



CYRENTIS

CR-FX20

X-Band Long-Range FMCW Low-Altitude Surveillance Radar

Technical Specification



Image for reference only. Finish color can be customized on request, e.g. desert tan, tactical gray, or camouflage patterns.



Version	Date	Description
V1.0	2025-10-18	Initial version.
V2.0	2026-03-16	Specifications updated to the latest production configuration; packing list and logistics dimensions added.
V3.1	2026-05-20	Product images and document structure revised; maintenance, transportation and service sections added; minor editorial corrections.



Contents

1	Product Overview.....	4
2	Main Functions.....	5
3	Technical Specifications.....	6
3.1	Basic Performance & Accuracy.....	6
3.2	Electrical Interface.....	6
3.3	Physical & Environmental.....	6
4	Equipment Dimensions.....	7
5	Delivery List.....	8
6	Maintenance.....	9
6.1	Maintenance Schedule.....	9
6.2	Maintenance Content.....	9
7	Transportation and Storage.....	10
7.1	Transportation Requirements.....	10
7.2	Storage Requirements.....	10
8	After-Sales Service.....	11



1 Product Overview

The CR-FX20 low-altitude surveillance radar is an intelligent detection 3D radar. It can rapidly detect and continuously track targets such as UAVs, aircraft, vehicles and birds. It is widely used in critical sites to prevent hazards caused by aerial intruders and birds.

Utilizing simultaneous multi-beam technology and high-performance signal processing techniques, the radar rapidly and accurately acquires target position and motion states even in complex, dense multi-target environments. The radar employs a continuous wave operation mode with low transmission power, significantly enhancing its resistance to electromagnetic interception compared with pulse-based systems.

Within a cooperative detection system, the radar can serve as the core sensing unit, providing high-precision target data to other sensors (such as electro-optical devices and bird dispersal equipment) to achieve precise guidance.



2 Main Functions

Detection & Coverage

- Employing DBF technology and a high-performance signal processor, the radar simultaneously detects up to 500 targets within a 360° azimuth and 65° elevation range, effectively handling complex scenarios with large coverage areas and multiple targets;
- Utilizing a Frequency Modulated Continuous Wave (FMCW) system, it avoids the signal-to-noise ratio mutation issues caused by waveform handover in pulse radars, ensuring continuous detection of very small targets (such as the DJI Mini 3) at all elevation angles;
- Employing sophisticated clutter suppression technology combined with machine learning-based AI algorithms, it learns environmental characteristics in real time, accurately extracts weak target signals while filtering environmental clutter, and maintains a very low false alarm rate in complex backgrounds, enabling effective identification of drones and birds.

Tracking & Recognition

- Advanced tracking filtering algorithms significantly improve target tracking performance;
- With exceptionally high sub-clutter visibility, the radar continuously and stably tracks ultra-low-altitude moving targets even in urban building environments.

Safety & Low Interceptability

- The continuous wave working system keeps transmission power at a low level, effectively enhancing operational safety for nearby equipment and personnel;
- Compared with pulse radar, the risk of electromagnetic interception is greatly reduced, and the anti-interference and concealment performance is more outstanding.

Deployment & Maintenance

- The lightweight and compact structural design enables rapid deployment and withdrawal for high-mobility operations;
- A friendly user interface makes operation simple and easy; at the algorithm level, adaptive processing eliminates the need to set numerous operating parameters and allows quick mastery.



3 Technical Specifications

3.1 Basic Performance & Accuracy

Item	Parameter
Frequency band	X band (9.2GHz ~ 9.8GHz)
Operating mode	Azimuth mechanical scanning + elevation DBF (CW)
Detection range	20km
Detection performance	Micro UAV / birds (RCS 0.003m ² , DJI Mini 3): ≥6km; small UAV (RCS 0.01m ² , Phantom 4): ≥10km; car / helicopter (RCS 5m ²): ≥20km
Maximum detection altitude	3000m
Blind zone	50m
Coverage	Azimuth 360°, elevation -5° ~ +60°
Velocity measurement range	1m/s ~ 150m/s
Measurement accuracy (RMS)	Range ≤5m, velocity ≤0.5m/s, azimuth ≤0.3°, elevation ≤0.3°
Refresh rate	2s (30rpm, standard); 1s (60rpm, upgradeable); 3s (20rpm)
Simultaneous tracking capacity	≥500 targets

3.2 Electrical Interface

Item	Parameter
Power supply	DC 36-52V (supplied with AC220V-DC48V adapter)
Power consumption	≤400W
Communication	Ethernet (circular aviation connector)

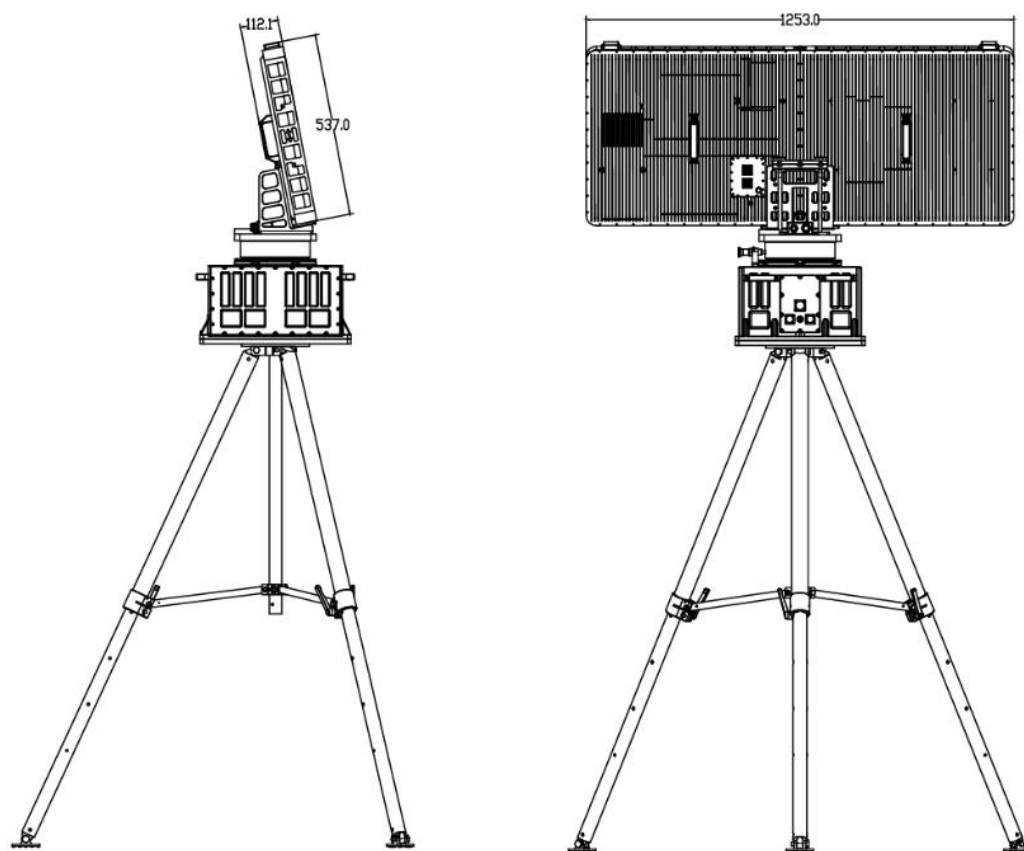
3.3 Physical & Environmental

Item	Parameter
Weight	≤66kg (host + turntable)
Operating temperature	-40°C ~ +55°C
Operating humidity	≤90%
Protection rating	IP66 (radar host: IP67)

The above specifications are typical nominal values; actual values are subject to the product contract and technical agreement.



4 Equipment Dimensions



CR-FX20 structural and installation dimensions (unit: mm)



5 Delivery List

No.	Item	Unit	Qty
1	Radar host unit	Unit	1
2	Radar pedestal	Unit	1
3	Tripod	Unit	1
4	Radar host unit transport case	Unit	1
5	Radar turntable transport case	Unit	1
6	Power adapter (AC220V to DC48V, 15m cable)	PC	1
7	Communication cable (radar to display & control terminal, 15m)	PC	1
8	Assembly tools & screws (host, pedestal, tripod)	Set	1
9	Documentation (user manual etc., electronic)	Copy	1



6 Maintenance

6.1 Maintenance Schedule

The maintenance schedule may be determined according to actual service conditions, and shall in principle meet the following requirements:

- a) Perform maintenance once after transportation and before use;
- b) For radars in storage, perform maintenance every 3 months.

6.2 Maintenance Content

- a) Check the equipment appearance and completeness; check the installation for rust or cracks, installation firmness, and potential safety hazards of the installation platform;
- b) Power on and run the equipment for testing to ensure there is no abnormal radar alarm;
- c) Wipe dust and stains off the housings of the radar array face, servo turntable and power module with a dry, clean cloth;
- d) After the turntable has actually operated for 2 years, please contact the manufacturer for maintenance and replacement.



7 Transportation and Storage

7.1 Transportation Requirements

- The equipment can be transported by road, railway or air. Shock-proof packaging in dedicated packing cases is required during transportation.

7.2 Storage Requirements

7.2.1 Storage Environment

Packaged products shall be stored under the following environmental conditions to ensure their service life:

- a) Temperature
- b) Relative humidity
- c) The warehouse shall be free of acids, alkalis and other corrosive gases harmful to the equipment; during storage there shall be no strong mechanical vibration, shock or strong magnetic field.

7.2.2 Storage Life

- Unless otherwise specified in the contract, the storage period of this product shall not exceed five years from the date of receipt by the ordering party.



8 After-Sales Service

- a) The warranty period is 1 year. During this period, if the product is damaged or fails to work normally due to quality problems, the manufacturer is obliged to repair or replace it free of charge;
- b) The company responds to after-sales service requests from purchasing units within 12 hours.