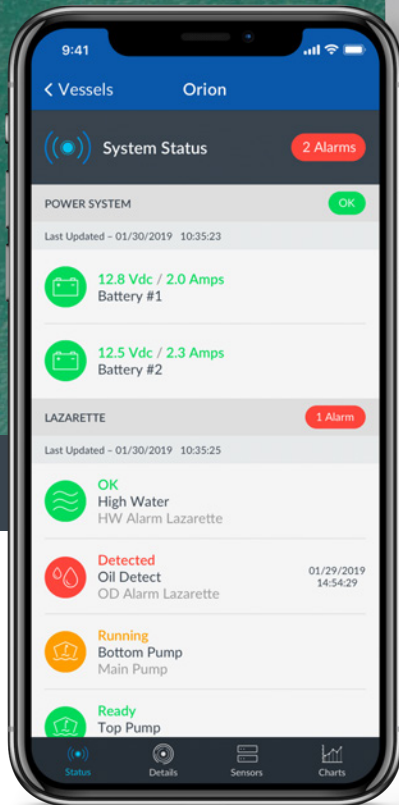




BG-Link

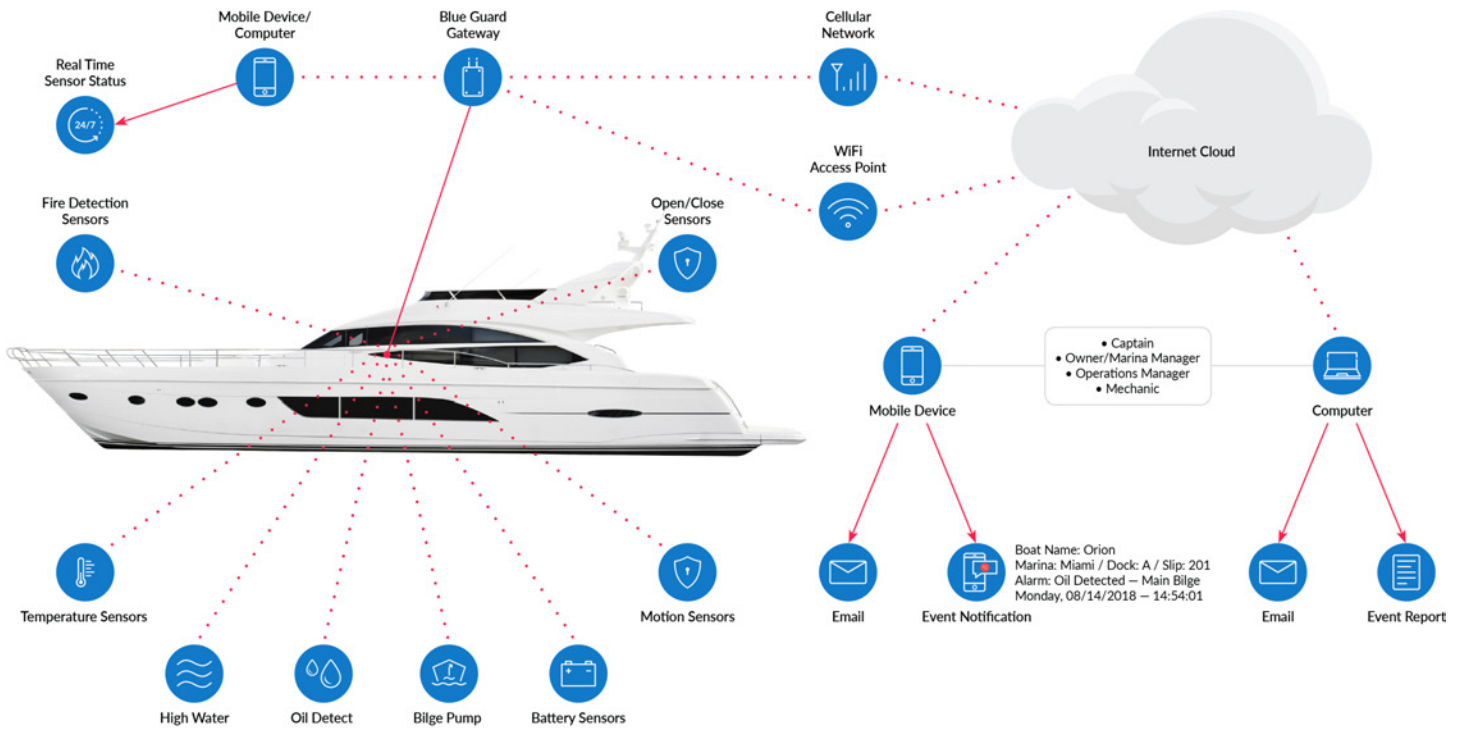
IoT Marine Gateway

SETUP & INSTALLATION GUIDE





REAL TIME BILGE MONITORING & NOTIFICATIONS



* Multiple sensors are required to achieve all monitoring functions.

STANDARD FEATURES

The BG-Link IoT Marine Gateway is a unique wireless monitoring system which primarily focuses on monitoring and alerting vital boat functions such as battery power systems and bilge functions through direct access to the internet cloud. Keeping the boat owner or designated user informed with 24/7 information about events taking place in the vessel's bilge system. Regardless of the size of the vessel, it is easy to configure individual compartments, battery banks, down to all devices that are being monitored. Connect and configure devices via the *BG-Link Web Portal* and monitor your boat in real time with the *BG-Link App* available on Android and iOS.



GATEWAY (BG-GWM-W/-C/-G)

Supports up to 50 sensors. Get alerts anywhere with cellular or WiFi connection. No subscription required with WiFi.

WIRELESS SENSORS (BG-WS-01/-02/-03)

Connect up to 50 sensors to one gateway to expand the system.



Bilge Pump Monitoring

Monitor voltage & current of installed bilge pumps and if the bilge pump is working and the activation rate.



Security

Receive alerts if movement is detected or any door/window/latch is opened or closed.



High Water Alarm

Detects when the pump is overwhelmed or not functioning.



Temperature

Monitor the temperature of cabin, engine room, fridge, bait locker, etc.



Oil Detection

Detects if oil has leaked into the bilge.



Fire Detection

Monitor fire detectors for smoke or fire.



Battery Monitoring

Monitor excessive current drain from lights or equipment that is left on, up to 4 battery banks, voltage & current.



Real Time Sensor Status

View the current status of all connected sensors in real time.

BG-Link-W PACKAGE CONTENTS

(1) BG-GWM-W Gateway



(1) BG-WS-01 Wireless Sensor



(1) USB to Micro USB



(2) Silicone Wire Plug



BG-Link-C/BG-Link-G PACKAGE CONTENTS

(1) BG-GWM-C/-G Gateway



(1) BG-WS-01 Wireless Sensor



(1) Cellular Antenna



(1) USB to Micro USB



(2) Silicone Wire Plug



WIRELESS SENSOR BACKUP BATTERY (OPTIONAL)

The BG-WS-01, 02, and 03 all come with a battery holder for a LS14250 1/2 AA 3.6V Battery for power backup.



GATEWAY & SENSOR SILICONE WIRE PLUG



Silicone wire plugs come attached in the BG-Link-W/-C/-G package gateway and sensor. To connect wires to the terminal, take off the enclosure cover and insert the wires through the silicone plug holes (wire holes come sealed but can be poked with wires to break the seal). The image on the left shows an example of a wired sensor with wires coming out of the silicone plug.

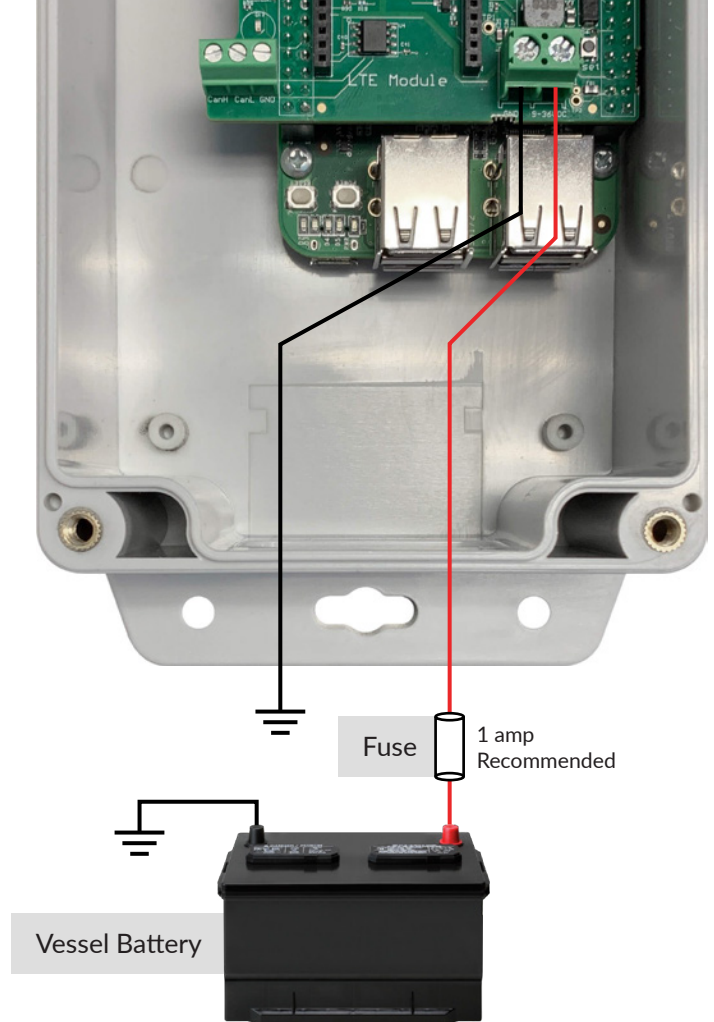
GATEWAY TERMINAL CONNECTION

1. GND

Supply negative = Ground = Boat chassis

2. 9-36VDC

9 – 36 Vdc power



BG-WS-01 TERMINAL CONNECTION

1 Bilge Pump Voltage, Current & Activation Rate 1 High Water, 1 Oil Alarm

1. AL1/HW (BG-HW, BG-SWA)

High water sensor, NO (normally open)
Activates when input is > 10 Vdc

2. AL2/O (BG-One, BG-Oil)

Oil detection sensor, NO (normally open)
Activates when input > 10 Vdc

3. V Out

No connection

4. V In

9 – 36 Vdc power

5. GND

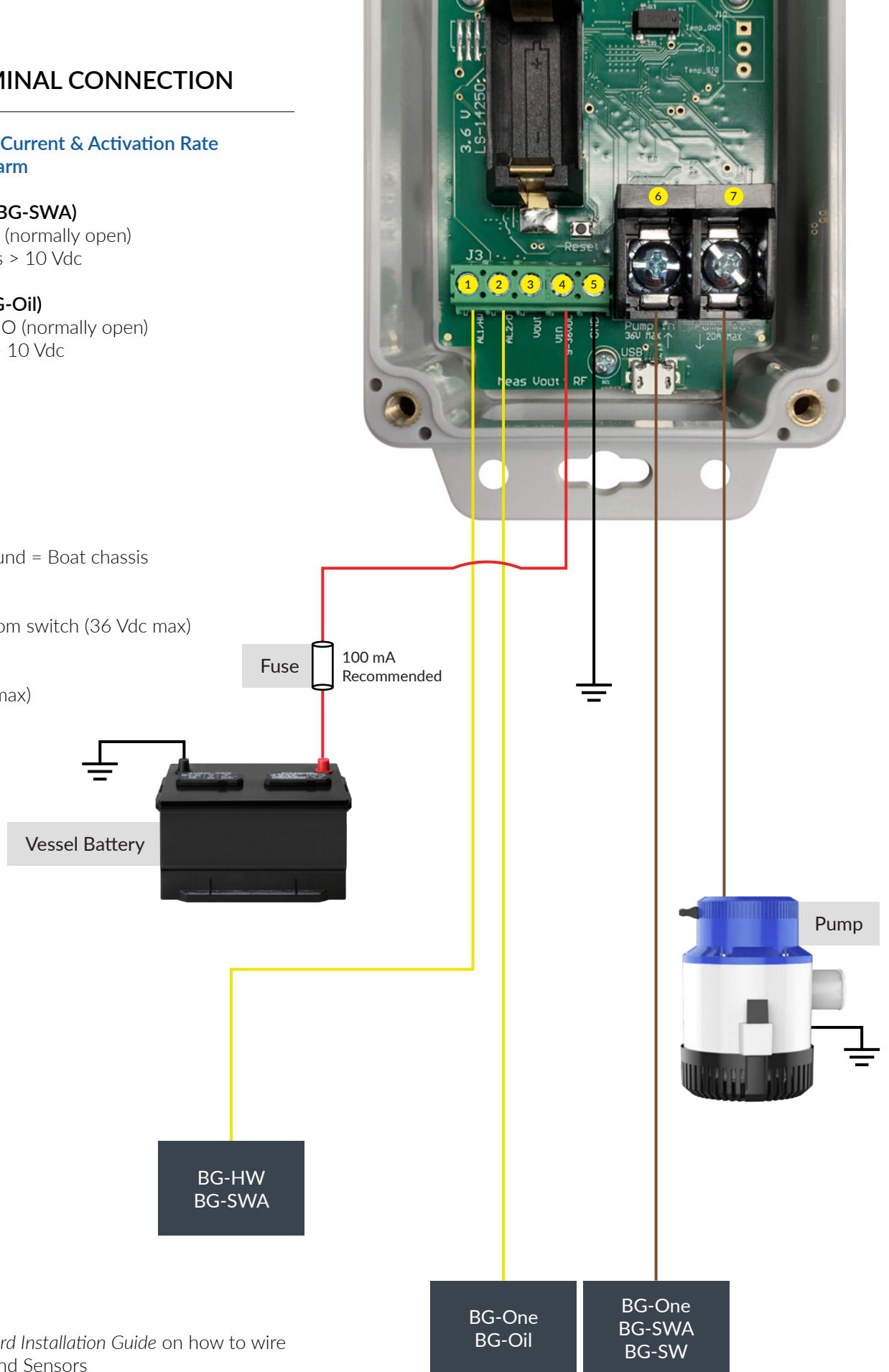
Supply negative = Ground = Boat chassis

6. Pump In

Pump power output from switch (36 Vdc max)

7. Pump Out

Power to pump (20 A max)



Note:

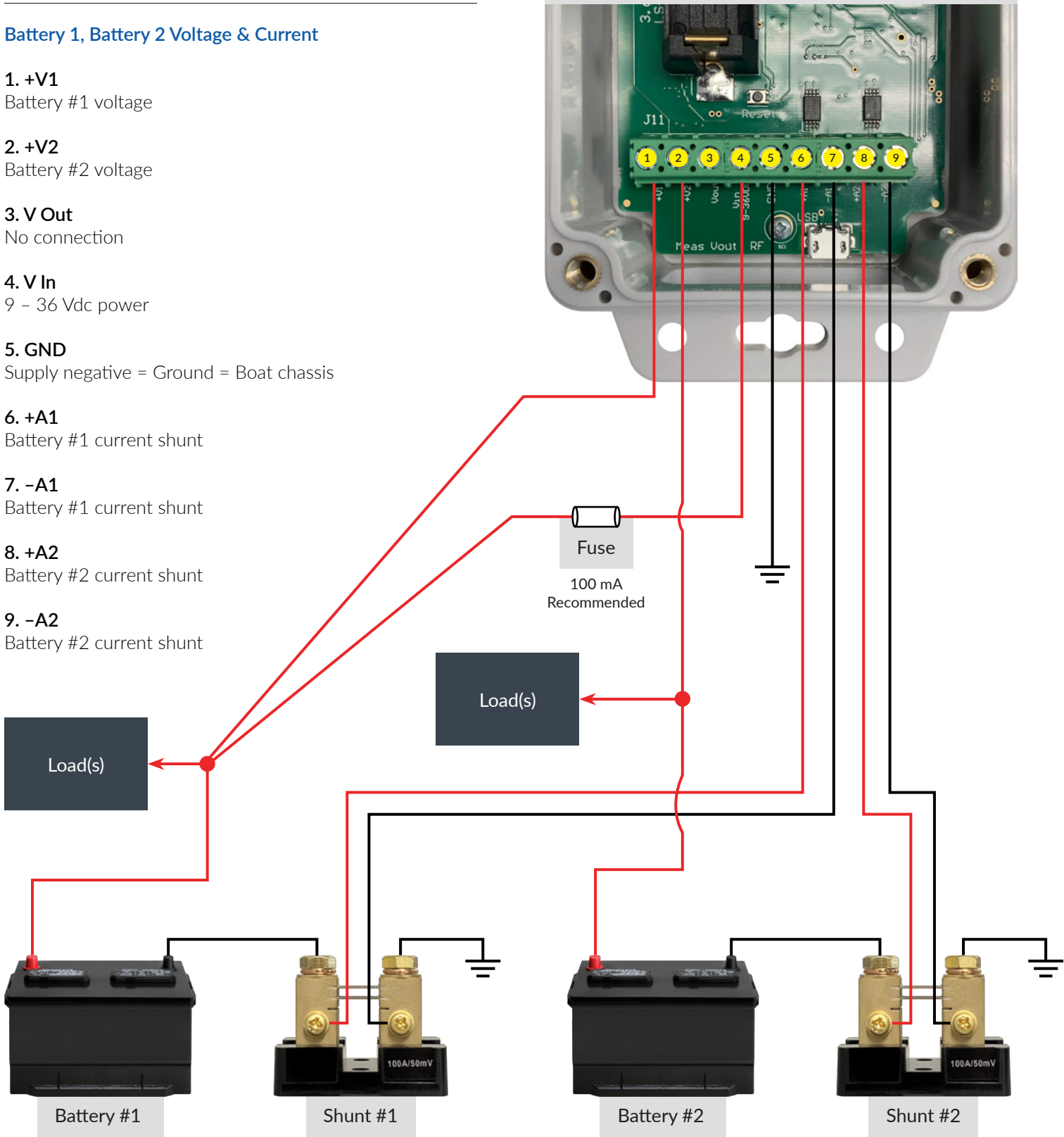
- Refer to the *Blue Guard Installation Guide* on how to wire Blue Guard Switches and Sensors

BG-WS-02 TERMINAL CONNECTION

Low Side Shunt

Battery 1, Battery 2 Voltage & Current

- 1. +V1
Battery #1 voltage
- 2. +V2
Battery #2 voltage
- 3. V Out
No connection
- 4. V In
9 – 36 Vdc power
- 5. GND
Supply negative = Ground = Boat chassis
- 6. +A1
Battery #1 current shunt
- 7. -A1
Battery #1 current shunt
- 8. +A2
Battery #2 current shunt
- 9. -A2
Battery #2 current shunt



Note:

- Works with any 50 mV shunt (not included), shunts can also be connected on high side.
- If your current reads negative, swap inputs +A1 with -A1 and/or +A2 with -A2.

BG-WS-03 TERMINAL CONNECTION

1 Temperature, 1 Fire Detection, 1 Security Sensor

1. AL1/HW

Fire detection sensor, NO (normally open)
Activates when input is > 10 Vdc

2. AL2/O

Security sensor, NC (normally closed)
Activates when input < 10 Vdc

3. V Out

No connect

4. V In

9 – 36 Vdc power

5. GND

Supply negative = Ground = Boat chassis

3-Pin Temperature Block

6. Temp_GND

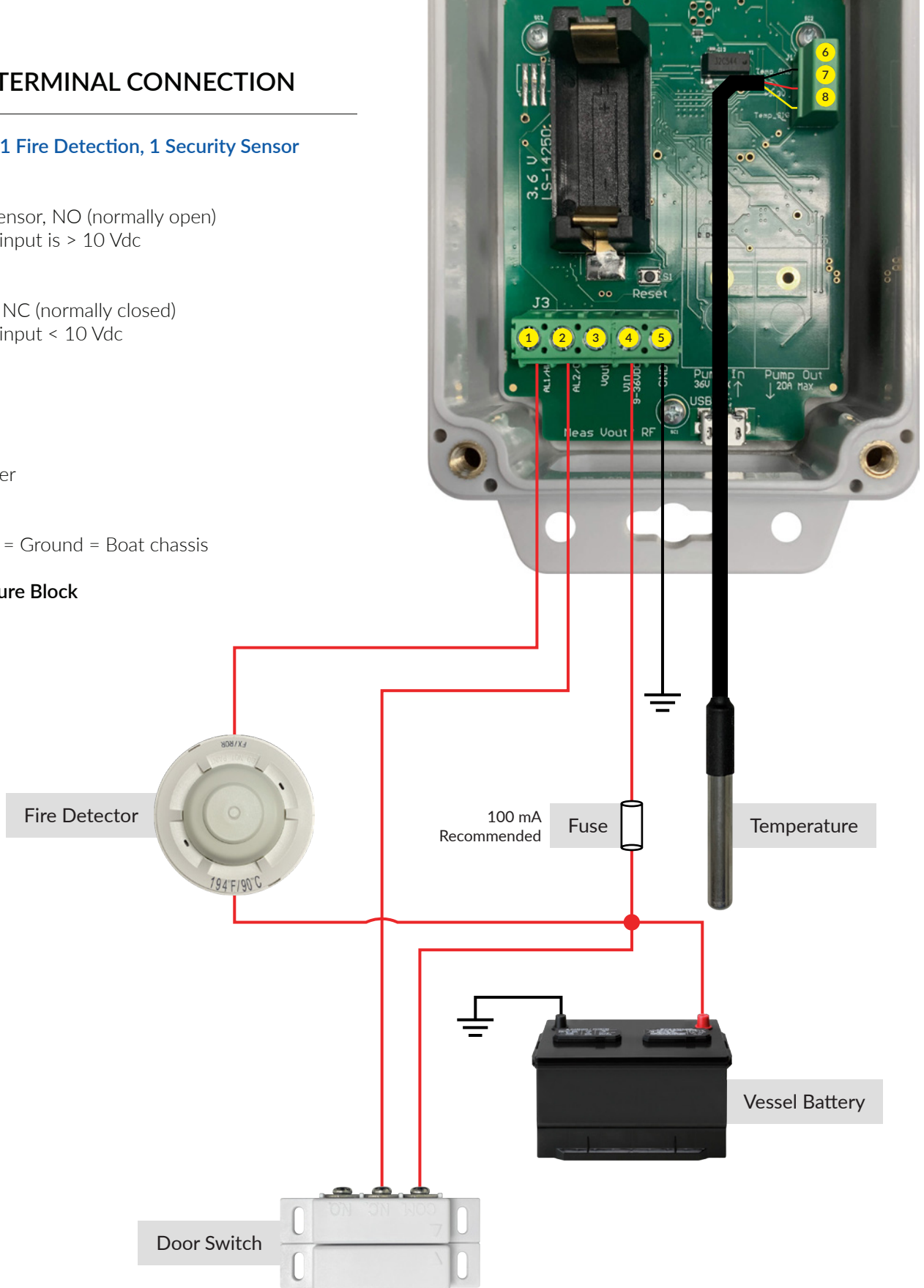
Black wire

7. +3.3V

Red wire

8. Temp_SIG

White wire

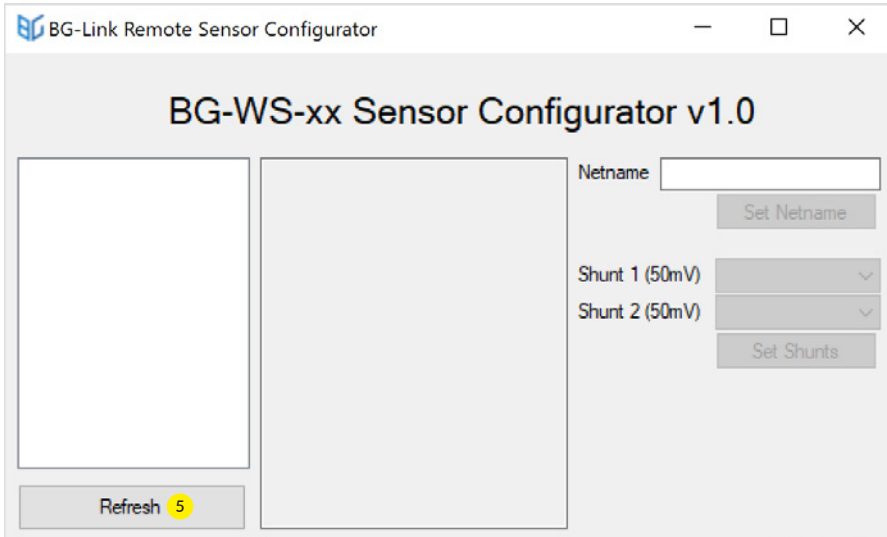


Note:

- Our system has been tested to work with Aqualarm 20271 smoke detector and Aqualarm 20514 fire detector.

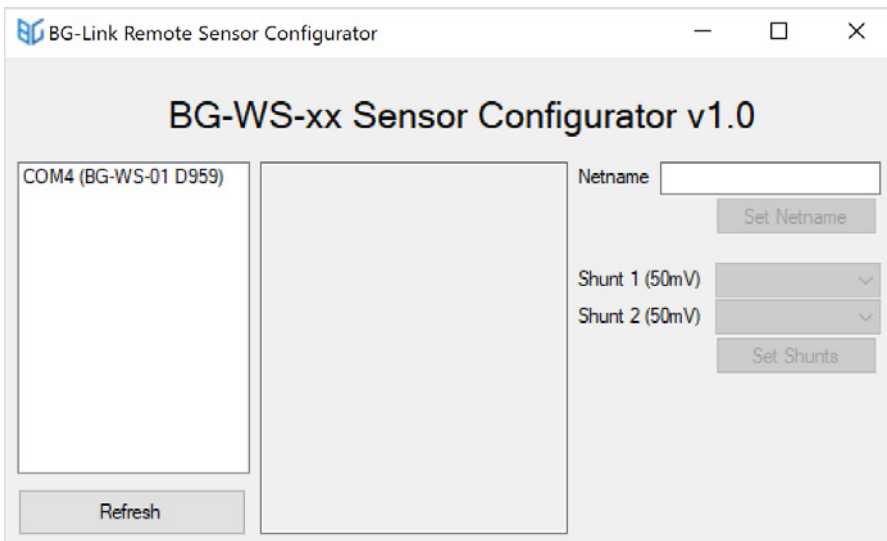
CONNECTING ADDITIONAL SENSORS

1. Download the BG-Link Remote Sensor Configurator for Windows or Mac.
2. Once the download is complete open the BG-Link Remote Sensor Configurator.

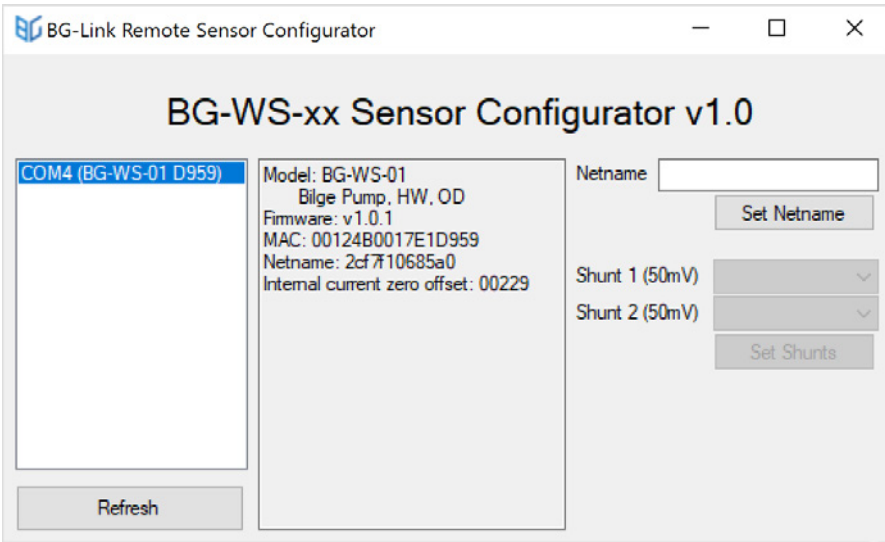


4. Connect the USB end of the USB to Mirco USB provided with your BG-Link Kit to your computer, then to the micro ESB to your BG-WS Wireless Sensor (You may have to remove the silicone plug in order to do this).

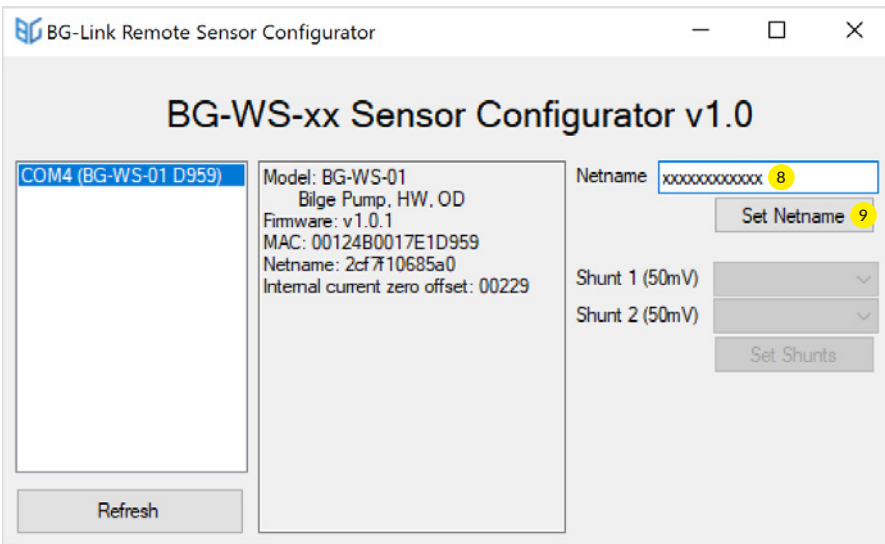
5. Next click on the Refresh Button on the BG-Link Remote Sensor Configurator located on the bottom left.



6. If your computer has detected the BG-WS Wireless Sensor then you should see the sensor in the white box to the left.



7. Now click on the sensor in the box to the left and it should highlight in blue. You should also see the BG-WS's specs populate the box in the middle.



8. Now locate the 12 character Netname on the side of your BG-GWM Gateway and enter that into the white box next to Netname.

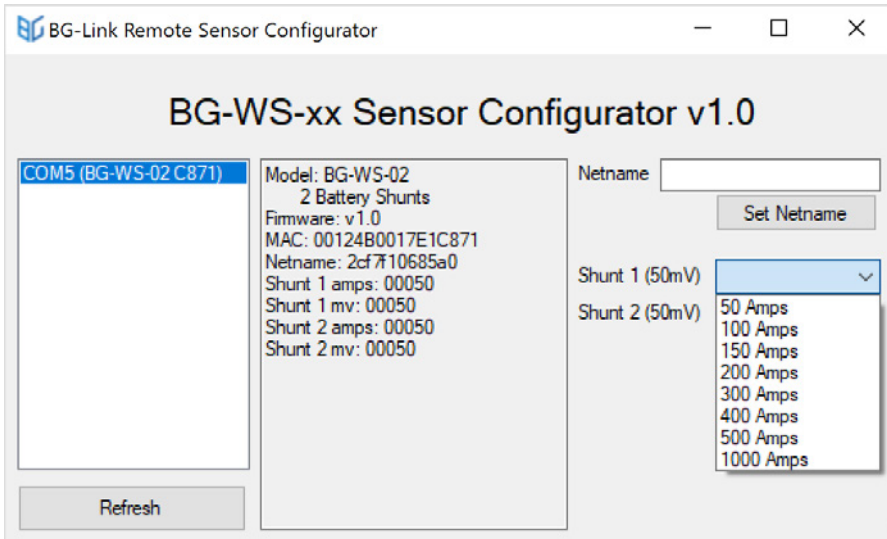
9. Press the Set Netname located under the white box.

10. Your BG-WS Wireless Sensor configuration is complete. You can now disconnect the BG-WS Wireless Sensor from the USB to Mirco USB Cable.

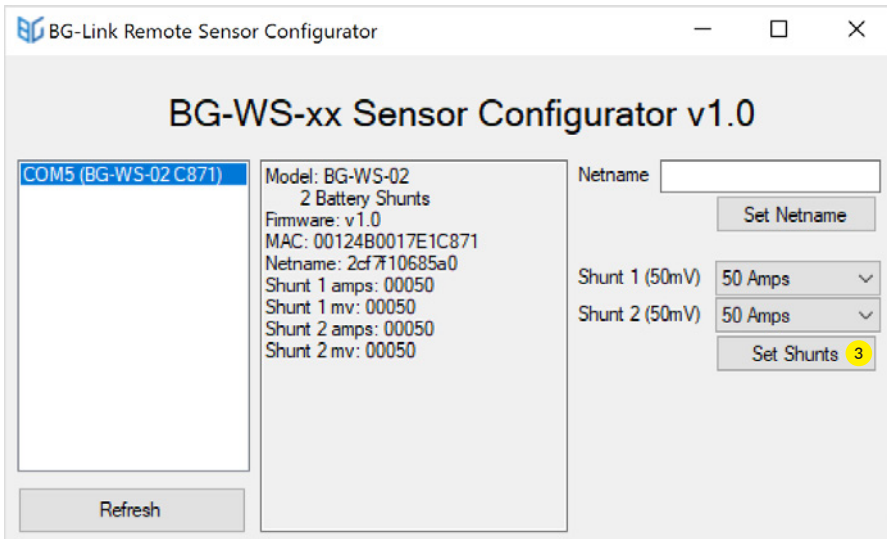
CONNECTING ADDITIONAL SENSORS

For BG-WS-02 Shunt Configuration

1. To Configure Shunts for Your BG-WS-02 complete steps 1-7 above.



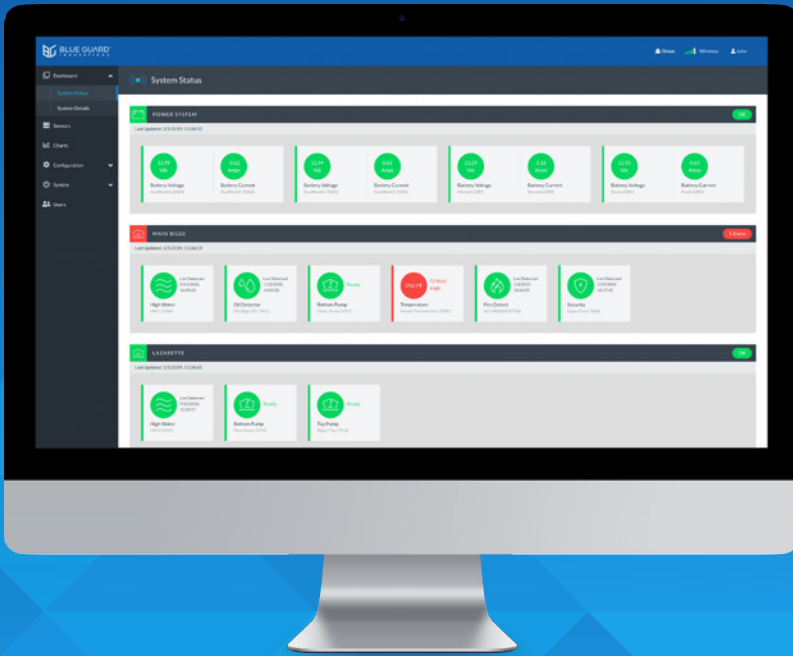
2. Select the correct value for each Shunt.



3. Then click the Set Shunts button.

4. Your Shunt Configuration is now complete. You can now disconnect the BG-WS Wireless Sensor from the USB to Mirco USB Cable.

BG-Link WEB PORTAL



Configure

Configure bilges, sensors, and alerts.

Bilge and Sensor Monitoring

View real time sensor data and alarms.

Charts

View battery voltage & current, pump activation, high water, oil detection, security, temperature, and fire detection data.

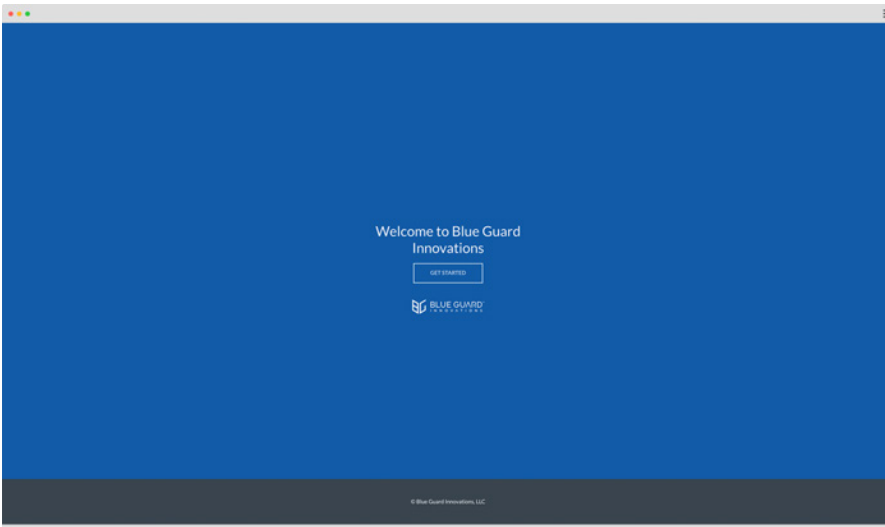
Event Log

View and export log of past events.

BG-Link INITIAL SETUP

Before starting the initial setup process:

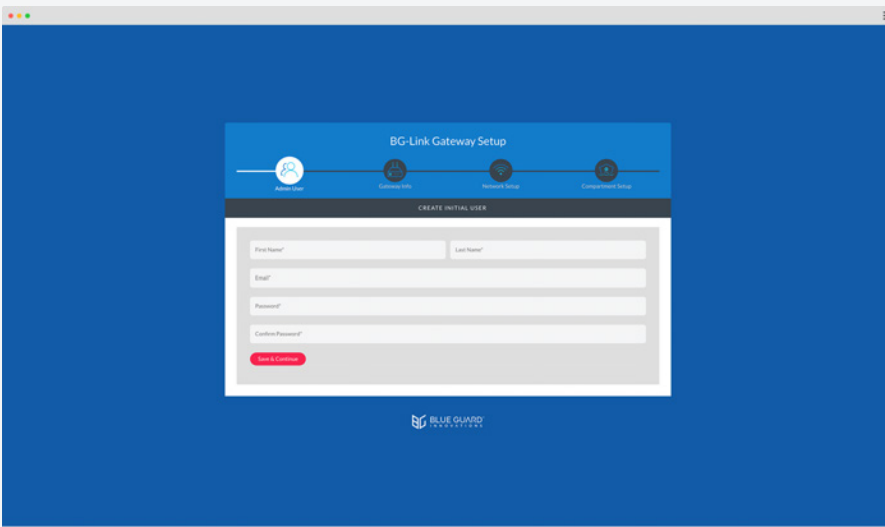
- I. Power on the gateway (the gateway takes up to 2 minutes to power up).
- II. Sensors should be wired as per terminal connection diagram (refer to page 7, 8, 9) and powered on. If you want to configure your sensors at a later time, you may do so through the web portal after completing the initial setup.
- III. Make note of the information on the label located on the side of the gateway enclosure.



1. Connect to the gateway to start initial setup.

I. On a WiFi enabled computer or tablet, go to the WiFi settings and connect to the WiFi network corresponding to the SSID on the label. It will ask you to enter the key, also located on the gateway label.

II. Once you are connected to the gateway's WiFi network, open a web browser and type 192.168.8.1 in the address bar. You will then be greeted with the "Get Started" screen shown.



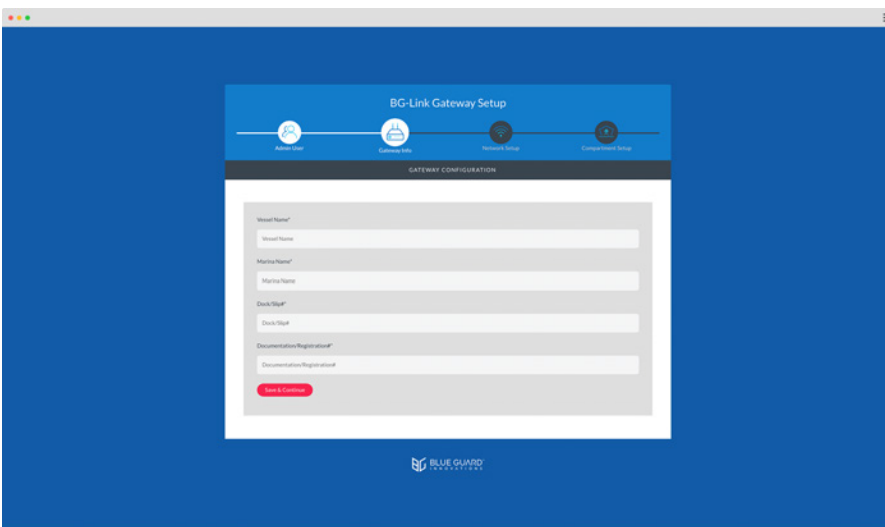
2. Create admin user.

First and Last Name*

Email*
(This will be your login username).

Create Password*

Confirm Password*



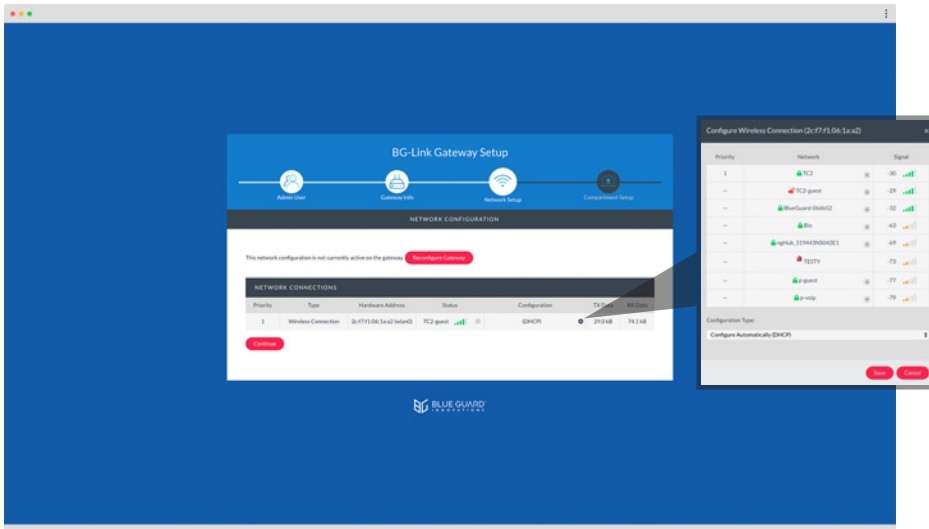
3. Setup vessel information.

Vessel Name*
(e.g. Orion).

Marina Name*
(e.g. San Diego).

Dock/Slip*
(e.g. A-102).

Documentation/Registration#*
(Your vessel registration number).



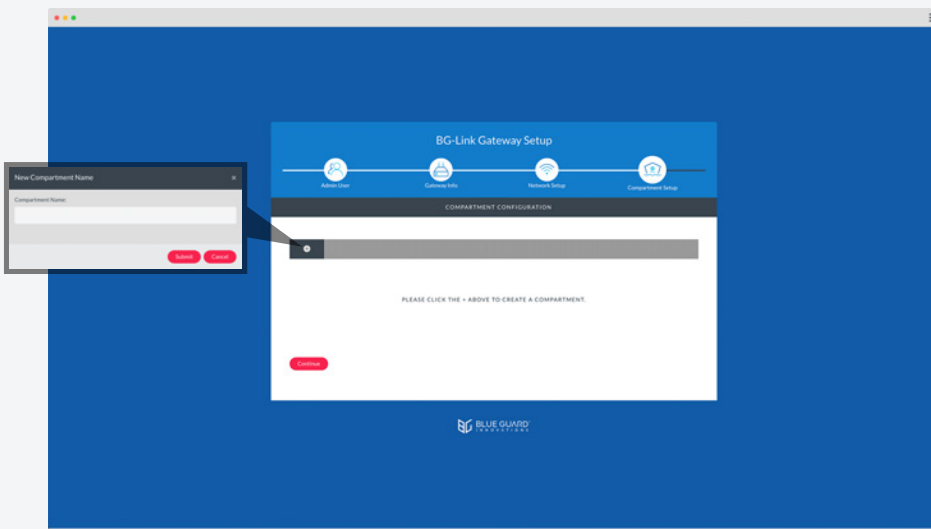
4. Connecting gateway to Internet.

I. By default, the gateway will connect to an open WiFi network. Click on the ⚙️ icon to see all available WiFi networks.

II. Click on the ⊕ icon next to select your desired WiFi network. You will be asked to enter your WiFi password.

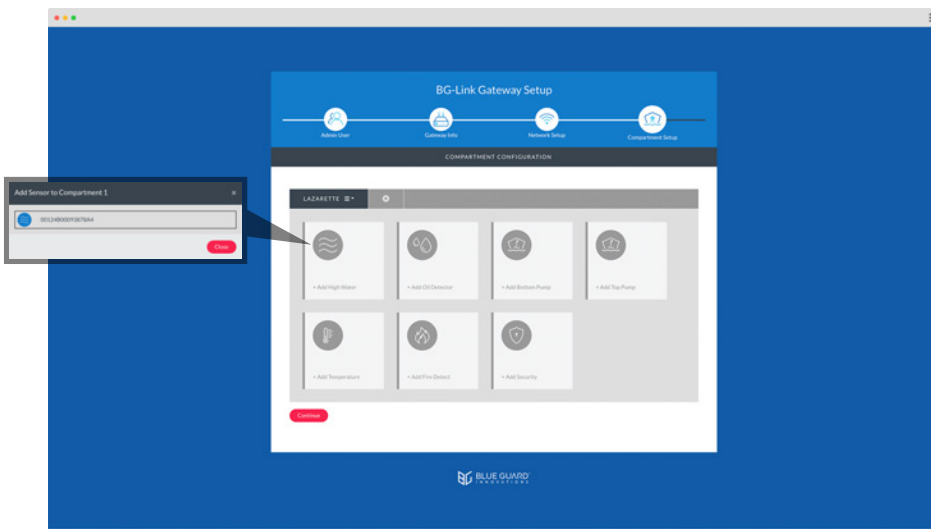
III. Once you are done adding your desired network(s), click on "Reconfigure Gateway". Within 30 seconds the gateway should update to your configured connection.

Note: If you do not have a WiFi network or are using the cellular models -C, -G, you may skip this step by clicking "Continue". You can also configure/reconfigure your network setup through the web portal after completing the initial setup.



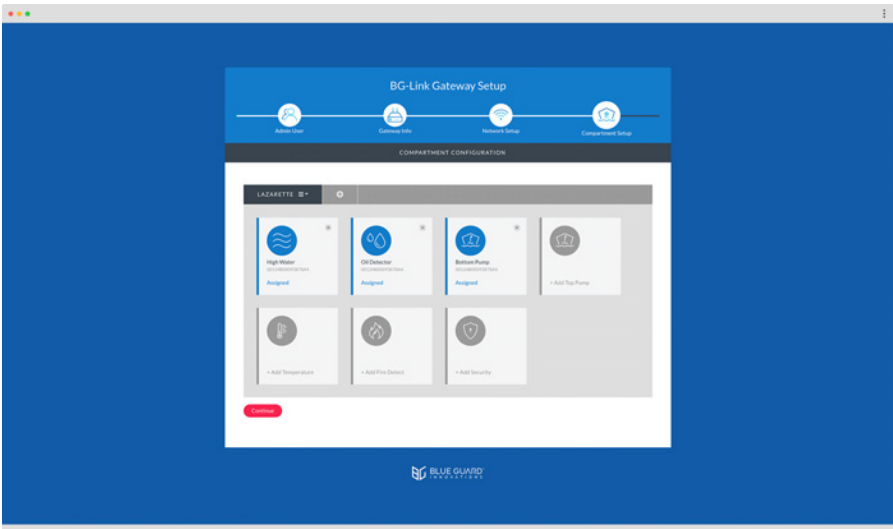
5. Creating compartments.

Click on the ⊕ icon to create a new compartment and set a name (e.g. Lazarette, Engine Room, Forepeak).



6. Assigning sensors.

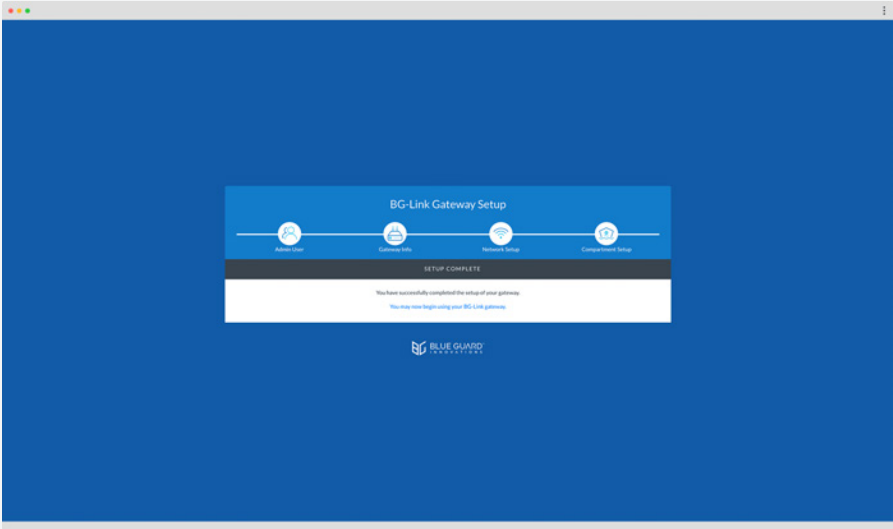
Select sensor categories to enable monitoring of that device (e.g. High Water, Oil Detect, Bottom Pump). Connected sensors will be listed.



7. Assigned sensors.

Assigned sensor categories will be shown in blue.

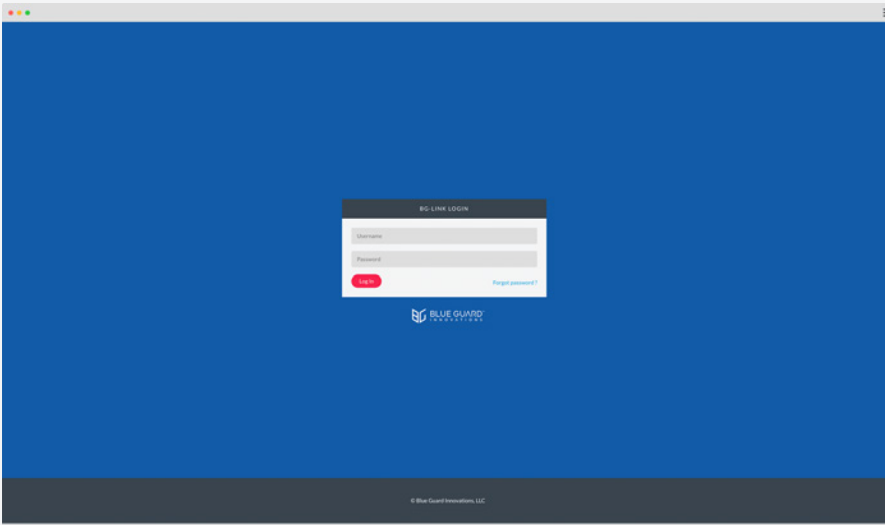
Note: You can also add or remove sensors through the web portal after completing the initial setup.



8. Setup complete.

You may now begin using your BG-Link gateway.

BG-Link WEB PORTAL INTERFACE

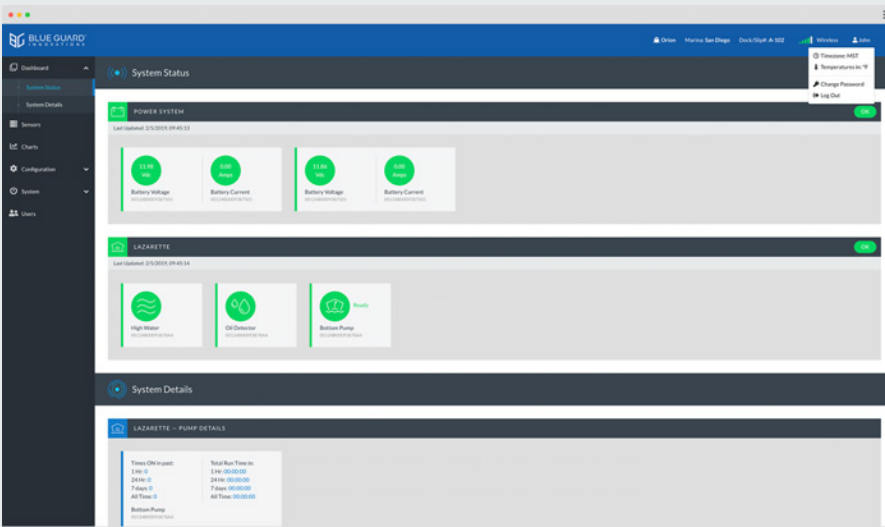


BG-Link Login

Log in using your account information. If directly connected to WiFi BlueGuard-XXXXXX, the URL is 192.168.8.1. If the gateway has been configured with an Internet connection, the URL is XXXXXX.bluebgi and can be found on the side of the gateway enclosure (refer to page 10).

Username
(Your email).

Password
Enter the password you created during the initial setup. If you forgot your password, you can request a reset.



Dashboard

Top Navigation Bar

View additional vessel information by hovering over the vessel name . By clicking on the username , toggle between your local timezone or UTC, temperature in °F or °C, change password or log out.

System Status

Check the current status of batteries and all connected sensors.

System Details

Monitor pump details including number of activations and run times.

HIGH WATER									
Name	ID	Compartment	Signal	Backup Battery	Internal Temp	Status	Last Detected	Last Update	
0012480009387844	7844	Lazarette	-55	OK	77°F	OK	1/29/2018 14:54:29	1/29/2018 15:39:38	

OIL DETECT									
Name	ID	Compartment	Signal	Backup Battery	Internal Temp	Status	Last Detected	Last Update	
0012480009387844	7844	Lazarette	-55	OK	77°F	OK	---	1/29/2018 15:39:38	

PUMPS										
Name	ID	Compartment	Signal	Backup Battery	Internal Temp	Status	Pump Status	Pump Alarm	Run Count	Last Update
0012480009387844	7844	Lazarette	-55	OK	77°F	Ready	0/06	0/00	0	1/29/2018 15:39:38

TEMPERATURE									
Name	ID	Compartment	Signal	Backup Battery	Internal Temp	Status	Sensor Temp	Last Alarm	Last Update

FIRE DETECT									
Name	ID	Compartment	Signal	Backup Battery	Internal Temp	Status	Last Detected	Last Update	

SECURITY									
Name	ID	Compartment	Signal	Backup Battery	Internal Temp	Status	Last Detected	Last Update	

BATTERY BANKS									
Name	ID	Compartment	Signal	Backup Battery	Internal Temp	Status	Bat. Volts	Bat. Amps	Last Update
0012480009387501	7501	Battery	-55	OK	70°F	OK	13.76	0.00	1/29/2018 15:39:46
0012480009387501	7501	Battery	-55	OK	70°F	OK	13.84	0.00	1/29/2018 15:39:46

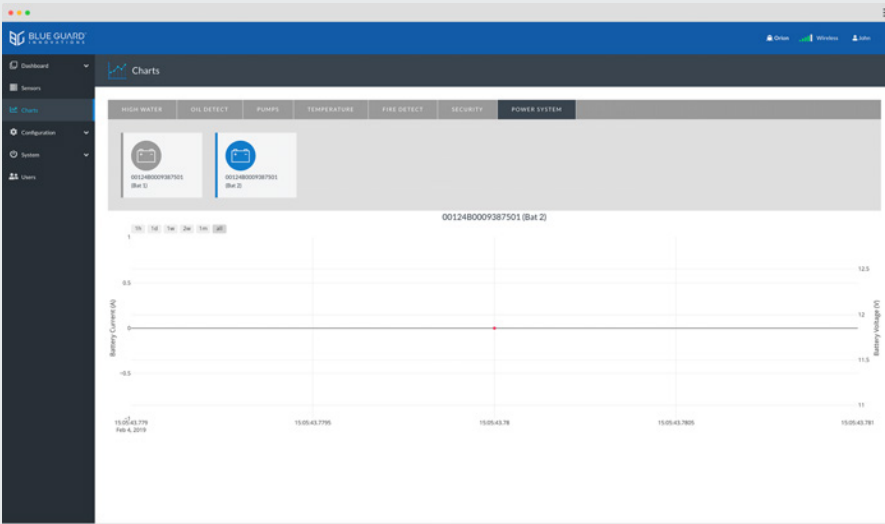
Sensors

Sensor Status

Monitor the current status of batteries and all connected sensors.

Sensor Setup

- 👁 Enable or disable a sensor.
- ✎ Edit sensor name.
- 🔔 Enable or disable backup battery alert.
- ☰ Modify the alert thresholds of battery voltage & current, pump run count, and temperature.
- 🗑 Clear alert.



Charts

View battery voltage & current, pump activation, high water, oil detection, security, temperature, and fire detection data. Click on tabs and sensors you wish to view.

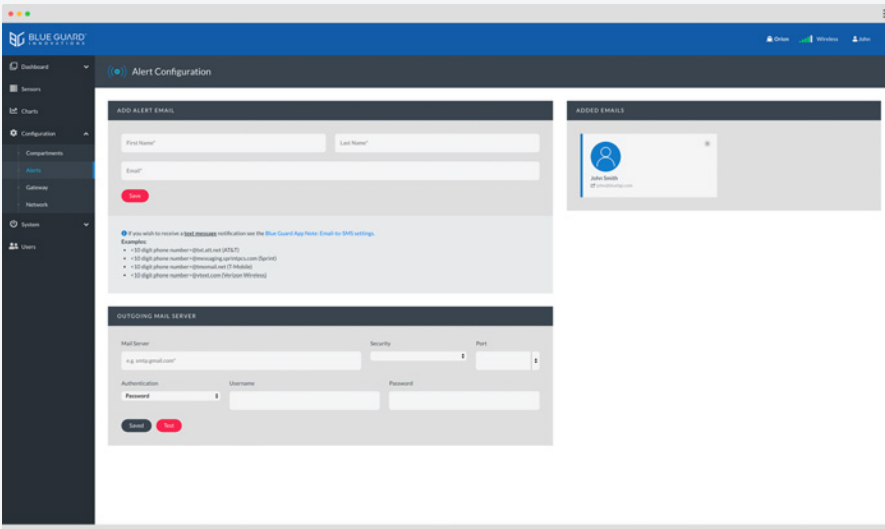
Compartment Configuration

Add/Remove Compartment(s)

Click on the **+** icon to add a compartment. To rename or remove an existing compartment, click on the **☰** icon.

Add/Remove Sensors

Add or remove connected sensors by clicking on the categories for each device.



Alert Configuration

Outgoing Mail Server* (Required)

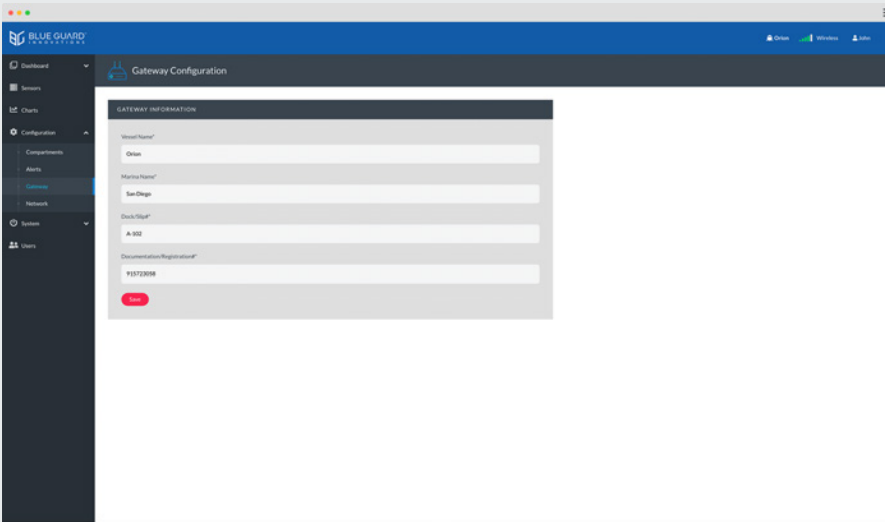
Configure SMTP settings to be able to receive alerts from the gateway. This information can be obtained from your email service provider.

Add Alert Email

Add a recipient to receive email alerts upon an event. If you wish to receive a text message notification as well, see the app note Email-to-SMS settings.

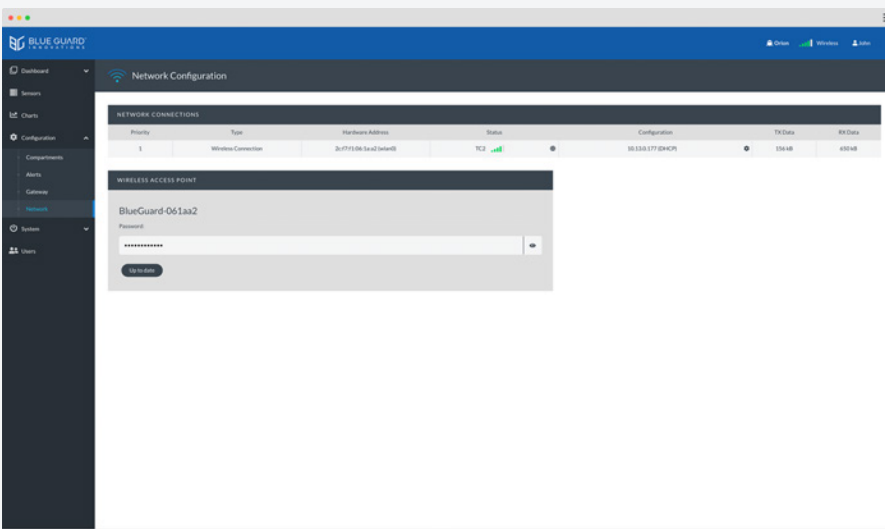
Added Emails

View added recipient(s) with the option to remove.



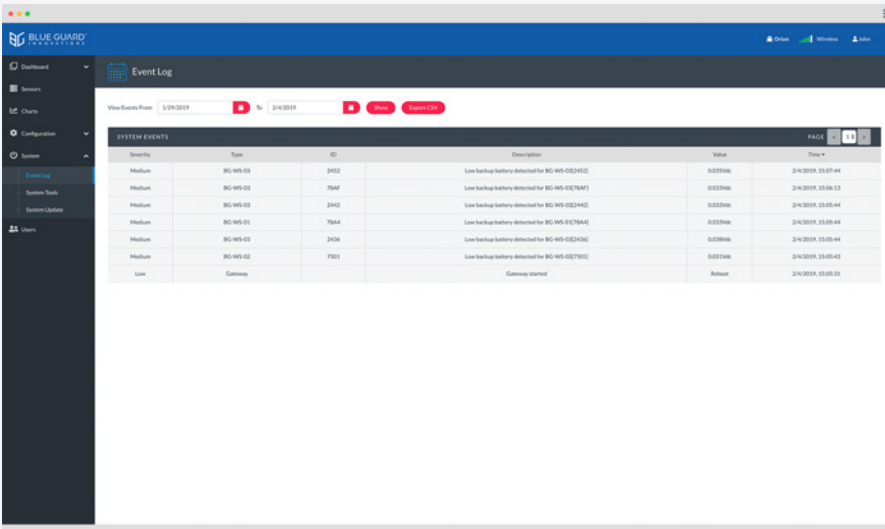
Gateway Configuration

Gateway information added during the initial setup will be shown. You can view or modify the information.



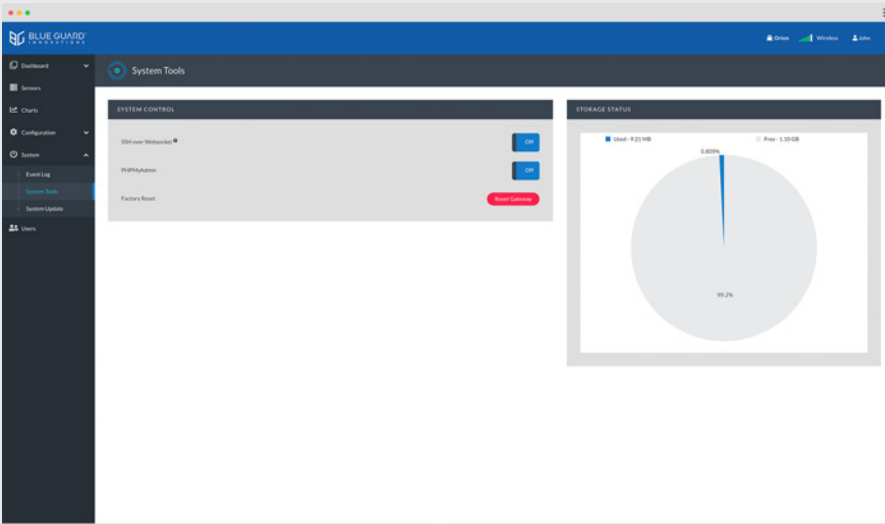
Network Configuration

Network information added during the initial setup will be shown. You can view or change the connection by clicking on the ⚙️ icon.



Event Log

Provides a log of past events. View a list from a specific date range or export the event log in CSV format.



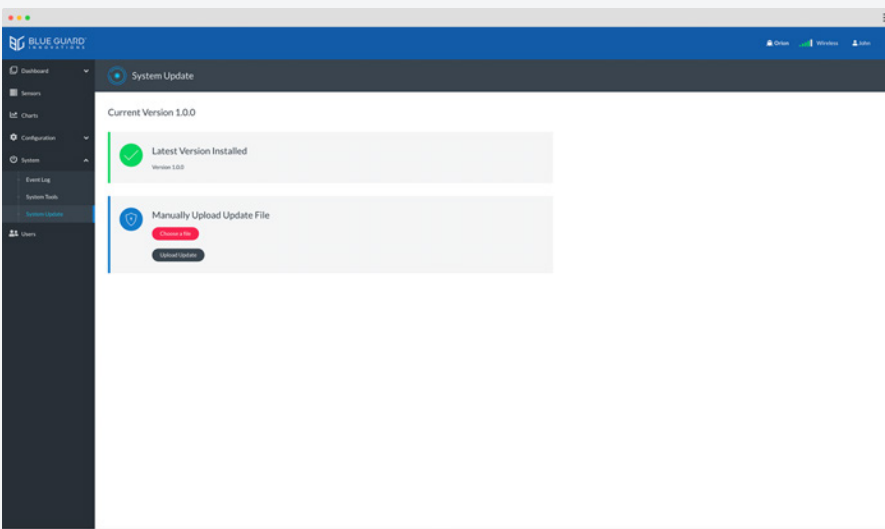
System Tools

System Control (Technical Support)

The SSH over Websocket and PHPMyAdmin options allow Blue Guard Innovations to log into your gateway to troubleshoot problems or perform upgrades. We may require you to turn this on to assist with support requests. To reset the gateway to factory default, click on the "Reset Gateway" option; you will have to reconfigure the gateway through the initial setup process.

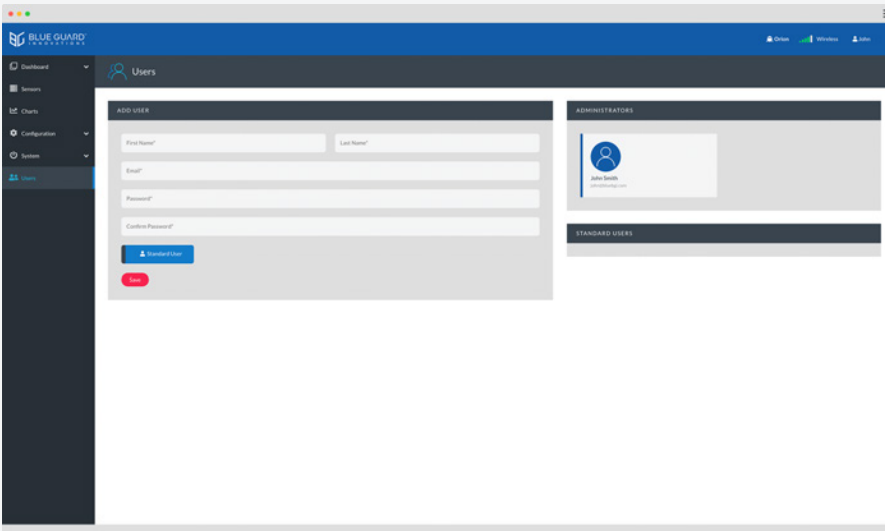
Storage Status

View gateway storage space.



System Update

By default, the system will automatically check for the latest version. If you wish to manually upload an update saved on your local computer, you have the option to do so.



Users

Add User

Create a new administrator or standard user.

Administrators

View active administrator(s). If there is a second administrator added, you will have the option to remove. You cannot remove yourself.

Standard Users

View active standard user(s) with the option to remove. Standard users will only be able to view the gateway status and its connected sensors with no access to configuration settings.

BG-Link APP

Connect

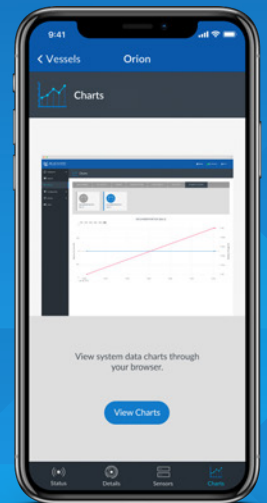
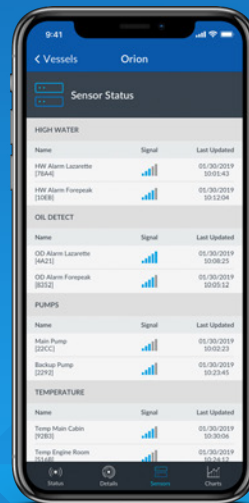
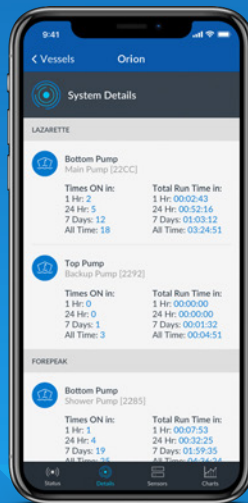
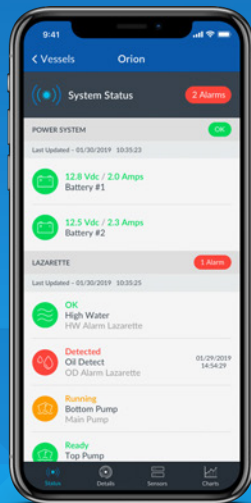
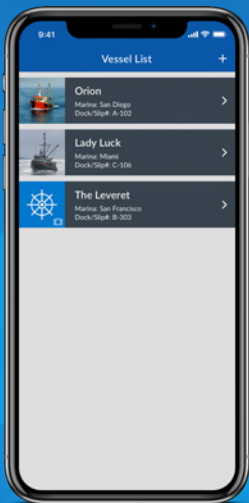
Connect one or multiple vessels.

24/7 Monitoring

View real time sensor status.

Event Notification

Alerts via email/text with WiFi or cellular connection.





GATEWAY TECHNICAL SPECIFICATIONS

Status LEDs

Power, WiFi, Cellular, Sensor connection

Operating Voltage

9 – 36 Vdc

Power Consumption

BG-GWM-W

Typical – 160 mA @ 12 Vdc

Maximum – 200 mA @ 12 Vdc

BG-GWM-C

Typical – 350 mA @ 12 Vdc

Maximum – 500 mA @ 12 Vdc

Connectivity

WiFi (Internal antenna) – Standard

Cellular (External antenna) – BG-GWM-C, -G

RJ45 (Wired) – Optional

Wireless

900 MHz wireless transceiver

Enclosure

IP-66 rated ABS plastic

Operational Temperature

14°F – 167°F / -10°C – 75°C

Humidity

95% R.H. @ 122°F / 50°C non condensing

Compact Size

6.3 in x 3.5 in x 2 in / 159.4 mm x 90.7 mm x 51 mm

Light Weight

12.5 oz / 354 grams

Maximum Number of Wireless Sensors Connected

50

Certifications

FCC, CE



SENSOR TECHNICAL SPECIFICATIONS

Status LEDs

Blinking green – Power ON

Intermittent blue sensor – Sending data

Operating Voltage

9 – 36 Vdc

Range

Up to 300 ft

Power Consumption

11 mA @ 12 Vdc

Battery (Back Up) – Optional

1,100 mAh / Lithium Thionyl Chloride

Battery Backup Time

Up to 100 hrs

Wireless Frequency

900 MHz

Enclosure

IP-66 Rated ABS Plastic

Operational Temperature

-22°F – 167°F / -30°C – 75°C

Humidity

95% R.H. @ 122°F / 50°C non condensing

Compact Size

4 in x 2.75 in x 1.6 in / 102 mm x 70 mm x 40 mm

Light Weight

5 oz / 141 grams

Certifications

FCC, CE