Dynamox

USER MANUAL

DynaGateway

DUO EWI



Dynamox_s.a | Dynamox | Dynamox.net

Index

1 First steps 4

2 Product description 5
2.1 Product structure 5
2.2 Models and characteristics 7

3 Pre-installation 9
3.1 Internet availability assessment 9
3.2 Positioning recommendations 10
3.2.1 Strategic positioning 10
3.2.2 Environment assessment 10
3.2.3 Sensors connectivity test 10
3.3 Network access release 11

4 Installation 12
4.1 Power supply 12
4.2 Configuration 13
4.2.1 Mobile Network 15
4.2.2 Ethernet 16
4.2.3 Wi-Fi 17
4.3 LED signaling 20
4.4 Mounting 21

5 Adoption and configuration 23
5.1 Adopting a DynaGateway 24
5.2 Batch spot configuration 27
5.2.1 Practical example of DynaGateway configuration 30
5.3 Individual Spot configuration 32

6 Status **34**
6.1 Spot connection 34
6.2 Visibility update 35

7 Additional resources **36**
7.1 Connectivity 36
7.1.1 Network interface 36
7.1.1.1 Wi-Fi 36
7.1.1.2 Ethernet 37
7.1.1.3 Mobile 37
7.1.2 LAN configuration 37
7.1.3 Time 37
7.2 System reboot 38
7.3 Restore factory settings 39
7.3.1 Configuration restoration via Gateway Setup 39
7.3.2 Configuration restoration via external button 39
7.3.3 Factory settings 40
7.4 Firmware update 41
7.5 Sensors search within DynaGateway range 43
7.6 Mesh Network 44
7.6.1 Configuring the Mesh Network for Root node 45
7.6.2 Configuring the Mesh Network for Node Mode 46

1 First steps

This document addresses the processes of configuration, usage, and operation of the DynaGateway (models LTE, LTE-S, IoT, and IoT-S), the automatic data collector from DynaLoggers for monitoring the health of industrial assets.

The main objective of the DynaGateway is to interact with the DynaLoggers located within its Bluetooth range, collecting vibration and temperature data and requesting waveform analyses at the specified interval. This information is sent to the Dynamox Platform, where the data can be viewed graphically.

In this regard, it is necessary for the DynaGateway to have internet access. Connectivity can be established through a Wi-Fi network, an Ethernet cable, or a mobile data network.

In the following chapters, product installation recommendations, a step-by-step configuration guide, and its main functionalities are presented. It is essential that the information presented in this document is followed to achieve proper functioning of the solution.

2 Product description

The DynaGateway works with the purpose of making vibration and temperature sensor data available on the Dynamox Platform in an automated manner, generating a history of measurements that enable future analyses.

2.1 Product structure

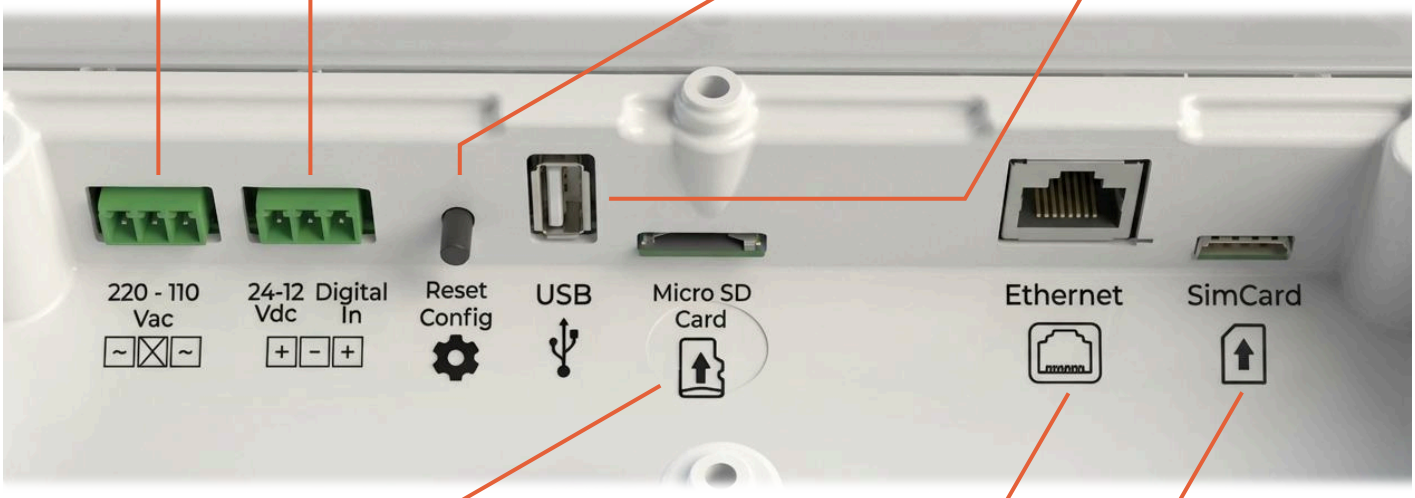
On the front inner part of the DynaGateway, the main product-user interaction interfaces are located. They will be used in the installation and configuration processes:

Power input
- alternating current
Connection port for 110/220Vac power supply.

Power input
- direct current
Connection port for 12/24Vdc power supply.

Reset/Config Button
It leads the Gateway to generate an Access Point (AP), allowing the user to access a DynaGateway settings interface, and offers reset functionality.

USB Port
Enables the use of an external device to save Gateway logs (exclusive use by Dynamox Support).

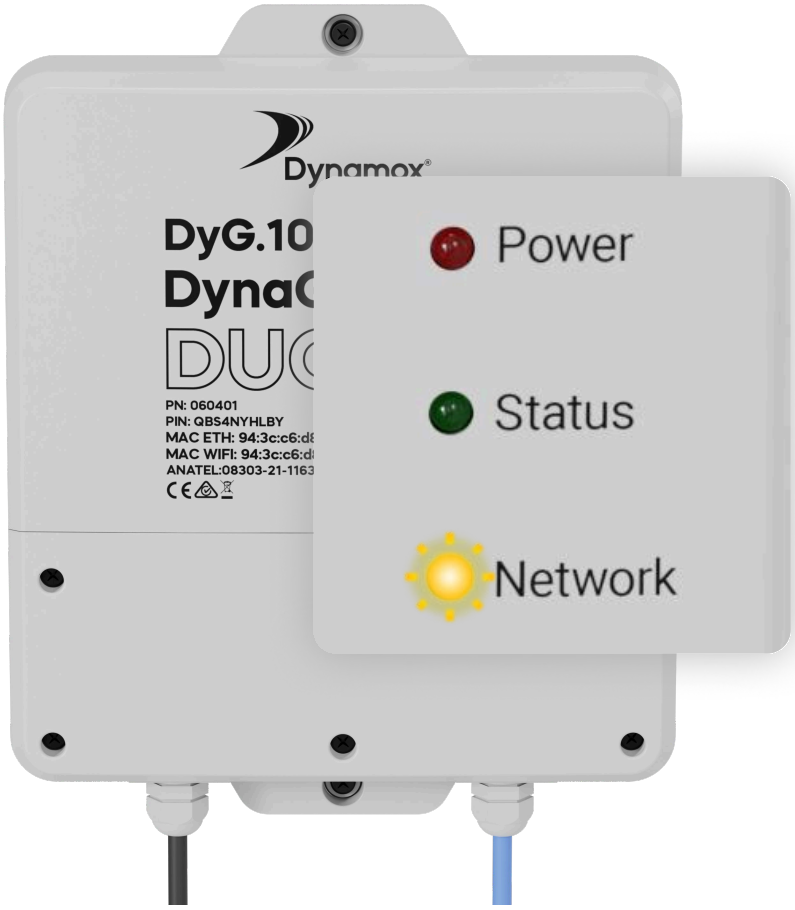


SD Card
Local storage of offline collection data for later upload to the Dynamox Platform.

Ethernet
RJ45 port for connecting the device to the internet via Ethernet cable.

Sim Card
Chip insertion for connection with mobile networks.

The DynaGateway also provides an operational status indication through three LEDs positioned on the front side of the product. They serve the functions of indicating **Power**, **Status** and **Network**, which correspond to power supply, internal status, and connectivity, respectively. The functionalities of each LED and their respective colors are detailed in section 4.3 of this document.



2.2 Models and characteristics

In the central part of the device cover, information such as name, model, serial number, PIN, and MAC address of the DynaGateway is provided. This product offers four different models: DynaGateway LTE, DynaGateway LTE-S, DynaGateway IoT, and DynaGateway IoT-S.



DyG
Serial number of the DynaGateway. It is used in connection with the Dynamox Platform.

Model identification
Modified according to the model.

PN (Part Number)
Identification code of the product.

PIN
Used for device adoption on the Dynamox Platform.

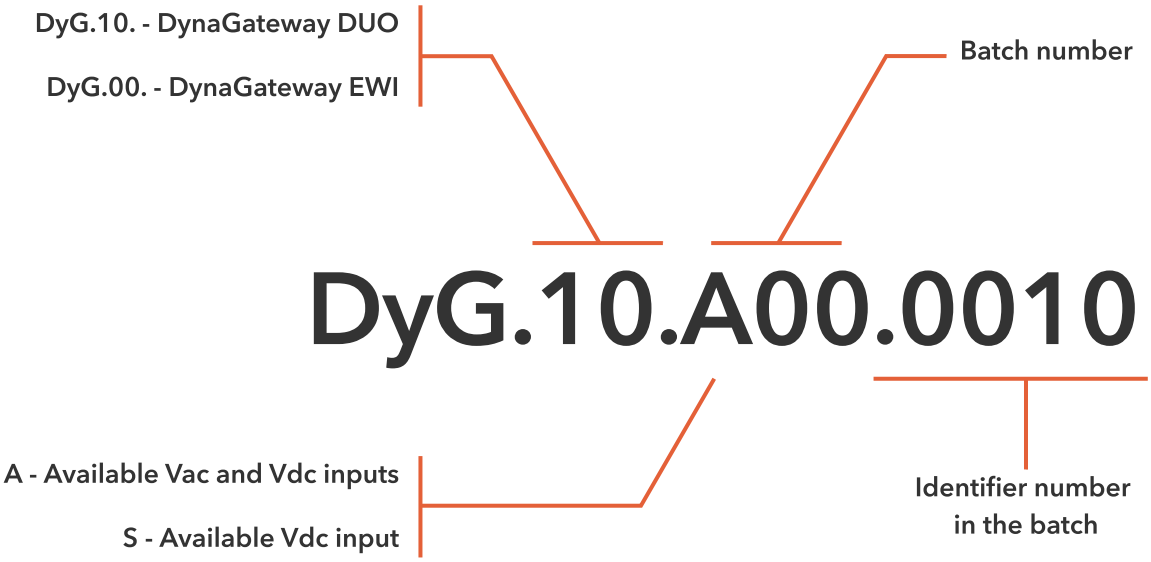
MAC ETH
MAC address of the device on wired networks.

MAC Wi-Fi
MAC address of the device on Wi-Fi networks.

The characteristics of the different models are presented in the following table.

			DynaGateway DUO	DynaGateway EWI
Serial Number			10	00
Ethernet			✓	✓
Wi-Fi + Bluetooth (2.4 GHZ)			✓	✓
Mobile Networks	2G GSM		✓	⊗
	3G E-UTRAN		⊗	⊗
	4G	LTE CAT-1	⊗	⊗
		LTE NB-IoT	✓	⊗
		LTE CAT-M1	✓	⊗
Power Supply 110/220 V ~ 5/30 V			✓	⊗

The identification code format of the DynaGateway follows a construction pattern in the form DyGX.XX.XXXXX, as shown in the image below.



In the DUO model, use a Nano SIM Card and the data below to set up mobile access.

OPERATOR[1]	APN[2]	USER	PASSWORD
Claro	claro.com.br	claro	claro
Oi	gprs.oi.com.br	oi	oi
Vivo	zap.vivo.com.br	vivo	vivo
TIM	timbrasil.br	tim	tim
Algar	algar.br	algar	1212

1 - If the operator responsible for your chip's services is not listed in this table, request the information directly from the provider.

2 - Chips with M2M technology may require specific APNs. In these cases, it may be necessary to check directly with the operator.

3 Pre-installation

The interaction between the DynaGateway and the Dynamox Platform depends on an internet connection. Information regarding data collection, waveform analysis requests, and parameterization of the DynaLoggers and the DynaGateway itself is included in this interaction.

In this context, to ensure proper functioning of the DynaGateway, it is recommended before installation to:

- Check the availability of an internet connection at the installation site;
- Verify the need for network traffic clearance;
- Plan the installation location of the Gateway in relation to the sensors.

These processes are detailed individually below.

3.1 Internet availability assessment

Checking network availability is particularly critical when using Mobile Networks, as there may be unavailability of the operator, technology, and frequency, or simply the signal may not be strong enough to provide connectivity for the DynaGateway. It is worth noting that the DynaGateway can work with a SIM card from any operator and use GSM (2G) technology and/or CAT-M1/NB-IoT (4G). More information about network technologies is available in section 4.2.1. Additionally, the product datasheet describes the frequencies supported by each model.

If the DynaGateway connects via Wi-Fi or Ethernet, it is necessary to ensure that it is allowed to connect to the local network and that the data sent by it can travel outside the network. More details are presented in section 3.3. Additionally, it is recommended to check if the plant's Wi-Fi network has sufficient coverage and if the network point intended for the DynaGateway is functional in the wired infrastructure at the installation site.

3.2 Positioning recommendations

Proper positioning of the DynaGateway directly impacts the quality of its connection with the DynaLoggers. The maximum connection range with a DynaLogger, in open space and line of sight, is 60 m.

3.2.1 Strategic positioning

It is recommended that the DynaGateway be installed at a level above the plant machinery to reduce possible communication barriers that could impair the Bluetooth connection. Installing the device at a central point in the plant can allow the range to be utilized in all directions.

It is worth noting that installing the DynaGateway inside metal boxes drastically reduces the range of wireless communications.

3.2.2 Environment assessment

Before installation, carefully evaluate the environment where the device will be used. Consider the presence of reflective objects, radio frequency interference, and other factors that may affect the line of sight and connection quality.

3.2.3 Sensors connectivity test

To estimate the sensors within the DynaGateway's range, before field installation, it is recommended to use the Dynamox App, available on the Play Store and App Store. In the side menu, the **Search Spots** option displays all sensors already registered on the platform in a Bluetooth visibility list on the mobile screen. This technique can be used to estimate the feasibility of connection between the sensors and the DynaGateway.

After installation, perform connectivity tests with the Gateway itself to ensure that the line of sight is adequate and that there are no significant interferences. The test can be performed using the functionality described in 7.5.

3.3 Network access release

When using a private Wi-Fi, or Ethernet for communication, it is necessary to allow data traffic on the network for the following hostnames:

DOMAIN	PORT	DESCRIPTION
.dynamox.solutions	443	Release all interactions with Gateway (optional)
dyg.gateways.dynamox.solutions	443/8883	Release all interactions with Gateway (optional)
time.google.com	123	Time synchronization via SNTP *Note: NTP server address is configurable.

Dynamox is a company certified by the ISO 27001 standard, which concerns information protection and security. The certification ensures that Dynamox complies with the criteria established by the standard regarding information security in its processes.

For more information about network clearance, contact Dynamox technical support **support@dynamox.net**↗.

4 Installation

After completing the Pre-Installation stage, the next step is to connect the device to the power supply and the selected communication interface. This section provides the necessary instructions for this process.

> It is recommended that the following procedures be carried out in a location where the product can be easily handled, as it is more convenient to configure its communication interface before positioning it in the chosen location for operation, aiming to ensure greater productivity and safety for the people responsible for the installation. In addition, for increased safety, the **use of protective gloves** is mandatory when handling the product.

4.1 Power supply

The DynaGateway can be powered through a DC source with an output between 12 and 24V. To do this, it is necessary to connect the power cables according to the figure below:



The power terminals are located in the internal compartment of the product, near the physical interfaces (SIM Card slot, RJ45 port, Reset button, etc.). The image above shows the connection of the Ethernet cable and power supply.

4.2 Configuration

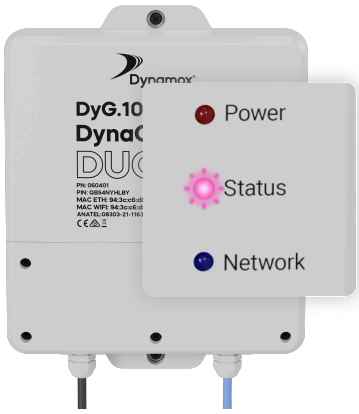
To configure the DynaGateway's communication interface with the internet, it is necessary to start the device's configuration mode through the following steps:

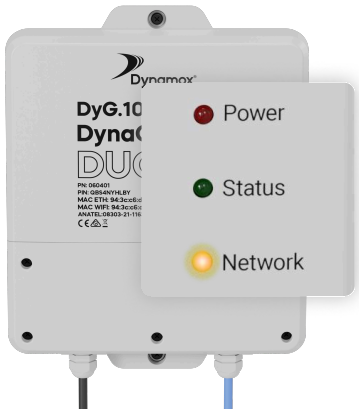
1 Hold the **Reset button** for 10 seconds

2 After this period, the **LED Status** will flash pink one time

3 Then, the **LED Power** will change to a steady orange

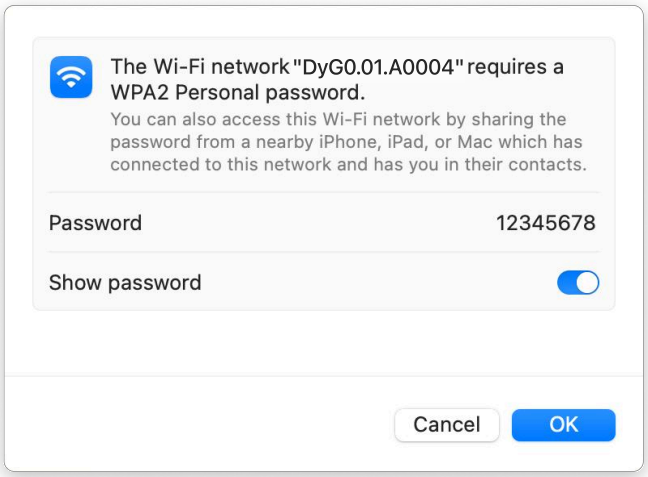






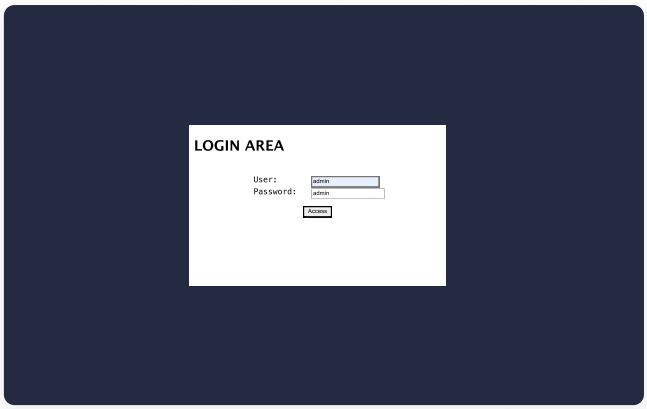
4 Connect to the Wi-Fi network generated by the device using a nearby computer or mobile device. The network generated by the Gateway has the following credentials:

- **Network name (SSID):** serial number of the device
- **Password:** 12345678

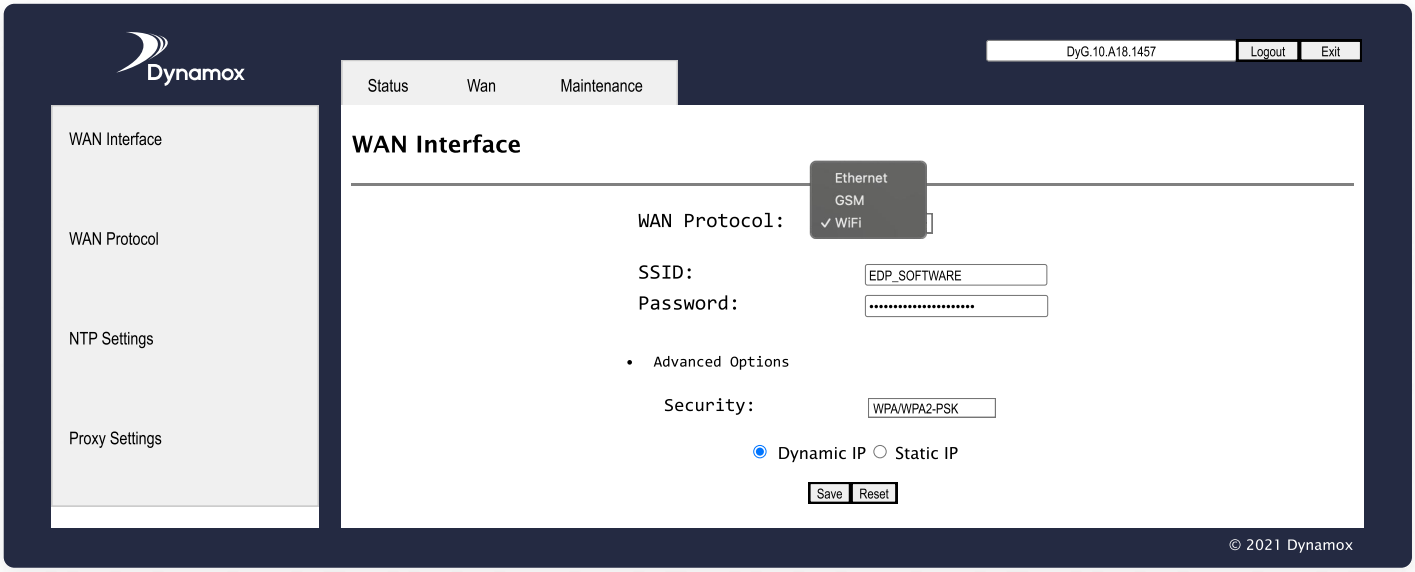


5 Once connected, access the DynaGateway configuration mode by typing 192.168.10.1 in the browser. Use the following credentials:

- **User:** admin
- **Password:** admin



After logging into the system, the user will have access to the Quick Setup tab. It can also be accessed through the side menu. The first step is optional and involves reading the visibility of the DynaLoggers near the Gateway. If it is not necessary, you can select the option **No, skip to the next step**; otherwise, select the option **Yes, let's scan the sensors**. Then, press the button **Next**.



Below, the communication interfaces for the Gateway's operation, as well as their installation and configuration process, will be detailed.

4.2.1 Mobile Network

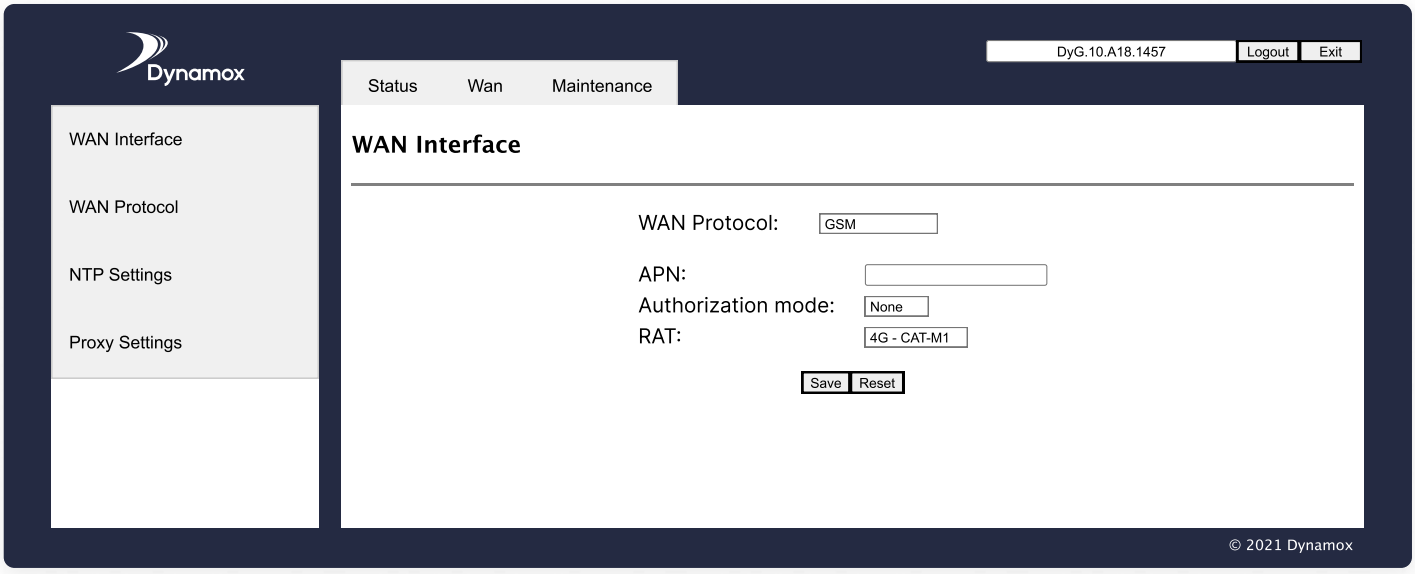
The acquired Gateway model will provide different communication technologies, previously mentioned in the Table in section 2.2. It is important for the user to be informed about local coverage, considering the technologies that their Gateway model can connect to and the bands provided in the Datasheet.

If you wish to use the DynaGateway through mobile data, you need to insert a SIM Card from the carrier of your choice. Then, configure the communication through the configuration interface.

> The user should not insert or remove the SIM Card with the Gateway powered on to avoid product failures.

On the **WAN Interface** tab, the user must select, in the **WAN Protocol** field, the **GSM** option. Below are the fields that the user must fill the **APN** field and choose the authorizations mode and connection technology according to those available in your region.

After completion, select the option **Save** to complete the configuration.

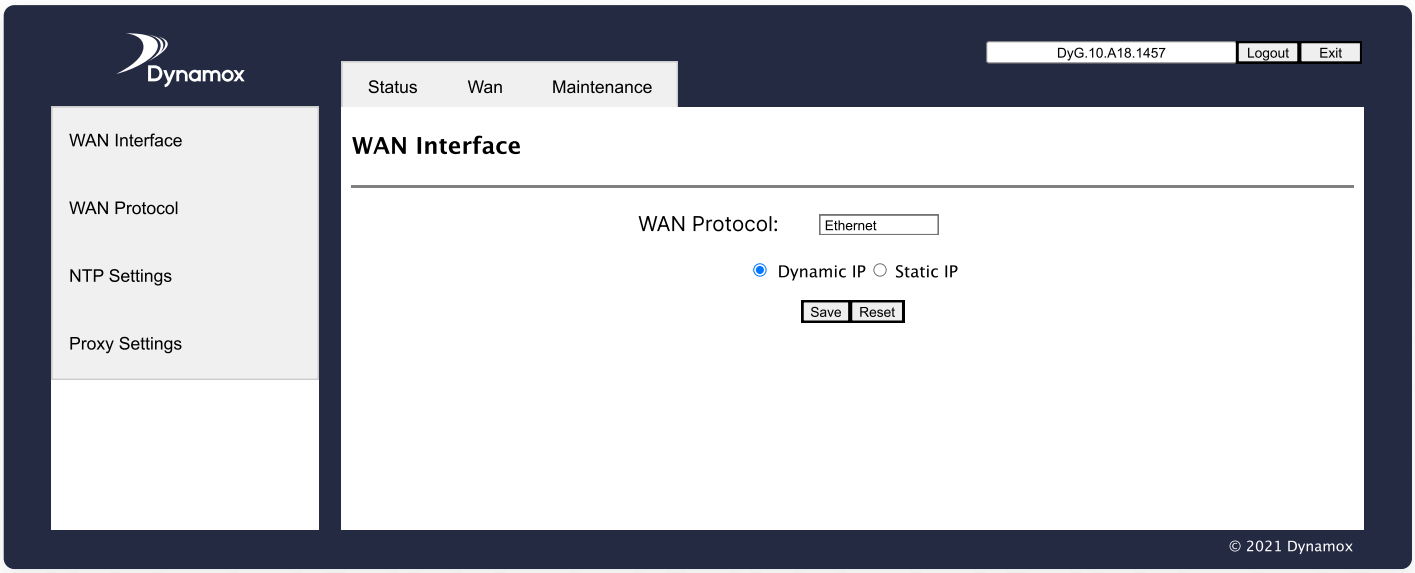


To access the IMEI, go to the **Mobile Signal Strength** tab, as shown in the following image:

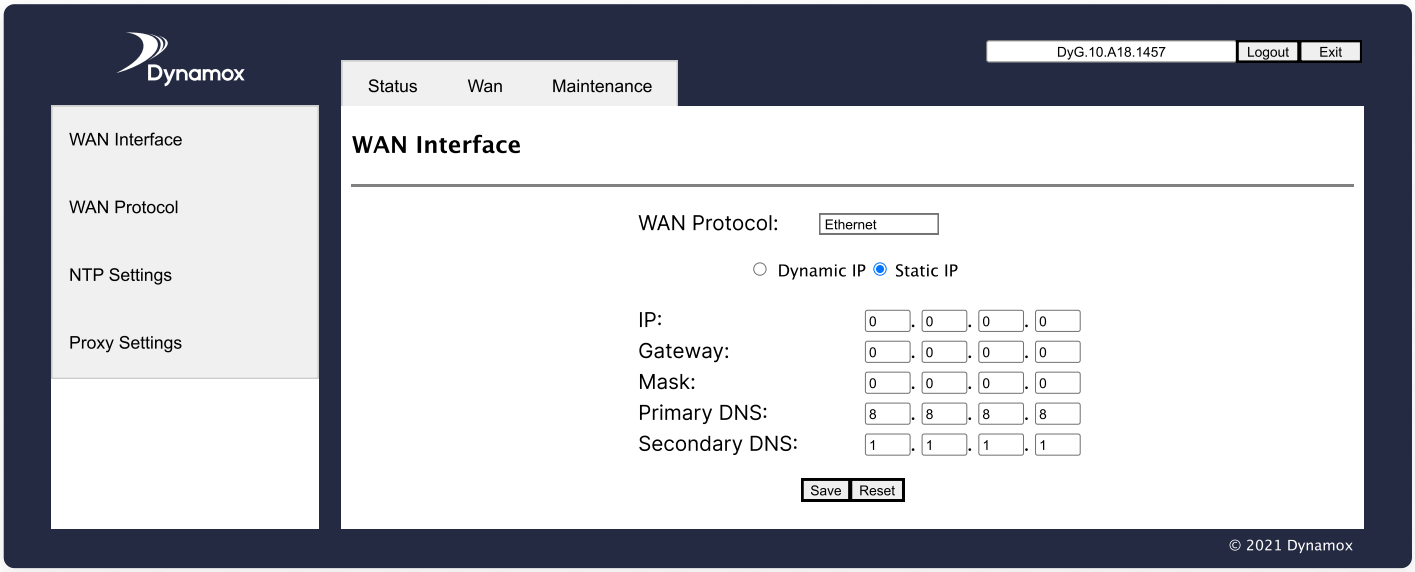


4.2.2 Ethernet

If you want to connect to the internet through a wired network, in addition to network traffic clearance, an RJ45 cable is required to connect it to a network access point. After connecting the cable, you must configure the interface via the **WAN Interface** tab, selecting the **Ethernet** option in the **WAN Protocol** field.



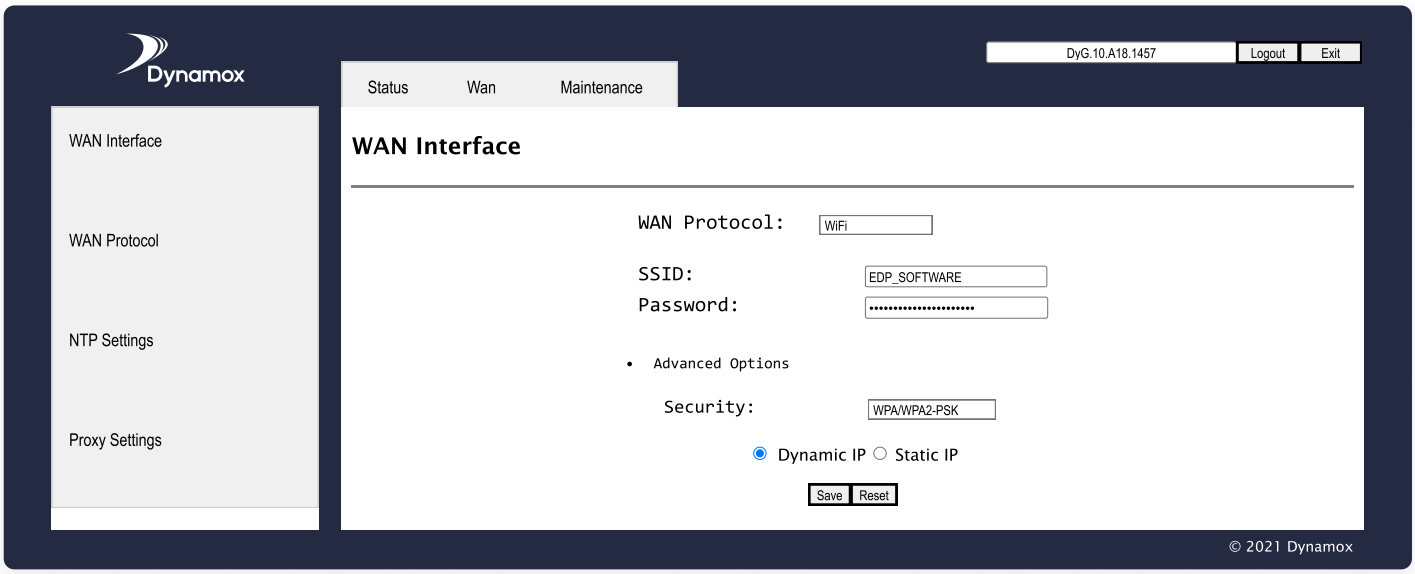
If the Internet connection is valid (via RJ45 cable) and network traffic is properly cleared to the hostnames mentioned in section 3.3 - Clearing Network Access, the interface configuration is complete. By default, below the **WAN Protocol** checkbox, **Dynamic IP** is pre-selected and recommended for ordinary connections. If required, you can select **Static IP** to assign a fixed IP address, used in networks where IP liberation is required.



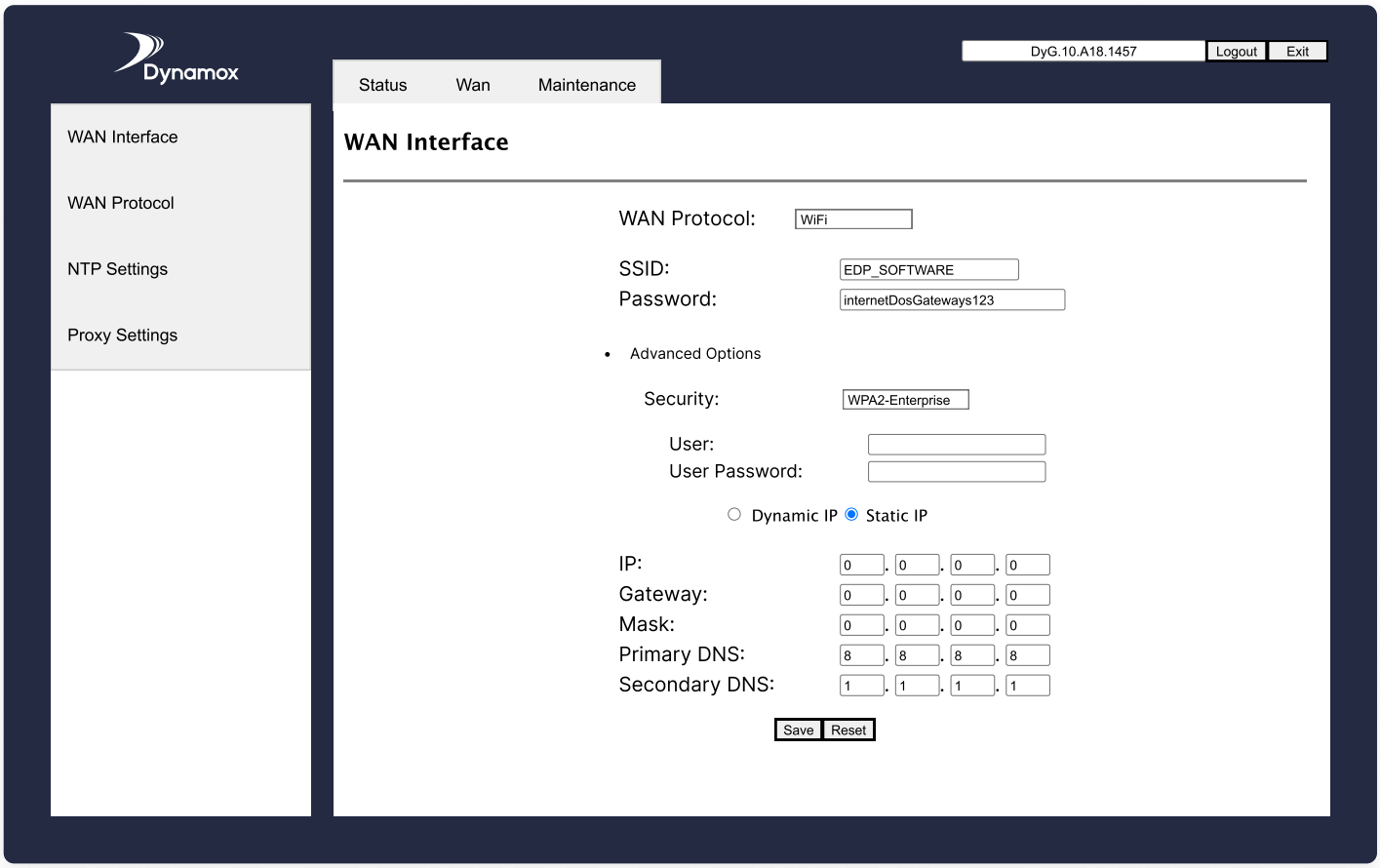
The department responsible for releasing the IP local network of your company must provide the data to be filled in on this screen. After completion, select the **Save** option to finalize the configuration.

4.2.3 Wi-Fi

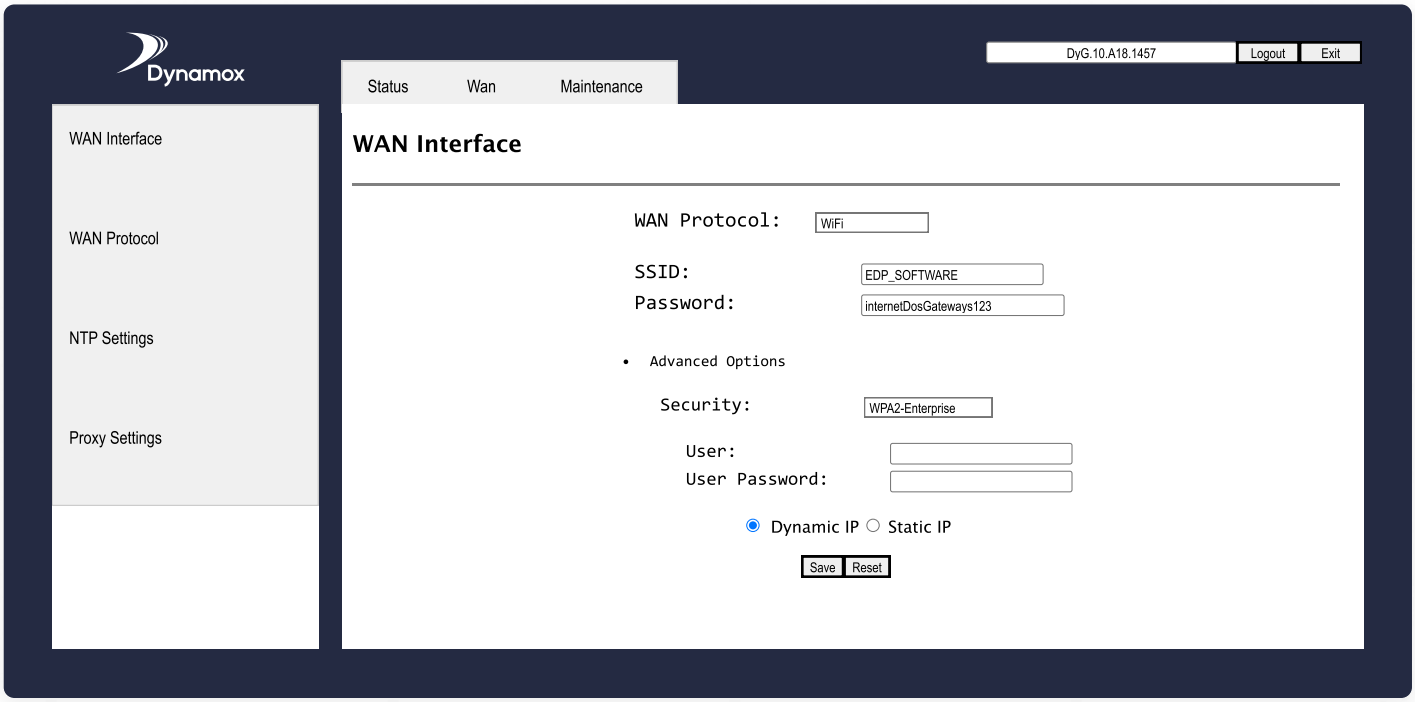
The configuration of the DynaGateway connection via Wi-Fi is done entirely through the configuration interface. Starting, analogously to the Ethernet configuration, from the **WAN Interface** tab, the user must select the **Wi-Fi** option.



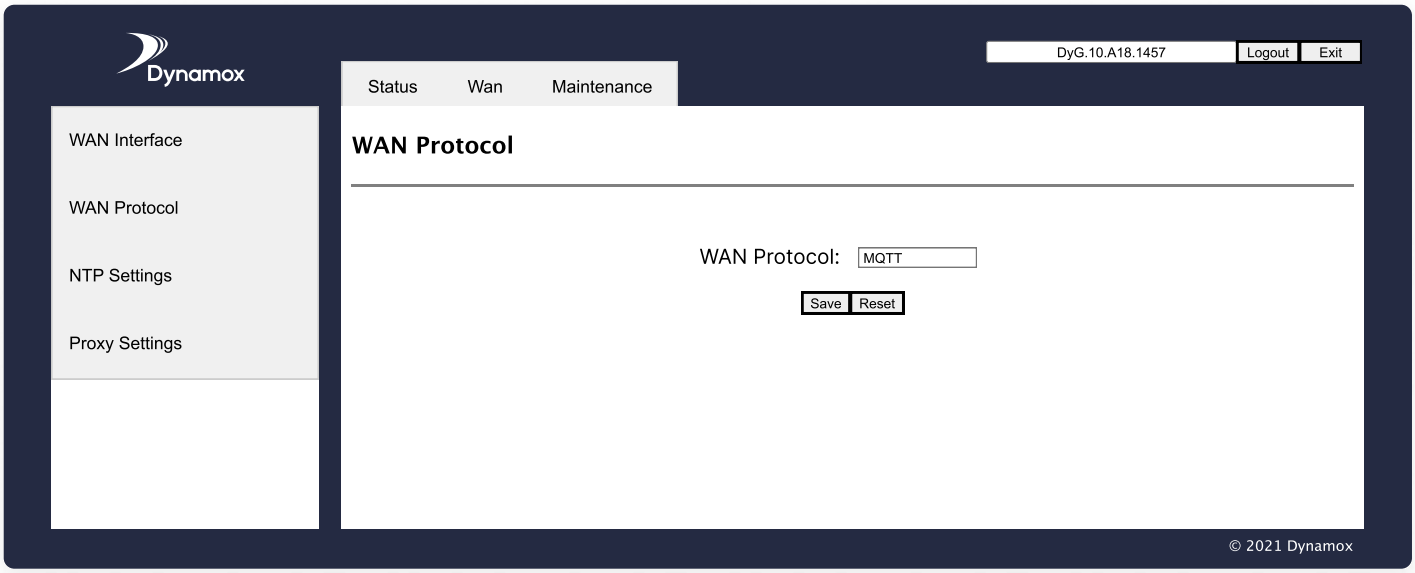
Two fields will appear just below the selection. You must fill in the name (SSID) and password of the Wi-Fi network you wish to connect the DynaGateway to. As with the Ethernet configuration, you can use a fixed IP address by selecting the **Static IP** option. If this is not desired, the **Dynamic IP** option is already pre-selected and requires no additional configuration. After completion, select the **Save** option to finalize the configuration.



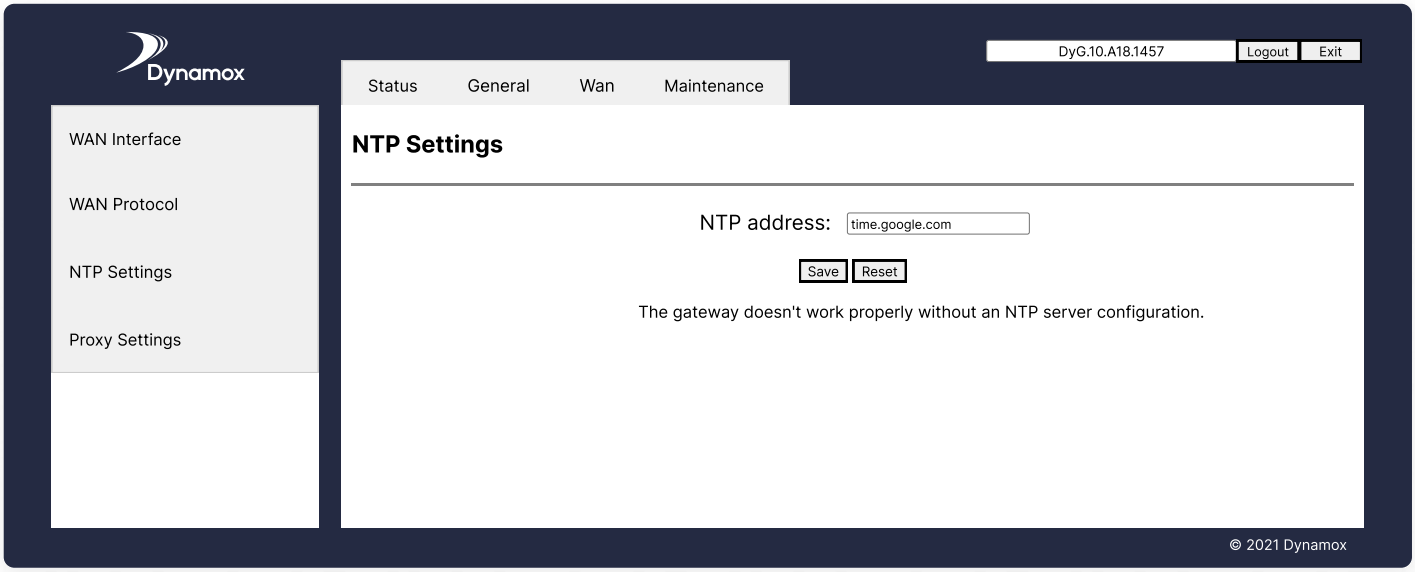
In specific cases, it may be necessary to configure the Gateway on a WPA-Enterprise Wi-Fi network (with user and password per employee). When you select **Wi-Fi** on the **WAN Interface** tab, the **Advanced Options** field will be shown, where the options for the WPA-Enterprise configuration will be displayed. The user must fill in the information regarding the user and password for the enterprise network. In this case, the user should leave the **Password** field below SSID blank. When you select **Save**, the configuration of the Gateway via Wi-Fi is complete.



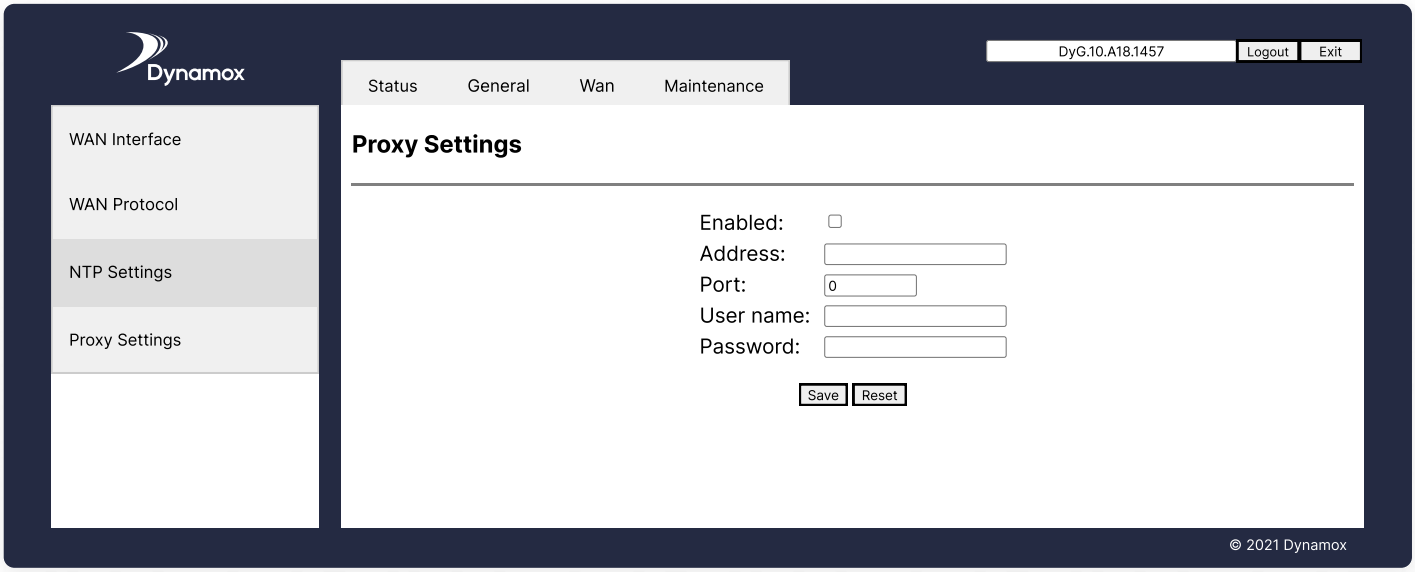
The **Wan Protocol** tab offers a unique option: MQTT. This protocol is essential for communication between devices on a network, allowing for lightweight and efficient message exchange. After selecting the MQTT option, click **Save** to ensure everything works correctly.



In the **NTP Settings** tab, you will see the **NTP address** field, next to which is filled in time.google.com. The NTP server is responsible for synchronizing your device's time with the internet's standard time, ensuring that all operations occur accurately. It is essential that you configure the NTP server correctly, as the Gateway will not function properly without this configuration. After making the configuration, do not forget to select **Save**.



In the **Proxy Settings** tab, you will find several essential options to manage your connection. First, enable the **Enabled** option by checking the box. Next, fill in the required fields: **Address** for the proxy server, **Port** for the connection, and the credentials for **User name** and **Password**. After configuring everything, don't forget to click **Save** to apply the changes.



Section 4.3 refers to the status of the communication interface configured for the Gateway. In this section, it will be possible to verify if the entire configuration process is correct and if the device is ready for communication with the cloud.

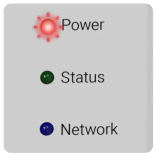
4.3 LED signaling

On the DynaGateway casing, there are indicators of connection status and relevant information for the user through the LEDs. Each of the three LEDs on the product corresponds to: Power, Status, and Network.

The color and behavior of the LED may vary according to the activity the Gateway is performing at the moment or the state it is in, as follows:

1 LED Power

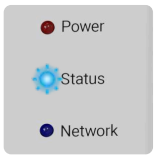
Solid red:
Gateway powered



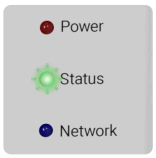
2 LED Status

Alternates between on and off while the Gateway performs one of the following activities, according to the LED color:

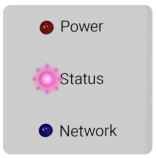
Flashing blue:
communicating with DynaLoggers



Flashing green:
communicating with the Dynamox Platform



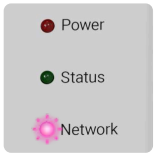
Flashing pink:
internal processing



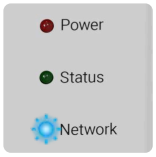
3 LED Network

Changes color according to the chosen communication interface:

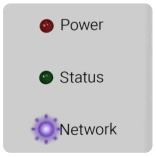
Flashing pink:
connecting to Wi-Fi



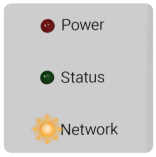
Flashing blue:
connecting to Ethernet



Flashing purple:
connecting to Mobile networks

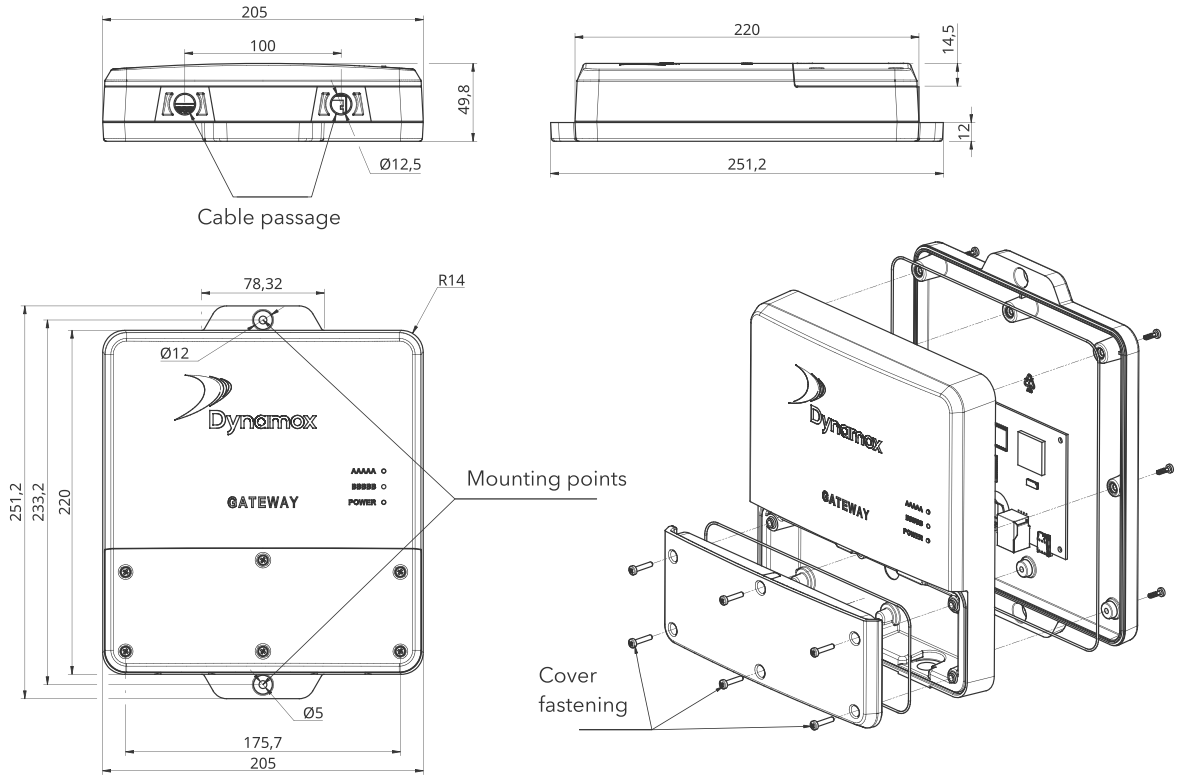


Solid orange:
Gateway Setup mode



4.4 Mounting

After configuring the communication interface, proceed to the designated location to position the DynaGateway. During the mounting process, it is important to consider the product dimensions and pay attention to the drilling patterns and the recommended screw size for mounting (M4), as follows (measured in millimeters):



To access the physical interfaces of the product (USB port, RJ45 connection, etc.), it is necessary to unscrew the front cover. It is worth noting that the tightening torque of this component should be approximately 4 N.m, considering the screw size and the material of the casing.

Below, the cable glands at the bottom provide access to the cable passage area, with the left side for power cables (Vac or Vdc power supply) and the right side for the RJ45 cable (Ethernet).



Key:

1. Turn to loosen the cable pass-through
2. Run the Ethernet cable
3. Crimp the RJ45 connector with a crimping tool
4. Connect the cable to the Ethernet port
5. Tighten the cable pass-through

To ensure proper operation, it is recommended to access the device's configuration interface and check the visible sensors within its range before closing the front cover and positioning it in the final installation location. For this verification, refer to section 7.5 of this document.

Complete the installation of your DynaGateway by closing the front cover, tightening the previously removed screws, and mounting it in the installation location. The positions indicated in the image below represent the two mounting points of the Gateway on the desired structure. For securing the product, consider a diameter of 5 mm for the body and 12 mm for the head of the screw, as follows:



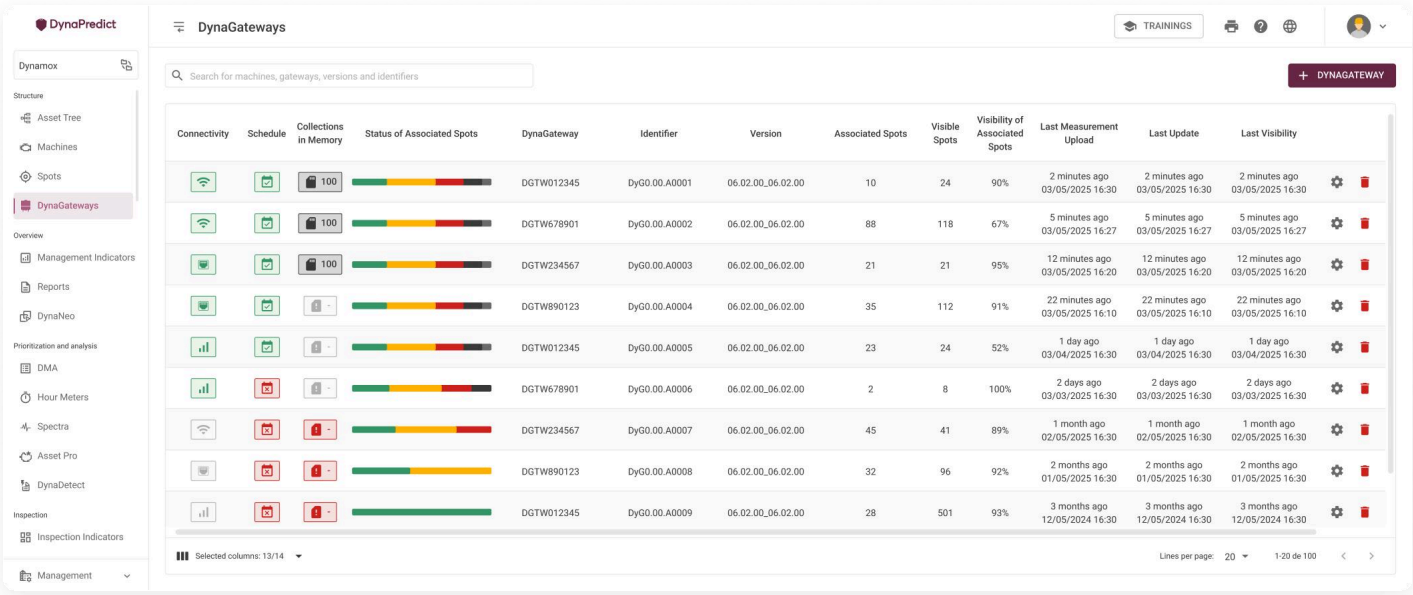
After configuring the communication interface and positioning the Gateway in its operating location, the user can verify the success of the process through the Power and Network LEDs (color according to the chosen communication interface, see section 4.3, both continuously lit).

Finally, to configure which Spots will be collected by the Gateway, the user must perform the adoption and configuration process of the Gateway collections through the Dynamox Platform, described in the following sections.

5 Adoption and configuration

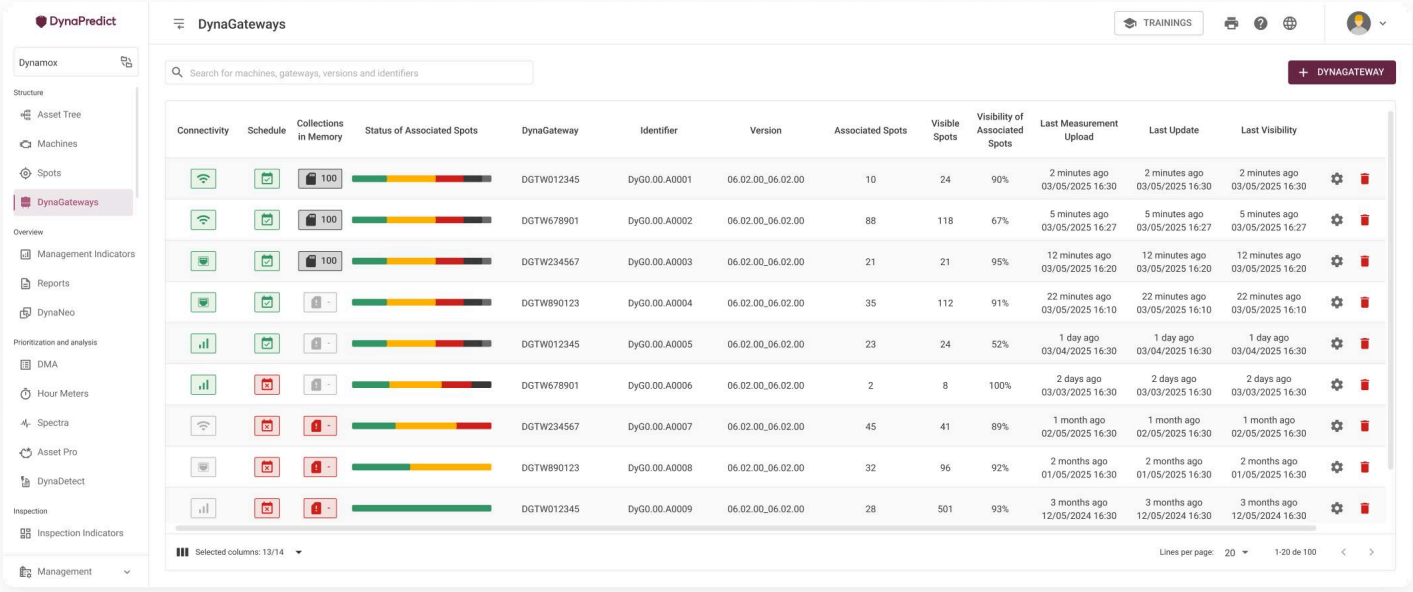
After configuring the network and communication interface of the Gateway, it is necessary to access the Dynamox Platform to adopt the device in a workspace and indicate the operating parameters, such as sensors to be collected and the interval for collecting continuous values and requesting spectra.

To do this, the user must access the Platform at [https://dyp.dynamox.solutions/↗](https://dyp.dynamox.solutions/) and, in the side menu, access the Gateways tab. Upon entering, a table with the list of Gateways already registered in the workspace where the user is located will be displayed.

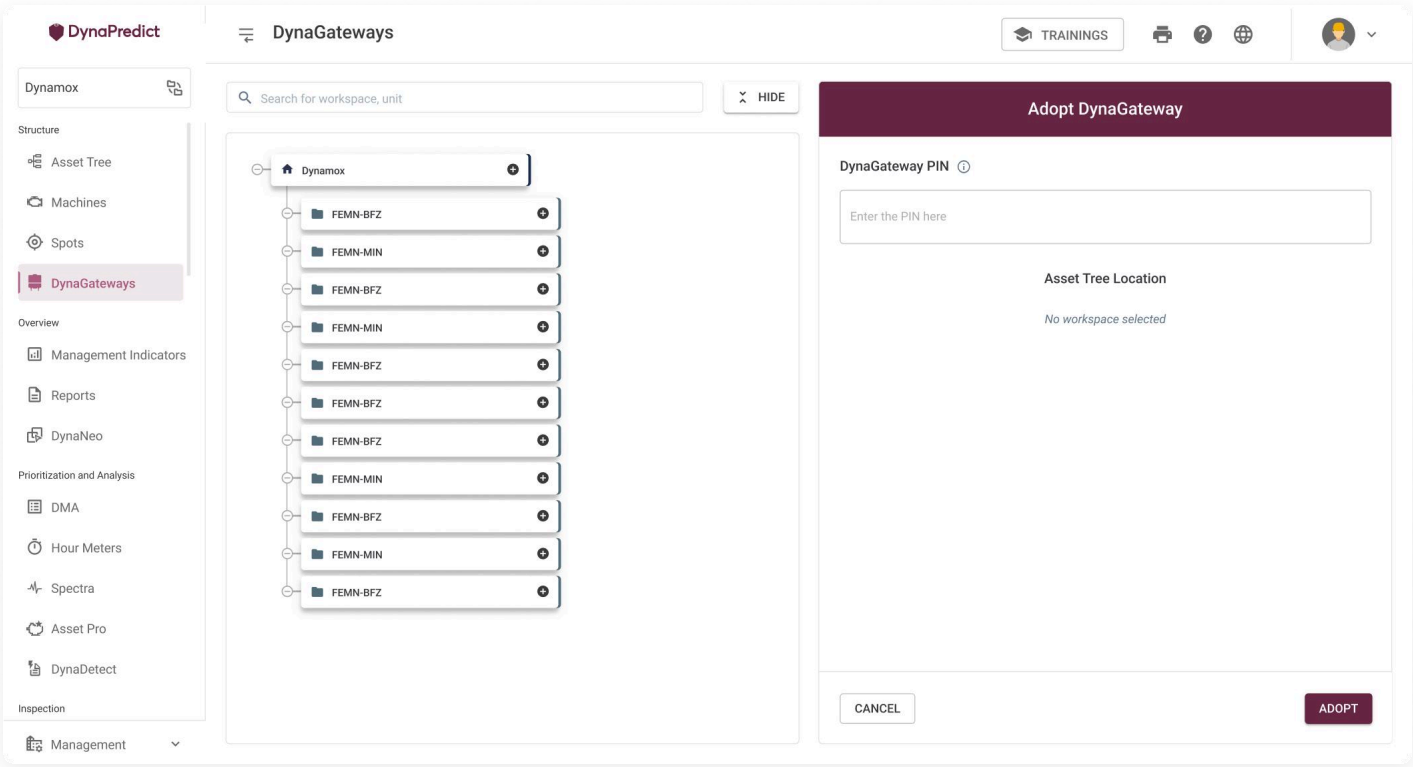


5.1 Adopting a DynaGateway

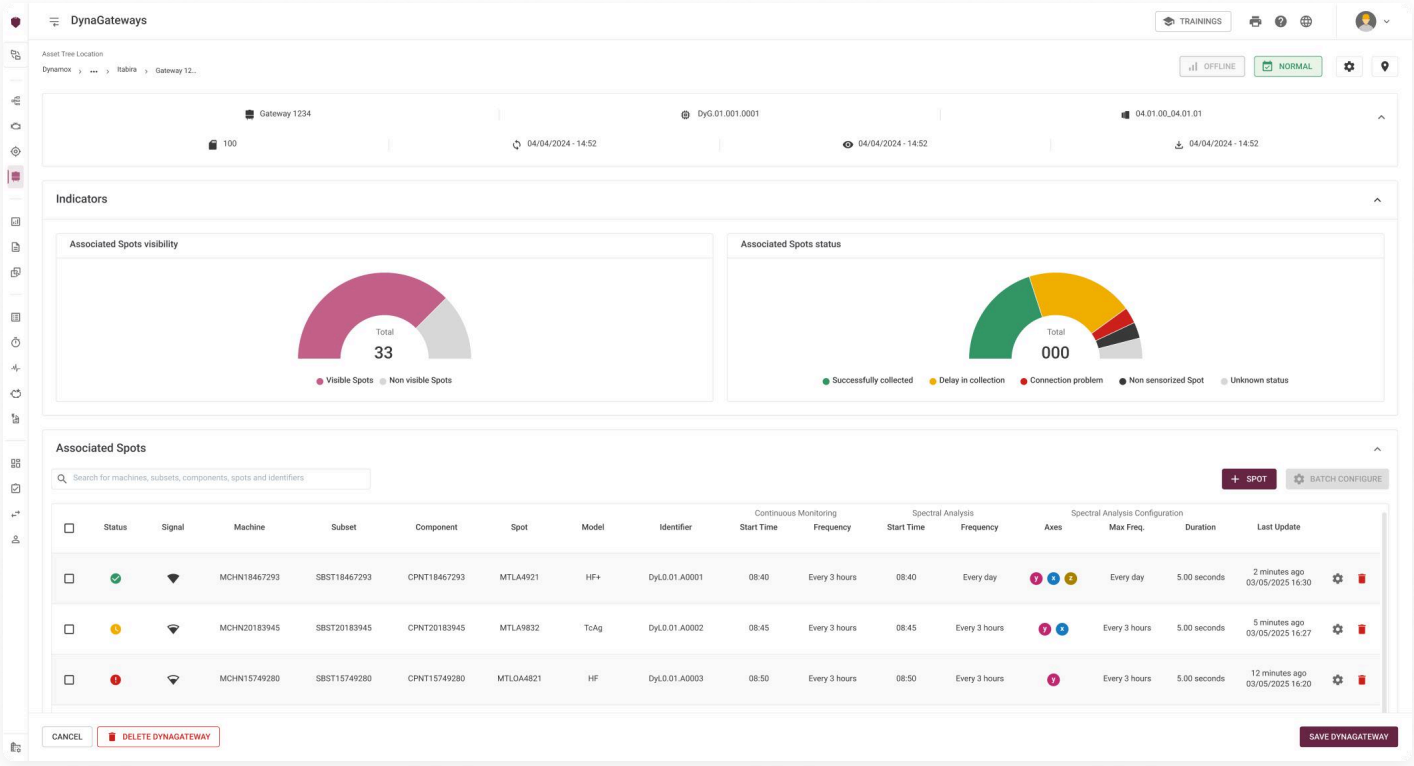
To adopt a DynaGateway, in the Gateways tab, the user must select the **+ DynaGateway** option in the upper right corner.



On the right side of this screen, the user must enter the device PIN, printed on its casing. Using the Asset Tree on the left side, the user must select in which subarea the DynaGateway will be positioned. This will influence the restriction of the group of sensors that can be associated with the DynaGateway, as well as which users can edit its configuration parameters.



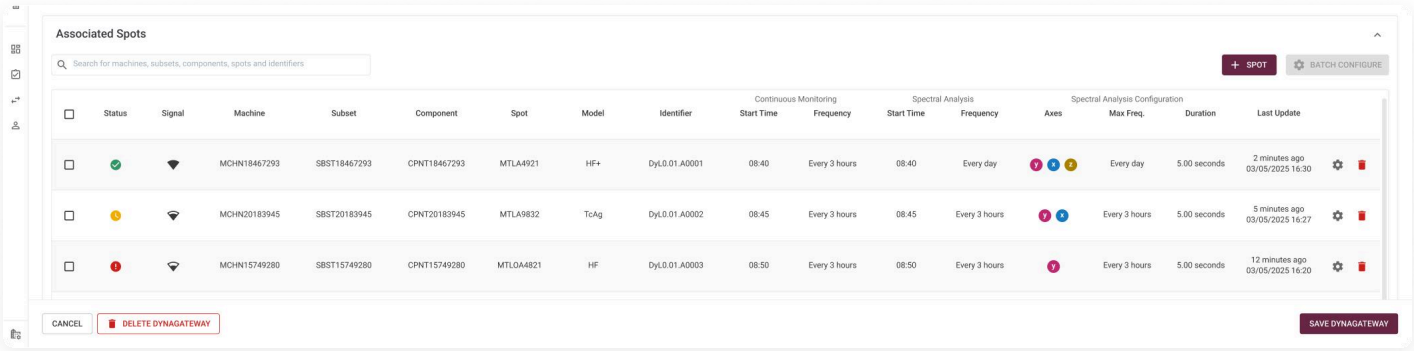
The selection follows the same pattern as the company's Asset Tree, where higher levels can enjoy the same benefits at lower levels. By clicking on the **Adopt** option, the Gateway Configuration page will be displayed to the user.



At the top of the screen, general information about the Gateway is displayed, such as the assigned name (which can be edited), product serial number, last edit made on the Dynamox Platform, and the last visibility update.

At the bottom, there is information related to the status of the Spots within the Gateway's range and the sensors associated with it. The status of each icon is detailed in section 6.1. The Spots visible to the Gateway are all those within its range, including sensors not associated with this Gateway. This concept can help determine better use for the device, ensuring it is configured to collect data only from DynaLoggers that are truly within its range.

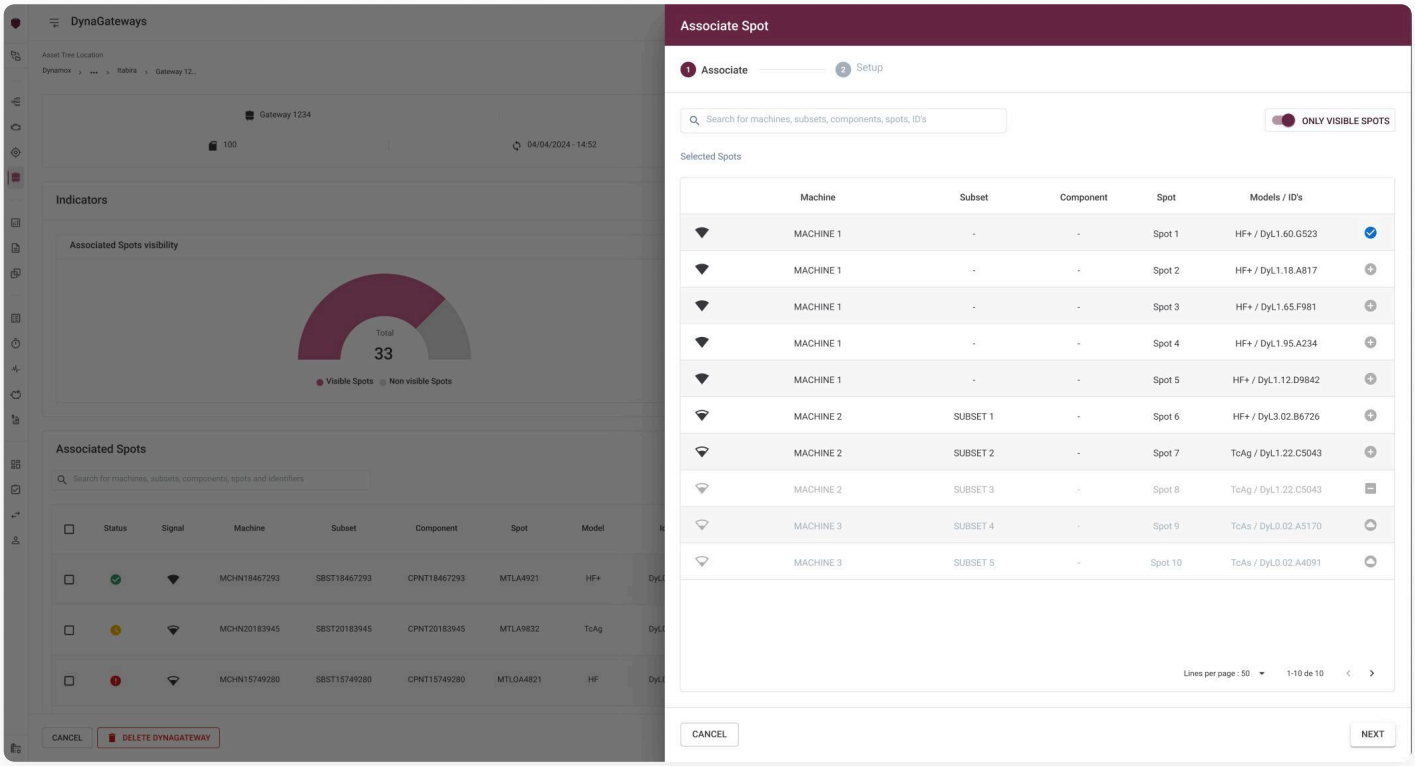
By selecting the **+ Spot** option, it is possible to associate the Spots that should have their data collected by the Gateway. To do this, select the option to view the Spots available for association.



The list of Spots below will be shown according to the workspace where the Gateway was previously configured. The **Only visible Spots** option allows filtering the Spots whose DynaLoggers are within the Bluetooth range of the DynaGateway. It is important to note that to use this option, the device must be powered on and have recently performed a visibility update. This update does not occur at the same time the DynaGateway is connected to the network, meaning this process may take some time to complete.

It is still possible, in all cases, to uncheck the **Only visible Spots** option to associate the Spots, keeping in mind that the DynaGateway does not yet have the information if the sensor is within its communication range. Similarly, it is advisable that the device is also positioned in its installation location, as it will inform the user which Spots are visible to it for future association.

To add a Spot, simply select the icon ⊕ , to its right, changing it to ✔ . If the Spot in question is already associated with another Gateway, the icon shown will be ⊖ . On the left side of the screen, the signal strength of each Spot visible to the Gateway will be displayed, which can help in the device positioning process.

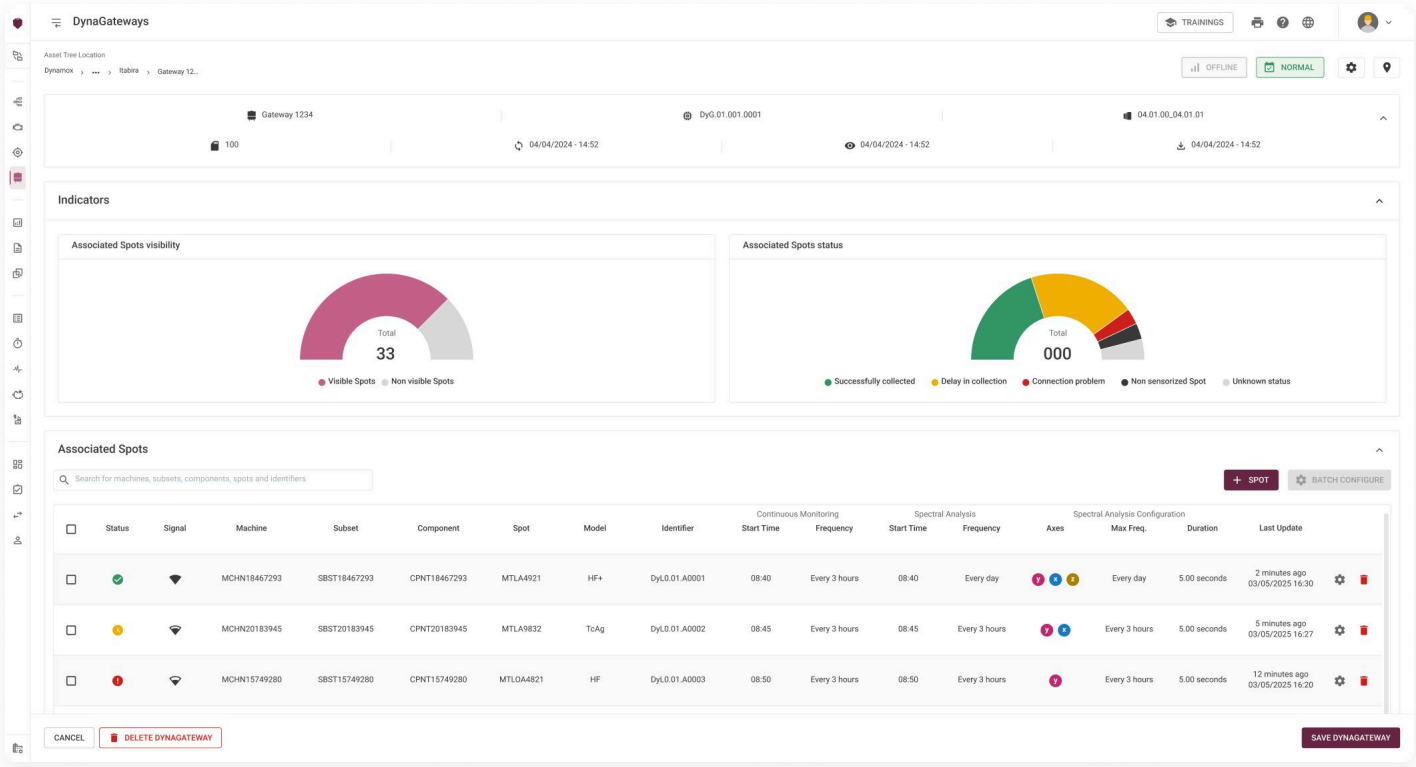


Upon completing the process, select the **Next** option to proceed to the screen to configure the Spots to the Gateway's schedule. It is also important to pay attention to the correct configuration of the collection intervals for each Spot to avoid overloading the Gateway, as described below.

5.2 Batch spot configuration

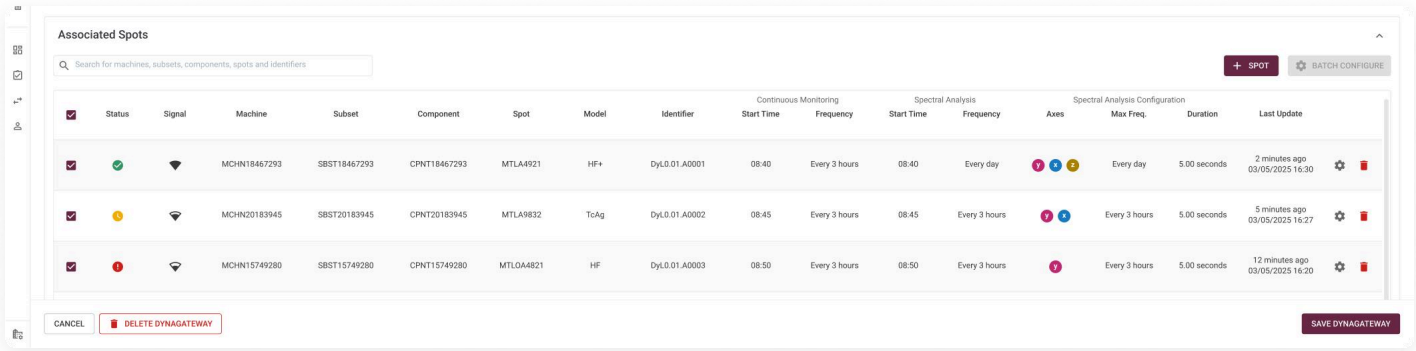
Once the Spots to be collected by the Gateway have been associated, the user needs to configure the desired collection and spectral request intervals.

By selecting the ⚙ , option, the user can configure the continuous data collection and spectral analysis parameters for a specific Spot.



In cases where multiple DynaLoggers are associated with the Gateway, it is beneficial to configure all Spots in a standardized manner, creating uniformity in data posting and speeding up the parameterization process. Thus, in the upper right corner, the user can select the **Batch Configuration** option, which becomes available when more than one Spot is marked in the list.

To define which Spots will be configured simultaneously, check the box to the left of the corresponding Spots. To select all at once, check the box above the Spots list.



The configuration screen for collection and spectral analysis schedules defines the frequency with which the DynaGateway will communicate with the sensors and send data to the Platform. This screen consists of two monitoring options:

- **Collection:** defines the times when the Gateway will communicate with the DynaLogger to request the collection of global data stored in its internal memory.
- **Spectral Analysis:** defines the times when the Gateway will communicate with the DynaLogger to request a spectral analysis on the Spot.

For each type of monitoring, it is necessary to define the start time of the collections and the frequency with which the Gateway will repeat the monitoring, which is the collection interval.

It is important to differentiate the concepts of collection interval and sample interval. The first refers to the Gateway, while the second is the configuration defined when creating the Spot for the DynaLogger. The sensor takes measurements according to its sample interval and stores them in its internal memory until, according to its collection interval, the DynaGateway transfers the data to the Platform and clears the sensor's memory.

> **Example:** a DynaLogger with a sample interval of 5 minutes generates vibration and temperature samples at this interval and stores them in its internal memory. A Gateway with a collection interval of 3 hours (180 minutes) will collect this data and send it to the Platform every 3 hours, collecting 36 samples (180 min / 5 min) of vibration and temperature at a time.

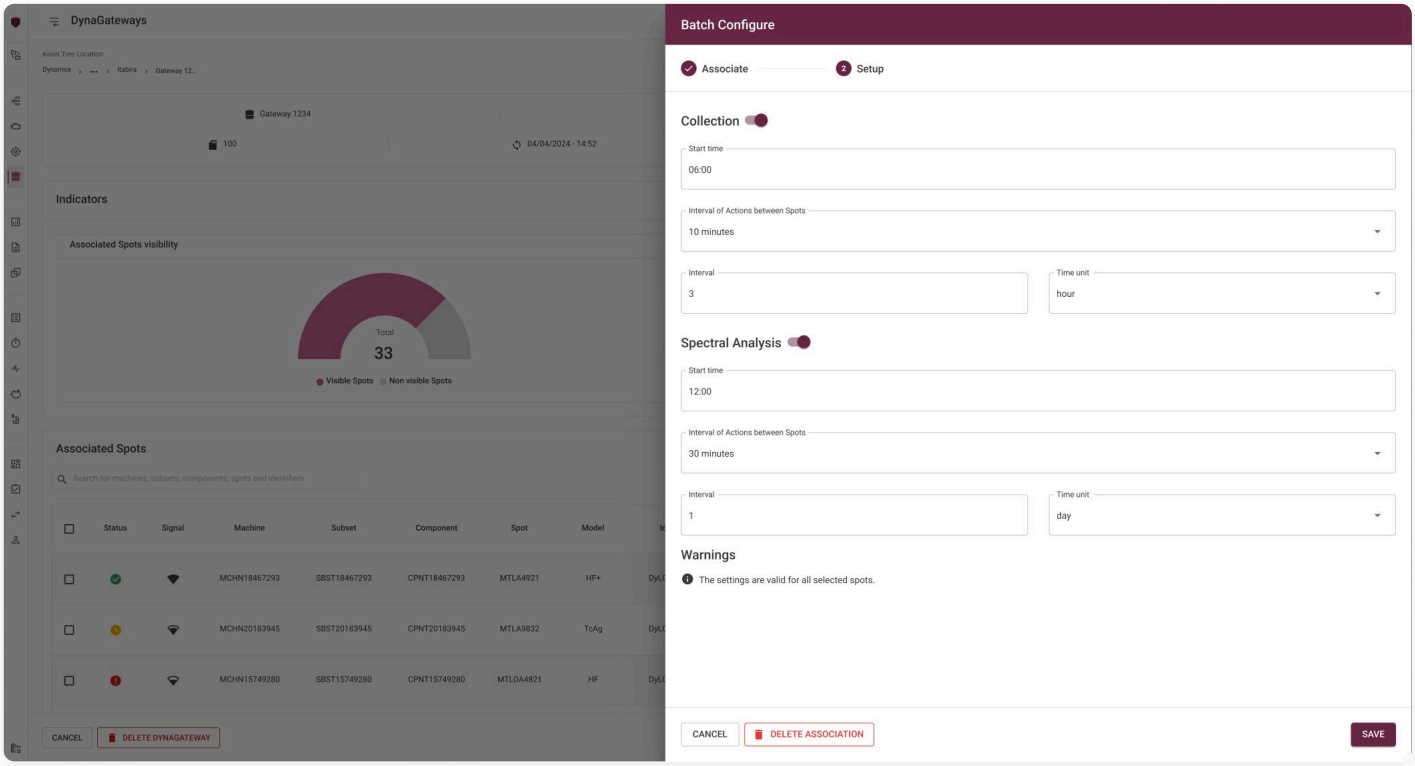
In the case of Batch Configuration, it is also necessary to inform the Action Interval between Spots so that from the start time of the first Spot's collection, the Gateway defines the times for the other Spots. By selecting the option, the configuration window will be displayed for the user to fill in the following fields:

Continuous Monitoring:

- **Start Time:** the start time of the schedule, i.e., the moment when the first Spot on the list will be collected.
- **Action Interval between Spots:** the time interval between the collections of the Spots, starting from the immediately previous point collected. For the second Spot on the list, for example, its collection time will be the start time of the first plus the action interval between Spots, and so on.
- **Interval:** the interval of the complete spectral collection cycle. Unlike the action interval between Spots, this value refers to the cycle's periodicity, i.e., how many hours the monitoring point will have its data collected again. Example: start time 09:00 with an interval of 3 hours, resulting in collection cycles at 09:00, 12:00, 15:00, and so on.

Spectral Monitoring:

- **Start Time:** the start time of the schedule, i.e., the moment when the first Spot on the list will have its spectral analysis requested.
- **Action Interval between Spots:** the time interval between the spectral requests of the Spots, starting from the immediately previous point collected. This field is analogous to continuous monitoring, except the Gateway's action type will be different.
- **Interval:** the interval of the complete spectral collection cycle. Unlike the action interval between Spots, this value refers to the cycle's periodicity, i.e., how many hours the monitoring point will have its spectral analysis requested again. For spectral monitoring, the minimum value for this field is 1 (one) day.



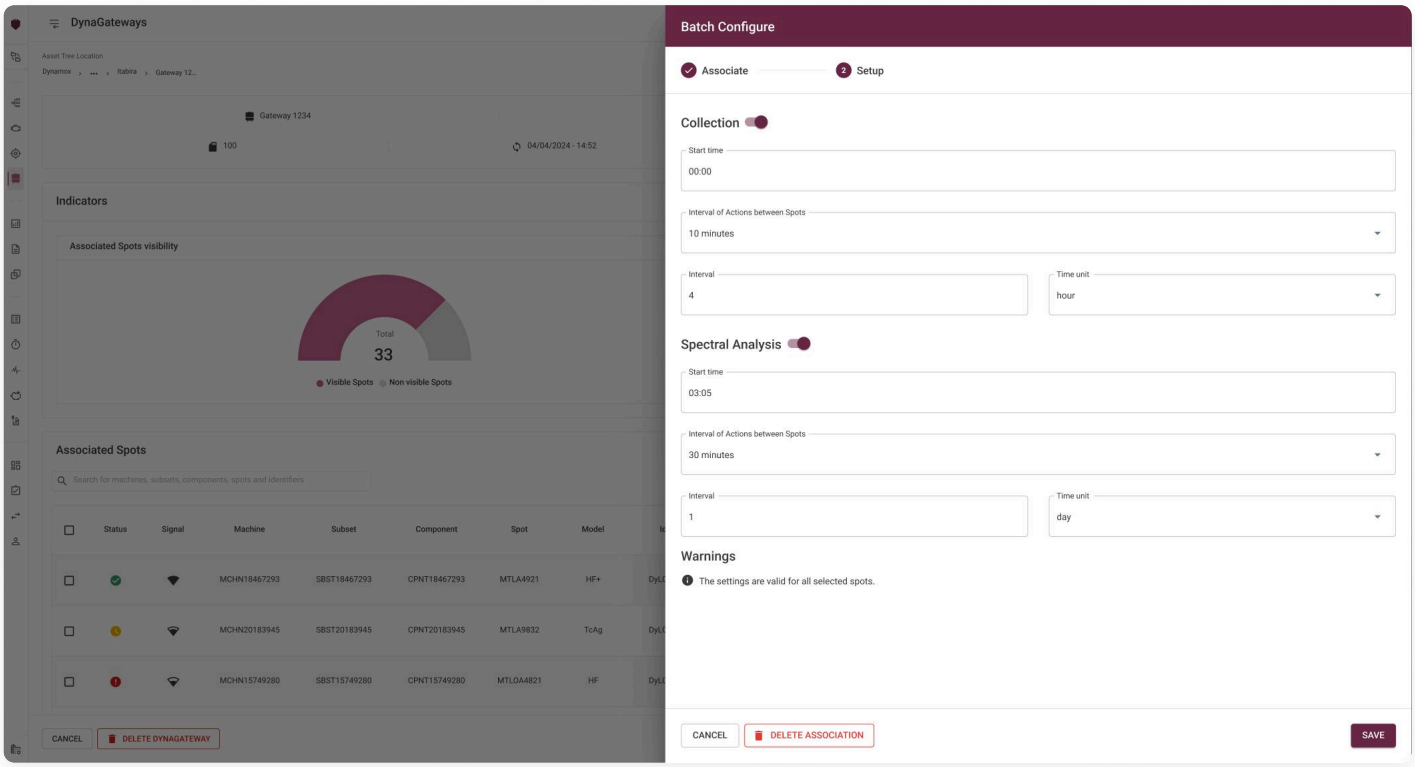
It is possible to perform as many batch configurations as necessary independently, i.e., the collection and spectral parameters can be different for each configured batch.

If the **Operations Accumulate more than 24h** icon appears, it means that the volume of actions associated with this Gateway may be exceeding the time available to execute them. In this situation, the daily operations of continuous data collections and spectral analyses together have an estimated time that exceeds 24 hours to be performed, which may result in a progressive delay in the Gateway's processes. In this case, we recommend reconsidering the volume of collections or the spectral configurations of the Spots to avoid delays.

Upon completing the configuration process, the user must select the **Save** button to finalize it. To save the Gateway changes, click **Save Gateway**.

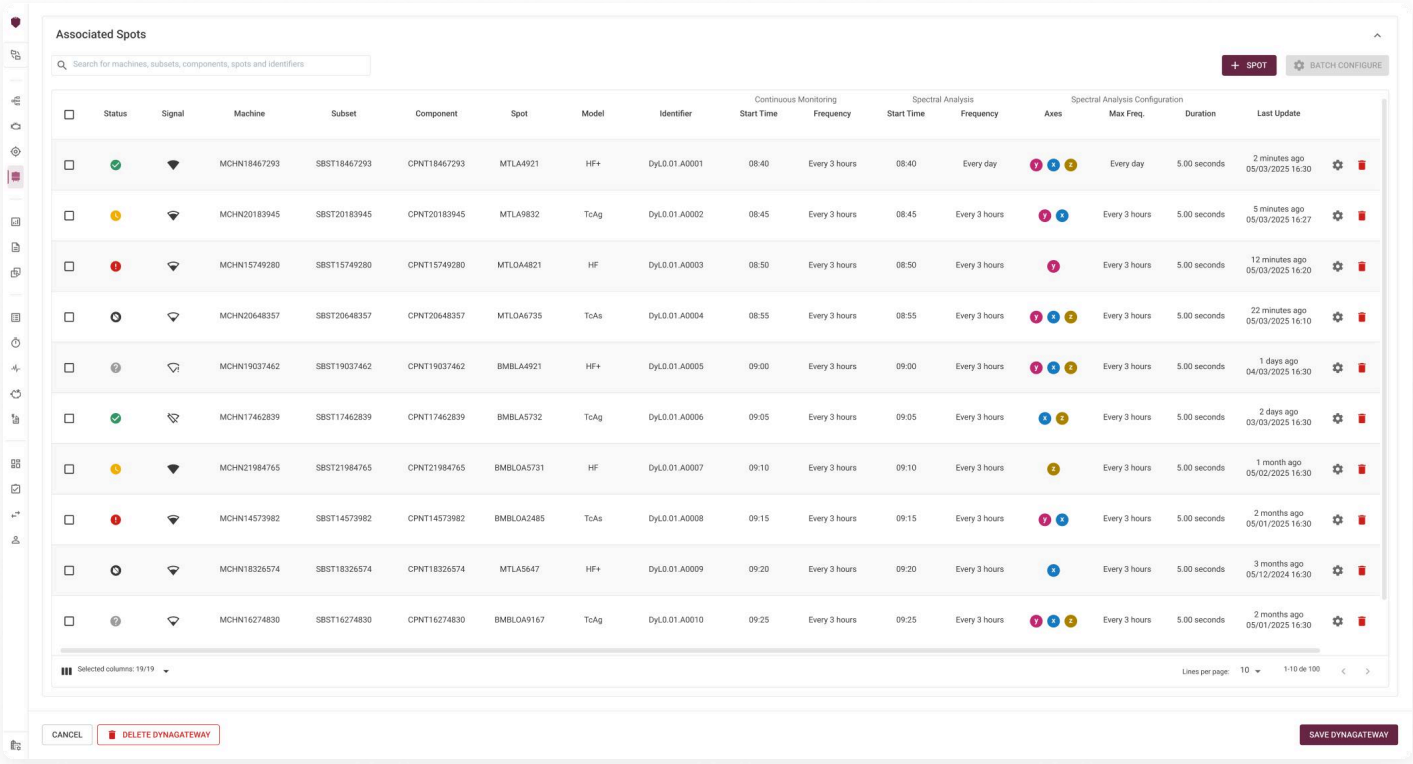
5.2.1 Practical example of DynaGateway configuration

This section will introduce a practical example of configuring a DynaGateway, as well as best practices for performing this process, considering a collection interval of 4 hours and daily spectral analysis for 20 associated Spots: as mentioned earlier, the time taken for the Gateway to perform a spectral analysis depends on the volume of data in the analysis and the stability of the internet. Generally, intervals of 30 minutes are considered for this action and 10 minutes for continuous data collections. In this example, collections alternate with spectral analyses in a schedule with 20 Spots, according to the configuration below:



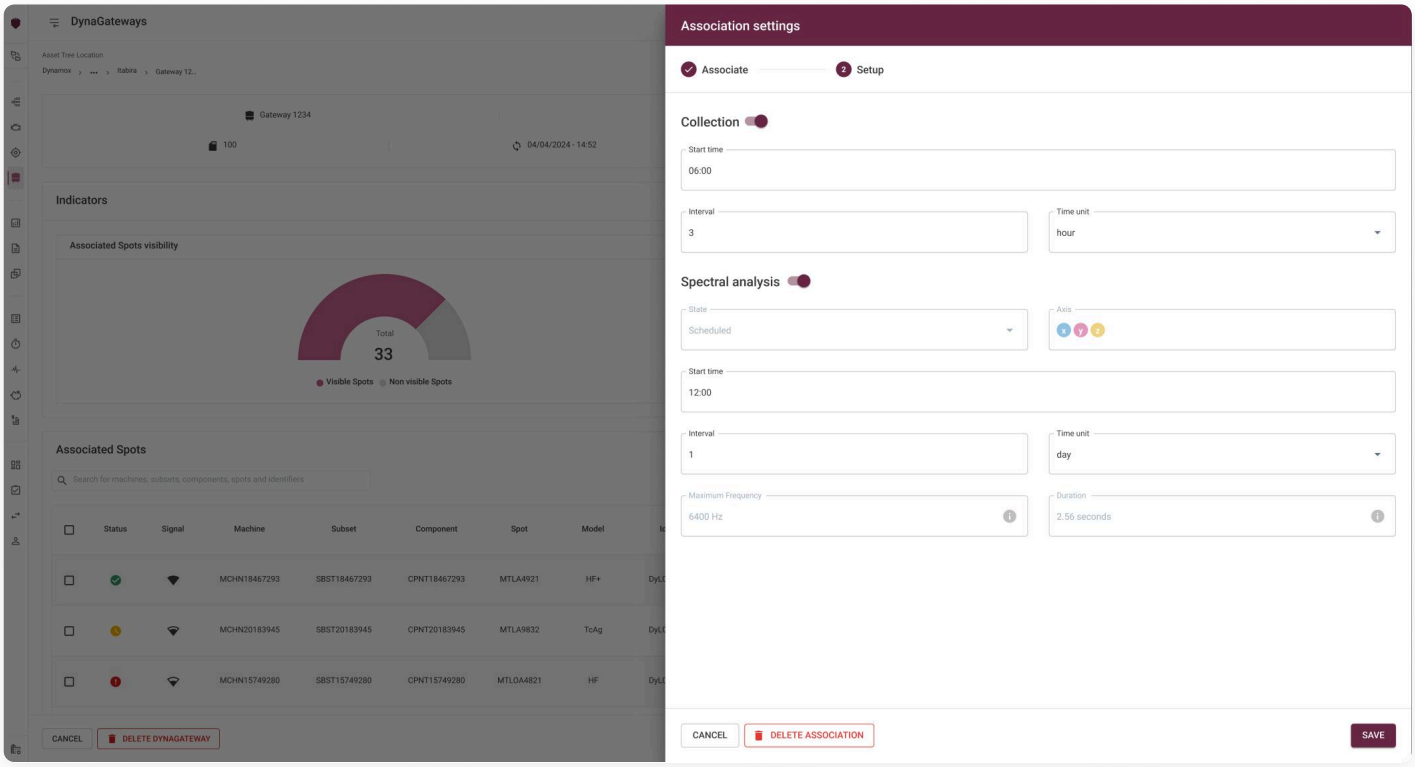
Thus, all continuous data from the Spots will be collected within 4 hours (20 Spots x 10 minutes equals about 4 hours), and therefore, this is a valid periodicity. Additionally, the intervals considered between actions respect the time available for the Gateway to perform them.

Thus, the first Spot is collected at 00:00 and starts its spectral analysis at 03:05. The second Spot is collected at 00:10 and starts its spectral analysis at 03:35, and so on. The collection cycle is repeated every 4 hours, so at 04:00, the first Spot will be collected again. Best practices for configuring the Gateway schedule are those that ensure actions are spaced out and that there is enough time for them to be processed before repeating an action cycle.



5.3 Individual Spot configuration

In some cases, it may be beneficial to configure Spots individually. To do this, you should select the ⚙ option next to the desired Spot, and a window similar to the batch configuration will be displayed. The fields and functionalities follow the same pattern discussed in the previous section regarding batch Spot configuration.



As with batch configuration, if the selected Spot is set to perform triaxial spectral analyses with a maximum frequency above 1600 Hz, a warning about the action's execution time will be displayed.

By clicking the **Save** button, the user will be returned to the Spots screen to configure the remaining selected points.

6 Status

After the configuration and adoption steps of the DynaGateway, it is possible to monitor the connection status with the DynaLoggers to ensure that all assets associated with the Gateway are being effectively monitored. The status of each Spot will vary according to the connection attempts made by the Gateway at the scheduled times during its configuration.

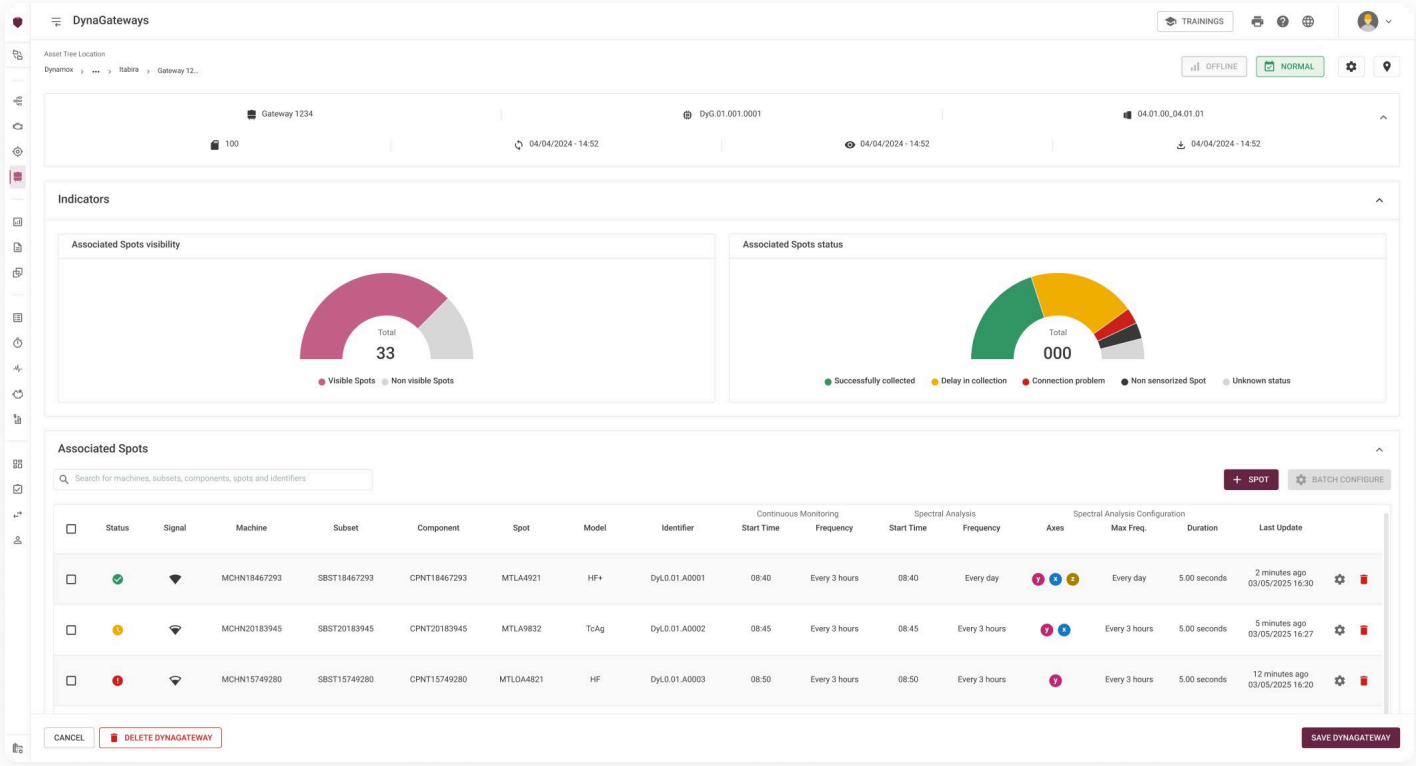
6.1 Spot connection

By accessing the Gateway Configuration screen, it is possible to check the collection status of the Spots associated with the selected Gateway. The colored icons on the left side of the list indicate the last collection status of that point, as follows:

- **Successfully collected:** the Gateway successfully collected data from the associated Spot at the scheduled time.
- **Delayed:** the Gateway did not send the last ccollections from the Spot at the expected time.
- **Not collected:** the Gateway was unable to collect data from the associated Spot.
- **Unknown status:** there are no collections from the Spot sent by the DynaGateway yet, commonly seen in cases where the Spots were recently configured. If all Spots remain with this status, it is recommended to check the connection interface (Ethernet, Wi-Fi, or Mobile Network) and the product's power supply. For isolated cases of Spots, check the signal strength of the sensors.
- **Uninstrumented spot:** the Spot does not have an associated sensor.

6.2 Visibility update

The DynaGateway periodically scans the sensors within its Bluetooth range. By default, every 2 hours, the device performs a visibility update when properly connected to the network. The information on how long since the last update is present in the last visibility field on the Dynamox Platform.



The visibility update procedure ensures that the statuses shown on the Platform reflect the reality of the last 2 hours, identifying which monitoring points need individual verification.

7 Additional resources

The DynaGateway has several tools that can assist in troubleshooting and contribute to the device's usability. Among these are system reboot, factory reset, firmware update, and sensor search within its range.

This section details the functionalities and procedures for using the device's tools. All described processes are performed through the device's Web interface, the same used for configuring the communication interface (accessing http://dynagateway-setup.local/ or 192.168.10.1 in the browser).

7.1 Connectivity

Connectivity is one of the main features of the DynaGateway and is essential for its proper functioning, enabling the collected data to be sent to the Dynamox Platform. Therefore, the device provides a wide range of network interfaces and configurations, adding adaptability and security to the product.

7.1.1 Network interface

Three network interface options are available: Wi-Fi, Ethernet, and Mobile Networks.

7.1.1.1 Wi-Fi

The Gateway has Wi-Fi connectivity operating in the 2.4GHz frequency band, with the following configurable parameters:

- **SSID:** The SSID is the unique name assigned to your wireless network. It is the identifier that allows devices to find and connect to your Wi-Fi network. Enter the name of the Wi-Fi network you are trying to connect to in this field.

Security Settings:

- **WPA/WPA2-PSK:** WPA/WPA2-PSK is a security encryption method for home and small business Wi-Fi networks.
  - Password: When selecting this security option during your Wi-Fi network setup, you will be prompted to enter the network password if there is one.
- **WPA/WPA2-Enterprise:** Enterprise is a more advanced security option designed for corporate and institutional networks. When choosing this security option, users are authenticated individually.
  - Username: Information related to the enterprise network user.
  - Password: Information related to the enterprise network password.

7.1.1.2 Ethernet

The Gateway has Ethernet connectivity, requiring a twisted pair network cable with an RJ-45 connector.

7.1.1.3 Mobile

In many locations, the availability of Wi-Fi and Ethernet network infrastructures is a problem, making it necessary to use mobile networks as a connectivity solution. To use mobile networks, a SIM Card from a carrier with coverage in the installation region and an active data plan is required.

Some network technologies are only available for specific models; information about the models is described in section 2.2. The following options are configurable:

- **APN:** The Access Point Name is an optional configuration.
  - Default: By default, this field is empty; in this mode, the device uses the chip information to select the APN automatically.
    Only public APNs from carriers work in this model.
  - Private APN: For this type of network, this field needs to be filled in.
- **Radio Access Technology (RAT):** Check the technologies (2G, 3G, LTE, etc.) available for each model described in section 2.2 and their availability in the location.

7.1.2 LAN configuration

Access to LAN settings is restricted to Wi-Fi and Ethernet interfaces. It is possible to configure the IP address statically or let it automatically obtain an IP address from the DHCP server:

- **Dynamic IP:** This configuration is selected by default from the factory, and no additional configuration is required.
- **Static IP:** When selecting this configuration, it is necessary to know some network information, such as IP address, Gateway, and mask.
- **DNS**

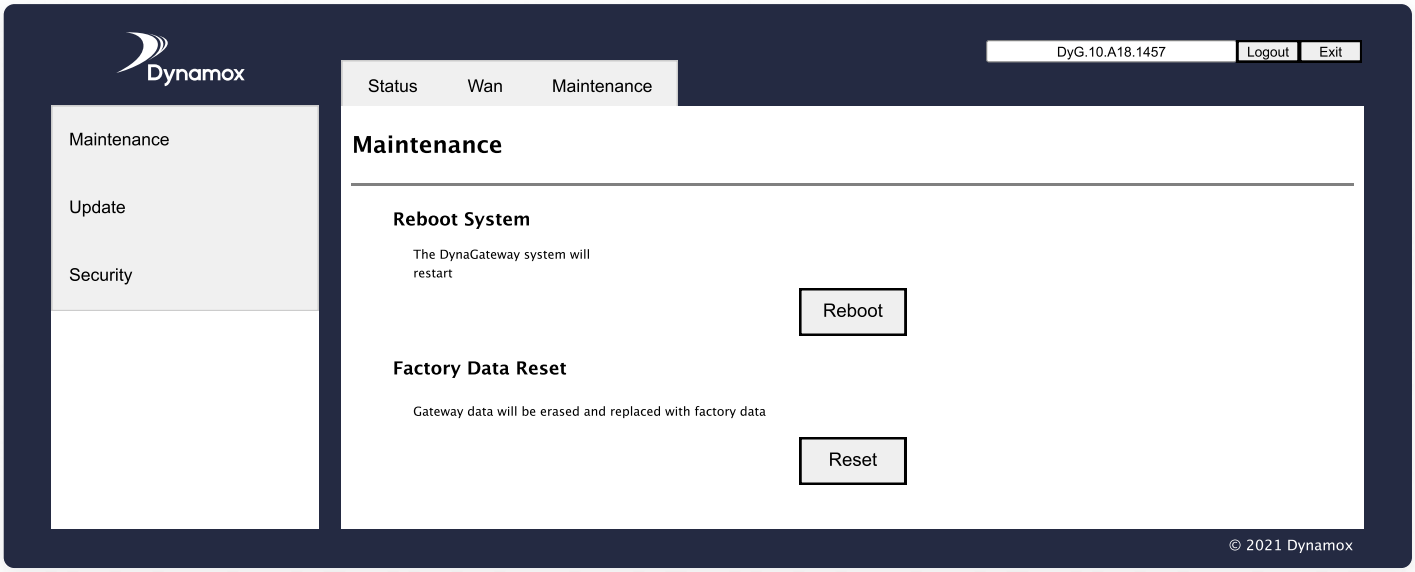
7.1.3 Time

The Gateway uses the NTP protocol for time synchronization, and it is possible to configure the server to be used.

- Server
- Port 123

7.2 System reboot

Rebooting the DynaGateway can be used when the device is not performing its functions as expected. To do this, the user should access the **Reboot and Factory Reset** tab in the side menu.



By selecting the **Reboot** button and confirming, the device will automatically start the reboot process.

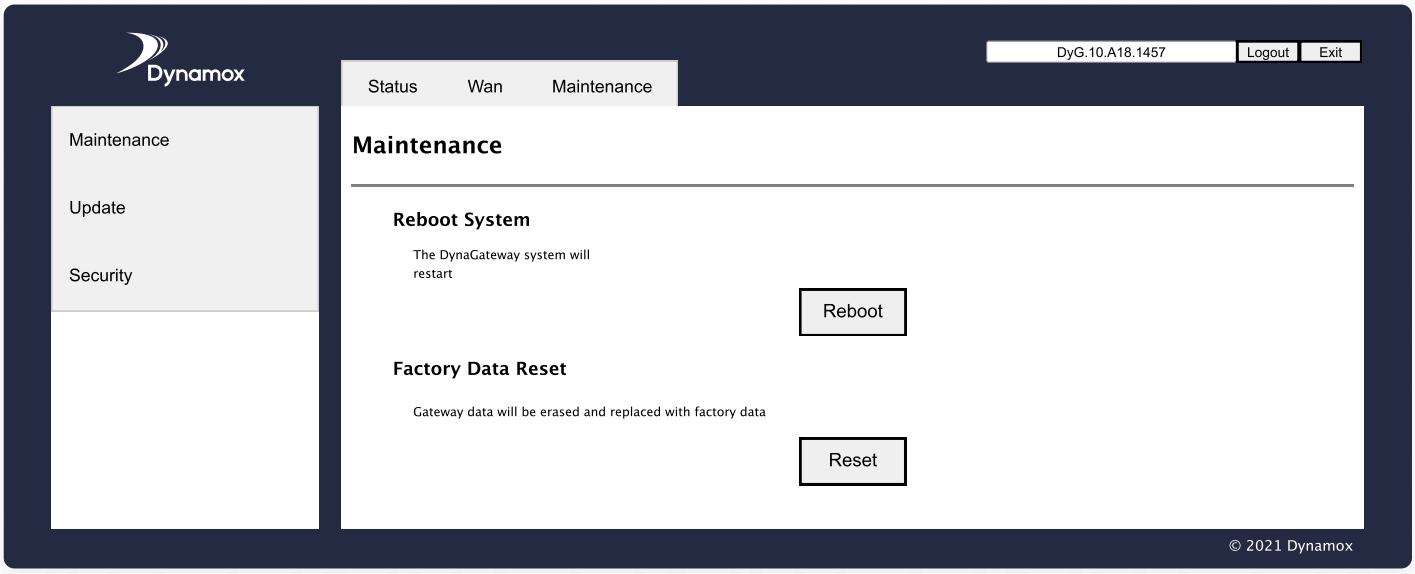
This procedure can also be performed using the physical **Reset** button, requiring only a single touch for the Gateway to reboot. It is important to note that this process does not affect the configurations but rather the operating system that will be rebooted.

7.3 Restore factory settings

Restoring the settings to factory defaults resets the device and erases all previously made configurations, including registered access users and passwords and the communication interface, which will need to be reconfigured later. After the reset, the Gateway restarts and adopts the factory settings specified in 7.3.3.

7.3.1 Configuration restoration via Gateway Setup

To perform the restoration, the user should access the device's Web interface, go to the **Reboot and Factory Reset** tab in the side menu, and then select the **Reset** button. The process will start automatically after confirmation.



7.3.2 Configuration restoration via external button

It is also possible to restore factory settings by pressing the Reset button for 20 to 30 seconds, during which the Power LED will turn red. Releasing the button within this time will cause the LED to flash red for 3 seconds; to proceed with the reset, the button must be quickly pressed once. If this does not happen, the Gateway will reboot without erasing any data. Finally, the Power, Status, and Network LEDs will flash red if the restoration is successful.

If the user forgets the registered username and password for the device's web interface, a factory reset via the button will be necessary.

7.3.3 Factory settings

Factory settings are the configurations that the Gateway has when produced and that it assumes again after a factory reset action occurs.

- **Network Configuration**
  - Ethernet
  - Dynamic IP

- **Access Credential**
  - User: admin
  - Password: admin

- **NTP**
  - Server address: time.google.com
  - Server port: 123

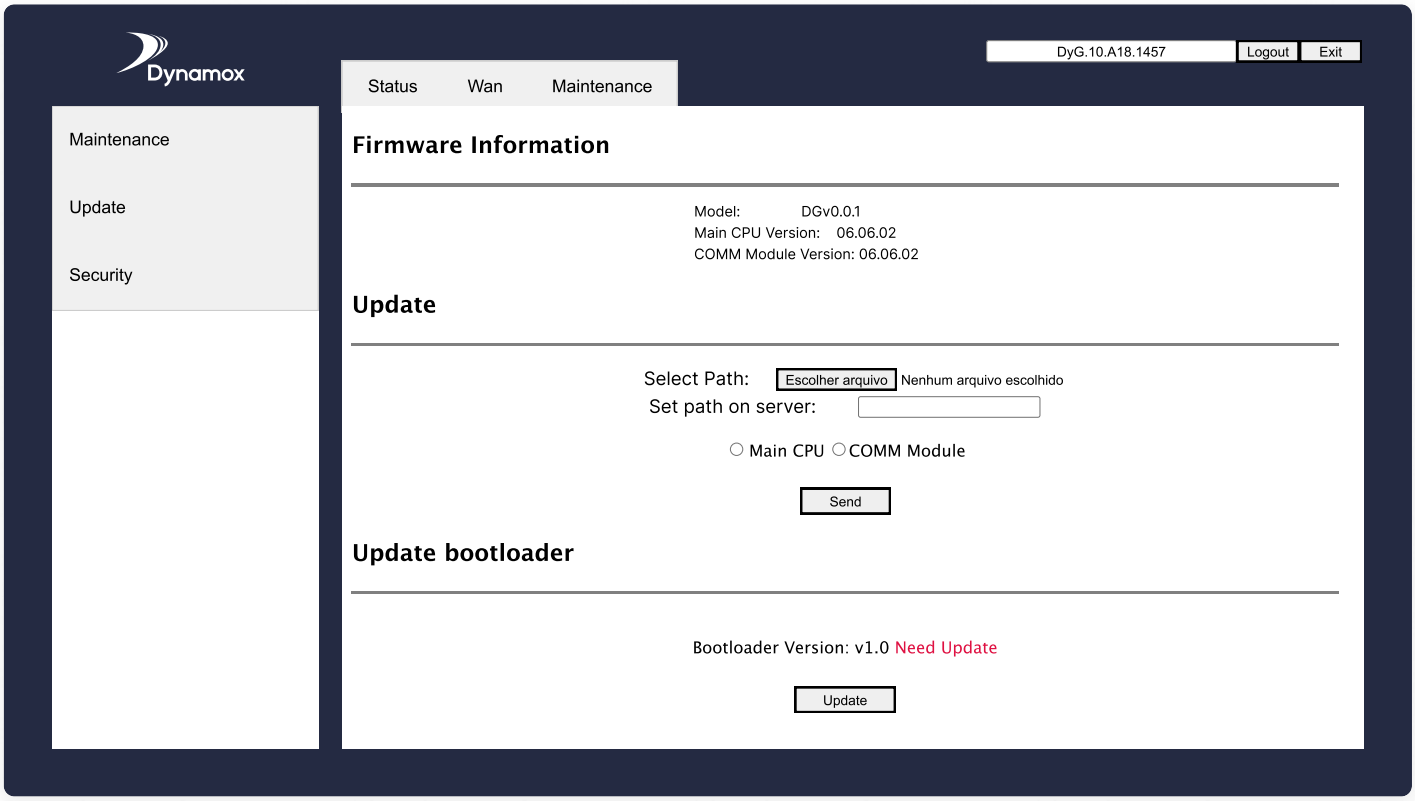
7.4 Firmware update

To keep your devices always updated with the latest features, Dynamox provides automatic updates for DynaGateways connected to the internet. In some cases, however, it may be necessary to perform a local firmware update.

To perform the process, the user must have the update file for both DynaGateway modules, the Main CPU and the COMM Module. To obtain the latest update files, contact Dynamox technical support at **support@dynamox.net**.

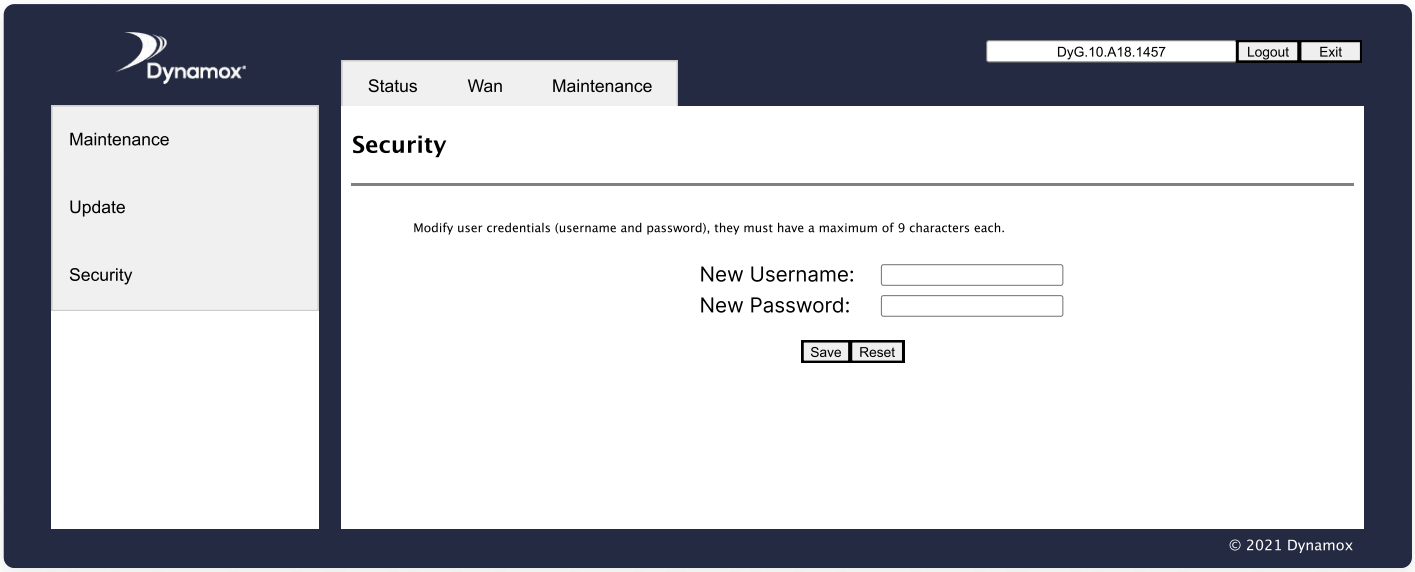
When you request file updates, you will receive one file for each device module (Main and Comm). It is worth paying attention to the name of each to differentiate which module it refers to.

By accessing **Maintenance** from the top menu and **Update** from the side menu, you will access information about the firmware already installed and the fields to perform the update. In the **Select Path** field, you must select the **Choose file** option and upload the file (already saved on your computer) with a .bin extension. Below you must indicate which of the two DynaGateway modules the previously selected file refers to. The process must be carried out first in the COMM module and, once completed, in the Main module.



By selecting the **Send** option, a confirmation window will be displayed to complete the process. Once completed, the user will be notified with a window indicating the success of the operation and the blue-colored LED Status light will turn off. Finished for this module, the process as a whole must be repeated for the Main module.

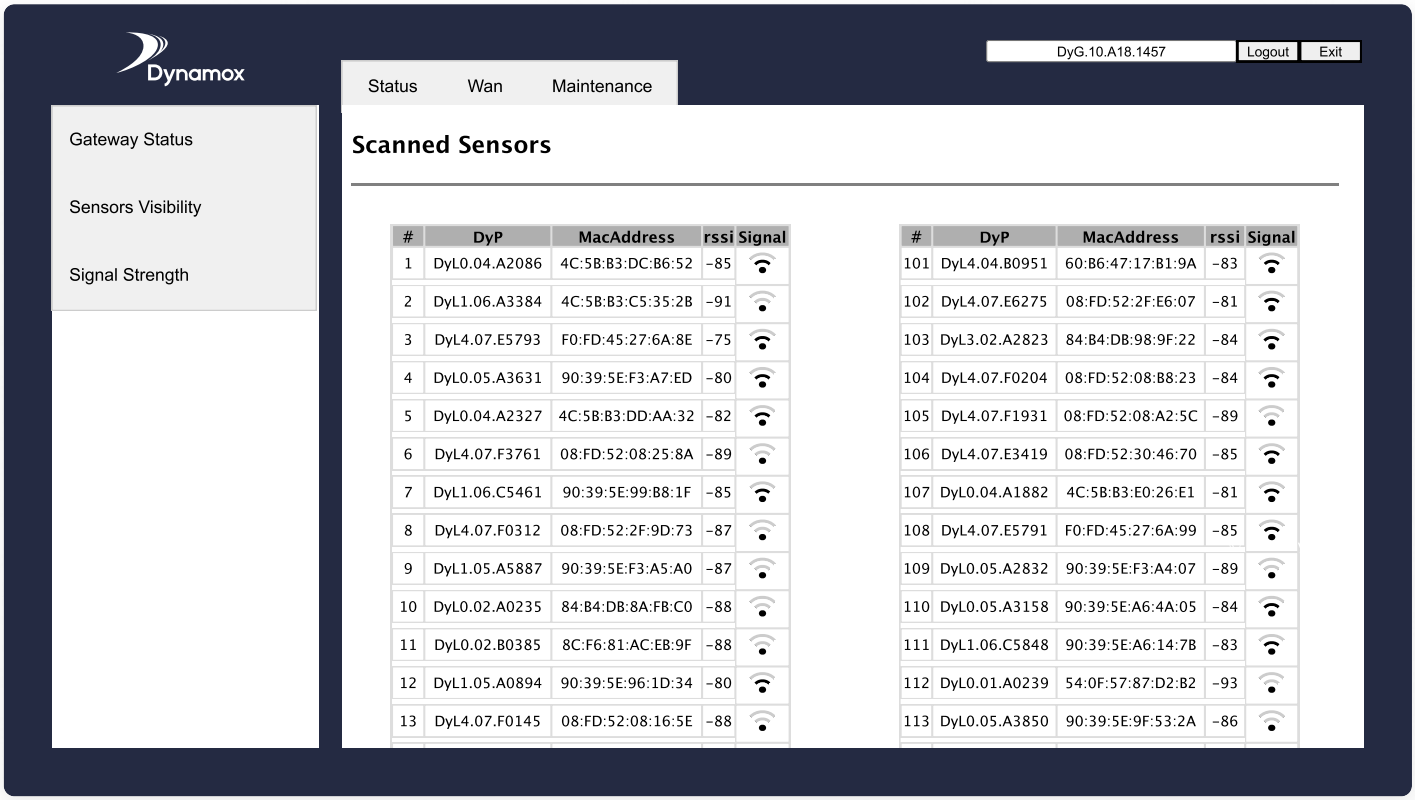
By selecting the **Start update** option, a confirmation window will be displayed to complete the process. Once completed, the user will be notified with a window indicating the success of the operation, and the DynaGateway will restart. The initialization behavior can be observed through the LEDs.



7.5 Sensors search within DynaGateway range

In addition to the sensor visibility information sent to the Dynamox Platform every 6 hours, the user can request a scan of all sensors within the DynaGateway's range at any time through the Gateway Setup.

The option can be found in the top menu **Status** and in the side menu **Sensors Visibility**.
By selecting it, the device will start searching for all sensors within the Bluetooth range. Upon completion, a table will be displayed containing relevant information such as the number of sensors, identification, MAC address, and signal strength at the time of visibility.



#	DyP	MacAddress	rssi	Signal
1	DyL0.04.A2086	4C:5B:B3:DC:B6:52	-85	
2	DyL1.06.A3384	4C:5B:B3:C5:35:2B	-91	
3	DyL4.07.E5793	F0:FD:45:27:6A:8E	-75	
4	DyL0.05.A3631	90:39:5E:F3:A7:ED	-80	
5	DyL0.04.A2327	4C:5B:B3:DD:AA:32	-82	
6	DyL4.07.F3761	08:FD:52:08:25:8A	-89	
7	DyL1.06.C5461	90:39:5E:99:B8:1F	-85	
8	DyL4.07.F0312	08:FD:52:2F:9D:73	-87	
9	DyL1.05.A5887	90:39:5E:F3:A5:A0	-87	
10	DyL0.02.A0235	84:B4:DB:8A:FB:C0	-88	
11	DyL0.02.B0385	8C:F6:81:AC:EB:9F	-88	
12	DyL1.05.A0894	90:39:5E:96:1D:34	-80	
13	DyL4.07.F0145	08:FD:52:08:16:5E	-88	

#	DyP	MacAddress	rssi	Signal
101	DyL4.04.B0951	60:B6:47:17:B1:9A	-83	
102	DyL4.07.E6275	08:FD:52:2F:E6:07	-81	
103	DyL3.02.A2823	84:B4:DB:98:9F:22	-84	
104	DyL4.07.F0204	08:FD:52:08:B8:23	-84	
105	DyL4.07.F1931	08:FD:52:08:A2:5C	-89	
106	DyL4.07.E3419	08:FD:52:30:46:70	-85	
107	DyL0.04.A1882	4C:5B:B3:E0:26:E1	-81	
108	DyL4.07.E5791	F0:FD:45:27:6A:99	-85	
109	DyL0.05.A2832	90:39:5E:F3:A4:07	-89	
110	DyL0.05.A3158	90:39:5E:A6:4A:05	-84	
111	DyL1.06.C5848	90:39:5E:A6:14:7B	-83	
112	DyL0.01.A0239	54:0F:57:87:D2:B2	-93	
113	DyL0.05.A3850	90:39:5E:9F:53:2A	-86	

This mapping does not update the **Last visibility** field on the Dynamox Platform. The process only instantly shows the sensors within the Bluetooth range of the Gateway and can be used to help determine the best location for positioning the device.

This equipment has no right to protection against harmful interference and cannot cause interference in properly authorized systems.

This product is not suitable for use in residential environments, as it may cause electromagnetic interference that requires the user to take necessary measures to minimize such interference.

For more information, visit Anatel's website: **www.gov.br/anatel/pt-br**↗

© 2026, Dynamox® is a registered trademark. All rights reserved.

The contents of this publication are presented for information purposes only. Every care has been taken to ensure the validity of the information contained in this publication, but no liability can be assumed for any loss or damage whether direct, indirect or arising from the use of the information contained herein. We reserve the right to modify or improve the specifications of our products at any time without prior notice.

Manual DynaGateway DUO/EWI - Version 8 - March 2026 - en - Public Document

Get in touch:
www.dynamox.net/contact-us