TRINITY
Standard configuration for littoral defence

- Member of the Thales Mission Solution family
- Unrivalled tracking and fire control solution for small manoeuvring targets
- Innovative approach and easy to install
- Complete and compact integrated solution for guns of 12.7 to 30 mm
- Lean and effective
TRINITY is a competitive, comprehensive, compact and effective integrated defence and security solution for vessels operating in the littoral domain. The main characteristic of TRINITY is its extremely accurate tracking and fire control, integrated with a dedicated weapon.

The system is designed for use in a dynamic environment on board of a range of highly manoeuvrable vessels and unique because of its unmatched ability to track small, fast and also highly manoeuvrable targets. TRINITY combines its track capability with high performance gun fire control, creating an unrivalled high-precision hit, or intended “shot across the bow”.

Besides excellent tracking and fire control, TRINITY also enables planning and execution of an entire mission. The total system is based on five pillars: situational awareness, mission planning, evidence gathering, communication, and deployment of weapons.

In all, TRINITY is the best and most innovative solution for small and medium size highly manoeuvrable vessels executing littoral missions ranging from general policing up to defence against threats like asymmetric swarm engagements.
Operational benefits

- Unrivalled tracking and fire control solution
- Full fire control, using best possible Thales filters and algorithms, versus joystick or manual control
- Best shooting performance on small and weaving targets due to separated sensor and weapon
- No “act of war” or hostile intent, but investigation without weapon aiming
- Solution optimized for use onboard of highly manoeuvrable vessels in a dynamic environment

- Fully integrated and complete solution
- No deck penetration; easy to install
- Short delivery time
TRINITY EOST
Electro Optical Surveillance and Tracking system

The TRINITY EOST stands out by providing recognition and identification during day/night and up to a range to the horizon maximum. It is a compact and lightweight system specifically designed for the use on small naval and coast guard vessels.

The system uses an IR camera in combination with a laser range finder for surface target tracking and a colour zoom camera for observation and surveillance. The sensors are mounted on a compact pan and tilt system. Target tracking (based on the well-known MIRADOR® EOSTS), sensor management (e.g. steering of pan and tilt and communication with the sensors) and communication with other components (e.g. navigation and inertial navigation) are handled by the processing cabinet.

Functional aspects
- Optical Surveillance
- Target Designation
- Manual and Automatic Target Acquisition
- Target Tracking

| INSTALLATION DATA TRINITY EOST |
|-------------------|-----------------|-----------------|-------|-------|
| Width (mm) | Depth (mm) | Height (mm) | Mass (kg) |
| 580 | 540 | 430 | 32 |

Technical data

**EOST director**
- Azimuth mechanical coverage: 360°
- Elevation mechanical coverage: - 40° to + 95°
- Maximum azimuth speed: ≥ 120 °/s
- Maximum elevation speed: ≥ 100 °/s

**TV colour zoom camera**
- Field of View (FOV): 1.6° x 1.2° (smallest FOV)
- Focusing range: 1 meter to infinity
- Zoom: ≥ 18 X
- Dynamic range: 2 - 300,000 lux
- Video output: CCIR

**IR track camera**
- Type: Uncooled (cooled is supported)
- Spectral bandwidth: 8 - 12 μm
- Field of view: 4.6° x 3.7°

**Laser range finder**
- Type: OPO shift Nd YAG, IEC 60825 class
- 1M Wavelength: 1.57 μm
- Instrumented range limit: 300 m – 20 km
- Beam divergence: 0.8 mrad
- Eye safe
TRINITY
Command & control

TRINITY is a complete solution, with fully integrated and easy to use situational awareness, navigation, evidence gathering, communication and fire control capabilities.

Situational awareness
Situational awareness is created by automatically presenting tracks from the integrated navigation radar, AIS and TRINITY EOST, on layers like electronic sea charts or satellite views.

Navigation / route planning
- User friendly interface
- Create and manage Routes & Waypoints
- Free worldwide weather forecast service
- Worldwide tide database
- AIS/ARPA function included (using NMEA0183 or Ethernet)
- 3D navigation software
- Seamless chart plotting experience
- Fuse satellite images to the marine chart

Evidence gathering
Evidence gathering in GigE Vision format on both the consoles and the recorder. The video will create a file name using key parameters like location, time and date and the sensor ID in order to know exactly when and where the recording took place.

Communication
Rugged Thales SOTAS IP communication solution for internal and external voice and data communication.

Fire Control
With a single click, a track of interest can be designated on the TRINITY console. From that moment on the track will be slaved automatically by the TRINITY EOST, without the need of manual intervention. The fire control capability uses the high accuracy track from the TRINITY EOST as input for the weapon pedestal. This processing is using sophisticated track filtering and dedicated Thales weapon control algorithms for surface and slow air targets.
The remote controlled pedestal is designed to use on vehicles and highly manoeuvring compact vessels. The function of this pedestal is to carry, stabilize, damp, manipulate (pan and tilt) and guide the gun. It also contains the electromechanical operating equipment of the weapon, enabling remote gun control from either an operator remote control panel, other directly from a C2 system.

The pedestal is able to carry a built-in machine gun, with calibres from 12.7 up to 30 mm. The gun is considered to be furnished by the customer.

Target assignment is done with TRINITY C2. Re-assignment or manual adjustment is not necessary while the TRINITY target tracking is very accurate and stable. However, remote control is also possible with the joystick of the TRINITY C2 operator station.

Technical data

Pedestal
- Azimuth coverage: 360°
- Elevation range: -10° to +70°
- Max azimuth speed: >= 60°/s
- Max elevation speed: >= 60°/s

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TRINITY pedestal (gun is customer furnished equipment).
SOTAS IP
Communication infrastructure

SOTAS IP is a rugged, battle-proven, modular, IP-based communication system. It is multi-purpose while able to deliver all multimedia services in one compact system.

It's the ideal solution for smaller heavily maneuvering vessels and vehicles. Because of its excellent noise reduction, it is TRINITY's first choice for internal communication. The SOTAS IP system can easily be connected to any type of customer delivered radios for external communication.

- Fielded in 25 countries
- Compact
- Interoperable with any radio
- Crystal clear communications
- Future proof

Integration of (multimedia) services
SOTAS IP contains the broadest range of communication technologies from Voice-Only to Networking, Ethernet, IP routing, Voice Over IP telephony and optimized IP transport over Combat Net Radios.

Crystal clear communications
Thanks to unique Dynamic Noise Reduction (DNR) and human voice recognition algorithms, SOTAS IP offers very high radio quality and extreme clear voice communications in high noise level environments like high speed craft.

DNR virtually eliminates the ambient noise from a microphone signal while preserving the speech signal. In doing so, DNR contributes to the hearing protection and dramatically improves intelligibility. DNR also increases the effective range of the radios.

Robust and extreme reliable
SOTAS IP is a hermetically sealed, robust MIL-SPEC system that requires no special protection measures. The system is designed to be used in harsh environments and has a very high availability of over 99.9 %.

Scalable and future proof
SOTAS IP is scalable from small voice intercom to complete multimedia command networks. And when new requirements emerge, the system can easily be extended with extra modules.

Rugged, compact and configurable low weight communication suite
## Solutions matched to your mission

### Defence

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**Legend:** ● Selected ● Option

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**THALES**

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