

REEBOT

A black UniDrone E900 drone is shown in flight, positioned to the left of a large, complex metal electrical transmission tower. The drone has a camera mounted underneath and its arms are extended. The tower is a lattice structure with multiple cross-arms and insulators. The background is a hazy, overcast sky. The overall scene is in grayscale, with the drone and tower being the primary subjects.

UniDrone E900 Electrical Inspection Application Manual

Take both efficiency and precision into account

Reebot Robotics
APR, 2025

CONTENT

01	Product Solution 1. ApplicationsP1 2. Product SolutionP2
02	Applications 1. Inspection of Base TowersP3 2. Power Line InspectionP4 3. Substation InspectionP4 4. Wind Power / Solar Photovoltaic Power InspectionP5 5. Emergency RepairP6
03	Operation Guideline 1. InstallationP7 2. Standard OperationP8 - P13
04	Purchase Index Parameters & Purchase IndexP14 - P16
05	About us About Reebot RoboticsP17



Inspection of Base Towers

Quick transfer between FPV & Zoom camera, inspection from multiple angles.



Power Line Inspection

EO / IR linkage, quickly locate the overheating problem. Support UniGCS auto-operation.



Substation Inspection

Solve the problem of being unable to approach dangerous facilities and the blind spots of human eyes.



Wind Power / Solar Photovoltaic Power Inspection

Quick inspection in suburb, eliminate defects in a timely manner and reduce the losses caused by shutdowns.



Emergency Repair

Solve the problem of roads damaged by disasters, and emergency repair at night.



UniDrone E900
Industrial-grade
Drone Platform

+



Reebot UniPod MT11
Mini Quad-Sensor
AI Optical Pod

+



SIYI ZR30
Optical Pod

+



SIYI ZR10
Optical Pod

+



UniGCS

No.	Name	Optional Components
1	Drone Platform	UniDrone E900 Industrial-grade Drone Platform
2	Gimbal Camera	UniPod MT11 Mini Quad-Sensor AI Optical Pod ZR30 Optical Pod, ZR10 Optical Pod

Solution A



UniDrone E900
Industrial-grade
Drone Platform

+



Reebot UniPod MT11
Mini Quad-Sensor
AI Optical Pod

+



UniGCS

Solution B



UniDrone E900
Industrial-grade
Drone Platform

+



SIYI ZR30
Optical Pod
(30X Optical Zoom)

+



UniGCS

Solution C



UniDrone E900
Industrial-grade
Drone Platform

+



SIYI ZR10
Optical Pod
(10X Optical Zoom)

+



UniGCS



Inspection of Base Towers

Painpoints

1. The Inspection routes of electric towers usually cover long distances and involve a large number, most of which may be located in mountains, forests or suburban areas, which brings a large number of work.
2. The operation environment is usually complex, involving high-altitude areas and the environment after snowfall or under low temperatures.
3. human sight always has many blind spots, which makes it easy to miss the problems.
4. It is difficult to detect some defects with visible light.
5. Data storage & trace back.

Solutions

1. The drone supports quick-release function, which can help you quickly transfer and easily put it in the trunk.
2. High-altitude inspection with 35km patrol radius, supports close-range inspection from multiple angles, and quickly switch between 4K FPV & zoom camera.
3. Support EO / IR images on one screen and adjust the zoom magnification at the same time, quickly locate the overheating problem and realize precise inspection.
4. Set the route with UniGCS in advance, operate automatically, and take photos at the fixed point.



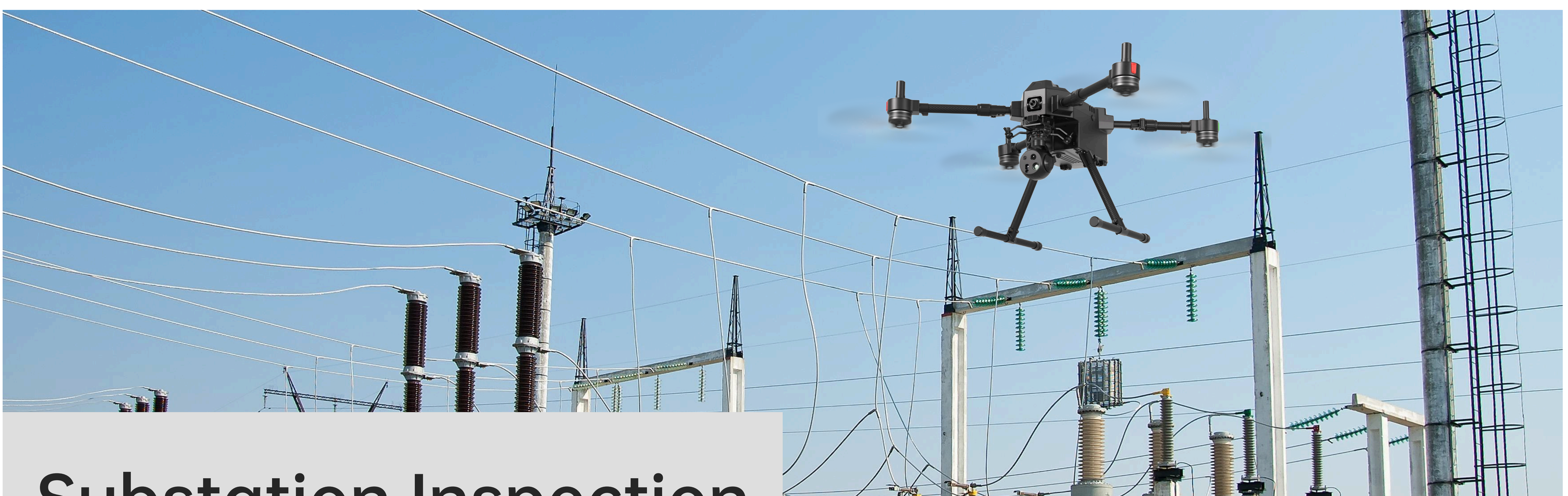
Power Line Inspection

Painpoints

1. The urban distribution network usually extends to thousands of kilometers in length and involves tens of thousands of base towers, which are often situated in mountains and forests, impose an [extremely huge workload](#).
2. It directly affects the electricity consumption, which makes it necessary to have [higher precision](#) and a [greater inspection frequency](#).

Solutions

1. [Precise inspection with drone](#). Quickly switch between 4K FPV / zoom camera, identify the problems of base towers.
2. [Operation with just one click](#) with UniGCS, reduce the threshold for frontline operations.



Substation Inspection

Painpoints

1. Substation usually has a lot of equipment and has a complex structure, and some of the equipment may be very [dangerous for inspectors](#).
2. Because of the complex structure, the inspection work is usually [arduous](#).

Solutions

1. [No-blind-spot](#) inspection at a high altitude, support [quickly switching between the FPV and zoom](#) vision.
2. Precisely identify the potential equipment hazards.



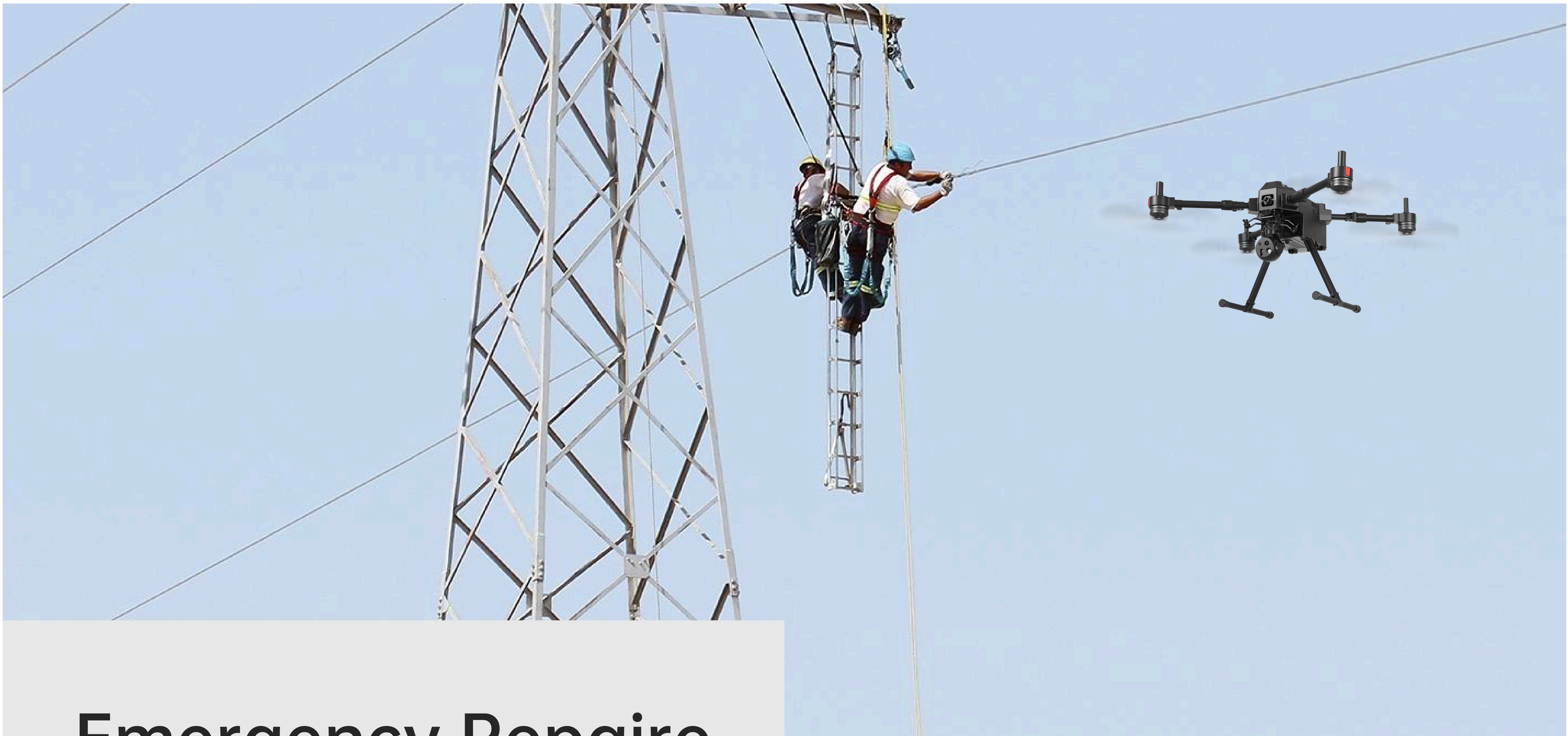
Wind Power / Solar Photovoltaic Power Inspection

Painpoints

1. Most wind turbines and photovoltaic power stations are **located in remote areas**, which is **dangerous** and **inefficient** for manual inspection.
2. The **cost of wind turbines is so high** that it is necessary to **promptly detect** and **eliminate** the defects.
3. **Special scenarios** such as offshore wind power generation is difficult to conduct manual inspections.
4. During the inspection process, the wind turbines need to be locked and stopped. Manual inspection is inefficient, and long-term locking and **stopping of the turbines will lead to significant power generation losses**.

Solutions

1. Flexibly **inspect and adjust the zoom at a high altitude**. Quickly switch between 4K FPV & zoom camera, helping you **precisely inspect** and quickly detect issues such as equipment damage and contamination.
2. 35-kilometer patrol radius, **easily cross mountains and forests**, discover the equipment damage and contamination. Support setting the route in advance, auto-operation and reduce the locking and stopping time.



Emergency Repaire

Painpoints

1. Natural disasters will [damage the roads](#) and prevent the emergency repair workers from reaching the site.
2. Urban electricity consumption is related to all aspects of production and daily life, and there is an extremely [high demand for the efficiency](#) of emergency repairs.
3. It is difficult to locate the problem when there is [a sudden failure at night](#).

Solutions

1. With its high-altitude perspective, the drone can be remotely controlled to [cross damaged roads](#) and use its high-definition zoom function to [identify problems](#).
2. [Quickly switch between 4K FPV & zoom vision, locate the problem](#) and improve the efficiency of repair work.

Hardware Installation

Step 1



Use M3 × 8 screws to fix the Gimbal Camera Mount Plate to the UniPod MT11 Quick Release Anti-Vibration Board.

Step 2



Use M3 × 6 screws to attach the assembled Quick Release Anti-Vibration Board to the UniDrone E900 airframe.

Step 3



Insert the UniPod MT11 Quick Release Anti-Vibration Board and secure with screws.

Step 4



Connect power, UART & SBUS, and Gimbal LAN to the Interface Docking Station.

Step 5



Mount the UniPod MT11 Unit and rotate counterclockwise to lock.

New Version (UniPod MT11)

Compatible Models

✓ UniPod MT11 ✓ ZT30 ✓ ZR30

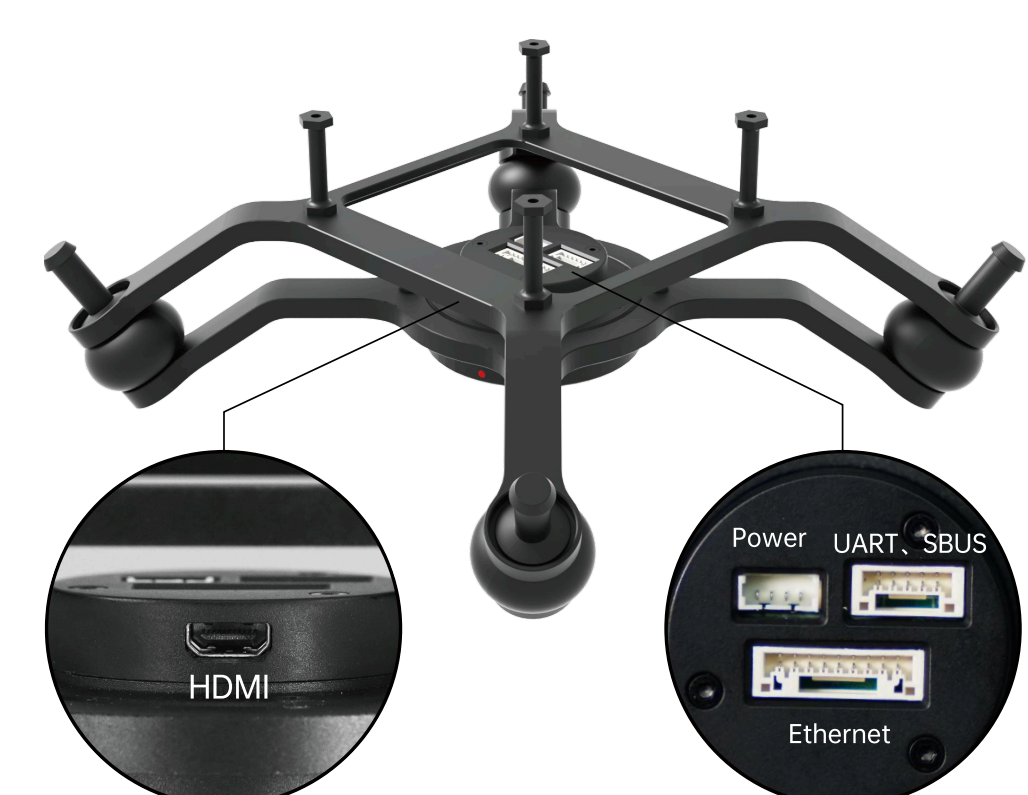


UniPod MT11 Quick Release Anti-Vibration Board

Old Version (ZT30, ZR30)

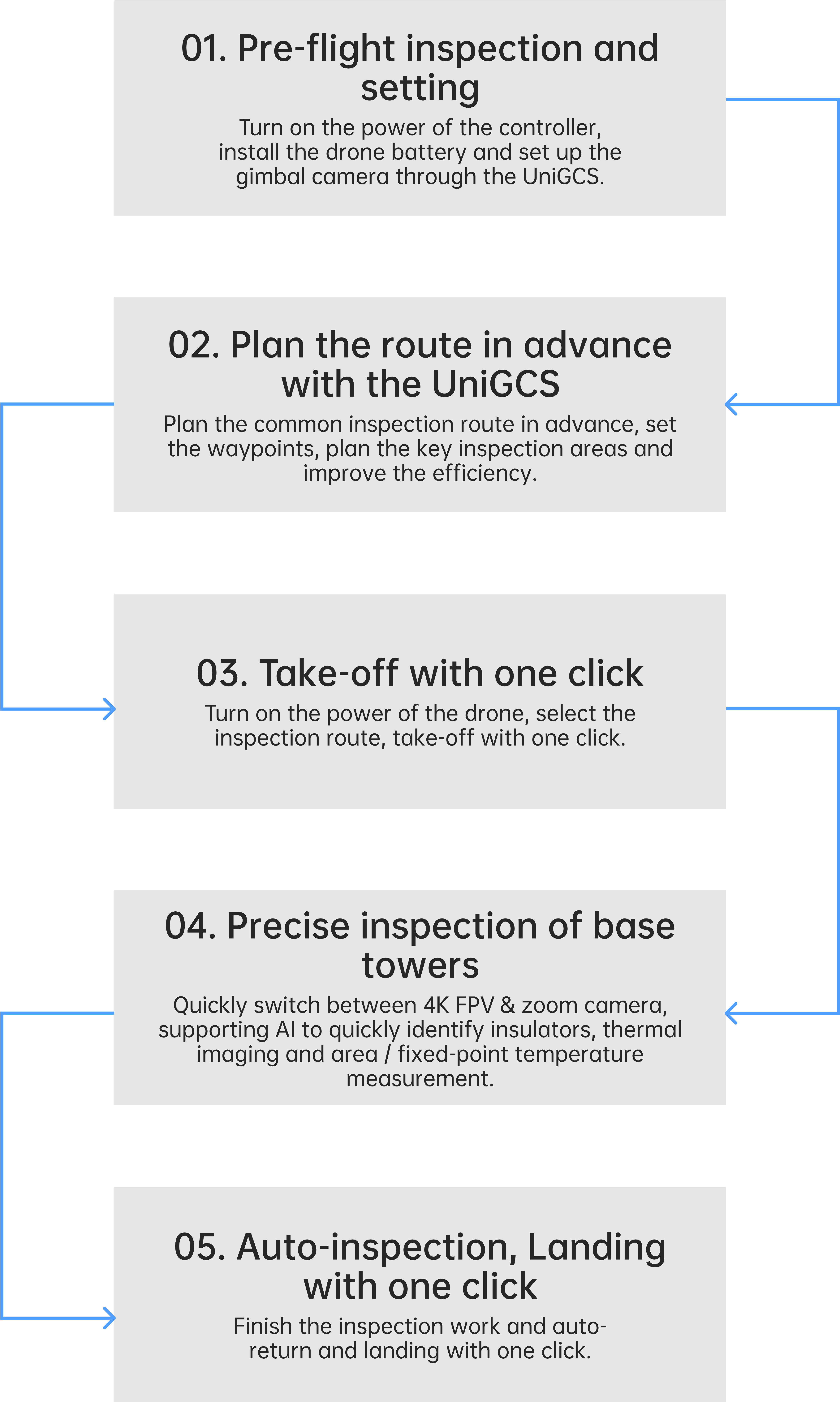
Compatible Models

✗ UniPod MT11 ✓ ZT30 ✓ ZR30



Old Version (Not Compatible) Quick Release Anti-Vibration Board

Attention: Please do not install the UniPod MT11 onto the old version quick release anti-vibration board!



Pre-flight inspection

REEBOT

Step 1

Arrive at the work site and take out the UniDrone E900.



Step 2

Press the power button briefly once, and then press and hold it for 2 seconds to turn on the power of the controller.



Step 3

Install the battery and lock the battery latch. Press the power button briefly once, and then press and hold it for 2 seconds to turn on the power of the drone.



Step 4

Open the UniGCS APP, set Camera A to "SIYI AI", and set Camera B to "4K FPV (PRO)"



Step 5

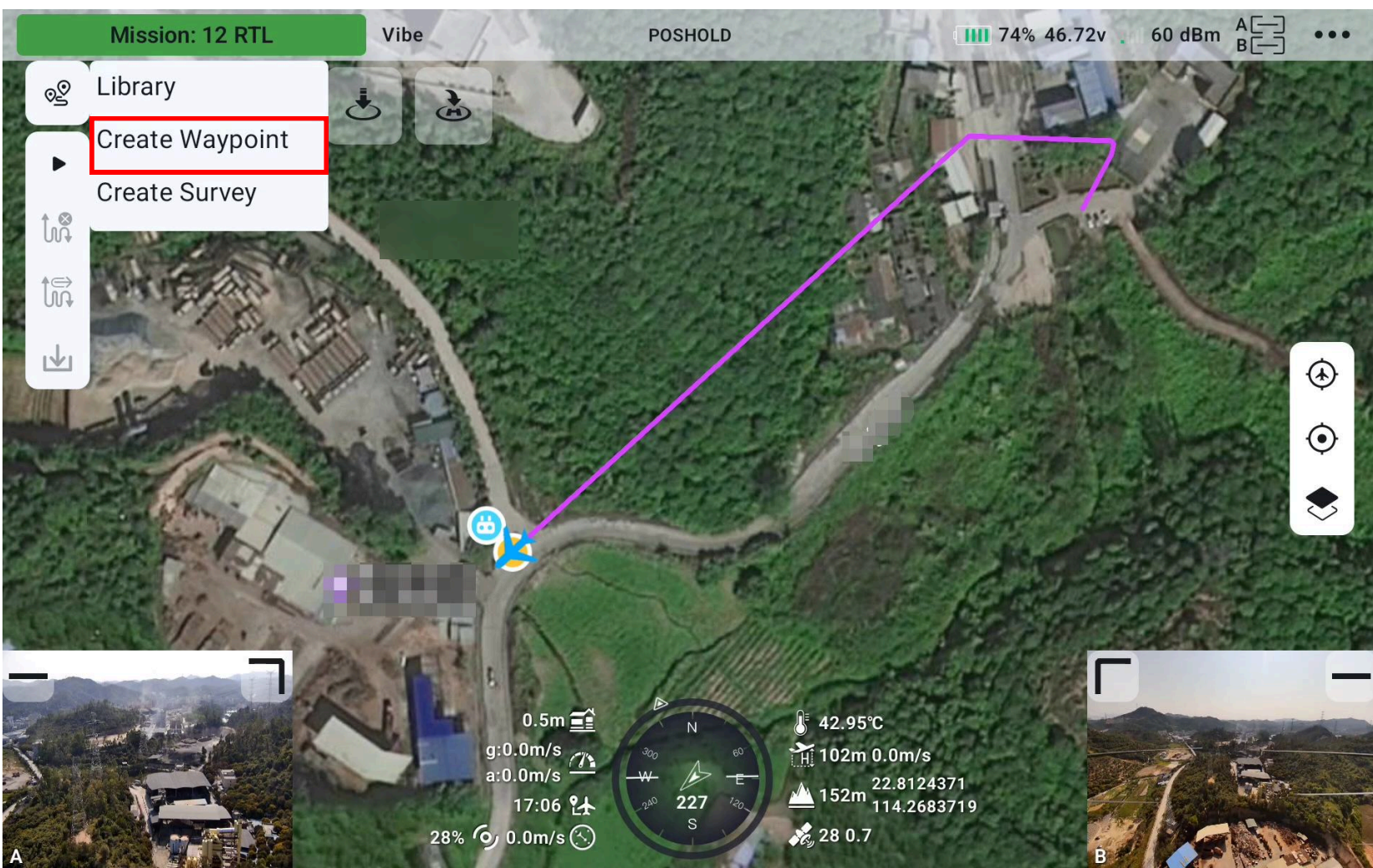
Complete the "pre-flight inspection" before taking off. Make sure that there are no human or vehicles around, and then unlock and take off the drone.



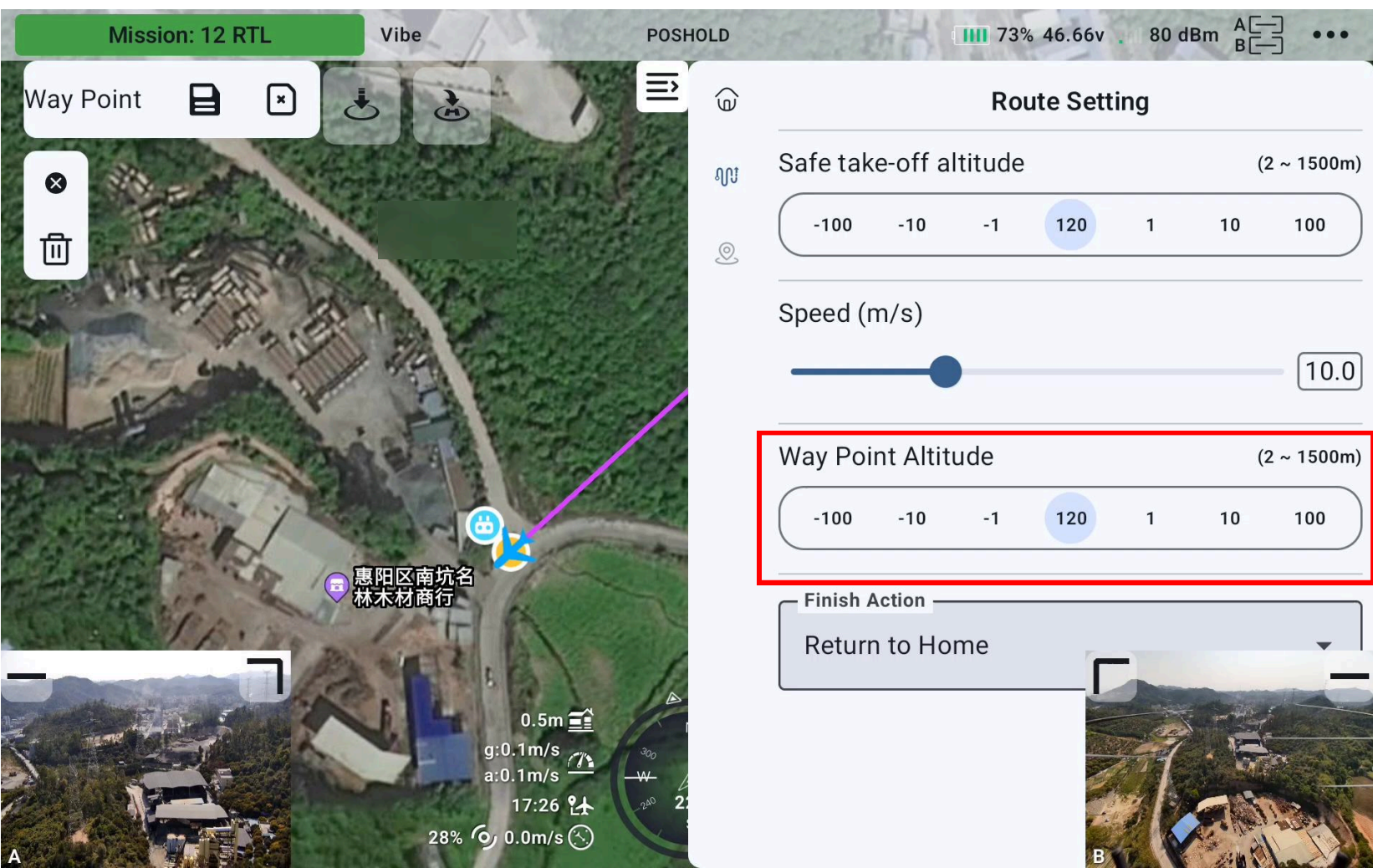
Plan the Route in Advance with the UniGCS



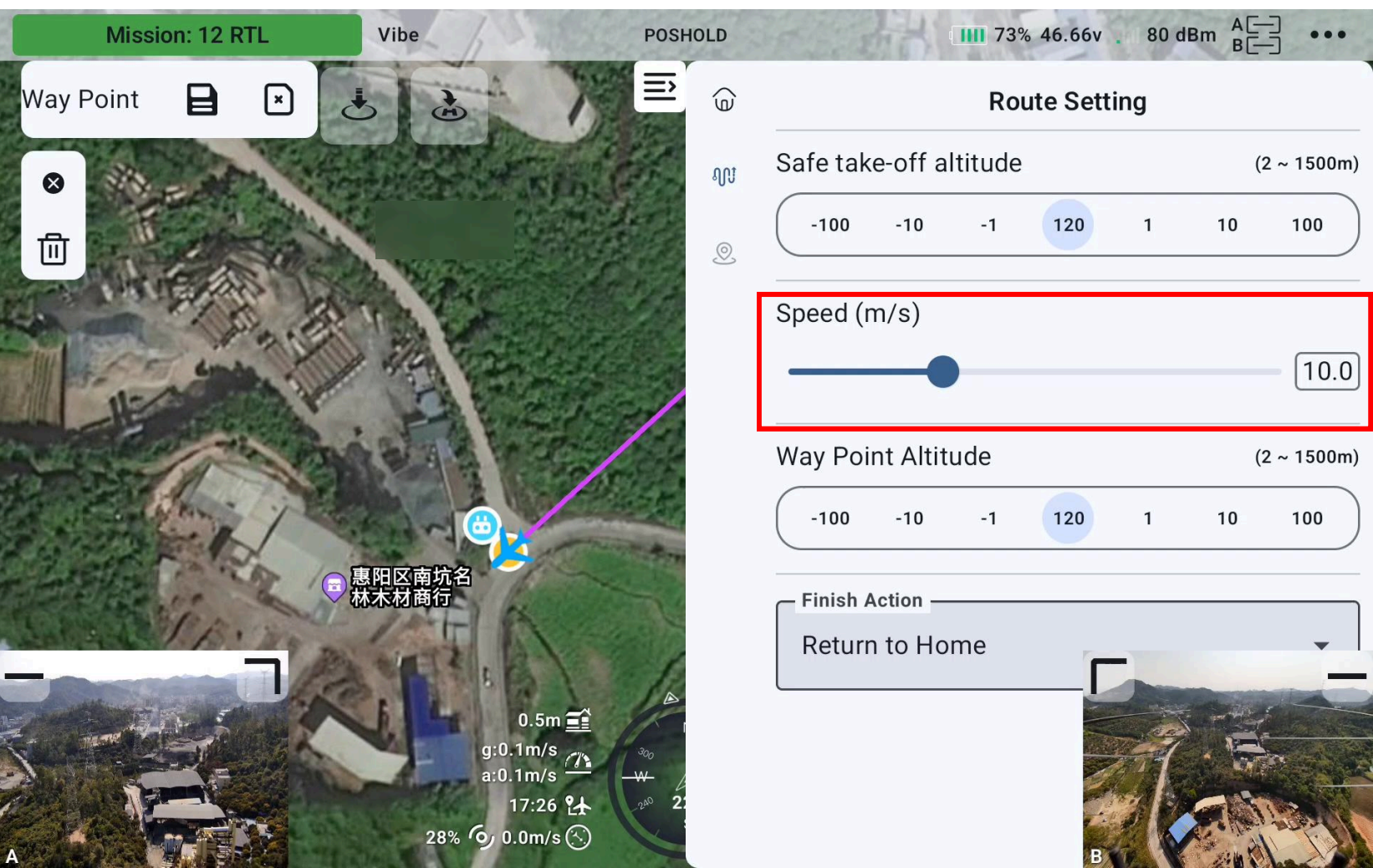
Step 1
Click "Create Waypoint"



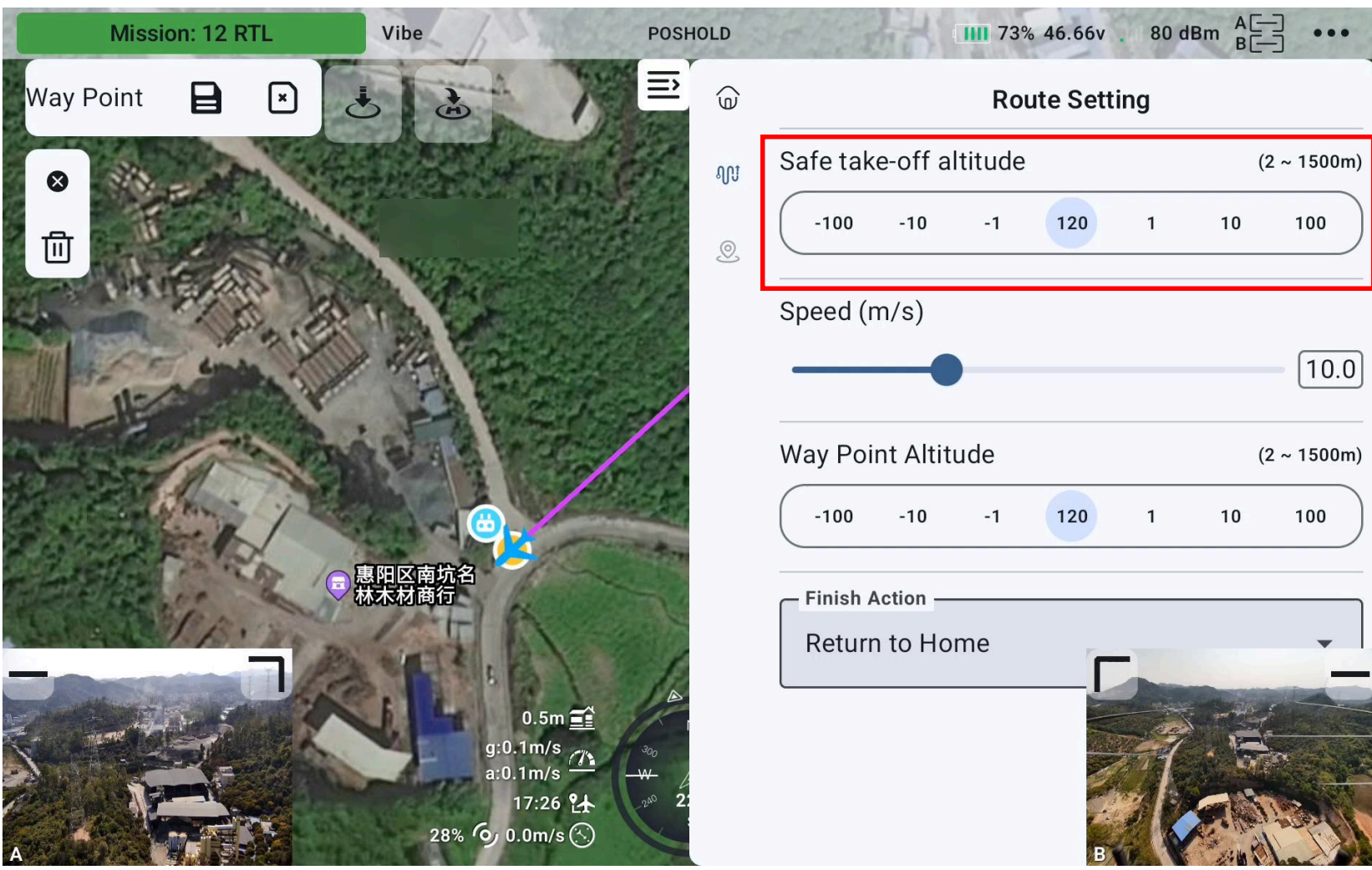
Step 2
Set the "Way Point Altitude"
(Max 120 meters)



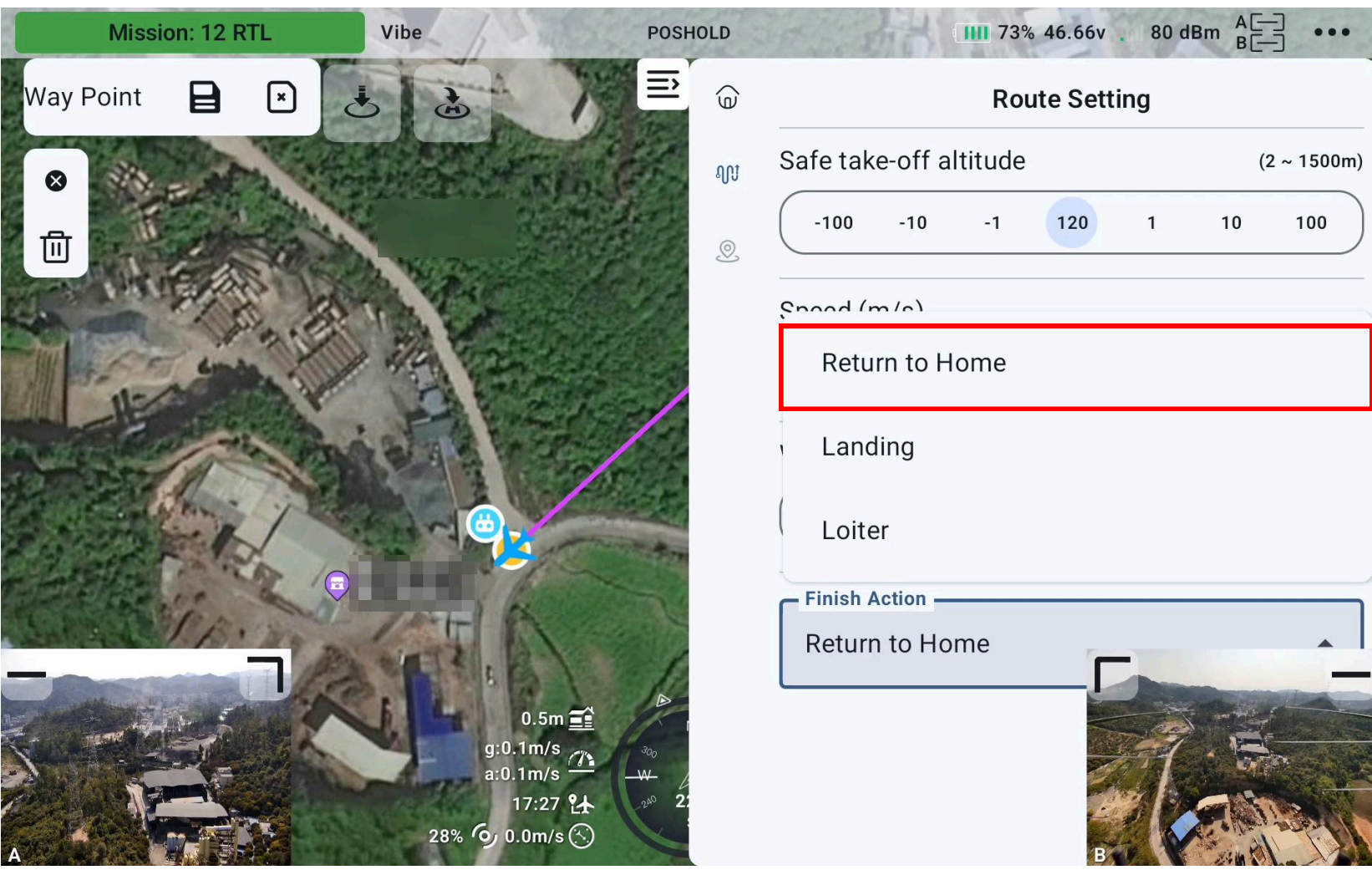
Step 3
Set the "Speed"
(Recommend 8-12 m/s)



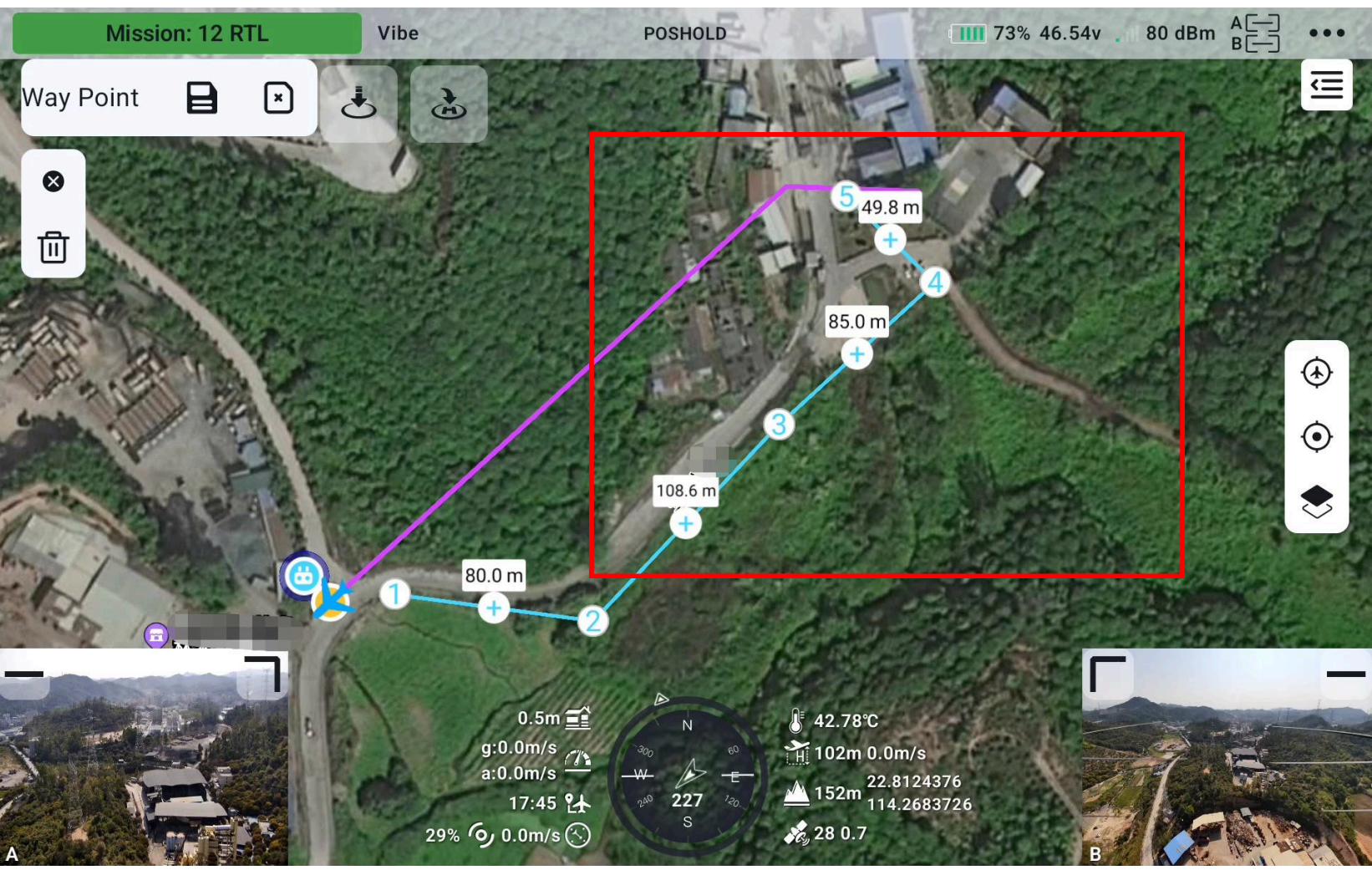
Step 4
Set the "Safe take-off altitude"
(Recommend 60 meters)



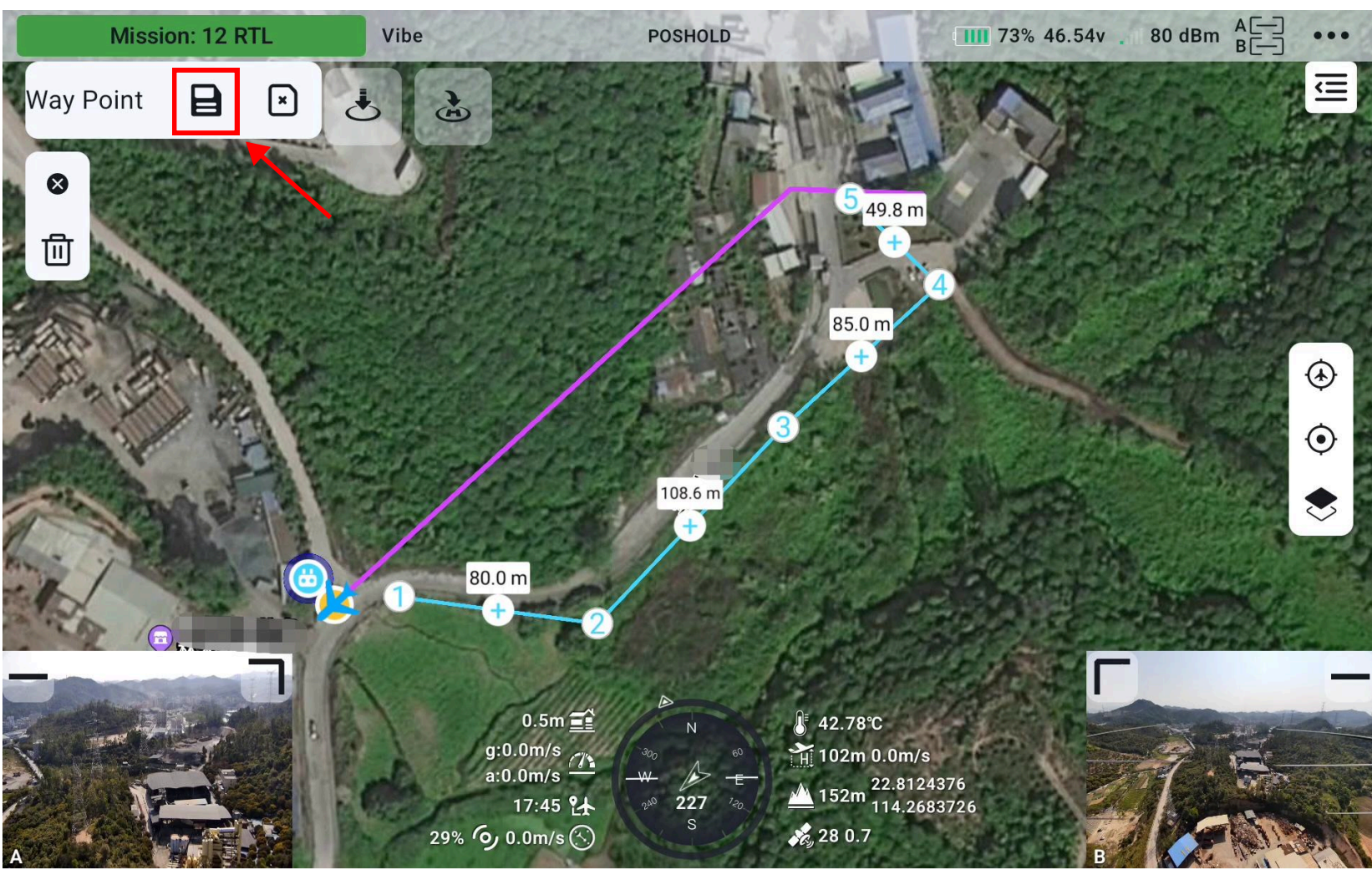
Step 5
Set the finish action as
"Return to Home"



Step 6
Plan the inspection area and
set the waypoints



Step 7
Save the route



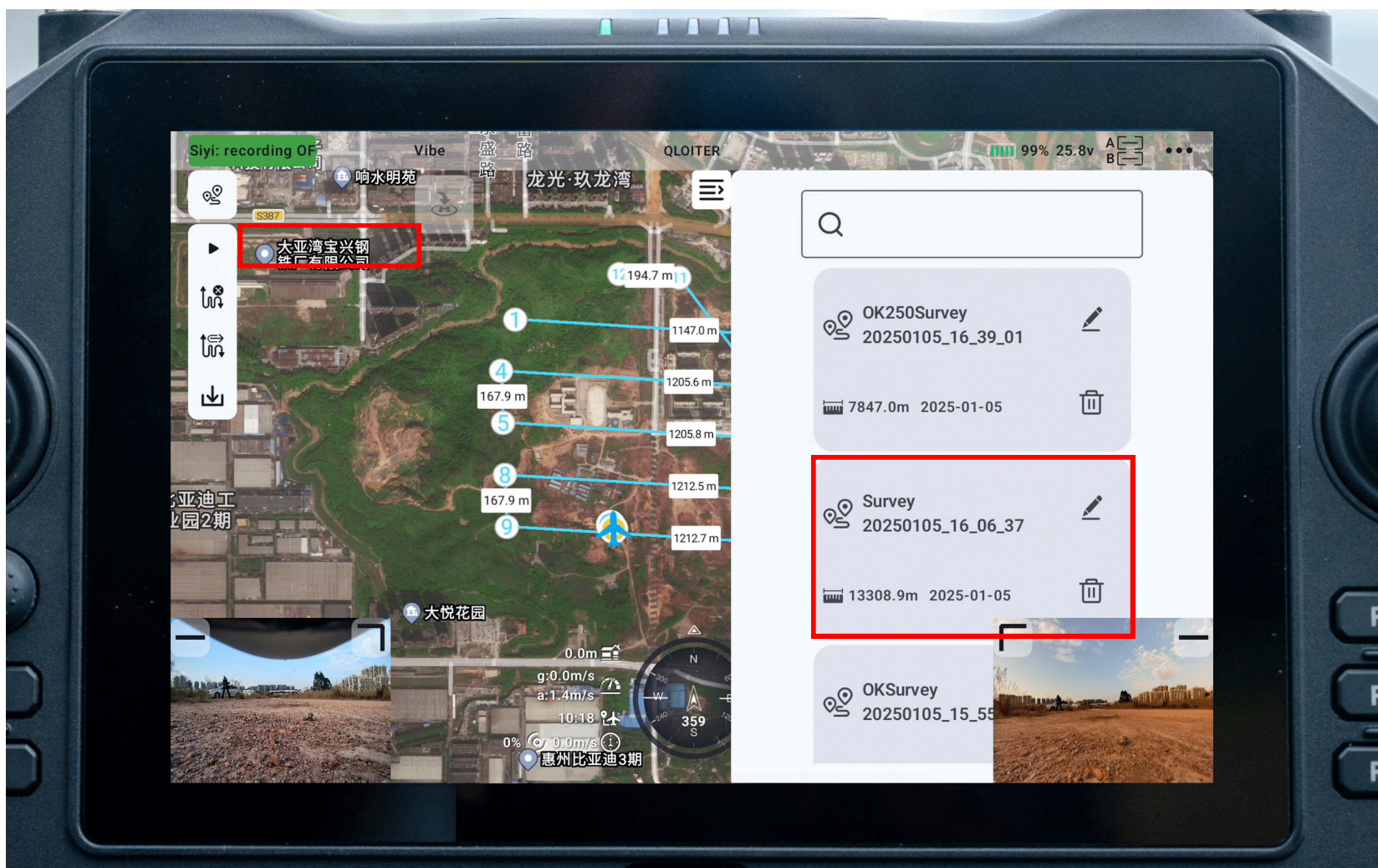
Take-off with one click

REEBOT

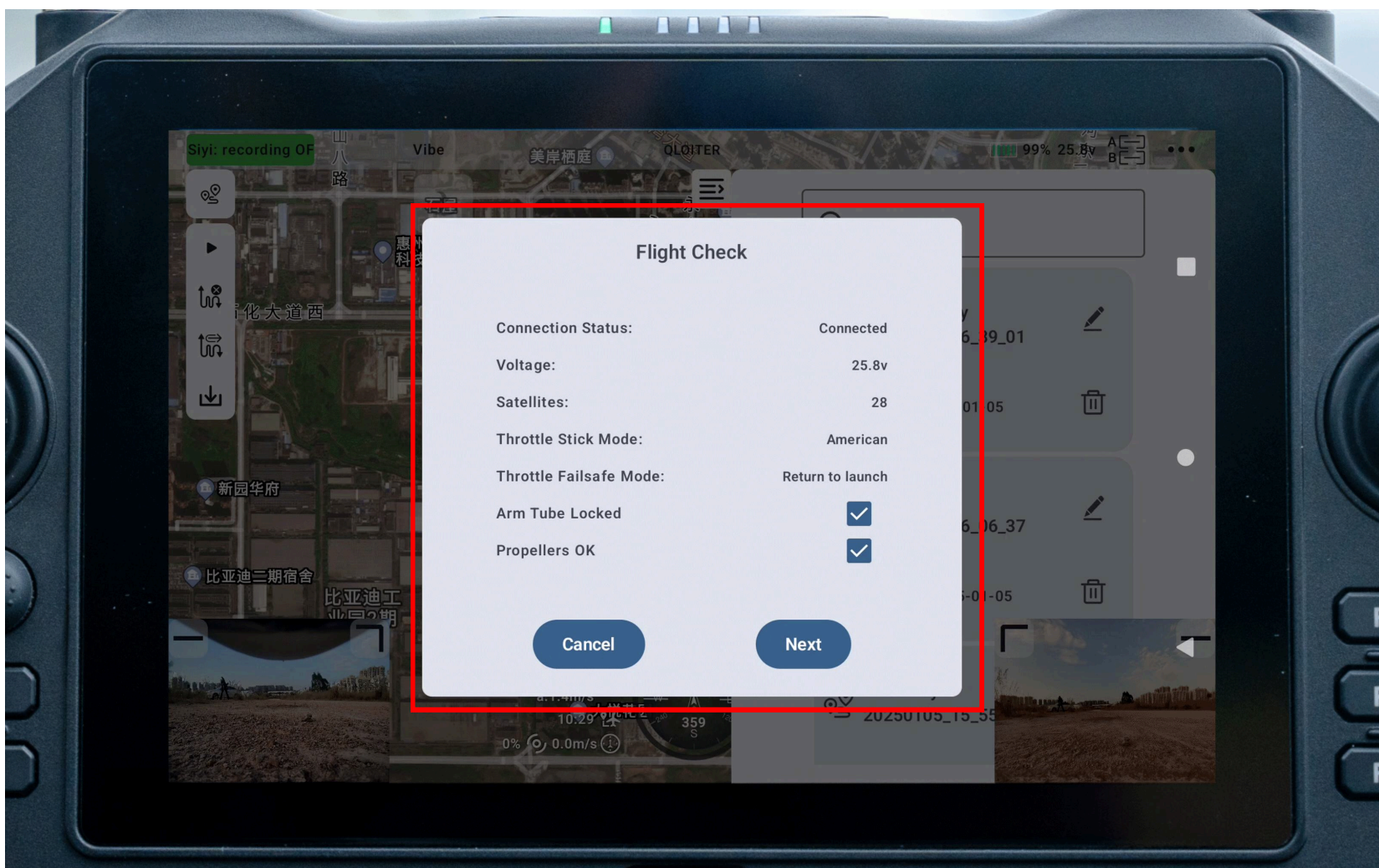
Step 1
Select "Library"



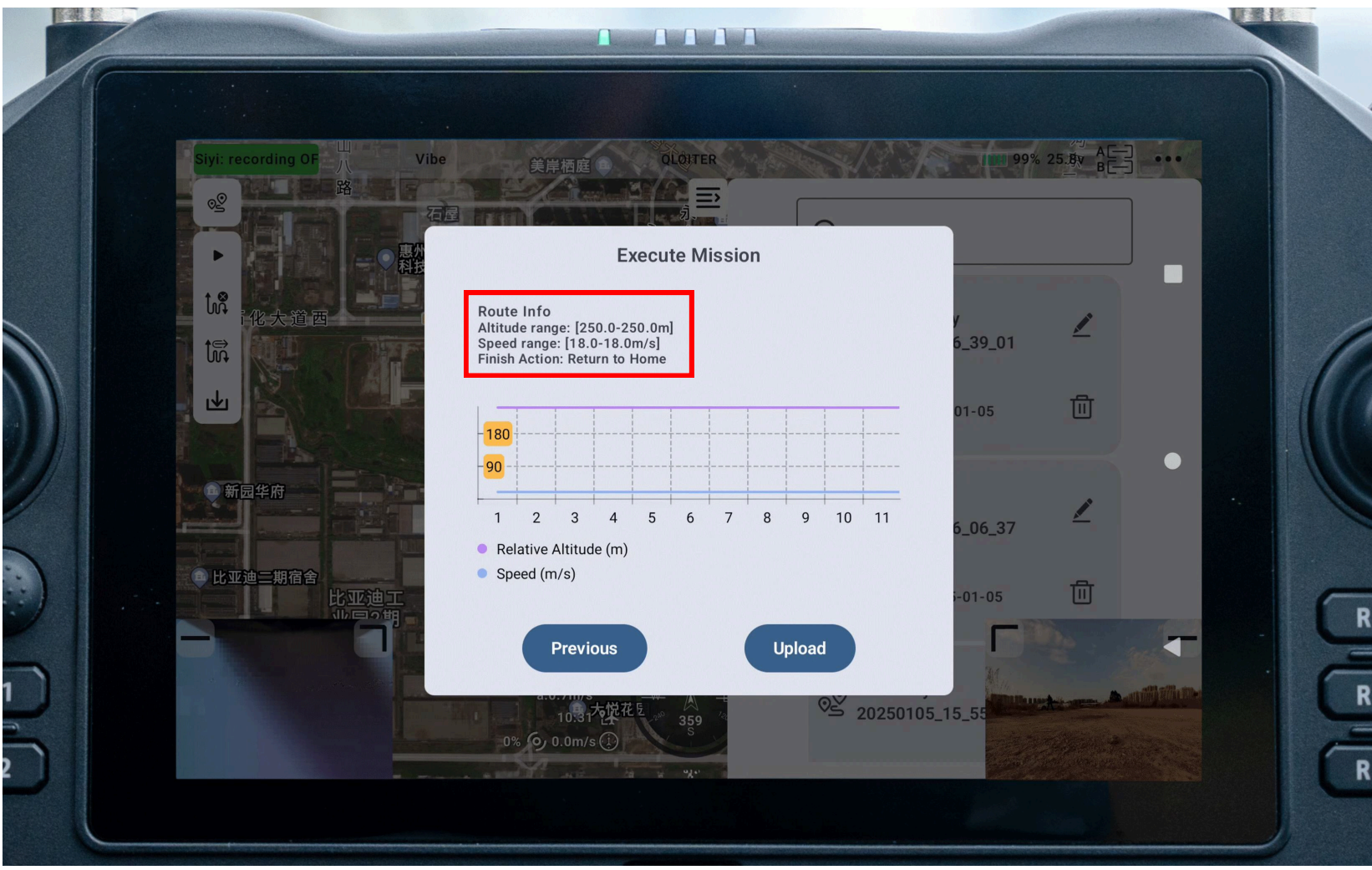
Step 2
Select the route



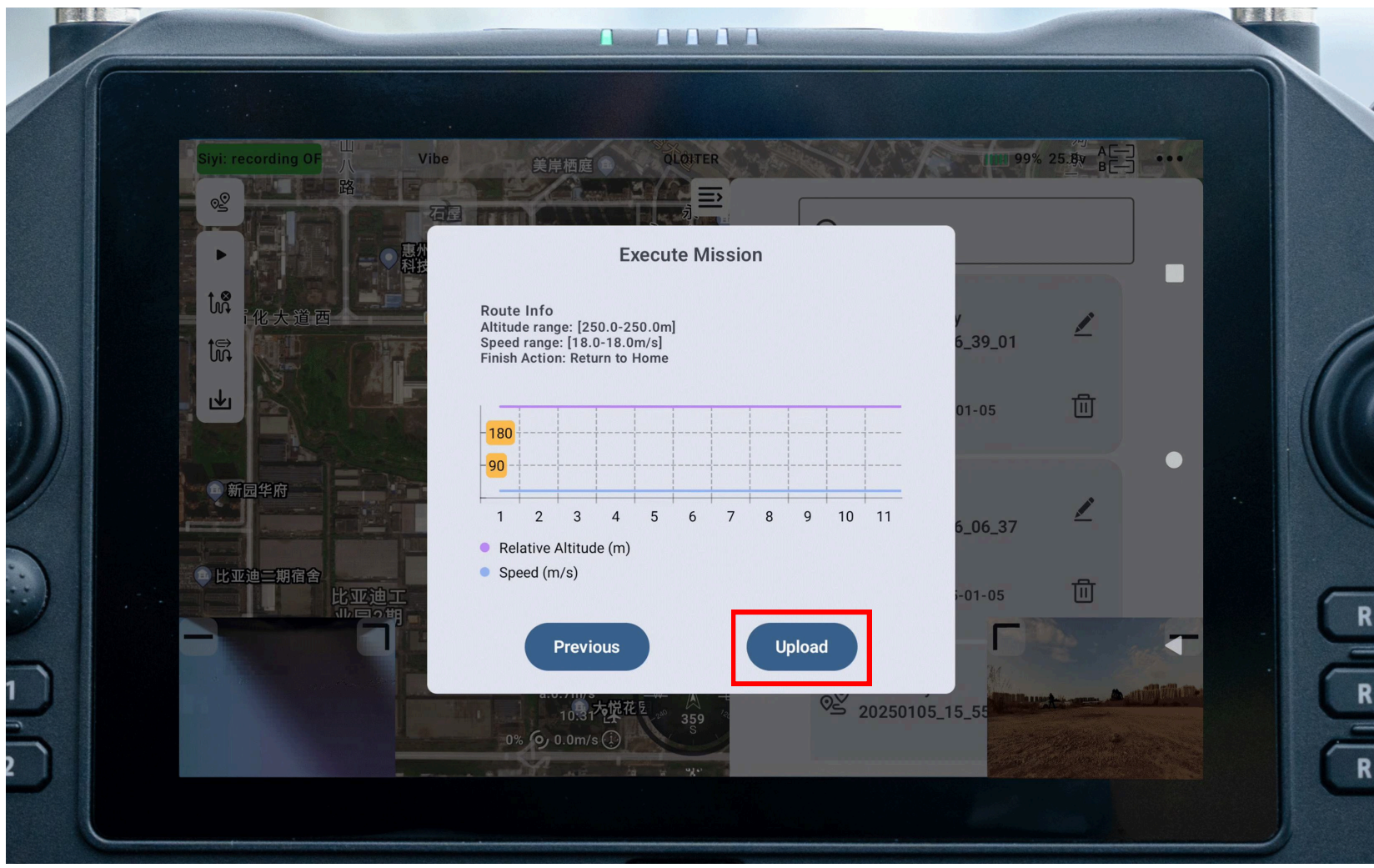
Step 3
Open the task, check the preparations



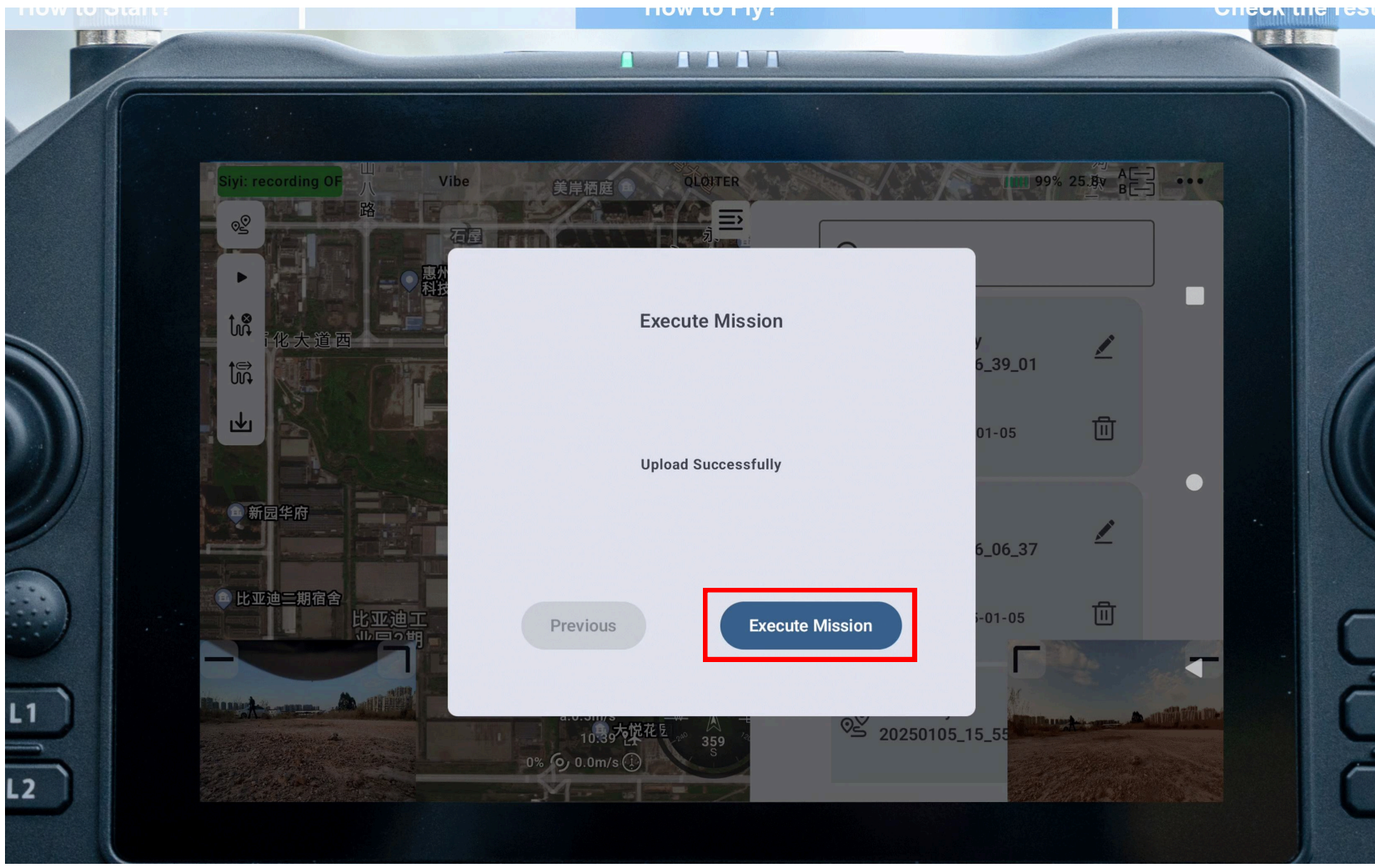
Step 4
Check the relative altitude and the speed, finish the next operations



Step 5
Upload the route



Step 6
Execute mission with one click



AI recognition of insulators



Step 1

Arrive at the target point, identify the possible defects with 180X hybrid zoom.



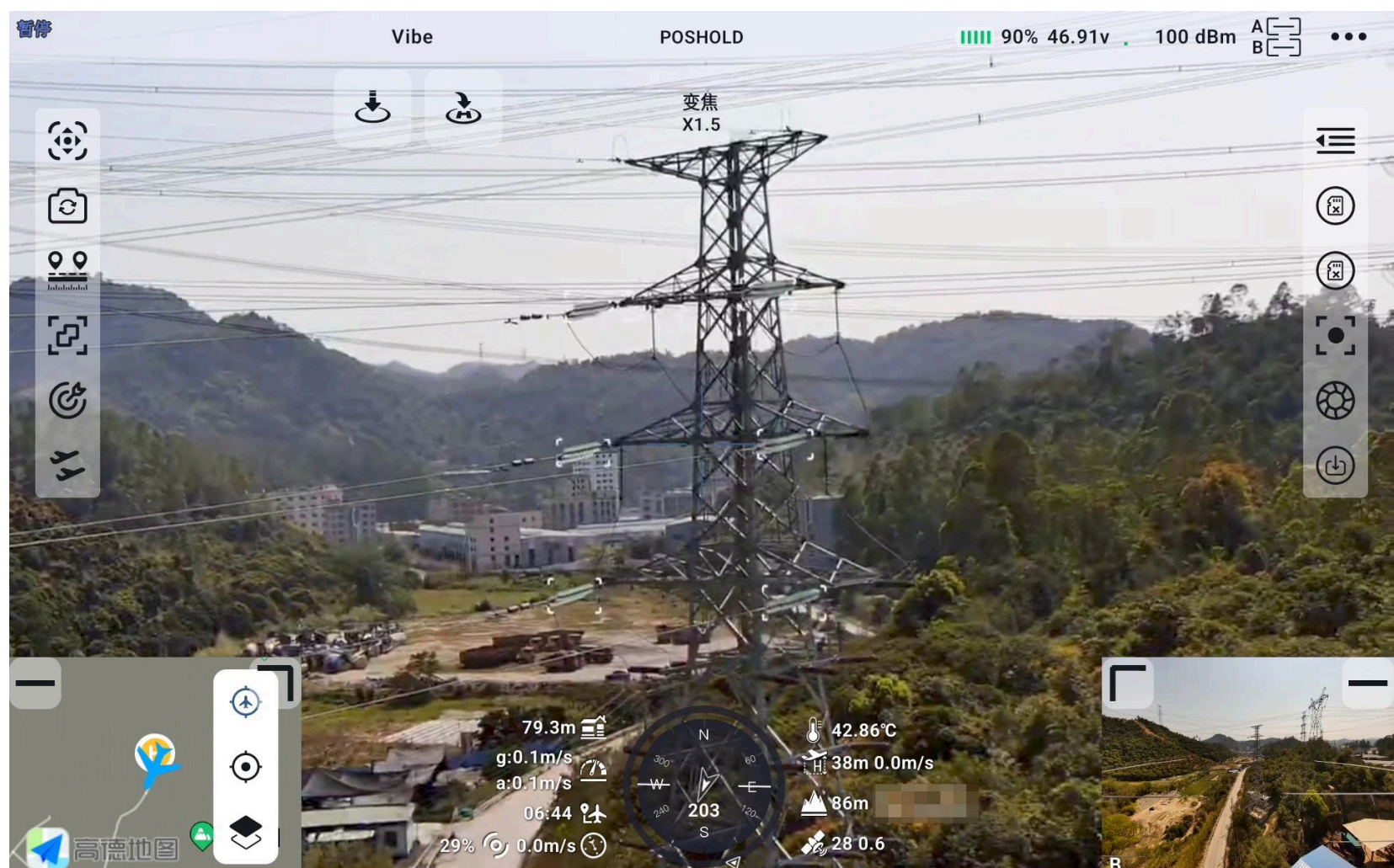
Step 2

Click on the small window in the lower right corner of the screen to quickly switch between the 4K FPV and zoom viewing angles, enabling fine inspection from multiple angles.



Step 3

Turn on the AI function and quickly identify the insulators on the screen.



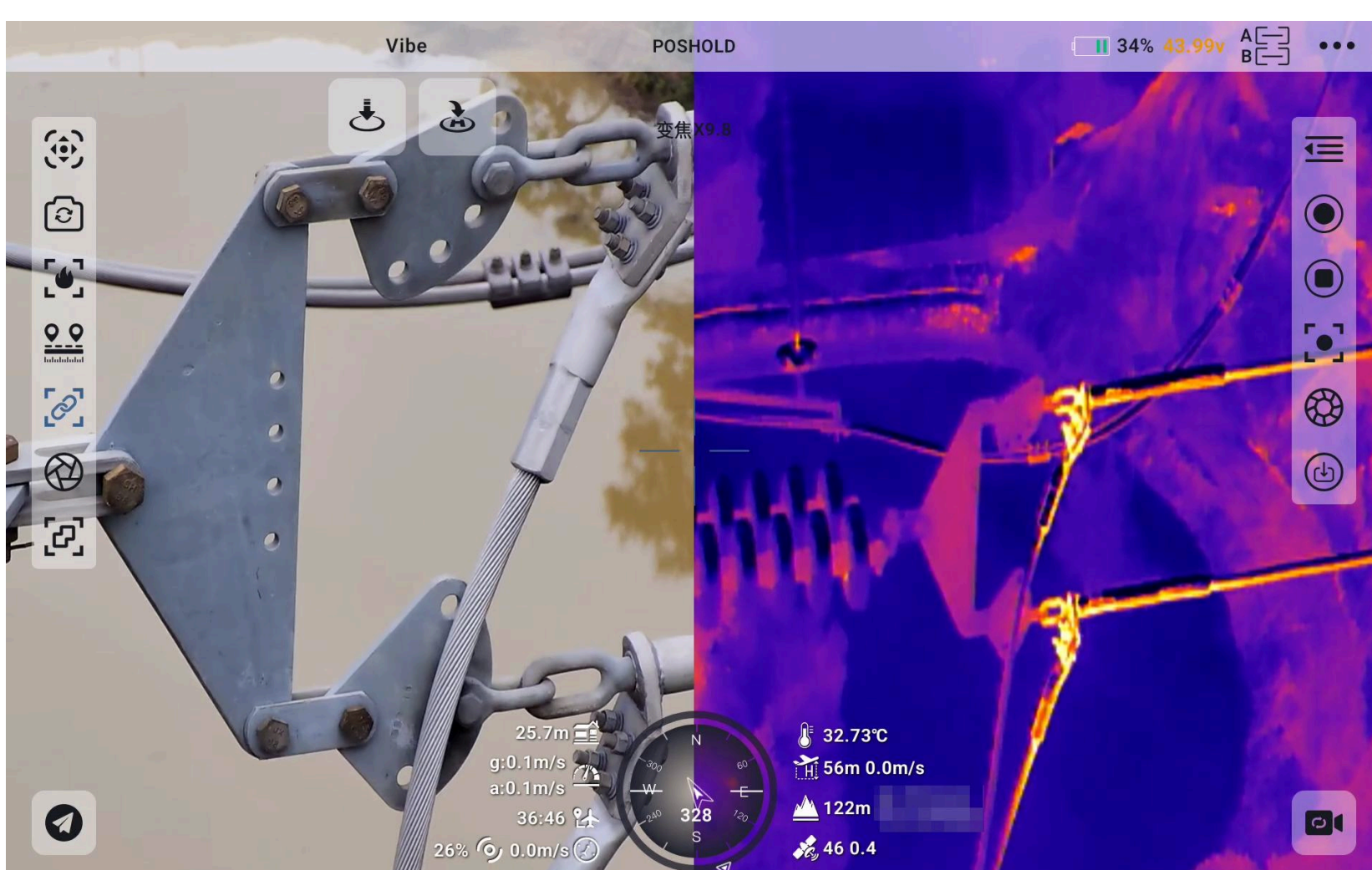
Step 4

Click on the identified insulator, and then the gimbal camera will quickly locate and track the target.



Step 5

According to your usage requirements, you can also set the screen to the "stitching screen of the zoom and thermal imaging dual-camera streams", allowing you to view both the zoom and thermal imaging screens simultaneously.



Step 6

In the thermal imaging screen, you can select a screen area to conduct area temperature measurement, which will display the lowest and highest temperature points in the screen. Click on any position in the screen to perform fixed-point temperature measurement.



Auto-inspection, Landing with one click

REEBOT

Step 1

Plan the route in advance with the UniGCS.



Step 2

Auto-return after finishing the operation.



Step 3

Slow land the drone after ensuring that there are no human or vehicles.



Step 4

Turn off the power of the drone.



Step 5

Turn off the power of the controller.



Step 6

Store the drone, controller and other accessories in the safe storage box.



Solution A	No.	Name	Optional Components
	1	Drone Platform	UniDrone E900 Industrial-grade Drone Platform
	2	Gimbal Camera	Reebot UniPod MT11 Mini Quad-Sensor AI Optical Pod
	3	Software	UniGCS

Solution B	No.	Name	Optional Components
	1	Drone Platform	UniDrone E900 Industrial-grade Drone Platform
	2	Gimbal Camera	SIYI ZR30 Optical Pod
	3	Software	UniGCS

Solution C	No.	Name	Optional Components
	1	Drone Platform	UniDrone E900 Industrial-grade Drone Platform
	2	Gimbal Camera	SIYI ZR10 Optical Pod
	3	Software	UniGCS

 UniDrone E900 Industrial-grade Drone Platform		 Purchase Index	
Name	Parameter	Name	Parameter
Wheelbase	900mm	Payload Capacity	10.5 kg (maximum takeoff weight) 2.1 kg (maximum payload weight)
Flight Time	55min (no payload) 43min (full payload)	Positioning and Orientation Accuracy	RTK Centimeter-level Precision
Tramsmission Range	35km	Frequency	2.4G & 5G
FPV Mode	Pitch Follow Mode + FPV Mode	AI Function	Any Object Recognition AI Tracking Smart Flight Follow
Ground Station Display	7 inch 1080P	Battery Type	Smart Battery Softpack Battery
Max Horizontal Flight Speed	20m/s	Aircraft Dimensions	Full Dimensions (Unfolded): L738 x W673 xH425 mm Folded Dimensions: L428 x W412 xH425 mm
Max Flight Altitude	5000m		
Features	AI Tracking & Smart Flight Follow, Forward-facing LiDAR Obstacle Avoidance, 4K Ultra-wide FPV Camera, Dual-antenna centimeter-level positioning and orientation, Supporting third-party payloads, Dual IMU redundancy, FOC ESC, Auto RTH, Quick Release, Open Source Ardupilot...		

 UniGCS Software	Product Introduction: UniGCS is a professional software for drone pilots and missions. The abundant features of UniGCS such as intelligent route planning, low-latency HD video display, precise camera control, AI recognition and tracking, RC / autopilot configuration, etc. provides drone operators unparalleled efficiency and intuitive operating experience.	 Purchase Index
---	---	---

 REEBOT UniPod MT11 Basic Mapping Camera	Zoom Camera	Focal Distance: 15-50mm (Effective focal distance: 81-270mm) Image Sensor: 1/2" CMOS, effective resolution 48 MP FOV: 28.98°(D) 23.48(H) 17.81(V) Video Resolution: 3840*2160, 2560*1440, 1920*1080, 1280*720 Photo Resolution: 3840*2160, 8000*6000	Quick-Release Structure	Supported	 Purchase Index
			Controllable Yaw Angle	Pitch: -90° ~ 20°	
			Laser Rangefinder	5-1200m	
	Infrared Camera	Focal Distance: 18mm FOV: DFOV: 31° Digital Zoom: 8x Video Resolution: 640*512, 1280*1024@AI Photo Resolution: 640*512, 1280*1024@AI, 2560*2048@AI Wavelength: 8~14μm Temperature Measurement Range: -20°C~60°C ambient temperature Color Palette: 11 selectable palettes	Video Output Interface	Ethernet Port	
			Control Signal Input Methods	S.BUS, UART, Ethernet (TCP, UDP)	
			Dimensions (With the Quick Release Anti- Vibration Board)	141.5mm*141.5mm*169mm	
			Weight (With the Quick Release Anti- Vibration Board)	533.5g	

 SIYI ZR30 Optical Pod	Zoom Camera	30X Optical Zoom (180X Hybrid Zoom) 4K 1/2.7-Inch CMOS 8 MP Effective Resolution	Quick-Release Structure	Supported	 Purchase Index
			Controllable Yaw Angle	-270° ~ +270°	
			Video Output	Ethernet, Micro-HDMI	
			Control Signal Input	S.Bus, UART, Ethernet UDP	
			Product Dimensions (Including the Quick Release Anti-Vibration Board)	132*100*159 mm	
			Product Weight (Including the Quick Release Anti-Vibration Board)	628g	

 SIYI ZR10 Optical Pod	Zoom Camera	10X Optical Zoom (30X Hybrid Zoom) 2K 1/2.7-Inch CMOS 4 MP Effective Resolution	Controllable Yaw Angle	-160° ~ +160°	 Purchase Index
			Video Output	Ethernet	
			Control Signal Input	S.Bus, UART, Network UDP	
	Product Weight	381g	Product Dimensions	121*101*78 mm	

REEBOT

Empower Global Intelligent Robotics & Drone Industries

Business Area



Industrial-grade
Multirotor UAV Platform



Industrial-grade
VTOL Drone Platform



Support Third-party
Various Drone Payloads

Electric Inspection | Traffic Inspection | Search & Rescue |
Surveying & Mapping | River Inspection Oil, Gas, Pipelines and Mines Inspection |
Tethered | Security | Firefighting

REEBOT

20250414



REEBOT



Scan the QR Code
to Learn More

Phone:
+86 400 097 0971

Email:
info@reebot.com

Web:
www.reebot.com

Reebot Robotics Technology

Address:
15F, East Wing, Skyworth
Semiconductor Design Building,
No.18, Gaoxin Ave 4 S, Nanshan,
Shenzhen, 518063