Member of CSG

RXB06

ReGUARD

Multi-role 3D radar
for the detection
and tracking of ground
and low-flying targets



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ReGUARD

ReGUARD radar is a multi-role 3D radar which simultaneously detects and tracks ground targets and slow, low-flying targets with a small radar cross section (LSS). ReGUARD monitors the area by utilizing electronic beam steering and mechanical rotation of the radar head.

— Instrumental range 18 km
— Deployment time under 10 min



TECHNOLOGY

— 3D AESA with steering in both elevation and azimuth
— Rapid area monitoring using multiple received beams
— Full solid-state technology
— Monopulse processing in both azimuth and elevation for accurate evaluation of coordinates
— Advanced signal and data processing for clutter suppression (including birds and cars)
— Networking capability (ASTERIX output, fully Sapient 7.0 compatible, remote control, etc.)
— Built-in test equipment for automatic system diagnostics
— 24/7 Operation capability

Key features

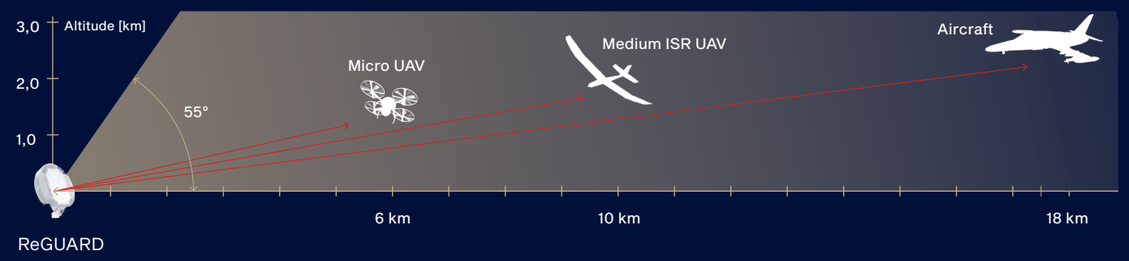
— Multi-role utilization - broad variety of detectable objects, simultaneous tracking of ground and air targets
— Compact size and low weight
— Passive cooling without fans
— Simple maintenance
— Long term support during the product life cycle
— Easy integration on masts, rooftops, poles, stands, vehicles

Operational modes

ReGUARD operates in sector or rotational mode. Each mode utilizes a different method of scanning the area in azimuth. When the radar scans in sector mode, its beam is steered only electronically both in azimuth and elevation. While scanning rotationally the radar sensor head revolves on a turntable and the electronic steering of the beam is primarily used in elevation. Steering in azimuth provides rapid confirmation of detection when initiating track and enhances the quality of tracking while scanning (TWS). The ReGUARD is configurable in each operational mode according to individual deployment requirements.



Visualization of ReGUARD detection performance (Sector Mode - UAV18S)



ReGUARD radar utilization



A single ReGUARD radar is capable of covering up to 22 km of the border.



ReGUARD tracks and records a drone‘s entire flightpath.



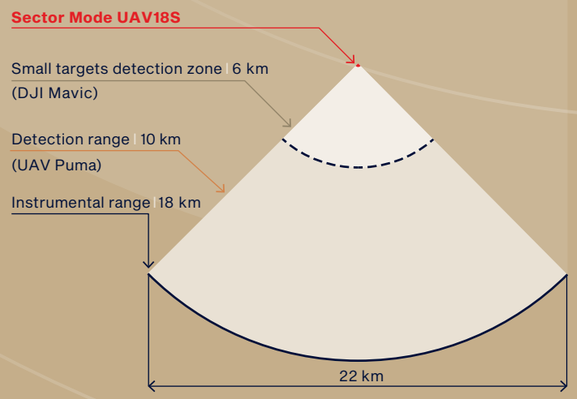


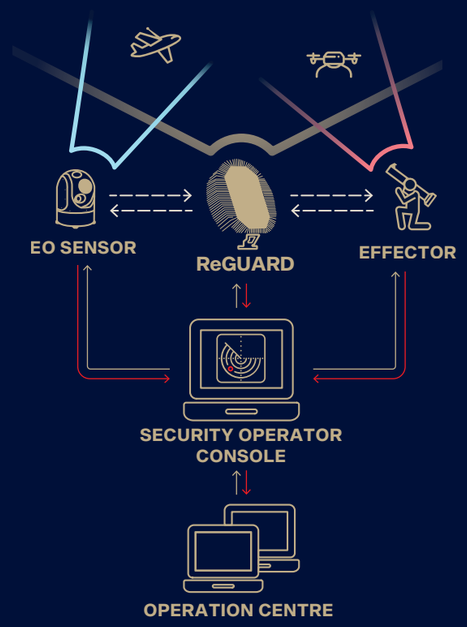
RCS = 0,1 m²

ReGUARD radar is designed for two primary applications: either as a standalone sensor or as an integral part of a complex system. It can be adapted according to customer’s requests and the nature of the object that requires safeguarding. This makes it ideally suitable for the following tasks.

BORDER CONTROL

While protecting borders, ReGUARD ensures that no person, vehicle or drone crosses the border without the radar operator’s knowledge. It provides early warning and gives valuable reaction time for an effective response, while protecting a wide strip of territory. When ReGUARD is suitably located, its range covers up to 22 km of border in the horizontal plane and it also provides the detection of possible threats up to 8 km behind it.





Radar’s parameters make the ReGUARD an ideal part of a comprehensive anti-drone solution.

SECURING CRITICAL INFRASTRUCTURE

Intrusions by UAVs into critical infrastructure areas such as nuclear power plants and other industrial or technological sites are ever increasing. They are already showing us the fact that protection against this type of threat is currently very inadequate. Effective detection provides a window of opportunity to respond in a timely manner thus preventing material and human losses. As an example, ReGUARD can detect a commercial drone at a distance of 6 km, which at top speed is their maximum flight range. This gives the user a valuable reaction time of 15 minutes before the drone reaches its destination.

IN AN ANTI-DRONE SYSTEM

ReGUARD can also serve as part of a comprehensive anti-drone system in which it acts as a radar sensor for LSS detection with a range up to 18 km. Due to its outstanding parameters it provides the system with drone “early warning” information. The anti-drone system then uses high-precision target positioning data generated by ReGUARD to guide the anti-drone action. No anti-drone solution can provide complete protection without a type of radar sensor such as ReGUARD.

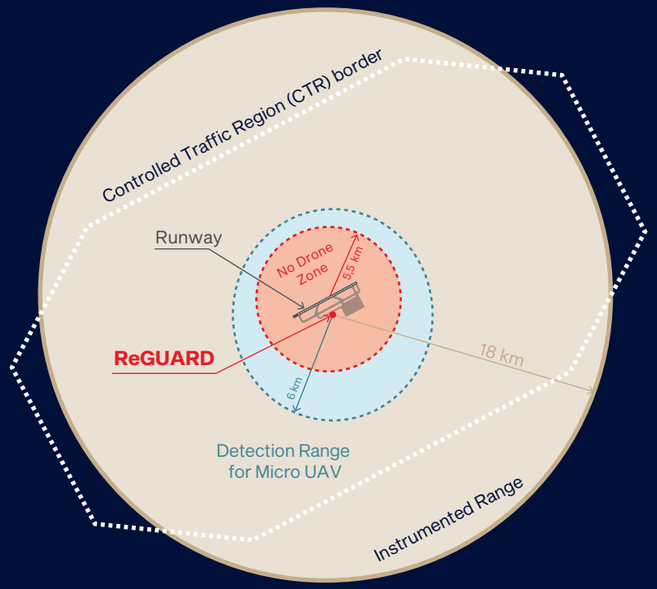
AS A PART OF AIR DEFENCE SOLUTION

ReGUARD provides high-precision radar data thanks to its cutting-edge innovative radar technology. This data can then help create a very effective air-defence system via integration with a powerful weapon system coupled with a system for the efficient data transmission between all the parts of the whole air-defence system.

AIRPORT DRONE DETECTION

Airports are very vulnerable to threats posed by small UAVs. Even their unintentional presence in the area of the airport, where drones are prohibited, interferes with the airport’s operation and can lead to considerable economic losses. Unfortunately, economic losses are not the only threats posed by UAV‘s. Other serious threats such as deliberate attack on an aircraft or infrastructure are also very real. However, when ReGUARD is permanently deployed at the airport it allows the airport security to prevent both minor and major damage by UAV’s. Additionally, ReGUARD records the complete flight paths of all drones in its range, thus greatly assisting the investigation of any drone incident and finding its operator. Last, but not least, ReGUARD‘s exceptional range enables it to cover almost the whole CTR of an airport with just one sensor.

The ReGUARD radar is capable of covering the entire Controlled Traffic Region (CTR) of the airport.



Configuration





Portable configuration

The radar head is mounted on a tripod making it convenient for temporary deployment. This configuration, which allows for an easy location change, is appropriate for the temporary securing of important geographical points or border control.

Mobile configuration

A highly mobile configuration since the radar head can be fitted on a vehicle or any other customer-designed platform. Facilitates the rapid patrolling of designated areas like large gatherings, concerts, VIP zones.



Hot configuration

Hot climate version with adequate thermal protection. Special sand color for better reflection of sun radiation. Increased radiator fins on back cover of radar head and on radar stand. Redesigned sunshield for optimal airflow around head unit.



Parameter	Parameter, Feature		Note
	Rotational mode UAV18R	Sector mode UAV18S	
Make and Type	3D phased array mobile radar		Fully coherent digital radar
Operating Frequency	X Band		All solid state technology
Instrumented Range	0,58 ÷ 18 km		
Elevation Coverage	up to 56°		
Azimuth Coverage	360°	90°	
Mission	surveillance	surveillance and targeting	
Altitude Coverage	2,2 km	3 km	UAV Puma
Detection Range	9 km	10 km	UAV Puma
Detection Range	5 km	6 km	UAV Raven/DJI Mavic3
Rotation Speed	15 rpm	fixed	
Antenna Type	Active phased array		Pencil beams
Antenna Feed	TR module front-end on each antenna element		
Antenna Dimensions	w = 0,65 m; h = 0,75 m; t = 0,235 m		
Radar head weight	71 kg		
Cooling	Passive (conduction)		clima-pack (optional)
Total Power Consumption	up to 1 kW		
Temperature Range	-32 °C ÷ +49 °C (passive cooling)		-32 °C ÷ +55 °C (with desert environment clima-pack)
Humidity	95 %		at 35 °C

*adjustable according to customer's specifications



ReGUARD climatic limits can be extended by using one of the clima-pack options. It includes pre-heating for arctic environment or sun-shield with fans for extremely hot environment operation.



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