Active Antenna Array Solutions For Next-Generation Radar







api technologies corp.

Active Antenna Array Unit (AAAU) Solutions

Active Antenna Array Units

Modular Units Featuring Line-Replaceable Quad T/R Module 'Common Building Blocks' for Scalability and Ease of Integration and Repair

Using a Line Replaceable Unit (LRU) approach, API Technologies has developed a solution set that streamlines system integration, simplifies repair, and reduces the cost of ownership of AESA, E-Scan, and other next-generation radar platforms.

API's Active Antenna Array Unit (AAAU) system is comprised of multiple QTRM (Quad Transmit Receive Module) assemblies, packaged in removable planks that form the AAAU sub-array. The QTRMs are Line Replaceable Units (LRU), which allow for ease of assembly and maintenance.

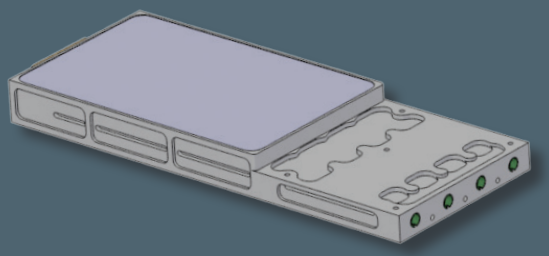
These API-designed and manufactured QTRMs are ready to use out of the box. All that is necessary is the upload of system calibration data, which then propagates through the system, speeding set-up time.

Quad T/R Modules

Common Building Blocks for E-Scan & AESA Radar System Solutions

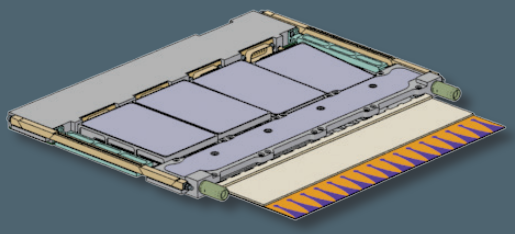
API Technologies' Quad Transmit Receive Module, or QTRM, solutions for AESA/E-Scan radar applications offer a unique and innovative solution to system integrators and prime contractors seeking a high performance, high level transmit/receive solution for the development of active antenna array systems and sub-systems.

This common module approach, which uses API's European designed and manufactured elements and COTS components, delivers ease of system integration, first line repair and reduced cost.



QTRM

Each Quad Transmit Receive Module (QTRM) includes full RF, DC, control functionality (logic interface), calibration and BITE status for each TRM, thermal and current overload protection, as well as receive and transmit functions. Each field-replaceable QTRM common module is factory calibrated. The only set-up needed is a one-time laptop upload of antenna offsets.

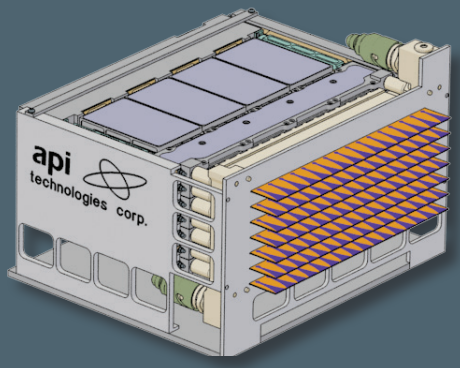


Plank

The Plank is the quick-remove host for four QTRMs, creating a 16-channel assembly with integrated antenna. The plank incorporates the RF manifold, DC distribution and logic/control distribution and is inserted into the AAAU as a rack-mounted sub-assembly.

Cooling Solutions

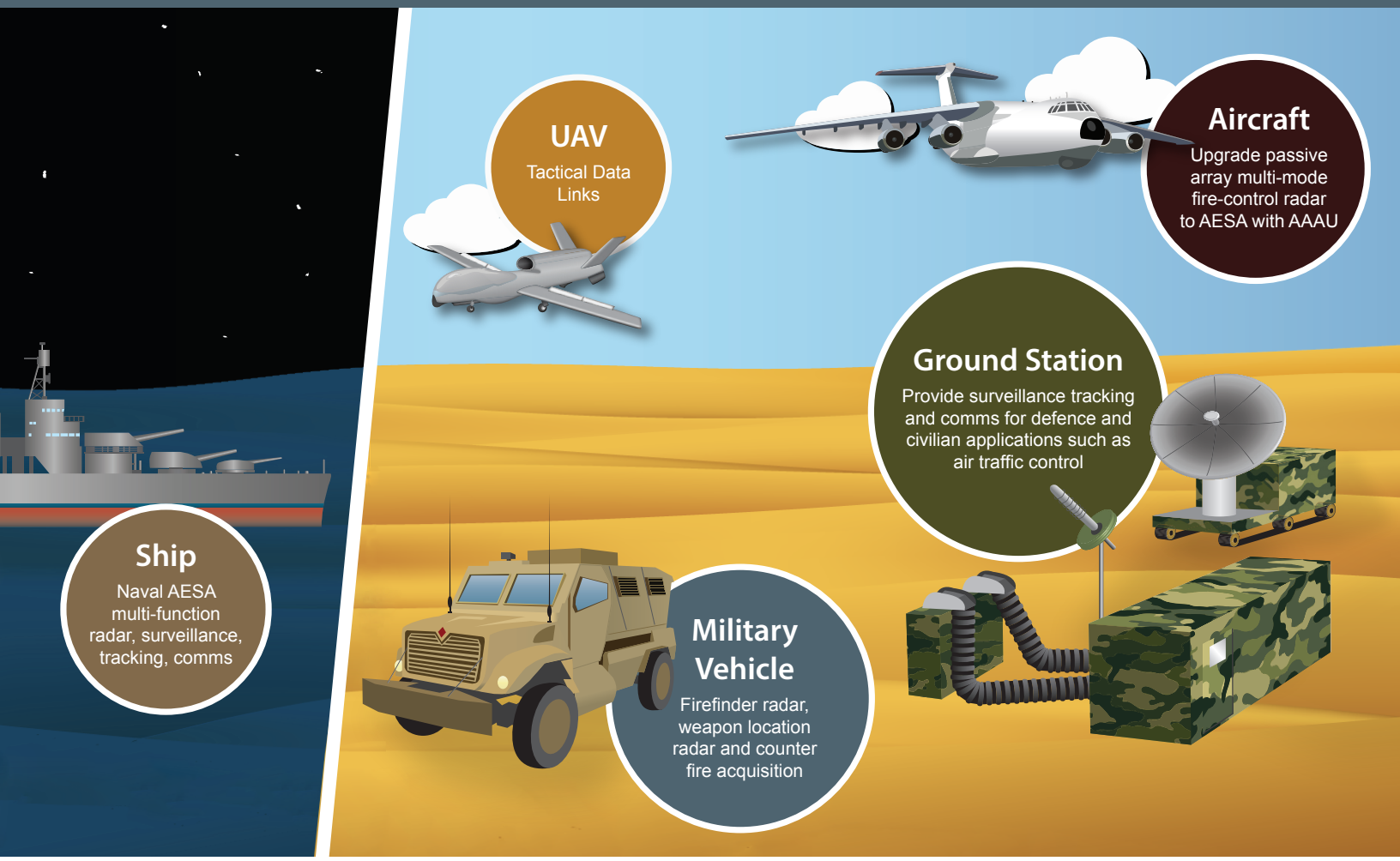
API has a range of cooling solutions to support different platform applications that can be implemented at QTRM or at plank level.



AAAU

API's steerable AAAU easily bolts on to the SPU for use in air, sea, and ground-based AESA radar, data link, and satcom applications. Both the unit's compact size and scalability allow for use across multiple defence and commercial aerospace programs. The AAAU is comprised of multiple, easy-to-replace planks, which form a sub-array.

Featured Active Antenna Array Installations



Featured Active Antenna Array Applications

AESA is a flexible technology platform that is capable of simultaneous, multi-target tracking. Military organisations have embraced AESA radar for use on defence aviation, ground and martime platforms, missile defence programs, as well as in support of critical satcom systems.

Radar

API's AAAU concept is suitable for multi-function radar systems for naval, air and land defence applications, delivering surveillance, tracking, guidance and communications. In the civilian aerospace markets, the AAAU concept is ideal for air traffic control radar.

Data Links

The AAAU is equally applicable to data link solutions for tactical command and control, enabling surveillance, tracking, guidance and communication.

Satcom

AESA enables tactical communication via satellite. API's AAAU can deliver electronic steering/tracking of the satellite, and can be configured as a low profile antenna or as a conformal antenna for fixed wing aircraft.

Benefits & Features of API's Active Antenna Array Solutions

Field Upgradable

The solution elements are fully interchangeable, allowing for ease of integration and fast repair. This is in contrast to current Active Electronic Scanned Array (AESA) solutions, which require the entire platform to be sent back for repairs and upgrades.

Simplified Installation

No calibration is required. Factory-Calibrated transmit/receive modules are included with the solution, so only antenna offsets need to be uploaded. This significantly speeds time to deployment.

Self-Monitoring Options

The solution offers cooling options to support a variety of platform applications. The unit self-monitors temperature and engages automatic shut down if the internal temperature reaches a critical limit.

API Technologies' Solutions for Radar

API Technologies designs and develops Active Electronically Scanned Array Solutions including a modular, scalable Active Antenna Array Unit, as well as a variety of drop-in, ready to integrate, high performance T/R modules including quad and dual TRMs in X, C and S band configurations. These Active Antenna Array Solutions provide the RF transmit and receive functionality for the front end of transmission systems, and are ideally suited for AESA, E-Scan, naval, airborne, ground-based, vehicle-mounted, air traffic control radar applications, as well as SATCOM on the move, tactical data link applications, and ground, maritime and other missile defence program requirements.

API offers a broad portfolio of high performance phased array solutions, covering S, C, X, and Ku bands. We possess years of design expertise and collaboration with the world's leading primes, and a breadth of systems knowledge to deliver exceptionally reliable products to meet our customers' rigorous requirements.

Beyond phased array solutions, API designs, develops, and manufactures RF, microwave, millimeter wave, and microelectronic products, including receiver protectors and waveguide limiters, nuclear event detectors and navigational equipment, as well as subsystems, modules, single and multi-function assemblies, sophistated components, and state-of-the art integrated microwave assemblies (IMAs) for military, aerospace and commercial applications.

Applications

- Naval Radar / Marine Radar
- Airborne Radar
- Ground-Based Radar
- Vehicle-Mounted Radar
- Air Traffic Control Radar
- Tactical Data Links including SATCOM on the MOVE
- E-Scan & Satcom Applications
- CNI
- C4ISR
- Electronic Warfare

Product Capabilities

- Active Antenna Array Units
- Phased Array Radar Subsystems
- T/R Module Solutions & QTRMs
- High Power Amplifier Modules & Subsystems
- High Frequency, High Linearity & Low Noise Amplifiers
- Pulsed Power Amplifiers
- Filters, Filtered GPS LNAs & Switched Filter Banks
- Receiver Protectors and Frequency Multipliers
- Delay Lines, Power Dividers, Mixers
- Tactical Power Supplies

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API Technologies Corp. is a trusted provider of RF, microwave, microelectronics, and security solutions for high-reliability applications. The company designs, develops, and manufactures electronic components, modules, systems and products for technically demanding defense, commercial/industrial and aerospace applications. API Technologies' customers include many leading Fortune 500 companies, as well as a majority of NATO governments. While API was founded in 1981, our heritage brands have served the demanding, hi-rel marketplace for more than 60 years. API Technologies trades on the NASDAQ under the symbol ATNY.

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