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Electronically Scanned Arrays Market Forecasts to 2032 – Global Analysis By Type (Active Electronically Scanned Array (AESA) and Passive Electronically Scanned Array (PESA)), Component, Platform, Array Geometry, Frequency Band, Application and By Geography

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Abstracts

According to Stratistics MRC, the Global Electronically Scanned Arrays Market is accounted for $10.26 billion in 2025 and is expected to reach $18.76 billion by 2032 growing at a CAGR of 9.0% during the forecast period. Electronically Scanned Arrays (ESAs) are modern radar systems designed to steer beams electronically, eliminating mechanical antenna movement. Composed of many small antenna units, ESAs can swiftly redirect beams, improving target detection, tracking, and imaging performance. Offering superior precision, rapid response, and strong anti-jamming features, they surpass traditional radar technologies. ESAs are extensively utilized in defence, aerospace, weather forecasting, and communication applications, marking a significant innovation in radar system development.

Market Dynamics:

Driver:

Growth in commercial applications

As industries prioritize real-time data acquisition and precision tracking, ESAs are becoming integral to next-gen sensing platforms. The rise of autonomous vehicles and smart infrastructure is accelerating demand for compact, high-performance radar

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systems. Technological advancements in beam steering and digital signal processing are enhancing operational efficiency and reducing latency. Commercial aerospace and maritime sectors are also integrating ESAs for improved situational awareness and navigation. This diversification beyond defence is reshaping the market landscape and unlocking new revenue streams.

Restraint:

Supply chain vulnerabilities

Global supply chain disruptions exacerbated by geopolitical tensions and raw material shortages are impacting production timelines and cost structures. Smaller manufacturers struggle to secure critical parts, especially for high-frequency applications, limiting scalability. Regulatory compliance for export controls and defence-grade electronics adds complexity to procurement and logistics. Emerging technologies like AI-enabled radar and IoT integration further complicate sourcing due to niche component requirements. Without resilient supply networks and strategic inventory planning, market growth risks being throttled.

Opportunity:

Multi-functionality and integration

ESAs are increasingly designed to support simultaneous functions such as surveillance, communication, and electronic warfare within a single platform. Modular architectures and software-defined capabilities are enabling flexible deployment across varied mission profiles. Integration with AI and machine learning is enhancing target recognition and adaptive beamforming. Emerging trends include hybrid arrays that combine active and passive elements for cost-efficiency and performance optimization. As demand grows for compact, interoperable systems, ESA technologies are evolving to meet cross-sector requirements.

Threat:

Cost-effective alternatives

Budget-constrained buyers, especially in emerging markets, often opt for legacy technologies that offer acceptable performance at reduced expense. Innovations in digital signal processing and software-defined radios are narrowing the performance

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gap between ESAs and conventional systems. Additionally, commercial off-the-shelf (COTS) solutions are gaining traction due to ease of integration and lower lifecycle costs. The proliferation of drone-based and mobile radar platforms is further challenging ESA dominance in certain applications.

Covid-19 Impact

The pandemic disrupted ESA production and deployment schedules, particularly in defence and aerospace programs reliant on international collaboration. Lockdowns and travel restrictions delayed testing, certification, and installation of radar systems across multiple platforms. However, the crisis accelerated digital transformation, with increased interest in remote sensing, autonomous surveillance, and unmanned systems. Supply chain digitization and decentralized manufacturing emerged as key resilience strategies. Post-Covid, the ESA market is pivoting toward agile development cycles and enhanced interoperability across platforms.

The transmit modules segment is expected to be the largest during the forecast period

The transmit modules segment is expected to account for the largest market share during the forecast period, owing to its critical role in signal amplification and beam direction. These modules are essential for achieving high-power output and precise targeting in both defense and commercial radar systems. Advancements in GaN-based transmitters are improving thermal efficiency and bandwidth, enabling more compact and powerful arrays. Integration of digital control and adaptive modulation is enhancing performance across diverse operating environments. Transmit modules are also benefiting from increased investment in satellite communication and space-based radar platforms. Their versatility and scalability make them foundational to next-gen ESA architectures.

The planar array segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the planar array segment is predicted to witness the highest growth rate, driven by its compact design and suitability for mobile and airborne platforms. These arrays offer superior beam agility and reduced profile, making them ideal for UAVs, automotive radar, and portable surveillance systems. Technological innovations in substrate materials and miniaturization are expanding their application scope. Planar arrays are increasingly integrated with AI algorithms for dynamic beam steering and threat classification. Their modular nature supports rapid deployment and

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customization across mission-specific needs. As demand rises for lightweight, high-performance radar, planar arrays are emerging as the fastest-growing segment.

Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market share fuelled by rising defense budgets and rapid industrial modernization. Countries like China, India, South Korea, and Japan are investing heavily in indigenous radar technologies and phased array systems. Regional governments are promoting domestic manufacturing and R&D to reduce reliance on imports. The proliferation of smart cities, autonomous vehicles, and 5G infrastructure is boosting commercial ESA adoption. Strategic collaborations between local firms and global OEMs are accelerating technology transfer and deployment. With expanding aerospace and maritime surveillance programs, Asia Pacific remains the epicenter of ESA demand.

Region with highest CAGR:

Over the forecast period, the North America region is anticipated to exhibit the highest CAGR, driven by its leadership in radar innovation and defence modernization. The U.S. Department of Defence is actively funding next-gen radar systems with enhanced electronic warfare and multi-domain capabilities. Private sector initiatives in autonomous mobility, space exploration, and weather forecasting are driving commercial ESA integration. Regulatory support for advanced RF technologies and streamlined approval pathways is accelerating time-to-market. Key players are leveraging AI, cloud computing, and edge analytics to optimize radar performance and data utilization.

Key players in the market

Some of the key players profiled in the Electronically Scanned Arrays Market include Raytheon Technologies, Rheinmetall AG, Northrop Grumman Corporation, Indra Sistemas S.A., Lockheed Martin Corporation, Hensoldt AG, Thales Group, Elbit Systems Ltd., Leonardo S.p.A., Aselsan A.?., Saab AB, Israel Aerospace Industries (IAI), Mitsubishi Electric Corporation, General Dynamics Corporation, and BAE Systems plc.

Key Developments:

In September 2025, BAE Systems' FAST Labs™ research, development, and production organization and the Air Force Research Laboratory (AFRL) have signed a

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three-year Cooperative Research and Development Agreement (CRADA) to advance quantum sensing and networking capabilities. This agreement will enable us to push the boundaries of quantum sensing and networking,' said Jane Heyes, principal scientist at BAE Systems' FAST Labs.

In September 2025, Rheinmetall has agreed with the L?rssen Group on the key terms of an acquisition of Naval Vessels L?rssen the military division of the long-established Bremen shipyard, and all its subsidiaries. The parties intend to formally conclude the transaction in the near future. Subject to approval by the relevant antitrust authorities, the parties are aiming to complete the acquisition in early 2026.

Types Covered:

- Active Electronically Scanned Array (AESA)
- Passive Electronically Scanned Array (PESA)

Components Covered:

- Transmit Modules
- Control Electronics
- Beamforming Network
- Power Supply Units

Platforms Covered:

- Airborne
- Naval
- Land-based

Array Geometries Covered:

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Planar Array

Linear Array

Frequency Scanning Array

Frequency Bands Covered:

X-band

C-band

S-band

L-band

Ku-band

Applications Covered:

Defense & Military Surveillance

Space-Based Radar Systems

Government Security & Border Control

Commercial Aviation & Air Traffic Control

Other Applications

Regions Covered:

North America

US

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- Canada
- Mexico

Europe

- Germany
- UK
- Italy
- France
- Spain
- Rest of Europe

Asia Pacific

- Japan
- China
- India
- Australia
- New Zealand
- South Korea
- Rest of Asia Pacific

South America

- Argentina
- Brazil

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Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:
- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments
- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

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SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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