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Brochure
Worldwide Release

ND-BU005

Advanced Passive Anti-Drone System

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System Overview

With exponentially sales of drones around the world, the threat posed by the weaponization of recreational drones already is a reality. The unregulated proliferation of drones in most countries poses a significant danger and threat to their national security.

ND-BU005 Advanced Passive Anti-Drone System is an upgraded version of our passive anti-drone systems with longer detection and jamming range, providing all-around and full-band protection against a variety of drone targets.

The system has been designed and developed against consumer-grade small rotor drones, merging long-range detection, jamming and record tracking functions into one system, for protection of key areas and response to threats from small rotor drones, e.g., illegal drone invasion, terrorist attack, and drug trafficking.

The system mainly consists of Detecting Unit (Full-Band RF Detector) and Jamming Unit (Full-Band Directional Jammer). Detecting Unit can detect and track long-distance drones and lead Jamming Unit to interfere with the remote control circuits and navigation signals of the drones and force the drones to land or return.

Typical Targets

Type	Small rotor drones
Wheelbase	≥350mm
Weight	≥1kg
Speed	≤30m/s

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Detecting Unit Description

The Detecting Unit (Full-Band RF Detector) could detect and find drones within full frequency bands. It has the functions of drone detection and early warning, model identification, positioning and tracking, and trajectory playback within and outside the range of multiple stations.

By adopting the Detecting Unit, the system is capable of precisely detecting and localizing virtually all consumer-grade drones and obtaining more accurate tracking data through electronic scanning.

Main Features of Detecting Unit

- Full-band detection

  Accurately identify the vast majority of consumer-grade drones, Wi-Fi toy machines, DIY drones, analog/digital picture transmission and hundreds of other models.

- Precise identification and positioning of drone

  It can detect drones within a long range, covering most of consumer-grade drones on the market. It is able to accurately detect and position DJI drones and obtain their unique serial numbers.

- Precise positioning of drone controller

  The location of drone's controller (pilot) can be displayed through the control platform, with a high refresh rate, the controller's movements can be captured in real time.

- TDOA and AOA composite passive positioning technology

  Able to be used for single-station AOA (Angle of Arrival) direction finding and ranging, or multi-point deployment network to achieve TDOA (Time Difference of Arrival) accurate positioning, with higher scene adaptability. Without active electromagnetic signal emission, it is more secure and concealed.

- High maturity design

  All-in-one design, all working modules are integrated in one radome, no other functional modules, easy and fast deployment.

- All-weather, all-day and omni-directional

  Suitable for complex electromagnetic and climatic environment, not being affected by lightning, fog and haze weather and night sight range, can achieve 7 x 24 hours 360° all-round real-time monitoring.

Specifications of Detecting Unit 1

Detection	Detection type	Passive radio detection
	Signal type	Drone data transmission signal Drone remote control signal Wi-Fi system drone signal
	Drone type	Vast majority of conventional consumer-grade drones, some unconventional drones, some fixed-wing drones and some DIY drones
	Detection band	300MHz~6GHz full-band detection
	Detection range	Horizontal 360° omnidirectional
	Direction accuracy	≤3° (RMS)
	Detection radius	≥5km (open environment, drone transmission power is 0.1W)
	Detection height	≥1km (open environment, drone transmission power is 0.1W)
	Multi-station detection accuracy	≤30m (inside the station) ≤100m (outside the station)
	Number of multiple stations deployed	≥3
	Multi-station deployment interval	≥500m
	Target false alarm rate	≤5/day (24h, typical urban environment)
	Receive sensitivity	≤-120dBm
	Time of first detection	≤3s

Specifications of Detecting Unit 2

Protocol analysis technology	Working principal	DJI drone signal message protocol analysis
	Content of the analysis	It supports analyzing and obtaining GPS coordinates, flight altitude, speed, direction, model, SN code, take-off point address and other information of DJI drone, and accurately obtaining the location of drone controller (pilot). The information can be reported and displayed in real time to show the detection situation.
	Detection distance	5km
	Positioning accuracy	DJI drone: ≤2m (open environment, drone transmission power is 0.1W) Drone controller: ≤2m (open environment, drone transmission power is 0.1W)
	Detection of drone controller	Able to detect the drone controller, and display its longitude and latitude coordinates, direction, pitch angle and other information, also supports displaying the trajectory of the drone controller.
	Serial number recognition	It supports identification of drone serial numbers. When the target drone switches its working frequency point, the system could also identify it as the same target.
Device	Azimuth calibration	Automatic calibration (portable)
	Dimensions	≤φ610 x 440mm
	Weight	≤16kg
	Communication mode	Ethernet (100/1000M network), 4G/5G
	Operating temperature	-40°C~65°C
	Operating humidity	RH<95%
	Power supply	AC220V±10%, 50Hz
	Power consumption	≤120W
	Protection grade	IP67

All specification are subject to change without notice. Pictures for reference only.

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Jamming Unit Description

The Jamming Unit is a software-defined jammer, which can customize the configuration of jamming frequency and jamming bandwidth according to the mainstream drone frequency band. It also supports independent or combined output of multiple jamming channels.

It jams the drone satellite navigation signal or blocks the communication link between the drone and the remote control by emitting electromagnetic waves.

Guided by the target information (e.g., speed, distance, direction and pitching) provided by the Detecting Unit, the Jamming Unit is able to rapidly adjust the antennas to interfere with the invading drone and force it to land or return.

Main Features of Jamming Unit

- Full-band jamming, software definable

  It has 300MHz-6GHz full-band jamming capability, covering most of the mainstream drone communication and navigation frequency bands.

- Digital jamming source design

  The digital jamming source supports various modulation forms, including FSK, BPS, QPSK, QAM, 16AQM, 64QAM, and OFDM and other modulated signals to effectively respond to all types of consumer-grade drones and unconventional drones.

- All-in-one design

  The whole device is composed of modules such as jammer, intelligent variable speed PTZ and mounting bracket, with compact structure and high integration.

- High power broadband amplifier design

  High power broadband amplifier adopts gallium nitride broadband process for segmented amplifier design, each segment amplifier power is more than 100W, ensuring excellent countermeasures against new anti-jamming drones.

- Easy installation and wide application

  Can be installed with fixed poles, suitable for long-term deployment of regional protection; can also be quickly erected using tripods, suitable for important meetings, large-scale security activities and other temporary low-altitude protection tasks.

Specifications of Jamming Unit

Jamming specifications	
Signal source system	Support DDS sweep source, and also switching FSK, BPSK, QPSK, QAM, 16AQM, 64QAM, OFDM and other modulation source modes
Jamming frequency range	Jamming channel output can be set freely within the frequency range of 300MHz - 6000MHz
Typical jamming bands	410-440MHz, 830-870MHz, 875-915MHz, 920-960MHz, 1160-1200MHz, 1220-1260MHz, 1440-1480MHz, GPS L1, 2.40-2.50GHz, 5.70-5.90GHz
Jamming distance	5km (0.1W transmitting power of target drone)
Interference to signal ratio	10:1
Antenna type	High gain directional antenna
Antenna launch angle	≥90° (<2G band); ≥60° (2G-4G); ≥30° (>4G)
Transmitting power	≥100W/each jamming module jamming emission power software adjustable
Jamming effective time	≤3s
Whole device specifications	
Dimensions	≤428 x 285 x 560mm (L x W x H)
Weight	≤28kg
Main indicators of the PTZ	Rotation speed: horizontal 0.02°~60°/s; pitch 0.02°~30°/s Rotation angle: horizontal 0~360° continuous rotation; pitch +75° ~-15°
Communication interface	RJ45 10M/100M/1000M self-adaptive ethernet port
Power supply	AC220V±10%, 50Hz
Power consumption	≤900W
Operating temperature	-40°C ~ +60°C
Protection grade	IP67

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