

SIT 434CI

MK XA AND NSM AND MODE S IFF INTERROGATOR

ELECTRONICS DIVISION



The SIT434CI is one of a family of IFF Mk XA and National Secure Mode (NSM) and Mode S interrogators developed under the multinational New-Generation IFF (NGIFF) programme in order to provide a state-of-the-art IFF interrogation capability.

Military identification is available with Mode 4-like NSM, supported by an external cryptographic computer. Mode S is also provided in order to monitor civilian air traffic to support Situational Awareness.

The SIT434CI has been designed for airborne applications, surveillance on fixed wing maritime patrol aircraft or Airborne Rotary Wing (ARW), together with medium-range and long range naval and ground systems.

The interrogator is packaged in a rugged single LRU, intended for hard mounting with forced air cooling. It may alternatively be installed on a mounting tray with an integral fan to provide the forced air cooling drawn from ambient air. Integration with the platform is available via an Ethernet or MIL-STD-1553B data bus.

MAIN FEATURES

- › Full IFF Mk XA + NSM, Mode S
- › Enhanced surveillance Mode S operation with dual transmitter
- › Monopulse interrogations and reply processing
- › Digital plot extractor and friend evaluator
- › System Interface through Ethernet or MIL-STD-1553B data bus
- › Plot streaming over Ethernet
- › Target specific interrogations
- › Intermode with short P4
- › Automatic lockout of transponders based on SI/II codes
- › Flexible target reporting options
- › Ethernet: X, Y (Absolute); Range, Bearing (Absolute); Range, Bearing (Relative)
- › MIL-STD-1553B: X, Y (Absolute)
- › Target time tag in UTC when controlled from Ethernet
- › Target time tag in bus time when controlled from MIL-STD-1553B data bus
- › Suppression In/Out in accordance with STANAG 4193..

OPERATION

The SIT434CI is fully solid-state and of modular construction to facilitate maintenance.

A dual-channel transmitter is included to provide full Interrogation Side Lobe Suppression (ISLS) operation for Mode S surveillance. The receive section provides two matched channels to support both Receiver Side Lobe Suppression (RSLS) and azimuth calculation capabilities. The system provides monopulse processing of replies, with automatic switching to centre beam marking where reply conditions prevail.

Multiple options are available to schedule interrogations. These include continuous challenge; multi-sector, and specific target operation. Fully controllable range filtering is available in all modalities.

Data processing is hosted on open architecture boards. These are 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
- › Azimuth determination based on Monopulse processing, supported by a calibration facility
- › Friend evaluation in NSM to improve identification reliability
- › Plot extraction providing coordinates, target ID, full decode of replies and special codes processing (Emergency, I/P)
- › Time of Target Reporting in UTC on Ethernet
- › Time of Target Reporting in Bus time on MIL-STD-1553B.

Control of the interrogator is via Ethernet or MIL-STD-1553B Data Bus, used also to transfer plot and status information. Extensive BIT facilities are provided, including power-up, continuous, and initiated BIT. Test results and diagnostic information are available on the control/system interface.

CONFIGURATION

An interrogator system includes, in addition to the IFF equipment, a Monopulse Sum/Difference directional antenna used to send interrogations and receive replies. The antenna can be:

- › Integrated within the main radar antenna
- › A separate antenna mechanically mounted on the radar antenna
- › Independent of the main radar antenna

For applications where the antenna is not already present in the platform, we can provide a complete configuration with OEM components.

TECHNICAL SPECIFICATIONS

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| › Operating modes | IFF Mk XA (1, 2, 3/A, and C) in accordance with STANAG 4193 Part I to III NSM in accordance with STANAG 4193 Part I to III, with an external cryptographic computer Mode S ELS and EHS in accordance with STANAG 4193 Part IV and ICAO Annex 10 (Amendment 77) |
| › System Interface | Ethernet 10/100 Base-T or MIL-STD-1553B Data Bus |
| › Sensitivity | -79dBm @ 1090MHz IFF Mk XA (1, 2, 3/A, and C), NSM, Mode S |
| › Output Power and Duty Cycle | > 31dBW @ 1030MHz
0.6 % long term
1.2 % short term (40ms) |
| › Operating temperature | -40°C to +71°C, from -54°C after a 10 minute warm-up |

RELIABILITY

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| › Airborne, Inhabited, Cargo (AIC) | 3,700 hours at 40°C |
| › Airborne, Rotary Winged (ARW) | 1,200 hours at 40°C |
| › Ground, Mobile (GM) | 2,600 hours at 40°C |
| › Naval, Sheltered (NS) | 3,700 hours at 40°C |
| › Maintainability | MTTR < 10 minutes at LRU level |
| › Testability | 95% fault isolation to 2 modules |
| › Environmental Conditions | MIL-STD-810E |
| › Electromagnetic Compatibility | MIL-STD-461C |
| › Dimensions (mm) | 256 (W) × 194 (H) × 324 (D)
+ 38mm for connectors |
| › Weight | < 19kg (fitted with dummy SDU and Battery Module) |
| › Input Power | 115V 400Hz single phase in accordance with MIL-STD-704A, 220W maximum |
| › Cooling | Forced air cooling is required |
| › Mounting | Hard mounted, or installed on an optional mounting tray |
| › Options | Mounting tray with internal cooling fan
Diagnostic software
Special to-type test equip.
Automatic test equipment
160V DC power input |

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