

AMPS-MV

Airborne Missile Protection System with
Missile Verification Sensor



Protection against Surface-to-Air Missile attacks



Automatic CM release



Crew alert



Sufficient warning time



Low false alarm rate



High MTBF

The threat

Military, VIP and commercial aircraft are all exposed to the growing threat of Surface-to-Air Missile (SAM) attacks and mainly from MANPADS (Man Portable Air Defence Systems). More than 500,000 MANPADS are on the worldwide market, and some of them are in the hands of non-state organisations. A high percentage of the aircraft losses in current and recent conflicts were from ground-based defence systems using IR SAMS.

According to sources of the US Department of State since the 1970s, more than 40 civilian aircraft have been hit by MANPADS causing over 28 fatal crashes and over 800 deaths worldwide.

Facing the threat and serving special missions

To counter the increasing threat by IR-guided missiles, countries and armed forces have to deploy more sophisticated solutions for aircraft self-protection.

Especially advanced MWS and sophisticated countermeasures against IR-guided missiles play an important role in this context. A low false alarm rate is one of the most important requirements for operators, alongside a high probability of declaration and reliability.

A very low false alarm rate is crucial for avoiding unintended flare deployment, in particular during operations like Search and Rescue (SAR) missions or civil applications such as the transportation of VIPs and Heads of State.

A significant reduction of false alarm rates is achieved by using the Missile Approach Confirmation Sensor (MACS). Additionally, the MACS provides threat information like distance and velocity of the missile, which can be put to further use during the countermeasure phase.

AMPS-MV system

The AMPS-MV system is based on the MILDS® AN/AAR-60 Block 2 missile warner and the Missile Approach Confirmation Sensor (MACS). It also features an Electronic Warfare Suite Controller (MCDU), one Inertial Measurement Unit (IMU) as well as a fully integrated Advanced Countermeasure Dispensing System (ACDS). The system is therefore a complete stand-alone Self-Protection System (SPS).

Significant reduction of the false alarm rate (FAR)

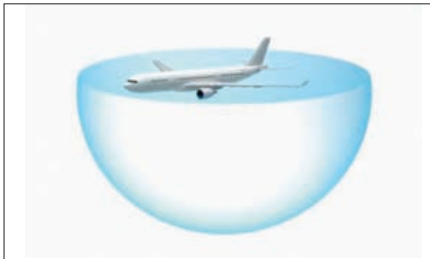
- Combination of active / passive technology to reduce FAR
 - The MILDS missile warner is solar blind, the false alarm rate is already very low and the sensitivity of the system can be kept at a high level.
 - With the help of the active confirmation sensor MACS, the very low false alarm rate can be significantly reduced further by several orders of magnitude to avoid unintended flare ejection as much as possible.
- Sufficient warning time due to confirmation of the missile right after AAR-60 pre-alarm.
- With the FAR being so close to zero, the risk of running out of countermeasures (flares) is significantly reduced.

Flying without highlighting your presence

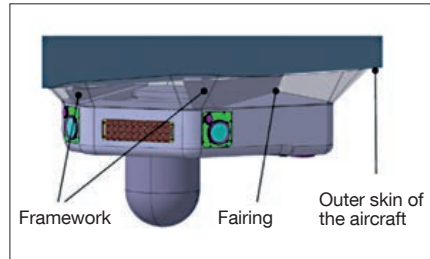
- Improves aircraft survivability (especially during night time by avoiding unintended flare deployment).
- MACS is active only when needed
- Only active in missile direction with a very narrow beam.

Enhanced crew comfort

- The aircrew's overall stress levels are reduced due to the FAR being so close to zero.
- The aircrew can focus better on their operations and missions.
- The decision process takes place in the MCDU without requiring any aircrew involvement.
- The AMPS-MV is easy to operate.



A single MACS installation on the aircraft belly provides sufficient coverage by the huge field of regard of the MACS



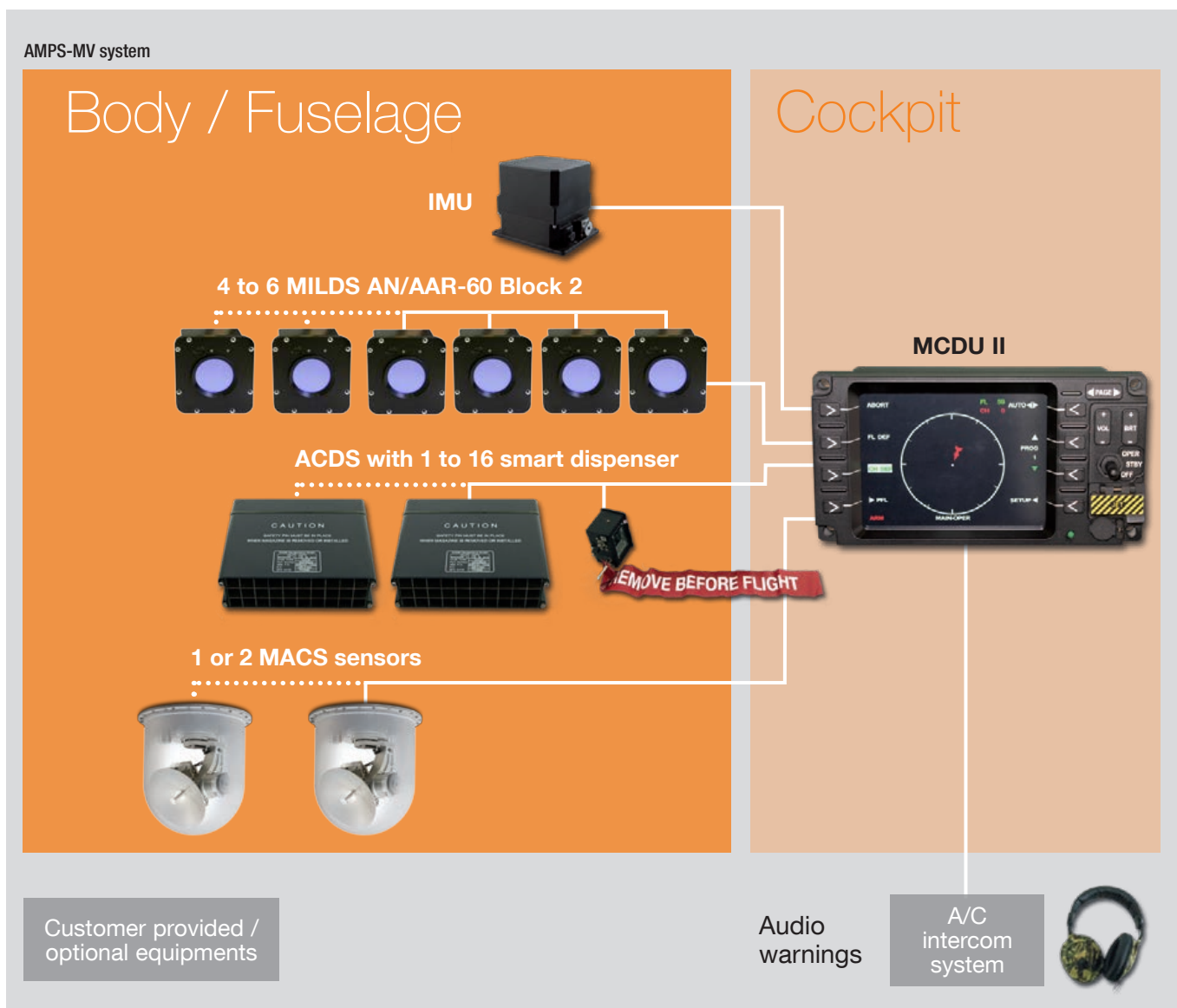
Pod installation fitted to the airframe

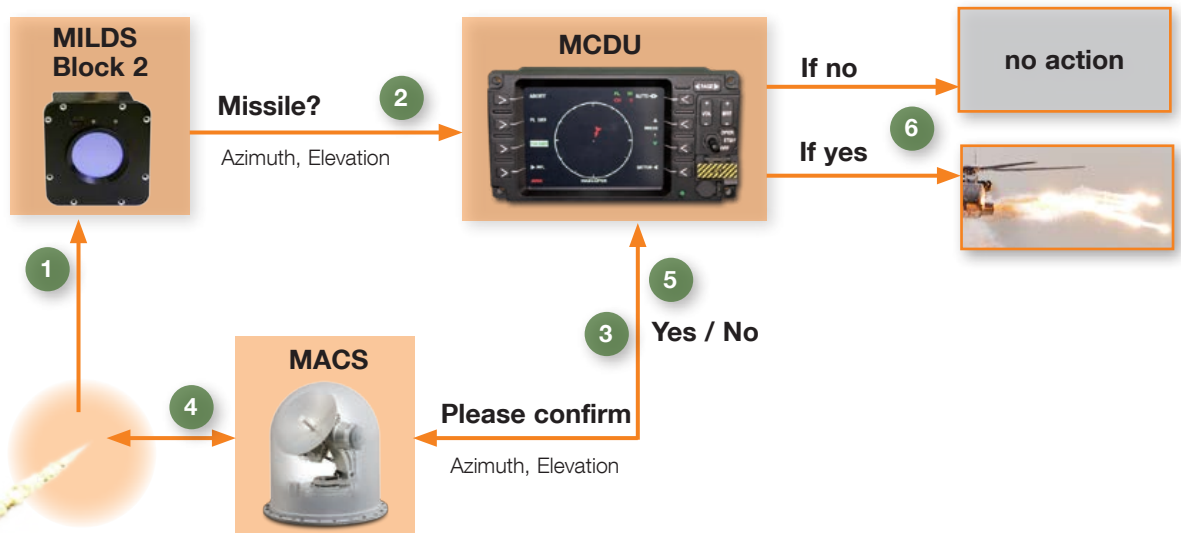


Airframe integrated installation

AMPS-MV: the smart solution for civilian and military operators

- Fully autonomous system from detection to protection (stand-alone configuration).
- Easy integration as no avionics interface is required.
- Off-the-shelf equipment without any development risk.
- The high MTBF of the AMPS equipment and the low number of LRUs in the AMPS system provide a very good AMPS-MV system reliability.
- Due to the smart dispenser's mixed payload capability, a "cocktail" of flares can be deployed to counter even the latest-generation threats.
- AMPS-MV is the cost-efficient solution, even for countering multiple IR missiles with third-generation seeker heads simultaneously. As a result, AMPS-MV can deal with the majority of today's IR threats.





If the MILDS declares a potential threat, the pre-alarm information is provided to the MCDU. The MACS sensor is then directed by the MCDU to confirm the presence of an approaching missile. The selected MACS sensor antenna is aligned to the direction of the detected potential threat and its distance and approaching velocity are measured.

If the measured parameters fit to the characteristics of an approaching missile, the threat will be confirmed by the MACS and the confirmation including parameters like distance and velocity is provided to the MCDU. The MCDU, depending on the operating mode of AMPS-MV, automatically initiates the countermeasures.