KRONOS® DUAL BAND
KRONOS DUAL BAND

UNRIVALLED PERFORMANCE

- Local Area and Self Defence
- Fire Control & Missile Guidance
- Littoral Warfare
- Electronic Attack
- Anti Tactical Ballistic Missile Defence

Dual Band Multifunction Active Electronic Scanning Antennas in X and C Bands. Antennas’ designs are based on extensive experience of Land & Naval Defence Electronics Division of Finmeccanica in developing multifunction radar systems. All radar components are fully solid-state, offering unrivalled detection performance and high reliability of the overall mission system with a modular and scalable radar architecture.

KRONOS Dual Band combines two AESA radar architectures:

- KRONOS Quad with four fixed panels in C Band
- KRONOS StarFire with four fixed panels in X Band

Both AESA radars are designed with scalable architecture: the number of TRMs is fixed according to required performance.
KRONOS Quad and StarFire use their multifunction capability to simultaneously and independently perform their tasks by electronically scanning the beams both in azimuth and elevation.

KRONOS Dual Band combines Quad and StarFire capabilities to provide Surface Combatant Vessels with 360°Az/90°El high range performance and extensive ECCM features.
SYSTEM MANAGER

To effectively manage all available functions through the execution of specific tasks associated to one or more function as:

- Dual Band Search and Multiple Tracking
- Fire Control
- Missile Guidance
- Electronic Attack
- Main Beam & Side Lobe Cancellation
- BITE, Calibration
- Environment Monitoring
The AESA fixed panels are coordinated by the system manager to minimize electromagnetic interferences and to allow the most effective coverage of the entire 360° x 90° surveillance volume.

To each task is associated a specific radiated waveform, time of execution and frequency for each direction of the surveillance volume.

Scheduling /Prioritization and Task Execution are key blocks of the system architecture:

Scheduling and Prioritization set the sequence of tasks to be executed by each panel. Task Execution manages the physical implementation of all micro-events (e.g. transmit/receive modules programming, gate enabling, etc.) which make up the task itself.

All functions operate typically on a time scale of seconds, except Scheduling and Prioritization which operate on a msec time scale and Task Execution which operates on a nsec base.
IN-HOUSE FOUNDRY HIGHLIGHTS

All Transmitter Receiver Module (TRM) are manufactured in our in-house foundry

- More than 500m2 of ISO5 clean-rooms
- CMMI Level 3 Certification

C-Band HP multi-channel TRM belonging to KRONOS Quad architecture

X-Band active column plate (14 SPKs) belonging to KRONOS StarFire 32 columns architecture

TRM’s plug-in concept
**KRONOS QUAD**

The main asset of the Principal Anti Air Missile System for multiple active-missiles guidance:

- Multiple target tracking
- Missile Up-link Transmission
- Instantaneous track initialization
- Precise and effective power emission control
- Volumetric search
- Electronic Attack
- Jammer detection and tracking
- Clutter detection

**KRONOS DUAL BAND**

- Predicted Trajectory
- Multi-beam generation
- Fading
- ± 45° in Azimuth
- ± 60° in Elevations
KRONOS QUAD 1000

More than 600 TRMs per each fixed panel

KRONOS QUAD 2000

Increased performance in range can be reached fulfilling the Quad 1000 antennas with 800 TRMs

KRONOS QUAD 3000

More than 2500 MPK-C in GaN technology per each fixed panel to perform long range detection and anti-tactical ballistic missile defence
KRONOS DUAL BAND

KRONOS STARFIRE

- Air/Surface Surveillance
- Very precise multiple tracking with high accuracies
- Electronic attack

Four fixed multifunction panels in X Band.
Each panel is resizable with a scalable number of TRMs according to customer requirements.
KRONOS STARFIRE 1000 AND 2000

- Air/Surface Surveillance
- Anti-missiles Surveillance
- Gun Fire Support and Splash Spotting
- Passive Frequency Listening and jam strobe extraction

KRONOS STARFIRE 3000 (MORE THAN 380 SPKS)

- Air/Surface Surveillance
- Gun Fire Control
- Electronic Attack
- High Resolution Surface Surveillance
- I-CWI (growth capability)
ARCHITECTURE

Different Top Side solutions to install the eight antennas in X and C Band on one or two planes.
MAINTAINANCE CONCEPT

Different Top Side solutions to install the eight antennas in X and C Band on one or two planes.

KRONOS Quad maintenance concept

- Easy of Maintenance
- High reliability and Gracefull degradation
- Activities performed inside the vessel according with MIL-STD-1742G

Total Weight 2400kg

KRONOS starfire maintenance concept

Total Weight 1150kg

SPKs are accessible from the rear cabinet

Total Weight 1150kg
KRONOS DUAL BAND

Combing capabilities to meet the required performance

KRONOS STARFIRE

KRONOS QUAD

KRONOS Dual Band can be integrated within any warship’s mast or provided as turn-key solution Unimast

UNIMAST

Unimast combines any configurations of Kronos StarFire and Quad according to the required performance and surface combatant vessel size. Unimast provides a turn-key solution integrating also other combat system equipment as R-ESM and C-ESM, ECM, Secondary Surveillance Radar, Comms and Sat Comms.

Unimast 1000 can be provided starting just from KRONOS Quad 1000 with secondary surveillance radar or including also the StarFire.

Unimast 2000 can be provided starting just from KRONOS Quad 2000 with secondary surveillance radar or including also the StarFire 1000 or 2000.

Unimast 3000 can be provided starting just from KRONOS Quad 3000 with secondary surveillance radar or including also the StarFire 1000, 2000 or 3000.
KRONOS Dual Band integrated within UNIMAST
SIR-M-PA
Conformal IFF antenna

KRONOS StarFire
thousands X-band transmitter receiver modules
shaping the required performance

KRONOS Quad
modular and scalable performance in C-Band