

BlueBoat Software Setup

Introduction

Setting up the software for the BlueBoat involves installing ground control station software, connecting your computer to the BaseStation, setting the appropriate wireless settings for your country, and calibrating the BlueBoat sensors.

To complete the software setup for your BlueBoat, you will need the following components:

- Your BlueBoat
- Your BaseStation (with included antenna and USB-C cable)
- A computer—most PCs and laptops running Windows 10 or newer, macOS, or Linux will work well. You can view the system requirements [here](#). Android tablets, Apple tablets, and Chromebooks are not recommended and are currently not supported.
- 1 x BlueBoat battery
- A controller (optional)

Select Your Operating System

We have instructions available for Windows, macOS, and Linux operating systems. Select the operating system you are using by clicking the buttons below.

[Windows Setup](#)[macOS Setup](#)[Linux Setup](#)

Before You Start

An internet connection is required to update the BlueBoat software. Make sure you are in an area with a strong and reliable Wi-Fi network with internet access before you start.

It's also a good idea to **fully charge** your BlueBoat battery and BaseStation prior to starting the software setup process. If you are using a Blue Robotics battery, refer to your [battery charging instructions here](#). To charge your BaseStation:

1. Screw the BaseStation antenna onto the antenna connector on the side of the BaseStation. Orient the antenna so sticks straight up when deployed.



2. Unscrew the cover off the USB-C bulkhead connector.



3. Use the included USB-C cable to connect the BaseStation to a USB power source. This could be a USB port on your computer, a USB wall charger, a USB power bank, etc.

4. Press the charging button on the BaseStation panel to begin charging. The orange indicator LED above the charging button and the battery status LEDs should light up to show that the battery is charging.



The USB-C bulkhead connector on some older (before March 2024) BaseStations is not reversible. If your BaseStation is not charging or connecting, try reversing the USB cable.

5. The orange indicator LED above the charging button will turn off when charging is complete.

Install QGroundControl

QGroundControl (QGC) is ground control station software that serves as the graphical user interface to control the boat, set up missions, and view real-time vehicle telemetry. Download the latest recommended version from the link below and install it on your computer.

[Download QGroundControl for Windows](#)



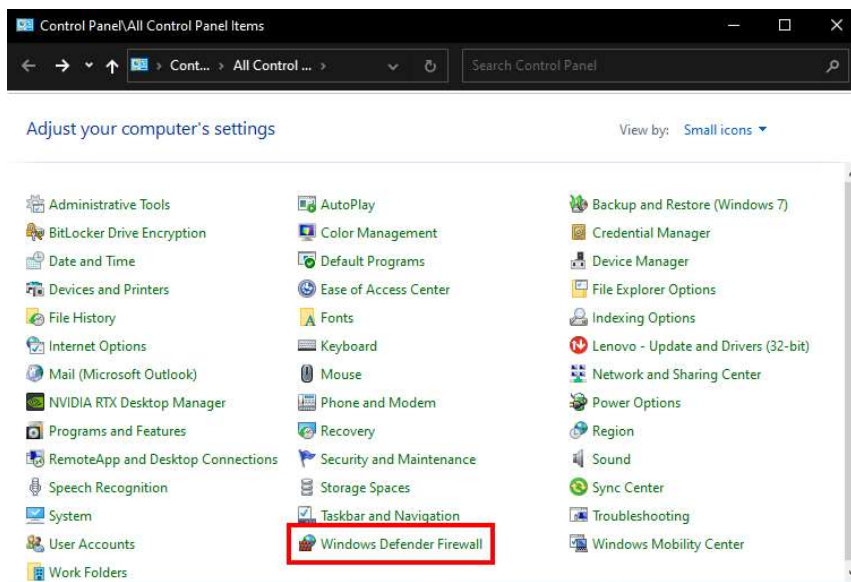
This is the latest QGC version that has been tested for full compatibility with the BlueBoat. There may be newer versions available directly from the QGC website but this is the version we recommend using for the best experience.

Configure Firewall

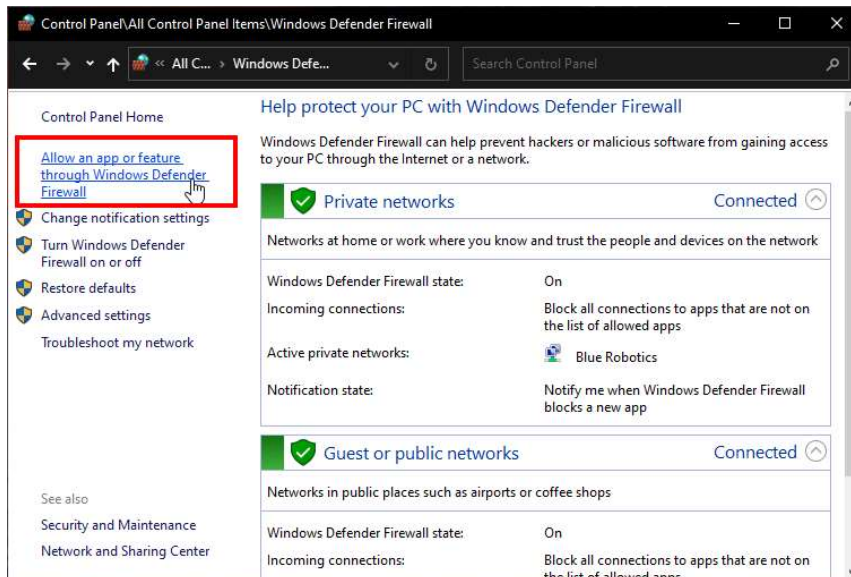
If your computer has an active firewall, you will need to add a rule to allow QGroundControl through the firewall.

The instructions for allowing QGroundControl through Windows Defender Firewall are provided below. If you are using a different firewall program, follow the directions for that firewall to allow incoming and outgoing connections from QGroundControl.

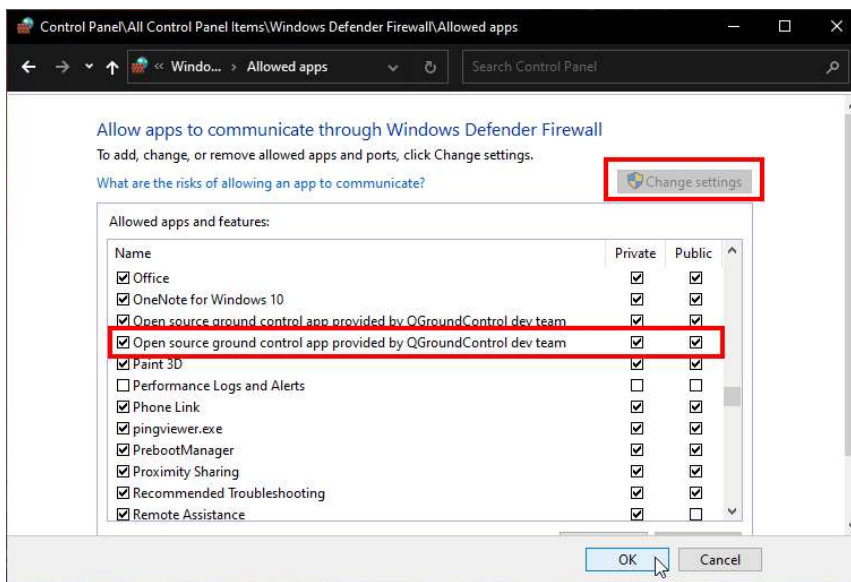
1. Go to the Windows **Control Panel** then select **Windows Defender Firewall**. If you do not see Windows Defender Firewall, change the **View by** option to large or small icons.



2. Select "Allow an app or feature through Windows Defender Firewall".



2. Select **Change Settings**, find "Open source ground control app provided by QGroundControl dev team" or "QGroundControl" in the application list. Check the box next to it and check the boxes for **Private** and **Public** then click **OK**.



Network Setup

You now need to connect the BaseStation to your computer. The BaseStation can be connected to your computer wirelessly via Wi-Fi or wired using the included USB-C cable. Keep in mind that if you connect to the BaseStation wirelessly, your computer will no longer have internet access through that wireless connection. Connect the BaseStation to your computer using **one** of the methods below, you do not need to do both.

Use the buttons below to show the correct instructions for your operating system.

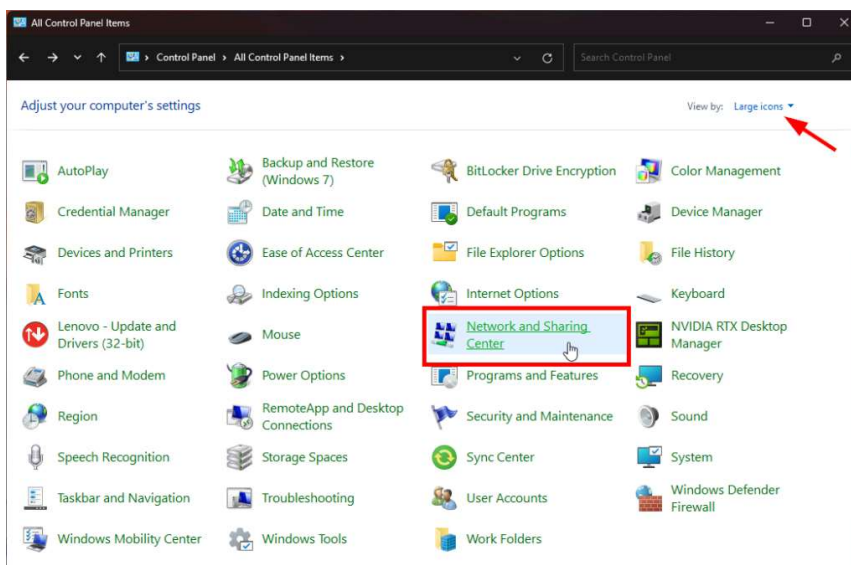
Windows Setup

macOS Setup

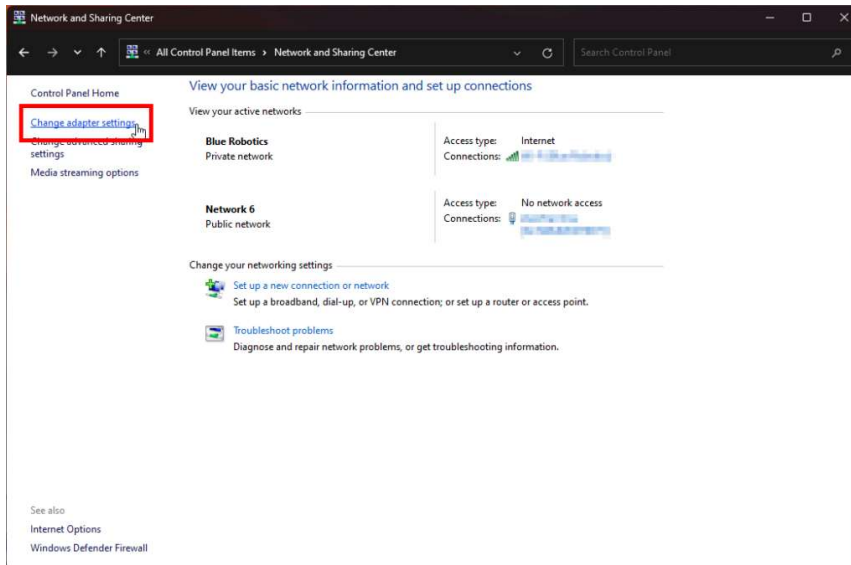
Linux Setup

Connecting the BaseStation With a USB Cable

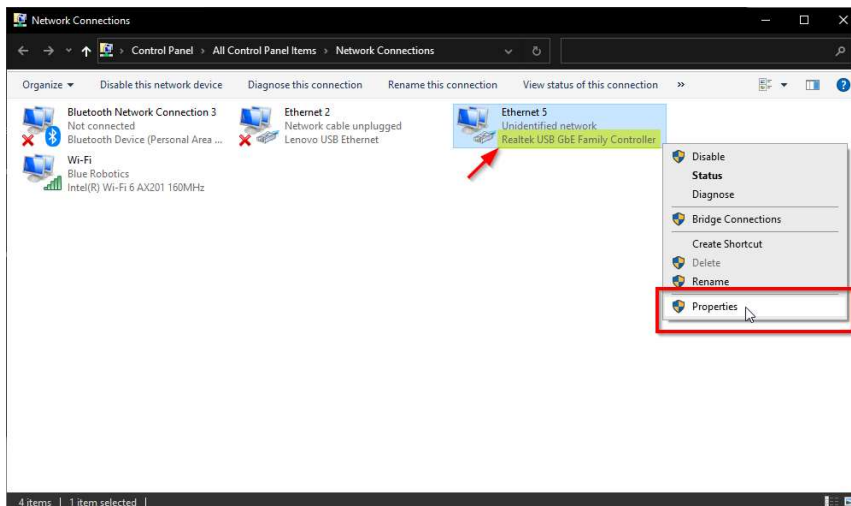
1. Turn on the BaseStation if it is not on already and connect the included USB-C cable to the Type-C port on the back of the BaseStation.
2. Connect the other end of the USB-C cable to your computer. If your computer does not have a USB-C port, you can use a USB Type-C to A adapter.
3. Open the Windows **Control Panel** then select **Network and Sharing Center**. If you don't see Network and Sharing Center, change the **View by:** option to large or small icons.



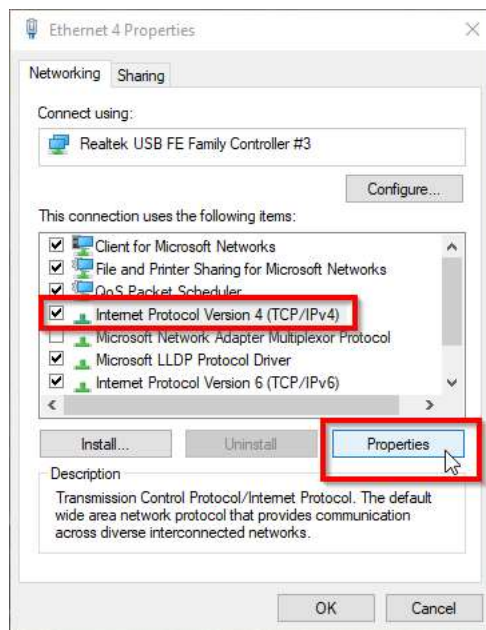
4. Select **Change adapter settings** from the left side menu.



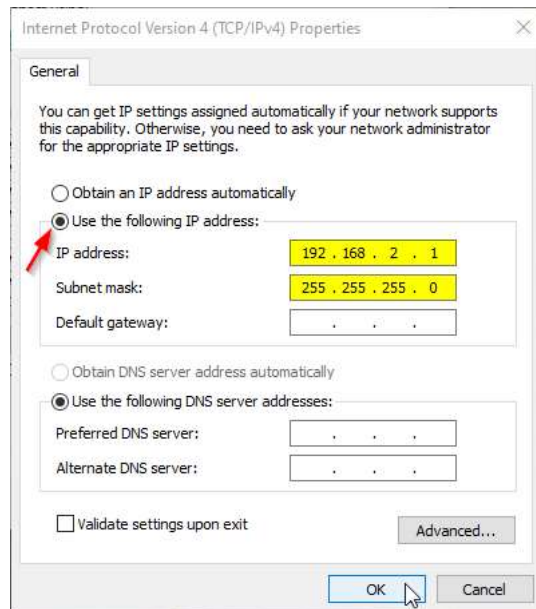
5. The BaseStation has an internal USB Ethernet adapter, it should be displayed as “Realtek USB GbE Family Controller” in this menu. Right click on this Ethernet adapter then choose **Properties**.



6. In the properties dialog, click on **Internet Protocol Version 4 (TCP/IPv4)** to highlight it, then click **Properties**.

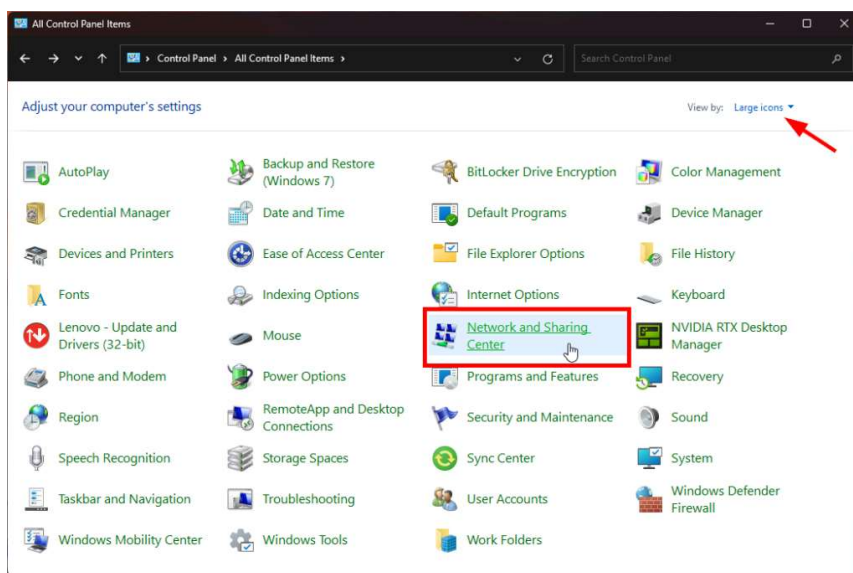


7. Select **Use the following IP address** And enter **192.168.2.1** for the IP address and **255.255.255.0** for the Subnet mask. Select **OK**. You can then exit this menu.

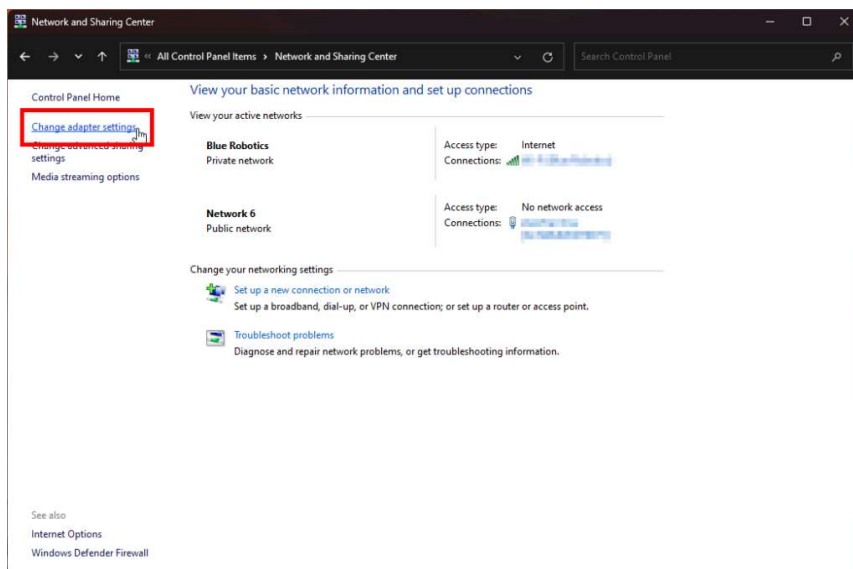


Connecting to the BaseStation With Wi-Fi

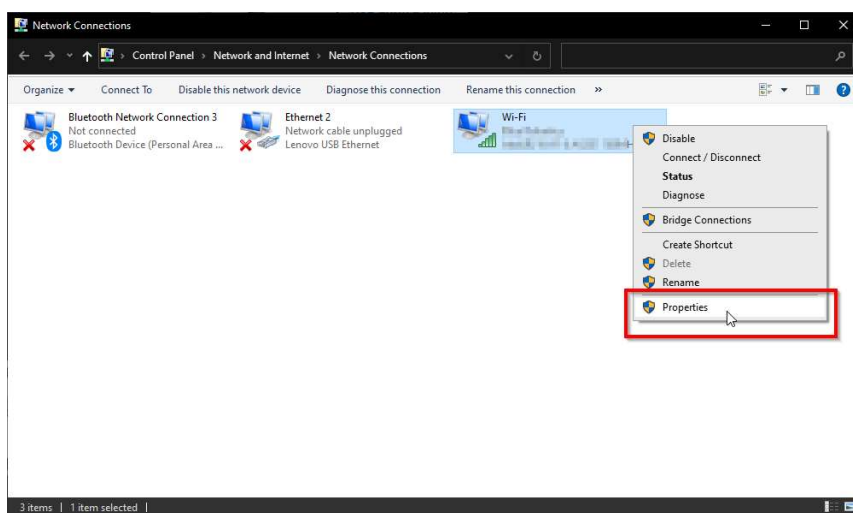
1. Turn on the BaseStation if it is not on already.
2. Open the Windows **Control Panel** then select **Network and Sharing Center**. If you don't see Network and Sharing Center, change the **View by:** option to large or small icons.



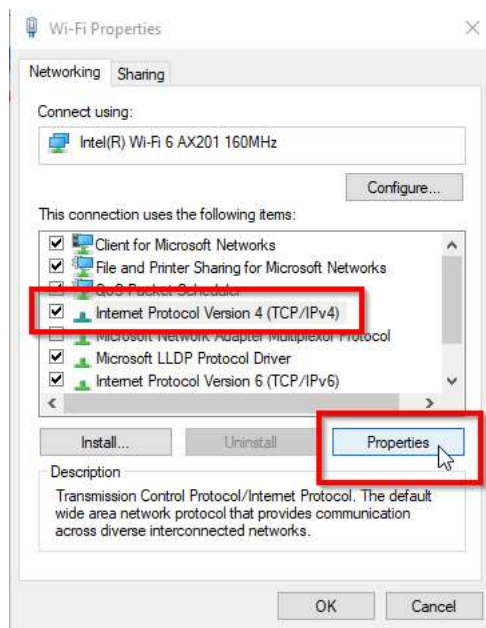
3. Select **Change adapter settings** from the left side menu.



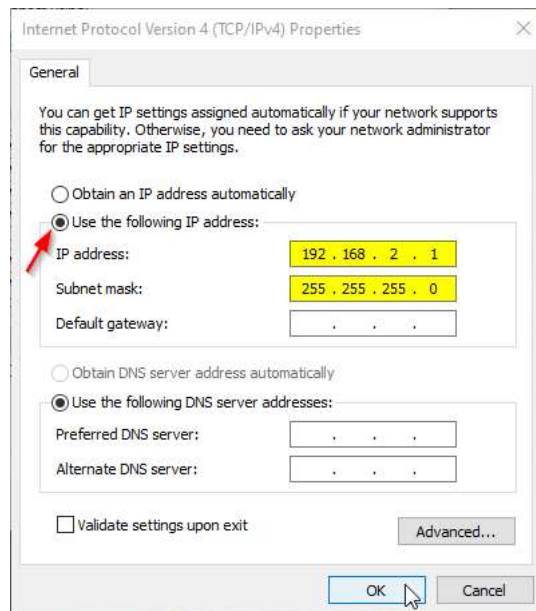
4. Find your Wi-Fi adapter in this menu, right-click it and choose **Properties**.



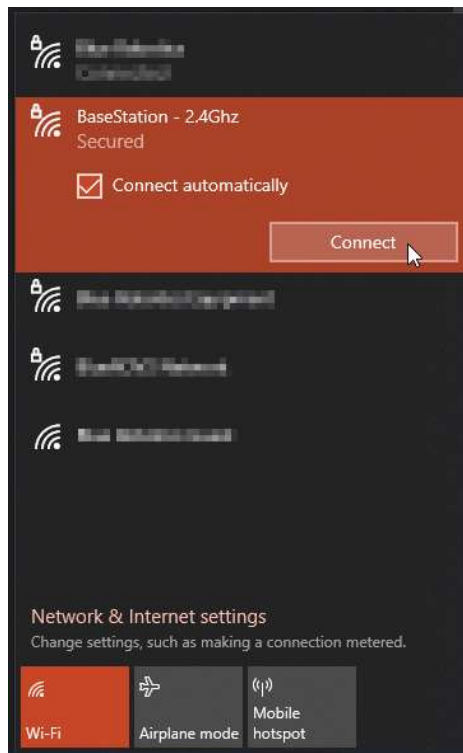
5. In the properties dialog, click on **Internet Protocol Version 4 (TCP/IPv4)** to highlight it, then click **Properties**.



6. Select **Use the following IP address** And enter **192.168.2.1** for the IP address and **255.255.255.0** for the Subnet mask. Select **OK**. You can then exit this menu.



7. The BaseStation creates a wireless network with the SSID "**BaseStation - 2.4Ghz**". Open the Wi-Fi network menu and connect to it. The default password is "**BaseStation**".



Powering-up the BlueBoat

To power-up the BlueBoat, you will need:

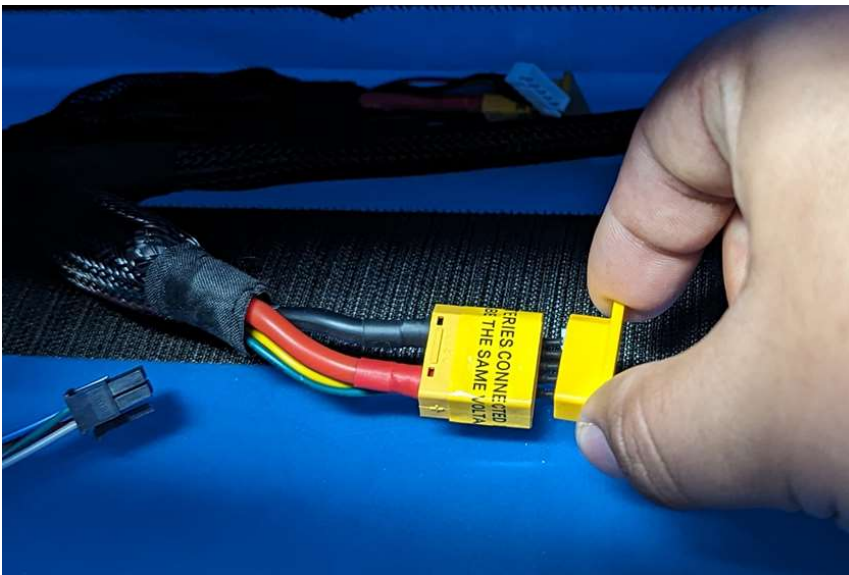
- Your BlueBoat
- 1 x BlueBoat battery

The BlueBoat supports connecting up to eight batteries, but we only want to connect one right now for initial setup. Make sure the battery has Velcro strips applied to it to secure it in the hull.

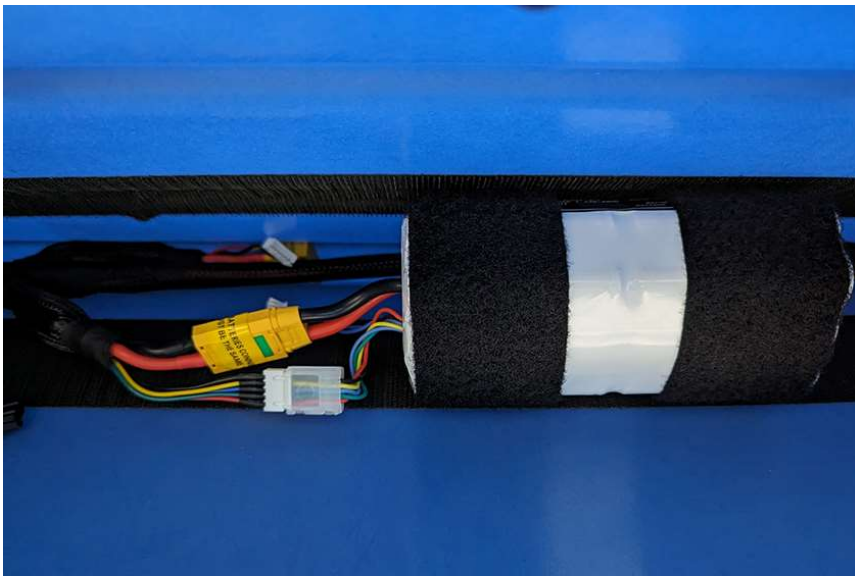
1. Open the starboard side hatch to access inside of the hull.



2. Remove the cap from one of the XT90 connectors on the 4S splitter cable (be sure to save it so you can use it later). It does not matter which one you pick, as they are all connected in parallel.



3. Connect the XT90 and balance lead connectors from the battery to the 4S splitter cable. Make sure the battery is securely held in place by the Velcro strips.



4. Close the hatch lid and lock all of the latches by pushing each latch in from the top until it snaps into place.

5. Put the antenna in the fully upright position.



6. Turn the power switch in the “ON” direction until it bottoms out. You should hear a beep and the NavLight will turn on after a few seconds indicating that the BlueBoat is powered on.

Verifying the Network Connection

The BlueBoat will automatically connect to the factory default “**BaseStation – 2.4Ghz**” BaseStation network. If the BaseStation network SSID or password are changed from the defaults, you will have to manually connect the BlueBoat to the BaseStation. Now is a good time to verify all the connections are good and everything is talking to each other correctly.



If you purchased your BlueBoat before 26 June 2024, it will not automatically connect to the BaseStation. You must perform the [manual pairing process](#) to connect the BlueBoat to the BaseStation.



The default username and password for both the BlueBoat and BaseStation routers is “**admin**” and “**admin**”.

- **192.168.2.1** – your computer's IP address
- **192.168.2.2** – BlueBoat Raspberry Pi 4 IP address (BlueOS)
- **192.168.2.3** – BaseStation wireless router IP address
- **192.168.2.4** – BlueBoat wireless router IP address

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- The screenshot displays the MikroTik WinBox interface for RouterOS v6.48.6 (long-term). The top status bar shows the IP address 192.168.2.3 and the router's role as a WebFig v6.48.6 (long-term) on GrooveA 52 (mips). The main configuration area is divided into two tabs: 'Wireless' and 'Configuration'. The 'Wireless' tab is currently active, and a red arrow points to the 'Quick Set' button in the top right corner. The 'Wireless' configuration section shows the following settings: Wireless Protocol is set to 802.11 (selected), nstreme, and nv2; Network Name is BaseStation - 2.4Ghz; Frequency is set to auto (selected) MHz; Band is 2Ghz-B/G/N (selected); Channel Width is 20MHz (selected); Country is united states3 (selected); Antenna Gain is 0 dBi; MAC Address is 48:A9:8A:B6:C9:5D; Use Access List (ACL) is unchecked; Security is WPA (selected) and WPA2 is unchecked; Encryption is aes ccm (selected) and tkip is unchecked; WiFi Password is BaseStation (selected) and Hide is unchecked. The 'Configuration' tab is also visible, showing settings for Mode (Bridge selected), Internet (MAC Address 48:A9:8A:B6:C9:5C), Bridge (Address Acquisition Static selected, IP Address 192.168.2.3, Netmask 255.255.255.0 (/24)), Gateway, DNS Servers, and VPN (VPN Access unchecked).

Wireless Clients

MAC Address	In ACL	Last IP	Uptime	Signal Strength
48:A9:8A:F6:28:D9	no	192.168.2.2	03:58:28	-36

Signal Strength: cur: -36 dB, avg: -34 dB, max: -27 dB

Buttons: Copy To ACL, Remove From ACL

The BlueBoat listed as a connected client is your confirmation that BlueBoat is connected successfully. If you want to be extra sure, you can also access the BlueBoat's router via IP address **192.168.2.4** (default password "**admin**"). The **Quick Set** page will display its connection status and the name of the network it's connected to, which should be **BaseStation - 2.4Ghz** for the BaseStation.

Configure Country and Antenna Gain Settings

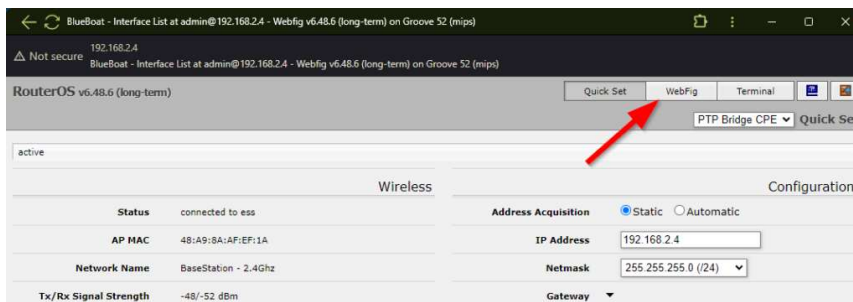
Wireless regulations vary from country to country. To ensure that the BlueBoat and BaseStation wireless communication systems operate legally and comply with local regulations, the country profile and antenna gain must be configured correctly in the router settings.

- As of 9 July 2024, the BlueBoat and BaseStation wireless settings are set to comply with United States regulations by default. If you are operating the BlueBoat in the United States and purchased the BlueBoat and BaseStation **after** 9 July 2024, you **do not** need to change the country or antenna gain settings and you can skip this section.
- If you are operating in the United States and purchased your BlueBoat or BaseStation **before** 9 July 2024, follow the instructions below.
- If you are operating the BlueBoat in any country other than the United States, follow the instructions below.

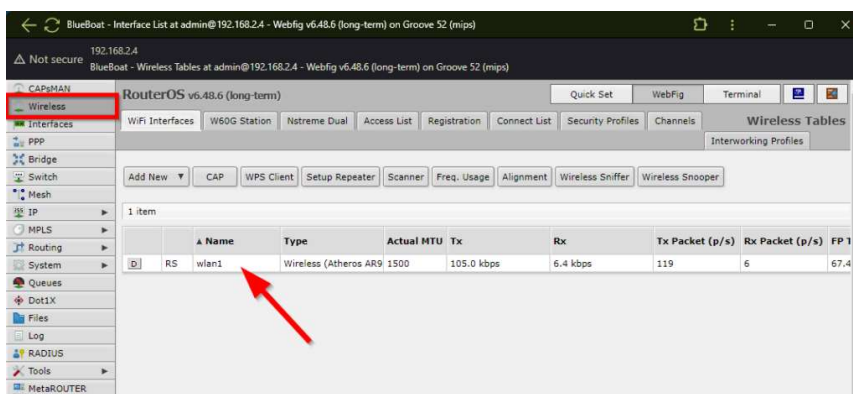


Effective Isotropic Radiated Power (EIRP) measures the power radiated by an antenna. Countries regulate EIRP levels to limit interference with other wireless devices and ensure safety. Operating in countries with low maximum EIRP limits typically results in reduced communication range. This is because lower EIRP limits mean that the router transmission power must also be reduced. You can read more about communication range and calculating EIRP in the [calculating EIRP](#) section at the end of this guide.

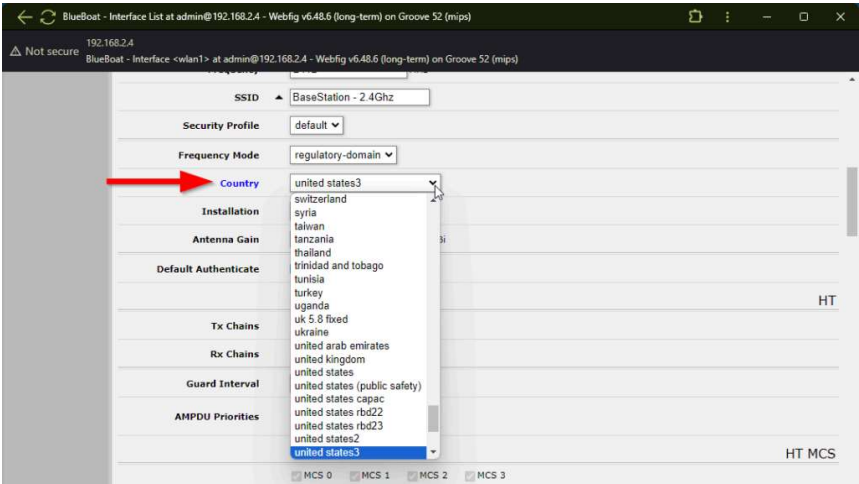
1. Ensure you have completed all previous sections of this guide to connect your computer to the BaseStation and powered on your BlueBoat.
2. In a web browser, type **192.168.2.4** to access the wireless router inside the BlueBoat. From the web interface, click on **WebFig** from the upper right corner.



3. On the next screen, click on **Wireless** from the left sidebar then select the **wlan1** interface.



4. On the following screen, scroll down until you see the **Country** setting. Select the country you are operating in from the dropdown menu. Some countries have more than one associated setting. In this case, use the recommended country setting listed in the table below.



Country	Recommended Profile
Brazil	brazil
Canada	canada2
Egypt	egypt
ETSI Countries	etsi2
France	france
Germany	germany
Indonesia	indonesia5
Japan	japan6
South Korea	korea republic3
New Zealand	new zealand
Russia	russia4
United States	united states3

5. Scroll down a little bit to the **Antenna Gain** field and enter the value listed in the table below. Please note that these values only apply if you are using the stock omnidirectional antenna.

Country	Gain Setting ¹
United States ²	0
Canada ²	0
All other countries ³	6

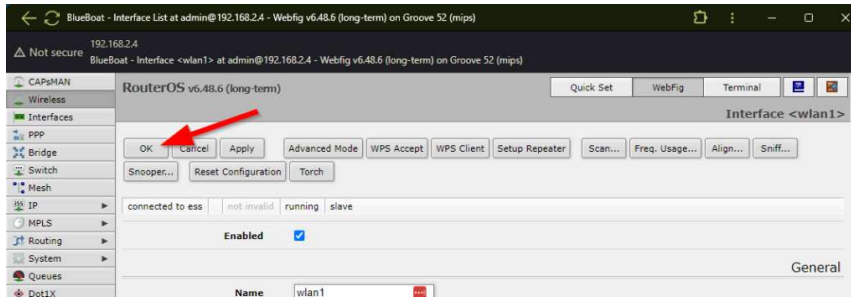
¹ These gain settings only apply when using the stock 7dBi omnidirectional antenna.
² We may enter 0 dBi as these countries allow for a higher EIRP limit in outdoor use.
³ The stock omnidirectional antenna gain is 7 dBi, but we may enter 6 dBi here to account for a 1 dBi loss through the antenna coupling and connector.



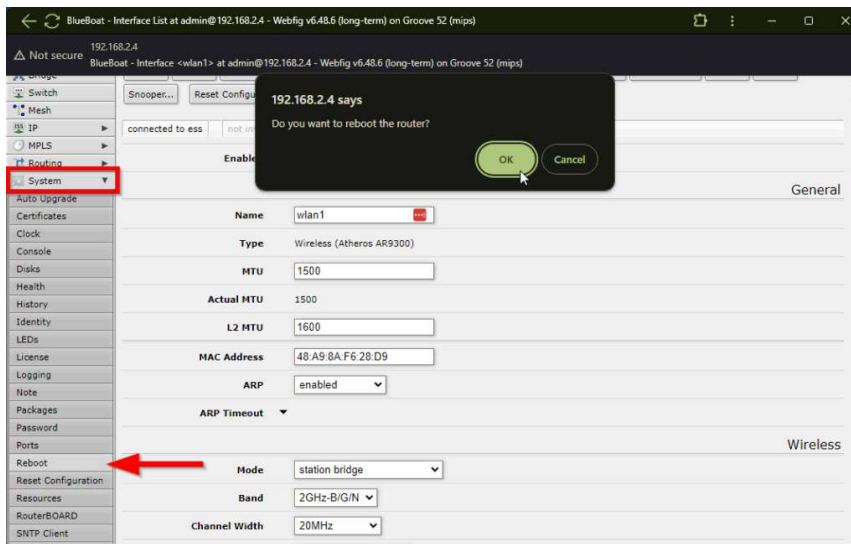
The **Antenna Gain** field should be populated with the gain specification of the antenna you are using. RouterOS uses this number to adjust the transmission power to ensure the total EIRP does not exceed the limits set by the country setting. If you are using a different antenna, enter its gain value instead. You can read more about the effect of

the antenna gain setting on communication range and calculating EIRP in the [calculating EIRP](#) section at the end of this guide.

6. Scroll back to the top of the page and click on **OK** to save the settings.



7. After the setting has been confirmed, expand the **System** menu from the left sidebar, then click **Reboot**. Confirm your selection by clicking **OK**.



8. The BlueBoat router will take around a minute to reboot. In the meantime, type the IP address **192.168.2.3** into the browser to access the router in the BaseStation. Follow the same procedure to change the country setting and set the gain for the BaseStation.

Allow a minute or so for the BaseStation to fully reboot before proceeding to the next section.



The country and antenna gain settings must be configured for **both** the BlueBoat and BaseStation. Make sure you have also configured these settings for the BaseStation before proceeding.

Update Software

Before continuing setup, you **must** update the onboard BlueOS software and ArduRover firmware to get the latest feature updates and bug fixes. The BlueBoat will need access to Wi-Fi in order to perform the updates, make sure you are in an area with a strong and accessible Wi-Fi network before continuing with the update process.

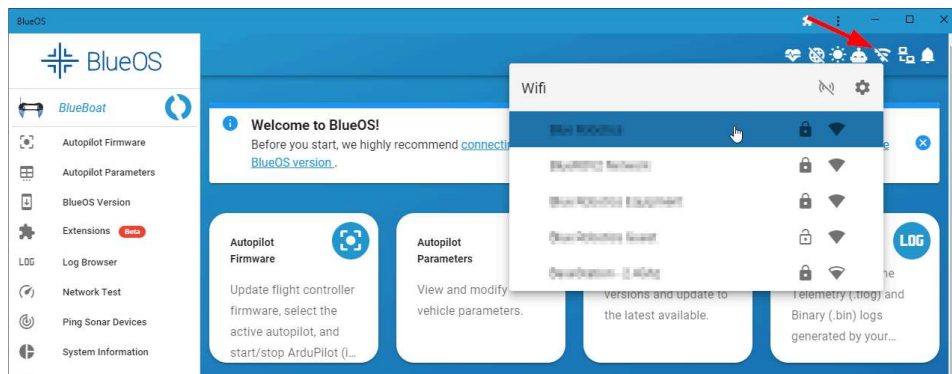


Be sure to use a **fully charged** battery when performing software updates.

Accessing BlueOS

BlueOS is a collection of tools and features for managing the BlueBoat through a web browser-based user interface. It comes preinstalled on the BlueBoat's onboard Raspberry Pi computer. To access the BlueOS web interface:

1. Make sure you have followed the first part of this guide and have paired the BlueBoat and BaseStation, connected the BaseStation to your computer, and powered on both the BlueBoat and the BaseStation.
 2. In a web browser window, type 192.168.2.2 or blueos.local in the browser address bar.
 3. You will be taken to the BlueOS web interface home screen. Do as the friendly welcome tour suggests and connect to your Wi-Fi network by clicking the network from the Wi-Fi menu and entering the password.
- Be aware that in this step you are connecting to your own Wi-Fi network from your router that has internet access, **not** the network generated by the BaseStation.



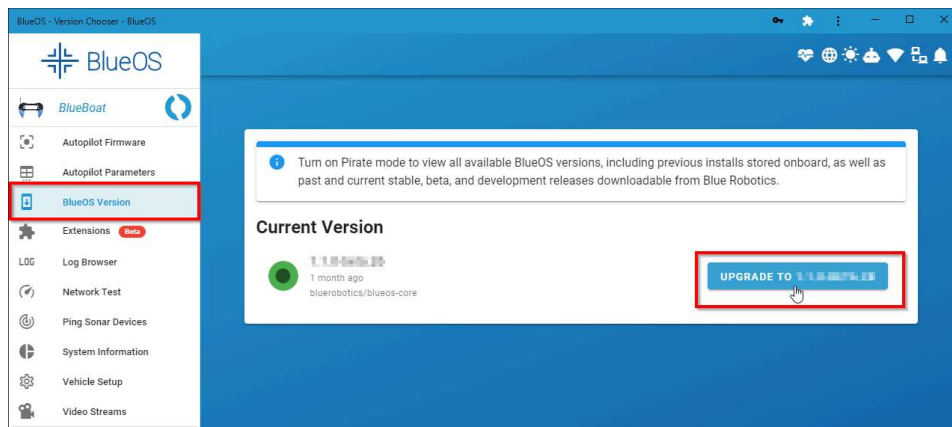
Updating BlueOS

To perform a BlueOS software update:

Click on **BlueOS Version** from the left sidebar. This page will show the currently installed BlueOS version. It will also display an **"UPGRADE TO ..."** button if there is update for BlueOS available. Go ahead and upgrade to the latest version if one is available. The process may take a few minutes depending on the internet connection speed. Wait for the update process to complete, the page will automatically refresh once it is done and the new BlueOS version will be displayed.



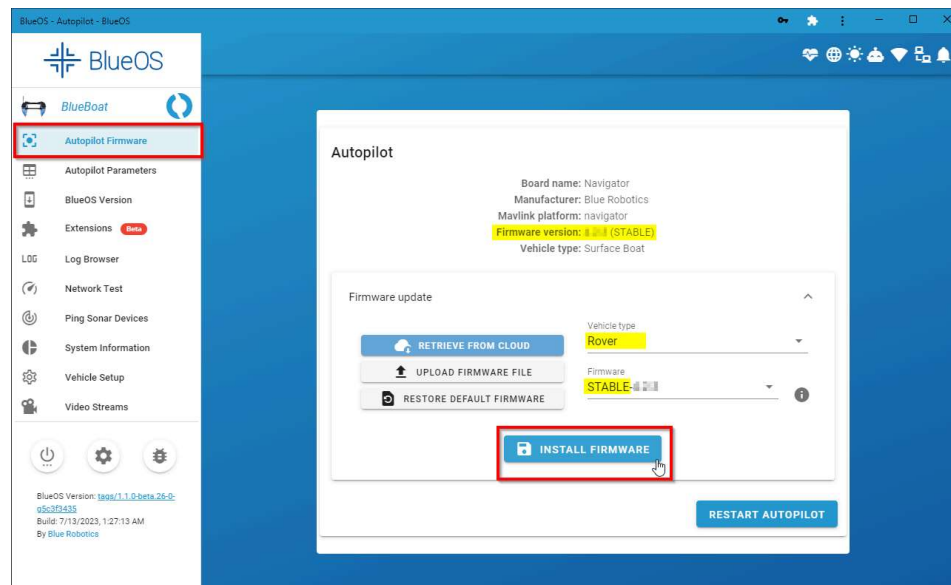
Make sure you have internet access when checking for updates. No updates will be displayed if the BlueOS is not connected to the internet.



Updating ArduRover

ArduRover is the autopilot firmware that runs on the Raspberry Pi. To perform an ArduRover firmware update:

1. Click on **Autopilot Firmware** from the left sidebar. The currently installed firmware version will be displayed in the autopilot summary information at the top.
2. Expand the **Firmware update** section. Select **Rover** from the **Vehicle type** dropdown menu. From the **Firmware** dropdown menu, select the latest **STABLE** version available (higher number means newer). If the latest stable matches what is currently installed, you don't have to do anything. Otherwise, if a newer version is available, click **INSTALL FIRMWARE** and wait for the process to finish.



Connecting to QGroundControl

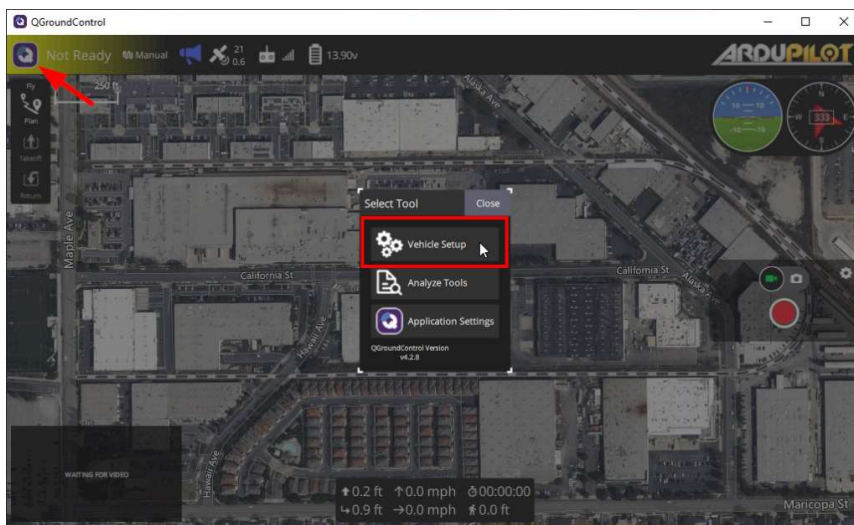
1. With the BlueBoat and BaseStation powered on, open the QGroundControl application.
2. Wait a few seconds for the BlueBoat to auto-connect and the green parameters bar to finish loading from left to right.
3. If this is the first time setting up the BlueBoat, you will receive a message that additional setup is required. Follow the next sections to finalize vehicle setup.

Sensor Calibration

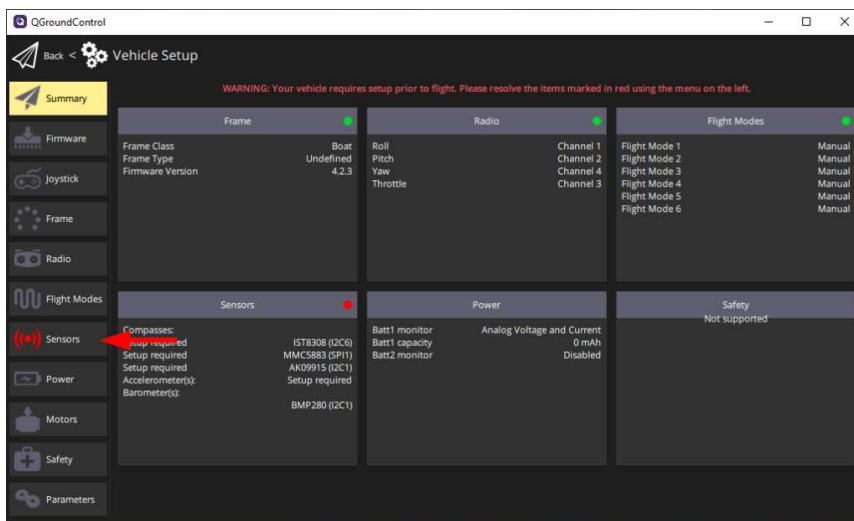


The sensor calibrations involve physically rotating and holding the BlueBoat in different positions. We recommend getting a friend to help with this step! It's also important for the battery to be secured to the Velcro inside the hull during this process.

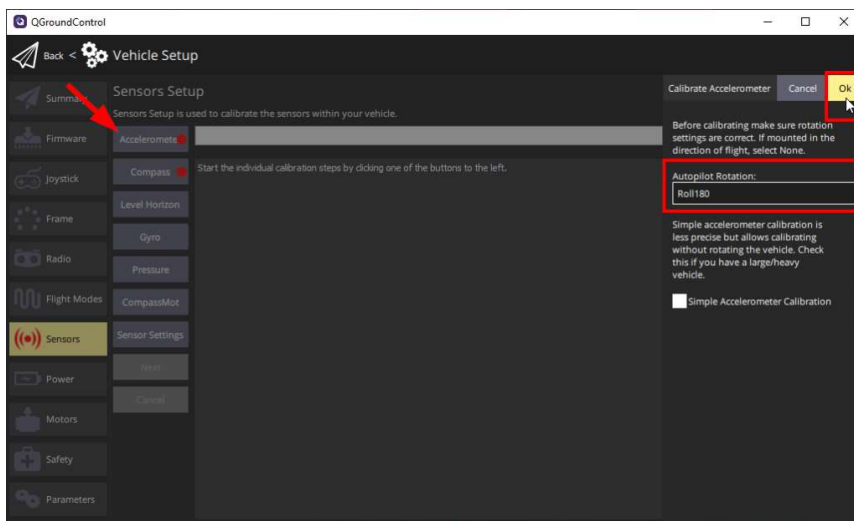
1. QGroundControl should automatically take you to the Vehicle Setup section the first time it connects. If it doesn't, click on the "Q" icon in the upper left corner to open the QGC menu and click on **Vehicle Setup**.



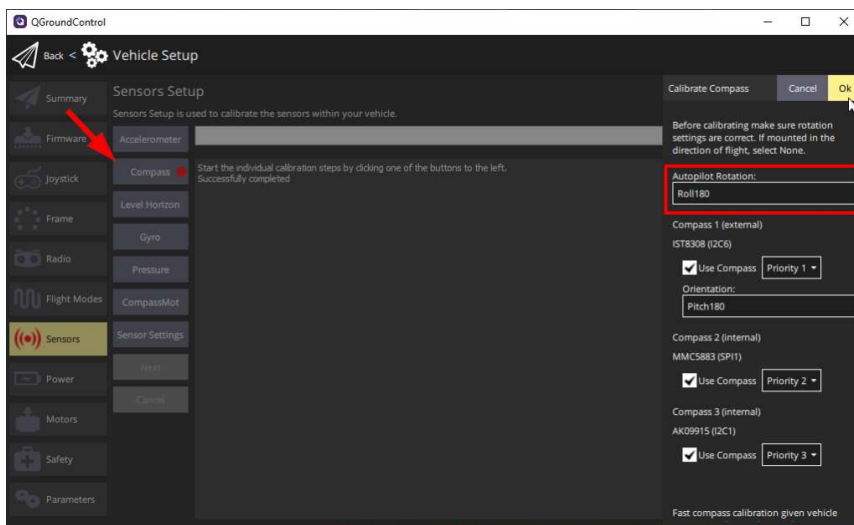
2. Click on **Sensors** on the left sidebar.



3. Click on **Accelerometer**, ensure **Roll180** is set for **Autopilot Rotation** then click **Ok**. Follow the onscreen instructions for the accelerometer calibration process. You will be prompted to reboot the autopilot when it is done. Go ahead and click **Reboot** and wait for it to reconnect.



4. Click on **Compass**, ensure **Roll180** is set for **Autopilot Rotation** then click **Ok**. Follow the onscreen instructions for the compass calibration process. You will be prompted to reboot the autopilot when it is done. Go ahead and click **Reboot** and wait for it to reconnect.



The compass calibration can be affected by the presence of nearby ferrous metals. If the compass calibration results are poor (in the yellow or red), try performing the calibration outside in an empty parking lot or a field away from large buildings.

Check Motor Directions



Make sure all people, pets, and objects are clear of the propellers before checking motor directions!



Do not allow the motors to spin at high speed while dry for more than a few seconds at a time. The bearings require water for lubrication and may be damaged if the motor is operated for an extended period of time while dry.

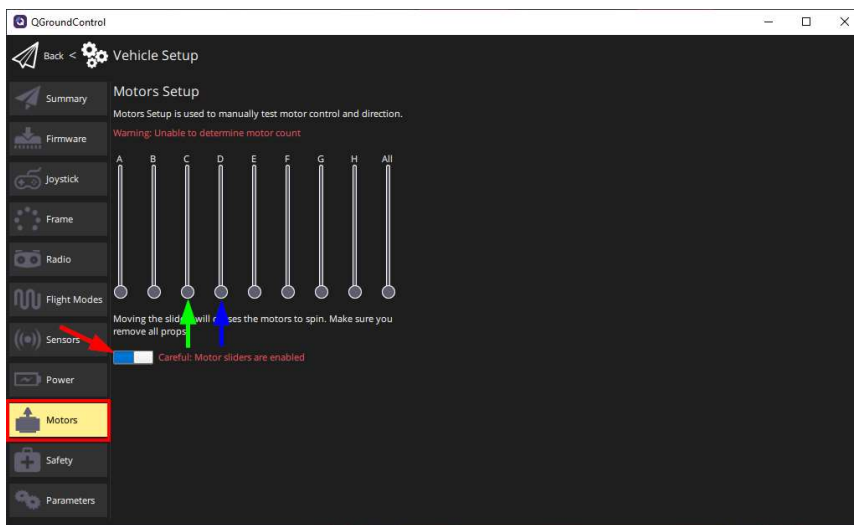


Do not use anything other than water to lubricate the motors.

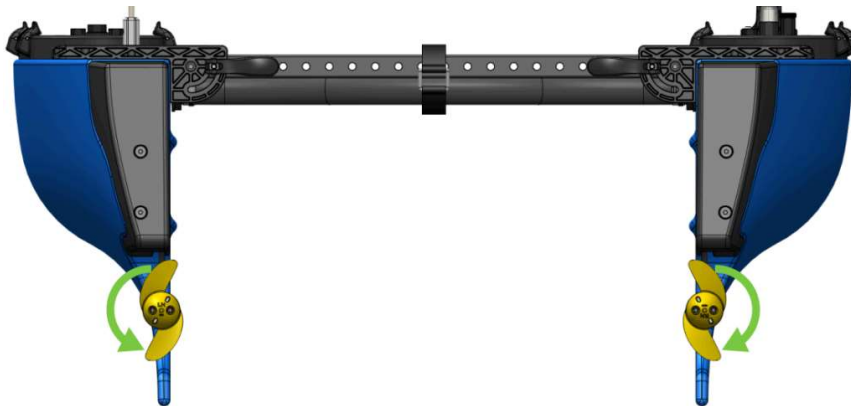


A clicking sound or noisy motor is normal, especially when operated while dry. Most noise and vibration go away once the motors are operated in water.

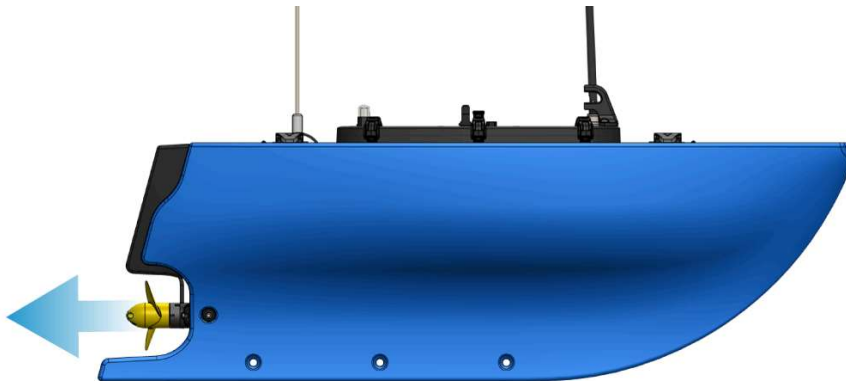
From the Vehicle Setup screen, click on **Motors** on the left sidebar. Click the button to enable the motor sliders. Slider “C” controls the port side motor and slider “D” controls the starboard side. Move the slider for each motor up (you only have to move it a little bit) and check the spin direction of the corresponding motor.



While viewing the boat from the rear, the port side motor (LH) should spin counter-clockwise and the starboard side motor (RH) should spin clockwise when the sliders are moved up. If the motors are not spinning correctly, follow the instructions in the 'Reversing a Motor Direction' section.



You can also determine spin direction by checking which way the propellers are pushing the air. When the sliders are moved up, each motor should push air backwards, away from the boat.

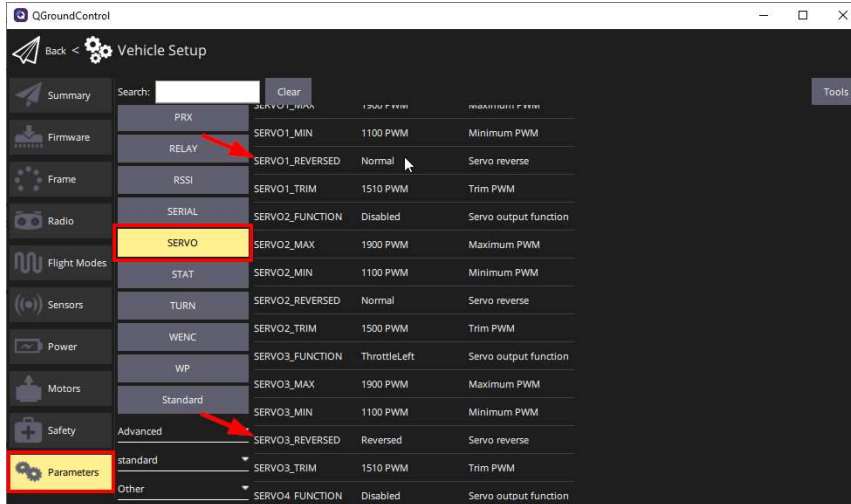


If the motors are not pushing air in the correct direction, first check that the propellers are installed on the correct side. The propeller marked "LH" should be installed on the port side, and the propeller marked "RH" should be on the starboard side. If you have verified that the propellers are installed correctly and are still pushing air in the wrong direction, follow the instructions under 'Reversing a Motor Direction' to reverse the motor.

Reversing a Motor Direction

Follow these instructions to reverse a motor direction. You can skip this section if your motors are already spinning in the correct direction.

1. From the Vehicle Setup screen, go to **Parameters** then **SERVO**. Find the **SERVO#_REVERSED** parameter for the motor that needs to be reversed; SERVO1 is the port side motor and SERVO3 is the starboard side motor.
2. Switch the parameter setting to reverse the motor (e.g. if it was "Normal" set it to "Reversed" or if it was "Reversed" set it to "Normal").



6S Battery Settings

If you installed 6S battery splitter cables in your BlueBoat and are using 6S batteries, make sure to follow the [6S Battery Splitter Cable Installation](#) guide and set the [additional parameters](#). If you are using the standard 4S splitter cables and batteries you can ignore this part!

Controller Setup

The BlueBoat can be operated without using a gamepad controller. However, we recommend having one available in case the BlueBoat needs to be manually controlled through tricky situations or if GPS aided navigation is not available. The [Xbox controller](#) is our recommended controller for the best experience. The Logitech F310 is also a good alternative for a more affordable option.



QGroundControl also supports many other types of gamepad controllers. If you would like to use a different type of controller, please refer to [QGroundControl documentation](#) for information about other supported controllers.

Xbox Controller Initial Setup

The Xbox controller is plug-and-play with Windows systems. It can be used wired with a USB-C cable or wirelessly via Bluetooth. To use the controller wirelessly, your computer must have Bluetooth enabled and the controller must be paired from the Bluetooth settings menu.

To pair the controller with your computer:

1. Turn on the Xbox controller by holding down the middle Xbox button until it lights up.
2. Put the controller in pairing mode by holding down the small pairing button on the top of the controller until the middle Xbox button starts to blink.
3. Open the Start menu and go to **Settings > Devices > Bluetooth & other devices**.
4. In the Windows Bluetooth menu, select **Add Bluetooth or other device** and select the Bluetooth option.

5. Select the controller from the list. The controller must be in pairing mode to show up as a selectable device.

The middle Xbox button can be used as a user-assignable function button. By default, it is configured to open the Windows Game Bar. This needs to be disabled before this button can be used in QGroundControl.

1. Open the Start menu and go to **Settings > Gaming**.
2. Uncheck the **Open Xbox Game Bar using this button...** option.



The middle Xbox button also acts as the on and off button for the controller when held down for a few seconds. If using this button for a controller function, do not hold it down for more than a couple of seconds to avoid turning off the controller.

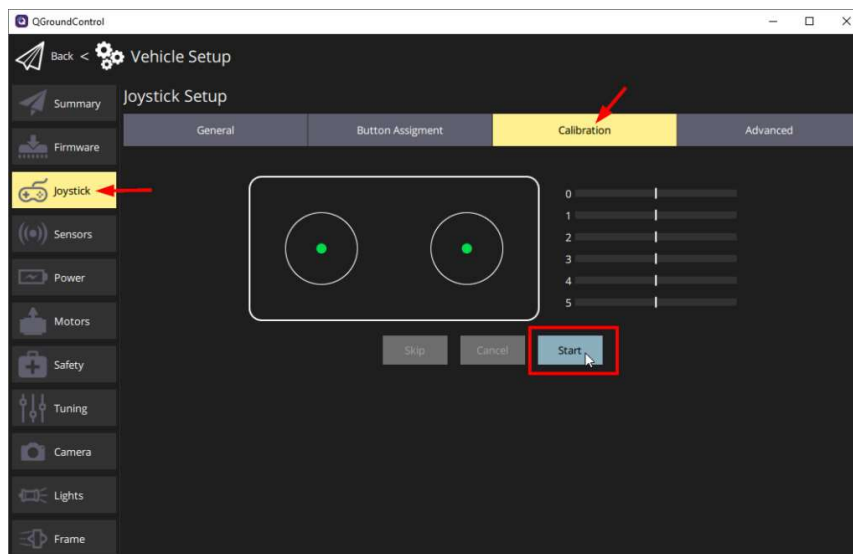
Logitech F310 Controller Initial Setup

Set the switch on the back of the controller to the “X” position and plug in the USB cable.

Controller Calibration

The controller may require calibration before you can enable it for use in QGroundControl. If your controller requires calibration, the **Joystick** tab on the **Vehicle Settings** page will be red, and you should follow these steps to calibrate your controller. If your controller does not require calibration, the **Joystick** tab will not be red, and you can skip this step!

1. From the Vehicle Setup screen, click on the red **Joystick** tab in the sidebar on the left. If you do not see a **Joystick** tab, this means that the controller is not detected by QGroundControl or not connected to the computer.
2. Click **Calibration**, then click **Start**.



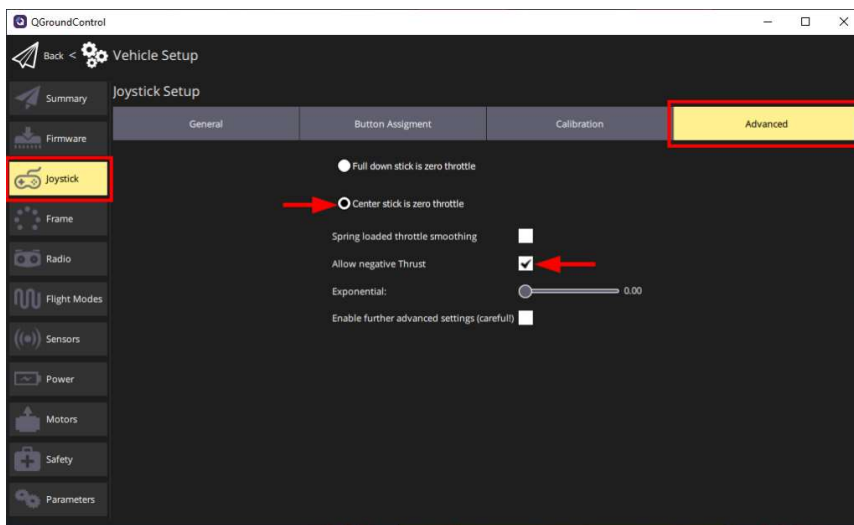
3. Follow the step-by-step instructions and move the sticks as indicated in QGroundControl. Move the thumbsticks slowly and allow the stick to return to center between movements.

When completed, the **Joystick** tab will no longer be red, and the **Enabled** checkbox on the Joystick page will be checked.

Controller Settings

The following settings must be enabled for the controller to function properly.

1. From the Vehicle Setup screen, click on **Joystick** from the left sidebar.
2. Click on the **Advanced** tab then enable the options for **Center stick is zero throttle** and **Allow negative Thrust**.



Button Assignment

There is no predefined button layout so you will have to manually assign all of the button functions. To assign the button functions:

1. From the Vehicle Setup screen, click on **Joystick** from the left sidebar.
2. Go to **Button Assignment**, this screen will show a list of all the buttons and their assigned functions.
3. Press the button that you want to configure on the controller. The corresponding button number in the list will light up next to a dropdown menu with the list of functions that can be assigned to it.
4. Select the desired function from the dropdown. An example layout is shown below but you can configure the layout as you like.



Controller Thumbstick Modes

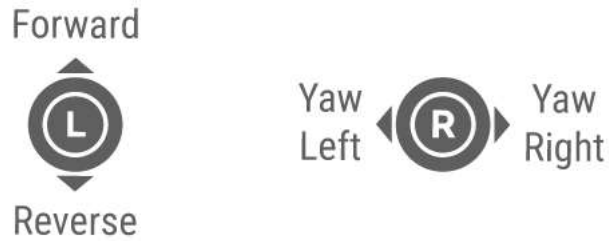
QGroundControl allows you to change which thumbsticks control the forward/reverse and rotational (yaw) movement of the boat.

1. From the Vehicle Setup screen, click on **Joystick** from the left sidebar.
2. Go to **General** and select an option from **RC MODE**. The different modes are shown below:

RC Mode 1



RC Mode 2



RC Mode 3



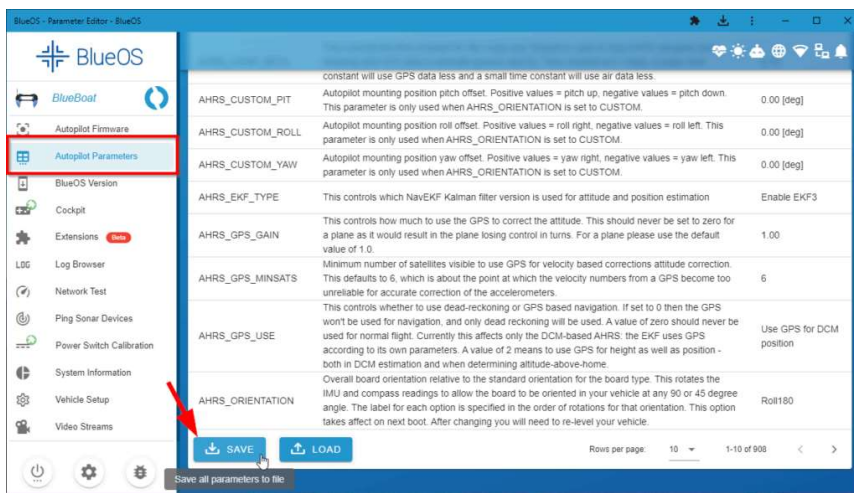
RC Mode 4



Backing Up Your Parameters

After you have the BlueBoat all set up, it's a good idea to create a backup of your autopilot parameters so they can be easily restored should the need arise. To backup your autopilot parameters:

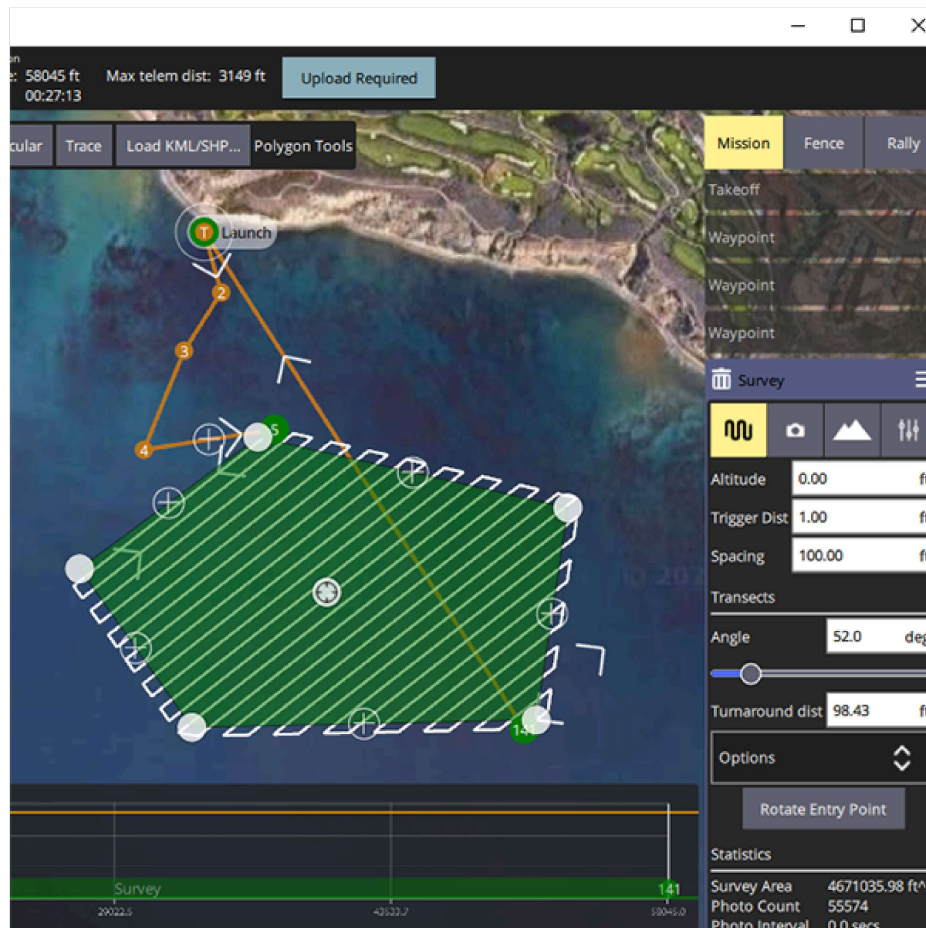
1. Access BlueOS and navigate to the **Autopilot Parameters** page.
2. Scroll down to the bottom of the list of parameters and click on the **SAVE** button.



3. The parameter file (.params) will be saved to whichever folder is designated as the “Downloads” or “Save to...” folder in your web browser settings. Keep this file in a safe location.
4. To restore a parameter file, use the **LOAD** button from the same Autopilot Parameters page.

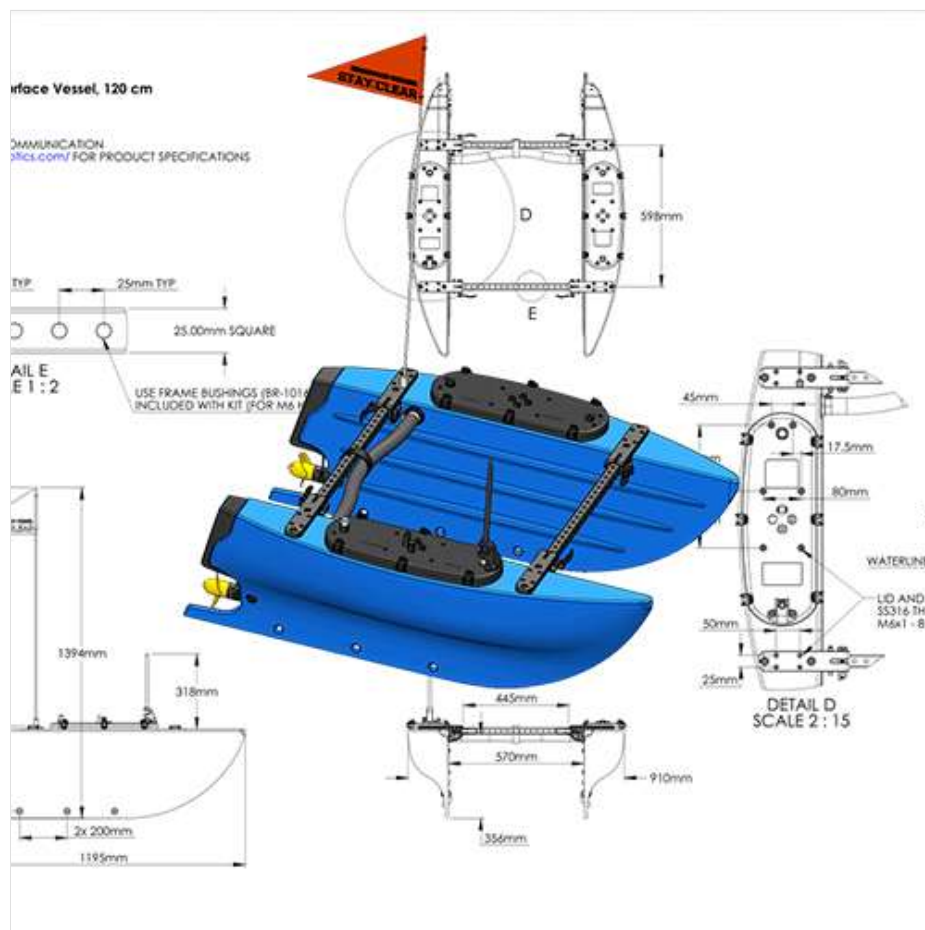
Next Steps

Your BlueBoat is now ready for operation! Head over to the [BlueBoat Operator's Guide](#) to learn how to carry out your first mission. After that, check out the [BlueBoat General Integration Guide](#) to learn about the various ways BlueBoat supports integrating payloads.



[BlueBoat Operator's Guide](#)

Learn how to operate your BlueBoat!

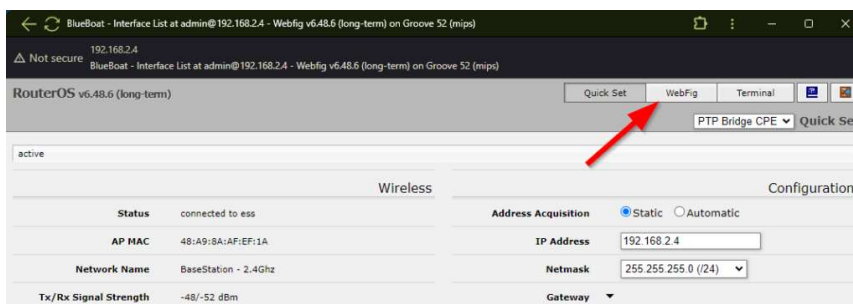


Advanced Settings

The following sections describe BlueBoat and BaseStation router configuration options for advanced use. Learn about all the ways things can be mounted, attached, routed, plugged in, and generally use. The default settings should work well for most users, we recommend not changing these unless you have a reason to!

All advanced settings can be accessed from the BlueBoat or BaseStation router web interface. In a web browser, type **192.168.2.4** for the BlueBoat or **192.168.2.3** for the BaseStation. Enter the default password "**admin**" to log in.

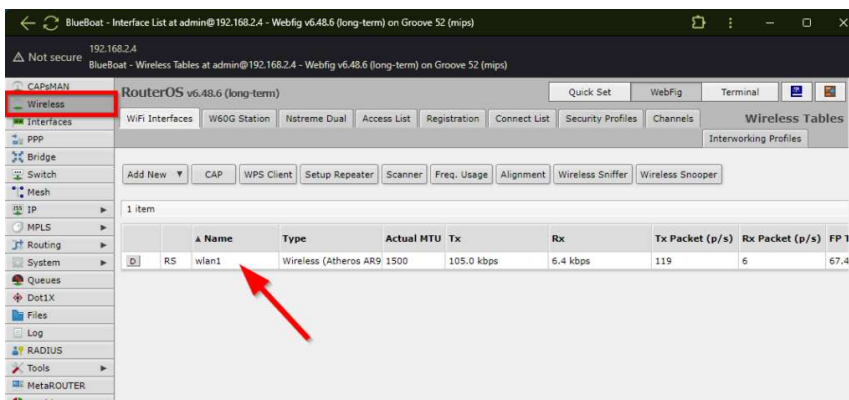
Select **WebFig** from the top right corner to access all router settings.



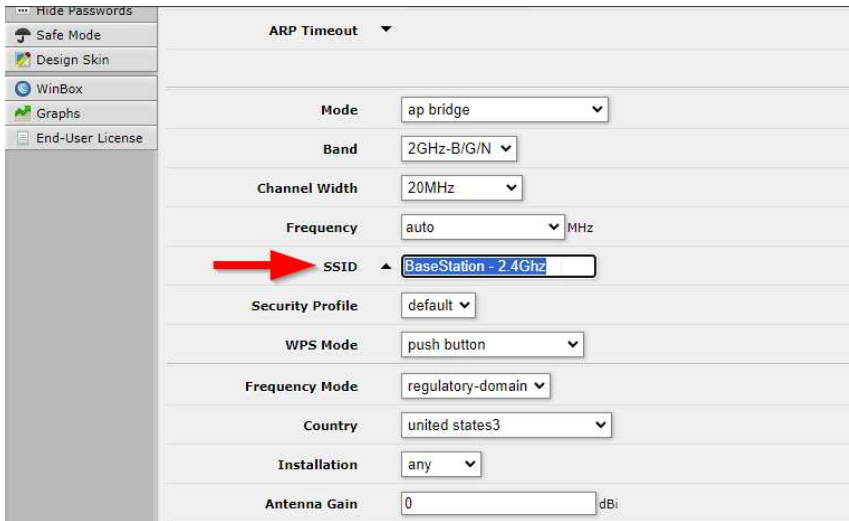
Changing the BaseStation Network SSID and Password

To change the SSID:

1. Select **Wireless** from the left sidebar then select the **wlan1** interface.



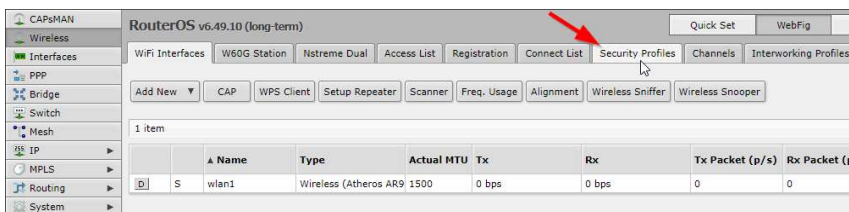
2. On the following screen, scroll down until you see the **SSID** field. Enter the desired SSID here.



3. Click on OK at the top of the page to save the setting.

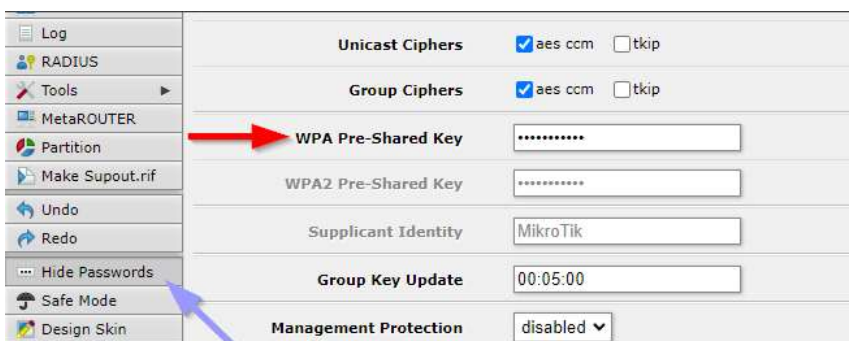
To change the password:

1. Select **Wireless** from the left sidebar then select the **Security Profiles** tab.



2. Click on the **default** profile.

3. Enter the desired password in the **WPA Pre-Shared Key** field. You can show and hide the current password by clicking the **Hide Passwords** option from the left sidebar.



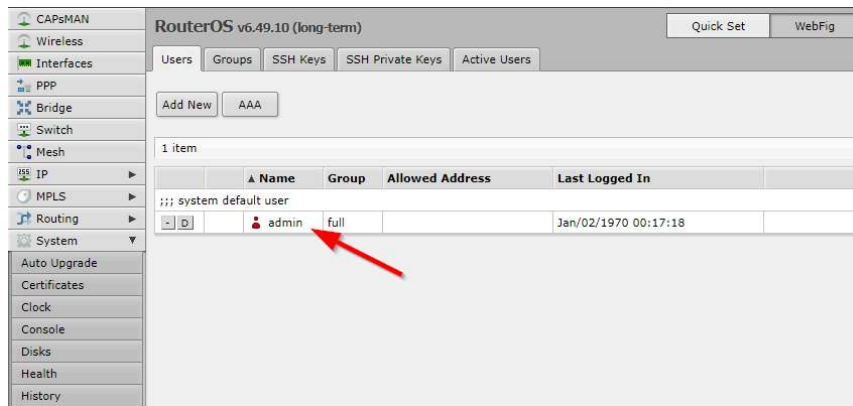


After changing the SSID or password, you will have to [pair the BlueBoat to the BaseStation](#) to connect to it.

Changing Router Admin Password

The admin password is used to access the router web interface. It is “admin” by default for all BlueBoats and BaseStations. To change this password:

1. Expand the **System** menu from the left sidebar, then click **Users**, then the default **admin** user profile.



2. The user password can be changed from the **Password...** menu on the next screen.

Antenna Gain and Calculating EIRP

Effective Isotropic Radiated Power (EIRP) measures the power radiated by an antenna. Countries regulate EIRP levels in wireless communication systems to limit interference with other wireless devices and ensure safety. In RouterOS, each country profile setting has a maximum EIRP value based on that country's regulations. RouterOS adjusts the transmit (Tx) power based on the antenna gain value entered in the wireless settings, increasing or decreasing Tx power to ensure the total EIRP remains within the limits of the selected country profile. When entering the antenna gain value in the router settings...

- Always use the correct gain value for your antenna. Incorrect values can lead to operating above legal EIRP limits or reduced performance:
 - Entering a value lower than the actual gain will increase transmit power, potentially improving effective communication range but also exceeding legal EIRP limits.
 - Entering a higher value than the actual gain reduces transmit power unnecessarily, reducing the effective communication range.
- Consider reducing the entered gain value by 1 dB to account for losses at the antenna connector and coupler.

For reference, here is the formula to calculate total EIRP:

$$\text{EIRP (dBm)} = \text{Tx Power (dBm)} + \text{Antenna Gain (dBi)} - \text{Losses (dB)}$$

Where:

- **Tx Power** is the power of the transmitter in decibels relative to one milliwatt (dBm).
- **Antenna Gain** is the gain of the antenna in decibels relative to an isotropic radiator (dBi).
- **Losses** represents the losses in the system, including cable losses, connector losses, and any other losses, in decibels (dB). In the BlueBoat and BaseStation, the losses through the antenna connector and coupler are about 1 dB.

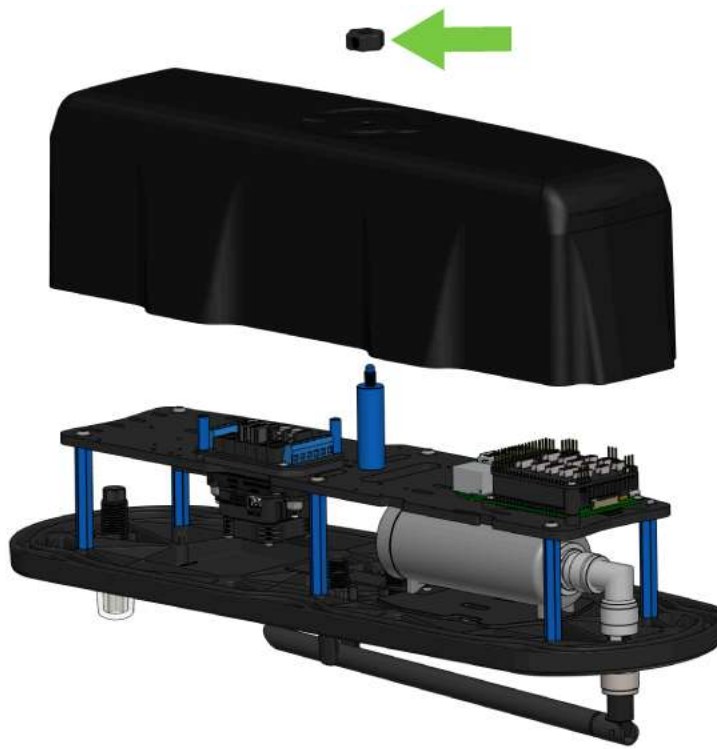
BlueBoat and BaseStation Pairing

BlueBoats purchased before 26 June 2024 need to be manually paired to the BaseStation to connect to it. You must also perform this pairing process if you changed the BaseStation network SSID or password from the defaults and are connecting the BlueBoat for the first time.

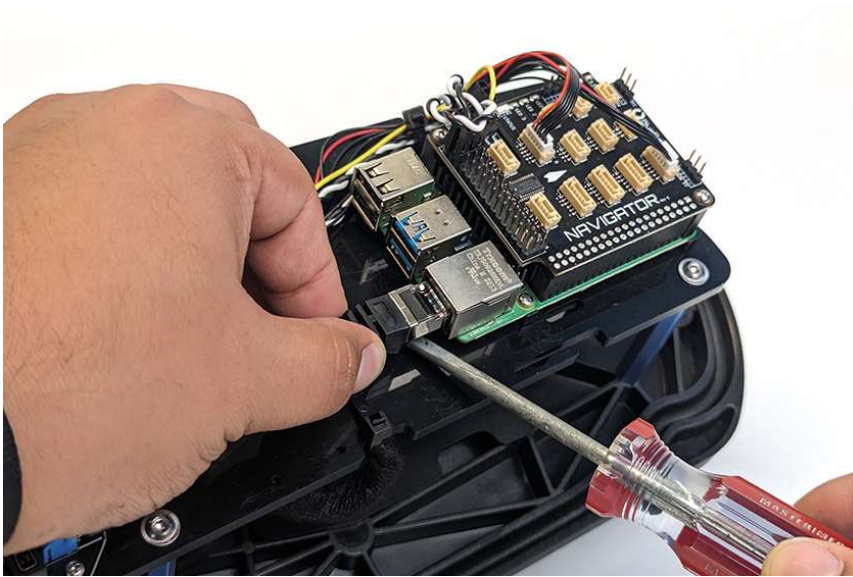
1. Open the BlueBoat starboard side hatch lid and disconnect all the cables that are connected to it (STBD PWR cable, motor cable, ESC signal cable). Remove the hatch lid assembly from the BlueBoat, this is the only part of the BlueBoat you will need to complete the pairing process.



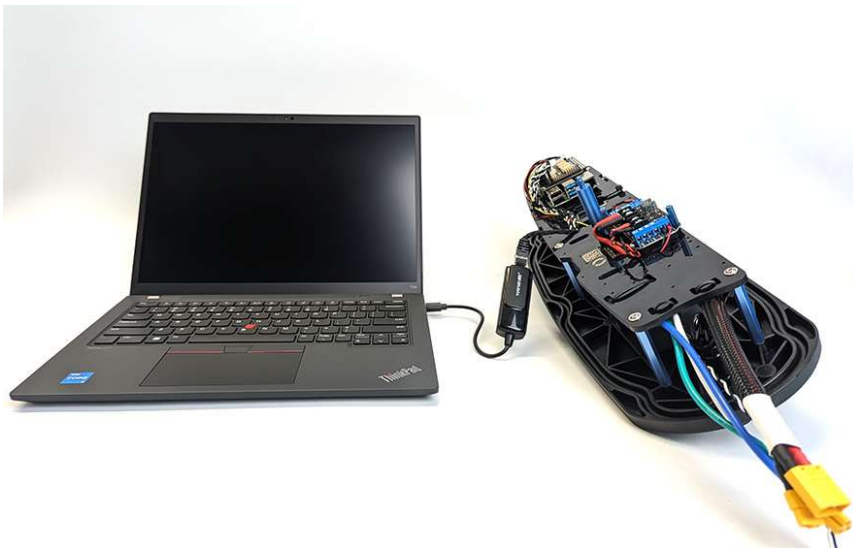
2. Remove the hatch lid clamshell (cover) by unscrewing the thumb nut. This gives you access to the electronics on the electronics tray.



3. Unplug the Ethernet cable from the Raspberry Pi. A flat tool like a screwdriver is helpful to push in the tab to disconnect the plug.

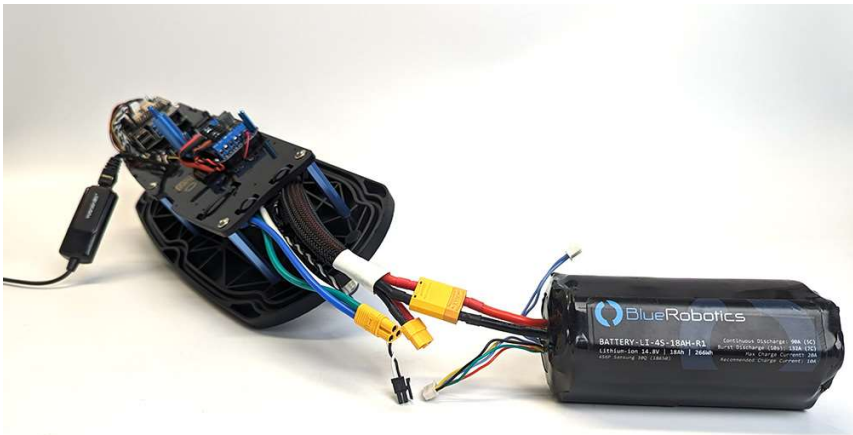


4. Connect this Ethernet cable to the USB Ethernet adapter included in the BlueBoat kit, then connect the adapter to a USB port on your computer. Note that in this step, you are connecting the router in the BlueBoat to your computer via the adapter, **not** the Raspberry Pi.



Ensure the BlueBoat antenna is connected to the antenna connector on the starboard hatch lid. **DO NOT** power on the electronics if there is no antenna connected.

5. Connect a fully charged battery to the XT90 connector on the STBD PWR cable.



6. Turn on the electronics by turning the power switch in the "ON" direction until it bottoms out.



7. Turn on the BaseStation by pressing and holding the power button for 2 seconds then releasing. The green LED above the power button should illuminate when it is powered on.



8. The USB Ethernet adapter must be configured with an IP address on the **192.168.2.X** subnet (e.g. 192.168.2.10). **Do not** use the following reserved IP addresses:

- **192.168.2.1** – your computer's IP address
- **192.168.2.2** – BlueBoat Raspberry Pi 4 IP address (BlueOS)
- **192.168.2.3** – BaseStation wireless router IP address
- **192.168.2.4** – BlueBoat wireless router IP address

Select your operating system below to show instructions for setting the IP address.

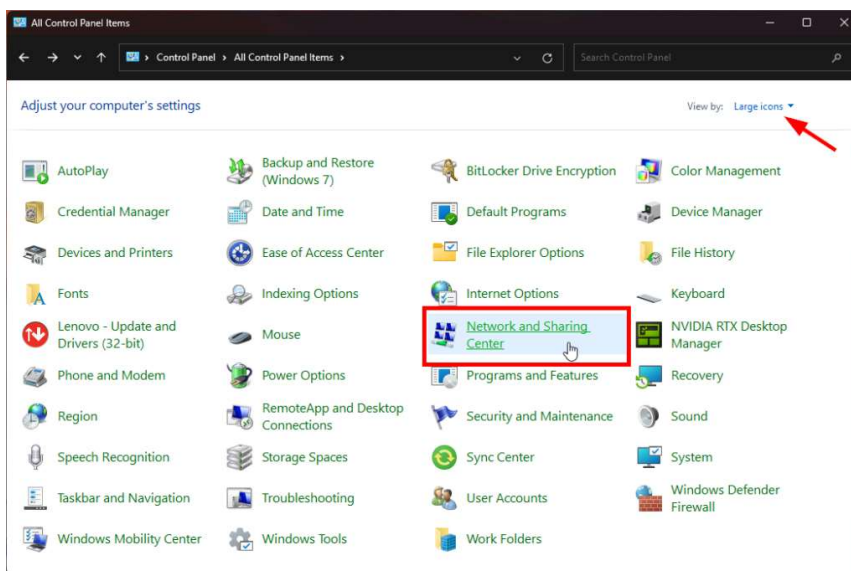
Windows Setup

macOS Setup

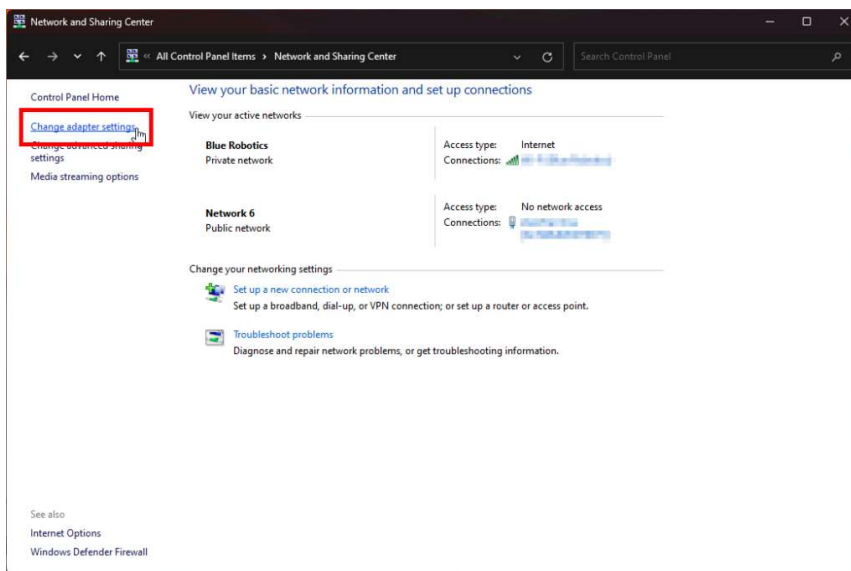
Linux Setup

Windows

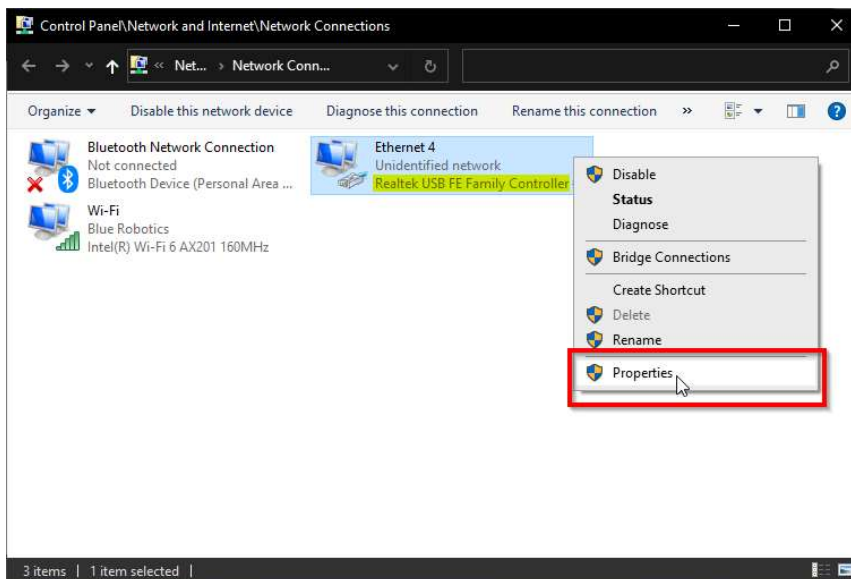
(8.1) Open the Windows **Control Panel** then select **Network and Sharing Center**. If you don't see Network and Sharing Center, change the **View by:** option to large or small icons.



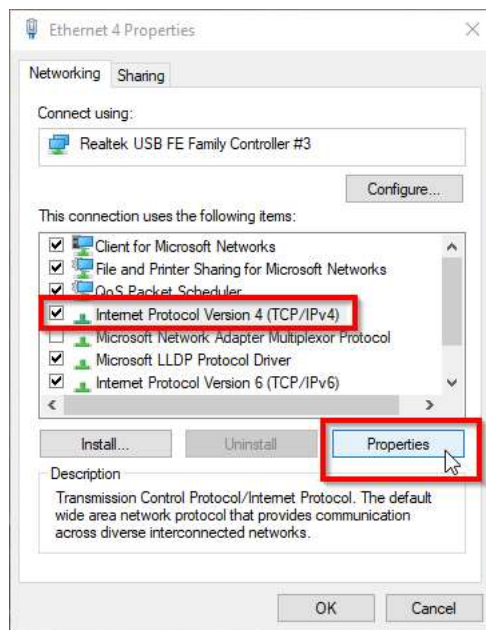
(8.2) Select **Change adapter settings** from the left side menu.



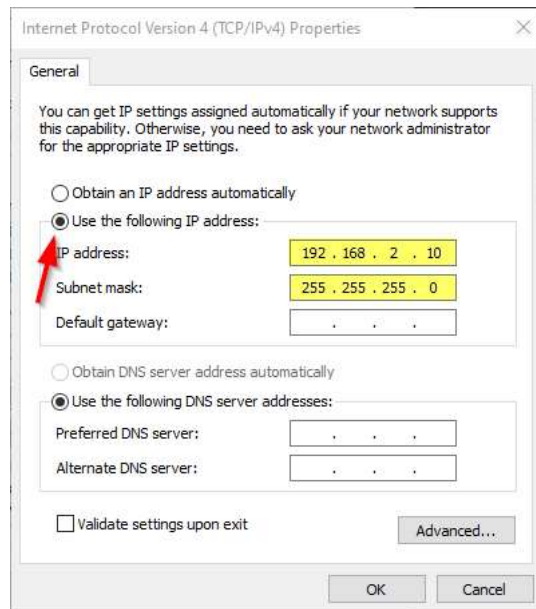
(8.3) The USB Ethernet adapter should be displayed as “Realtek USB FE Family Controller” in this menu. Right click on this Ethernet adapter then choose **Properties**.



(8.4) In the properties dialog, click on **Internet Protocol Version 4 (TCP/IPv4)** to highlight it, then click **Properties**.

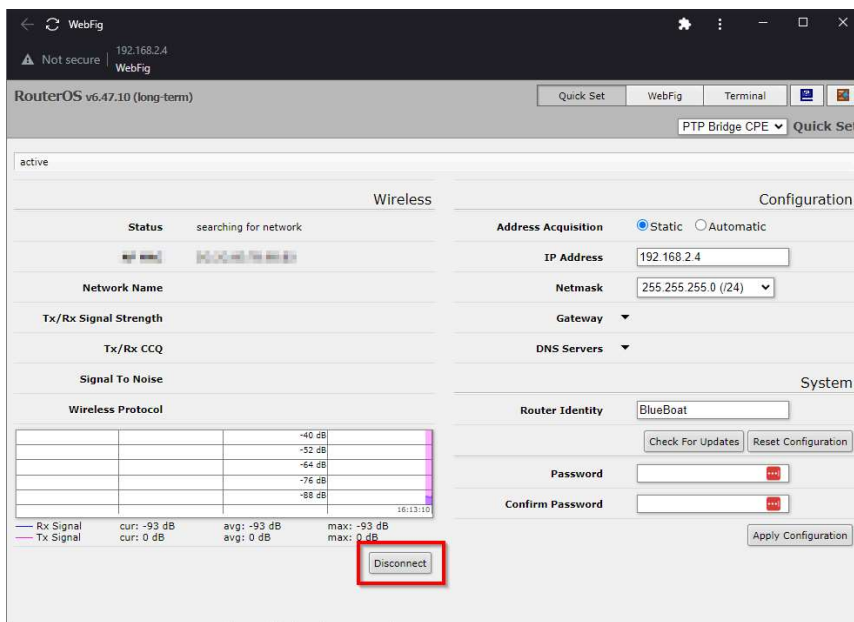


(8.5) Select **Use the following IP address** And enter **192.168.2.10** for the IP address and **255.255.255.0** for the Subnet mask. Select **OK**. You can then exit this menu.



9. Type **192.168.2.4** into a web browser address bar. This is the IP address of the wireless router in the BlueBoat starboard hatch lid assembly.

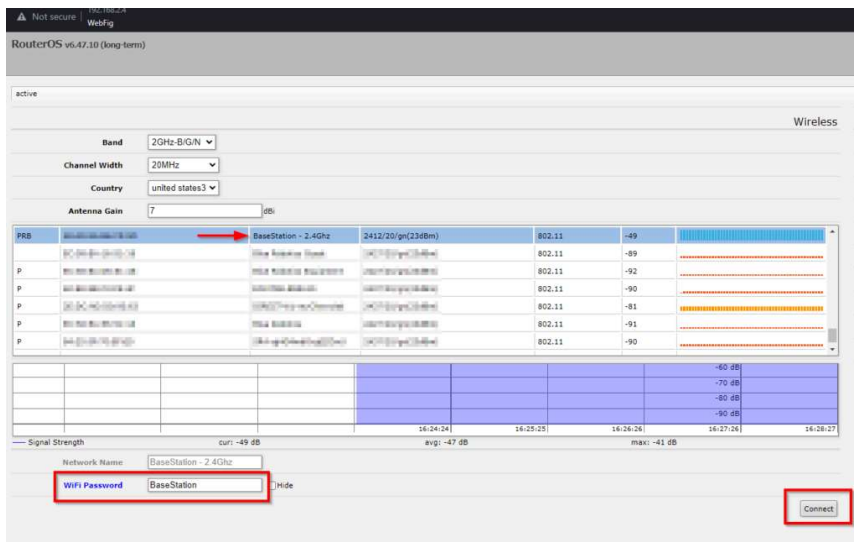
10. You should now be in the wireless router's interface menu. Click **Disconnect**.



11. The interface should now display a list of networks it detects in the area. The BaseStation creates a wireless network with the SSID “**BaseStation – 2.4Ghz**”, select it. Enter the default password “**BaseStation**” and click **Connect**.



If you have changed the default BaseStation SSID or password, enter that information instead.



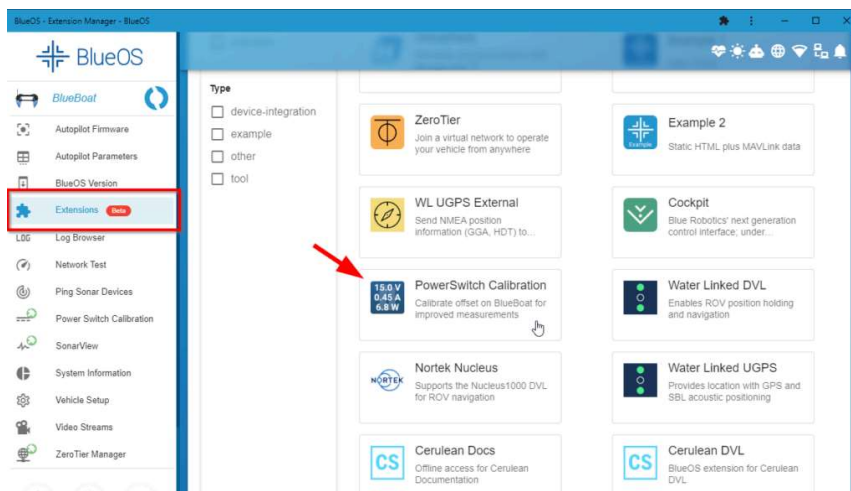
12. Congratulations! Your BlueBoat is now paired to your BaseStation. You can now return the starboard hatch lid assembly to the BlueBoat:

- Turn off the hatch lid assembly by turning the power switch in the “OFF” direction and disconnecting the battery.
- Disconnect the Ethernet cable from the USB Ethernet adapter and plug it back into the Raspberry Pi.
- Install the clamshell cover and thumb nut back on the hatch lid assembly.
- Install the hatch lid assembly back in the BlueBoat by reconnecting all the cables you disconnected earlier.

Calibrating the PowerSwitch

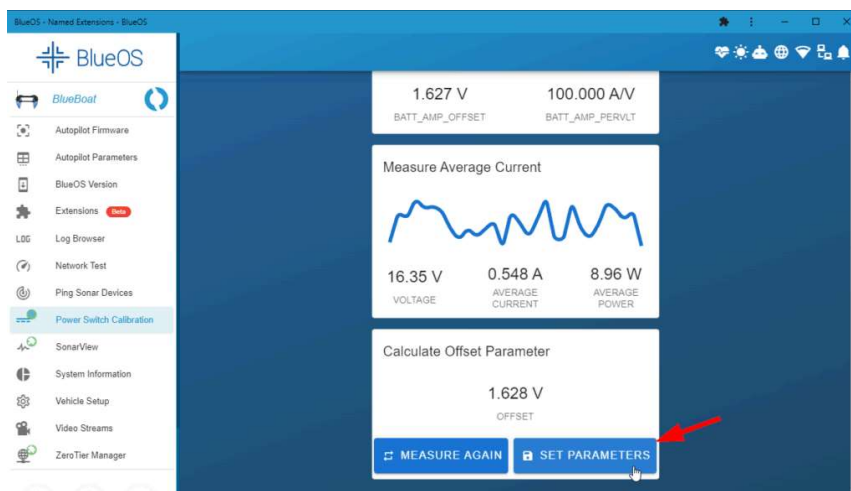
The current offset parameter for some older BlueBoats may need additional calibration. If you notice the current draw information seems inaccurate, perform this calibration procedure. The calibration should be performed while the BlueBoat is at rest, with no additional load on the power system (no accessories or payloads connected to power).

1. Access BlueOS and navigate to the **Extensions** menu. Install the **PowerSwitch Calibration** extension.



2. After the extension is installed, click on it from the left sidebar. Wait for the extension to connect then click **START CALIBRATION**.

3. The calibration routine will run for a few seconds. The newly calculated offset parameter will be displayed when it is done, click on **SET PARAMETERS** to save the parameter to your BlueBoat.



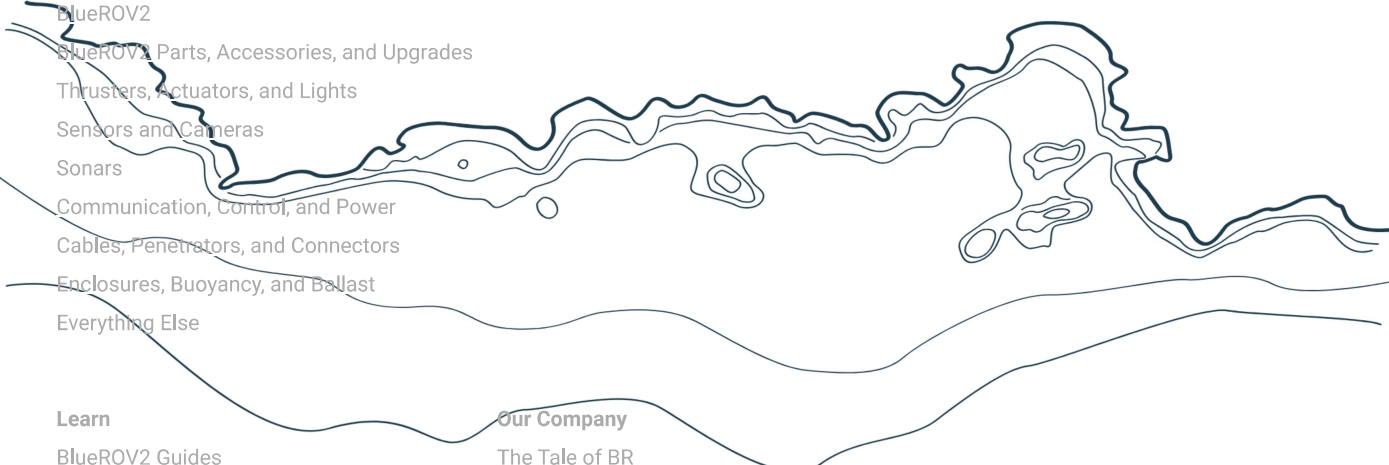
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