

# **VisionMaster SeaGuard**

The Total Awareness Solution for Sea Surveillance



# VisionMaster SeaGuard

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**Every target.  
Every condition.  
Every time.**

## Today's challenge

Standard navigation radars struggle to detect smaller targets at sea. Search and rescue is especially difficult and delays incurred trying to find people lost overboard are incredibly costly and disruptive, besides potential damage to corporate reputation.

Navigating safely amongst many small craft is equally challenging. Their course and speed may have changed completely by the time standard navigation radars have tracked them. In piracy-prone waters, such delays could lead to a life-threatening situation.

Heavy rain and high sea states compound the problem. It may not be possible to see buoys coming into port, forcing vessels to wait outside for several hours until the weather has cleared. Even navigating safely in open waters is difficult in such conditions with reduced detection range.

## Solid-State Radar Technology

VisionMaster SeaGuard is the first commercial radar to instantly detect small targets in all conditions. Based on solid-state technology, it offers the highest levels of precision and resilience to significantly improve your situational awareness.

Its unique frequency diversity operation with high resolution, high definition performance and advanced clutter reduction is purposely designed to detect people in the water, small craft in congested seas or potential threats in piracy-prone areas. And operators can choose different user profiles for different scenarios to help improve efficiency further.

The radar's unique real-time automatic tracking capability provides an instant update on target positions – crucial when small craft are moving and changing course much more rapidly.

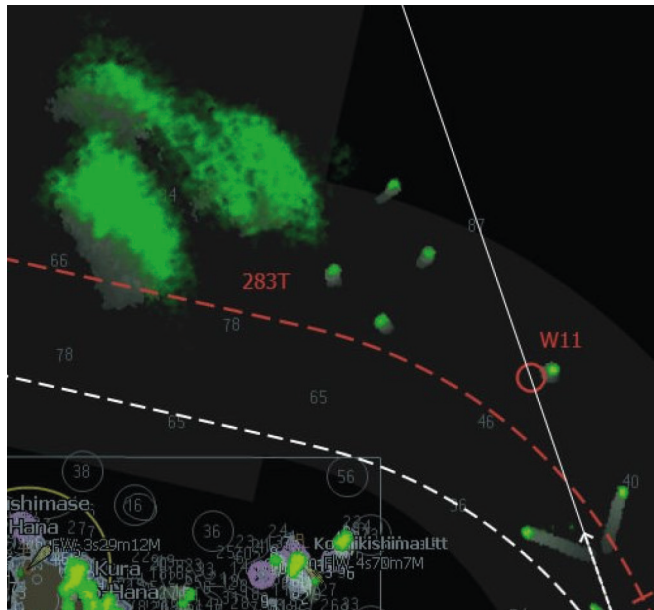
VisionMaster SeaGuard successfully detects small targets with a very high probability – even in heavy rain and high sea states – to deliver improvements in operational efficiency and safety that easily justifies the additional investment.

# Improved Safety and Efficiency through Improved Situational Awareness

## Improved Precision

Detects and tracks small targets with a level of accuracy and precision that standard navigation radars cannot even see, to significantly improve your safety.

- **High resolution** – separates targets within a 3- metre cell (vs 15-18 metres for standard navigation radars) to detect multiple small targets approaching instead of a large single one.
- **High definition** – displays 256 intensity levels (vs 8 for standard navigation radars) to give a much clearer picture; improved detection of water vs black ice on surface-eroded icebergs to reduce risk of damage to vessels.
- **Advanced clutter reduction** – for detection of small targets even in a high sea state.
- **Real-time automatic tracking** – instant update of a target's course and speed (vs up to two minutes' delay using standard navigation radars).



**X-Band Magnetron Radar**  
Heavy rain hiding two targets

## Increased Resilience

Operates over six frequencies on solid state technology to deliver the highest levels of resilience and situational awareness.

- **Very high level of radar return** – unique frequency diversity operation ensures small targets are detected.
- **Detection in heavy rain** – system self-organises to automatically switch between the six frequencies, enabling small target detection even in the harshest weather conditions.
- **Detection in all sea states** – from calm to high seas, through advanced clutter reduction and frequency-diversity operation.
- **Exceeds all IMO requirements** – for navigation radars to detect targets.



**VisionMaster SeaGuard**  
Advanced clutter suppression provides clear target detection in heavy rain and high sea state

## Improved Efficiency

Automates key tasks that would normally require manual intervention, allowing operators to focus on other duties to improve your operational efficiency.

- **Real-time, automatic tracking** – enables operators to navigate using the latest target data available.
- **Pre-defined operating scenarios** – flexible choice of 16 user profiles including: navigation at 24 miles; navigation at 12 miles with heavy rain and man overboard; plus the ability to create customised user profiles.

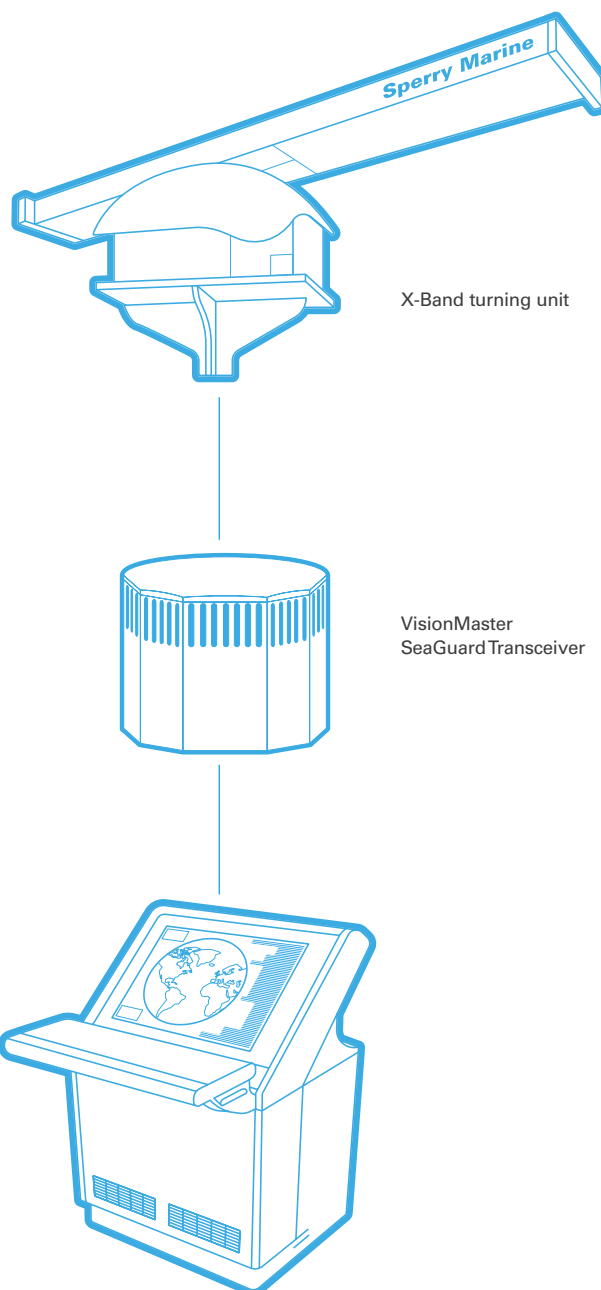
TCVR A Profiles	
Name	Range
1: Nav1, 6n...	6.0 NM
2: Nav2, 12n...	12.0 NM
3: Nav3, 20n...	19.4 NM
4: Nav1, Rai...	6.0 NM
5: Nav2, Rai...	12.0 NM
6: Nav3, Rai...	19.4 NM
7: SAR0, 3n...	3.0 NM
8: SAR1, 6n...	6.0 NM

User-defined transmitter profiles

## Easy to Implement

VisionMaster SeaGuard is quick and simple to deploy within existing Integrated Bridge Systems.

- **Flexible installation** – alongside navigational radar systems from Northrop Grumman Sperry Marine or other vendors.
- **Familiar VisionMaster interface** – minimises operator training for existing users of the VisionMaster FT and VisionMaster Net product range.



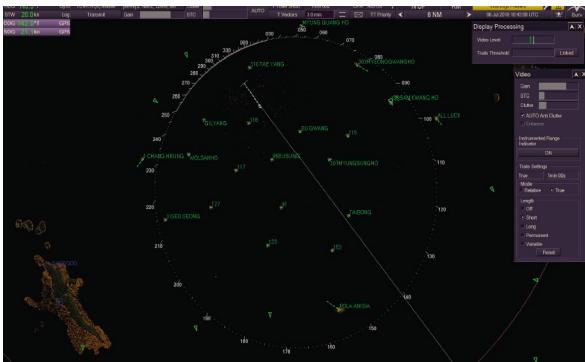
## High Return On Investment

VisionMaster SeaGuard delivers significant safety and operational efficiency improvements that easily justify the capital investment.

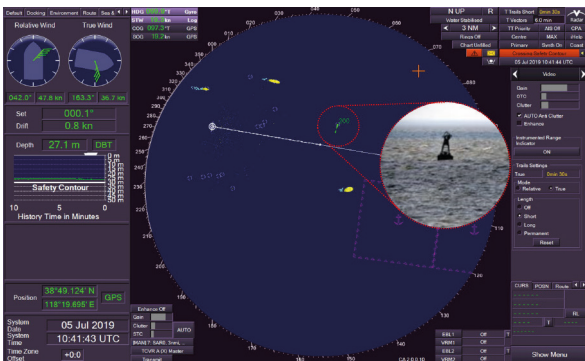
- **Superior performance** – very high level of detection, while standard navigation radars perform poorly in the first two miles where sea-clutter is more significant.
- **Reduced vessel delays and operational costs** – significant fuel savings during search and rescue operations by covering a larger area with the same resources.

## Sea Surveillance

- **Search and rescue** – increase your chances of detecting people in the water to significantly reduce delays and costs.
- **Heavily trafficked seas** – navigate more safely in waters with lots of small craft.
- **Piracy detection** – reduce the risk of potentially life-threatening situations with real-time automatic tracking of small, fast-moving craft to give more time to request assistance.



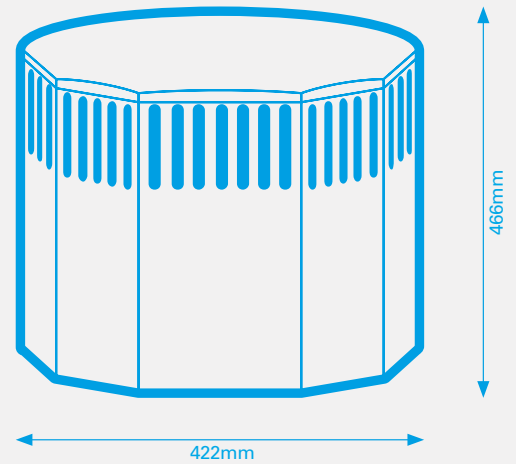
Automatic global tracker



Small target detection

## Specifications

Key features	Transceiver characteristics
<b>Type</b>	X-Band Solid State power amplifier
<b>Frequency</b>	9.3 - 9.5 GHz
<b>Output power</b>	> 80W peak (equivalent to 25kW magnetron)
<b>Sector transmission</b>	Blanking/reduced Tx-power
<b>Sampling</b>	12 bit @ 200 MHz
<b>Dynamic range</b>	> 120 dB (incl. processing)
<b>Min. detectable signal</b>	< -127 dBm
<b>Noise figure</b>	2.5 dB typical
<b>Tracker</b>	Automatic global tracking
<b>Number of radar profiles</b>	Up to 16 user-defined transmitter profiles
<b>Radar modes</b>	Radar, Chart Radar, Surveillance
<b>Chart modes</b>	ECS, ECS Radar overlay



<b>Weight</b>	26kg
<b>Dimension (HxWxD)</b>	466x422x422mm

### Standards Applied

IEC Test Standards:

IEC 60945:2002

General Requirements for Marine Navigation Equipment

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A division of the Northrop Grumman Corporation, Sperry Marine provides a range of sophisticated navigation solutions for mariners around the world: autopilot and steering control systems, compass systems, integrated navigation and bridge systems, integrated platform management systems, speedlogs, navigation radar and ECDIS. Working with mariners around the globe for over 100 years.

BR-16/EXP-HJ-2018-3109

Specifications and features subject to change without notice.

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