Mission Solution 300
Standard configuration for point defence

- Member of the Thales Mission Solution family
- Standard configuration of integrated sensors, effectors, CMS, communication system and navigation system
- Turn-key delivery of proven solutions with flexible in-service support levels
- Short lead times through standardization in functionality, composition, services and pricing
Mission Solutions for each domain

Thales offers a complete range of domain oriented solutions for Safety, Littoral Security, Ocean Security, Point Defence, Local Area Defence and Wide Area Defence. The Mission Solutions for ships that operate in the maritime safety and security domain and/or in the defence domain with low intensity conflicts are standardized by Thales. The pre-integrated and hence cost effective systems are easy to install, easy to operate and have short delivery times. The basis of these solutions is the TACTICOS Combat and Mission Management System family that offers a full package supporting Maritime Security Operations (MSO) next to traditional warfare functionality.

The MS-300 is a Naval Mission Solution designed to provide defence and security capabilities for today’s multi-role navies. It is aimed to equip any naval ship up to patrol ships with a point defence capability built on guns. The MS-300 comprises the capabilities of gun based Anti Surface Warfare and self defence against limited air threat with MSO capabilities.
• Superior very small surface and air object detection with a military VARIANT 2D Air and Surface Surveillance Radar in normal and cluttered environments.
• Covert operations with the Low Probability of Intercept (LPI) VARIANT 2D Air and Surface Surveillance Radar, MIRADOR Electro Optical Surveillance sensor and VIGILE Radar ESM sensor.
• Full situation awareness by dedicated TACTICOS MSO package and modern sensors for Maritime Security Operations and Point Defence.
• Legal evidence gathering and recording with ESM, MIRADOR and TACTICOS.
• Easy information sharing over non-tactical communication networks (IP-based) and real-time data exchange over military tactical data link.
• Multi-target surface engagements with an all-weather military radar and EO fire control solution realized with: LIROD (option), VARIANT (in Track While Scan mode) and MIRADOR. Therefore TACTICOS provides automated threat ranking and optimized sensor/weapon allocation to the threat(s) with the ASuW and AAW package.
The VARIANT naval radar system is a modern, highly efficient surveillance and target indication sensor for Naval Vessels operating in blue ocean and in the littoral. It is a stabilised, 2D air- and surface surveillance radar system consisting of a dualband pulse-Doppler radar, a dedicated FMCW radar and an IFF antenna. Three-antennas-in-one ensures robustness, operational flexibility and enhanced redundancy.

Technical data
- Type: double pill box
- Horizontal beamwidth: 1.8° (G-band) - 1.2° (I-band)
- Rotation speed: 14 & 28 r.p.m.
- Elevation coverage: up to 35°
- Low Probability of Intercept capability
- Surface Gun Fire Control support
- Integration with IFF systems, supporting Mode 5/S

Performance data
- Number of tracks
  - Air: 200
  - Surface: 200
  - FC Surface: 3
- Instrumented ranges
  - Air: 120 km
  - Surface: 70 km

MIRADOR
Electro optical observation and tracking system

MIRADOR is a compact, fast and highly accurate electro-optical observation and tracking system. MIRADOR provides accurate target tracking data for precise fire control of weapon systems against high maneuvering air and surface targets.

Technical data

**Tracking cameras**
- IR camera: (night and day)
- Fields of view: 2° x 1.5” and 7.2” x 5.4”
- Detector elements: 384 x 288 CMT
- 8-12 μm camera is optional
- Black and White TV camera: (day)
- Spectral bandwidth: Visible light
- Field of view: 2° x 1.5"
- Dynamic range: 1 - 200,000 lux

**Observation cameras**
- Colour Zoom TV camera:
- Field of view: 1.6” x 1.2” (x 26 zoom)
- Dynamic range: 2 - 200,000 lux
- Laser Range finder:
- Diode pumped Nd:YAG/OPO class 1M eye safe
- Repetition rate: 6 Hz average
- Instrumented range: 100 m – 40 km
- Range accuracy: 2.5 m

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LIROD
Light-weight radar tracking system

LIROD Mk2 is Thales lightweight track radar for gun fire control. Its stealth target detection capabilities support ship defense and operation in littoral environments. LIROD Mk2 provides short to medium range acquisition and tracking capabilities down to very low elevations thanks to K-band tracking and TV angular tracking. Its design is optimised to perform in all weather conditions, severe ECM conditions and low to high sea states.

VIGILE 100 Radar ESM

As a primary sensor, VIGILE is the key component of the EW suite. It is fully integrated in the Combat System and participates to situation awareness, self protection and ELINT. In multi-ship, network-enabled operations it is a major contributor to enhanced operational awareness. The VIGILE 100 provides full surveillance, warning and monitoring of active emitter activity for enhanced tactical situation awareness and threat evaluation in E to J bands.

Technical characteristics

Sensors
- Radar: K-band
- EO: Black & White camera, IR camera (optional)

Radar system
- Antenna type: elliptical parabolic with monopulse cluster
- Antenna size: 1 m (H) x 0.4 m (W)
- Beamwidth: 0.55°(E) 1.5°(B)
- Frequency band: 35 GHz
- Transmitter type: TWT
- Average power: 100 W
- Instrumented Range limit: 36 km

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**EARL**

**Lightweight Naval C-ESM solution**

EARL - Naval is a lightweight and cost-effective naval C-ESM solution for small surface ships, providing Alert and Situation Awareness capabilities based on interception/Direction Finding of the radio communication signals in frequency band 100-3000 MHz. It provides detection and bearing of conventional or asymmetric communication emitters, for surveillance and littoral warfare missions.

EARL - Naval is composed of a compact DF antenna, a lightweight DF sensor and an easy-to-use display running on a rugged laptop, able to be used by non-skilled operators.

**Technical data**
- Frequency band: 100 - 3000 MHz
- DF scanning speed: up to 2.5 GHz/s
- DF accuracy: < 3° RMS < 5° RMS
- Listening-in: AM, FM, USB, LSB, ISB

**Installation data**
- DF sensor unit
  - Size: 43x32x14cm Weight: < 15kg
  - Power supply: 11-30 VDC
- Antenna: weight: <15 kg

**Information sharing**

MS-300 shares information such as track data, e-mail or chat messages, map overlays, compressed video frames, etc. over the communications bearers.

MS-300 supports multiple network communication bearers including: Satellite Communications (SATCOM), Internet Protocol (IP), Ultra High Frequency (UHF), Very High Frequency (VHF) radio, High Frequency (HF) radio, W-AIS, WiMAX and WIFI. Since this capability has been designed to efficiently operate over low-bandwidth HF radio channels, the MS-300 data exchange mechanism is extremely efficient. This translates into exceptional bandwidth optimization.

**LINK Y Mk2**

**Tactical data link**

LINK Y Mk2 is used for reliable and secure exchange of tactical data and tactical orders. It is easy to use via a self-managing and adaptive radio network between multiple military platforms. LINK Y Mk2 offers functionality which is comparable to NATO LINK 11, but with enhanced capabilities, and using (software embedded) national encryption. LINK Y Mk2 acts as a “force multiplier”: available tactical data of participating units is shared, creating a complete and uniform tactical picture amongst users.

- Dynamic TDMA protocol for HF, VHF and UHF radio communication
- Proven integration with TACTICOS
- Applicable for sea, air and land platforms
TACTICOS 300 - Combat Management System

TACTICOS 300 is a Mission and Combat Management System designed to provide defence and security capabilities for today's multi-role navies. It is aimed to equip any naval ship up to patrol ships with a point defence capability built on guns only.

**Secure and Defend**
Modern navies must be prepared for traditional naval combat as well as Maritime Security Operations (MSO). TACTICOS 300 marries the capabilities of gun based Anti-Surface Warfare and self defence against air threats with extensive MSO capabilities.

**Situational Understanding**
TACTICOS 300 offers high fidelity, real time integrated operational picture to support the command team. This presents all the supporting information that allows determination of intent. Information about weather conditions and historical track data with trend analysis all add to the understanding of the situation. That understanding is one of the critical edges that provides mission success.

**Connected, Extendable**
TACTICOS 300 connects information to create intelligence, assets to work together, and links ships at sea to information sources on land. It can be configured to support military data links of many types (including L11, LinkY, etc). With open interfaces, the TACTICOS family architecture supports the integration of new capabilities to meet changing operational needs.

<table>
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<th>INSTALLATION DATA MOC MK4 (EXCL. SHOCK MOUNTS)</th>
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