



# BG-Link

IoT Marine Gateway

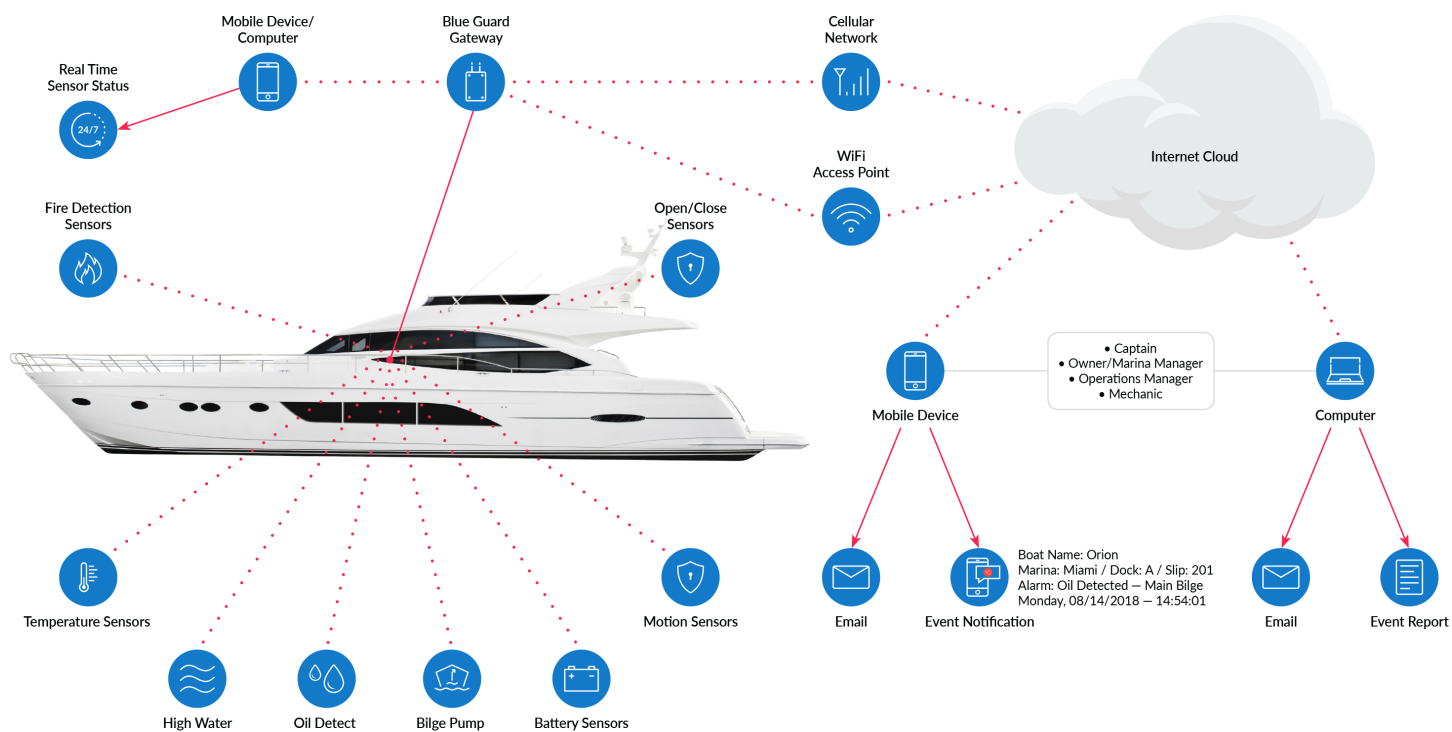
SETUP & INSTALLATION GUIDE







## REAL TIME BILGE MONITORING & NOTIFICATIONS



\* Multiple sensors are required to achieve all monitoring functions.

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## 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

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(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

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



(1) BG-WS-01 Wireless Sensor



(1) Cellular Antenna



(1) USB to Micro USB



(2) Silicone Wire Plug



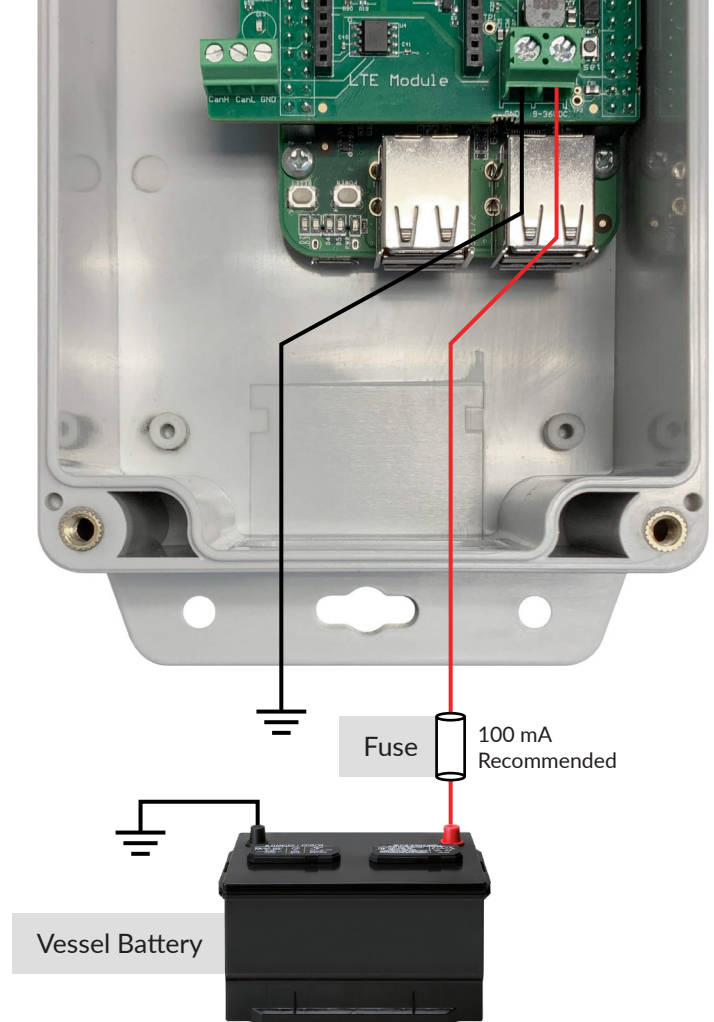
## GATEWAY TERMINAL CONNECTION

### 1. GND

Supply negative = Ground = Boat chassis

### 2. 9-36VDC

9 – 36 Vdc power



## 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.



## 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

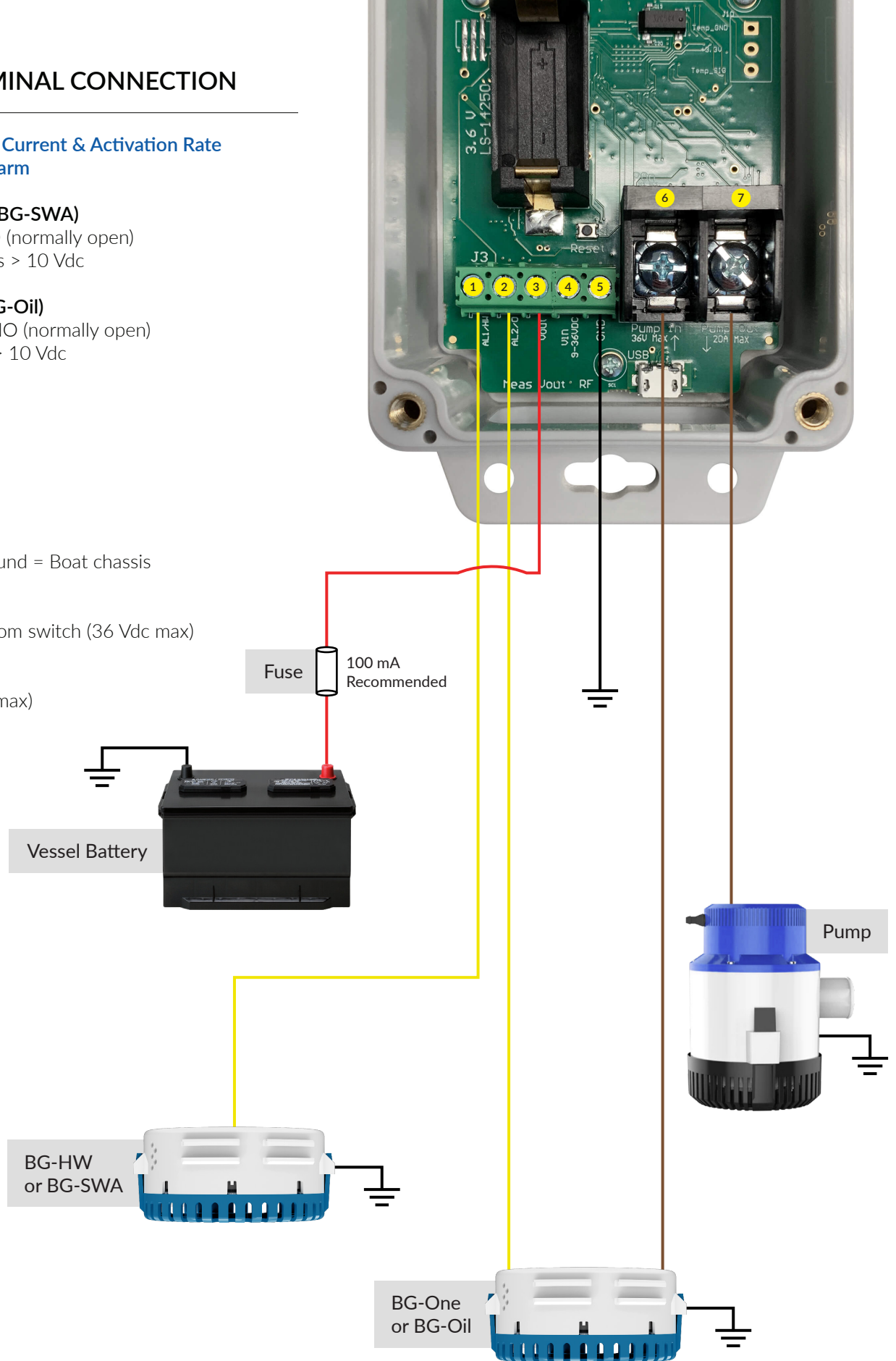
Supply negative = Ground = Boat chassis

#### 6. Pump In

Pump power output from switch (36 Vdc max)

#### 7. Pump Out

Power to pump (20 A max)



## BG-WS-02 TERMINAL CONNECTION

### 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

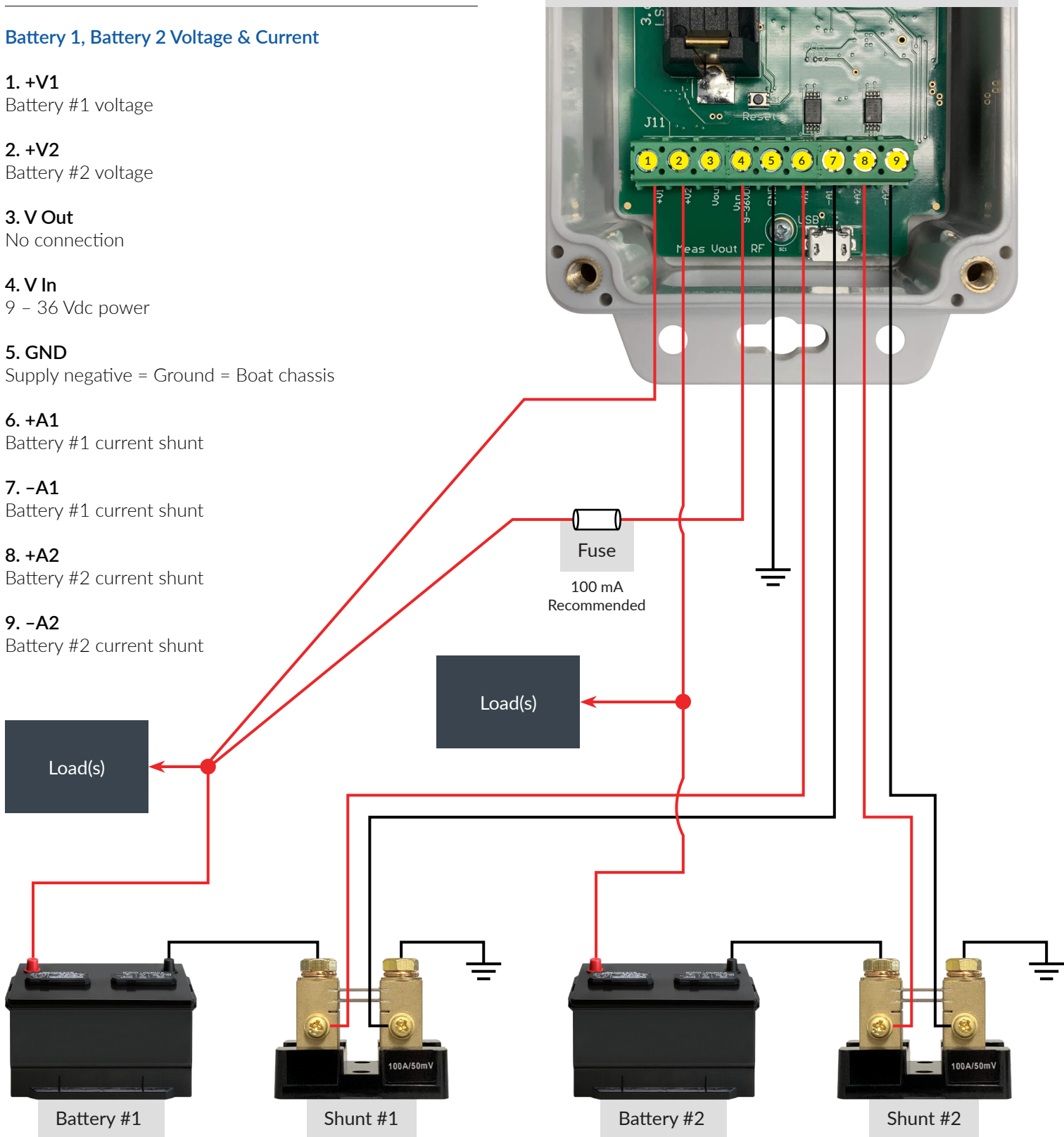
Battery #1 current shunt

#### 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

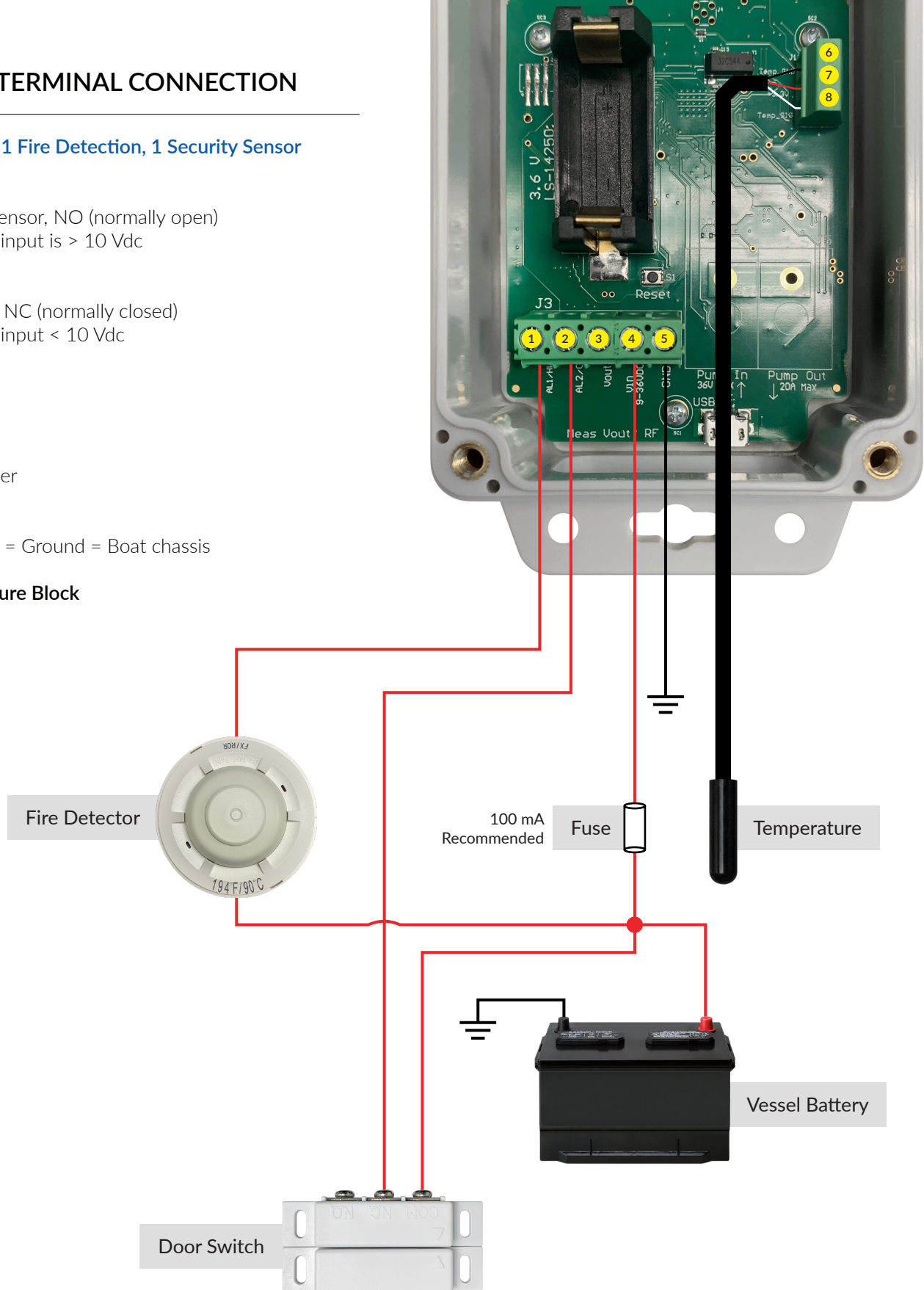
Black wire

##### 7. +3.3V

Red wire

##### 8. Temp\_SIG

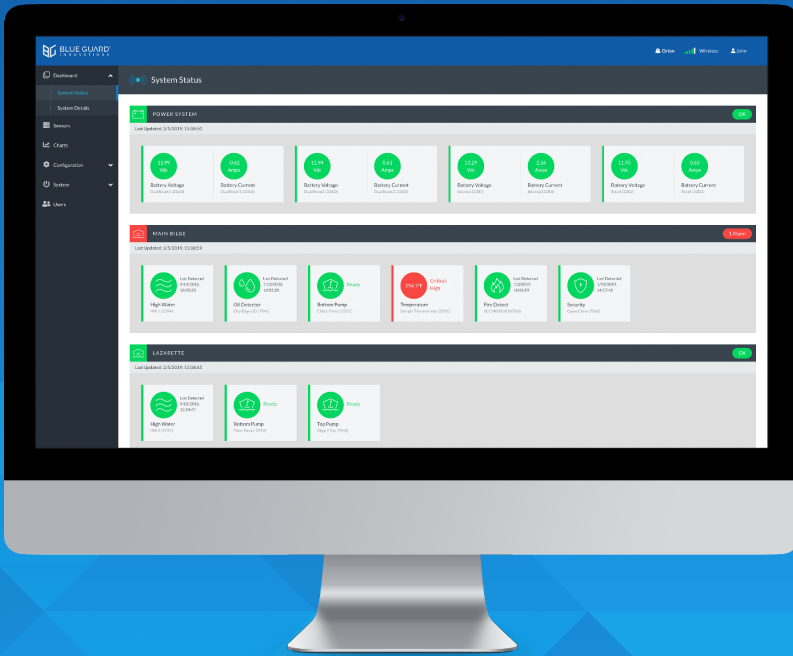
White wire



#### Note:

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

## 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.

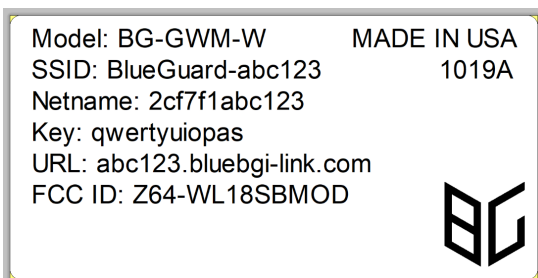
### Event Log

View and export log of past events.

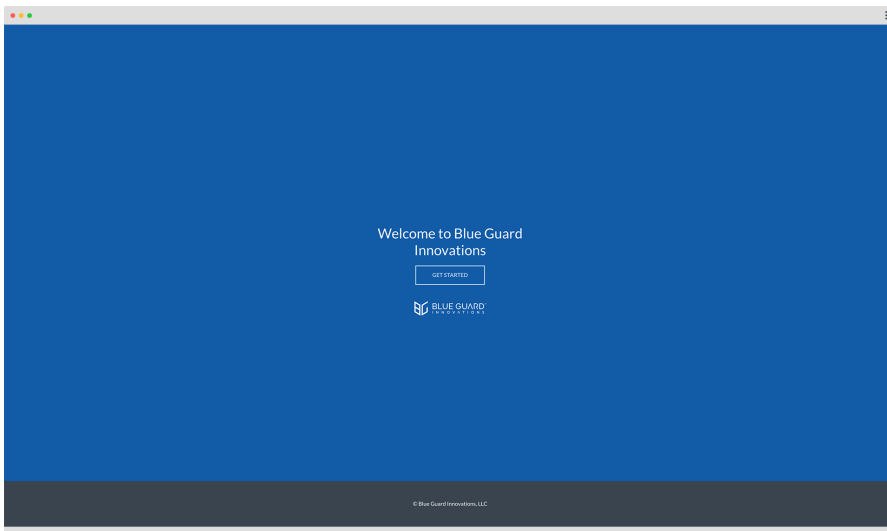
## BG-Link INITIAL SETUP

### 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. You may want to take a photo of it for easy reference.



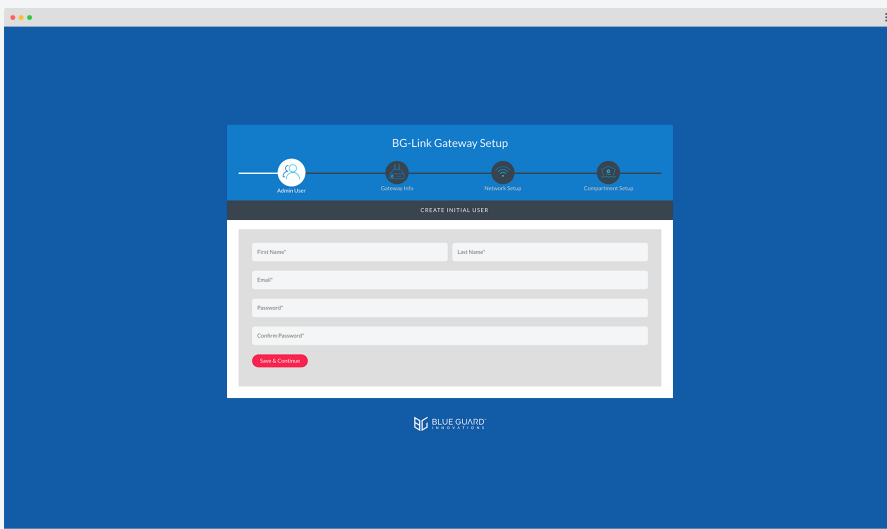




## 1. Connect to the gateway to start initial setup.

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.

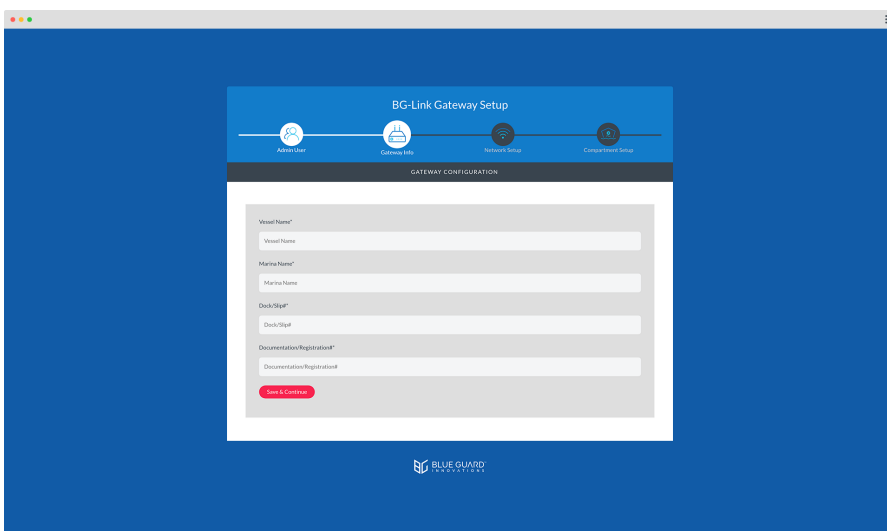
**First and Last Name\***

**Email\***

(This will be your login username).

**Create Password\***

**Confirm Password\***



## 3. Setup vessel information.

**Vessel Name\***

(e.g. Orion).

**Marina Name\***

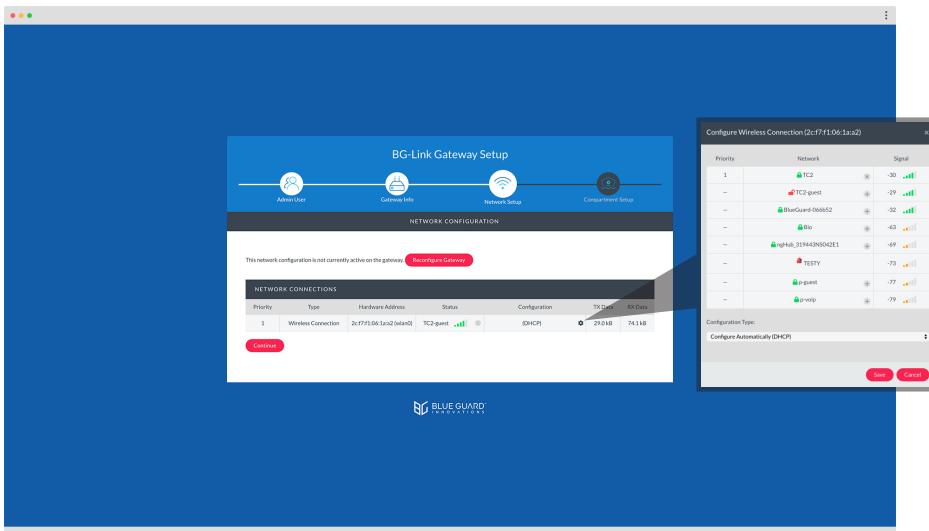
(e.g. San Diego).

**Dock/Slip#\***


(e.g. A-102).


**Documentation/Registration#\***

(Your vessel registration number).



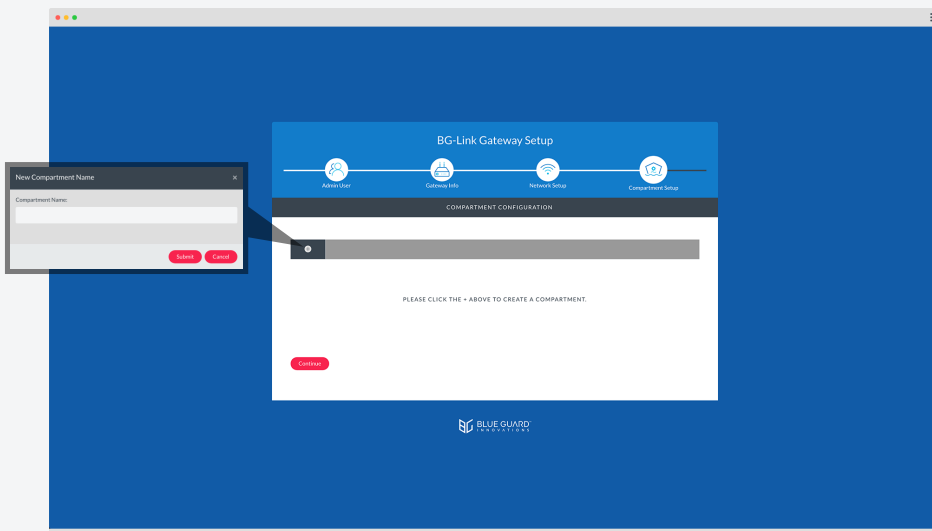
## 4. Connecting gateway to Internet.

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.

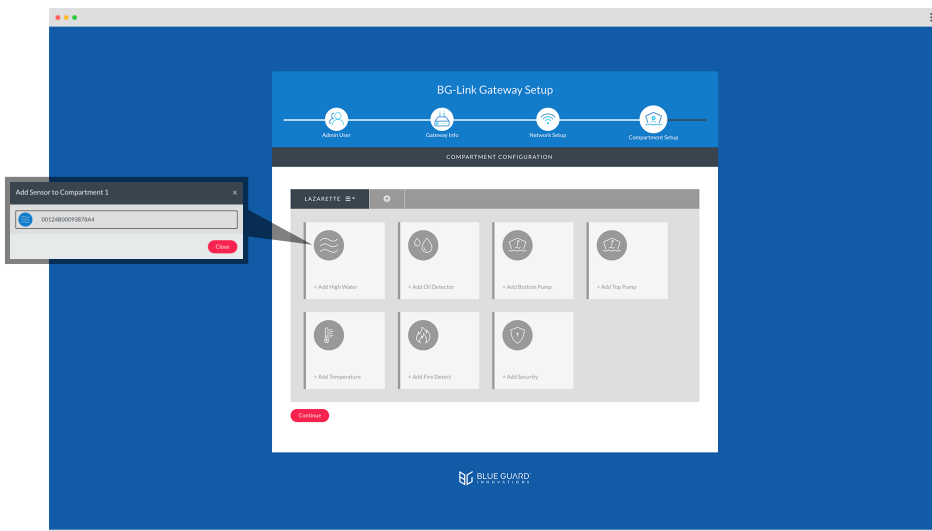
III. Once you are done adding your desired network(s), click on "Reconfigure Gateway". Within 30 seconds the gateway should update to your configured connection.

**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.



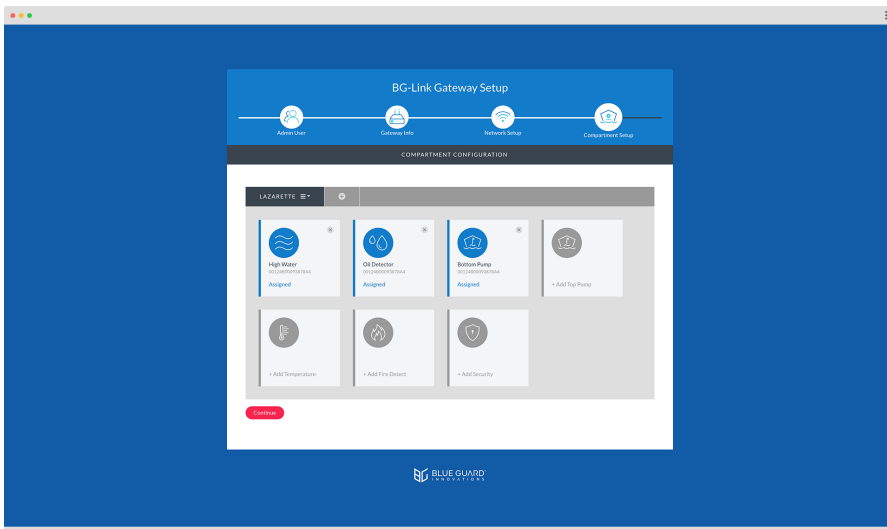
## 5. Creating compartments.

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



## 6. Assigning sensors.

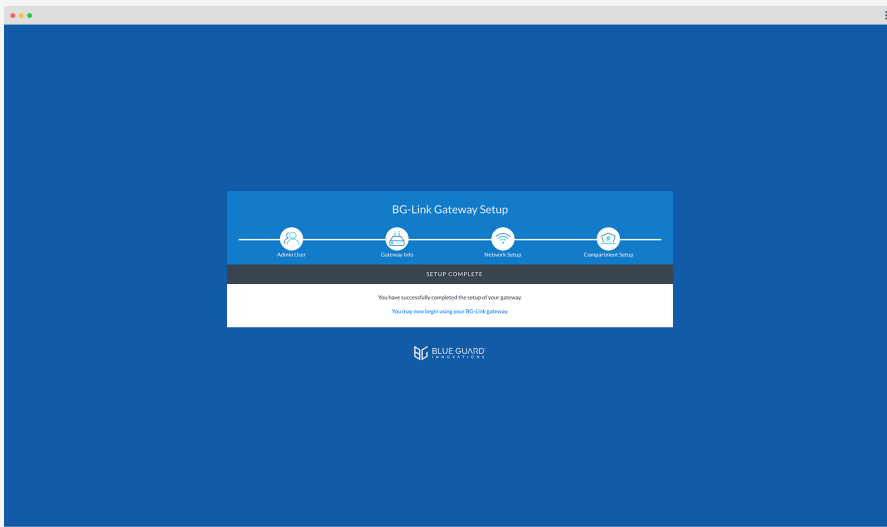
Select sensor categories to enable monitoring of that device (e.g. High Water, Oil Detect, Bottom Pump). Connected sensors will be listed.



## 7. Assigned sensors.

Assigned sensor categories will be shown in blue.

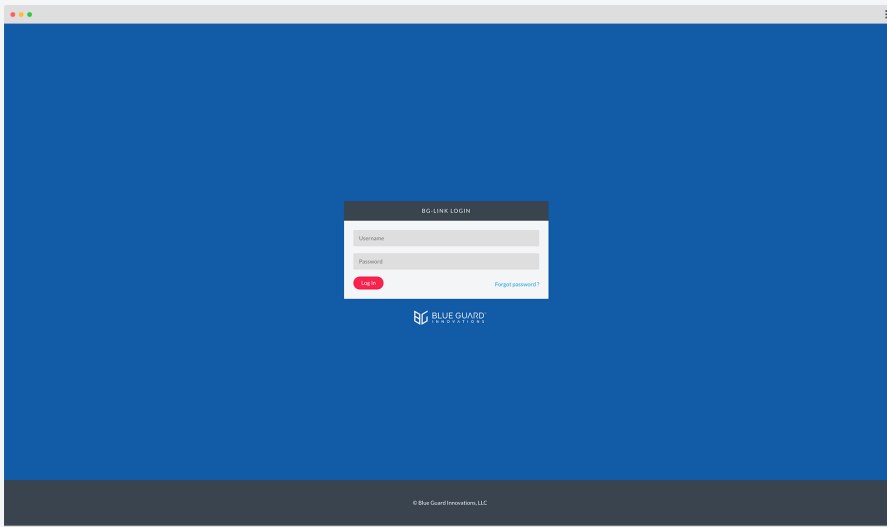
**Note:** You can also add or remove sensors through the web portal after completing the initial setup.



## 8. Setup complete.

You may now begin using your BG-Link gateway.

# BG-Link WEB PORTAL INTERFACE



## BG-Link Login

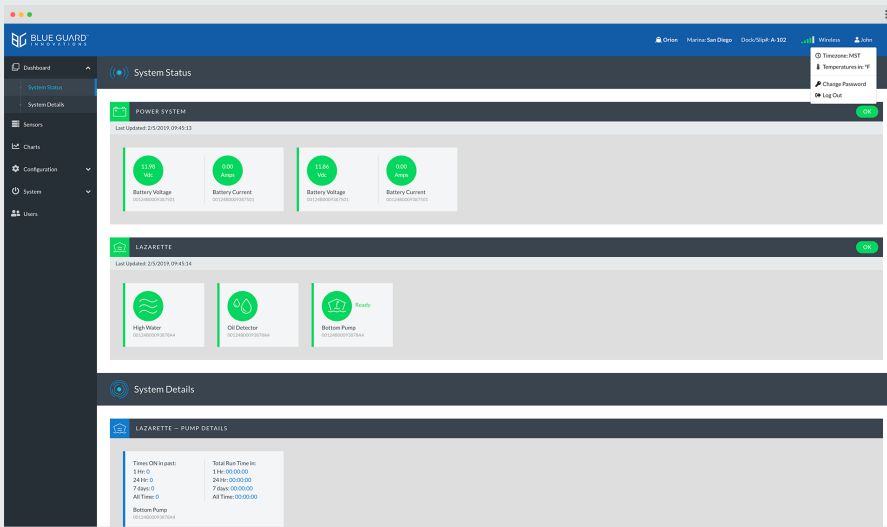
Log in using your account information. If directly connected to WiFi BlueGuard-XXXXXX, the URL is 192.168.8.1. If the gateway has been configured with an Internet connection, the URL is XXXXXX.bluebgi-link.com and can be found on the side of the gateway enclosure (refer to page 10).

### 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.



| Name             | ID   | Compartment | Signal | Backup Battery | Internal Temp | Status | Last Detected      | Last Update        |
|------------------|------|-------------|--------|----------------|---------------|--------|--------------------|--------------------|
| 00124800093878A4 | 78A4 | Lazarette   | -55    | 0.02V          | 77°F          | OK     | 1/29/2019 14:54:29 | 1/29/2019 15:39:35 |

| Name             | ID   | Compartment | Signal | Backup Battery | Internal Temp | Status | Last Detected | Last Update        |
|------------------|------|-------------|--------|----------------|---------------|--------|---------------|--------------------|
| 00124800093878A4 | 78A4 | Lazarette   | -55    | 0.02V          | 77°F          | OK     | —             | 1/29/2019 15:39:35 |

| Name             | ID   | Compartment | Signal | Backup Battery | Internal Temp | Status | Pump Status | Pump Amps | Run/Hour | Last Update        |
|------------------|------|-------------|--------|----------------|---------------|--------|-------------|-----------|----------|--------------------|
| 00124800093878A4 | 78A4 | Lazarette   | -55    | 0.02V          | 77°F          | Ready  | 0.0s        | 0.00      | 0        | 1/29/2019 15:39:35 |

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

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

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

| Name             | ID   | Compartment | Signal | Backup Battery | Internal Temp | Status | Bat. Vols | Bat. Amps | Last Update        |
|------------------|------|-------------|--------|----------------|---------------|--------|-----------|-----------|--------------------|
| 0012480009387501 | 7501 | Battery     | -51    | 0.02V          | 70°F          | OK     | 11.98     | 0.00      | 1/29/2019 15:39:46 |
| 0012480009387501 | 7501 | Battery     | -51    | 0.02V          | 70°F          | OK     | 11.84     | 0.00      | 1/29/2019 15:39:46 |

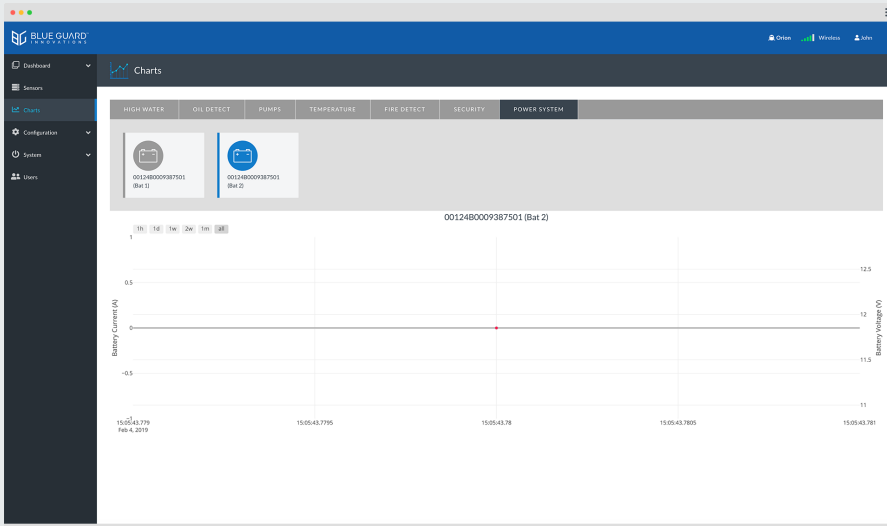
## Sensors

### Sensor Status

Monitor the current status of batteries and all connected sensors.

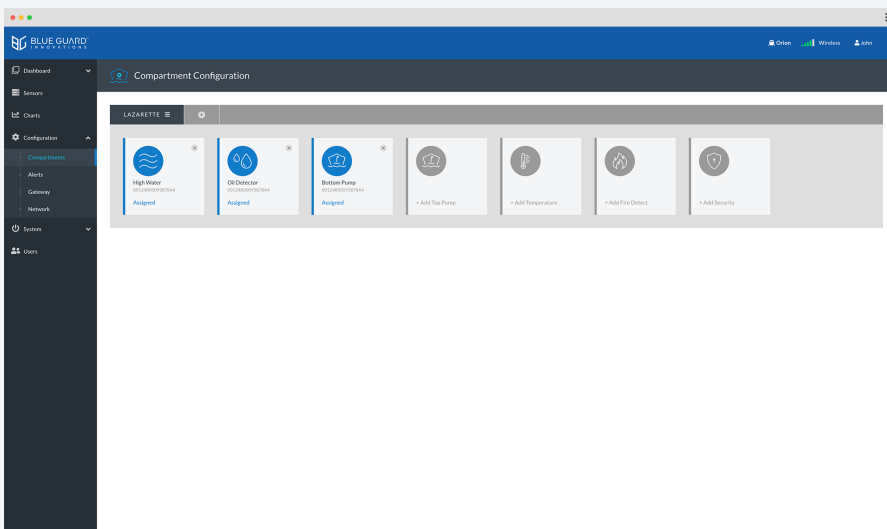
### Sensor Setup

- 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 .

### 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.

| Priority | Type                | Hardware Address          | Status | Configuration      | Tx Data | Rx Data |
|----------|---------------------|---------------------------|--------|--------------------|---------|---------|
| 1        | Wireless Connection | 2c:f7:f1:06:1a:a2 (e61a2) | TC2    | 10.138.177.124 (P) | 154 KB  | 450 KB  |

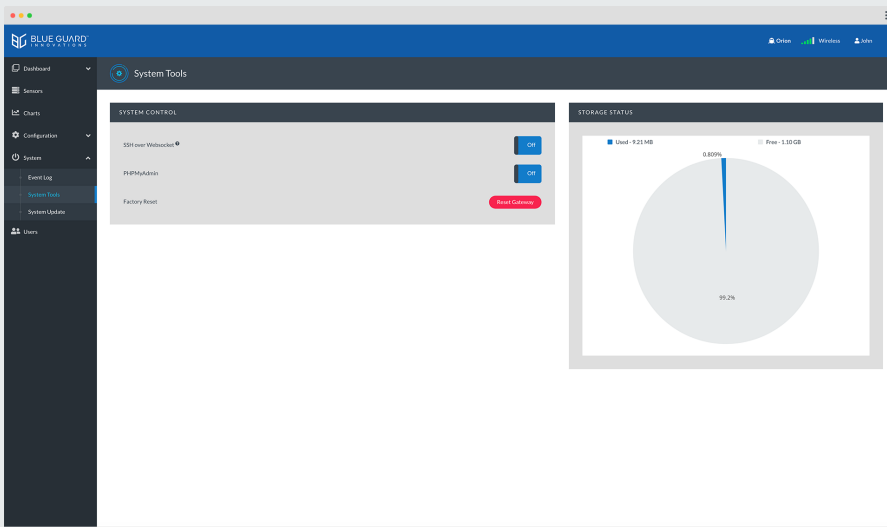
## Network Configuration

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

| Severity | Type     | ID   | Description                                    | Value    | Time               |
|----------|----------|------|------------------------------------------------|----------|--------------------|
| Medium   | BG-W5-03 | 2432 | Low backup battery detected for BG-W5-03(2432) | 0.033Vdc | 2/4/2019, 15:07:44 |
| Medium   | BG-W5-03 | 7847 | Low backup battery detected for BG-W5-03(7847) | 0.033Vdc | 2/4/2019, 15:06:13 |
| Medium   | BG-W5-03 | 2442 | Low backup battery detected for BG-W5-03(2442) | 0.033Vdc | 2/4/2019, 15:05:44 |
| Medium   | BG-W5-01 | 7844 | Low backup battery detected for BG-W5-01(7844) | 0.033Vdc | 2/4/2019, 15:05:44 |
| Medium   | BG-W5-03 | 2436 | Low backup battery detected for BG-W5-03(2436) | 0.033Vdc | 2/4/2019, 15:05:44 |
| Medium   | BG-W5-02 | 7501 | Low backup battery detected for BG-W5-02(7501) | 0.033Vdc | 2/4/2019, 15:05:43 |
| Low      | Gateway  |      | Gateway started                                | Reboot   | 2/4/2019, 15:05:31 |

## Event Log

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



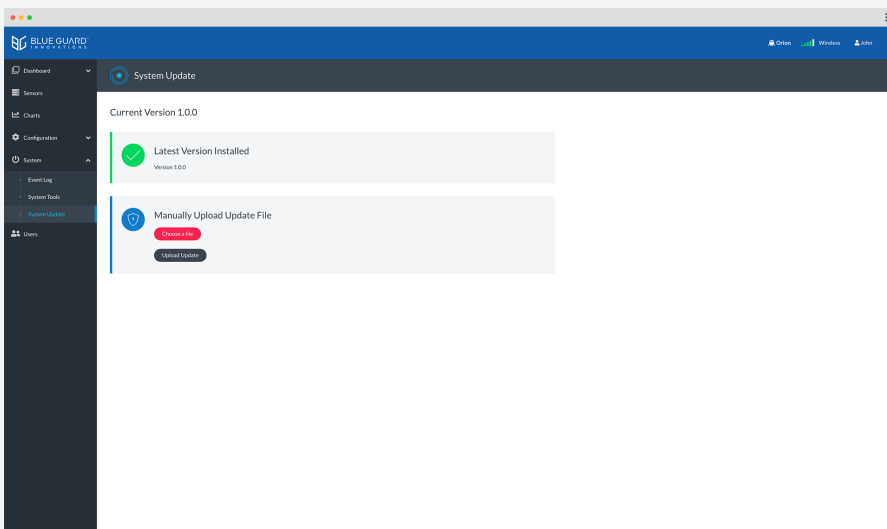
## System Tools

### 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.

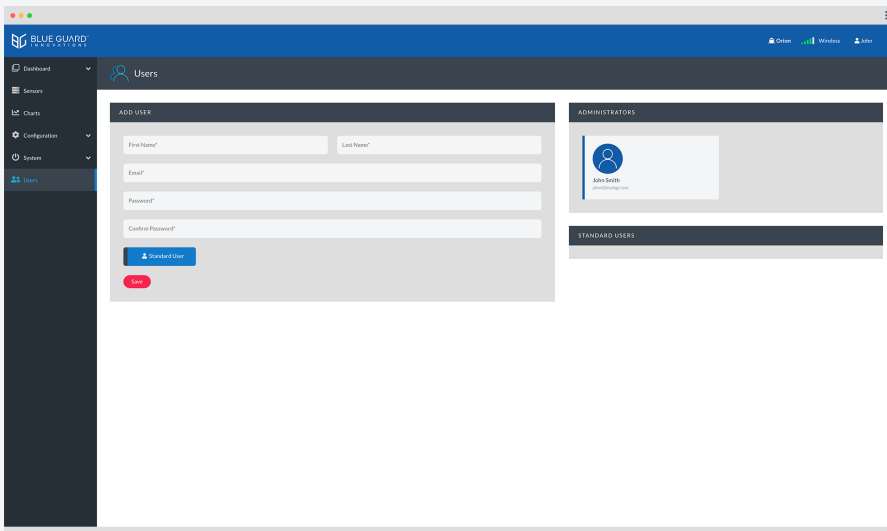
### Storage Status

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

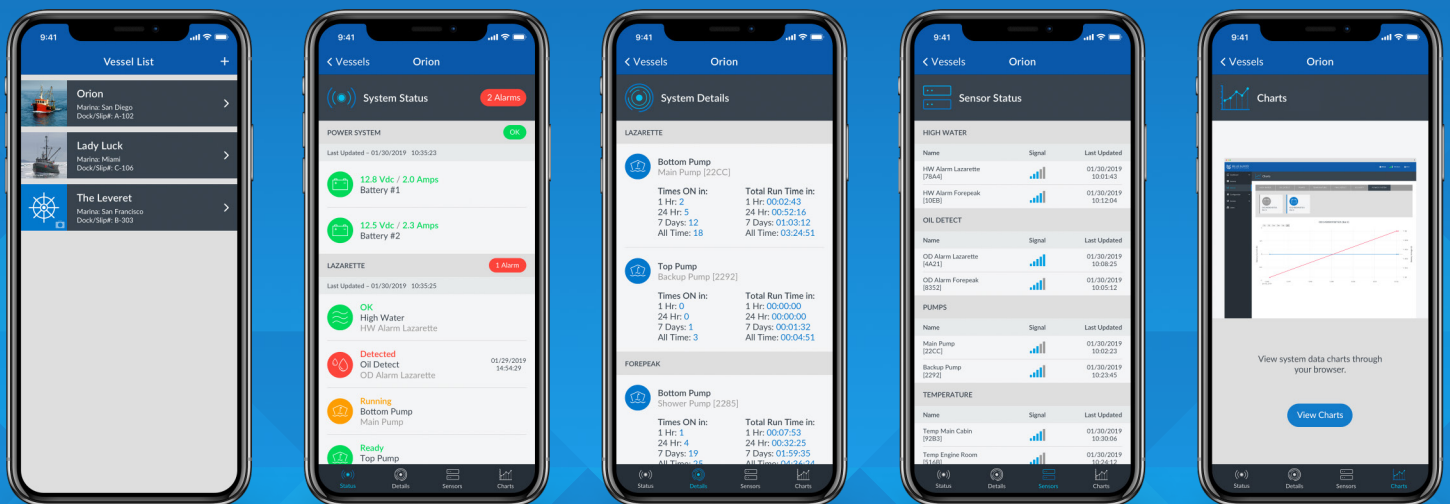
Connect one or multiple vessels.

### 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 – 30 Vdc

### Power Consumption

150 – 200 mA @ 12 Vdc

### Connectivity

WiFi (Internal antenna) – Standard

Cellular (External antenna) – Optional

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

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### Status LEDs

Blinking green – Power ON

Intermittent blue sensor – Sending data

### Operating Voltage

9 – 30 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