



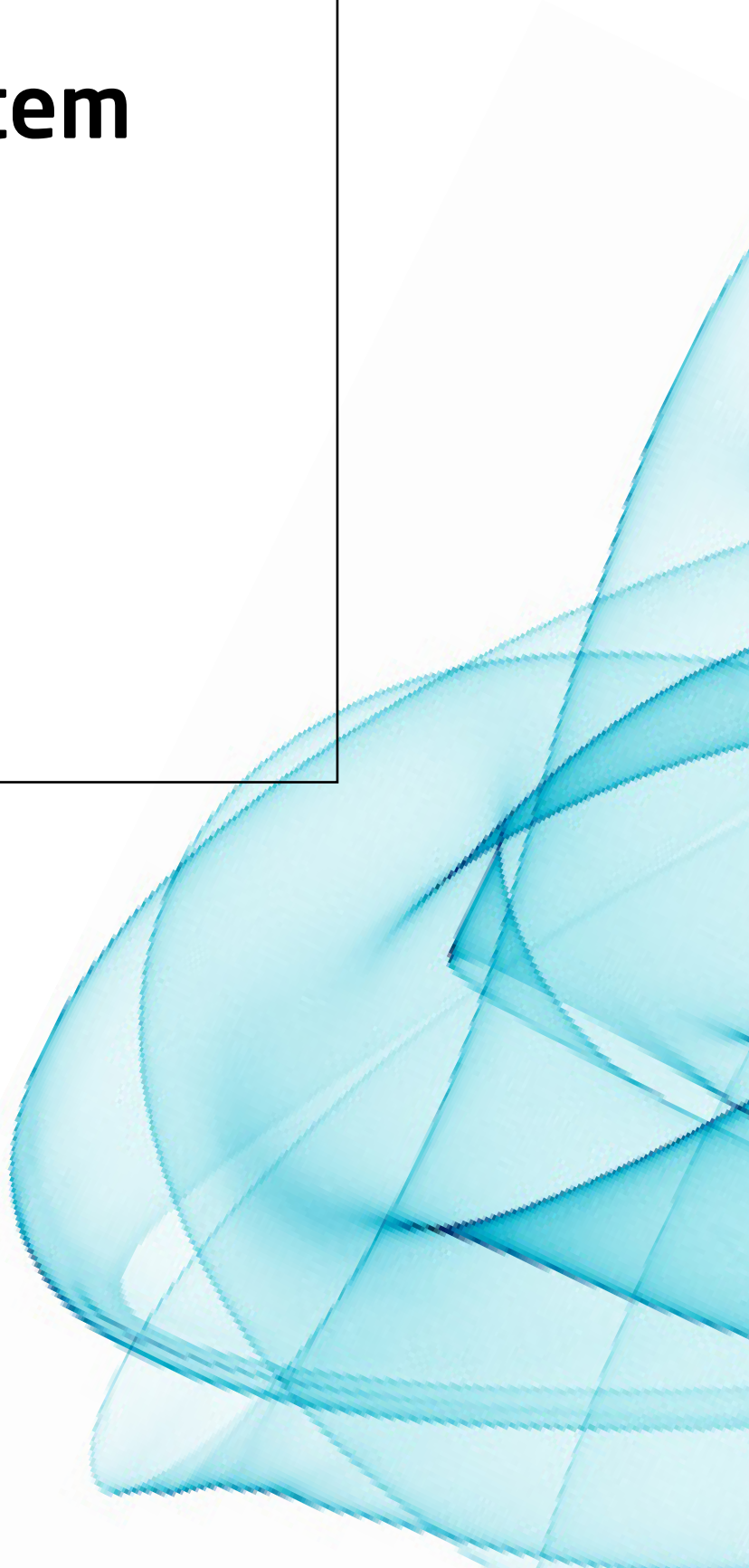
**indra**

DEFENSE AND SECURITY

# ELINT-FD System

Defence in five continents

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# ELINT-FD System



True all-weather radar ELINT systems, providing: acquisition, direction finding, technical characterization, pulse and intrapulse detailed analysis and identification of radar signals

## MISSION AND FUNCTIONALITY

The ELINT-FD is a unique instrument to perform outstanding strategic information about enemy forces and their radars in the 0.5 to 40 GHz frequency range

The analysis sensor, working in coordination with the existing advanced SW analysis tools, performs the following functions:

- Narrow band signals detection of pulsed and CW emitters within the radar bands.
- Search and surveillance according to strategy tables.
- Signals technical parameters characterization.
- Emitter's identification.
- Pulse buffers capture.
- Information report to host.
- Built-in-test.

## OPERATIONAL MODES

Detection and parameters measurement are performed in four operative modes:

### Surveillance Mode

The receiver explores the frequencies contained in the Surveillance Table and generates reports

### Search Mode

The receiver explores the entries of the Search Table until the detection of the signal.

### Assignment Mode

The operator can manually put the receiver in this mode, setting up the required tunings criteria. The Analysis Sensor is stopped in the desired signal, analyzing and reporting data.

### Manual Mode

It is a manual programming of the receiver, setting up the frequency, bandwidth, antenna movement...

## TECHNICAL ADVANTAGES

- Directional spinning antenna based on linear arrays of printed antennas (high gains, narrow azimuth beams, wide elevation beams).
- Dual channel Superheterodyne Receiver for FLAT-DF antenna and omnidirectional antenna.
- Processing architecture based on POWERPC board.
- Digitized pulse data received can be stored for subsequent analysis adding an important ELINT capability to the ES system.
- Very high reliability.
- System maintainability criteria based on replacement, minimized programmed/ preventive maintenance, minimized use of tools for maintenance operations (only commercial tools), both at operator and base maintenance level.

## TECHNICAL FEATURES

The most important features of the ELINT-FD are the following:

- FLAT-DF Antenna capable of rotating at a high speed with big elevation coverage, therefore maximizing the POI figure.
- Very high accurate angle of arrival (AOA) measurement.
- Superheterodyne Receiver with maximum bandwidth of 500MHz for each of the two FLAT-DF and Omni channels.
- Frequency measurement accuracy better than 1 MHz rms.
- Very high mean system sensitivity.
- Measurement of parameters of the signal, by means of interpulse and intra-pulse analysis.
- Emitter's identification by correlation with the Emitters Library. It can be adapted to the customer's requirements (large experience regarding the NATO standard Data Base). The Applied Software includes programming tools to update or modify the Emitters Library.
- Standard interface to exchange data with Command and Control Centers.
- BITE (initialization, manual or continuous).
- Advanced Human Machine Interface (HMI) with a highresolution display system and multiple graphic windows.
- Activity and sensor histograms (Frequency, PRI, PW, PA, azimuth)
- Temporal Diagram: Frequency-Time that indicates activity according to time, providing a clear idea of the present situation.
- The Pulse Analysis component has powerful graphic tools and algorithms to analyze pulse buffers captured with the sensor.
- The Intrapulse Analysis component has powerful graphic tools and algorithms to analyze the intrapulse modulation and the radar signature of a signal.
- Data Base Tools component implements query and handling tools for ELINT System databases.
- Capability to be integrated with communication devices for remote control.
- GPS reception capability.
- Mapping of the mission area using the Customer's Digitized Map.

## CONFIGURATION

The ELINT-FD is physically composed by four elements:

### ELINT Antenna Assembly

- DF sub-assembly, based on a FlatSpin Antenna, composed by a series of stacks covering the C/J band, from 0.5 to 18 GHz, and optionally including the K band (18-40 GHz).
- An Omnidirectional antenna to support detection, maximizing system POI, in the C/J band, and optionally including a dedicated omnidirectional antenna covering the K band (18-40 GHz).
- Positioner unit, which allows the DF subassembly azimuth rotation.

### Dual Super-heterodyne Receiver (RGSH)

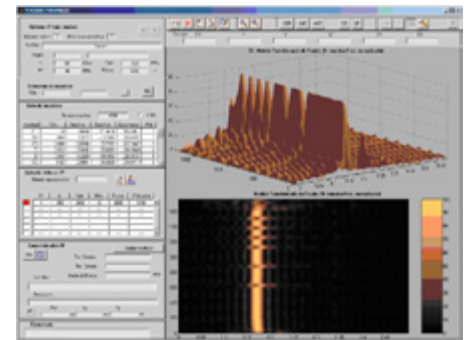
It provides two IF channels (1 GHz signal with an IBW of 500 MHz), which are delivered to the Fine Analysis Processor.

### Fine Analysis Processor (MGSH)

It concentrates both the IF resources (providing an output bandwidth that can be tuned from 5 to 500 MHz) and the digitization and processing resources. It contains the Digital Receiver (core technology), basis for the main technical features described below. It also contains the antenna rotation controller.

### Presentation and Display

It is composed by the emitters data base and the Human machine interface (HMI).



## TECHNICAL CHARACTERISTICS

Parameter	Unit	Value
Frequency range	GHz	0.5 to 18 (Up to 40 GHz in option)
Frequency accuracy	MHz	0.5 rms
Bearing accuracy (360° coverage)	deg.	0.5 rms
Mean system sensitivity (CW)	dBm	-85 @ 500 MHz BW
Mean system sensitivity (Pulses)	dBm	-85 @ 5 MHz IBW (PW ≥ 1 μs) -70 @ 500 MHz IBW (PW ≥ 0.1 μs)
Mean system dynamic range	dB	55 plus 40 dB of fix additional attenuation
Instantaneous bandwidth (IBW)	MHz	500, 250, 50, 15 and 5 (Selectable)
PA accuracy / resolution	dB	2 / 0.5
PW range / accuracy / resolution	ns	50 to 200000 / 25 or 5% of PW / 25
PRI range / accuracy / resolution	μs	2 to 30000 / 10 or 0.1% of PRI / 10
Scan measurement range / accuracy	ms	5 to 30000 / Up to 2
Scan measurement types		Circular, Sectorial, Lock-on, Conical
Coverage azimuth / elevation	deg.	360 / 45
Antenna rotor speed	rpm	Up to 300 (Selectable)
POI	%	99 (within IBW)
Number of emitters tracked		200
Pulse density	pps	700000 (within IBW)
Intrapulse analysis		
LPI detection		Yes
Pulse Doppler detection		Yes
Pulse compression detection		Yes
Emitter types (frequency)		Stable pulse, CW, Agile, PRF staggered, PRF jittered, Pulse Doppler, Frequency Diversity, Pulse coded, Chirp and frequency agile, Phase coded, Pulse compression
Emitter types (PRI)		Fixed, Stagger (up to 32), Jitter, Slide, Switch
Emitter PW types		Fixed, Agile
Recording data capabilities		Yes
BITE level		Card/Module
Control interface		Ethernet
Environmental		According to MIL-STD-810F
EMI/EMC		According to MIL-STD-461B

(\*) Notes: The characteristics shown above could be modified according to the requirements and installation constraints.



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