SF3300 smart vertical take-off and landing fixed wing

User's manual

Guangzhou Southern Surveying and Mapping Technology Co., LTD

August 2025

user manual

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1. Reading tips

Before using the product, please be sure to read this instruction carefully and follow the instructions of the instruction to avoid causing damage to the product, property loss, personal injury or violation of the warranty terms.

1.1. Access channels

Users can access and view instructional videos and other videos through the following links or by scanning the QR code to ensure correct and safe use of the product.

Link:

https://pan.baidu.com/s/1rvslHqZNeMDJHOn3VuIlyg?pwd=2024

Extraction code: 2024

1.2. Technical support

If you have any problems that cannot be solved by the specification, please contact us through the following methods:

- Contact number: 400-7000-700
- Fax: 020-23380888
- Search the "Southern Surveying and Mapping" public account, select online customer service to contact us.

1.3. Figure captions and style

Warning: Safety instructions or correct methods of operation must be followed.。

Note: Operation and use tips.

2. Product overview

2.1. Introduction

The drone integrates the design of fixed-wing and multi-rotor systems, combining their respective advantages. The multi-rotor configuration enables vertical takeoff and landing, while the fixed-wing design ensures long-range flight capability and rapid cruising speed, allowing large-scale aerial surveys. This design meets operational requirements in complex terrains such as mountains, hills, and plateaus. Additionally, through ground station software, the drone can autonomously complete data collection, flight state transitions, and vertical takeoff and landing at each mission stage.

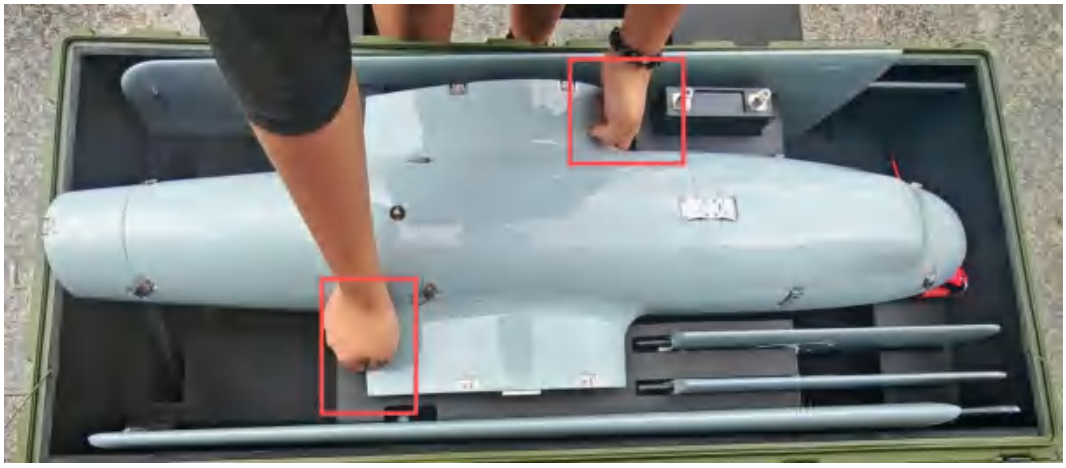
3. Drone assembly

3.1. Assemble the main body of the UAV

3.1.1. Open the chassis.

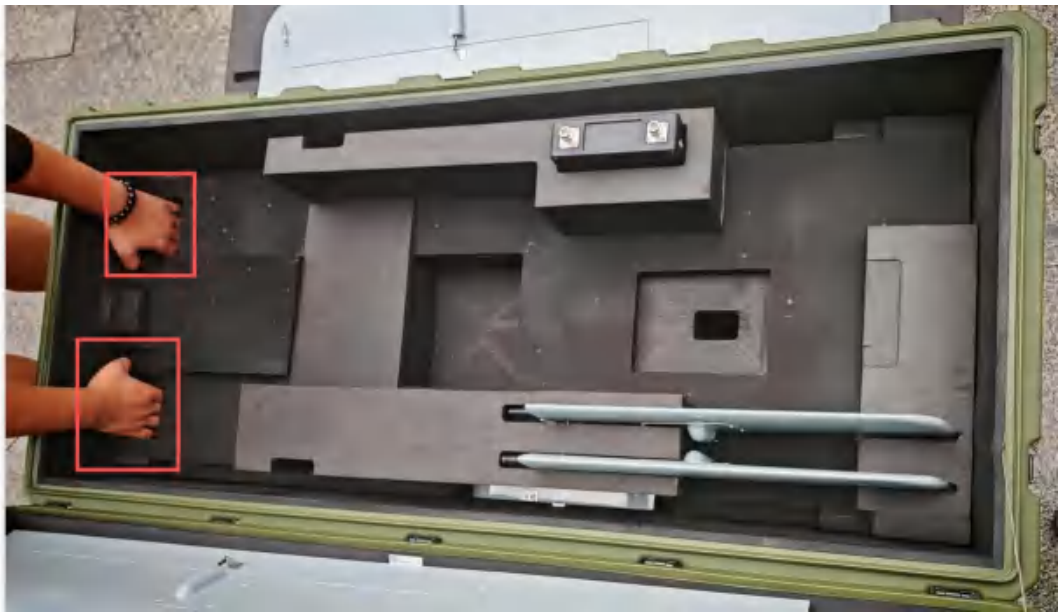
3.1.2. Remove the inner lining of the fuselage and the radio antenna.

3.1.3. Remove the drone fuselage.

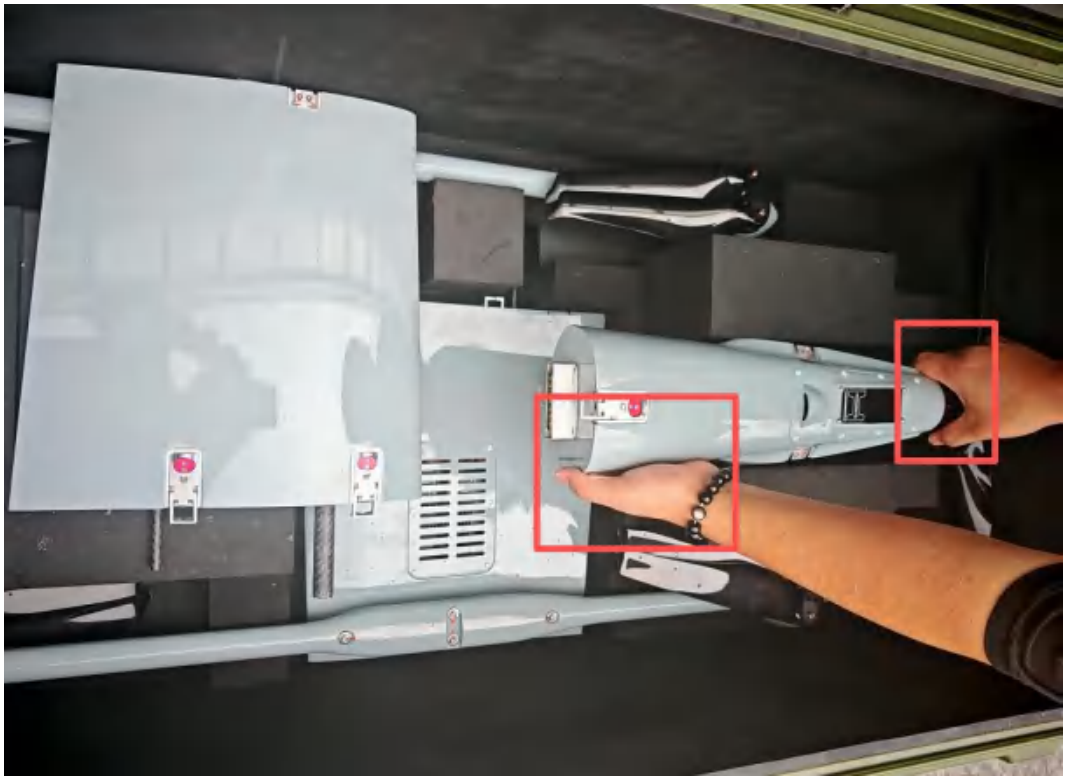


3.1.4. Remove the outer wing and set it aside.

3.1.5. Grab the tail landing gear limiter groove with your hand and pull it up and back to remove the lining. Place it aside.



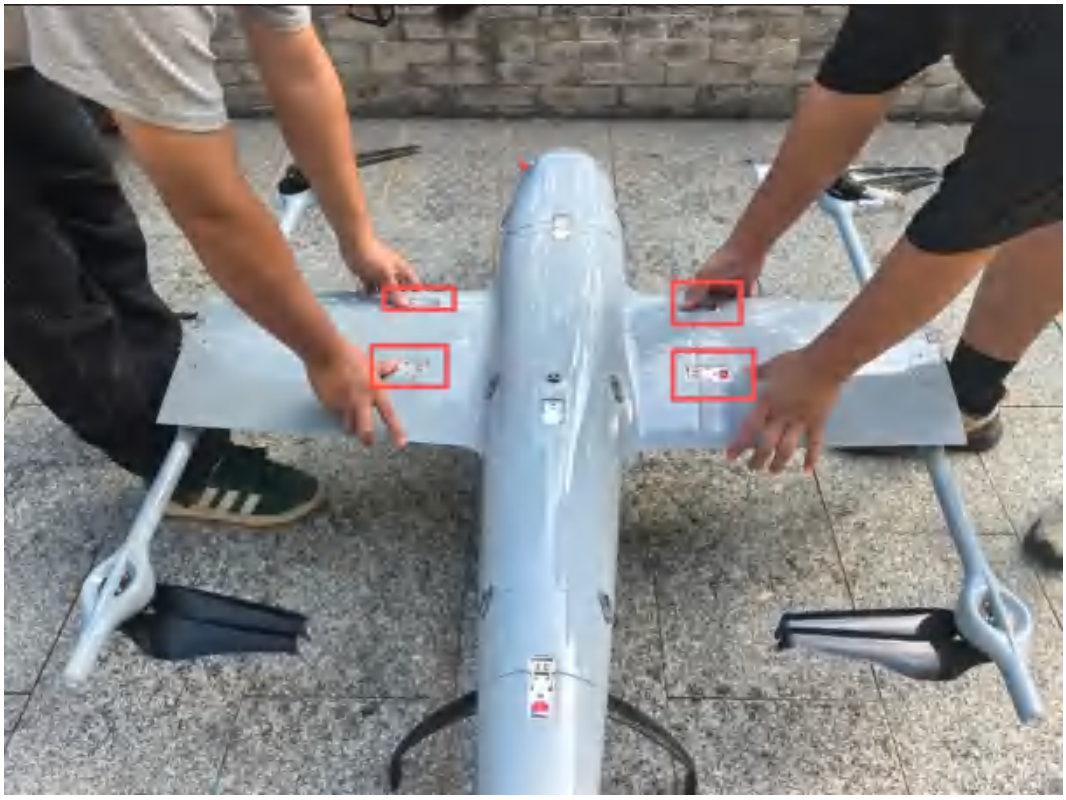
3.1.6. Remove the tail fin.



3.1.7. Install the tail fin. Tighten the upper and lower latches at the same time.


3.1.8. Remove the middle wing in turn.

3.1.9. Install the middle wing. (Note: The middle wing must be assembled and disassembled on both sides at the same time)



3.1.10. Install the outer wing in sequence.

3.1.11. Remove the fuselage image transmission antenna.

3.1.12. Install the antenna.

3.1.13. Remove the V tail.

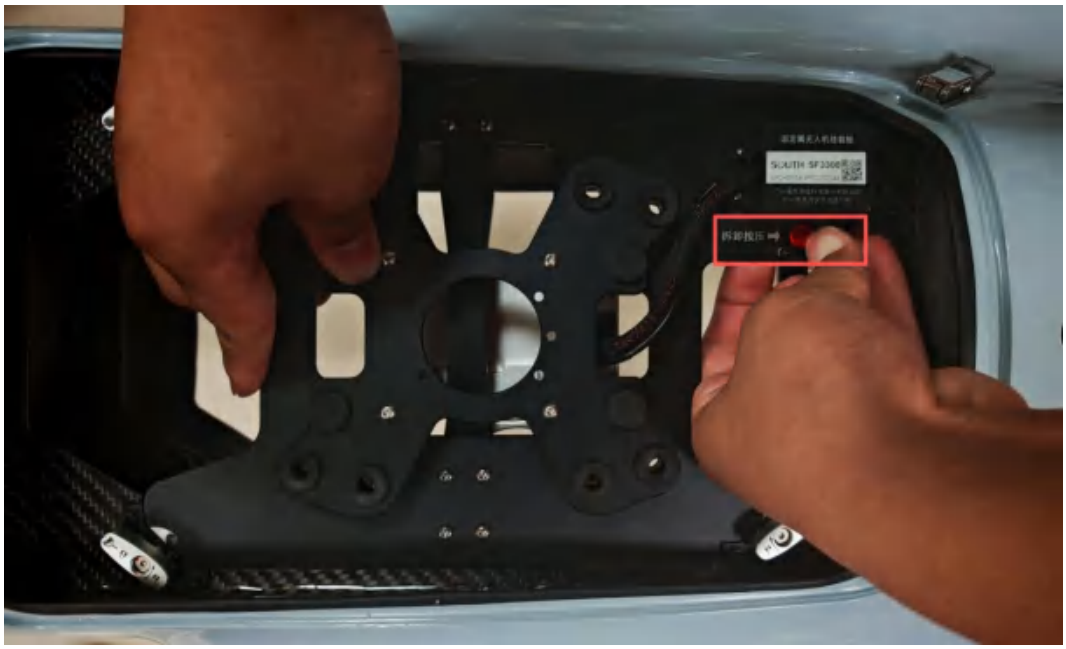
3.1.14. Install the V tail in sequence.

3.1.15. Remove the airspeed tube sleeve.

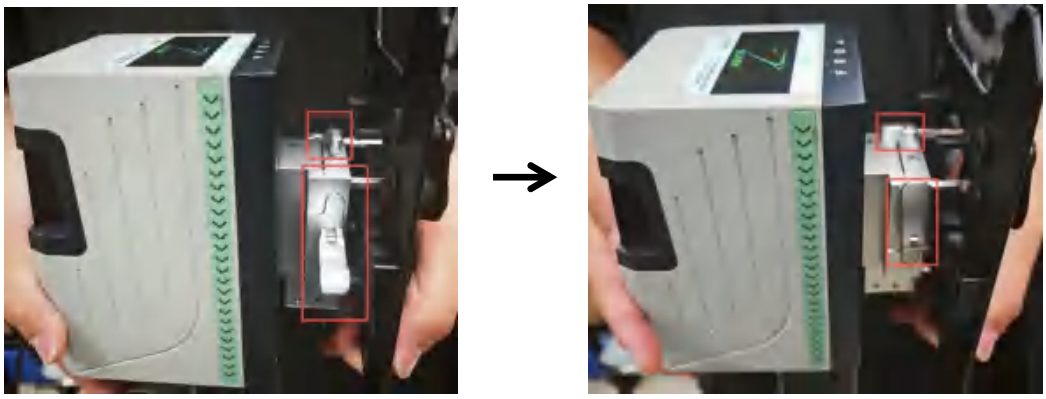
3.2. Mounting installation

3.2.1. Open the mount warehouse.

3.2.2. Remove the mounting plate.

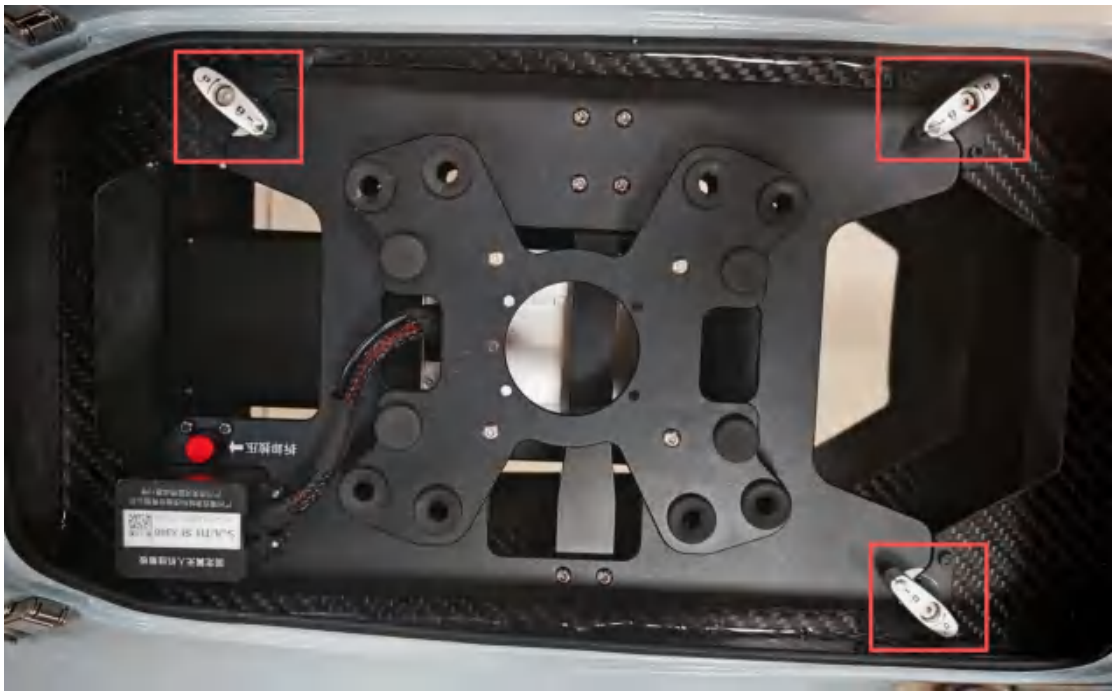


3.2.3. Mount the installation to the mounting board.

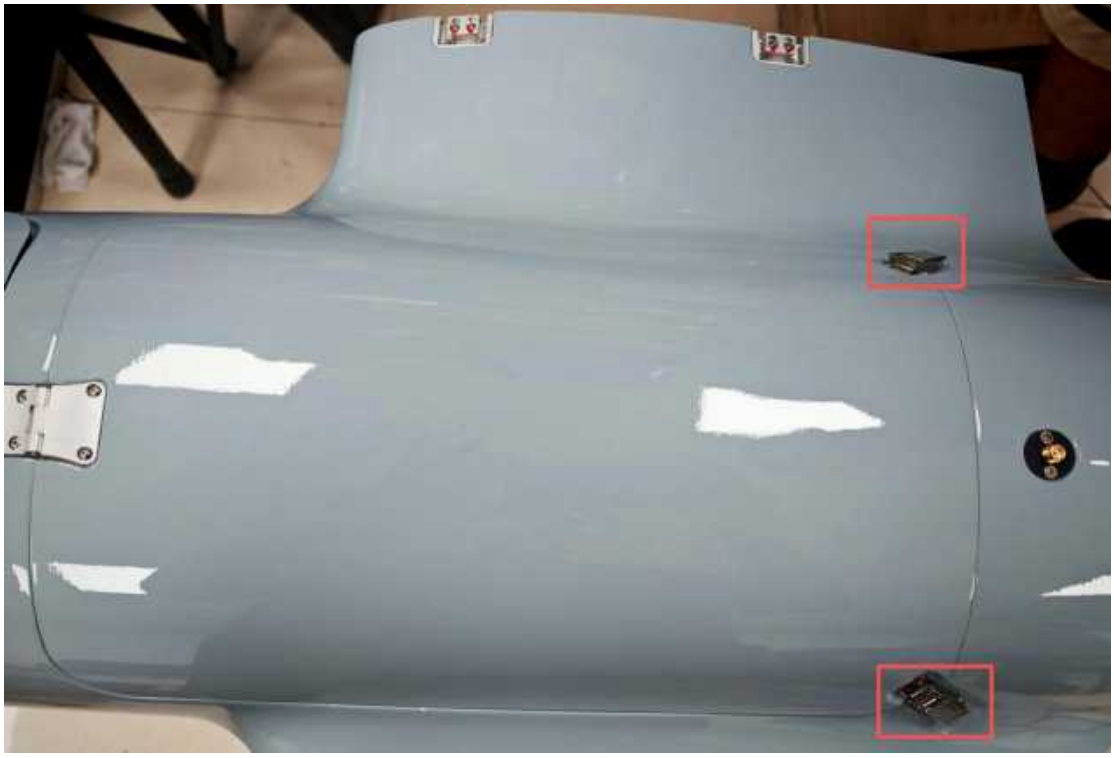


3.2.4. Mount the board and mount it into the mounting compartment.

3.2.5. Rotate the lock to mount the board clip.

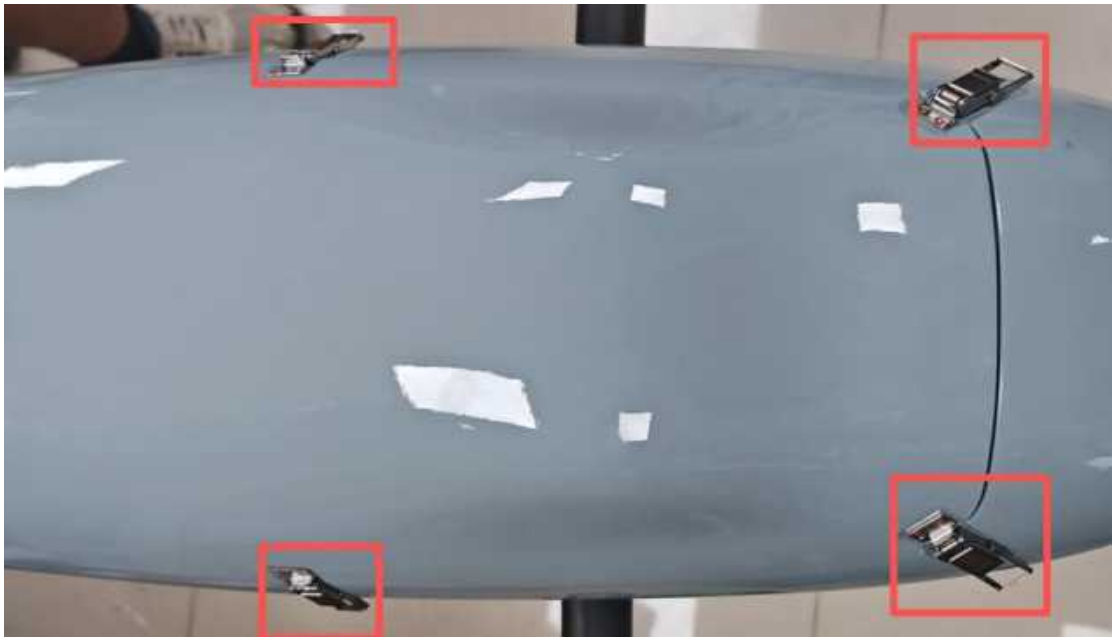


3.2.6. Fasten the load bin buckle.



3.3. Battery installation

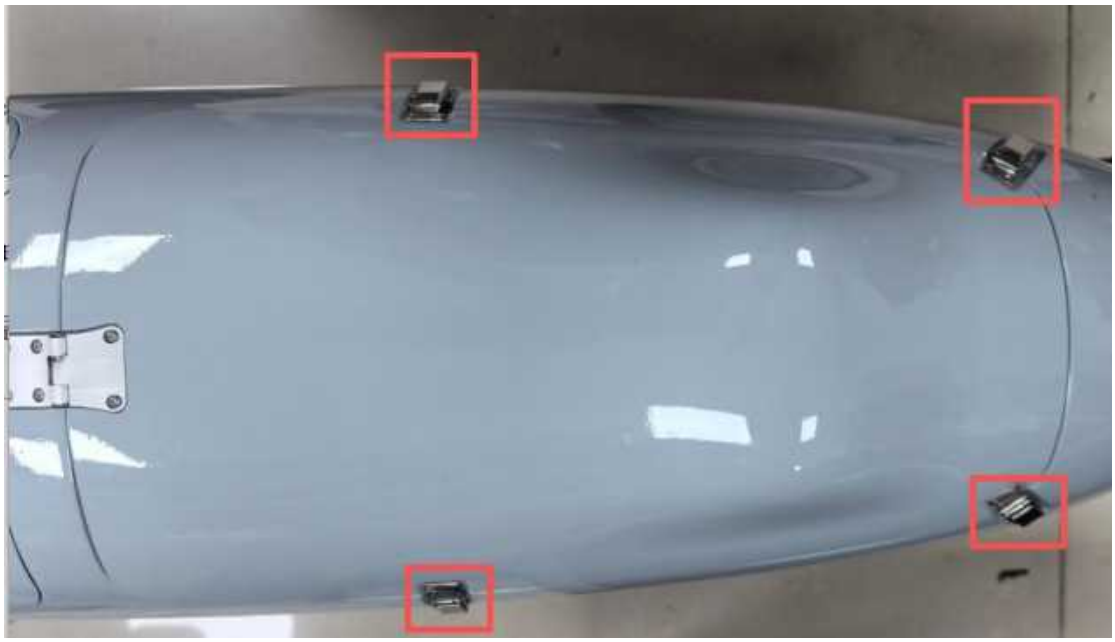
3.3.1. Open the battery compartment.



3.3.2. Align the battery power key with the power interface of the battery compartment and the battery limit, then press slightly to make the battery contact with the power interface tightly.

3.3.3. Short press the battery to start the machine.

3.3.4. Close the battery compartment cover and fasten the four clips of the battery compartment cover.



4. Field data collection

4.1. Data link connections

4.1.1. Close the computer firewall.

4.1.1.1. Open computer Settings> Search (Firewall)> Select Firewall and Network Protection.

4.1.1.2. Disable all (domain networks), (professional networks), and (public networks).

4.1.2. Photo transmission module

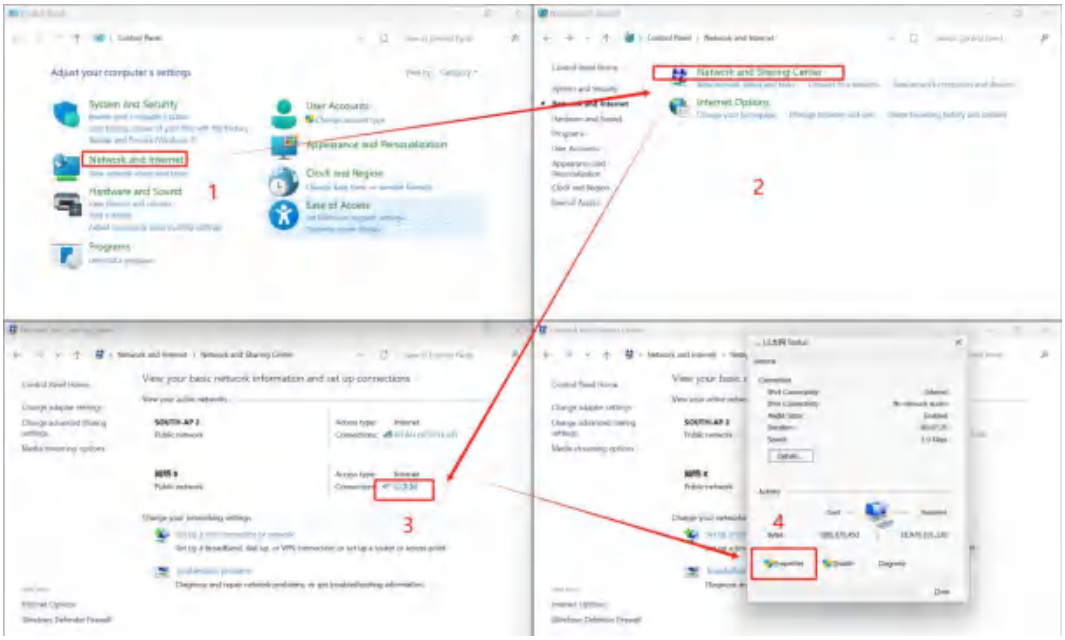
4.1.2.1. Install the map transmission module antenna.

4.1.2.2. The power supply of the image transmission module is powered. (Note: Connect the antenna before power supply)

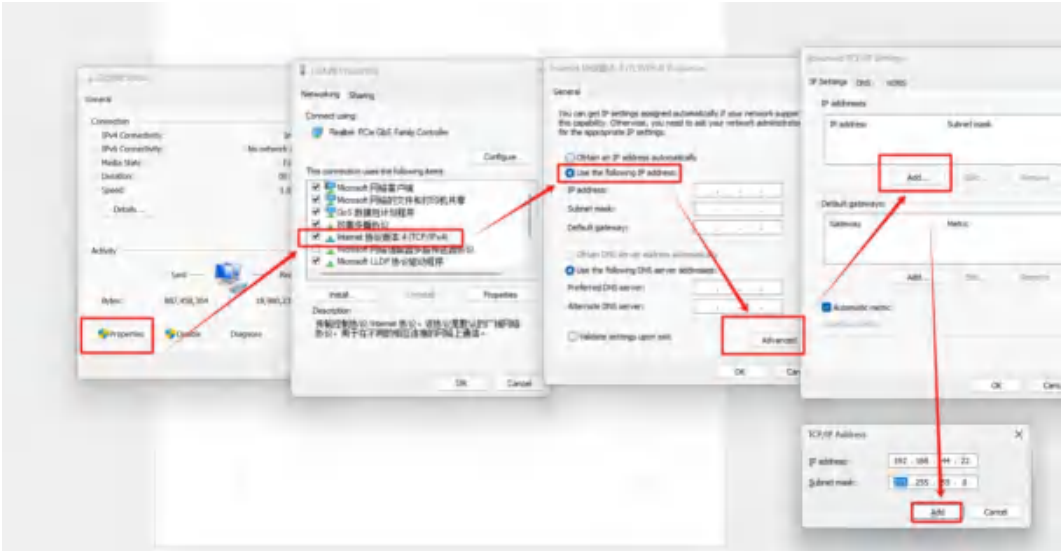
4.1.2.3. Connect the image transmission module to the computer.

4.1.3. Computer network configuration.

4.1.3.1. Setting Ethernet properties Click Control Panel → Click Network Sharing Center → Click Change Adapter Settings → Double-click the identified Ethernet.



4.1.3.2. Add two IP addresses Click Properties → Double-click the IP4 protocol → Select Use the following IP address → Click Advanced → Click Add → Enter 192.168.144.22 → Click Subnet Mask and it will automatically identify 255.255.255.0 Use the same method to add 192.168.199.33 again and click OK.



4.2. Chinese and English switching

4.2.1. Open the ground station software

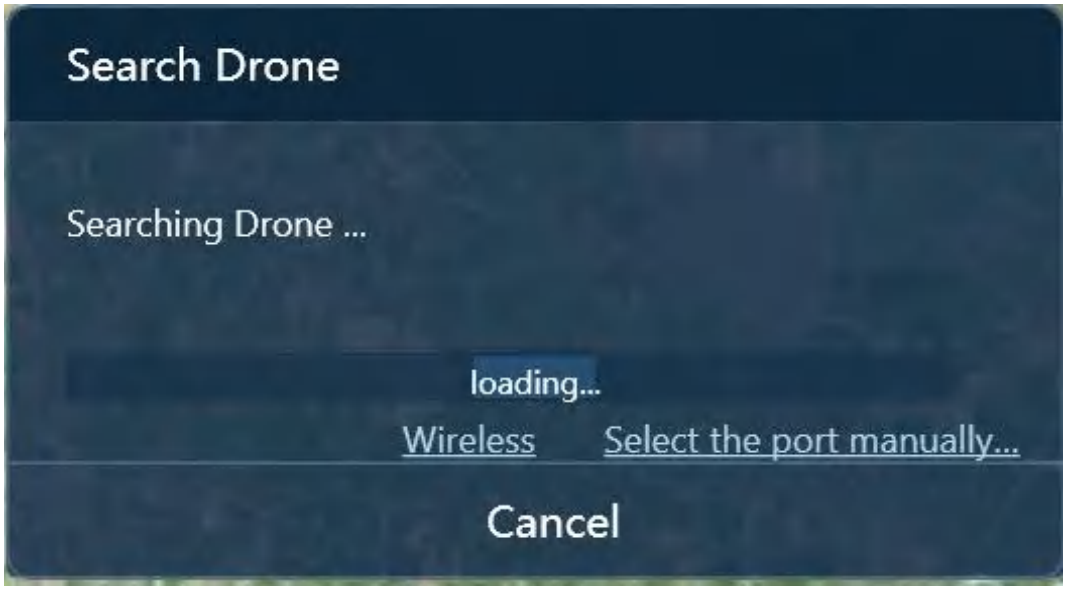
4.2.2. Click UAV→click 系统设置 System setup→click 语言→select English。

4.3. Ground station operations

4.3.1. Open the ground station software

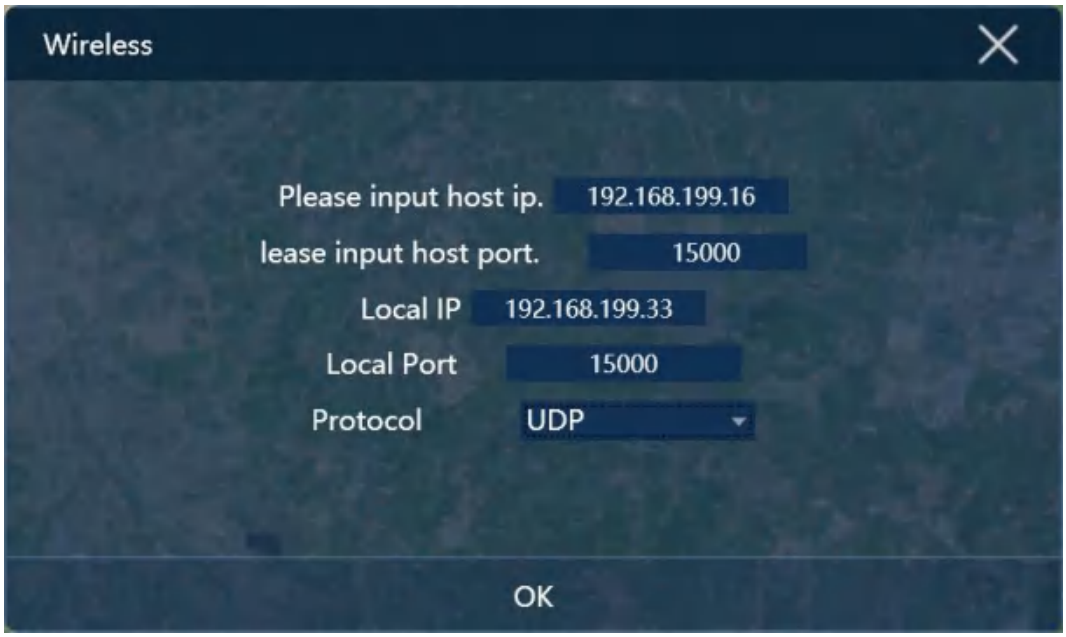
4.3.2. Connecting the Drone

4.3.3. Click on "Wireless"



4.3.4. Select "UDP" for the protocol

4.3.4.1. Drop-down selection Protocol: UDP， The following figure shows the setting of IP address and port number.



4.4. Map selection

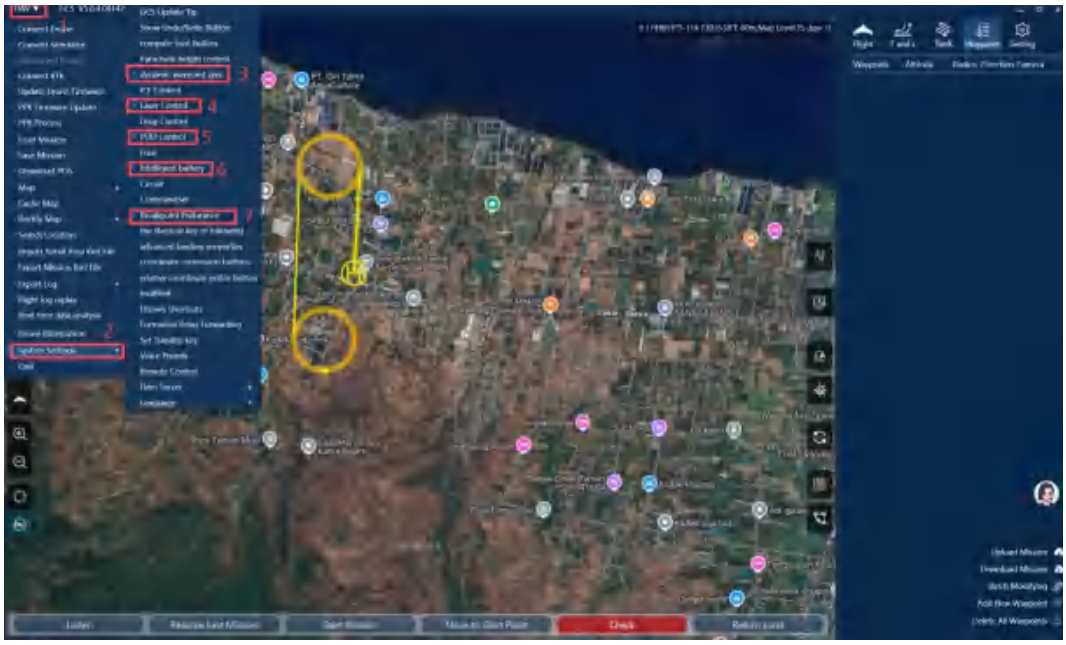
4.4.1. Click UAV→Click Map→Select GoogleHybridMap. After connecting to the computer network, the map and elevation DEM data will be automatically loaded. (Note: If the map cannot be loaded, you can select the 4.5 server for elevation data.) (This setup is required only for new installations; you can skip it and go directly to 4.8 to configure takeoff and landing routes.)

4.5. Server selection

4.5.1. Click UAV → Click System Settings → Click Dem Server → Select StandbyServer2. (This is required for new installations)

4.6. Open the function command button

4.6.1. Please open the function command button one by one as shown in the figure below. (This is required for new installations)



4.7. Fixed firmware version check

4.7.1. Click UAV → Click Drone Information → Check if the software version in the red box of Figure 2 matches the flight control firmware version. If not, upgrade the flight control firmware. For uncertain cases, contact technical support for remote assistance. The yellow box shows the accumulated flight mileage. Maintenance is required when the mileage reaches 15,000 kilometers.

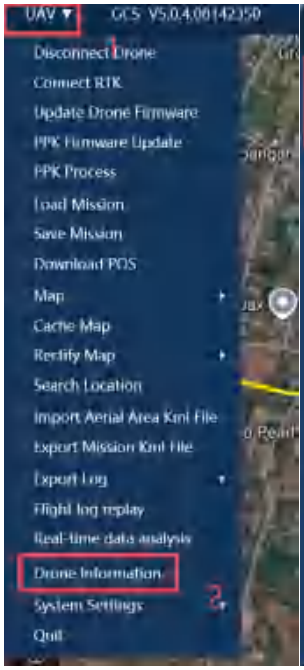


Figure 1

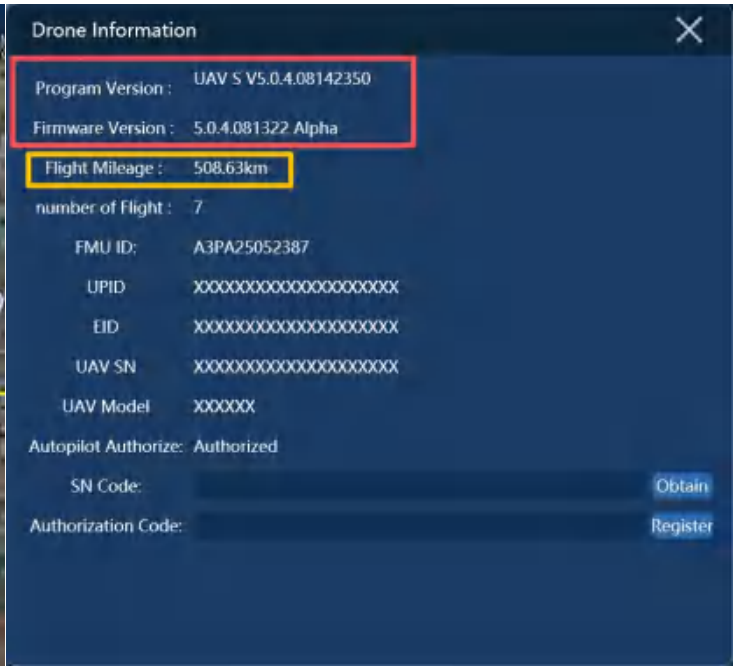
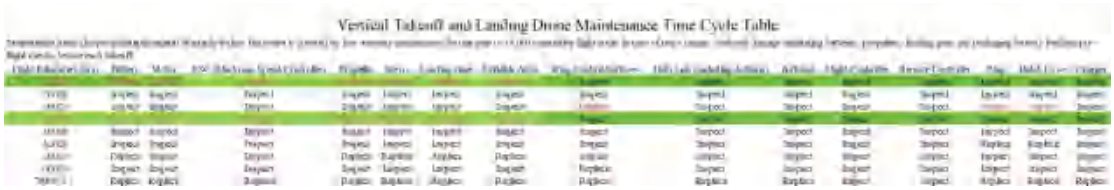


Figure II

Maintenance information sheet



4.8. Flight path setting

4.8.1. After the drone is powered on, click to find the location of the drone → click to take off and land → click to set the take-off hover circle button, and then click to select the position in the direction of the drone's nose. (Note: The nose should be kept against the wind to take off and land against the wind)

4.8.2. Set the landing circle position, the takeoff circle is in the direction of the nose, the landing circle is in the direction of the tail.

4.8.3. Takeoff and landing parameters Settings, such as Linear distance can also be set to 450-500 meters in case of strong winds of level 5-6. (Note: It is necessary to manually check that there are no tall buildings and mountains around the circle range)

4.9. Zoning

4.9.1. Add survey area manually

4.9.1.1. Click on Task, then hover over the flight area and right-click → click Delete all survey zone history。

4.9.2. Import scope kml

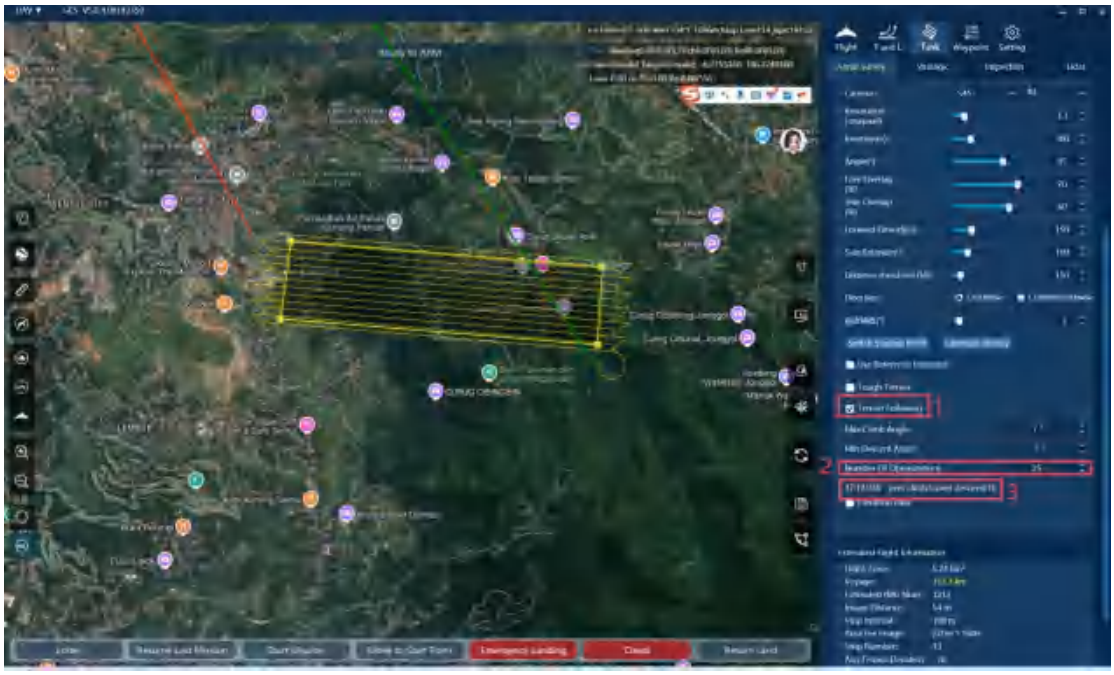
4.9.2.1. Click UAV → Click Import Aerial Area Kml File, then select the KML range. The map will show the imported survey area range. Click right-click within the range line and select Create block survey area from the KML.

4.10. Route planning

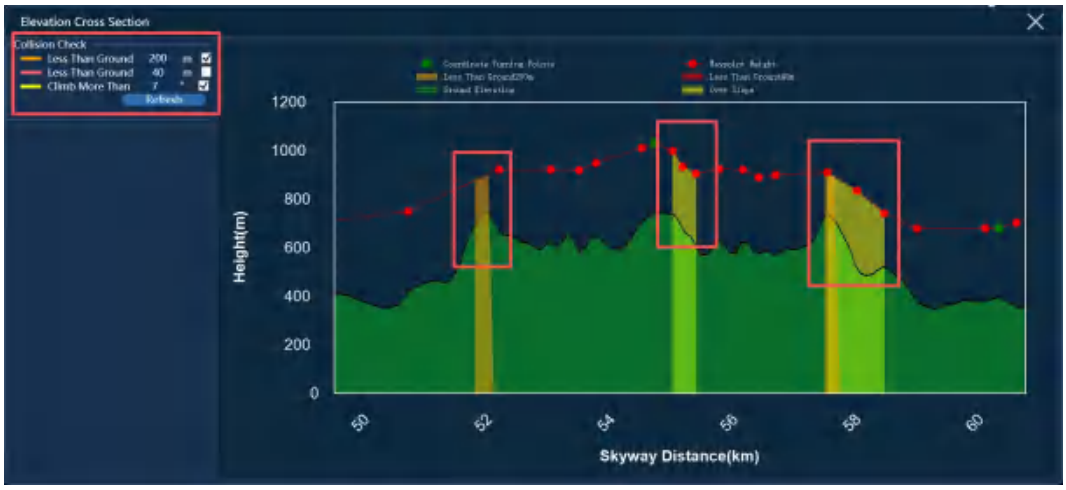
4.10.1. Select aerial survey for the payload camera and radar for the payload radar. Set the flight path parameters according to the diagram below, and then click Generate flight path

4.11. Planning of imitation routes

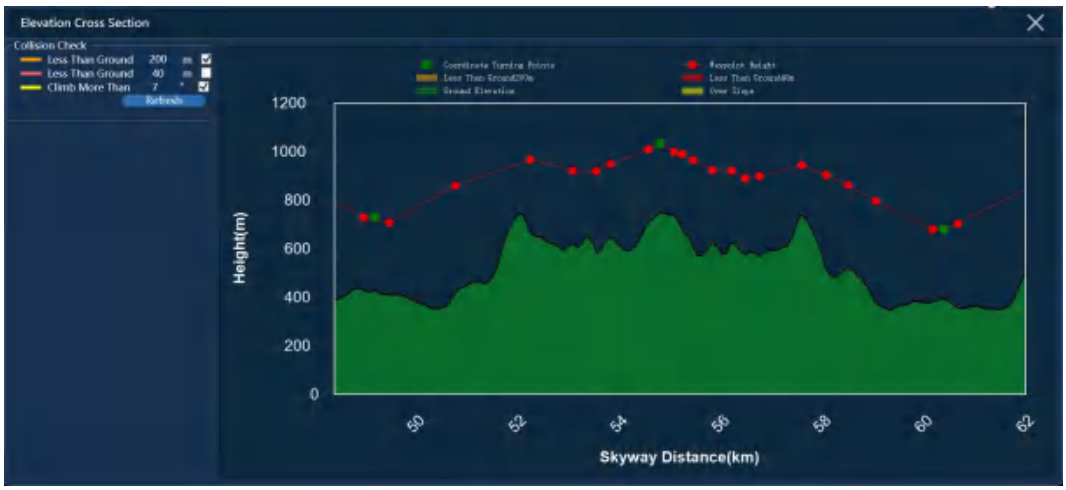
4.11.1.1. For example, in the image: Over climb (6) indicates that two waypoints on the flight path have a climbing angle greater than 7 degrees, while Over descent (16) shows two waypoints with a descending angle exceeding-7 degrees. When selecting the "Clone Ground" option, set the maximum climb angle to 7 degrees and minimum climb angle to-7 degrees. Adjust these values upward or downward through optimization iterations to minimize (over climb: vs over descent:). Finally, click "Generate Flight Path" to finalize the configuration.



4.11.2. First configure the upper-left settings: The "Less Than Ground" setting should maintain a 200-meter distance from the ground, while the "More Than" setting requires an aircraft angle of 7 degrees. As shown in the diagram below, orange indicates distances under 200 meters from the ground, while yellow marks angles exceeding 7 degrees that fail to reach target altitude. (You can adjust flight points by moving up or down using the Shift key.)



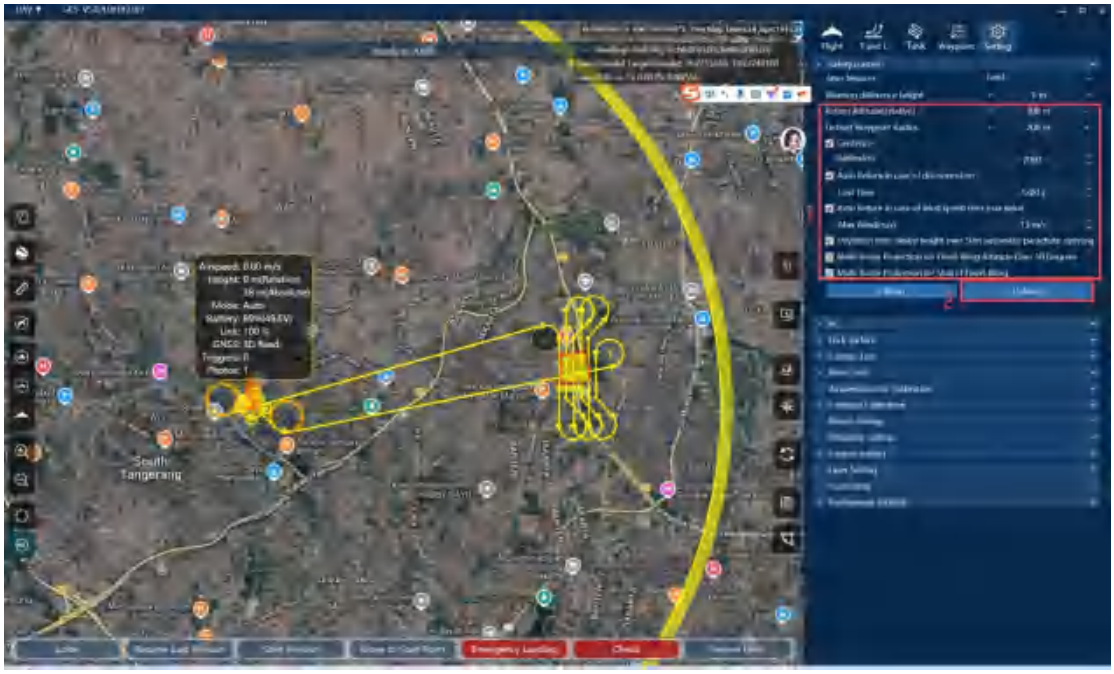
4.11.3. The route adjusted by pressing the Shift key has no error message that the altitude is less than or greater than the climb angle.



4.12. Flight return altitude and protection Settings

4.12.1. Return Altitude (relative) when flying level: consistent with the flight altitude. Default Waypoint Radius: 200-230 meters.

Geofence Radius (m): adjust the distance of the restricted area according to the flight route. Other boxes are checked and set according to the picture.



4.13. Take-off inspection

4.13.1. Click Check, read the information and check all the boxes, then click Next.

4.13.2. Click Moto Test to prompt the confirmation button. Start the low-speed test one by one automatically from the upper right in a clockwise direction. (Note: Ensure that no one is within 5 meters of the aircraft during motor testing)

4.13.3. Check Next after the rotor motor test is complete.

4.13.4. Check Heading Check to automatically pop up GPS and dual antenna heading Angle, then click Next correctly.

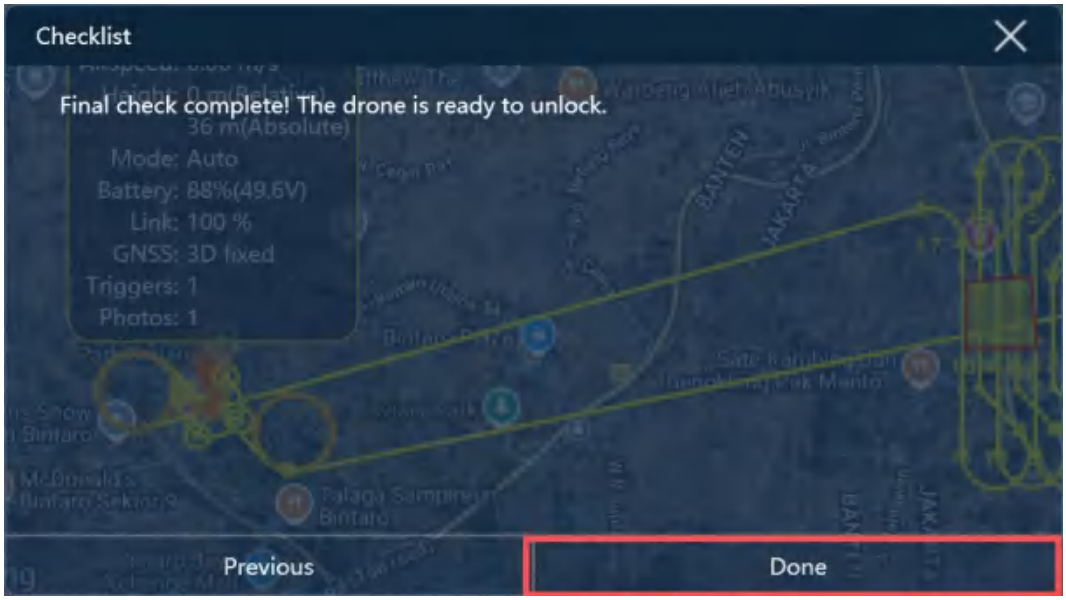
4.13.5. To check the airspeed tube, blow air into the airspeed tube. If the airspeed is greater than 10m/s, the test will be passed. Enter the airspeed tube temperature, check to enable, click setting, enter the return voltage, click setting. Check and click next.

Return flight calculation table					
Rover landing height	Type of load	Return distance	Is it land	wind	Return flight voltage
70 metres	laser	5km	no	8-10m/s	41.6V
70 metres	camera	5km	no	8-10m/s	41.2V
70 metres	laser	5km	yes	8-10m/s	42.6V
70 metres	camera	5km	yes	8-10m/s	42.2V

Note: the voltage should be set 0.5V for every 10 meters of the landing height of this rotor, and the same is true for the simulated ground route.

4.13.6. When mounting the camera, click Photo Test to perform the camera's photo test. Simultaneously observe Triggers: and Photos: to ensure they remain synchronized and updated. Click Photo Test to proceed once the laser is mounted. For unmanned inspection, Triggers: and Photos: should remain unchecked. Verify that Aser Altitude displays green text and shows OK. After confirming all drone latches are secure, click Next.

4.13.7. click Done。

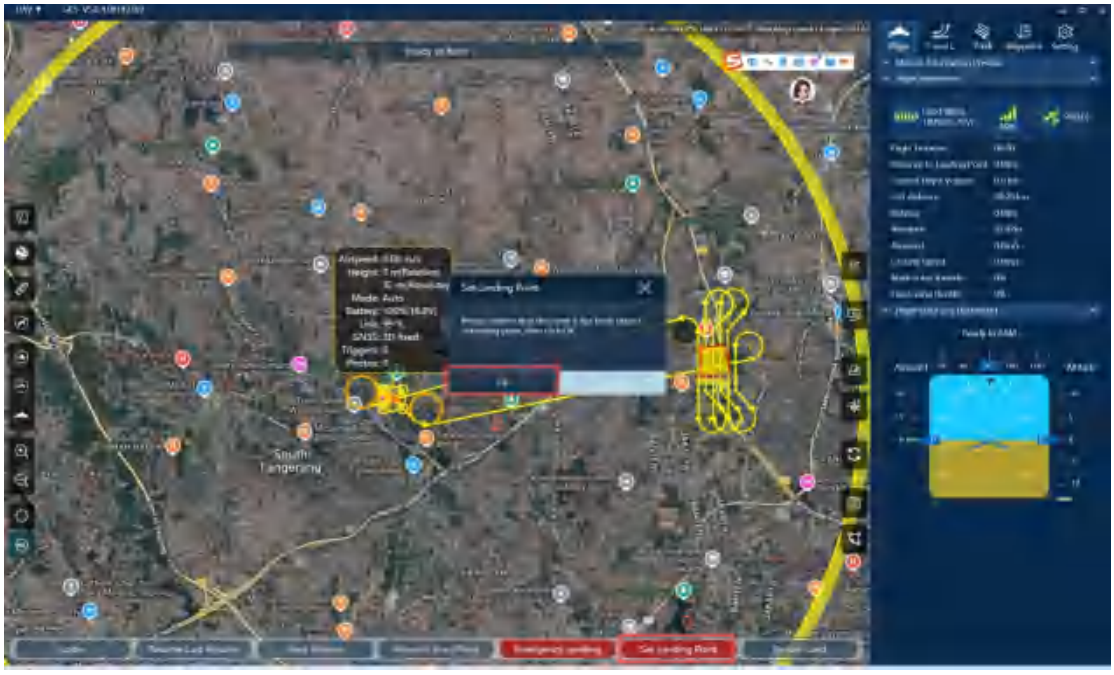


4.13.8. Click Download Route to download the route.

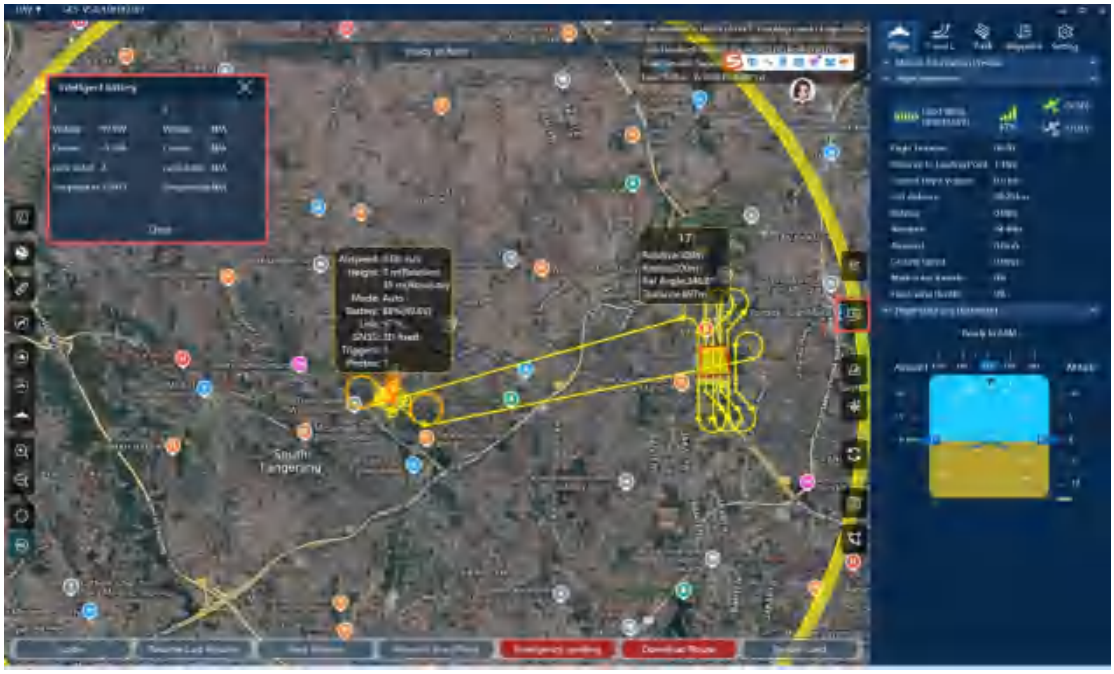
4.13.9. Click Set Landing Point and click the graph parameter setting in the upper left corner. Click Refresh to check whether there is any difference between the viewed and uploaded route points.

4.13.10. If you mount the laser, there will be an additional step of laser startup.

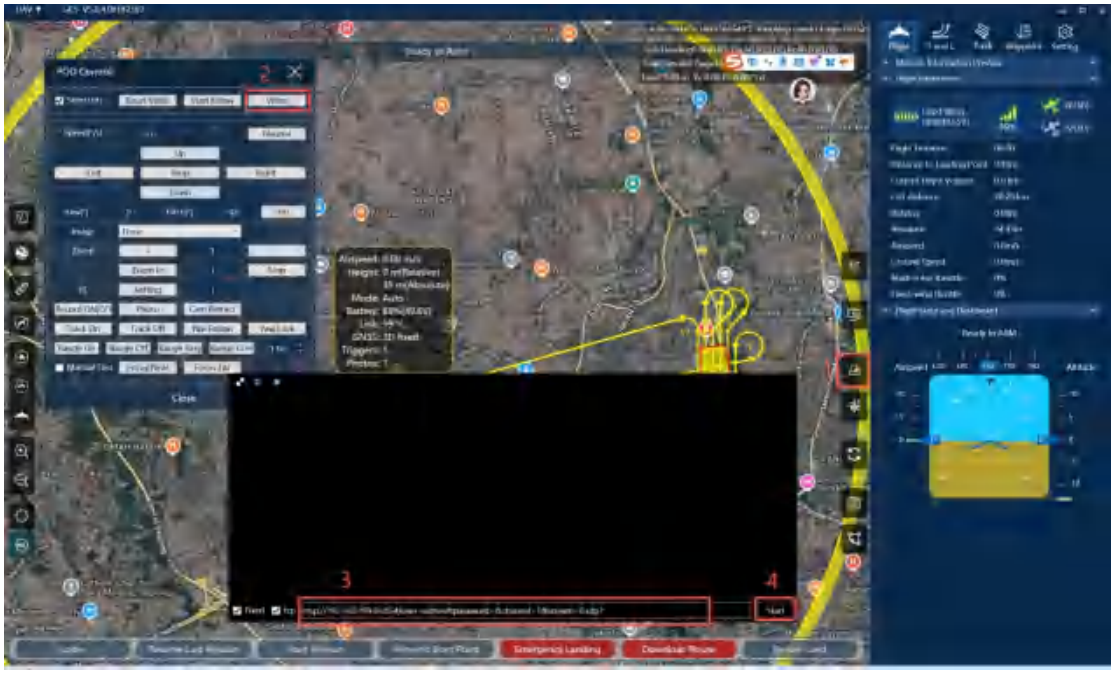
4.13.11. Click Set Landing Point and then click OK for the landing position.



4.13.12. Click the smart battery button to retrieve the battery information and see the battery information in real time.



4.13.13. Click the video play button → Click video → Enter （rtsp://192.168.199.86:554/user=admin&password=&channel=1 &stream=0.sdp?）→Click Start.



4.13.14. Check for error messages in the upper middle of the screen and satellite information in the upper right.

4.13.15. Place the mouse on the attitude instrument and click Ctrl+D to bring up detailed flight information.

4.13.16. Click Unlock (Takeoff) to unlock and take off. The remote control should be kept in Auto mode and the ground station should display Auto.

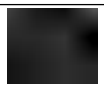
5. Operational flow chart

DOMINO UAV operation process		
Choose an open, unobstructed, and safe takeoff point; do not fly in strong winds (Note: All steps in the table must be strictly checked before operating the drone to take off, word for word and line for line to ensure that they are correct)		
1	Drone assembly	Inspection of main components (main body, left and right main wings, left and right ailerons, etc.)
2		The nose of the aircraft is pointed in the direction of takeoff (against the wind, clear and safe)
3	UAV mounting equipment preparation	Check the laser memory card and whether the lens cover is removed.
4		Check whether the laser/lens indicator light is normal
5	Setting up base stations	Set up base stations and collect base station coordinates
		Static data collection
6	Aircraft powered on	Insert the battery and power up the aircraft
7	Control the ground station to connect to the drone	INPUT IP address Input host IP：192.168.199.16 Input host port:15000 Input Local IP:192.168.199.33 Input Local Port:15000 Drop-down selection Protocol: UDP
8	Planning and measurement area	Importing KML files
		Route planning (aerial survey/laser)
		Set flight parameters according to the operation

		resolution
		In the case of large drop, plan a terrain-following route
9	Generate route	Generate waypoints after planning
10	Setting the takeoff circle	Takeoff circle circling height
		Multirotor take-off height
11	Setting up the landing circle	Circling landing altitude
		Open-parachute height（Rotor landing altitude）
12	Enter the settings interface	Set the return altitude (300 meters higher than the highest point in the measurement area)
		Set up geofencing
		Set the maximum loss of contact time. If the time exceeds this limit, the aircraft will automatically return to the ground.
		Set the maximum wind speed. If the wind speed exceeds this value, the aircraft will automatically return to the starting point.
13	Pre-flight check	Follow the prompts of the ground station to check step by step
		Check whether the buckle is fastened tightly and whether the aircraft battery is working properly.
		Whether the mounted device is powered on
14	Manually switch the remote control mode to see if the ground station feedback is normal.	Switch the remote control mode to see if the aircraft mode changes (automatic mode, multi-rotor hovering, attitude mode)
15	Manually move the lever on the remote control	Manually move the stick to see if the aircraft's steering amount is normal

16	Unlock and take off	Make sure there is no one around, stay away from the plane, don't get too close
17	Observation ground station	After the aircraft takes off, always observe the aircraft's attitude changes and the ground station broadcasts the voice

6. Appendix (Description of functional keys of ground station)

Analysis of ground station functions		
	Elevation cross section	Check the height of the route and terrain.
	Find the drone's location	When the drone is powered on and receives the satellite, it can quickly find the drone's location by clicking.
	Lock the position of the drone display	Real-time lock on the drone in the center of the screen.
	Route dashed line switch	Route dashed line switch.
	Flight point number display switch	Flight point number shows switch.
	Discontinuous resume button	Click acquire, click crop.
	Smart battery	View smart battery information.
	Cabin video and FPV	View the pod video and FPV.
	Laser control button	Laser control button.
	Flying instructions	Click to set the flight altitude Click to select the guide position, click update and execute.
	The lock click command window does not jump.	The lock click command window does not jump.
	Change of course command	Click the entered flight point number to change the flight point.

	Set return altitude, electronic fence, wind speed protection, loss of contact protection	Set return altitude, electronic fence, wind speed protection, loss of contact protection