



WBG-1000 Gateway

Installation Guide

The Optergy Wireless BACnet Gateway is a next-generation solution designed to enable seamless wireless communication with BACnet MS/TP devices—no Edge Controller required. This fully standalone gateway simplifies installation and operation, allowing you to connect, monitor, and integrate BACnet networks effortlessly and with speed.

WBG Installation

The WBG is a Wireless Gateway that converts Optergy Air Wireless Sensor Data into native BACnet IP or MSTP Data for use in building control applications.

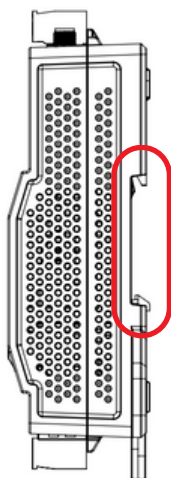
Common applications include: HVAC, Tenant Control, Carpark Monitoring



Mount the WBG in one of two ways:

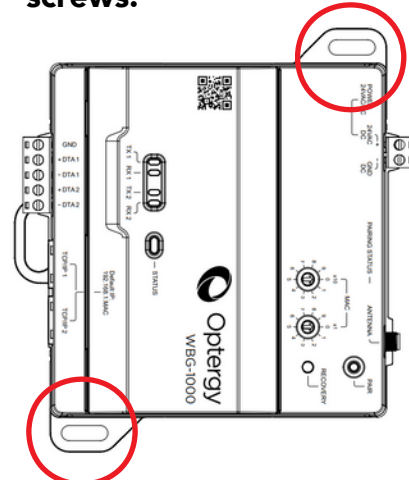
METHOD
1

Mount the controller to a DIN rail.



METHOD
2

Use the 2 screw holes to fasten with self tapping screws.



Wiring & Product Label

Wiring

All terminals are labeled on the cover. Refer to the wiring diagrams for details.

Power

WBG Power can be supplied by:

- 24 VAC ½ wave (grounded secondary)
- 12-24VDC Power Supply



TCP/IP Communication

The WBG has two modes of communication, IP and MSTP, for IP Communication note the following:

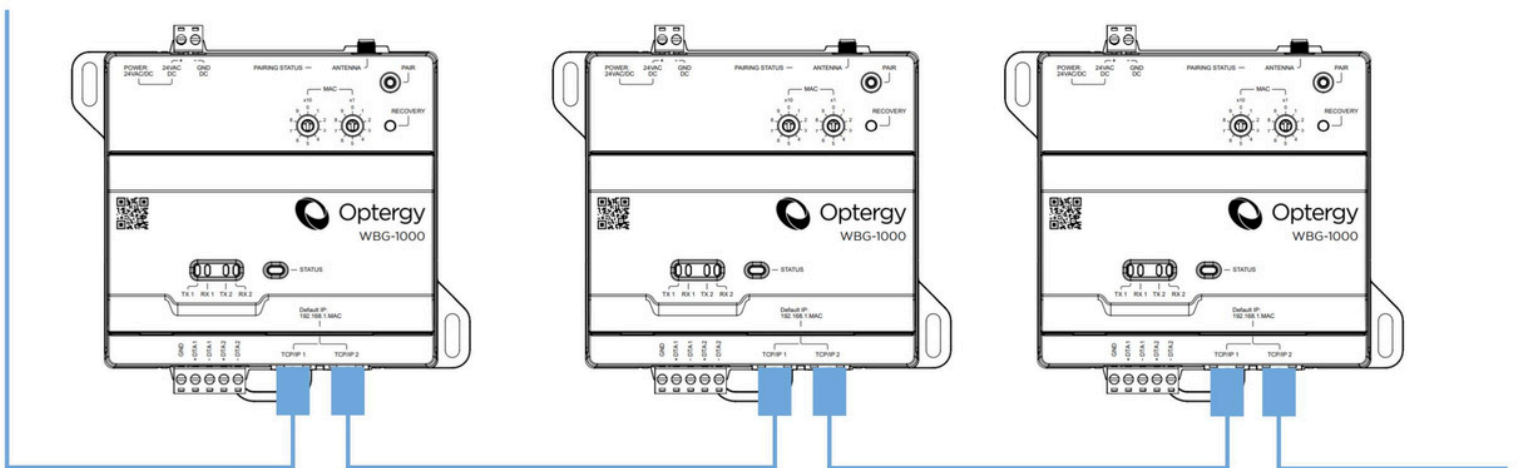
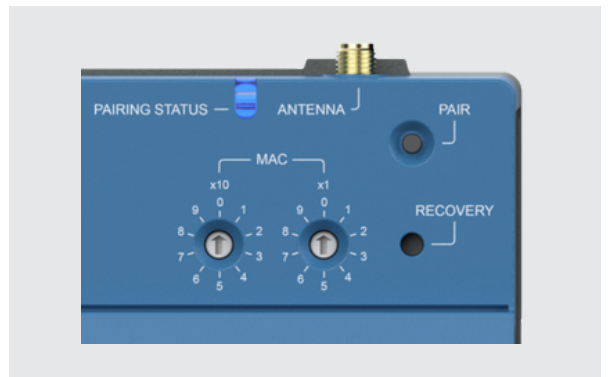
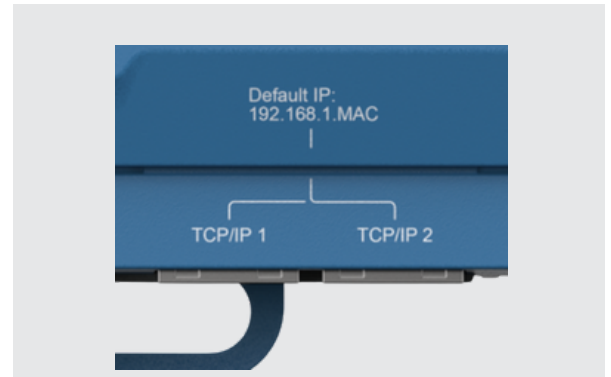
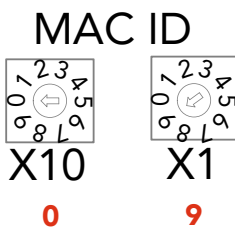
For IP connection install an Ethernet Cable to either TCP/IP 1 or 2 ports, these ports operate like a switch and allow devices to be daisy changed together in groups.

Default IP address is 192.168.1.MAC

See MAC Dials on the unit in order to set your default IP Address.

For Example, if you set the dials to:

The result will be:
192.168.1.9



WBG has an Ethernet Failover Relay. This means when the controller loses power the Ethernet cable bypasses the controller and continues the signal onto the next controller

MS/TP Communication

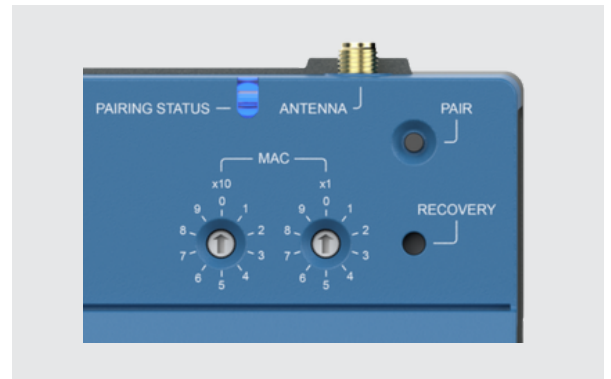
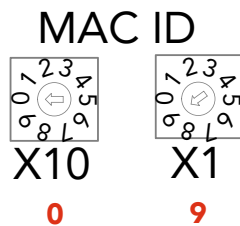
In addition to IP the WBG can also be used with BACnet MS/TP communication.

To wire in MS/TP communication instead of using the TCP/IP Ports you will instead use low capacitance cable in accordance with BACnet specification (nominally referred to as RS-485 twisted, shielded pair cable) wired into the Data 1 port.

Shield must be carried through and single point to earth ground as well as a 120 ohm termination resistor used on start and end of the network.

MAC Dials in addition to being used for default IP Addresses are also used for setting the BACnet MS/TP MAC Address of the unit and the default BACnet device instance.

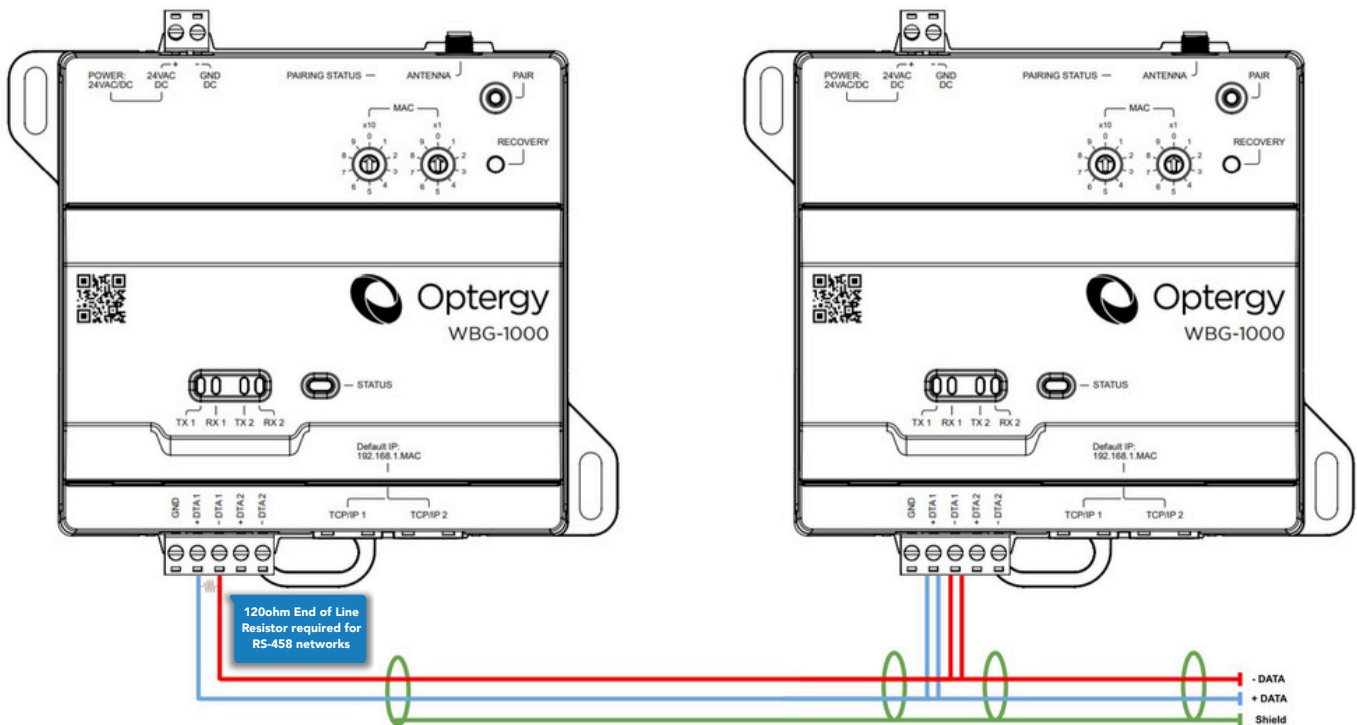
For Example, if you set the dials to:



Your BACnet MS/TP MAC Address will be 9

Your BACnet device instance will be:

6000 + MAC = **600009**



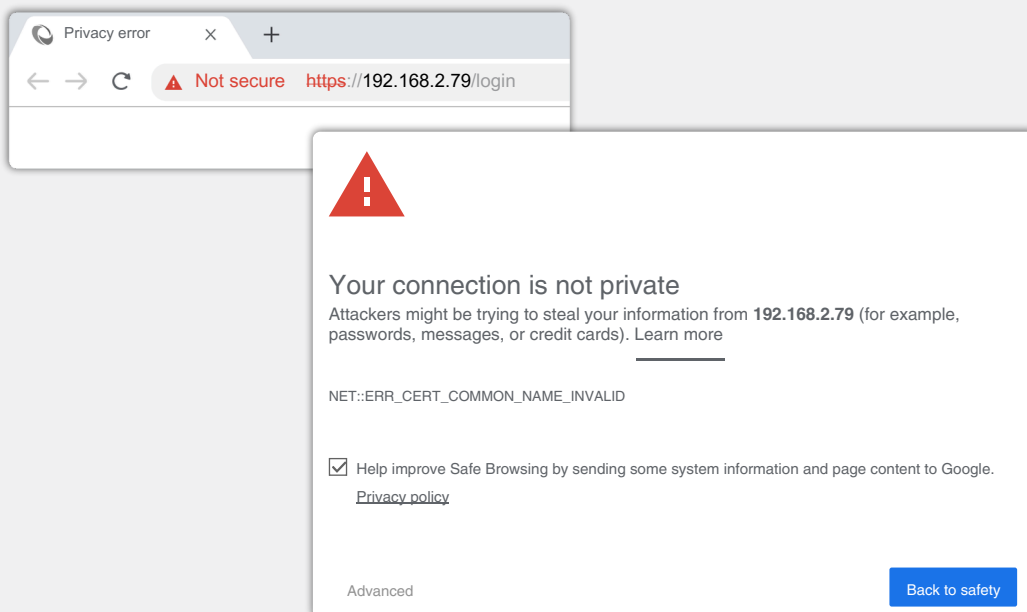
WBG Web User Interface

Access and Login

The WBG uses https or SSL encryption to assure secure communication to the web server. Optergy has issued a self signed certificate which is one that is published by Optergy. Most browsers will flag this as a security concern asking the user if this is a known and trusted publisher. The user should answer yes. While Optergy is not a known trusted publisher of certificates, like Truste, Verisign, Comodo etc. it is highly preferable to use encryption rather than not using any security. For this reason any requests made to `http://<ipaddress>` will be redirected to `https://<ipaddress>`.

To access the user interface for configuration purposes, follow these steps:

1. Plug local PC into TCP/IP port 1 or 2 on the P442.
2. Set local PC to the same IP range as the P442.
3. Open web browser on local PC and navigate to the P442 using https://IP address (192.168.1.MAC) for example `https://192.168.1.79`
4. You will be confronted with a message that looks like the following-



> Press the Advanced button

This server could not prove that it is **192.168.2.79**; its security certificate does not specify Subject Alternative names. This may be caused by a misconfiguration or an attacker intercepting your connection.

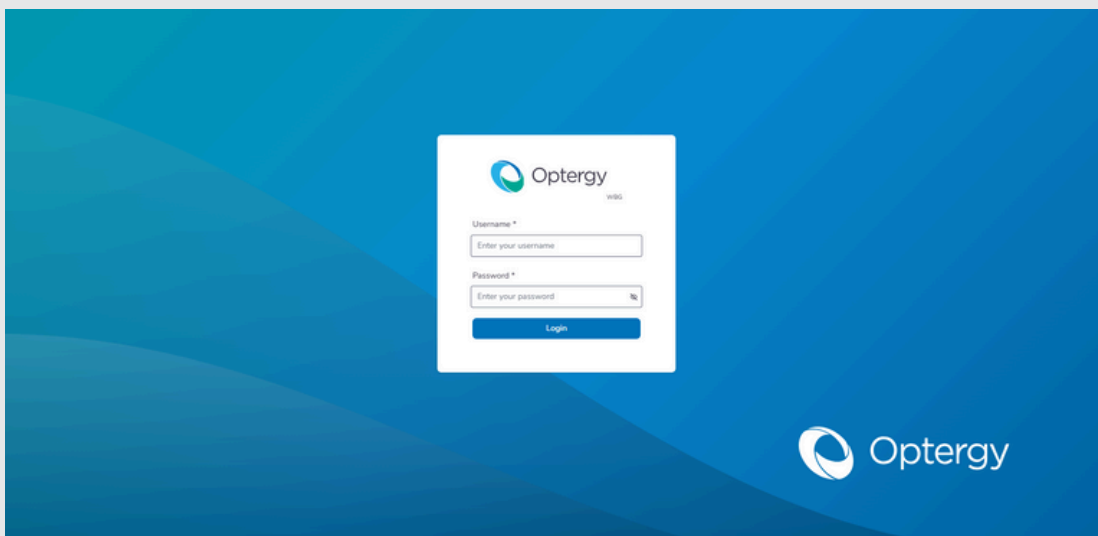
[Proceed to 192.168.2.79 \(unsafe\)](#)

> Click proceed to <ip address>(unsafe)

WBG Web User Interface

Access and Login

5. When prompted by the login screen, login with username - "admin", password - "admin".
 - a. The User will be prompted to change the password upon initial login.



Note: If the user forgets the login credentials, the recovery button can be used to reset the user back to admin/admin and 192.168.1.MAC.

Press and hold the recovery button for more than 5 seconds, after 5 second lights will begin flashing and you can let go, the system will take 30 seconds to complete the recovery sequence.

WBG Web User Interface

Access and Login

Setting device configuration

1. Device Configuration
 - a. Software Version
 - b. Device location
 - c. Device Description
 - d. Units – User Selectable Metric or US Customary
2. IP Configuration
 - a. Ethernet modes
 - b. IP address
 - c. Subnet Mask
 - d. Default Gateway
 - e. BACnet IP Network Number
 - f. BACnet IP Port
3. BACnet Configuration
 - a. Device Instance
 - b. BACnet Mode
4. BACnet MSTP Configuration
 - a. MSTP MAC Address
 - b. MSTP Baud Rate
 - c. Max Info Frames
 - d. Max Master
5. Wireless Configuration
 - a. Operating Channel
 - b. Operational Mode
 - c. Optimize Gateway Button

The screenshot displays the WBG Web User Interface for device configuration. The interface is divided into several sections:

- Device Configuration:** Includes fields for Software Version (0.1.3), Device MAC (0:80:E1:26:0:1A), Serial Number (TES001-WBG-V0.1-00000X), Units (US Customary Units), Device Location (33423432), and Device Description (123123).
- BACnet Configuration:** Includes fields for Device Instance (Manual) (710054), BACnet Mode (BACnet MSTP), MAC (55), Baud Rate (76800), Max Info Frames (3), and Max Master (126).
- IP Configuration:** Includes fields for Ethernet Mode (Manual), IP Address (192.168.6.203), Subnet Mask (255.255.255.0), and Default Gateway (192.168.6.1).
- Wireless Configuration:** Includes fields for Operating Channel (Auto (Recommended)) and Operational Mode (Auto (Recommended)), along with an Optimize Gateway Wireless Parameters button.

At the bottom of the configuration sections, there are buttons for "Submit" and "Discard".

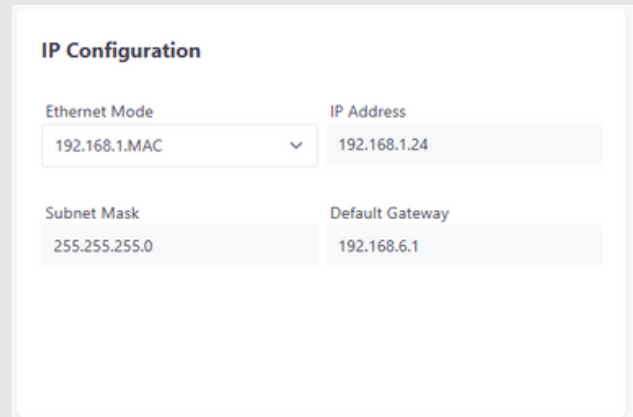
WBG Web User Interface

Access and Login

IP Configuration

Ethernet Modes choices include:

- **DHCP*** (used only for issuing the IP address for the WEB UI).
- **Manual** (IP address is selected by user entry).
- **MAC** (IP address is determined by the switch positions and result in an IP address 192.168.1.XX mask: 255.255.255.0)



The screenshot shows the 'IP Configuration' section of the WBG Web User Interface. It contains four input fields arranged in a 2x2 grid. The top-left field is 'Ethernet Mode' with a dropdown menu showing '192.168.1.MAC'. The top-right field is 'IP Address' with the value '192.168.1.24'. The bottom-left field is 'Subnet Mask' with the value '255.255.255.0'. The bottom-right field is 'Default Gateway' with the value '192.168.6.1'.

- **IP Address** (IPv4 addresses can be entered here example: 192.168.1.10)
- **Subnet Mask:** (IPv4 Subnet mask can be entered here example: 255.255.255.0)
- **Default Gateway:** (IPv4 addresses can be entered here example: 192.168.1.1)
- **BACnet IP Network Number:** any valid network number can be used, it must be set to the same as all other BACnet IP routers.
- **BACnet IP port:** default is 47808

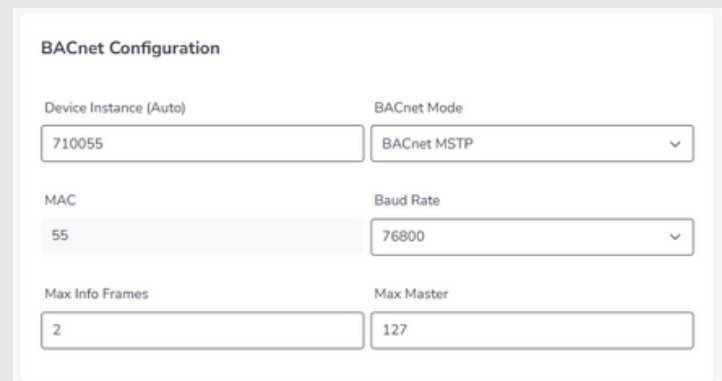
BACnet Configuration

Device Instance: Device Instance is preset initially by concatenating the "7100 + Device MAC" this value can be entered manually from this field.

BACnet Mode choices include:

- **IP only**
- **MS/TP only** (default)

**unlike P864 device there is no segregated IP / MSTP where both communication methods are used simultaneously.*



The screenshot shows the 'BACnet Configuration' section of the WBG Web User Interface. It contains six input fields arranged in a 3x2 grid. The top-left field is 'Device Instance (Auto)' with the value '710055'. The top-right field is 'BACnet Mode' with a dropdown menu showing 'BACnet MSTP'. The middle-left field is 'MAC' with the value '55'. The middle-right field is 'Baud Rate' with a dropdown menu showing '76800'. The bottom-left field is 'Max Info Frames' with the value '2'. The bottom-right field is 'Max Master' with the value '127'.

**DHCP may not be included in v1.0.0 release of the software*

WBG Web User Interface

Access and Login

BACnet MS/TP Configuration

MS/TP MAC Address: The initial MAC address is set using the rotary switches, this value cannot be overwritten in the software.

MS/TP Baud rate: The default configuration is 76.8K Baud, fixed baud rates also include 9.6, 19.2, 38.4, 57.6 and 115.2.

**All baud rates of all BACnet MS/TP device must be the same on the network in order for the devices to operate correctly.*

BACnet Configuration

Device Instance (Manual)	BACnet Mode
442024	BACnet MSTP
MAC	Baud Rate
24	76800
Max Info Frames	Max Master
2	127

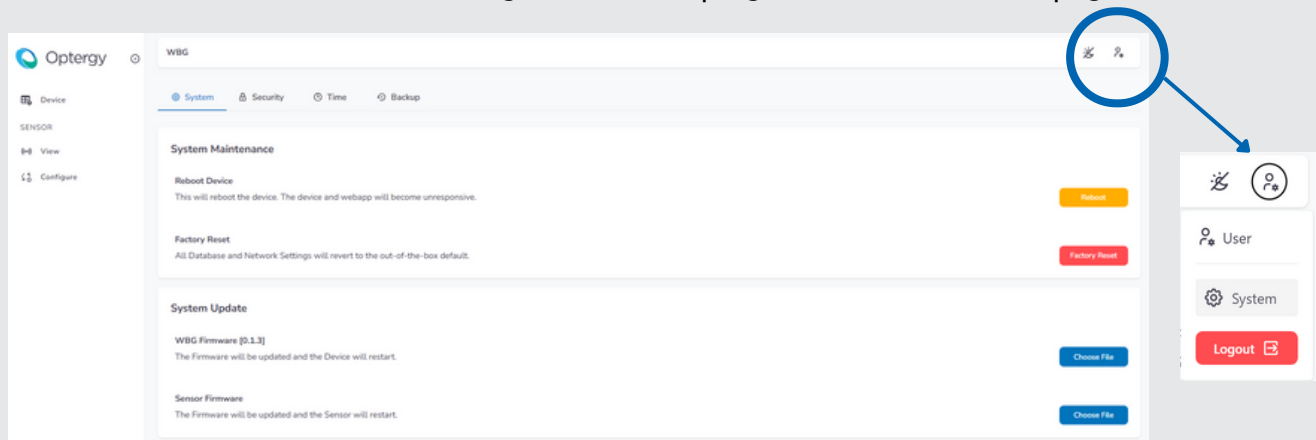
WBG Web User Interface

Access and Login

System Menu

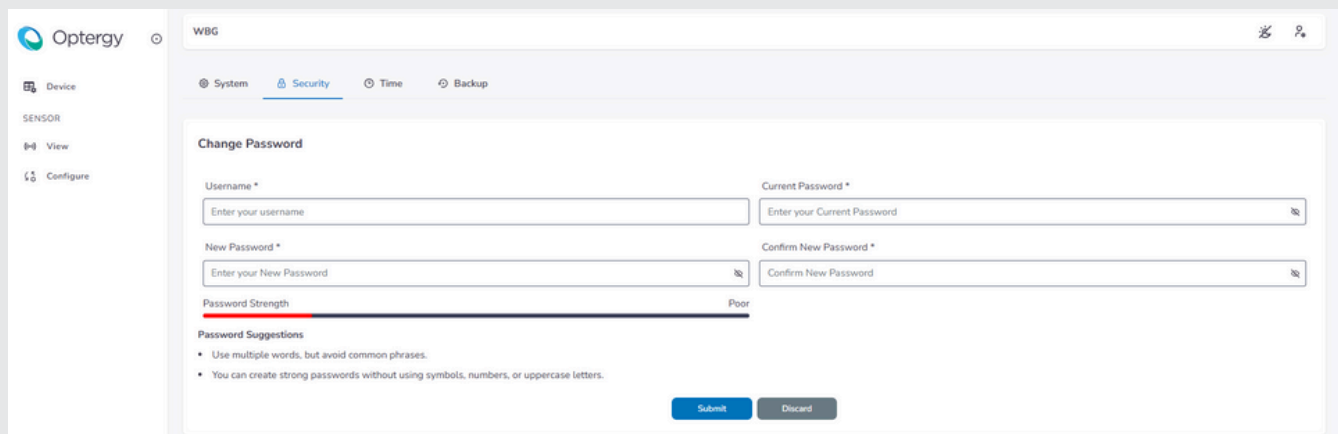
Allows access to the system level settings.

Various System options exist, including Reboot, Reset and Firmware Update options. The System Menu can be found user the User/Cog icon in the top right hand corner of the page.



Change Password

To Change the Password use the Security Tab



Sensor Pairing

The WBG has the ability to connect up to seven **Optergy Air** wireless sensors to each gateway.

It operates on two Wireless Modes

Indoor (Up to 30m range)

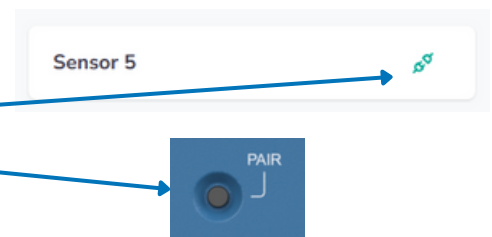
Outdoor (Up to 100m range)

*See Optergy Air Wireless Sensors for which are compatible for Indoor vs Outdoor Wireless Modes



There are three ways to enter pairing mode:

1. Through the WBG web user interface via the Pair button
2. Manually pressing the pairing button on the transceiver.
3. Activating the associated BACnet point (**BO-X02**)



Once in pairing mode the blue pairing light will blink.

Whilst in this mode, manually press and hold the associated sensor's pair button for two seconds or until the transceiver and sensor both flash green twice a second. This indicates a successful pairing.

Once in the paired state the Optergy Air wireless sensor will flash green once every thirty seconds, and it will display a card in the user interface. This card will show all of the sensor's metrics, the ability to blink the sensor's LED for identification, and an option to remove the sensor pairing from that slot. The sensor metrics are exposed as BACnet objects as per the table on the following page.

Status LED

The WBG has a status LED that indicates:

- Green Blink** = Initialization
- Green Solid** = Normal Operation
- Red Blink** = Runtime Error
- Red Solid** = Start-up Error
- Blue Blink** = Firmware Update
- Yellow Blink** = Recovery Mode



Typical BACnet Points Table (exact list is dependent on paired sensors, scan device for all points)		
Description	BACnet Object	Units (auto assigned based on WBG configuration)
'X' indicates the Sensor Number based on pairing (e.g. for Temperature - Sensor 1 is AI-101, For Sensor 2 it's AI-201)		
Temperature	AI-X01	°C or °F
Humidity	AI-X02	°C or °F
Carbon Dioxide Reading	AI-X03	°C or °F
Carbon Monoxide Reading	AI-X07	°C or °F
Battery Level	AI-X08	°C or °F
TVOC Reading	AI-X10	°C or °F
RSSI Signal	AI-X11	°C or °F
Firmware version	AI-X12	°C or °F
Low Battery Level Warning	BI-X02	°C or °F
LED Enable	BO-X01	OFF / ON
Pairing Mode	BO-X02	OFF / ON
Sensor Paired	BI-2002X	OFF / ON
Sensor Detected	BI-2003X	OFF / ON
Following BACnet points are Device related not sensor related		
Gateway Reboot	BO-20010	OFF / ON
Gateway Optimize	BO-20011	OFF / ON
Gateway Unpair All	BO-20012	OFF / ON
Gateway Mode	AV-20010	OFF / ON
Gateway Channel	AV-20011	OFF / ON
Gateway Install Mode	AV-20012	OFF / ON