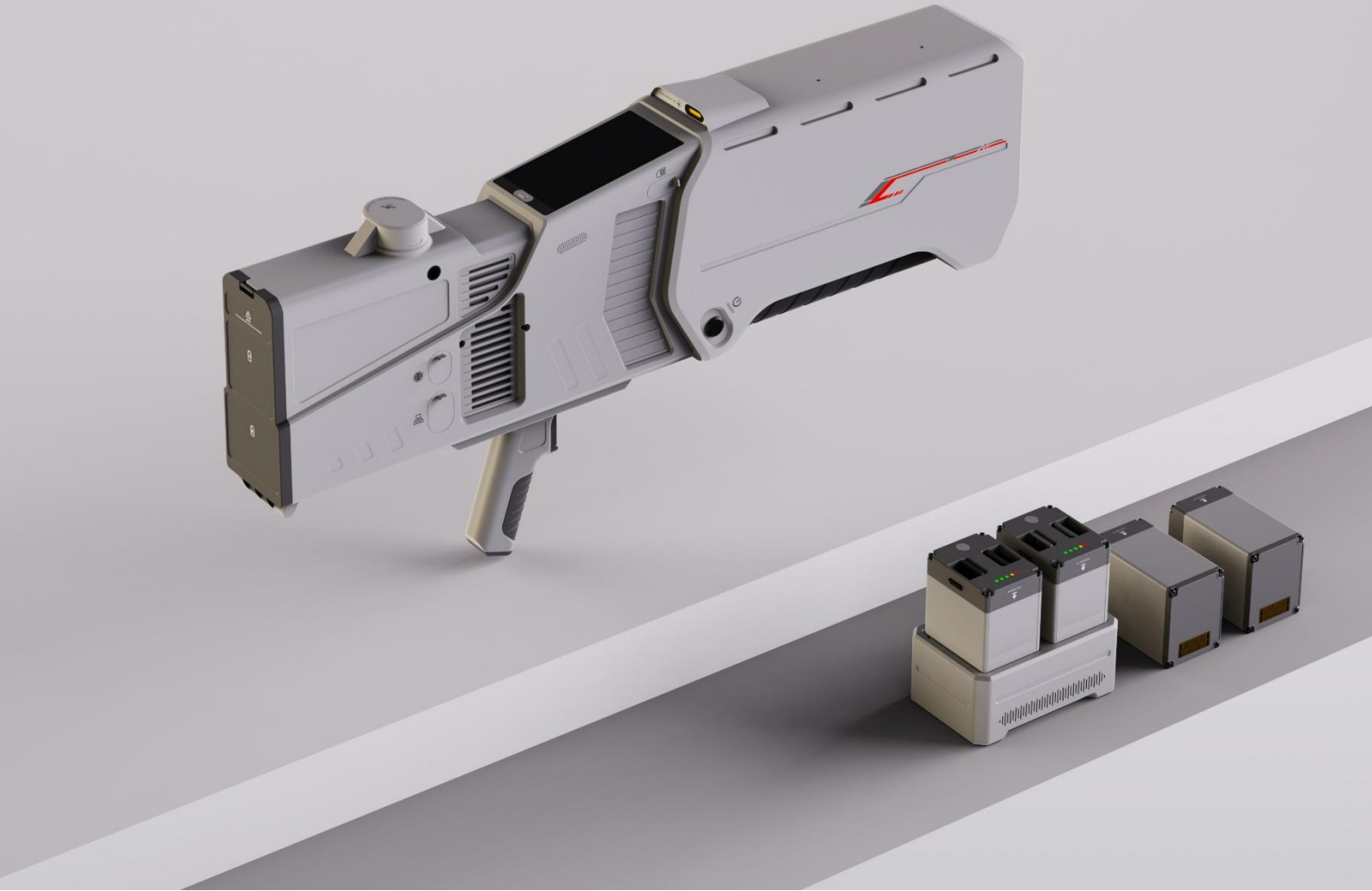
HDJS 3.0

User Manual

V1.0



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 the device operating temperature 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.

Table of Contents

1 Product Introduction

The product HDJS 3.0 is a man-portable handheld integrated defense system that combines detection, jamming, and spoofing capabilities. Integrating an advanced technical architecture and precision detection technologies, it can rapidly and accurately identify characteristic information of intruding drones, enabling early warning of potential threats. The system supports identification and alerting, direction finding and positioning, jamming and suppression, as well as navigation spoofing, forming a complete defense system that provides reliable low-altitude security assurance for critical areas.

1.1 Main Functions

Integrated Detection-Jamming-Spoofing Design

Combining detection, jamming, and spoofing capabilities into a single system to streamline operational procedures and enhance mission efficiency. The adaptive strike band function automatically adjusts jamming strategies based on the communication frequency of intruding UAVs, ensuring maximum jamming effectiveness.

Precise Identification

Based on CRPC technology, the system accurately identifies drones of the same brand, model, and frequency band but with different architectures, and marks the unique ID of each drone's body.

RTK Direction Finding

By applying RTK direction-finding and positioning technology, the system enhances positioning accuracy to the centimeter level. This enables precise locking of the intruding drone's location, providing exact guidance for subsequent jamming and spoofing operations, thereby improving the accuracy and reliability of defense.

Continuous Drone Library Updates

The system offers lifelong maintenance and upgrades for covered drone models, ensuring sustainable device usage and effectively addressing the rapid evolution of drone technology.

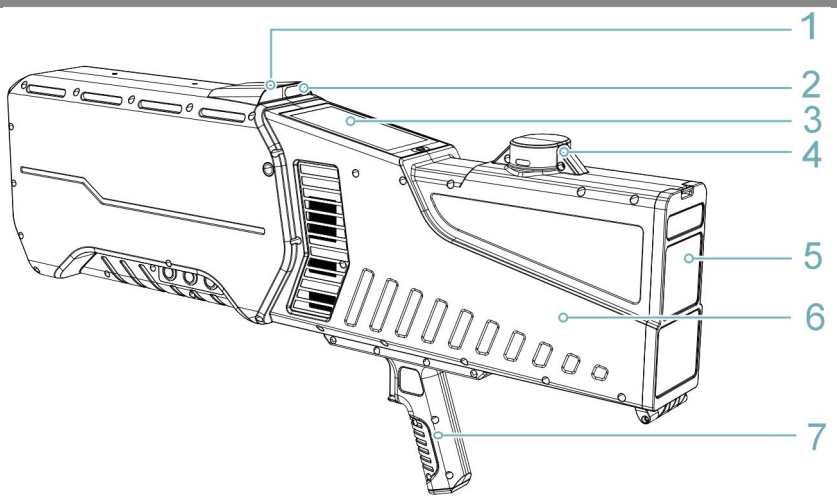
Visual Touchscreen Control

Equipped with an integrated color touchscreen display, the device allows operators to accurately track the drone's flight path, location, and surrounding geographical environment. It processes real-time data during drone detection, jamming, and spoofing operations, enabling the precise formulation of defense strategies.

Dual-Battery Power Supply

The dual-battery power design provides strong support for the stable operation of the product, ensuring continuous performance during prolonged missions or unexpected situations.

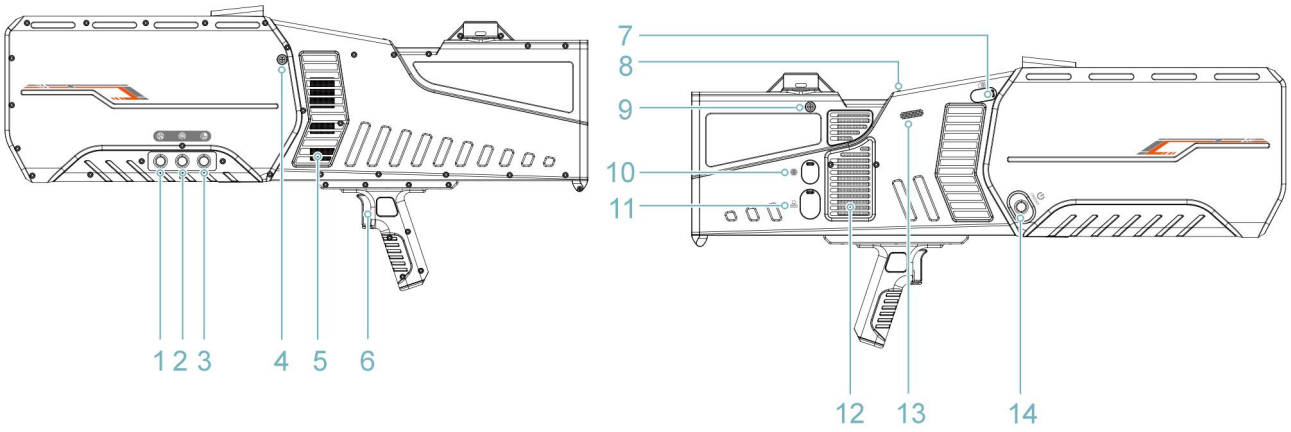
1.2 Product Appearance



1. GPS Antenna Module	Built-in GPS antenna module. To ensure optimal satellite reception, do not cover the module with any objects.
2. Operation Status Indicator	• Yellow light slow flashing: Target detected in detection mode • Red light steady on: Jamming mode active
3. Touch Screen	Features a built-in intelligent system, supporting an intuitive user interface, device function management, and interaction.
4. Satellite Antenna Module	Built-in satellite antenna module. To ensure optimal satellite reception, do not cover the module with any objects.
5. Battery Cover	Features a dual-battery compartment design, allowing installation of two removable lithium-ion batteries. The upper section is compartment A, the lower section is compartment B.
6. Main Unit	The main body of the device.
7. Detachable Stock	Modular disassembly, suited for users with special transport needs.

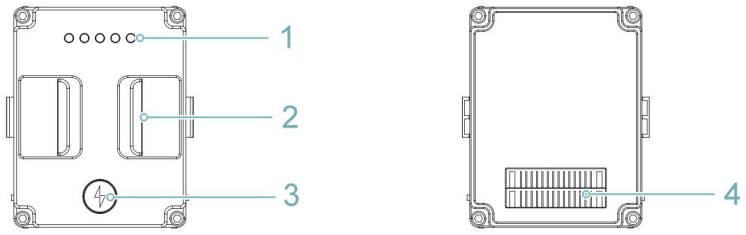
1.3 Ports and Buttons

The Ports and Buttons of Main Unit



1. Navigation spoofing switch
2. Full-band jamming switch
3. Direction-finding switch
4. Strap mounting hole 1
5. Cooling air intake
6. Trigger lock (for activating/deactivating jamming)
7. SIM card slot
8. Screen power on/off button
9. Strap mounting hole 2
10. Power connector
11. Ethernet port
12. Cooling air outlet
13. Speaker
14. Power on/off button

The Ports and Buttons of Lithium-ion Battery

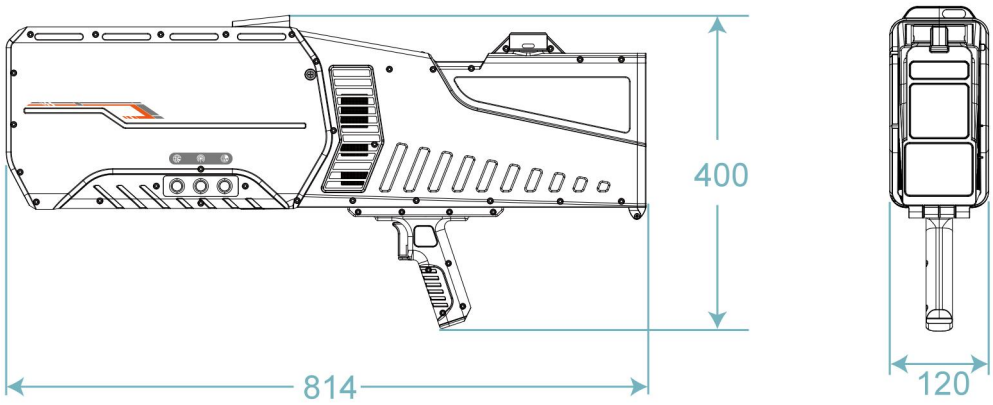


1. Battery level indicator
2. Handle
3. Power on/off button of the battery level
4. Female connector for battery

1.4 Mechanical Characteristics

Item	Specification
Size(1)	
Length	814 mm
Width	120 mm
Height	400 mm
Screen Size	
Screen Size	5.5 inch
Weight	
Weight	7 kg

(1) The data are of the main unit and battery.



2 Equipment Deployment Preparation

This device adopts a portable design ideal for rapid outdoor deployment. Under compliant environmental conditions, it ensures stable operation and optimal detection, jamming and spoofing performance. First check the specifications and quantity of all parts and standard parts according to the equipment delivery list, and then assemble them step by step according to the following installation steps.

2.1 Site Selection

The equipment is typically deployed outdoors. 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.

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.

2.2 Installation Methods

The product features a portable, integrated design and comes with a dedicated shoulder strap. It supports two deployment modes, the back-mounted and tripod- mounted deployment modes, meeting operational requirements for both rapid response and long-term surveillance.

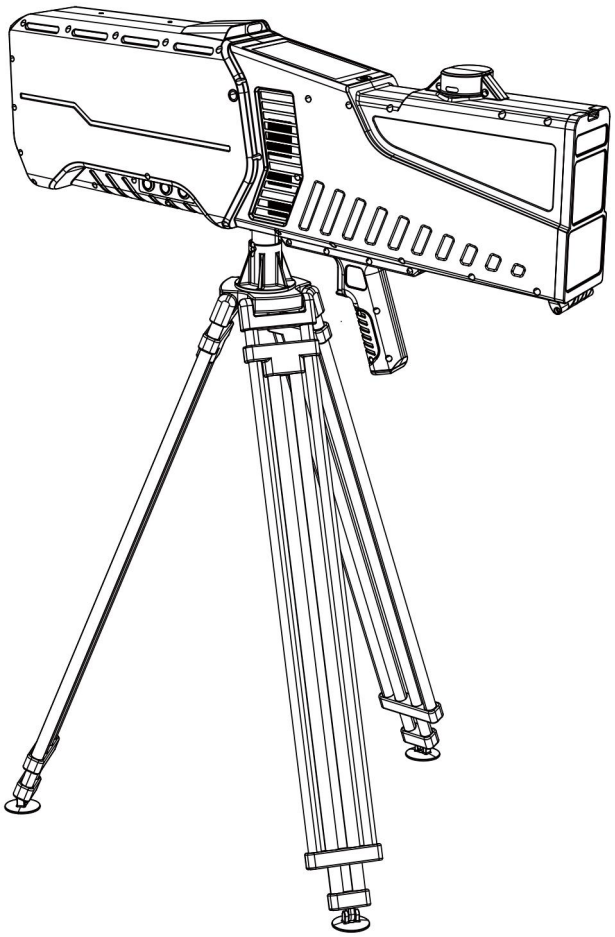
Back-Mounted Deployment

1. Install the Retaining Rings: Snap the two retaining rings from the shoulder strap kit into the shoulder strap mounting holes 1 and 2 on both sides of the device.
2. Install the Shoulder Straps: Securely connect the strap rings at both ends of the shoulder strap to the installed retaining rings, and adjust the strap length to a comfortable fit for carrying.

Mounting on a Tripod

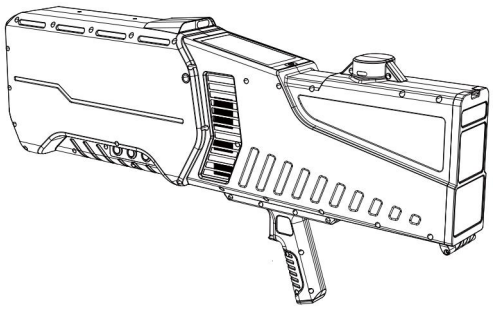
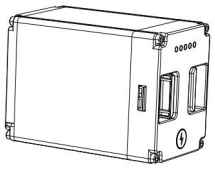
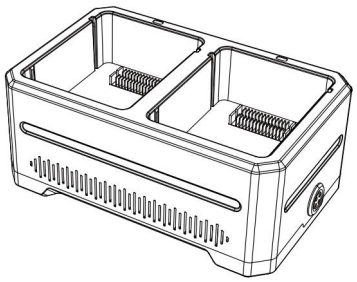
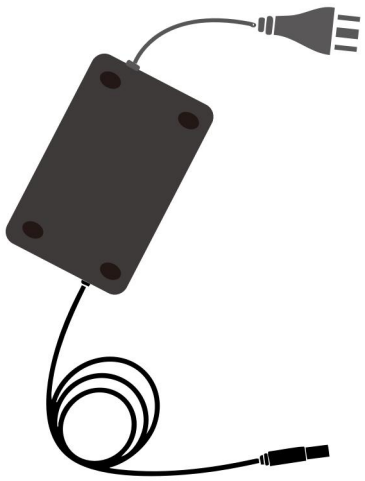
1. Install the support frame: Align the dedicated support frame with the standard interface on the bottom of the device and secure it with bolts.
2. Mount the equipment: Lock the entire device (with the support frame installed) onto the tripod head, ensuring the tripod legs are fully extended and positioned steadily on the ground.

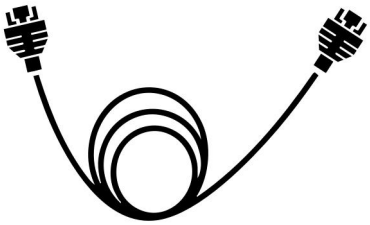
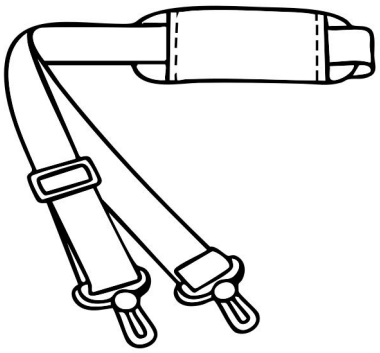
> ⓘ Use only manufacturer-specified tripod or authorized third-party tripod. For long-term use, anchor the tripod to the ground using tripod ground stake or add counterweights at the base to prevent tipping.



2.3 Delivery Checklist

Check the specifications and quantity of all parts and standard parts according to the equipment delivery list.

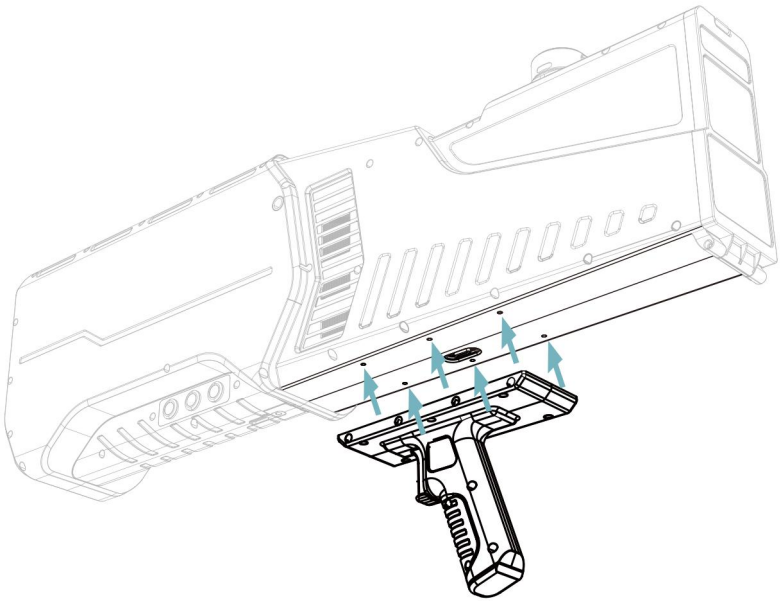
Part	Quantity	Description	Diagram
Main Unit	1	Main unit of the device; used for detection, identification, direction-finding, and the transmission of jamming signals.	
Lithium-ion Battery	1	Used to power the main unit.	
Battery charging dock	1	Used for placing the battery for charging.	
Power adapter	1	Used for providing power to the main unit as well as to the charging dock.	

Category 6 Network Cable	1	Category 6 round network cable - 2M; used for connecting the device to user terminal equipment (computer).	
Shoulder Strap	1	Polyester shoulder strap with quick-detach buckle; used for securing the device during carrying.	Shoulder Strap:  Retaining ring: 

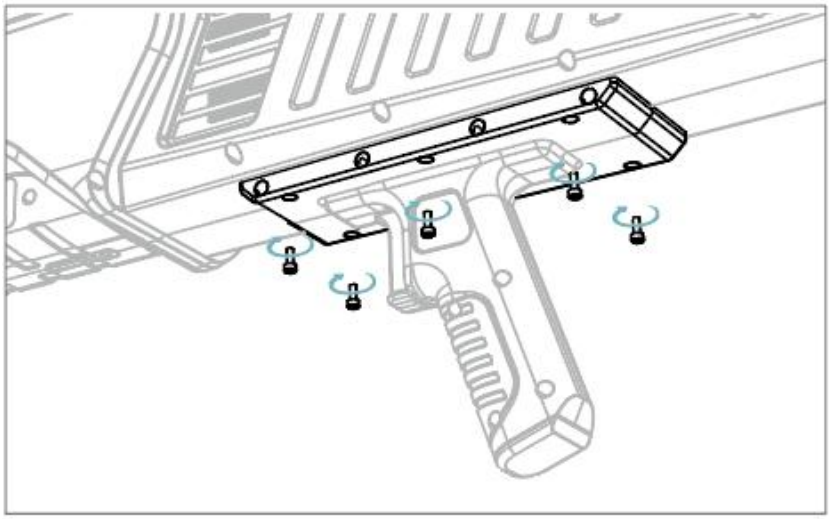
3 Deploy the Equipment

3.1 (Optional) Install the Detachable Stock

1. Mate the stock's connecting surface with the bottom of the gun body, ensuring the 6 threaded holes are concentrically aligned.



2. Use a 2.5 mm hex key to torque the six M3x8 socket head cap screws in a diagonal crisscross sequence.



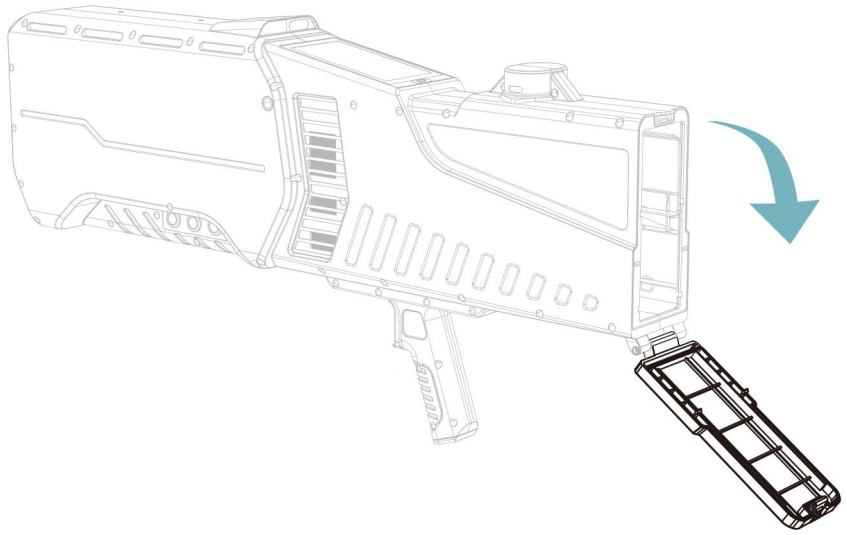
3.2 Check and Install the Lithium-ion Battery

The device supports flexible single or dual-battery configuration. For best endurance, it is recommended to install both batteries for operation.

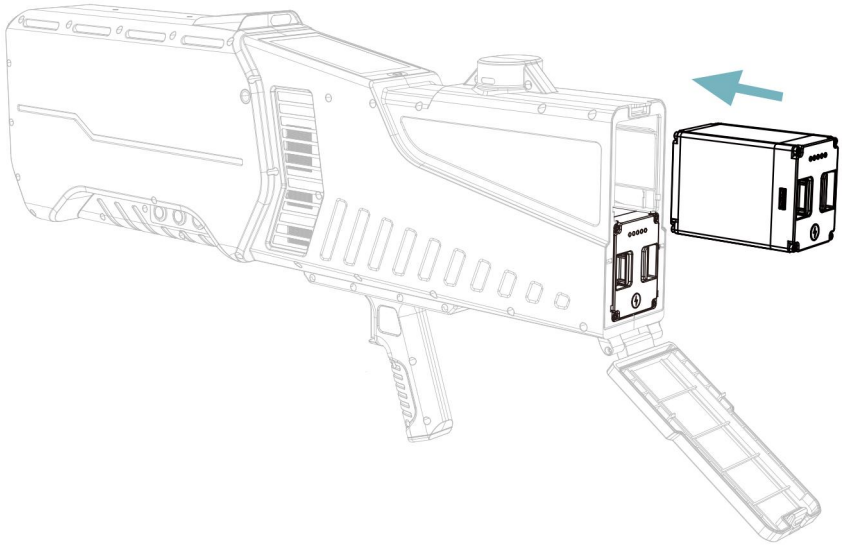
1. Check the battery to confirm that its appearance is normal.
2. Press the Power On/Off Button on the battery to check battery level.

Normal Status	
Red×1 + Yellow×1 + Green×1 Red×1 + Yellow×1 + Green×2	The battery is not fully charged. It is recommended to charge it fully before use.
Red×1 + Yellow×1 + Green×3	The battery is fully charged and ready for use.
Low Battery Status	
Red×1	The battery is in a low-power state. It is recommended to charge it fully before use.
Red×1 + Yellow×1	The battery is in a low-power state. It is recommended to charge it fully before use.

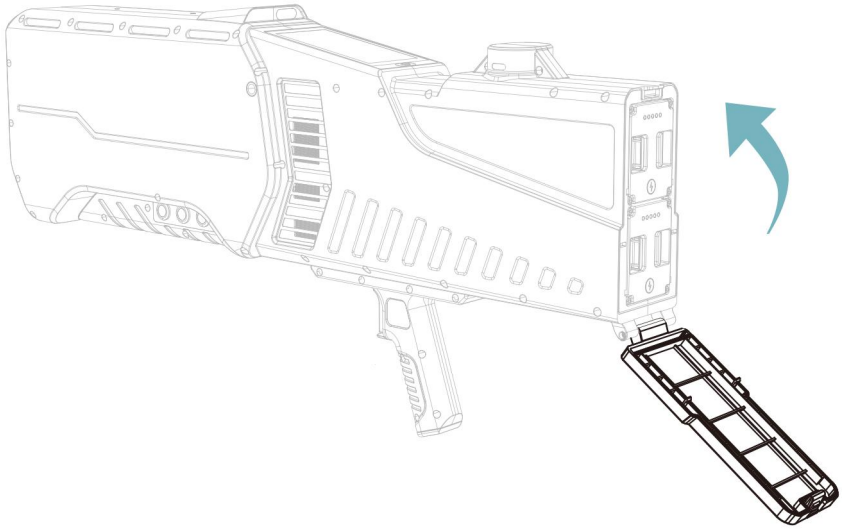
3. Press the battery cover latch and open the cover.



4. Align the female connectors of the two batteries with the male connectors in battery compartment A and B, and push them in until they are securely engaged. An audible click indicates that the batteries are properly locked in place.



5. Close the battery cover.

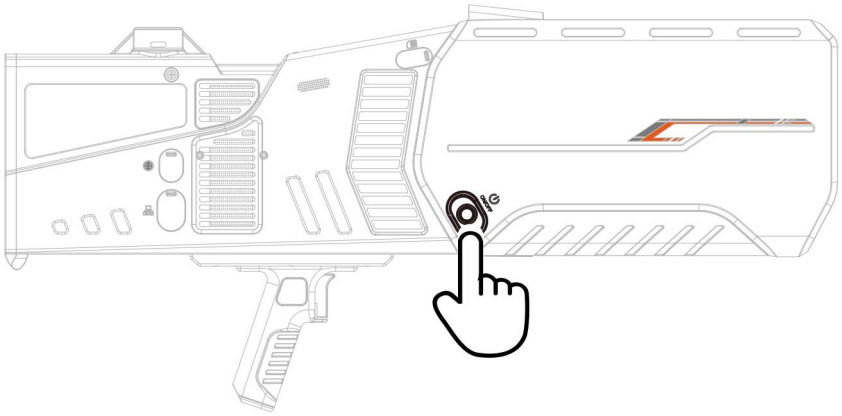


3.3 Power On / Power Off

Power On

1. After installing the battery, press the power button on main unit.

The device supports instant-on jamming, meaning jamming can be activated as soon as the device is powered on, even before the system fully boots up. The jamming covers four frequency bands: 2.4 GHz, 5.2 GHz, 5.8 GHz, and 900 MHz.



2. The startup screen appears on the touch screen of main unit, and the system initializes the controller, engine, sensors, and spoofer. The entire boot process takes approximately 90 seconds to complete.

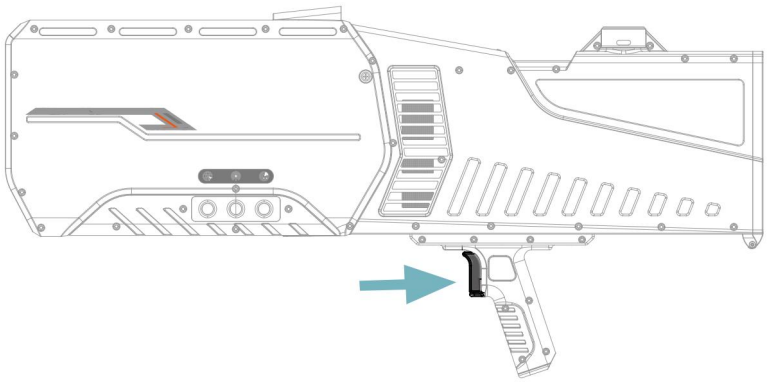
Power Off

1. Press the power button on main unit to power off.

3.4 Start Jamming

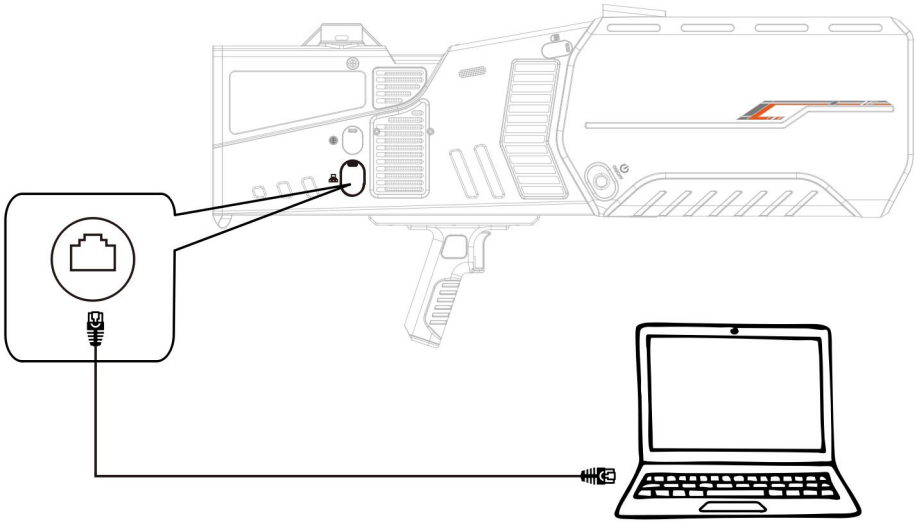
When the target drone is within visual range, you can initiate the jamming directly.

1. Locate the drone target and pull the trigger lock to initiate jamming.



3.5 Connect a Control Terminal

1. Connect a user terminal equipment (computer) to the device's Ethernet port for accessing Drone Defense Software Platform or transferring files.



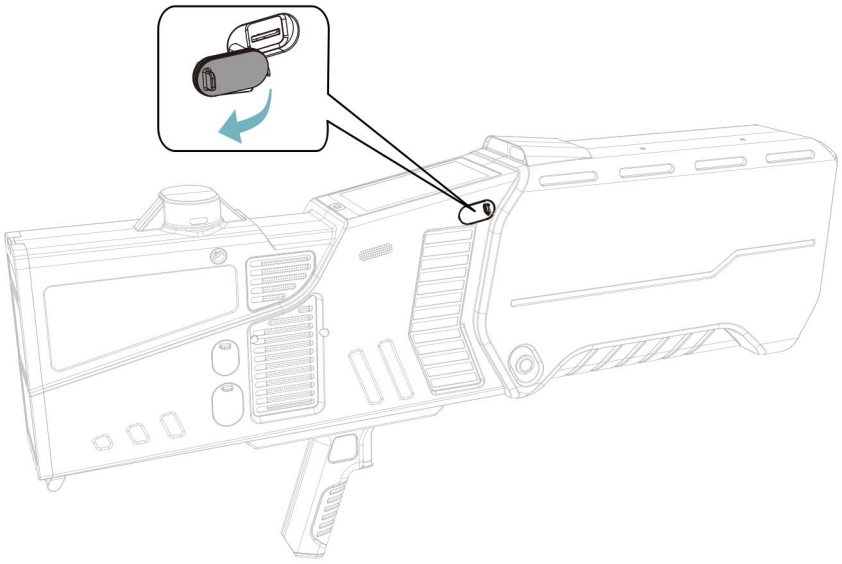
3.6 (Optional) Connect to the Network

Perform this step when the device requires a network connection.

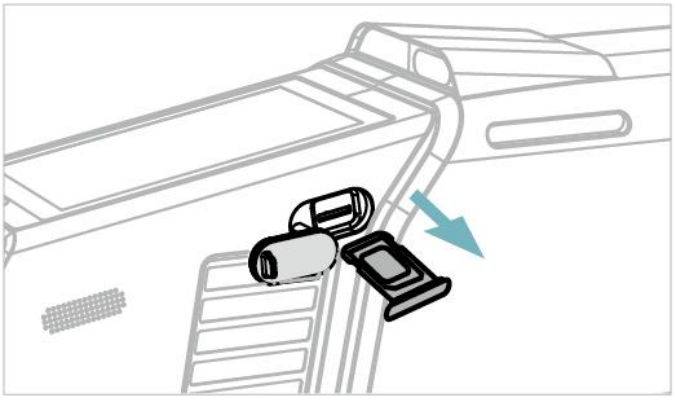
Option 1: Connect to 4G Network

The device does not support SIM card hot-swapping. Ensure the device is powered off during the process of installing or removing the SIM card.

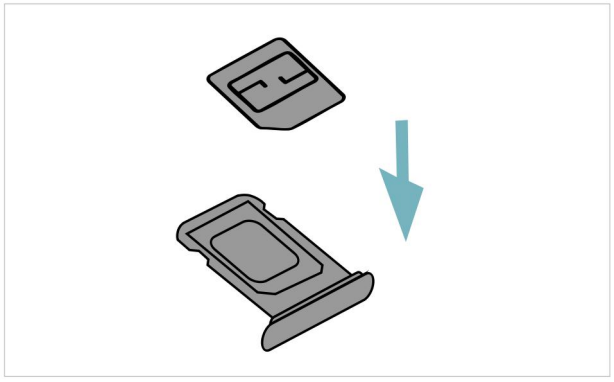
1. Open the protective cover of the SIM card slot.



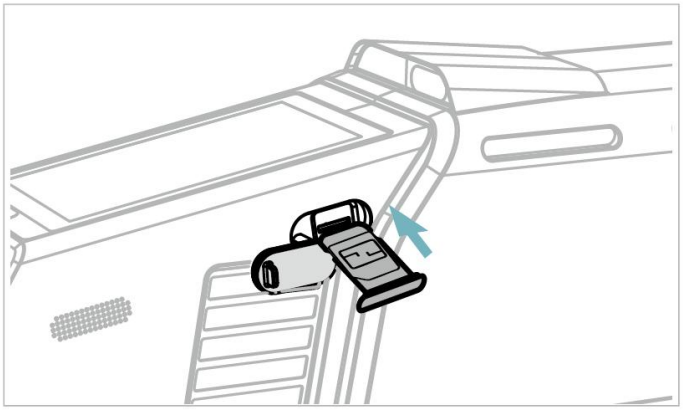
2. Pull the tray out of the slot.



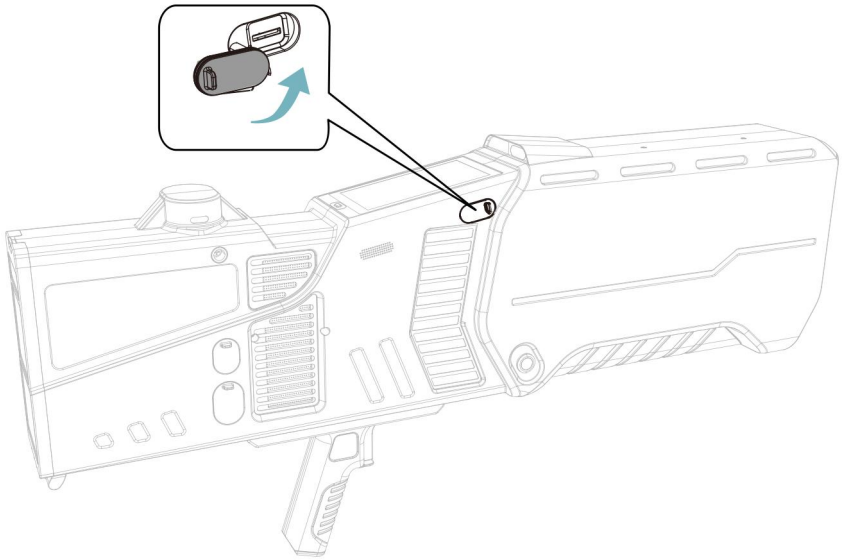
3. Insert the 4G nano-SIM card into the tray, with the SIM card chip facing up, ensuring the card lies flat after installation.



4. Slide the tray horizontally into the slot, ensuring it is fully seated.

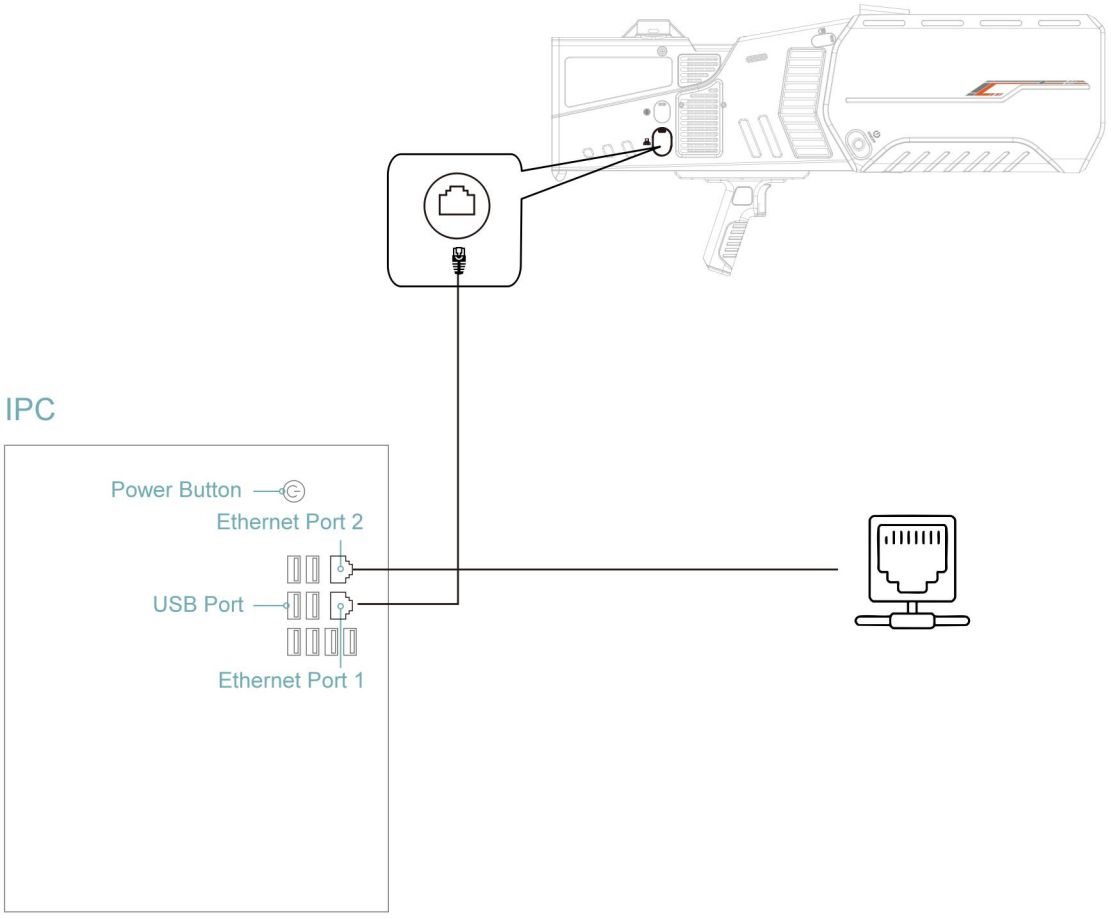


5. Close the protective cover.



Option 2: Connect to Wired Network

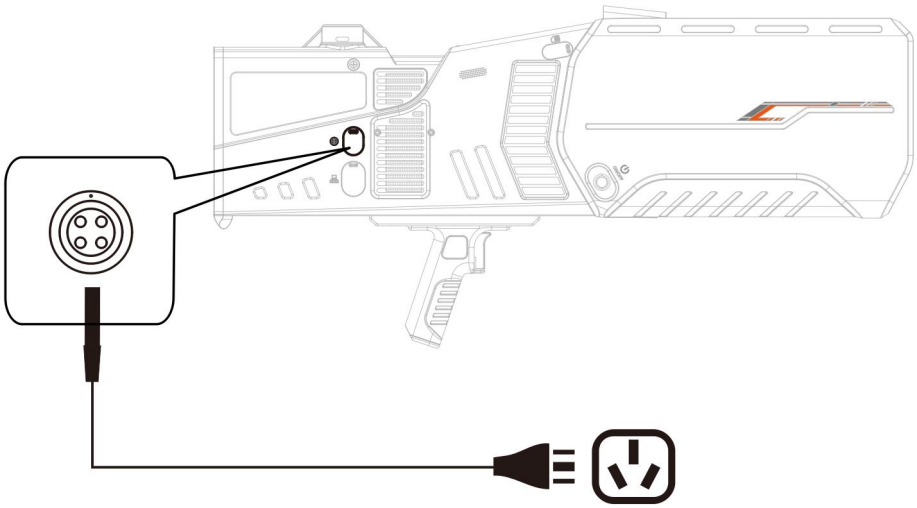
1. Connect the Device Ethernet port to the IPC's Ethernet port 1 using an Ethernet cable.
2. Connect the IPC's Ethernet port 2 to the network port using an Ethernet cable.



3.7 Charge

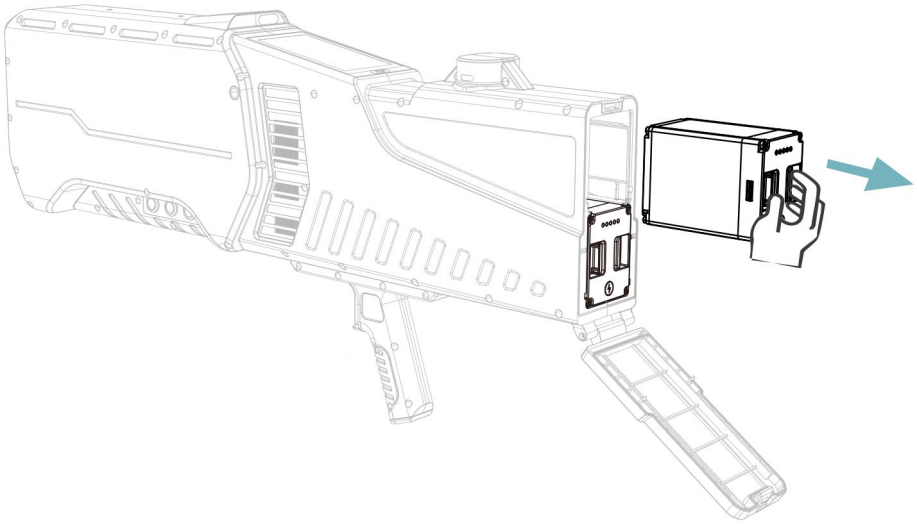
Option 1: Power the Device

1. Connect the input end of the power adapter to the fixed power supply and insert the output end into the power connector of the device.

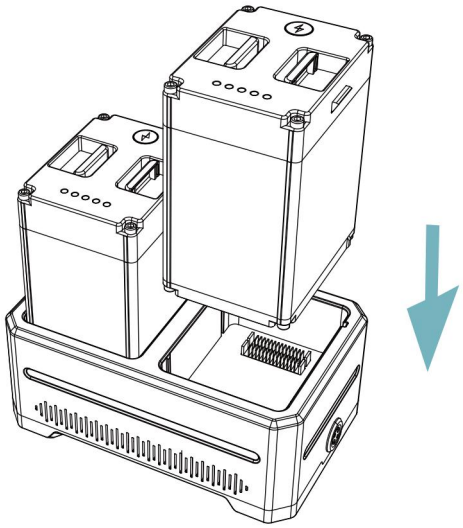


Option 2: Charge the Lithium-ion Battery

1. Pinch the handle on the battery and pull it horizontally outward to remove the battery from the device.

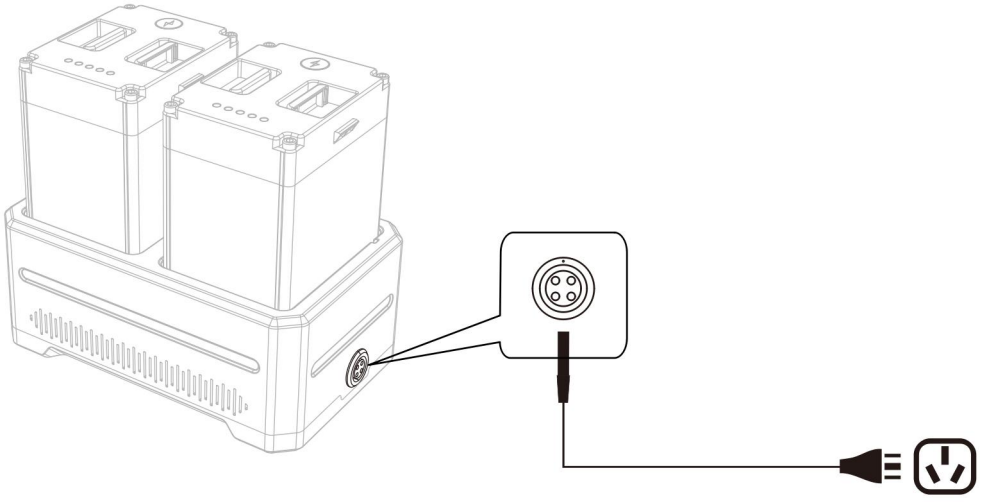


2. Place the removed battery into the dedicated charging dock, aligning the contacts. Ensure the battery's contacts are fully engaged with those in the dock.



3. Connect the power adapter to both the fixed power supply and the dock's charging interface to supply power to the charging dock.

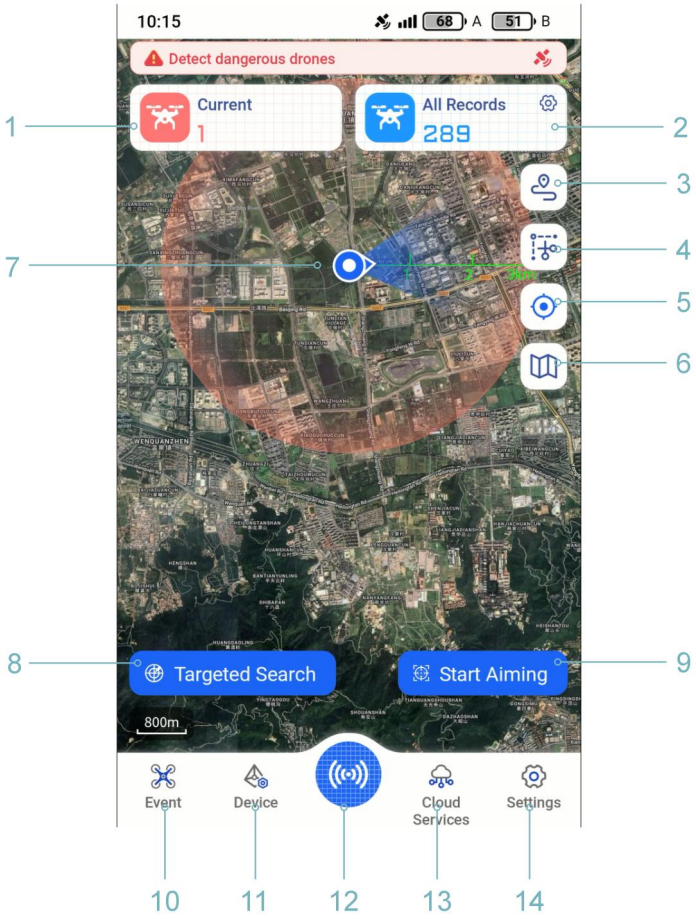
	Indicator	Battery Status
Charging Dock	Constant red light	Charging
	Off	Fully charged
Battery	Light flashing	Charging
	Off	Fully charged



4 Drone Defense System

4.1 Main Interface

The main interface is distributed in two functional areas.



Information Display Area

1. Current Detection	Display the total number of drones currently being detected by the device
2. Historical Detection	Display device detection history within a specified time frame. You can set multiple time ranges in the top right-hand corner.
3. Trajectory Display	Support switching operations for drone flight trajectories and pilot (remote control) trajectories. When the function button is in the on state, the trajectory can be viewed on the electronic map.

4. Hide Historical Trajectories	Hide the trajectories record that taken prior to the current time.
5. Center Position	Find the center of the device and display its protection area, with the center point at the center.
6. Map Layers	Switch between different types of map layer.
7. Device Position	Display the current position of the device.
8. Direction-Finding Button	Enable the rapid direction finding of unknown targets.
9. Aim Button	Enable the precision jamming of known targets at beyond-visual-range.

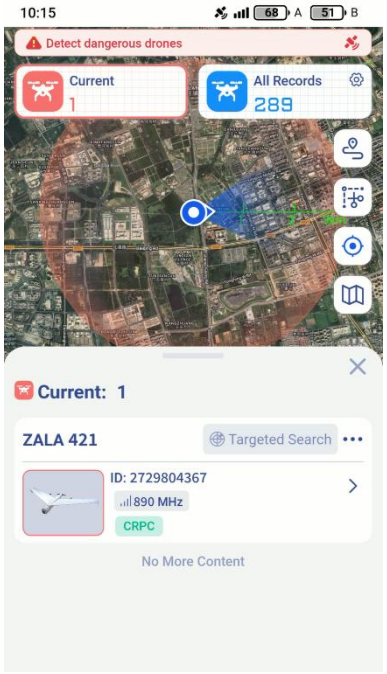
Bottom Function Area

10. Events	Include detection logs, historical statistics, blacklist/whitelist settings, and current environment Wi-Fi signal detection.
11. Device	View the real-time working status of the device's key modules and provide configuration options. ● Controller: Display the information such as operation status, and online time. ● Engine: Display the information such as operation status, and Pkt status. ● Sensors: Display the information such as operation status, temperature, and version. ● Spoofer: Display the information such as operation status, version and spoofing mode.
12. Map	View the real-time positions of the detected drones and pilots (remote controller) on the map.
13. Cloud Services (for multi-device networking)	Access the Command and Control Platform to view other networked devices.

14. Settings Basic settings for the device and the map.

4.2 Passive Detection

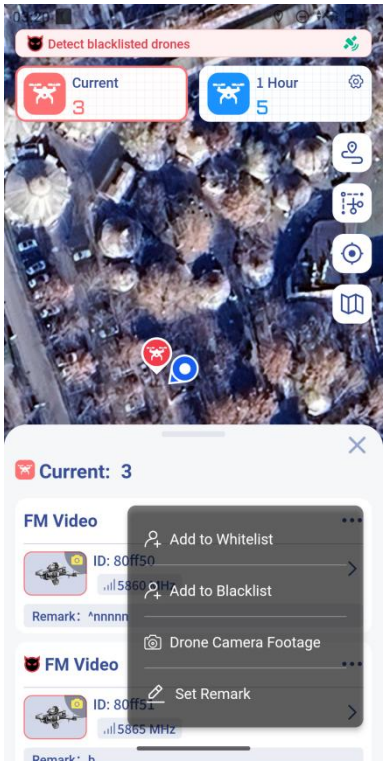
The system automatically raises an alarm when a drone is detected. The symbols and locations of the drones and their pilots (remote controllers) are displayed on the electronic map. Meanwhile, information about the detected drones is displayed in the information display area, including the details such as the brand, model, ID, flight frequency, direction of intrusion, reference distance, flight altitude and flight speed.



To view more detailed information, such as the drone's latitude and longitude, pilot information, and historical detection records, by expanding the drone information in the information display area.

Add to Whitelist/Blacklist

1. On the current drone detection interface, select the drone and click ••• button on the right side.
2. According to the drone's status, click 'Add to Whitelist' or 'Add to Blacklist'.



Show Drone Camera Footage

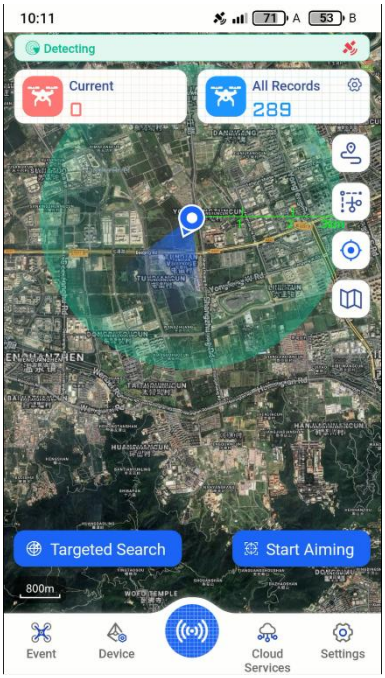
1. On the current drone detection interface, select the drone and click ••• button on the right side.
2. Click 'Drone Camera Footage' button, then the screenshot of the drone will be displayed. Click on the image to enlarge it.

4.3 Execute Direction-Finding

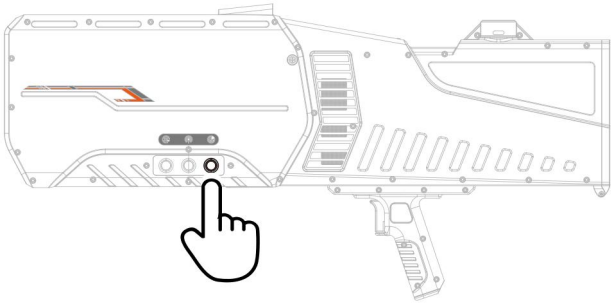
For UAV targets without position information, enable for direction finding of unknown UAVs.

1. Set the device to direction-finding mode.

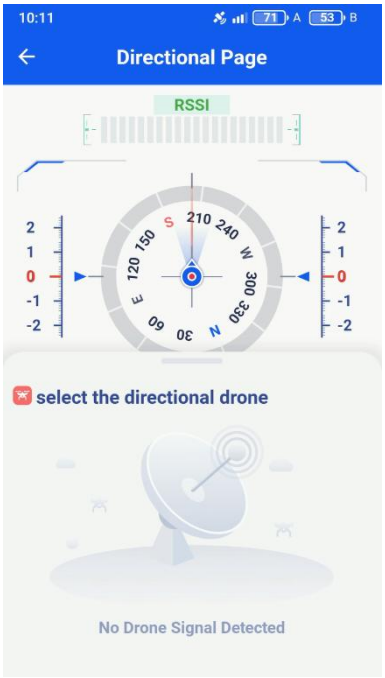
a) On the main interface's information display area, click the **Targeted Search** button.



b) Press down the direction-finding switch.



2. The device enters direction-finding mode.



3. Once an unknown drone is detected, select it from the detection list and click the **Direction-Finding** button to initiate signal direction finding.

4. Hold the gun and slowly rotate 360° in place. Based on the signal strength displayed on the screen, determine the UAV's direction to complete signal direction finding.

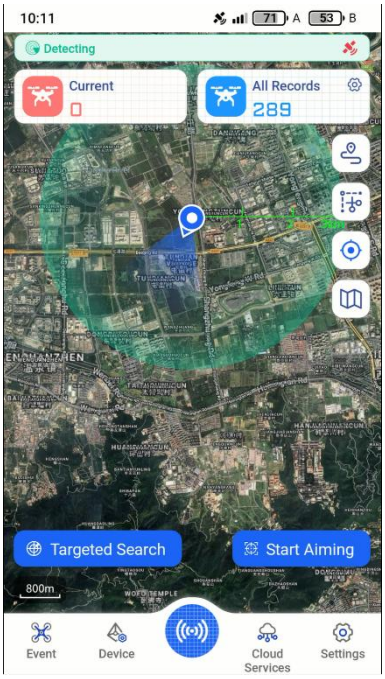
	Stronger signal strength indicates closer proximity to the direction of the drone.

5. Aim at the target drone and pull the trigger lock to initiate jamming.

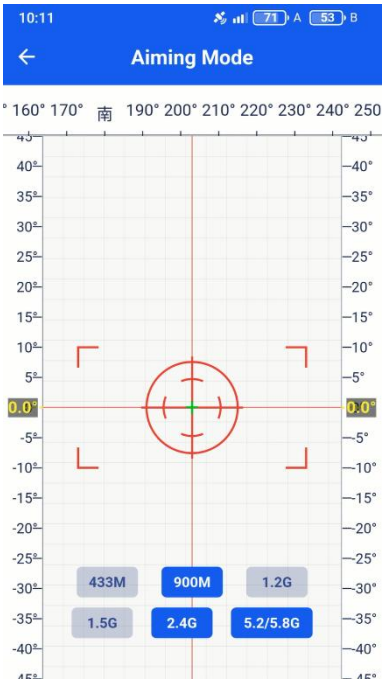
4.4 Execute Aiming

For the known drone targets, the aiming function performs real-time target lock and tracking, allowing operators to conduct rapid and precise strikes against beyond-visual-range threats.

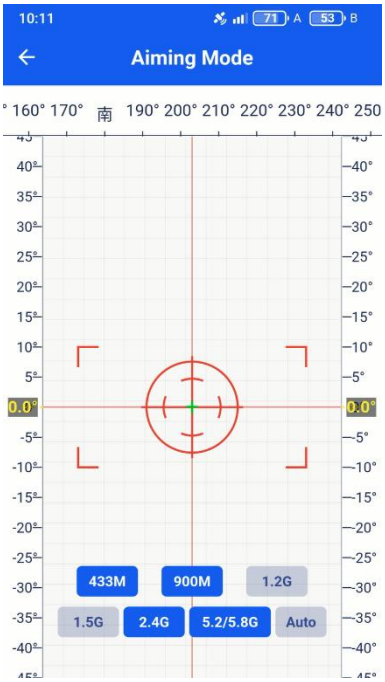
1. On the main interface's information display area, click the **Start Aiming** button.



2. The interface will display the drone's real-time positioning information for the selected frequency band.



3. (Optional) Click the frequency band options at the bottom of the interface to dynamically select the jamming target band.



4. Move the gun body to aim, bringing the target drone into the strike zone to prepare for jamming.
5. Aim at the target drone and pull the trigger lock to initiate jamming.

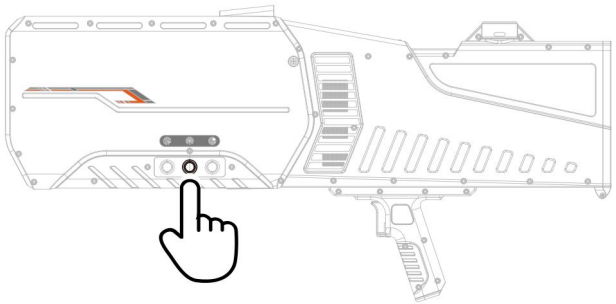
4.5 Execute Jamming and Spoofing

Activating the device's full-band jamming enables jamming of drones on 433 MHz, 900 MHz, 2.4 GHz, 5.2 GHz, 5.8 GHz, 1.2 GHz, and 1.5 GHz frequency bands. Activating the navigation spoofing enables evict or forced landing of drones.

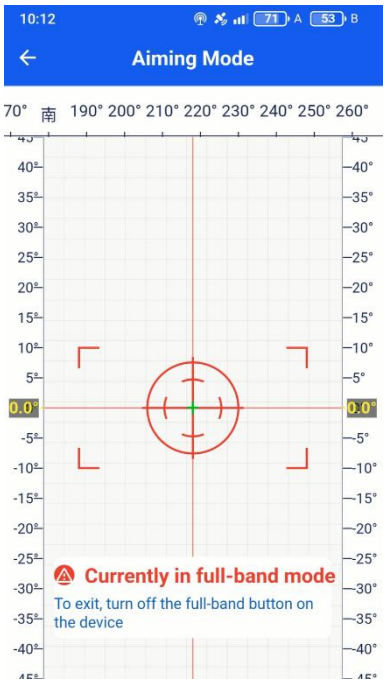
Full-Band Jamming

Jamming on 433 MHz, 900 MHz, 2.4 GHz, 5.2 GHz, 5.8 GHz, 1.2 GHz and 1.5 GHz channels.

1. Press down the full-band jamming switch, and keep the navigation spoofing switch in the "Off" (raised) position.



2. In aiming mode, lock onto the target drone on the screen.

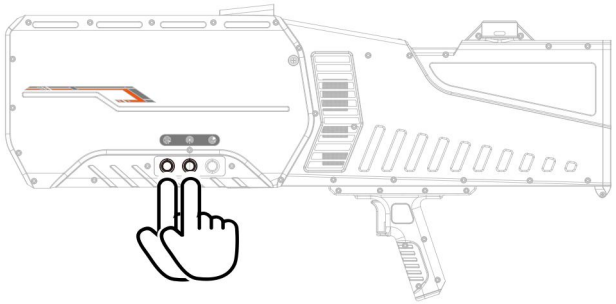


3. When the target drone is within the strike zone, pull the trigger lock to perform full-band jamming against it.

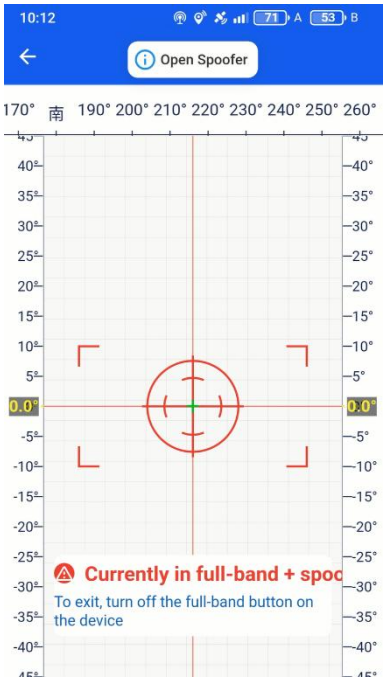
Full-Band Jamming + Navigation Spoofing

Jamming on 433 MHz, 900 MHz, 2.4 GHz, 5.2 GHz, 5.8 GHz, and 1.2 GHz channels, along with L1 navigation spoofing.

1. Press down the full-band jamming switch, and press down the navigation spoofing switch.



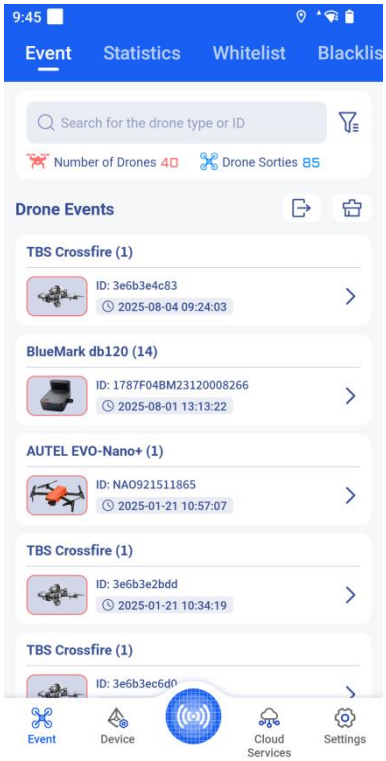
2. In aiming mode, lock onto the target drone on the screen.



3. When the target drone is within the strike zone, pull the trigger lock to perform full-band jamming and navigation spoofing against it.

4.6 Event Function Area

The Event Function Area contains five pages: Event, Statistics, Whitelist, Blacklist, and Wi-Fi Signal.

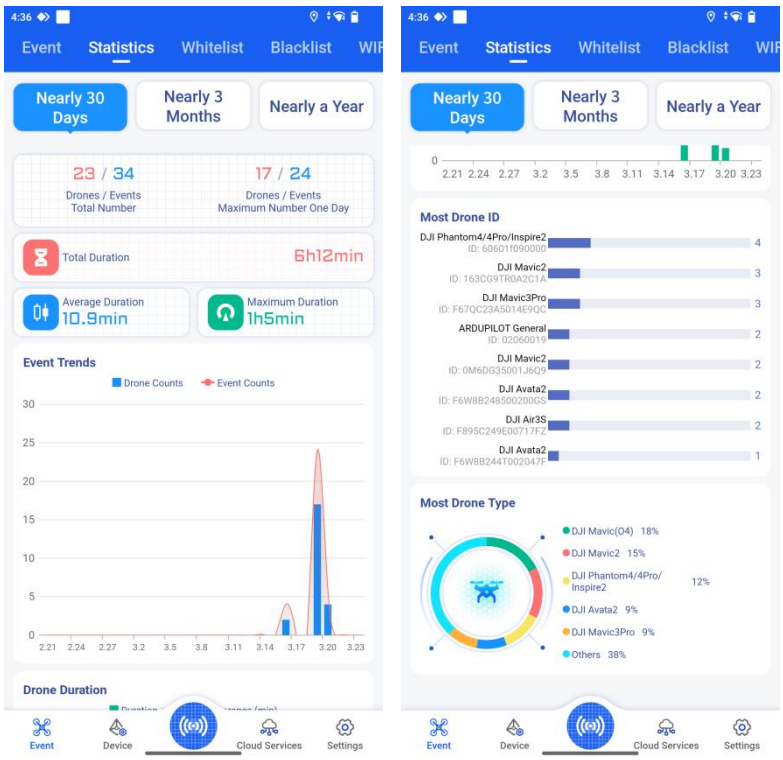


Check Event Page

1. Click on the 'Event' to enter the list of historical events.
2. Choose one drone event and click > button at the right side.
3. The drone's ID, detection time, duration, working frequency band, trajectory and other information can be viewed.

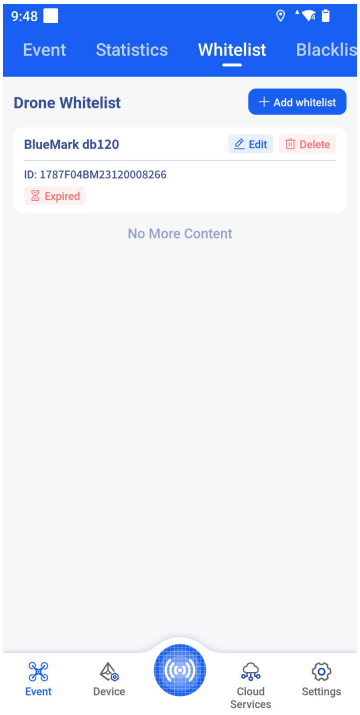
Check Statistics Page

1. Click on the 'Statistics' to enter the statistics interface.
2. You can view the statistics on drone events for the past 30 days, 3 months, or 1 year, which includes the number of events, duration, trends, drone flight time, common drone IDs, and common drone model.

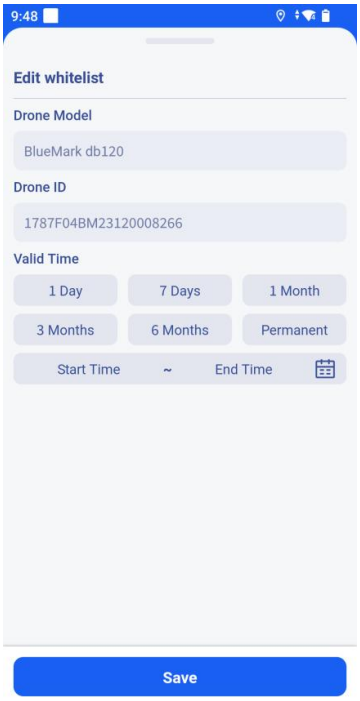


Edit Whitelist

1. Click on the 'Whitelist' to enter the whitelist interface.



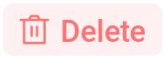
2. Choose the drone information that needs to be modified in the drone list and click  button.



3. Enter the 'drone model', 'drone ID', and set the 'valid time' information, then click the '**Save**' button.

Delete the Whitelist

1. Click on the 'Whitelist' to enter the whitelist interface.

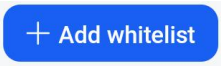
2. Choose the drone information to be deleted in the drone list and click 

button.

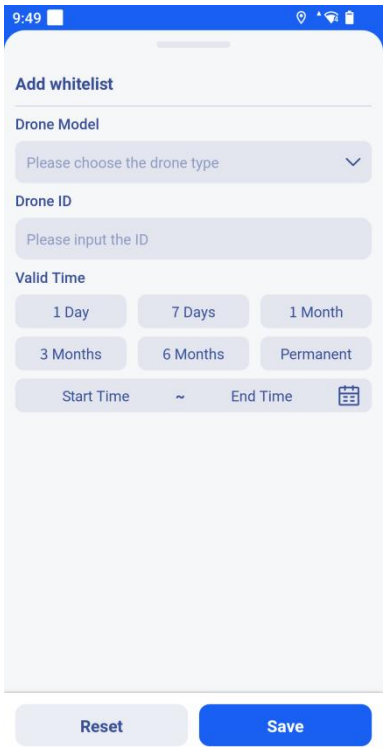
Add the Whitelist

Once the target drone has been added to the whitelist, the device will not raise the alarm when it detects the drone.

1. Click on the 'Whitelist' to enter the whitelist interface.

2. Click 

button to enter the interface to add the whitelist.

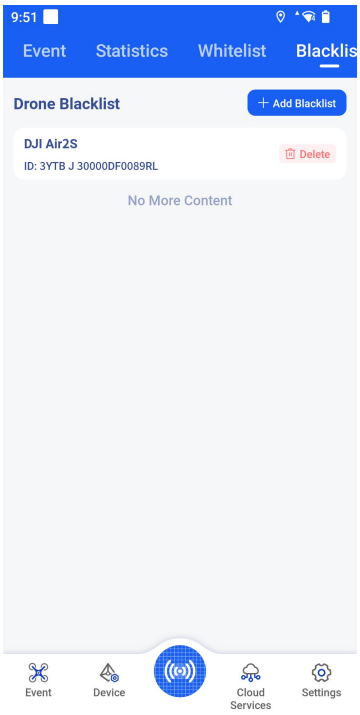


3. Enter the 'Drone Model', 'Drone ID', and set the 'Valid Time' information, then click the '**Save**' button.

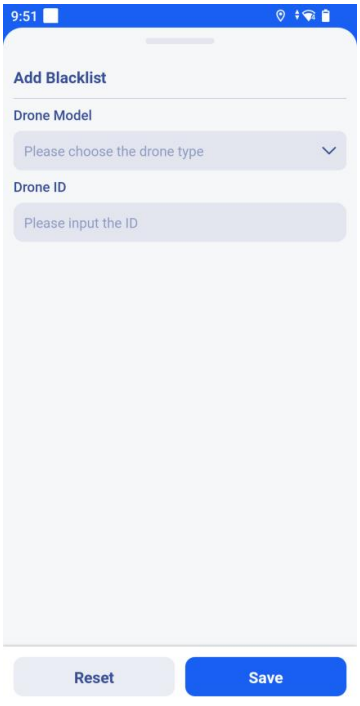
Add the Blacklist

Once the target drone has been added to the blacklist, the device will raise the alarm when it detects the drone.

1. Click on the 'Blacklist' to enter the blacklist interface.



2. Click  button to enter the interface to add the blacklist



3. Enter the 'Drone Model' and 'Drone ID', then click the '**Save**' button.

Delete the Blacklist

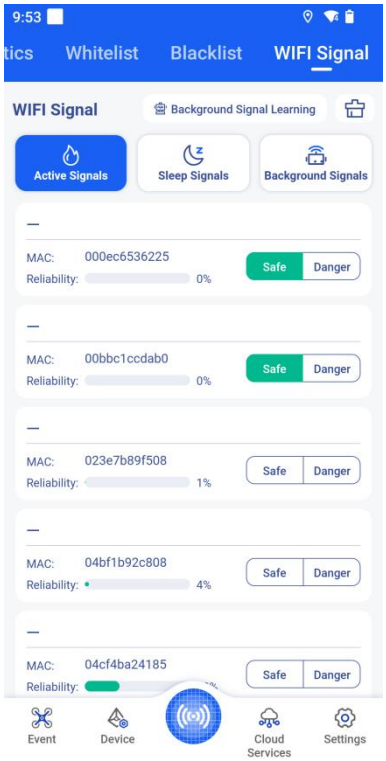
1. Click on the 'Blacklist' to enter the blacklist interface.

2. Choose the drone information to be deleted in the drone list and click Delete button.

Mark Dangerous Wi-Fi Drones

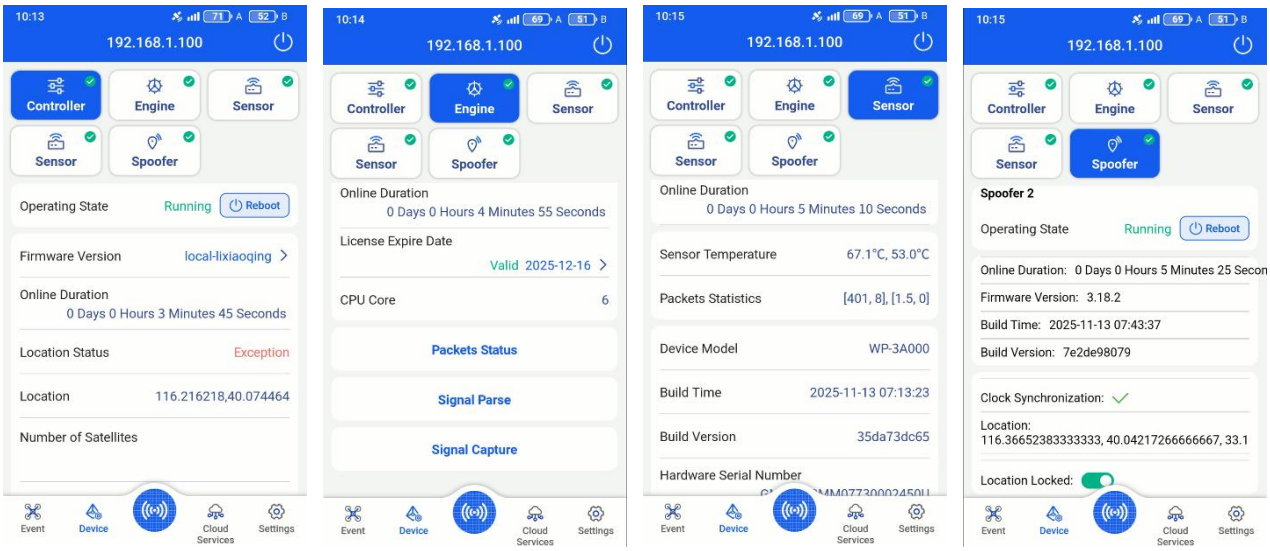
The Wi-Fi signal page primarily displays the detected Wi-Fi drone signals in the current environment. Users can mark the Wi-Fi signal.

1. Click on the 'Wi-Fi Signal' to enter the list.
2. Mark the Wi-Fi signal.
   a) Users can select and mark the known non-Wi-Fi drones as 'Safe'. After marking, the system will not alarm when detecting this signal.
   b) Users can select and mark the Wi-Fi drone as 'Danger'. After marking, the system will alarm when detecting this signal.



4.7 Device Status

The Device Status page allows users to view the status of the controller, engine, sensor and spoofer, as well as make settings.



Reboot

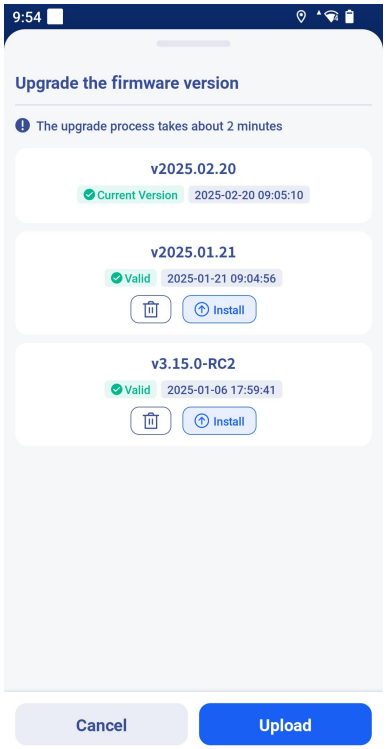
The controller needs to be restarted after it malfunctions or certain settings are made.

1. Click on the Controller/Engine/Sensor/Spoofer to enter the page.
2. Click 

button on the 'Operating State' bar to reboot.

Upgrade Firmware Version

1. Click on the Controller/Engine/Sensor/Spoofer to enter the page.
2. Click > button at the right side on the 'Firmware Version' bar to enter the list.



3. Upgrade the firmware version.

   a) If the version to be upgraded is in the list, click 

button to start installation.

   b) If the version to be upgraded is not in the list, click 

button to add the firmware installation package into the list by downloading or uploading.

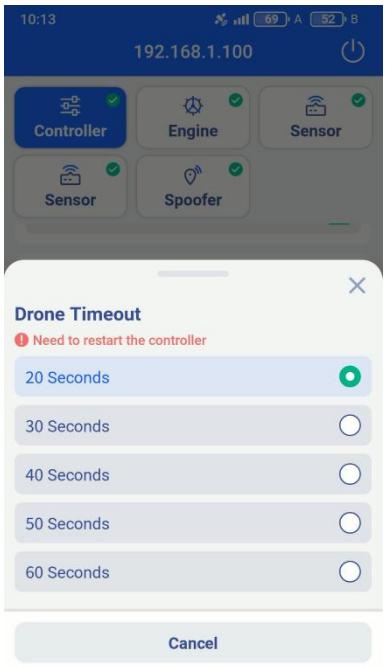
Set Detection Bands

1. Click on the 'Controller' to enter the page.
2. Select the detection frequency band on the bar.

Set Drone Timeout

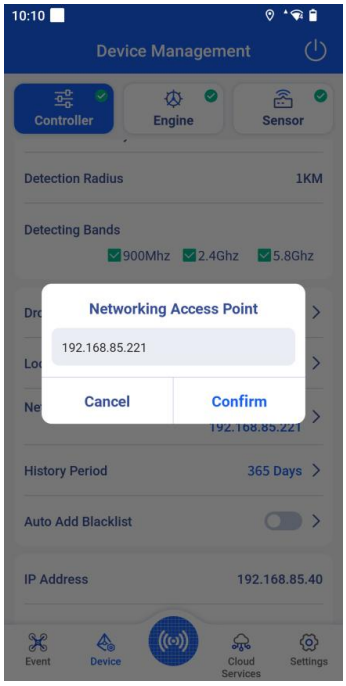
When the detected drone signal disappears and exceeds the set drone timeout period, the device will not display the drone information.

1. Click on the 'Controller' to enter the page.
2. Click > button on the 'Drone Timeout' bar to modify the drone timeout period.
3. Click Reboot button to reboot the controller and make the modification effective.



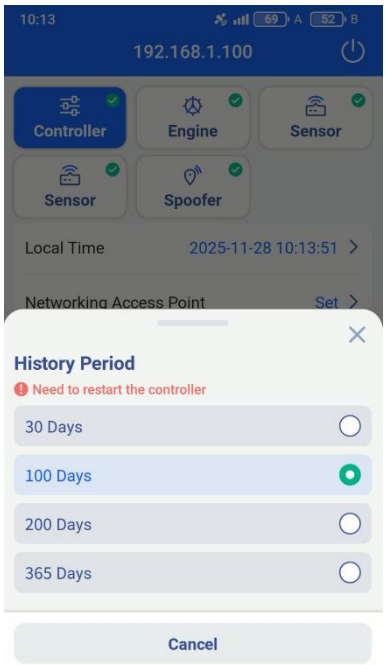
Set Networking Access Point

1. Click on the 'Controller' to enter the page.
2. Click > button on the 'Networking Access Point' bar to set the website address for the cloud services. This can be set to the CCS Command and Control platform address for networking purposes.



Set History Period

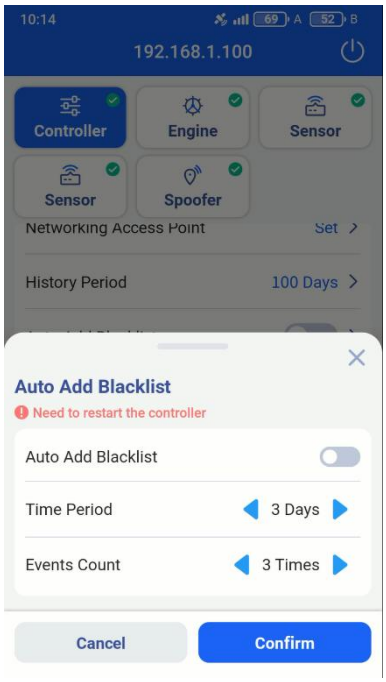
1. Click on the 'Controller' to enter the page.
2. Click > button on the 'History Period' bar to modify the device history retention period.
3. Click Reboot button to reboot the controller and make the modification effective.



Enable Auto Add Blacklist

Once enabled, the function will automatically add any drones detected a specified number of times within a specified number of days to the blacklist.

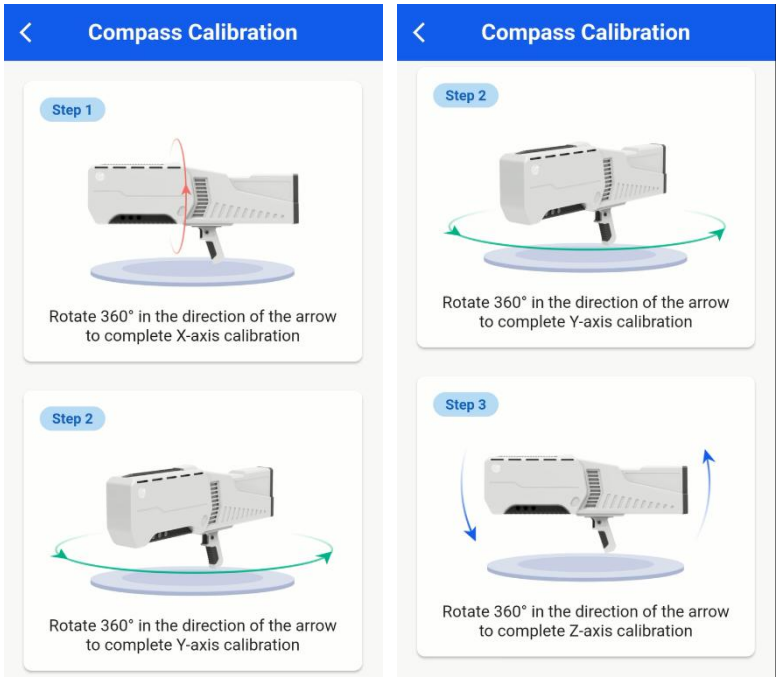
1. Click on the 'Controller' to enter the page.
2. Click > button on the 'Auto Add Blacklist' bar.
3. Enable the auto add blacklist function by sliding the button, and set the time period and event count.
4. Click Reboot button to reboot the controller and make the modification effective.



Calibrate Compass

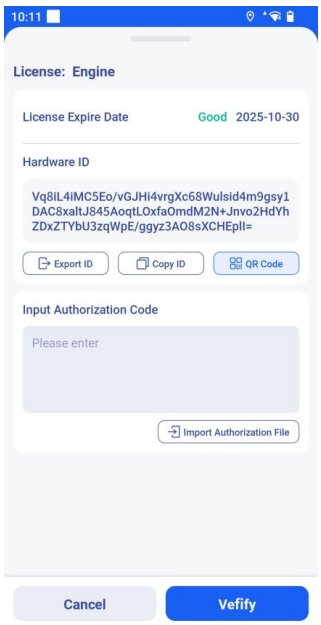
If during the drone direction-finding process, the measured direction deviates from the actual direction, it may be due to electromagnetic interference affecting the device, resulting in inaccurate compass readings. The electronic compass can be recalibrated before performing direction-finding again.

1. Click on the 'Controller' to enter the page.
2. Click **Set** button of **Compass Calibration**.
3. Follow the on-screen instructions to perform a three-axis calibration of the device.



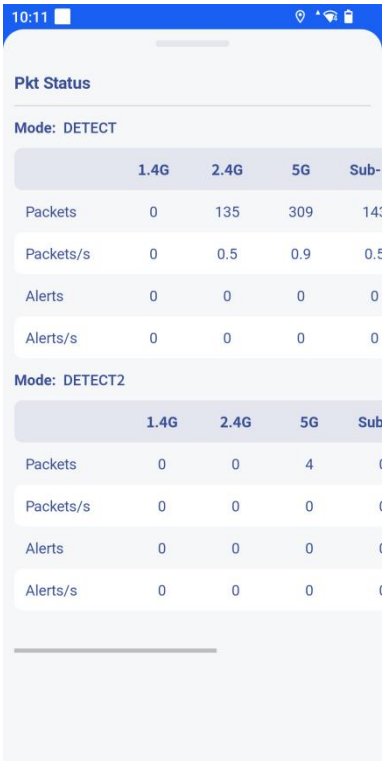
Check License Expire Date

1. Click on the 'Engine' to enter the page.
2. Click > button on the 'License Expire Date' bar to check the device's valid authorization period.
   a) Users can export ID, copy ID, and generate a QR code.
   b) Users can contact us to obtain the authorization file, select to import the authorization file and verify it, and extend the authorization period.



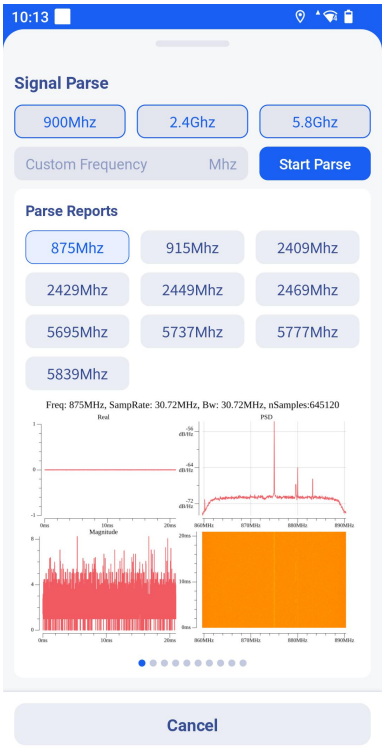
Check Pkt Status

1. Click on the 'Engine' to enter the page.
2. Click the 'Pkt Status' button to check the status of packages being received and sent.



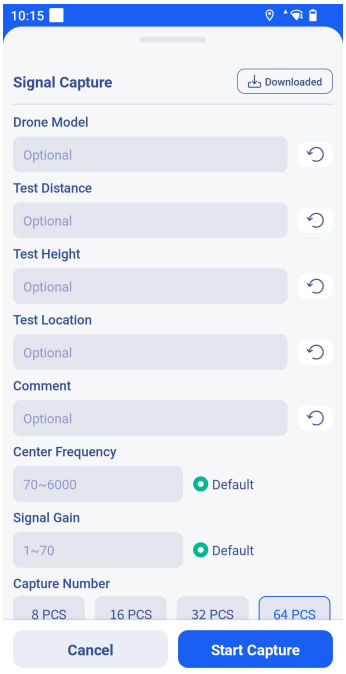
Signal Parse

1. Click on the 'Engine' to enter the page.
2. Click the 'Signal Parse' button to enter the interface.
3. Click Start Parse button to check the report.



Signal Capture

1. Click on the 'Engine' to enter the page.
2. Click the 'Signal Capture' button to enter the interface.
3. Click Start Capture button to view the signal information.

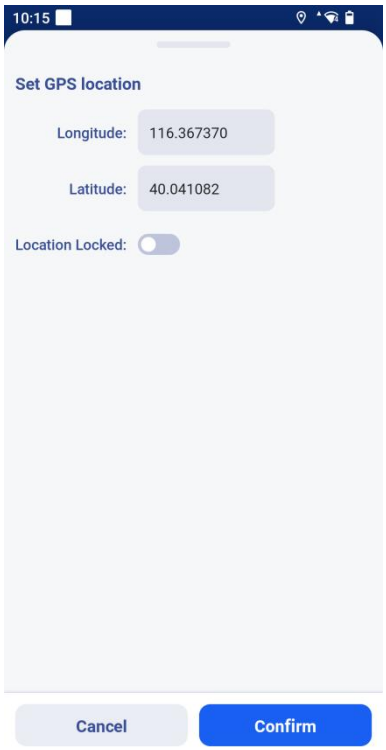


Close Sensor

1. Click on the 'Sensor' to enter the page.
2. Click Close button on the 'Operating State' bar to close the sensor.

Set Location

1. Click on the 'Sensor' to enter the page.
2. Click > button on the 'Location' bar to manually set the GPS location and fix it to the current address.



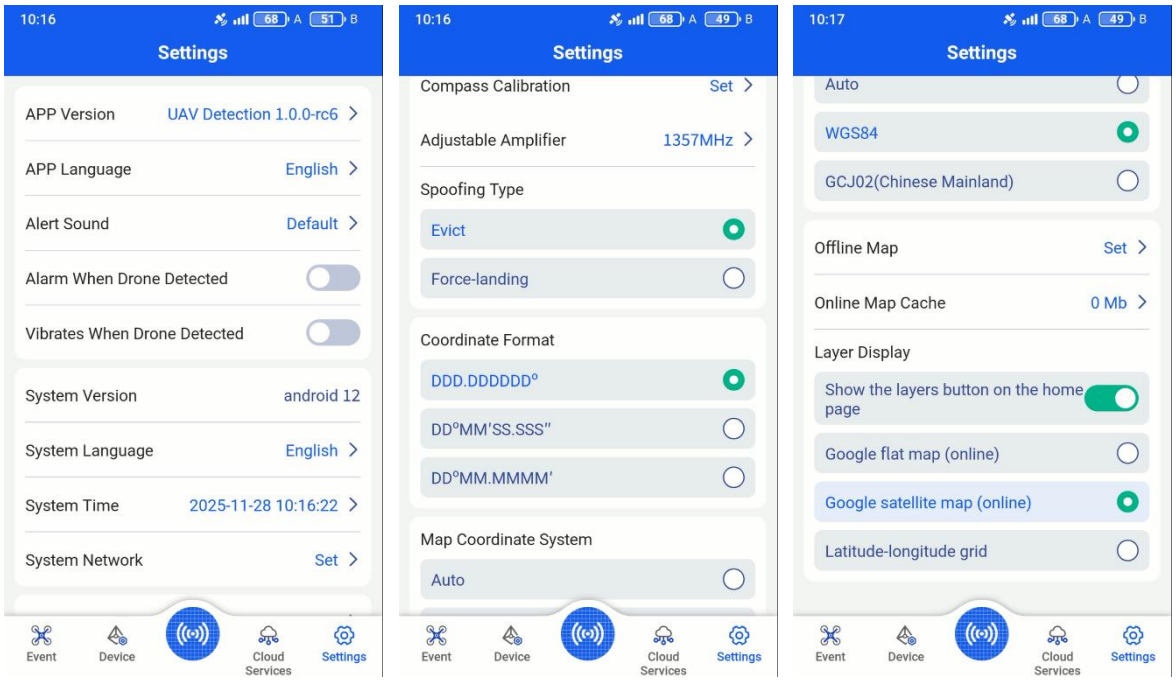
In normal conditions, the sensor can obtain and display the GPS address.

4.8 Cloud Services

The CCS Command and Control Platform can be accessed via the cloud service, where it can be used in coordination with other devices.

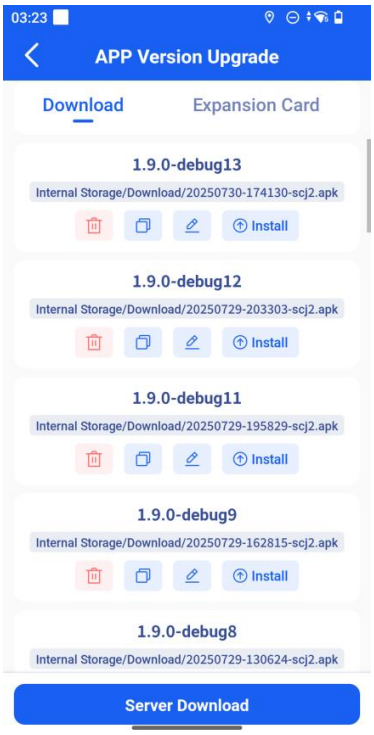
4.9 Settings

In the settings interface, users can configure the app and maps.



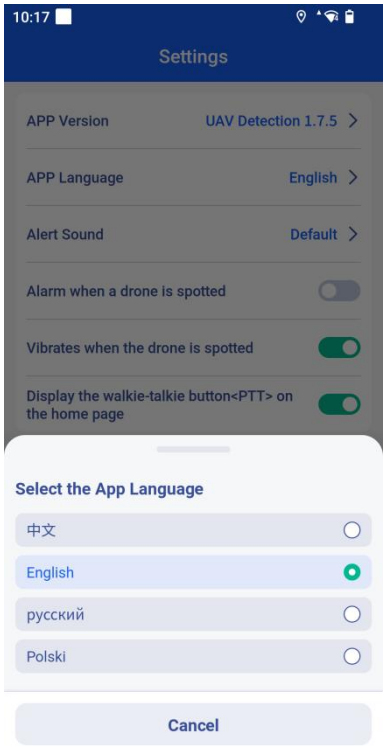
Upgrade APP Version

1. Click › button on the 'APP Version' bar to enter the interface.
2. Upgrade the app by downloading it from the server or via a USB disk.



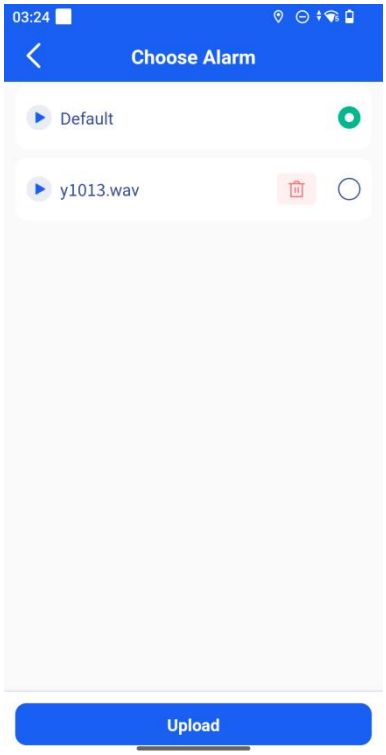
Set APP Language

1. Click > button on the 'APP Language' bar to enter the interface.
2. Change the display language of the app.



Set Alert Sound

1. Click > button on the 'Alert Sound' bar to enter the interface.
2. Select the ringtone to be used. Set it as the alarm sound.



3. Click Upload button and upload the alert sound.

> The ringtone upload supports .wav and .mp3 files.

Turn On/Off the Alarm

1. Slide the button to turn the alarm on or off on the 'Alarm when a drone is spotted' bar.

Map Settings

Switch Map Coordinate System

1. Switch the current map coordinate system.

Use Offline Map

1. Click the 'Set' button on the 'Offline Map' bar to enter the interface.

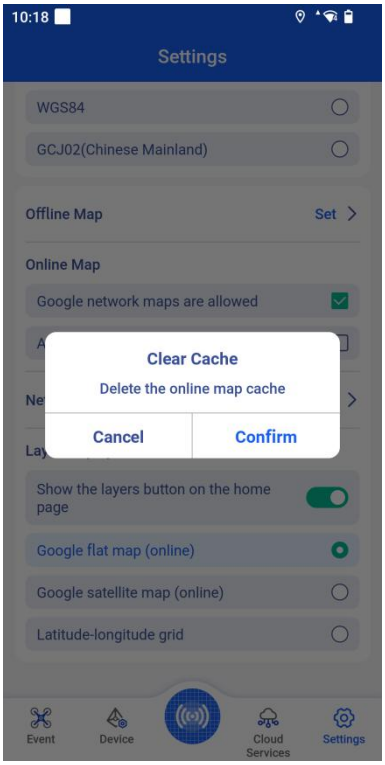
2. Install or use offline map.

Use Online Map

1. Once connected to the network, select whether to allow Google or Amap Network Maps to be used.

Clear Network Map Cache

1. Click › button on the 'Network Map Cache' bar to enter the interface.
2. Click 'Confirm' button to clear the online map cache.



Switch GPS Format

1. Change the format of the GPS coordinates displayed on the home page.

Switch Map Layer

1. Select the map layer type.

5 Equipment Maintenance

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

5.1 Routine Maintenance

Routine maintenance is recommended every 3 months.

Maintenance Type	Maintenance Method
Interface protection	Seal unused interfaces with protective covers.
Cable maintenance	● Immediately replace any 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.
Battery maintenance	● The battery appearance must be free from defects such as cracks, scratches, melted plastic, or deformation. ● The metal contacts inside the battery connector must be intact, with no breakage or burn marks. ● Before long-term storage (>3 months), charge the battery to 80% to prevent deep-discharge damage. ● Recharge and discharge the battery approximately every three months to maintain its performance. ● The storage temperature for batteries: -20°C to +45°C. For long-term storage (>3 months), keep the battery at 23 °C ± 5 °C and 65 %RH ± 20 %RH.
Device appearance & Operation	● The device appearance must be intact, with no cracks. ● Power the unit on and off 3–4 times; startup and shutdown must proceed normally. ● The device power on/off button, detection/direction-finding

	switch button, and jamming switch button must function properly, with smooth pressing and no sticking. ● Battery insertion and removal must be smooth; once inserted, the battery must lock firmly to the main unit.

5.2 Basic Troubleshooting

Fault Type	Troubleshooting Method
Power-related fault	● Check and confirm that the power supply battery is properly installed, the device is powered on, and both the detection terminal and all components are receiving electrical power. ● Turn the power on/off button again. ● Power off the device, wait for 30 seconds, and then restart it.
System Process Exception	Log in to the "Device" interface to check the process status of the controller, engine, and sensors.

If the issue persists, contact our technical support team.

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

6 Packaging, Transportation and Storage

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

6.1 Packaging

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

- Delivery list
- Product Inspection Certificate
- User manual.

6.2 Transportation

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

6.3 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.