



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.

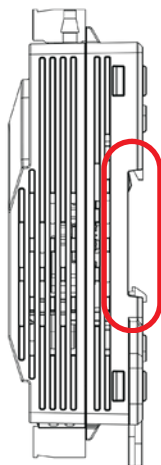
Common applications include: HVAC, Tenant Control, Carpark Monitoring



Mount the WBG in one of two ways:

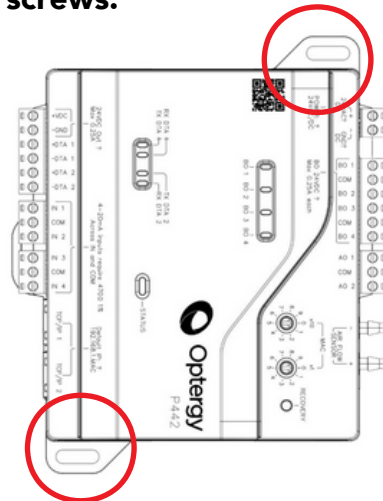
METHOD
1

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:

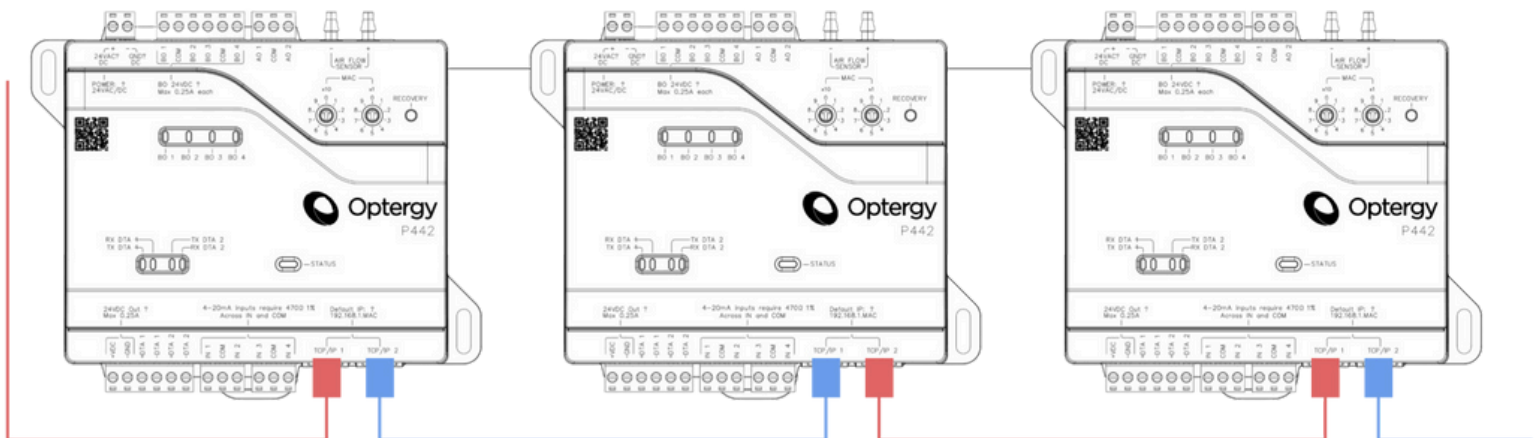
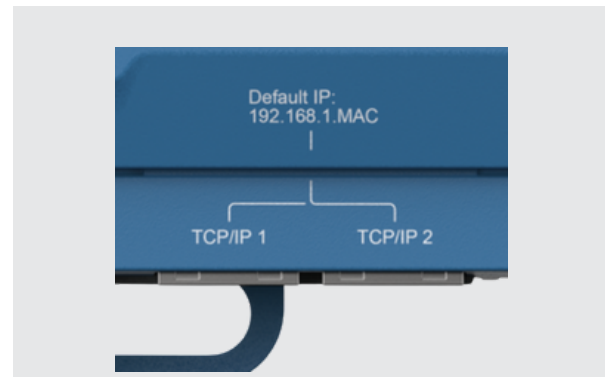
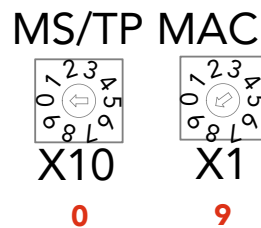
For IP connection install an Ethernet Cable to either TCP/IP 1 or 2 ports, these ports operate like a switch and allow devices to be daisy changed together in groups.

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

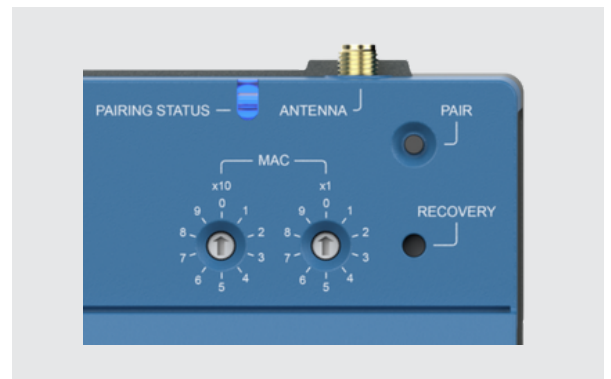
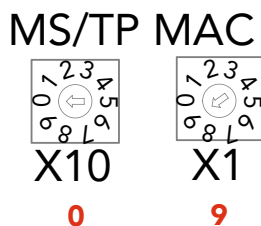
In addition to IP the WBG can also be used with BACnet MS/TP communication.

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.

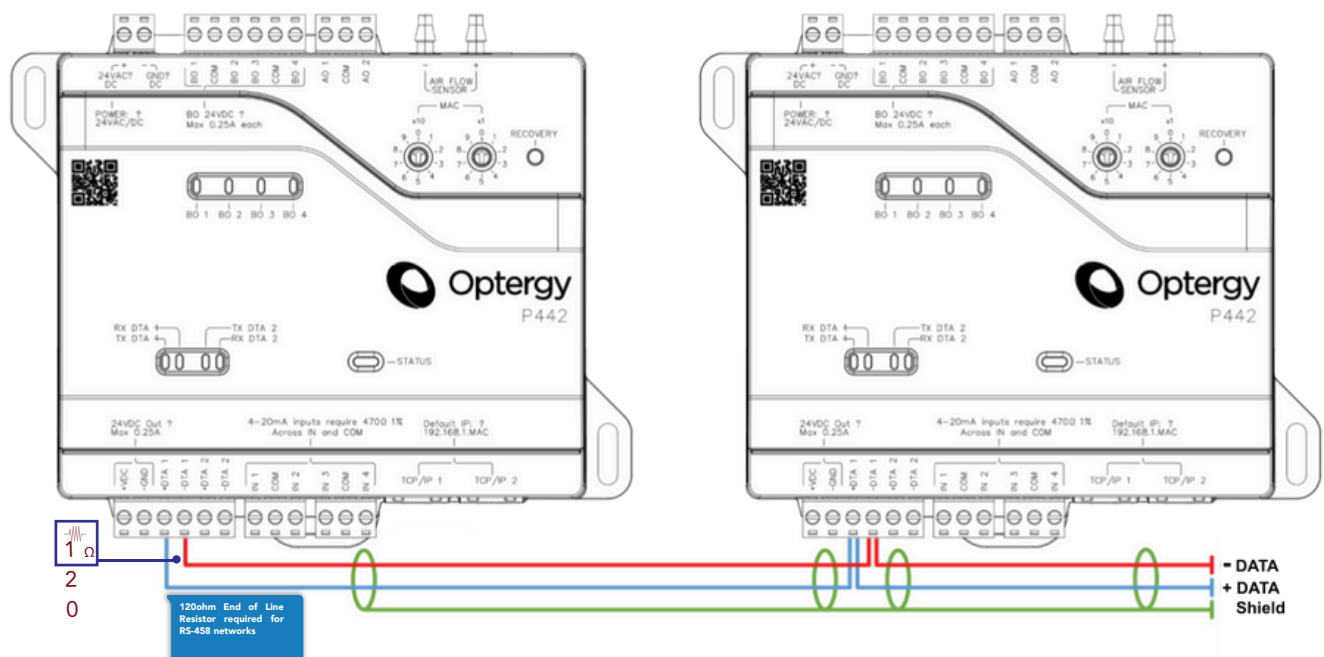
For Example, if you set the dials to:



Your BACnet MS/TP MAC Address will be **9**

Your BACnet device instance will be:

6000 + MAC = **600009**



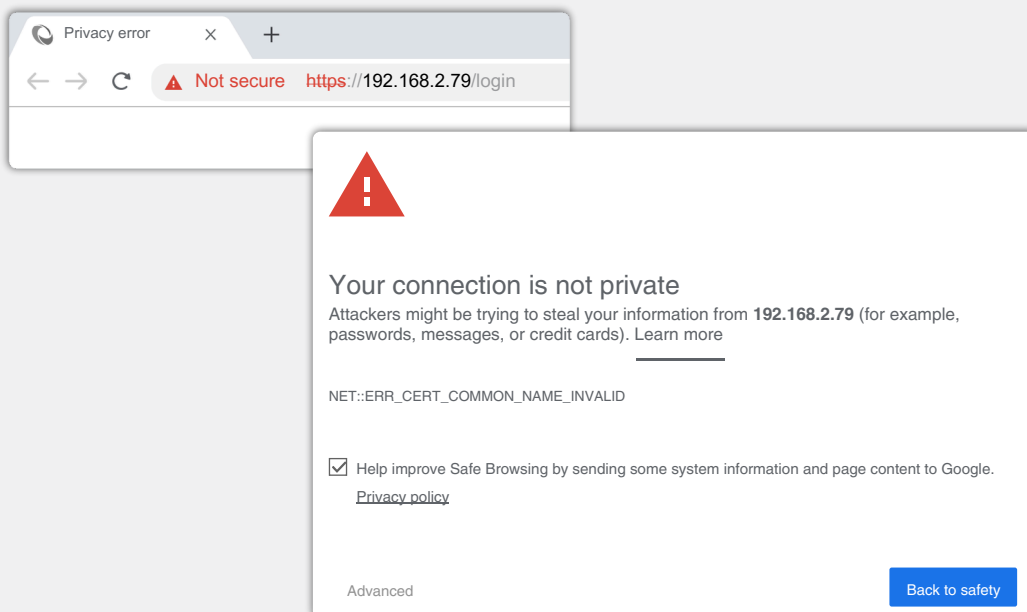
WBG Web User Interface

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.

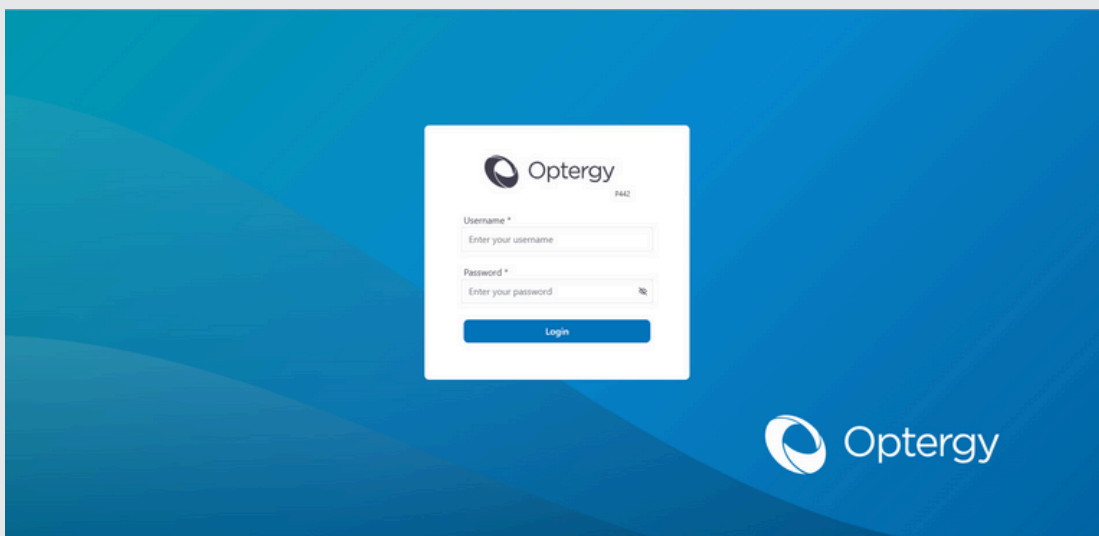
[Proceed to 192.168.2.79 \(unsafe\)](#)

> 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 Network Number
 - c. MSTP Baud Rate
5. 2nd RS-485 Port
6. Port Protocol – BACnet or Modbus

The screenshot displays the Optergy WBG Web User Interface for device configuration. The interface is organized into a sidebar on the left and a main content area on the right. The sidebar includes a 'Device' tab (selected) and a 'SENSOR' tab. The main content area is divided into four configuration panels: 'Device Configuration', 'BACnet Configuration', 'IP Configuration', and 'Wireless Configuration'. Each panel contains various input fields and dropdown menus for configuring the device. At the bottom of the main content area, there are 'Submit' and 'Discard' buttons.

Device Configuration	
Software Version	Device MAC
0.1.3	0:80:E1:26:0:1A
Serial Number	Units
TES001-WBG-V0.1-00000X	US Customary Units
Device Location	Device Description
33423432	123123

BACnet Configuration	
Device Instance (Manual)	BACnet Mode
710054	BACnet MSTP
MAC	Baud Rate
55	76800
Max Info Frames	Max Master
3	126

IP Configuration	
Ethernet Mode	IP Address
Manual	192.168.6.203
Subnet Mask	Default Gateway
255.255.255.0	192.168.6.1

Wireless Configuration	
Operating Channel	Operational Mode
Auto (Recommended)	Auto (Recommended)
Optimise Gateway Wireless Parameters	
Optimise	

Submit 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)

- **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 "4420 + Device MAC" this value can be entered manually from this field.

BACnet Mode choices include:

- **IP only**
- **MS/TP only**

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

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 a text input containing '192.168.1.24'. The bottom-left field is 'Subnet Mask' with a text input containing '255.255.255.0'. The bottom-right field is 'Default Gateway' with a text input containing '192.168.6.1'.

The screenshot shows the 'BACnet Configuration' section of the WBG Web User Interface. It contains four input fields arranged in a 2x2 grid. The top-left field is 'Device Instance (Manual)' with a text input containing '442024'. The top-right field is 'BACnet Mode' with a dropdown menu showing 'BACnet IP'. The bottom-left field is 'IP Network Number' with a text input containing '0'. The bottom-right field is 'IP Port' with a text input containing '47808'.

**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

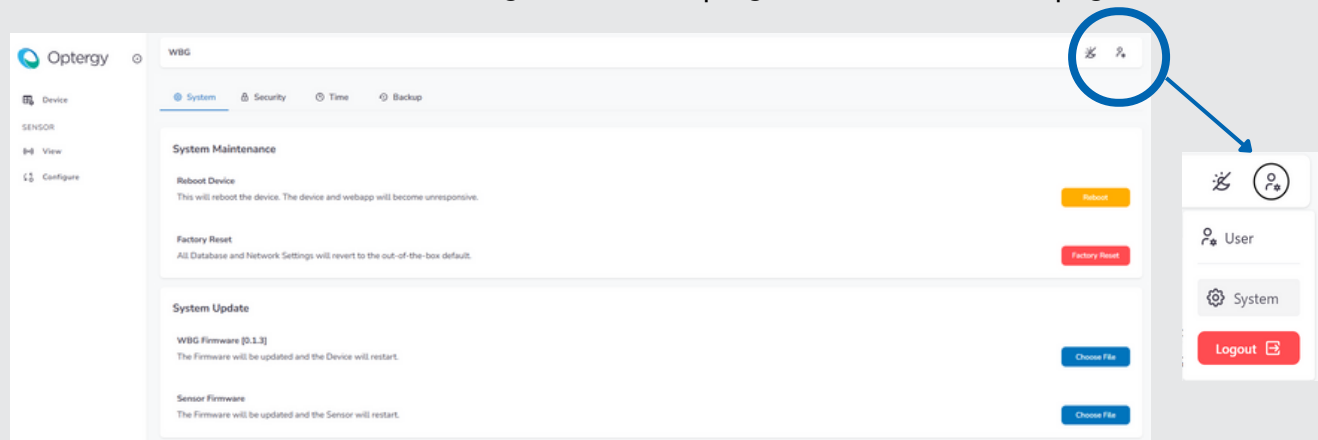
WBG Web User Interface

Access and Login

System Menu

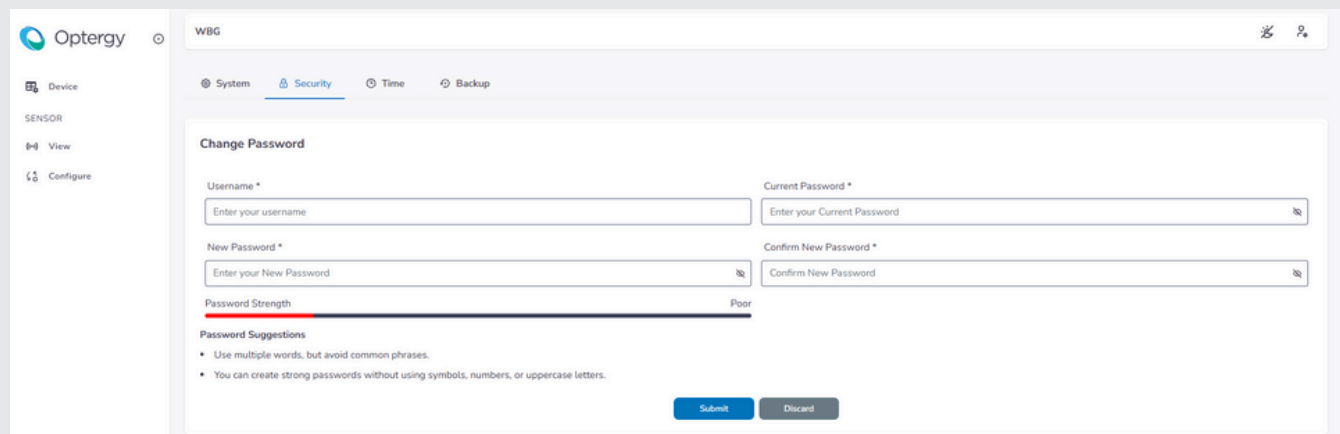
Allows access to the system level settings.

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

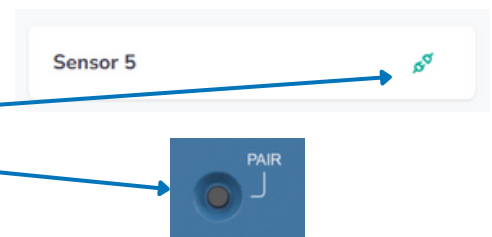
Indoor (Up to 30m range)

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.



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 P442 has a status LED that indicates:

Green Blink = Initialization Green

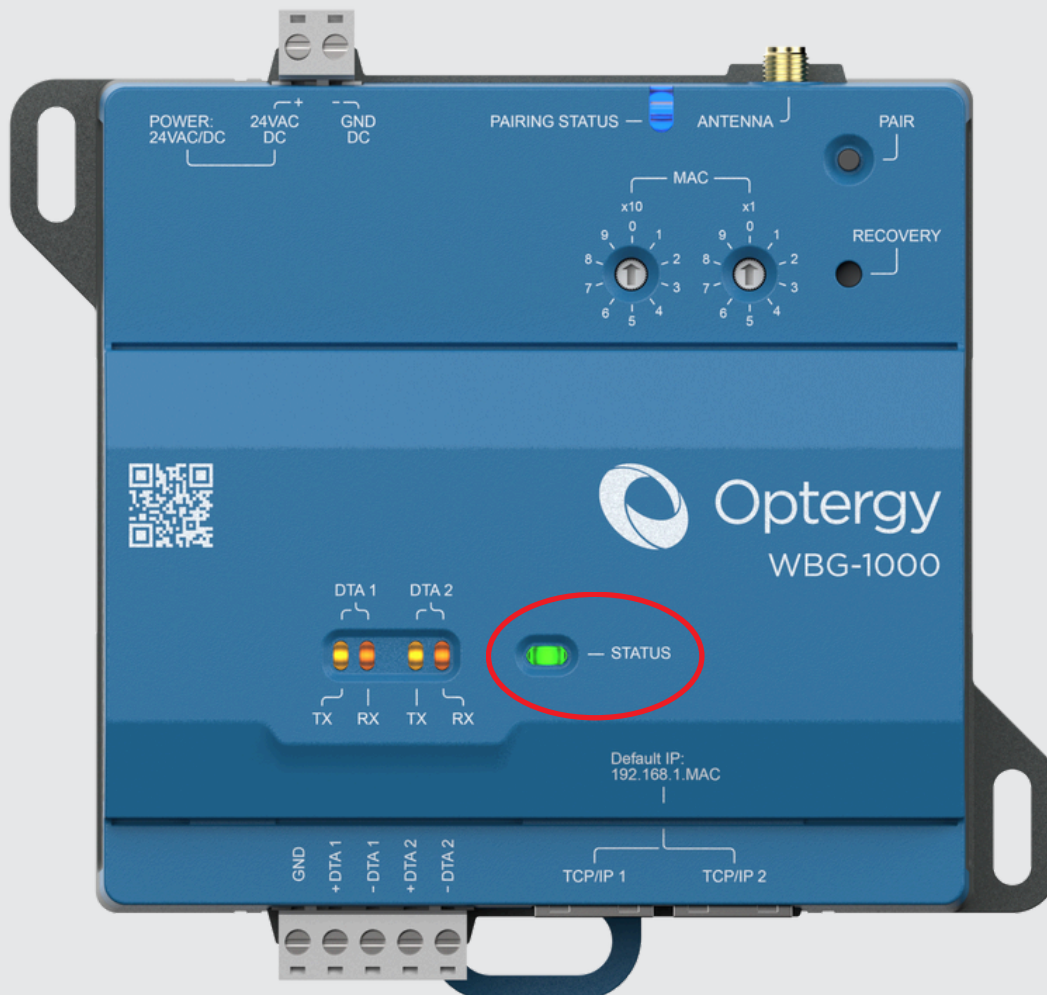
Solid = Normal Operation

Red Blink = Runtime Error

Red Solid = Start-up Error

Blue Blink = Firmware Update

Yellow Blink = Recovery Mode



FCC Caution:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To maintain compliance with FCC's RF Exposure guidelines, This equipment should be installed and operated with minimum distance between 20cm the radiator your body: Use only the supplied antenna.