



## ARGOS-30X X-BAND COASTAL SURVEILLANCE RADAR

**Argos-30X is a fully coherent X-band primary radar for combined surface and air surveillance on sensible zones of coastal environment and for EEZ protection.**

The Argos-30X represents an outcome of the Selex Sistemi Integrati experience in the field of advanced radar systems and takes advantage of the acquired know-how and of the latest advances in the state of the art technology.

A wide range of processing techniques are automatically employed in the Argos-30X to ensure maximum operational performance under any environmental condition. The selection of the most appropriate technique from those available is based both on an extensive geographical and adaptive mapping system.

Argos-30X can be easily integrated to realize a Coastal Surveillance System Network (point to point serial link, Ethernet standard data LAN).

Argos-30X features up to 3 operational roles:

- Mode 1 - Long Range Surveillance (Surface and Air Surveillance of small air/surface targets)
- Mode 2 - Medium Range Surveillance, characterised by a high rotation speed
- Mode 3 - Over The Horizon (OTH), low rotation speed

Each modality has been designed with a proper set of transmitted waveforms.

The reflector antenna performs two different beams (both in linear and circular polarisation), used to cope with the different applications.

The first beam is a cosecant square and it is used in Surveillance modes.

The second one is a pencil-beam and it is applied for Over The Horizon mode.

Argos-30X receiver is designed to have a very high linearity and sophisticated processing.

It employs triple conversion with a carrier sample technique.

An automatic and adaptive STC algorithm is implemented against the returns coming from the clutter and very strong target radar cross section.

Sophisticated detection and extraction logic is used to extract surface and air target at plot level. The target identification is confirmed by means of the automatic tracker algorithm (at track level).

A different set of tracking filter parameters and logic is used in each mode for Air and Surface Targets.

Argos-30X is fully controlled by remote position, the radar site is normally unmanned.

The radar can be sheltered (ISO standard) for truck transport.

In addition to civil application, Argos-30X can be also employed in military field, providing optional ECCM capabilities, such as:

- Automatic Frequency Selection (AFS), selecting the least jammed frequencies within the operational band

## MAIN FEATURES

- Dedicated operative modes, selectable on site
- Generation and transmission to a remote console of digital radar video
- Non linear frequency modulated (NLFM chirp) transmitted waveform for high average power
- Linear/circular switchable polarization
- High dynamic range receiver, with very low system noise figure
- Adaptive STC for enhanced target detectability in clutter
- Digital Pulse Compression with enhanced peak-to-sidelobe ratio for high range resolution
- Extensive mapping techniques employed to maintain CFAR in presence of high density, non homogeneous clutter:
- Tangential target detection, by super-clutter detection capability
- Built-in plot extractor based on the "weighted mean logic" to give best plot accuracy and quality
- Extensive Built-in test (BIT) function for automatic on-line failure detection of all the radar components, from the antenna to the extractor
- Full monitoring and control capability, both locally or remotely, via a PC based control panel with user-friendly, look and feel HMI in a graphic, windowed environment
- Designed for un-manned operation

## TECHNOLOGICAL HIGHLIGHTS

- High dynamics receiver
- Fully coherent Adaptive Moving Target Detector (A-MTD) system
- Enhanced built-in test (BIT)
- High Mean Time Between Failure (MTBF)
- Low Mean Time To Repair (MTTR)

## TECHNICAL CHARACTERISTICS

### INSTRUMENTAL RANGE

It depends on parameters setting, typical values are:

- Mode 1 (6 Rpm): 180 Km Air/Surface Surveillance
- Mode 2 (12 Rpm): 100 Km Short-Medium Range Surveillance

- Mode 3 (3 Rpm): 240 Km Over The Horizon (OTH) Surface Surveillance

### OUTPUT

- Video (raw and processed video). They can be mixed and displayed on console monitor by means of operational commands
- Air and Surface Plot (up to 1000 plot/scan)
- Air and Surface Tracks (up to 300 System tracks)
- Serial/Ethernet Bus

### ANTENNA GROUP

- Very low azimuth side-lobe level
- Double beam: pencil and cosec-square
- Double Polarization (circular and linear for both beams)

### RECEIVER

- Linear Type
- Coherent triple conversion
- Frequency synthesiser
- Digital pulse compression
- Programmable waveform and digital expander
- Adaptive STC
- Carrier sampling technique
- Coherent integration with MTD technique
- Non-coherent integration
- Automatic Air and Surface plot extractor and Tracking
- Transmission to a remote console of digital compressed video radar via Ethernet LAN/WAN

### TRANSMITTER

- X-band, TWT output stage
- Type of transmission:
- Fixed frequency
- Diversity (batch-to-batch agility)
- Coded waveforms
- PRF Stagger

### DIGITAL SIGNAL PROCESSOR

Adaptive Moving Target Detector (A-MTD) with FIR filters set

Threshold detection:

Fixed, Adaptive (CFAR)

Maps:

Geographical, Clutter, STC, MTD set selection

### EXTRACTOR / CONTROLLER

Plot extraction:

Weighted mean logic using filter amplitude for range/azimuth coordinate extraction

Functions:

Radar timing control

Operator interface

System supervision