9.1 Disclaimer

For disclaimer see *page 218*.

9.2 Weather application pre-requisites

Before you can use the weather application you need to:

- Obtain a Sirius ID number. (For full details, see the Sirius Installation handbook.)

- Customize a page set to include a weather application.

- Specify the weather elements that you wish to display.

- For the G-Series system to display weather data, it must be connected to an SR100 Sirius Receiver which is supplying the appropriate data.

- For your vessel to be displayed and for weather reports to be available at your position, you need a fix for your boat's position and be within range of Sirius satellites.

For further information on installing and commissioning a weather receiver, see the SR100 Weather Receiver Installation Guide.

Creating a weather window

A weather application window is not included in the pre-configured page sets. You therefore need to customize a page set to include one. For information about how to do that, see *Selecting an application page* on *page 26*.

9.3 Weather application setup

With a weather window active, the Weather Setup Menu is available from the system Setup menu.

To open the Weather Setup Menu

1. With a weather window active, press the **MENU** button.

2. Select **Weather Setup** menu.

| FUNCTION	OPTION
Sirius Weather User ID Details the Weather ID obtained from Sirius and keyed in on your display.	(as advised)
Wind Symbol Graphic used for wind symbol	Arrow Barb
Marine Watchbox Alerts Enables alert when watchbox is issued.	OFF 50nm 150nm 300nm 500nm ALL

Specifying meteorological elements

You can choose to view textual weather reports or animated graphics for specific weather element.

To specify meteorological elements

1. Make a weather window active.

2. Press the **DISPLAY GRAPHICS** softkey.

3. Select a weather element and make the appropriate setting for each element you are interested in.

4. Press **OK**.

9.4   The weather display

The main features of the weather display are shown below.
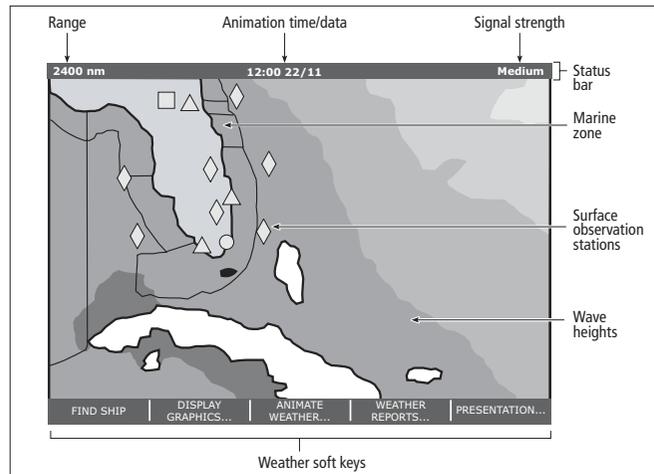
Note: Time shown can be either for the time of latest data or animation time/date, as appropriate.

9.5   Moving around the weather map

When you open the weather application, a world map is displayed. Use the cursor to move around the map and the range button to zoom in and out.

To re-centre the map on your boat, use the **FIND SHIP** softkey.

9.6   Placing waypoints

The waypoint button operates as normal when a weather window is active, but you need to make a radar or chart window active to see the waypoints.
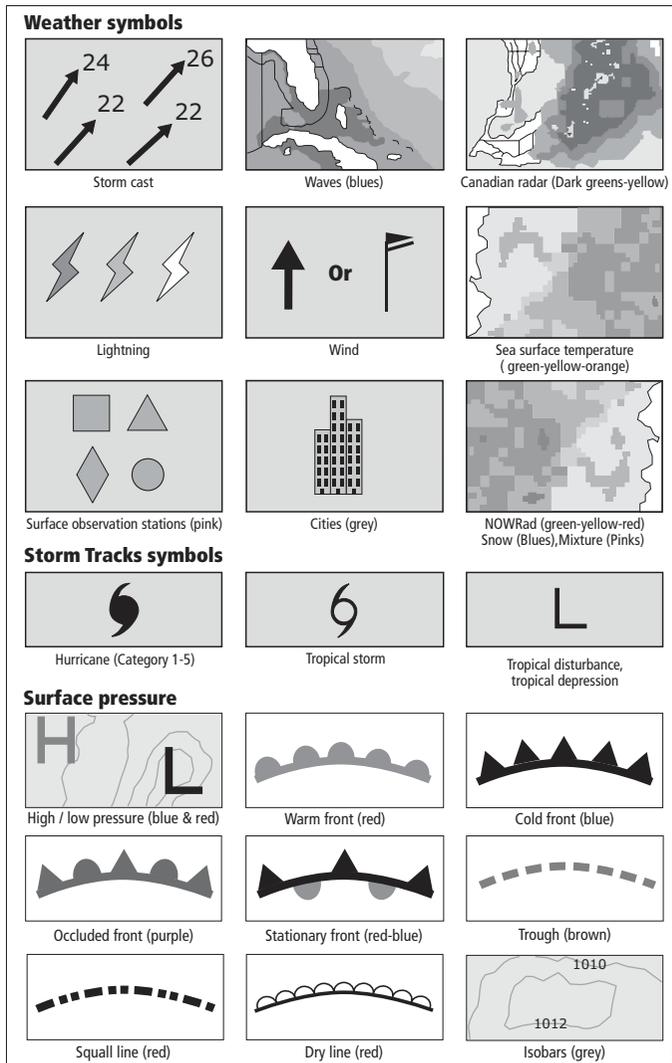
9.7   Weather symbols

The following table summarizes the weather symbols used by the G-Series system. The section after it gives more information about each.

Many symbols have additional data associated with them. If this is the case, the object window will contain the text "OK for more info".

To display additional data for meteorological objects
1. Highlight the object.
2. If a pop-up indicates that additional data is available, press **OK** to see it.

Weather symbols

Storm cast

Waves (blues)

Canadian radar (Dark greens-yellow)

Lightning

Wind — Or

Sea surface temperature (green-yellow-orange)

Surface observation stations (pink)

Cities (grey)

NOWRad (green-yellow-red) Snow (Blues),Mixture (Pinks)

Storm Tracks symbols

Hurricane (Category 1-5)

Tropical storm

Tropical disturbance, tropical depression

Surface pressure

High / low pressure (blue & red)

Warm front (red)

Cold front (blue)

Occluded front (purple)

Stationary front (red-blue)

Trough (brown)

Squall line (red)

Dry line (red)

Isobars (grey)

Precipitation (NOWRad)

NOWRad displays the type and level of precipitation:

Color	Precipitation type	Intensity (dBz)
Light green	Rain	15-19
Medium green	Rain	20-29
Dark green	Rain	30-39
Yellow	Rain	40-44
Orange	Rain	45-49
Light red	Rain	50-54
Dark red	Rain	55 +
Light blue	Snow	5-19
Dark blue	Snow	20 +
Light pink	Mixed	5-19
Dark pink	Mixed	20 +

Storm Cast

Storm cast arrows indicate the direction and speed of a storm.

Speed of storm

Direction of storm
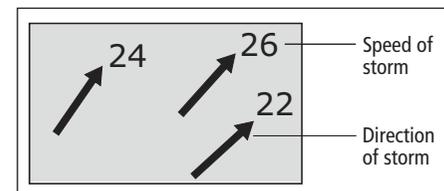
Sea surface temperature (SST)

The temperature range of the sea surface is indicated by shading, from low temperatures to higher temperatures through blue-green-yellow-orange-red.
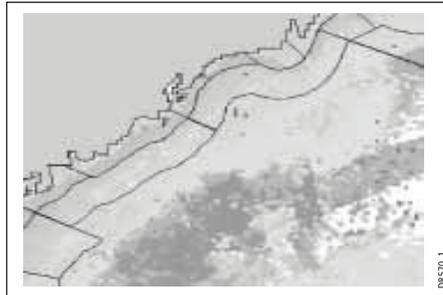
Canadian radar

Canadian radar shows the intensity of precipitation for Canada. Unlike NOWRad, Canadian radar does not show the precipitation type.

Color	Intensity (mm/hr)
Transparent	0.00-0.20
Light green	0.21-1.00
Medium green	1.01-4.00
Dark green	4.01-12.00
Yellow	12.01-24.00
Orange	24.01-50.00
Light red	50.01-100
Dark red	100.01 +

Tracking storms

You can use the STORM TRACK function to monitor significant storms in your area. These include tropical disturbances, depressions, storms and cyclones, hurricanes, typhoons and super-typhoons.

The G-Series system displays the path the storm has taken, its current and forecast position, the wind radii (for its current position only), and its current direction and speed of travel.

Storm Tracks symbols

These symbols are displayed on screen in three different colours:
Grey - historical, Red - current, Orange - forecast

Hurricane (Category 1-5)   Tropical storm   Tropical disturbance, tropical depression

Move the cursor over the symbol for additional information.

Tropical storm data

Tropical storm data can be displayed for a selected storm. The data includes:

- The storm's name, type, date and time.
- The position, direction and speed of travel of the storm.
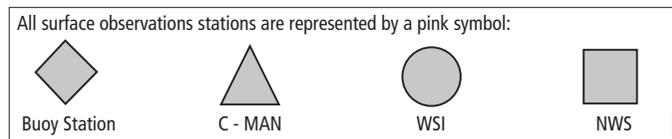- The pressure and maximum wind speed and gusts.

Lightning

The system puts a lightning symbol at every cloud-to-ground strike recorded within the last 5, 10 and 15 minutes.
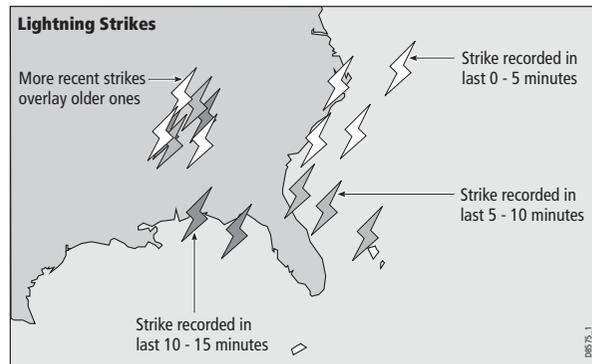
Surface observation stations

You can view current or historical weather data at surface observation stations.

City forecasts

The Cities option gives you access to details of city weather forecasts. Forecasts for up to three days may be available.

Wind

This option displays the current wind direction and magnitude. You can choose (using the Weather Setup Menu) to display the wind symbol as either an arrow or a wind barb. Wind arrows give an indication of wind speed - the larger the arrow the stronger the wind.
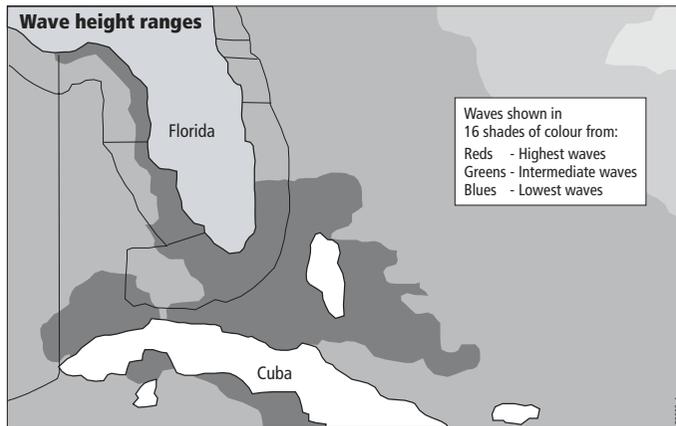
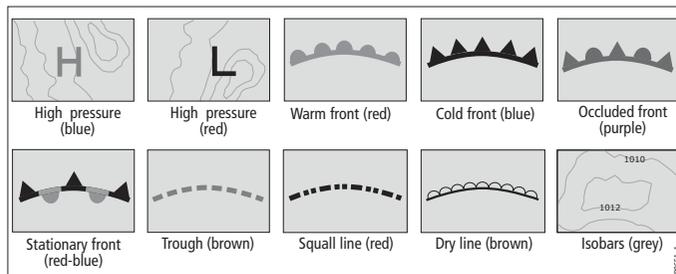Wind barbs give a more precise representation of wind speed:
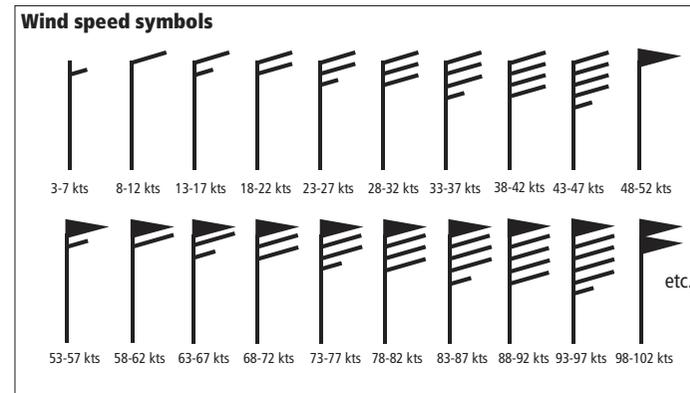
Waves

This option gives you wave period, wave direction and wave height data.
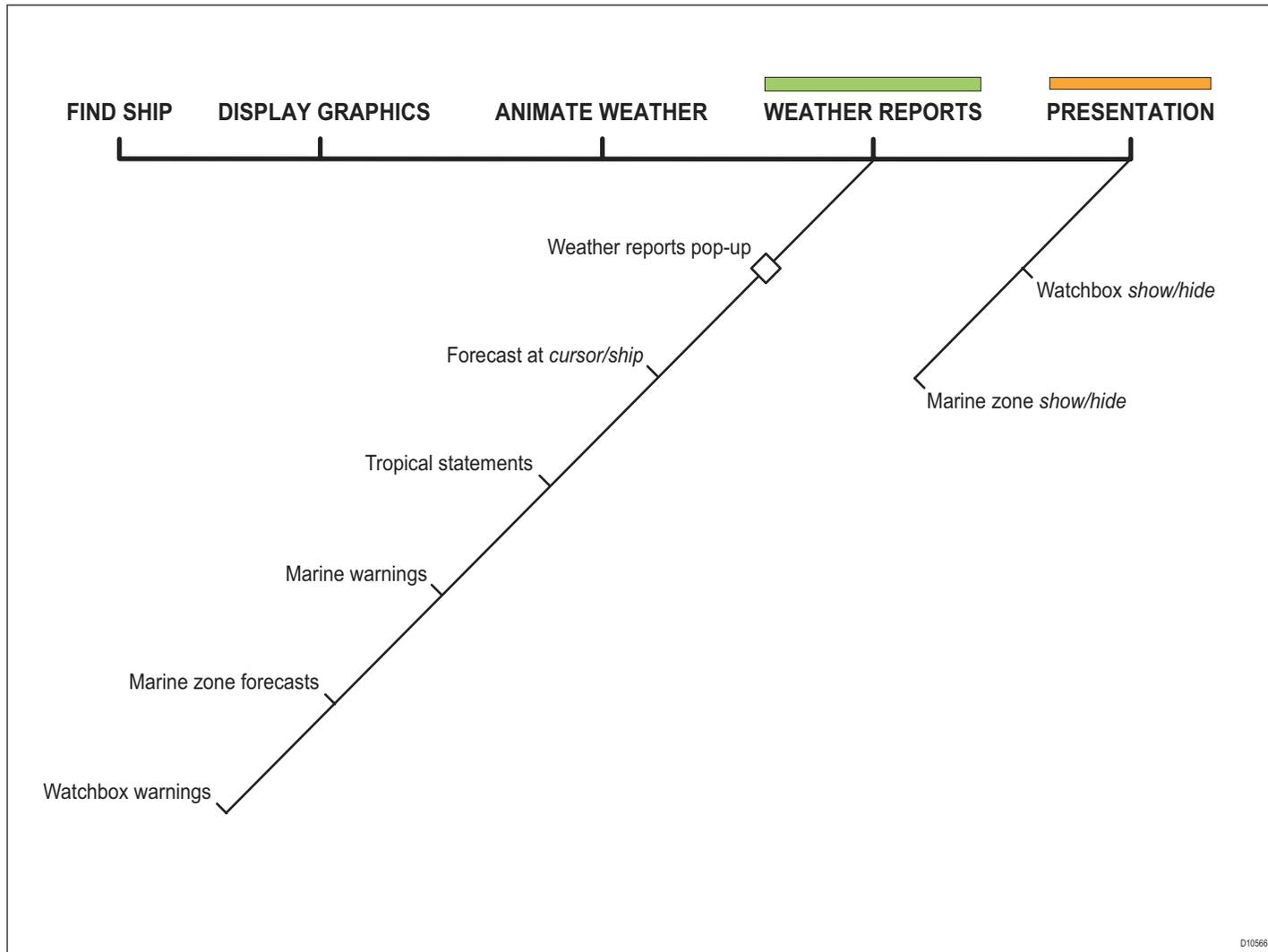
Wave height is displayed in 16 levels:

Wave height ranges

Florida

Cuba

Waves shown in
16 shades of colour from:

Reds   - Highest waves
Greens - Intermediate waves
Blues   - Lowest waves

Surface pressure

This option shows surface pressure data using standard meteorological symbols.

High pressure (blue) | High pressure (red) | Warm front (red) | Cold front (blue) | Occluded front (purple)

Stationary front (red-blue) | Trough (brown) | Squall line (red) | Dry line (brown) | Isobars (grey)

9.8 Weather toolbar

Options available under the default weather toolbar are summarized in the following two diagrams.

FIND SHIP   DISPLAY GRAPHICS   ANIMATE WEATHER   WEATHER REPORTS   PRESENTATION

Weather reports pop-up

Watchbox *show/hide*

Forecast at *cursor/ship*

Marine zone *show/hide*

Tropical statements

Marine warnings

Marine zone forecasts

Watchbox warnings

D10566-1

FIND SHIP   DISPLAY GRAPHICS   ANIMATE WEATHER   WEATHER REPORTS   PRESENTATION

Weather graphics pop-up

Wave Direction

Wave Period

Animate type *forecast/n-rad*

Forecast *win/wav/pres*

Animate *on/off*

Pause *on/off*

D10566-1

9.9   Viewing data for a specific position

It is possible to display the sea temperature, wind speed and direction, wave height, precipitation intensity and type for a location specified by you. The marine zone is also shown.

To view data for a specific position

1. Move the cursor to the required position.
2. Press **OK**.

9.10 Animated weather graphics

The animated weather feature allows you to view an animation from the current time for:

- The forecast for wind and wave activity or surface pressure.
- The weather radar history loop (NOWRad).

You cannot display information by moving the cursor over a symbol when animation is running.

The range and trackpad controls do however remain operable, provided the PAUSE option has not been selected. Ranging or panning causes the animation to restart.

The animation stops if you press any of the ACTIVE, PAGE, DATA, WPS/MOB, or MENU buttons, or if you close the window containing the animation.

To set up an animated weather graphic

1. Press the **ANIMATE WEATHER** softkey.
2. Toggle to the required setting on the **ANIMATE TYPE** softkey.
3. Toggle to the required option on the **FORECAST** softkey (wind, wave or surface pressure).

To run an animation

1. Press the **ANIMATE WEATHER** softkey.
2. Toggle to **ON** with the **ANIMATE** softkey.

The status bar indicates the time-frame displayed. The weather radar history provides up to eight images of data covering the last two hours, at 15-minute intervals.

To pause an animation

1. Press the **PAUSE** softkey.

9.11 Viewing weather reports

The following weather reports are available:

- Tropical statements.

- Marine warnings.
- Marine zone forecasts.
- Watchbox warnings.

Each report type may contain several bulletins; the window can be scrolled to view all the data.

To view weather reports

1. Press the **WEATHER REPORTS** softkey.
2. Press the appropriate softkey for the type of report you want.
3. If available, select the relevant option on the **FORECAST AT** softkey (ship or cursor).

Watchbox warnings

When a tornado or thunderstorm warning is received, the system generates a watchbox alert:

Warning type and period for which warning is valid

Watchbox report text
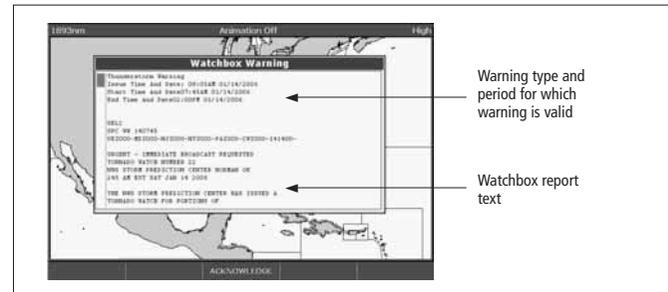
Use the trackpad or rotary control to scroll through the report.

You can set the range for the watchbox alert to: OFF; 50; 150; 300; 500 and ALL using the weather setup menu. Any watchbox outside of the selected range will not trigger the alarm. (Units vary according to the configuration of your system.)

You can switch off the marine watchbox alert (using the Weather Setup Menu, see) or set the watchbox status to hide. Reports continue to be added to the database, irrespective of the alert and show/hide status.

To clear a watchbox alert

1. Press **ACKNOWLEDGE**.

The alert is removed from the display but you can still see the watchbox warning by using the Weather Reports softkeys.

Displaying marine watchboxes

When the marine watchboxes feature is ON (default), any regions for which a watchbox is valid are highlighted on the weather map as a red polygon.

Watchbox alert warning area
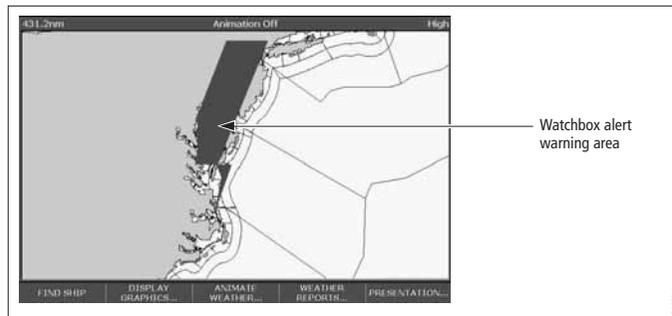
To show or hide watchboxes

1. Press the **PRESENTATION** softkey.
2. Toggle to the appropriate setting on the **WATCHBOX** softkey.

To display watchbox data

1. Highlight the watchbox.
2. Press **OK** to display the Object Info pop-up screen.
3. Press **OK** again to display the watchbox data.

9.12 Troubleshooting

Problem	Reason
Boat symbol not displayed	No position fix
FIND SHIP softkey greyed-out	No position fix
Boat symbol drawn as a solid circle	No heading or COG available
'No Connection' message is displayed in the status bar	No signal received from SR100; check cabling and that SR100 is powered.

Chapter 10: Navtex

You can use the G-Series system to view marine safety information (including weather forecasts and marine warnings) if you have a Navtex integrated receiver connected to your system.

Major areas of coverage include the Mediterranean Sea, The North Sea, coastal areas around Japan and areas around the North American continent.

Chapter contents

10

10.1 Setting up Navtex

Before you are able to view Navtex messages you need to:

- Specify the baud rate of your Navtex receiver.

- Enable the appropriate category of Navtex messaging (see).

10.2 Selecting message alert categories

On initial power up, the system provides alerts for all message categories listed in the Navtex Alert Menu. You can switch off any category except Navigation Warnings (Category A), Meteorological Warnings (Category B) and Search and Rescue information (Category D).

To select the message alert categories

1. Press **MENU** to open the Setup menu.
2. Select **Navtex Messages** and open the **Navtex Message List**.
3. Press the **SETUP ALERTS** softkey.
4. Select the appropriate category and toggle its status to the required setting.

10.3 The Navtex message window

Once correctly connected to the Navtex unit, the system will display messages it receives from within your chosen categories:
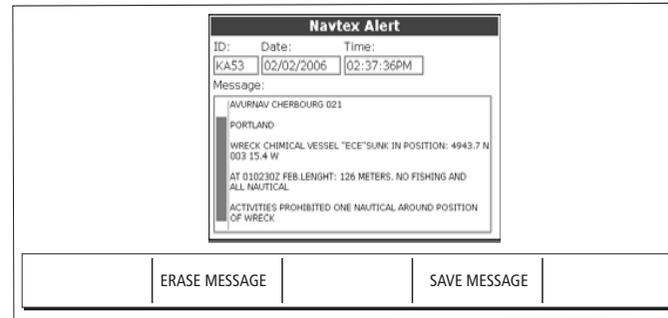
When you receive a message, the toolbar gives you the option to erase or save the message as appropriate. The G-Series system can save up to 100 Navtex messages. Once this capacity is reached, it starts to overwrite the oldest messages with newer ones.

To view saved messages

1. Press **MENU** to open the Setup menu.
2. Select **Navtex messages**.
3. Select the appropriate message from the list.

The message text is displayed in the right-hand column. Scroll through it to see the complete text.

You also have the option to sort the message list by date, station or category, erase a message, or set up the message alerts.

10.4 Managing Navtex messages

Management options for Navtex messages allow you to:

- Select categories for which the G-Series system will show alerts.
- Erase messages.
- Sort the message list.

Sorting the message list

By default the message list sorts by the date and time the message was received (DATE) with the most recent message at the top. If required, you can sort the list by station identifier (STN) or by message category (CAT).

To sort the message list

1. Press **MENU** to open the Setup menu.
1. Select **Navtex Messages** and open the **Navtex Message List**.
2. Toggle to your preferred sorting method on the **SORT LIST** softkey.

Chapter 11: Radar

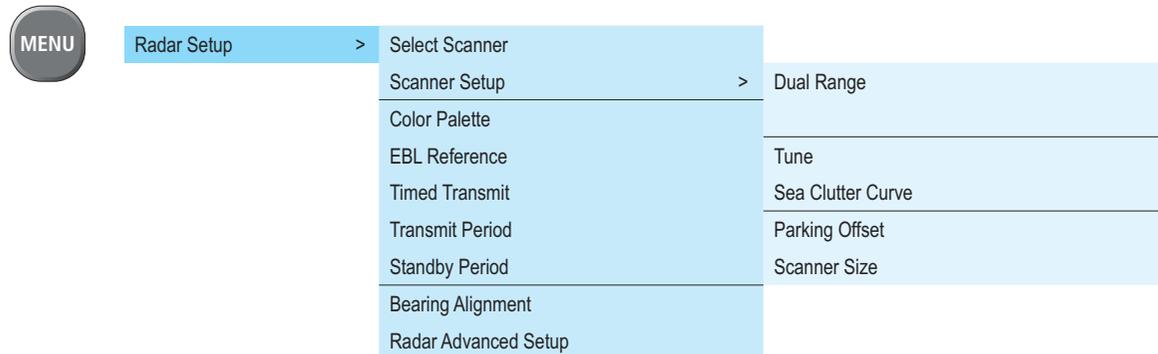The G-Series can be used with digital radar scanners. Digital scanners offer:

• Improved target definition.

• Full-color image.

• Scan-to-scan.

• SuperHD option. Super HD effectively increases the transmitter power by a factor of at least two, and re-duces the beamwidth by a similar amount.

• Dual-range operation.

• Simultaneous operation of two radar scanners.

Chapter contents

11.1 Radar setup

The Radar Setup Menu lets you customize the way the radar operates. Changes you make in this menu are kept when you remove power from the G-Series system.

.

MENU	Radar Setup >	Select Scanner		
		Scanner Setup >	Dual Range	
		Color Palette		
		EBL Reference	Tune	
		Timed Transmit	Sea Clutter Curve	
		Transmit Period	Parking Offset	
		Standby Period	Scanner Size	
		Bearing Alignment		
		Radar Advanced Setup		

Note: The radar needs to be receiving heading and position data for full functionality.

Select scanner

Selects which scanner is displayed in the active radar window.

Scanner setup

The scanner setup option lets you customize various aspects of the scanner's behavior.

Dual range

If dual range is set to on, the system allows you to view two ranges simultaneously in one window.

Short range gives you a maximum range of 3 nautical miles; long range provides standard ranges.

When dual range is enabled, chart overlay and synchronization functions are disabled. If you already have chart overlay or synchronization turned on, dual range is not available.

Tune

The tune function is used to fine-tune the scanner's receiver for maximum target returns on the display.

Auto mode: recommended

In AUTO mode, the radar tunes itself automatically on all range scales.

This is the default mode and it is recommended that you leave the tune function in auto mode to ensure that the radar receiver is always tuned to receive the maximum signal.

Manual (MAN) mode

If you do set the tune function to MANUAL, you will need to adjust it about 10 minutes after you have turned on the radar, since the required setting will change after the magnetron has warmed up.

Adjust the control to obtain the maximum signal strength (indicated by the eight-step horizontal bar). If you cannot tune the radar successfully, refer to the Installation Guide.

Sea clutter curve

Adjust the system's sensitivity to sea clutter. The steepest setting is 1 and the shallowest is 8. The default setting is 4.

Parking offset

The default parking offset is 0 degrees: the scanner aligns with the pedestal, facing forwards.

With parking offset selected you can use the rotary controller to adjust the parking offset from 0 to 358 degrees in steps of two degrees.

This setting change is only available when the digital radar is set to Off or Standby. The changes you make are applied at the end of the next transmit cycle.

To open the radar setup menu

1. Make a radar application window active.
2. Press the **MENU** button.

Edit name

The edit name softkey is available when the radar setup menu is open. This option allows you to name scanners. The default names are 1 for the first scanner and 2 for the second scanner if there is one. Names can be up to five characters long, and are displayed on the title bar.

Radar alarms

For information about the radar-specific alarms you can configure, see *Alarm Setup Menu* on *page 194*.

Note: Until you are familiar with interpreting the radar display, take every opportunity to compare the radar display with your physical surroundings. Note the location of boats, buoys and coastal structures and their corresponding echoes on the radar display. Practice harbor and coastal navigation during daylight hours and in clear weather conditions.

11.2 Controlling power to the scanners

You control power to the radar scanners from the power control toolbar, which you open with the power button on the G-Series keyboard:

D10569-1
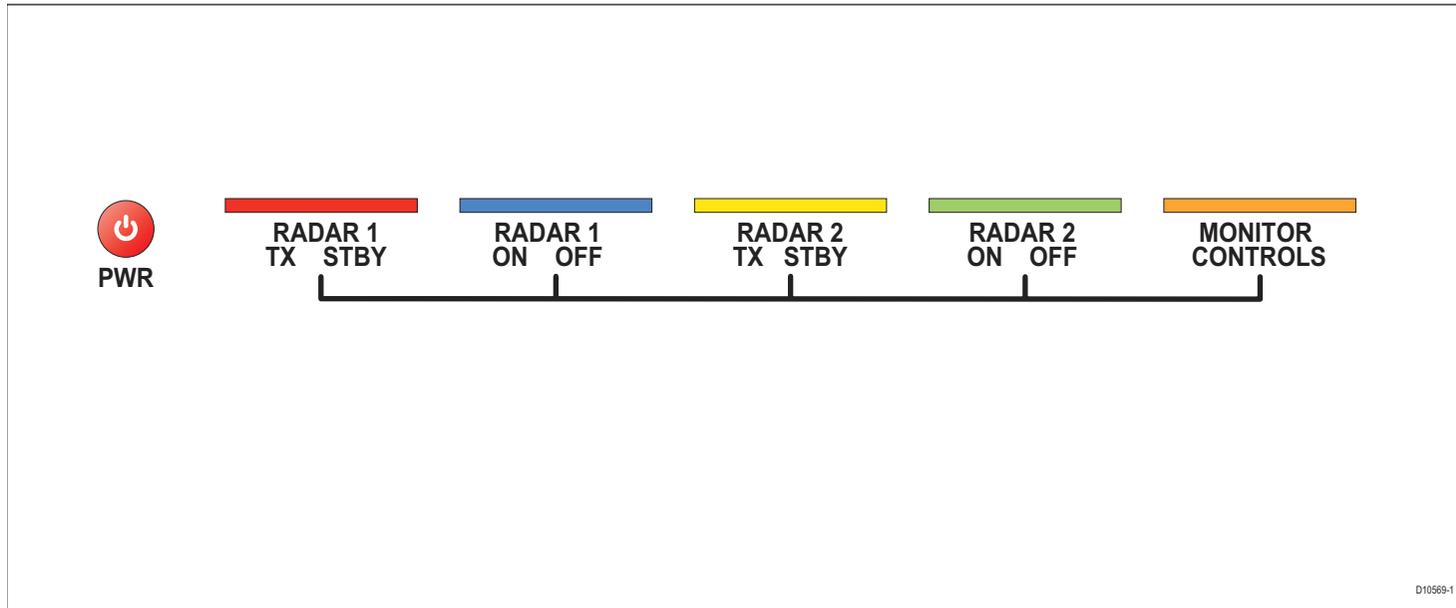
There are three power states for the radar scanners:

• **Off.**

• On and in **standby**: powered up and ready to transmit.

• On and in transmit (**TX**): rotating and transmitting.

The default power mode is on and in standby.

To change scanner power states

1. Press the **power** button.

2. Toggle to your desired power state on **RADAR 1** or **RADAR 2** as appropriate.

You can turn the radar scanners off even if there is no display, or if the display is blank for any reason. In this situation, a message on the keyboard LCD screen prompts you.

To switch scanners off when the monitor is blank

1. Press the **power** button.
   A prompt on the keyboard LCD says "**To switch radars off press power**".

2. Press the **power** button.

Radar status

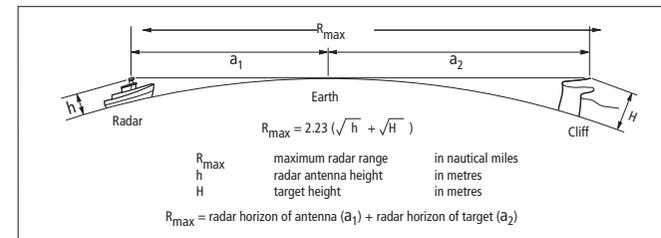The following table summarizes the various scanner states and associated status icons.

Status	Icon	Description
Transmit (TX)	(Rotating icon)	**Scanner on and transmitting**. This is the usual mode of operation.
Standby (STDBY)	(static icon)	**Scanner powered on but not transmitting; antenna not rotating**. This is a power-save mode used when radar is not needed for short periods. When you return to transmit mode, the magnetron does not need to warm up. This is the default mode.
Off	(grayed-out icon)	**Scanner powered off.** When radar is not required.
Timed transmit	(rotating/static icon)	**Scanner switches between on/trans-mitting & standby mode.** Power save mode when constant use of radar not required. To set up this option, see

11.3 Radar range and image quality

Radar operates by transmitting radio pulses, then detecting the reflections as the pulses bounce back from objects within radar range. The reflections are processed and displayed on-screen as 'echoes'.

Range

Radar range is limited by the height of your scanner and the height of the target, as illustrated below:

$$R_{max} = 2.23 (\sqrt{h} + \sqrt{H})$$

R_{max}	maximum radar range	in nautical miles
h	radar antenna height	in metres
H	target height	in metres

R_{max} = radar horizon of antenna (a_1) + radar horizon of target (a_2)

The table below gives the approximate range for various antenna and target heights.

Antenna height (m)	Object height (m)	Range (nm)
3	3	7.7
3	10	10.9
5	3	8.8
5	10	12

Image quality

Not all radar echoes are produced by valid targets. Spurious echoes may be caused by:

- Side lobes

- Indirect echoes

- Multiple echoes

- Blind sectors

- Sea, rain or snow clutter

- Interference

Through observation, practice, and experience, you can generally detect these conditions very quickly and use the radar controls to minimize them.

Side lobes

Side lobe patterns are produced by small amounts of energy from the transmitted pulses that are radiated outside the narrow main beam.

The effects of side lobes are most noticeable with targets at short range (normally below 3 nm) and with large objects. Side lobe echoes form either arcs on the radar screen similar to range rings, or a series of echoes forming a broken arc.
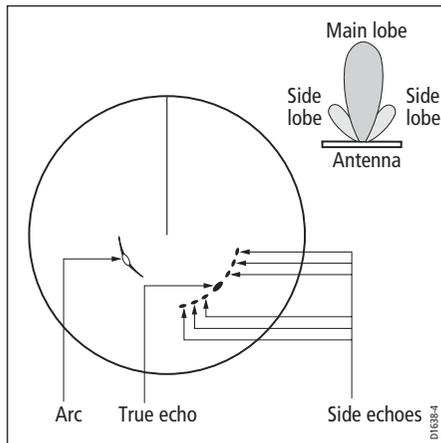

Indirect echoes

There are several types of indirect echoes, or 'ghost' images. These sometimes have the appearance of true echoes, but in general they are intermittent and poorly defined.
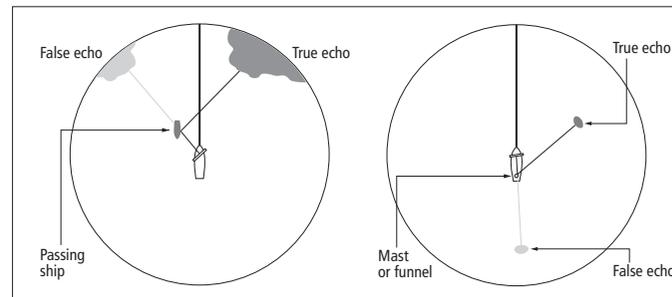
Multiple echoes

Multiple echoes are uncommon but can occur if there is a large object with a wide vertical surface at a comparatively short range. The transmitted signal bounces between the object and your own vessel, producing multiple echoes. The false echoes are displayed beyond the range of the true target echo, but on the same bearing.
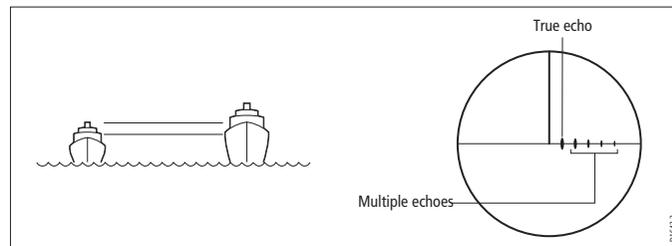
Blind sectors

Obstructions such as funnels and masts near the radar antenna can obstruct the radar beam and cause radar shadows or 'blind sectors'.
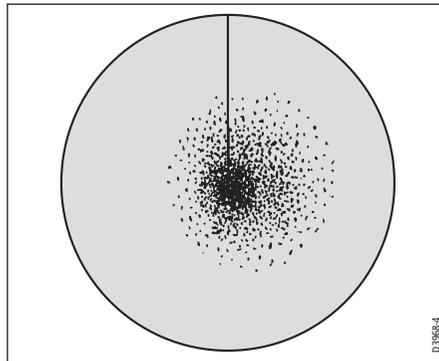
If the obstruction is relatively narrow, there will be a reduction of the beam intensity, though not necessarily a complete cut-off. However, with wider obstructions there can be a total loss of signal in the shadow area. There might also be multiple echoes which extend behind the obstruction.

Blind sector effects can normally be minimized by careful selection of the scanner site prior to installation.

Sea clutter

Radar returns from waves around the vessel can clutter the centre of the radar picture, making it difficult to detect real targets. Such 'sea clutter' usually appears as multiple echoes on the display at short range, and the echoes are not repetitive or consistent in position.
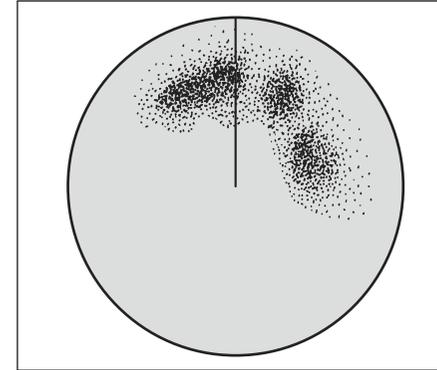
In high winds or extreme conditions, sea clutter can produce an almost solid disc on a radar display.

These returns sometimes appear as large hazy areas, depending on the intensity of the rainfall or snow in the storm cell.

Mutual radar interference

This can occur when two or more radar-equipped vessels are operating within range of each other. The interference usually appears as a spiral of small dots from the display centre, and is most marked at long ranges.

Rain or snow clutter

Radar detects rain and snow. Returns from storm areas and rain squalls consist of countless small echoes which continually change in size, intensity and position.

11.4 Radar window overview
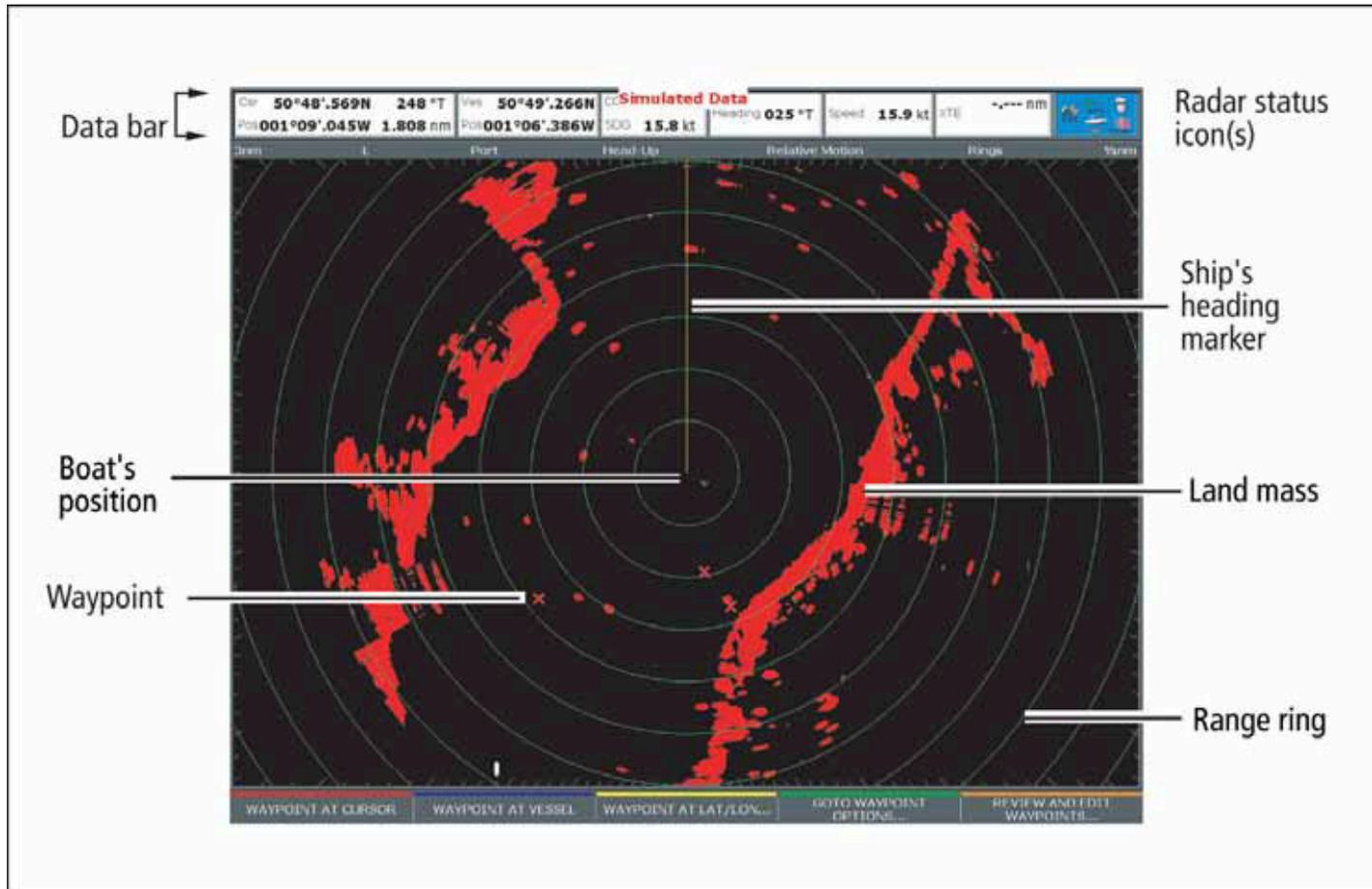
Your position

By default your boat is shown at the centre of the radar display and your dead-ahead bearing is indicated by a vertical line known as the Ship's Heading Marker (SHM).

Operation modes

The radar gives excellent results in one of the four preconfigured operation modes under the **GAIN** softkey. Select the mode that best suits your circumstances: attempting to make manual adjustments to the settings could degrade your image. (However, this facility is available.)

See for more information.

Other vessels or objects

On-screen targets may be large, small, bright or faint, depending on the size of the object, its orientation and surface type.

Remember that the strength of an object's echo may not be proportional to the physical size of the object. For example, a nearby object might produce an echo of the same strength as a more distant, but larger, object.

With experience, the approximate size of different objects can be determined by the relative size and brightness of the echoes.

Factors affecting echo strength

• The physical size of the reflecting object.

• The material from which the object is made. Metallic surfaces reflect signals better than non-metallic.

• Vertical surfaces, like cliffs, reflect the radar signal better than sloping surfaces, like sandbanks.

• High coastlines and mountainous coastal regions can be observed at longer radar ranges. Therefore, the first sight of land

may be a mountain several miles inland from the coastline. Although the coastline may be much nearer, it may not appear on the radar until the vessel is closer to shore.

• Some targets, such as buoys and small boats, can be difficult to discern, because they do not present a consistent reflecting surface as they bob about in the waves. Consequently, these echoes tend to behave erratically on the radar screen.

• Buoys and small boats often resemble each other, but boats can often be distinguished by their motion.

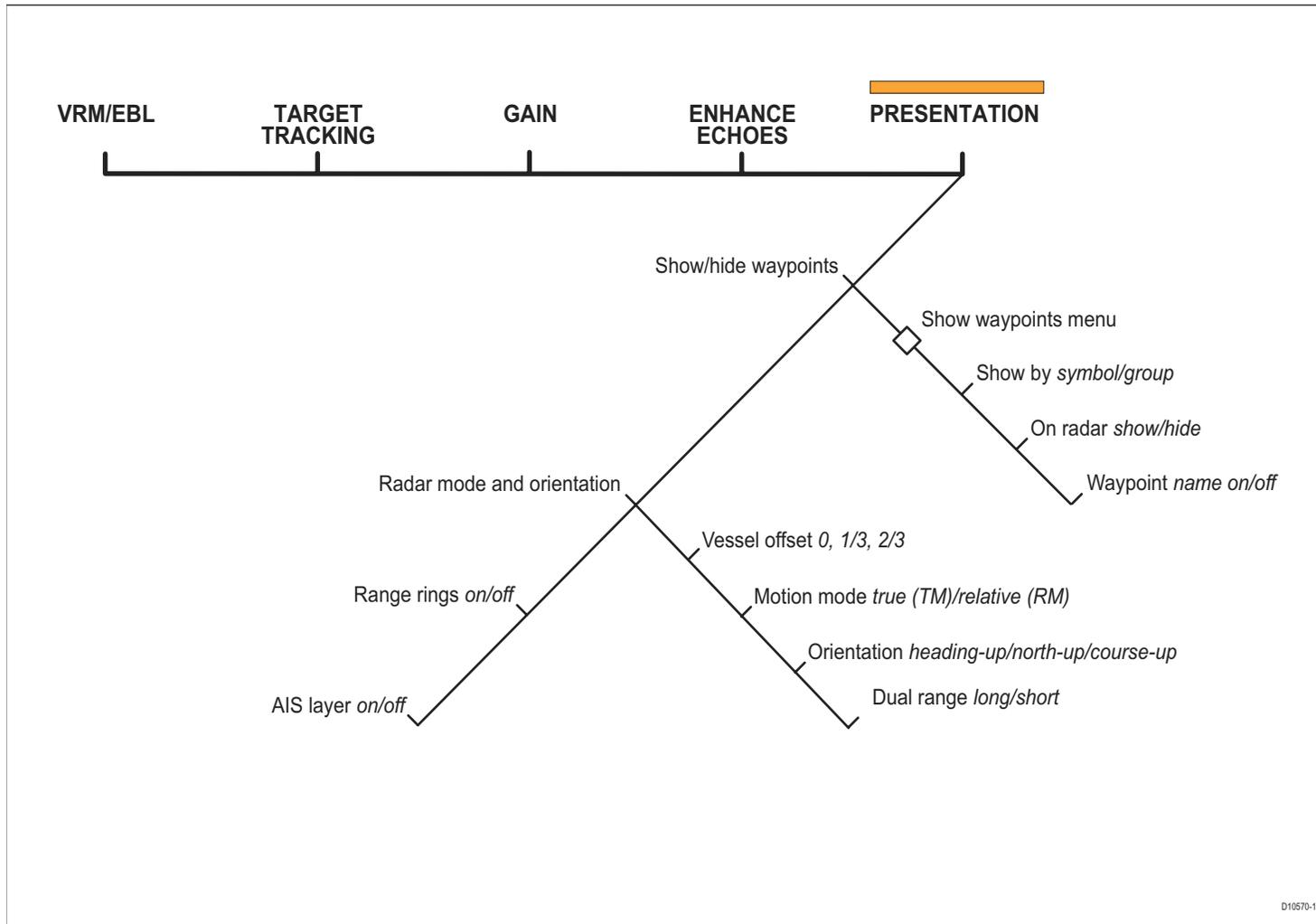• Trees and shrubbery do not reflect radar. Thus, they can disguise the shape of nearby land.

11.5 Using waypoints with the radar

You can use waypoints in the radar application for navigation (just like in the chart application), using the **WPTS/MOB** button.

You can also edit waypoints from within the radar application.

For full details on using waypoints, see *Chapter 4:Using Waypoints* on page 35 and *Chapter 5:The Chart Application* on page 43.

Chapter 11: Radar

11.6 Radar display options

VRM/EBL

TARGET TRACKING

GAIN

ENHANCE ECHOES

PRESENTATION

Show/hide waypoints

Show waypoints menu

Show by *symbol/group*

On radar *show/hide*

Waypoint *name on/off*

Radar mode and orientation

Vessel offset *0, 1/3, 2/3*

Range rings *on/off*

Motion mode *true (TM)/relative (RM)*

Orientation *heading-up/north-up/course-up*

AIS layer *on/off*

Dual range *long/short*

D10570-1

The presentation softkey on the radar toolbar gives you control over:

- Waypoint behavior
- EBL
- Radar mode and display orientation
- Range rings
- AIS

These radar settings are locally applied, which means they affect only the scanner and display on which you are working.

Orientation

Radar *orientation* refers to the relationship between the radar display and your direction of travel. There are three orientation modes:
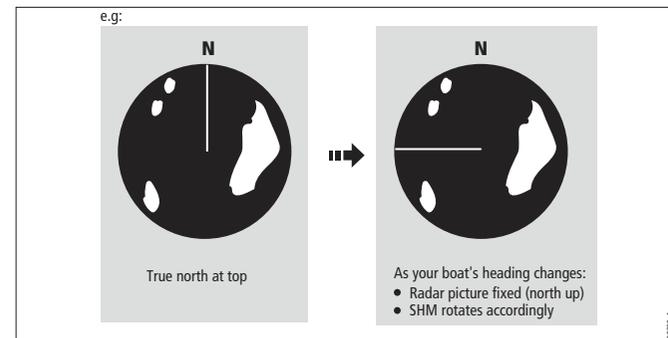
- Head up
- North up
- Course up

These orientation modes are used in conjunction with motion modes (see) to control how your vessel's progress is shown on screen.

Heading-Up (H-UP)

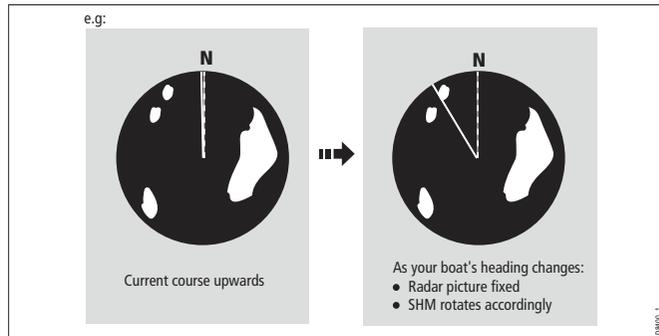This is the default mode for the radar application.
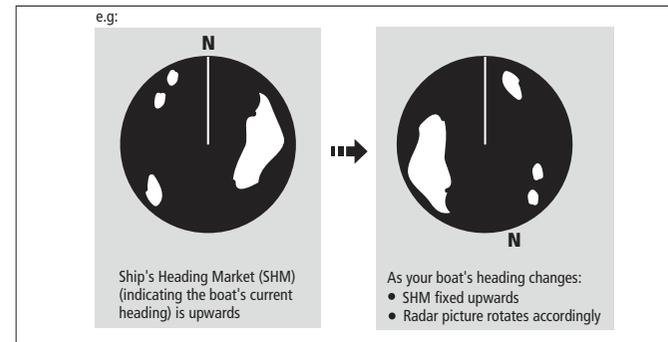
North-Up (N-UP)

If heading data becomes unavailable while in this mode, a warning message will be shown, the status bar shows North-Up in brackets and the radar uses 0° heading in relative motion. When heading data becomes available once more, North-Up mode is reinstated.

It is not possible to select Head Up mode when the motion mode is set to True.

Course-Up (C-UP)

e.g:

N

N

Current course upwards

As your boat's heading changes:
● Radar picture fixed
● SHM rotates accordingly

If you select a new course, the picture will reset to display the new course upwards.

The reference used for Course-Up depends upon the information available at a given time. The system prioritizes this information in the following order:

1. Bearing from origin to destination (your intended course).
2. Locked heading from an Autopilot.
3. Bearing to waypoint.
4. Instantaneous heading.

If heading data becomes unavailable while in this mode a warning message is displayed; the status bar puts Course-Up in brackets to show it is suspended; and the radar uses 0° heading in relative motion mode.

When heading data becomes available again, Course-Up mode is reinstated.

To select an orientation mode

1. Press the **PRESENTATION** softkey.
2. Press **RADAR MODE & ORIENTATION**.
3. Choose your preferred setting under the **ORIENTATION** softkey.

The selected orientation mode is displayed in the status bar.

Setting the motion mode

Motion modes control how your progress is represented on the display. The selected motion mode is displayed in the status bar. If no position data is available, the status bar shows the motion mode in brackets.

There are two motion modes:

• Relative motion
• True motion

The default setting is relative motion.

Relative motion (RM) with optional vessel offset

When the motion mode is set to Relative, the position of your boat is fixed on the screen and all the targets move relative to the boat.

You can specify whether the boat is fixed in the centre of the window (0 offset) or offset by 1/3 or 2/3:

0 offset   1/3 offset   2/3 offset
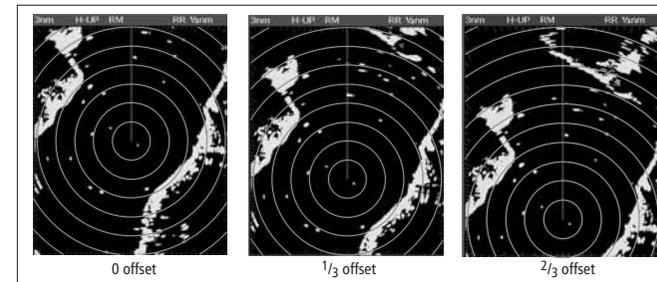
The default vessel-offset value is zero.

True Motion (TM)

When the motion mode is set to True, fixed radar targets maintain a constant position and moving vessels (including your boat) travel in true perspective to each other and to fixed landmasses on the screen. As the boat's position approaches the edge of the screen, the radar picture is automatically reset to reveal the area ahead of the boat.

If heading and position data become unavailable when true motion is selected: a warning message is shown; the display reverts to relative motion; the status bar indicates that True Motion is selected but suspended by showing it in parentheses (TM).

It is not possible to select True Motion when the orientation is set to Head Up.

To set the motion mode

1. Press the **PRESENTATION** softkey.
2. Press **RADAR MODE AND ORIENTATION**.
3. Toggle between True and Relative Motion on the **MOTION MODE** key.

To change the vessel offset

1. Press the **PRESENTATION** softkey.
2. Press **RADAR MODE & ORIENTATION**.
3. Toggle to your desired offset using the **VESSEL OFFSET** softkey.

Changing the bearing mode for EBLs

The default bearing mode for EBLs is relative to your vessel's heading. If heading data is available, you can set the bearing mode to be relative (REL) or magnetic/true (M/T).

When M/T is selected, the EBL bearings will be expressed as either true or magnetic, depending on the equipment connected. The current EBL bearing is given on the EBL label and on the ADJUST EBL softkey label.

To change the EBL reference

1. Press the **PRESENTATION** softkey.
2. Toggle between **M/T** and **REL** on the **EBL REFERENCE** key.

Dual range

The G-Series system allows you to view either a short- or a long-range image in separate radar windows. To allow this, dual range must be enabled in the Radar Setup Menu (see *Radar setup* on *page 128*).
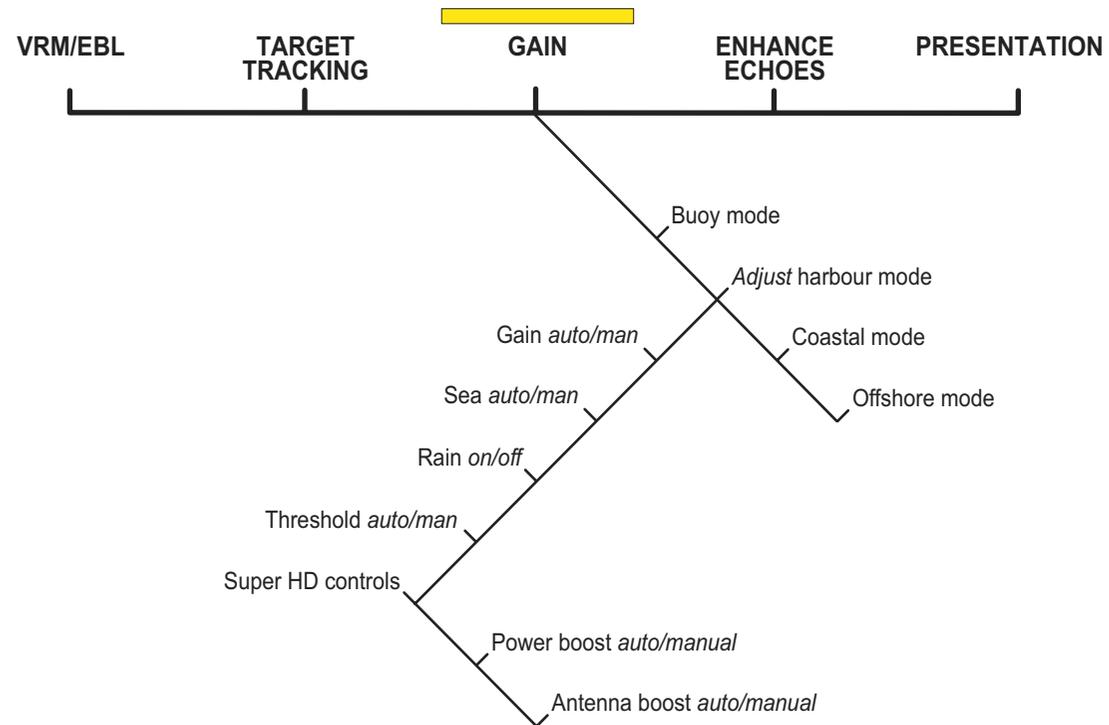
To set the range

1. Press the **PRESENTATION** softkey.
2. Press **RADAR MODE & ORIENTATION**.
3. Toggle between **LONG** and **SHORT** on the **DUAL RANGE** softkey.

The default setting is long, which provides a standard scanner range. The short setting provides a maximum range of six or twelve nautical miles.

Note: If chart-radar sync is turned on in the chart application, you cannot enable dual range in the radar application. If dual range is on, you cannot turn on chart-radar synchronization.

Chapter 11: Radar

11.7 Tuning the radar display: GAIN

Gain reduces the effect of false echoes and clutter. For best results, retain the default AUTO setting. You can, however, adjust gain settings manually if required

.

VRM/EBL   TARGET TRACKING   GAIN   ENHANCE ECHOES   PRESENTATION

Buoy mode

Adjust harbour mode

Gain *auto/man*   Coastal mode

Sea *auto/man*   Offshore mode

Rain *on/off*

Threshold *auto/man*

Super HD controls

Power boost *auto/manual*

Antenna boost *auto/manual*

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Gain presets

There are four preset gain modes to give you the best picture in different circumstances.

Harbor is the default mode. This setting takes account of land clutter so that smaller targets, like navigation buoys, are not lost.

Coastal accounts for the slightly higher levels of sea clutter you might encounter out of harbor and adjusts the radar display accordingly.

Offshore automatically adjusts for high levels of sea clutter.

Buoy is a special mode to enhance the detection of small objects like mooring buoys. It is useful at ranges up to 3/4 nm.

Manually adjusting gain

The gain function makes the radar picture clearer by changing the sensitivity of radar reception.

* **For long ranges** select a sensitivity level that gives a slight speckle in the background. Setting the gain too low can cause weak or small targets to disappear, however.
* **For shorter ranges** reduce the gain slightly to reduce speckle and improve target definition.

Note: If you control gain manually, check it each time you change the range scale.

To manually adjust gain settings

1. Press the **GAIN** softkey.
2. Press the **ADJUST** softkey for the preset mode you are in.
3. Select manual on the **GAIN** softkey.

The changes you make are applied to both the active window and any other radar windows displaying this preset. Gain setting changes are kept at system power-off.

Rain clutter

Radar detects echoes from rain or snow. The strength of these echoes depends upon the altitude, range, density and size of the snow flakes or rain droplets and appear on screen as countless small echoes continuously changing size, intensity and position.

Turning the RAIN clutter function on suppresses the bulk effect of rain returns from around your boat, so that recognizing other objects is easier.

Sea clutter

Radar echoes from waves around your boat can clutter the centre of the radar picture, making it difficult to detect real targets (see *page 131*).

Adjusting the sea mode will reduce this clutter for up to 5 nautical miles (depending on wave and sea conditions) from your boat. This reduces sea echoes to intermittent small dots, while small targets remain visible and persistent. Gain levels further from your boat remain unchanged.

Super HD adjustments

You can generally use the default AUTO settings for best results, but two manual controls allow you to explore Super HD's capabilities.

Antenna boost

This scales the effective antenna size. At zero, the effective antenna size matches its actual size. At 95, the effective antenna size is doubled.

Increasing effective antenna size has the effect of separating targets that appear merged at lower settings.

In some circumstances, a larger effective scanner can be a drawback. In particular, if you are in a harbor or close to land, you may see more detail than is useful.

For that reason, the AUTO settings for Harbor and Coastal modes provide lower scale factors of about 30% and 60%.

Power boost

This adjusts effective transmit power. At zero, the radar operates at its standard power (4kW or 12kW). At 90, the effective power is increased by a factor of at least two.

Increasing power has the effect of making targets more distinct from noise. For maximum benefit, reduce gain to prevent saturation of strong targets.

The default power boost setting for all AUTO modes is 90.

11.8 Tuning the radar display: ENHANCE ECHOES

The ENHANCE ECHOES softkey gives you access to further features for tuning the radar display.
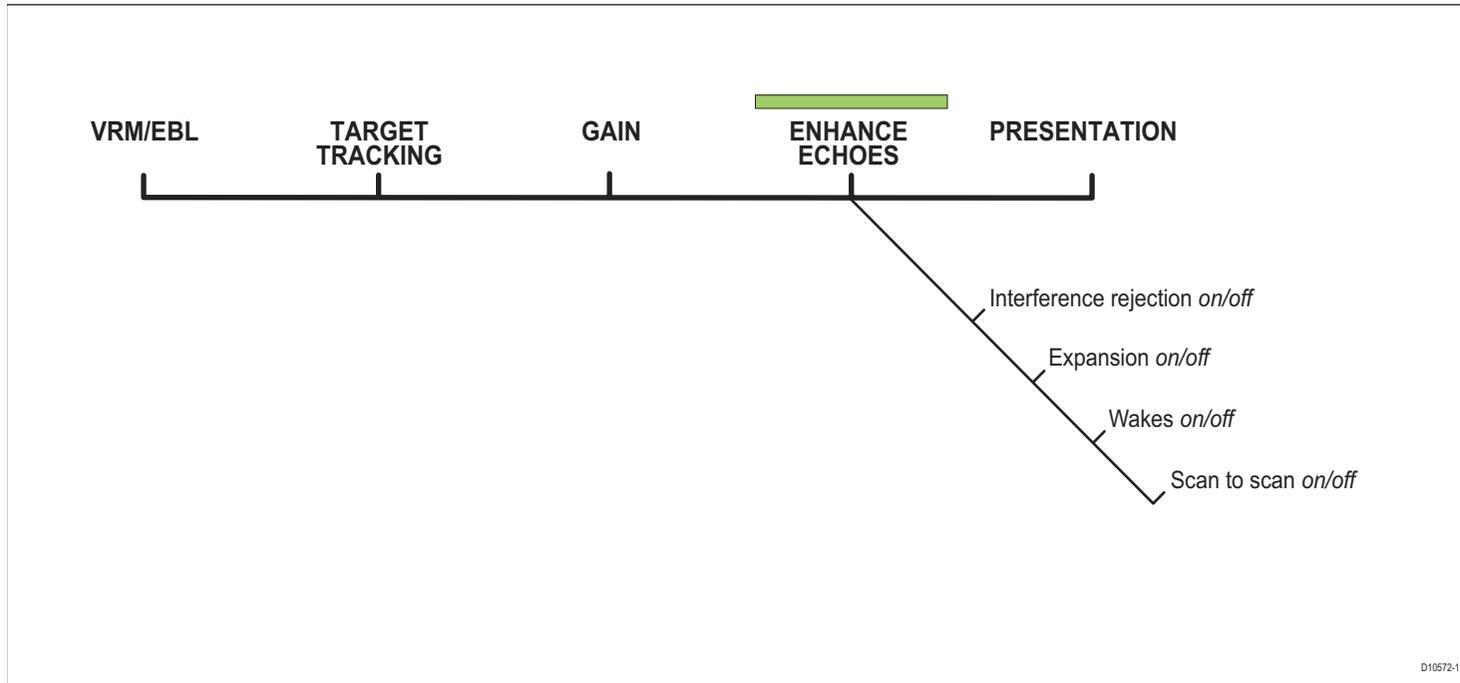
Interference rejection

Interference rejection automatically reduces mutual radar interference when two radar-equipped vessels are operating within range of each other. It is switched on by default.

You can adjust the strength of interference rejection in the Radar Setup Menu.

Turning interference rejection off altogether allows you to detect the presence of other radars in the vicinity.

To turn interference rejection off
1. Press the **ENHANCE ECHOES** softkey.
2. Toggle the setting to **OFF** on the **INT REJECT** softkey.

Expansion

The expansion function allows you to either override the pulse length or to give larger returns so targets are easier to see.

To override the pulse length

1. Open the **Radar Setup Menu**. You can either use the **MENU** button, or press and hold the **EXPANSION** softkey.
2. Set the magnification level for target expansion to **HIGH**.

To give larger returns

1. Open the **Radar Setup Menu**.
2. Set the magnification level for target expansion to **LOW**.

Note: Selecting this option may compromise target resolution.

Wakes

When the wakes function is switched on, you can see the direction and speed of moving targets relative to your boat. Targets are displayed in yellow, turning to paler shades of blue as the signal diminishes.

The wakes option is a local setting which applies only to the display on which you are working. You can choose to display wakes for a period of 10 seconds, 30 seconds, 1 minute, 5 minutes or 10 minutes.

To switch wakes display on

1. Press the **ENHANCE ECHOES** softkey.
2. Toggle wakes to **ON** using the **WAKES** softkey.
3. Select your preferred wakes setting.
4. Press **OK**.

To switch wakes display off

1. Press the **ENHANCE ECHOES** softkey.
2. Press the **WAKES** softkey.
3. Press the **CLEAR WAKES** softkey.

Scan to scan

When scan to scan is switched on, stationary objects appear stronger with each sweep of the radar. If the object moves, it appears relatively weakly on screen.

This can be used to reduce the effects of rain and sea clutter.

To switch scan to scan on or off

1. Press the **ENHANCE ECHOES** softkey.
2. Toggle to **ON** or **OFF** using the **SCAN TO SCAN** softkey.
3. Press **OK**.

11.9 Radar range

You can zoom in or out to view the radar display at different scales. The scale is measured from the centre to the top of the window and is displayed in the left-hand corner of the status bar.

- **Short-range scales** show nearby objects in greater detail, and are most suitable as you approach coastlines, harbors, or other vessels. The shortest range available is 1/8 nautical miles.

- **Long-range scales** provide the best overview of the vessel's relationship to landmasses, weather fronts and large ships within or beyond your field of vision. The longest range available is 72 nautical miles, depending upon the scanner fitted.

To change the radar range

1. Zoom to your required scale using the **RANGE** button on the keyboard.

Synchronizing radar range and chart scale

The chart application includes an option to synchronize the radar range with the chart scale.

When synchronization is switched on:

- The radar range in all radar windows changes to match the chart scale.

- 'Sync' is displayed in the top left-hand corner of the chart window.
- If you change the radar range, all synchronized chart views change scale to match.
- If you change the scale of a synchronized chart window, all radar windows update to match.

To synchronize radar range and chart scale

1. Make a **chart window** active.
2. Press the **PRESENTATION** softkey.
3. Press **CHART MODE AND ORIENTATION**.
4. Toggle to **RDR** on the **CHART SYNC** softkey.

Note: Radar range synchronization is not available when the chart motion mode is set to autorange, nor when the selected scanner is set to dual range.

11.10 Measuring distance, range and bearing

You can measure distance, range and bearing in the radar application. Options for doing so are detailed in the table below.
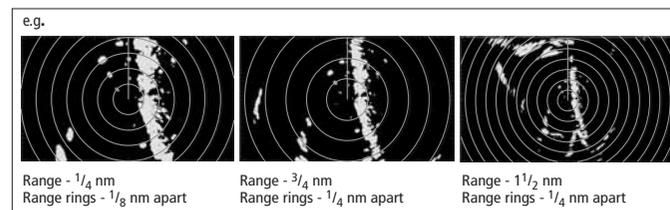
Functions	Distances between points	Range from your boat	Bearings
Range Rings	Yes (approx.)	Yes (approx.)	-
Cursor	-	Yes	Yes
Variable Range Markers (VRMs)	-	Yes	-
Electronic Bearing Lines (EBLs)	-	-	Yes

Functions	Distances between points	Range from your boat	Bearings
Floating VRMs	Yes	-	-
Floating EBLs	-	-	Yes

Range rings

Range rings help you gauge the approximate distance between points at-a-glance. Range rings are centred on your position and displayed on the screen at pre-set intervals.

The number and spacing of range rings changes to suit the scale you have set.

e.g**.**

Range - $^1/_4$ nm
Range rings - $^1/_8$ nm apart

Range - $^3/_4$ nm
Range rings - $^1/_4$ nm apart

Range - $1^1/_2$ nm
Range rings - $^1/_4$ nm apart

To show or hide range rings

1. Press the **PRESENTATION** softkey.
2. Toggle to **ON** or **OFF** using the **RANGE RINGS** softkey.

Bearing and range

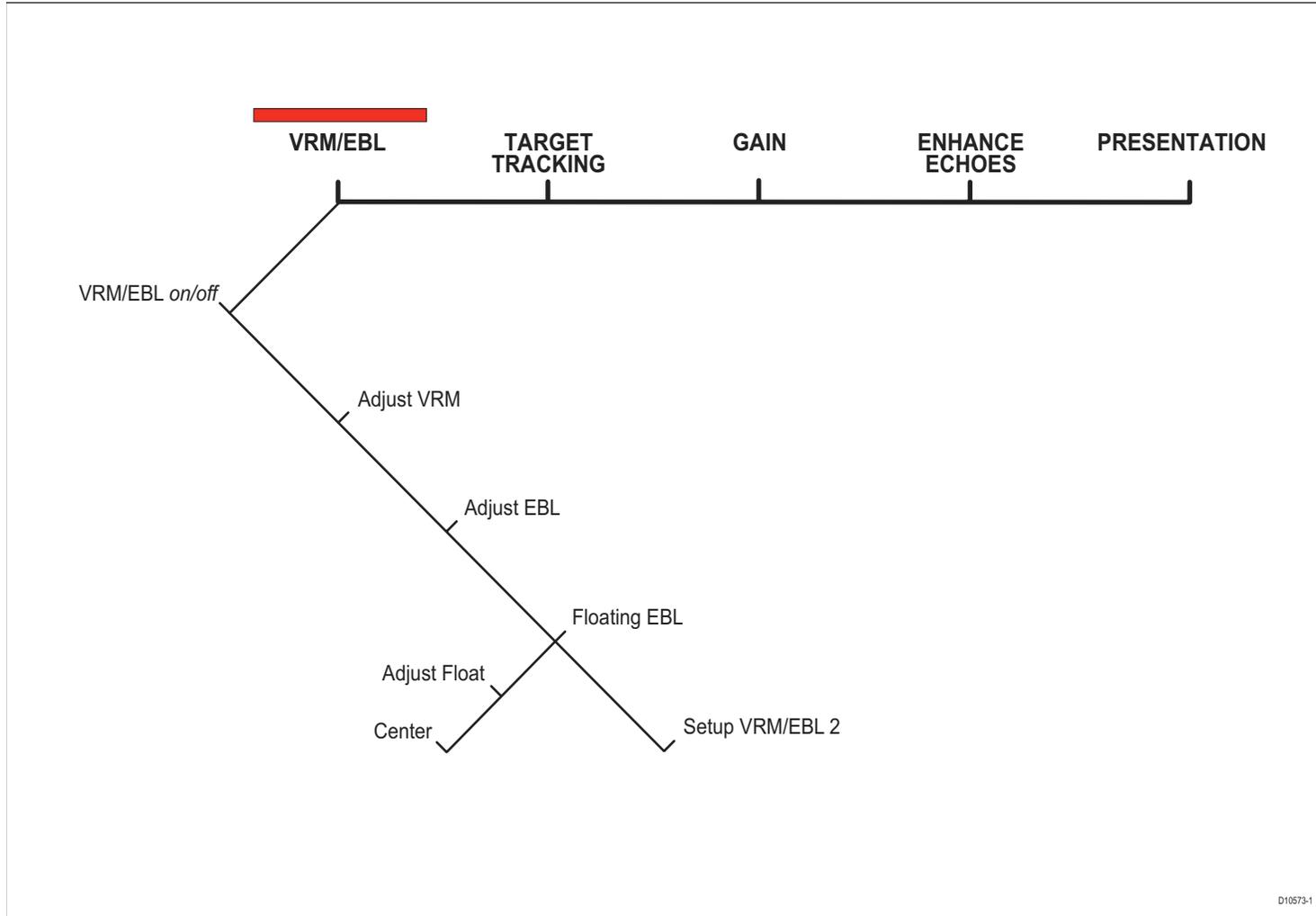The radar display shows you bearing and range data to any object you highlight.

To find the bearing and range to an object

1. Move the cursor to the object's position.
2. Read off the bearing and range in the databar.

Bearing and range from
your vessel to cursor

Cursor
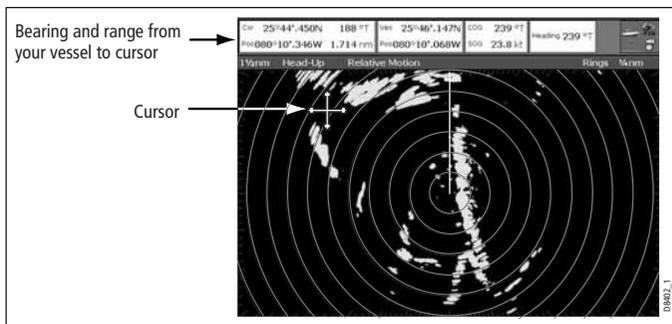
The Variable Range Marker (VRM) and Electronic Bearing Line (EBL)

The VRM/EBL softkey opens the toolbars shown below:

VRM/EBL

TARGET TRACKING

GAIN

ENHANCE ECHOES

PRESENTATION

VRM/EBL *on/off*

Adjust VRM

Adjust EBL

Floating EBL

Adjust Float

Center

Setup VRM/EBL 2

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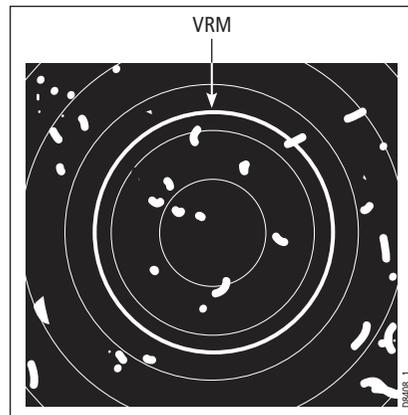
Variable Range Marker

A Variable Range Marker (VRM) is a circle of variable radius centred on your vessel's position.

You can use the VRM to measure the distance from your vessel to a selected object by adjusting the radius of the marker so that it intersects the object's position.

The range is displayed on the ADJUST VRM softkey label when you highlight the VRM.

VRM

Electronic Bearing Marker

An Electronic Bearing Line (EBL) is an on-screen marker drawn from your position to the edge of the window.

When this line is rotated to align with a target, the bearing relative to your current heading is measured and displayed on the ADJUST EBL softkey label.
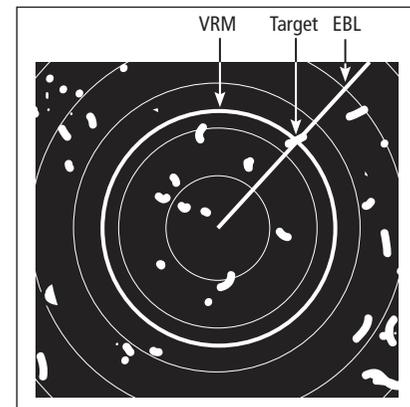
The data is also displayed if you select the EBL with the cursor.

EBL
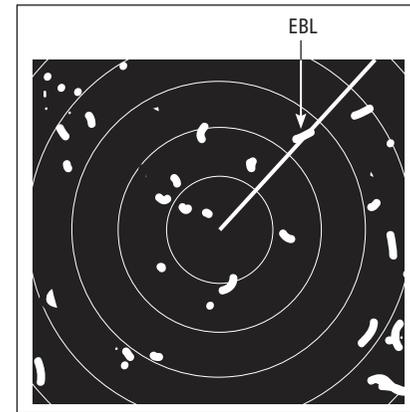
To change the EBL reference from relative to magnetic or true, see .

Combined range and bearing

You can combine a VRM and an EBL to measure range and bearing simultaneously:

VRM   Target   EBL

Tracking a target with a VRM or EBL

You can tell which direction an object is travelling in by tracking its movement in relation to the EBL. If it continues travelling towards the EBL, it could be on a collision course with your boat.

To create a VRM or an EBL

1. Press the **VRM/EBL** softkey.
2. Toggle to **ON** with the **VRM/EBL** softkey.
3. To adjust settings, press either the **ADJUST VRM** or **ADJUST EBL** softkey and make changes with the rotary controller.

To place a second VRM or EBL

1. Press the **SET UP VRM/EBL 2** softkey.
2. Proceed as with **VRM/EBL 1**.

Floating VRM and EBL

The VRM/EBL float function allows you to measure range and bearing between any two points on the radar screen (rather than from your vessel's position).

First you move the VRM/EBL centre to the position you want to measure from. Then you change the radius of the VRM to measure distance, or change the angle of the EBL to take a bearing.

To use floating VRM

1. Create a standard VRM.
2. Highlight the VRM or press the **VRM/EBL** softkey.
3. Press the **FLOATING VRM** softkey.
4. Press the **ADJUST FLOAT** softkey.
5. Move the cursor to the point to **measure from**.
6. Press **OK**.
7. Move the cursor to the point to **measure to**.
8. The range between the two points is shown on the **ADJUST VRM** softkey label.

To use floating EBL

1. Create a standard EBL.
2. Highlight the EBL or press the **VRM/EBL** softkey.

3. Press the **ADJUST EBL** softkey.
4. Adjust the direction and start point of the EBL using the trackpad and rotary controller.
5. The bearing is shown on the ADJUST EBL softkey label.
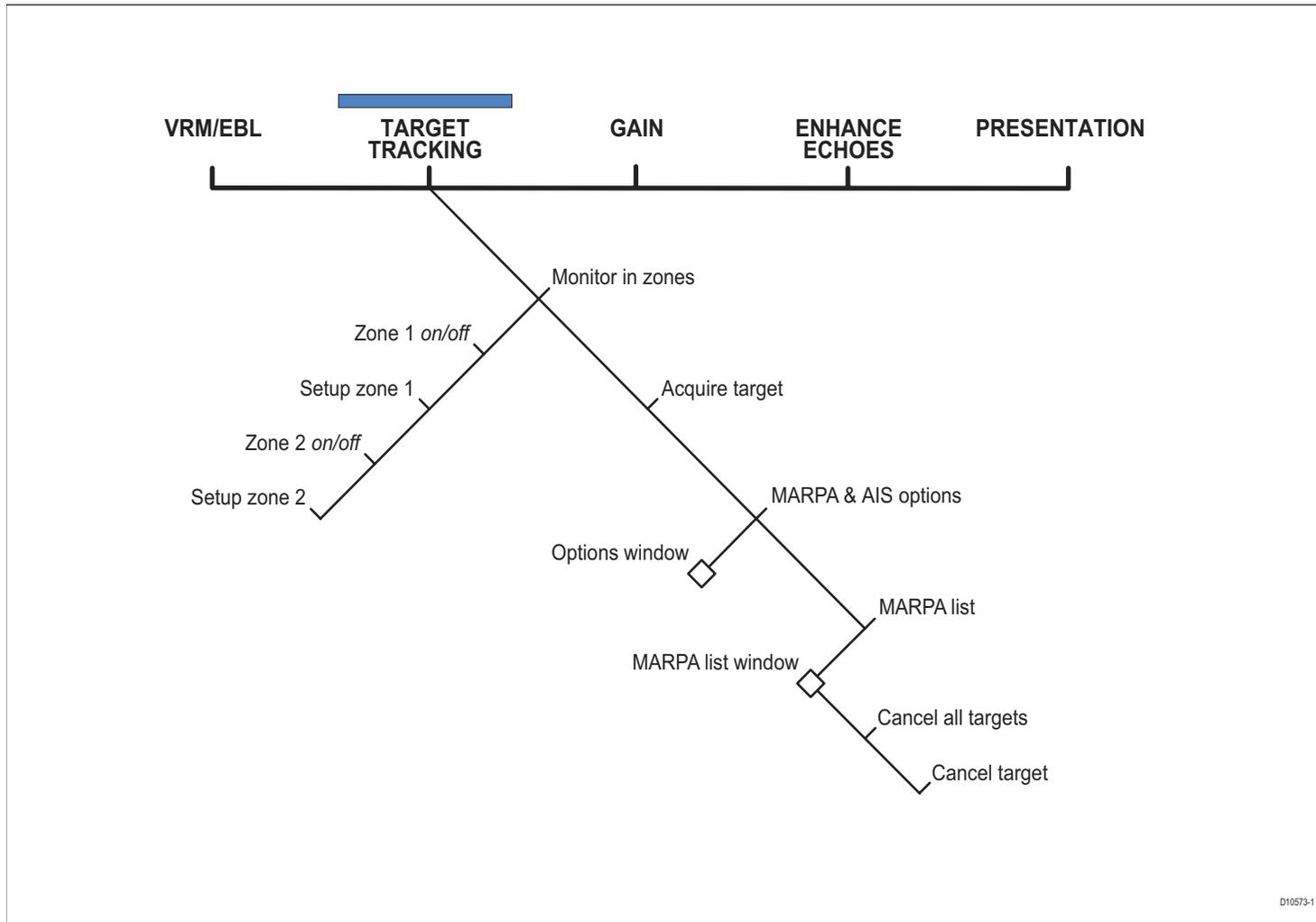
To use a second floating VRM or EBL

1. Press **SET UP VRM/EBL 2**.
2. Toggle **VRM/EBL 2** to **ON**.
3. Repeat the steps for using a floating VRM (steps 1-8).

To unfloat a VRM or EBL

1. Press the **VRM/EBL** softkey.
2. Press the **FLOATING EBL** softkey (under **SET UP VRM/EBL 2** if you are using a second floating VRM or EBL).
3. Select **CENTER**.
4. Press **OK**.

11.11 Using radar to track objects

The TARGET TRACKING softkey opens the toolbars shown below:

VRM/EBL   TARGET TRACKING   GAIN   ENHANCE ECHOES   PRESENTATION

Monitor in zones

Zone 1 *on/off*

Setup zone 1

Zone 2 *on/off*

Setup zone 2

Acquire target

MARPA & AIS options

Options window

MARPA list

MARPA list window

Cancel all targets

Cancel target

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Target tracking functions are used to help avoid collisions.

- **Guard zones** sound an alarm when an object comes within a specified range.
- **MARPA** displays information about tracked objects.
- **AIS** displays the identity and voyage information of other AIS-enabled vessels.

To track a target

1. Press the **TARGET TRACKING** softkey.
2. Highlight the object you wish to track.
3. Press the **ACQUIRE TARGET** softkey.

The 'target being acquired' icon is displayed, followed by the appropriate MARPA status icon.

Guard zones

A guard zone is a 'protected' area around your vessel: as soon as an object (like another vessel) enters the zone, it triggers an alarm on your Nav Station. Guard zones are managed from the Monitor in Zones toolbar.

Guard zones can be either circular- or sector-guards, and you can define up to two of them on your system.

Circular Guard Zone

Sector Guard Zone
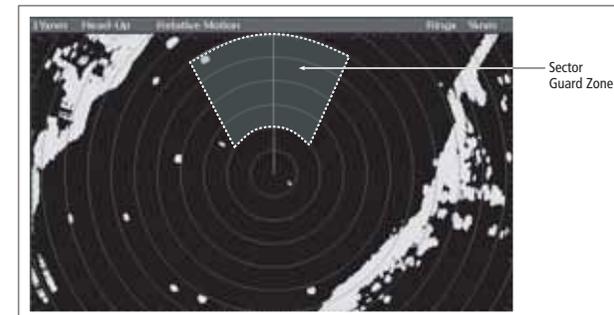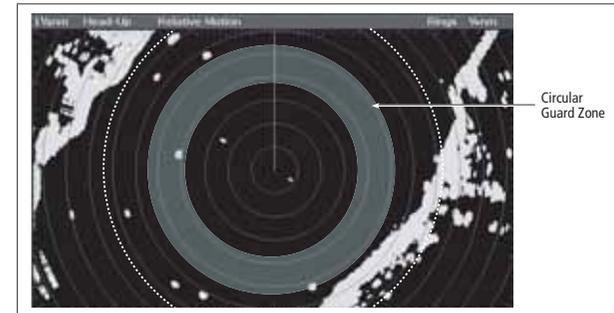
You can adjust the sensitivity of guard zones on the Alarms Setup Menu. For more information, see *Alarm Setup Menu* on *page 194*.

Guard zones only operate when the whole zone is displayed on the screen. To avoid inappropriate alarms, they become active ten seconds **after** being placed or edited.

To place a guard zone

1. Press the **TARGET TRACKING** softkey.
2. Press the **MONITOR IN ZONES** softkey.
3. Toggle **ZONE 1** or **ZONE 2** to **ON**, as appropriate.
4. Press the corresponding **SET UP ZONE** softkey.
5. Choose your zone shape.
6. Set the limits of the guard zone using the rotary controller.
7. Press **OK**.

MARPA

The Mini Automatic Radar Plotting Aid (MARPA) provides target-tracking and risk-analysis features. MARPA obtains detailed information for up to ten automatically tracked objects and provides continuous, accurate and rapid situation analysis.

To use MARPA, you need a fast heading sensor.

Setting up MARPA

You can customize the following parameters from the MARPA Options menu:

Parameter	Options
Vector Length The time period specified for drawing length of vectors.	0.5min, 1 min, 3 min, **6min**, 12min, 30 min, 60 min
Target History Plots a target's previous position at the specified intervals. The four most recent position points are displayed. If True target vectors are selected, the four most recent vessel position points are also displayed.	**OFF**, 0.5 min, 1 min, 3 min, 6 min
Own vessel safe zone The safe zone is a ring, centred on your boat, within which a target is considered dangerous if it will enter this zone within the *time to safe zone* period.	0.1 nm, 0.2nm, **0.5nm**, 1.0 nm, 2.0nm
Time to safe zone If a target enters your safe zone within this time period, it is considered dangerous.	**3 mins**, 6 mins, 12 mins, 24 mins
Safe zone ring Controls whether the safe zone ring is displayed or hidden on screen	Visible Hidden

To open the MARPA Options menu

1. Press the **TARGET TRACKING** softkey.
2. Press the **MARPA & AIS OPTIONS** softkey.
3. Change MARPA options as required.

Safety notices

MARPA can improve collision avoidance when used wisely. It is the User's responsibility to exercise common prudence and navigational judgements.

There are certain conditions under which acquiring a target may become difficult. Some of those conditions are:

- The target echo is weak.
- The target is very close to land, buoys or other large targets.
- The target or your own ship is making rapid manoeuvres.
- Choppy sea state conditions exist and the target is buried in excessive sea clutter or in deep swells.
- Choppy sea state conditions exist yielding poor stability.
- Inadequate heading data exists.

Symptoms of such conditions are that acquisition is difficult and the MARPA vectors are unstable; the symbol wanders away from the target, locks on to the wrong target or changes to a lost symbol target.

If any of these conditions are present, acquisition and tracking may need to be re-initiated or, in some cases be impossible to maintain. Improving the quality of the heading data will reduce the effect of the other conditions.

To acquire a target

MARPA automatically tracks acquired targets, calculates target bearing and range, speed and course, Closest Point of Approach (CPA), and Time to Closest Point of Approach (TCPA).

Each target tracked can be displayed with a CPA graphic which shows the target vessel, course and speed (as a vector) and indicates the CPA. The calculated target data can also be shown on your screen. Each target is continually assessed and an audible alarm is sounded if a target becomes dangerous, or is lost.

Effective MARPA operation is dependant on accurate own-ship's heading and speed. Speed Over Ground (SOG) and Course Over Ground (COG) information are required to show true target course and speed. The better the quality of the heading and speed data, the better MARPA will perform. MARPA will function without SOG and COG in relative mode. For the best heading data a Raymarine SMART heading sensor or a gyro-stabilized autopilot is required.

Risk assessment

Each target is monitored to see if it will be within a certain distance from your boat within a certain time. If so, the target is designated as dangerous and an audible warning is sounded along with an on-screen warning being shown. The target symbol changes to the dangerous target symbol and flashes to indicate that it is a danger-ous target. Pressing the appropriate soft key will silence the alarm and remove the warning.

If a target is lost, either because the MARPA software has lost contact with it, or because it has moved out of range, an audible alarm is sounded and an on-screen warning appears. The on-screen symbol will change to the target lost symbol. Pressing the appropri-ate soft key will silence the alarm and remove the on-screen warning and the target lost symbol.

MARPA range

MARPA target acquisition is only available at radar range scales of up to 12nm, although tracking continues at all ranges.

If you change to a smaller range scale, targets may be beyond the range of your scanner and will be lost. In such cases, an on-screen warning will indicate that the target is off-screen.

MARPA targets
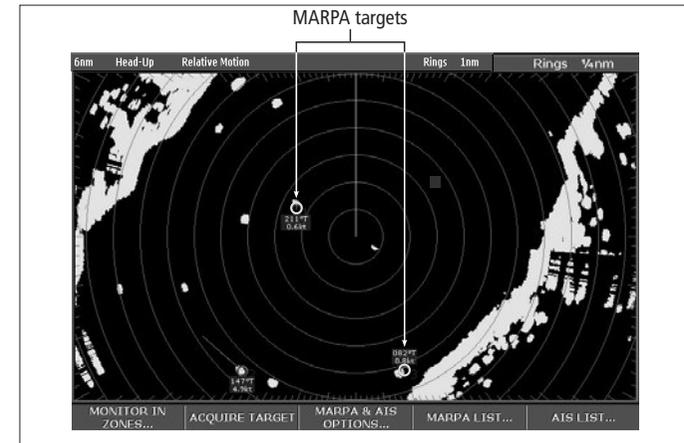
Closest point of approach

Closest point-of-approach (CPA) graphics show vectors for your vessel and a selected target. (A vector is a line showing a predicted course.) Vector length varies with speed (settings can be changed in the MARPA Setup Menu).
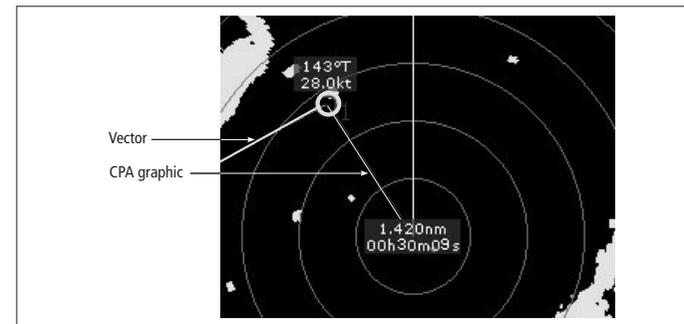
Vector

CPA graphic

To show or hide closest point-of-approach
1. Highlight the object with the cursor.

2. Toggle to the required CPA setting using the **CPA GRAPHIC** softkey.

How motion modes affect CPA

In **true motion** mode, the vectors of your vessel and the target are shown extended to their intersection point. The CPA is shown as a line that is placed on your boat's vector at the point of the CPA. The length and direction of the line indicates the distance and bearing of the target at CPA. The text indicates CPA and TCPA. The text next to the target symbol indicates its true course and speed.

In **relative motion mode**, no vector extension of your boat is shown. The CPA line emerges from your own boat, with the target vector extension being shown as relative, not true. The text next to the target indicates its course and speed.

Press SHOW DETAILS to display the calculated relative course and speed.

Displaying MARPA data

All MARPA data is held in a list containing:

*   MARPA ID
*   Bearing
*   Range
*   True Course
*   True Speed
*   CPA
*   TCPA

Target display

The position of MARPA objects is marked with an icon, which also indicates its MARPA status.

⠿	Target being acquired	△	Dangerous target
◯	Safe target	◈	Lost target

To view the MARPA list
1. Press the **TARGET TRACKING** softkey.
2. Press the **MARPA LIST** softkey.

To cancel MARPA directly
1. Highlight a tracked **MARPA** object.
2. Press either the **CANCEL TARGET** or **CANCEL ALL TARGETS** softkey, as appropriate.

To cancel MARPA from the MARPA list
1. Open the MARPA list.
2. Select a target and press CANCEL TARGET or CANCEL ALL TARGETS, as required.

Displaying vessel identity (AIS)

If you have an AIS receiver fitted to your system, you can use it to:

*   Show the position and display vessel data for other AIS-equipped vessels within a specified range of your boat.
*   Display voyage data (position, course, speed and rate of turn) of AIS-equipped vessels.
*   Display basic or detailed information for each target vessel including safety critical target data.
*   Set up a safe zone around your boat.
*   View alarm and safety related messages.

This information is displayed in the form of an overlay or as a dialog box on your radar screen. For more information about AIS, see *Chapter 12:Automatic Identification System* on page 157.

To overlay AIS on a radar window

1. Press the **PRESENTATION** softkey.
2. Toggle the **AIS LAYER** to **ON**.

Chapter 12: Automatic Identification System

The Automatic Identification System (AIS) provides safety features when you are at sea.

On the G-Series system, AIS is overlaid on a chart or radar widow. It provides:

- Heading, speed and rate of turn data for nearby AIS-equipped vessels.

- A 'safe zone' around your boat.

- Alarms and safety messages.

Chapter contents

12

12.1 Background

AIS broadcasts information between vessels and shore-based stations on VHF frequencies in the maritime band. This information is used to provide fast, automatic and accurate collision-avoidance data. AIS augments the radar application. It can operate in radar blind spots and can detect smaller (AIS-equipped) vessels than radar can.

AIS does not replace radar, because it is unable to detect land or navigation beacons.

⚠	WARNING

Product installation

Smaller vessels do not have to be fitted with AIS, and although it is mandatory for larger commercial vessels to use AIS, do not assume that they all do. Always exercise due prudence and judgement.

AIS complements radar, it is not a radar substitute.

Classes of AIS data

AIS data is defined as Class A or Class B. The sending and receiving of Class A data is compulsory for larger vessels. You will therefore be able to view all larger vessels on your AIS display.

Not all AIS receivers will decode all information and not all of the Class A vessels input all of the required AIS data. For example, some inexpensive AIS Class B receivers do not decode and output the ship's name, IMO number and vessel data.

Class B data is applicable to smaller vessels and is not compulsory. Do not assume that your AIS will display data for all smaller vessels in your area.

The following information can be transmitted by a Class A AIS system:

- **Static data**: ship name, type, MMSI number, call sign, IMO number, length, beam and GPS antenna location.
- **Voyage data**: draft, cargo, destination, ETA, other relevant information.
- **Dynamic data**: time, position, COG, SOG, gyro heading, rate of turn, navigational status.
- **Dynamic reports**: speed and status.
- **Messages**: alarm and safety.

12.2 System requirements

To use AIS, you need:

- **AIS unit**: either a receive-only or full transceiver device.
- **VHF antenna**

12.3 System settings

For the NMEA port that communicates with the AIS transceiver unit, specify a baud rate of 38,400 (see *page 188*).

12.4 AIS setup

The AIS Layer Setup Menu allows you to:

- Select target types displayed (ALL or DANGEROUS).
- Switch AIS safety messages on or off.
- View the list of active AIS alarms.

To display the AIS Layer Setup Menu

1. Ensure the **AIS LAYER** is set to **ON** (see *Using AIS*, below).
2. Press the **MENU** button.
3. Select **AIS Layer Setup**.

12.5 Using AIS

AIS is a selectable layer of the chart or radar application.

To switch AIS layer on

1. With either a chart or radar window active, press the **PRESEN-TATION** softkey.
2. If you are in a radar window, toggle AIS on or off using the **AIS LAYER** softkey.
   If you are in a chart window, press the **CHART LAYERS** softkey to open the toolbar containing **SYMBOLOGY**, then select **AIS**.
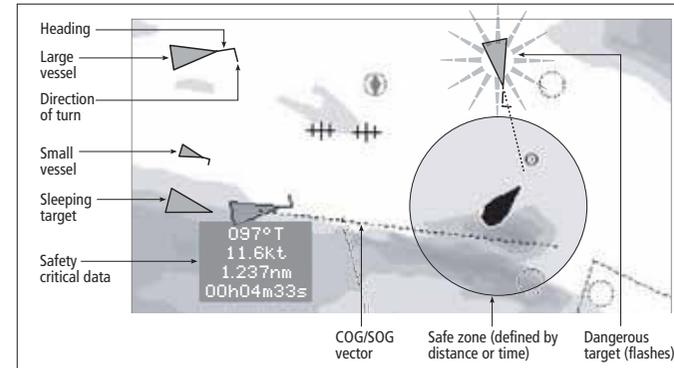
AIS status icons

Status icons are displayed in the data bar.

	No recent AIS messages.
	There are recent AIS messages.
	AIS unit on with active alarms.
	AIS unit switched on and operating but dangerous and lost alarm disabled.

12.6 The AIS data display

Suitably AIS-enabled vessels (or AIS 'targets') appear as triangular symbols. Up to 100 targets can be displayed.

Vectors can be displayed for each target. These vectors indicate the direction of travel and rate of turn of the vessel and the distance it will travel over a specified period of time (COG/SOG vector). Targets displayed with their vectors are referred to as 'active targets' and are scaled according to the size of the vessel.

You can choose to display all targets or just the dangerous ones (see *page 158*).

AIS Target symbols

AIS target symbols are summarized below.

Sleeping target ● Target not activated, dangerous or lost.	
Activated target ● Target activated i.e. AIS vector displayed. ● Vector line (optional) shows predicted distance travelled within given time.	COG/SOG vector → Direction of turn Heading
Selected target ● Target selected with cursor. ● Can activate the target and view detailed data.	AIS
Dangerous target ● Targets within specified distance (CPA) or time (TCPA). ● Dangerous target alarm sounds if en-abled. ● Target flashes.	
Uncertain target ● Calculated CPA/TCPA value uncertain.	
Lost target ● When signal of dangerous target not received for 20 seconds. ● Target in latest predicted position. ● Alarms sounds if enabled. ● Target flashes.	D8523-1

Viewing AIS information

You can display information relating to individual AIS targets.

To see AIS data for a selected target

1. Highlight the AIS target with the cursor.
2. Select the appropriate data from the toolbar.

The AIS toolbar

Softkeys on the AIS toolbar give you access to:

•   AIS vectors

•   AIS safety critical data

•   AIS List

•   Full AIS data

12.7   Displaying AIS vectors

The AIS vector feature gives you the following data for selected targets:

•   A COG/SOG vector indicating the predicted distance that a target will travel within a given period of time.

•   Graphical representation of heading and direction of turn.

To switch AIS vectors on or off

1. Highlight the AIS target for which you want to display vectors.
2. Toggle to your desired setting on the **AIS VECTOR** softkey.

12.8   Displaying safety-critical AIS data

Safety-critical target data such as COG, SOG, CPA and TCPA can be displayed in the tag alongside each target. You can switch this data on or off or set it to display it automatically when the cursor is over the target.

To view AIS data

1. Highlight an AIS target.
2. Toggle to your preferred setting on the **AIS DATA** softkey:

   AUTO (default): safety-critical data shown when the cursor is over the target.
   ON: safety-critical data shown constantly.
   OFF: safety-critical data never shown.

AIS list

The AIS list provides collision-avoidance data for the highlighted target:

To display the AIS List

1. Make a **chart window** active, with **AIS Layer** turned on.
1. Press the **AIS OPTION** softkey.
2. Press the **TARGET TRACKING** softkey.
3. Select **AIS LIST**.

Full AIS data

Full AIS data for an individual target includes static, dynamic and voyage related data.

To view full AIS data for a target

1. Highlight the target with the cursor.
2. Press the **VIEW FULL AIS DATA** softkey.

or

1. Select the target on the AIS list.
2. Press the **VIEW FULL AIS DATA** softkey.

12.9 Safe zones

A safe zone is a circular area about your vessel. If another vessel enters this area, the G-Series system considers it dangerous. The perimeter of the zone is displayed on the radar and chart window as a red ring.

The AIS safe zone uses the same criteria as MARPA and will deem a target dangerous if it comes within a specified distance of your vessel (closest point of approach, or CPA) within a specified time (time to closest point of approach, or TCPA). The CPA and TCPA are calculated using COG/SOG and position from the AIS target.

When the system recognizes a dangerous AIS target:

• The target symbol changes to red and flashes.

• An warning is displayed.

• An alarm sounds (if AIS alarm is enabled).

Safe zone alarm

You can disable the dangerous target alarm. Doing so will prevent the visual warning from displaying and the audible alarm from sounding, but dangerous targets are still displayed in red.

The AIS status icon shows the current status of AIS alarms.

The dangerous target alarm operates irrespective of the status of the AIS target display or the status (VISIBLE/HIDDEN) of the safe zone ring.

To set up an AIS safe zone

1. Press the **TARGET TRACKING** softkey.
2. Press the **MARPA** and **AIS OPTIONS** softkeys.
3. Select Own Vessel Safe Zone and set the radius of your safe zone.

Time to safe zone

The time to safe zone function calculates how long it will take other AIS-equipped vessels to reach your safe zone, based on their AIS data. You can set your system to alert you when such vessels reach a designated 'time to safe zone'.

To set the time to safe zone

1. Press the **TARGET TRACKING** softkey.
2. Press the **MARPA** and **AIS OPTIONS** softkey.
3. Select Time to Safe Zone in the **MARPA & AIS OPTIONS** menu.

12.10 MARPA and AIS options

Parameter	Options
Vector Length The time period specified for drawing length of vectors.	0.5min, 1 min, 3 min, **6min**, 12min, 30 min, 60 min
Target History Plots a MARPA target's previous position at specified intervals. The four most recent position points are displayed. If True target vectors are selected, the four most recent vessel position points are also displayed.	**OFF**, 0.5 min, 1 min, 3 min, 6 min
Own vessel safe zone The safe zone is a ring, centred on your boat, within which a target is considered dangerous if it comes within a specified distance (CPA).	0.1 nm, 0.2nm, **0.5nm**, 1.0 nm, 2.0nm
Time to safe zone If a target enters your safe zone within this time period, it is considered dangerous.	**3 mins**, 6 mins, 12 mins, 24 mins
Safe zone ring Controls whether the safe zone ring is displayed or hidden on screen	Visible Hidden

Safety messages

When AIS Safety Messages is on (controlled from the AIS Layer Setup Menu), incoming safety messages from vessels, shore stations and mobile stations are displayed in a pop-up box. The message will include latitude and longitude if it is available.

Whenever you receive a safety message, the system gives you options to:

- Remove the message (ACKNOWLEDGE).
- Place a waypoint to mark the sending vessel's position.

- GOTO the sending vessel's position.

Note: When the simulator is operating you will not be able to receive any safety messages.

12.11 AIS alarms

In addition to the dangerous target alarm, the system generates an alarm when a dangerous target becomes lost (this happens if the AIS signal from a tracked vessel is not received for more than 20 seconds).

When the connected AIS unit generates an alarm, the G-Series system indicates the alarm status in the data bar and displays a warning message:
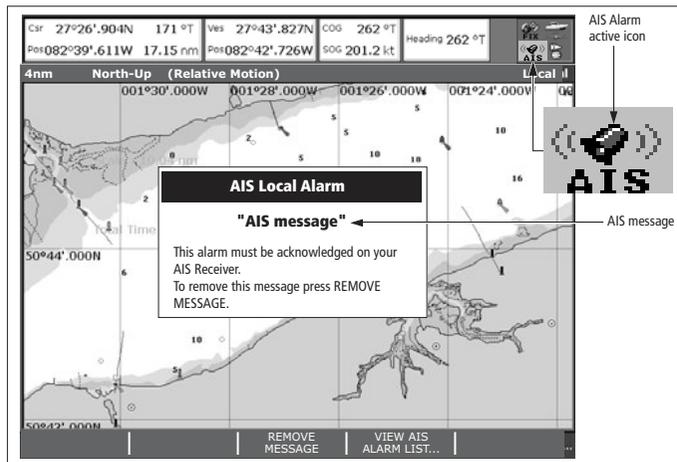
Active alarm list

The active alarm list shows the status of each local alarm. This list can either be accessed via the AIS Layer Setup Menu (see *page 158*) or from the Alarms Setup Menu (see *page 194*).

1. Press either the **REMOVE MESSAGE** or **VIEW AIS ALARM LIST** softkey.
2. Acknowledge the message at your AIS unit.

Note: Alarms remain active until they are acknowledged on the AIS unit. Removing the message or adding it to the Alarm list on your G-Series system does not cancel the alarm.

12.12 Simulator mode

We recommend that you use the simulator to familiarize yourself with the AIS function.

When the system simulator is switched on (see *page 29*), it displays 20 AIS targets within a 25nm range. These targets are displayed using the appropriate AIS targets status symbol (see *page 160*) and move around the screen as if they were real targets.

Note: Incoming safety messages cannot be displayed while the simulator is switched on.

Chapter 13: Video

The video application allows the G-Series system to display images from on-board cameras and DVD players.

Chapter contents

See also…

- **G-Series System Installation Guide**
  for information about connecting video equipment, and the various input configurations available.

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13.1 Video overview

The G-Series system is supplied with S-Video cabling but you can also use composite video devices. Video processing is handled by a GVM400: each of these devices provides four inputs. The total number of video inputs available depends upon your system configuration.

The system can handle multiple video inputs, and you can cycle through the attached devices to stay updated on each view.

You can also adjust the brightness, contrast, color and aspect ratio of the image, adjust audio volume, and set a video window to display a mirror image of the feed (see *page 167*).

13.2 Setting up the video application

Before you can use the video application, you may need to configure a page set to include a video application window. For information about how to do that, see *page 25*.

At installation, the video module (GVM400) or modules attached to your system, along with any video input devices, were named. You can change these names if you wish.

Customizing the video application

You need to change the default settings in the following circumstances:

• To use composite video on input 1.
• To name video inputs (for example 'engine room', 'view stern', 'DVD', etc).
• To cycle video views.
• To set up the selection softkeys.

All these options are accessed from the **Video Setup Menu**.

To open the video setup menu
1. With a video window active, press the **MENU** button.
2. Select **Video Setup Menu**.
3. Press **OK**.

13.3 Using composite video on input 1

By default, the system allows for one S-Video input (input 1) and three composite video inputs (inputs 2-4). If you want to use input 1 for composite video, you need to change the video input settings.

To change video input settings
1. Open the **Video Setup Menu**.
2. Select **Composite**.
3. Press **OK**.

13.4 Setting a name for the video feed

By default, the video sources are labelled 'Comp1' to 'Comp3' and 'S-Video'. You can change these labels to make them more descriptive, for example: 'engine room', 'stern', or 'bow'. You can also rename each video controller module (GVM).

To edit the video feed name
1. Open the **Video Setup Menu**.
2. Select the video source whose name you want to change.
3. Select **RENAME**.
4. Change the name and press **OK** to save the changes.

13.5 Selecting a video input

To change choose a video input to display, press the appropriate softkey. If you have **more than four video inputs**, press the rotary controller to open a list of all video feeds available and then select the one you want to use.

13.6 Cycling through video feeds

You can set up the video application to cycle through images from the attached devices. This is particularly useful if you have on-board cameras and want a regular overview of the areas they are pointing at.

You can specify the length of time each feed is displayed for. By default the cycle period is 10 seconds but you can change this (from 1 to 99 seconds) if required.

While a video cycle is running, you cannot change the aspect ratio, contrast, brightness or color levels of the video image.

To set up a video cycle

1. Open the **Video Setup Menu**.
2. Select **Cycle 1** and the name of the input you want to set as the first view in the cycle.
3. Repeat this process for each successive input in the cycle.
4. To exclude an input from the cycle, switch its status to **NONE**.

To set the cycle period

1. Open the **Video Setup Menu**.
2. Specify the cycle period.
3. Press **OK**.

To run the video cycle

1. Press the **PRESENTATION** softkey.
2. Toggle the **CYCLE VIDEO** setting to **ON**.

To stop running the video cycle

1. Press any of the four video softkeys.

or

1. Toggle the **CYCLE VIDEO** option to **OFF**.

13.7 Adjusting the image

Unless a video cycle is running, you can make changes to the aspect ratio, contrast, color and brightness settings in the video application.

Mirror image

Setting up a video window to display a mirror-image of the video feed can be useful if you have, for example, a rear-facing camera linked to a forward-facing display.

Aspect ratio

The video application automatically detects the appropriate aspect ratio for each input source. If an image appears distorted (squashed or stretched), you can override the automatic setting to choose the appropriate aspect ratio manually.

An aspect ratio of 4:3 is standard format, while 16:9 is widescreen format.

To change the aspect ratio

1. Open the **Video Setup** menu.
2. Navigate to the required setting using the trackpad.

Contrast, brightness and color

If necessary you can adjust the level of contrast, brightness or color. If a video cycle is running, this adjustment is unavailable.

To change contract, brightness or color

1. Press the **PRESENTATION** softkey.
2. Choose the setting you want to change.
3. Make your adjustments using the rotary controller.
4. Press **OK**.

Chapter 14: Sirius Audio (US only)

If you have a Sirius SR100 data receiver installed, you can use the G-Series system to control satellite radio broadcasts.

Refer to the SR100 documentation for installation information.
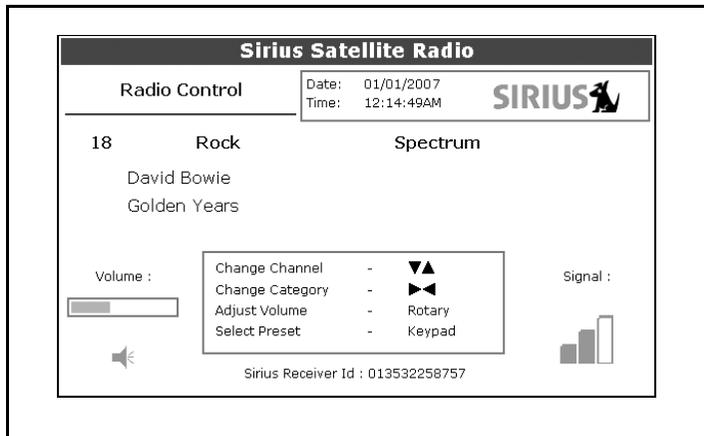
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14.1 Using Sirius Radio

As well as using the G-Series to control your radio, you can set up parental locks to limit access to selected channels and create alerts to tell you when a favourite song is being played.

To start using Sirius radio

1. Press **MENU**.
2. On the Setup Menu, select **Sirius Satellite Radio**.

The Sirius Radio Control screen opens:

Information contained on the Sirius Radio Control screen includes:

- Current channel name, number and category
- Play data for the current channel
- Date and time
- Receiver ID and signal strength

Use the softkeys and trackpad to control audio functions. Use the rotary controller to adjust volume.

The toolbar gives you access to the functions outlined below.

MUTE ON/OFF	Controls the mute setting.
PRESETS	Displays a list of preset channels and the full channel list with modify options. Use the trackpad or rotary controller to scroll through the list of presets.
SETUP CHANNELS	Gives access to the Edit Presets, Edit Alerts, Edit Channel Access, Scan Channels softkeys.
ALERTS	Lets you set up an alert to tell you when favourite songs or artists are played on any channel.
BROWSE	Scroll to view play data and to select channels, presets, or categories.

14.2 Tuning to a channel

From the Sirius Control screen, you tune to channels using the trackpad or the alphanumeric keys.

Trackpad up	Next channel.
Trackpad down	Previous channel.
Trackpad left	First channel in the previous category.
Trackpad right	First channel in the next category.

14.3 Browsing channels

The browse function allows you to view play data for channels without tuning to them.

To browse channels

1. On the Sirius Audio Control screen, press the **BROWSE** softkey.
    Pressing this key displays the Channel List or Preset List for browsing. Toggle between the two lists with the **VIEW ALL/PRE** softkey.
2. Use the rotary controller or trackpad to scroll through the channels.
3. Press the **TUNE TO CHANNEL** softkey (or the rotary controller) to listen to the selected channel.

To go back to the Sirius Control screen, press **OK** or **CANCEL**.

Filtering categories from the browse

This feature allows you to choose a category from which to browse channels; other categories are excluded from the browse.

To filter categories

1. On the Browse screen, press the **FILTER BY** softkey.
2. Press the **SELECT CATEGORY** softkey.
3. Using the trackpad or rotary controller, select the category you want to browse.
4. Press **OK**.

14.4 Scanning channels

The Scan function automatically tunes to all channels in turn.

To scan channels

1. Press the **SETUP CHANNELS** softkey.
2. Select **SCAN CHANNELS**.
3. Use the **SCAN ALL/PRE** softkey to choose to scan all channels or only preset channels.
4. Press **SELECT** to stop the scan and listen to the active channel.

14.5 Hiding or showing channels and categories

You can select particular channels and categories to be excluded (hidden) from the Browse and Scan sequences.

To hide or show a channel or category

1. Press the **SETUP CHANNELS** softkey.
2. Select **EDIT CHANNEL ACCESS.**
3. In the channel list, select the channel you want to hide. If you want to hide a category, select any channel in that category.
4. Toggle between hidden and shown states with either the **CHANNEL SHOWN/HIDDEN** or **CATEGORY SHOWN/ HIDDEN** softkeys.

14.6 Presets

You can assign up to 18 channels to presets to make tuning, scanning and browsing easier. To assign a channel to a preset, use the **PRESETS** softkey from the main control screen or the **EDIT PRE-SETS** softkey from either of the following screens:

*   Setup channels

*   Browse channels

At the Edit Preset Channels screen you can select a preset and assign a channel to it, move the assigned channel to a different preset, or delete the assigned channel.

Toggle between the Preset Channels list and the Channel List either by using the trackpad (left/right) or by pressing the appropriate softkey.

To assign a channel to a preset

1. Select an unused preset number from the Preset List.
2. Press the **ASSIGN NEW CHANNEL** softkey.
3. Select the target channel from the Channel List.
4. Press the **ASSIGN TO PRESET** softkey.

Note: If the preset you want to use already has a channel assigned to it, delete the preset first.

To delete a channel from a preset

1. In the Preset Channels list, select the preset you want to clear.
2. Press the **DELETE CHANNEL** softkey.

To move a channel to a new preset

1. Use the rotary controller or trackpad to select the preset you want to move.
2. Press **MOVE TO NEW PRESET.**
3. Scroll to the preset you want to move the channel to.
4. Press **MOVE TO NEW PRESET**.

Note: You can overwrite a channel that has already been assigned to a preset, but you will be prompted to confirm the action.

14.7 Parental locking

You can set up blocks on selected channels so that they can only be played if a correct password is entered. Parental locking must be enabled for the blocks on your selected channels to be effective.

By default, blocking is not enabled.

To enable blocking

1. Press the **SETUP CHANNELS** softkey.
2. Press the **PARENTAL LOCK ON/OFF** softkey so that **ON** is highlighted.

To set up a password

1. Press the **SETUP CHANNELS** softkey.
2. Press the **PARENTAL LOCK** softkey to highlight **ON**.
3. At the Password Setup screen, enter and confirm your password and hint.

You can also access the password entry screen by pressing **EDIT CHANNEL ACCESS** then **CHANNEL ENABLED/LOCKED**.

To change an existing password

1. Press the **EDIT CHANNEL ACCESS** softkey.
2. Press the **EDIT LOCKOUT PASSWORD** softkey.
3. Enter your old password, then the new password and hint.

To block a channel

1. Press the **SETUP CHANNELS** softkey.
2. Press the **EDIT CHANNEL ACCESS** softkey.
3. In the Channel List, select the channel you want to block.
4. Press the **CHANNEL ENABLED/LOCKED** to highlight **LOCKED**.
5. Repeat steps 3-4 for each additional channel you want to block.
6. When you blocked all the channels you want, press the **CLEAR** key.
7. Ensure the parental lock is on (**ON** is highlighted on the **PARENTAL LOCK ON/OFF** softkey).
8. At the prompt, enter your password.

Blocked channels remain visible in channel lists, but you cannot select them with the trackpad and they are ignored by the scan function. They are marked as locked by an icon next to the channel name.

Entering passwords

If you select a blocked channel from the channel list or want to block a channel when the parental lock is on, you will be asked to enter the password.

After three incorrect attempts, the system displays your password hint.

14.8 Favourite song alerts

The favourites feature alerts you when a favourite song or artist is playing on any channel. You can define up to ten favourites using the Alerts softkey.

To enable favourite alerts

1. Press the **ALERTS** softkey to open the Edit Alerts screen.
2. Use the **ALERTS ON/OFF** softkey to toggle favourite alerts on and off.

To set up a song or artist alert

- Press the **ALERTS** softkey to open the Edit Alerts screen. This screen shows ten favourites and the song playing currently.

- You can delete a favourite from the list, add the current song or artist to the list or switch the favourites alert off.

- You can also mark a channel or song as a favourite by pressing the **ASSIGN TO ALERT** softkey while scanning.

When alerts are turned on and the system detects one of your favourites being played on any channel, it will display an alert and sound the alarm.

- To tune to the channel playing the song, press **TUNE TO CHANNEL**. To ignore the alert, press **CLEAR ALERT**.

Chapter 15: Course Deviation Indicator

With the G-Series system receiving accurate heading and position data, you can use the Course Deviation Indicator (CDI) to monitor your course and help you steer to a target waypoint.
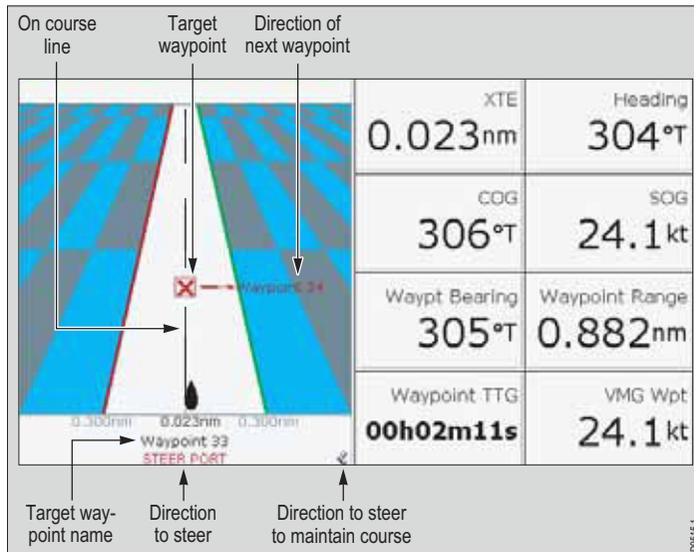
Chapter contents

15

15.1 The CDI display

The CDI gives you a 'rolling road' representation of your progress, with navigation data displayed alongside.

The rolling road covers an area of sea that corresponds to the Cross Track Error (XTE) limits specified in the Setup menu.

Steering instructions

The steering instructions below the rolling road tell you what correction is needed to maintain your course and arrive at the target waypoint.

Instruction	Cause
STEER STARBOARD	XTE error to port is more than a 1/4 of the maximum XTE error limit in the Setup menu
STEER PORT	XTE error to starboard is more than a 1/4 of the maximum XTE error limit in the Setup menu

Indicator-arrows either side of the steering instruction (pointing towards the centre line) tell you how great or small the error is. The greater the error, the greater the number of arrows.

Correct your course by steering in the direction indicated by the arrows.

15.2 Using the CDI application

To use the CDI, you need to select a page set that includes a CDI window. For more information about page sets, see *Choosing page sets* on *page 25*.

To open the CDI application

1. Press and hold the **PAGE** button to open the Select Page Set window.
2. Select a page set that includes the CDI application.

3. Select a page that includes a CDI window.

Chapter 15: Course Deviation Indicator

Chapter 16: The Data Application

The data application shows you data that is generated by the G-Series system, or that is received from attached instruments.

Chapter contents

16

16.1 The data display

The data screen gives you access to five preconfigured data panels.

16.2 Using the data application

To use the data application, you need to select a page set that includes a data window.

You can select a panel of pre-configured data or customize any panel to display the data of your choice. Pre-configured data panels include data associated with G-Series navigation, waypoint, route, fishing or sailing functions.

For more information about page sets, see *Choosing page sets* on *page 25*.

		Panel Type				
		Navigation	Waypoint	Route	Fishing	Sailing
	Vessel position	✓	✓	✓	✓	
	Active waypoint	✓	✓	✓	✓	
	TTG	✓				
	VMG - Waypoint	✓				✓
	Depth	✓		✓	✓	
	Cog Sog	✓	✓	✓	✓	✓
	Heading	✓		✓	✓	✓
Data content	Speed	✓			✓	✓
	Set/Drift	✓			✓	
	XTE	✓	✓	✓		
	Trip	✓				
	Local time	✓				
	Sea temperature				✓	
	Ground wind					✓
	App wind					✓
	True wind					✓
	VMG wind					✓

To select a pre-configured data panel

1. Press the **ACTIVE** button.
2. Press the appropriate softkey.

Customizing data panels

You can customize each panel by changing any or all of the following attributes:

- Panel name.
- Size and number of data cells.

- Cell data: a cell can contain any transducer- or internally-calculated data that is available on NMEA or SeaTalk. Additional data includes a compass gauge, a distance log and four resettable trip counters.

- Type of display: data can be shown in numerical, gauge or graphical format as appropriate.

To rename a panel

1. Press the **MENU** button and select **Panel Setup Menu**.
2. Select the panel you want to rename.
3. Press the **RENAME** softkey.
4. Set the name.
5. Press **OK**.

To select data for a cell to contain

1. Press the **MENU** button and select **Panel Setup Menu**.
2. Select the cell you want to assign data to.
3. Press the **SELECT DATA** softkey.
4. Select the data type and format.
5. Press **OK**.

To split cells

1. Press the **MENU** button and select **Panel Setup Menu**.
2. Select the cell you want to split.
3. Press the vertical or horizontal **SPLIT CELL** softkey as appropriate.

The direction in which the selected cell will be split is indicated by an arrowhead on the softkey label.

To merge cells

1. Press the **MENU** button and select **Panel Setup Menu**.
2. From the pair of cells you want to merge, select either the left- or upper-most cell.
3. Press the vertical or horizontal **MERGE CELLS** softkey as appropriate.

The direction in which the cells will be merged is indicated by an arrowhead on the softkey label.

Chapter 17: Engine Monitor

The engine monitor lets you view information from up to three compatible engines in the form of gauges and digital data.

Engines with a J1939 or NMEA 2000 interface are compatible.

Chapter contents

See also…

www.raymarine.com for information about compatible engines and related software updates.

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17.1 The engine monitor

The engine monitor toolbar gives you access to five preconfigured data panels. You can customize these panels in the same way as you do in the data application. For more information about customizing data panels, see *Customizing data panels* on *page 180*.
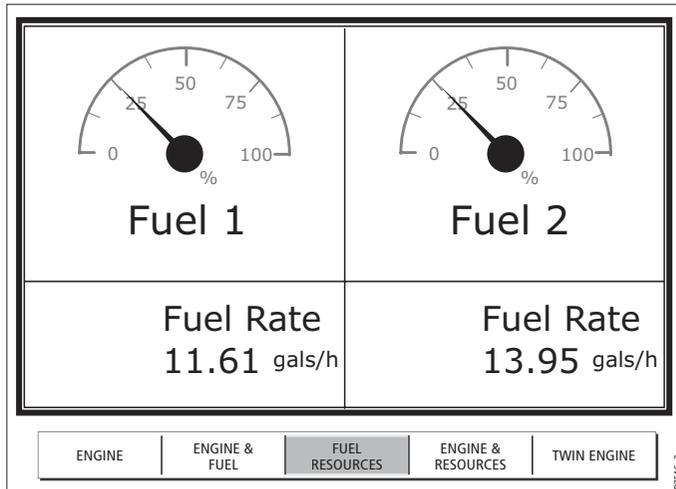
17.2 Setting up the engine monitor

Before you use the engine monitor, you need to:

•   Customize a page set to include an engine monitor window.

•   Set the number of engines and the maximum tachometer range to reflect your particular vessel.

For information about how to do customize page sets, see *Choosing page sets* on *page 25*.

To set engine and tachometer values

1. Open the **Panel Setup Menu** (with an engine monitor window active, press the **MENU** button).
2. Set the number of engines.
3. Set the maximum tachometer range.

Temperature and fuel units

Engine temperature units (°F or °C) and fuel units (liters, imperial gallons or US gallons) are defined in the System Setup Menu under Units Setup.

17.3 Available data

The table below summarizes the data contained in each pre-configured data panel (available on the softkeys).

Data content		Engine	Engine & fuel	Fuel resources	Engine & resources	Multi engines (3)
		Panel Type				
	Tacho & engine hours	✓	✓		✓	✓
	Oil pressure	✓	✓		✓	✓
	Engine coolant temperature	✓	✓		✓	✓
	Boost pressure	✓	✓		✓	✓
	Alternator	✓	✓		✓	✓
	Fuel level (tanks 1 & 2)		✓	✓	✓	
	Fuel rate			✓	✓	
	Total fuel			✓	✓	

17.4 Engine monitor alarms

The engine monitor triggers an alarm (over NMEA/SeaTalk^2) when a problem is detected.

If this occurs, check the engine monitoring system and if necessary refer to the documentation supplied with your engine system. Press **ACKNOWLEDGE** to silence the alarm.

Note: When engine monitoring is active, all other system alarms remain active.

Chapter 18: System Setup and Customizing

This chapter details the settings available on the system Setup menu. For instructions on how to use the menus, see *Operating Principles* on page 21.

Chapter contents

18

The system Setup menu is split into sections: application-specific, external equipment and system-wide.

Application-specific menus are context-sensitive. The menu that opens is appropriate to the application in the active window when you press the MENU button.

- For application-specific setup menu details, refer to the appropriate application chapter of this book.

External equipment menus provide options to set up external equipment that is connected to your G-Series system. This might include AIS, Navtex, GPS or Compass equipment; the options available on the menu depend upon what is connected.

System setup menus control functions throughout the system.

When you first power on your system, default values are used. The tables that follow show the sub-menus, settings and options that are available to customize those defaults.

Changes you make on one display affect all displays in the network, with the exception of Display Setup, Databar Setup and Select Page set.

18.1   Page sets

If none of the default page sets suit you, you can edit them to display the application and page layouts you want.

To configure a page set

1. Open the system **Setup** menu.
2. Open the **Select Page Set** screen.
3. Highlight the page set you want to edit.
4. Press the appropriate softkey:
   EDIT PAGE SET
   RENAME PAGE SET
   RESET TO DEFAULT PAGES
5. Follow the on-screen instructions for the option you selected.
6. Press **OK**.

18.2   Databar

Configuration options available on the Databar Setup screen include:

- **Position on screen**
  At the top or on the side of the display.

- **Size**
  For the top position, set to large or small.

- **Data displayed**

Note: The databar configuration applies only to the display on which you are working.

To configure the databar

1. Open the system **Setup** Menu.
2. Select **Databar Setup** then **Configure**.
3. Press the appropriate softkey:
   ADD DATA
   REMOVE DATA
   MOVE DATA
4. Follow the on-screen instructions.
5. Press **OK** when complete.

The table below lists the data available.

Data groups	Data (abbreviations in brackets)
VESSEL	Vessel position (Ves Pos) Course over ground/Speed over ground (COG/SOG) Heading Speed Wind velocity made good (VMG Wind) Waypoint velocity made good (VMG Wpt) **Log trip** Log Trip Ground Log/Trip 1 Ground Log Ground Trip 1 Ground Trip 2 Ground Trip 3 Ground Trip 4 Rudder
NAVIGATION	Cross track error (XTE) Waypoint (WPT)
DEPTH	Depth
ENVIRONMENT	Pressure Air temperature (Air Temp) Sea temperature (Sea Temp) Set drift
WIND	True wind Apparent wind (App Wind) Ground wind
TIME AND DATE	Local time Local date

Data groups	Data (abbreviations in brackets)
CURSOR POSITION	Cursor position (Csr Pos)
TRANSDUCER STATUS	Transducer status

Log trip

You can view the total distance travelled (Log) and the distance of your current journey (Trip) based on your speed through water (STW) from a speed transducer.

In addition you can include in your data application or databar, ground log and four ground trip counters based on your GPS position. These counters are updated every minute and can be individually reset from the system setup menu.

If the GPS fix is lost or if the system simulator is switched on, the system will pause the ground log and trip counters. When the GPS fix returns, or the system simulator is switched off, the ground log and trip counters resume.

18.3 Compass bar

The compass bar gives you a continuous readout centred on your current heading or course over ground (COG). Arrows at either end of the bar indicate current steer direction.

When displayed, it replaces the databar and is always positioned at the top of the screen.

Active waypoint
Bearing marker
Steer direction
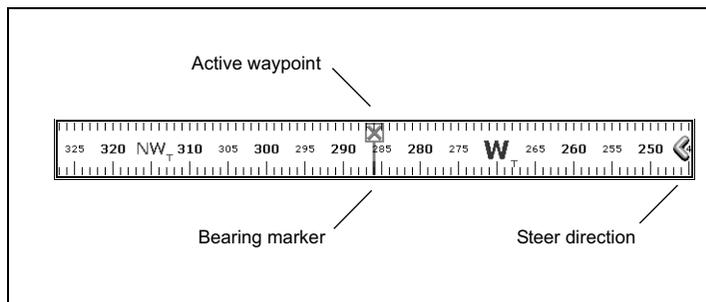
- In **heading** mode, the bearing marker is **RED**.

- In **COG** mode, the bearing marker is **GREEN**.

- When you use the compass bar with an **active waypoint**, the bearing marker is **BLUE** and the active waypoint symbol indicates the bearing to your waypoint.

You turn the compass bar on and off from the data toolbar.

To turn the compass bar on and off

1. Press the **DATA** button.
2. Use the **DATABAR** softkey to turn the compass bar on or off.

ON	Displays the standard databar, at the top or side of the screen depending on your setup options.
COMPASS	Replaces the standard databar with the compass bar, displayed along the top of the screen.
OFF	Removes both the databar and the compass bar from your display.

Note: When the compass bar is displayed the transducer icons remain visible in the top-right section of the screen.

Compass bar setup

The compass bar is set to open in heading mode. To change this setting, press the **MENU** button and go to the Databar Setup menu where you can select either Heading or COG.

Note: If a man overboard (MOB) alarm is activated while the compass bar is open, the compass is replaced with the MOB toolbar. The compass bar returns when you cancel the active MOB.

18.4 Compass Setup

This option can be used to linearize, or 'swing', a Raymarine ST80 active compass or Smart Heading sensor connected on SeaTalk.

Note: You calibrate an autopilot compass through the autopilot control head.

To linearize your compass

1. Select **Compass Setup**.
2. Press the **LINEARIZE COMPASS** softkey.
3. Follow the on-screen instructions.
4. Use the rotary controller to fine-tune heading alignment.

18.5 GPS Setup

The GPS is used to position your boat on the chart. You can set up your Global Positioning System (GPS) and check its status from the GPS Status option in the Setup Menu.

For each tracked satellite, this screen provides:

- satellite number
- signal strength bar
- status
- azimuth angle
- elevation angle
- A sky-view to show the position of tracked satellites

Actual mode GPS reporting (No Fix, Fix, D Fix or SD Fix)

Mode selected by GPS

Only available if connected to Raymarine landbased GPS e.g. 114
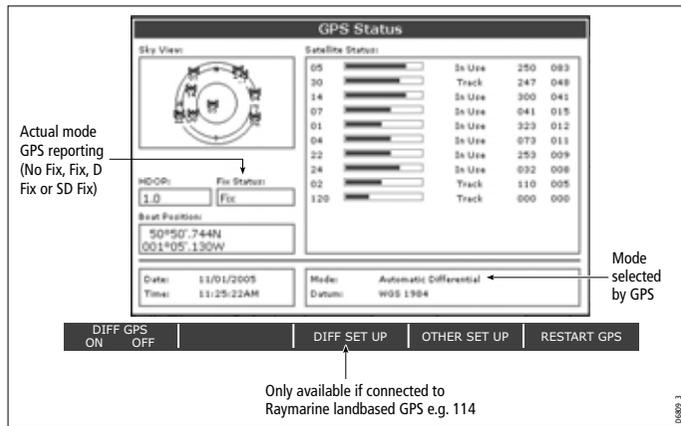
GPS accuracy depends upon the parameters shown, especially the azimuth and elevation angles which are used in triangulation to calculate your position.

Horizontal Dilution of Position (HDOP) is a measure of GPS accuracy; a higher figure signifies a greater positional error. In ideal circumstances, the figure should be in the region of 1.0.

Satellite differential system

Select the satellite group(s) appropriate to your area using the Other Set Up softkey:

* WAAS - United States
* EGNOS - Europe
* MSAS - Japan
* GAGAN - India

Note: The EGNOS, MSAS and GAGAN systems may not be active. Check with your local government for operational status.

COG/SOG filter

Set the COG/SOG filter to the level appropriate to your use and to the level of oscillation being experienced by the GPS:

* **HIGH** for trawling or when there is a high level of oscillation.
* **MEDIUM** for general use.
5. **LOW** when travelling at speed.Display Setup

18.6 System-wide settings

The following tables detail the options available under each of the system-wide menu items.

System Setup menu

MENU ITEM	OPTIONS
Position Mode Controls whether the position is expressed in latitude and longitude co-ordinates or Loran TDs.	Lat/Long TD's
TD Setup If the *Position Mode* is set to TD's, this function controls the selected chain identifier, slave and ASF.	Various
Simulator ON - allows operation of display without data from antenna and/or external data sources. Demo - a series of slides with descriptions to demonstrate the various system functions.	OFF ON Demo
Bearing Mode Mode of all bearing and heading data displayed. This does not affect how the chart or radar are drawn.	True Magnetic
MOB Data Type Selects whether position data or dead reckoning displayed on screen. Assuming your boat and the MOB are subject to same tide and wind effects, dead reckoning normally gives a more accurate course.	Dead Reckoning Position
Variation Source This allows you to compensate for the naturally occurring offset of the earths magnetic field. When set to AUTO, the value the system would use (or is using) is noted in the menu e.g. 4^0W. To enter your own variation value, set to MANUAL.	Auto Manual
Manual variation If Variation Source is set to MANUAL then use this setting to enter the variation value. This value is transmitted to any other SeaTalk instruments.	0°E Range 0 - 30º east/west

MENU ITEM	OPTIONS
Language Selected language used for screen text, labels, menus, options and display format for lat/lon position information.	Selection available will vary according to your location.
Extended Character Set Controls whether additional accented characters are made available when you are entering text.	OFF ON
Ground Trip Reset... Resets the chosen ground trip distance counter to zero.	Ground Trip 1 - 4 Reset
Settings Reset Resets all system setup menus, including page sets and the data bar to the factory default. Waypoints, routes and tracks are NOT removed.	
Settings and Data Reset Resets all system setup menus, including page sets and the data bar to the factory default. Waypoints, routes and tracks are deleted.	
Date /Time Setup	See sub-menu below
Units Setup	See sub-menu below
System Integration	See sub-menu below
Waypoint Password Set-up... Allows you to set up a password to protect access to your waypoint and route databases.	

Date/Time Setup Menu

MENU ITEM	OPTIONS
Date Format Displays date as day/month/year or month/day/year	mm/dd/yy dd/mm/yy
Time Format Displays either 12 or 24 hour clock	12hr 24hr
Local Time Offset Specify local time in increments of 0.5 hours (+/- 13) from the Universal Time Constant. Use rotary control for 0.5hr increments and trackpad to individually adjust the value of the tens, units, and tenths - system rounds to nearest 0.5 hr.	+/- 13hrs from UTC

Units Setup Menu

MENU ITEM	OPTIONS
Distance Unit Choose the units you require distances to be displayed in.	NM Miles km
Speed Units Choose the units that you require speed to be measured in.	Knots MPH KPH
Depth Units Choose the units that you require depths to be measured in.	Meters Feet Fathoms
Temperature Units Select required temperate unit.	Fahrenheit Celsius

MENU ITEM	OPTIONS
Pressure Units Select required pressure unit.	Bar Psi Kpa
Volume Units Select required volume unit.	US Gallons Imp Gallons Litres

System Integration Setup Menu

MENU ITEM	OPTIONS
DSC Message When set to ON, details of distress DSC messages are displayed on screen	ON OFF
SeaTalk Alarms When set to enabled, all SeaTalk system alarms are received and displayed on the chartplotter.	Enabled Disabled
Data Master When set to ON, the display you are working on is defined as the master.	ON OFF
Bridge NMEA Heading Used to prevent NMEA heading data being bridged onto the SeaTalk bus. Switch this function off if you are using MARPA with an external fast heading sensor.	ON OFF
NMEA Output Setup Allows you to switch off individual NMEA out sentences	APB, BWC, BWR, DBT, DPT, GGA, GLL, MTW, RMA, RMB, RMC, RSD, RTE, TTM, VHW, VLW, VTG, WPL, ZDA
NMEA Port Setting Select the appropriate setting dependent on the equipment attached to the NMEA port for each individual display. When Navtex 4,800 or 9,600 selected, the option to view the Navtex message list is available.	NMEA 4,800 Navtex 4,800 Navtex 9,600 AIS 38,400

Note: If AIS or Navtex has been set on any display in the system, the menu options will be available on all displays. Navtex and AIS are available simultaneously.

Alarm Setup Menu

The Alarm Setup Menu has five sub-menus:

- System Alarms Setup
- Navigation Alarms Setup
- Radar Alarms Setup
- Fishfinder Alarms Setup
- AIS Alarms Setup

System Alarms Setup

System alarms sound in all applications.

MENU ITEM	OPTIONS
Anchor Alarm Switches the anchor alarm on or off.	OFF ON
Anchor Alarm Radius If the *Anchor Alarm* is set to ON, an alarm is triggered when you drift from your anchor position by more than the specified distance.	0.01 - 9.99 nm 0.10nm (or equivalent in the selected *Distance Unit*)
Timer Switches the countdown timer alarm on or off	OFF ON
Timer Period If the *Timer* is set to ON, the system counts down from the time you specify. An alarm is triggered when zero is reached.	00h01m - 99hrs 59mins 00h00m
Alarm Clock Switches the alarm clock on or off.	OFF ON
Alarm Clock Time If the *Alarm Clock* is set to ON, an alarm is triggered when the time you specify is reached.	00.01 - 24:00hrs 00:00

MENU ITEM	OPTIONS
Temperature Alarm If this alarm is set to ON, an alarm is triggered if the temperature moves into or out of the range that you have specified in *Lower Temperature Limit* /*Upper Temperature Limit.*	OFF ON
Lower Temperature Limit Specifies the lower limit of the sea temperature range that is to trigger the *Temperature Alarm.*	60°F 0°-99.8°F
Upper Temperature Limit Specifies the upper limit of the sea temperature range that is to trigger the *Temperature Alarm.*	75°F 0.2°-99.9°F

Navigation Alarms Setup

Navigation alarms will sound in any application when you are navigating.

MENU ITEM	OPTIONS
Arrival Alarm Radius The distance from the target waypoint or the closest point of approach to the target waypoint that triggers the arrival alarm to sound.	0.1nm 0.01 - 9.99nm
Offtrack Alarm Switches the off-track alarm on or off	OFF ON
Offtrack Alarm XTE If the *Offtrack Alarm* is set to ON, an alarm is triggered when the XTE for any current navigation, exceeds the value that you have specified.	0.3nm 0.01 - 9.99nm (or equivalent in the selected *Distance Unit*)

Radar Alarms Setup

These alarms will only sound when you are in the radar application.

MENU ITEM	OPTIONS
Guard Zone Sensitivity Ensure that this is not set too low or targets will be missed.	50% 0 - 100%

Note: If a radar is not detected, the alarm setup windows are grayed out.

Fishfinder Alarms Setup

MENU ITEM	OPTION
Fish Alarm Switches the fish alarm on or off.	OFF ON
Fish Alarm Sensitivity If the *Fish Alarm* is set to ON, an alarm is triggered when the fish return strength reaches the sensitivity that you specify.	5% 10% - 100%
Fish Alarm Depth Limits If the *Fish Alarm* and this alarm is set to ON, an alarm is triggered (2 beeps) if any target meets the sensitivity level and is within the *Shallow Fish Limit* and *Deep Fish Limit* that you specify.	OFF ON
Shallow Fish Limit Specifies the lower value for the *Fish Alarm Depth LImit*.	2ft (0002ft - 1000ft)
Deep Fish Limit Specifies the upper value for the *Fish Alarm Depth LImit*	1000ft (0002ft - 5000ft)
Shallow Depth Alarm Switches the shallow depth alarm on or off. If a DSM is not connected, this cannot be set.	OFF ON
Shallow Depth Alarm Value If the *Shallow Depth Alarm* is set to ON, an alarm is triggered if the depth drops below the value you specify.	5ft (0002ft - maximum range of transducer)
Deep Depth Alarm Switches the deep depth alarm on or off. If a DSM is not connected, this cannot be set.	OFF ON
Deep Depth Alarm Value If the *Deep Depth Alarm* is set to ON, an alarm is triggered if the depth exceeds the value that you specify.	

Note: If a fishfinder is not detected, the alarm setup windows are greyed out.

AIS Alarms Setup

Dangerous Targets Alarm Switches the alarm for dangerous targets to on or off. When OFF, the AIS alarm off icon is displayed in the status bar.	OFF ON
AIS Alarm List Details the identity, description, time and acknowledgement of alarm messages received from an AIS receiver.	

Display setup

MENU OPTION	OPTIONS
Soft key Autohide Controls whether the toolbar is automatically hidden if not used for a period of 10 seconds. Pressing any key re-displays it.	OFF ON
Cursor Autohide Controls whether the cursor is automatically hidden if not used for 10 seconds. Pressing any key re-displays the cursor.	OFF ON
Key beep Controls whether a noise is made when you press a key.	OFF ON
Text size Controls the size of the text on the screen	Small Large

Chapter 19: CompactFlash Cards and Managing Data

CompactFlash cards expand the capabilities of the G-Series system. They provide:

- **Detailed cartographic information**
  Obtain cartographic information using Navionics® chart cards. To check the current availability of Navionics chart card types, visit www.navionics.com or www.navionics.it.

- **Archiving and updating**
  Store waypoints, routes and tracks and update system software.

- **Saving data**
  Save waypoint, route and track data for use on other equipment like personal computers.

Chapter contents

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19.1 Cautions

CompactFlash Card Installation
When installing CompactFlash cards ensure that the card is fitted the correct way around. DO NOT try to force the card into position as this may result in irreparable damage to the card.

Water Ingress
To prevent the ingress of water and consequent damage to the unit, ensure that the chart card door is firmly closed at all times. This can be confirmed by an audible click.

Card Removal
DO NOT use a metallic instrument such as a screwdriver or pliers to help you remove a card, as doing this can cause irreparable damage.

Card writing
CompactFlash cards can be damaged if they are removed from the unit during either a read or write operation. A warning is displayed during write operations. The unit is continually reading the card. It is therefore essential that before removing the card you follow the correct procedure to stop access to the card.

Note: Raymarine recommends the use of SanDisk Standard Compact Flash memory for reliability.

19.2 Card insertion and removal

You can remove and insert cards while a chart is displayed provided that you follow the correct procedure. Chart information is retained on-screen until the chartplotter redraws the screen; for example, when you pan outside the current area, or use the RANGE button to change the chart scale.

Cartographic data is available on any monitor.

Card removal

Only remove the card while the CF Card Removal message is displayed. This is opened through the setup menu, documented below. Once the message is closed, the card should no longer be removed

If you try to remove a card without accessing the setup menu, a blue screen and warning message is displayed and the unit must be restarted.

To insert a CompactFlash card

1. Check that you are using the correct type of card (see Important Information, at the beginning of this manual).
2. Open the chart card door.
3. Insert the card with the lip of the card facing inwards. It should position easily. If it does not, DO NOT force it but check the direction in which the lip is facing.
4. Gently press the card home.
5. To prevent the ingress of water and consequent damage, close the chart card door and press firmly until it clicks.

To remove a CompactFlash card with the unit powered up

1. Press the **MENU** button to open the system **Setup** menu.
2. Select **Remove CF Card**.
3. When you see the message telling you it is safe to do so, remove the card. **Do not remove a card until you see the pop-up saying it is safe to do. Otherwise you could lose data.**
4. Open the chart card door.
5. Grip the card and pull to remove it from its slot.
6. To prevent water damage, close the chart card door and press firmly until it clicks.
7. Press **OK**.

To remove a CompactFlash card with the unit powered down

1. Open the chart card door.

2. Grip the card and pull to remove it from its slot.
3. To prevent water damage, close the chart card door and press firmly until it clicks.

19.3 Saving and retrieving data

The system can save up to 3000 waypoints, 150 routes and 15 tracks in database lists. Once this number is reached, you need to archive data to a CompactFlash card for safe-keeping or retrieval at a later date.

Alternatively, you can transfer data to another instrument or PC using SeaTalk^{hs} or NMEA. When navigation is active, you can also receive waypoints, routes and tracks from a PC, other SeaTalk^{hs}, SeaTalk and NMEA instruments (see).

Raymarine strongly recommend that you save data to a separate CompactFlash card and not to a Navionics card containing cartography.

To save data to a CF card

1. Make sure the correct card is inserted.
2. Press the **DATA** button.
3. Press the **ARCHIVE AND TRANSFER** softkey.
4. Press the **SAVE TO CARD** softkey.
5. Select the data list you want to save on the **SELECT LIST** softkey.
6. Define the data you want to save by pressing the appropriate softkey.

To retrieve information from a CF card

1. Insert the appropriate card.
2. Press the **DATA** button.
3. Press the **ARCHIVE AND TRANSFER** softkey.
4. Press the **RETRIEVE FROM CARD** softkey.
5. Select the data list you want to retrieve from.
6. Define the data you want to retrieve by pressing the appropriate softkey.

If your selection is already found to exist on the system, a warning message appears and the softkey labels change to give you the options of retrieving as new, replacing the data or cancelling the retrieving process.

To erase information from a CF card

1. Insert the appropriate card.
2. Press the **DATA** button.
3. Press the **ARCHIVE AND TRANSFER** softkey.
4. Press the **ERASE FROM CARD** softkey.
5. Select the list you want to remove data from.
6. Define the data to be deleted.
7. Press **YES** to confirm

19.4 Sending and receiving data from a personal computer

You can transfer and retrieve waypoints or routes to and from another instrument or PC using NMEA or SeaTalk^{hs}.

With a RayTech 6.0's planner you can transfer waypoints and routes via a CF memory card. Such transfers require that the PC be connected to the display's NMEA port via a serial data cable. Ray-Tech 6.0 will transfer waypoints and routes via SeaTalk^{hs}.

To transfer or receive information from a personal computer

1. Press the **DATA** button.
2. Press the **ARCHIVE AND TRANSFER** softkey.
3. Press **TRANSFER ON NMEA.**
4. Press the softkey that corresponds to the transfer you want to perform.

To stop the transfer at any point, press **STOP TRANSFER.**

19.5 Password protecting your waypoints

If required, you can use password protection to control access to your waypoint and route databases. Once you have set up a password, it must be entered to access the Password Setup sub-menu, regardless of the whether Password Protection is set to ON or OFF.

Password confirmation

When Password Protection is enabled and you attempt to access a password-protected function for the first time during a power-cycle, the system asks for the password for the following functions:

- Access WPTS key functions. This does not affect the operation of the MOB function.
- Access ROUTES soft key functions.
- Create a route from a track. All other track functions are unaffected.
- Archive or transfer any waypoints.
- Enter the Waypoint Password Setup menu.

Disabled data/functions

When Password Protection is ON and you have not entered a password you cannot:

- View details of waypoint and route databases.
- Edit waypoints or routes.
- Goto an existing waypoint.
- Follow a route.
- View waypoints on screen (even when the SHOW/HIDE status is set to SHOW).
- View waypoint names on screen (even when WAYPOINT NAME is set to ON).

- All other options including GOTO CURSOR are unaffected.

To set up a password

1. Open the system **Setup** menu.
2. Select **System Setup**.
3. Select **Waypoint Password Setup**.
4. Select **Enable Password: ON**.
5. Press **OK**.
6. Read and accept the warning.
7. Enter the password and confirm it.
8. If wanted, enter the password hint.

Note: The password is case sensitive.

The password is now set and protection enabled although access to the waypoint and route functions remains available until you restart your system.

To change the password

1. Select **Change Password** on the **Waypoint Password Setup** menu.

Enabling and disabling password protection

Once you have set up a password on your system (see previous section) you need to key in this password whenever you want to change the status of the password protection feature.

To enable or disable password protection

1. Open the system **Setup** menu.
2. Select **System Setup**.
3. Select **Waypoint Password Setup**.
4. Enter your password. Remember it is case-sensitive.
5. Select **Enable Password: OFF**.
6. Press **OK**.

If you enter an invalid password more than twice within one power cycle the system displays the password hint.

There is no limit to the number of attempts to enter a valid password but if you forget your password, you need to perform a Settings and Data Reset (see *page 205*) which will erase all waypoints in the unit's memory.

Raymarine strongly recommends that you regularly save your waypoints, routes and tracks to a CF memory card.

Chapter 20: Maintenance and Troubleshooting

This chapter provides information on maintaining and troubleshooting the G-Series system, and information about getting assistance from Raymarine.

Chapter contents

20

20.1 Maintenance procedures

At regular intervals, carry out the following servicing procedures:

- Routine checks.
- Cleaning the Display.

Do not attempt any other servicing procedures.

Servicing and Safety

- Raymarine equipment should be serviced only by authorized Raymarine service technicians. They will ensure that service procedures and any replacement parts used will not affect performance. There are no user serviceable parts in any Raymarine product.

- Some products generate high voltages, so never handle the cables or connectors when power is being supplied to the equipment.

- When powered on, all electrical equipment produces electro-magnetic fields. These can cause adjacent pieces of electrical equipment to interact with one another, with a consequent adverse effect on operation. In order to minimize these effects and enable you to get the best possible performance from your Raymarine equipment, guidelines are given in the installations manual, to enable you to ensure minimum interaction between different items of equipment, i.e. ensure optimum Electromagnetic Compatibility (EMC).

- Always report any EMC-related problem to your nearest Raymarine dealer. We use such information to improve our quality standards.

- In some installations, it may not be possible to prevent the equipment from being affected by external influences. Generally this will not damage the display, but it can lead to spurious re-setting action, or momentarily may result in faulty operation.

- At the end of the useful working life of this product, it should disposed of in accordance with local regulations.

Routine checks

Carry out the following tasks on a regular basis:

- Examine all cables for signs of damage, such as chafing, cuts or nicks.
- Check that all cables are securely connected.

Cleaning the display
Please read these instructions carefully. Failure to follow the correct cleaning procedure may damage your display window and invalidate your warranty.

Window coating

A coating is applied to the plastic window of your display. This makes it water repellent and prevents glare. To avoid damaging this coating, the recommended cleaning procedure must be followed.

Recommended cleaning procedure

1. Power off the Display.
2. Rinse the window with fresh water, to remove all dirty particles and salt deposits.
3. Allow the window to dry naturally.

✗ Do not use any abrasive materials including a dry cloth.
✗ Do not use any cleaning solutions, polishes or sprays.
✗ Do not use a jet wash.

4. If any smears remain, very gently wipe the window with a clean microfiber cleaning cloth (provided with the Display or available from opticians).

20.2 Resetting the monitor

You can reset the G-Series system in one of two ways:

- Settings reset.

- Settings and data reset.

After applying either of these, the system resets and returns you to the power-on procedure.

Settings reset

When you apply a settings reset, all system set-up menus, page sets and the data bar are reset to the factory default. Your waypoints, routes and tracks are NOT removed.

Settings and data reset

When you apply a settings and data reset, all the system settings return to their default values and **waypoint, route and track data are deleted**.

To apply a settings reset

1. Open the system **Setup** menu.
2. Select **System Setup**.
3. Select **Settings Reset**.
4. Press the **YES** softkey to confirm.

To apply a settings and data reset

1. Open the system **Setup** menu.
2. Select **System Setup**.
3. Select **Settings and Data Reset**.
4. Press the **YES** softkey to confirm.

20.3 Troubleshooting

All Raymarine products are subjected to comprehensive test and quality assurance programs before packing and shipping. However, if your system should develop a fault, this section will help you identify the most likely cause and suggest corrective action.

If, after using this section, you still have problems with your system, contact your local dealer, national distributor or Raymarine Technical Services Department for further advice.

Always quote the product serial numbers which are printed on the back of the unit.

This section is divided into problems associated with:

- Installation and display.

- Chart application.

- Fishfinder application.

- Radar application.

- Weather receiver.

Installation and display

Problem

- Solution

System does not power up

- Check power supply cable is sound and that all connections are tight and free from corrosion.

- Check relevant fuses.

- Check power source is of the correct voltage and sufficient current.

System switches off

- Check power input connection is secure at the rear of the Display(s).

- Check power cable for damage or corrosion.

- Check your boat's power supply for faulty connections or insufficient cable diameter.

How do I upgrade software?

- Visit www.raymarine.com and click on Support to download the latest software. Follow the instructions included with these downloads.

How do I reset my system?

- Use the system setup menu. For details see .

Display very dull/hard to view

- Check PALETTE set to DAY (see).

No databar or compass databar displayed

- Set the databar or compass bar to ON (see)

Problem

- Solution

No fix displayed against GPS status icon

- Check GPS status (see).

- Check the GPS antenna has a clear view of the sky.

- Check connections/operation of the GPS antenna.

No instrument, navigational or engine data displayed

- Check instruments/engine interface are operating correctly.

- Check SeaTalk/NMEA correctly connected to Display (see System Integration chapter of the Installation Guide).

- Check all SeaTalk/NMEA cables are free from damage and corrosion.

Chart

Problem
Solution

Vessel not shown in correct geographical position

- Check GPS status (*page 190*).

- Check that the Display is not in Simulator mode (see *page 29*).

- Check the SDGPS setting is switched OFF.

- Perform the chart offset operation (see *page 47*).

Display does not show enough chart detail

- Set the Declutter option to OFF (see *page 68*).

- In the Cartography Setup Menu switch the appropriate feature(s) to ON.

Fishfinder

Problem
Solution

How do I upgrade my DSM software?
Visit www.raymarine.com and click on Support to download the latest software. Follow the instructions included with these downloads.

Problem
Solution

'No data source' for my fishfinder

- Check the DSM power cable is free from damage and corrosion.

- Check DSM is receiving the correct voltage and current.

- Check status LED of the DSM unit - refer to Maintenance and problem solving section of the DSM owner's handbook.

- Check the DSM's SeaTalk High Speed connections are sound and connected correctly - refer to the System Integration chapter of your E-Series Installation Guide.

No depth readings available from the DSM

- Check status LED of DSM unit - refer to the Maintenance and Problem solving section of your DSM Owner's manual

- Check Gain setup and Transducer frequency - refer to the Fishfinder chapter in your Reference Manual.

- Check the DSM power cable is free from damage and corrosion

Radar

Problem
Solution

'No data' message

• Check that cable connecting the scanner to the GPM is securely connected and undamaged.

'Scanner software incompatible' message

• Check software revisions by contacting your local Raymarine dealer.

"Invalid scanner software: Version xx.x, Version xx.x required"

• Incorrect software version installed. Contact your local Raymarine dealer.

"Scanner not responding" message

• Check that the cable connecting the scanner to the radar display unit is securely connected and undamaged.

"Scanner hardware fault"

• Scanner not functioning.

The bearing displayed on the radar picture is not the same as the actual bearing

• Perform the bearing alignment procedures described in the Installation Guide.

Weather receiver

"No connection"

• Check that the cable connecting to the weather receiver is securely connected and undamaged.

Display not showing weather data

• Check the weather graphics are switched on in the weather graphics menu (see *page 113*).

20.4 Getting technical support

This section details how you can obtain technical support for your G-Series system or for your Navionics cartography.

Raymarine provides a comprehensive customer support service, on the world wide web, through our worldwide dealer network and by telephone help line. If you are unable to resolve a problem, please use any of these facilities to obtain additional help.

If you need to request service, please quote the following product information:

• Product name.
• Product identity.
• Serial number.
• Software application version.

To see your product information
1. Open the system Setup menu.
2. Select System Diagnostics.
3. Select Software Services.
4. Select the Software Services menu:

Web

There is a Customer Support area on our website at:
www.raymarine.com

This contains Frequently Asked Questions, servicing information, e-mail access to the Raymarine Technical Support Department and details of worldwide Raymarine agents.

If you don't have access to the web, contact Technical Support where specialists are available to answer questions about installing, operating and trouble-shooting all Raymarine products.

Contacting Raymarine in the US

You can contact Raymarine in the US either using the website as detailed above or by calling one of the telephone numbers below.

For accessories and parts

Contact your authorized Raymarine dealer or Raymarine Technical Services on:

1-603-881-5200 extension **8665**

Opening hours: Monday through Friday 0815 - 1700, Eastern Standard or Eastern Daylight Savings Time.

For product repair and service

If your Raymarine product should develop a problem, contact your authorized Raymarine dealer for assistance. The dealer is best equipped to handle your service requirements and can offer time-saving help in getting your equipment back into normal operation.

If repairs cannot be obtained conveniently, product service can be obtained by returning the unit to:

Raymarine Inc.
21 Manchester Street
Merrimack, NH,
03054 - 4801
US

The Product Repair Centre is open Monday to Friday 0815 to 1700 Eastern Standard Time or Eastern Daylight Savings Time.

All products returned to the Repair Centre are registered upon receipt and a confirmation letter is sent to acknowledge the repair status and the reference number of the product.

We will make every effort to carry out the repair and return your unit as quickly as possible.

If you wish to enquire about the repair status of your unit, contact the Repair Centre on:

1-603-881-5200

Contacting Raymarine in Europe

You can contact Raymarine in Europe either using the Raymarine website as detailed above or by calling the telephone number below.

For technical support, service and accessories

Contact your authorized Raymarine dealer or Raymarine Technical Support at:

Quay Point
Portsmouth
P03 5TD
England

Tel: **+44(0)23 92714713**

Fax: **+44(0)23 92661228**

20.5 Navionics contact details

For questions about Navionics cartography, contact Navionics directly through their website:

www.navionics.com

or contact Navionics customer support:

Navionics customer support		
Navionics Italy	Via Fondacci, 269 Z.I. Montramito 55054 Massarosa Italy	Tel: +39-0584-329111 Fax: +39-0584-962696 sales@navionics.it
Navionics USA	6 Thatcher Lane Wareham MA 02571 USA	Toll Free: 800-848-5896 Tel: 508-291-6000 Fax: 508-291-6006 sales@navionics.com

Navionics customer support		
Navionics Australia	134/85 Reynolds Street Balmain NSW 2041 Australia	Tel: +61-2-9555-2522 Fax: +61-2-9555-2900 sales@navionics.com.au
Navionics UK	PO Box 38 Plymouth, PL9 8YY England	Tel: +44-1752-204735 Fax: +44-1752-204736 sales@navionics.co.uk

If you wish to file a report of an error or omission on a Navionics chart, please provide the information to Navionics web site, Discrepancy Report section at the link below:

http://www.navionics.com/DiscrepancyReports.asp

20.6 Sirius contact details

For questions about the Sirius marine weather service, contact:

www.sirius.com/marineweather
1-800-869-5480

For questions about the Sirius audio, contact:

www.sirius.com
1-888-539-SIRIUS

Chapter 21: Shortcuts

The G-Series system software contains shortcuts for some frequently-used functions. These are usually accessed by pressing and holding the appropriate keyboard button or softkey, but some are reached by pressing the rotary controller.

They are summarized in this chapter.

Chapter contents

21

21.1 System shortcuts

Hardkey shortcuts

Press and hold.

Hardkey	Action
PAGE	Open Select Page Set screen.
ACTIVE	Set active window to full screen.
WPTS/MOB	**Press once** to place a waypoint when waypoints toolbar is open. **Press and hold** to activate man overboard.
DATA	Hold until system beeps to save current screen to CF card.

Softkey shortcuts

Press and hold.

Toolbar	Softkey	Action
Data	CHART VECTORS	Open Chart Setup Menu.
	DATABAR ON/OFF/COMP	Open Databar Setup menu.
Fishfinder	PRESET ADJUST PRESET	Open Configure Preset Frequencies menu.
Video	VIDEO 1/2/3/4	Open Video Setup Menu
Data and Engine Monitor	PANEL 1/2/3/4/5	Open Panel Configuration screen

Rotary controller shortcuts

Press the rotary controller in until it clicks once.

Application	Action
Radar	Toggle between ADJUST VRM and ADJUST EBL when adjusting VRM
	Cycle through adjustment softkeys when adjusting guard zones.
3D chart	Toggle between ADJUST ROTATE and ADJUST PITCH.
Video	Open Video Source selection list.

Chapter 22: Disclaimers and Licenses

22

Chapter contents

22.1 Sirius Weather

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