



ASR-M[®]

A modular approach to Airport
Surveillance Radar



ASR-M®
Value Proposition

Executive Summary

ASR-M® is a modular approach to airport surveillance radar that incorporates advanced technologies to enhance radar performance.

This modularity accelerates system integration and deployment, and reduces production, maintenance and support costs. The patented technologies at the heart of ASR-M® provide real solutions to current and emerging challenges: wind farm mitigation, 5G interference, ...

Radar manufacturers and integrators get added value from ASR-M® in the form of scalable, easy-to-integrate radar solutions at a highly competitive price. Air traffic control and military users enjoy outstanding performance and advanced features in a reliable system.

ASR-M® is available in four standard primary radar configurations: single and dual receive channels, with or without a primary transmitter. Whichever you choose, with ASR-M® you will be helping to make the skies safer.



Challenges of ASR operators and integrators

How would you define
a successful integration of an ASR system?

Airport surveillance and ASR system operations

Is it about checking all the boxes on the customer's list of system requirements? Or do you as a radar manufacturer want to deliver real value? Do you want to make your customer more competitive and better prepared for future challenges? Wind farm mitigation, 5G interference, increased air traffic density, ...

No doubt you want to provide reliable and durable solutions with minimal maintenance, spare parts and obsolescence management. You want your customers to be happy and ready to do a great job..

ASR system integration

And how does the integration of an ASR system create value for you? If you satisfy your customer, you will be respected as an integrator in the aviation industry. That's great, but it doesn't pay the bills.

You want an integration project that runs smoothly, with subassemblies that interface naturally. You don't want mismatches between primary and secondary sensors. To you as a respected integrator, they are one system that works the same.

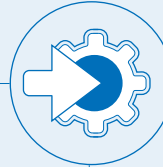
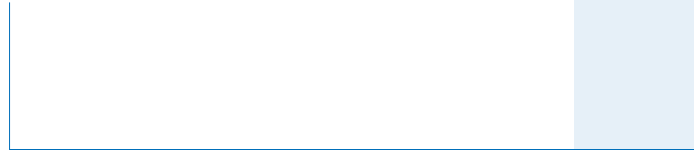
You want a system that can be easily and reliably tuned using intuitive tools. You want to collect and monitor system performance data from remote, highly secure connections.

In summary, you want the best-in-class technologies in an integration-friendly format at the most competitive price.



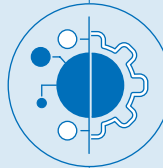
ASR-M®

The solution to your and your customer's challenges



MODULARITY

Ease integration and save costs
Value for the ASR integrator



ADVANCED TECHNOLOGIES

Mitigate emerging challenges in airport surveillance
Value for the ASR operator



ESG CONFORM

Contribute to sustainable aviation and safer skies
Value for society

ASR-M® has been designed to address emerging challenges in airport surveillance AND in radar system integration.

It offers added value for all stakeholders.

Modularity to ease integration and save costs

value for the ASR integrator



The modular concept of the ASR-M® system allows quick and easy integration and reusability of modules across multiple radar types. This reduces the need for spare parts and greatly simplifies obsolescence management. In addition, modularity allows for optimization of the production process, resulting in reduced production, maintenance and support costs.

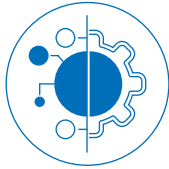
Modularity has been applied to the entire ASR-M® system design. This means that the RF signal received from the primary radar antenna is processed all the way to the ASTERIX output, passing through various processing stages in different system modules. From RF to IF, combining, extraction, etc. All modular building blocks can be easily integrated and replaced in-line. They are standard COTS units.

ASR integrators get a higher ROI
on their projects with ASR-M®.

But that's just the beginning! The modular design extends to our state-of-the-art engineering tools designed specifically for tuning and calibrating the ASR-M®. These advanced tools come with comprehensive training modules for integration engineers and ASR operators to ensure seamless integration and operation. Get ready to experience unprecedented efficiency and performance!

Advanced technologies for Next Generation
airport surveillance

value for the ASR operator
sales arguments for the ASR integrator

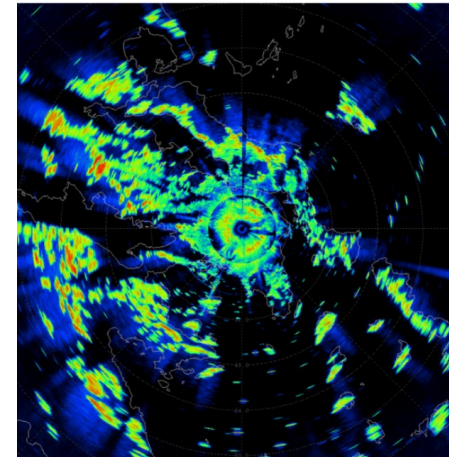


ASR-M[®]'s dual beam processing is the core technology that allows us to effectively address these challenges. Vertical Clutter Cancellation (VCC[®]) is a patented and valued technology that leverages information from the lower beam to adjust the upper beam pattern, mitigating clutter at elevation, such as from wind turbines. The high sensitivity also improves drone detection.

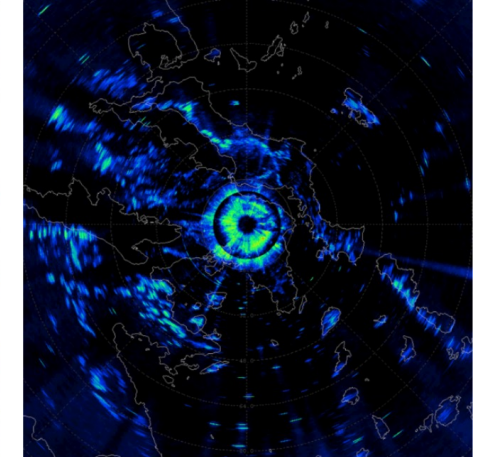
Median filtering is another technology that enables several exceptional detection capabilities. Specifically, median filtering excels in the robust rejection of RF interference. It handles issues such as 5G and other sources of radio frequency interference remarkably well.

In combination, median filtering, VCC[®] and Doppler processing result in an exceptionally clean radar display.

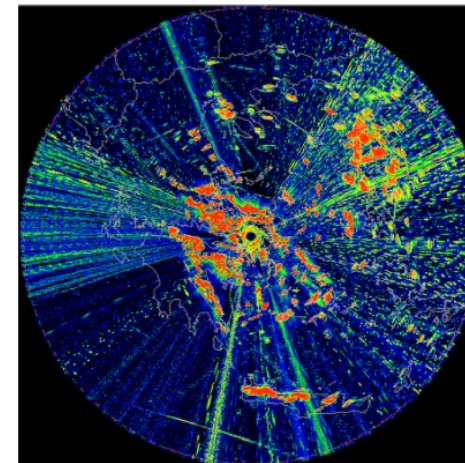
ASR-M[®] ensures ASR operators get the most
out of their investment.



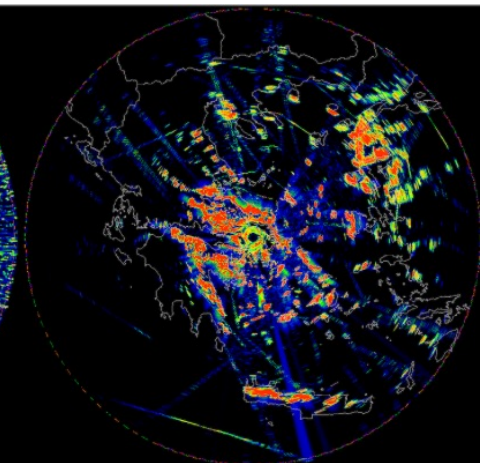
VCC Disabled



VCC Enabled



Median Filter Disabled



Median Filter Enabled

Modular system design and smart technologies
for sustainable aviation and safe skies

value for society
sales arguments for the ASR integrator



ASR-M[®] was designed with our ESG ambitions in mind. Intersoft Electronics is committed to providing products and services that are designed and manufactured in an environmentally and socially responsible manner, while adhering to core business ethics. In addition, ASR-M[®] offers ESG benefits to system integrators and radar operators.

The modular design and advanced technologies of ASR-M[®] underpin its distinctive ESG benefits. Modularity optimizes production and integration, reducing consumption of power, electronic components, logistics and resources.

With its overall superior performance, ASR-M[®] makes a significant contribution to making the sky safer. ANSPs can rely on trustworthy data, minimizing risk in decision-making and facilitating efficient airport operations. Its advanced technologies enable coexistence between different stakeholders, including telecom service providers, wind energy providers, and civil and military air traffic services and operations.

Thanks to the overall outstanding performance,
ASR-M[®] truly contributes to making the sky safe.

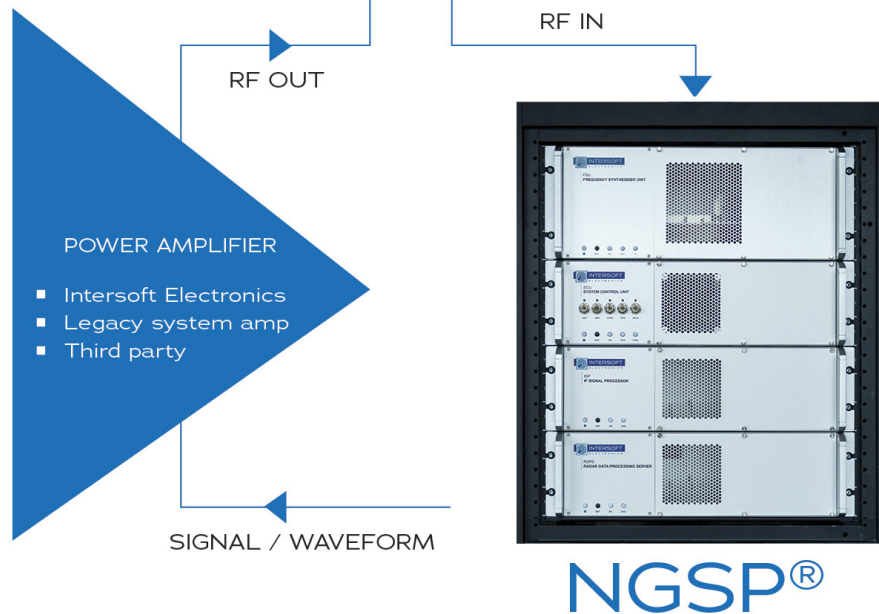
It is important to note that ASR-M[®] has an infinite lifetime. The individual modules are designed for integration into Service Life Extension Programs (SLEPs) and upgrades. As modules degrade and new technologies emerge, simple upgrades or line replacements keep ASR-M[®] up to date. The Closed-Loop Integration Concept (CLIC) allows firmware and software updates to be performed remotely.

System description

The core of ASR-M[®] is the Next Generation Signal Processor (NGSP[®]). It contains several modules including the primary radar RF Receiver, Signal and Data Processor, and Signal and Waveform Generator.

The generated signal is amplified by the Power Amplifier (PA). That can be the legacy system PA, a third party or Intersoft Electronics supplied. The output power is distributed to the antenna system. RF on reception is input to the NGSP[®] for processing, combining and plot extraction. Secondary radar data can be input from any MSSR interrogator. ASTERIX is output to the ATM system. ASR-M[®] is available for S and L band operation.

ASR-M[®]



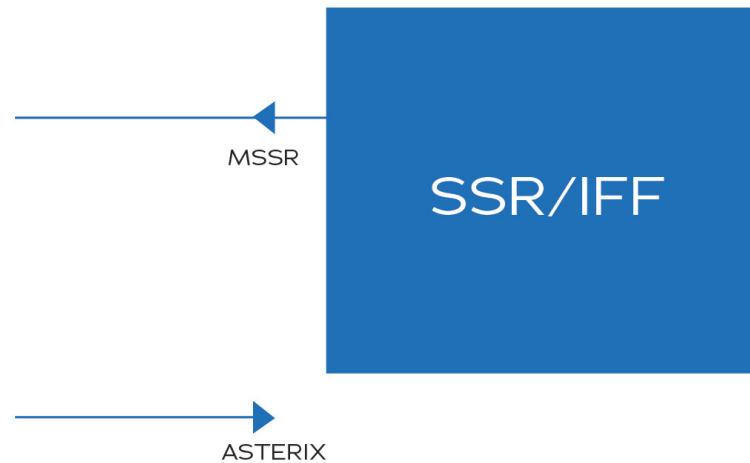
NGSP configuration includes;

- RF receiver
- Signal / Data Processor
- Signal / Waveform generator

S or L band operation

Input from any MSSR interrogator

ASTERIX output



Key modules of ASR-M®

IF Signal Processor (ISP)

The ISP inputs beam IF and outputs plots and beam video. The ISP applies Intersoft Electronics' smart processing algorithms such as VCC, Median Filtering, 16-channel MTD, CFAR, adaptive clutter maps, and soft STC.

Radar Data Processing Server (RDPS)

The RDPS inputs plots from all beams and from the SSR/IFF sensor. After beam combining, 3D height can be calculated. The RDPS also performs sensor combining, scan-to-scan correlation, SSR reflection processing, and false plot filtering.

System Control Unit (SCU)

The SCU distributes control and monitoring signals to the whole NGSP® and takes care of triggers and timing of the complete ASR-M®.

Frequency Synthesizer Unit & Receiver (FSU-R)

The FSU-R generates the system clocks, receiver oscillators and transmitter and test waveforms. The FSU-R also contains the primary radar RF-IF downconverting receivers.

ASR-M® configurations

In civil aviation, dual (redundant) receiver-processing channels are typically essential, whereas redundancy tends to be less critical for military users.

Intersoft Electronics offers standard ASR-M® configurations with or without transmitter amplifiers.

In summary,

ASR-M[®] is differentiated from other ASR systems by two key features:
advanced technology and modularity.

The former provides significant value to ANSPs and MoDs, while the latter allows ASR-M[®] to be offered at a highly competitive price.

Together we make the sky safer



www.intersoft-electronics.com