

LEONARDO ELECTRONICS

OSPREY

MULTI-MODE SURVEILLANCE RADAR



The Osprey multi-mode surveillance radar provides second generation Active Electronically Scanned Array (AESA) surveillance capability as the primary sensor on airborne assets to meet the challenges of the 21st century.

A scalable design fulfils the surveillance requirements of unmanned aerial systems (UAS) through to strategic ISR platforms of users around the world. Osprey operates in the most demanding roles for fixed and rotary wing applications, bringing together wide azimuth and elevation electronically scanned (E-Scan) fixed antenna(s) with a compact processor and multi-channel receiver.

KEY BENEFITS

- Class-leading maritime surveillance capability
- AESA-enabled small target mode (STM)
- Very high resolution, wide swath SAR Mapping
- Small radar cross section (RCS), low minimum detectable velocity (MDV), multi-channel moving target indication (MTI)
- Air-to-air surveillance
- Instantaneous multiple mode interleaving

- Difficult target detection from high altitude
- High reliability for persistent operations
- Flexible configuration, installation and integration
- Multiple fixed antennas, choice of antenna sizes
- Belly-free, obscuration-free 360° coverage
- Open standards interfaces
- Compact, lightweight LRUs

KEY FEATURES

Osprey provides a genuine multi-domain capability, with high performance sea surveillance, notably against 'difficult targets', land surveillance with wide swath, very high resolution ground mapping, small and low speed ground target indication, high performance air-to-air surveillance.

These capabilities, combined with the radar's ability to rapidly interleave modes and provide scan-independent beam steering, make Osprey ideally suited to mixed environment operations, such as in the littoral.

Osprey is a low size, weight and power (SWaP) radar system, offered with a range of antenna sizes that may include up to four fixed antennas, depending on the azimuth coverage requirement, and which leave the belly of the aircraft free for operation to and from unprepared surfaces; or for other antennas, sensors or weapon systems. It is particularly well suited to UAS operations, with very high reliability for persistent surveillance, and difficult target detection capability from high altitude, facilitating platform line of sight (LoS) communications and improved platform fuel efficiency.

INTEGRATION

Platform integration is simplified through its flexible configuration (various antenna size and installation options), its low SWaP, air cooled line replaceable units (LRU), and its open standard interfaces.

PERFORMANCE BENEFIT OF AESA RADAR

E-Scan enables simultaneous multi-domain wide area search and Target of Interest (ToI) focus, and ultra-fast beam scanning to provide vastly improved clutter cancellation and superior detection performance. This performance is maintained from high altitudes typically encountered by UAS operating at the full extent of LoS data links.

SUPERIOR RELIABILITY AND OPERATIONAL AVAILABILITY

At the core of the AESA radar design is the ability to tolerate individual element failure. Component failures within the array result in graceful performance degradation rather than complete system failure, delivering high operational availability when compared with conventional radar systems.

Its high reliability and availability result in a reduced maintenance requirement and provides the option to reduce spares holding, resulting in significant cost benefits over the life of the system.



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BACKGROUND

Leonardo is a radar centre of excellence that has designed, developed and supported radar systems for more than 65 years. More than 3000 radar systems have been supplied for manned and unmanned fixed and rotary wing aircraft in surveillance, fire control and ground attack roles.

We have extensive experience of surveillance radar and have produced more than 800 systems. Osprey is our latest addition to our family of AESA surveillance radars, which includes Seaspray 7000E, and Seaspray 7500E, and PicoSAR.

TECHNICAL SPECIFICATION

Characteristics

Frequency: X-Band

Scan coverage: Installation dependant

Maximum range: 200NM

Mean Time Between Critical Failure (MTBcF): >2000 hours

Cooling: Unconditioned air

Weight (Approx. installation dependant): 28kg/62lbs (Single Antenna, Processor and Receiver LRUs, and IMU)

Interface standards: Ethernet, RS422, ARINC 708, ARINC 429

Video outputs: Multiple options for Mission System and cockpit display compatibility

Dimensions (H x W x D approx.)

Processor: 200mm x 125mm x 230mm (8x5x9 inches)

Receiver: 206mm x 255mm x 175mm (8x10x7 inches)

Antenna: 200mm x 510mm x 140mm (8x20x6 inches)

Functions

Track While Scan: Up to 1000 tracks, with Automatic Track Initiation (ATI)

Track Identification: AIS and Inverse Synthetic Aperture Radar (ISAR)

Mode Interleaving: Simultaneous multi-mode operation

Capabilities

Maritime Surface Surveillance: Maritime surveillance Small target mode

Strip and Spot SAR Ground Mapping: High resolution wide area ground mapping

Moving target detection: Ground, Maritime and Air MTI Air-to-Air Intercept

Navigation: Land mass discrimination, Weather detection, Turbulence detection

Beacon detection: Search and Rescue Transponder (SART)

Target imaging/classification: ISAR, Range profiling

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MM08527 06-22

