WAVEFRONT

Making the underwater world visible

Sentinel 2

Intruder Detection Sonar

WAVEFRONT

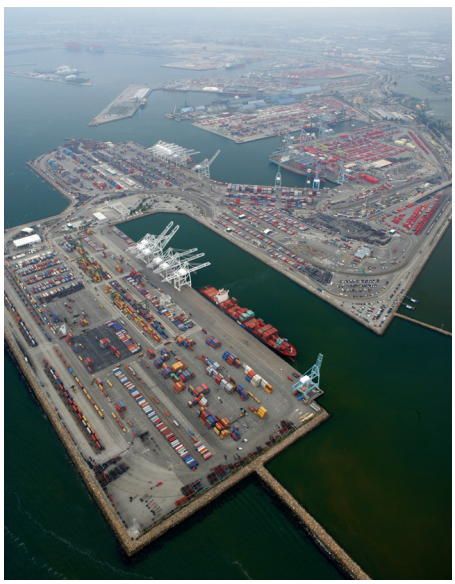
Wavefront apply engineering excellence to the problems of underwater detection and navigation. Our operationally proven market-leading sonar systems are reliable, easy to use and designed to provide real-world solutions.

Our sonar technology allows us to make the underwater world visible.

Sentinel 2

The next generation of our world-leading intruder detection system (IDS).

Sentinel, our widely deployed intruder detection system, is more advanced than ever. By providing enhanced tracking and visualization capabilities, Sentinel 2 will ensure your vessels, oil platforms, waterside facilities and national infrastructure are protected.



Sentinel 2 IDS

Sentinel 2
The next generation IDS

Sentinel 2 is the next generation of the world-renowned Sentinel Intruder Detection Sonar system. It detects, classifies and tracks sub-sea threats approaching your protected area or asset, such as a diver, swimmer delivery vehicle or unmanned drone. The Sentinel 2 uses advanced simultaneous in- band active and passive sonar capability (SInAPS) to identify and protect, ranging up to 1500m for mini-subs and 1000m for divers.

Sentinel 2 is an intuitive system that will automatically inform the end user of any potential threat without the need for any sonar-trained personnel.

Depending on your application, Sentinel 2 can be supplied in either a portable and mobile package for rapid deployment where temporary security is required or as a permanently installed system for continuous protection of a known asset or perimeter.

Your underwater security covered

Sentinel 2 IDS is used globally to protect critical national infrastructure, ports and harbours, military operations and ports, private and commercial yachts, cruise vessel and waterside properties.

Offering a flexible security solution, either fixed or portable, Sentinel 2 is tailored to each individual site. With both active and passive sonar capabilities, Sentinel 2 has multiple deployment options and can be used individually or form part of a networked, subsea security perimeter. Sentinel 2 offers cost-effective, highly efficient and trustworthy solutions in any underwater environment.
Keel Clearance (UKC).

Sentinel 2 IDS

A 2-head system tracking an Open-Circuit Diver actively on both heads and passively on one of the heads. The target data on Heads 1 and 2 are integrated to show a single track. Super-Inheritance ensures that all the track data from each sonar target is passed between sonars so that threat level, metrics and classification are continuously reported.

Design

Lightweight and compact, Sentinel 2, can be used whenever rapid deployment is needed or for permanent protection.

Range

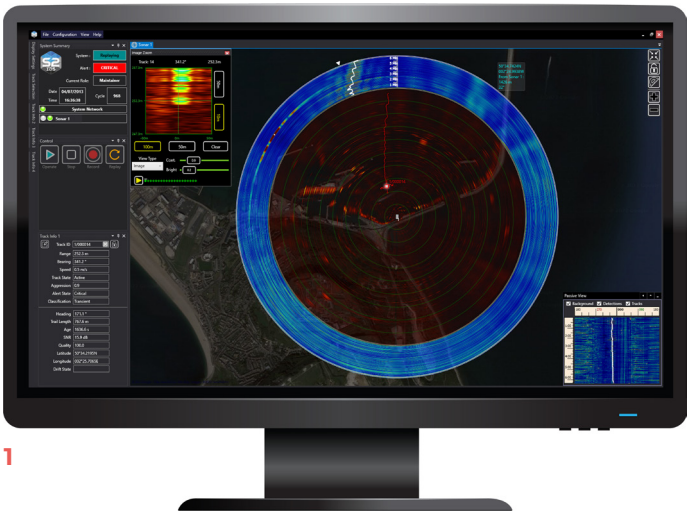
Simultaneous active and passive sonar capabilities deliver up to 1500m mini-sub and 1000m diver detection ranges.

Intuitive

Informs the user of any potential threat through automated systems, even if they are not sonar trained, with a low false alarm rate.

- **SInAPS® combines the detection and tracking capabilities of active and passive sonar**
- **Simultaneous multiple detections and tracks in a single processing cycle**
- **Full aperture target zoom processing capabilities for lower false alarm rates**
- **Historical tracking data for enhanced threat target validity and evaluation**
- **Identifies and classifies threats up to 1500m**
- **Compact and portable for rapid overboard deployment, when and where needed**
- **Permanent installation for continuous protection of perimeters and assets**

Sentinel 2 IDS



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1. The Image Zoom window (top left) shows a full-resolution active sonar image automatically centred on the target. This is shown with range as the Y-Axis and azimuth as the X-Axis. The zoom can be used to help the operator to classify the target; in this case groups of bubbles from the diver's breathing can clearly be seen, confirming it is an open circuit diver OCD.
2. Up to 10 sonar heads can be displayed on a single command workstation. The Sentinel UI can display the multi-head view in one window, or can tile images from individual heads in the Overview. A tiled example is shown below. The user can drag and zoom the displays to optimise views in any window.
3. The Sentinel UI allows for easy fine-tuning of the sonar positions relative to the background images – the operator can move and rotate the sonar location in real-time using built-in tools. Additional point to point measurements can be made from any area of the UI screen.

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Why invest

- Simultaneous in-band active and passive sonar (SInAPS) leaving intruders nowhere to hide
- Multiple subsea target-type detectors and trackers in a single processing cycle
- Sets specific identifiable sonar-return characteristics for even lower false alarm rates
- Super-Inheritance historical tracking data for improved threat identification

System Setup

- Wavefront experts work with the integration team to conduct on-site surveys for all permanent installations
- An appointed project manager will support the local installation team from start to finish.
- Our field engineers will support system commissioning, for effective deployment
- Practical training courses designed to get the best from your system

Support

- Free 24/7, 365-day support service for our valued customer base
- Access to our engineering team to remedy any issues remotely
- Extended warranty and maintenance support
- Flexible and modular design to acilitate any installation scenario and potential future expansion

Wavefront offer a wide variety of installation options for the Sentinel system. This is usually advised after an engineer site visit to assess the perimeter that requires protection and understand the end-user requirement (ConOps).
1. Expeditionary / temporary deployment of the Sentinel sonar via seabed frame.
2. A fixed bracket is a practical, cost effective solution to deploy the sonar from piles and other suitable structures.
3. A seabed stand provides an optimum sonar deployment method for permanently protecting open areas of water.
4. A seabed frame provides a fast low logistic deployment of the Sentinel system from vessel or quayside for temporary and mobile protection requirements
5. As a critical security product, Wavefront offer extensive support and operator and maintenance training to our customers either in the UK or in-country to ensure the Sentinel is providing the required world beating protection 24/7.

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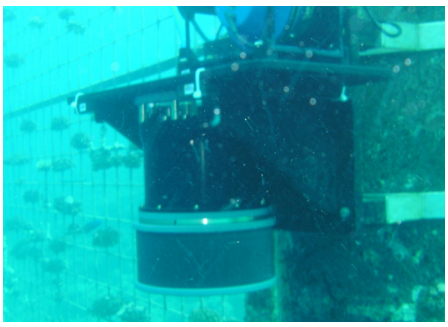

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6. At just 43cm high Sentinel 2 is compact and portable for rapid overboard deployment, when and where needed

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Sentinel 2 Performance		Expeditionary Model	Long Immersion Model
Acoustic	Operational Frequency	70 kHz	70 kHz
	Bandwidth	20 kHz	20 kHz
	Source Level (dB re 1 µPa @1m)	206dB	206dB
	Pulse Length	40ms	40ms
	Receive Beams	256	256
	Acoustic Cover	360°	360°
	Target Bearing Accuracy	Down to 0.35°	Down to 0.35°
	Target Position Accuracy	<1 m at 150 m range	<1 m at 150 m range
Electrical	Voltage	55-0-55 V ac	55-0-55 V ac
	Power	Maximum 70 W	Maximum 70 W
Communication		Cat6 Ethernet	Cat6 Ethernet
Dimensions (L x D)		432 x 330 mm (17 x 12”)	432 x 330 mm (17 x 12”)
Weight in Air/Water		35/6 kg (77/13.5 lb)	45.5/18 kg (100/40 lb)

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A COVELYA GROUP COMPANY

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