



SV300 Unmanned Survey Vessel User Manual



ComNav Technology Co., Ltd

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1. Introduction

1.1. SV300 Introduction



Figure 1-1. SV300 Unmanned Surface Vessel

SV300 unmanned surface vessel adopts a modular integrated design. The entire vessel consists of the hull shell, control module, propulsion module, obstacle avoidance module, positioning module, remote control module, and power supply module. The shore-based system consists of an integrated data transmission Android remote controller. The software system is the integrated control and post-processing iSail vessel control App. The functions and usage of each hardware and software component will be introduced in detail in the following sections.

1.2. Hull Hardware Structure Introduction

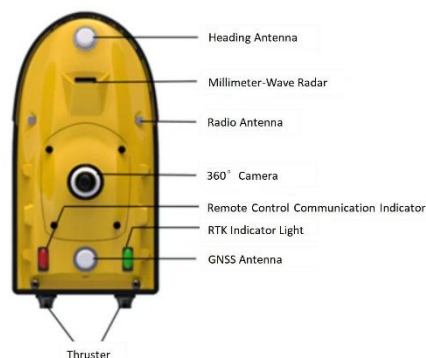


Figure 1-2 SV300 unmanned surface vessel structure diagram

1.3. Remote controller introduction

(1) The G20 remote controller is equipped with a brand-new Qualcomm 6 nm octa-core processor and runs on the Android 13 (64-bit) embedded operating system. It adopts a new high-power, high-bandwidth 2.4/5.8 GHz dual-band wireless module, delivering clearer images, lower latency, longer transmission distance, and stronger anti-interference performance.

(2) It features a built-in 7-inch high-definition, high-brightness display with a resolution of 1920×1200. Combined with the camera, it enables real-time transmission of high-definition images. Dual built-in cooling fans effectively reduce heat, ensuring efficient and stable operation.

(3) It supports SIM card, USB, and Type-C interfaces.

(4) It uses a high-energy-density lithium-ion battery, providing 6-8 hours of operation on a full charge.

(5) It is manufactured using weather-resistant silicone, matte rubber, and ABS materials. The G20 incorporates dust-proof protection on the body, control switches, and all peripheral interfaces, ensuring stable and smooth operation in harsh environments.

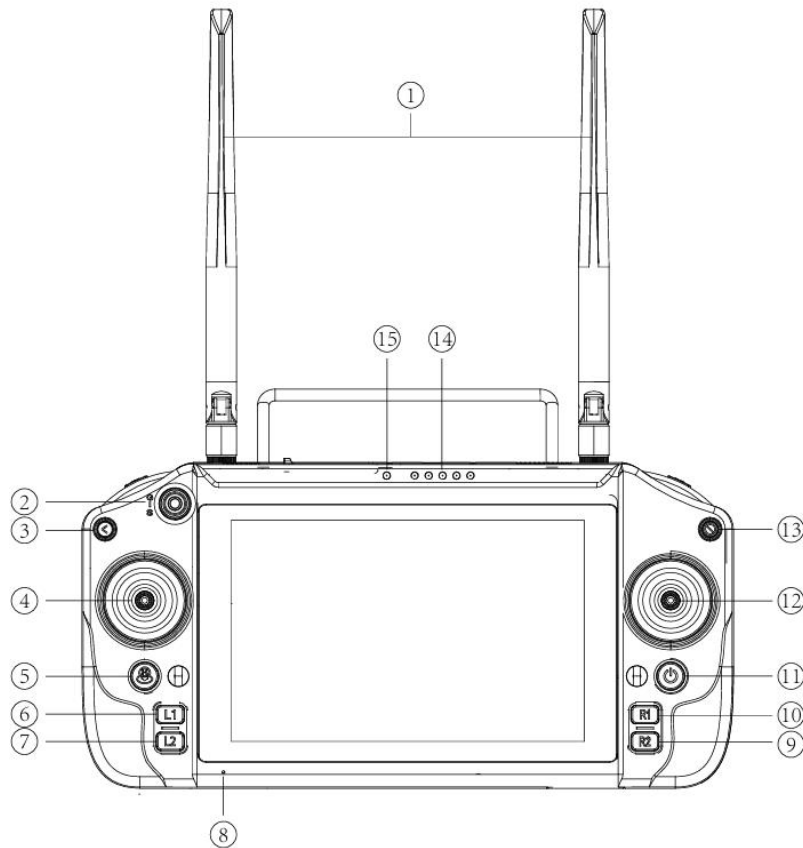


Figure 1-3 Remote controller

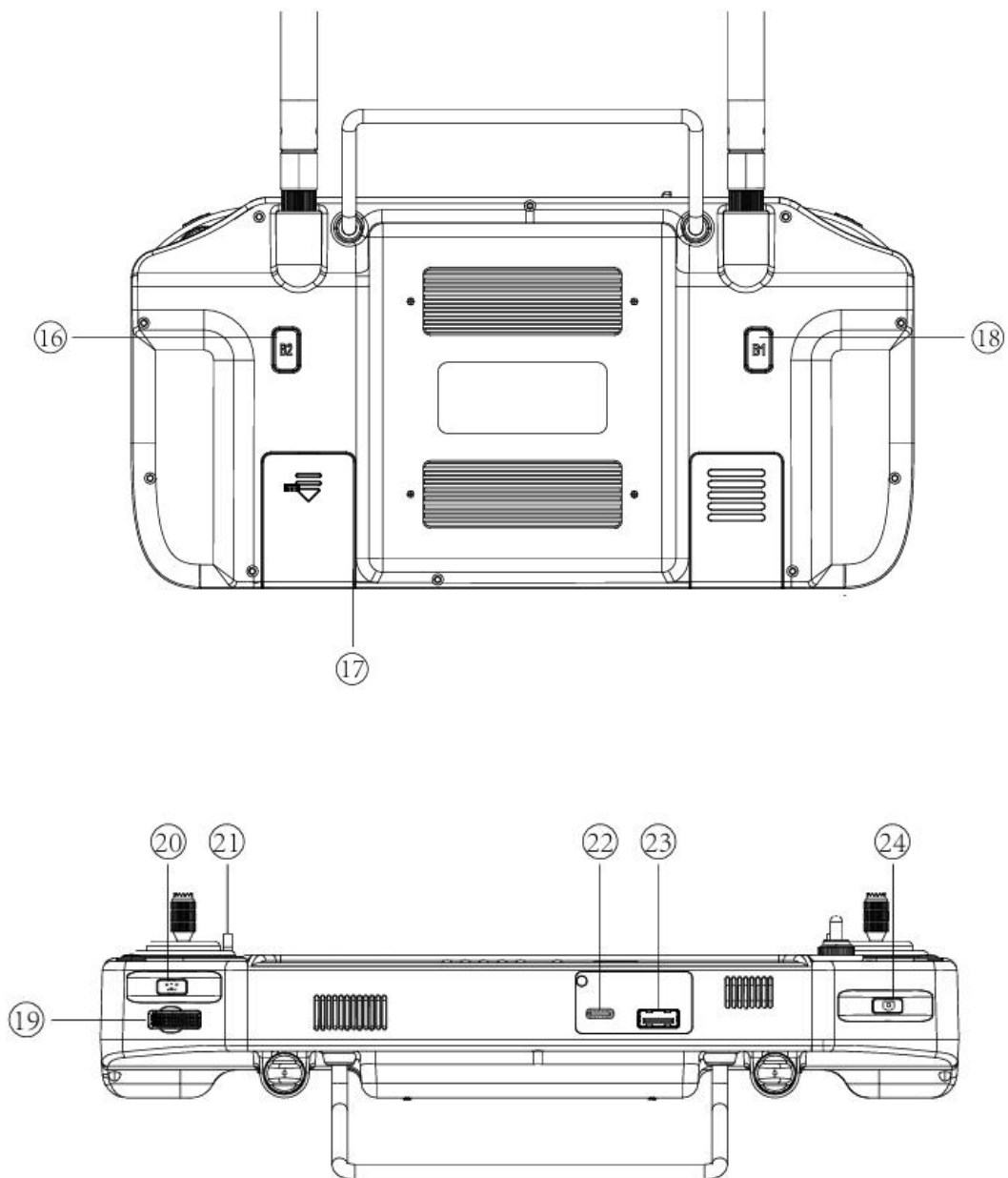
Remote Controller Specifications

G20 Remote Controller Specifications			
Product model	H20	Channel count	16
Operating voltage	4.2 V (built-in battery)	RF power	23dBm@CE / FCC
Frequency band	2.4 G	Dynamic frequency hopping	Supports frequency hopping
Dimensions	277(L) × 138(W) × 96mm(H)	Weight	1.2kg
Battery life	6-8 hours	Battery	20000mA/H
Upgrade	OTA package / online upgrade	Charging interface	TYPE-C
RAM	4 GB	System storage memory	64GB

1.4. Remote Controller Operation



No.	Description	No.	Description
1	2.4G antenna	9	Unmanned vessel information shortcut key (R2)
2	Three-position toggle switch(Front: Auto / Middle: Hover / Rear: Manual)	10	Vessel control parameter settings shortcut key (R1)
3	Back button	11	Power button
4	Forward/backward control (left joystick)	12	Left/right control (right joystick)
5	Return-to-home button	13	Data recording stop button
6	Route planning shortcut key (L1)	14	Battery level indicator light
7	Safety settings shortcut key (L2)	15	Pairing indicator light
8	Microphone		



No.	Description	No.	Description
16	B2 button (reserved)	21	Lanyard attachment point
17	TF card / SIM card slot	22	Type-C
18	B1 button (reserved)	23	USB port
19	Gimbal camera left/right rotation Self-centering scroll wheel	24	Photo capture button
20	Camera interface switch button		

Operating environment conditions:

- a. Ambient temperature: -10°C to +45°C.
- b. Storage temperature: -20°C to +50°C.
- c. Relative humidity: not exceeding 85%.
- d. Atmospheric pressure: 86kPa to 106kPa.
- e. The operating environment must be free of explosive media. The surrounding atmosphere should not contain gases that corrode metals, damage insulation, or include conductive media. The environment must not be saturated with water vapor or subject to severe mold growth.
- f. The operating location should be equipped with facilities to protect against rain, snow, wind, sand, and dust.

Power supply method and precautions:

- a. The G20 series ground terminal has a built-in integrated rechargeable lithium battery and supports charging via standard market Type-C interfaces (such as USB chargers for mobile phones, cameras, and other digital devices).
- b. If smoking, unusual odor, or liquid leakage is detected while charging the ground terminal, stop charging immediately and send the unit to our company for maintenance.
- c. Do not charge this product in areas accessible to infants or children to avoid the risk of electric shock.
- d. Do not charge this product in environments with temperatures exceeding 60 °C.
- e. Please use a reliable, professional charger to charge the battery.
- f. The antenna of this product is a fragile component; avoid excessive force to prevent damage.

Preparation and inspection before use:

- a. Before use, be sure to check that the remote controller battery level is sufficient.
- b. Before use, please check that the antenna is positioned correctly to achieve optimal performance.
- c. Users should ensure that they are not operating the device under the influence of alcohol or medication.

2. Hardware Connection

2.1. Pre-operation Preparation

- (1) Charge the lithium battery and the remote controller using the dedicated charger.
- (2) Connect the charger connector to the battery interface, paying attention to proper alignment of the connector. Then plug the charger into a 220 V AC power supply. Note: Connect the interface first, then connect the power supply. When the battery is not connected, only the POWER indicator on the charger will be on. After the battery is connected, the CHARGE indicator will light up red. When charging is complete, the indicator will turn green, and the battery can then be used.
- (3) Battery maintenance instructions:
 - ① Newly delivered batteries are shipped with a charge level of $\geq 30\%$; please fully charge them within two months.
 - ② If the battery level indicator shows only one bar, please recharge it promptly.
 - ③ A fully charged battery can be stored for up to six months; after six months, please recharge it in time.

2.2. Accessory Installation

- (1) Insert the battery, connect the power aviation connector, and turn on the battery switch.
- (2) Connect the main camera network cable and power cable properly.
- (3) Close the cabin cover and tighten the knobs.

2.3. Pre-launch Debugging

- (1) Powering on the unmanned vessel

After installation is completed, observe the indicator lights on both sides of the hull. Steady red and green lights indicate normal operation.

(2) Powering on the remote controller

The power button is located at the lower right corner and marked with a power icon. Press the power button and wait for the indicator light to turn on to complete startup. To power off the remote controller, press and hold the power button for 1- 2 seconds, then confirm shutdown in the pop-up window on the right side.

(3) Propeller test

Use the remote controller to operate the propellers and check whether forward, backward, left, and right movements are functioning properly.

(4) Power-on self-test

After the vessel control software is connected, the power-on self-test will be completed automatically.

3. Software Operation

3.1. Software Introduction

iSail is an unmanned vessel control and post-processing software independently developed by ComNav Technology. It supports multiple survey modes, enabling the unmanned vessel to automatically perform operational tasks and adapt to various application scenarios. The software provides functions including vessel control, route planning, status display, safety alerts, and online upgrades. It adopts an integrated remote-control solution and supports 4G communication and data transmission connections, allowing real-time viewing of three-angle video feeds.

The system supports the connection of various external sensors, with data integrated and displayed directly in the vessel control App, eliminating the need to carry a computer. Post-processing features include water depth waveform overlay, providing traceable evidence for depth noise. Multiple data correction modes are provided to ensure accurate and reliable data. From the user's perspective, the software is designed to achieve more precise measurements, more user-friendly operation, and simpler, more efficient functions for rapid deployment and operation.

(1) Technical specifications

Operating environment: G20 vessel control remote controller (Android 9).

(2) Installation and uninstallation

Installation: Copy the iSail vessel control program (*.apk) to an Android device. Tap the program on the touchscreen to start the installation. After a short wait, the installation will be completed successfully, and the **ComNav** vessel control program icon will appear on the desktop.



Figure 3-1 iSail Vessel Control App

Uninstallation: Press and hold the iSail vessel control App icon and drag it to the uninstall area on the screen. When a pop-up window appears asking “Uninstall this application?”, tap Confirm to uninstall the software.

(3) Notes on iSail vessel control software version and upgrades

When the application is opened while connected to the network, the system will check the server for a new software version. If a new version is detected, a pop-up notification will be displayed according to the server configuration. If the current connection is not a Wi-Fi data link, the system will prompt you to confirm whether to proceed with the download.

The G20 remote controller comes with the iSail vessel control App pre-installed by default. If it is not installed, please contact ComNav technical personnel for installation.

Note: Many functions of the current software require a mobile network. In addition, operation of the unmanned vessel requires network connectivity to provide Network RTK services. Please ensure that a network connection is available when using this product.

3.2. Establishing a Connection

(1) Tap the iSail vessel control App icon to open the software and enter the home page. Tap the iBoat button in the lower-right corner. When the unmanned vessel connection pop-up window appears, select Image Transmission - Connect or 4G - Connect.

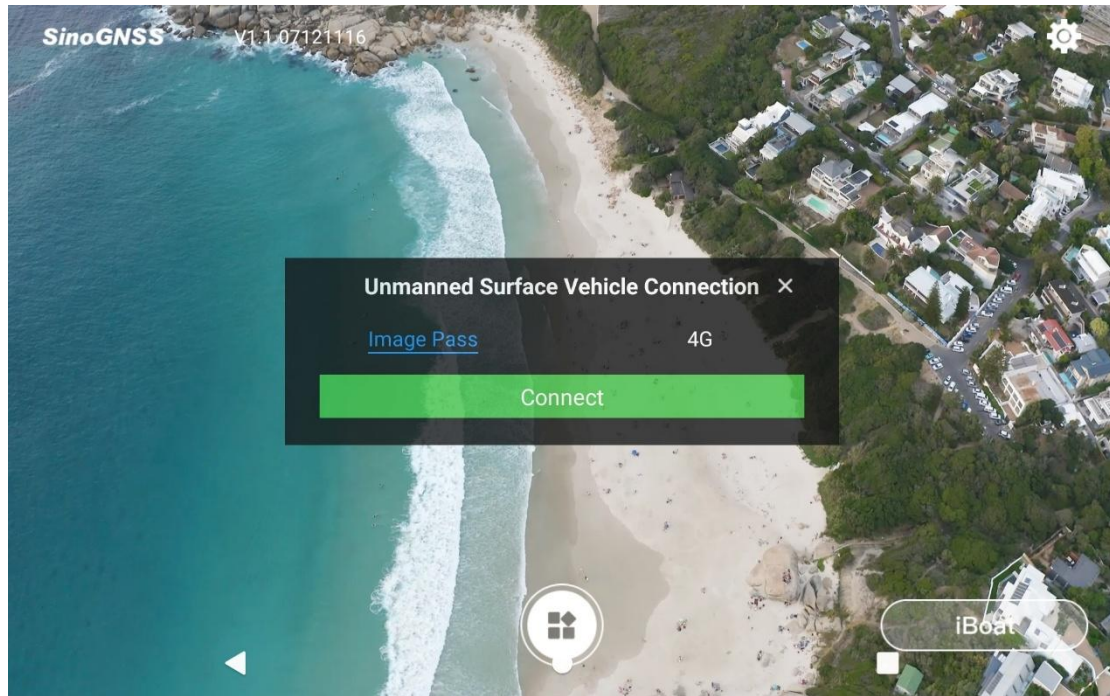


Figure 3-2 Home Page Connection

(2) The unmanned vessel supports two connection modes: 4G and image transmission. By default, the image transmission mode is used. In 4G connection mode, the vessel ID is the unmanned vessel SN number, and the password is admin123. After a successful connection, this button will change to "Disconnect".

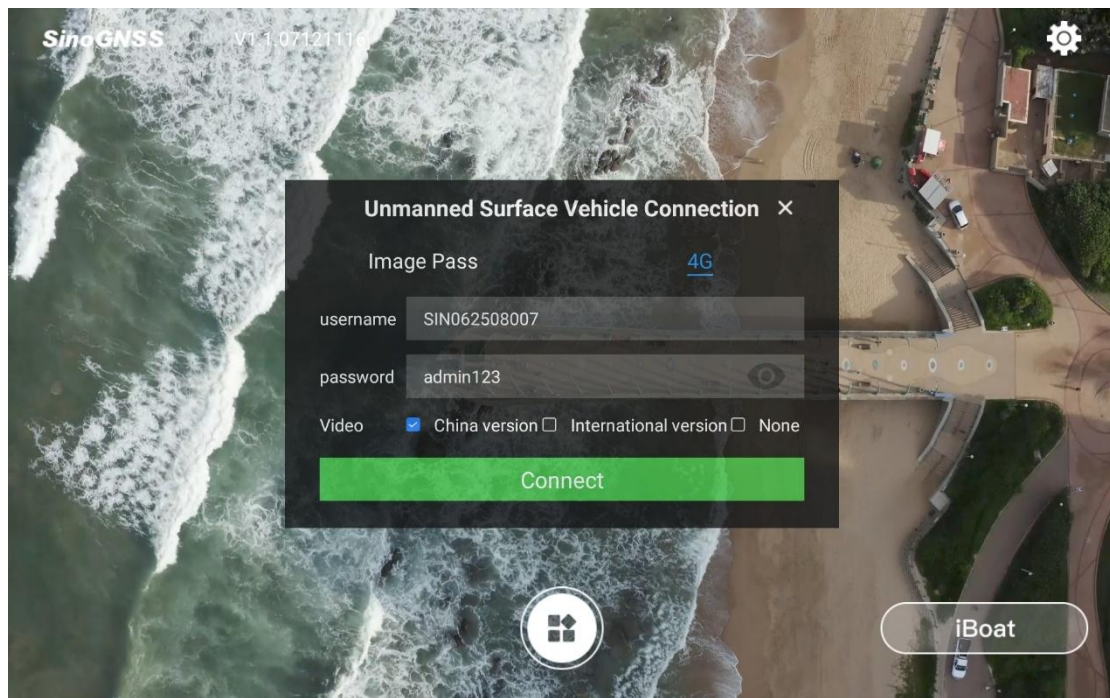


Figure 3-3 Unmanned Vessel Connection

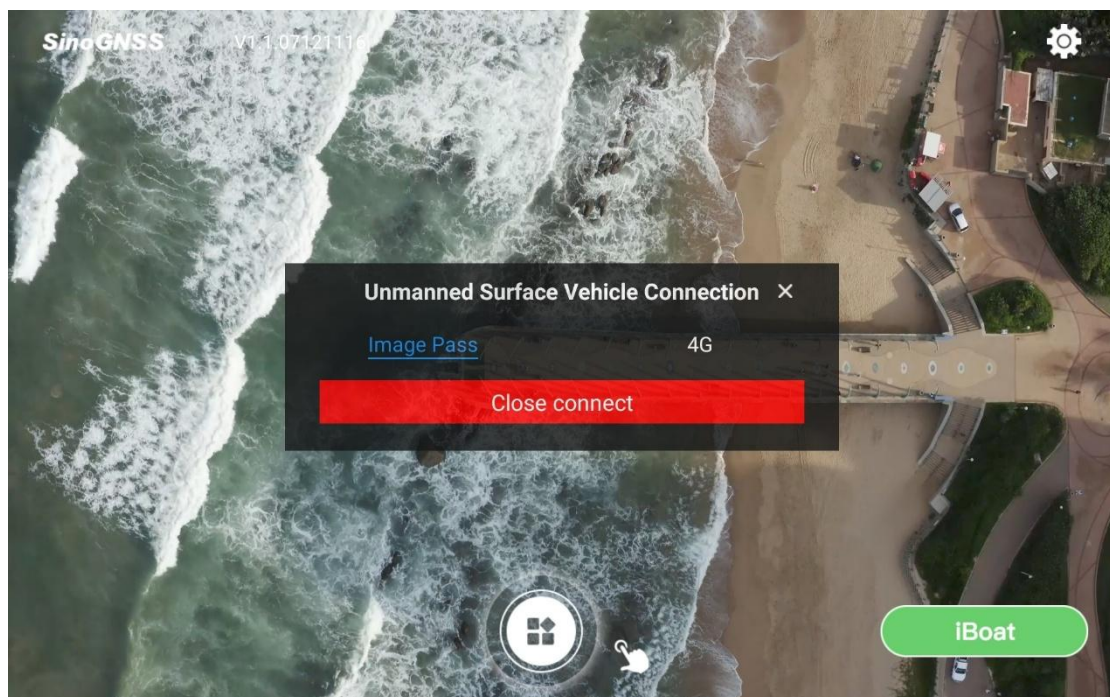


Figure 3-4 Unmanned Vessel Connected Successfully

3.3. Project Creation

(1) Tap the function button at the bottom of the screen to enter the project directory, then tap New Project.

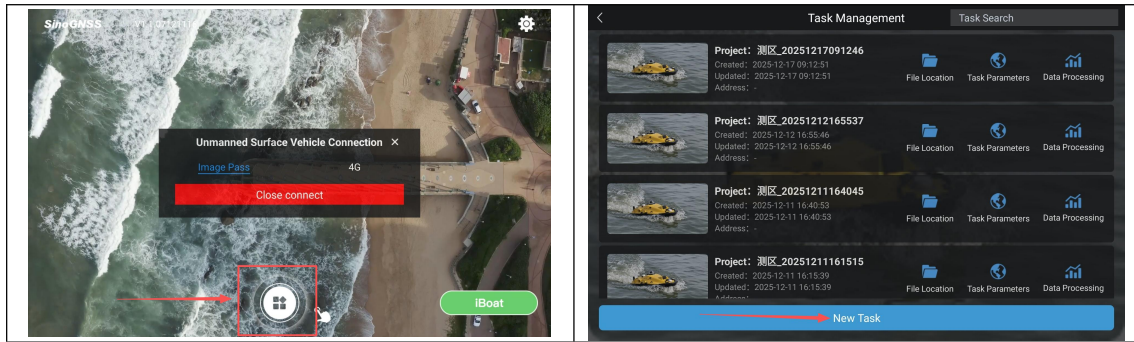


Figure 3-1 New Project

(2) Select the coordinate system and set project parameters such as the central meridian. After completing the settings, tap Confirm to finish creating the project and enter the main App interface.

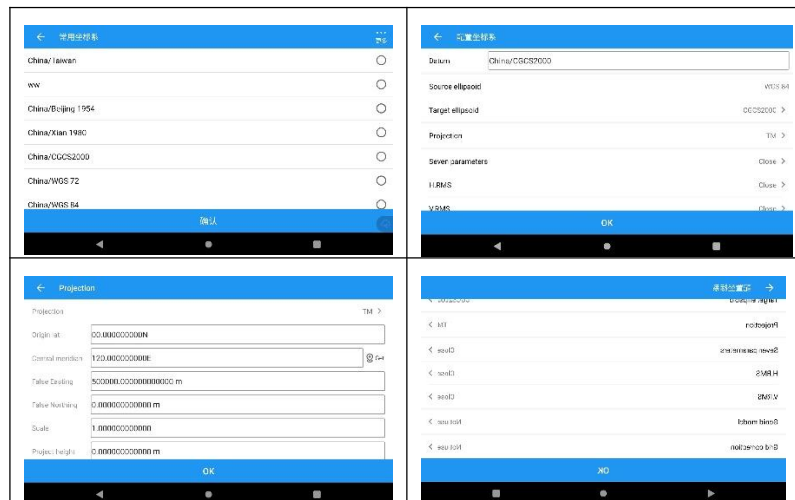


Figure 3-2 Project Parameter Settings

3.4. Device Self-Check

After the unmanned vessel is connected, the system will prompt a power-on self-check when entering the vessel control interface for the first time. Tap Confirm to proceed to the next step.

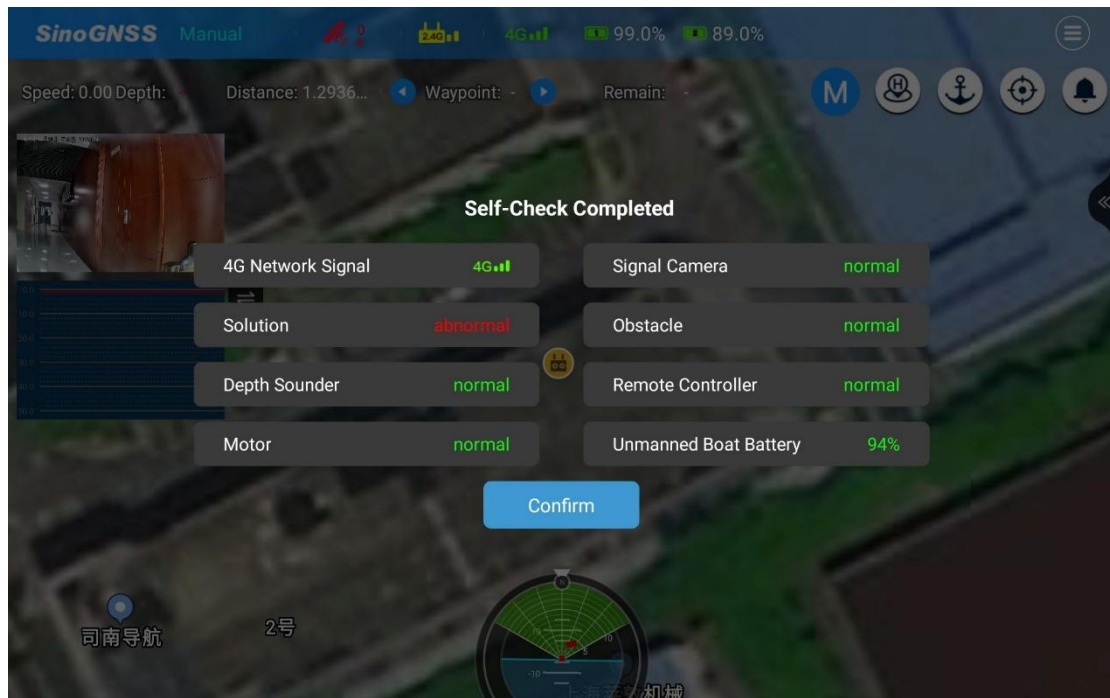


Figure 3-5 Device Power-On Self-Check

Vessel control 4G network signal: Displays the real-time network quality of the unmanned vessel control system. $\geq 80\%$: full signal (3 bars); $\geq 60\%$: 2 bars; $\geq 40\%$: 1 bar; others: 0 bars.

GNSS solution mode: Indicates the positioning solution status, including three modes—Single point (white), Float (yellow), and Fixed (green).

Echo sounder: Displays “Normal” in green when the connection is successful; otherwise displays “Abnormal” in red.

Propulsion system: Displays “Normal” in green when the connection is successful; otherwise displays “Abnormal” in red.

Camera: Displays “Normal” in green when the connection is successful; otherwise displays “Abnormal” in red.

Obstacle avoidance module: Displays “Normal” in green when the connection is successful; otherwise displays “Abnormal” in red.

Remote controller: Displays “Normal” in green when the connection is successful; otherwise displays “Abnormal” in red.

Unmanned vessel battery: Displays “Normal” in green when the connection is successful; otherwise displays “Abnormal” in red. Battery level indicators: $>50\%$ green, $10\%–50\%$ yellow, $\leq 10\%$ red.

3.5. App Main Interface

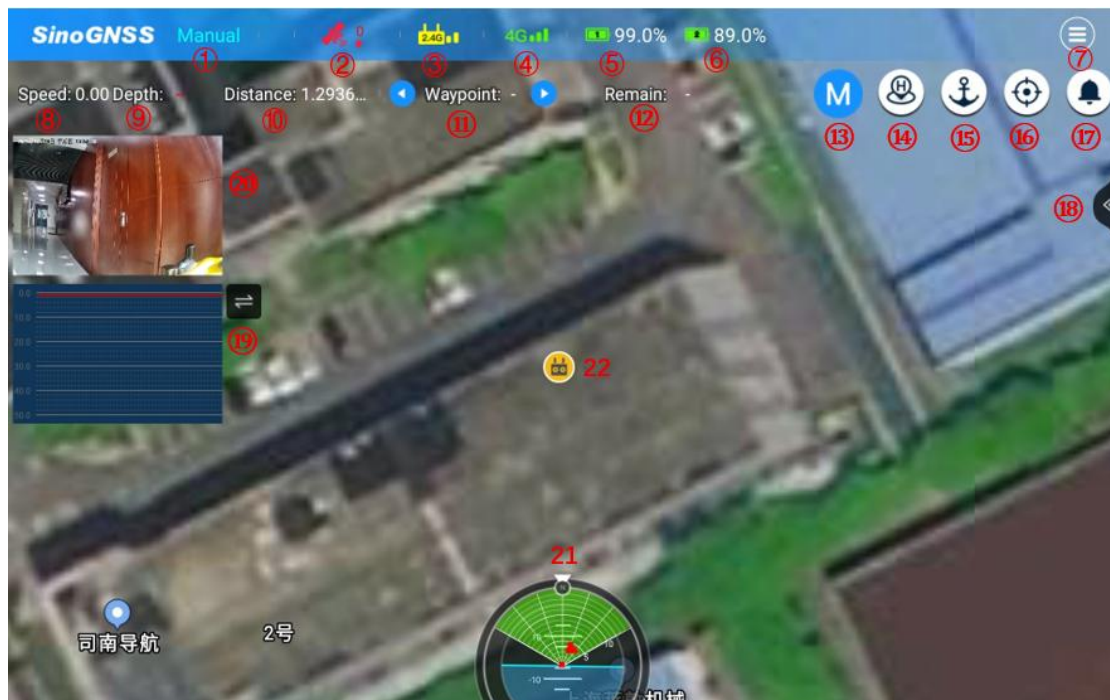


Figure 3-6 Vessel Control App Main Interface

The following is a brief introduction to the functions on the vessel control interface:

- ① **Navigation Mode:** Displays the current navigation mode of the unmanned vessel in real time.
- ② **GNSS Solution Status:** Shows the positioning solution status — Single point, Float, or Fixed.
- ③ **Satellite Status:** Displays the current satellite acquisition status and number of satellites for the unmanned vessel.
- ④ **Remote Controller Status:** Displays the current connection status and signal strength of the remote controller.
- ⑤ **Vessel Control Network Status:** Displays the current network status and signal strength of the unmanned vessel.
- ⑥ **Battery Status:** Shows the current battery level of the unmanned vessel as a percentage.
- ⑦ **Device Settings Module:** Tapping this button opens the device settings interface, including route planning, vessel control parameters, echo sounder control, recording control, differential settings, unmanned vessel information, layer management, safety settings, and other settings.

- ⑧ **Speed:** Displays the current speed of the unmanned vessel.
- ⑨ **Water Depth:** Displays the water depth at the current location of the unmanned vessel.
- ⑩ **Water Surface Elevation:** Displays the current water surface elevation at the vessel's location.
- ⑪ **Target Waypoint:** Displays the current target waypoint of the unmanned vessel. Tap the left or right buttons to switch between target waypoints.
- ⑫ **Remaining Distance:** Displays the remaining distance of the unmanned vessel along the mission route.
- ⑬ **Auto/Manual Switch:** Switches between automatic and manual navigation modes.
- ⑭ **Return/Cancel Return Switch:** Switches between return-to-home mode and cancel return mode.
- ⑮ **Hover/Cancel Hover Switch:** Switches between hover mode and cancel hover mode.
- ⑯ **Auto-Centering:** Enables or disables the unmanned vessel's auto-centering function.
- ⑰ **Real-Time Messages:** Real-time messages pop up automatically for temporary alerts and disappear within 5 seconds, e.g., "Shallow area ahead". Disappeared messages can be viewed in the bell message list, which can be opened by tapping the bell icon. Tap the bell icon again to close the list.
- ⑱ **Echo Sounder Function Slide Button:** Tap this button to display echo sounder control buttons.
- ⑲ **Echo Sounder Waveform View:** Displays the real-time waveform of the echo sounder.
- ⑳ **Camera:** Displays real-time camera image transmission.
- ㉑ **Vessel Attitude:** Displays the vessel's heading, roll, and pitch in real time.
- ㉒ **Unmanned Vessel:** Shows the real-time position of the unmanned vessel on the satellite map.
- ㉓ **Remote Controller:** Shows the real-time position of the remote controller on the satellite map.

3.6. Route Planning

(1) Manual Route Planning

The steps for creating a new route are as follows: Tap the three horizontal lines in the upper-right corner of the vessel control interface to open the function menu, then select the Route Planning feature.

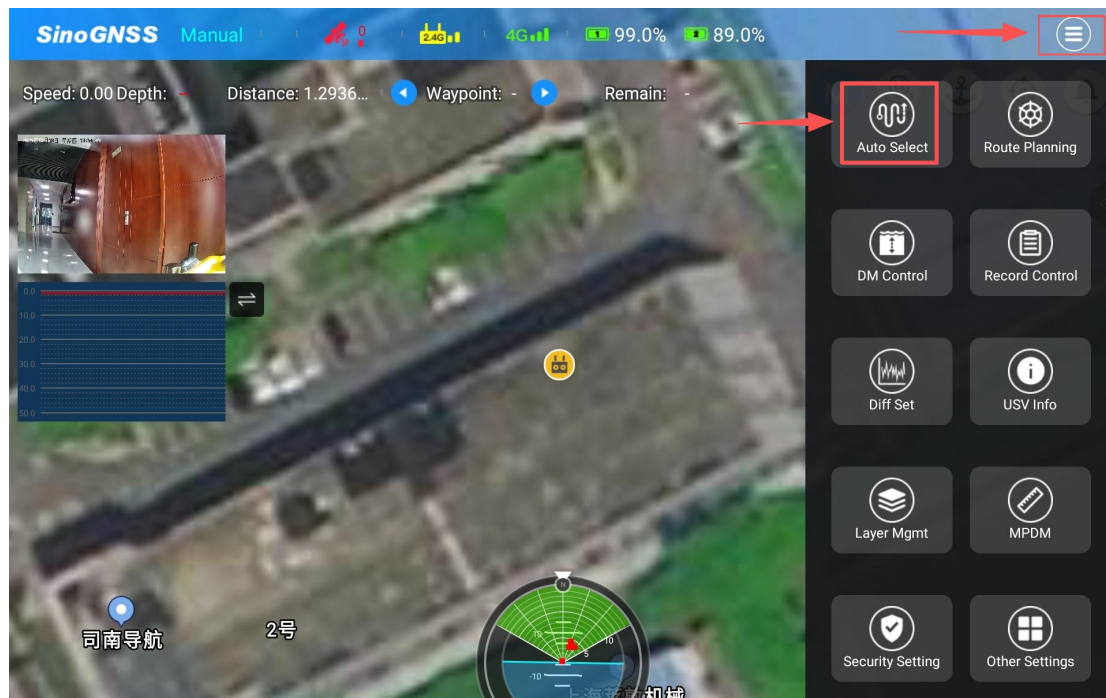


Figure 3-7 Route Planning Function Operation

Tap the first function in the upper-left corner. When the function icon is highlighted, you can click multiple points on the satellite map to generate mission waypoints. Each click successively adds waypoints in the order they are placed, determining the vessel's navigation positions and directions.

The bidirectional arrow allows you to swap the order of the planned waypoints (red number 1 in the figure). Current operations on the mission points include deleting a single point (red number 3 in the figure) and deleting all points (red number 2 in the figure). The icon indicated by the red arrow on the right can be tapped to view the latitude and longitude of the waypoints.

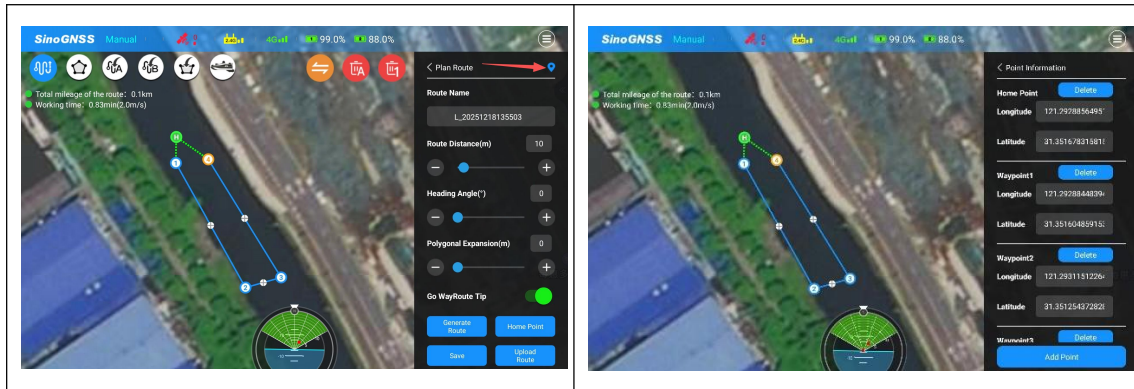


Figure 3-3 Manual Route Planning Function Operation

(2) Polygon Route Planning

The second icon in the upper-left corner represents the polygon route planning function. When creating a polygon, each click on the map generates a polygon vertex; for example, three clicks will create a triangle. Additional clicks continue to add vertices to the polygon. After confirming the polygon area, you can tap the Generate Route button on the right to create a default route. Alternatively, you can adjust route spacing, route direction angle, or expand the polygon to modify the route.

While the Edit Polygon button on the left remains selected, you can drag a vertex to move the polygon area or delete a selected point.

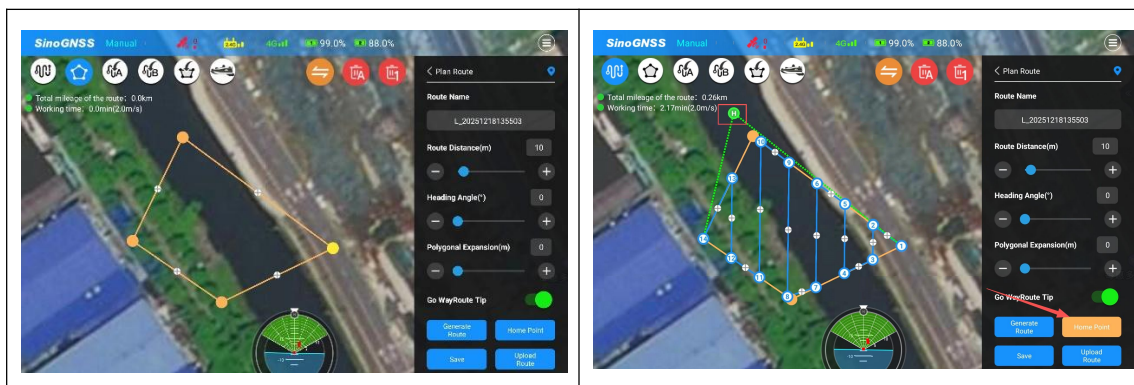


Figure 3-4 Polygon Route Planning

(3) Setting the Home Point

After entering route planning, tap the Home Point button to select it. Then click on the map to set the Home point. Tap the Home Point button again to confirm and complete the Home point setting.

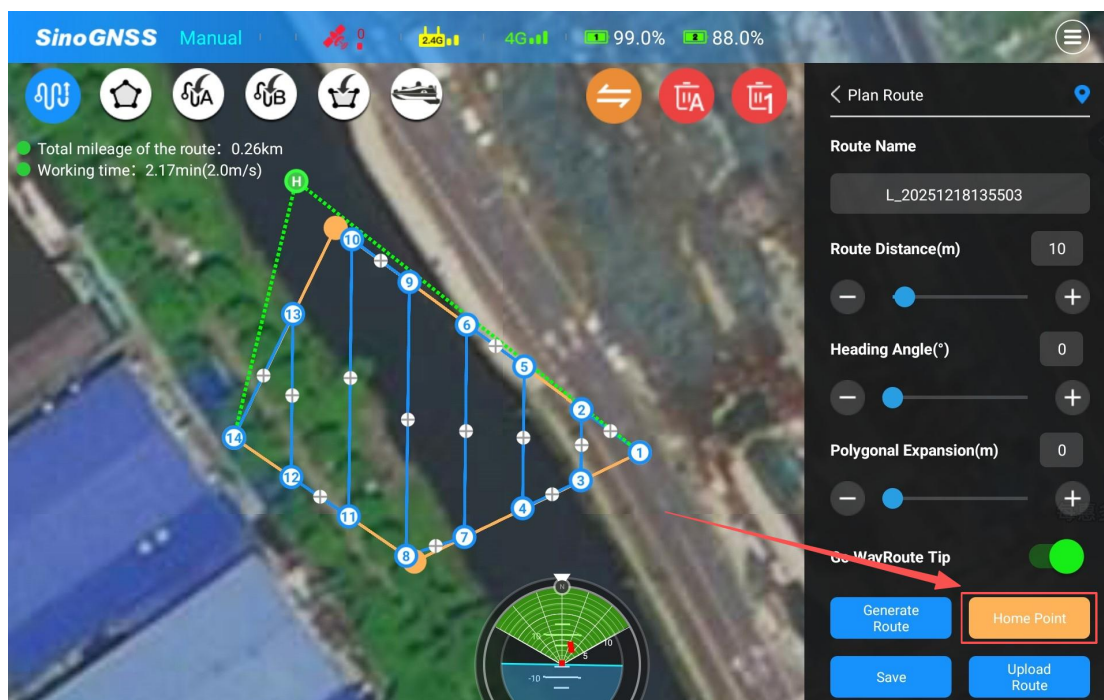


Figure 3-8 Home Point Setting

Note: The Home point must be set before uploading the route to the unmanned vessel.

(4) Target Waypoint Setting

Target waypoints can be switched up or down directly on the vessel control main interface, or by tapping Target Waypoint to enter the selection menu for modifying waypoint settings.

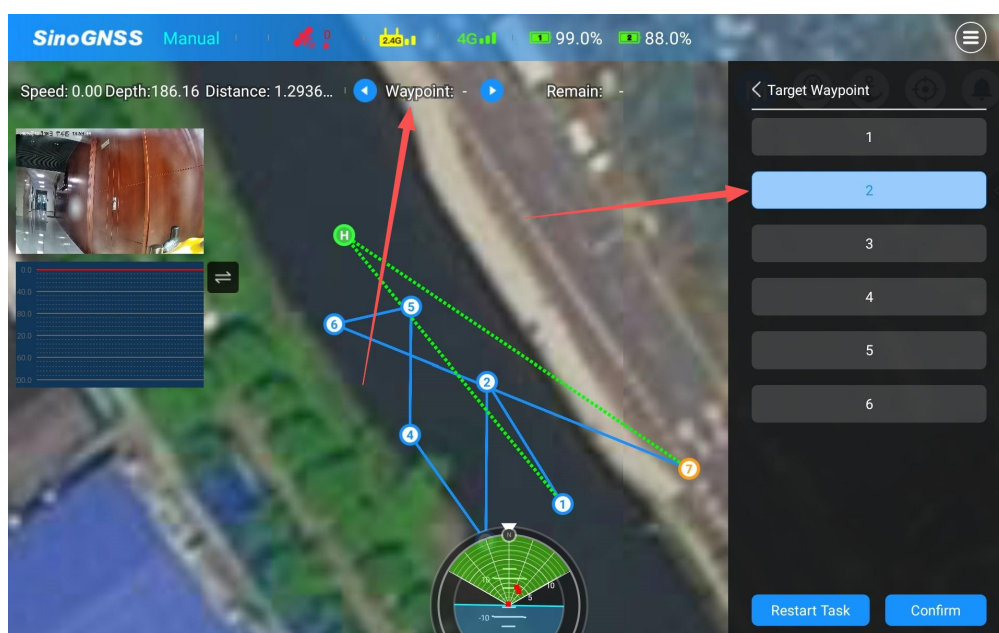


Figure 3-9 Target Waypoint Setting

3.7. Parameter Settings

Tap the three horizontal lines icon in the upper-right corner of the main interface to access and configure various parameters of the unmanned vessel.

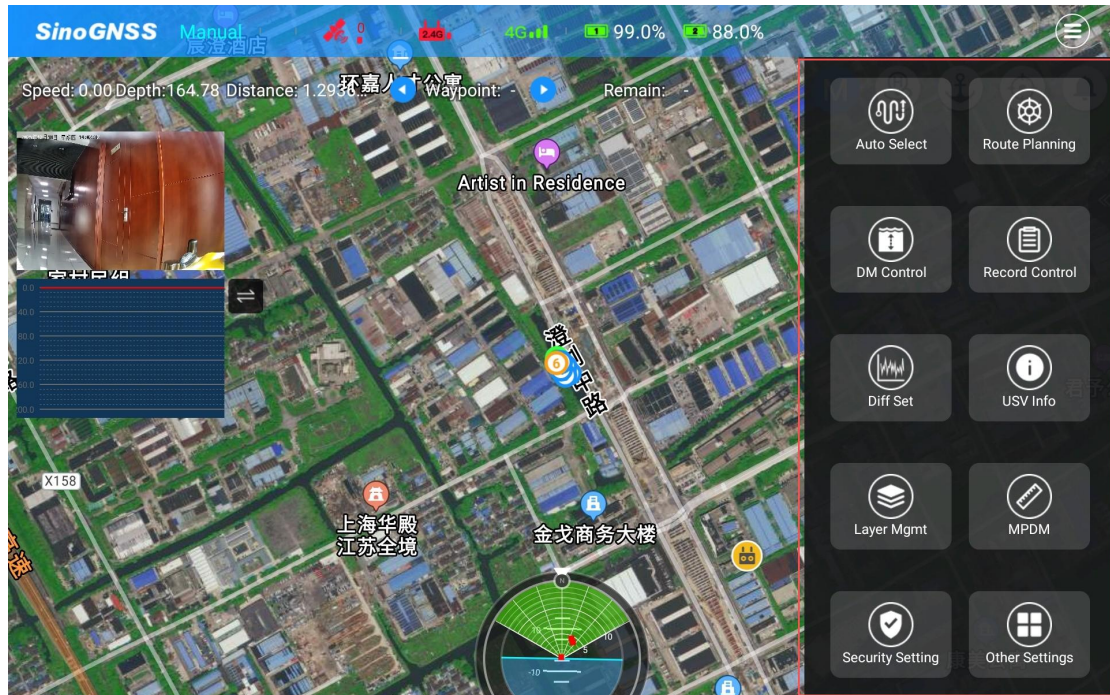


Figure 3-10 Unmanned Vessel Parameter Settings

(1) Vessel Control Parameters

Set cruising speed: Tap the + or - buttons to increase or decrease the cruising speed in 0.5 m/s increments. Manual input is also supported, and changes take effect in real time.

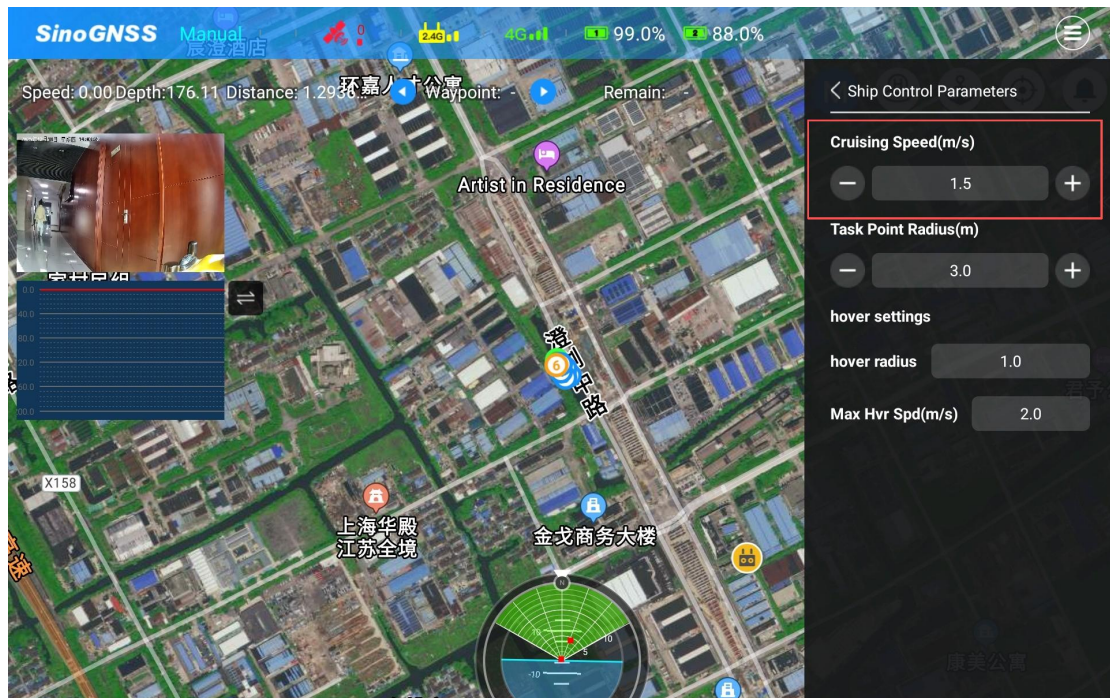


Figure 3-11 Vessel Control Parameter Settings

(2) Echo Sounder Control

Set echo sounder parameters, including manual settings for temperature, sound speed, gain, and depth filtering.

- a. **Draft:** This value is tied to the vessel type and is fixed; it cannot be manually modified.
- b. **Temperature:** Can be manually entered; also supports calculating sound speed based on temperature.
- c. **Sound Speed:** Can be manually entered; also supports calculating sound speed based on temperature and salinity.
- d. **Automatic Measurement Recording:** When enabled, depth data is automatically collected during route execution.
- e. **Automatic Range Acquisition:** Automatically sets the measurement range based on the current water depth.
- f. **Automatic/Manual Gain:** Supports both manual and automatic settings for the echo sounder signal strength.
- g. **Depth Filtering:** Filters out noise and clutter outside the set depth range.

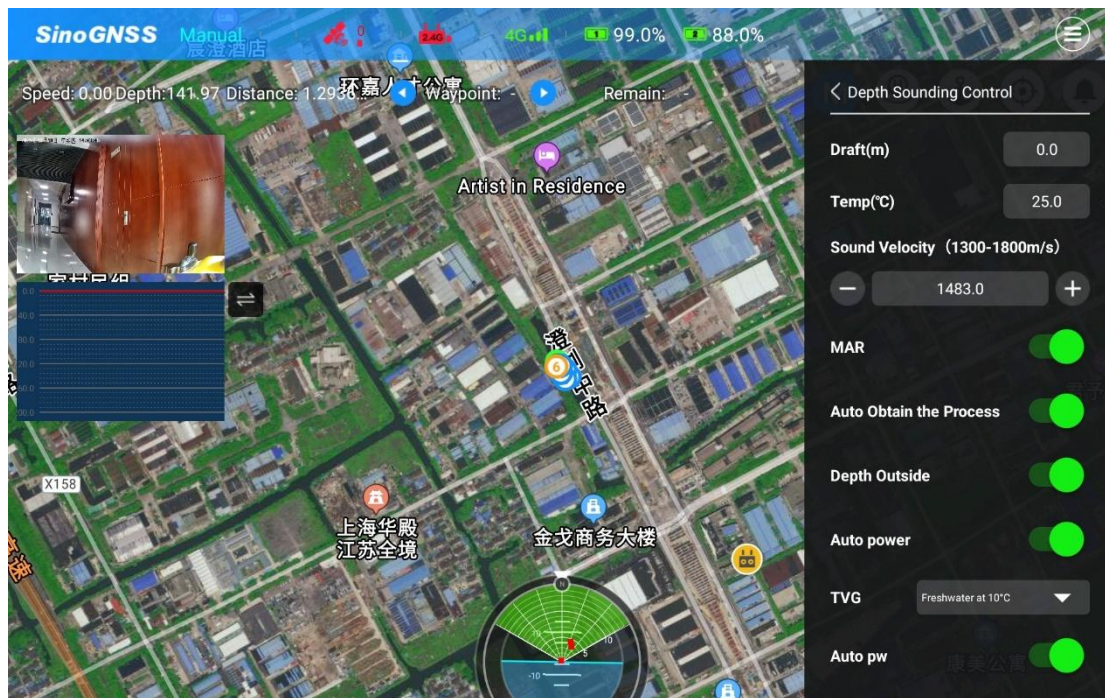


Figure 3-12 Echo Sounder Parameter Settings

(3) Recording Control

Set the recording control parameters. The data recorded in real time will follow the current settings. For example:

Distance-based recording: If the route distance is set to 1 m, depth data will be recorded every 1 m along the route.

Time-based recording: If the route time is set to 1 s, depth data will be recorded every 1 second.

Solution Status:

Fixed: Only records fixed solution data.

Float: Records both fixed and float solution data.

Single Point: Records all data, including fixed solution, float solution, inertial navigation solution, and single-point solution.

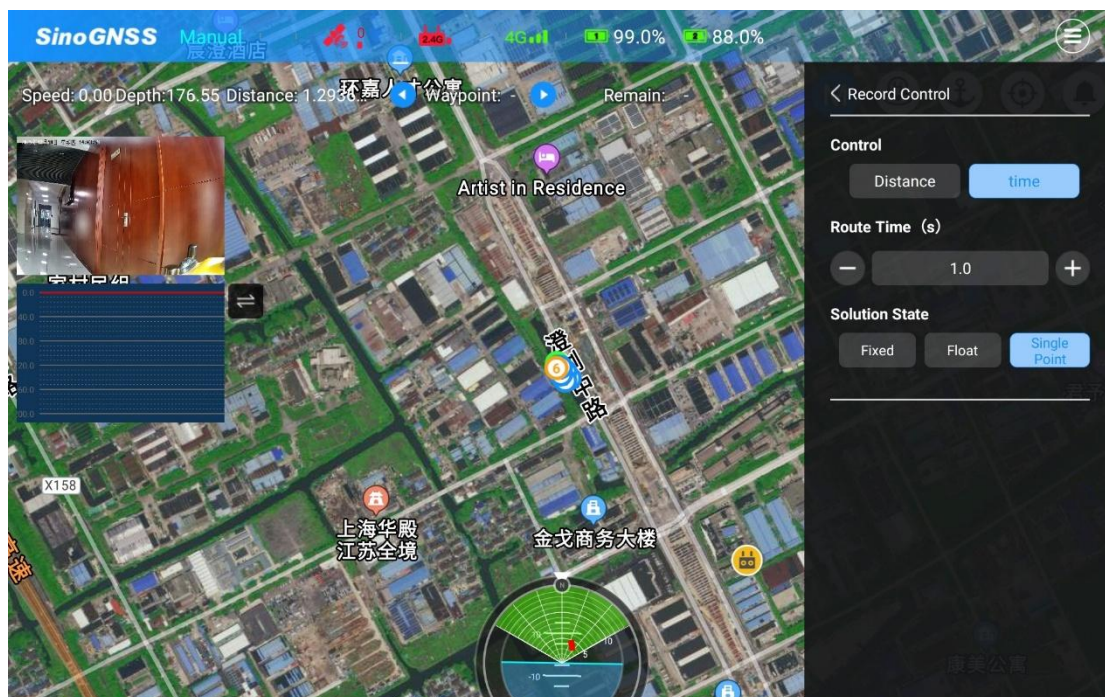


Figure 3-13 Recording Control Parameter Settings

(4) Differential Settings

This interface allows you to configure vessel control CORS and mobile network CORS login parameters, as well as radio login parameters.

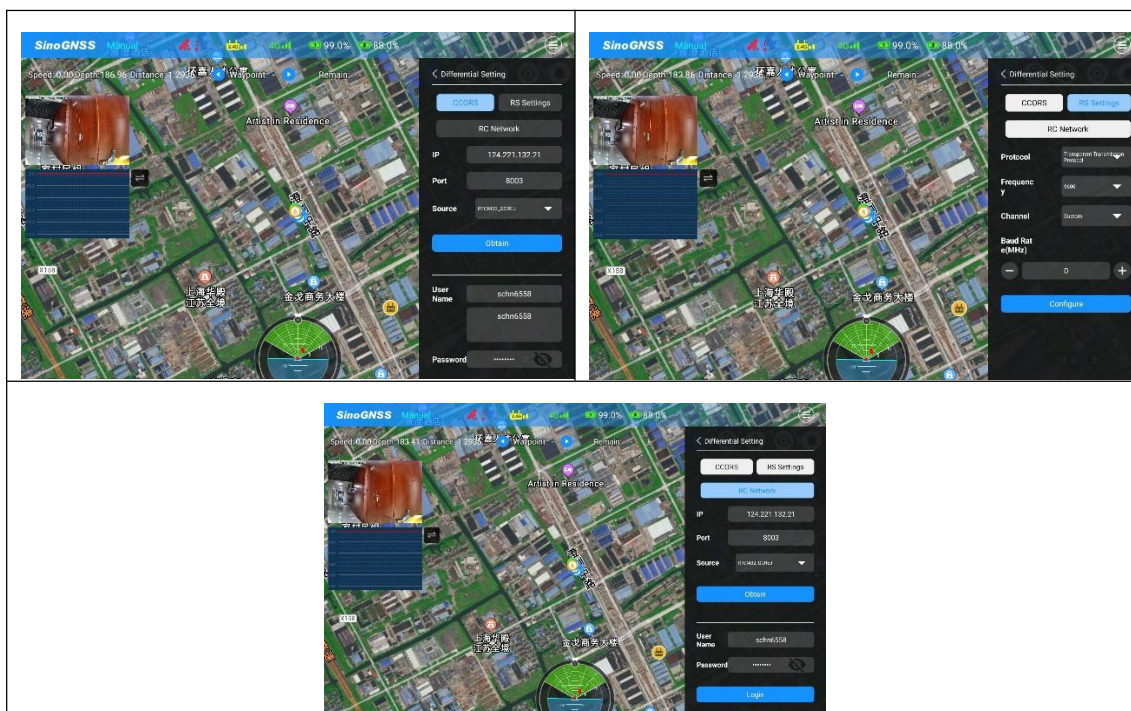


Figure 3-14 Differential Information Parameter Settings

(5) Unmanned Vessel Information

Displays various information about the unmanned vessel, including GNSS positioning, navigation attitude, vessel type, battery status, navigation status, echo sounder status, and propulsion system status.

Unmanned Boat Information					
GNSS Info		Battery Info		Depth Sounding Info	
Lon.(dd)	0.000000	Voltage1 volts(V)	32.2	Water Depth(m)	192.11
Lat.(dd)	0.000000	Voltage2 volts(V)	32.2	Water Temperature(°C)	25.0
Height (m)	0.00	Current1 amps(Amps)	0.0	Sound Speed (m/s)	1483.0
East Coordinate	0.000000	Current2 amps(Amps)	0.0	Draft(m)	0.0
North Coordinate	0.000000	Capacity1 percentage(%)	99.0	Motor Speed	
Water Surface Elevation(m)	-0.142	Capacity2 percentage(%)	88.0	Directional Input	0
Water Bottom Elevation(m)	-172.2	Temperature Degrees Celsius(°C)	23.0	Throttle Input	0
HRMS(m)	0.000	Antenna Deviation		Left Motor Output	0.0
VRMS(m)	0.000	Phase Center(m)	0.001	Right Motor Output	0
Satellite Count	0/60	Antenna Deviation X(m)	-0.24	4G info	
GPS Status Fixed		Antenna Deviation Y(m)	0.0	Registration status	已注册,home
Differential Mode CORS		Base Water Surface Height(m)	0.17	SIM status	OK
Differential delay(m)	0.000	Navigation Info		Operator	CHINA MOBILE
Base station id		Waypoint Distance(m)	0.00	Net model	FDD LTE
Base station easting	0.000	Target Waypoint	0.0	IMEI	869387061886934
Base station northing	0.000	Remaining Distance(km)	0.00	ICCID	898608D59825D0116400
Base station distance(m)	0.000				

Figure 3-15 Unmanned Vessel Information Parameters

(6) Layer Management

Includes measurement point layers and boundary line layers. Tap the corresponding layer to show or hide it.

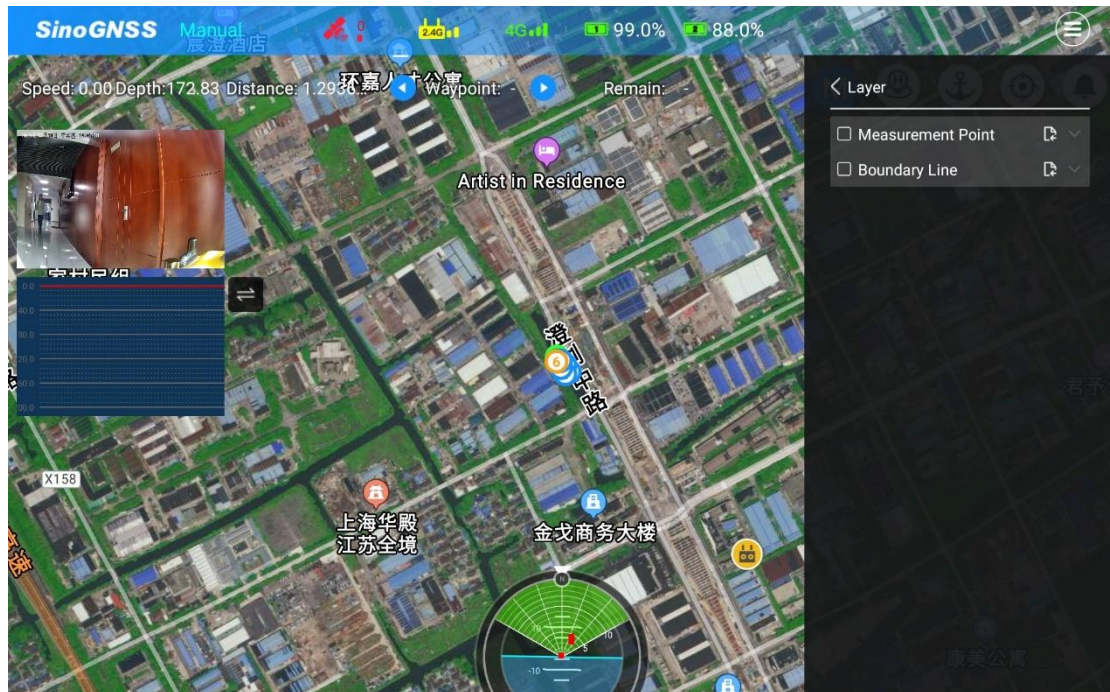


Figure 3-16 Unmanned Vessel Layer Management

(7) Distance Measurement Function

Tap any two points on the satellite map to display the distance and angle between them.

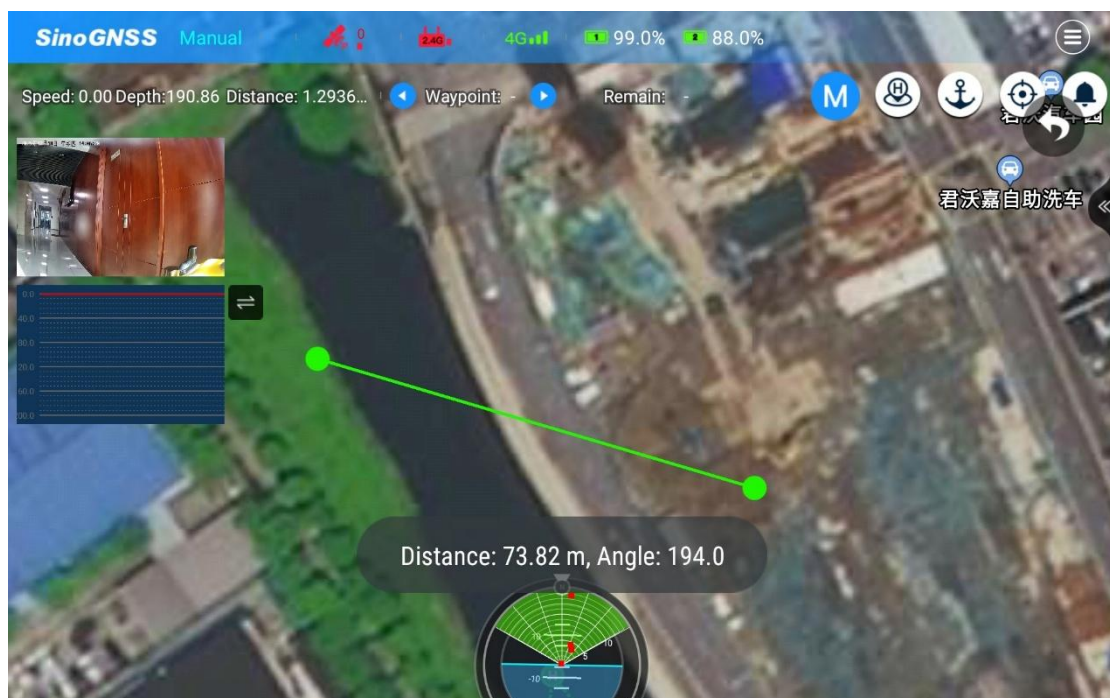


Figure 3-17 Distance Measurement Function

(8) Safety Settings

a. Automatic Obstacle Avoidance: Toggle this function on. When enabled, the unmanned vessel will automatically detour or stop if an obstacle is detected ahead.

b. Shallow Water Reverse: Toggle this function on. When enabled, the unmanned vessel will automatically reverse if it enters an area shallower than the set water depth.

c. Return on Loss of Connection: Toggle this function on. When enabled, if the remote controller disconnects (e.g., due to distance), the vessel will automatically return after a set period of time (loss-of-connection time).

d. Low Battery Return: Toggle this function on. When enabled, the unmanned vessel will automatically return when the battery level is low.

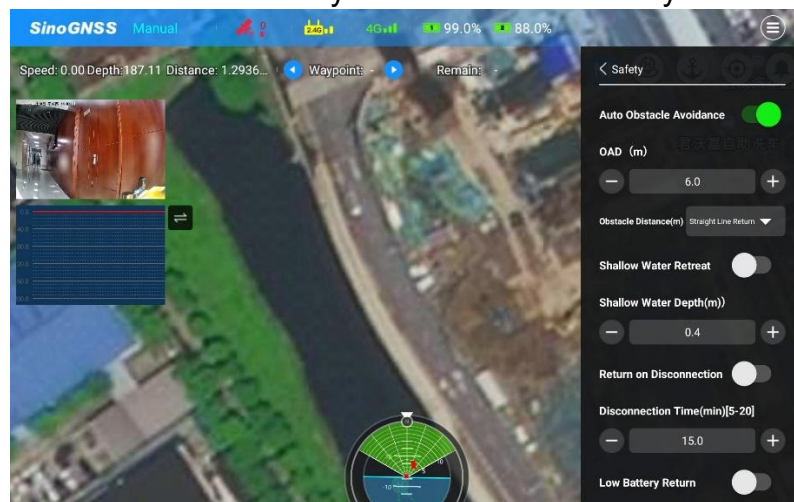


Figure 3-18 Safety Settings

(9) Other Settings

Includes additional functions such as virtual joystick and sampling settings.

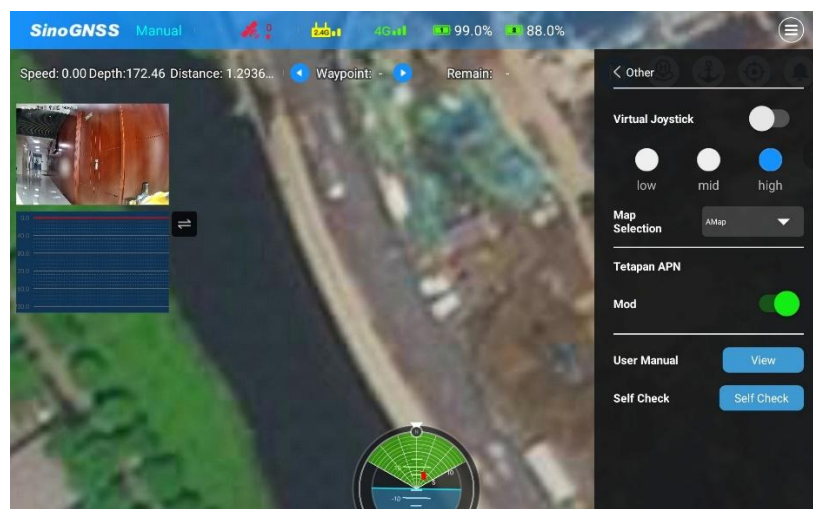


Figure 3-19 Other Settings

3.8. Echo Sounder Control

Tap the echo sounder slide button on the right side. Tap Transmit Sonar to start the echo sounder.

Tap Depth Collection to begin recording depth point data.

Tap Pause Recording to temporarily stop recording depth points.

Tap Stop Recording to save the recorded depth point data to a file.



Figure 3-5 Echo Sounder Control

3.9. Camera Control

Tap the camera feed in the upper-left corner to enter the camera view. You can enable split-screen display.

Bottom-right number 1: Record Video

Bottom-right number 2: Take Photo

Bottom-right number 3: Adjust Gimbal (up, down, left, right)

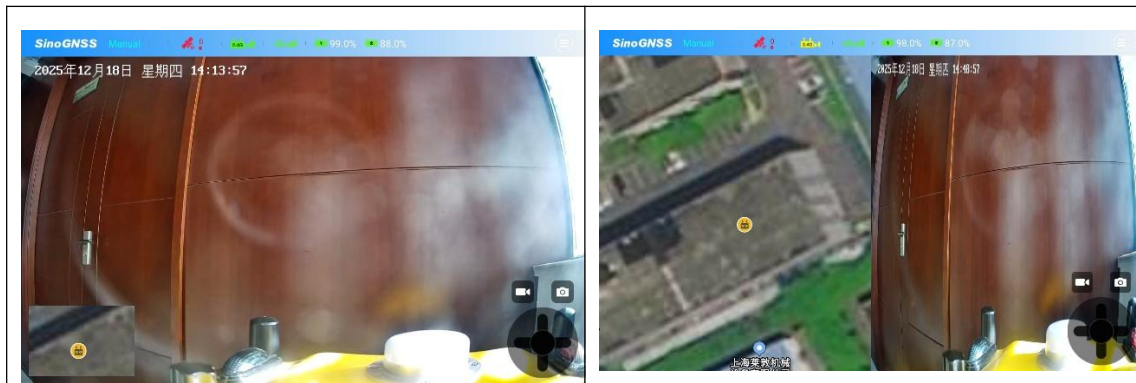


Figure 3-6 Camera Control

3.10.Data Post-Processing

In the project management section, select the corresponding project and tap Data Processing to enter the post-processing interface.

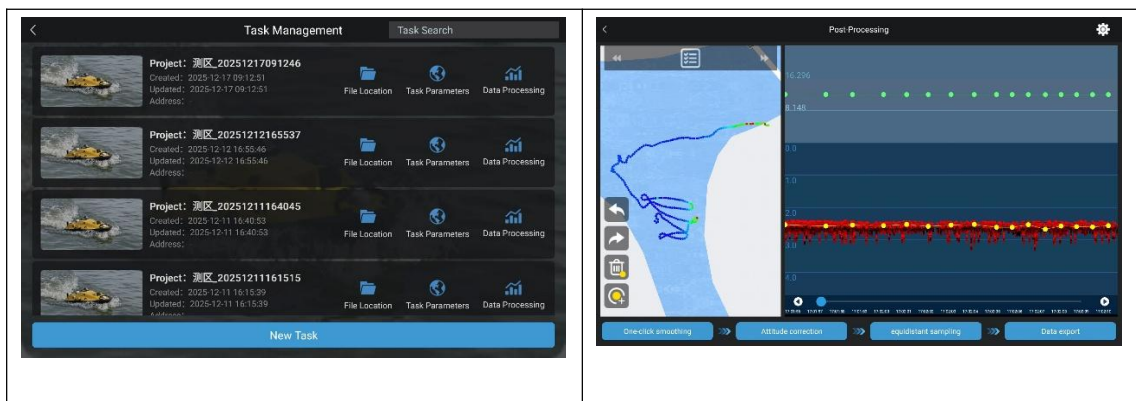


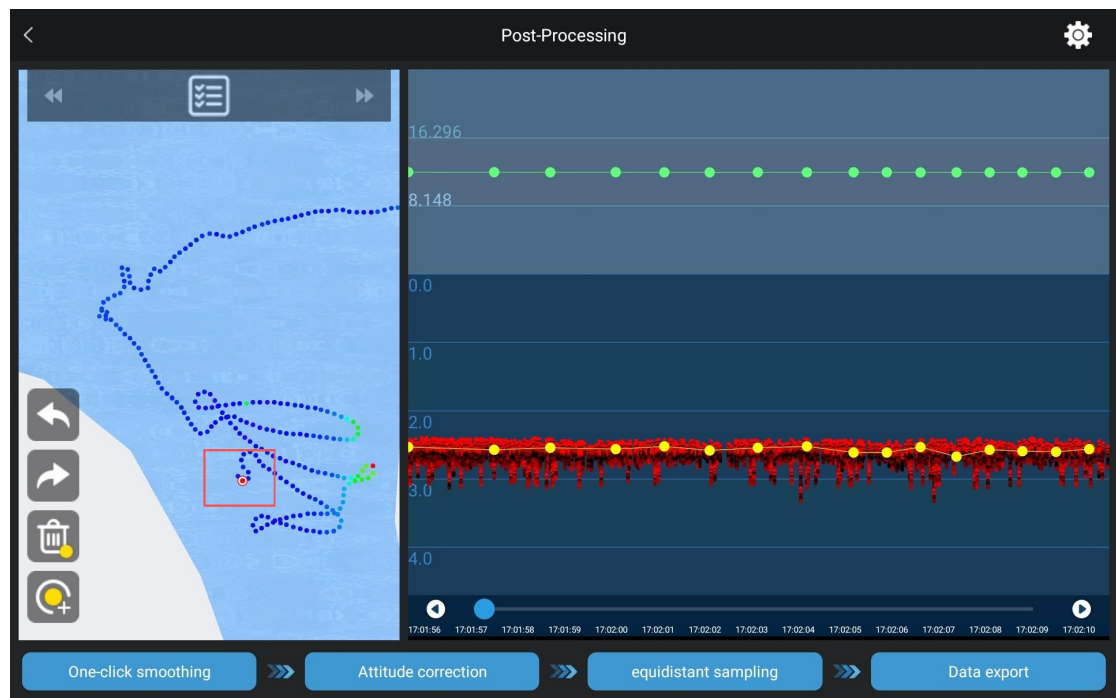
Figure 3-7 Data Post-Processing Interface

(1) View Introduction

① Right-side Depth View:

Green points at the top represent water surface elevation points, indicating their elevation values.

Yellow points below represent measured depth points, and red points represent echoes. When a depth point is selected, the corresponding point on the left-side map track is highlighted in red.



② Left-side Map View:

The map can be moved by dragging and zoomed in or out.

Recorded points on the map are color-coded according to water depth, with the depth scale ranging from shallow to deep in the order: red, orange, yellow, green, cyan, blue, purple.

(2) Function Button Introduction

① **Survey Lines:** Displays all recorded survey line files within the current project.

② **Undo:** Reverts the last operation (e.g., dragging points, deleting points, adding or removing feature point sample lines).

③ **Redo:** Restores the last undone operation (e.g., dragging points, deleting points, adding or removing feature point sample lines).

④ **Delete:** Tap this button, then select multiple depth points to delete them. Deleted points are grayed out and cannot be selected again.

⑤ **Insert Point:** Manually insert data. Tap this button, then click anywhere within the depth view to insert a new record at the corresponding time and depth position. Newly inserted points are displayed in yellow.

⑥ **Previous Line:** Switch to the previous survey line for processing.

⑦ **Next Line:** Switch to the next survey line for processing.

⑧ **Tide Correction:** Import a tide file (*.tid). The date and time in the TID file must include the survey line's date and time. After importing, the water surface elevation will be corrected using the data from the TID file.

⑨ **Echo Sounder Settings:** Adjust settings for echo sounder draft and sound speed.

⑩ **Project Parameters:** Modify project parameters as needed.

⑪ **Attitude Correction:** Correct roll and pitch values in the data.

⑫ **Sampling Settings:** Limit sampling data by setting the sampling method (e.g., feature point sampling) and sampling interval.

a. Distance-Based Sampling: Within equal intervals of X meters, select the depth point at the interval line as the sampling point.

b. Deepest (Equal Interval): Within equal intervals of X meters, select the deepest depth point as the sampling point.

c. Shallowest (Equal Interval): Within equal intervals of X meters, select the shallowest depth point as the sampling point.

d. Average (Equal Interval): Within equal intervals of X meters, calculate the average of all depth points as the sampling point.

⑬ **Data Export:**

a. Merge Files: Merge multiple selected survey line data files into a single file.

b. Save Header: Include header information in the exported file.

c. File Type: Select the export file format; supported formats include TXT, DAT, and CSV.

d. File Format: Customize the header information to be included in the exported data.

⑭ **UI Settings (Gear Icon at Upper Right):**

a. Depth Interval: Sets the interval for the vertical axis (depth).

b. Time Interval: Sets the interval for the horizontal axis (time).

c. Time Width: Keeps the time interval unchanged but expands the horizontal time width of the view to prevent points from being too dense and difficult to select.

(3) Gesture Operation Introduction

① Points in the depth view can be dragged up or down to adjust depth. For example, selecting a single point allows vertical movement to modify its depth value, but horizontal movement is not allowed.

② Swipe from the top-left to the bottom-right of the points to perform multi-point selection, similar to the box selection operation on a PC.

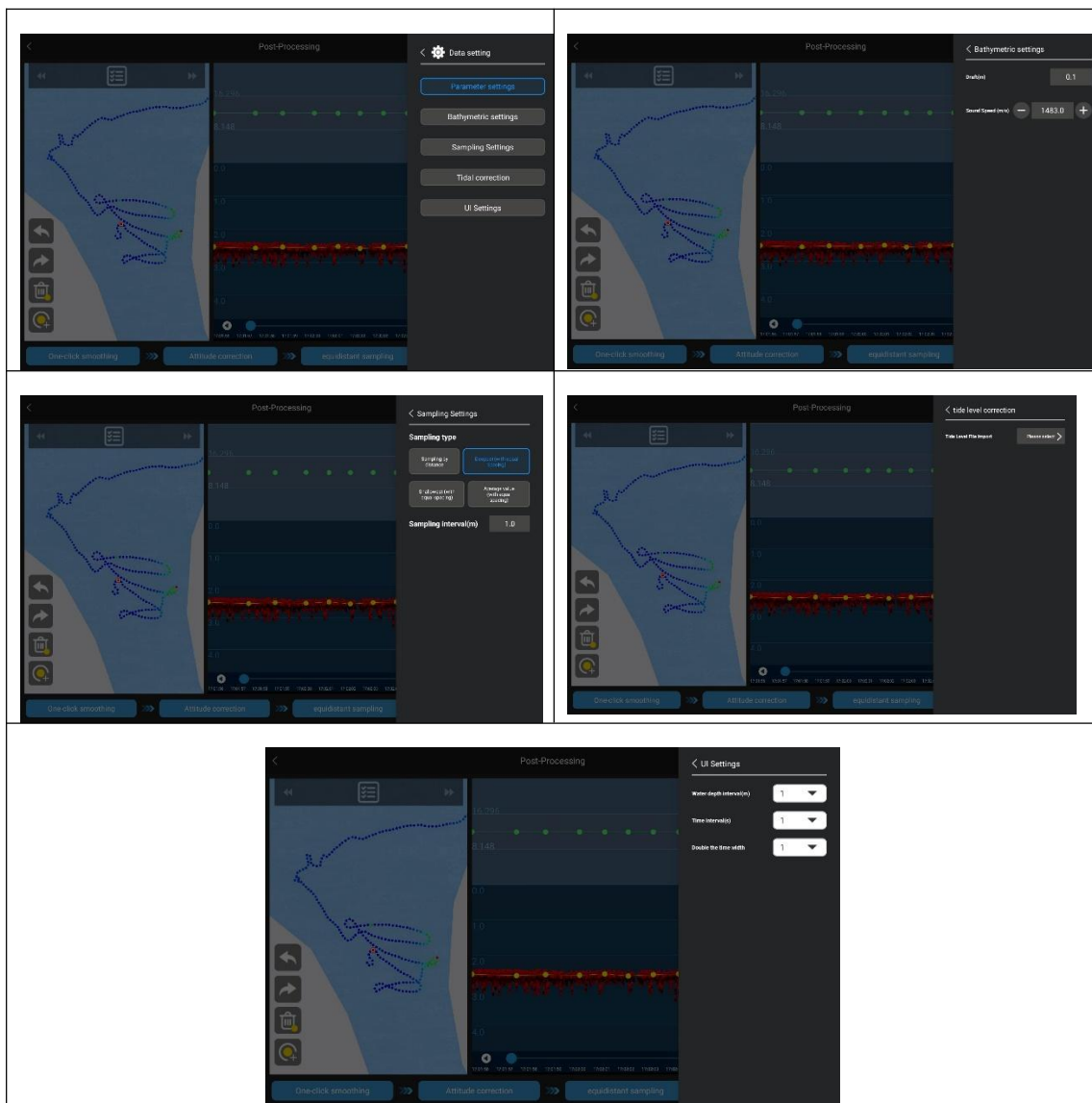


Figure 3-8 Data Post-Processing Function Interface

4. Quick Start Guide

(1) After powering on the unmanned vessel, wait about 1 minute and check whether the motor and status indicator lights are normal. Open the iSail vessel control software and connect to the vessel via the image transmission mode.

(2) Tap Project, then New Project. Modify the project name and coordinate system, then choose Draw Manually or Import Route File. Enter the map interface (edit mode) and check the Power-On Self-Check list. If all items are normal, proceed to route planning. After planning the route, tap Upload. Once the upload is successful, the route project will be automatically saved.

(3) Start operation: Set the vessel to automatic cruise mode and enable data recording to begin collecting data.

(4) Launch the unmanned vessel into the water, switch to automatic navigation mode, and tap the Start Recording button to officially begin the survey.