



M425 MKIIA AND MODE S IFF TRANSPONDER

The equipment is part of a family of MkIIA (MkXII + Mode 5) equipment developed under the NGIFF program in order to provide a state of the art IFF capability.

Military identification is available with Mode 4 and Mode 5, supported by an embedded crypto module entirely designed by Selex ES and qualified by NATO Authorities (SECAN).

Compatibility with the latest ATC standards is provided by a Mode S (up to Enhanced Surveillance) that includes an ADSB-OUT capability. 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.

The equipment has been designed for all applications including avionic (fixed or rotary wings) and ships. The transponder is packed in a rugged single LRU intended for hard mounting, that has the popular for-factor of APX 100. Integration with the platform can be via 1553 Bus, ARINC 429 or RS485; a conventional Control Panel (M910) is available for legacy applications.

The M425 is currently installed on many IT-Mod aircraft helicopters and ships, and used on a number of NATO platforms. A variant of the equipment, with limited repackaging, is provided to EF Typhoon for the needs of the four Nations.

MAIN FEATURES

- Full MkXII, Mode 5 and Mode S capability
- Embedded crypto certified by SECAN
- Tested for interoperability with US Navy
- Compliant to STANAG 4193, Ed2
- ADSB-OUT capability
- Multiple, self-configuring system interfaces
- Wide operational deployment.

OPERATION

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

Replies are transmitted on two RF connectors to provide full diversity operation, supported by a receive section that provides two matched channels.

Multiple options are available in order to interface the Host platform; all interfaces are available in the same unit and are automatically selected at power-up.

These options are:

- MIL-STD-1553 to interface an avionic bus
- RS 485 to interface an FMS or dedicated Control Panel
- ARINC 429 to interface an FMS.

For integration on legacy platforms that do not include a Data Bus or FMS a Control Panel (M910) has been developed; it has the same footprint of existing MkXII panels in order to facilitate aircraft upgrade.

For Mode S operation the equipment is capable of providing Enhanced Surveillance operation with its own interfaces, without the need of an additional ADLP; an Extended Squitter capability is also provided to support ADSB-OUT.

The equipment is also capable of operating in conjunction with a TCAS II (V7) interrogator.

An ACC function is included in Modes 1 and 3 to facilitate pre-flight initialization and reduce User workload (when operating in association with the M910 Control Panel. Extensive BITE is provided, including Power-Up, Continuous and Initiated BIT; test results and diagnostic information are available on the control interface.



CONFIGURATION

A transponder system includes, in addition to the IFF Equipment:

- A mounting tray
- Two omni antennas (Top, Bottom) for diversity operation.

For applications where the antennas are not already present in the platform Selex ES can provide a complete configuration with OEM components.

In order to support the system Selex ES can provide a full range of solutions covering:

- Diagnostic SW (on OTS platform) for troubleshooting, calibration and Operational SW loading
- Special Test Equipment
- Automatic Test Equipment.

OPERATING MODES

- MXA (1, 2, 3/A, C) i.a.w. STANAG 4193 Part I to III; ACC for Modes 1 and 3
- Mode 4 i.a.w. STANAG 4193 Part I to III, embedded or external crypto
- Mode 5 Level 1 and 2, i.a.w. STANAG 4193 Part V and VI; embedded crypto
- Mode S (Enhanced Surveillance) i.a.w. STANAG 4193 Part IV and ICAO10 (Am 77), including Extended Squitter and TCAS II (V7).

TECHNICAL SPECIFICATIONS

System Interface	BUS-1553B ARINC 429 RS 485
Sensitivity	-78dBm 1030 MHz SIF, Mode 4
Output Power	27dBW 1090 MHz
Reliability	2000h ARW 40°C
MTBF	>3000h (ARW @ 40°C) i.a.w. MIL-HDBK-217F
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
Electromagnetic compatibility	MIL-STD-461E
Dimensions	APX 100
Weight	< 6.5 Kg (with embedded crypto)
Input power	28 VDC i.a.w. MIL-STD-704D
Cooling	No cooling air is required
Mounting	Hard mounted

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