DEFENSE AND SECURITY

# MK-XIIA COMBINED INTERROGATORS / TRANSPONDERS

Defense and security in five continents

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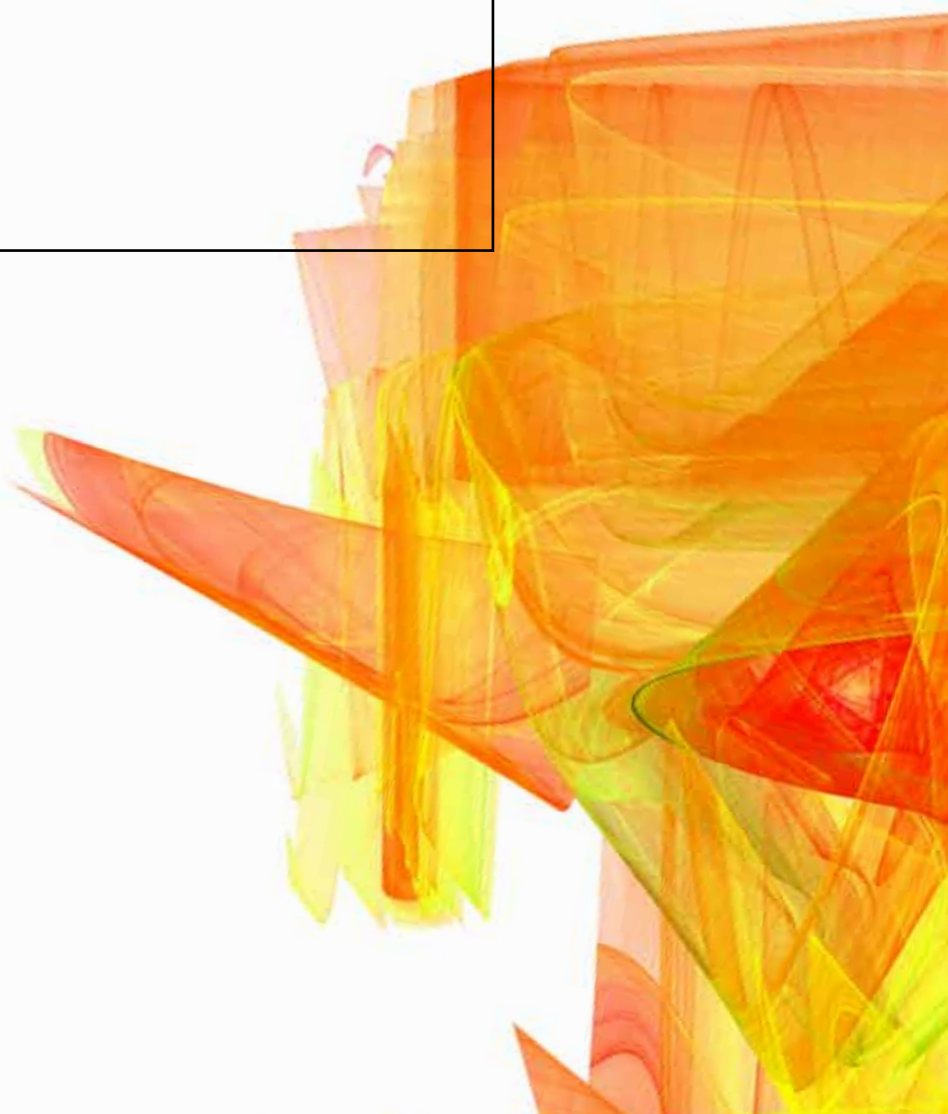


CIT-18
CIT-20
CIT-20M
CIT-25A
CIT-25D

# MK-XIIA COMBINED INTERROGATORS / TRANSPONDERS

CIT-18

CIT-20

CIT-25A

IFF equipment integrating both interrogator and transponder functionalities with the most advanced technology according to STANAG 4193 and ICAO Annex 10 to allow the platform to identify targets and being identified by other platforms

## Equipments

Five IFF equipments supporting both interrogator and transponder functions. The CIT-25A includes a short range interrogator of reduced dimensions, destined to attack helicopters like the Eurocopter HAD Tiger.

The CIT-18, CIT-20 and CIT-20M have more output power for applications requiring medium or long range and are installed in the F-18 (CIT-18), and in the P-3 Orion (CIT-20, CIT-20M).

They can be integrated in attack, reconnaissance and surveillance aircrafts.

The CIT-25D has been designed for ships or land radars that require a medium interrogation range. Currently it is being integrated in the Spanish LHD (Landing Helicopter Dock), BAC and BAM vessels.

### Main features

- Modes 1, 2, 3/A, C, 4
- Mode S
- Mode 5 Level 1
- DSP Processing
- Appliqué crypto for Mode 4, Mode 5 or secure mode operation

### Interrogator - Main features

- Interrogator: Mode S Intermode/All-call (for CIT-25A and CIT-25D only)
- ISLS and RSLS functions for side lobes suppression

### Transponder - Main features

- Transponder: Mode S Level 1, 2
- Mode 5 Level 1
- Hijack according to ARINC 718A.
- Two antenna interfaces for diversity operation

## Combined interrogators and transponders

A reliable identification friend or foe system is essential in the battlefield to rapidly and positively identify enemies, friends and neutrals. It enables to manage and control the battle area, optimally employ forces and minimize total fratricide.

For platforms that require complete IFF system to identify and to be identified, the most cost-effective solution is to integrate a CIT. It includes a combined interrogator and transponder in a single package offering a significant savings in volume, weight and cost.

A complete family of CITs (with different sizes, interfaces and ranges) has been developed in order to cover a large number of platform requirements. This family has been recently completed with new equipments supporting Mode 5 and fully compatible with all prior modes.

### Mode S capability

For this kind of military systems, it is very important to maintain the compatibility with the civil systems, especially in situations of shared airspace. Both interrogator and transponder support Mode S; interrogator up to intermode / All call, and up to level 2 for the transponder.

### Mode 5 capability

Mode 5 represents the state of the art for IFF technology. It is based on enhanced cryptography and direct sequence spread spectrum modulation. The result is a new system which really reduces the risk of fratricide and is robust to interferences, exploitation and jamming.

### Mode 5 improvements

- Direct sequence spread spectrum modulation
- Enhanced security, based on new cryptographic algorithmic using time-of-day information
- Resistant to interferences, jamming, interception, fading and exploitation
- Compatible with all prior operation modes
- Reduce the risk of battlefield fratricide and improve tactical situational awareness

## Qualification

The complete family of CITs has been tested under the most stringent environmental conditions: temperature, humidity, altitude, shock, vibration, acceleration, fungus, salt and fog, explosive atmosphere, lighting, acoustic noise and EMC.

## Technology

The new family of products supporting Mode 5 is based on a modular architecture with the latest technology in FPGAs and DSPs.

This modularity and extensive use of off-the-self components facilitates the adaptation to new platforms. New operational requirements or even new platform interfaces can be included with relevant saving costs, and ensuring minimum modifications in the platform.

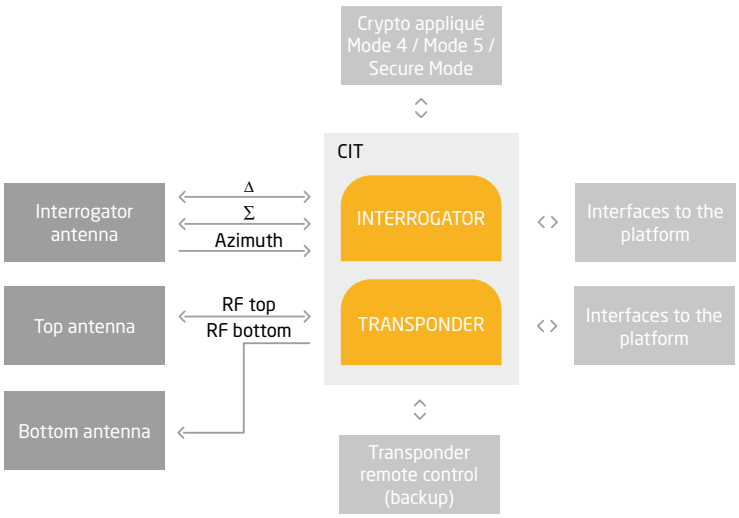
## Maintainability and reliability

The family of CITs include a Built In Test (BIT) capability designed to detect and isolate any module failure. These tests are executed either during the power-up, by request or periodically to detect any fault. It also simplifies the maintenance by providing indication of the source of the problem.

The maintenance concept is based in shop-replaceable modules, easily accessible and exchangeable.

All components of the IFF equipments have been selected to provide maximum reliability and minimize the maintenance costs.

## Block diagram CIT




| Technical characteristics | Modes supported | Range | Size (H x W x D) | Weight | Platforms |
|---|---|---|---|---|---|
| **CIT-18** | 1, 2, 3/A, C, 4 | MERAD | 3/4-short ATR<br>193.5 x 190.5 x 362 mm | 17.5 Kg | Fighters / Attack aircrafts |
| **CIT-20** | 1, 2, 3/A, C, 4, S (TXP) | LORAD | 193.5 x 250.5 x 362 mm | 22 Kg | Fixed or rotary wing aircrafts for reconnaissance and surveillance |
| **CIT-20M** | 1, 2, 3/A, C, 4, S (TXP) | MERAD | 193.5 x 190.5 x 362 mm | 17.5 Kg | Fixed or rotary wing aircrafts for reconnaissance and surveillance |
| **CIT-25A** | 1, 2, 3/A, C, 4, S, 5 | SHORAD | 193.5 x 190.5 x 318/333 mm<br>ARINC 600 – 6 MCU | 12.7 Kg | Attack helicopters |
| **CIT-25D** | 1, 2, 3/A, C, 4, S, 5 | MERAD | 355.0 x 483 x 498/545.2 mm | 36 Kg | Ships and land radars |

F-18

HAD TIGER

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