ELECTRONICS DIVISION

LEONARDO

MAIR

Multiple Aperture Infrared Missile Warning System

MAIR (Multiple Aperture InfraRed) is a missile warning system based on multiple InfraRed sensors, able to cover the full angular volume around the aircraft.

Thanks to the new generation IR detector technology MAIR achieves high missile warning performance in a light, compact and low power consumption design.

Man Portable Air Defence Systems (MANPADS) are the cause of most of aircraft losses in the last decade. Innovative systems, able to effectively counter these threats, increasing the safety of flight, are a primary need for both civil and military users.

MAIR provides immediate warnings, high detection probability and very low false alarm rate in heavy cluttered scenarios.

The IR technology allows the detection of threats at their very early stage thus providing a longer timeframe for counteraction.

MAIR provides tracking in each stage of missile flight and a suite of video function for full spherical situation awareness, in addition to early missile launch warning. MAIR is designed for an easy interface with counter measure systems (DIRCM, flares).

The system can be installed on a large range of platforms, both fixed and rotary wing, manned and unmanned, to be used in a moltitude of domains (fighter, surveillance, cargo, tanker, tactical, airliners/business jet also in a dedicated plug-in configuration).

MAIR is a scalable system composed at least by 5 interconnected optical heads (MOHx, x=1... 5) to cover 360 degree in azimuth and 270 in elevation around the hosting platform. An additional 6th optical head completes the full spherical coverage.

In its basic configuration all the processing and the communications run on board of the heads processing electronics.

A second configuration foresees the MAIR Central Processing Unit (MCPU) for enhanced video functions, data fusion with external sensors and full mission recording capability.

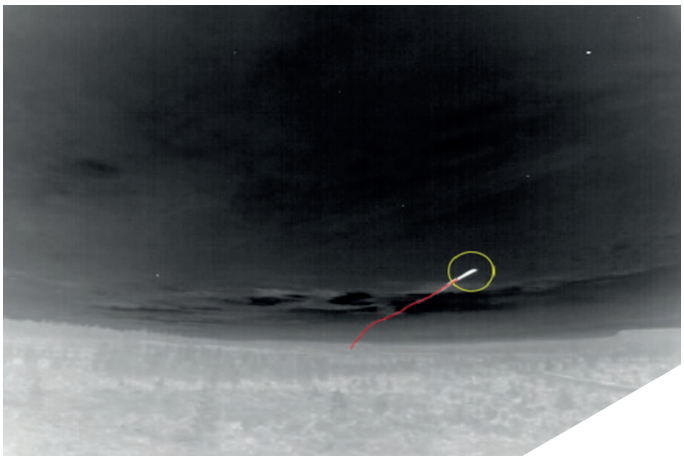
Day-night full spherical vision is simultaneously and independently available on aircraft displays and helmets.

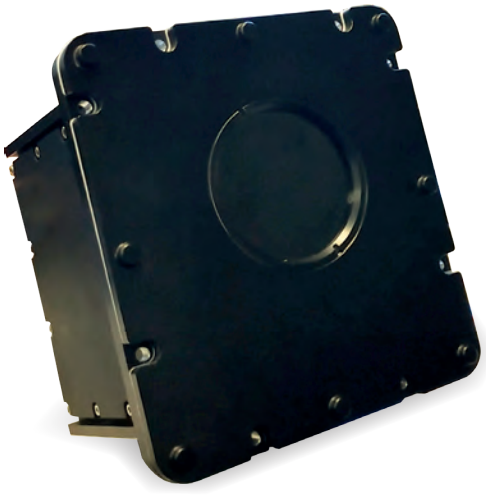
MAIR is highly modular for customizations and it is specifically designed to minimize Size, Weight and Power Requirements.

MAIR has been successfully tested during Surface to Air Launch Trials 2018 (Salt III).

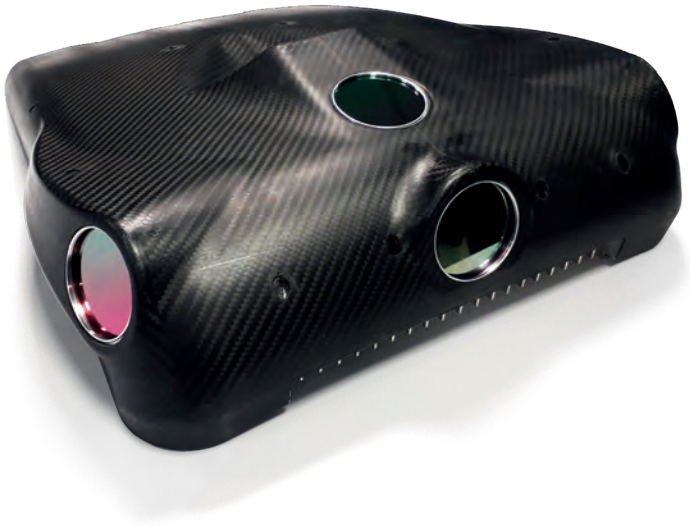
MAIR is the result of Leonardo Airborne and Space Systems extensive experience in the design and production of systems based on infrared technologies for surveillance and situation awareness purposes, for airborne, ground and naval applications.

Its open architecture design allows for future evolution in accordance with the technology trend, thus guaranteeing Customers a long-term edge solution.





Sample of MAIR Plug-in configuration



KEY FEATURES

Missile warning

MAIR works in a complete passive operation environment by exploiting thermal IR band.

Thanks to its fast refresh time and advanced false alarm rejection algorithms, MAIR ensures high probability early missile launch detection.

Using IR image capability, it is able to continuously update threat collision path. Its performance is continuously tested versus different backgrounds by real data and IR physics based intensive simulations.

Hostile Fire Indication (HFI) threat

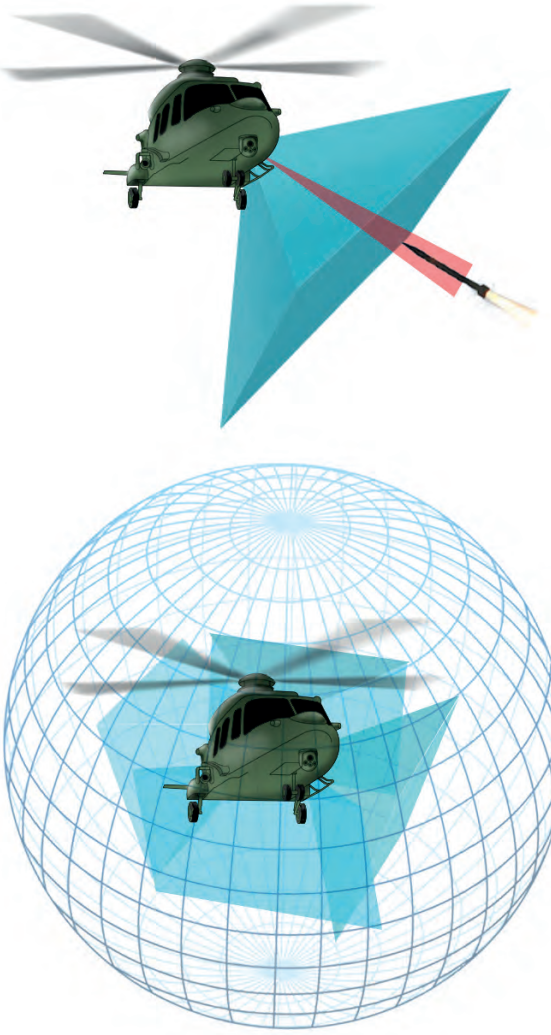
Detector high resolution and sensitivity allows for Tracer Detection and Tracer Conditioned Muzzle Detection, active together with all other MAIR features.

Day and night spherical vision

Each MOH (Optical Head) is provided with a video output to be used for IR picture presentation on the helmet displays of the pilots or on the cockpit displays, in order to present to the pilot the image related to the operative scenario and threats for situation awareness.

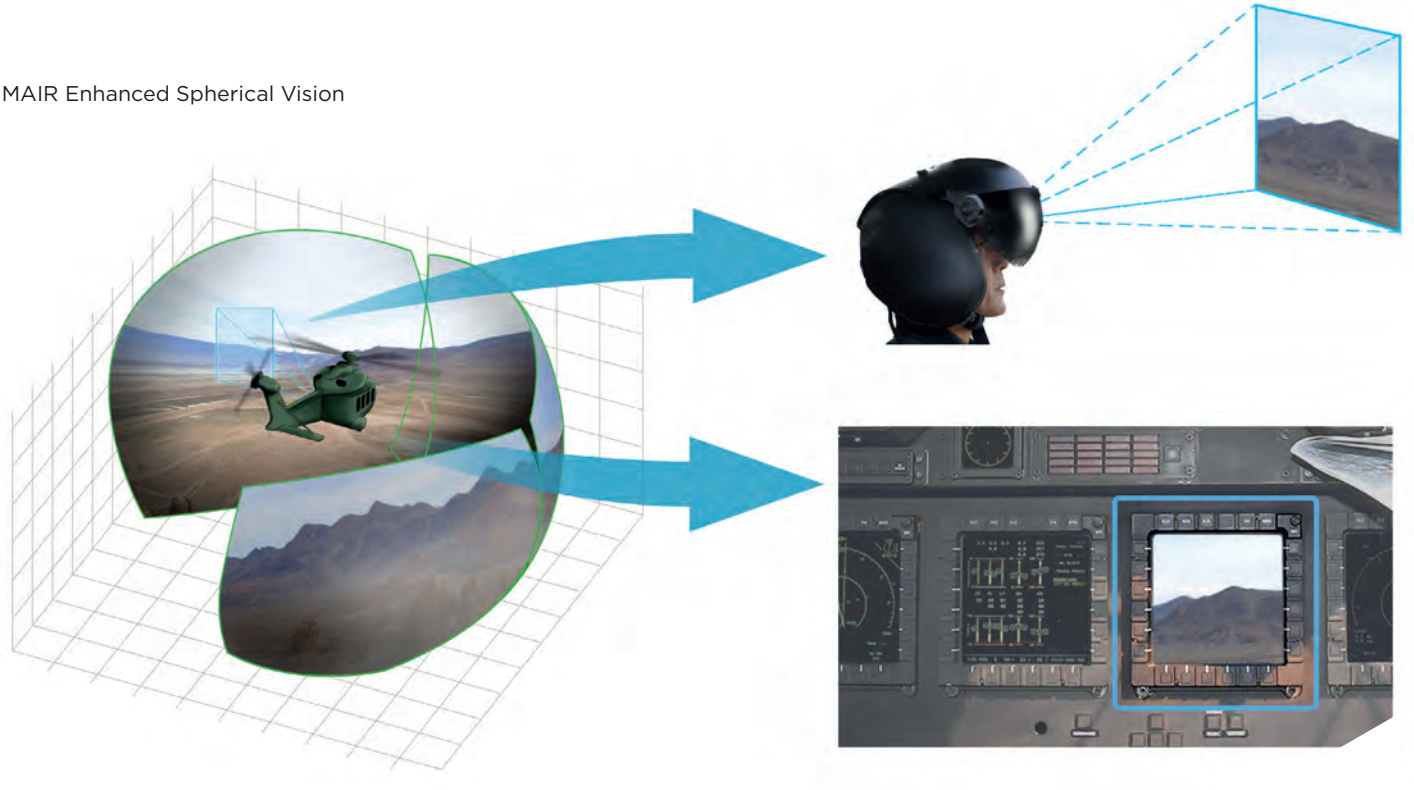
IRST function

MAIR provides Full Sky surveillance for situation awareness, heritage of the market leading Leonardo IRST products.

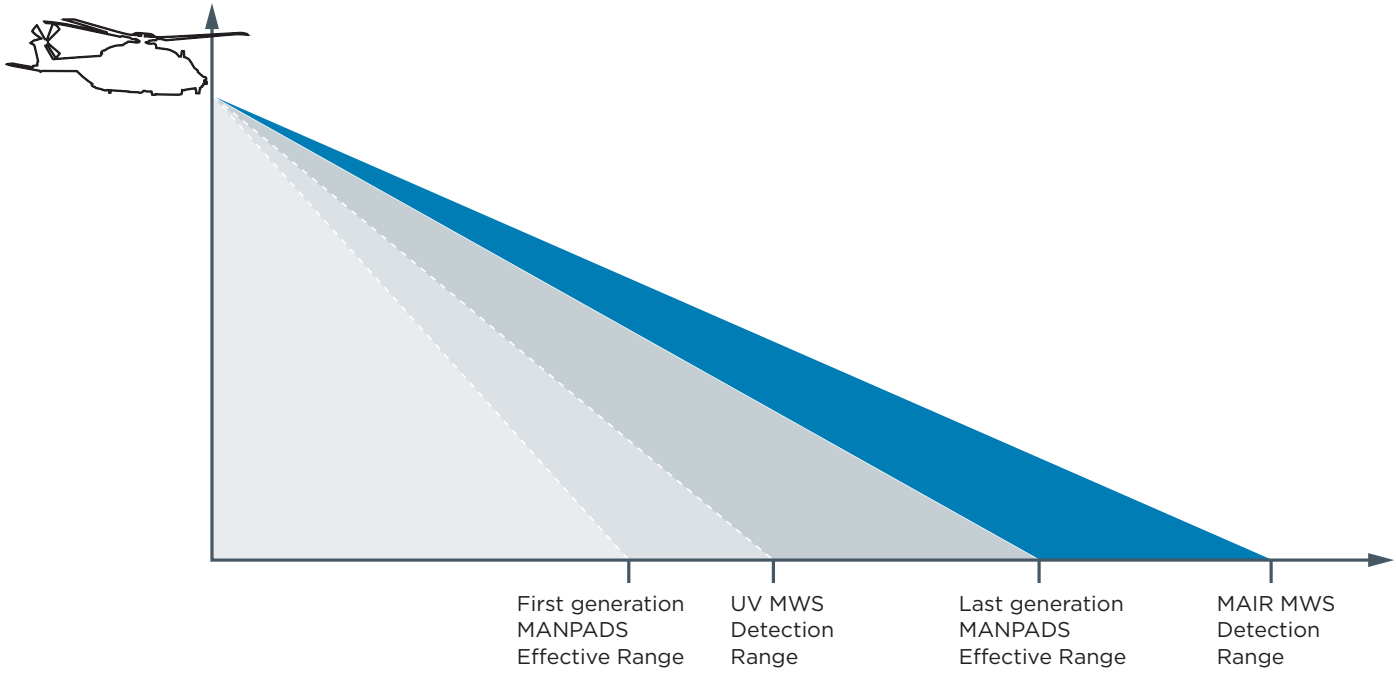


MAIR self-protection

MAIR Enhanced Spherical Vision



MAIR PERFORMANCE



TECHNICAL SPECIFICATIONS

- Bands: Thermal IR
- Coverage (5 heads): 360°x270°
- Coverage (6 heads): 360°x360°
- Size: <120mm x 108mm x 107 mm
- Weight: <2Kg per head
- Power: <24W per head
- Operative Temperature: -40°C to +71°C
- Storage Temperature: -55°C to +80°C
- MTBF: 10000 FH (per head)
- Bus: MIL-STD-1553-B, G-Ethernet
- MCPU consumption: <150W
- MCPU weight: <10Kg
- MCPU dimensions: (1/2 ATR)

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