



SAFE NAVIGATION AID SONAR

Thesan Sonar is a bow mounted, lightweight active sonar for surface ship, designed to detect and localize moored mines and submerged moving or stationary small objects and to assist the navigation with excellent performance in both deep and shallow waters.

With an additional wet end and a simple deployment system Thesan provides full protection from Divers and related Divers Delivery Vehicles to any surface vessel at mooring or when anchored outside a harbour.

MAIN FUNCTIONS

- Mine Avoidance
- Torpedo Alarm in the forward sector, normally not covered by towed array
- Intercept function (passive detection of active transmissions)
- Collision avoidance

- Asymmetric Threat Detection Sonar (ATDS)
- Navigational aid in narrow or dangerous waters, as detection of underwater or semi-floating objects.

SYSTEM COMPOSITION

The system consists of 4 main units:

- Transducer Array Unit
- Transmitting and Receiving Unit
- Console Unit with Graphic Software
- ATD kit (antenna and deployment system)

The Transducer Array Unit includes the following hardware items:

- A vertical array for sonar transmission
- An horizontal array for sonar reception
- Front-end RX electronics PCBs for vertical beamforming, pre-amplification & filtering and BITE function
- Front-end TX electronics PCBs including matching circuits for each hydrophone.

THESAN

The Transmitting and Receiving Unit is a military, air cooled cabinet for electronic modules which includes the following functions:

- A/D and D/A conversion
- Digital beamforming in RX
- Digital signal and data processing
- Test target simulation
- Interface management (Console, TDS, DTS)
- Signal generation for transmission and digital inverse beamforming
- Power amplification for transmission
- Power supply.

The TX/RX Unit is largely based on COTS technology for the functions related to the digital sonar processing.

The ATD kit includes the following hardware items:

- A stand-alone Thesan Transducer Array Unit
- A mechanical deployment system, including a winch, to position the dedicated antenna, while the ship is anchored, to the best depth for asymmetric threat detection.

The very low cost ATD kit uses the same TX/RX cabinet and the same HCI of the Thesan already installed on board.

The Graphic software includes the following functions:

- Sonar raw-data display format
- Synthetic data presentation for tracked object
- Readout information
- Management for the input data/command.

The installation of Thesan antenna can be performed with different configurations, depending on the type of ship to be equipped:

- For large ships two configuration are available. Both are inside a bow dome but one of them is conformity with the large dome which contains also the ASW Sonar
- For Fast Patrol Boats or small ships in general, a light antenna, to be directly installed into the keel, is available.

