

# Underwater SIGINT

Advanced Maritime EW Surveillance and Intelligence Family

## ELINT Technical Specifications

Parameter	Specification
Frequency Band	2÷18 GHz (0.5÷40 GHz – option), <u>instantaneous</u>
Dynamic Range	<u>Instantaneous</u> : 60 dB. Switched: 85 dB
DF Measurement Accuracy	Better than 4°
Probability of Intercept (POI)	100%; Includes full multi-pulse processing
Frequency Measurement Accuracy	Better than 1 MHz
Signal Inter-Pulse Modulation Handling	Pulse, CW, Frequency and PRF modulations
Pulse Density	At least 2 MPPS
PRI Accuracy	Better than 10 ns
PRF Measurement Range	200 Hz – 500 KHz
PW Measurement Range	100 ns to CW
Scan Types Handled	Circular, Bi-Sectorial, Conical, Lock, etc.
Amplitude Accuracy	Better than 3 dB
Detection Time for a New Emitter	Less than 1 sec.
GPS Bands Covered by Antenna	L1, L2 (L5 option)

## COMINT Technical Specifications

Parameter	Specification
Frequency Range	HF band: 1.6 to 30 MHz (0.05 to 30 MHz - option) V/UHF band: 30 to 3000 MHz SHF band: 3 to 6 GHz (optional)
Instantaneous Processing BW (IBW)	HF band: sub-octave filters, from 0.8 to 8 MHz V/UHF band: selectable 20 or 40 MHz
Resolution Bandwidth (RBW)	HF band: 0.78, 1.58, 3.125 KHz V/UHF band: 6.25, 12.5, 25, 50 KHz
Number of Channels	HF band: 3 wideband channels, RF direct sampling and processing in parallel V/UHF band: 4 wideband channels, sampling and processing in parallel
DF Operating Principle	HF band: beam-forming V/UHF band: correlative interferometer
Antenna Array	HF band: crossed loops V/UHF band: four stacks, four dipoles per stack
Spatial Coverage	Omnidirectional in azimuth, ±15° in elevation
Operational DF Accuracy	HF band: better than 5° RMS V/UHF band: better than 2° RMS typical
DF/Scan Speed	HF band: 2 GHz/sec V/UHF band: 20 GHz/sec

**Note:** Other highly advanced classified features can be discussed upon request

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## Overview

Today’s naval platforms, both submarines and surface vessels, are facing a wide range of rapidly evolving, increasingly sophisticated electromagnetic signals. Utilizing its decades of experience in the design and manufacture of advanced SIGINT (RESM, ELINT, CESM and COMINT) systems, Elbit Systems EW and SIGINT - Elisra (Elisra), has developed ultra-smart maritime EW, surveillance and intelligence collection solutions that effectively detect, gather, identify and alert with respect to suspicious electromagnetic emissions in both open seas and littoral waters. Distinguishing between threatening and non-threatening signals, these cutting-edge intelligence capabilities enable timely processing and immediate, maximized responses.

## WONDER and TIMNEX III

Elisra’s next generation surveillance and intelligence collection systems offer combined capabilities that deliver a comprehensive, modular, flexible and future-ready solution successfully dealing with the most difficult EW challenges at sea, in the densest and most complex electromagnetic environments.

**WONDER** – a recent addition to Elisra’s family of naval EW systems – is a modular, fully digital, wideband surveillance system that delivers both RESM and ELINT capabilities. Providing instantaneous 100% Probability of Intercept (POI) for all signal types – including Pulse, Continuous Wave (CW) and Low Probability of Intercept (LPI) signals – the system automatically detects, processes, identifies, records and displays radar emitter data to the operator.

**TIMNEX III** is a cutting-edge ESM/SIGINT system, based on RESM, ELINT, CESM and COMINT subsystems, that provides an advanced and cost-effective Intelligence Collection System (ICS) to meet submarine intelligence requirements.

The system is capable of searching, detecting, intercepting, monitoring, measuring Direction of Arrival (DOA), recording and analyzing of all communication and radar signals.

The system covers the frequency spectrum using wideband and narrowband techniques. Sophisticated algorithms are initiated to analyze and classify the intercepted signals.

The system handles complex signals including spread spectrum and advanced modulated communication and LPI signals, in dense electromagnetic (EM) environments.

## WONDER Main Features

- Simultaneous ESM & ELINT capabilities
- Patented digital processing concept enables direct sampling of received signals & extraction of reception parameters
- Instantaneous 100% Probability of Intercept, 360° coverage, with no degradation for all signal types
- Handling at least 2MPPS, instantaneously and simultaneously
- Very small EWA and ESM antennas
- Fully interfaces with Combat Management System & Navigation System using redundant Ethernet LAN
- Fully integrates into CMS consoles for display, command & control
- Optional addition of Elisra’s iSNS immune GPS capability

## TIMNEX III Main Features

- Unified SIGINT system
- CESM antenna integrates with RESM antenna, providing unified SIGINT antenna
- Combines data from CESM system and RESM system for complete tactical naval picture
- RESM/ELINT capabilities laid on top of WONDER’s capabilities
- CESM/COMINT covers HF/VHF/UHF/HUHF frequency bands
- COMINT DF antenna array for frequencies above 300KHz (option)
- Very fast scanning rates enable handling of dense EM environments, including frequency hopping, burst, etc.
- Signal content and traffic monitoring; fast activity detection; deep analysis of signals of interest
- COMINT capabilities based on dual (wide & narrow) band scanning receivers
- Digital Audio Recording provides record/replay capabilities