Integrated RESM deployable across manned and unmanned platforms

Deployable where larger ESM systems cannot go, ESROE's integrated MicroESM 1i and 1ni solutions can form part of the payload on a wide range of vehicle mission systems. Used standalone on a platform, or part of a networked sensor suite, integrated MicroESM systems deliver two key functions - awareness and reconnaissance - offering a tactical edge in many military scenarios. On manned vehicles they provide early threat warnings by identifying signatures of radar guided systems. Whilst integrated onto UAVs seeking radars of interest and counterbattery radars, the systems provide essential detection and identification capabilities.

Sensors System at a glance:

- 2 – 18 GHz frequency range
- Fully automatic operation
- Low power
- 7° rms bearing accuracy
- Full 360° azimuth coverage from 4 antennas
- Sensor weight < 2 Kg
- Highly affordable

The MicroESM 1i and 1ni Miniature Radar ESM systems are ESROE's first fully functional, integrated solutions that utilise the vehicle power source and mission computer system. Combining an ultra-lightweight, 4-channel, crystal video/digital receiver with ESROE's GLAMDRING automatic processing software, the systems automatically identify radar emitters programmed into its radar library.

The standard MicroESM 1i (integrated) and 1ni (uses nanoONYX and integrated) sensor systems consist of ruggedised antenna/receiver units with power and data cables for connection to vehicle systems and GLAMDRING software for installation on the vehicle computer system. The 1ni system is supplied with a ruggedised computer system hosting the software.

Accurate direction finding capability
Direction finding of detected signals is achieved using the four antennas, refined for accuracy by the software.

Intelligent radar libraries
Radar libraries can be loaded to the system from internal or external storage. Library entries created automatically by the system for unknown radar emitters can also be saved to internal or external storage, to continuously improve situational awareness.

Real-time pulse logging and reprocessing facility
All measured radar pulse data can be continuously saved to internal or external storage for offline analysis. Logged pulse data can also be reprocessed, providing a typically faster than real-time view of recorded missions.

Automated radar identification
A live stream output from the GLAMDRING software provides continuously updated radar intercept information over a TCP/IP socket interface for integration with vehicle systems.

Designed for integration to minimise payload
Open API integration allows data to be displayed via the platform's computer. And the MicroESM unit can be powered via an external 12V or 16-36V power supply, on board the platform.

Functionality	Metrics	Description
Frequency Range	2.0 GHz to 18 GHz	Switches automatically between 2 - 12 and 12 - 18 GHz bands
Frequency Measurement	3.5 MHz (2 - 12 GHz) 2.5 MHz (12 - 18 GHz)	Measurement resolution Accuracy ≤ 2 MHz rms
Enhanced Frequency Measurement	0.85 MHz	Measurement resolution and accuracy possible for pulse density < 100 000 pulses per second
Azimuth Coverage	360 degrees	
Bearing Measurement	7 degrees	Typical rms accuracy
System Sensitivity	-55 dBm -70 dBm	With bearing measurement For CW signals without bearing measurement
Dynamic Range	50 dB	
Minimum Pulse Width	40 ns (2 - 12 GHz) 50 ns (12 - 18 GHz)	
Time of Arrival	20 ns (2 - 12 GHz) 25 ns (12 - 18 GHz)	Measurement resolution Accuracy ≤ 20 ns rms
Environment Pulse Density	Up to 200,000 pulses per second*	Fast response time up to stated density, graceful degradation thereafter.
Emitter Library Capacity	200 emitter mode lines*	Capable of expansion
Reported Emitters	100 simultaneous emitters*	Capable of expansion
Operating Voltage Range	10 - 20V DC (12V nominal)	16-36V with alternative supply
Power Consumption	< 20W < 10W	Full operating mode (Main unit) Standard mode (Main unit)
Size	< 180mm x 180mm x 96mm	Length x depth x height
Weight	< 2 Kg	Main unit
Operating Temperature Range	-20 degrees C to +48 degrees C	
Environmental Certification	IP 68	Main unit - designed for long term operation at sea, it is also tested for vibration, shock and immersion (further details on request).
Data Logging		Continuous logging of pulse data to tablet internal storage. Logging also includes emitter track data and library data generated by the system.

* These values are fundamentally dependent on computer performance and can be improved with a higher performance processor.

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