



# Doruk 3D Radar

UAV Detection/Tracking Radar for Land Borders and Infrastructure  
Detection and Classification Technology



## DORUK 3D UAV Detection Radar

Doruk 3D UAV Detection Radar is for detection of moving ground and maritime targets and low altitude flying targets. Doruk 3D is both fully compliant to Vessel Traffic Service (VTS) system radar requirements as defined in IALA Guidelines and also being adapted to ATC (Air Traffic Control) requirements as a mobile air traffic control system with its integrated ADS-B receiver.

Doruk 3D radars perform detection and classification simultaneously. This TWS (Track While Scan) capability provides angle, range, elevation, RCS (Radar Cross Section), velocity and heading of up to 300 targets with signal processing algorithms inside radar.

## Precise and State of Art

X-Band Doruk 3D radar detects low RCS slow-moving targets even in strong clutter environments such as rain, snow, desert sand storms and even urban environments. Doruk 3D Radar is a Pulse Doppler radar with its adjustable Solid State Power Amplifier. Doruk radars are powered by this X-Band solid state power amplifier, and combine the capabilities of pulse compression, Doppler processing and CFAR (Constant False Alarm Rate) algorithms. Doruk radars are operated from a user friendly open architecture software user interface.

All targets are shown realtime on the geographical map with detailed target informations supplied from the modern and reliable tracker algorithms of system.

## DORUK 3D Radar Specifications

Operating Frequency Band	X-Band
Detection (%80 Pd and $10^{-6}$ Pfa)	Small UAV (RCS=0.01 m <sup>2</sup> ) > 6km Small Boat (RCS=0.5 m <sup>2</sup> ) > 12 km Human > 15 km Glider > 20 km Big vehicle, Small Ships > 28 km Mid size aircraft > 40 km
Velocity Detection	0.2 m/sec to 160 m/sec
Elevation Beamwidth (-3 dB)	21 Beams each approx. 2.5°, Elevation Coverage -11° to 50°
Azimuth Accuracy	< 0.5°
Range Accuracy	< 5 m
Elevation Accuracy	< 1°
Velocity Accuracy	0.2 m/sec to 1 m/sec
Azimuth Coverage	360 °
Scanning Rate	Adjustable, 180°/sec
Weight	≤ 90 kg
Dimensions	110 x 400 x 900 mm
Operational Readiness	≤ 10 min
Operating Temperature	-30 °C to +70 °C
Storage Temperature	-40 °C to +85 °C
MTBF	5000 hours
MTTR	< 10 min
Track capacity	300
Antenna Technology	Slotted Waveguide Antenna with 21 Elevation Beams
Max Power Input Requirement	< 300 watt (Solar panel compliant)



## Robust & Reliable

With high MTBF and low MTTR, each Doruk radar is an autonomous system to operate under all-weather and day/night conditions. Tests and analysis results have proven Doruk Radars are compatible with MIL-STD-810F, MIL-STD-461E and IP standards.

## Mobile & Flexible

With its unique design, Doruk radars can be installed and used very easily in every environment. Doruk radars can be integrated to any type of vehicle such as car, truck, trailer fast and easy, as their software and hardware interfaces are industry standard.

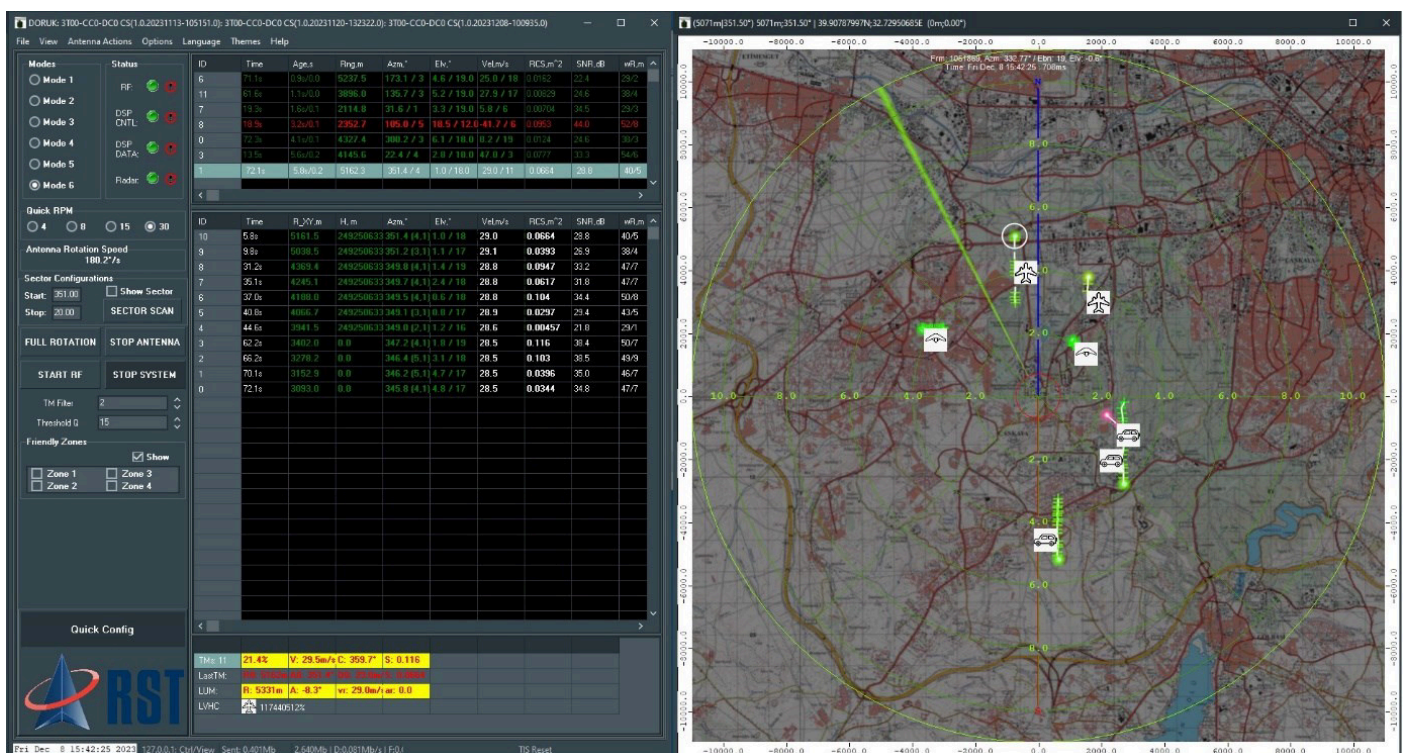
## Coastal and Land Border Surveillance Radar Software

Radar Navigation Display is compatible with all map formats, from naval and air traffic control maps to all military and free maps. All inland sea areas and coastal regions will be shown with friend/foe details on map. Also capability to connect to thermal/low light cameras, soft kill jammers and hard kill weapons are included in system.

Up to 10 operator laptops can be connected to each radar via internet in real time. Also up to 200 radar sensors can be connected to a control center via standard interface.

Radar track and control input/outputs are integrated to a command control application, ATC Display or any kind of (W)ECDIS.

Each radar targets up to 300 real-time tracks. Radar targets and identification details such as patrol boat, big ship, vehicle, drone, talon, aircraft, personnel are shown on map with icons real-time. High Level Track Fusion algorithms enable Central Command to continuously track&view up to 200 radars in a single big screen.



# Radar Software Capabilities

- Detection of moving ground and maritime targets and low altitude flying targets
- Target Classification with Advanced Mathematics and AI (Artificial Intelligence)
- Track While Scan capability Provides angle, range, elevation, RCS (Radar Cross Section), radial velocity and heading of targets with Doppler Processing
- Target Tracking over map (User selected maps are added easily)

State of the art one box system : No waveguide, no cable loss

MIL-STD Design and Production : From desert/tropical climates to snow

Electronic Protection (ECCM) : Frequency Hoping Radar (anti-jamming)

LRU based design : No Specialised Maintenance Training

Light weight : Total weight around 90 kg.

Operate onboard vehicle : Integrated to mast, mobile operation

Single Laptop Operation : Operator uses a single rugged laptop

Air Traffic Control Capable : Includes ADS-B Receiver

Fully Mobile 3D Radar : Automatic Position & North Finding

