

X-Band Radar Machine Learning And AI Recognition For Target Detection And Classification Of Airborne Targets

Our Product Introduction

Basic Information

- Place of Origin: China
- Brand Name: MYT
- Certification: CNAS、CMA、CAL、ILAC-MRA
- Model Number: DD-R37
- Minimum Order Quantity: 1
- Price: Pricing is negotiable based on order quantity
- Delivery Time: 10 work days
- Payment Terms: L/C,T/T
- Supply Ability: 1000units per month



Product Specification

- TAS Tracking Target Count: ≥ 6
- Minimum Detection Altitude: $\leq 10\text{m}$
- Velocity Range: $1\text{m/s} \sim 100\text{m/s}$
- Resolution Ratio: Distance: $\leq 15\text{m}$, Azimuth: $\leq 6^\circ$, Elevation: $\leq 4^\circ$
- Operating Temperature Range: $-40 \sim +60$
- Size: $\leq 510\text{mm} \times 340\text{mm} \times 135\text{mm}$
- Power Dissipation: $\leq 1200\text{W}$
- Supply Electricity: AC220V/DC24V
- Levels Of Protection: IP66
- Joggle: RJ45 Network Port
- Highlight: **X-Band radar for UAV detection, AI recognition airborne target classification, Anti UAV radar machine learning**

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Product Description

The DD-R37 X-band long-range quad-cell radar

1, Product Overview

The DD-R37 X-band long-range quad-cell radar is configured with a fully solid-state, fully coherent, and pulse Doppler system. This empowers it to carry out all-weather detection and early warning of "low, small, slow" targets. By leveraging machine learning and AI recognition technologies grounded in "micro-Doppler signatures" and "flight path features," the radar can effectively detect and classify a diverse range of targets. These targets encompass drones, light aircraft, helicopters, powered triplanes, airships, and airborne balloons, all while maintaining an extremely low false alarm rate. The radar is outfitted with a two-dimensional phase scanning system. This system can be extended to configurations such as "azimuth mechanical scanning + elevation phase scanning" or multi-cell arrays to satisfy a broad spectrum of application requirements.

2, Function

The product is equipped with a comprehensive set of target monitoring and analysis capabilities. It enables precise target positioning on the map, and not only can it display the target's trajectory in real - time, but also offers a playback function for users to review past movements. While doing so, it simultaneously and instantaneously presents crucial parameters like the target distance, azimuth, elevation, and speed. This allows operators to have a complete and up - to - date understanding of the target's state.

The system comes with an in - built data recording and storage functionality. This feature is designed to comprehensively save all relevant target trajectory data, as well as detailed radar status information. This comprehensive data storage is highly beneficial as it fully supports subsequent data playback and query operations. Such operations are essential for in - depth analysis, post - mission reviews, and forensics.

By leveraging AI recognition technology that is founded on "micro - Doppler features" and "track features," the product showcases powerful target classification and identification capabilities. It can accurately distinguish between a wide variety of target types, including drones, which are becoming increasingly common in modern scenarios, birds that might be confused with other flying objects, people on the ground or in the air, and vehicles moving on various terrains.

Integrating advanced machine learning technology, the system has the remarkable ability to autonomously adapt to the current operating environment. This means that it can start its operation directly without the need for manual parameter adjustment. This self - adapting feature significantly simplifies the operation process, reduces human error, and allows the system to function optimally in different and often changing scenarios.

To ensure reliable operation around the clock and in all weather conditions, the product is equipped with cloud and rain noise suppression capabilities. This feature effectively mitigates the interference caused by adverse weather conditions such as clouds and rain, ensuring that the system can maintain its performance and accuracy regardless of the external environment.

The software interface of the product offers flexible parameter configuration options. Users can customize settings according to their specific requirements. For example, they can adjust the elevation coverage to focus on specific altitude ranges, modify the target update rate to balance between real - time data acquisition and system resource consumption, and set the monitoring range according to the area they want to monitor.

In addition, the product is equipped with automatic compensation functions for independent positioning, orientation, elevation, and roll angles. These functions play a crucial role in ensuring the measurement accuracy of the system. Even when the equipment is subject to external factors that may affect its position or orientation, these compensation functions can correct the data and maintain high - precision measurements.

During the system's operation, users can make full use of the real - time status monitoring functionality to comprehensively monitor the equipment's working conditions. This enables them to detect any potential issues promptly and take appropriate measures, thus ensuring the stable and efficient operation of the entire system.



3, qualification

order number	parameter	metric
1	frequency range	X frequency range
2	detection range	$\geq 10\text{Km}(\text{RCS}:0.01\text{m}^2, \text{unmanned aerial vehicle})$ $\geq 20\text{Km}(\text{RCS}:0.3\text{m}^2, \text{unmanned aerial vehicle})$
3	fade zone	$\leq 150\text{m}$
4	work pattern	2D Phased Array
5	hunting zone	Heading: $\pm 45^\circ$, Pitch: $0^\circ \sim 60^\circ$ (configurable according to mission requirements)
6	trace function	TAS feature available
7	TAS tracking target count	≥ 6
8	Minimum detection altitude	$\leq 10\text{m}$
9	velocity range	1m/s~100m/s
10	Target update rate	TWS: $\leq 5\text{s}$ (30° pitch coverage, 15km range) TAS: $\leq 0.5\text{s}$ (default)
11	resolution ratio	Distance: $\leq 15\text{m}$, azimuth: $\leq 6^\circ$, elevation: $\leq 4^\circ$
12	Search precision (RMS)	Distance: $\leq 10\text{m}$, azimuth: $\leq 0.5^\circ$, elevation: $\leq 0.4^\circ$
13	Tracking accuracy (RMS)	Distance: $\leq 10\text{m}$, azimuth: $\leq 0.3^\circ$, pitch: $\leq 0.3^\circ$
14	joggle	RJ45 network port
15	target capacity	≥ 500 batches
16	weight	$\leq 25\text{Kg}$ (net weight of the device, excluding power supply/cable)
17	supply electricity	AC220V/DC24V
18	power dissipation	$\leq 1200\text{W}$
19	size	$\leq 510\text{mm} \times 340\text{mm} \times 135\text{mm}$
20	operating temperature range	-40 +60
21	levels of protection	IP66

4, Application Scenarios



5, Certification Certificate



6, Company profile

Chongqing Miao Yitang Technology Co., Ltd. is a specialized company engaged in anti-drone and unmanned intelligent defense management. With the technical support from the AI Internet of Things Research Institute of the Chinese Academy of Sciences and collaborations with multiple intelligent AI companies, the company has established research laboratories for AI unmanned field products, accumulating a variety of technical patents.

The company's products are widely applied to unmanned automatic management solutions for various defense and perimeter areas, including AI anti-drone systems and AI unmanned vehicle patrol systems. These systems integrate with multiple technologies such as optoelectronics, radar, vibration, thermal imaging, facial recognition, and radio frequency management, truly achieving a 24-hour uninterrupted anti-drone defense and ground perimeter defense warning system. This allows for cost savings for clients, reduction in human resource allocation, and

ensures the safety of clients' lives and property. The outstanding security system has won the company an excellent reputation and created higher value for its partners.



7, Customer Service

- 1). We offer 24 hours service after sales
- 2). If there are any usage or quality issues with the product, we provide online technical support to diagnose the cause of the problem.
- 3). Should you find the products unsatisfactory, kindly return it to us within a period of 3 months from the date of dispatch. Upon receipt and inspection, should the products be found to be free from any damage attributable to human factors, a full refund will be granted. Alternatively, we can engage in discussions to amend the product and subsequently reship the product to you.

CUSTOMER SERVICE

- * Fast and patient communication: professional sales reply immediately
- * Fast delivery: usually 2-7 days
- * Flexible Safe shipping: fast by air or sea with cheap freight
- * Customer-friendly: complete user manual and exact video training provided
- * After sales service: one year warranty and life time technical support



Chongqing Miao Yi Tang Technology Co., Ltd.

+8613101235550

gary@chinaantidrone.com

chinaantidrone.com

www.chinaantidrone.com