ELECTRONICS DIVISION

SIT422/5

MKXIIA/MS Surface Interrogator

The SIT422/5 is part of a family of MkXIIA (MkXII + Mode 5) and Mode S interrogators developed under the NGIFF program in order to provide a state-of-the-art IFF capability.

Military identification is available with Modes 4 and 5, supported by a removable crypto module entirely designed by the company and qualified by NATO Authorities (SECAN); Operation in Mode 5 has been successfully verified during bilateral IT-US interoperability trials with the US Navy.

Variants of the equipment can be provided for non-NATO applications with a M4-only or National Secure Mode capability.

Mode S is also provided in order to monitor civilian air traffic for Situational Awareness purposes. The equipment has been designed for surface applications,
covering the needs of SHORADs and medium range ground systems. It is also suitable for operation onboard small ships, such as patrol boats or corvettes.

For longer range applications, a higher power equipment (SIT422/5MR) con be provided, sharing a large commonality of modules. The interrogator is packaged in a rugged single LRU, intended for hard mounting with no need for forced cooling.

Integration with the platform is mainly via self-configuring serial interfaces (Ethernet or RS422). The equipment is currently in use on mobile radar systems by NATO and Coalition Nations.

MAIN FEATURES

- Full MkXII, Mode S and Mode 5 capability
- Removable Crypto Applique (SIT2010) i.a.w. DoD AIMS-04-900A, opt. B
- Tested for interoperability with US Navy
- Enhanced Surveillance Mode S operation with dual TX
- Monopulse processing
- Digital plot extractor and friend evaluator
- Self-configuring data/control interfaces (RS422, Ethernet)
- Certified by DoD AIMS.

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OPERATION

The equipment is fully solid-state and of modular construction to facilitate maintenance. A dual-channel transmitter is included to provide full ISLS operation for Mode S surveillance.

The receive section provides two matched channels to support both RSLS and target azimuth estimation capabilities.

Multiple options are available to schedule interrogations, including continuous challenge, multisector and on-target operation; fully controllable range filtering is available in all modalities.

Data processing is hosted in an open architecture set of boards based on programmable hardware and standard microcontrollers implementing the following main functions:

- Fully automatic interlace of interrogation Modes, based on platform configuration constraints, including SuperMode capabilities
- Azimuth determination based on Monopulse processing, supported by a calibration facility
- Friend evaluation (in M4 and M5) to improve identification reliability
- Plot extraction providing coordinates, target ID, full decode of replies and special codes processing (Emergency, I/P).

Control of the interrogator is via a serial bi-directional interface also used to convey plot and status information. The equipment includes two alternative interfaces (Ethernet or RS422) that can be activated at power-up based on configuration data.

Extensive BITE is provided, including power-up, continuous and initiated BIT. Test results and diagnostic information are available on the control interface.

CONFIGURATION

An interrogator system includes, in addition to the IFF equipment, a sum/difference directive antenna used to send interrogations and receive replies. These antennas can be:

- Integrated into the radar
- Separate but mechanically mounted on the radar
- Independent.

For applications where the antenna is not already present in the platform, the company can provide a complete configuration with OEM components in order to support the system. The company can also provide a full range of solutions covering:

- Diagnostic software (on OTS platform) for troubleshooting, calibration and operational software loading
- Special Test Equipment
- Automatic Test Equipment.technical specificaions

TECHNICAL SPECIFICATIONS

Operating Modes	MXA (1, 2, 3/A, C) i.a.w. Stanag 4193 Ed. 3 Part I Annex B Mode 4 i.a.w. Stanag 4193 Ed. 3 Part I Annex C in conjunction with a DoD AIMS-04-900A option B, SIT2010 Crypto Applique Mode S ELS and EHS i.a.w. Stanag 4193 Ed. 3 Part I, Annex D and ICAO Annex 10 Volume IV Annex 85 Mode 5 Level 1 and 2, i.a.w. Stanag 4193 Ed. 3 Part I, Annex EF, Crypto Applique
System Interface	RS422: 1Mb (Manchester) or Start/ Stop Protocol (up to 115.2Kb) Ethernet: UDP/IP Protocol Synthetic video: Reconstructed symbols for targets, Friends and Jammer strobe
Sensitivity	-75dBm @ 1090MHz SIF, Mode 4, Mode S
Output Power	> 300W @ 1030MHz
Reliability	>6500h @ GF 40°C
Maintainability	Mttr < 10m @ LRU level
Testability	95% fault isolation @ 2 SRUs
Environmental conditions	Mil-Std-810E
Operating temperature	-40°C +71°C, -54°C after warm-up
Electromagn. compatibility	Mil-Std-461E
Dimensions (mm)	273 (W) × 350 (H) × 180 (D)
Weight	<15Kg (with embedded crypto)
Input power	15V 400Hz i.a.w. Mil-Std-704A 110W (max)
Cooling	No cooling air is required
Mounting	Hard mounted

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