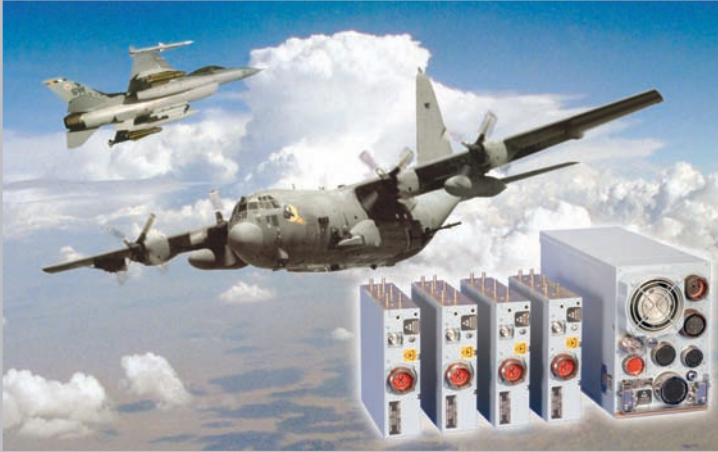




AN/ALR-69A(V) Radar Warning Receiver



The upgraded AN/ALR-69A(V) Radar Warning Receiver — the world's first all-digital radar-warning receiver — dramatically enhances air-crew survivability, providing "sensors forward" situational awareness at substantially lower cost than competing systems.

Benefits

- Advanced broadband digital receiver technology
- Enhanced situational awareness in high-density environments
- Improved detection range
- Accurate, unambiguous signal identification
- Rapid, flexible threat reprogramming
- Easy integration with other ECM or radar systems
- Compact, lightweight package — 5 LRUs, 42 lbs.
- Cross-platform commonality
- Growth potential through technology enhancement, additional sensors, integration with other onboard systems
- Dramatically lower cost than competing systems

The ALR-69A(V), the world's first all-digital radar warning receiver (RWR), will provide an affordable and effective solution to the defense of the modern warfighter. Using advanced broadband digital receiver technology and an open architecture design, the ALR-69A(V) enhances traditional RWR performance while enabling new missions for the host aircraft. Raytheon has designed the system for the utmost in flexibility, allowing cross-platform commonality, improved spectral and spatial coverage, and easy integration with other ECM or radar systems. The result is a superior combination of high performance and low cost.

Mission Capability

The ALR-69A(V) will initially be installed on U.S. Air Force AC/MC/C-130 and F-16 aircraft. The system will provide improved detection range and accurate, unambiguous identification in dense signal environments comprised of both threat signals and those from

wingmen, coalition partners, and commercial operations. Its 360-degree coverage is provided by four independent Digital Quadrant Receivers (DQRs), each covering one quadrant of the aircraft. Each of the four DQRs contains a wideband digital channelized receiver providing signal selectivity and high sensitivity in dense signal environments. The combination of narrow receiver channels and a large number of channels provides the selectivity needed for high sensitivity and management of interference while ensuring rapid coverage of the threat spectrum and rapid response time.

The ALR-69A(V)'s digital architecture allows the DQRs to be co-located near the antennas to maximize sensitivity. High-speed optical data links transfer information to the Modular Countermeasures Computer, which employs over 20 billion-instructions-per-second of processing throughput for advanced signal processing.

The ALR-69A(V)'s next generation performance supports suppression of enemy air defenses, precision situational awareness, and construction of real-time electronic order of battle — capabilities previously unattainable in a tactical RWR.

Flexibility and Growth

Thanks to built-in cross-platform commonality, the ALR-69A(V) is designed to equip virtually any airborne platform. The system also provides for expansion of bandwidth, spatial coverage, spectral coverage, polarization diversity, interferometry, and integration with other onboard systems. Integration is supported by an open architecture that allows interfacing with ECM or radar systems through insertion of an interface card and a new software load.



Digital Quadrant Receivers

- Four C/J-band channelized digital receivers accept RF/microwave input from quadrant antennas and convert information to digital format
- 16-channel FPGA-based receiver is easily reconfigured to support future applications
- High speed fiber-optic data link transfers data to modular countermeasures computer

The ALR-69A(V) RF converters are designed to support growth through three generations of digital converter technology, so that as analog-to-digital converter technology improves, the system's response time and dynamic range can be improved by simple replacement of a digital circuit card. This reduces the risk of diminishing manufacturing sources and parts obsolescence.

The system supports expansion to as many as four additional sensors interfaced on fiber-optic data links. These additional sensors can include digital receivers used to enhance spatial or spectral coverage or to implement various configurations of interferometers. The sensors may also include modular missile warning sensors to provide true multispectral coverage.

Cost of Ownership

Due to the extensive use of digital circuitry, the procurement cost of the ALR-69A(V) is substantially less than the cost of competing systems that offer less performance. Life-cycle cost is kept low thanks to a system design that minimizes parts obsolescence and provides exceptional reliability. The built-in-test system isolates all failures to a single LRU, and in most cases to the failed assembly within an SRU.

Exportability

The ALR-69A(V) is compatible with more than 8,000 airborne platforms and contains specific design features to enable wide export, an expanded user base, and reduced support costs. The system design supports in-country reprogramming and control of system capability in international markets.

Modular Countermeasures Computer

- Open architecture sensor/processor uses off-the-shelf commercial components
- Accepts four sensors, expandable up to eight
- Four digital signal processors and two power PCs process sensor and emitter/threat data
- Includes platform and operator interfaces
- Extra card slots pre-wired for future growth

The Total Solution

For the ultimate affordable, high performance EW suite, Raytheon is currently developing a low-cost technique generator which will be tightly integrated with the ALR-69A(V), as well as fiber-optic decoys and high-power transmitters, to provide a complete solution for aircraft self-protection.

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