VisionMaster Net
The Networked Bridge Solution
Northrop Grumman Sperry Marine’s heritage in commercial marine radar dates back to August 1949, when Decca Marine Group introduced its first product, the Type 159.

In the course of 70 years, the Sperry Marine portfolio has evolved from standalone, single function navigation and positioning products, through smart products with feature rich software, improved user interface and integrated sensor data, to smart and connected products combining remote monitoring, control and optimisation.

The latest phase of developments has seen the company move into networked bridge solution with VisionMaster Net, to simplify deployment, increase system availability and create foundation for big data on the vessel.

The simple integration of VisionMaster Net provides an easy interface for the crew for safety and operational efficiency, simplifying their daily work on board.

**Simple**
Easy to install: VisionMaster Net’s distributed architecture makes installation easier, with fewer components to connect and less cables to pull.

Easy to integrate: It is designed as a modular network over an Ethernet ring. Any combination of VisionMaster Net and third party equipment can be easily integrated into any configuration to create a networked bridge solution for any vessel.

**Solid**
Increased resilience: VisionMaster Net’s ring topology provides a higher level of redundant network capability than conventional point-to-point systems.

Complete support: VisionMaster Net is backed up by Sperry Marine’s global service network.

**Smart**
Improved operational efficiency: VisionMaster Net provides the foundation for “big data” on the vessel. With SperrySphere, it enables smart maintenance of on-board systems with a focus on cyber security.

Alert management: VisionMaster Net is supported by a new central alert management human machine interface (CAM-HMI) which complies with the latest IMO standards.

**Made for Mariners!**
The simple integration of VisionMaster Net provides an easy interface for the crew for safety and operational efficiency, simplifying their daily work on board.

**Features:**
- Digital platform for all navigational applications
- User centred interface
- Scalable to all type of vessels
- Type approved according to latest IMO regulation
- Joystick and Track control

**Benefits:**
- Easy installation
- User friendly with an intuitive interface
- Low cost of ownership through lifetime
- Fully connected with Ethernet CAT6a cable

**Navigation Products:**
- Autopilot – NAVIPILOT and NAVIGUIDE series
- Gyrocompass – NAVIGAT series
- Speed log – NAVIKNOT series
- VDR - VoyageMaster
- GPS
- GMDSS
A World of Support

VisionMaster Net simplifies and reduces the installation time and cost compared to other navigation systems.

Through our Global Service Network, we support you throughout the system’s lifecycle, from installation, maintenance and repair to managing obsolescence and ultimate replacement.

VisionMaster Net layout:
Multinode system

- Antenna
  - X-Band: 4ft / 6ft / 8ft
  - S-Band: 9ft / 12ft
- Masthead Tuning Unit
  - X-Band: 10kW / 25kW
  - S-Band: 30kW
- Network Switch A
- Network Switch B
- Ethernet CAT6a
- Control Panel
- Main ECDIS 26” Panel PC
- Radar 26” Panel PC
- Radar 26” Panel PC
- Backup ECDIS 26” Panel PC
- NSI
- Sperry Ring
- Panel PC
  - CAT1 26”
  - CAT2 24”, 19”
- Sperry Ring
- Network Serial Interface (NSI)
- AC Power
- X-Band
- S-Band
- Serial Data:
  - Gyro
  - GPS
  - Log
  - Echo
  - AIS
- Ethernet CAT6a
- Network Switch CAT6a
- Power
- Sperry Ring
A complete type approved connected bridge solution for safety at sea!

VisionMaster Net Radar / Chart Radar

The VisionMaster Net ARPA Radar is Sperry Marine's state of the art radar solution, which has established an unmatched reputation in reliability and performance worldwide.

With an easy upgrade to Chart Radar, the result is the most advanced series of high-performance radars yet produced by Sperry Marine, providing the ultimate in safe navigation and situational awareness.

VisionMaster Net ECDIS / ECDIS with Radar Overlay

The VisionMaster Net ECDIS provides a complete IMO compliant Type Approved Electronic Chart Display and Information System for safe navigation.

Multiple voyage plans can be created quickly and edited easily at any time during the voyage without interrupting the navigation process. The ECDIS automatically correlates targets with radar and AIS to minimize mistaken identity and simplify watch standing.

VisionMaster Net TotalWatch

The VisionMaster Net TotalWatch multi-function workstation provides the ultimate in flexibility and redundant network for bridge configuration, manning and safety.

At a TotalWatch multifunction workstation, any VisionMaster Net function (chart radar, ECDIS/radar overlay, CID, CAM) can be selected by the operator as a Watch Mode at the click of a button.

With TotalWatch:
- Any combination of workstation functions and watchkeeper manning configuration can be created
VisionMaster Net the power of connectivity

Modern navigation system technology provides more connectivity and communication capabilities for a safer and simpler journey for watch officers. The VisionMaster Net family of products includes:

**ARPA / Radar:**
Fully CAT1 and CAT2 Type Approved Radar exceeding MED requirements for safety and peace of mind of mariners.

**Chart Radar:**
Integrates electronics chart and radar displays for improved watch keeping efficiency and safety at sea.
**ECDIS:**
The Electronic Chart Display and Information System not only meets all IMO requirements for paperless navigation, but also provides the industry’s most advanced capabilities for voyage planning and chart management.

**TotalWatch:**
Multi-function workstations at which any VisionMaster Net function can be selected as a watch mode. In addition to the optional Playback Watch mode, having everything available at a single workstation maximizes situational awareness, increasing safety and navigation performance.

**Integrated Bridge System (IBS):**
For a complete certified solution, Sperry Marine VisionMaster Net new bridge design is for all type of commercial applications and is scalable for all types of vessels. Any combination of VisionMaster Net radars, chart radars, ECDIS and/or TotalWatch can be integrated with all our navigation product lines.

**SperrySphere**
- Digital platform
- Secure USB-free transfer of charts and routes
- Route planning
- On ship and shore-side vessel performance dashboards
- Shore side vessel status
Specifications

Antenna Characteristics

<table>
<thead>
<tr>
<th>Antenna Type</th>
<th>S-Band</th>
<th>X-Band</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slotted waveguide array</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Aperture Length</th>
<th>9ft*</th>
<th>12ft</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(2750mm)</td>
<td>(3600mm)</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Horizontal Beamwidth</th>
<th>2.8° max.</th>
<th>2.0° max.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical Beamwidth</td>
<td>30° nom.</td>
<td>24° nom.</td>
</tr>
<tr>
<td></td>
<td>24° nom.</td>
<td>24° nom.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gain (nominal)</th>
<th>25dB</th>
<th>26dB</th>
<th>29dB</th>
<th>30dB</th>
<th>31dB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Polarization</td>
<td>Horizontal</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Nominal Rotation Rate | 25rpm (50Hz) / 30rpm (60Hz) | 28rpm |

* The S-Band 9ft is not Type Approved

Masthead Transceivers

<table>
<thead>
<tr>
<th>Transceiver Frequency</th>
<th>S-Band</th>
<th>X-Band</th>
</tr>
</thead>
<tbody>
<tr>
<td>3050MHz</td>
<td></td>
<td>9010MHz</td>
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</table>

<table>
<thead>
<tr>
<th>Transceiver Peak Power</th>
<th>S-Band</th>
<th>X-Band</th>
</tr>
</thead>
<tbody>
<tr>
<td>30KW</td>
<td>10kW</td>
<td>25KW</td>
</tr>
</tbody>
</table>

| Pulse Length/PRF       | 0.05μ /1800Hz Nominal | 0.05μ /1800Hz Nominal |
|                        | 0.25μ /1800Hz Nominal | 0.25μ /1800Hz Nominal |
|                        | 0.75μ /785Hz Nominal  | 0.75μ /785Hz Nominal  |

<table>
<thead>
<tr>
<th>Performance Monitor</th>
<th>Yes</th>
<th>Yes</th>
</tr>
</thead>
</table>

| Transceiver/TU Power Supplies | Depends on S-Band selection | Nominal Input 92-276V AC - 47/64Hz |

VisionMaster Net

Antennas and Masthead units

Bespoke X-Band and S-Band antennas, provide clear and accurate radar images to VisionMaster Net.

The specific design has been especially influenced to minimize load on the motor in high wind, for thermal management and also to reduce ice accumulation.

The mastheads top units including transceivers, provide highly reliable data transmission to the VisionMaster Net display through a CAT6a Ethernet cable.

Customised colours and other options available.

Navigation Products

A complete set of high reliable navigation products can be provided to interface with VisionMaster Net for a safe navigation.

- Autopilot series: NAVIPILOT 4000+ and NAVIGUIDE series
- CompassNet Gyrocompass and Fiber-Optic Gyrocompass series: NAVIGAT 100 / 200 / 2500 / 3500
- Speedlogs series: NAVIKNOT
- VDR - VoyageMaster
- GMDSS
- AIS
- NAVTEX

Marine Panel PC

<table>
<thead>
<tr>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>Product Type</td>
</tr>
<tr>
<td>Screen Size</td>
</tr>
<tr>
<td>Screen Type</td>
</tr>
<tr>
<td>Resolution</td>
</tr>
<tr>
<td>Aspect Ratio</td>
</tr>
<tr>
<td>Luminance</td>
</tr>
<tr>
<td>Glass</td>
</tr>
<tr>
<td>Processor</td>
</tr>
<tr>
<td>RAM</td>
</tr>
<tr>
<td>Hard Drive</td>
</tr>
<tr>
<td>Power Input</td>
</tr>
<tr>
<td>Dimensions (WxHxD)</td>
</tr>
<tr>
<td>Weight</td>
</tr>
<tr>
<td>Operating Temperature</td>
</tr>
<tr>
<td>Ingress Protection code</td>
</tr>
</tbody>
</table>

Standards Applied

IMO Performance Standards and Resolutions:
MSC.191(79), MSC.232(82), MSC.302(87) and A694(17)

IEC Test Standards:
IEC 61174:2015 Electronic Chart Display and Information System
IEC 60945:2002 General Requirements for Marine Navigation Equipment
IEC 62388:2013 Shipborne Radar
IEC 61162-1 Ed 5:2016 Digital Interfaces
IEC 61162-2 Ed 1:1998 Digital Interfaces
IEC61162-450:2011 + Amd.1 Digital Interfaces (Ethernet interconnection)
Global Customer Support and Solutions

We provide service and support on a 24/7/365 basis at every major port worldwide, at anchor, offshore and at sea. We continually monitor our service quality to ensure our performance remains the highest in the industry.