



**surfbee.io**

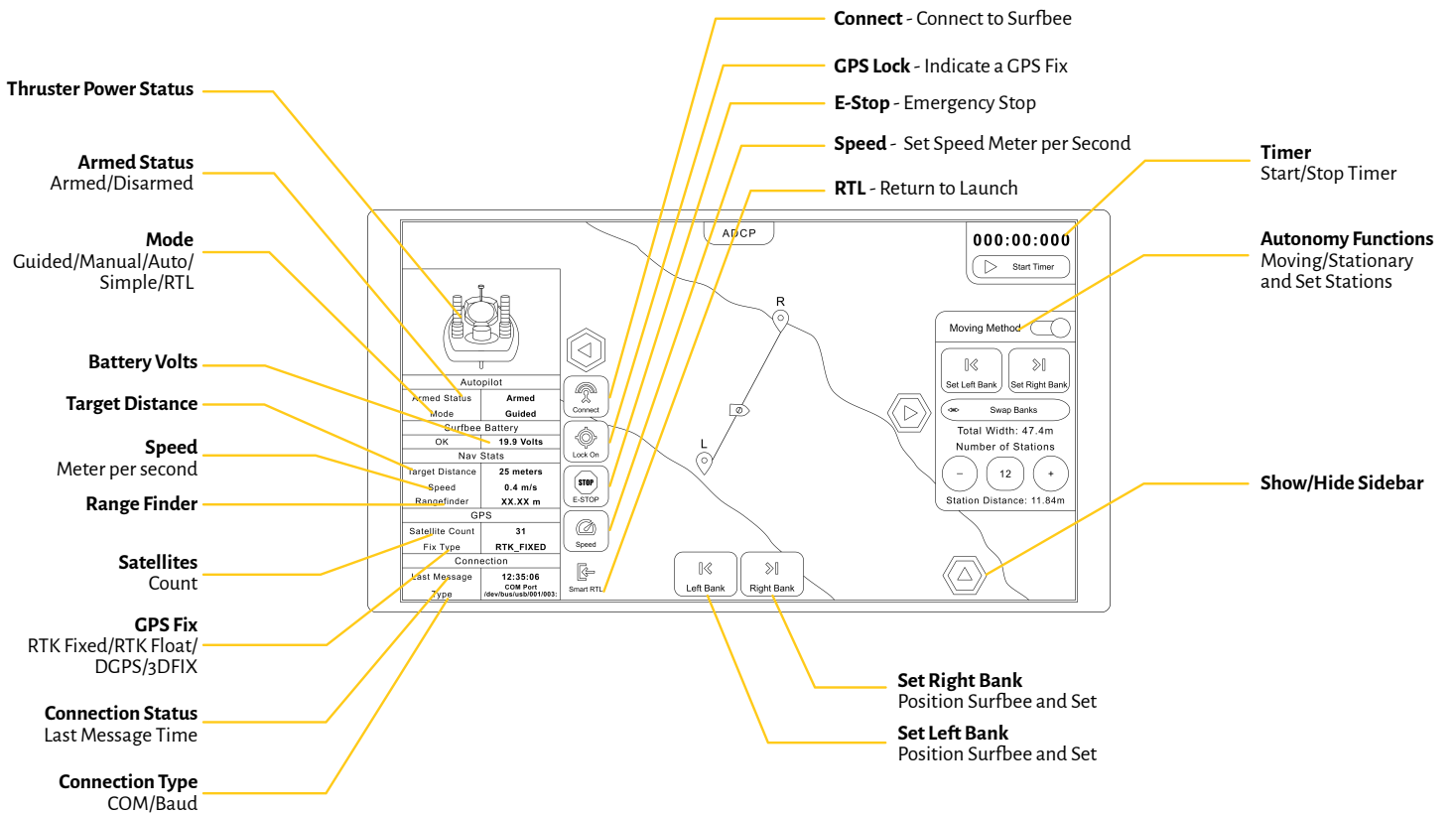
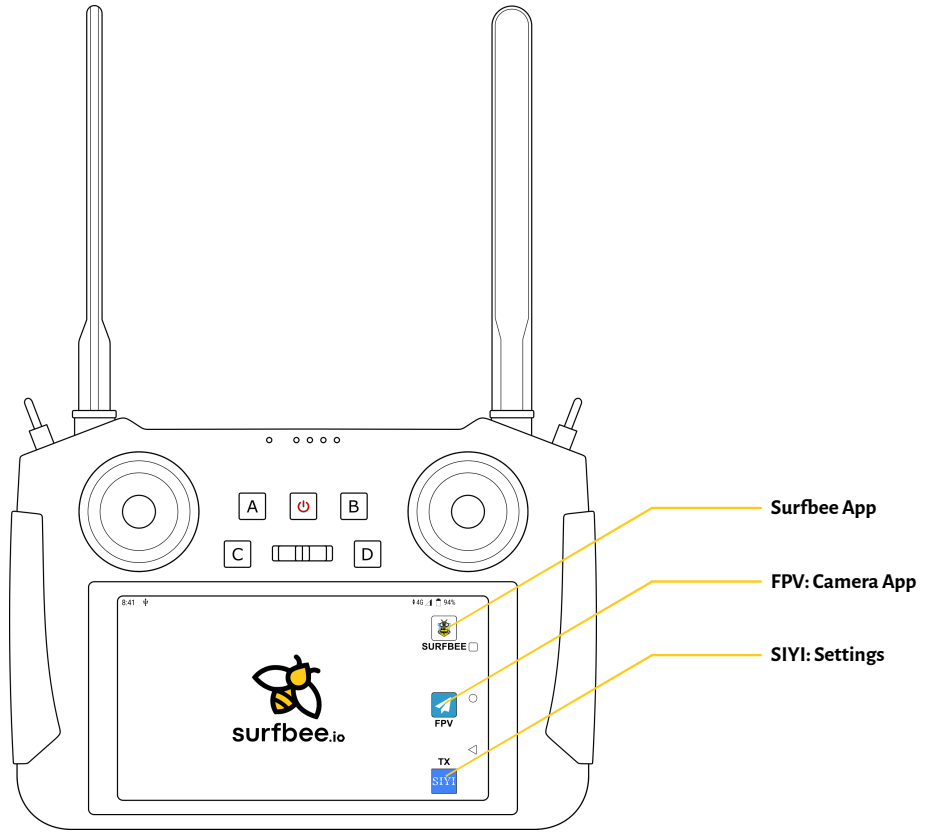
# Table of Content

## WHAT?

<b>App Overview</b>	2
<b>Connect Your USV to the Controller</b>	3
<b>Connect a Device Using Bluetooth</b>	6
<b>Functions</b>	12
<b>Mode:</b>	
<b>Map</b>	14
<b>Surf</b>	18
<b>ADCP</b>	27
<b>Surfbee App Settings</b>	31
<b>Camera Settings</b>	37
<b>Controller Settings (SIYI App)</b>	43

# Surfbee App Overview

## App Layout



# Connecting Your USV to the Controller

WHAT?

WHERE

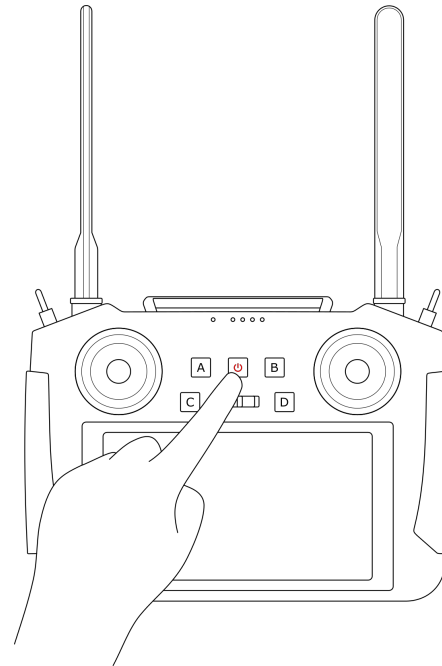
HOW?

## Controller Setup

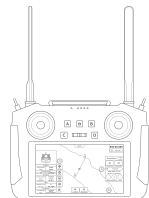
Turn on the controller by pressing the button as instructed



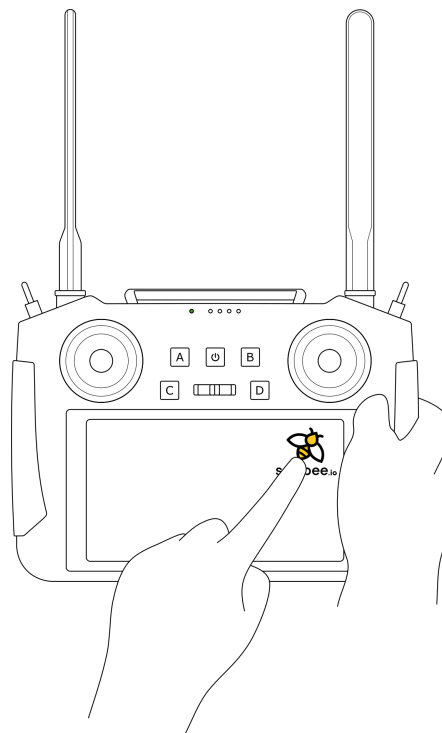
Press the power button on the controller once for 1 second and then again for 2 seconds until all power lights are illuminated.



Launch the Surfbee app



Open the Surfbee app from the startup screen (top right corner) on the controller.



## WHAT?

## WHERE

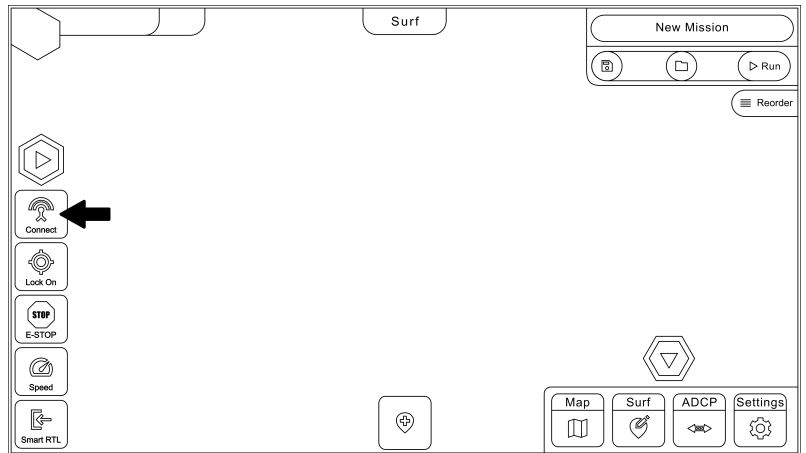
## HOW?

### Auto Connect

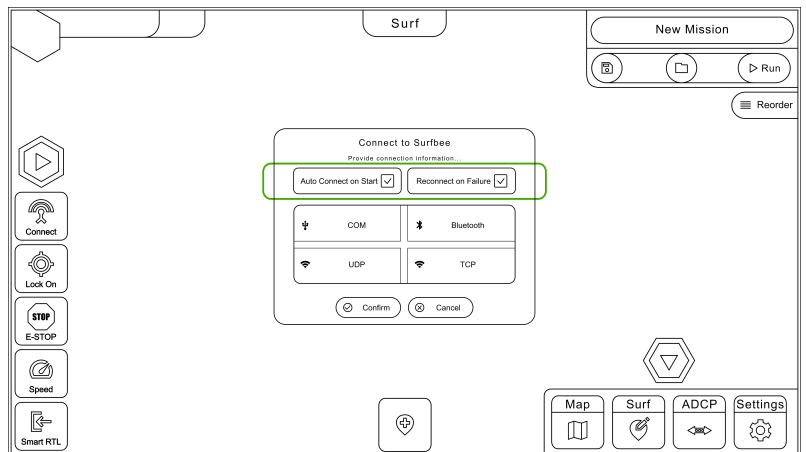
Connect your controller with the USV



Click on Connect.



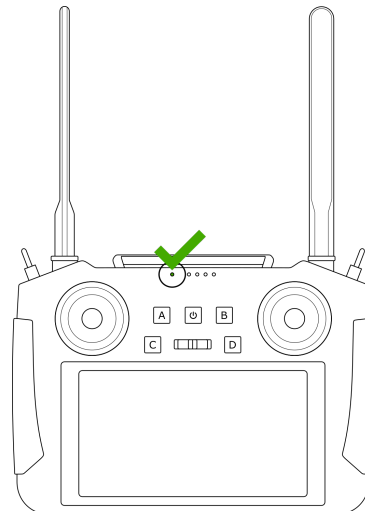
Make sure the “Auto Connect on Start” and “Reconnect on Failure” are switched on.



When the vessel connects to your controller, a green light will appear on your controller connection status LED



Wait for the green indicator on the controller to confirm successful connection to the Surfbee.



## WHAT?

## WHERE

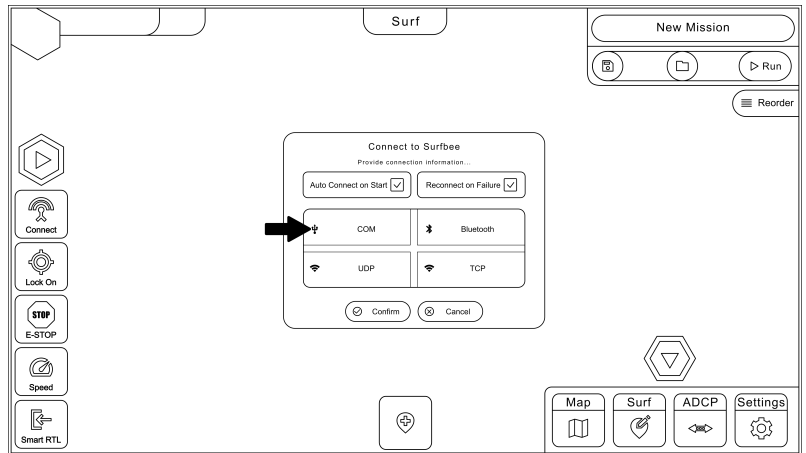
## HOW?

### Manual Connect

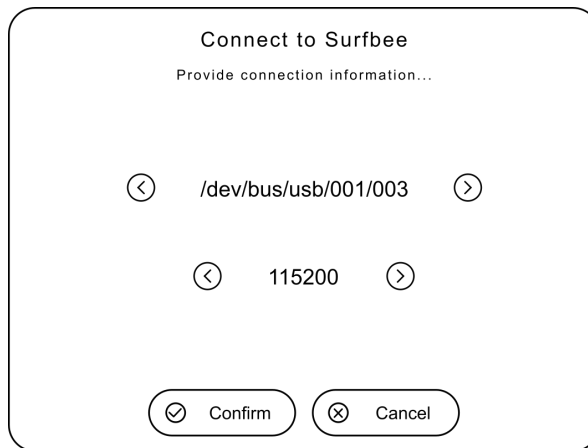
If your controller does not connect automatically to the USV, proceed to manual connection



Click on Connect, then click on COM.



Search manually for the device using the arrows.



# Connect a Device Using Bluetooth to Your Controller

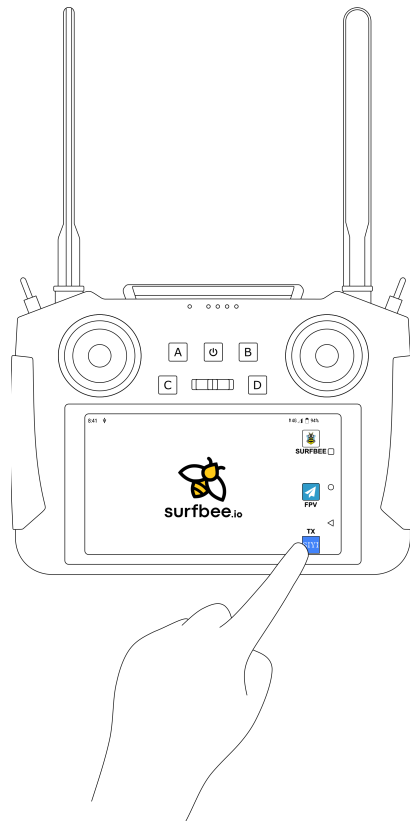
Utilize this tool to seamlessly connect a tablet, phone, or laptop to your controller, enhancing your display size or facilitating mission setups and map downloads. It's important to note, however, that operating your Surfbee will still require the use of the controller's dials and joysticks. After completing your setups, be sure to carefully follow the provided instructions for disconnecting your devices. This step is crucial to ensure smooth and issue-free operation of your Surfbee.

## WHAT?

## HOW?

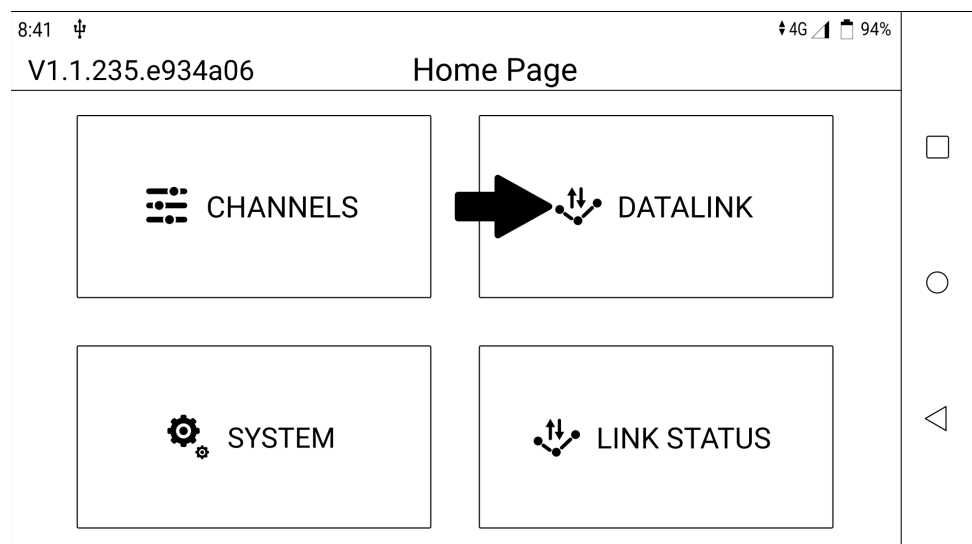
### Turn On the Bluetooth on Your Controller

On your controller, open your SIYI App.



### Connect Your Windows Device to Your Controller

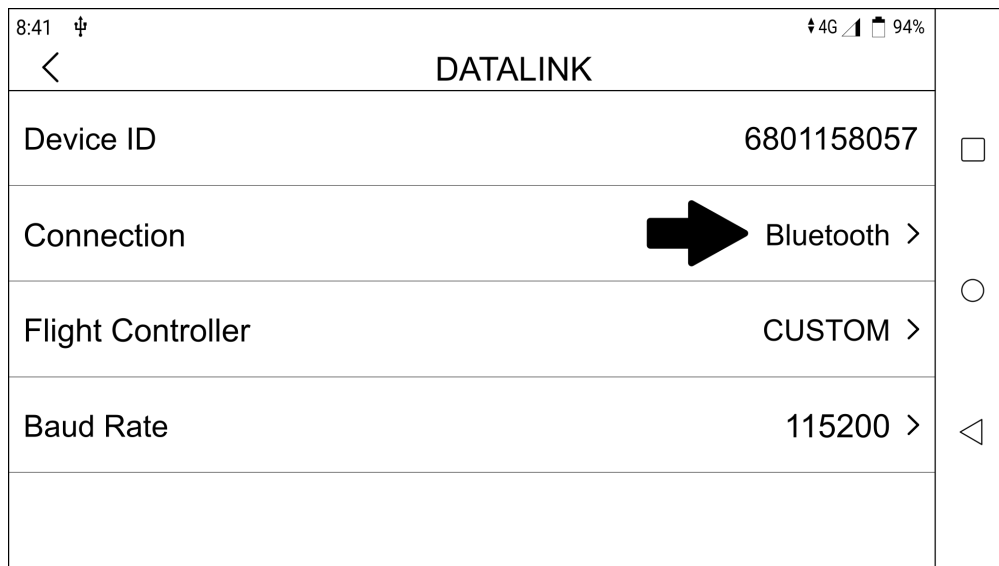
On your SIYI app, go to DATALINK



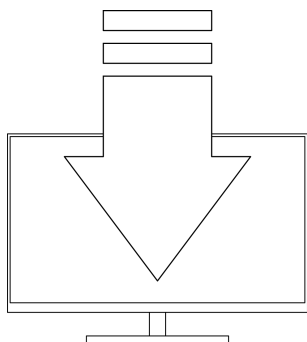
## WHAT?

## HOW?

On the connection, select Bluetooth to activate your controller's Bluetooth.



Contact Surfbee Team to request the windows version of the Surfbee app via email at [support@surfbee.zohodesk.com.au](mailto:support@surfbee.zohodesk.com.au)



After successfully proceeding with the installation of the software, proceed with these steps:

On the Bluetooth settings of your Windows device, search for a new device and look for a SIYI device.

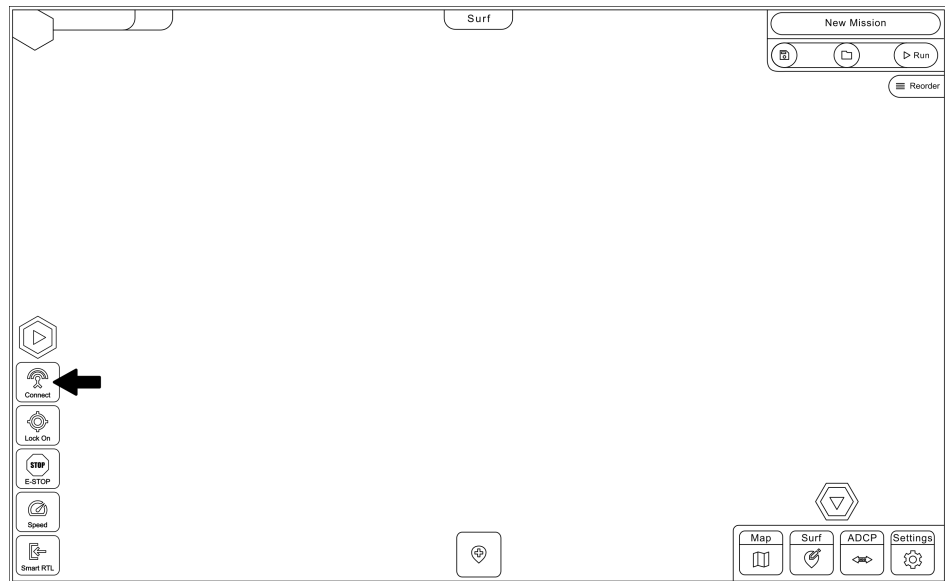
Use the password **1234** to connect.



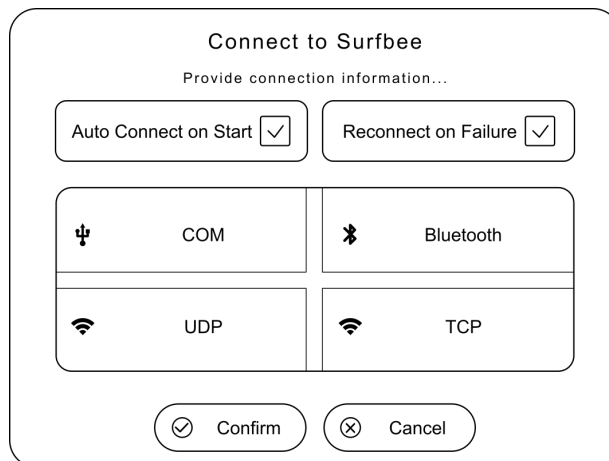
## WHAT?

## HOW?

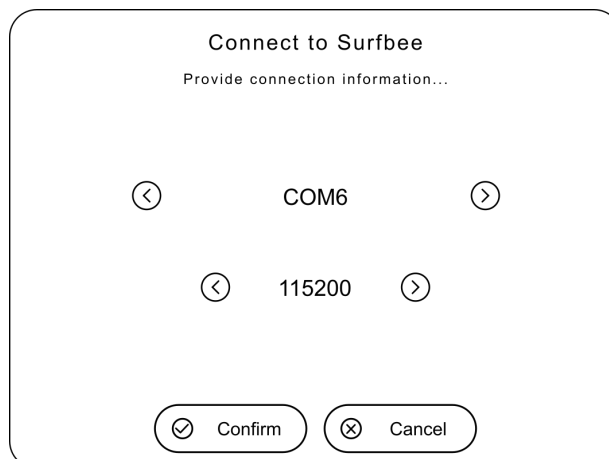
Then, open the surfbee app on your Windows version and click on Connect located on the left bar of the screen.



This will appear on your screen.



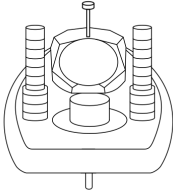
Now select COM and use the arrows to change the COM port to select the connected device.



## WHAT?

## HOW?

After a few seconds your device should be connected and you should see this boat on the home screen of your Surfbee App.



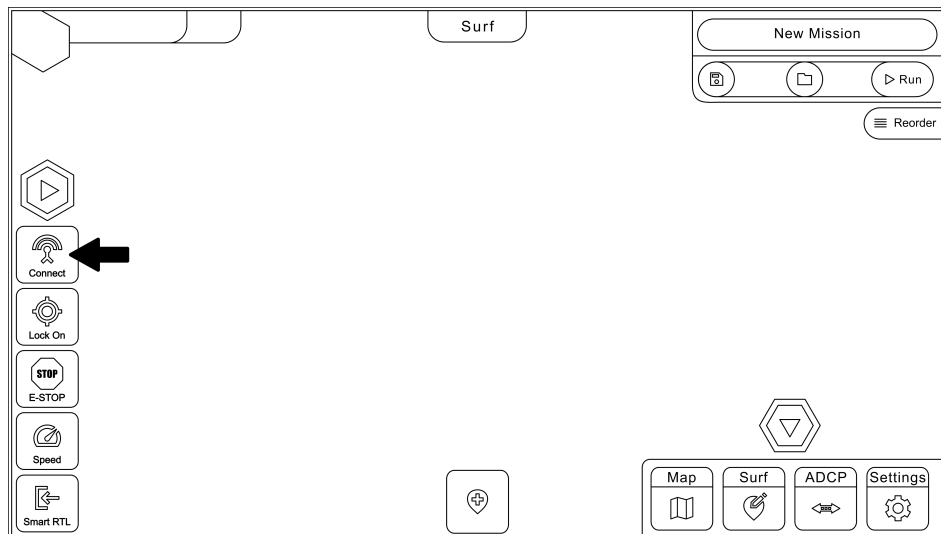
Autopilot	
Armed Status	<b>Disarmed</b>
Mode	<b>Manual</b>
Surfbee Battery	
OK	<b>20.2 Volts</b>
Nav Stats	
Target Distance	<b>0 meters</b>
Speed	<b>0.0 m/s</b>
Rangefinder	<b>XX.XX m</b>
GPS	
Satellite Count	<b>29</b>
Fix Type	<b>3D_FIX</b>
Connection	
Last Message	<b>12:28:28</b>
Type	<b>COM Port COM3:115200</b>

If this does not happen, return to the Connect option and select a different COM port.

## Connect your Android Device to Your Controller

Download the Surfbee App for Android.

Open the app on your Android device and click on Connect located on the left bar of the screen.



## WHAT?

## HOW?

This will pop up on your screen.

Connect to Surfbee  
Provide connection information...

Auto Connect on Start  Reconnect on Failure

COM Bluetooth

UDP TCP

Confirm Cancel

Now select Bluetooth, make sure the Bluetooth is enabled and click on refresh to look for your Android device.

Connect to Surfbee  
Provide connection information...

Bluetooth Client

BLE DISABLED Refresh

Scan Results

No Nearby Devices

Confirm Cancel

Use the arrows to select the device and click on confirm.

After a few seconds, your device should be connected and you should see this boat on the home screen of your Surfbee App.

Autopilot	
Armed Status	<b>Disarmed</b>
Mode	<b>Manual</b>
Surfbee Battery	
OK	<b>20.2 Volts</b>
Nav Stats	
Target Distance	<b>0 meters</b>
Speed	<b>0.0 m/s</b>
Rangefinder	<b>XX.XX m</b>

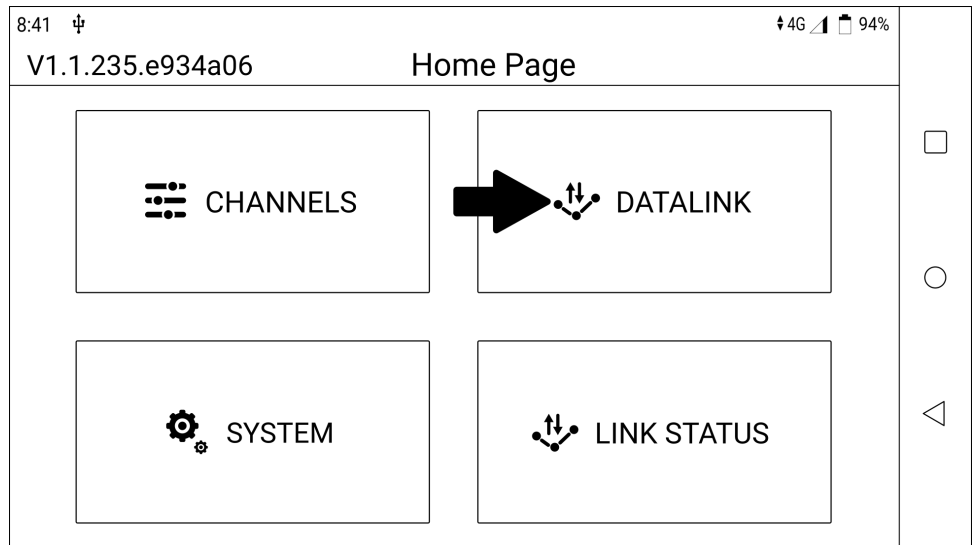
## WHAT?

### Disconnect your Device from Your Transmitter

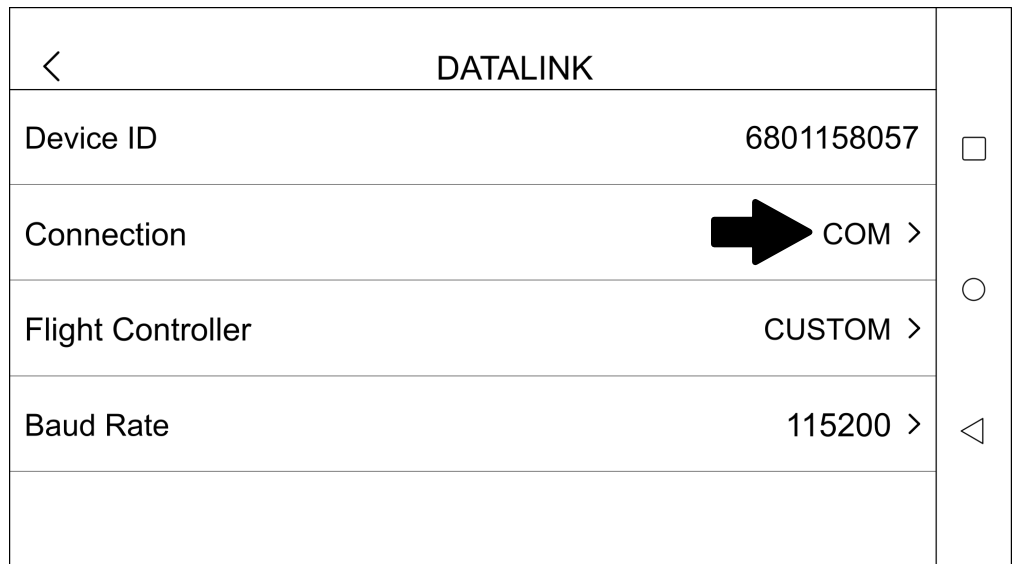
## HOW?

Remember to disconnect your Android or Windows device from the transmitter for a seamless operation of your USV.



On your SIYI app, go to DATALINK

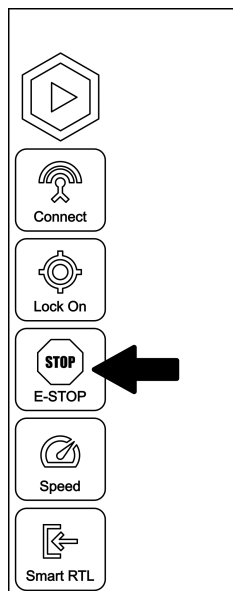
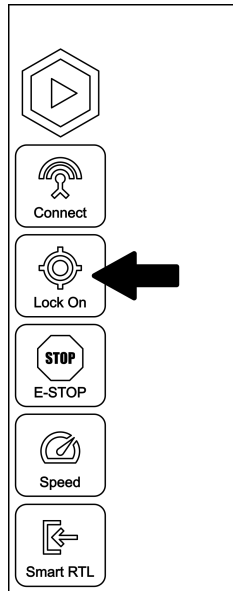


On the connection section, select COM to turn off the bluetooth. By selecting the COM port, your transmitter will automatically reconnect to your USV. If this does not happen, follow the procedures to “Connect your USV to the Controller”



# Functions

WHAT?	WHERE?	HOW?
<b>Turn the GPS Lock ON/OFF</b>		<p>Click on the lock button located on the left bar of the app. Turning the lock on will keep the vessel centralized to the map view.</p>
<b>E-STOP</b>		<p>The "Emergency Stop" is designed to provide immediate disarming of your vessel and halt all thruster activity in urgent situations. While this feature is critical for safety and avoiding potential hazards, it's important to exercise caution when using it. Please be aware that activating the Emergency Stop will result in the immediate loss of propulsion and steering control. This could lead to difficulties in retrieving the vessel, especially in conditions with strong currents, high winds, or when operating in inaccessible or hazardous areas.</p>



WHAT?

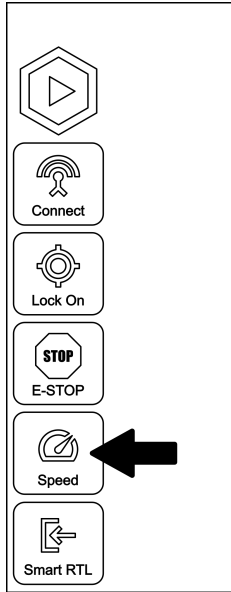
WHERE?

HOW?

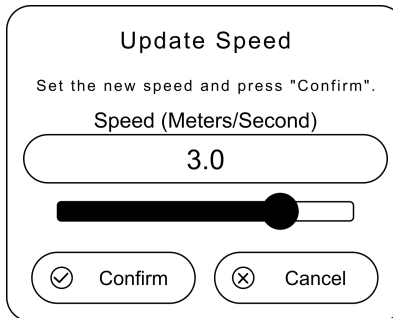
**SPEED**



Use this to manually set a speed for your vessel.



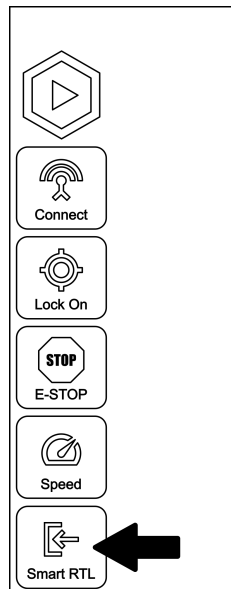
Click and drag to change the speed or insert manually the desired speed.



**Smart RTL**



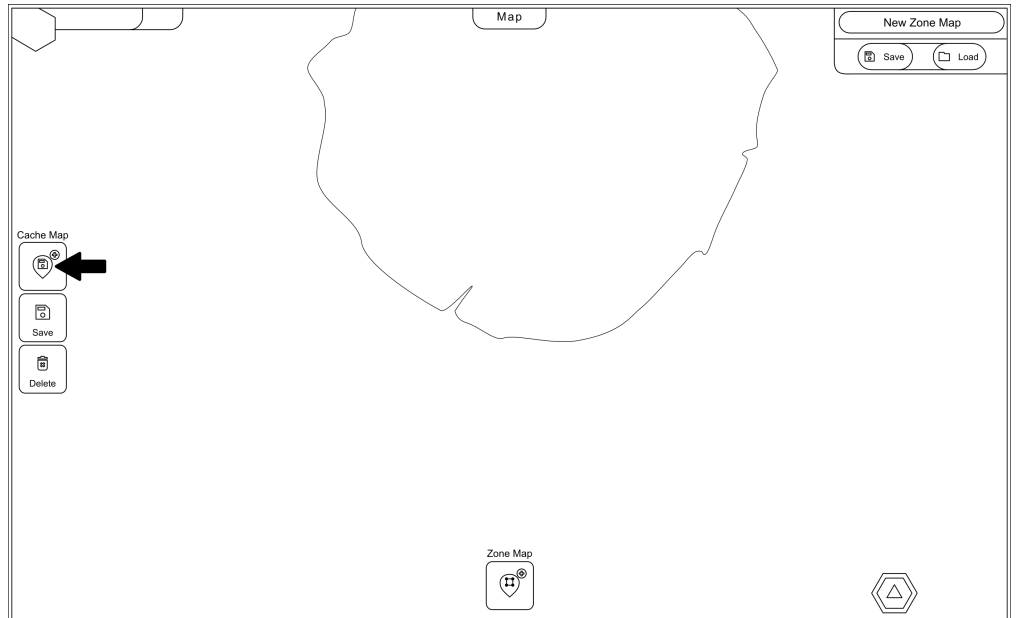
The function of the "Smart RTL" button is to return to the launch point using previously navigated paths. This feature is designed for use in areas where obstacles might be present in the water.



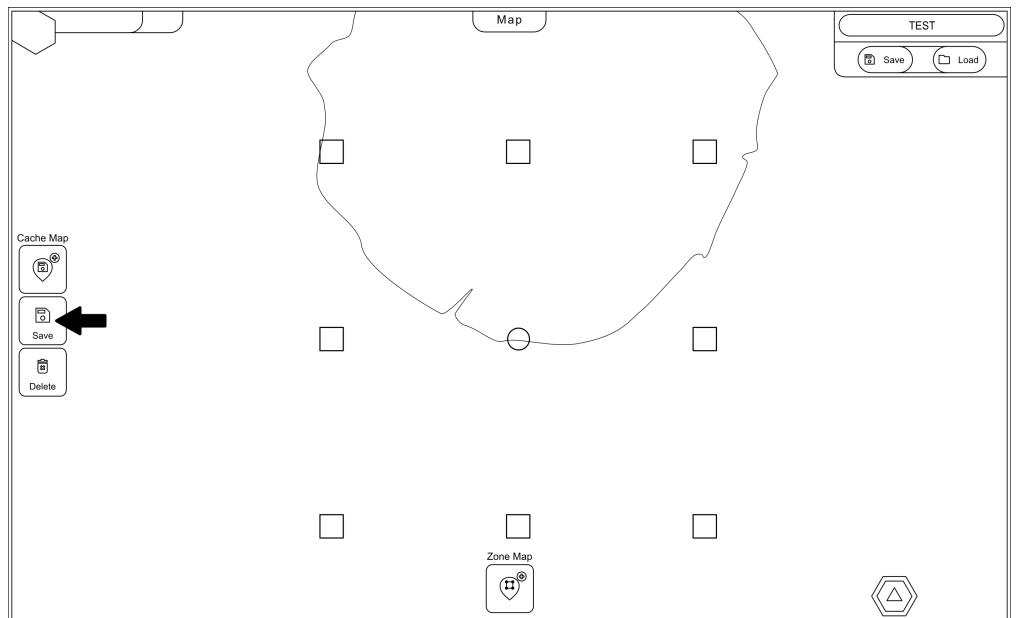
# Mode Map

## Download Cache map

On the Map mode, click on Cache Map and drag to the area you want to download.

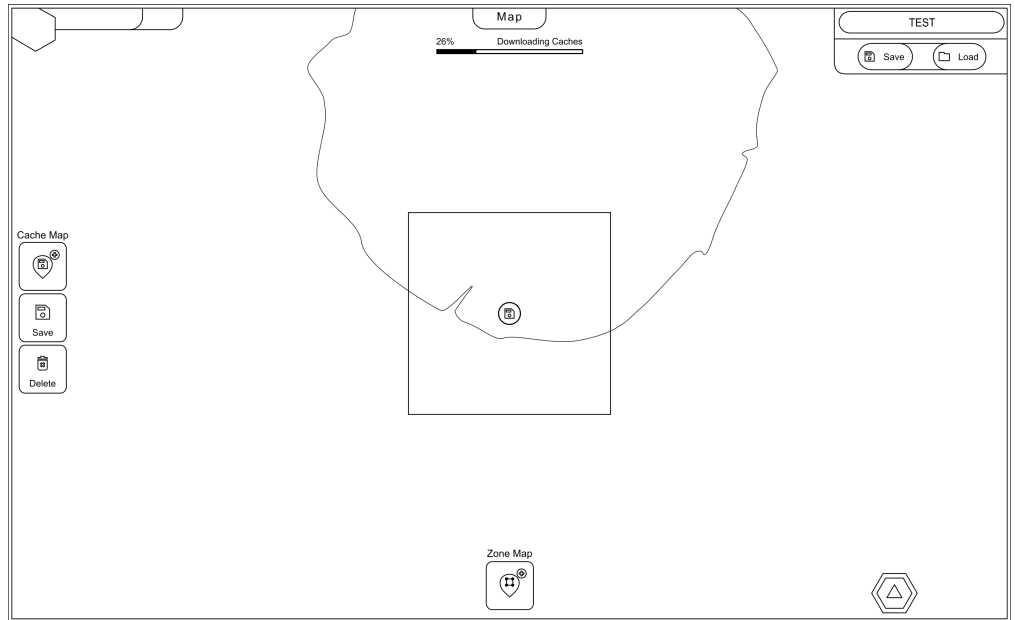


Adjust the squares to define the exact area that will be downloaded, then click in Save.



# Mode Map

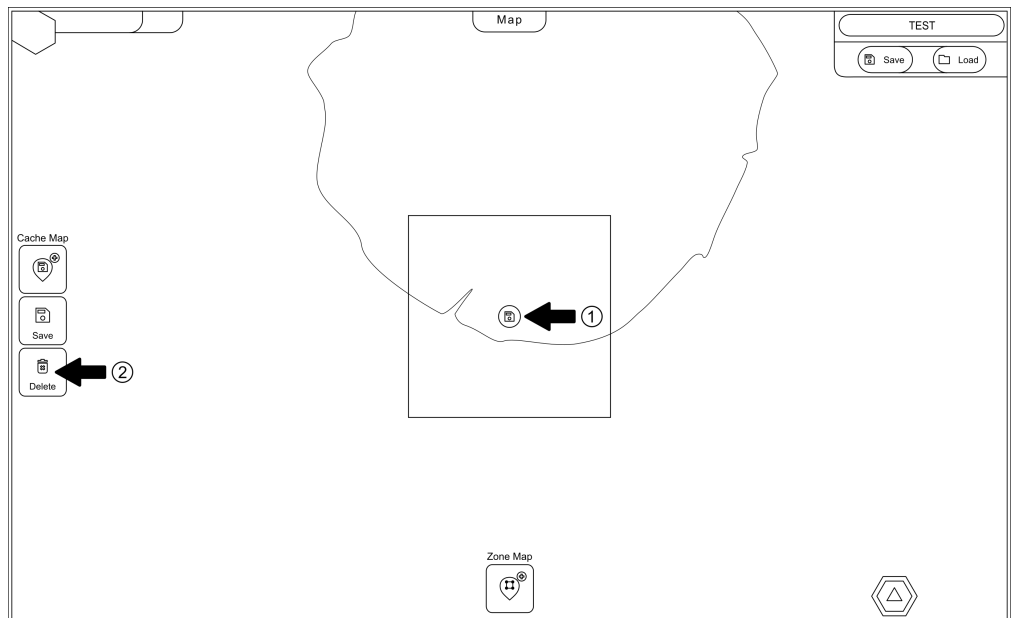
Once saved cache has been pressed, downloading cache progress bar will be activated.



The area inside the box will be saved to onboard storage and will be saved offline.

## Delete the Cache Map

Click on the save icon on the map and then click on delete.



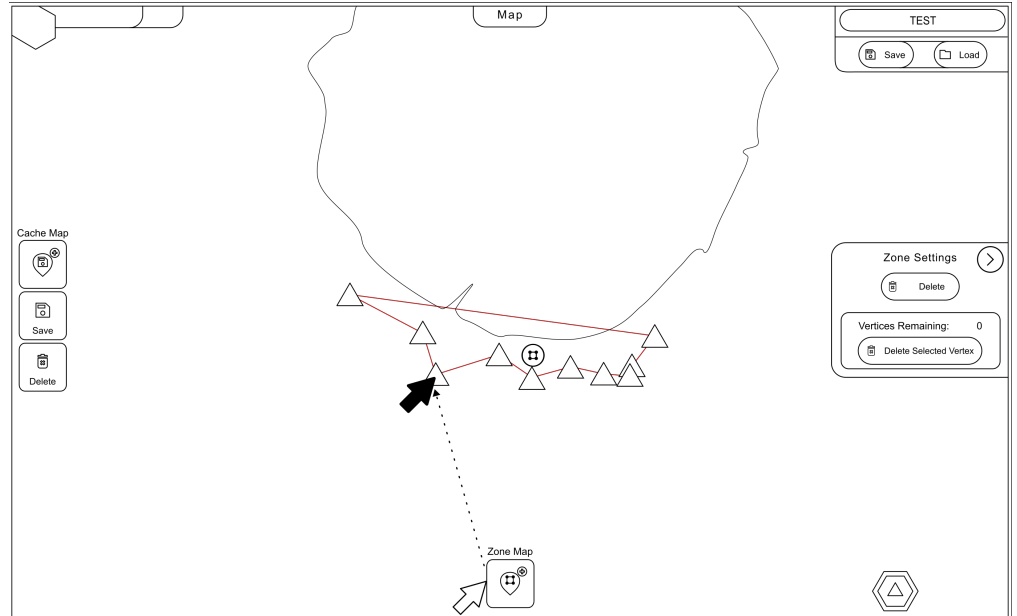
The cache map will be deleted from your storage.



# Mode Map

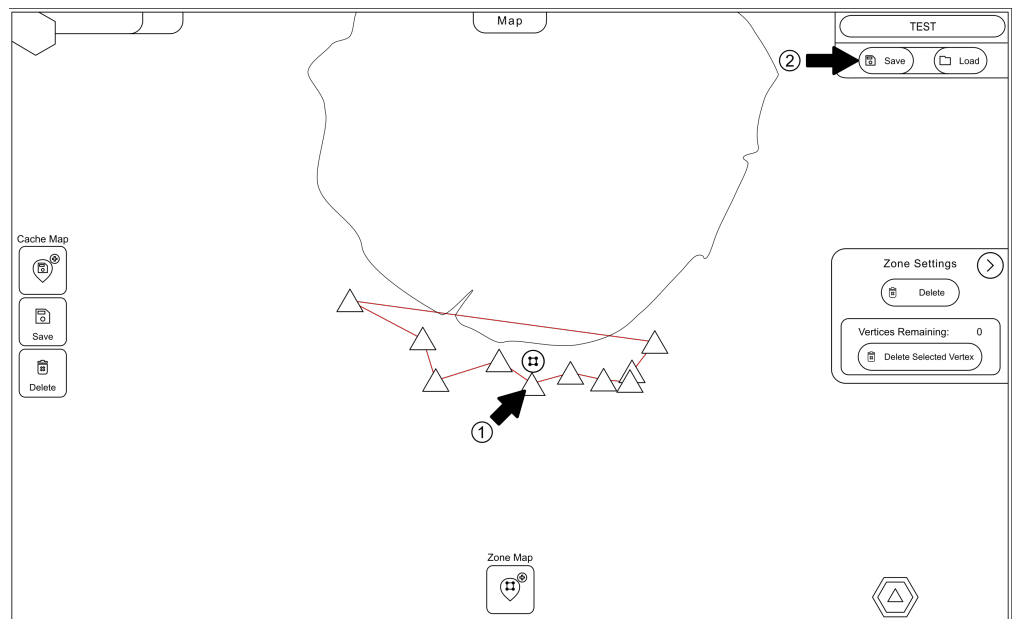
## Define and Save Exclusions Zones

Click and drag the zone map icon to the area you wish your USV won't go.



The area inside the box will be saved to onboard storage and will be saved offline.

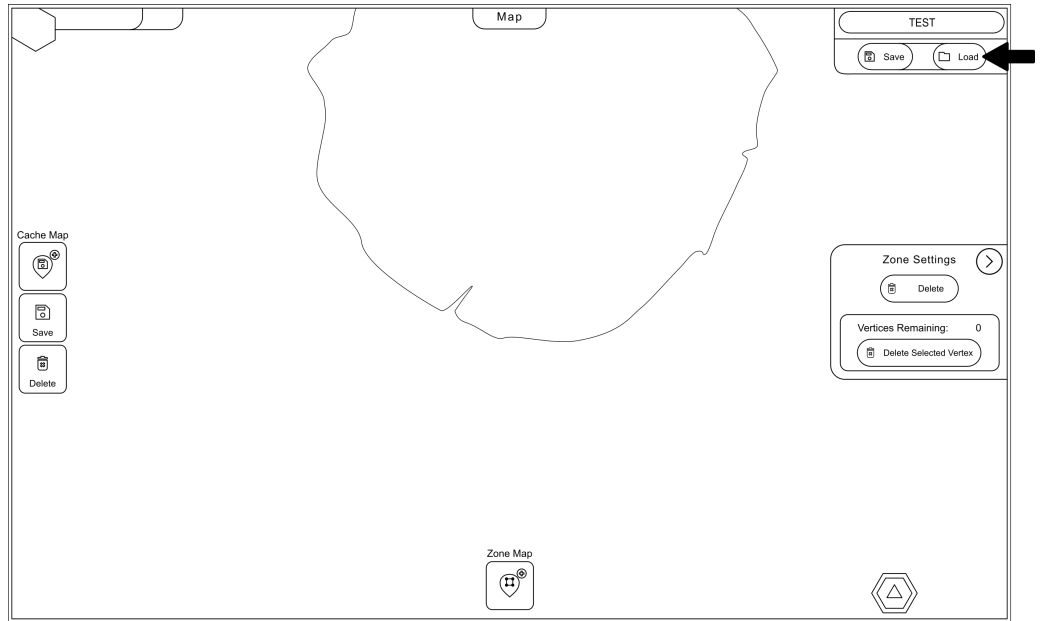
Move the triangles to the exactly location you wish to be avoided by the USV and then click save.



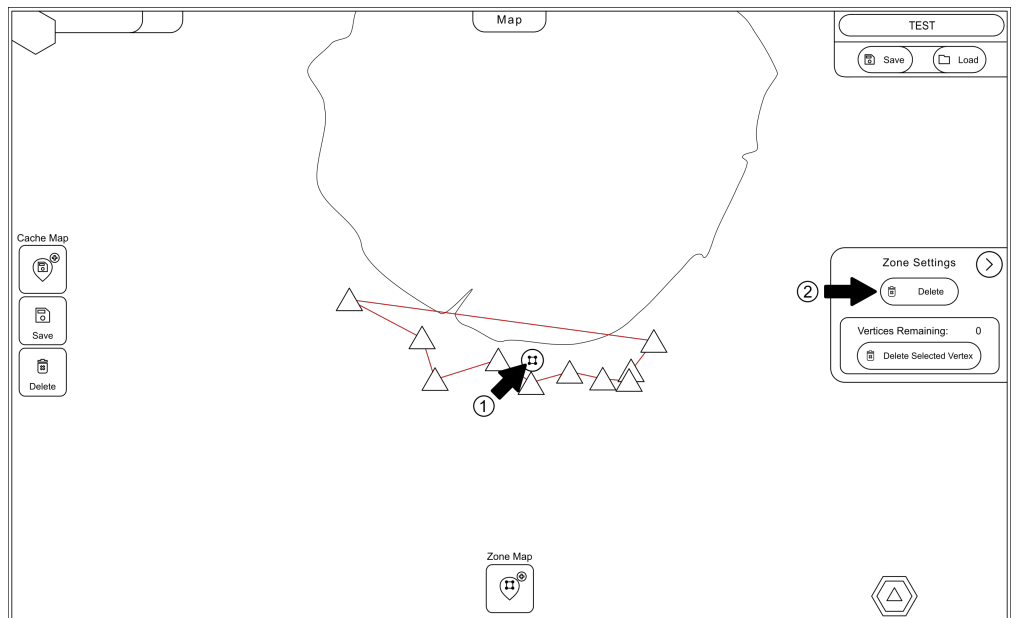
# Mode Map

## Open and Delete Exclusions Zones

On the top right of your app, click in Load to locate the exclusion zones saved on your app.



Click on the icon and then press delete.




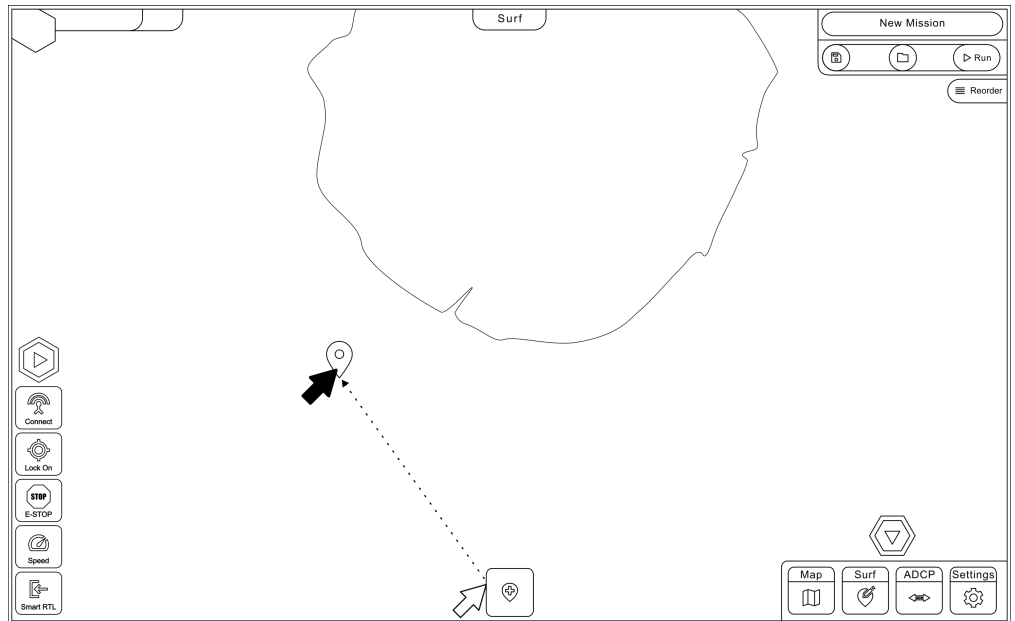
# Mode

## Surf

Before initiating any mission using the app and controller with your Surfbee, consider various factors that may affect the safety and success of the mission. In particular, take into account the water flow levels, currents and tides in the area where the mission is to be carried out.

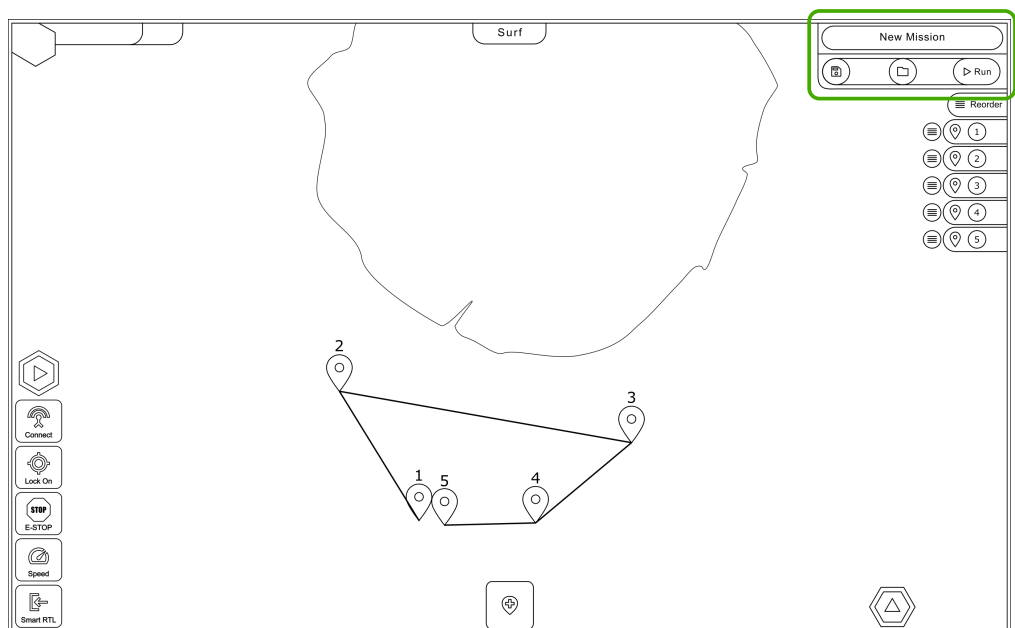
### Create a New Mission

Click on Surf on the bottom right, then click on  and drag to each point to create a mission.



### Save a New Mission

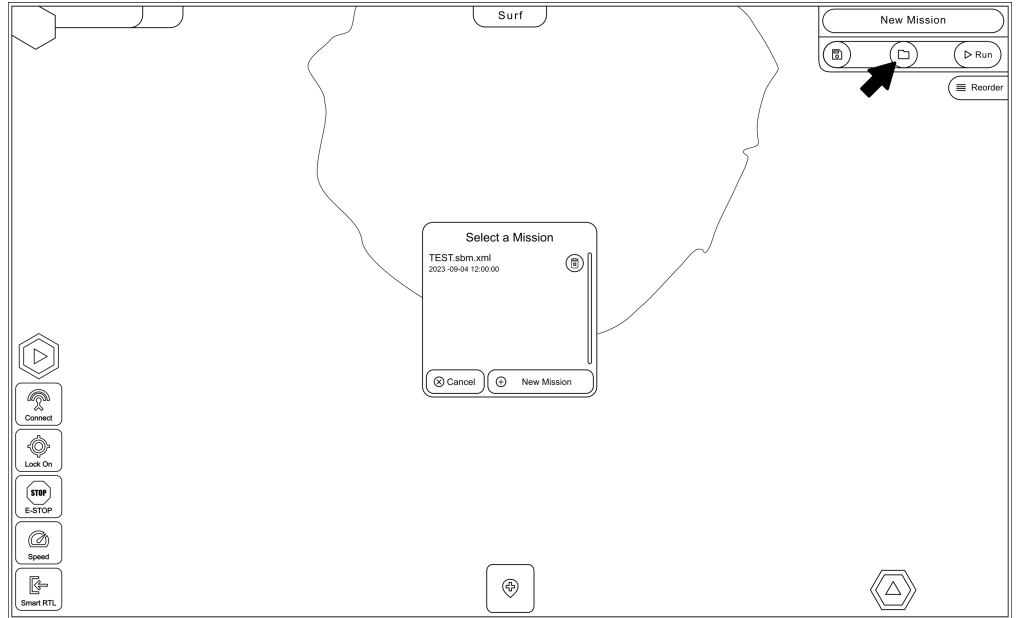
At the top right of the app, use the text box to rename the mission and then click on the save icon.



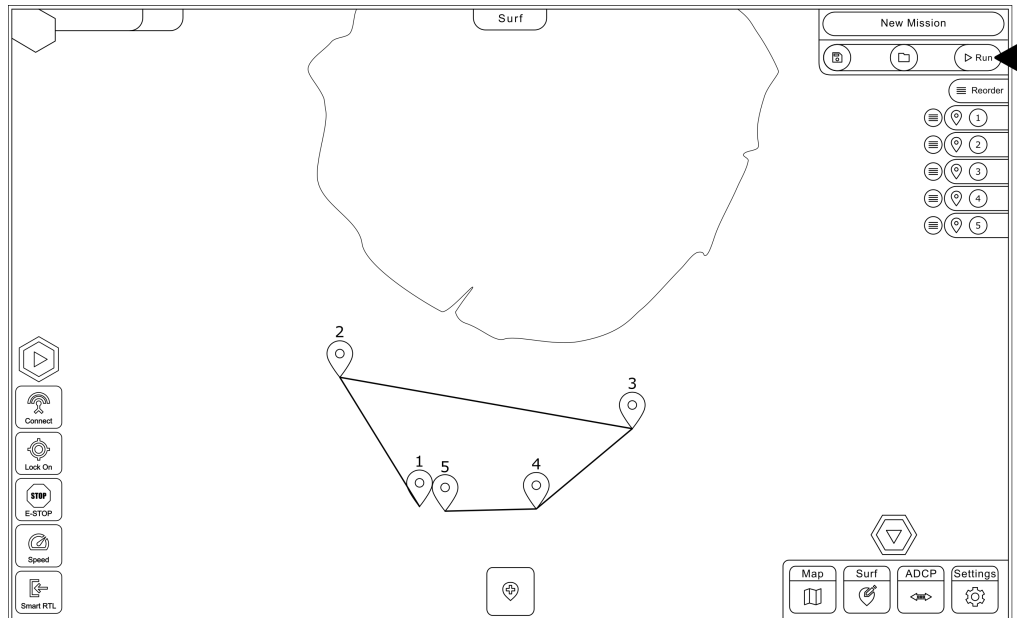
# Mode Surf

## Open and Run Mission

At the top right of your app, click on the folder icon to open a saved mission.



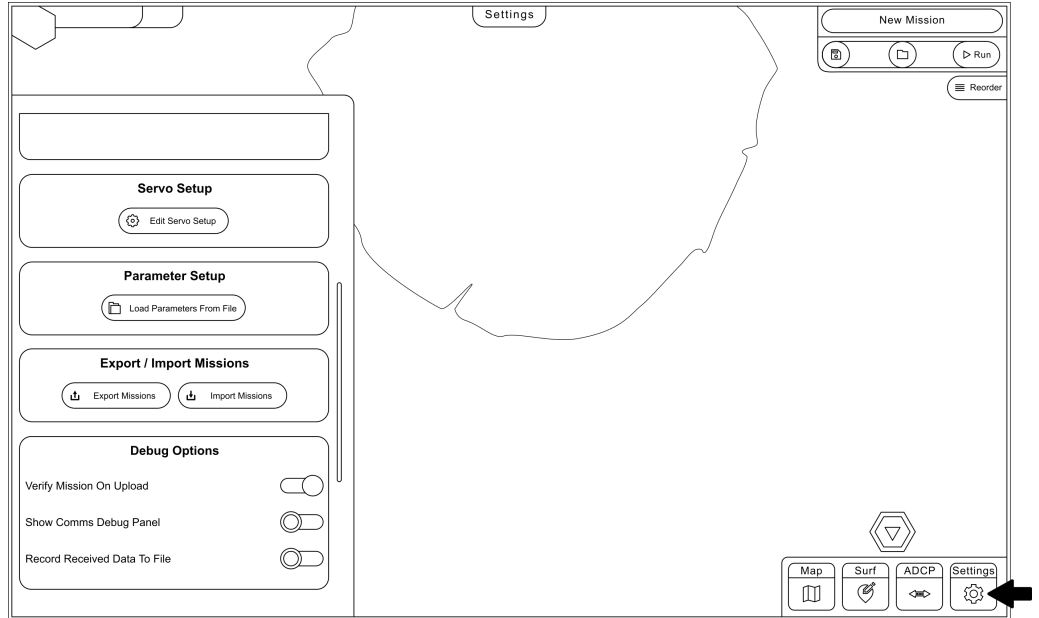
Then, press Run to start the mission.



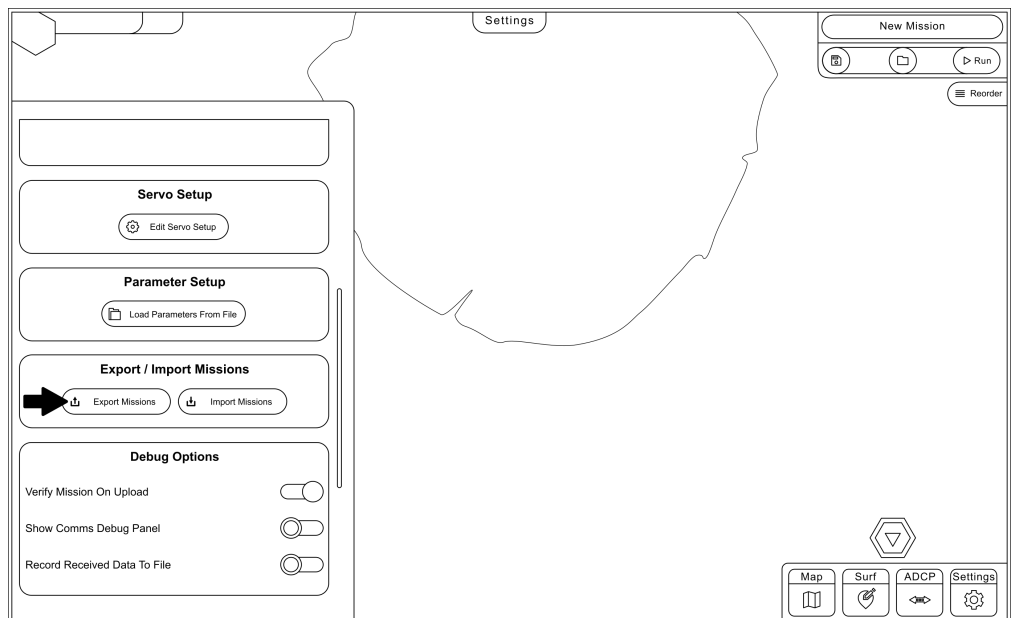
# Mode Surf

## Export a Mission

On the Surfbee App, click on Settings.

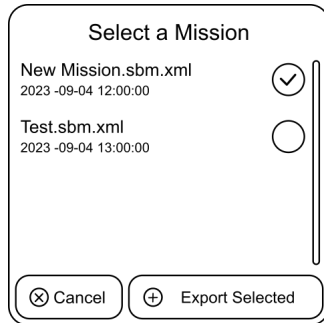


Then, scroll down to “Export/Import mission”. Click in Export Missions and select the mission previously saved.



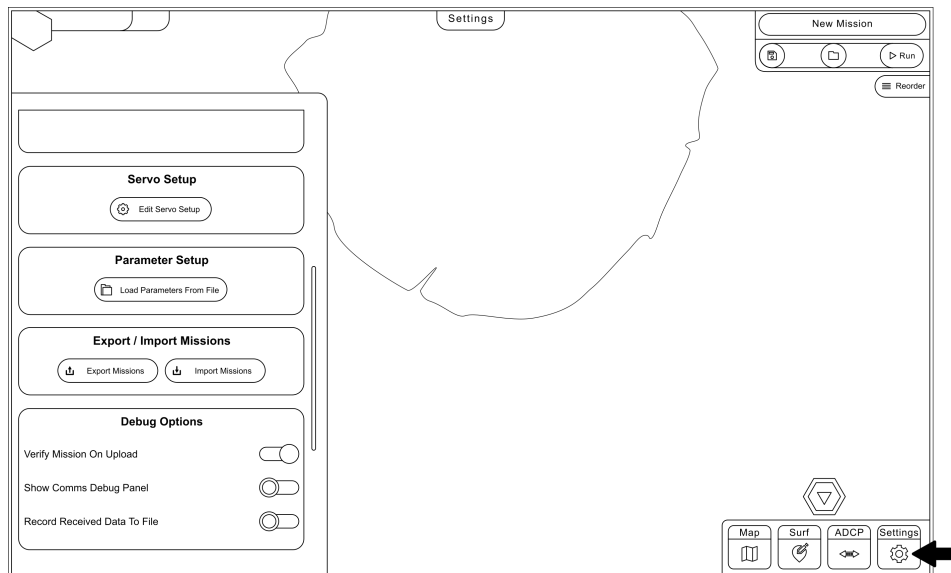
# Mode Surf

Select the Mission you wish to be saved and then, click on "Export Selected", saving the file in your drive.

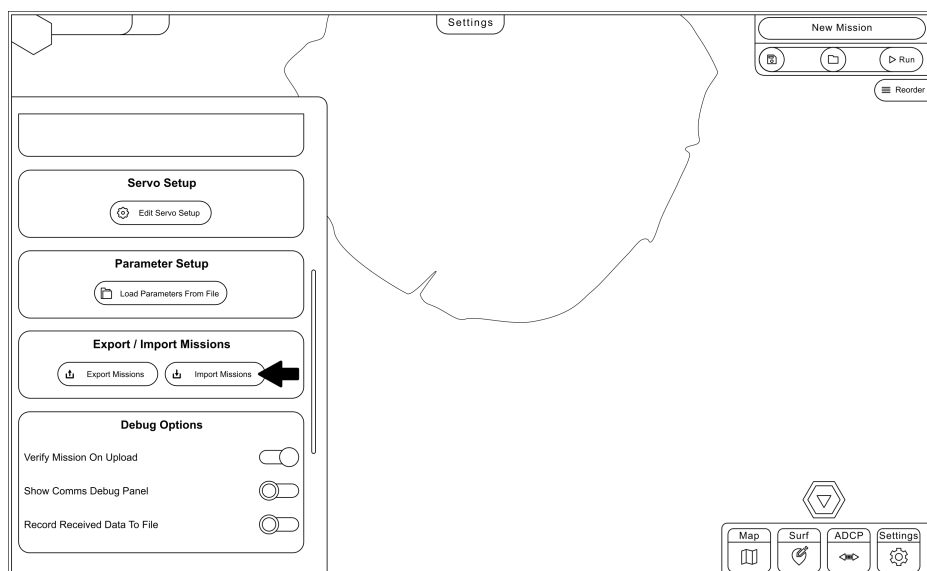


## Import a Mission

On the Surfbee App, click on Settings.



Then, scroll down to "Export/Import mission" and select Import Missions.

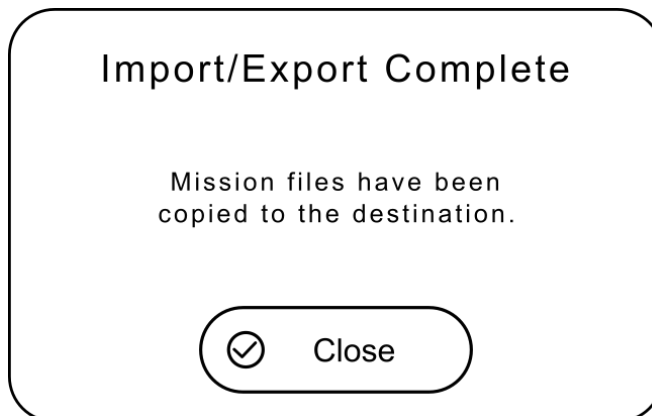


# Mode Surf

Choose the mission previously exported and click on Select.



Once you selected, the follow pop up should appear on your screen.



# Mode

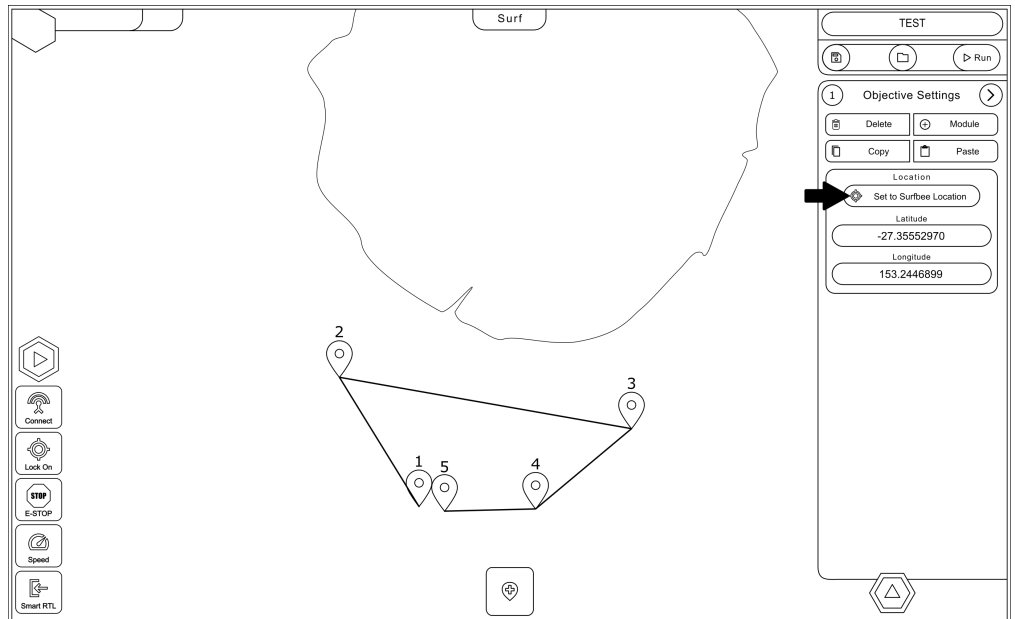
## Surf

### Modulating and Adjusting the Missions

While you are creating or modifying your missions, follow these steps to modulate each point of the mission.

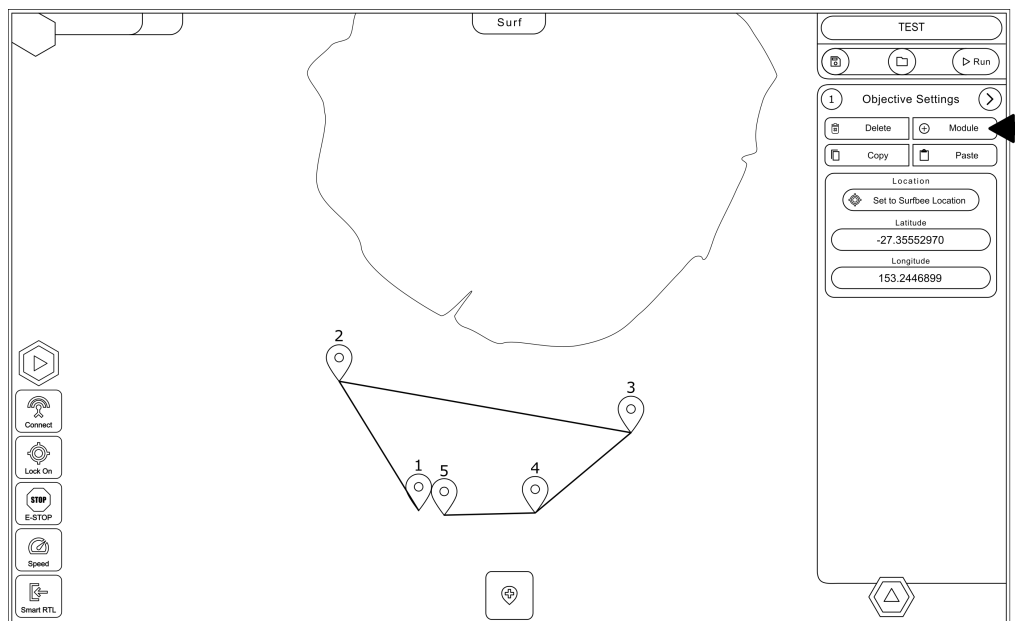
#### Set to Surfbee Location

Use this to set the current GPS location from the Surfbee to this objective.



#### Loiter

To define a specific loiter time after arriving at an objective, click on the objective at the right side of the app, and then click on modulate.

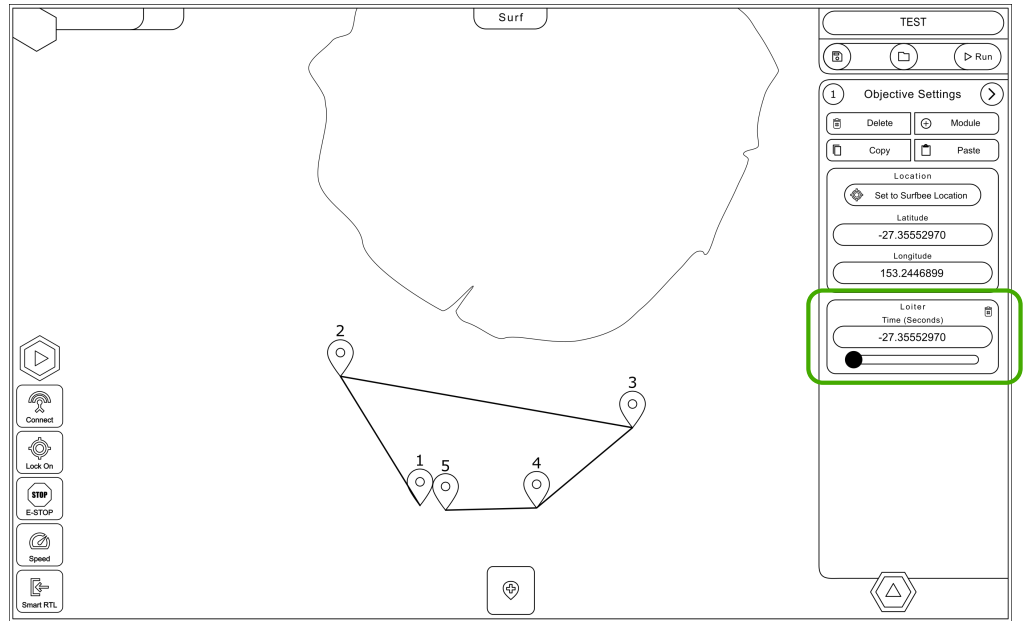




# Mode

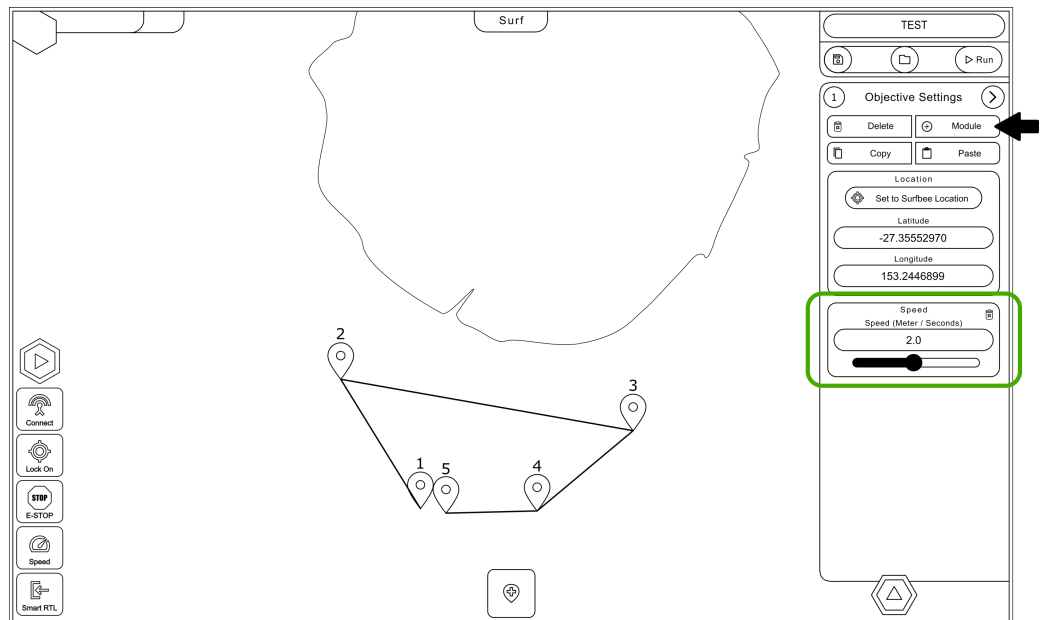
## Surf

Choose the "Loiter" option and specify the duration (in seconds) for which you want the USV to hold its position.



## Speed

Click on module, and then on speed and select the desired speed. The vessel will continue on that speed until the next objective of the mission.

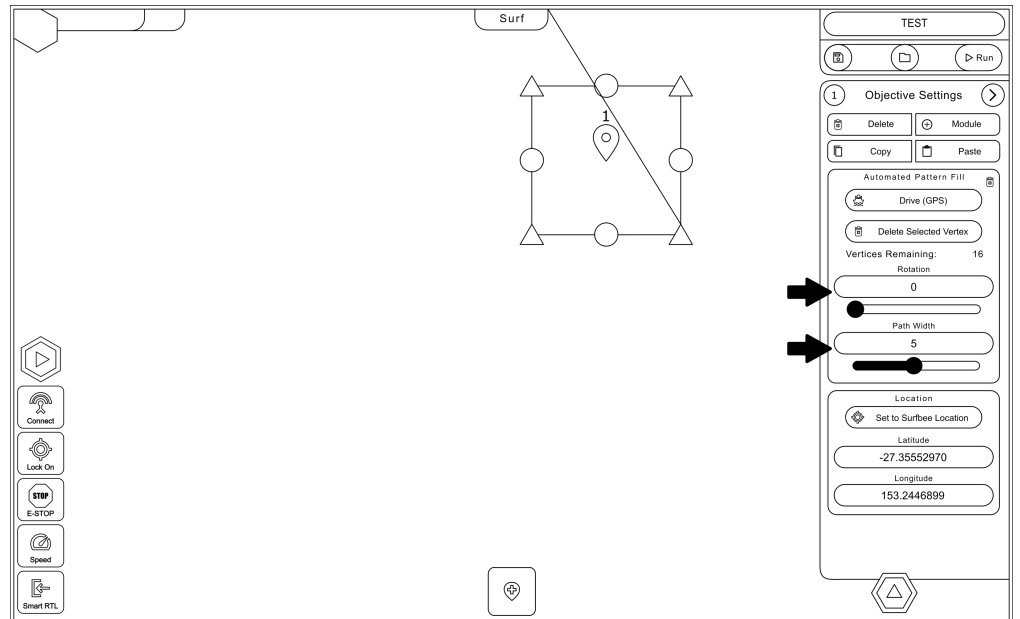


# Mode Surf

## Pattern Fill

Click on modulate and select Pattern Fill.

Drag the points to select the area and adjust the patterns by Rotation or Path Width.

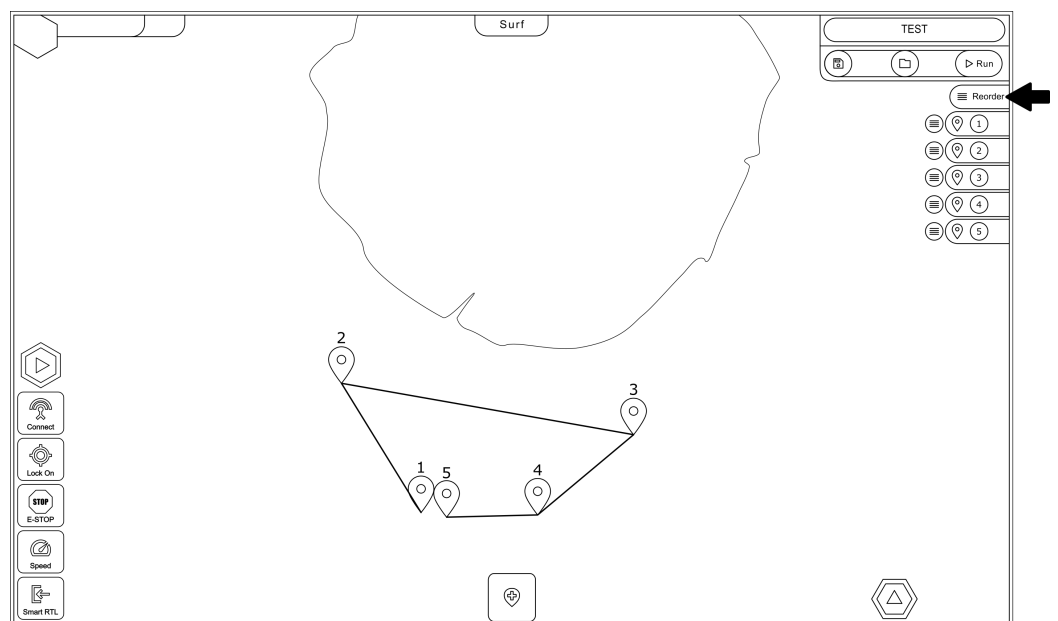


## Winch

In development.

## Reorder

To reorder any objective, simply click on the Reorder button at the right side of the app and drag the objectives to any position you would like.

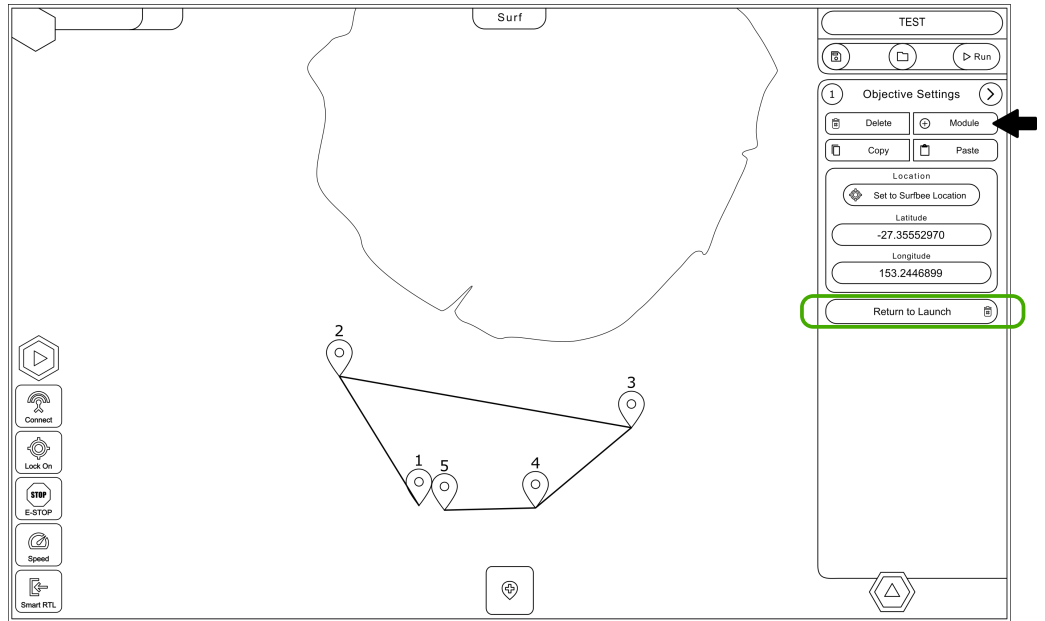


# Mode

## Surf

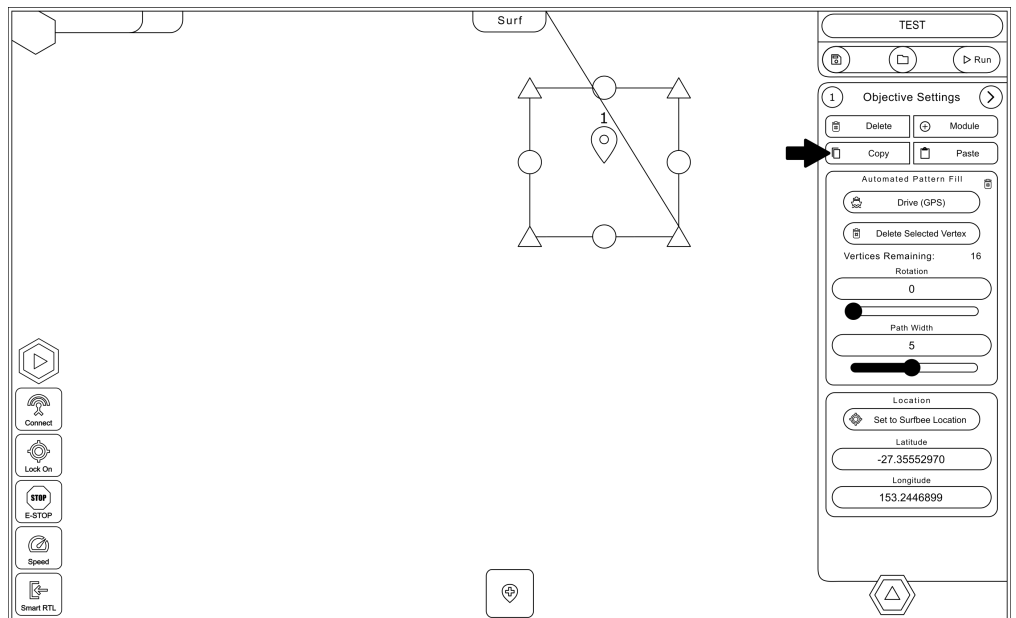
### Return to Launch

Click on modulate and then select Return to Launch. The vessel will return to the launch point after finishing this objective.



### Copy and Paste the Modules from One Objective to Another

Go to Objective Settings and after modulating this objective, click on copy.

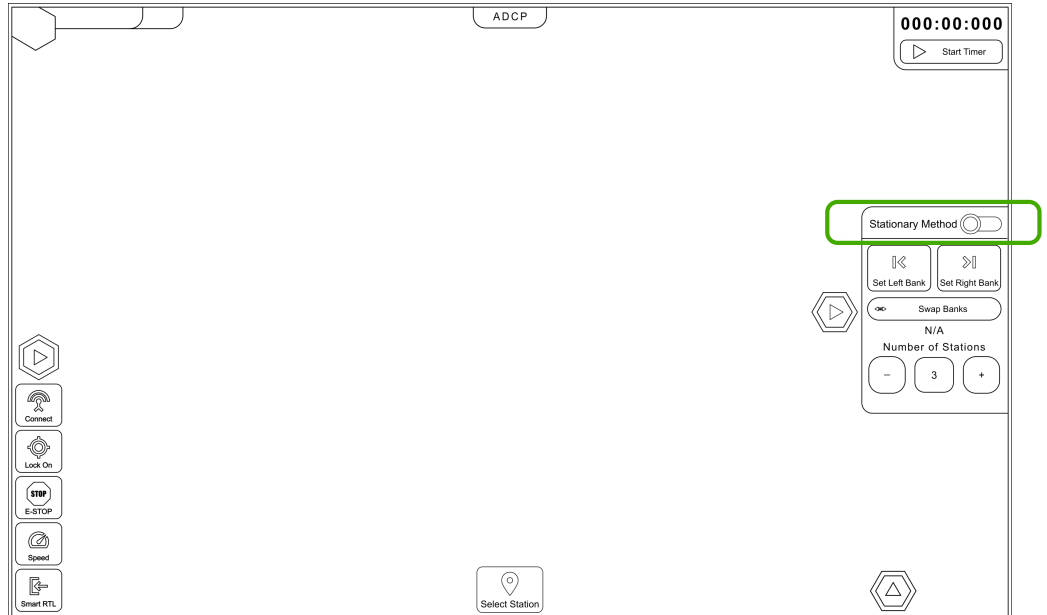


Go to the next objective and click paste, and all the settings will be pasted to this objective.

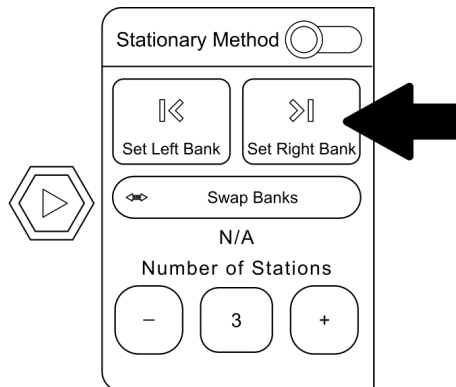
# Mode ADCP

## Start Measurements on STATIONARY METHOD

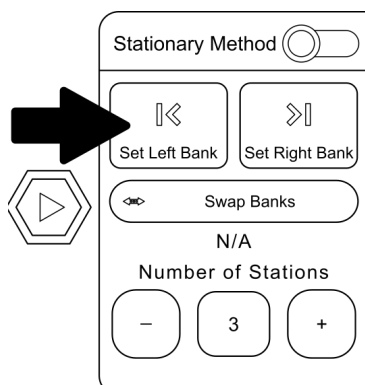
To start this measurement, select the stationary method and drive the vessel to the launch point.



Once you arrive at the launch point, click on Set the Right Bank and drive to the ending desired point.

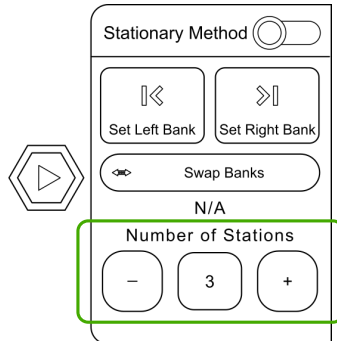


Once you arrive, click on Set the Left Bank.

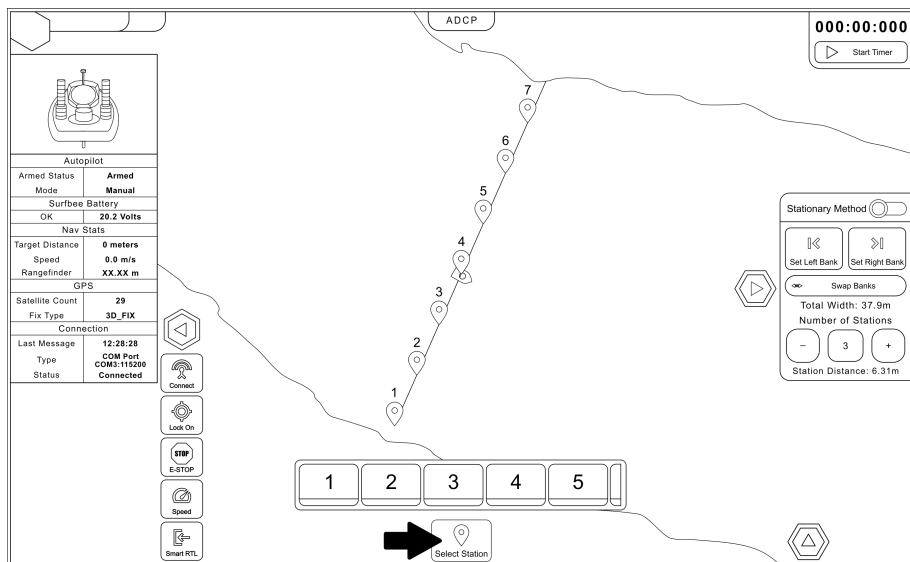


# Mode ADCP

Select the amount of stations you want to define.

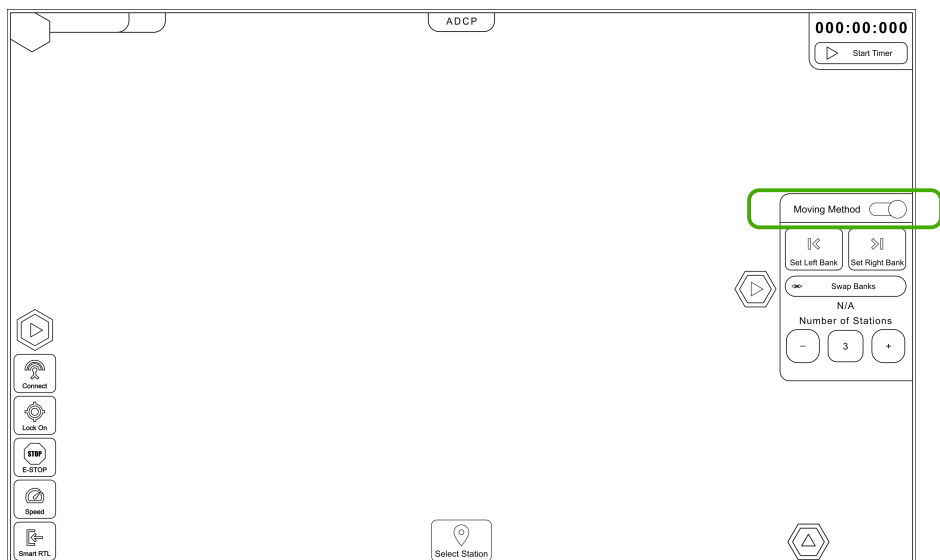


To drive the vessel to the next stop, click on "Select Station" and choose the station that you want your vessel to go.



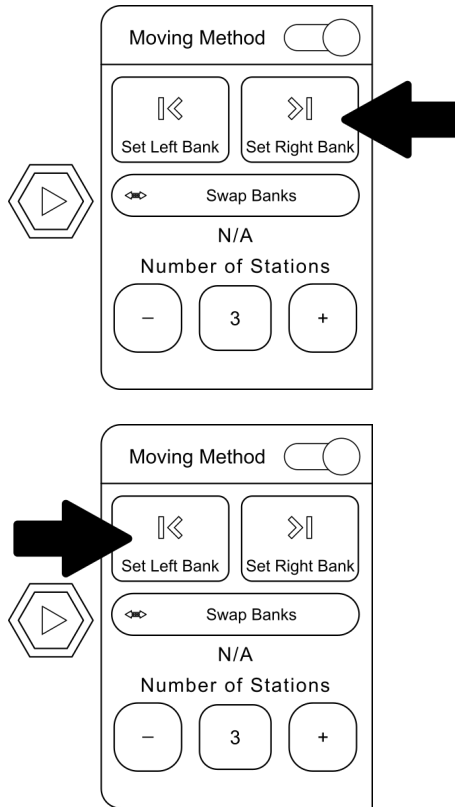
## Start Measurements on MOVING BOAT METHOD

Turn off the stationary method and drive the vessel to the desired starting location.

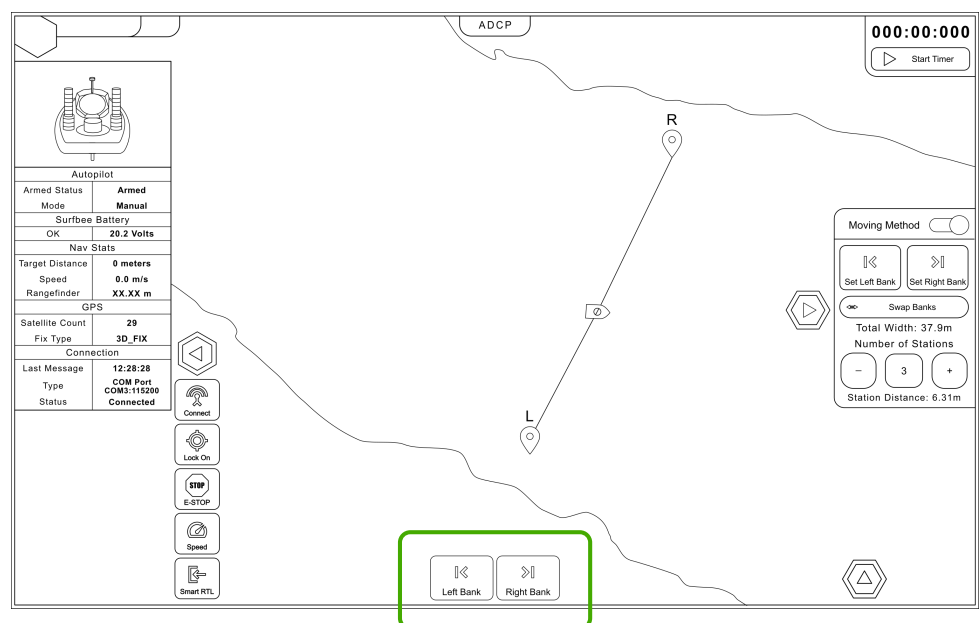


# Mode ADCP

Select “Set Right Bank” then drive the vessel to the next location. After you arrive, select “Set Left Bank”.



After the vessel arrives at the location, simply click on Left” or “Right”.



## Mode ADCP

The pop up message will appear asking if you are sure you would like to go to the next bank, click on Confirm and the vessel will drive to the next bank.



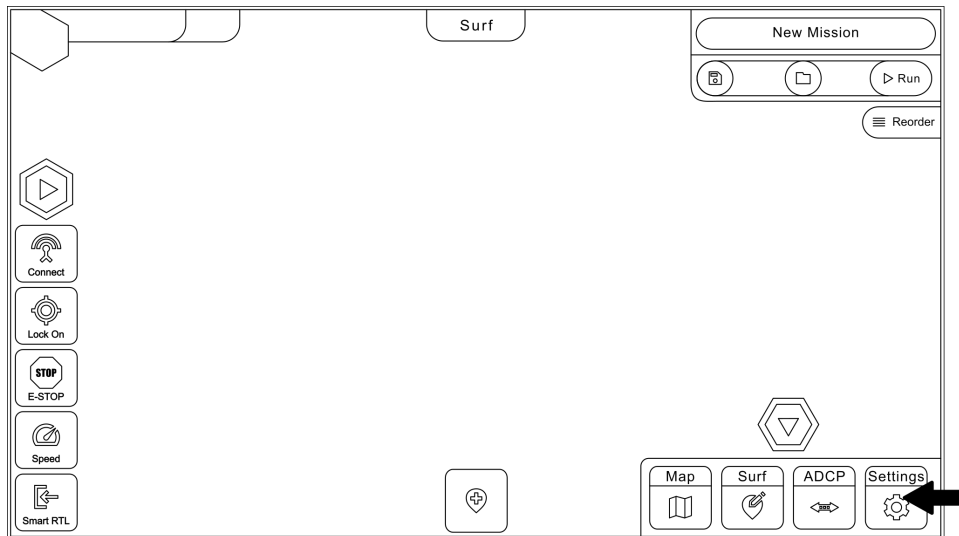
# Settings

## NTRIP Options

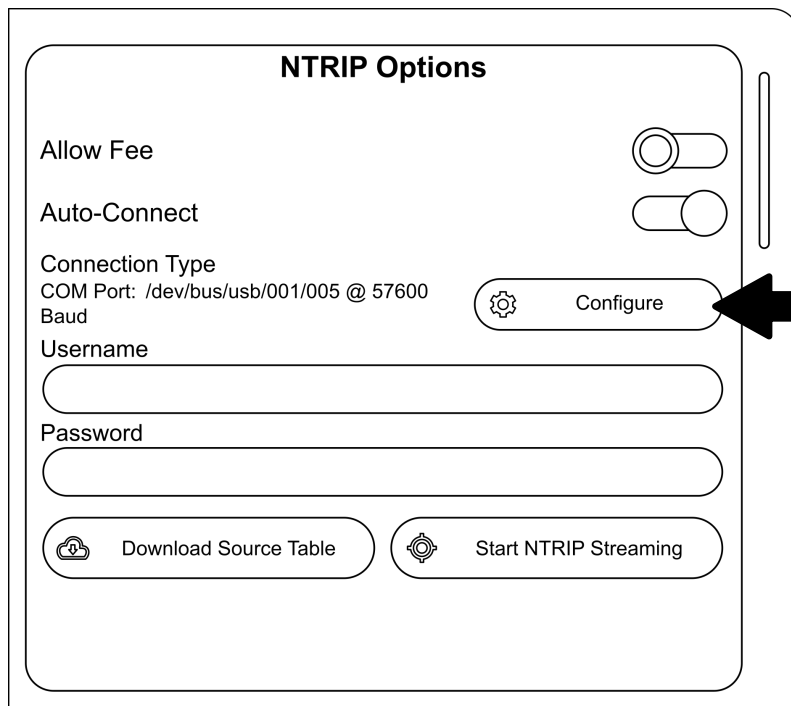
Surfbee App is powered with NTRIP options. You can use the RTK base station (check the RTK Base Station User Manual) or you can follow these instructions to use NTRIP provider via internet connection.

Before starting, make sure your transmitter has 4G connecting through a SIMCARD and make sure the transmitter is successfully connected to your vessel.

Open the Surfbee App and in the app, navigate to the 'Settings' section.



Open the Surfbee App and in the app, navigate to the 'Settings' section.





This screen below will pop up. Enter NTRIP URL and Port:

In the provided field, select HTTP and enter the NTRIP URL followed by a colon (":") and then the port number.

For example, if your NTRIP URL is ntrip.example.com and the port number is 2101, you would enter ntrip.example.com:2101.

NTRIP Connection  
Provide connection information...

< HTTP >

https://ntrip.data.gnss.ga.gov.au:443

✓ Save

After entering the URL and port number, click on 'Save' to store these settings.

Next, input your NTRIP username and password in the designated fields. These credentials are usually provided by your NTRIP service provider.

## ADVANCED SETUPS

### Edit Servo Setup

In this section, you have the flexibility to fine-tune the characteristics of the thrusters, allowing you to customize the rotation direction. For instance, if your setup includes two propellers on the left side, and you need to reverse the rotation direction of one of them, you can make the necessary adjustments here.

Servo Setup

⚙ Edit Servo Setup

### Servo Direction Setup

Show Hidden

Refresh

Servo ID	Function	Direction	
9	ThrottleLeft	DEFAULT	<span>↻ Set REVERSED</span>
10	ThrottleRight	REVERSED	<span>↻ Set DEFAULT</span>
11	Script1	REVERSED	<span>↻ Set DEFAULT</span>

### Load Parameter From File

This is an advanced function that allows you to configure the vessel for specific features that are not standard with support of Surfbee's Team. For more information, please contact our support team.

### Parameter Setup

📁 Load Parameters From File

### Load Parameters From File

📁 Load File

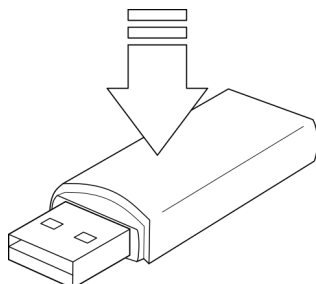
↻ Commit All

⚠ No Connection

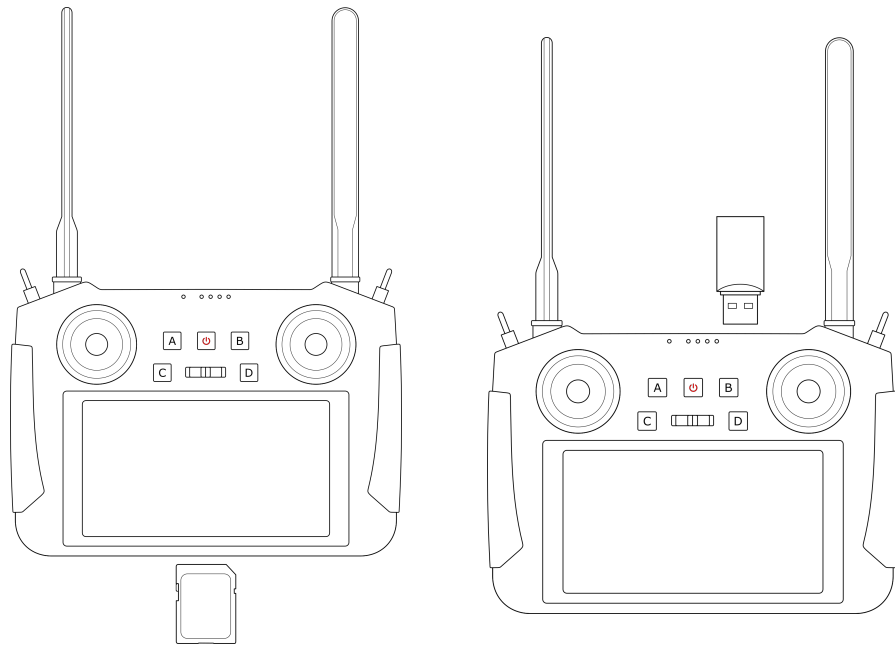
State	Parameter ID	Type	Current Value	New Value	Action

### Update Software

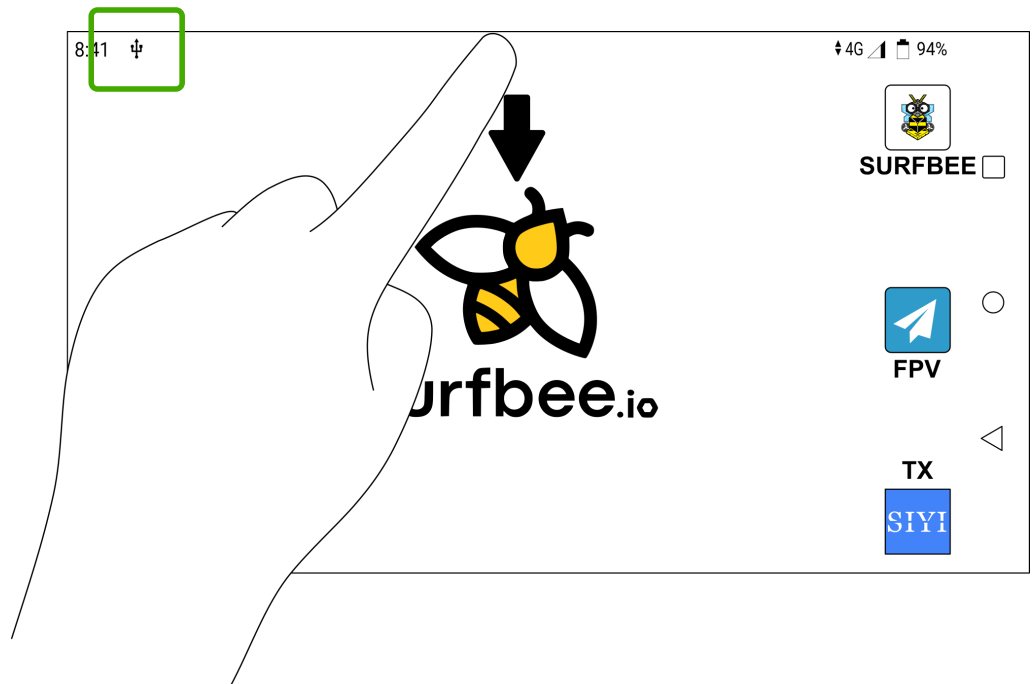
Download the new version of the software and paste it to a USB stick or SD card.



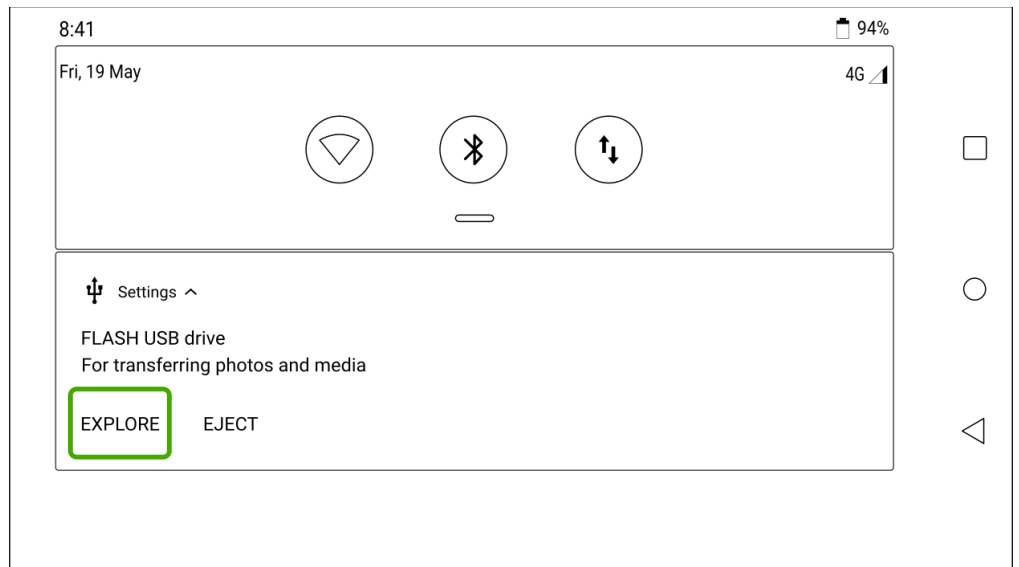
Turn on the Surfbee transmitter and insert the USB stick in the USB port on top of the transmitter or the SD card in the bottom of the transmitter.



In the top left corner there should be a small USB icon. Swipe down from the top of the screen.



The below screen should appear, tap the EXPLORE text.



-----  
This will allow you to find and select the new Surfbee App APK file on your USB stick.  
-----

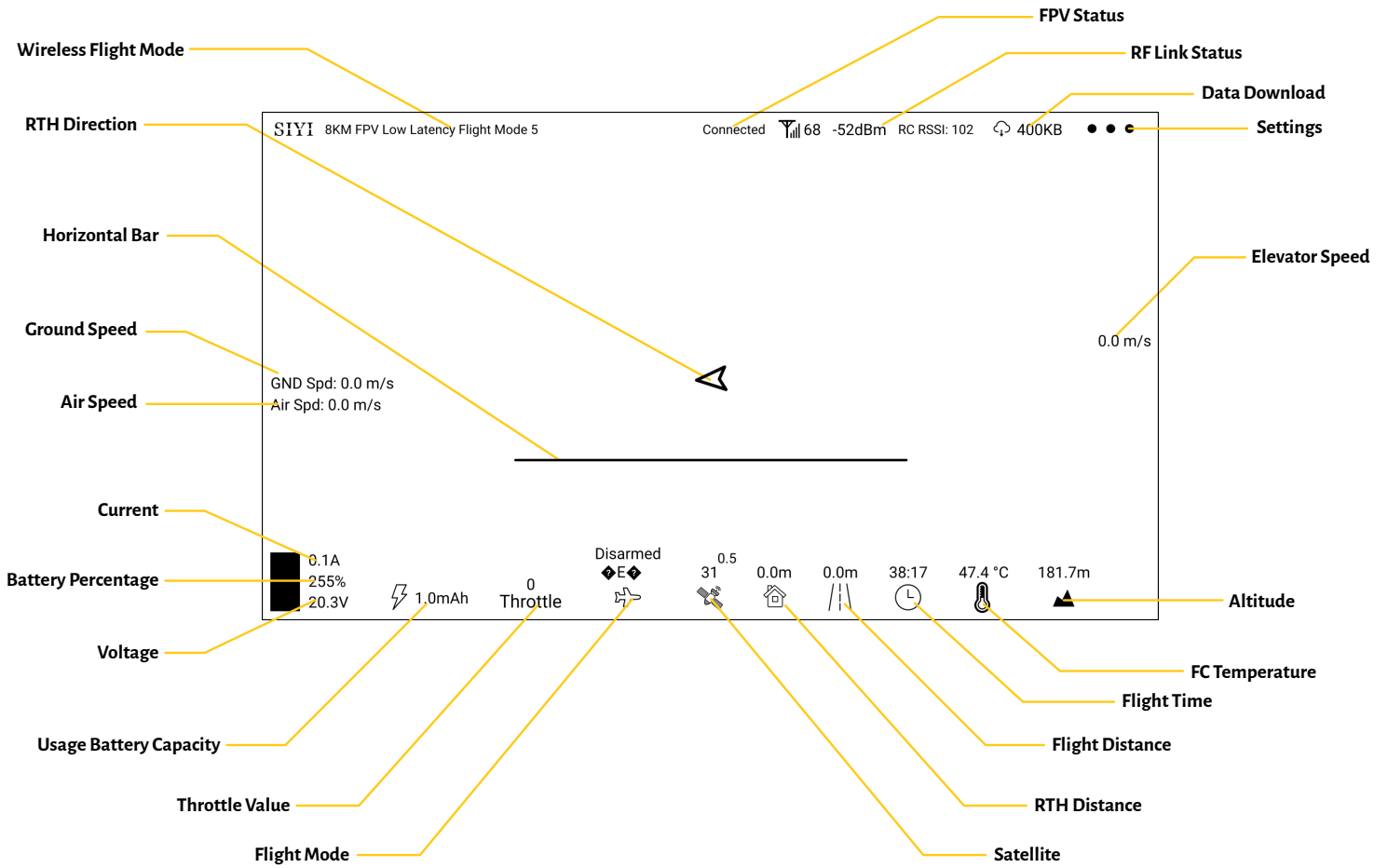
Tap on the APK file, select CONTINUE for the install process. The New Surfbee app will install over the top of the old one.

### Debug Options

This tool is for development only and should not be used as part of operation.

# FPV - Camera Function

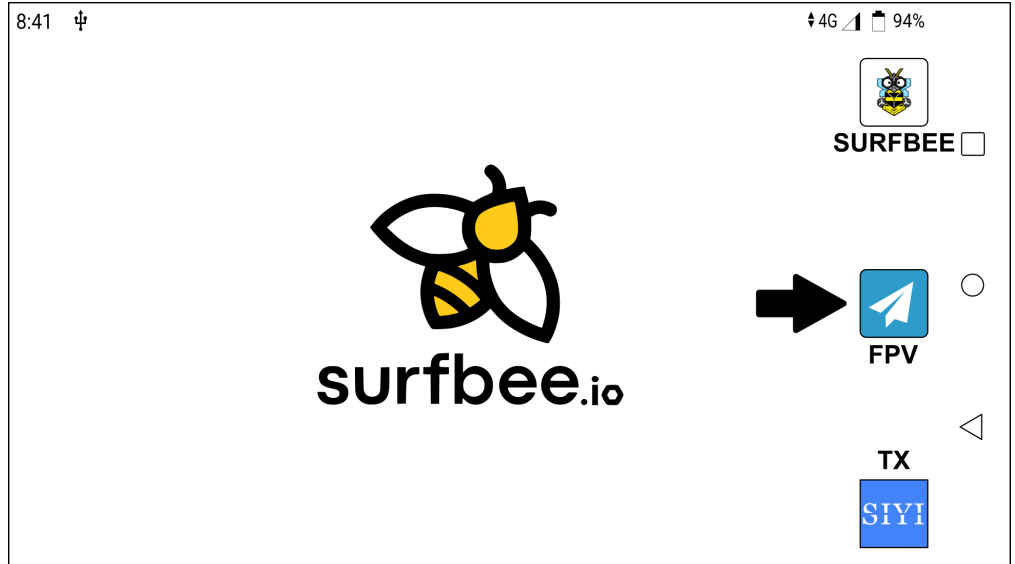
## Overview



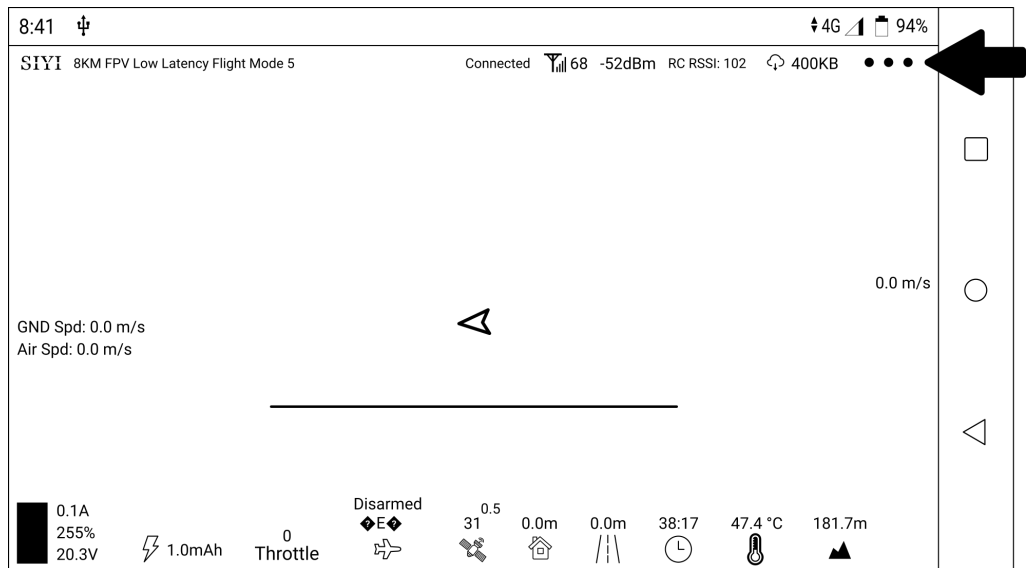
# Understand Camera Settings on the FPV App

## Open Camera Setting

Turn your controller on and make sure it is connected to your vessel. Then, go to FPV icon.

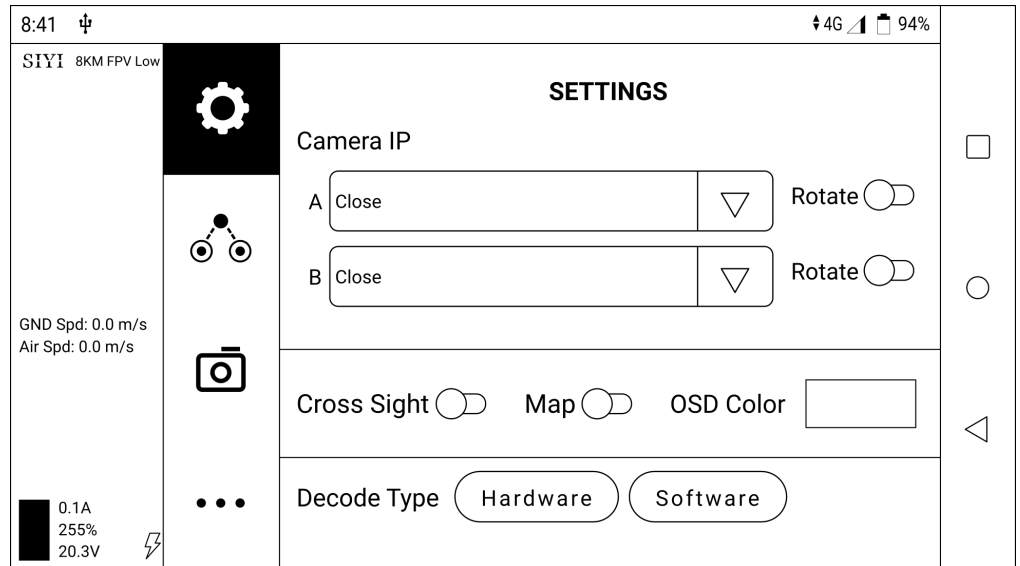


To open the settings on the camera, simply click on the 3 buttons on the top right of your screen.



This will open the settings.

## SETTINGS



**Camera IP:** Select the camera in use and turn off the camera not in use. The “Rotate” buttons allows you to rotate the image in 180 degrees.

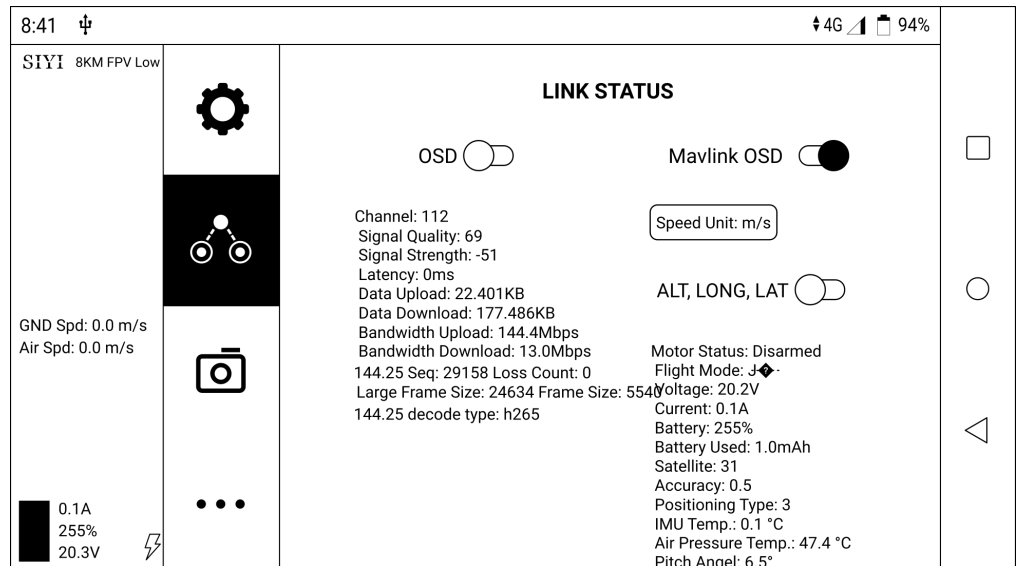
**Cross Sight:** Display a cross sight in the center of the image.

**Map:** Display the flight map at the left-bottom corner of the app.

**OSD Color:** Adjust the color of all OSD information.

**Decoding Type:** Switch between “Hardware Decoding” and “Software Decoding”.

## LINK STATUS



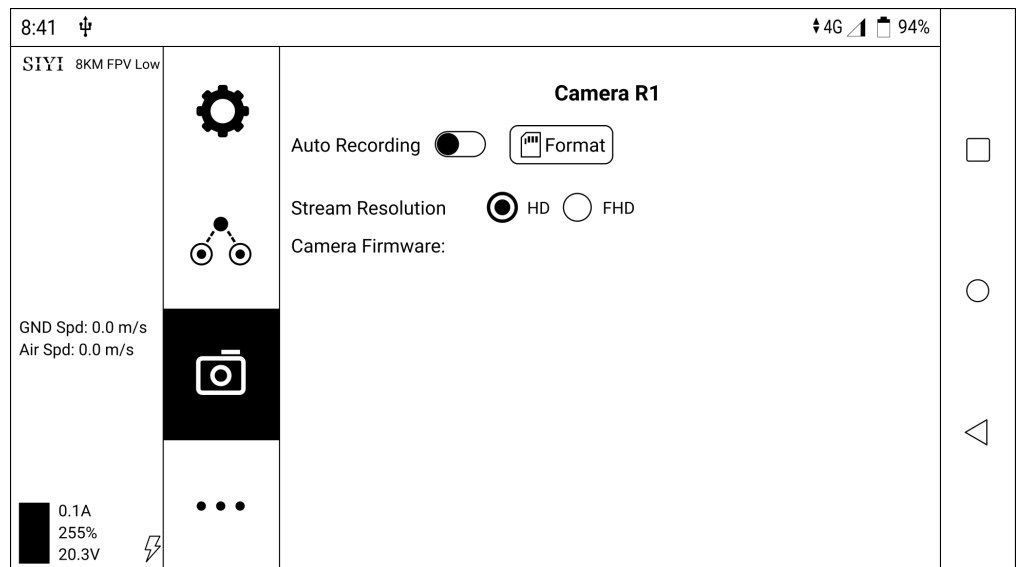
**OSD:** Enable / Disable standard OSD information.

**Mavlink OSD:** Enable/Disable Mavlink OSD (on screen display) information.

**Speed Unit:** Switch speed unit between meter per seconds and kilometer per hour.

**Longitude and Latitude:** Enable/Disable information.

## CAMERA R1 Settings



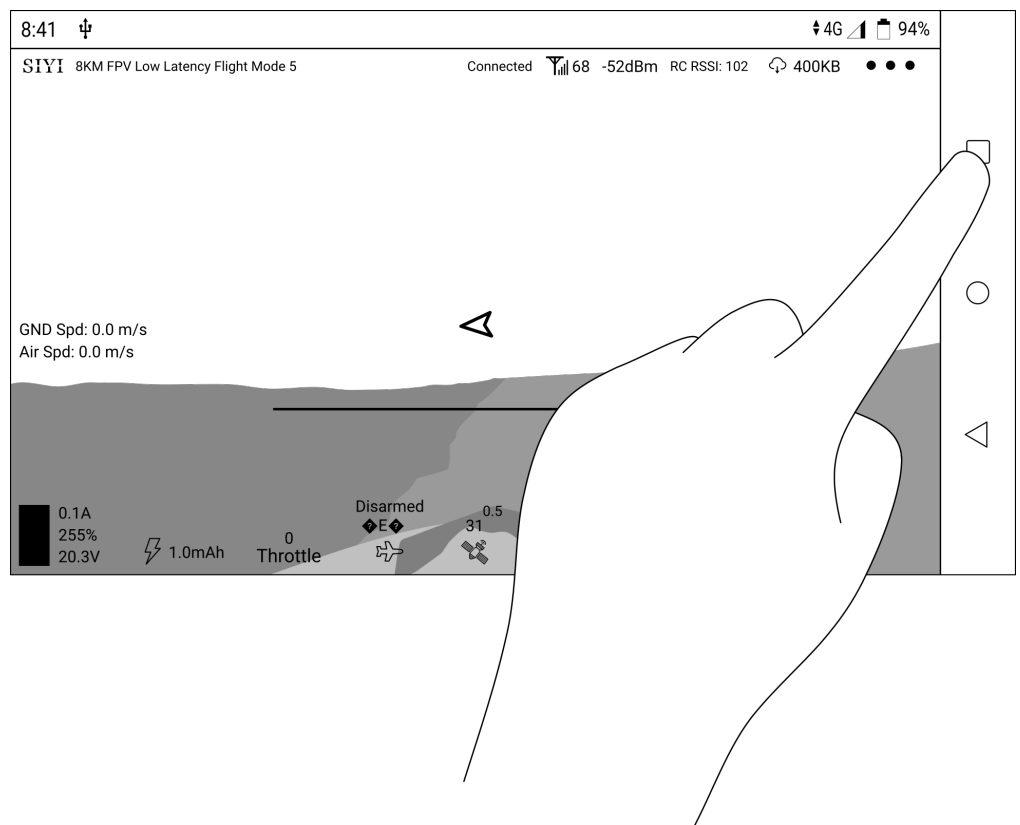
**Auto Record:** Turn on/off automatically video recording by TF card on camera start.

**Color Mode:** Switch camera's color mode between Daylight and Night Vision.

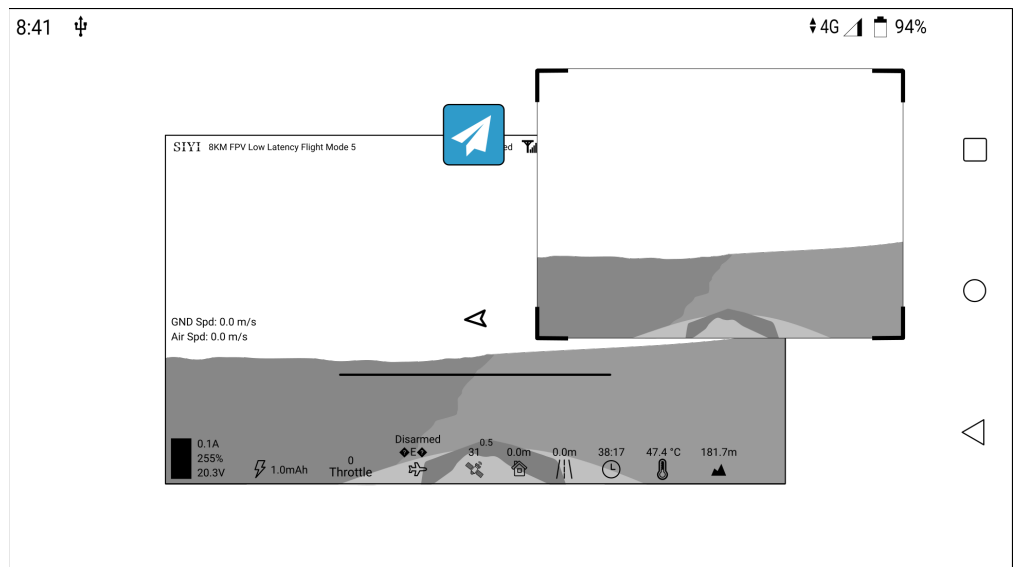
**Resolution:** Switch camera real-time video streaming resolution between HD (720p) and Full HD (1080p).

## Visualize the Camera while Operating Your Surfbee

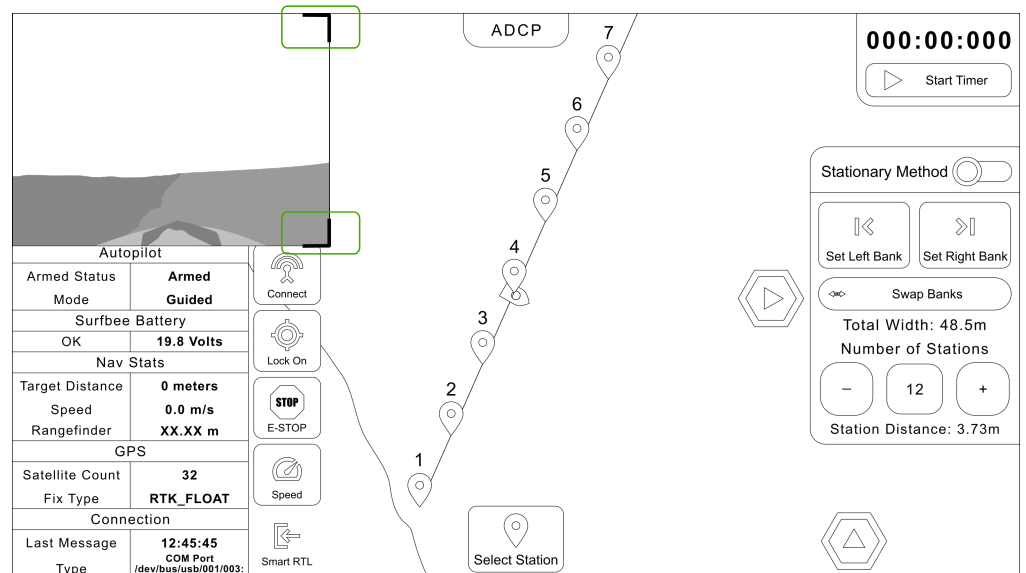
After successfully configuring your camera, swipe down on the screen and tap the square button. This action will minimize the camera feed and permit you to return to the Surfbee app keeping the camera's image.







Click and drag the edges to adjust the camera image on your screen.



## Update Firmware of Camera App

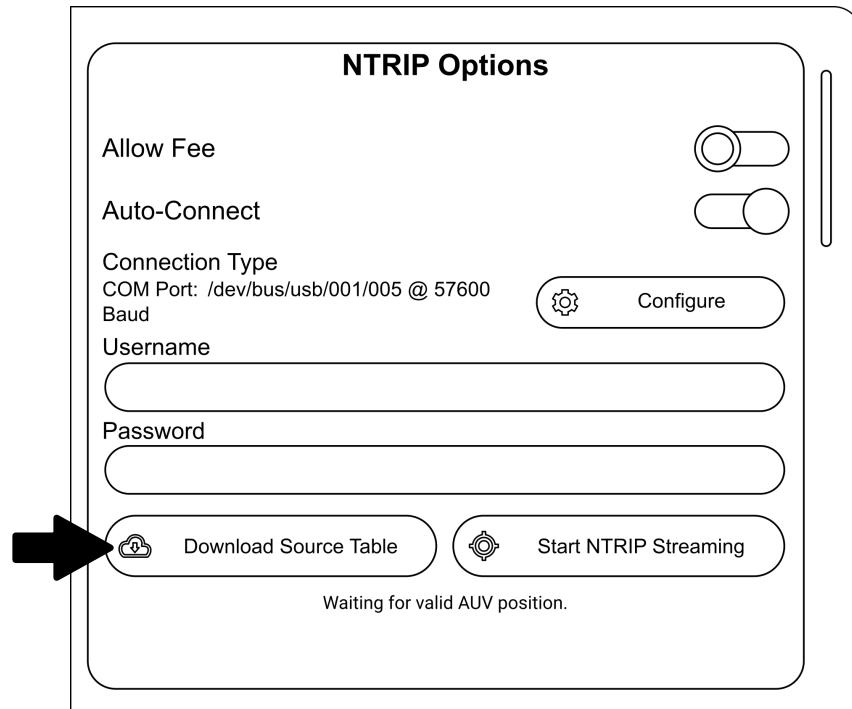
Request to the Surfbee's team updates via email to [support@surfbee.zohodesk.com.au](mailto:support@surfbee.zohodesk.com.au)

Save the camera firmware's ".bin" file to the SD / TF card's root directory and do not change the file name.

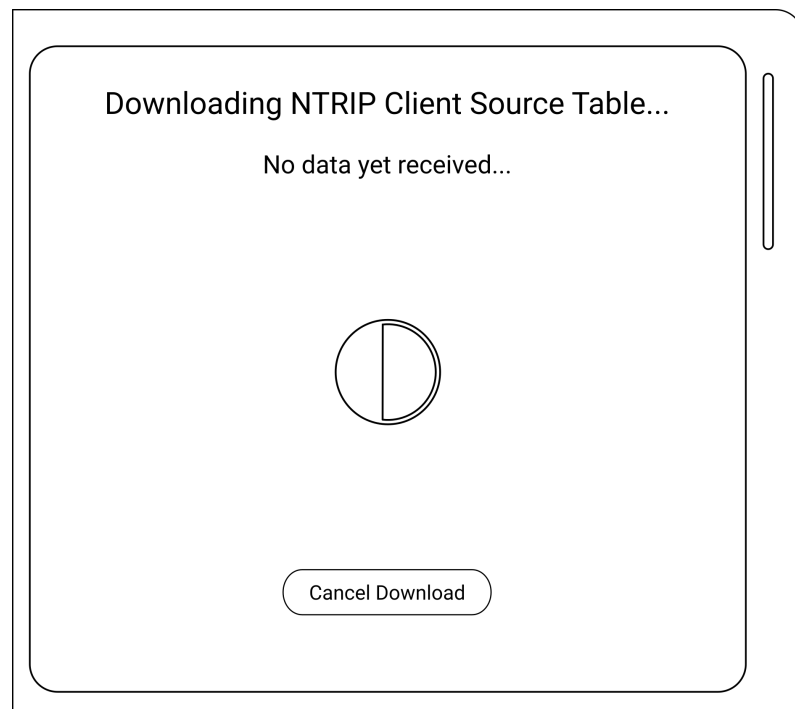
Restart the camera and wait for three to five minutes, camera firmware will be flashed automatically.

Run the SIYI FPV app to check if the camera firmware is updated or check from the "curip.txt" file in the SD card just used.

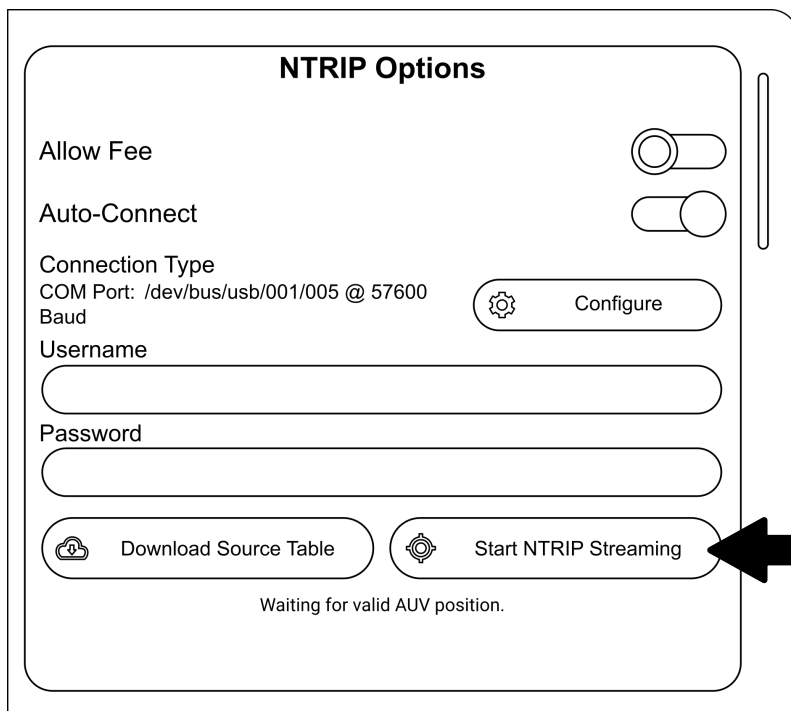
Click on 'Download Source Table'.



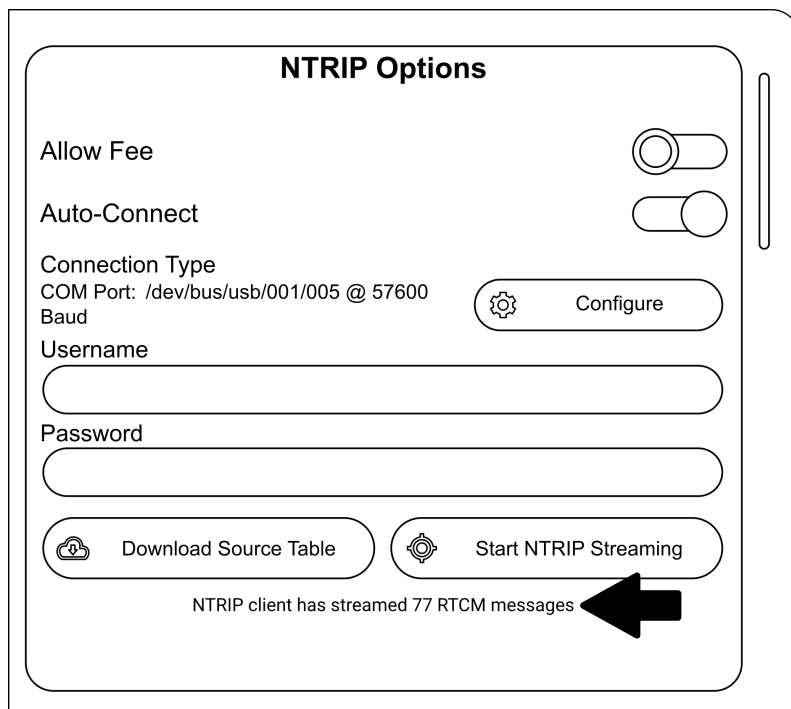
This action will retrieve the list of available NTRIP sources or base stations.



Finally, click on 'Start NTRIP Streaming'.



Your transmitter should now begin receiving RTK corrections from the NTRIP service. An alert of the RTK corrections will be received in order to verify your connection



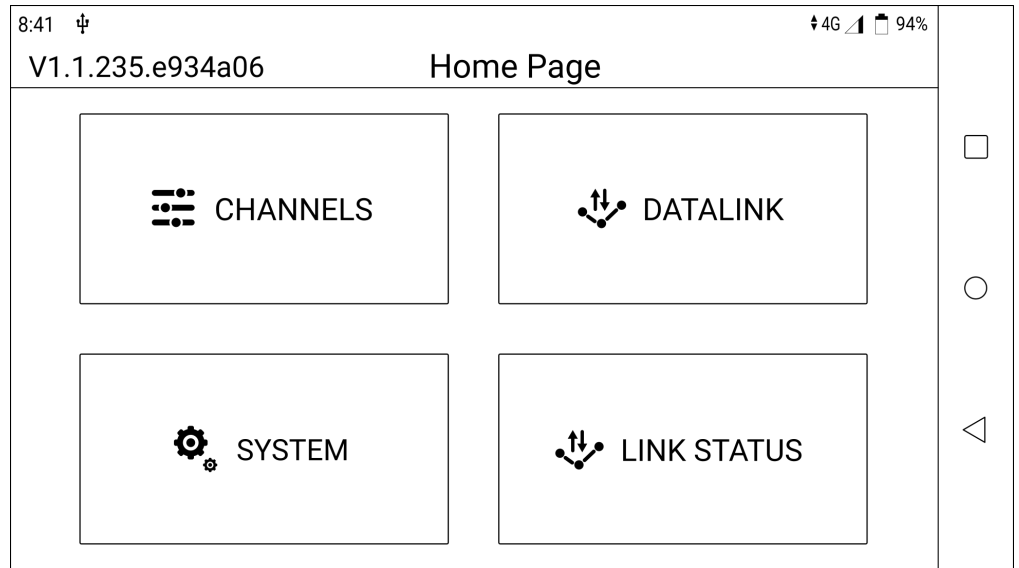
#### Additional Tips:

Ensure your device has an active internet connection if the NTRIP service is accessed online. The quality and reliability of the RTK correction depend on the proximity to the NTRIP base station and the quality of the internet connection.

If you encounter any issues, check your NTRIP service provider's documentation for specific requirements or troubleshooting steps.

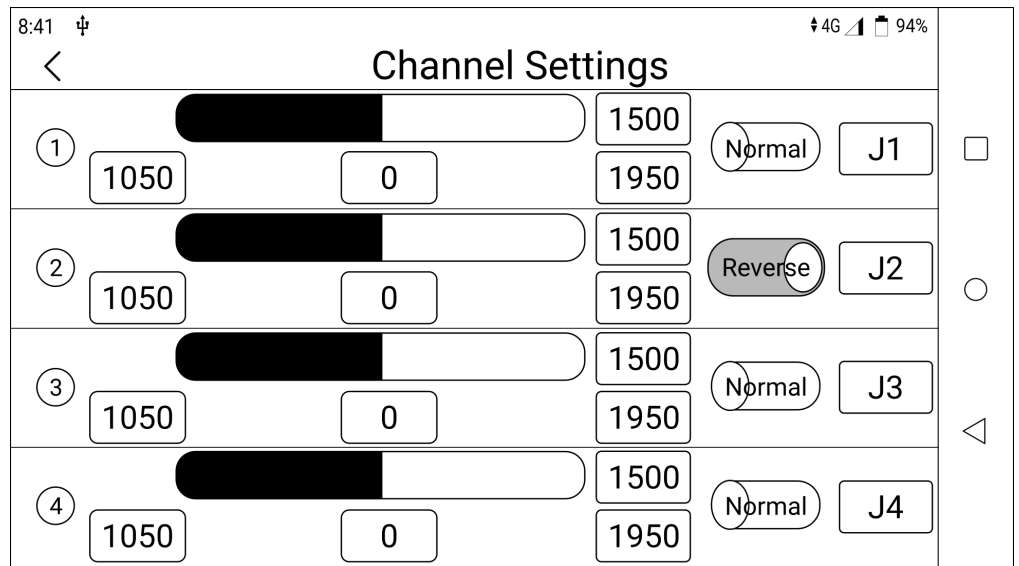
# SIYI App

## Home Page

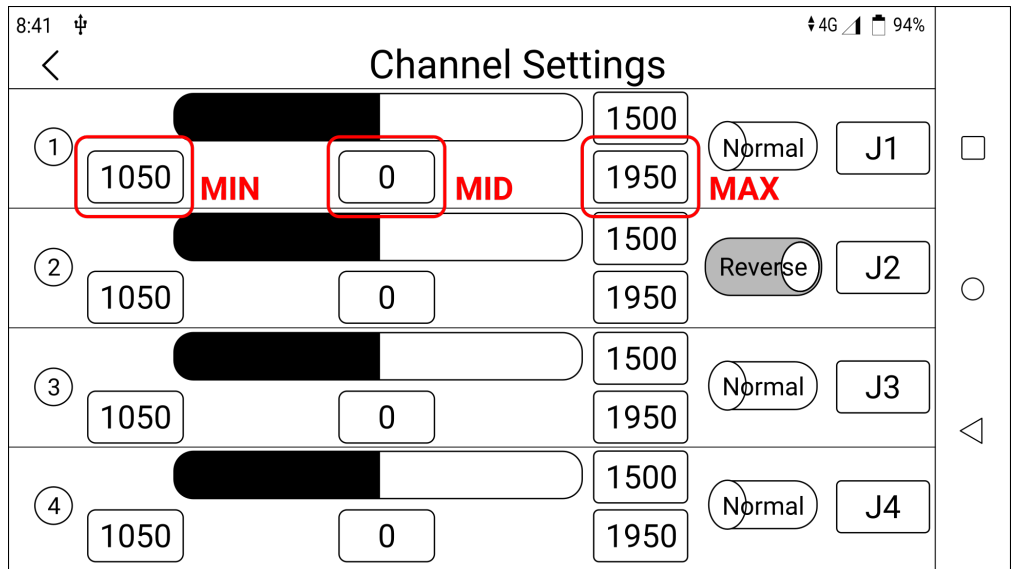


## Channels

Channel settings of End Point, Middle Point, Channel Reverse, and Channel Mapping.

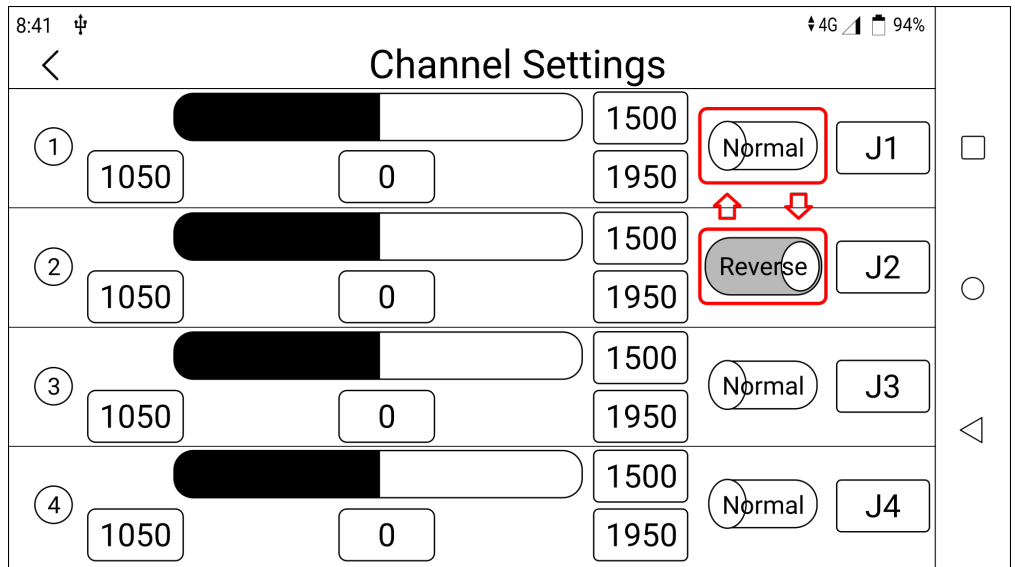


MK15 transmitter's default Endpoint range is between 1050 and 1950. The default Mid point is 0.



To change any of these parameters, simply select a target channel and input your required maximum, Mid or minimum channel value.

To reverse the channel output's direction, simply click on the normal button.



## Datalink

In Datalink Settings you can check the Device ID, switch Datalink connection and flight controller type, and configure customized baud rate.

8:41	4G 94%	
<	DATALINK	
Device ID	6801158057	<input type="checkbox"/>
Connection	USB COM >	<input type="radio"/>
Flight Controller	CUSTOM >	<input type="radio"/>
Baud Rate	115200 >	<input type="radio"/>

**Device ID:** Indicates the unique number of your controller.

**Connection:** Choose between the connection options of your controller.

8:41	4G 94%	
<	DATALINK	
UART		<input type="checkbox"/>
USB COM		<input checked="" type="checkbox"/>
Bluetooth		<input type="checkbox"/>
USB-C		<input type="checkbox"/>
UDP		<input type="checkbox"/>

**UART:** Telemetry data goes through the built-in Android UART port.

**USB COM:** Telemetry data goes through the built-in CP2102 port. This is the standard connection between your surfbee and the controller.

**Bluetooth:** Telemetry data goes through the built-in Bluetooth connection.

**Upgrade Port:** Telemetry data be output to PC GCS through the Type-C port at bottom unit.

**UDP:** Telemetry data goes through UDP network protocol.

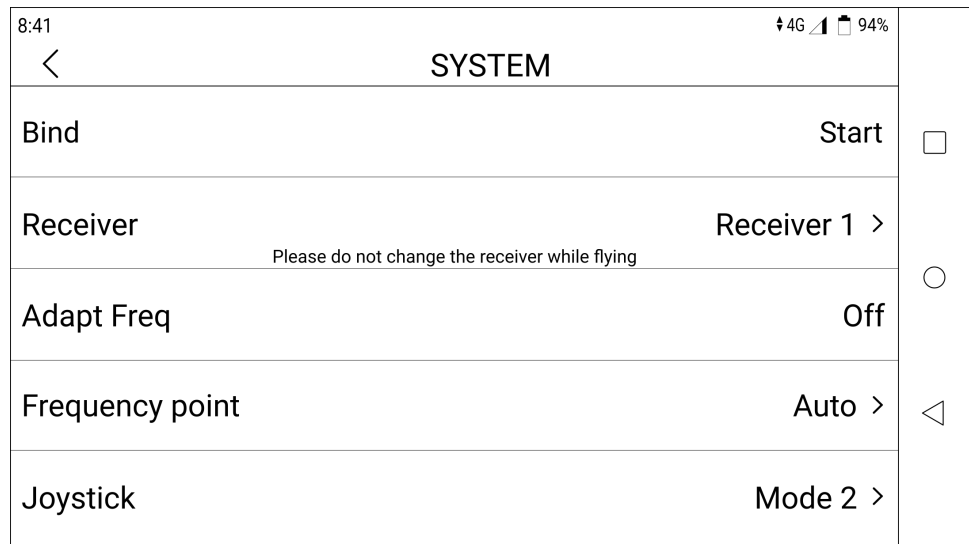
**Flight Controller:** The standard flight controller to operate your Surfbee is Custom. Please make sure that this option is selected in order to operate your Surfbee.

8:41	4G 94%
<	DATALINK
PIX	<input type="checkbox"/>
JIYI (K3A, K++)	<input type="radio"/>
BOYING (Paladin)	<input type="radio"/>
VKFLY (V7AG)	<input type="radio"/>
CUSTOM	<input checked="" type="checkbox"/>

**Baud Rate:** The standard Baud Rate to operate your Surfbee is 11520. Please make sure that this option is selected in order to operate your Surfbee.

8:41	4G 94%
<	DATALINK
9600	<input type="checkbox"/>
57600	<input type="radio"/>
115200	<input checked="" type="checkbox"/>
	<input type="radio"/>

## System



**Bind:** Check current binding status or start the binding process on the ground unit. Your controller is already binded to the vessel.

**Adapt Frequency:** Search and switch to the frequency band with lowest interference automatically.

**Wireless Mode:** Choose the proper wireless mode for requirement of different range.

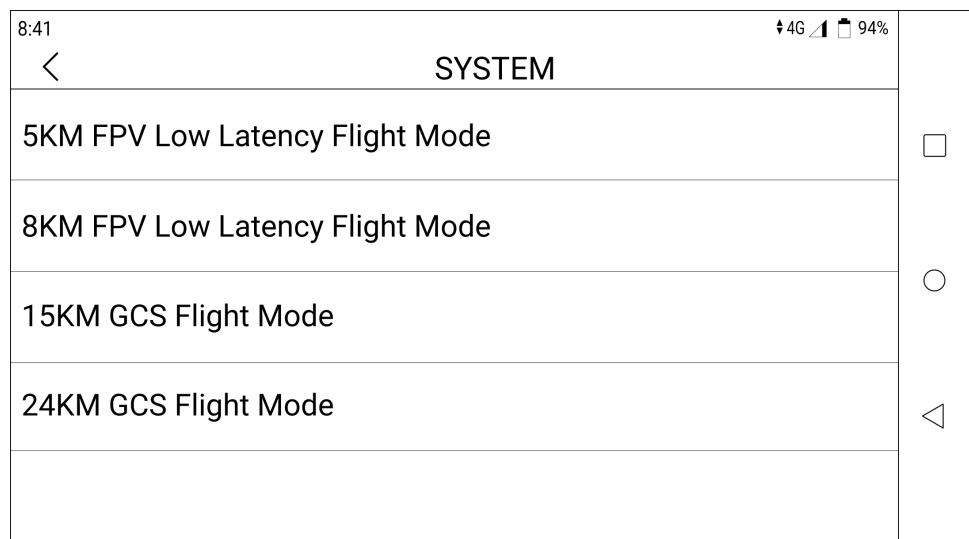
**Joystick Deadzone:** Configure the joystick deadzone value for smooth control based on your habit.

---

**Adapt Freq (ON/OFF):** In a strong-interference environment, turn on the function, the remote controller will automatically search for the frequency band with least interference to get the best transmission strength.

---

**Wireless Mode:** On your Surfbee Controller system you can switch among different wireless communication modes to be compatible with different types of antennas with different gains. In this way, the system can have the best communication range.





## Link Status

Link Status page digitalized the system's transmission quality by displaying the link's real-time status in numbers and percentage.

LINK STATUS	
Frequency	82
Loss Rate	0%
Valid Package	82
Valid Package Rate	102%
Data Upload	0

**Frequency:** The current frequency that the system is working at.

**Loss Rate:** Loss percentage of data package which failed to be received by the ground unit per second.

**Valid Package:** Quantity of data package which are successfully received by the ground unit per second.

**Valid Package Rate:** Received percentage of data package which are successfully received by the ground unit per second.

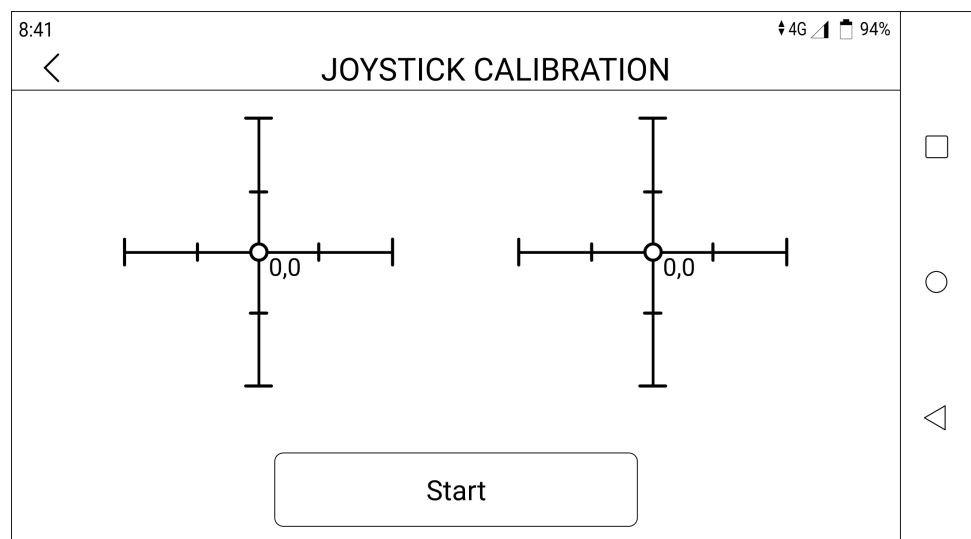
**Data Upload:** Data uploaded to the air unit per second by bit.

**Data Download:** Data downloaded from the air unit per second by bit.

**Switch (ON/OFF)**

## Joystick Calibration

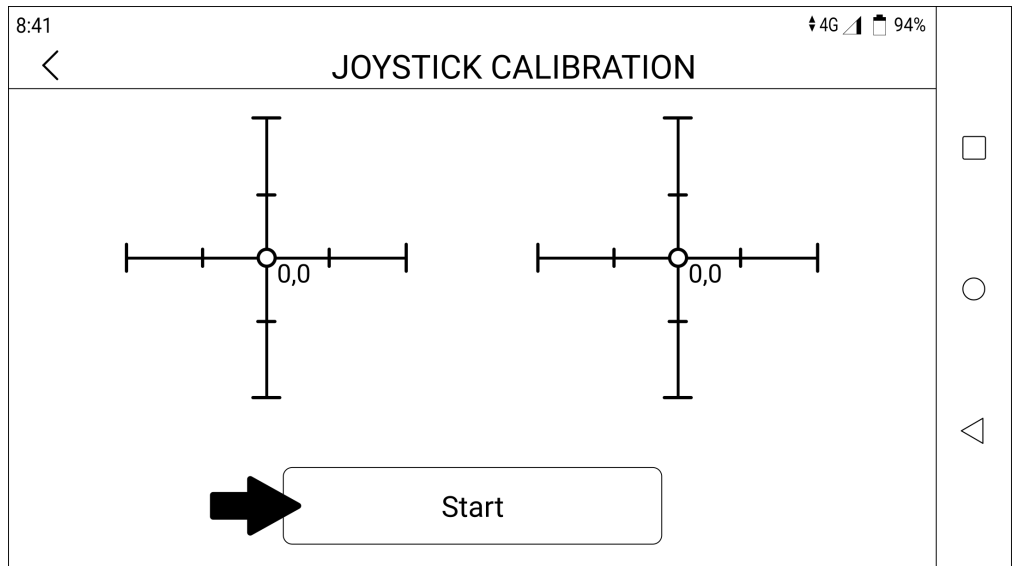
Joystick calibration function help users calibrate both joysticks' middle positions and maximum/minimum positions. Regular calibration helps maintain the control accuracy of the joysticks.



**Steps:**

Before calibrating the joysticks, please make sure that both joysticks are naturally standstill, not displaced by any force.

In the “Joystick Calibration” page, touch “Start”, the page shows as below.



According to the tips, if the joystick coordinates are not “(0, 0)” when both joysticks are standstill, it shows that the joystick middle points are displaced. Please touch “next” and do not touch joysticks.

Calibration of joystick middle points are finished. The next step is to calibrate joystick maximum and minimum positions.

Please follow the steps again to push each joystick to its maximum/minimum positions on all four dimensions.

