

InphiSensor D1

User Manual

V1.0



Copyright and Declarations

Copyright

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When using this product, please strictly comply with all applicable laws and regulations. In the event of any conflict between the content of this manual and applicable laws, the law shall prevail.

Declaration of Corporate Standards

The production and sale of this product shall comply with the enterprise standard specifications established by the company.

Reading Tips

This manual applies to the UAV radio countermeasure equipment developed and produced by the company. The manual provides comprehensive specifications, functional design, structure and specification requirements of the system, as well as installation, deployment, and operational requirements, serving as an operational guide for end users.

Symbol Legend

	Supplementary Notes: Additional explanations and annotations to the main text of the manual.
	Safety Notices: Important operational warnings and risk prevention guidelines for users.
	DANGER: Indicates imminent hazards which, if not avoided, will result in death or serious injury and major property damage.

Manual Usage Recommendations

1. Before using the product, please read this manual thoroughly. Retain this manual for future reference to address any operational inquiries.
2. All photographs, graphics, charts, and illustrations in this manual are for explanatory purposes only and may differ from the actual product. Refer to the physical product for exact specifications. The company reserves the right to update this manual due to product version upgrades or other requirements, with the latest electronic version to be distributed to users.
3. The company recommends using this manual under the guidance of qualified personnel.

Safety Notice

Before using the product, please carefully read the following precautions and operate the product correctly as required.

Installation Precautions

Environmental Requirements

Do not install or store the product in any of the following locations:

- Extreme environments: places where temperatures exceed the range of -40°C to +70°C or where frost may form.
- Near strong electromagnetic interference sources or equipment with large current fluctuations.
- Areas with flammable, explosive, corrosive gases or dust.
- Damp or water-exposed areas. Liquid ingress may cause electric shock or fire hazards.

Operational Guidelines

- Only qualified personnel or designated maintenance staff may open the chassis.
- All antennas must be fully connected and tightened according to the labels. Powering on the device without antennas installed is strictly prohibited.

Usage Precautions

Power and Electrical Safety

- Use only the specified AC 110 V–220 V power supply.
- Do not pull or bend the power cord. Avoid crushing or twisting it, and stop using it if damaged.
- Do not operate the equipment during thunderstorms. Avoid touching power lines or device connectors during lightning to prevent electric shock.
- Always unplug the power cord before moving the device.

- Do not touch the power plug with wet hands.
- When unplugging the power cord, hold the plug body firmly.

Operational Risk Warnings

- If abnormal conditions such as smoke, unusual noises, or burning smells occur, shut off power immediately and contact our after-sales service department.
- Do not install any software unrelated to the software platform; system issues caused by such software are not covered under warranty.
- Do not connect unauthorized USB drives or external hard drives to avoid malware infection. Do not delete server files arbitrarily, change the system time, or shut down or restart the server without authorization.
- Unauthorized personnel are prohibited from disassembling the device to avoid damaging internal components or compromising your rights. If the device malfunctions during use, contact our after-sales service department.

Regulatory Compliance

- This device may cause radio interference during operation. Users must take feasible measures to mitigate such interference.
- If suspected interference occurs with civil-aviation or military frequencies, stop using the device immediately, investigate the cause, and report the incident.

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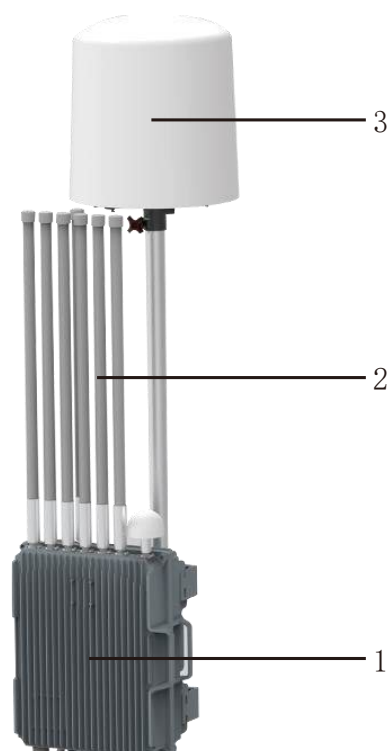
1 Product Overview

This product is the detection and positioning system, employing Adaptive Signal Decoding (ASD) technology—an advanced solution for detecting, identifying, and locating low-altitude civilian drones. The system performs passive detection, accurate identification, friend-or-foe discrimination, and early warning for drones within protected areas.

Adaptive Signal Decoding (ASD) technology is an advanced method for intelligent recognition and decoding of signals in complex, dynamic, or interfered environments. Its core lies in the system's ability to automatically adjust decoding parameters and algorithm strategies based on real-time received signal characteristics—such as frequency, modulation type, bandwidth, and encoding method—enabling faster and more accurate signal capture and interpretation. This technology quickly identifies remote control signals or video transmission links from various drone brands and supports detection of a wider range of brands, models, and custom drones, including those operating on non-standard frequency bands and encrypted communications.

1.1 Product Appearance

The equipment appearance is shown as follows:



1. Main unit

2. Antennas

3. Direction-finding antenna

1.2 Usage Environment

Usage Scenario	Outdoor open highland
Power Supply	AC 110V-220V
Network Environment	Public/Private/Offline Network

2 Equipment Deployment

Choose a wide-view area to erect the device. First check the specifications and quantity of all parts and standard parts according to the equipment list, and then assemble them step by step according to the following installation steps.

2.1 Site Selection

The equipment is typically deployed outdoors. A comprehensive site survey must be conducted prior to installation and deployment. Site the equipment should pay attention to the following factors:

Visibility environment:	Choose a flat, open highland or building rooftop, ensuring a 360° unobstructed view for the antenna placement.
Electromagnetic environment:	Avoid electromagnetic interference zones such as microwave stations, radio transmission towers, and high-voltage power line crossings, as well as areas near glass curtain wall clusters and large metal structures (e.g., bridges, transmission towers).
Natural environment:	● Avoid the wind to reduce the equipment antenna wind load. ● When deploying in thunderstorm-prone areas, avoid locations susceptible to water accumulation and lightning strikes. Install a lightning rod for protection; its height must exceed the overall equipment height by at least 50 cm.
Electrical Environment:	Avoid areas near electrified railways, base stations, or any other sources prone to signal interference.
Infrastructure:	Ensure the site has mains power access and supports connection to public or dedicated communication networks.
Additional Requirements:	The deployment site must be legally designated for construction. The building structure or mounting bracket must have sufficient load-bearing capacity to meet the equipment's weight requirements.

2.2 Installation Method

It can be mounted on a pole or wall. Be aware of the surroundings and make sure there are no obvious obstructions or strong jamming devices in the area.

Method 1: Ground Installation.

The equipment features an external mounting bracket on the back, which can be connected and secured to a prepared ground installation bracket using M10 bolts. The ground installation bracket should be firmly installed on the ground.

Method 2: Wall Installation.

The equipment is connected and secured to a wall mounting bracket using bolts, and the wall mounting bracket is fixed to the wall using expansion anchors.



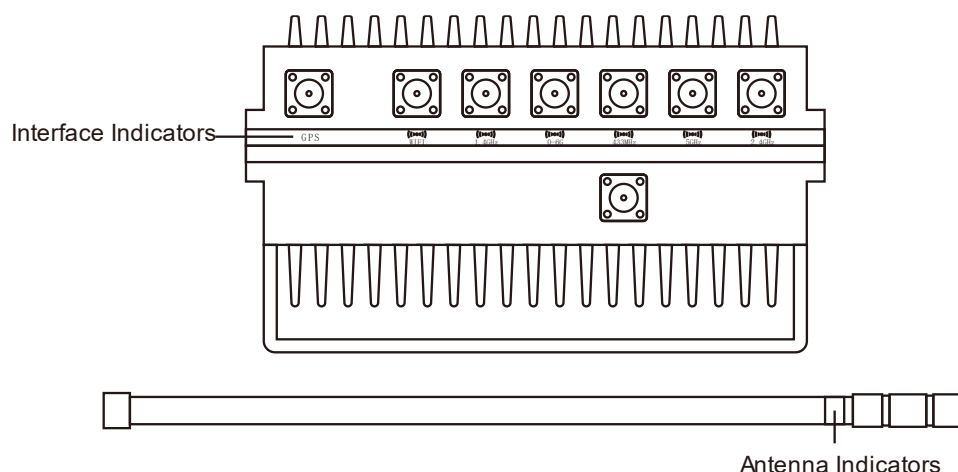
If used in conjunction with a direction-finding unit, the installation height of the Direction-Finding Unit should be higher than that of the main device's antenna.

2.3 Connect Antennas

1. Screw and tighten the antennas onto the main unit one by one in a clockwise direction in accordance with the corresponding labels.



All antennas must be installed on the main unit according to the labeling. If any antenna is missing or damaged, do not operate the equipment; continued use will cause permanent damage.



The correspondence between the main unit interface indicators and antenna indicators can be referenced in the following table:

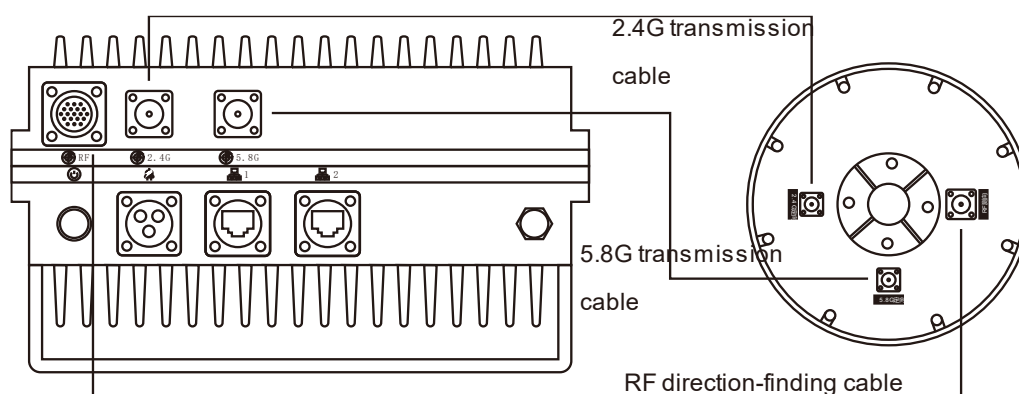
Interface Indicators (Main Unit)	Antenna Indicators
433M	428-438MHz
900M	840-930MHz
1.4G	1420-1530MHz
2.4G	2400-2500MHz
5G	5150-5850MHz
WIFI	2400-2500/5700-5900MHz
GPS	1559-1602MHz

The GPS antenna has an umbrella-shaped appearance, and its connection method is the same as other antennas. The 4G antenna is shorter than the others, and its connection method remains consistent.

2.4 Install Direction-Finding Antenna

Direction-finding unit can be used with the main unit.

1. Connect the main unit to the direction-finding antenna via two RF transmission cables (2.4G and 5.8G) and one data connection cable.



2.5 Connect Power Supply and Network

Connect Power Supply

The equipment can be connected to 220V AC power via power cable using either fixed power supply or UPS.

1. Connect the input end of the power cord to the fixed power supply and insert the output end into the device's power connector. The power connector features a snap-fit design, apply steady pressure until you hear an audible click, confirming a secure connection.

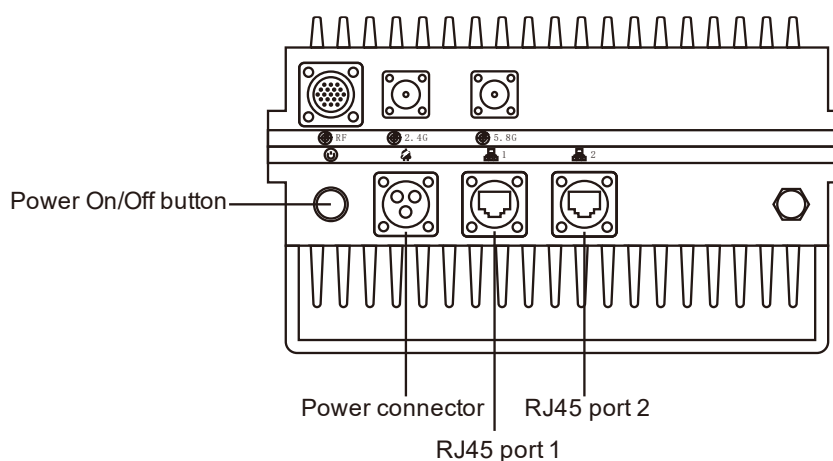
Connect to the Network

The equipment can be connected to the control terminal via fiber optic or standard Ethernet cable through the TCP/IP interface.

1. Plug the control terminal into RJ45 port 1.



RJ45 port 2 is a spare port used for daisy-chaining other company devices into the network. When not in use, keep it sealed with the waterproof plug.



3 System Operation Instructions

Drone defense software platform, which integrates situational awareness, information display, decision-making assistance, command and control. It supports browser access and control of other devices on the LAN, and supports multi-screen and multi-device monitoring.

Configure the Network

Before logging into the system, it is necessary to configure the network settings of the drone defense software platform. The IP address should be set within the 192.168.100.x subnet, which is the same subnet as the default access IP of the system: 192.168.100.100.

1. Configure the IP subnet to 192.168.100.x according to the system platform, e.g., Windows, Linux, or macOS.



Avoid setting the IP address to 192.168.100.100, as this will cause a conflict.

3.1 Login to the System

1. Open a browser and enter the device’s IP address <https://192.168.100.100> to access the login page.



Google Chrome is recommended for use.

2. Enter the system account and password, drag the verification slider to verify, and then click the “Sign in” to enter the main interface of the system.

Account:	demo
Password:	secret



3.2 Main Interface

After logging in to the main interface, it is distributed in three functional areas on the main interface: operation menu area, function display area and information display area.

A: Operation menu area: system operation function menu;

B: Function menu area, including historical event viewing, information statistics, device management, network settings, map settings, and advanced settings, which users can use as needed;

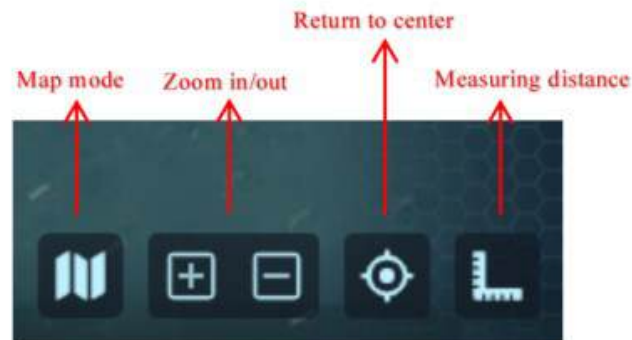
C: Display control menu, which allows users to modify the interface display, turn on and off sounds, and change the language;

D: Information display area: information display function of detected drones.



A. Function Menu

The functions of the operation menu in the main interface of the software include map mode, zoom-in/zoom-out, measuring the distance, returning to the center point, and the user can choose to click on the corresponding function operation according to the need.



B. Function Menu Bottom

As shown in figure below, the function menu mainly contains the following functions.



C. Display control menu

The main functions of the information display area include hiding/displaying the menu bar of the main interface, volume, notification switch, language switch, system login/logoff and other operations.



- | | |
|---|----------------------|
| ① Interface function area hidden function | ④ Language switching |
| ② Alarm setting | ⑤ User login |

③ Working status notification

⑥ Information display

D. Information display area



In addition, this area is mainly responsible for the real-time detection information display and control functions of drones, which can display the number of current detection and historical detection drones, as well as the detailed information of currently detected drones.

3.3 Passive Detection

When the system detects a drone, it will automatically issues an alarm, and the drone model, electronic ID and approximate location information are marked on the electronic map in the main interface, while an intrusion message is displayed at the top of the main interface.



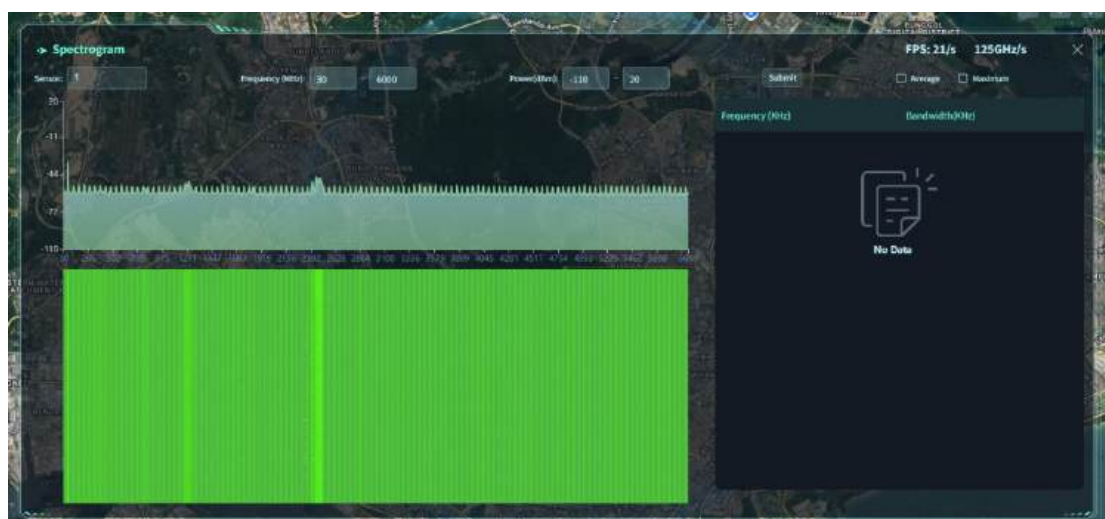


3.4 Full-Frequency Scanning Detection Mode

This mode is designed for non-standard frequency band, such as DIY drones), and can enable the full-frequency scanning module to realize full-frequency scanning and detection and real-time display of signals in 70MHz-6000MHz, which can provide spectrum information for the analysis of non-standard drone RC/GPR signals' frequency bands, detection and early warning as well as jamming countermeasures.



Only available for customized equipment.



3.5 Set Up the Whitelist

After the system detects a drone, expand the drone list menu and click "Add Whitelist" to add the drone to the whitelist. After adding the whitelist, the drone will be marked, and at the same time, the drones can be viewed in the whitelist list.



3.6 Delete Whitelist Drones

- ① After the drone is added to the whitelist, click "Delete Whitelist" again to remove the drone from the whitelist list;
- ② If the drone is not turned on or not within the detection range, click the delete icon to remove it from the whitelist;



If the drone is detected again after deleted, the system will generate an alarm.

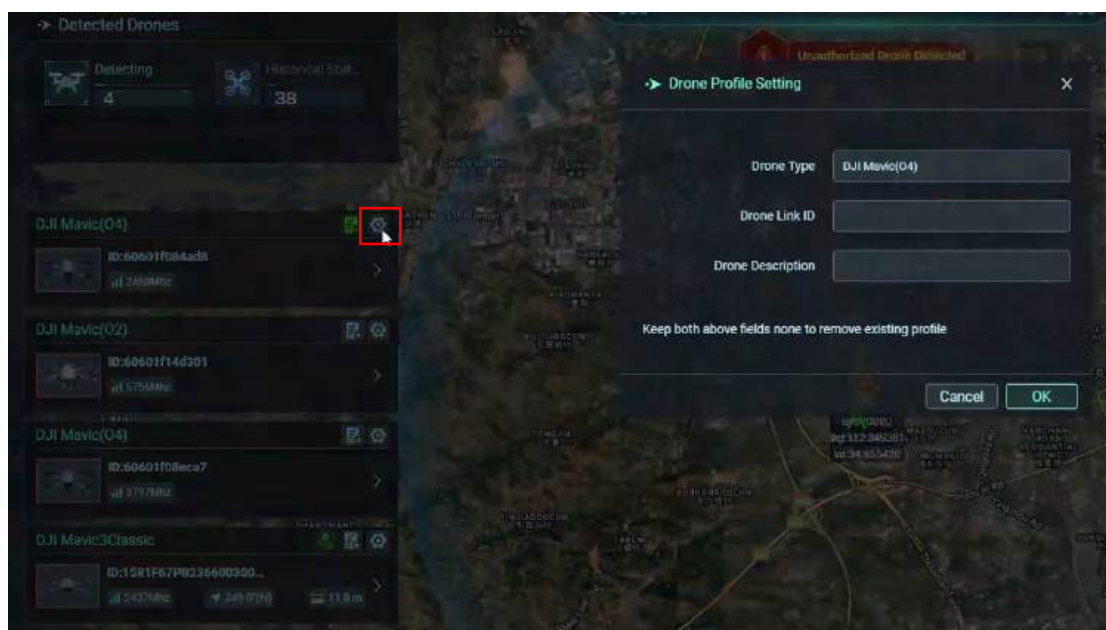


3.7 Drone Profile Setting

The system supports clicking “Profile” to customize the drone type, name and other information, click the drone signal on the right side, and set the information of the specified drone in the profile.

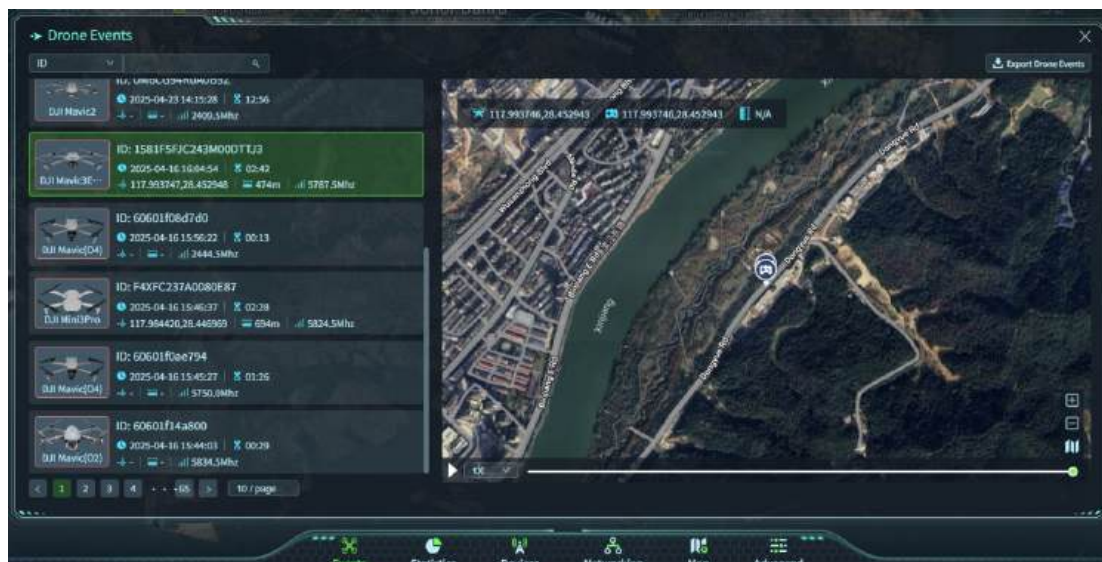


This function only supports manual setting after detecting a drone.



3.8 Check the Events

Move the mouse to click “Events” to enter the list of history events, view the detection time, duration, model and drone ID, working frequency band and other information, the list also supports expanding by “Time” or merging by “Model”, as shown in the Figure below.



3.9 Check the Statistics

Move the mouse to the click “Statistics” to enter the statistics interface and view the drone event statistics report, including the number of drones detected, common models, invasion time, drone event development trend and other information, as the Figure below.



3.10 Check the Device Status

Device management allows users to instantly view and monitor basic information about the device operating status.



- Controller

Allows users to view controller operational status, online time.

- Engine

Users can view the compute engine running status, online time, temperature, and version information, as well as send and receive packet status.

- Sensor

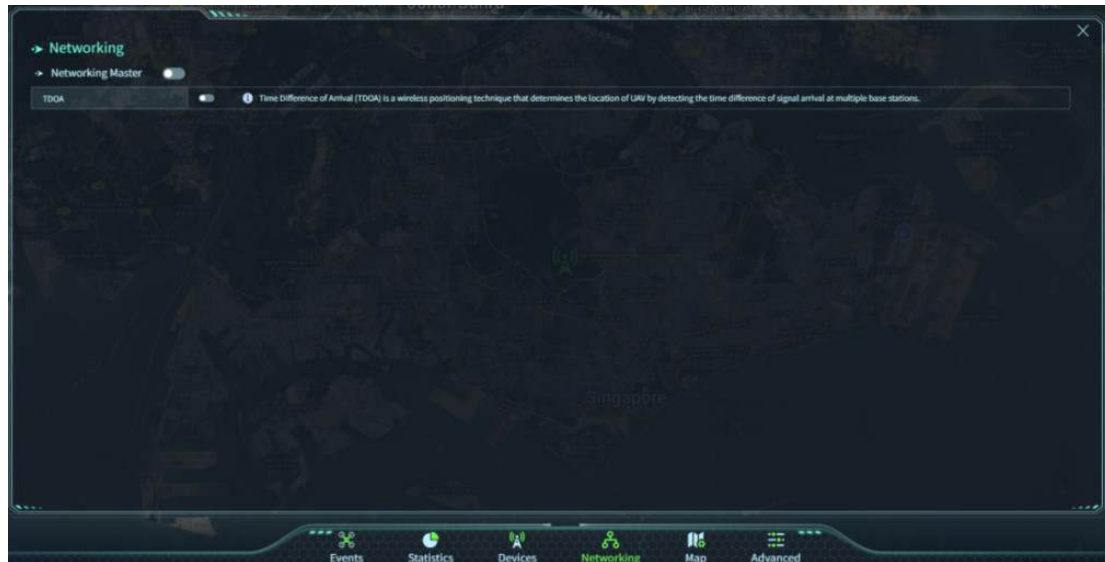
Allows users to view information such as running status, online time, software version.



If there is equipment failure, click into the equipment faults and follow the prompts to operate or consult the after-sales personnel.

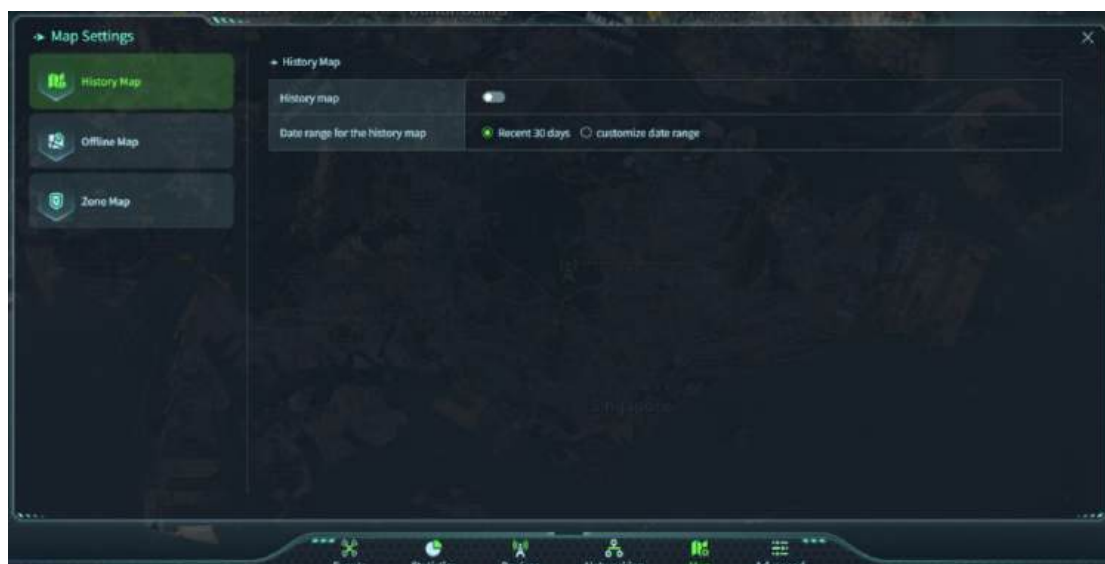
3.11 Check the Networking Status

TDOA, time difference of arrival is a wireless positioning technique that determines the location of UAV by detecting the time difference of signal arrival at multiple base stations.



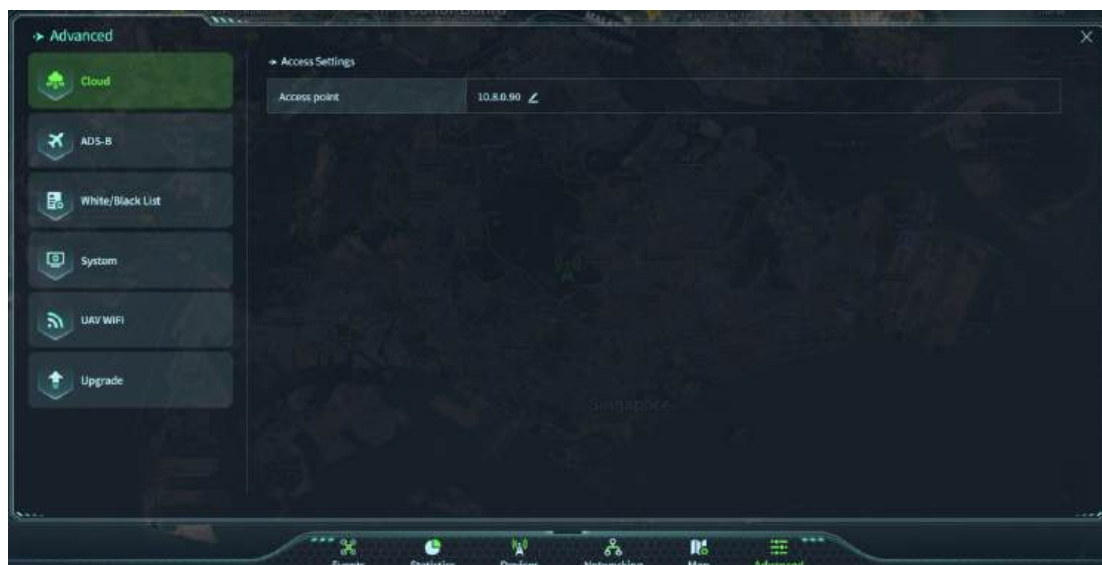
3.12 Check the Map Setting

In the map settings, you can set historical map information (including historical drone detection information) within a certain time range to be displayed on the main interface; you can also import and export offline maps.

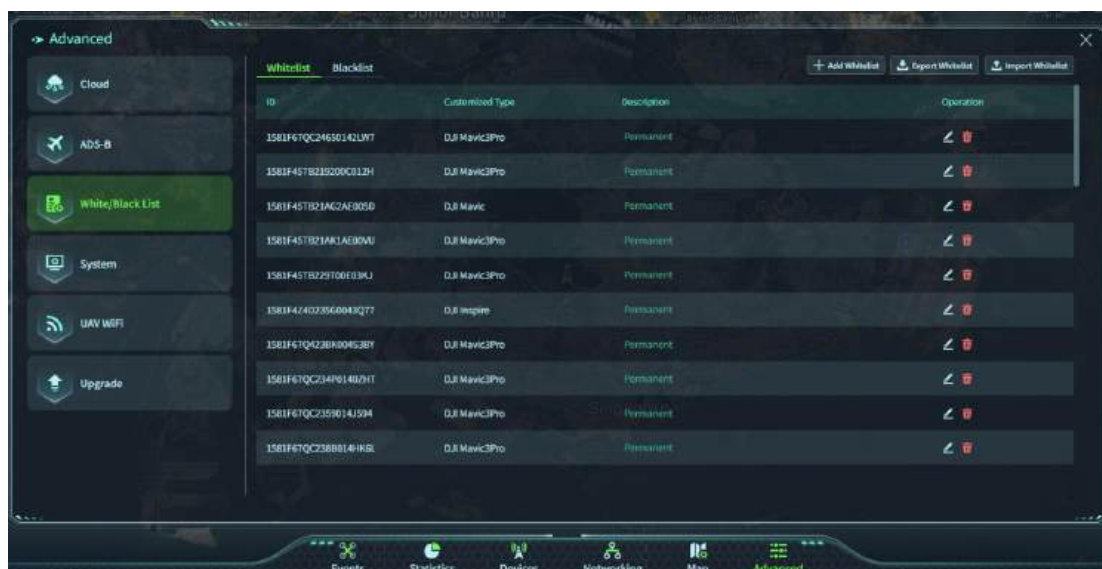


3.13 Advanced Settings

In Advanced Settings, you can manage functions such as cloud services, ADS-B, whitelist and blacklist, system settings, environmental WiFi signals, and system version upgrades.



In the whitelist/blacklist interface, you can add or remove drones from the respective lists. When a drone is added to the whitelist, the device will no longer sound an alarm upon detecting it. Conversely, when a drone is added to the blacklist, the system will provide a prominent alert upon detection.



4 Equipment Maintenance

To ensure stable operation of the equipment, please comply with the following maintenance specifications.

4.1 Routine Maintenance

Maintenance Type	Maintenance Method
Interface protection	Seal unused interfaces with protective covers.
Cable maintenance	● Do not replace antennas without authorization after deployment. ● Ensure cables and interfaces are fully engaged and securely locked. ● Immediately replace any feeder/power/Ethernet cables with damaged jackets or exposed wires. ● Ensure plug pins are not bent or damaged.
Power inspection	Verify that the device is powered normally.

4.2 Basic Troubleshooting

Fault Type	Troubleshooting Method
Power-related fault	● Restart the power switch, boot the server, and launch the related services. ● Power off the device, wait for 30 seconds, and then restart it.
Network disconnection	● Use the <i>ping</i> command to test connectivity between the device and the server. ● Unplug and reconnect the network cable, then verify that the port indicator light is on and stable.
System Process	Log in to the "Device" interface to check the process status of the

Exception	controller, engine, and sensors.
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If the issue persists, contact our technical support team.



Unauthorized personnel or non-designated maintenance personnel are prohibited from disassembling the chassis.

5 Packaging, Transportation and Storage

The equipment shall comply with the following requirements for packaging, transportation, and storage:

5.1 Packaging

The packing boxes shall be moisture-proof and shock-proof, and contain the following items:

- Delivery list
- Product Inspection Certificate
- User manual.

5.2 Transportation

In the process of transportation, avoid throwing, sun and rain, avoid mixing corrosive substances.

5.3 Storage

The storage shall meet the following requirements:

- Products should be stored in a cool, ventilated, dry warehouse.
- Do not put together with oil, away from heat sources.
- Stacking should be 20cm from the ground and 20cm from the wall.