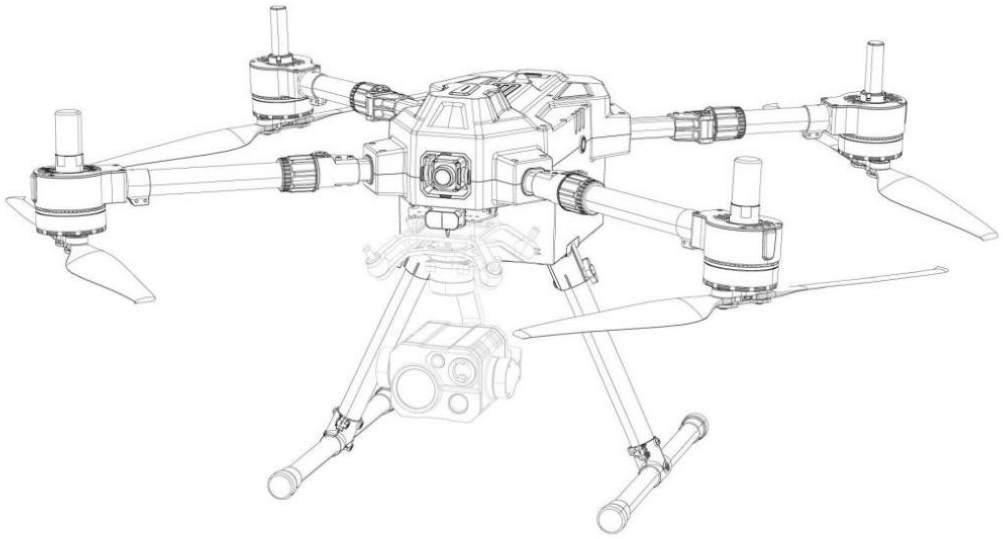
UniDrone E900

Drone Platform

User Manual (V3.0)



Reebot Robotics (Shenzhen) Co., Ltd.

https://reebot.com/en/

September 2026

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Foreword

Thank you for purchasing a Reebot product.

The UniDrone E900 is a versatile industrial drone platform designed for application scenarios such as security, search and rescue, and inspection.

For flight safety and to ensure a good product experience, please read this user manual carefully before assembly. This manual can help you resolve most questions that arise during use. You can also visit the product-related pages on Reebot's official website (https://reebot.com/en/), call the Reebot official after-sales service center (+86 400-097-0971), or send an email to info@reebot.com to consult Reebot engineers directly about product knowledge and to report product issues.

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Version Update Record

Version	Release Date	Update Content
1.0	Nov 2024	Initial version
1.1	Feb 2025	Compass calibration; basic flight; technical specifications
1.2	Mar 2025	Added common motor-arming prohibition messages, their causes, and corresponding solutions
1.3	Apr 2025	Added noise test data; light color definitions; remote identification
2.0	Jun 2025	Updated product introduction, heading lights, remote identification, technical specifications, and noise data
3.0	Sep 2026	Updated content layout; added flight operation introduction; added real-name registration notice; added dual-controller mode

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Reading Guide

Real-Name Registration Notice

1. Users who operate aircraft in mainland China must comply with the relevant provisions of national laws and regulations on the real-name registration of civil unmanned aircraft, including but not limited to:
   - Article 10, Chapter II of the "Interim Regulations on the Flight Management of Unmanned Aircraft": Owners of civil unmanned aircraft shall complete real-name registration in accordance with the law. The specific measures shall be formulated by the civil aviation authority under the State Council in conjunction with the relevant departments.
   - Article 92.205(a) of the "Rules for the Operation Safety Management of Civil Unmanned Aircraft": The owner of a civil unmanned aircraft shall complete real-name registration on the Comprehensive Management Platform for Civil Unmanned Aircraft as required, and may activate and use the civil unmanned aircraft only after obtaining the registration mark.
2. According to the "Interim Regulations on the Flight Management of Unmanned Aircraft", where a civil unmanned aircraft conducts flight activities without real-name registration, the public security authority shall order correction and may impose a fine of up to RMB 200; if the circumstances are serious, a fine of not less than RMB 2,000 but not more than RMB 20,000 shall be imposed.
3. Users who operate aircraft in mainland China can download the UOM App from a mobile app store or visit https://uom.caac.gov.cn using a personal computer browser. After completing account registration and logging in, you can apply for real-name registration for your aircraft. You can also follow the steps on the real-name registration guidance page in the aircraft control software to complete real-name registration for your aircraft.
4. Before reselling a civil unmanned aircraft (or any other action involving a change of ownership), the owner shall deactivate and cancel the real-name registration; otherwise, the owner may face civil legal risks such as tort liability and commercial disputes. If illegal activities are involved, the owner shall also cooperate with the investigation in accordance with the law and bear the corresponding legal consequences (including criminal liability).

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Icons and Symbols

When reading this user manual, please pay special attention to the content marked with the following symbols.

Symbol	Meaning
Danger	Hazardous operations that are highly likely to cause personal injury
Warning	Operations that may cause personal injury
Caution	Be careful not to cause unnecessary property damage through non-compliant operations
Prohibited Actions	Actions that are prohibited
Mandatory Actions	Actions that must be performed
Precautions	Matters requiring attention

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Safety Guidelines

The UniDrone E900 is designed and manufactured for professional application scenarios, and all necessary commissioning has been completed before delivery. Do not disassemble or modify its structure by yourself. The UniDrone E900 has a precision structure, and operators are required to have certain basic skills. Please operate it safely and in a standardized manner in accordance with the corresponding laws and regulations. Reebot assumes no liability for any unnecessary product damage, economic loss to the user or others, or even personal injury caused by any non-standard, unreasonable, or irresponsible operation of this product. Minors must use this product under the on-site supervision and guidance of professionals. Reebot products are designed for commercial scenarios; it is prohibited to use Reebot products for military purposes. Without Reebot's permission, it is prohibited to disassemble or modify this product without authorization.

To jointly maintain flight safety and help you make better use of this product's features, please pay special attention to the following:

- Do not use Reebot products to operate aircraft, vehicles, or models in crowded places (squares, parks, etc.), places with many obstacles (streets, parking lots, etc.), places with strong magnetic fields or signal interference sources (high-voltage power lines, railway lines, radar stations, etc.), or other areas that may cause unnecessary economic losses or even personal injury.
- During operation, never cover the ground unit antennas or otherwise block signal transmission.
- The tip of the ground unit's standard omnidirectional antenna is the part with the weakest signal transmission. During operation, avoid pointing it at your aircraft, vehicle, or model.
- Do not use Reebot products to operate aircraft, vehicles, or models when you are fatigued, drunk, or physically unwell.
- Without special operation permission, do not use Reebot products to operate aircraft, vehicles, or models in rainy, nighttime, or strong-wind environments.

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- Never cut off the ground unit power supply in advance while the engines or motors on your aircraft, vehicle, or model are still running.
- To ensure flight safety, check before takeoff whether the propeller blades, motor rotation directions, and the connections of all components are secure, and at the same time ensure an effective connection with the link.
- For flight safety, keep the aircraft within your visual line of sight when operating it for takeoff, and ensure that there are no pedestrians, animals, obstacles, etc. around the aircraft during flight and landing.
- During operation, be sure to return from the system parameter settings page to the main page.
- Before starting operations, be sure to check the remote controller battery level and the aircraft power supply voltage.
- When finishing operations, power off the aircraft first, and then power off the remote controller.
- Before setting ground unit parameters, be sure to power off the engines and motors to prevent accidental startup.
- Before starting operations, be sure to configure the failsafe function on the aircraft.
- Before starting operations, turn on the remote controller first and keep the throttle at the lowest position or within the throttle dead zone, and then supply power to the aircraft.
- When assembling the equipment, avoid installing the air unit too close to the GPS module to prevent interference. A distance of more than 20 cm between the air unit and the GPS module is recommended.

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Equipment Storage, Carrying, and Recycling

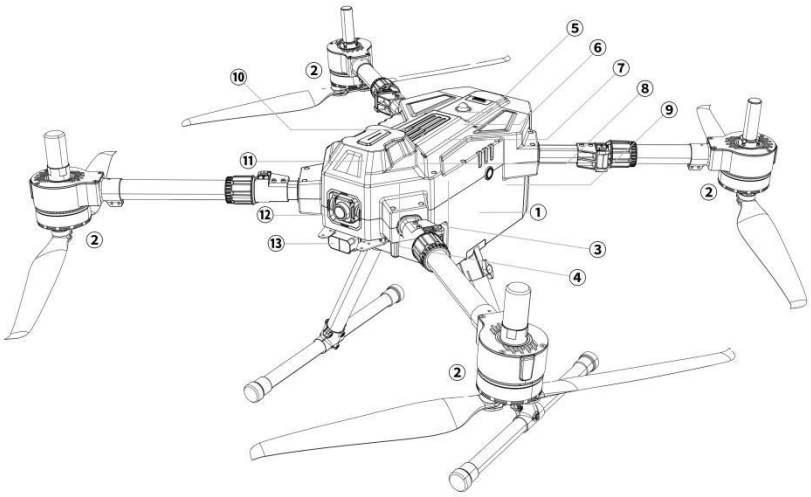
When your Reebot product is idle, when you carry it out for operations, or when the product has reached the end of its service life, please pay special attention to the following:

> **Danger:** - When Reebot products are idle, keep them away from areas that are easily accessible to children. - Avoid placing Reebot products in environments that are too hot (above 60 °C) or too cold (below -20 °C).
>
> **Caution:** - Avoid placing Reebot products in humid or dusty/sandy environments. - When carrying or transporting Reebot products, avoid operations that may damage components, such as vibration or impact.

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Chapter 1 Component Names

1.1 Aircraft



① Frame
② Power System
③ Central Board
④ RTK Positioning and Orientation Module
⑤ Strobe Light
⑥ FPV Control Module
⑦ Second-Generation AI Tracking Module
⑧ Air Unit
⑨ Smart Battery
⑩ Cooling Module
⑪ Flight Control System
⑫ FPV Camera
⑬ Obstacle Avoidance System

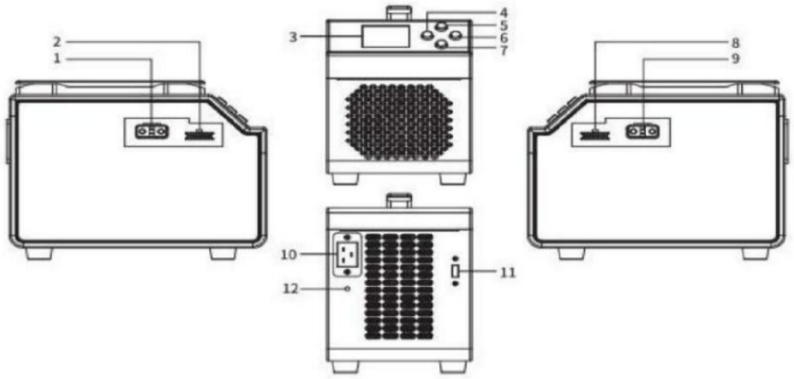
1.2 Remote Controller

Remote Controller Button Indicators



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1.3 Smart Charger



No.	Function Description
1	Charging port A
2	Balance port A
3	Display screen
4	Channel
5	Current
6	Start/Pause
7	Mode
8	Balance port B
9	Charging port B
10	AC input port
11	USB upgrade port
12	Enclosure ground screw hole

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Chapter 2 Flight Safety

2.1 Flight Environment Requirements

1. Do not fly in severe weather, such as strong wind, snow, thunderstorms, or fog. When flying in the rain, be sure to follow the requirements stated in the IPX4 ingress protection rating description.
2. Make sure the aircraft takes off from an open, unobstructed, and flat ground, away from surrounding buildings, trees, crowds, water surfaces, etc. Please keep the flight within visual line of sight. If beyond-visual-line-of-sight (BVLOS) flight is required, make sure the aircraft is in good condition and the user has the corresponding qualifications, and confirm before flight whether the flight complies with local regulatory requirements for BVLOS flight.
3. Make sure to operate the aircraft in an open area or on high ground. Tall steel-reinforced buildings, mountains, rocks, and woods may block the aircraft's GNSS and video transmission signals.
4. Since other wireless devices may interfere with the remote controller, it is recommended to turn off nearby high-power radio equipment and stay away from strong-interference devices such as base stations when using the remote controller to control the aircraft.
5. Be extremely cautious when flying near electromagnetic interference sources, and continuously observe whether the video feed in the UniGCS Pro App stutters and whether the video transmission signal strength is weak. Electromagnetic interference sources include but are not limited to: high-voltage power lines, high-voltage transmission stations, mobile phone base stations, and television broadcast signal towers.
6. Do not take off from the surface of a moving object (such as a moving car or boat).
7. Avoid sandy or dusty road surfaces during takeoff and landing, otherwise the service life of the motors will be affected.
8. When flying in high-altitude areas, the performance of the aircraft battery and propulsion system decreases due to environmental factors, and flight performance will be affected; please fly with caution. Do not fly beyond the altitude specified in the product specifications.
9. Do not fly near flocks of birds.

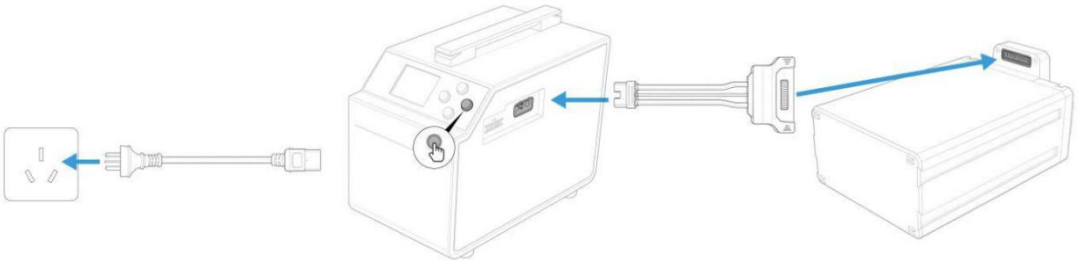
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Chapter 3 First Use

Visit the link or scan the QR code to watch the tutorial video:

https://reebot.com/en/index.php?id=video1&asd=191

3.1 Charging



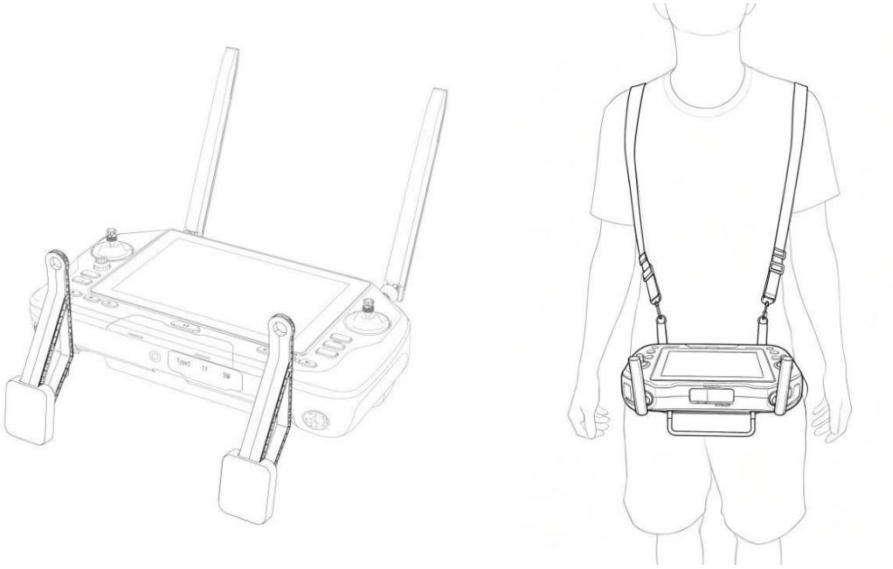
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3.2 Preparing the Remote Controller

Adjusting the Antennas



Installing the Strap Bracket



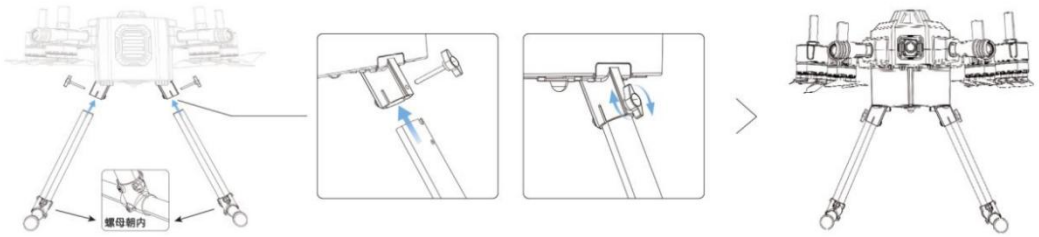
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3.3 Preparing the Aircraft

Installing the Landing Gear

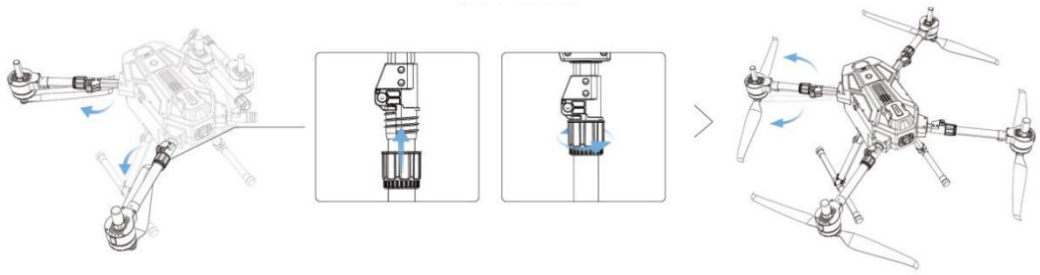
1. Align the landing gear with the landing gear mounts and install them into the airframe.
2. Place the airframe on a level surface, insert the T-shaped thumb screws, and tighten them clockwise.

> **Note:** The landing gear nuts face inward.



Unfolding the Aircraft

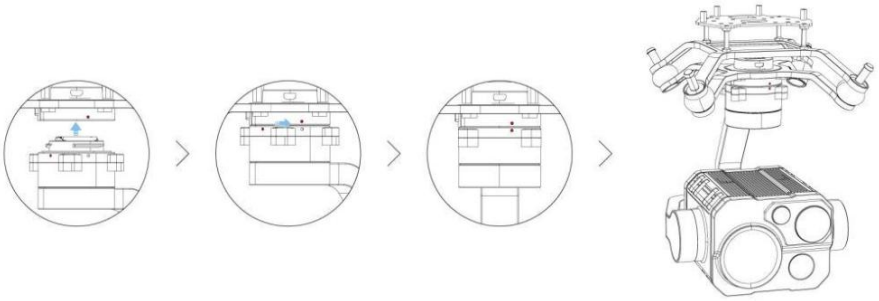
Unfold the four arms of the aircraft and tighten the arm fastening kits. Then unfold the propeller blades straight.



Installing the Gimbal Camera

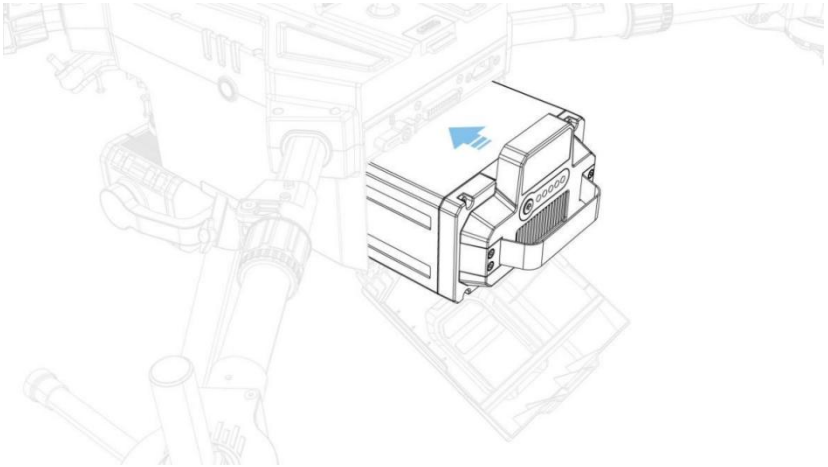
1. Align the white dot on the gimbal camera with the red dot on the mount, and insert the gimbal camera into the mounting position.
2. Rotate the gimbal camera quick-release mount to the locked position to secure the gimbal.

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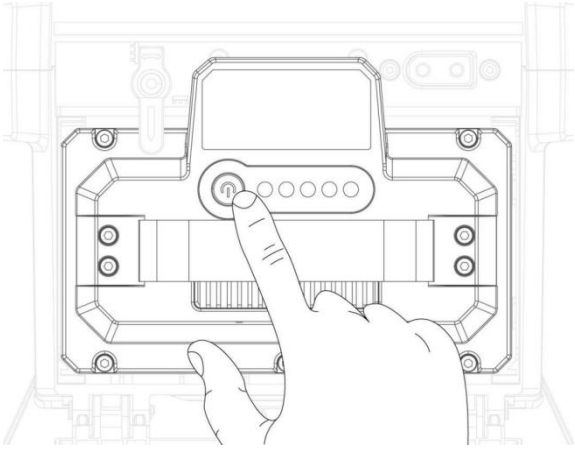


Installing the Intelligent Flight Battery

Insert the Intelligent Flight Battery as shown in the figure.



- Check the battery level: press the battery power button once.
- Power on/off: press the battery power button once, then press and hold (about 2 s) within 3 s to power on/off.



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3.4 Activation

A brand-new aircraft and remote controller must be activated before use. Power on the aircraft and the remote controller, and follow the on-screen instructions to complete activation.

> **Note:** Make sure the remote controller is connected to the internet during activation.

3.5 Basic Flight

Pre-Flight Checklist

1. The remote controller and aircraft batteries are fully charged, and the aircraft battery is properly installed and locked in place.
2. Make sure the aircraft propellers are securely installed and free of damage or deformation, that the motors and propellers are clean and free of foreign objects, that the propellers and arms are fully unfolded, and that the arm sleeves and landing gear are all locked.
3. Make sure the lenses of the FPV flight camera and the gimbal camera, as well as the lens of the LiDAR, are free of foreign objects, dirt, or fingerprints, and are not blocked by payloads on the airframe or external accessories.
4. Make sure the remote controller antennas are unfolded.
5. Turn on the remote controller and the aircraft, make sure the flight mode switch is in Loiter mode, and check that the remote controller status indicator is solid green. Make sure the pairing status between the aircraft and the remote controller is normal and that you have control of the aircraft.
6. Check that the aircraft's Return-to-Home (RTL) altitude is set higher than the surrounding environment.
7. Place the aircraft outdoors on flat, open ground. Make sure there are no obstacles, buildings, trees, etc. around, and that the pilot stands 5 m away from the aircraft facing its tail.
8. If multiple aircraft operate at the same time, divide the airspace to avoid mid-air collisions.

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Starting/Stopping the Motors

Mode 2— Current Default





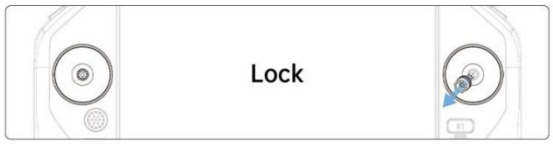
Mode 1





Mode 3



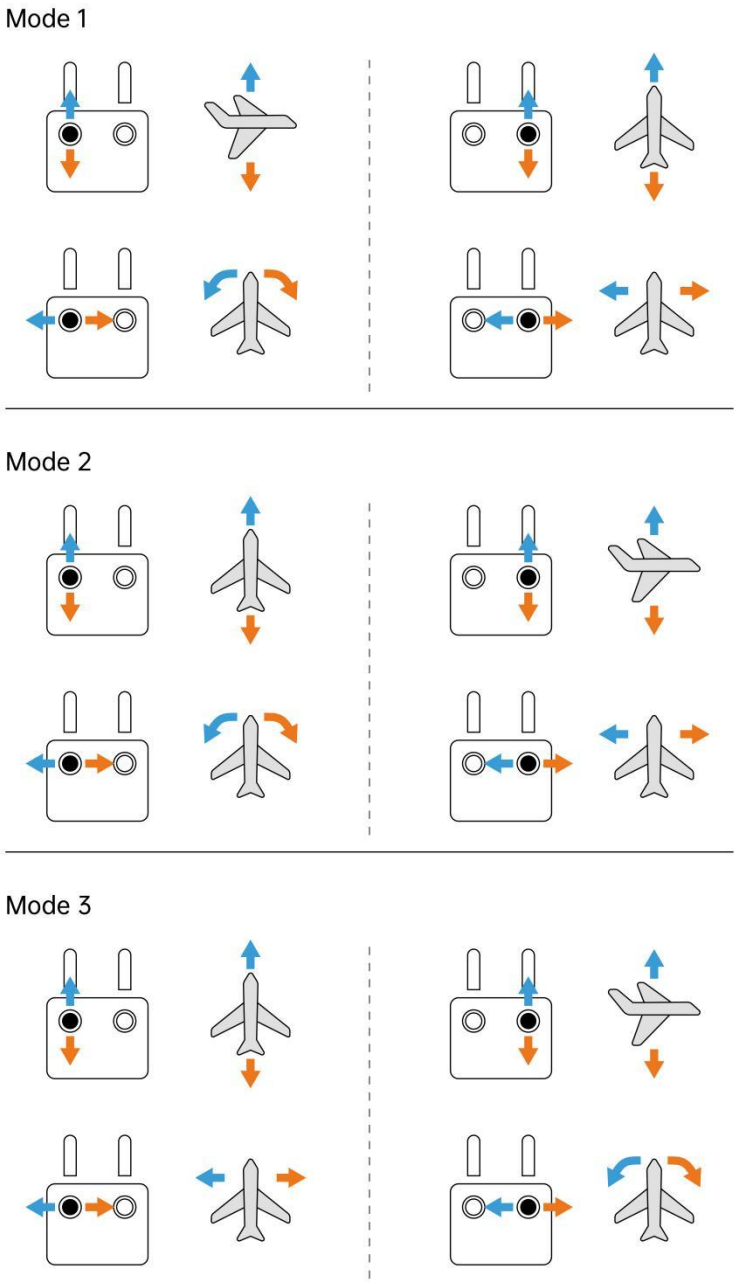


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Controlling the Aircraft

Use the remote controller sticks to control the flight of the aircraft. Three stick modes are available — Mode 1 (Japanese hand), Mode 2 (American hand), and Mode 3 (Chinese hand) — as shown in the figure below.

> **Note:** The remote controller is set to Mode 2 (American hand) by default at factory. The greater the stick deflection, the faster the aircraft flies.

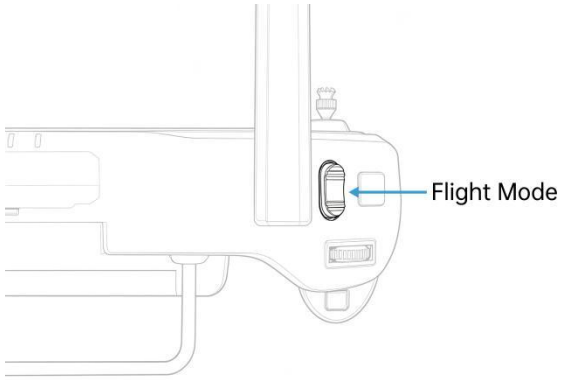


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Chapter 4 Aircraft

4.1 Flight Mode

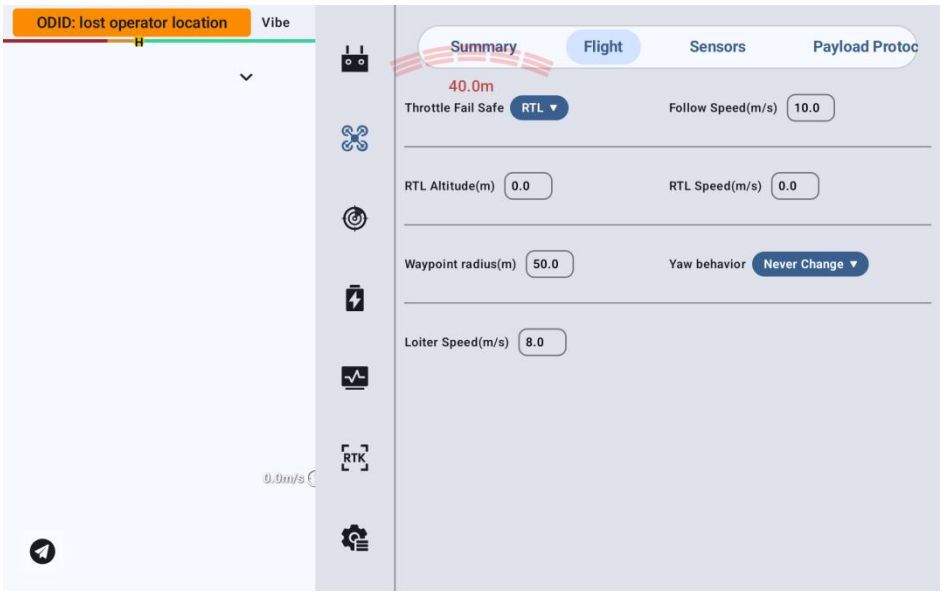
The aircraft currently offers only one flight mode; all three positions of the three-position switch on the remote controller correspond to Loiter mode.



Loiter Mode

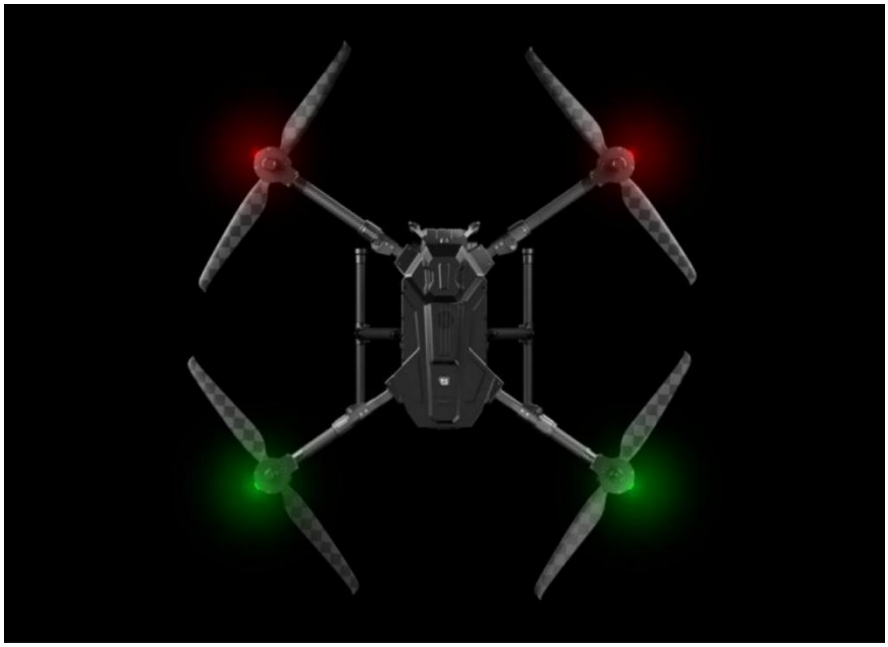
Loiter mode enables precise hovering, stable flight, and intelligent flight functions, and is suitable for most flight scenarios. When the obstacle avoidance function is enabled, the aircraft can also avoid obstacles using the sensing system.

You can modify the manual flight speed to adjust the maximum horizontal flight speed in Loiter mode; the maximum configurable value is 20 m/s.



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4.2 Aircraft Propulsion System Indicators



Heading lights: the red light indicates the nose direction of the E900, and the green light indicates the tail direction of the E900. The navigation lights stay solid on.

The propulsion system indicator colors are defined as shown in the following table:

Status	Error	Buzzer	Indicator	Recommended Action
Self-check	Overvoltage / undervoltage	No beeping	Yellow flashing:Overvoltage: one short flashUndervoltage: two short flashes	Check the power supply voltage and reduce it appropriately
Self-check	Operational amplifier abnormality	No beeping	Yellow flashing: two long flashes and three short flashes	Contact technical support
Self-check	MOS short circuit	No beeping	Yellow flashing: two long flashes and two short flashes	Contact technical support
Self-check	Motor phase loss	No beeping	Yellow flashing: two long flashes and one short flash	Check whether the motor rotation is stuck

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Status	Error	Buzzer	Indicator	Recommended Action
Self-check	Throttle signal lost	One short beep	Yellow flashing: one long flash	Check whether the throttle harness is damaged and whether the connected device outputs the corresponding signal
Self-check	Throttle not at zero	Rapid short beeps	Yellow flashing: one long flash and one short flash	Check the throttle travel of the flight controller and the remote controller
In operation	Throttle signal lost	One short beep	Yellow flashing: one long flash	Check for a loose harness, a damaged harness, or no signal output from the connected device
In operation	Throttle locked rotor	No beeping	Yellow flashing: one long flash and four short flashes	Check the motor for foreign objects
In operation	MOS over-temperature	No beeping	Yellow flashing: one long flash and two short flashes	Check whether the payload is within the recommended payload range
In operation	Capacitor over-temperature	No beeping	Yellow flashing: one long flash and three short flashes	Check whether the payload is within the recommended payload range
In operation	Full throttle (100%)	No beeping	Solid yellow until the throttle leaves the full-throttle state, then returns to the normal indicator color	The aircraft is not within the recommended thrust range; the indicator returns to its normal color after leaving the full-throttle state

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Status	Error	Buzzer	Indicator	Recommended Action
ESC firmware upgrade	No firmware	No beeping	Solid white	Connect to the parameter tuning software and upgrade the firmware
ESC firmware upgrade	Firmware upgrade failed	No beeping	Solid white	Make sure the propulsion system works properly and the harness is connected properly, then try flashing the firmware again
ESC firmware upgrade	Firmware upgrading	No beeping	White flashing	Firmware is upgrading; it returns to normal after a successful upgrade

4.3 Propellers

The E900 is equipped with carbon-fiber propeller blades. The lightweight material offers high strength and durability, high rigidity without deformation, corrosion resistance, stable performance, high precision, and smooth operation.

> **Note:** Since the propeller blades are thin and sharp, please handle them with care to avoid accidental cuts.

4.4 FPV Flight Camera

The UniDrone E900 is equipped with a 4K ultra-wide-angle FPV camera. The pod/gimbal view and the flight view can be switched freely, making flight safer.

Parameter information:

- FPV wide-angle field of view: 122° in the vertical direction, 113° in the horizontal direction
- FPV camera pitch angle: 68°
- FPV camera modes: pitch-follow mode + pitch-lock mode

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4.5 Gimbal Camera

The aircraft supports multiple gimbal payload combinations.

Visit https://reebot.com/en/index.php?id=faq1&asd=191 for the payload compatibility list.

> **Note:** Using multiple payloads requires the corresponding gimbal assembly. For the specific use of payloads such as the gimbal camera, please refer to the documentation of the corresponding product.

4.6 Intelligent Charger

Visit https://reebot.com/en/index.php?id=downloads1&asd=191 for the intelligent charger user instructions, including detailed safety guidelines and product usage solutions.

4.7 Intelligent Flight Battery

Precautions for Use

> **Note:** Before using the battery, please read carefully and strictly comply with REEBOT's requirements in this manual, the Safety Guidelines, the Maintenance Manual, and the stickers on the battery surface. The user shall bear the consequences of any failure to use the battery as required.

1. After a flight, the Intelligent Flight Battery temperature is high; wait until the battery cools down to the allowable charging temperature range before charging.
2. Charging the battery when its temperature is outside the allowable charging temperature range will damage the battery, and charging will not start at such temperatures. The optimal charging temperature range is 25 ± 3 °C; charging within this range can extend the battery's service life. If the battery cell temperature rises to 46 °C or above during charging, charging will stop.
3. Precautions for low-temperature environments:
   - The battery cannot be used for flight in environments below -20 °C.
   - In low-temperature environments, it is recommended to preheat the battery to room temperature before flight; you can keep the battery warm in advance to

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shorten the preheating time. In extremely cold conditions, take additional insulation measures.

- In low-temperature environments, the aircraft's wind resistance will decrease due to the limitation of the battery's output power. Please operate with care.
- Extra caution is required when flying in low-temperature, high-altitude environments.
- After taking off when the above conditions are met, if the UniGCS Pro App prompts "Critical low voltage alarm, landing", it is recommended to stop flying immediately and choose a suitable place to land. During the aircraft's automatic landing, you can continue to control the aircraft's heading via the remote controller.

4. After the battery is fully charged and left for a period of time, storage self-discharge protection will be activated. The battery may heat up slightly during discharging, which is normal.
5. Recharge the battery approximately every 3 months to maintain battery activity. Leaving the battery idle for a long time may affect its performance or even cause permanent damage. Batteries that have not been maintained (charged/discharged) for more than 3 months are not covered by the warranty.
6. For safety, the battery must be kept at a low charge level during transportation. Discharge the battery before transportation; fly it down to a low battery level (e.g., below 30%).
7. Over-discharging can seriously damage the battery. Try not to let the flight discharge voltage fall below 43 V.

Checking the Battery Level

When the power is off, short-press the battery level check button once to view the current battery level.

The battery level indicators show the battery level during discharge. The indicator definitions are as follows.

The BMS is designed with 4 white LEDs, which can display the battery level in 8 levels.

Legend: ● = solid on; ○ = off; ⊙ = flashing.

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Current Level	LED1	LED2	LED3	LED4
0%–12%	⊙	○	○	○
13%–24%	●	○	○	○
25%–37%	⊙	●	○	○
38%–49%	●	●	○	○
50%–62%	⊙	●	●	○
63%–74%	●	●	●	○
75%–87%	⊙	●	●	●
88%–100%	●	●	●	●

Battery Storage

- The battery storage temperature must be within the range of -20 °C to 35 °C.
- For long-term storage (more than 3 months), the battery must be placed in an environment with a temperature of 23 ± 5 °C and a humidity of ≤75% RH.
- The storage voltage is 45 V to 46.8 V (3.75 to 3.9 V per cell); storing the battery fully charged is prohibited.

4.8 Aircraft RTK

The aircraft has a built-in RTK module and is equipped with an RM3100 industrial-grade magnetometer, enabling single-module dual-antenna heading and supporting full-constellation, full-frequency high-precision positioning with BeiDou, GPS, GLONASS, Galileo, and QZSS, which greatly improves positioning accuracy and reliability. It also delivers excellent anti-interference performance in complex electromagnetic environments, providing high-precision control response for the aircraft system and enabling precise operations.

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Base Station End

Refer to the figure below: fix the RTK base station end and the mushroom-head antenna on a tripod and connect the antenna feeder.



> **Note:** The tripod should be prepared by the user. Make sure there are no obstructions or interference sources around the RTK antenna to avoid affecting the convergence time and positioning accuracy.

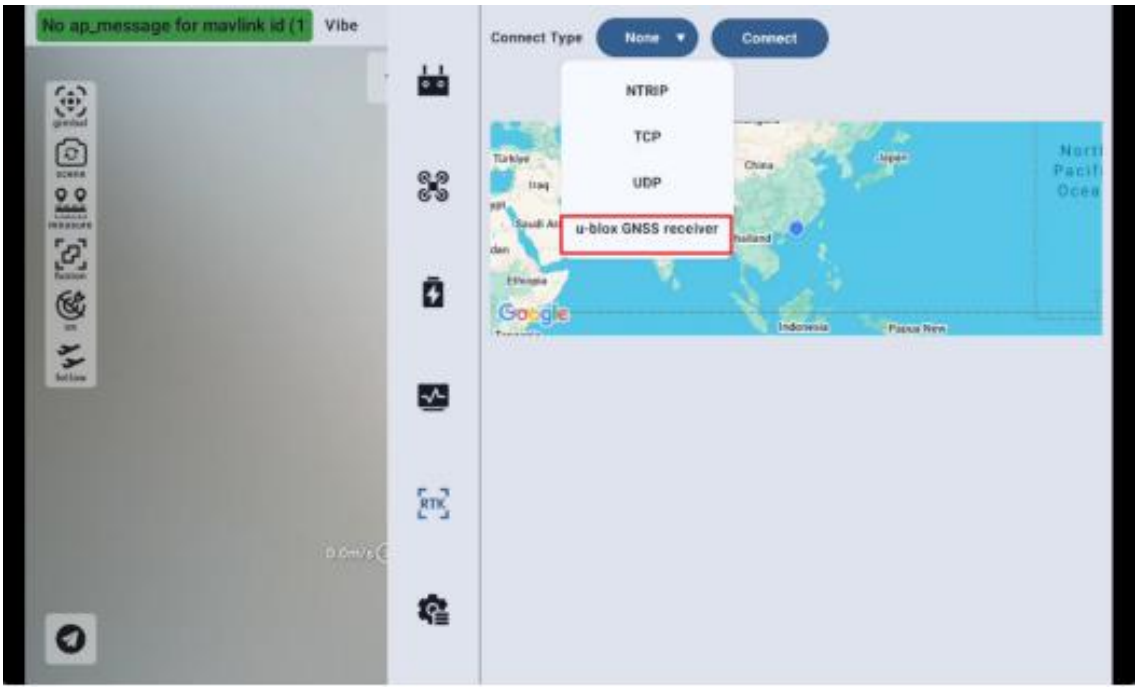
Traditional RTK

1. Hardware connection: use a USB cable to connect the RTK base station end to the USB port on the top of the remote controller.

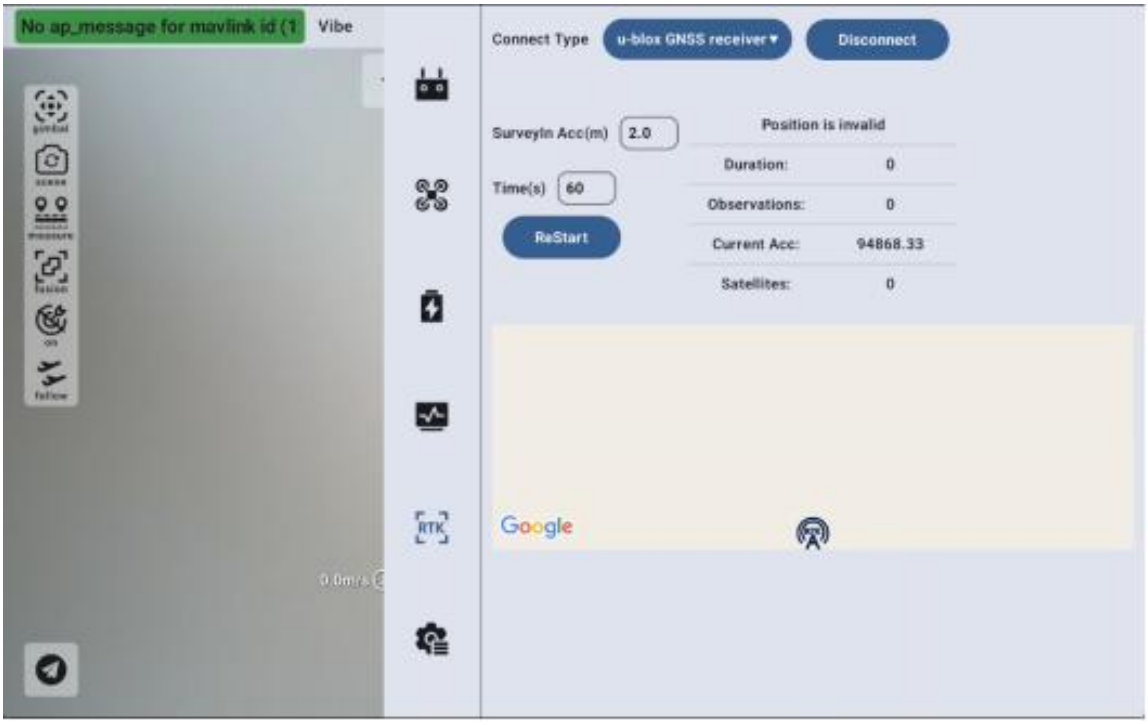


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2. Connection method: tap “Connection Method”; the program will automatically recognize and display the “u-blox GNSS receiver” option. Select this option.

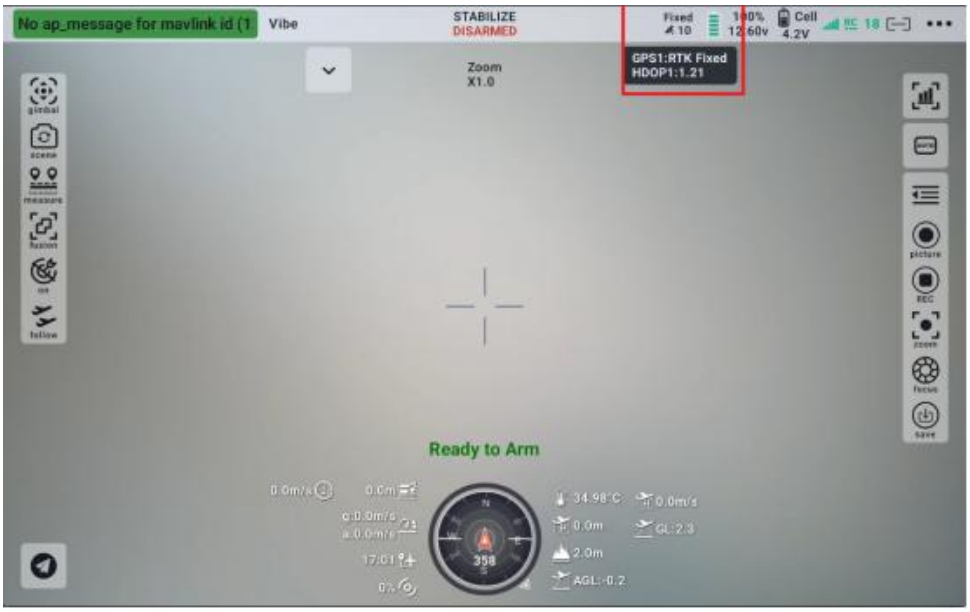


3. Connect: after setting the position accuracy and observation time as needed, tap “Connect” to complete the operation.



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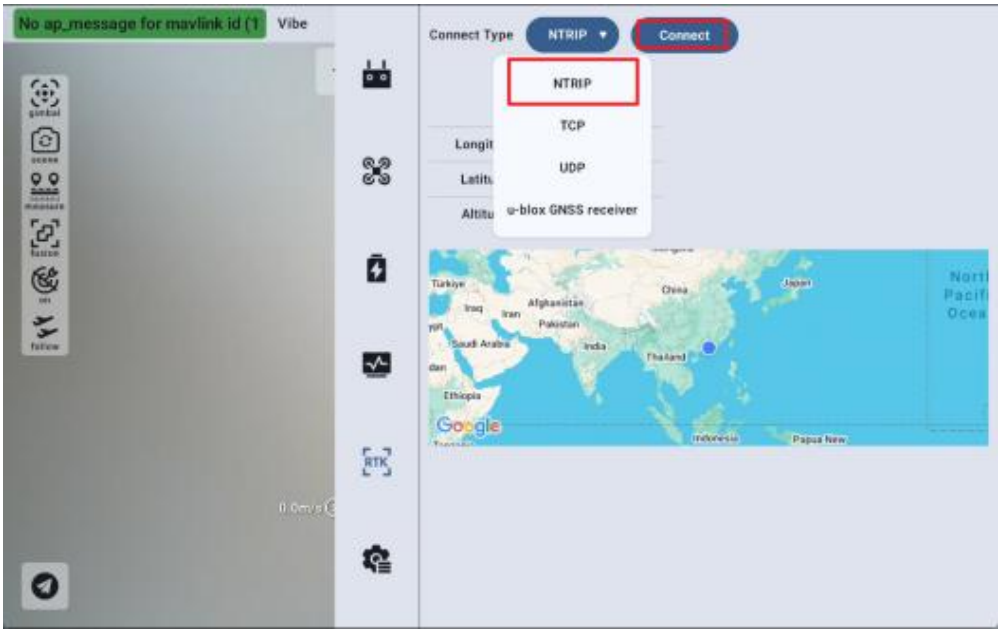
4. Conditions of use: wait until the GPS status in the positioning information of the top status bar shows “RTK FIX”; the function can then be used normally.



> **Note:** After the base station end is positioned successfully, it is strictly forbidden to move the base station!

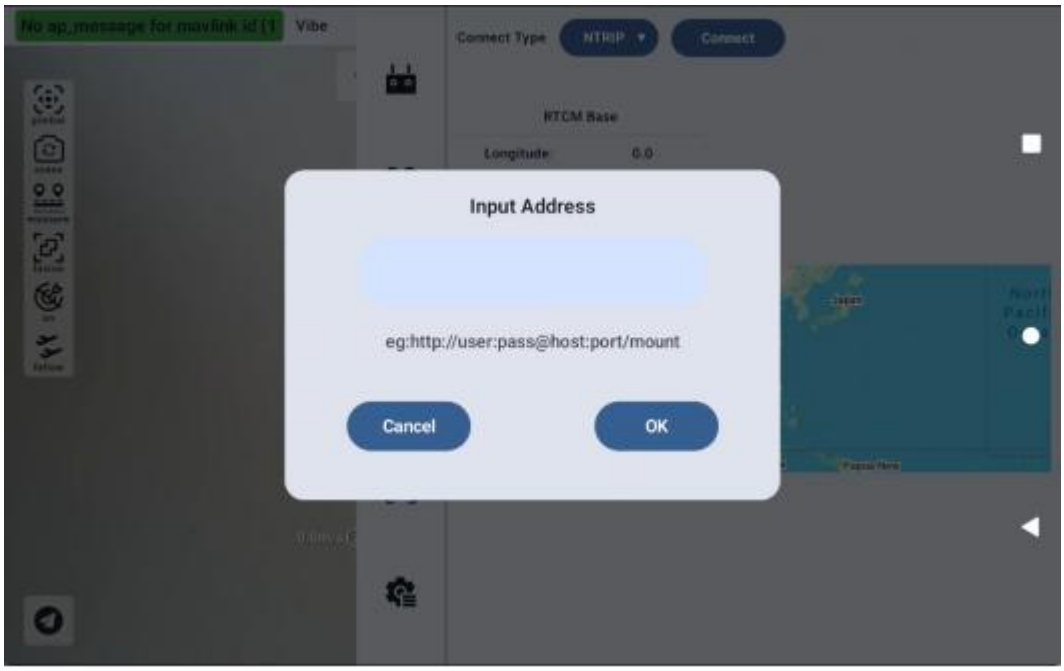
Network RTK

1. Connection preparation: make sure the device is connected to the network, and select “NTRIP” in “Connection Method”.

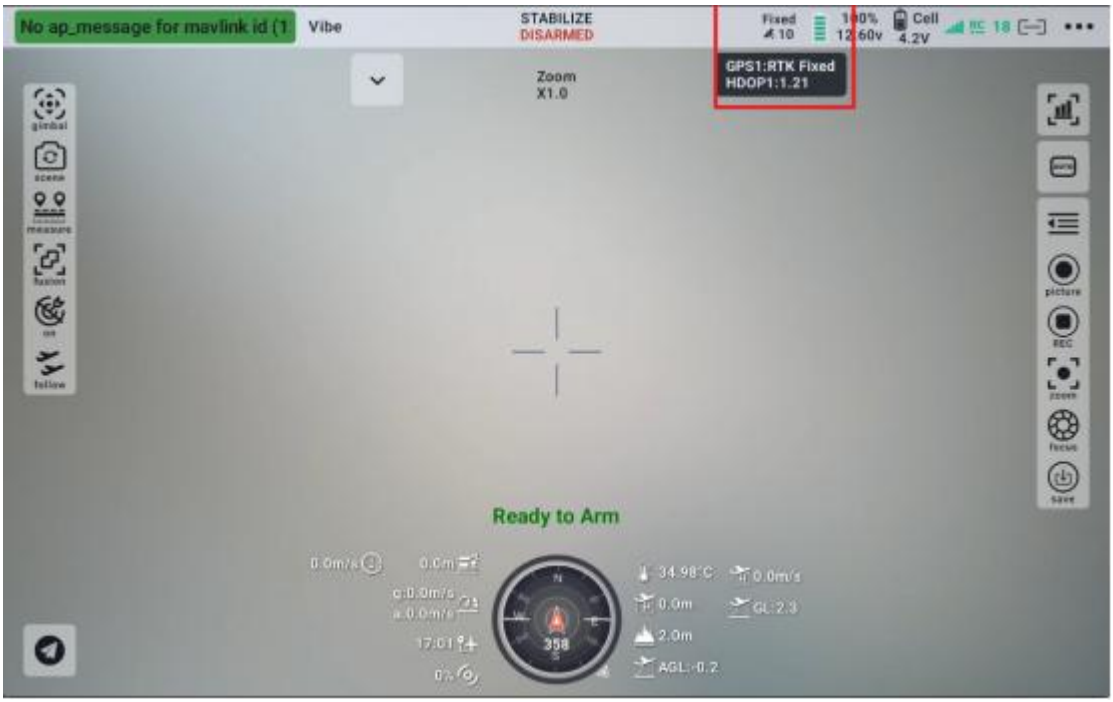


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2. Connect: tap “Connect”, enter the NTRIP URL link, and tap “Confirm”.



3. Conditions of use: the function can be used normally when the GPS status in the positioning information of the top status bar shows “RTK FIX”.



Note: Positioning accuracy is affected by device performance and the environment. Whether “RTK FIX” can be reached is subject to actual conditions.

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4.9 Return-to-Home (RTL)

> **Note:** Please read this chapter carefully to ensure that you are familiar with the aircraft's behavior in Return-to-Home mode.

The aircraft features Return-to-Home (RTL), which is triggered in three main ways: actively by the user, by low battery of the aircraft, or by loss of control (loss of remote controller signal). If the home point has been successfully recorded and positioning services are good, the aircraft will automatically return to the home point and land when RTL is triggered.

Home point: the current position is automatically recorded as the home point before the motors are armed.

Precautions for Use

- When positioning services are poor, normal RTL may not be achievable. If positioning services are poor during failsafe RTH, the aircraft will enter Attitude mode and land automatically.
- Without satellite positioning, do not fly over water, near glass buildings, or at heights greater than 60 m above the ground; when visual positioning is poor, the aircraft will enter Attitude mode.
- Before takeoff, be sure to enter the safety settings interface of the UniGCS Pro App and set an appropriate RTL altitude (the default RTL altitude is 100 m).
- During RTL, if the environmental conditions do not meet the requirements of the sensing system, the aircraft cannot avoid obstacles.
- No-fly zones will affect automatic RTL, and automatic RTL may not be completed. Please avoid flying near no-fly zones.
- Always watch for small objects (such as branches or wires) or transparent objects (such as glass or water surfaces) along the aircraft's RTL path, and stop RTL and control the aircraft manually in an emergency.
- If there are obstacles on the RTL route that the vision system cannot avoid, such as power lines or power towers, select an RTL route with a set altitude and make sure the set RTL altitude is higher than the obstacles on the route.

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- If you modify the RTL route settings in the UniGCS Pro App during RTL, the aircraft will brake to a stop and then follow the modified RTL route.
- If the maximum altitude is adjusted below the current altitude during RTL, the aircraft will descend vertically to the maximum altitude and then continue RTL.
- The RTL altitude cannot be adjusted during RTL.
- When the difference between the aircraft's current flight altitude and the set RTL altitude is too large, the RTL battery level cannot be estimated accurately because wind speeds vary greatly at different altitudes. Please pay attention to the RTL battery level and the warning messages in the UniGCS Pro App.
- During the landing phase of RTL, when the remote controller signal is normal, you can use the pitch and roll sticks on the remote controller (the sticks that control the aircraft's forward, backward, left, and right flight) to control the aircraft's horizontal movement.
- During the ascent in set-altitude RTL, if the aircraft's altitude reaches the flight restriction altitude at the aircraft's current position or at the home point, it will stop ascending and return at the current altitude. Please pay attention to flight safety along the RTL path.
- If the home point is inside an altitude-restricted zone but the aircraft is outside it, when the aircraft reaches the boundary of the altitude-restricted zone during RTL, it will descend below the altitude limit, which may be lower than the set RTL altitude. Please pay attention to flight safety.

Triggering Methods

User-Initiated RTL

Manual RTL can be initiated by pressing the RTL button on the remote controller. The heading is not controllable during RTL. During RTL, after short-pressing the RTL button on the remote controller once or exiting RTL by switching to another mode, the user can regain control of the aircraft.

RTL process:

1. The aircraft records the home point.
2. The aircraft confirms the home point and automatically adjusts the nose direction.

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3. The aircraft automatically flies above the home point and enters the landing protection process, during which the aircraft lands directly or hovers.

Low-Battery RTL

- During flight, if the aircraft determines that the current battery level is only sufficient to complete the RTL process, the UniGCS Pro App will prompt you to perform RTL; tap "Confirm" and the aircraft will perform the RTL action.
- During flight, if the voltage falls below the low-battery protection voltage (default 44 V), the RTL action will be forcibly triggered.
- During flight, if the voltage falls below the critical low-battery protection voltage (default 42.9 V), the landing action will be forcibly triggered.



- During the forced descent, you can use the pitch and roll sticks to control the aircraft's horizontal movement and the throttle stick to control the aircraft's descent speed. Please choose a suitable place to land as soon as possible.

> **Note:** Low-battery RTL occurs only once during the same flight. If the user cancels the low-battery RTL reminder and continues flying, the aircraft may run out of power on its way back and be forced to land, resulting in the loss or crash of the aircraft. If the aircraft continues to fly with a low battery, when the configured second-stage protection voltage is triggered, the aircraft will trigger the configured landing behavior. During landing, the user can control the aircraft to move left and right and choose a

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> suitable place to land, and can also cancel the aircraft's continuous descent behavior by switching the flight mode.

Failsafe RTH (Loss of Remote Controller Signal)

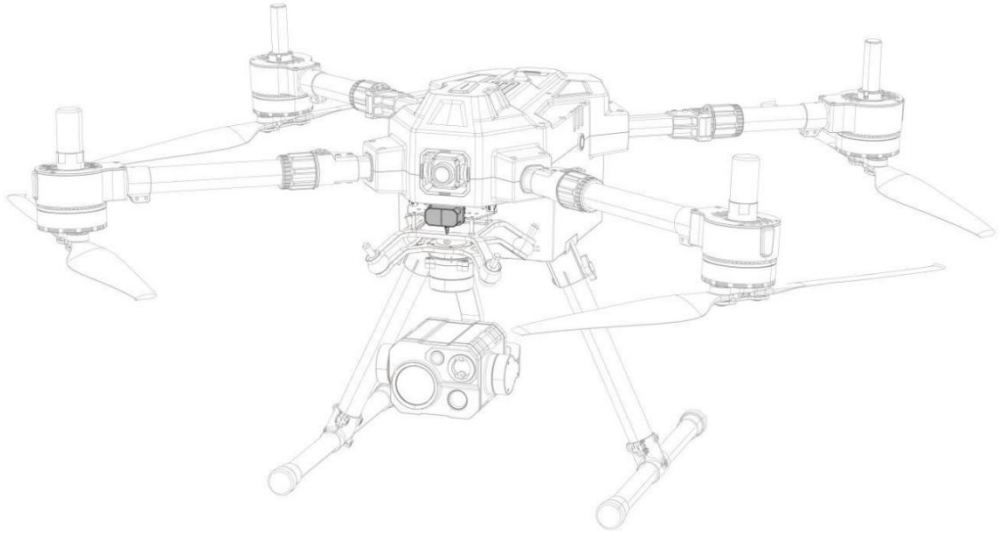
During flight, when the remote controller signal is lost, the aircraft will enter failsafe RTH.

> **Note:** After the failsafe is cleared (i.e., the remote controller transmitter and the receiver re-establish communication), the UniDrone E900 will maintain its failsafe state and will not automatically resume the flight mode that was active before the failsafe was triggered. This means, for example, that if the aircraft was in Loiter mode when the failsafe was triggered and the flight mode was automatically changed to RTL, the aircraft will continue to execute RTL even after the transmitter and the receiver re-establish communication. If the pilot wants to regain control in Loiter mode, the pilot needs to switch modes on the remote controller transmitter and then switch back to Loiter mode.

4.10 Sensing System

The UniDrone E900 is equipped with forward-looking laser obstacle avoidance, with an effective detection range of 10 m, an effective braking speed of 8 m/s, and a laser field of view of 3.6°.

> **Note:** The obstacle avoidance system cannot recognize mirrors, reflective metal, or transparent glass.



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4.11 Remote ID

Wi-Fi Broadcast Remote ID

Item	Value or Description
Broadcast protocol	WiFiBeacon
Trigger conditions for starting and ending remote identification broadcast messages (broadcast operating interval)	Start: the aircraft is powered on and the self-check is completedEnd: the aircraft is powered off
Broadcast frequency band or channel	Channel 6
Broadcast frequency	10 times per second
Message data update rate	Once per second
Abnormal status indication method	A remote identification module disconnection alert is shown in the upper left corner of UniGCS
Emergency status of the unmanned aircraft and its triggering method	Emergency status: low battery – battery failureTriggering method: battery level below the set threshold
Abnormal status of unmanned aircraft remote identification and its triggering method	Abnormal status: the remote identification module stops workingTriggering method: the remote identification module is powered off

Network Remote ID

Item	Value or Description	Remarks
Trigger conditions for starting and ending remote identification	The aircraft connects to the flight controller, and the remote controller is connected to the network	Triggered after the aircraft takes off, and stops being triggered after the aircraft lands
Reporting frequency	Once per second	
Message data update rate	Once per second	

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Item	Value or Description	Remarks
Abnormal status indication method	A remote identification module disconnection alert is shown in the upper left corner of UniGCS	
Emergency status of the unmanned aircraft and its triggering method	Emergency status: low battery – battery failureTriggering method: voltage below the protection voltage value	
Remote identification status of the unmanned aircraft and its triggering method	Abnormal status: the remote identification module stops workingTriggering method: disconnect the remote identification module	

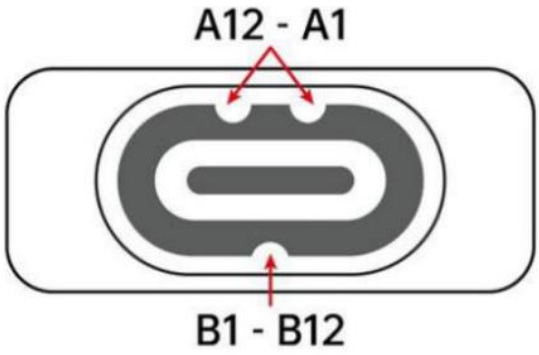
4.12 Aircraft Ingress Protection Rating

1. The UniDrone E900 meets the IPX4 ingress protection rating under the GB/T 4208-2017 standard. The ingress protection rating is not permanently effective and may degrade due to wear from long-term use.
   - Do not fly when rainfall exceeds 20 mm/h (light rain / light-to-moderate rain).
   - Before use, make sure the battery surface, the battery interface, the surface of the aircraft battery compartment, and the interface of the battery compartment are dry and free of water before inserting the battery into the aircraft.
   - Damage caused by immersion in liquid is not covered by the warranty.
2. The IPX4 ingress protection rating does not apply in the following conditions:
   - When the external interfaces are not in use, the protective rubber plugs of the aircraft interfaces are not fastened in place.
   - The network card compartment or external devices (such as a loudspeaker or a searchlight) are not properly installed or the screws are not tightened in place.
   - The airframe has other possible damage, such as a cracked housing or failed waterproof adhesive.
3. After long-term use, the appearance may show discoloration, which does not affect the aircraft’s performance or protection capability.

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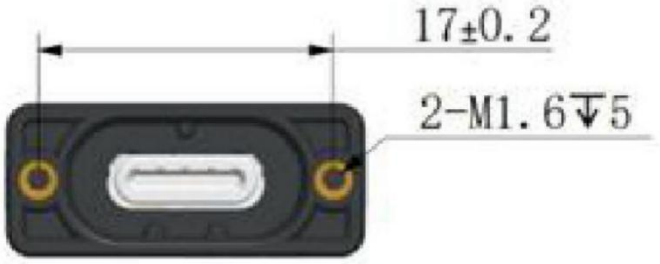
4.13 Expansion Interface

TYPE-C female connector pin definition diagram:



Pin	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	A11	A12
Definition	GND	TX+	TX-	VBUS	RX	/	/	TX	VBUS	RX-	RX+	GND

Pin	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12
Definition	GND	/	/	VBUS	S.BUS	/	/	/	VBUS	/	/	GND



- The UniDrone E900 expansion port integrates an Ethernet port, a serial port, and an SBUS control signal.
- The peak overcurrent of the expansion port is ≤ 5 A.

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Chapter 5 Remote Controller

5.1 Charging

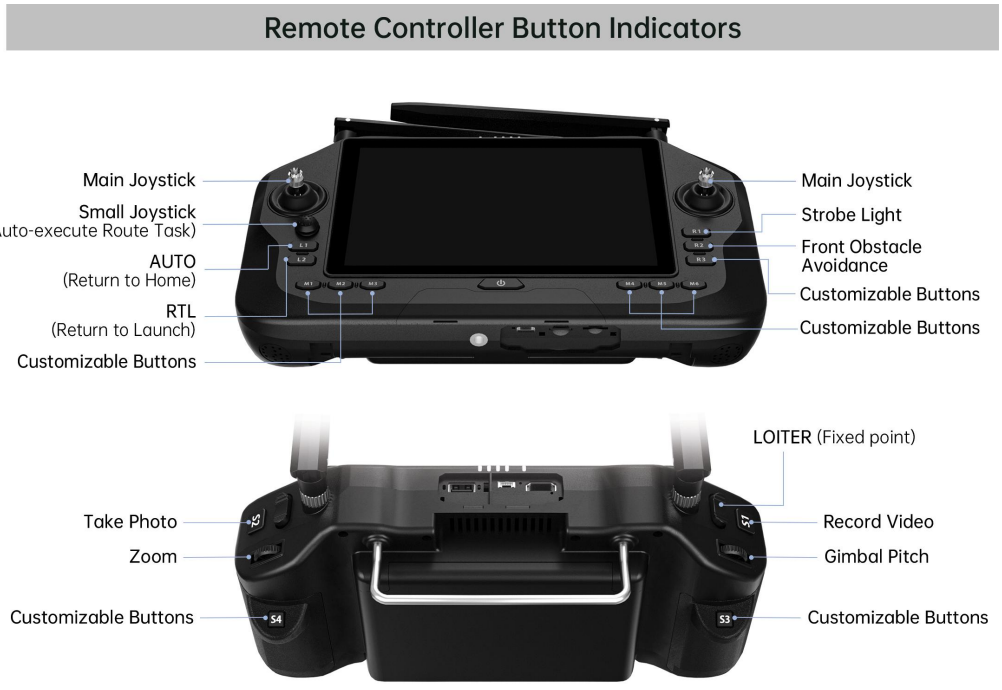
The UniRC 7 Pro handheld ground station supports charging with the standard 30W PD fast charger included with the product, whether the ground station is powered on or off. When charging while powered on, the ground station automatically reduces the charging power if the internal temperature becomes too high, until the temperature drops.

Charging steps

1. Connect the ground unit to the standard 30W PD fast charger using the Type-C fast-charging cable.
2. If the battery level indicators flash in sequence, charging is in progress.
3. When all four battery level indicators turn solid on, charging is complete.

> **Caution:** Do not charge the remote controller without the battery installed.

5.2 Default Aircraft Function Buttons



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5.3 Remote Controller Indicators

Remote Controller Status Indicator

Indicator Status	Meaning
Solid red	No communication between the ground unit and the air unit
Red fast flashing	Pairing in progress
Red slow flashing	Firmware mismatch
Red triple flashing	Link initialization failed
Red quadruple flashing	The ground unit control sticks need calibration
Red-green alternating flashing	The Android system shut down unexpectedly
Red-green-yellow alternating slow flashing	Video transmission starting up / video transmission firmware upgrading
Red-green-yellow alternating interval flashing	Upgrading the air unit firmware
Yellow slow flashing	Abnormal ground unit power voltage
Yellow double flashing	Ground unit Bluetooth not recognized
Yellow-red	Ground unit temperature level-1 alarm
Yellow-red-red	Ground unit temperature level-2 alarm
Yellow-red-red-red	Ground unit temperature level-3 alarm
Yellow triple flashing	Video transmission firmware mismatch
Solid green / flashing	The faster the flashing, the weaker the signal strength

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Indicator Status	Meaning
Solid green	100% valid packets
Green flashing (1 Hz)	99%–95% valid packets
Green flashing (3/5 s interval)	75%–50% valid packets
Green flashing (3/10 s interval)	50%–25% valid packets
Green flashing (1/25 s interval)	Less than 25% valid packets
Green-red	Air unit temperature level-1 alarm
Green-red-red	Air unit temperature level-2 alarm
Green-red-red-red	Air unit temperature level-3 alarm

Battery Level Indicators

The battery level indicators show the battery level of the remote controller.

Note: ● = solid on; ○ = off; ⊙ = flashing

Battery Level	LED 1	LED 2	LED 3	LED 4
0–25%	○	○	○	⊙
26%–50%	●	○	○	⊙
51%–75%	●	●	○	⊙
76%–99%	●	●	●	⊙
100%	●	●	●	●

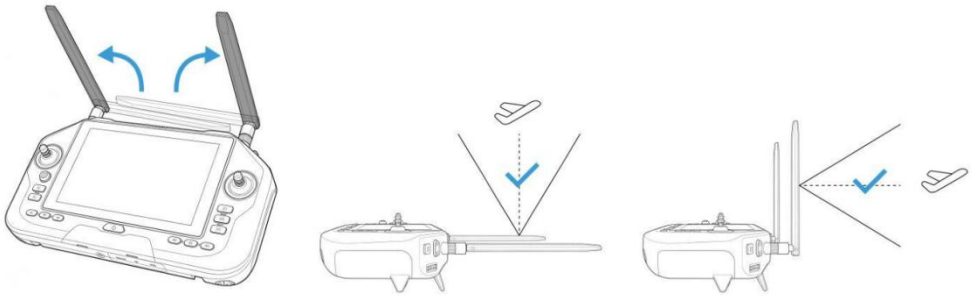
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5.4 Remote Controller Communication Range

Unfold the antennas of the UniRC 7 Pro 2.4G video transmission module:



Unfold the remote controller antennas and adjust them to a proper position. Different antenna positions receive different signal strengths.



According to the relative position of the remote controller and the aircraft, adjust the orientation of the remote controller's external antennas and point the flat side of the antennas toward the aircraft, so that the signal quality between the remote controller and the aircraft is at its best.

> **Note:** - When an antenna has been adjusted to its limit stop, do not force it further, to avoid damaging the antenna. A damaged remote controller antenna will affect performance and safety; please contact REEBOT technical support promptly. - During flight, do not use other communication devices operating on the same 2.4 GHz or 5.8 GHz bands (such as a mobile phone with Wi-Fi enabled) at the same time, to avoid interference with the remote controller signal. - In actual operation, UniGCS Pro will display a prompt when the video transmission signal is poor. Adjust the antenna position as prompted to ensure that the aircraft stays within the optimal communication range.

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5.5 Outputting Video from the Ground Unit to Other Devices

The UniRC 7 Pro ground unit supports outputting video to other display devices in several ways.

Output via the Ground Unit HDMI Port

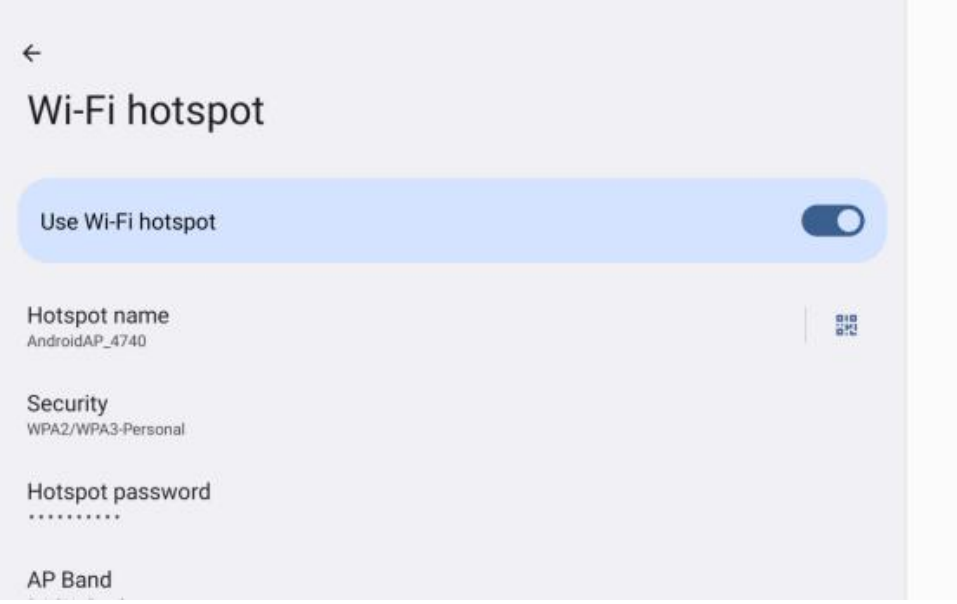
Taking output to an HDMI monitor as an example:

Use a standard HDMI cable to connect the standard HDMI port of the UniRC 7 Pro ground unit to the HDMI port of the monitor; the screen of the ground unit will then be mirrored on the monitor in real time.

Output via Ground Unit Wi-Fi Hotspot Sharing

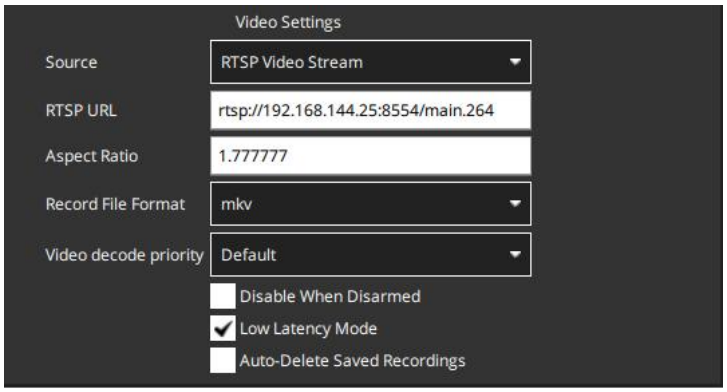
Taking sharing video to a Windows laptop for display in QGC as an example:

1. Enter the Android system settings.
2. Go to “Network & Internet – Hotspot & Tethering – Wi-Fi Hotspot” in sequence.



3. Turn on the hotspot and set the hotspot name and connection password.
4. Connect the Windows laptop to the hotspot shared by the UniRC 7 Pro ground unit.
5. Open the QGC ground station software on the laptop. Go to “Application Settings – Video” and switch the video source to “RTSP Video Stream”.

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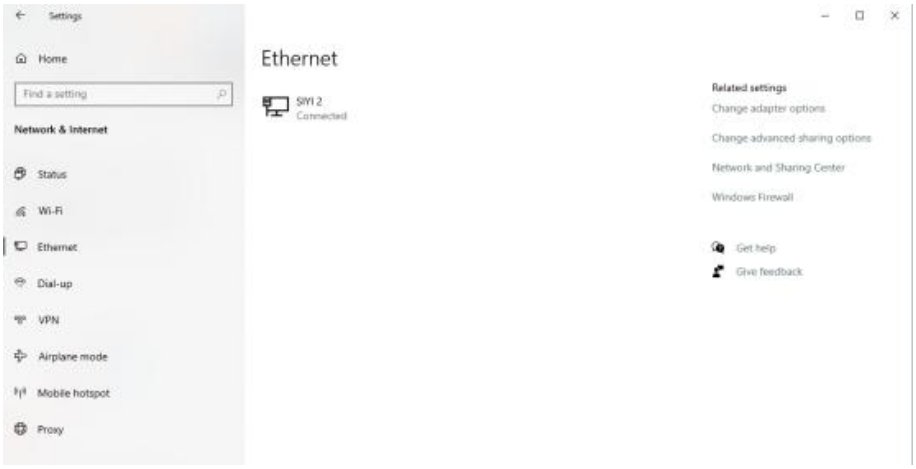


6. Enter the RTSP address of the camera device connected to the air unit in the “RTSP URL” field to display the video from the corresponding camera.

> **Note:** If an external device receiving video via the ground unit Wi-Fi hotspot and the software running on the UniRC 7 Pro ground unit display the same video stream, the video may stutter due to bandwidth limitations. In this case, disable one of the video streams, or set one video stream to “Camera 1/2” while the other continues to use the RTSP address.

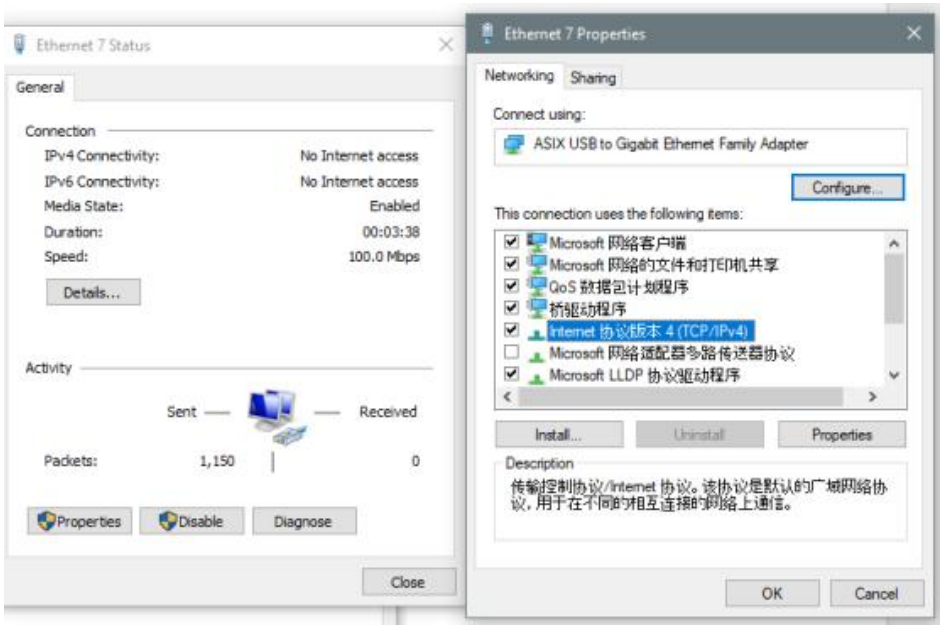
Output via the Ethernet Port

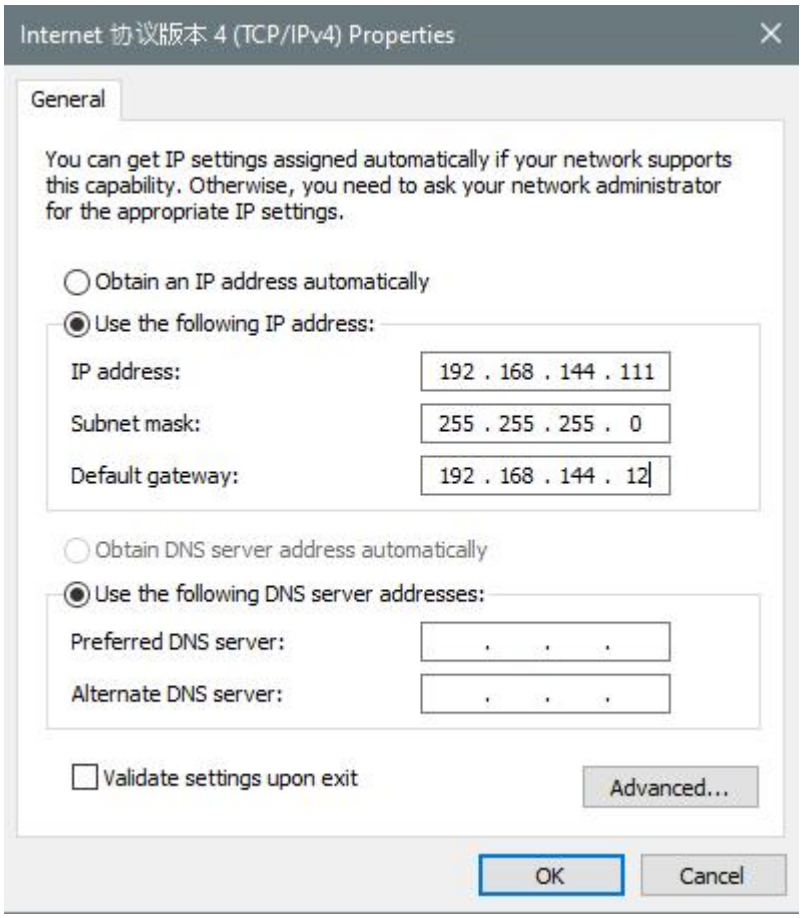
1. Keep the UniRC 7 Pro link in a communicating state, with a camera or gimbal pod connected to the video input port of the air unit.
2. Connect the LAN port on the top of the UniRC 7 Pro ground unit to the PC using the RJ45-to-4-pin cable.
3. Open the Ethernet settings on the PC, click “Change adapter options”, and locate the newly added network.



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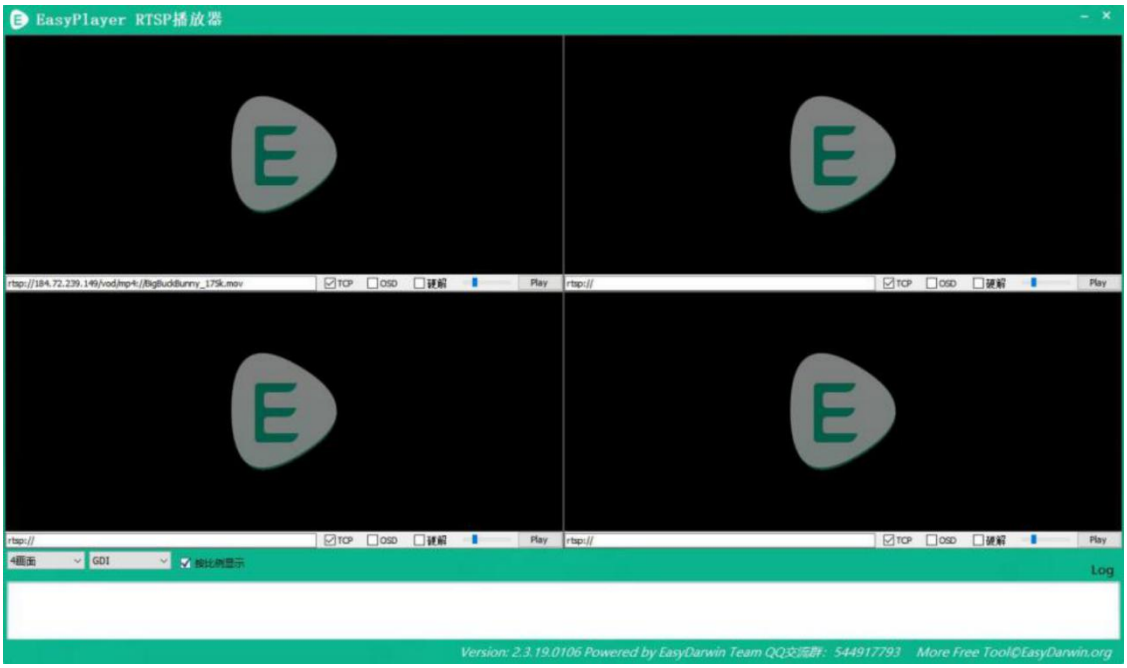
4. Select the newly added network and click “Properties” and then “Internet Protocol Version 4 (TCP/IPv4)” in sequence, and modify the IP address as shown below:



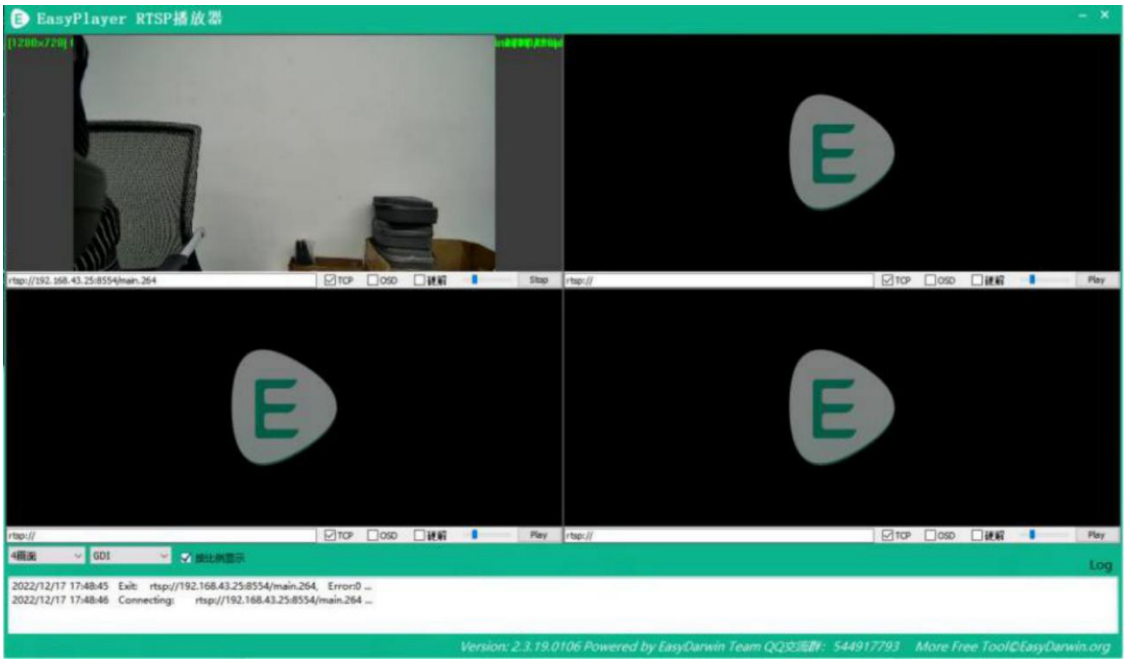


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5. Run the RTSP video display software EasyPlayer.

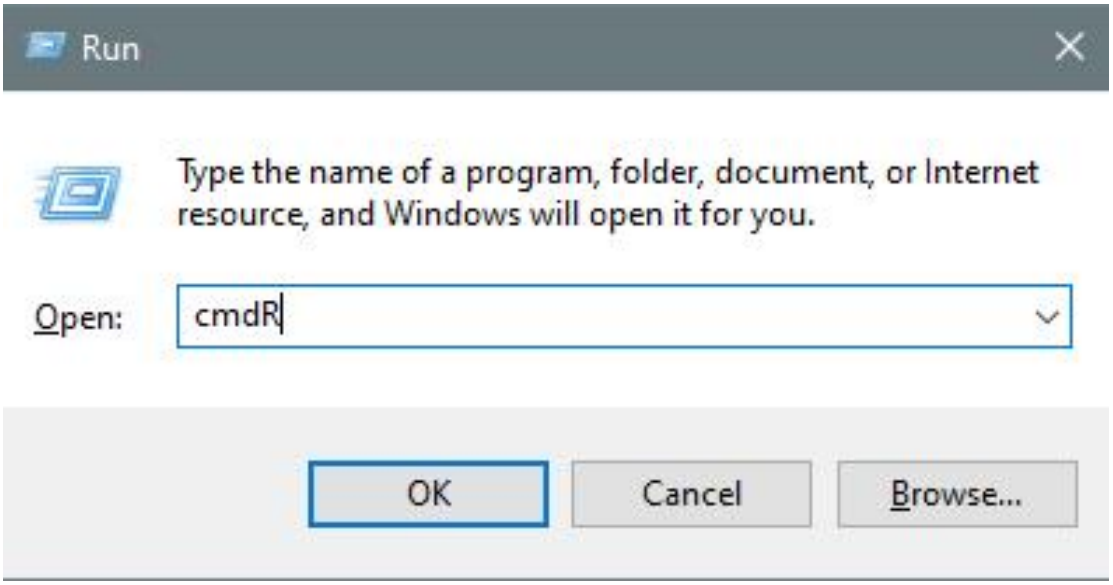


6. Enter the full RTSP address of the camera or gimbal pod in the IP address field of the EasyPlayer player to display the video.

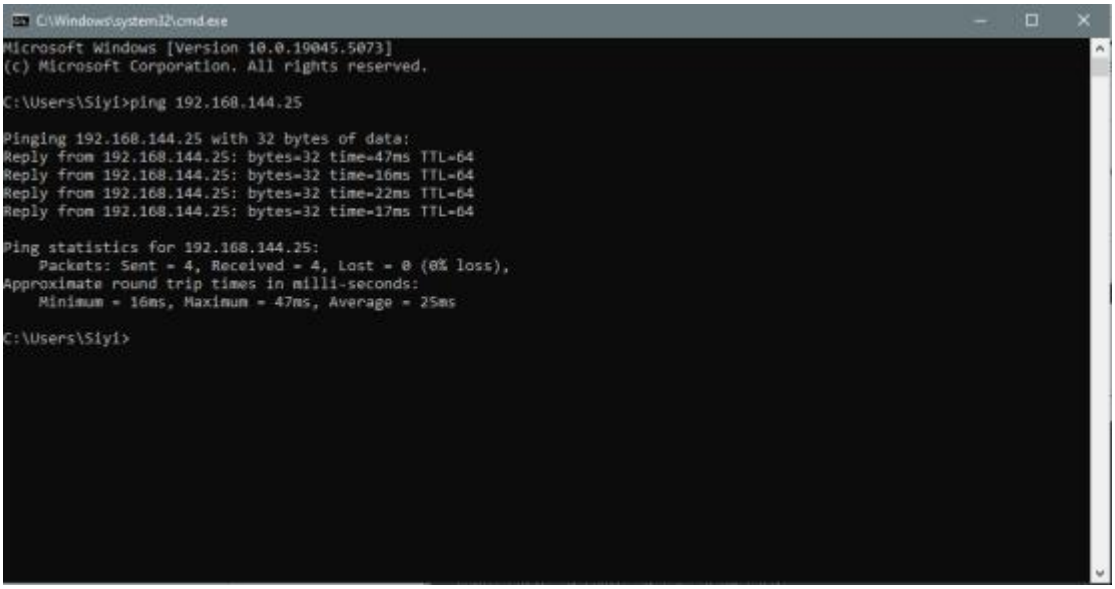


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7. If the video cannot be displayed properly, first open the Ping application on the UniRC 7 Pro ground unit to check whether the network is communicating, then press the “Win+R” key combination on the PC to open the menu shown below.



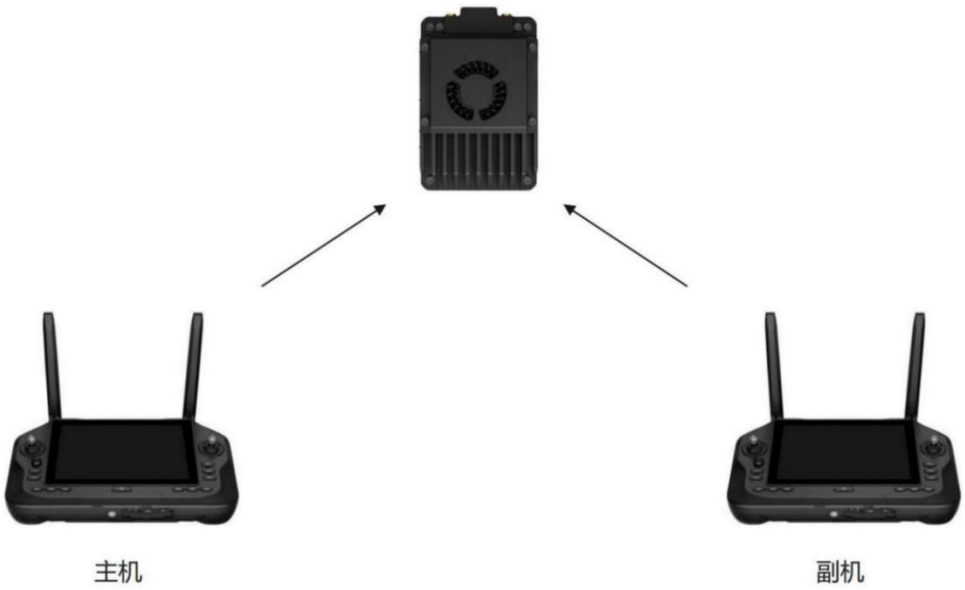
8. Enter “cmd” and press Enter to open the Ping program. Enter the camera IP address as shown in the figure below. If there is a reply, the network communication is normal and video can be displayed; if there is no reply, the link is disconnected and the wiring or connectors need to be checked.

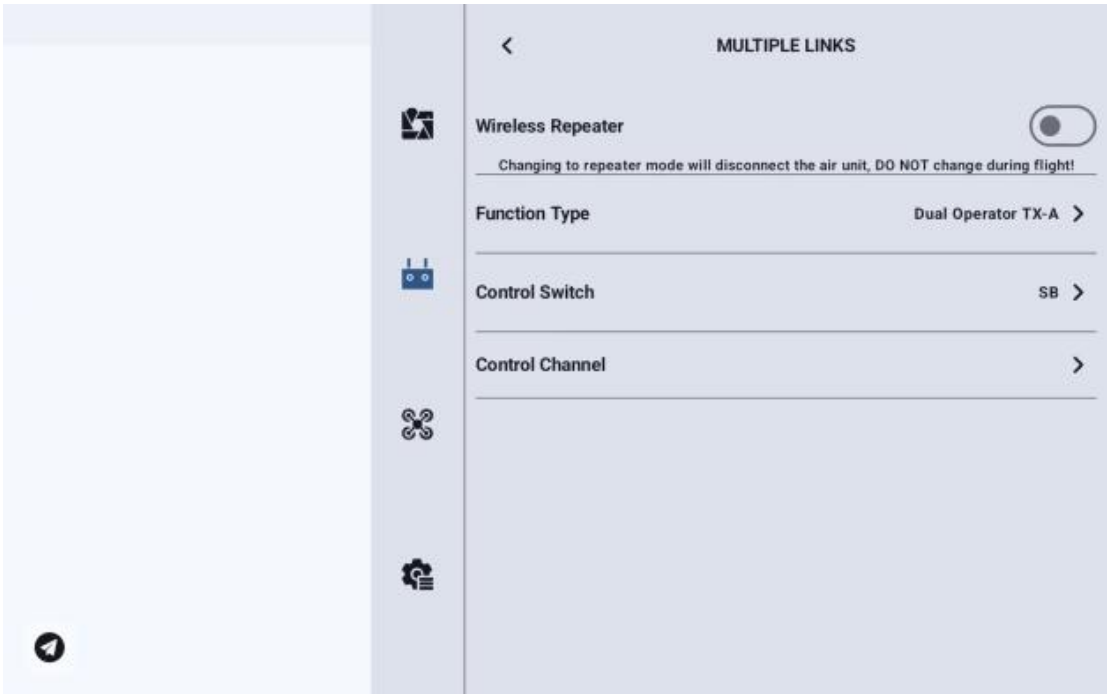


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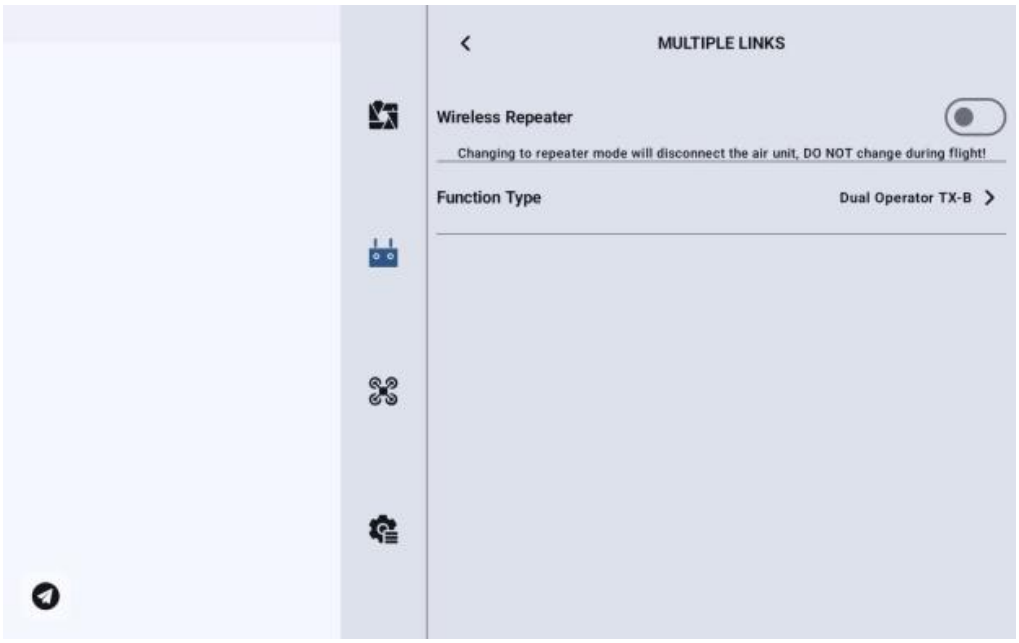
5.6 Multi-Device Interconnection

Dual-Controller Mode





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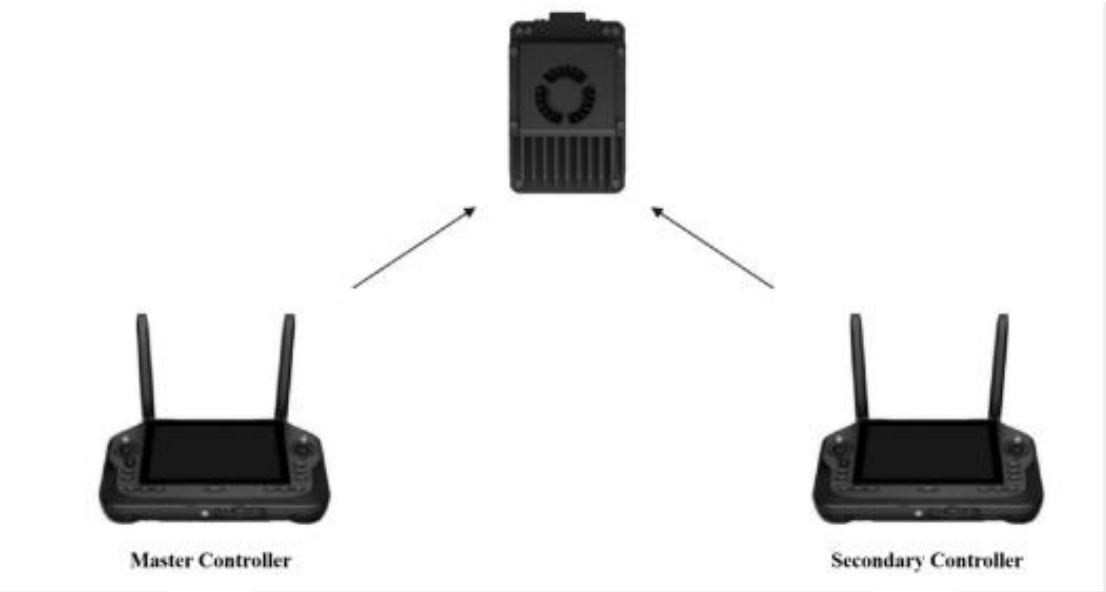
- First, set the function type of the primary controller ground unit to "Dual-Controller – Primary", and pair the primary controller ground unit with the air unit.
- Then, set the function type of the secondary controller ground unit to "Dual-Controller – Secondary", and pair the secondary controller ground unit with the air unit.

After pairing is complete, the primary controller can use the primary control switch to transfer control of the channels assigned to the secondary controller (control transfer is controlled only by the primary control switch).

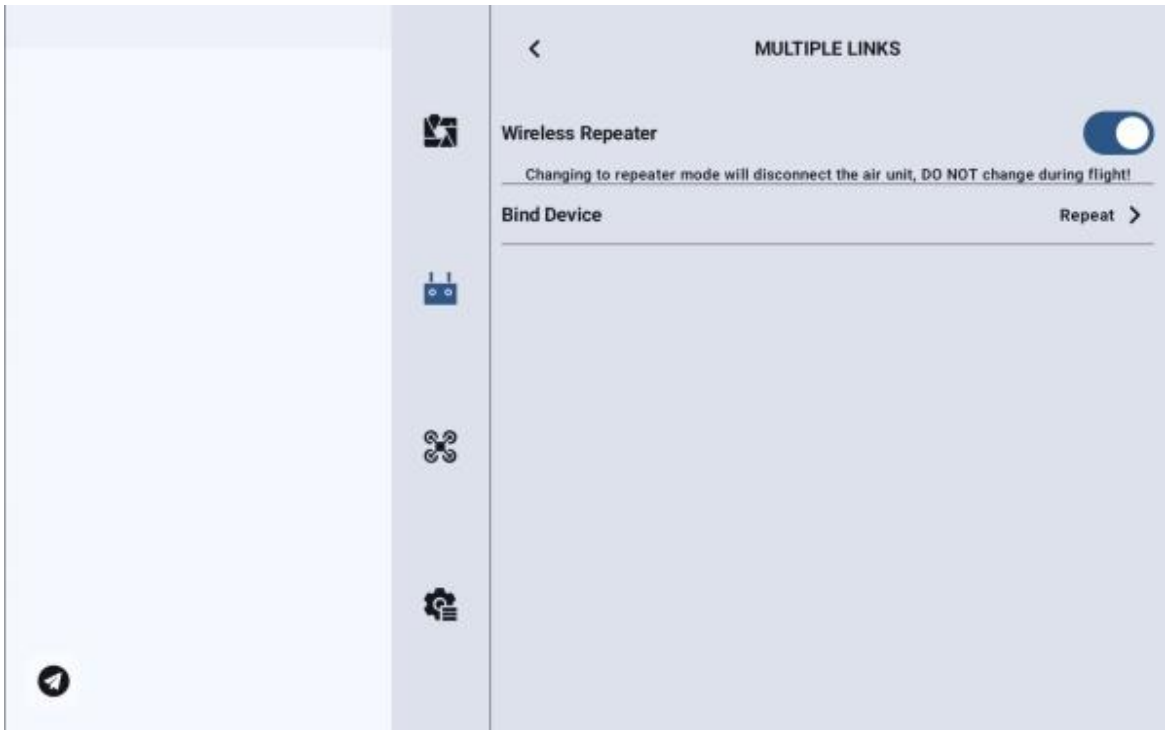


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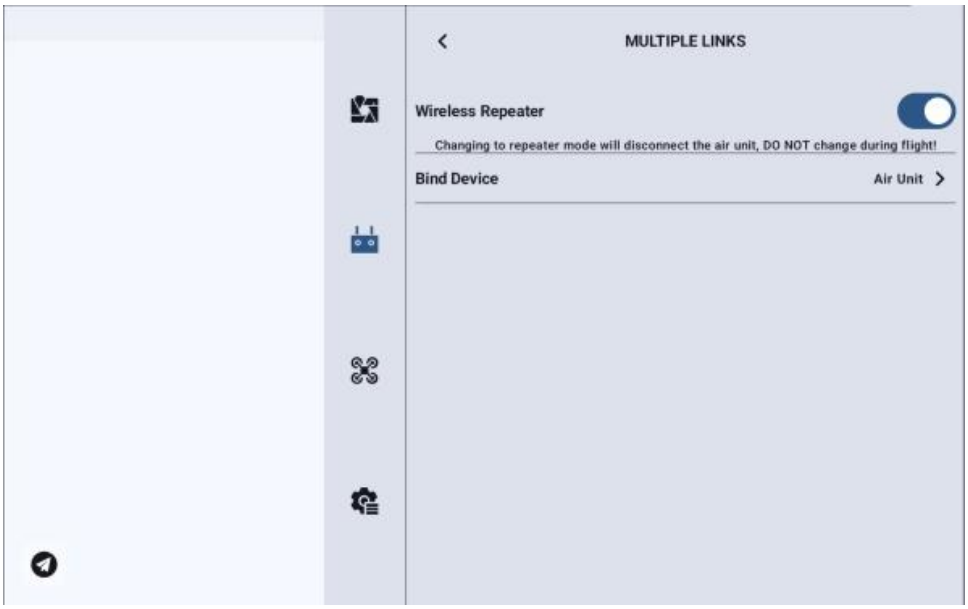
Relay Mode



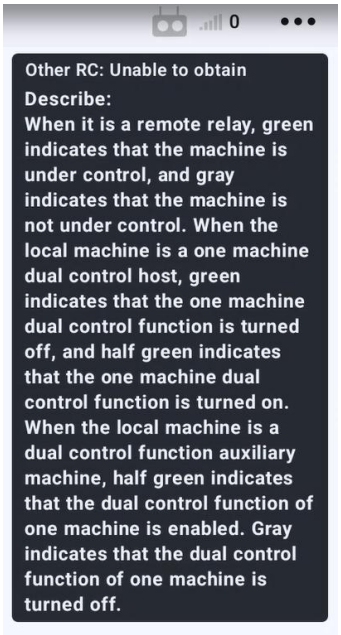
- First, set the function type of the primary controller ground unit to “Relay – Primary”, and pair the primary controller ground unit with the air unit.
- Then, set the function type of the secondary controller ground unit to “Relay – Secondary”, and pair the secondary controller ground unit with the air unit.



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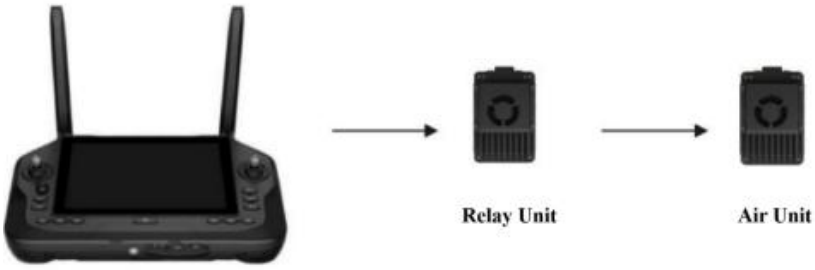
After pairing is complete, control authority is given to the primary controller first. The primary controller can use the primary control switch to transfer full control authority to the secondary controller. After control authority is transferred to the secondary controller, the secondary controller can use the secondary control switch to transfer full control authority back to the primary controller. If either the primary or the secondary controller disconnects, control authority is automatically transferred to the other party.

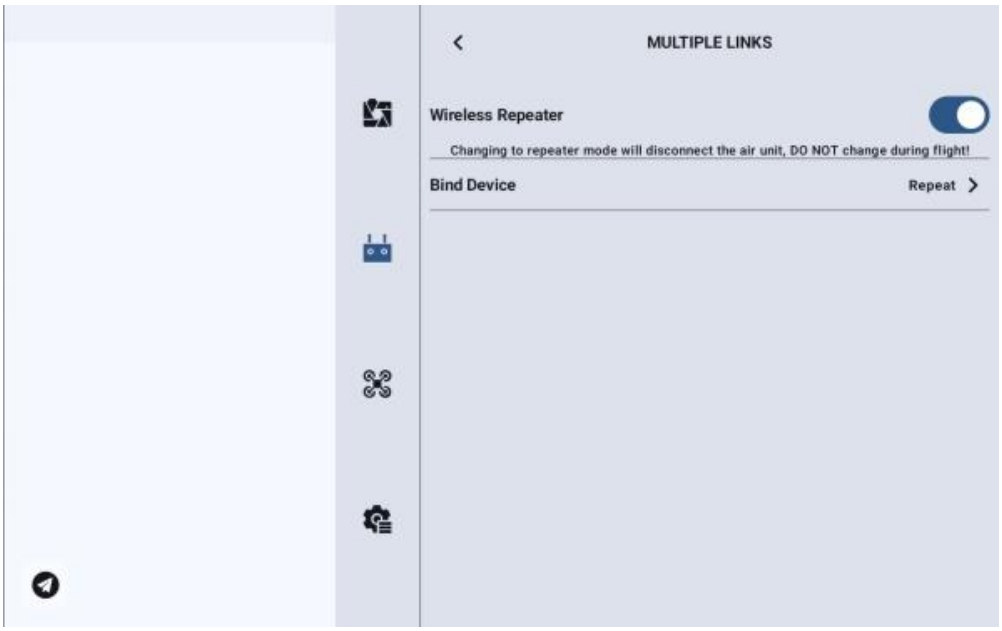


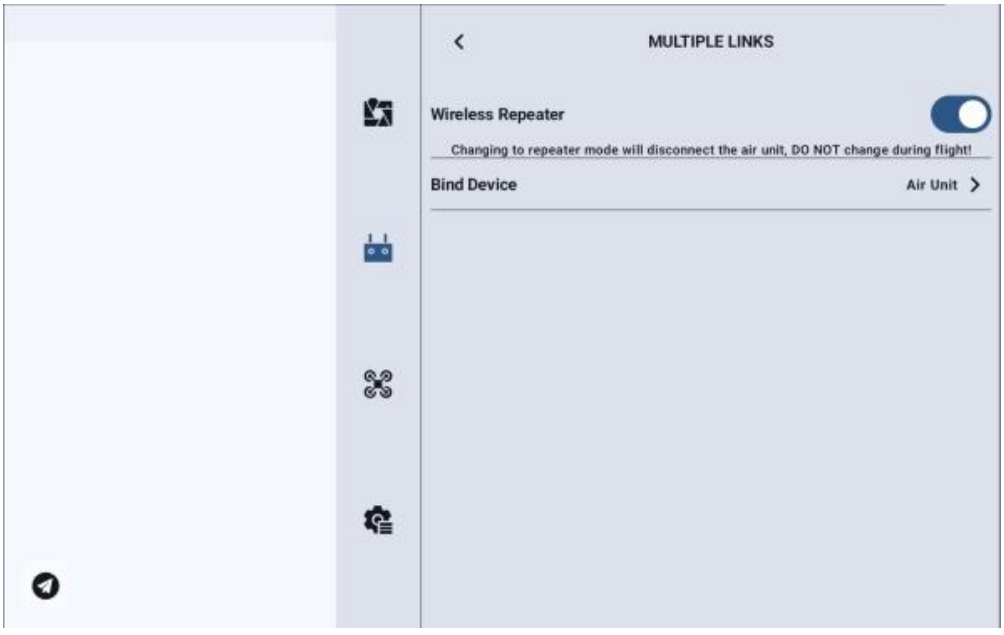
Control status information can be viewed by tapping the green remote controller icon in the upper right corner of the UniGCS Pro App main interface.

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Wireless Relay







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- After enabling the wireless relay function, first select the relay unit pairing target option to perform pairing (tap the remote controller pairing button on the ground unit, then press the pairing button on the relay unit to pair).
- After pairing succeeds, switch the pairing target option to the air unit to perform pairing (tap the remote controller pairing button on the ground unit, then press the pairing button on the air unit to pair).

Notes on Multi-Device Interconnection

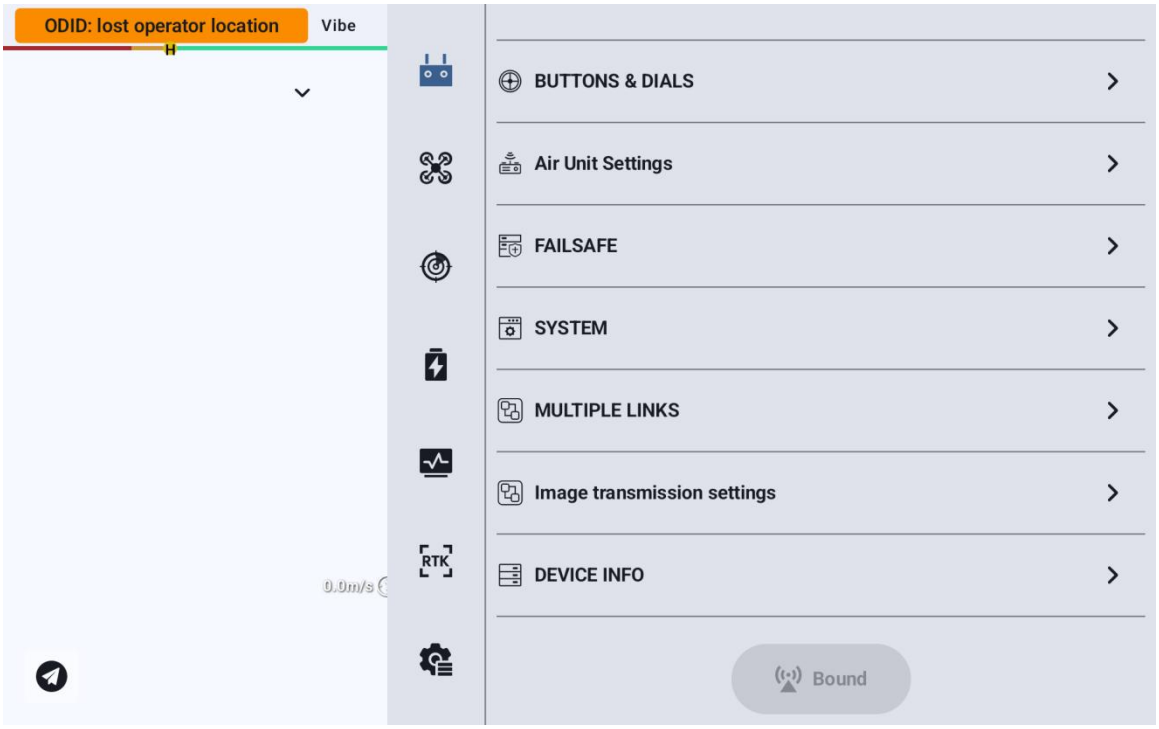
1. After switching the multi-device interconnection mode, pairing is forced to be performed again.
2. In relay mode and dual-controller mode, the secondary controller is forbidden to set the data link baud rate, PWM, failsafe, channel 15 mode, and video transmission downlink bandwidth.
3. Multi-device interconnection forbids setting the video transmission mode; the mode is fixed to bitrate enhancement mode.
4. Multi-device interconnection does not support wireless channel setting for now; it is fixed to adaptive wireless channel mode.
5. If the UniGCS Pro App is used for dual-controller dual-video output, the video transmission downlink bandwidth of the primary controller needs to be set to 20M, and the camera address of the second video output should be filled in with the RTSP address.
6. In relay mode and dual-controller mode, the frequency band configuration must be performed synchronously on the primary and secondary controllers. Wireless relay does not support frequency band setting for now; the frequency band is determined by the frequency band of the ground unit at the time of pairing.
7. In relay mode and dual-controller mode, the video transmission IP of the secondary controller is 192.168.144.13, the video transmission IP of the primary controller is 192.168.144.12, and the video transmission IP of the relay unit is 192.168.144.75.
8. In relay mode and dual-controller mode, if the Android firmware versions of the primary and secondary controllers are earlier than V1.0.7 (Pro version) / V1.0.6 (Standard version) (not including V1.0.7 for the Pro version and V1.0.6 for the Standard version), the IP cannot be modified automatically for now and needs to be configured manually.

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5.7 Pairing

Please follow the steps below to pair the ground unit and the air unit:

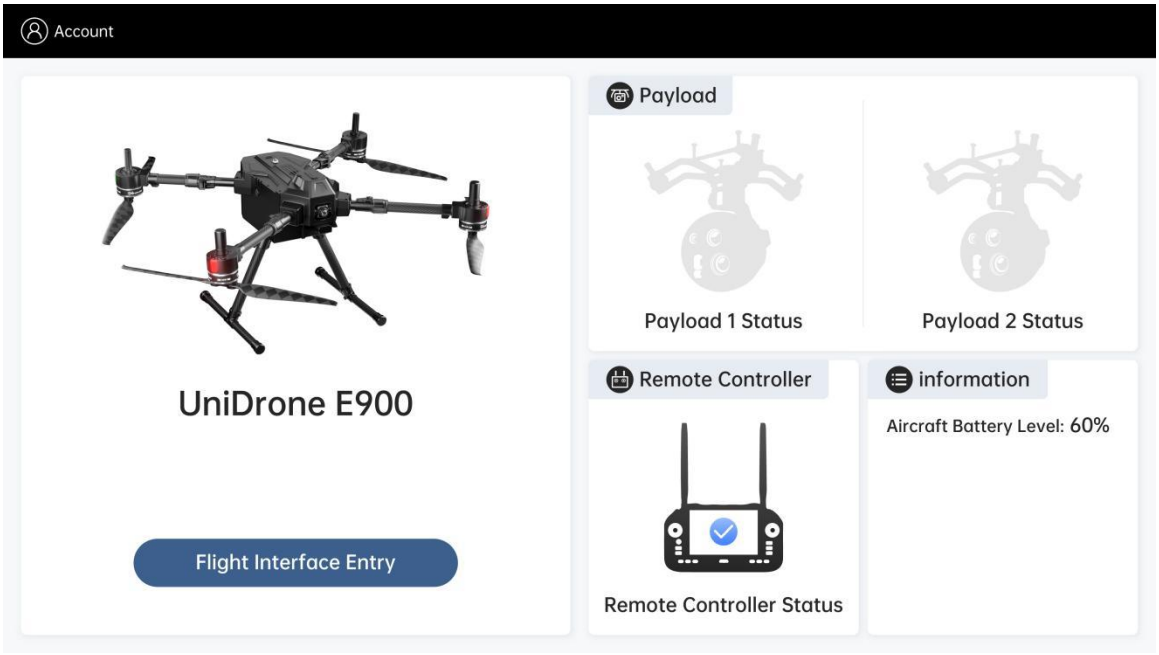
1. Open the remote controller settings menu in “UniGCS Pro” and tap “Remote Controller Pairing”;
2. The ground unit status indicator enters the red fast-flashing state, and the handheld ground station starts beeping;
3. Then press the air unit pairing button for 2 seconds; the air unit status indicator also enters the red fast-flashing state;
4. Wait for about 5 to 10 seconds. When the status indicators of both the ground unit and the air unit turn solid green, the pairing is successful.



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Chapter 6 UniGCS Pro App

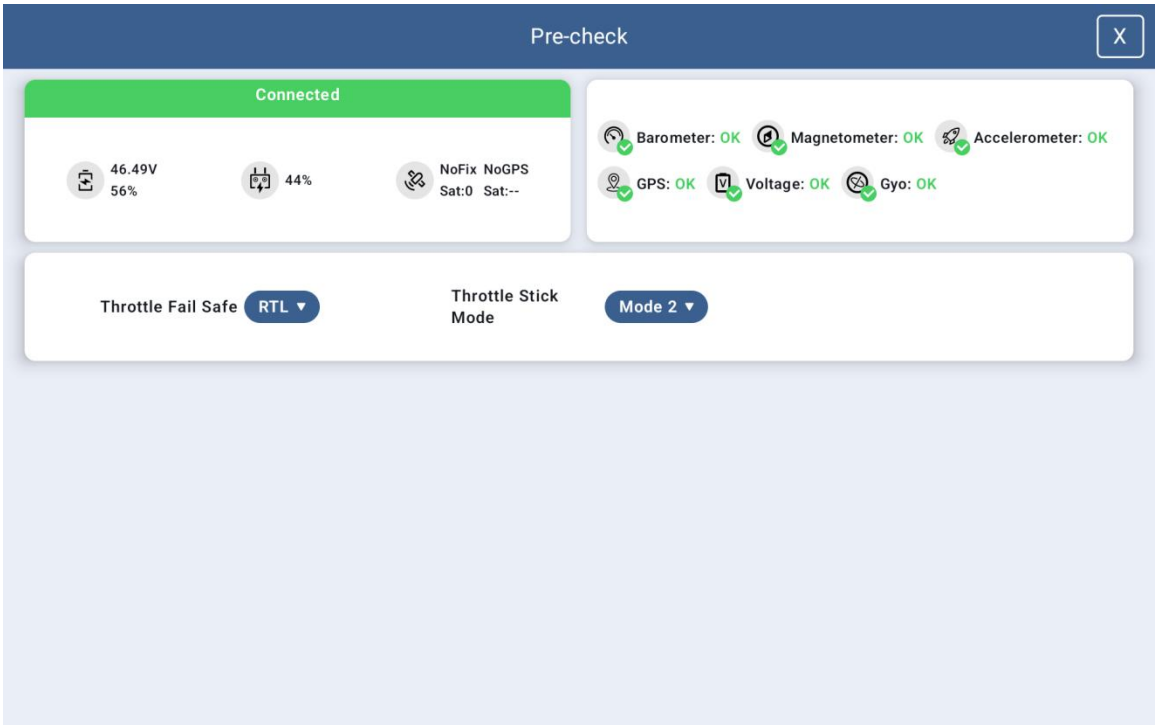
6.1 Home



1. Device Status
2. Account
3. Flight Interface Entry
4. Payload 1 Status
5. Payload 2 Status
6. Remote Controller Status
7. Aircraft Battery Level

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6.2 Pre-Flight Check



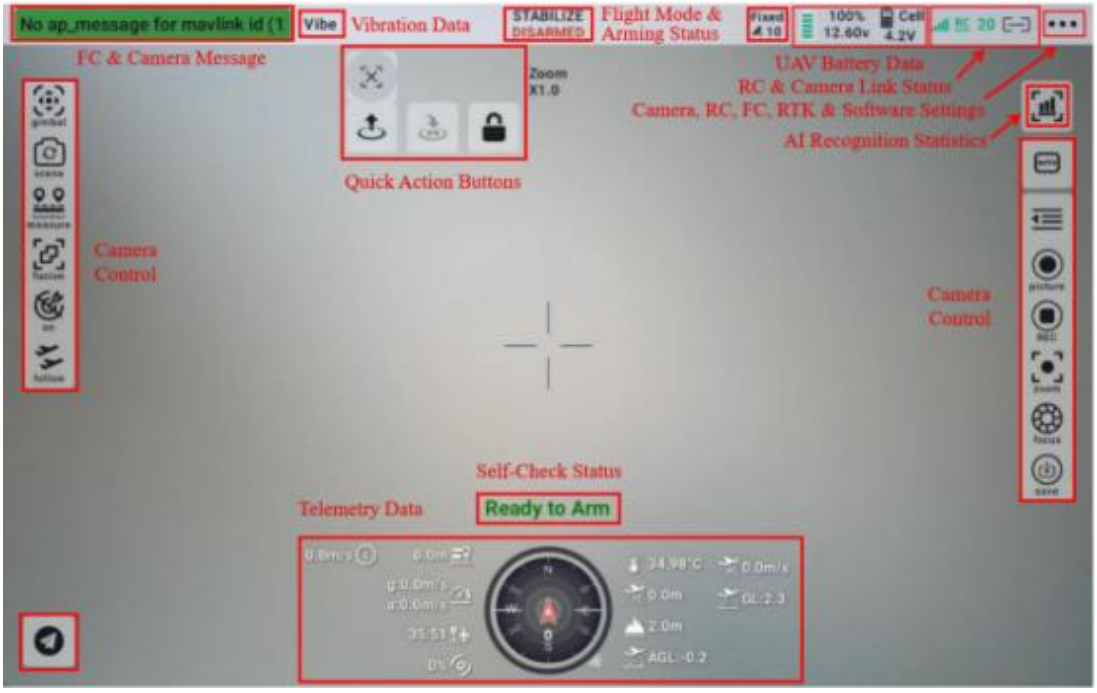
1. Aircraft voltage and battery level percentage
2. Aircraft protection action upon remote controller signal loss
3. Remote controller battery level percentage
4. Satellite signal status
5. Stick mode (Mode 2 by default)
6. Sensor status

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6.3 Flight Interface



1. Flight Assistance Functions
2. FPV Gimbal Recenter Function
3. Map Interface Switch
4. Payload Page Entry

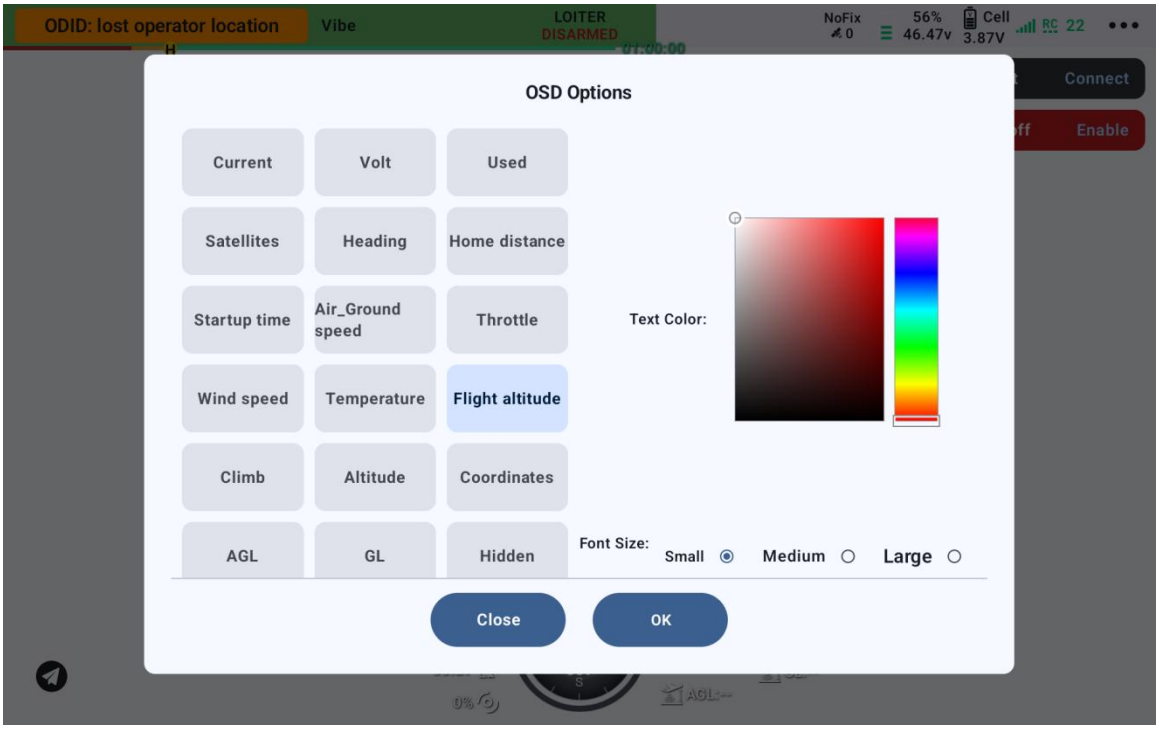


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5. Aircraft Data Information



Long press to enter the OSD options, where the displayed content, font color, and font size can be customized.



6. Smart Takeoff/Landing Function

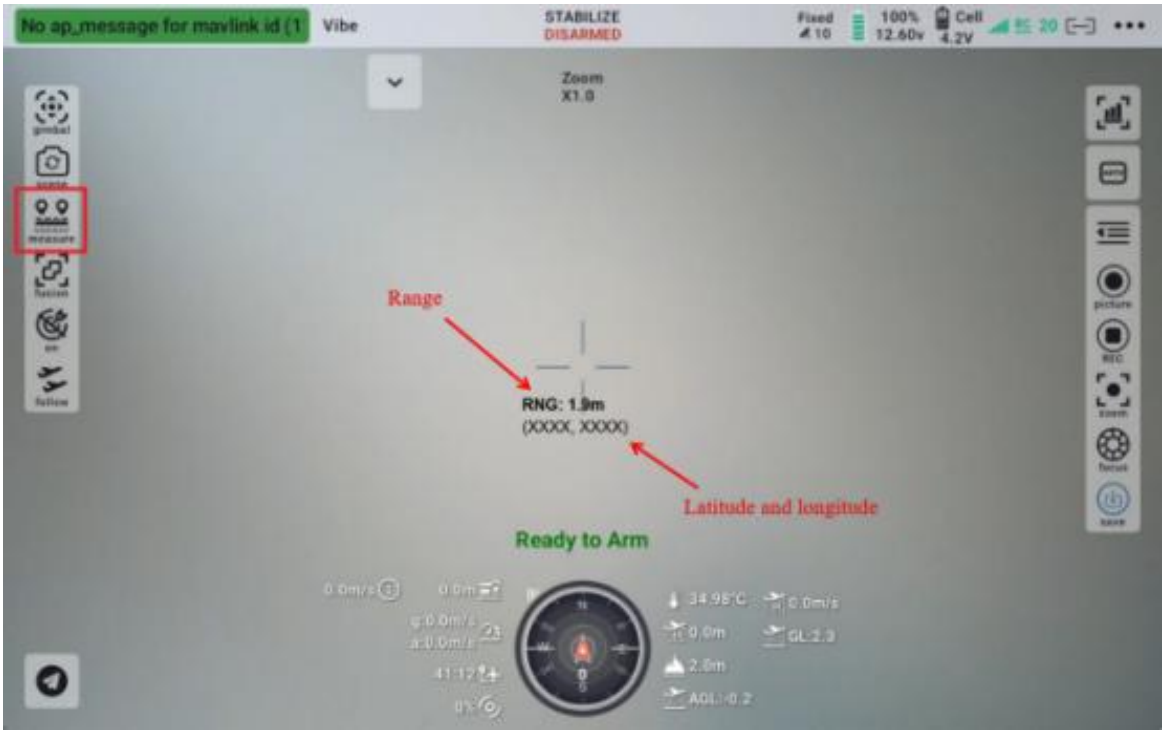
7. RTK Status Pop-up

8. Obstacle Avoidance Switch Status Indicator

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Laser Ranging

The laser ranging function is used to measure the distance to a target. Tap the ranging switch once to enable the ranging function; the button changes color and the crosshair stays aligned with the current ranging target. Point the center of the lens at the position to be measured, and the distance from the lens to the target position will be displayed on the screen. Tap the highlighted button again to disable the ranging function.



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Chapter 7 Flight Operations

7.1 Route Module

Route Module Main Menu



- **Route Viewing and Planning:** View the route library and plan routes.
- **Start/Pause Route:** After a route has been planned and uploaded, tap this button to start the route mission. While the route mission is being executed, tap this button to pause the mission; the aircraft will enter a hover. Tap again to resume the route mission.
- **Delete Route:** Clears the route mission on the current page and also deletes the route file in the flight controller. During waypoint mission execution, tap this button and confirm the deletion as prompted; the aircraft will enter a hover.

> **Note:** Once cleared, no route mission remains in the aircraft, so the mission cannot be continued. A new route must be uploaded again before a route mission can be executed.

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- **Exit Mission:** During route mission execution, tapping this button exits the route mission, and the aircraft will enter a hover. Tap the mission start button again to resume the route mission.
- **Download:** Tap this button to download the route mission stored in the aircraft.
- **Locate Aircraft:** Tap this button to highlight it and center the aircraft on the map. During flight, the map follows the aircraft's movement; when the user manually drags the map, the map-following function is disabled.
- **Locate Controller:** Tap this button to highlight it and center the remote controller on the map.

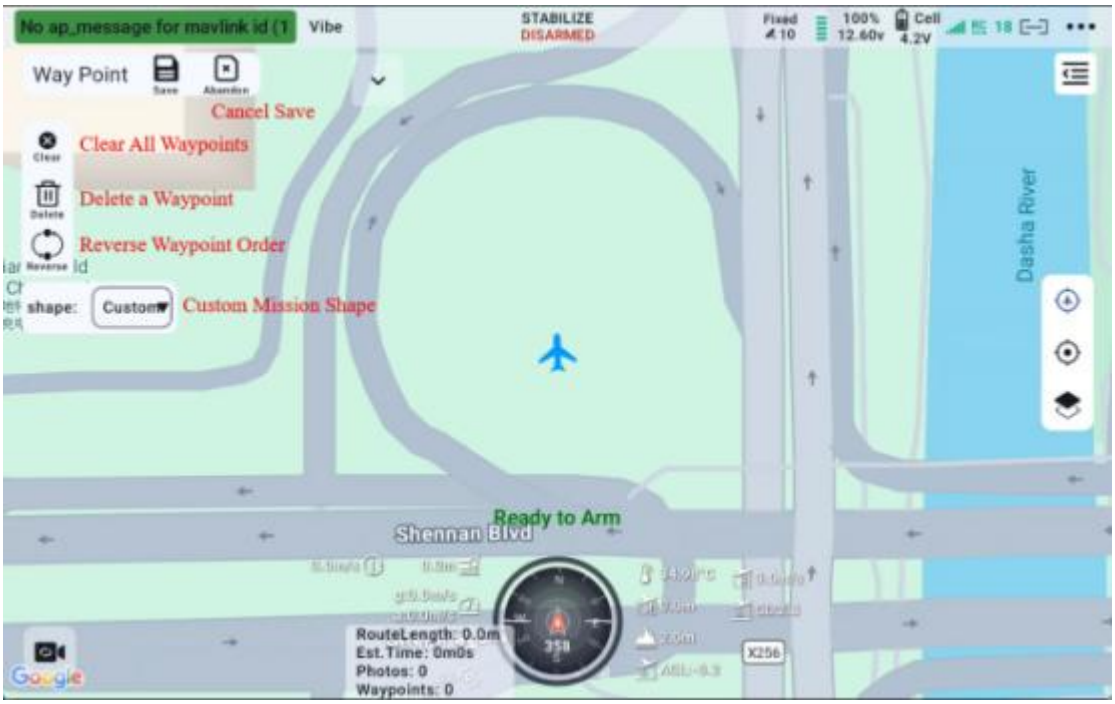
> **Caution:** This function requires the device to be connected to the internet.

- **Map Type:** Tap this button to select and switch to the desired map type; street, satellite, and hybrid maps are supported.

> **Caution:** Map loading requires an internet connection.

- **No-Fly Zone Display:** When the device is connected to the internet, the software automatically loads no-fly zones when the map interface is opened.

Route Planning Main Menu



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- **Delete Waypoint:** Tap this button to automatically delete the waypoint selected during planning.
- **Clear All Waypoints:** Tap this button to clear all waypoints planned on the current page.
- **Cancel Save:** Tap this button to cancel saving all waypoints planned on the current page.
- **Save Route:** Tap this button to save all waypoints planned on the current page to the route library.
- **Show/Hide Edit Menu:** Tap this button to hide the edit menu, making it easier for the user to view and drag waypoints. Tap again to expand it.

7.1.1 Route Library

Functions include route storage, quick recall, editing and updating, and cross-device synchronization.

Route Library List

Visually displays the routes planned and saved by the user, making it easy to view and modify them again.



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Route Operations



- **Edit:** After entering the route library list, tap the Edit button of any route to edit that route again.
- **Export:** In the route library, tap the Export button of any route to save it as a route usable by the aircraft and store it locally; the saved format is Waypoints.
- **Delete:** Tap the Delete button of any route to delete it from the route library.

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Uploading Routes to the Cloud

After successfully logging in to your account, press and hold any route in the local routes; selection buttons will automatically appear to the right of the routes.



Then simply check the routes to be uploaded to the cloud and tap the “Upload to Cloud” button to complete cloud storage of the routes. This operation enables cross-device access to routes, greatly improving the convenience of route reuse—the required routes can be easily obtained on different devices.



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Downloading Routes to Local

After successfully logging in to your account, you can view, export, and delete cloud routes in the cloud routes.



Similarly, press and hold any route; selection buttons will automatically appear to the right of the routes. Then simply check the routes to be downloaded to local and tap the “Download to Local” button to complete downloading the routes from the cloud.



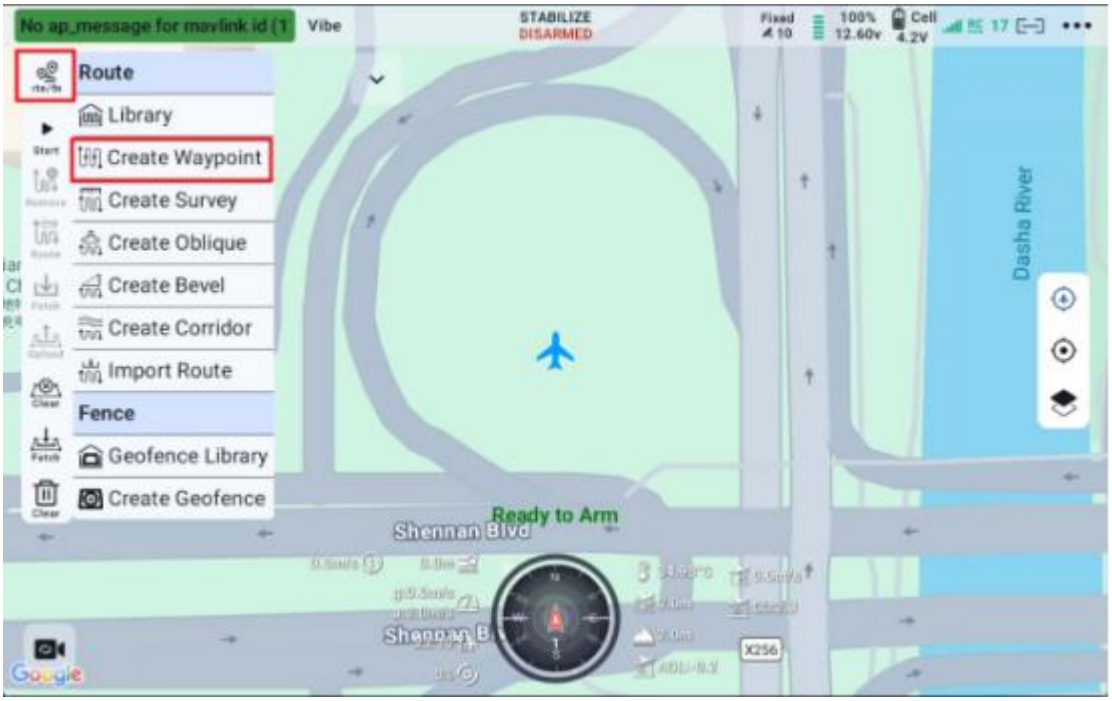
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7.1.2 Waypoint Route

A route in which the aircraft flies in a preset waypoint sequence. Each waypoint contains parameters such as coordinates and altitude. Suitable for precisely executing fixed-point missions (such as inspection and fixed-point photography); highly flexible, with a customizable path.

Creating a Route

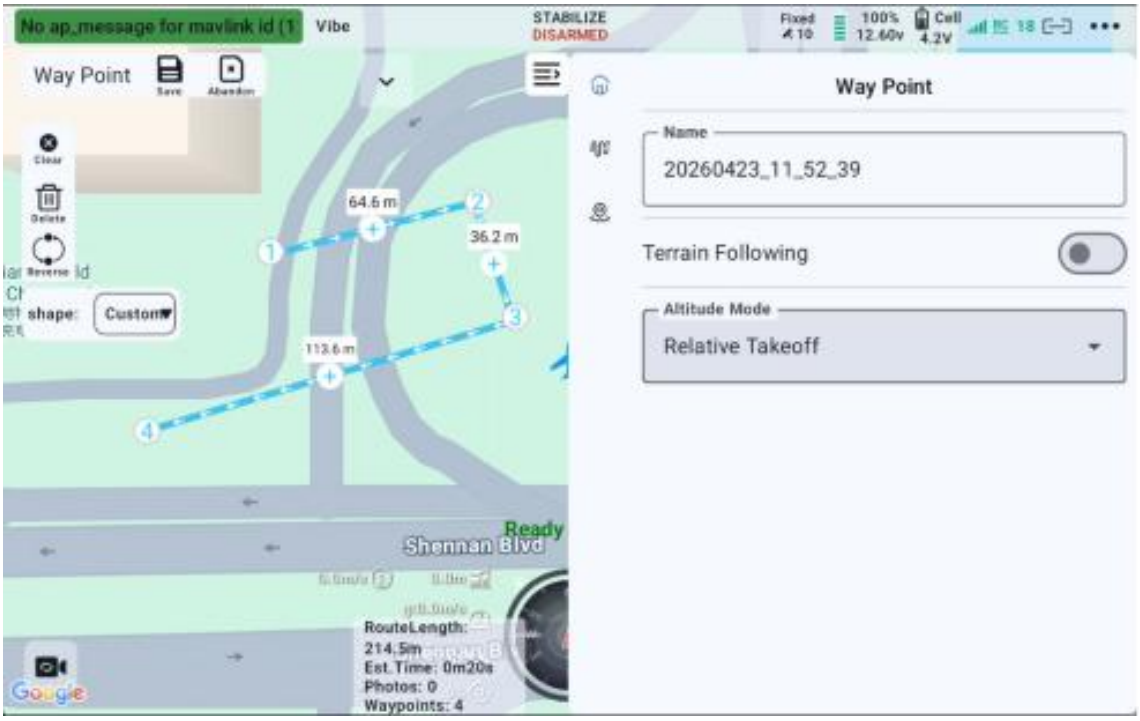
Tap the route planning button and select to create a waypoint route to plan a waypoint route.



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Waypoint Flight

In the Waypoint Flight tab, you can name this mission, enable or disable terrain-following flight, and switch the route altitude mode, among other settings.



- **Save:** Save the currently planned route.
- **Cancel:** Cancel saving the currently planned route.
- **Clear:** Clear all waypoints in the planning interface.
- **Delete:** Delete the single waypoint highlighted in blue on the current interface; short-press a waypoint to highlight it.
- **Reverse:** Reverses the waypoint order; the latitude and longitude of each waypoint remain unchanged.
- **Route Shape:**
  - **Custom:** Waypoint positions are placed by the user's taps.
  - **Circle:** Generates a circular route with a specified number of points (no more than 300). Drag the blue dots of the preview frame or zoom the map in or out to determine the radius of the circular route; the coordinates of each waypoint are determined by the center and the radius. Tap Confirm to automatically generate the route.

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  - **Rectangle:** Generates a rectangular route with 4 waypoints. Drag the blue dots of the preview frame or zoom the map in or out to determine the length and width of the rectangular route. Tap Confirm to automatically generate the route.

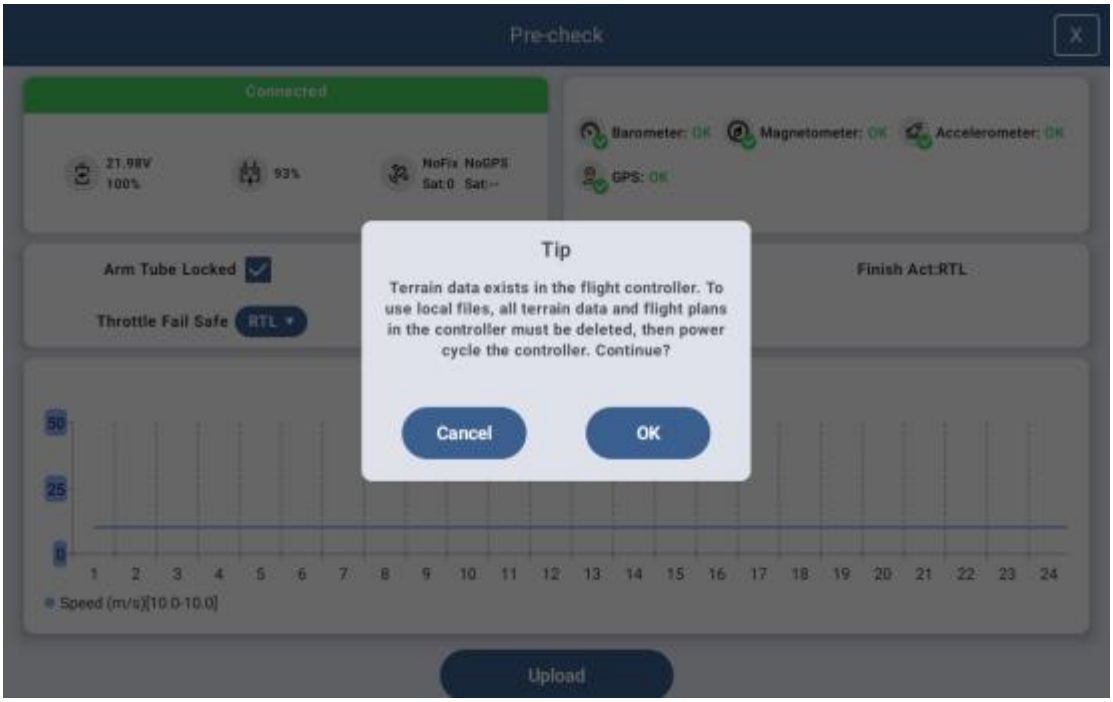
- **Route Direction:** Arrows on the connecting lines between two waypoints indicate the route direction.
- **Route Name:** Enter the desired name in the input box and save the route; the route can then be viewed in the route library.
- **Terrain-Following Flight:** After the terrain-following flight switch is turned on, the aircraft uses the downloaded terrain data to automatically adjust its flight altitude according to the set terrain-following height.

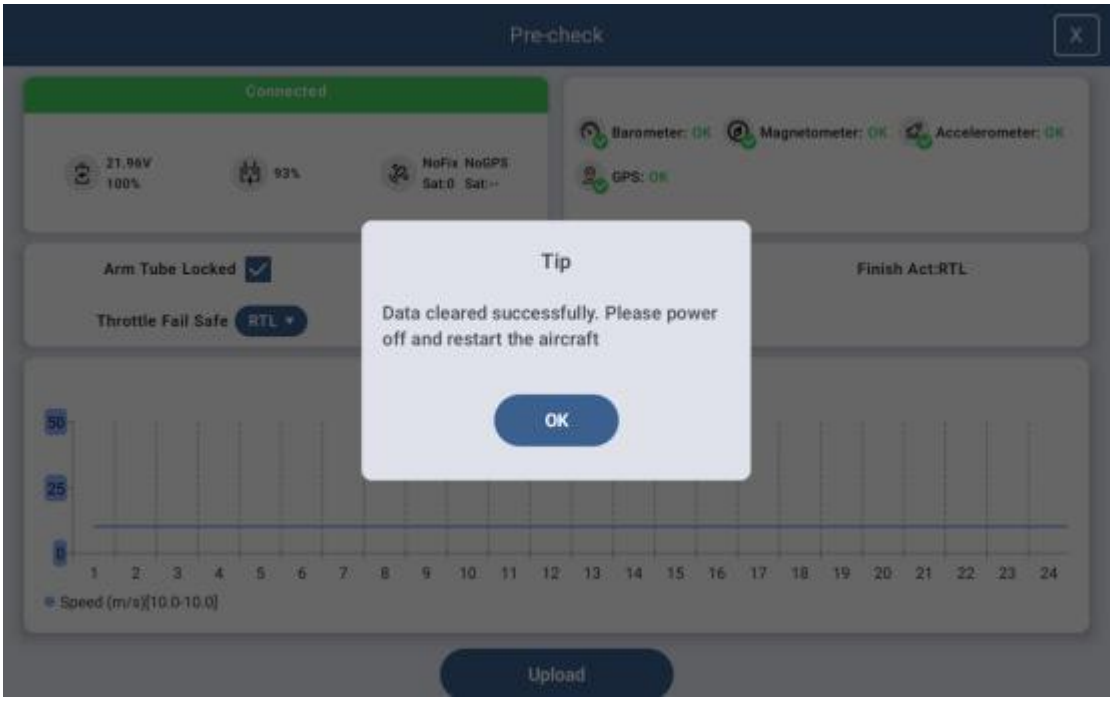
> **Note:** The online terrain-following altitude data comes from open-source databases and may deviate from the actual terrain. Please ensure a safe flight environment.

- **Optional Local Terrain Files:** When online terrain data cannot be loaded or the online terrain data does not meet current needs, the user can select one or more local terrain files. Terrain files must be in ".TIF" format.

> **Note:** When uploading a route using the local terrain-following function, if terrain files are detected in the aircraft memory card directory APM/TERRAIN (i.e., the directory on the flight controller memory card where terrain files are stored) and other routes exist in the aircraft, a prompt will pop up. To continue, tap Confirm, and be sure to power off and restart the flight controller without exiting the interface. After reconnecting, continue uploading the route.

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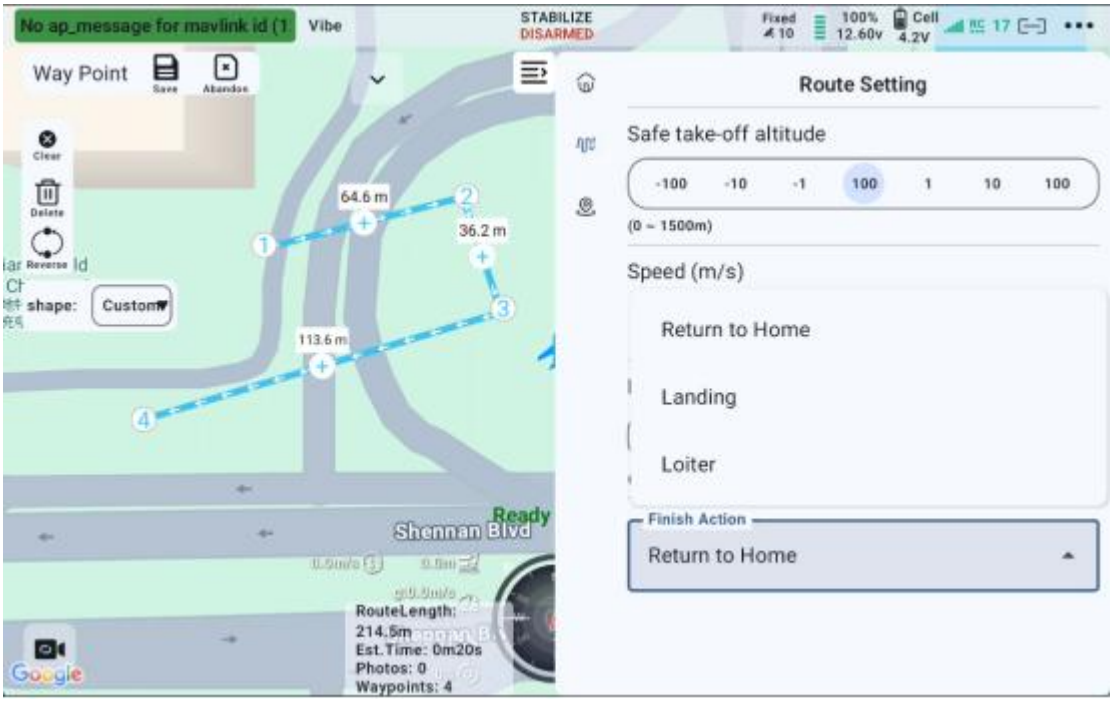


- **Altitude Mode:** Switches the altitude mode of all waypoints in the waypoint route.
  - **Altitude above Sea Level (WGS84):** The altitude of the aircraft relative to mean sea level (MSL, Mean Sea Level).
  - **Relative Altitude:** The altitude of the aircraft relative to the takeoff point or the ground reference plane.

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Route Settings

Enter the Route Settings tab to modify the safe takeoff altitude, route speed/altitude, and mission completion action.

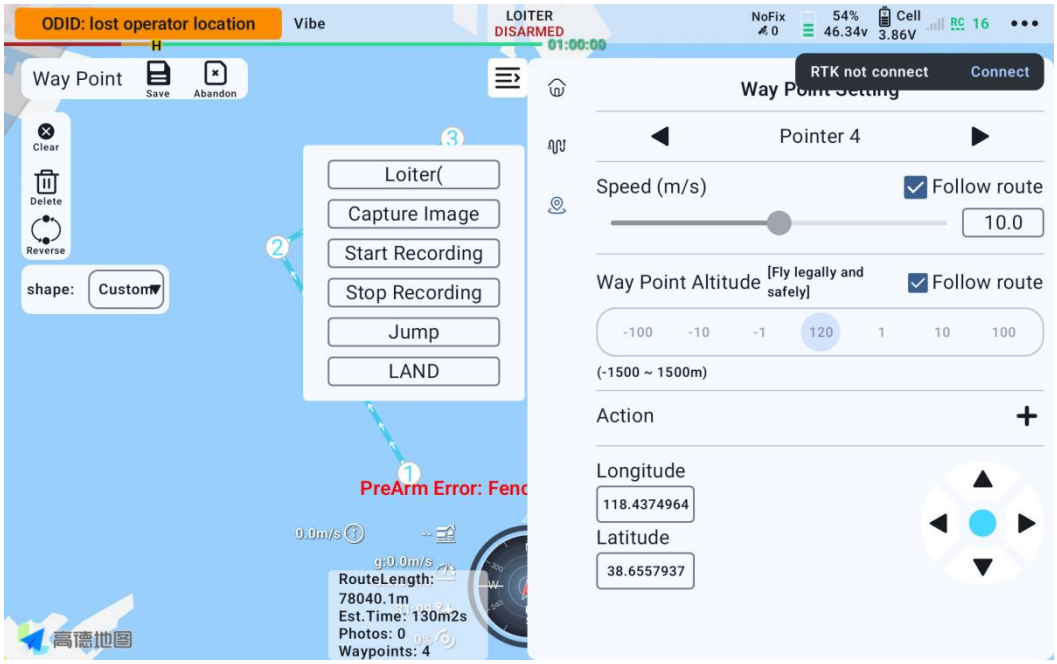


- **Safe Takeoff Altitude:** Sets the altitude the aircraft must reach during takeoff in a route mission; the aircraft proceeds to the first waypoint only after reaching this altitude.
- **Speed:** Sets the horizontal speed when flying the waypoint route.
- **Route Altitude:** Sets the flight altitude for continuing the mission after the safe takeoff altitude is reached during waypoint route execution.
- **Terrain-Following Altitude:** After the terrain-following flight function is enabled, this altitude value determines the relative distance between the aircraft and the terrain during flight.
- **Completion Action:** Sets the behavior after the waypoint route mission is completed.
  - **Return-to-Home:** The aircraft returns to the Home point from the position of the last waypoint of the mission.
  - **Land:** The aircraft lands in place at the position of the last waypoint of the mission.
  - **Hover:** The aircraft hovers at the position of the last waypoint of the mission.

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Waypoint Settings

Enter the Waypoint Settings tab to adjust the altitude, speed, waypoint actions, and latitude/longitude of an individual waypoint.

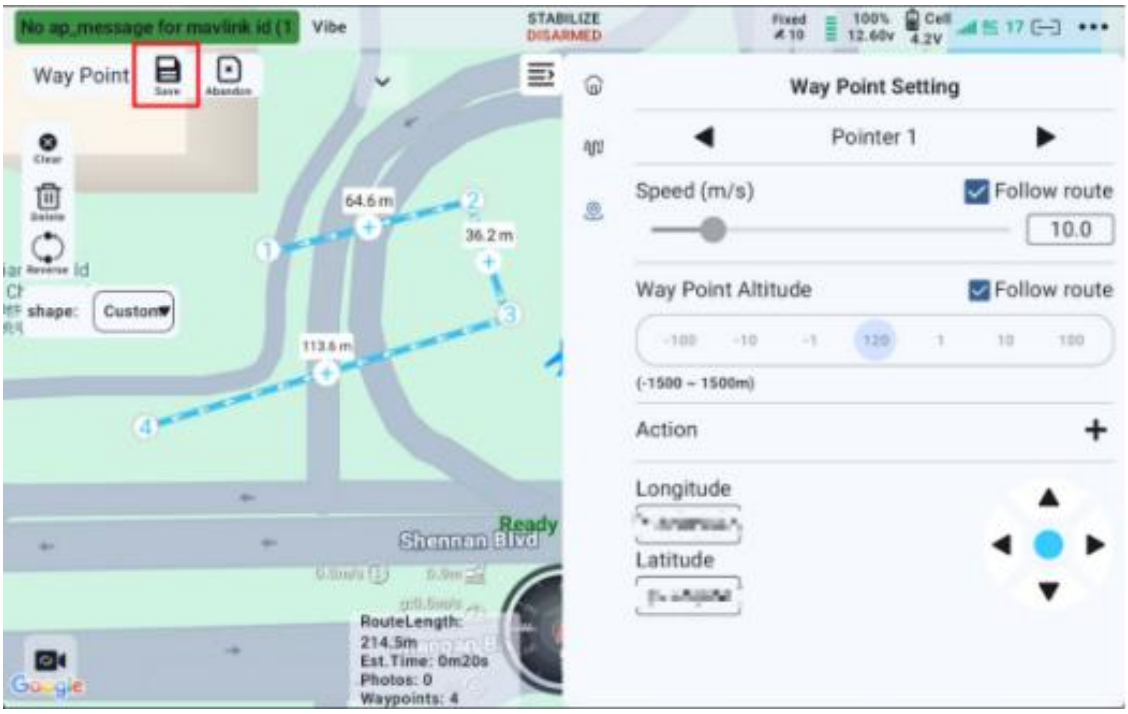


- **Waypoint Speed:** The flight speed after reaching this waypoint.
- **Waypoint Altitude:** The flight altitude when reaching this waypoint.
- **Follow Route:** "Follow Route" is checked by default; when checked, the waypoint's speed/altitude is set to the speed/altitude configured in "Route Settings".
- **Waypoint Actions:** Actions executed after reaching this waypoint; multiple actions can be combined.
  - **Hover:** Hover at this waypoint for the set duration.
  - **Take Photo:** Capture one photo upon reaching this waypoint.
  - **Start Recording:** Start video recording upon reaching this waypoint.
  - **Stop Recording:** Stop video recording upon reaching this waypoint.
  - **Waypoint Jump:** Upon reaching this waypoint, the aircraft jumps to the set target waypoint. A repeat count can be set so that the aircraft repeatedly flies between the jump point and the target waypoint; setting the repeat count to "-1" represents an infinite loop.
  - **Land:** Upon reaching this waypoint, the aircraft lands at its current position.

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Mission Execution

Step 1: After planning the route, tap the Save button.

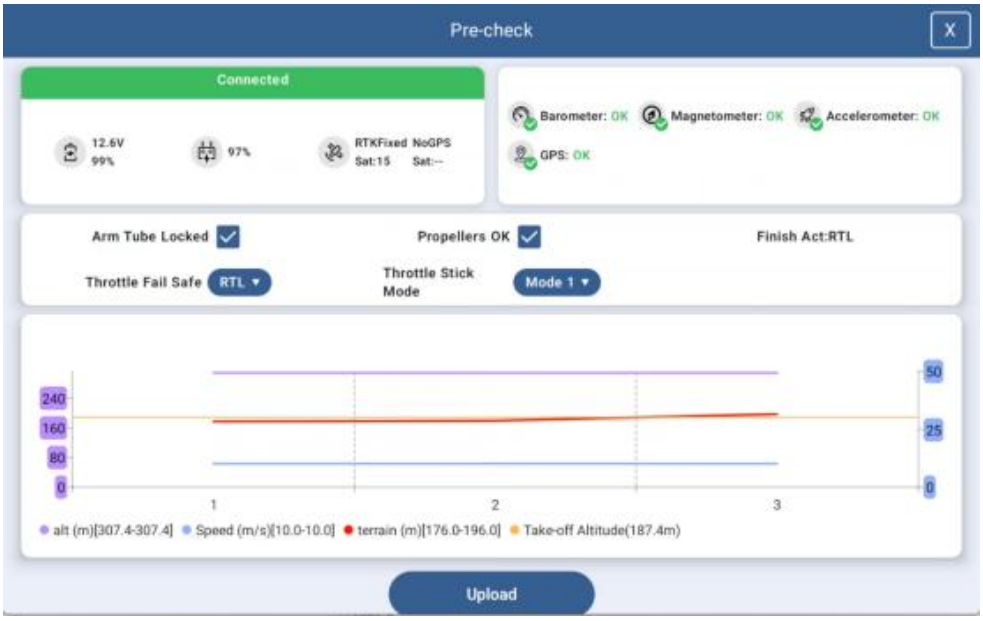


Step 2: Tap the Start button to upload the route.

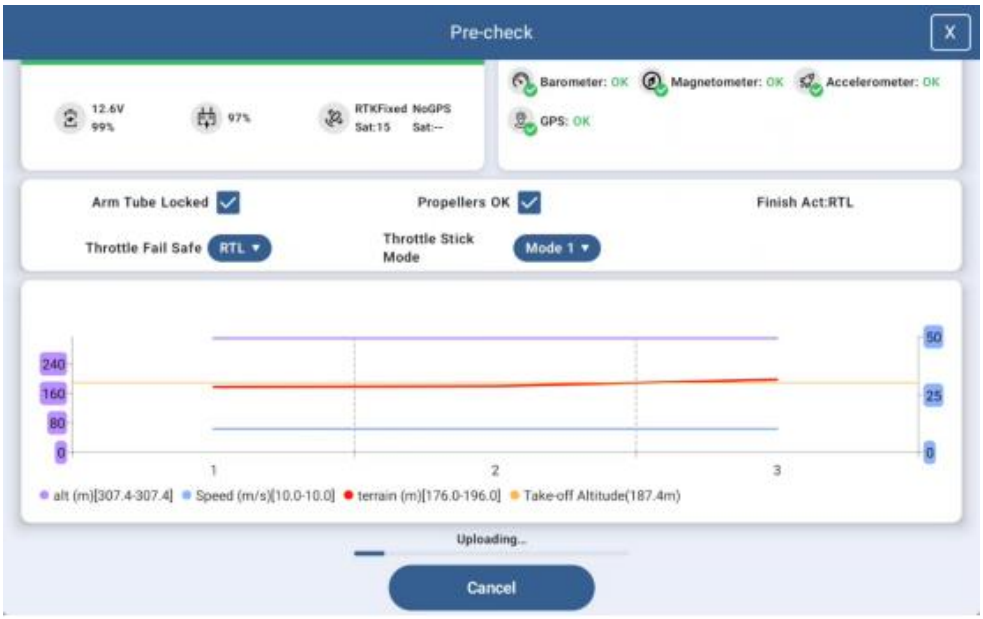


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Step 3: After tapping Start, the pre-flight check page opens. The page includes the route information check, where route speed, altitude, terrain height, takeoff point elevation, and route completion status can be previewed; aircraft status, including the health status of each sensor, aircraft battery level, positioning status, and failsafe settings; and remote controller status, including aircraft connection status and remote controller battery level. In the flight check confirmation, confirm that the arms are locked and the propellers are normal, and check the corresponding boxes. When finished, tap Upload Route.

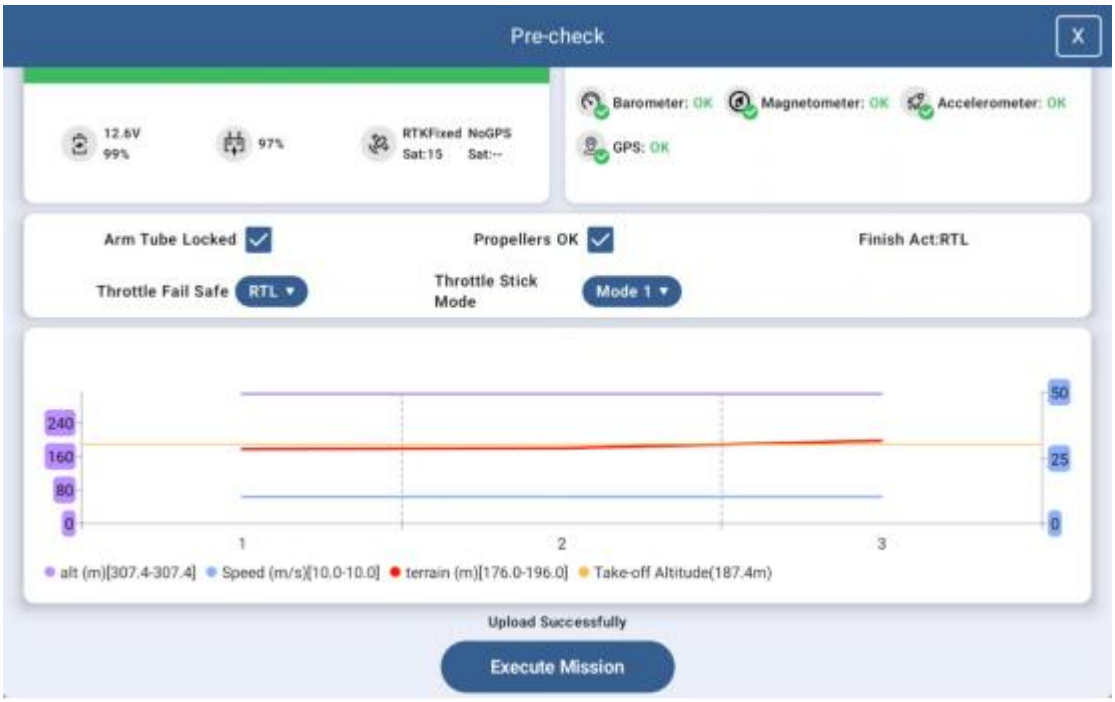


Step 4: Wait for the route upload to complete.



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Step 5: Arm the aircraft and tap Execute Mission to execute the waypoint route mission.



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Jump to Waypoint

Under the current route, tap a waypoint, then tap “Jump to This Waypoint”; the aircraft will fly to that waypoint. Applicable to all route types except slope/facade routes.



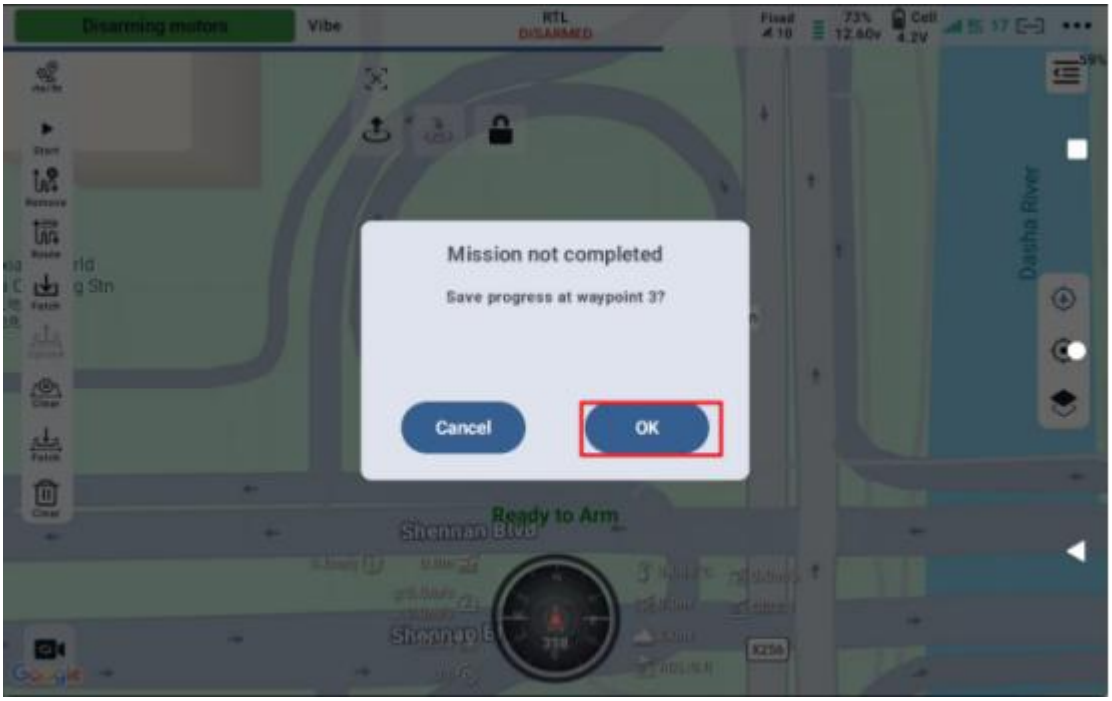
> **Note:** If tapping has no effect, check whether the waypoint jump is being performed within the current flight mission. You can tap Download, then tap a waypoint to perform the waypoint jump.

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Resume from Breakpoint

After a flight mission is interrupted, the aircraft can resume the remaining route from the waypoint before the interruption point, without restarting from the beginning. Applicable to all route types except slope/facade routes.

Procedure: After the aircraft's mission is interrupted, wait for the aircraft to return, land, and disarm; a prompt indicating that the route mission is unfinished will pop up on the main interface. Tap Confirm.



When the aircraft is ready again, the operator manually arms the aircraft and raises it above a safe altitude, then taps the "Start Mission" button. The system pops up a "Continue Mission" dialog with the following options:

- **Cancel:** Selecting this option terminates the current automatic mission, and the aircraft stops executing the preset route.
- **Start Over:** After tapping, the aircraft re-executes the complete automatic mission from the first waypoint of the route.
- **Continue Mission:** Once this option is triggered, the aircraft continues executing the remaining route from the waypoint before the previous interruption point, ensuring the continuity of the mission.

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> **Note:** To ensure the resume-from-breakpoint function works properly, keep the app open and running during flight, and use the one-tap Return-to-Home button at the top to return when the mission is interrupted. Before heading to the breakpoint, manually fly the aircraft above a safe altitude.

Route Progress Display

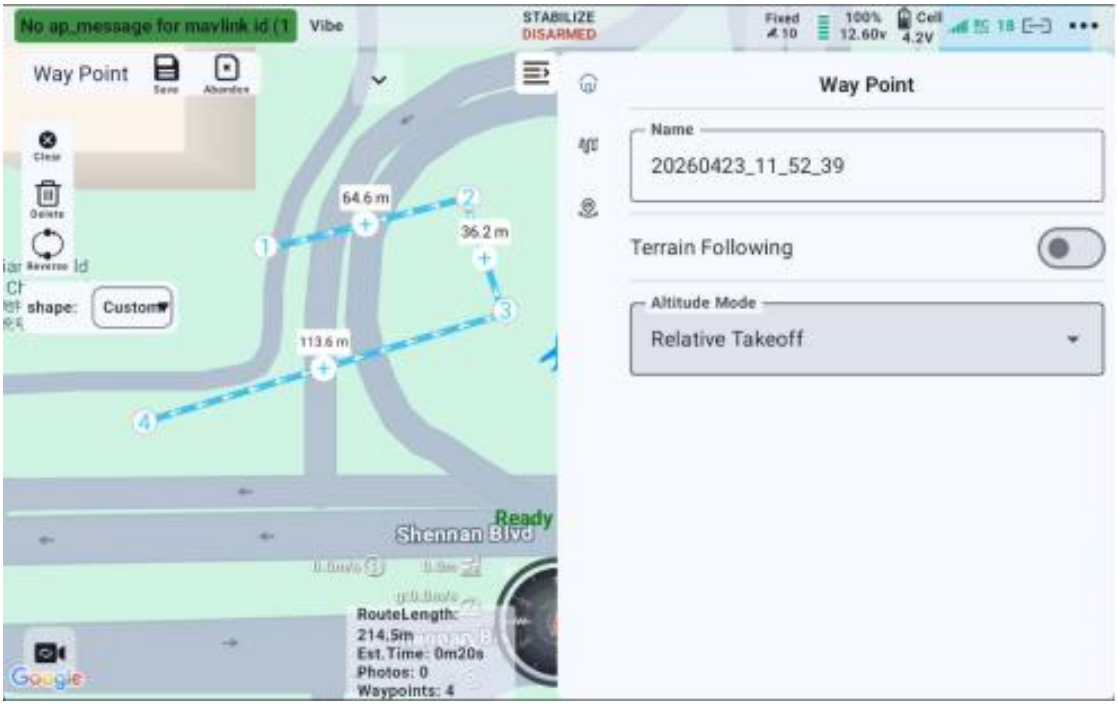
During the mission, a dynamic progress bar below the title bar indicates the percentage of the route completed; the progress bar grows in sync as the mission progresses.



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Route Information Estimation

Estimates the route length, number of waypoints, flight time, number of photos, and survey area for the current route.



During route planning, the system estimates and displays the key parameters of the current route in real time, providing an accurate reference for mission preparation and execution:

- **Route Length:** Visually presents the total distance of the entire route, helping the operator judge whether battery endurance is sufficient and avoid mission interruption due to low battery.
- **Number of Waypoints:** Clearly indicates the total number of waypoints in the route, making it easy to understand the mission's segmentation points and complexity.
- **Flight Time:** Estimates the total time required to complete the entire route based on the route length and the preset flight speed (the takeoff and landing phases are not included for now), assisting in planning the operation schedule and personnel arrangements.
- **Number of Photos:** Automatically calculates the expected total number of photos based on the camera capture interval, overlap ratio requirements, and route coverage, providing a capacity reference for later data storage and processing.

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- **Survey Area:** Presents the size of the actual mapping area covered by the route, precisely matching mission requirements and deliverable scope.

With the estimated information updated in real time, resource consumption, time cost, and operation scale can be fully assessed before the mission starts, thereby optimizing the planning strategy and improving mission controllability and efficiency.

> **Note:** Actual operations may deviate from the estimates. In actual operations, it is recommended to add a 10%–20% margin on top of the estimate to handle unexpected situations.

Flight Controller Camera Status Information

- **FOV:** Indicates the current field-of-view angle of the camera relative to the aircraft nose.
- **Capture Points:** Displays the shutter trigger positions in the route.
- **Clear Markers:** Clears the generated capture point markers.



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7.1.3 Mapping Route

A route in which the aircraft's camera points vertically downward at the ground. The imagery can be used directly to produce orthomosaic maps, faithfully reflecting the planimetric positions and shapes of ground features. Suitable for large-scale map surveying, land planning, and similar scenarios.

Route Planning

Tap the route planning button and select to create a mapping route to plan a mapping route.



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Mapping Route Settings

In the Mapping Route tab, you can name this mission and configure camera selection, route altitude, speed, safe takeoff altitude, altitude mode, completion action, and more.



- **Save:** Save the currently planned route.
- **Cancel:** Cancel saving the currently planned route.
- **Clear:** Clear all waypoints in the planning interface.
- **Delete:** Delete the single waypoint highlighted in blue on the current interface; short-press a waypoint to highlight it.
- **Shape:**
  - **Custom:** The area is defined by the user's taps.
  - **Circle:** Generates a circular area with a specified number of points (no more than 300). Drag the blue dots of the preview frame or zoom the map in or out to determine the radius of the circular area. Tap Confirm to automatically generate the circular area.
  - **Rectangle:** Generates a rectangular area with 4 waypoints. Drag the blue dots of the preview frame or zoom the map in or out to determine the length and width of the rectangular area. Tap Confirm to automatically generate the rectangular area.

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- **Route Direction:** Arrows on the connecting lines between two waypoints indicate the route direction.
- **Route Name:** Enter the desired name in the input box and save the route; the route can then be viewed in the route library.
- **Select Camera:** Select different cameras for mapping route operations, including the wide-angle/thermal infrared lenses of the ZT30 camera, the wide-angle/thermal infrared lenses of the ZT6 camera, and the A8mini camera. Third-party cameras can also be added manually; their parameters are provided by the third-party manufacturer.
- **GSD:** GSD refers to the actual ground distance corresponding to a single pixel in the image. After a camera is selected, the GSD value is displayed.
- **Terrain-Following Flight:** After the terrain-following flight switch is turned on, the aircraft uses the downloaded terrain data to automatically adjust its flight altitude according to the set terrain-following height.

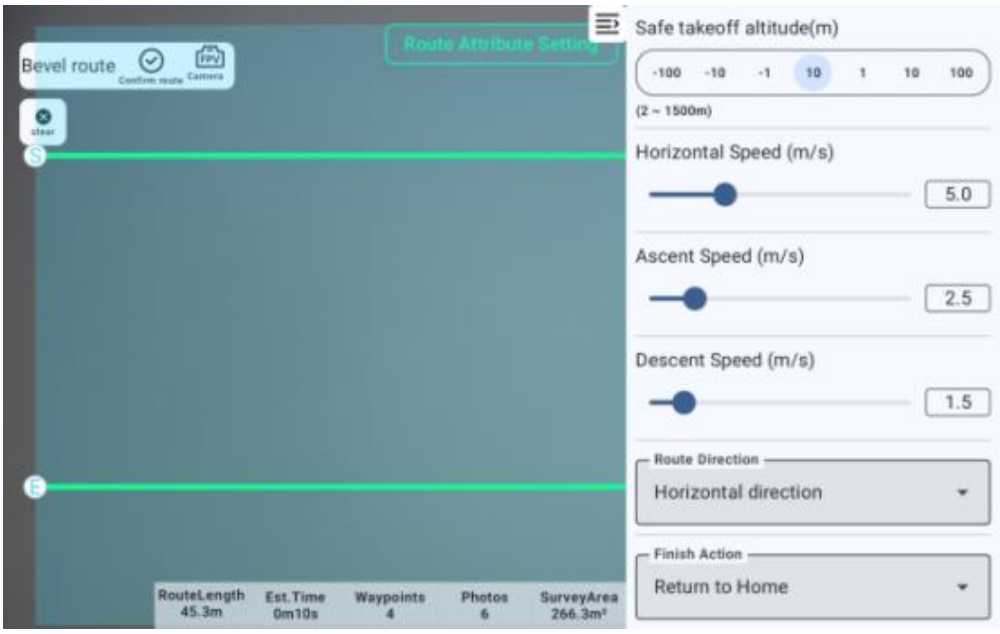
> **Note:** The online terrain-following altitude data comes from open-source databases and may deviate from the actual terrain. Please ensure a safe flight environment.

- **Optional Local Terrain Files:** When online terrain data cannot be loaded or the online terrain data does not meet current needs, the user can select one or more local terrain files. Terrain files must be in ".TIF" format.
- **Terrain-Following Altitude:** After the terrain-following flight function is enabled, this altitude value determines the relative distance between the aircraft and the terrain during flight.
- **Altitude Mode:** Switches the altitude mode of all waypoints in the mapping route.
  - **Altitude above Sea Level (WGS84):** The altitude of the aircraft relative to mean sea level (MSL, Mean Sea Level).
  - **Altitude Relative to Takeoff Point:** The altitude of the aircraft relative to the takeoff point or the ground reference plane.
- **Route Speed:** Sets the horizontal speed when flying the mapping route.
- **Route Altitude:** Sets the flight altitude for continuing the mission after the safe takeoff altitude is reached during mapping route execution.
- **Height of the Photographed Surface Relative to the Takeoff Point:** The vertical difference between the height of the photographed object and the aircraft's takeoff point

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height. Adjusting this parameter appropriately optimizes the modeling results; if the height of the photographed object is unknown, keep the default value.

- **Distance of the Route Relative to the Photographed Surface:** The vertical distance between the aircraft's flight route and the surface of the photographed object.
- **Main Route Angle:** Adjusting the main route angle allows it to match the environment and mission requirements, balancing efficiency and safety while ensuring data quality.



- **Safe Takeoff Altitude:** Sets the altitude the aircraft must reach during takeoff in a route mission; the aircraft proceeds to the next point only after reaching this altitude.
- **Heading Lock:** Locking the aircraft nose heading reduces variables (attitude, angle, and lighting) and ensures the uniformity and stability of the mapping data.

> **Note:** The heading lock function must be used together with the waypoint turn function, which effectively avoids frequent heading changes when switching lines on short edges.

- **Completion Action:** Sets the behavior after the mapping route mission is completed.
  - **Return-to-Home:** The aircraft returns to the Home point from the position of the last waypoint of the mission.
  - **Land:** The aircraft lands in place at the position of the last waypoint of the mission.
  - **Hover:** The aircraft hovers at the position of the last waypoint of the mission.

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- **Advanced Settings:** Configure forward overlap ratio, side overlap ratio, expansion margin, and capture mode.
  - **Forward Overlap Ratio:** The percentage of the overlapping area of two adjacent images on the same flight line relative to the length of a single image.
  - **Side Overlap Ratio:** The percentage of the overlapping area between images of two adjacent flight lines relative to the width of a single image.
- **Margin:** In a mapping mission, the expansion margin (also called the buffer or expansion area) refers to the additional flight and data acquisition area planned outside the target survey area.
- **Capture Mode:**
  - **Equal-Distance Interval Capture:** Ensures data uniformity based on a “spatial reference”; suitable for high-precision, complex-scene mapping.
  - **Equal-Time Interval Capture:** Relies on a “time reference”; only suitable for simple scenes with stable speed.

> **Note:** In actual operations, high-precision mapping almost always uses the equal-distance interval mode to avoid the impact of speed fluctuations on data quality.

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7.1.4 Oblique Photography Route

An oblique photography route captures imagery from multiple angles (vertical + oblique), comprehensively recording details such as building facades. It is mainly used for high-precision 3D modeling to reconstruct the three-dimensional form of objects.

Route Planning

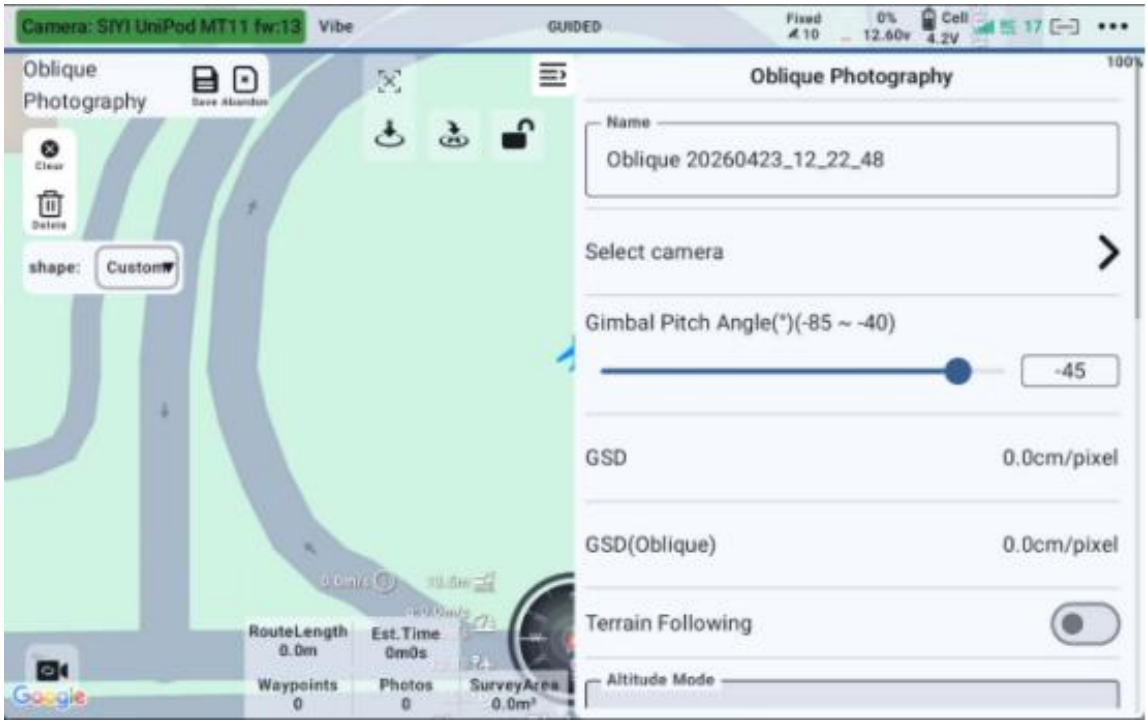
Tap the route planning button and choose to create an oblique photography route to start planning.



Oblique Photography Route Settings

In the Oblique Photography Route tab, you can name the current mission and configure camera selection, resolution display, route altitude, speed, safe takeoff altitude, altitude mode, completion action, advanced settings, and more.

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- **Save:** Save the currently planned route.
- **Cancel:** Cancel saving the currently planned route.
- **Clear:** Clear all waypoints on the planning interface.
- **Delete:** Delete the single waypoint highlighted in blue on the current interface; tap a waypoint briefly to highlight it.
- **Shape:**
  - Custom: An area freely defined by user taps.
  - Circle: Generates a circular area with a specified number of points (no more than 300). Drag the blue dot on the preview frame or zoom the map in/out to set the radius of the circular area; tap Confirm to automatically generate the circular area.
  - Rectangle: Generates a rectangular area with 4 waypoints. Drag the blue dot on the preview frame or zoom the map in/out to set the length and width of the rectangular area; tap Confirm to automatically generate the rectangular area.
- **Route Direction:** The arrows on the line connecting two waypoints indicate the route direction.
- **Route Name:** Enter the desired name in the input field and save the route; the route can then be viewed in the route library.

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- **Camera Selection:** Select a camera for the oblique photography route mission. Options include the wide-angle/thermal lenses of the ZT30 camera, the wide-angle/thermal lenses of the ZT6 camera, and the A8mini camera.
- **Gimbal Pitch Angle:** Adjust this option to control the pitch angle of the camera lens in non-nadir (oblique) coverage areas.
- **GSD:** GSD is the actual ground distance corresponding to a single pixel in the imagery. Once a camera is selected, the GSD value is displayed.
- **GSD (Oblique):** GSD (Oblique) is the actual ground distance corresponding to a single pixel in the imagery within oblique photography areas. Once a camera is selected, the GSD value is displayed.
- **Terrain-Following Flight:** When the terrain-following switch is enabled, the aircraft uses the downloaded terrain data and automatically adjusts its flight altitude according to the configured terrain-following height.

> **Note:** Online terrain-following height data comes from open-source databases and may deviate from the actual terrain. Ensure the flight environment is safe.

- **Optional Local Terrain File:** When online terrain data cannot be loaded or does not meet current requirements, you can select one or more local terrain files. Terrain files must be in ".TIF" format.
- **Terrain-Following Height:** When terrain-following flight is enabled, set this value to determine the relative distance between the aircraft and the terrain during flight.
- **Altitude Mode:** Switches the altitude mode of all waypoints in the oblique photography route.
  - Altitude (WGS84): The altitude of the aircraft relative to mean sea level (MSL).
  - Altitude Relative to Takeoff Point: The altitude of the aircraft relative to the takeoff point or the ground reference plane.
- **Subject Plane Height Relative to Takeoff Point:** The vertical difference between the height of the subject and the takeoff point of the aircraft. Adjusting this parameter appropriately can optimize the modeling result. If the subject height is unknown, keep the default value.
- **Aircraft-to-Subject Distance:** The vertical distance between the flight route of the aircraft and the surface of the subject.

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- **Route Speed:** Sets the horizontal flight speed in the nadir coverage area of the oblique photography route.
- **Route Speed (Oblique):** Sets the horizontal flight speed in the oblique coverage area of the oblique photography route.
- **Route Altitude:** Sets the flight altitude at which the mission continues after the aircraft reaches the safe takeoff altitude during an oblique photography route.
- **Main Route Angle:** Adjusting the main route angle helps match the environment and mission requirements, balancing efficiency and safety while ensuring data quality.
- **Safe Takeoff Altitude:** Sets the altitude the aircraft must reach after takeoff in a route mission before proceeding to the next point.
- **Heading Lock:** Locking the nose heading reduces variables (attitude, angle, lighting) to ensure the consistency and stability of survey data.
- **Completion Action:** Sets the behavior after the oblique photography route mission is completed.
  - Return-to-Home: Return to the Home point from the position of the last waypoint of the mission.
  - Land: Land in place at the position of the last waypoint of the mission.
  - Hover: Hover at the position of the last waypoint of the mission.



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- **Advanced Settings:** Set the forward and side overlap ratios and the expansion margin.
  - Forward Overlap Ratio: In the nadir coverage area, the percentage of the overlapping area between two adjacent images on the same route relative to the length of a single image.
  - Side Overlap Ratio: In the nadir coverage area, the percentage of the overlapping area between images on two adjacent routes relative to the width of a single image.
  - Forward Overlap Ratio (Oblique): In oblique coverage areas, the percentage of the overlapping area between two adjacent images on the same route relative to the length of a single image.
  - Side Overlap Ratio (Oblique): In oblique coverage areas, the percentage of the overlapping area between images on two adjacent routes relative to the width of a single image.
- **Margin:** In an oblique photography mission, the expansion margin (also called the buffer or extended area) is the additional flight and data acquisition area planned beyond the boundary of the target survey area.
- **Capture Mode:**
  - Equal-Distance Interval Capture: Ensures data uniformity on a spatial basis; suitable for high-precision mapping of complex scenes.
  - Equal-Time Interval Capture: Relies on a time basis; suitable only for simple scenes with stable speed.

> **Note:** In practice, high-precision mapping almost always uses the equal-distance interval mode to avoid the impact of speed fluctuations on data quality.

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7.1.5 Corridor Route

A corridor route consists of parallel routes distributed in a strip pattern. It is suitable for surveying narrow, elongated areas (such as roads and river channels). Multiple corridors are stitched together to cover the survey area, and the corridor spacing must be controlled to ensure side overlap.

Route Planning

Tap the route planning button and choose to create a corridor route to start planning.



Corridor Route Settings

In the Corridor Route tab, you can name the current mission and configure camera selection, resolution display, route altitude, speed, safe takeoff altitude, altitude mode, completion action, advanced settings, and more.

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- **Save:** Save the currently planned route.
- **Cancel:** Cancel saving the currently planned route.
- **Clear:** Clear all waypoints on the planning interface.
- **Delete:** Delete the single waypoint highlighted in blue on the current interface; tap a waypoint briefly to highlight it.
- **Route Direction:** The arrows on the line connecting two waypoints indicate the route direction.
- **Route Name:** Enter the desired name in the input field and save the route; the route can then be viewed in the route library.
- **Camera Selection:** Select a camera for the corridor route mission. Options include the wide-angle/thermal lenses of the ZT30 camera, the wide-angle/thermal lenses of the ZT6 camera, and the A8mini camera.
- **Single Route:** When this mode is enabled, the aircraft flies only the centerline route and does not expand the flight to either side of the centerline.

> **Note:** When Single Route mode is enabled, the system limits the minimum flight altitude of the aircraft during operation based on the selected camera parameters and the preset overlap ratio requirements.

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- **GSD:** GSD is the actual ground distance corresponding to a single pixel in the imagery. Once a camera is selected, the GSD value is displayed.
- **Terrain-Following Flight:** When the terrain-following switch is enabled, the aircraft uses the downloaded terrain data and automatically adjusts its flight altitude according to the configured terrain-following height.

> **Note:** Online terrain-following height data comes from open-source databases and may deviate from the actual terrain. Ensure the flight environment is safe.

- **Optional Local Terrain File:** When online terrain data cannot be loaded or does not meet current requirements, you can select one or more local terrain files. Terrain files must be in ".TIF" format.
- **Terrain-Following Height:** When terrain-following flight is enabled, set this value to determine the relative distance between the aircraft and the terrain during flight.
- **Adjust Expansion Distance Simultaneously:** Synchronously sets the expansion width on both sides of the route centerline for precise coverage of the strip-shaped survey area. When this option is disabled, the expansion widths of the left and right sides can be set individually.
- **Include Centerline:** When the centerline switch is enabled, the generated corridor path incorporates the preset centerline into the flight route, meaning the aircraft flies not only the expanded areas on both sides of the centerline but also directly along the centerline itself.
- **Split Distance:** Sets the length at which the entire corridor is automatically split into multiple sub-sections. With flight safety ensured, set the split distance and upload the area to be surveyed to make full use of battery power and improve operational efficiency.
- **Heading Lock:** Locking the nose heading reduces variables (attitude, angle, lighting) to ensure the consistency and stability of survey data.
- **Altitude Mode:** Switches the altitude mode of all waypoints in the corridor route.
  - Altitude (WGS84): The altitude of the aircraft relative to mean sea level (MSL).
  - Altitude Relative to Takeoff Point: The altitude of the aircraft relative to the takeoff point or the ground reference plane.
- **Route Speed:** Sets the horizontal flight speed during corridor route flight.

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- **Route Altitude:** Sets the flight altitude at which the mission continues after the aircraft reaches the safe takeoff altitude during a corridor route.
- **Subject Plane Height Relative to Takeoff Point:** The vertical difference between the height of the subject and the takeoff point of the aircraft. Adjusting this parameter appropriately can optimize the modeling result. If the subject height is unknown, keep the default value.
- **Aircraft-to-Subject Distance:** The vertical distance between the flight route of the aircraft and the surface of the subject.



- **Safe Takeoff Altitude:** Sets the altitude the aircraft must reach after takeoff in a route mission before proceeding to the next point.
- **Completion Action:** Sets the behavior after the corridor route mission is completed.
  - Return-to-Home: Return to the Home point from the position of the last waypoint of the mission.
  - Land: Land in place at the position of the last waypoint of the mission.
  - Hover: Hover at the position of the last waypoint of the mission.
- **Capture Mode:**
  - Equal-Distance Interval Capture: Ensures data uniformity on a spatial basis; suitable for high-precision mapping of complex scenes.

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– Equal-Time Interval Capture: Relies on a time basis; suitable only for simple scenes with stable speed.

> **Note:** In practice, high-precision mapping almost always uses the equal-distance interval mode to avoid the impact of speed fluctuations on data quality.

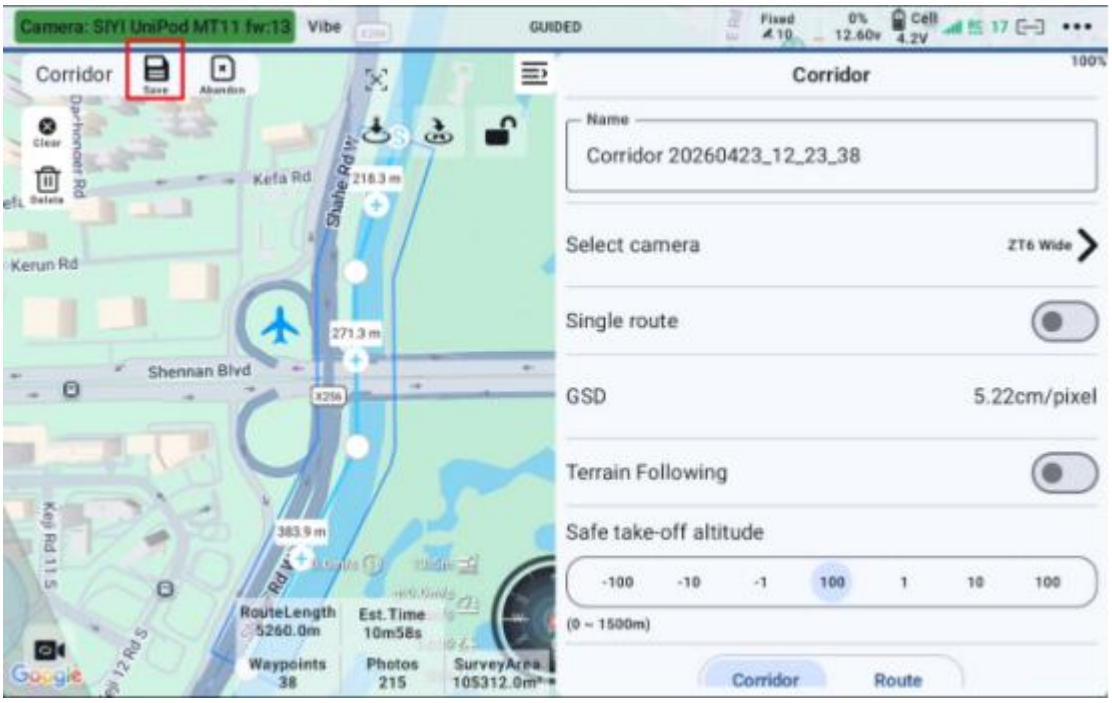
- **Advanced Settings:** Set the forward and side overlap ratios.
  – Forward Overlap Ratio: The percentage of the overlapping area between two adjacent images on the same route relative to the length of a single image.
  – Side Overlap Ratio: The percentage of the overlapping area between images on two adjacent routes relative to the width of a single image.



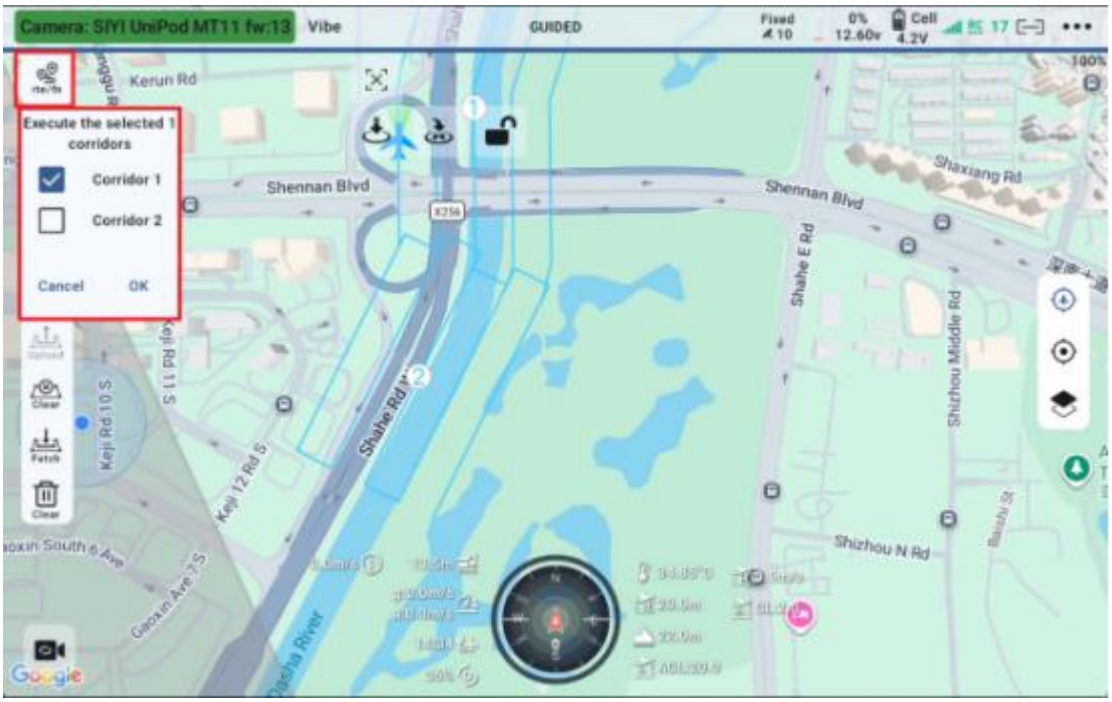
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Mission Execution

Step 1: After planning the route, tap the Save button.

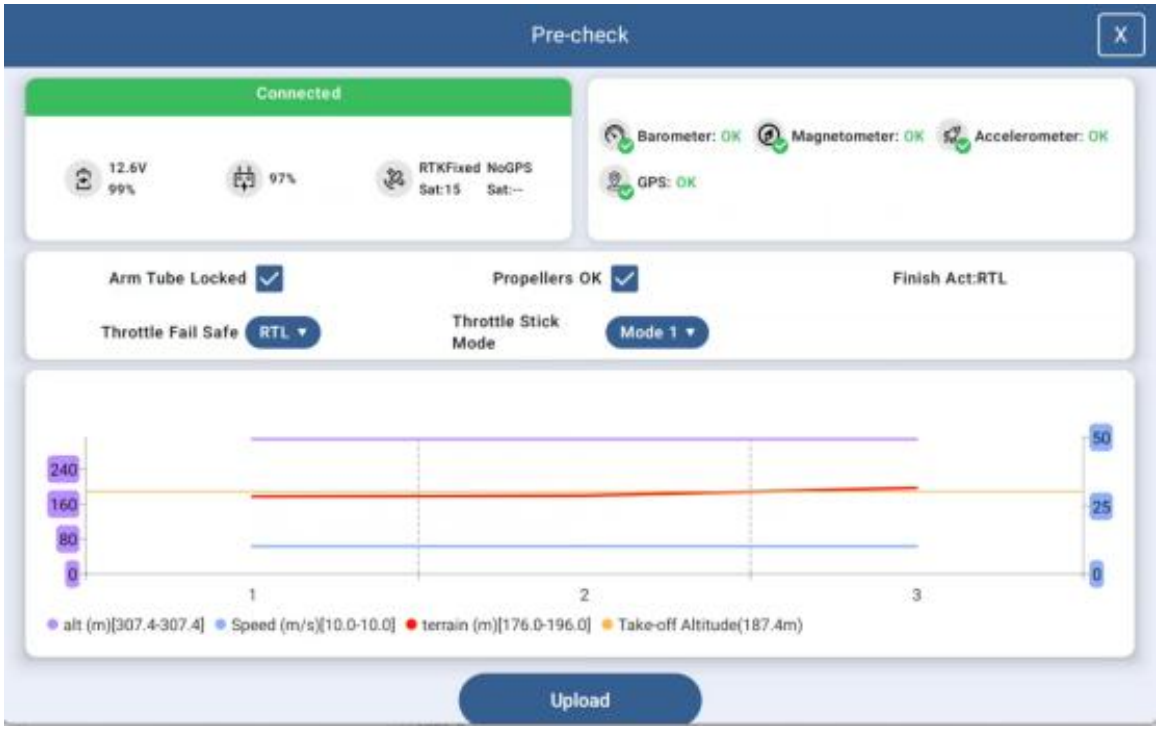


Step 2: Tap the Start button, select the area to be flown, tap Confirm, and upload the route.



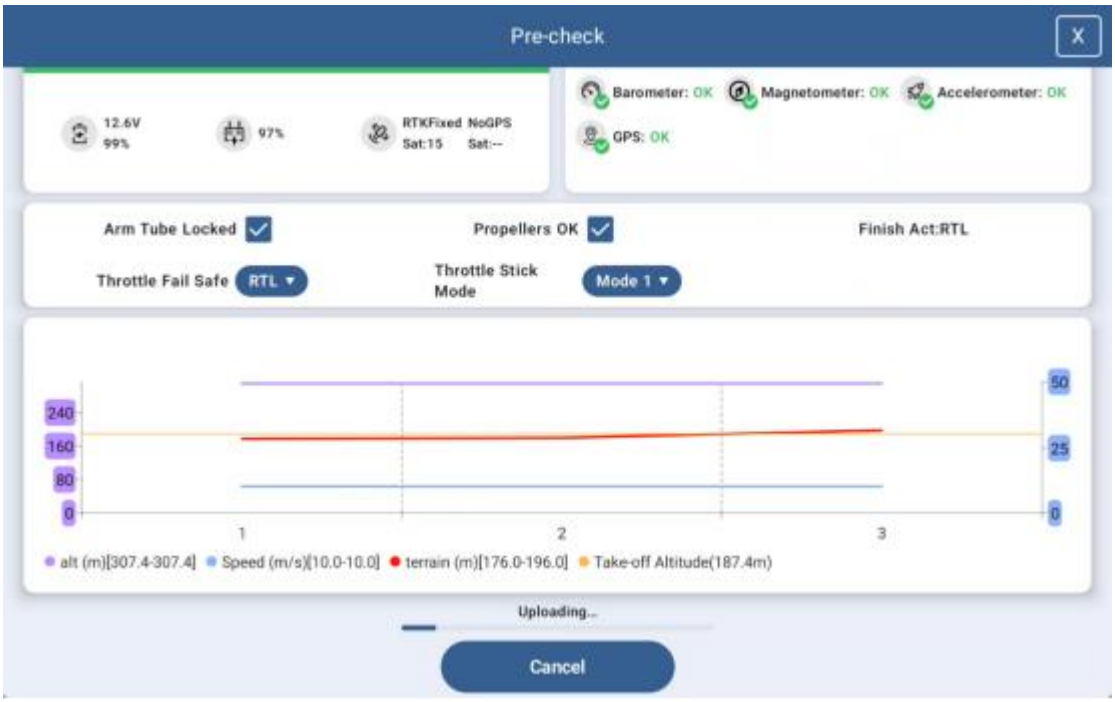
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Step 3: After tapping Start, the pre-flight check page appears. The page includes a route information check, where you can preview route speed, altitude, terrain height, takeoff point elevation, and route completion status; aircraft status, including the health status of each sensor, aircraft battery level, positioning status, and failsafe settings; and remote controller status, including aircraft connection status and remote controller battery level. Confirm the pre-flight check by verifying that the arms are locked and the propellers are normal and checking the corresponding boxes, then tap Upload Route.

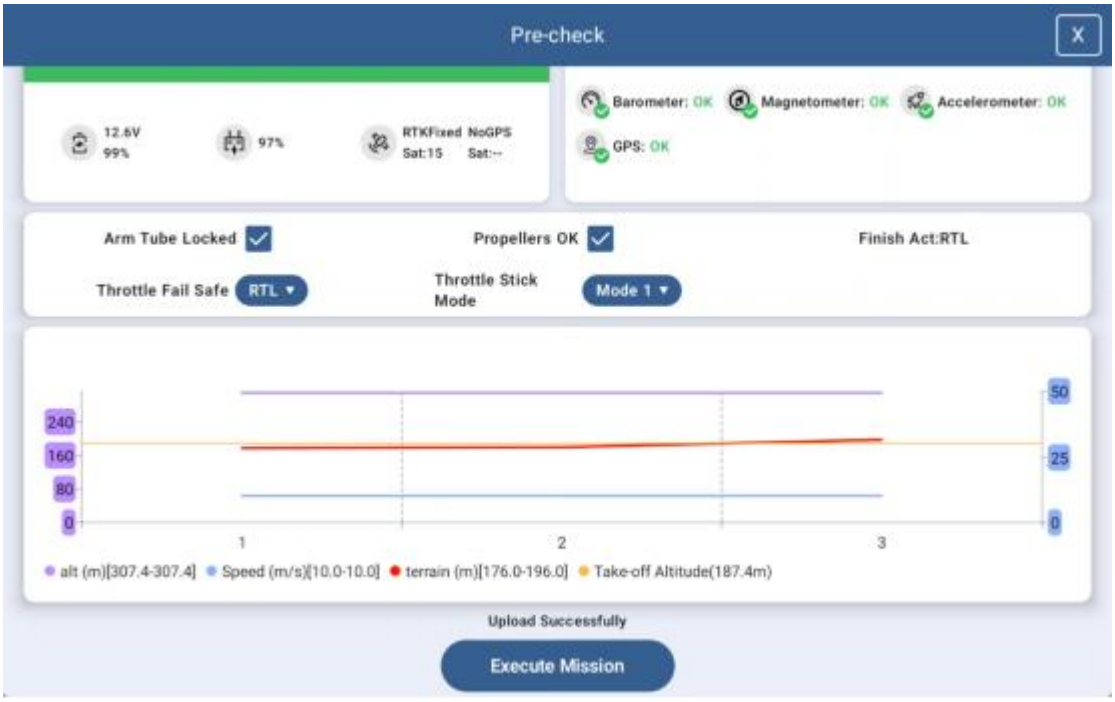


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Step 4: Wait for the route upload to complete.



Step 5: Arm the aircraft and tap Execute Mission to start the corridor route mission.



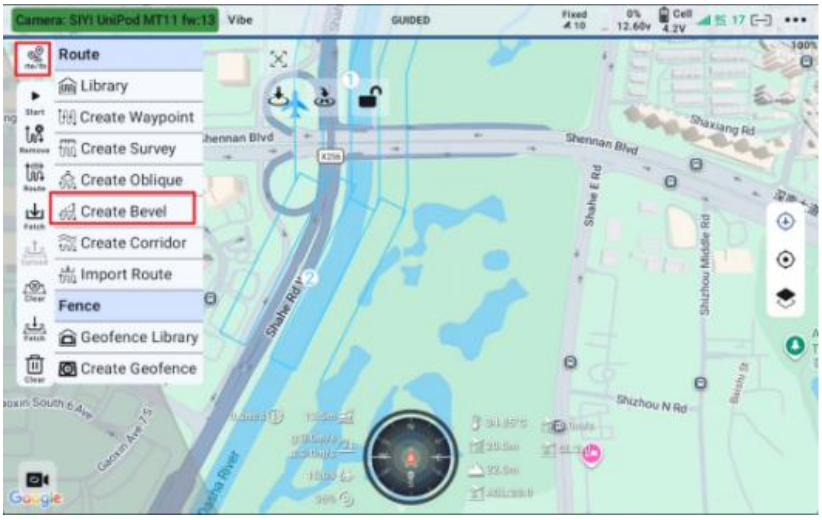
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7.1.6 Slope Route

A slope route is designed for the surfaces of objects (such as side walls and slope faces). The flight path maintains an appropriate distance from the slope to ensure clear imaging of slope details. It is commonly used for slope monitoring and facade mapping. The current version supports facade routes only (V2.0.3).

Route Planning

1. Tap the route planning button and select “Create Slope Route” to start the slope route planning process.



2. Once a blank pop-up window appears in the lower-left corner of the interface, you can begin route planning.



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> **Note:** Slope route planning is available only when the system has successfully acquired the live camera feed and the nose direction is set to “Keep Current Heading”.

1. Arm the aircraft following the standard procedure, manually fly it to the preset altitude, and tap the capture button. The small window in the lower-right corner of the interface will then update to the captured view. You can then land the aircraft and focus on subsequent route planning.
2. The Aircraft-to-Subject Distance data must be acquired before you can further plan the survey area and configure the parameters.



> **Note:** If a SIYI series camera with laser ranging is mounted, the system automatically acquires this distance data. If a camera without this capability is used, you need to manually confirm and adjust the distance between the aircraft and the subject.

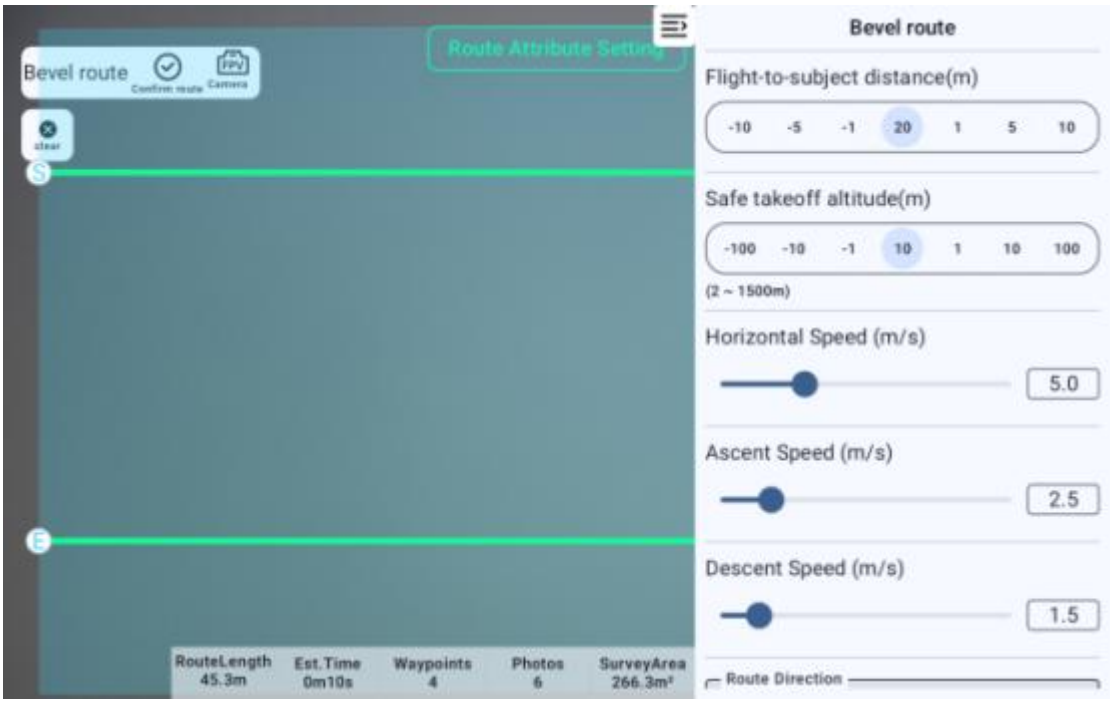
Slope Route Settings

In the Slope Route tab, you can configure the speeds, safe takeoff altitude, route direction, completion action, and other settings for the current mission.

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- **Aircraft-to-Subject Distance:** The straight-line distance between the aircraft and the slope subject when the aircraft captures the base map for route planning.

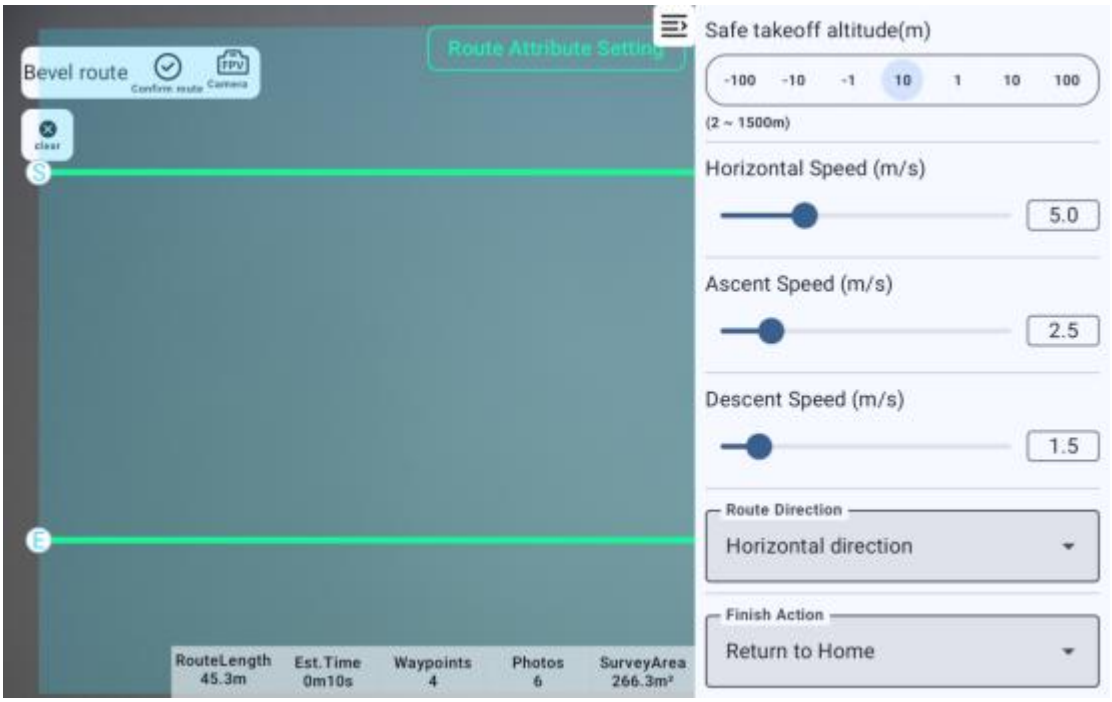


- **Subject Plane Distance from Actual Object:** The distance between the subject plane imaged by the camera and the actual subject.

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- **Aircraft-to-Subject Distance:** When executing a slope photography mission, the vertical distance between the plane on which the flight route lies and the subject slope.
- **Safe Takeoff Altitude:** Sets the altitude the aircraft must reach after takeoff in a route mission before proceeding to the next point.
- **Horizontal, Ascent, and Descent Speed:** Sets the horizontal, ascent, and descent speeds during slope route flight.
- **Route Direction:**
  - Horizontal Direction: Parallel to the extension direction of the slope; suitable for large, elongated slopes with high efficiency.
  - Vertical Direction: Perpendicular to the extension direction of the slope; suitable for narrow slopes and complex gradients, with better detail capture.

  In practice, the two are often combined to form a crosshatch route, ensuring complete coverage and data accuracy.

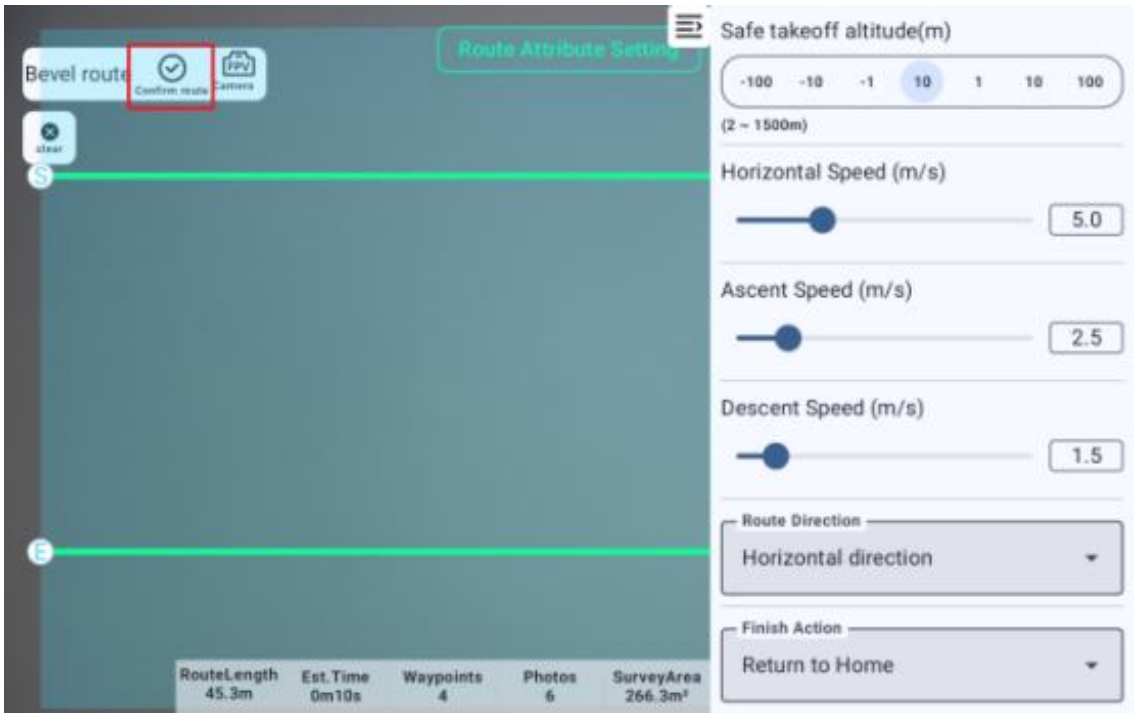


- **Completion Action:** Sets the behavior after the slope route mission is completed.
  - Return-to-Home: Return to the Home point from the position of the last waypoint of the mission.
  - Land: Land in place at the position of the last waypoint of the mission.

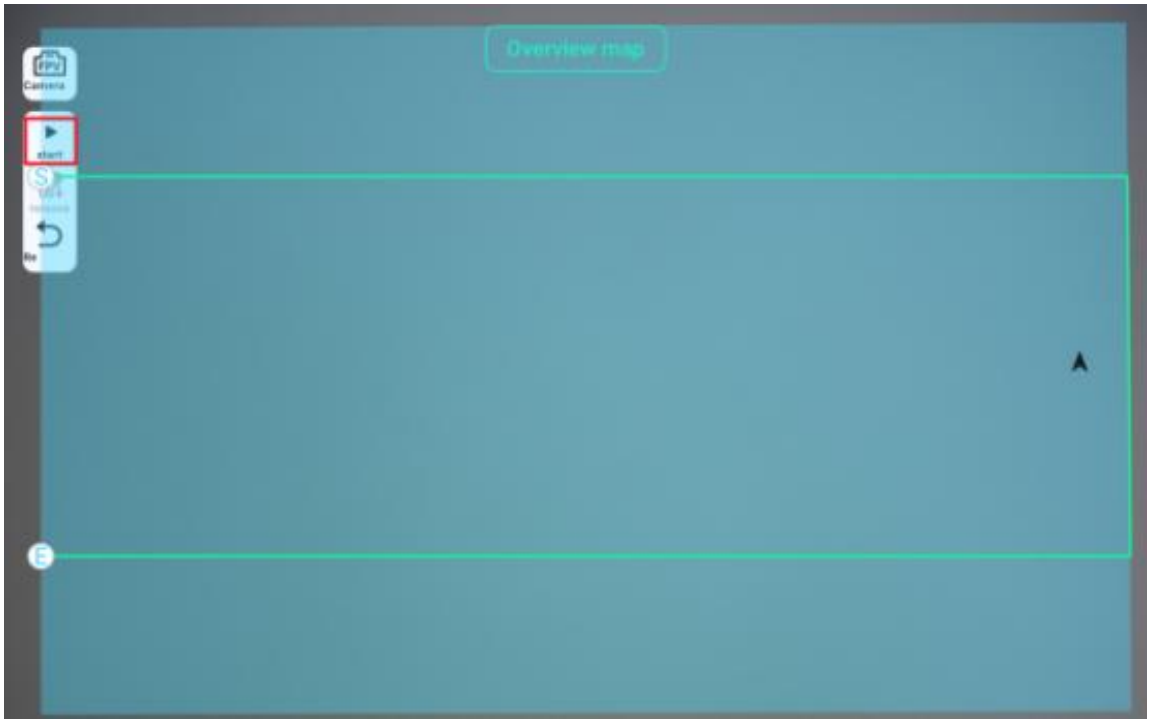
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Mission Execution

Step 1: After planning the route, tap the Confirm Survey Area button.

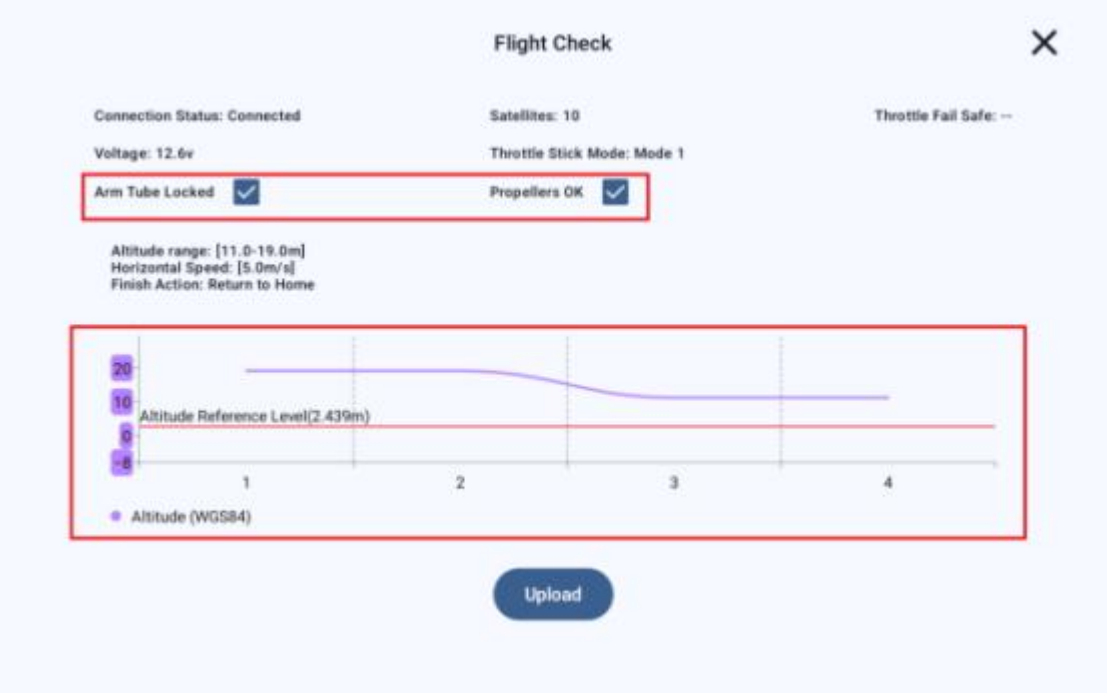


Step 2: Tap the Start button to upload the route.



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Step 3: Confirm the pre-flight check list, then tap Upload Route.



Step 4: Wait for the route upload to complete, then tap Execute Mission to start the slope route mission.



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- **Camera View:** Tap the camera view button in the upper-left corner to view the live feed from the camera, allowing the operator to directly monitor the current shooting perspective and scene details and adjust the shooting strategy in a timely manner.

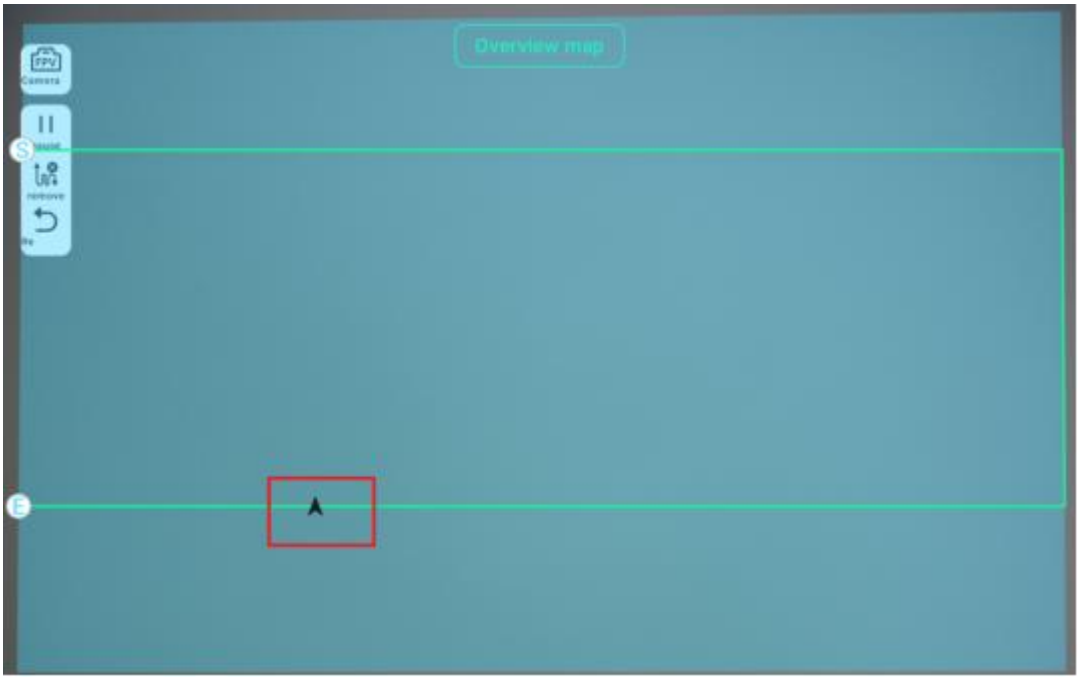


- **Replan:** Tap this button to re-adjust the survey area on the base map for route planning and flexibly modify route parameters (such as flight altitude, speed, and overlap ratio) to easily adapt to changing mission requirements.

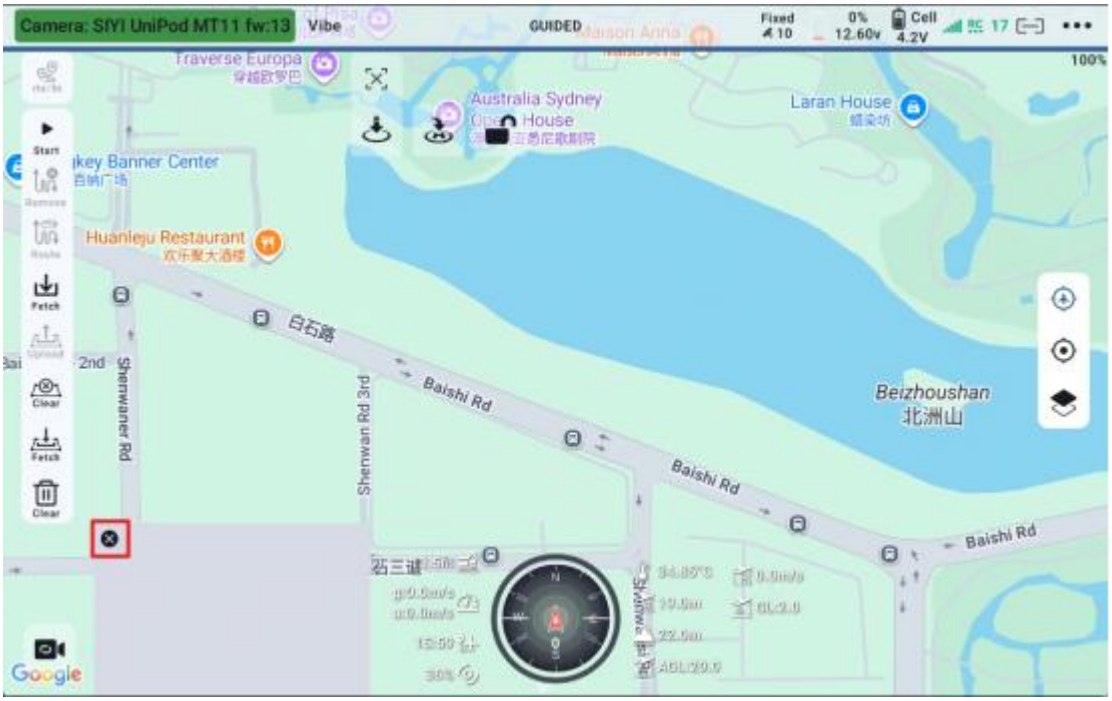


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- **Aircraft Route Position:** In both overview full-screen mode and small-window mode, the relative position of the aircraft along the route is clearly displayed, helping you track mission execution progress in real time and accurately estimate the remaining workload.



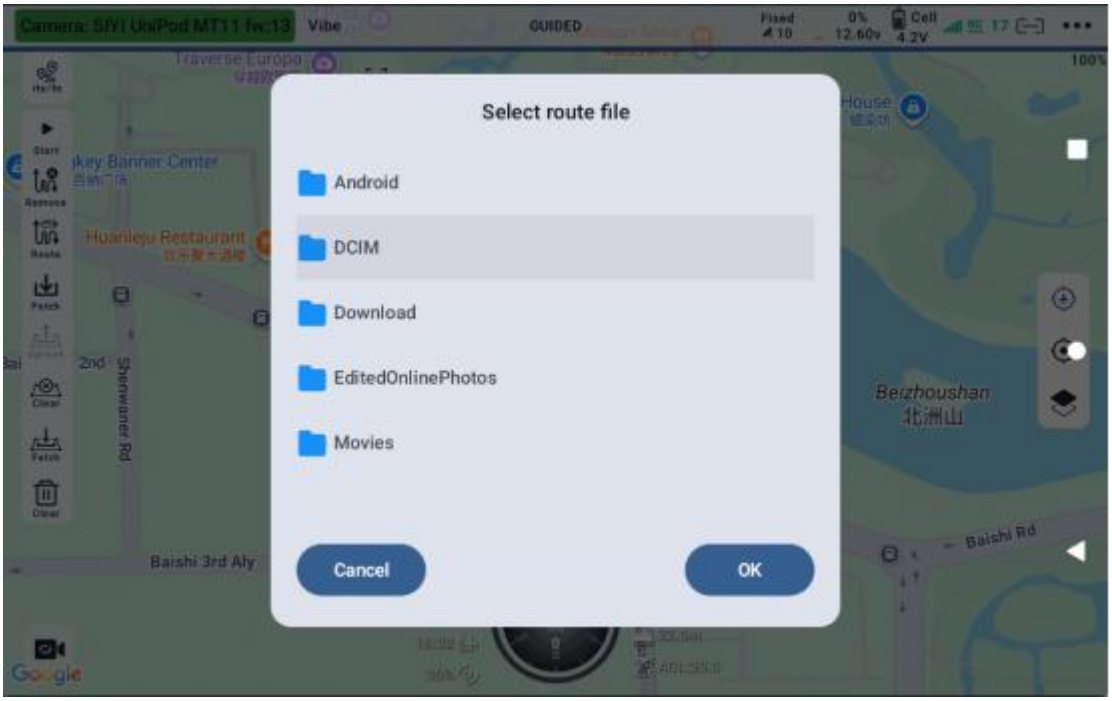
- **Exit Slope Route Mode:** Tap the button on the small-window view to exit slope route mode.

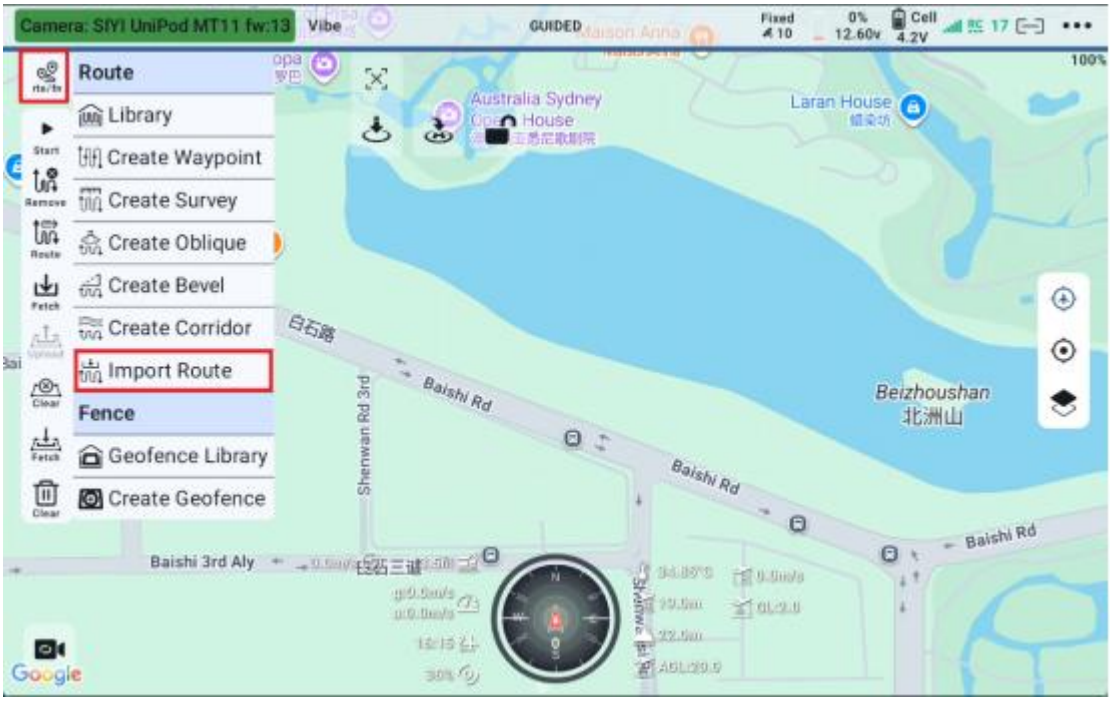


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7.1.7 Import Route

Tap the Import Route button and select a local route file in Waypoints format or a KML file to import a route.

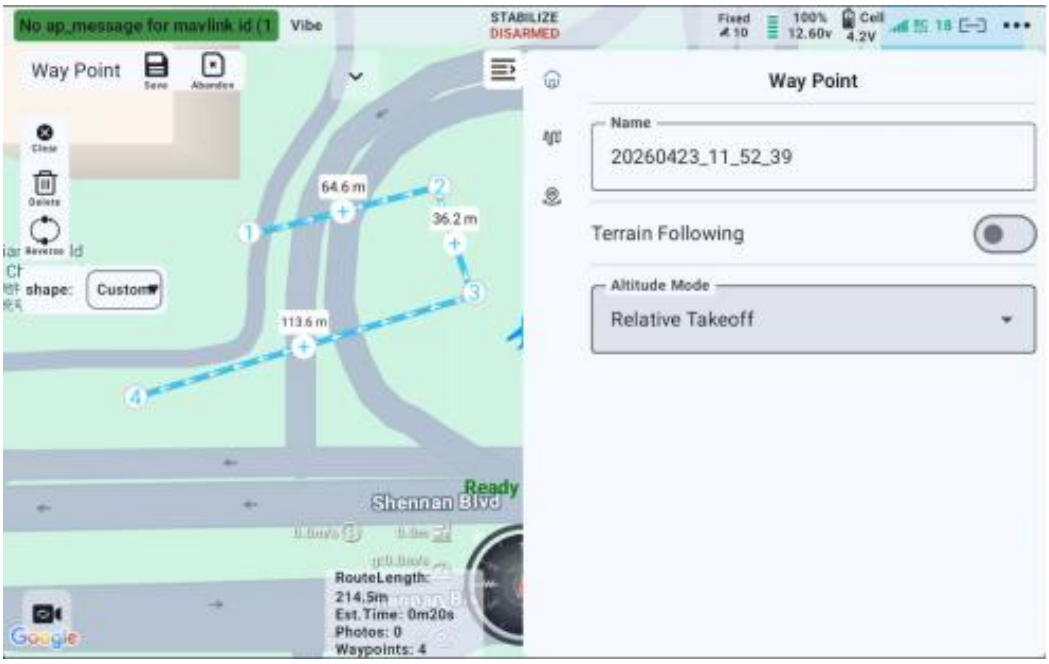




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- **Waypoints Format Import:** When a file in Waypoints format is imported, it is forcibly converted into a waypoint route.

> **Note:** After importing and before tapping Save, carefully check and configure the route parameters.



- **KML Format Import:** After selecting a KML file, a prompt box appears. Select the appropriate route type for import according to actual operational requirements.

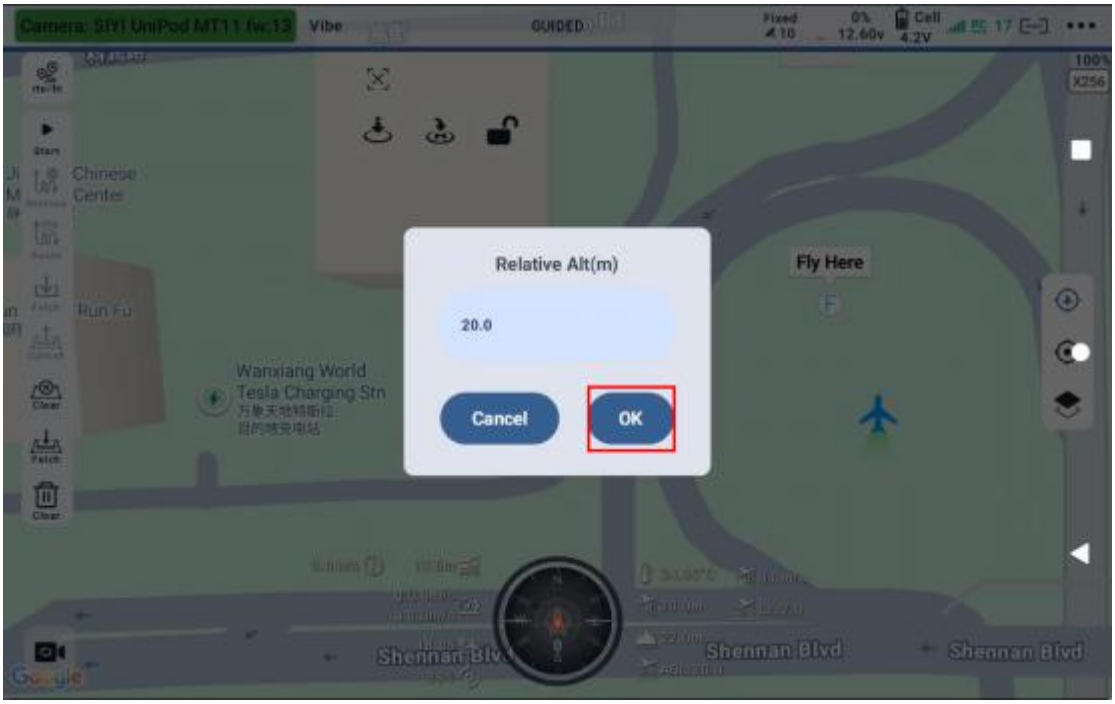


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7.1.8 Tap-to-Fly

During flight, long-press any position on the map to bring up the “Fly Here” window. Enter the specified altitude in the window and tap Confirm; the aircraft will fly from its current position to the target point.





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Chapter 8 Appendix

8.1 UniDrone E900 Technical Specifications

Parameter	Specification
Airframe material	Engineering plastics
Wheelbase	900 mm
Maximum flight speed	20 m/s
Economical cruise speed	8–12 m/s
Maximum ascent/descent speed	4 m/s; 2 m/s
Endurance*	Unloaded: 55 min; with ZT30 payload: 50 min; full load (2.1 kg payload): 43 min
Maximum payload	2.1 kg
Aircraft weight*	8.4 kg (including battery)
Maximum takeoff weight*	10.5 kg
Maximum wind resistance speed	11.5 m/s
Takeoff/landing method	Vertical takeoff and landing (VTOL)
Strobe light frequency	1.5 Hz
Power source	Battery
Pouch battery power port	Amass XT90 connector
Operating voltage	Battery: 12S (44.4 V)
Battery compartment dimensions	L205 × W144 × H78 mm
Positioning accuracy	Single point: 1.5 m; RTK: 1 cm + 1 ppm
Flight controller	N7 flight controller

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Parameter	Specification
Communication range	Refer to the link specifications
DIY customization	Flight controller, GNSS receiver, remote controller, mission payload, waterproof design, airframe shell, etc.
Ground station	UniGCS Pro
Applications	Aerial surveying and mapping, inspection, logistics, monitoring, public security, traffic, tethered operations, etc.
Motor mounting angle	3°
Forward obstacle avoidance speed	8 m/s
Forward obstacle avoidance distance	10 m

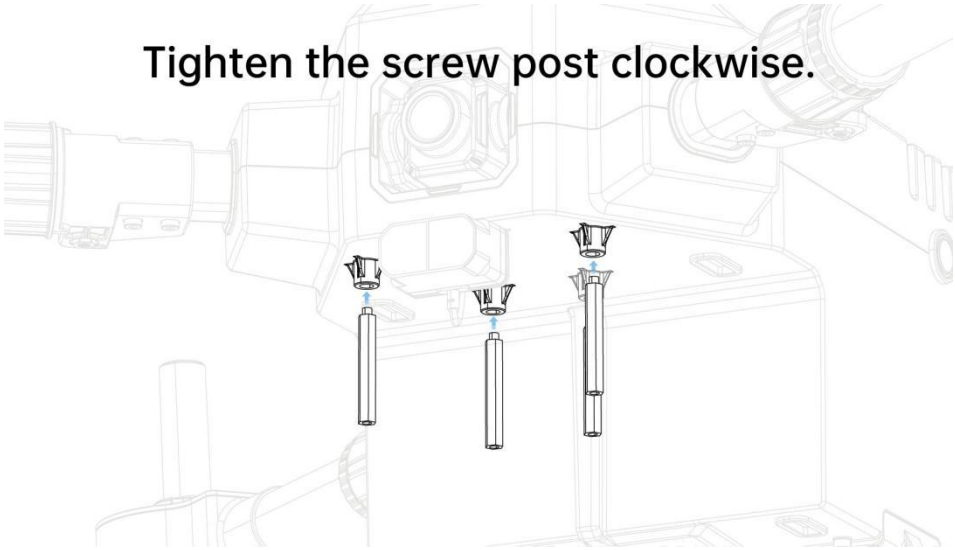
* Measured in calm wind near sea level; values may vary under different environments. Actual endurance in real-world use shall prevail.

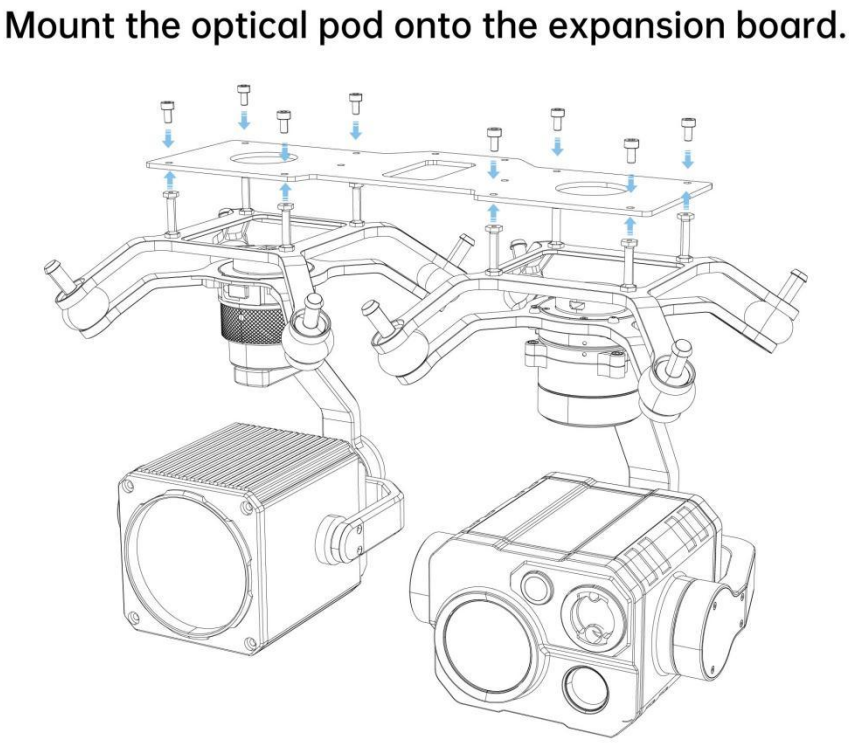
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8.2 Using the Belly-Mounted Dual-Gimbal Assembly

The belly-mounted dual-gimbal assembly is used to install gimbal cameras on the bottom of the UniDrone E900 aircraft.

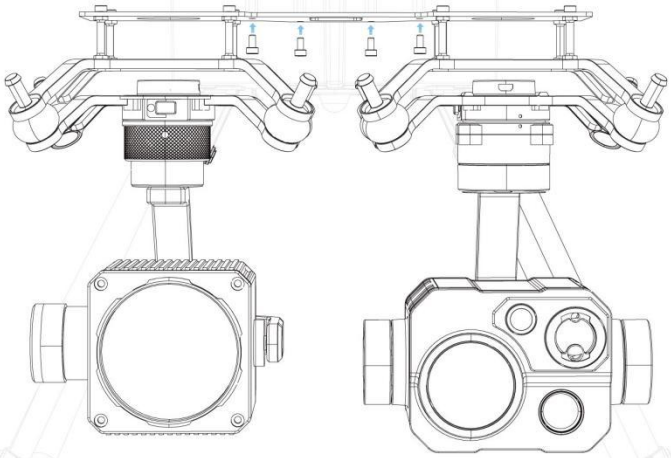
Installation Steps





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Secure the expansion board to the screw post.

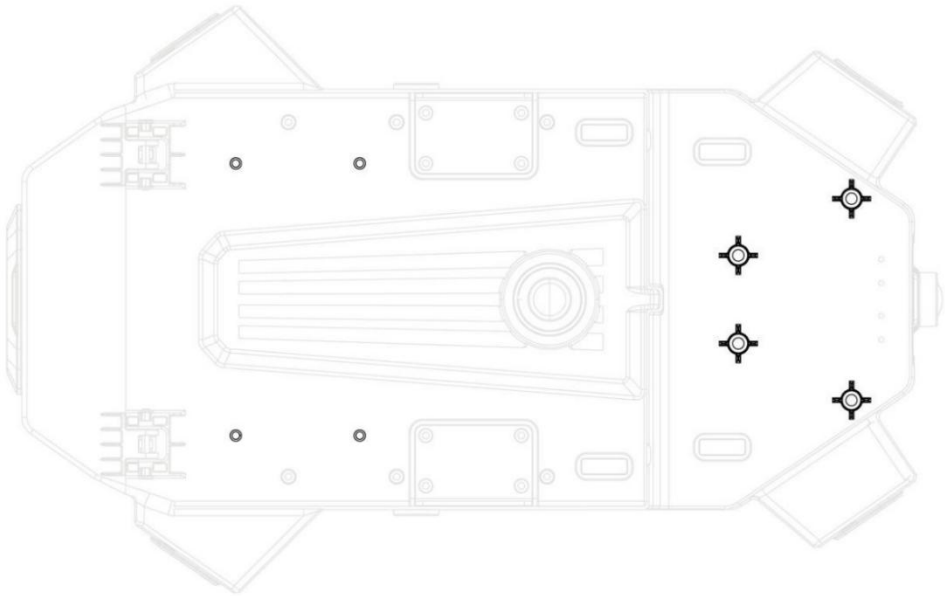


Thread the cable through the rubber plug into the fuselage.



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8.3 Expansion Screw Holes



> **Note:** All screws used here are M3 size.

8.4 UniDrone E900 Noise Test Results

Observation Point	Equivalent Sound Level dB(A)
Ground observation point (directly below)	91.23 dB(A)
Side observation point (same altitude plane)	87.80 dB(A)
Flying at 1 m/s, ground observation point (directly below)	90.90 dB(A)
Flying at 1 m/s, side observation point (same altitude plane)	87.42 dB(A)

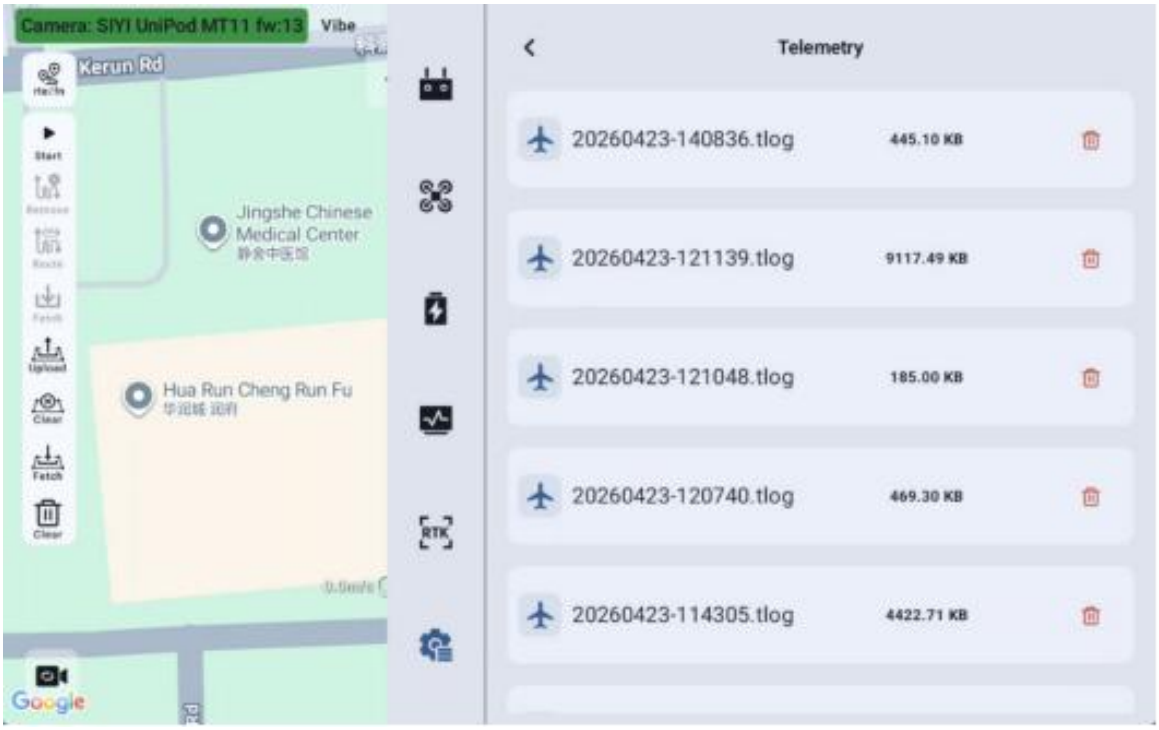
> **Note:** The noise test was conducted outdoors on a concrete surface.

8.5 UniDrone E900 Flight Data

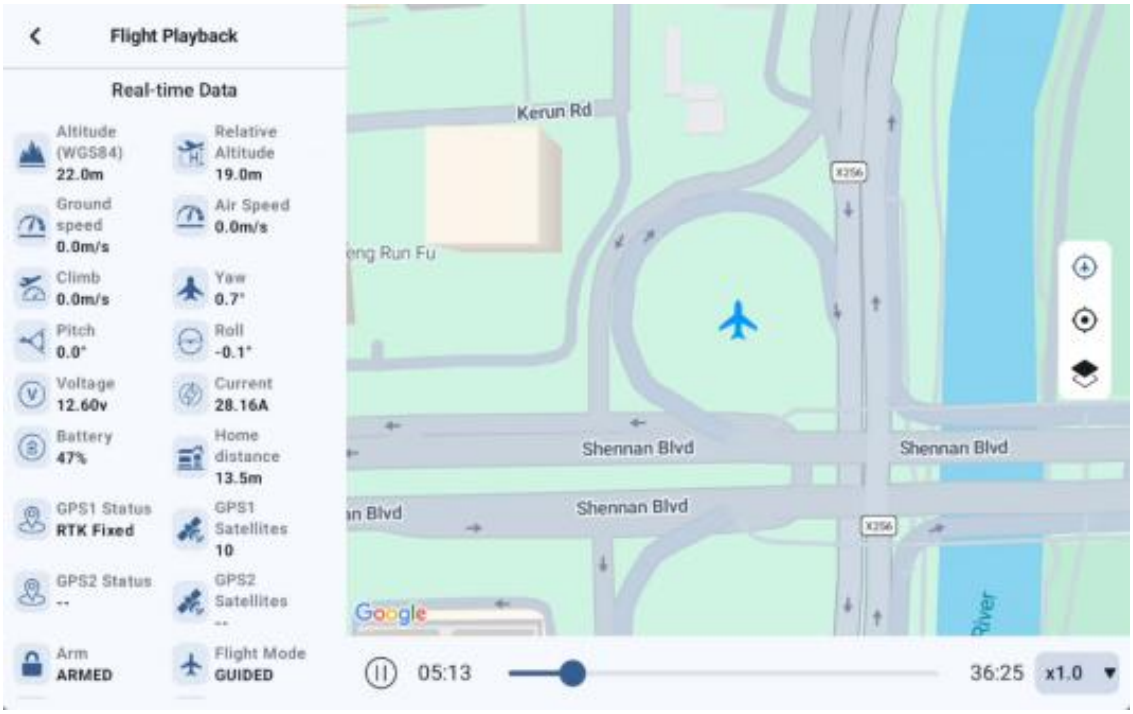
Telemetry Logs

The software automatically starts recording telemetry data when it is opened. The saved telemetry data can be used for flight status tracing, troubleshooting, and performance analysis.

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Click any telemetry log file to view it. The data on the left shows the aircraft's real-time data; the right side contains the buttons for locating the aircraft, locating the remote controller, and switching map types. The playback speed button is located in the lower-right corner. Drag the progress bar to view data at different points in time.

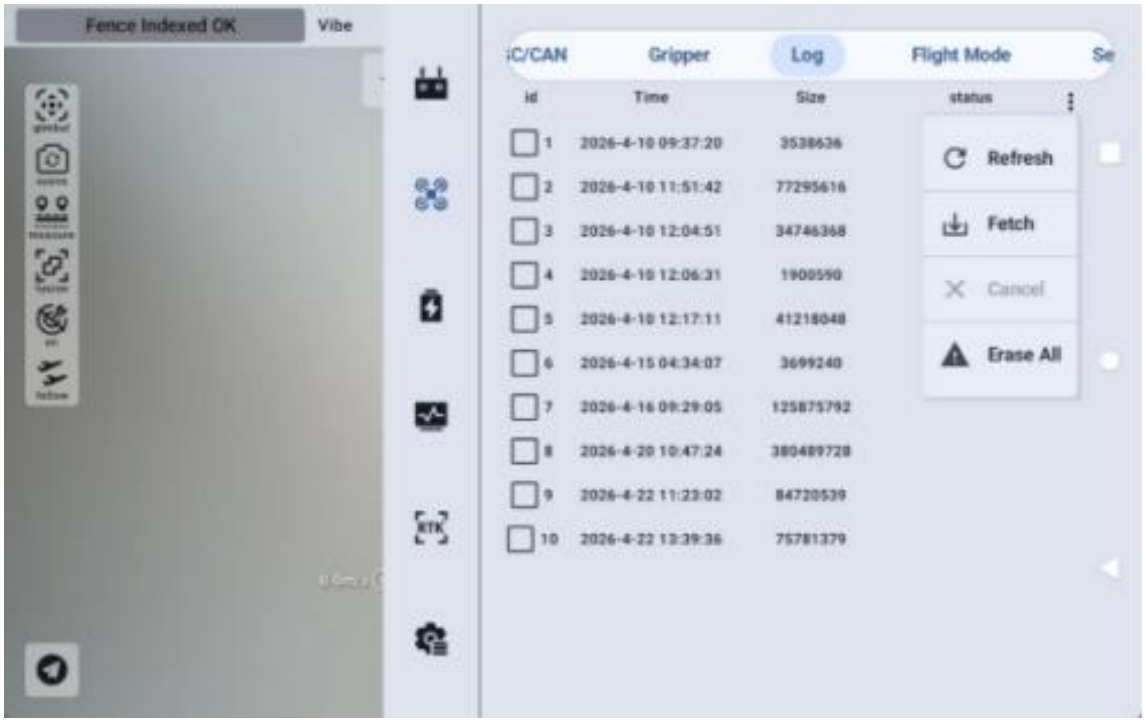


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Aircraft Logs

Log Download

This page is mainly used for flight controller log management, including viewing, downloading, and maintenance.



Log list:

- **id**: Log number
- **Time**: The specific date and time when the log was generated
- **Size**: Storage size of the log file
- **Status**: Current download status of the log

Operation menu (right side):

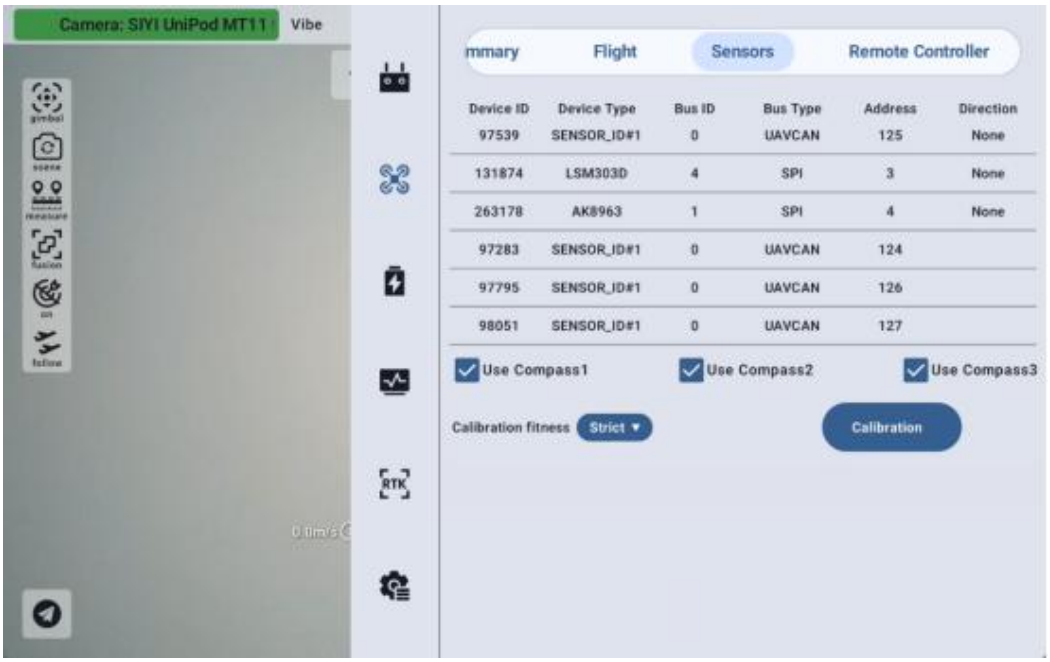
- **Refresh**: Update the log list and sync the latest log data from the flight controller
- **Download**: Download the selected log file to the local device
- **Cancel**: Terminate the ongoing log download
- **Delete All**: Clear all log files stored on the flight controller

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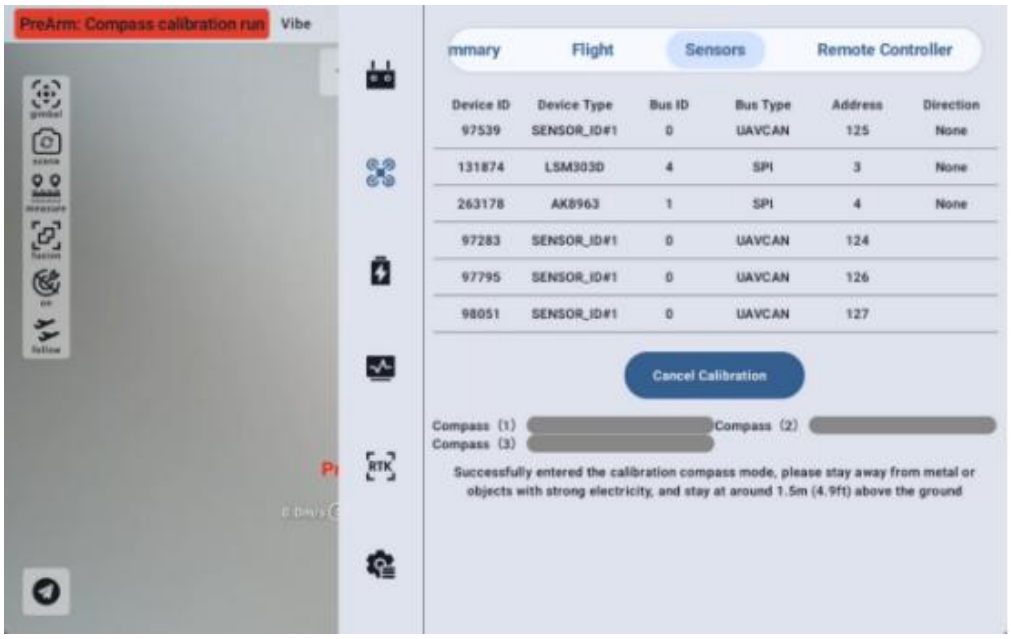
8.6 Calibration

Compass Calibration

This page includes the compass enable switch, various status information, and the calibration function.



Start Calibration



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Note:

- Do not calibrate in areas with strong magnetic fields or near large pieces of metal, such as magnetic mines, parking lots, or building areas with underground steel reinforcement.
- Do not carry ferromagnetic objects, such as mobile phones, during calibration.

1. Open the compass calibration interface in the order shown.
2. Select the calibration difficulty level.
3. Click Calibrate.
4. Lift the drone and rotate it in different directions so that each side (front, back, left, right, top, and bottom) points down toward the earth for a few seconds, until the compass progress bar finishes loading.
5. Restart the aircraft.

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