



AN/APR-48B

MODERNIZED RADAR FREQUENCY INTERFEROMETER

LOCKHEED MARTIN

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DETECT. IDENTIFY. ENGAGE.

Long-range detection and unambiguous identification of radar emissions are essential for complete situational awareness in battlefield environments. The digital receiver-based AN/APR-48B system provides accurate information under ever-changing battlefield conditions and intentional electromagnetic interference. Modern target acquisition, threat identification, and Radar Warning Receiver (RWR) systems must function at longer ranges and rapidly locate and identify targets to preserve both weapons system lethality and aircraft survivability.



The AN/APR-48B system provides accurate information under ever-changing battlefield conditions.

PERFORMANCE

The ability of the AN/APR-48B system to detect, precisely identify, prioritize and locate radars in varying threat conditions makes it a significant tool for the modern warfighter. The enhanced receiver sensitivity allows the system to detect a threat, or a friendly, long before the host aircraft is vulnerable, allowing aircrews to control engagement. In today's congested and contested electromagnetic spectrum (EMS), the wideband detection with narrow band sensitivity from the digital receiver core continues to give the warfighter the survivability edge required.

OPERATIONAL OVERVIEW

The AN/APR-48B system performs target acquisition and cueing for the fire control radar system in the AH-64E Apache Guardian attack helicopter. It can also deliver warning of radar directed anti-aircraft threats and serve as the controller for an integrated aircraft survivability equipment (ASE) system. System capabilities of the system significantly reduce exposure time, thereby increasing both platform survivability and lethality. The system also enhances suppression of enemy air defenses, armed intelligence, surveillance, and reconnaissance (ISR) and attack missions. The system provides high

sensitivity and precision angle of attack in a lightweight, modular configuration suitable for airborne or ground-based platforms, both manned and unmanned. These features allow the system to work efficiently with radar and electro-optic (EO) sensors to extend useful range, decrease acquisition time and provide positive target identification. The system can also operate independent of other sensors to provide enhanced situational awareness. As the number of platform transmitters increase in quantity and duty cycle, the system adapts and is fully interoperable for successful operation.

RWR AND SURVIVABILITY

Increased sensitivity, high probability of intercept and positive signal identification make the system an ideal solution for RWR applications. Advanced warning of a radar-guided threat allows the aircrew

to prepare for engagement before the threat can endanger the aircraft. The system can serve as the controller for an integrated aircraft survivability equipment system, thereby increasing both aircraft survivability and lethality.

SYSTEM INTERFACE

The AN/APR-48B system primarily operates on a dual-redundant MILSTD-1553B data bus. Other commercial I/O interfaces including gigabit ethernet, RS-232 and RS-422 are available for future growth. The UDM can be rapidly reprogrammed with a new threat library, allowing system operation changes in response to new missions or threats. Lockheed Martin, under contract to the U.S. Army, developed an organic toolset for generation and validation of UDM mission data loads.



System Specifications

Weight	39 lbs
• Antenna.....	15.1 lbs
• Receiver.....	9.1 lbs
• Processor	13.6 lbs
• Cables.....	2.1 lbs
Dimensions	
• Antenna.....	21" x 4.9" x 10.4"
• Receiver.....	11.1" x 8.6" x 7.8"
• Processor.....	6.9" x 7.4" x 12"
Power Dissipated	250 watts

MODULAR DESIGN - APPLICABLE TO MULTIPLE TYPES OF PLATFORMS

Lockheed Martin's AN/APR-48B system was designed for the Apache Guardian helicopter, but is also applicable to several other platforms, including unmanned aerial vehicles and ground-based air defense systems. The system can be packaged as a single Line Replaceable Unit (LRU) or can be configured as multiple LRUs depending on the requirements of the host platform.



- Two four-element interferometer arrays used for precision Direction Finding (DF) with 120-deg. field of view
- Additional antenna group with expanded frequency range for modern threat detection are incorporated
- Unique rotor blade processing algorithms perform precision DF
- Has instantaneous 360-deg. field of view, coarse DF arrays for Initial signal acquisition and RWR alerts

- Uses Digital Receiver with wideband detection and narrow band sensitivity
- Provides signal detection, measurement, processing, sorting, and Direction Finding
- Fully channelized receiver allows for accurate signal detection even among strong interference
- Firmware-based Digital Signal Processing (DSP) can be tailored for future threats
- Signal descriptors are sent to the Processor LRU for emitter identification

- Performs system control functions while executing the Operational Flight Program (OFP)
- Characterizes and identifies emitters and determines threat mode and priority
- Performs built-in test, fault isolation, calibration and system control
- Contains Input/Output (I/O) interfaces to host platform (dual-redundant MIL-STD-1553B ports, rotor blade position analog inputs, blanking signals, other configurable discrete I/O and test interfaces)
- Provides externally mounted, easily removable User Data Module (UDM) containing re-programmable system threat library

The AN/APR-48B Modernized Radar Frequency Interferometer (MRFI) system passively detects, accurately identifies and precisely locates radar emitters.

WE'RE ENGINEERING A BETTER TOMORROW

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