



CYRENTIS

CR-FK02

Ku-Band Short-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.



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1 Product Overview

The CR-FK02 low-altitude surveillance radar is a 3D radar featuring integrated air-ground detection capability. It can quickly detect and continuously track targets such as drones, aircraft and birds, while simultaneously monitoring ground targets like personnel and vehicles as well as surface vessels.

Utilizing simultaneous multi-beam technology and advanced signal processing techniques, the radar rapidly and accurately acquires target position and motion data even in complex, high-density multi-target environments. Operating in continuous wave (CW) mode with low transmit power, the radar offers enhanced low-probability-of-intercept (LPI) characteristics compared with conventional pulse radar systems.

In a cooperative detection system, the radar acts as a core perception unit, delivering high-precision target data to other sensors (e.g., electro-optical devices and bird deterrent equipment) for precise target guidance.

The radar is widely applicable in fields such as key site protection, the low-altitude economy, airport bird monitoring, air traffic control, and border and coastal defense.



2 Main Functions

Detection & Coverage

- Azimuth mechanical scanning combined with elevation DBF (Digital Beam Forming) provides 360° full-azimuth coverage;
- A high-performance signal processor supports real-time detection and tracking of multiple moving targets across the full field of view, suited to wide-coverage, dense-target scenarios;
- Excellent measurement accuracy in range, velocity, azimuth and altitude, delivering stable and precise sensing data for command decision-making and target tracking/countermeasures.

Tracking & Recognition

- Operating at a high update rate of 180°/s (upgradeable to 360°/s) with advanced tracking filtering algorithms, significantly enhancing tracking of high-speed, highly maneuverable targets;
- Advanced clutter suppression extracts weak target signals in complex electromagnetic environments such as strong ground clutter and meteorological clutter, while maintaining an extremely low false alarm probability.

Safety & Low Interceptability

- Operating in CW mode, the radar radiates at an extremely low power level compared with pulsed radars, effectively improving operational safety for nearby equipment and personnel;
- Low transmit power greatly reduces the risk of electromagnetic interception, with outstanding anti-interference and concealment performance.

Deployment & Maintenance

- An intelligent human-machine interface (HMI) allows quick and easy operation;
- The lightweight, modular structural design enables rapid deployment and retraction, supporting high-mobility operations.



3 Technical Specifications

3.1 Basic Performance & Accuracy

Item	Parameter
Frequency band	Ku band (15.7GHz ~ 16.7GHz)
Operating mode	Azimuth mechanical scanning + elevation DBF (CW)
Detection range	3.5km
Detection performance	Small UAV (RCS 0.01m ² , DJI Phantom 4): ≥2km; medium UAV (RCS 1m ²): ≥3.5km; vehicle / helicopter (RCS 5m ²): ≥3.5km
Maximum detection altitude	600m
Blind zone	50m
Coverage	Azimuth 360°, elevation -5° ~ +60°
Velocity range	1m/s ~ 100m/s
Measurement accuracy (RMS)	Range ≤5m, velocity ≤0.5m/s, azimuth ≤0.4°, elevation ≤0.4°
Update rate	2s (30rpm, standard); 1s (60rpm); 3s (20rpm)
Simultaneous tracking capacity	≥ 100 targets

3.2 Electrical Interface

Item	Parameter
Power supply	DC 18-28V (supplied with AC220V-DC24V adapter)
Power consumption	≤190W
Communication	Ethernet (circular aviation connector)

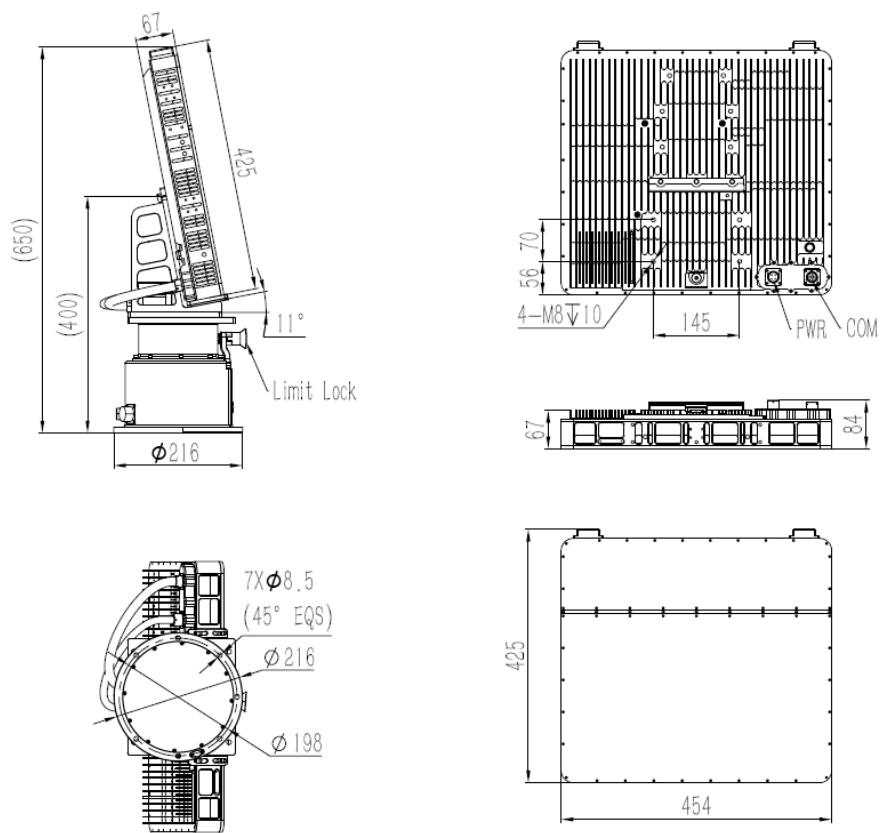
3.3 Physical & Environmental

Item	Parameter
Weight	≤25.5kg (host + turntable)
Dimensions	Host ≤454 × 425 × 85mm; turntable ≤415 × Φ225mm; tripod ≤980 × 230 × 230mm
Operating temperature	-30°C ~ +55°C
Operating humidity	≤90%
Protection rating	IP66

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



4 Equipment Dimensions



CR-FK02 structural and installation dimensions (unit: mm)



5 Delivery List

5.1 Packing List

No.	Item	Unit	Qty
1	Radar host unit	Unit	1
2	Radar turntable	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 DC24V, 15m cable)	PC	1
7	Communication cable (radar to display & control terminal, 15m)	PC	1
8	Assembly tools & screws (host, turntable, tripod)	Set	1
9	Documentation (user manual etc., electronic)	Copy	1

5.2 Logistics Dimensions

The complete set is packed in 3 cases. Packed weights: host case ≤18kg, turntable case ≤28kg, tripod case ≤16kg.

No.	Contents	Case dimensions (L×W×H, mm)	Qty
1	Radar host unit case	≤454 × 425 × 85	1
2	Radar turntable case	≤380 × 390 × 510	1
3	Tripod case	≤1100 × 250 × 250	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.