

Fixed type checking and punching integrated equipment



Thank you for using the Fixed Countermeasure Counterdrone (FCCU).

In order for you to be able to operate the equipment as soon as possible, we are equipped with a detailed user manual, from which you can obtain knowledge about the product introduction, usage, system settings and other aspects of safety precautions! and safety precautions. We have been very careful and rigorous in the preparation of this manual, and we believe that the information provided in the manual is correct and reliable, however, there will inevitably be errors and omissions, please bear with us and we warmly welcome your corrections.

Disclaimer:

Before using this product, please read the operating instructions and this disclaimer carefully to ensure proper use of the product. Failure to follow the instructions and precautions in this document will result in the risk of damage to the product. Some of the contents of this document may be changed with the product hardware upgrades, the contents of which are subject to update without prior notice.

By using this product, the user is deemed to recognise and accept the entire contents of this statement. Private disassembly of this product is strictly prohibited.

1. Equipment Overview

UAV Spectrum Detection Equipment achieves the functions of

discovering, identifying, warning and direction finding of UAV signals by receiving UAV signals from the air and analysing the signals. The system has the following features:

(1) Radiation-free detection

Adopts passive positioning technology, using the electromagnetic wave signals emitted by the drone and the remote control to locate the radiation source, without interfering with the existing equipment, which is safe and reliable. With early warning capability, no need for the drone to take off, the ground can be switched on to detect, with early warning capability. At the same time, for Remote-ID and Drone-ID drones, it can resolve detailed information such as drone position and flyer position.

(2) All-weather work

system is not affected by weather conditions, and can work all-weather.

(3) Long Detection Distance

Through the unique antenna, channel processing technology and super weak signal processing ability, it is able to implement long-distance detection.

(4) Strong identification capability

Constructs a UAV transmitter spectrum feature library, capable of identifying the manufacturers and models of UAVs within the feature library, and provides an expansion interface to continuously update the database.

(5) Full-band broadband monitoring and signal analysis

The frequency band covers 70MHz to 6GHz, covering all kinds of transmission links. Real-time bandwidth 120MHz, reliably guarantee the detection of frequency hopping signals, with signal recording and analysis functions.

(6) Good system scalability

equipment supports access to different types of disposal equipment such as omni-directional interference, directional interference and decoy. Multiple devices support networking and centralised control and management.

2. Main Functions

Unattended Function: When the equipment is in unattended state, within the effective interception distance, it can automatically intercept drones that are not in the system whitelist and generate event list records.

Networking function: Multiple devices can be networked, and the system can be operated remotely to achieve 360-degree airspace detection and strike without dead angle. Passive detection function: passive detection, no active emission of electromagnetic waves during the detection of drone signals; no strong electromagnetic interference environment, false alarm rate $\leq 10\%$.

Drone identification function: It can identify the brand and model of the

drone and the unique electronic fingerprint ID of the drone. Non-clear sight detection: The device can detect drones blocked by buildings and under non-clear sight conditions within the effective detection distance.

Protocol resolution function: At the same time, for Remote-ID and Drone-ID drones (e.g. DJI Mavic2 and Mavic3), the device can analyse detailed information such as drone position and flyer position.

Spectrum display function: with each channel spectrum, time spectrum real-time display function.

Packing list:

1. device body *1
2. AC220V power cable *1
3. network cable *1
4. tripod *1
5. aviation box *1

no.	index	parameter	remark
1	Detectable frequency range	70MHz-6GHz	Including 433 MHZ / 868 MHZ, 915 MHZ/key detection frequency 2.4 GHz / 5.8 GHz, etc
4	It can simultaneously detect and track the number of unmanned aerial vehicles	(Multi-target detection) :≥30	
5	Locatable frequency band	2.4GHz 和 5.8GHz	
6	Locatable frequency band	≤10°	(RMS, unmanned aerial vehicle hovering, free from electromagnetic interference, in a line-of-sight environment)
7	Positioning degree	≤5m	
8	New rate of direction finding	10~30 次/min	Affected by the environment and the

			model
10	Detection distance	≥5km	Under good environmental conditions, it can detect over 15 kilometers
12	There are over 700 types of detectable direction-finding models	Common models, such as DJI Avata2, mini4pro, and Daotong EVO II prov3; EVOLite+ etc. 220+; More than 110 self-made or FPV aircraft; WiFi devices, such as Udi, Haoxiang, Sima, etc.	Expandable
13	The types of models can be located	Some models of DJI	
14	Size	112.2*69.5cm	
15	Weight	79kg	
16	Protection grade	IP65	
17	Working temperature	-30°C~65°C	
18	Interference frequency band	433MHZ,100w 800MHZ,100W 900MHZ,100w 1.2GHZ,100W 1.4GHZ,100W 1.6GHZ,100W 2.4GHZ,100w 5.2GHZ,100W 5.8GHZ,100w	Functions: Image transmission cut-off, drive away, return
19	Interference effect ratio	10:1	
20	The interference range is large	Omnidirectional strike 1-2 kilometers (1 kilometer for frequency-hopping drones, such as DJI mavic3, etc.)	
21	Total power consumption of the entire machine	1080w	
22	Rated power	3000w	

Interfaces

NO.	Interfaces name	Function description	Note
1	POWER	The power supply for the equipment is 120V – 240VAC	Standard configuration
2	WAN	Dynamic network port to achieve device networking	
3	LAN	Static network port, 169.254.1.1	

5. Control software

1) Log in

Enter the system web address <http://169.254.1.1:8081> in the CHROME

browser to access the login interface. Enter the correct username and password to access the main interface of the system.

2) Main page



3) Drone monitoring

The status, trajectory, model, frequency, number, pictures and other detailed information of the drones are displayed through the drone list, the position of the drones on the map, and the sound warning method.

List of drones

The unmanned aircraft detected by the device will be automatically added to the list. If the signal disappears, the unmanned aircraft will be automatically removed from the list. The number of currently detected unmanned aircraft is recorded in the list.

When a fuzzy target is discovered, the specific information includes model, number, number of detections, threat level, frequency, image, etc. When a direction-finding target is discovered, specific information includes model, number, direction, distance, number of detections,

threat level, frequency, picture, protocol number, etc. When a location target is discovered, the specific information includes model, location, number (after parsing), direction, distance, number of detections, threat level, frequency, image, protocol number, etc. When a position target is discovered, the line below this list turns blue and the other lines are green. Among them,  Represent the change of the detection signal;  Indicates that one has been added to the whitelist and  indicates that one has not been added to the whitelist.  indicates that precise strike is in progress,  indicates that the drone supports precise strike, and the absence of an icon indicates that the drone does not support precise strike.  indicates that the drone supports being added to the ignore list. The absence of an icon means that the drone does not support being added to the ignore list. Click on the agreement number of the drone, and a static library image page of the drone will pop up.

➤ Unmanned aerial vehicle position

The location, trajectory and status of the drones are updated in real time on the map. At the same time, it is linked with the drone list. When the drone icon is clicked, this one will be selected in the list. If a certain one is selected in the list, the specific location of the drone will be automatically located on the map. The status of the drone icon  indicates the position target,  which is a blurred target,



indicating that they belong to the whitelist target. When a

direction-finding target or a position target is discovered, a direction line from the target to the device will be drawn, and the position target will also display the target's trajectory. In addition, if the position target can be parsed, the pilot's position will be displayed and the pilot icon will be white .

➤Ignore the list

When the "IgnoreList" menu button is clicked, the ignore list is entered.

The specific information in the ignore list includes the drone number, frequency, threat level, detection frequency, image, protocol number, etc.

Click the "DELETE" button to remove this target from the ignore list.

Clicking on the  list of drones can add this target to the ignore list.

Click on the agreement number of the drone, and a static library image page of the drone will pop up.

Equipment positioning and control

➤Equipment positioning

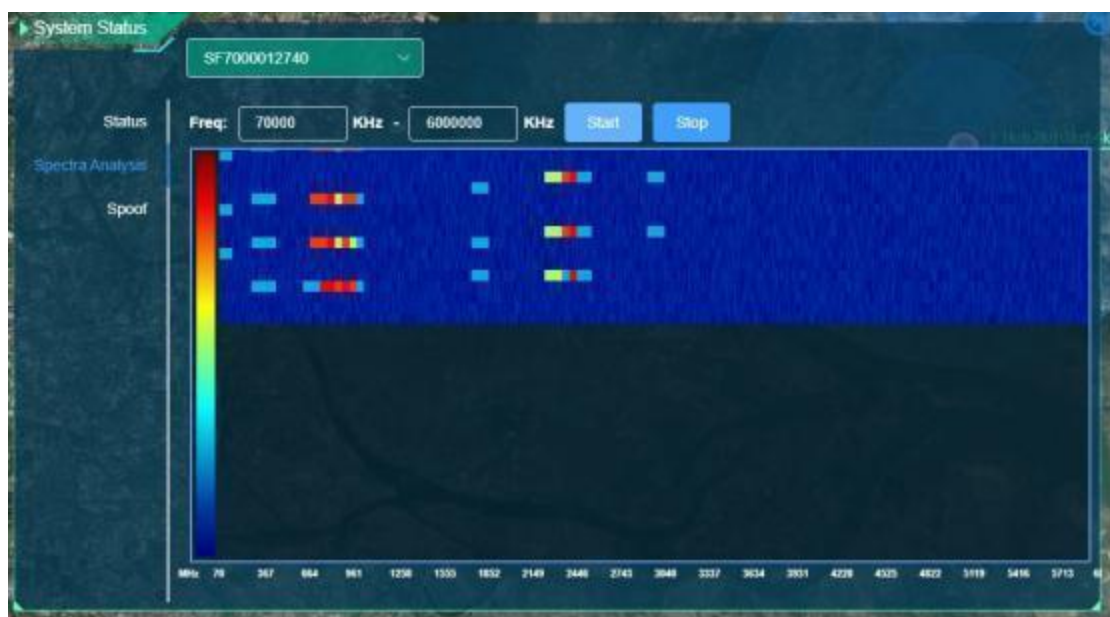
When the device is connected to the system, an icon  will appear on the map. When the device connection is abnormal, an icon  will also appear on the map, and at the same time, an abnormal error message will be displayed in the lower right corner of the map. Draw device detection on the map

The scope of action and the scope of equipment countermeasures

➤Equipment control

Click on the device icon, and the device control interface will be displayed in the upper left corner. If the system is configured with external devices, pan-tilt units, trams, etc., the pan-tilt unit is controlled at the lower left corner, while the external devices, trams, etc. are all controlled at the upper left corner. When the device frequency is turned on, the active area of the device on the map turns red; when it is turned off, the active area of the device on the map turns blue.

5) Spectrum analysis diagram



The real-time frequency changes of the unmanned aerial vehicle are

reflected through two-dimensional coordinate axes. The X-axis represents the frequency point, and the Y-axis is an example graph of signal strength. In the system, red represents the signal value of 100, orange represents the signal value of 75, yellow represents the signal value of 50, blue and white represent the signal value of 25, and pure blue represents the signal value of 0. Click the start button to begin the display of the waterfall chart at the currently set start and end frequencies, and click the stop button to stop the waterfall chart. Among them, when the mouse is moved over, the frequency of positioning can be viewed.