

BridgeMaster E Series of Naval Radars



Sperry Marine

BridgeMaster E Series of Naval Radars

BridgeMaster E Series of Naval Radars Standard Commercial Features

Originally designed as a commercial radar, BridgeMaster E incorporates an unequalled combination of standard features to provide enhanced situation awareness and effective, efficient navigation. The standard BridgeMaster E commercial ARPA radar package includes:

- 60 surface target tracking
- 150 knot relative tracking speed
- Automatic and manual target acquisition
- Multi-layer radar maps
- Simple point and click operation
- Four day/night presentation modes
- Tracking history with playback facility



Designed from experience....

Sperry Marine brings together the experience of Sperry Marine, Decca and C.Plath to provide the world's most comprehensive range of marine navigation solutions. The combined heritage of over 300 years in the marine industry has given Sperry Marine the knowledge to ensure that the company's extensive range of products and systems meets the customer's requirements.

BridgeMaster E Marine Navigation Radars

One of the most successful products born out of Sperry Marine's wealth of experience is the BridgeMaster E series of type-approved radars. Its unparalleled choice of configurations and options gives it the flexibility needed for any type, size and class of vessel. Its versatility extends to high-speed and static site applications.

Since its introduction in 1999, BridgeMaster E has been supplied to all the major navies and coast guards around the world including the UK Royal Navy, US Navy and French Navy.

Specially Developed for the Military and Paramilitary Market

Recognizing the needs of military and paramilitary customers, the BridgeMaster E series of Naval Radars has been specially developed to provide advanced navigational support for the toughest military assignments. By combining the basic navigational features and functions found in the BridgeMaster E standard ARPA with enhanced features and high performance configurations, BridgeMaster E Naval radars offer exceptional military capability at very competitive prices.



BridgeMaster E Naval Radars

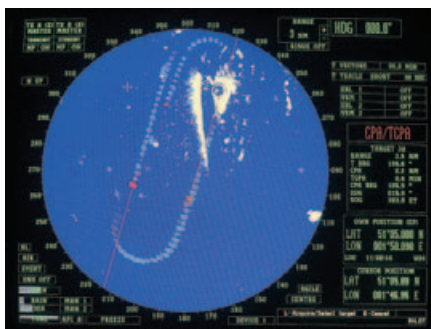
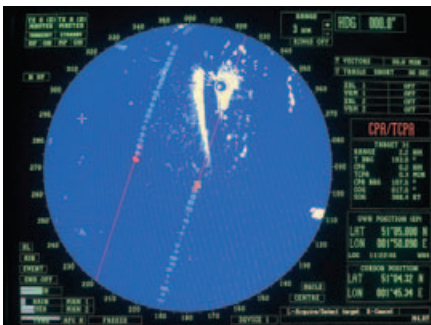
Navalized Display

The BridgeMaster E Navalized Radar display was the first display produced for the BridgeMaster E Naval series. It offers an outstanding selection of naval features and capabilities without the very high cost associated with most naval radars.

Main Features:

Red First Strike

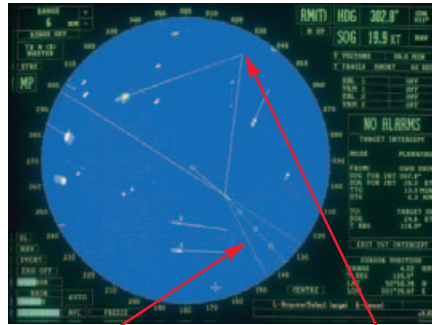
Red First Strike provides an immediate indication of fast moving targets such as fixed and rotary wing aircraft and fast attack craft, by highlighting them in red. This feature improves the operator's reaction time by simplifying the identification of any potential threat.



Red First Strike highlights an aircraft doing a 4G turn

Target Intercept

Target intercept enables the radar operator to plan and implement an interception of any tracked target either by own ship or by another tracked target such as a flotilla member. This is particularly useful in maritime interdiction/ counter drugs operations (MIOPs).



Helicopter Approach Sector

Target Intercept

Helicopter Approach

The ability to display a helicopter approach sector on screen is of great value in assisting with helicopter operations, especially in poor visibility. At a glance, the radar operator is able to check the status of the helicopter's approach and provide guidance to the pilot. The approach sector may be set up on own ship or on any tracked target.

Freeze Frame

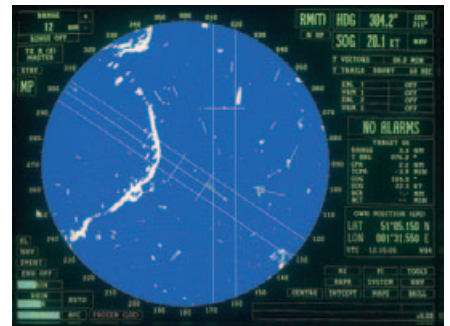
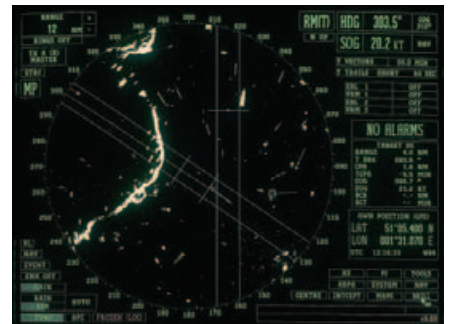
In any naval operation there may be times when it is necessary to impose radar silence. During these times the operator can be provided with a frozen picture of the radar situation immediately before the radar silence was imposed by using the 'Freeze Frame' function. The operator can activate this function locally or it can be imposed remotely.

Station Keeping

In bad weather conditions and at night it is often difficult to maintain station on other surrounding vessels. By using the station keeping feature, the operator is able to set up a sector for each vessel nearby which will allow him to see at a glance if any vessel has moved out of its correct position.

Advanced Index Lines

Many military organizations prefer to use index lines for blind pilotage operations. Sperry Marine's navalized display allows up to 15 index lines to be displayed simultaneously in groups of five. In order to minimize the cluttering effect of these lines, the operator is able to 'clip' the lines to the exact length required. These lines may be prepared in advanced and stored on a memory card for future use.



Range Yards

In addition to the standard radar distance units of nautical miles, kilometers and statute miles found in the BridgeMaster E commercial radar, the Navalized Display also offers the operator the choice of yards, which can be set during commissioning.



Tactical Display

The BridgeMaster E Tactical Display is Sperry Marine's most advanced radar system. It combines unique naval features with powerful configurations and options that supersede that of its predecessor, the highly acclaimed 20V90. Sperry Marine's tactical display is the first marine radar system in the world to be able to display inputs from two totally asynchronous radar heads simultaneously in the same video circle.

Main Features

Asynchronous Secondary Radar Input

A second, totally asynchronous radar input can be displayed on the tactical display. The second input can be from either a BridgeMaster E transceiver or from another manufacturer's transceiver.* Any combination of radars can be used, e.g., two X(I)-band radars or an X(I)-band and an S(E/F)-band or an X(I)-band and an RRB. Using a second input from a BridgeMaster E radar gives the operator the advantage of having full control over both radars through a single display.**

The radar operator is able to track targets from either radar in the usual way and the systems software ensures that the same target can only be tracked once.

600 Knot Target Tracking

The BridgeMaster E tactical display has the capability to track maneuvering targets travelling at speeds of up to 600 knots. The target maneuvers can be up to 4G depending upon target range, antenna rotation rate and local clutter conditions. This makes it an ideal radar for the detection, tracking and interception of fast moving targets.

Sector Transmission

Sector transmission enables the radar operator to define two sectors in which transmission is to take place, radar

silence being maintained on all other bearings. Once defined each sector will remain stable with respect to north even when own ship alters course. This feature is particularly useful when radar silence is required over a particular arc, while maintaining radar watch on a bearing of special interest.

Convoy Sectors

The tactical display has the ability to display NATO standard convoy sectors providing either XY(4W) or polar grids for convoy/battle group position control. The grid is referenced to the guide ship, which may be either own ship or a selected tracked target. Using the XY grid option, the operator has the benefit of being able to rotate the grid when the convoy formation axis changes. If own ship or other vessels within the convoy

deviate from their required station, the grid will provide early notification to the operator.

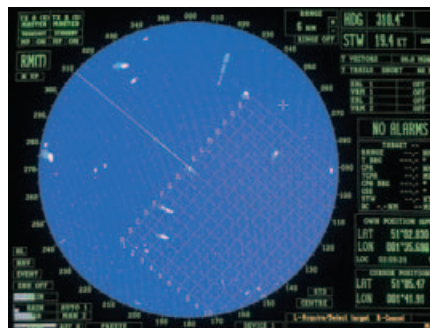
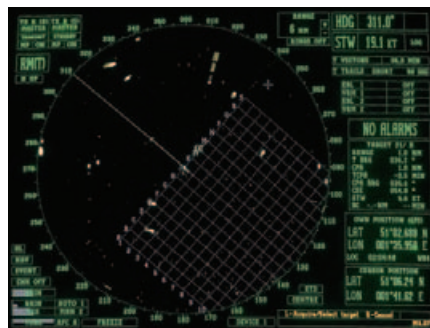
Weapon System Interfacing

The tactical display is able to accept an input from a vessel's weapon system or other shipborne equipment such as a night vision system via an optional communications board. The direction in which it is pointing is displayed as a line on the screen.

It can also output data on designated tracked targets to other systems to provide range and bearing information. Such data can be used to align a night vision or weapon system to a suspicious contact.

Additional Range Scale

Realizing the need for long-range capability, the tactical display has been equipped with an additional range scale of 192nm. This is especially useful when used in association with a long-range radar system as a secondary input to the tactical display.



* Appropriate interfacing units may be required

** The degree of control may vary when using another manufacturers radar system



Image from www.news.navy.mil

Navalized Display Capabilities

In addition to the above, all features found on the BridgeMaster E Navalized Display are included as standard on the tactical display (with the exception of station keeping which is replaced by Convoy Sector).

Other features within the tactical display include Bearing to the Closest Point of Approach (BCPA), and a training simulator, which allows scenarios to be developed for operator training.

BridgeMaster E Transceivers

The BridgeMaster E naval radar range incorporates a number of transceiver options. In addition to the usual S-(E/F)band and X-(I)-band, masthead option, the series includes standard off the shelf (COTS) units, units with additional features and full naval transceivers. All transceivers in the range operate using standard commercial frequencies and therefore appear to potentially hostile targets to be merchant radars rather than military.

Using enhancements in technology, the BridgeMaster E X(I)-band naval transceiver has been developed to act as a centralized distribution unit for radar synchronization. It accepts an external trigger input (200Hz-10KHz) that will allow its transmission to be synchronized with other systems and three independent adjustable pre-trigger signals outputs, which may be used by ownship's EW systems to avoid damage when a radar pulse is being transmitted.

In addition, the BridgeMaster E Naval transceiver has two positive and two negative radar video outputs, so that the video is available for other systems without the need for additional signal inversion circuitry. In the same way there are two sets of bearing data output in serial format (heading marker and incremental azimuth information).

The availability of a wide range of inputs and outputs allows BridgeMaster E radars to interface quickly and easily with other onboard systems without using multiple interfacing units thus reducing the complexity of the system and associated costs.

Total Flexibility

The BridgeMaster E Naval range offers the military user unprecedented flexibility and choice. The range encompasses everything from a simple COTS system through to a powerful tactical configuration. Through its modular design, it is possible to mix COTS elements with military thus minimizing cost by excluding unnecessary capability.

Integration & Interfacing

There is no need to worry about integrating to other onboard systems, previous generations of Decca radars or other units within the BridgeMaster E range. All BridgeMaster E radars have been specially designed to make interfacing and integration easy.

Configuration flexibility

BridgeMaster E Naval Radars are available with a choice of X (I)-band or S (E/F)-band antennas in an array of sizes with masthead or bulkhead transceivers. A variety of display formats are available, which include standard CRT desktop, floor standing and a selection of optional flat panel displays. As a space saving alternative, all BridgeMaster E systems are now available in flat panel kit format.

Sperry Marine can also offer a choice of Man Machine Interface (MMI) to suit all user preferences. It may be fitted with either a trackerball or joystick with the option of a dedicated keyboard incorporating the fundamental radar controls.

There is a BridgeMaster E system suitable for all shapes and sizes of bridge for retrofits or new builds.

BridgeMaster E Series of Naval Radars

Sperry Marine

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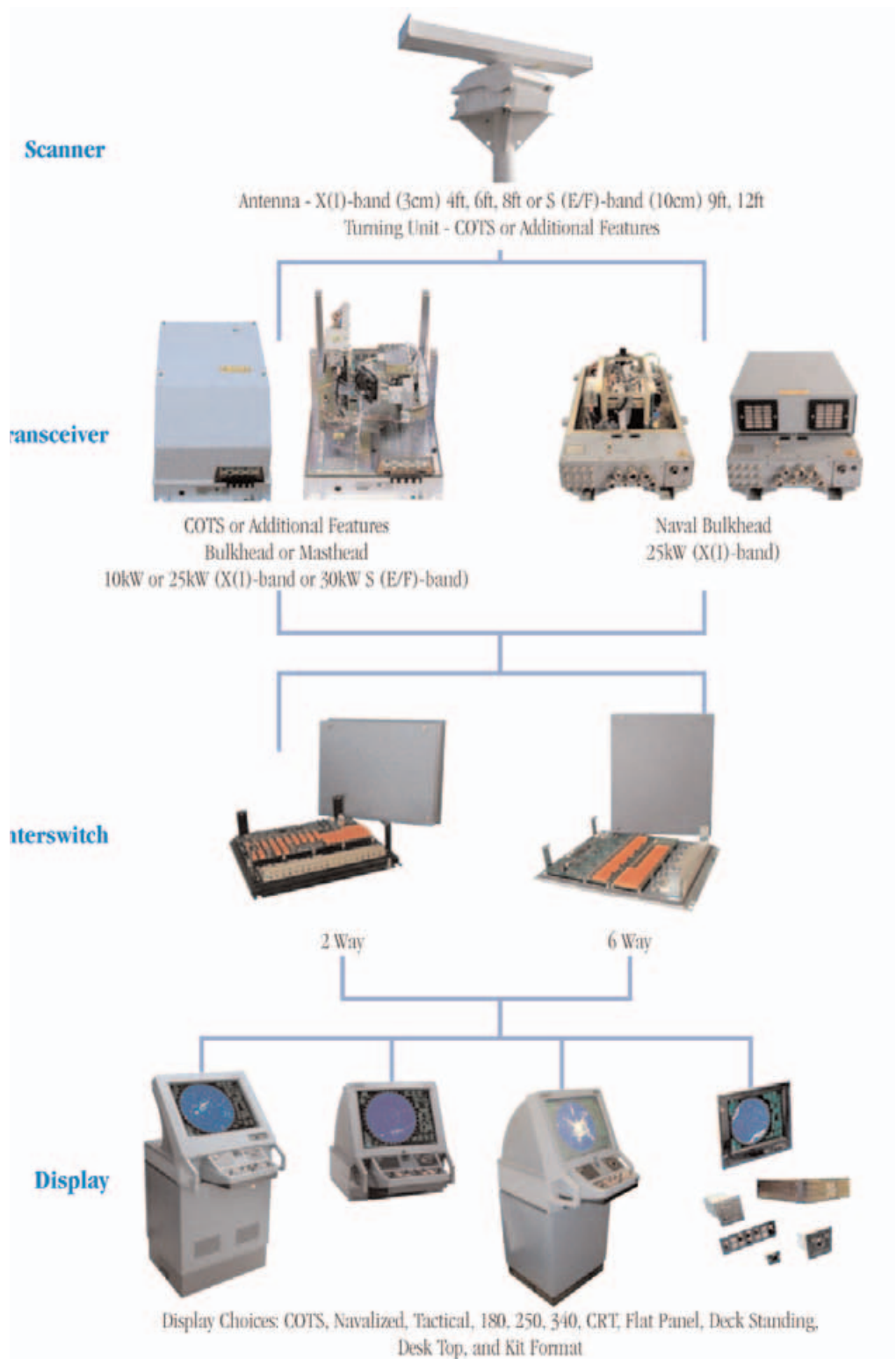
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System Configuration Diagram



Sperry Marine, with worldwide headquarters in Charlottesville, VA, and major engineering and support offices in Melville, NY, New Malden, England, and Hamburg, Germany, is part of the Northrop Grumman **Electronic Systems** sector.

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