

## Scorpion Aircraft Protection System

### Lightweight, Cost-Effective Missile Protection for Tactical Aircraft



**The Scorpion Aircraft Protection System is a lightweight, low-cost and reliable DIRCM system that protects tactical aircraft from man-portable missiles.**

#### Benefits

- Defeats all fielded man-portable IR missiles, including multiple and short shots
- Uses small, reliable and proven laser pointer technology
- Offers advanced laser options
- Designed for high-rate, quality production
- Lowest cost DIRCM system for tactical aircraft

As the world's leading developer and producer of tactical missiles, Raytheon has used its proven missile seeker technology and domain experience with the Navy to design, develop and demonstrate a fourth-generation directed infrared countermeasure (DIRCM) system for tactical aircraft and other light platforms.

Current DIRCM systems, hampered by commonality requirements with large and heavy first-generation components, suffer from high cost, complexity and low reliability. Earlier generation flares, lamps and single-band lasers are unsuitable for light helicopters and aircraft that require low-cost, lightweight and tactically reliable protection from the large and growing threat of man-portable air defense systems (MANPADS).

The Scorpion DIRCM system offers a cost-effective way to protect Army, Navy, Marine Corps and Air Force special

operations helicopters and tactical aircraft in high-threat environments. The Scorpion Aircraft Protection System incorporates proven, fielded components, advanced multiband lasers and two-color missile warning sensors into a DIRCM network that provides unparalleled missile protection for U.S. tactical aircraft.

This carefully designed blend of proven and cutting-edge counter-missile technologies networked with advanced software and missile defense algorithms provides the most cost-effective and reliable aircraft defense suite available to modern tactical aircraft.

Platforms that are constrained by allowable payload size, lifecycle cost and combat reliability will obtain the most benefit from the Scorpion Aircraft Protection System. Its modular, open architecture electronics design can control multiple countermeasure

components and provides unsurpassed upgrade capability to defeat emerging threats.

#### Scorpion Laser Pointer

The Scorpion laser-pointer system draws on four decades of successful development and production of one of the most successful missiles in the entire U.S. weapons inventory by using an air-to-air missile seeker gimbal, modified as a laser pointer, to direct laser energy into the attacking missile's seeker, thus diverting it away from the aircraft in seconds. The Scorpion slew rate and pointing accuracy provides improved protection from multiple and short-shot engagements.

Scorpion has demonstrated the ability to project a missile-defeating laser beam through a fiber-optic cable, allowing maximum flexibility of component and subsystem locations on current and future platforms. Scorpion also provides a streamlined



# Scorpion Aircraft Protection System



Laser Pointer



Controller/Processor



Two-Color Missile Warning Sensors



Advanced Solid-State Laser

laser pointer controlled by a high-resolution IR sensor that assures responsive and reliable laser pointing.

Using technology from missiles already in high-rate production, Scorpion can be rapidly produced and fielded to host aircraft as the threat requires. The Scorpion laser pointer has almost twice the slew rate, is half as expensive, one-third as large as and 17 times more reliable than currently deployed systems.

## Scorpion Controller/Processor

The Scorpion controller/processor is identical to the flight-proven 755(3) processor used in Raytheon's air-to-air missiles. With its small size, state-of-the-art power and large throughput margin, the Scorpion controller/processor provides ultra-responsive, accurate system reaction to

MANPADS threats from all directions. Raytheon Missile Systems' advanced handoff and tracking algorithms and missile warfare domain experience improve system performance beyond current DIRCM systems to outpace emerging threats.

## Scorpion Advanced Laser Options

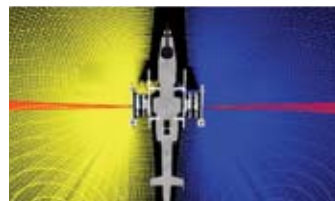
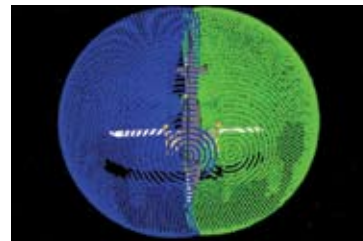
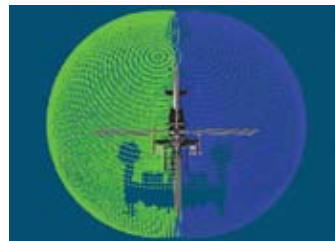
Scorpion solid-state, multi-band, mid-infrared lasers are specifically developed to provide a more affordable laser transmitter

compared with currently fielded lasers. Cost reductions were achieved through the use of novel opto-mechanical design and manufacturing methods and the use of a simplified optical architecture. Scorpion lasers provide low-cost solutions that can provide countermeasures against state-of-the-art missile threats. Scorpion's counter-missile capability is greatly improved by using the latest waveforms and missile seeker countermeasures

while retaining performance against older threats.

## Scorpion Missile Warning System

Scorpion incorporates an advanced two-color missile warning system that provides an accurate and responsive missile warning with a dramatic increase in effective range and reduction in the false-alarm rate. Developed from systems fielded on F-16 aircraft, Raytheon's sensor is the best missile warning sensor available today. The system provides laser warning of other threats with high reliability. Raytheon's superior knowledge of aircraft protection and threat missile performance allows for platform system designs that maximize protection in all environments and combat situations.



**Lightweight, low-cost, reliable protection for rotary and fixed-wing platforms**

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