E-Series Display
Operating Guide

Raymarine®

www.raymarine.com

General Operation

What can I see?

Basic Navigation

What is around me?

Where am I going?

What's under the boat?

Other functions

DATA
Press to access ruler, chart vectors, archive & transfer and data bar on/off functions.

ACTIVE
When multiple windows are open:
- Press to select required window.
- Press and hold to maximize current window.
- Press again to return to multiple windows.

PAGE
Press to scroll through available pages. Press and hold to select different page set or customise your own layout.

WPTS/MOB
Press to display the waypoint soft keys. Press again to place waypoint at your boat's position.
Press and hold to place a **Man Overboard (MOB)** marker at your current position. Press and hold again to exit MOB.

MENU
Press to access the set up menus. Press and hold to access help information.

Rotary control
Use to edit alpha-numeric values, and scroll through lists.
Turn clockwise to increase value and counter-clockwise to decrease value.
Press to move the cursor to the next character when editing text.
Use to edit symbology (VRM/EBL etc).

Trackpad
Used to control the on-screen cursor and to scroll through menu items. Press the corresponding edge of the trackpad to move the cursor horizontally, vertically or diagonally. Press and hold to move rapidly over larger distances.

Softkeys
Press to select the corresponding function identified by the on-screen label

CANCEL
Press to cancel the selected on-screen option when editing data; also used to return to the previous soft key set or menu.

Power
Press once to turn ON.
Press again to access backlight functions and scanner controls. Press and hold to turn the display OFF.

OK
Press to select an on-screen option, or return to the previous set of soft keys or menu.

RANGE
Press to change the display scale so that a smaller or larger area can be seen on the screen.

Chart Card slot
Open the cover to install CompactFlash cards.

Raymarine   E120

D7523_1

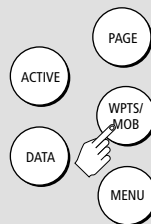## How do the controls work?

Buttons

- Access system functions or change what you see on-screen. Within the text of this document they are written in bold capitals e.g. **WPTS/MOB.**

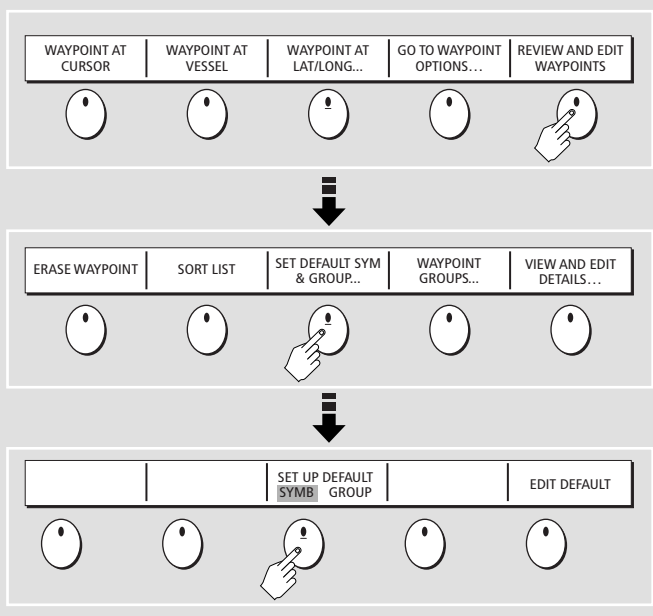- Press and hold to access short cuts - see individual buttons on facing page.

Example:
This example shows the series of button and soft key presses required to change the waypoint default symbol or group.

Soft keys

- They change depending on application or function being performed.

- Press and hold **MENU** to display help information for the currently displayed soft keys.

- Press the corresponding key (below the screen) to select.

- Further soft keys may be displayed. If a key has several options, each press will highlight the next option.

- If a key displays a single value or a slider above, use the rotary control to adjust.

- Within the text of this document they are written in capitals e.g. SORT LIST.

WAYPOINT AT CURSOR	WAYPOINT AT VESSEL	WAYPOINT AT LAT/LONG...	GO TO WAYPOINT OPTIONS…	REVIEW AND EDIT WAYPOINTS

ERASE WAYPOINT	SORT LIST	SET DEFAULT SYM & GROUP...	WAYPOINT GROUPS...	VIEW AND EDIT DETAILS…

		SET UP DEFAULT SYMB GROUP		EDIT DEFAULT

This process of pressing buttons and soft keys to navigate to the required function, is simplified within this guide and represented by a strip e.g.

WPTS/MOB ⟹ REVIEW AND EDIT WAYPOINTS ... ⟹ SET DEFAULT SYM & GROUP... ⟹ SET UP DEFAULT SYMB   GROUP

The Cursor

The Cursor appears on the screen as a white cross.

To make it easier to locate on screen, the cursor changes to a circle with a cross in it, when it is moved after a 10 second period of inactivity.

The cursor is context-sensitive. When it is placed over an object e.g. a waypoint or chart feature, it changes color and a label or information associated with the object is displayed. When you place the cursor over certain items, the soft keys change to enable you to access related operations.

Simulator:

To practice using your Display without data from a GPS scanner or fishfinder, switch on the simulator via the System Setup menu.
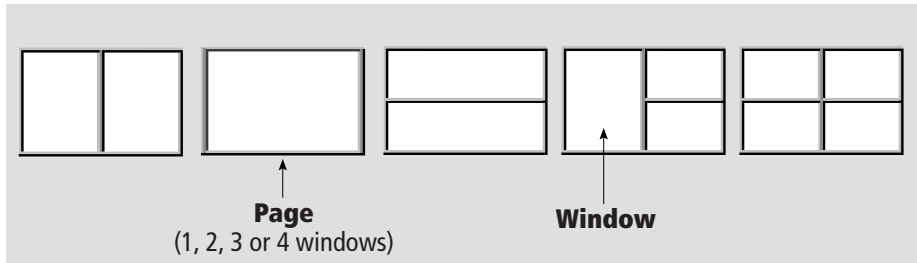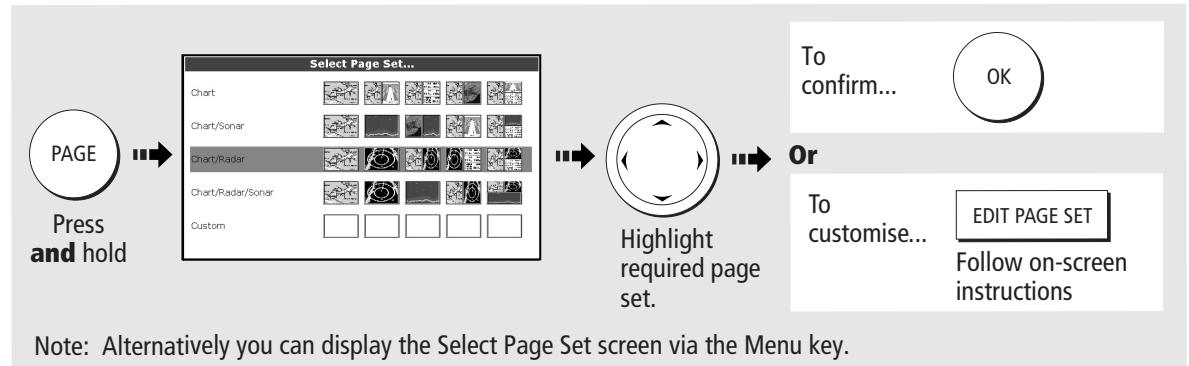
How do I select how the applications are displayed?

The applications are shown using a combination of page sets, pages and windows. There are five page sets each containing five pages with a combination of windows and applications in each. These sets can be edited to define the combination that suits your particular needs.
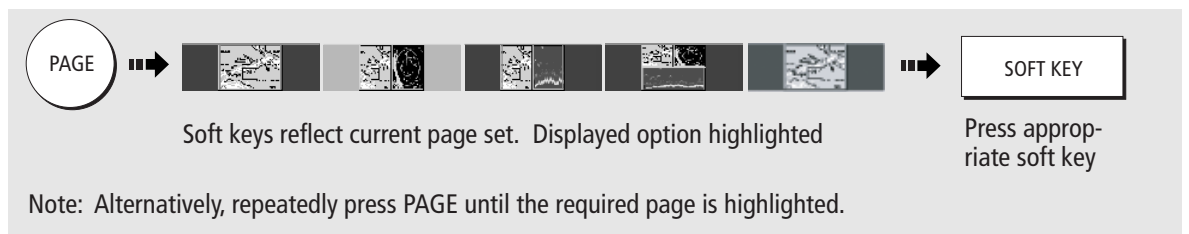
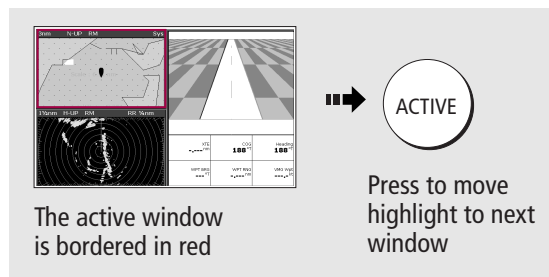Any changes you make will be saved to the system. You can change these preferences as many times as you wish.

Page
(1, 2, 3 or 4 windows)
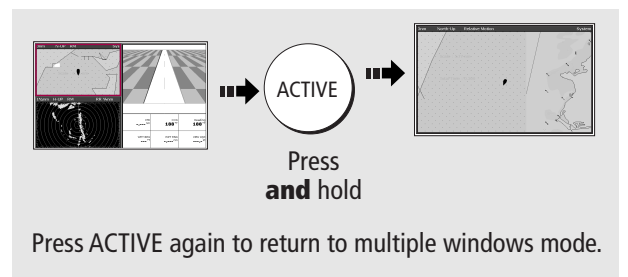
Window

How do I select the Page Set?

PAGE

Press **and** hold

Select Page Set...

Chart

Chart/Sonar

Chart/Radar

Chart/Radar/Sonar

Custom

Highlight required page set.

To confirm... OK

Or

To customise...   EDIT PAGE SET

Follow on-screen instructions

Note: Alternatively you can display the Select Page Set screen via the Menu key.

How do I select a Page?

PAGE

Soft keys reflect current page set. Displayed option highlighted

SOFT KEY

Press appropriate soft key

Note: Alternatively, repeatedly press PAGE until the required page is highlighted.

How do I select a Window?

The active window is bordered in red

ACTIVE

Press to move highlight to next window

To temporarily maximise active window:

ACTIVE

Press **and** hold

Press ACTIVE again to return to multiple windows mode.

? **More information**   See the 'General Operation' chapter of the Reference Manual

⚠️ **CAUTION**

CompactFlash Card
In order to protect your E-Series Display and CompactFlash cards from irreparable damage, please adhere to the following:

- **Fit the card the correct way around. DO NOT force.**
- **Ensure card door is firmly closed at all times.**
- **DO NOT use a metallic instrument (e.g. screwdriver or pliers) to aid card removal.**
- **Follow the correct procedure for removing a card (see below).**
- **DO NOT remove card during either a read or write operation.**

How do I insert a CompactFlash card?

1. Check that you are using the correct type of card. Raymarine recommend Navionics Chart cards or SANDISK CompactFlash cards.

2. Open the chart card door, located on the front left of the display.

3. Insert the card as shown, with the lip of the card facing inwards. It should position easily. If it does not, DO NOT force it, check the direction in which the lip is facing.

4. Gently press the card home and then firmly click the chart card door shut.
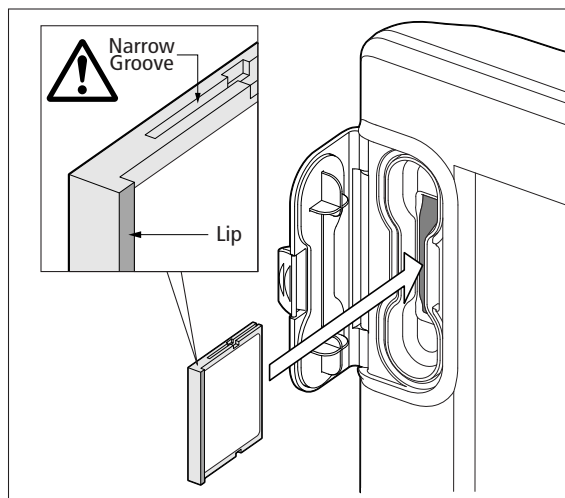
How do I remove a CompactFlash card?

... with the unit powered

1. Press **MENU**. The Setup menu is displayed.

2. Use trackpad (up/down) to highlight and then (right) to select CF CARD REMOVAL. The system will now complete its checks.

3. When instructed to do so, open the chart card door and remove the card.

4. Firmly click the chart door shut and press **OK** twice.

... with the unit powered down

1. Open the chart card door.

2. Grip the card and pull to remove it from its slot.

3. Firmly click the chart card door shut.

? **More information...**   See the 'General Operation' chapter of the Reference Manual.

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What can I see?
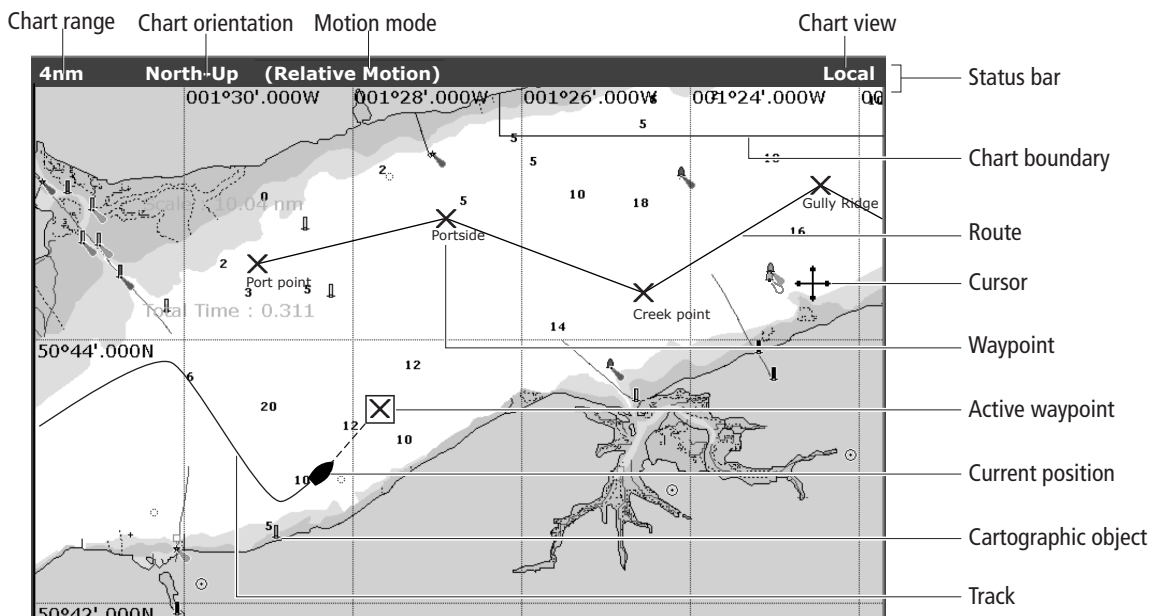## Understanding the chart
Card No. 5

What can I use the chart for?

- Find where you are.
- Interpret your surroundings.
- Place waypoints at specific locations.
- Navigate to a specific point.
- Monitor where you are going.
- Record where you have been.
- Measure the distance between two points.

- Build and follow routes.
- Manage and edit routes and tracks.
- Distinguish between fixed & moving objects (radar overlay).
- View photographs of ports and marinas.
- View information normally contained in an almanac.
- Display an aerial photo overlay.

Labels around the chart: Chart range, Chart orientation, Motion mode, Chart view, Status bar, Chart boundary, Route, Cursor, Waypoint, Active waypoint, Current position, Cartographic object, Track

Status bar text: 4nm   North-Up   (Relative Motion)   Local

How do I move around the chart?

To change the scale:

- Press **RANGE** (OUT) to see a larger area of the chart.
- Press **RANGE** (IN) to see a smaller area in more detail.
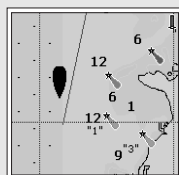
To pan the chart:

- Moves cursor. When cursor reaches window edge, chart pans to a different area.
- Press and hold to pan larger areas.

How do I find where I am on the chart?

The boat symbol indicates your position.

If you cannot find your boat symbol :

FIND SHIP CURSOR

The screen automatically pans to your boat's position and re-activiates the motion mode (see below - 'How do I change how my boat moves on the chart').

? More information . . . See 'Using the Chart' chapter of the E-Series Reference Manual
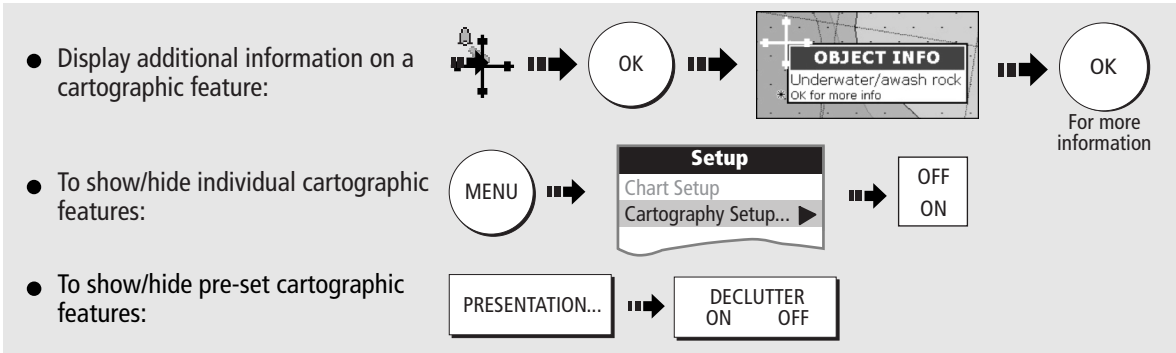
D8978_1

Viewing detail on the chart

- Display additional information on a cartographic feature:

OK ➧ **OBJECT INFO** Underwater/awash rock OK for more info ➧ OK

For more information

- To show/hide individual cartographic features:

MENU ➧ **Setup** / Chart Setup / Cartography Setup... ▶ ➧ OFF ON

- To show/hide pre-set cartographic features:

PRESENTATION... ➧ DECLUTTER ON OFF

How do I change the chart orientation?

The **orientation** of the chart refers to the relationship between the chart and the direction you are travelling in. It is used in conjunction with motion mode (see below) to control how your boat and chart relate to one another and how they are displayed on screen. The default mode is **North Up** (N-UP). This displays your chart with true north upwards. As your heading changes the boat symbol moves accordingly.

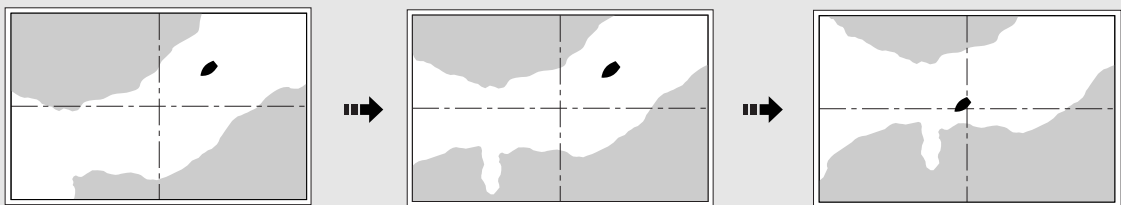If desired, you can change the orientation mode to:

- **Head Up** (H-Up) - displays chart with boat's current heading upwards. As heading changes, boat symbol remains fixed

- **Course Up** (C-Up) - chart picture stabilized, current course upwards. Boat symbol moves as heading changes.

To change the orientation mode:

PRESENTATION... ➧ CHART MODE AND ORIENTATION... ➧ ORIENTATION H-UP N-UP C-UP

Toggle as required
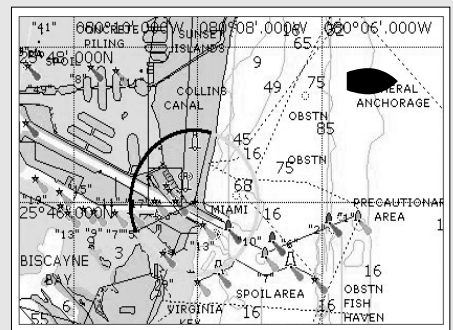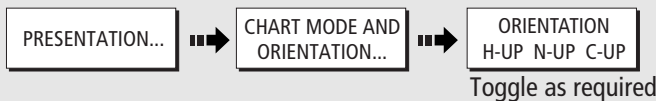
## How do I change how my boat moves on the chart?

How your boat moves on the screen is referred to as the **motion mode**. The default setting for the chart is **Relative Motion**. This means that your boat is fixed on the screen and the chart moves relative to your boat i.e.

If desired, you can change the motion mode to:

- **True** (TM) - the chart is fixed and the boat moves in true perspective to fixed landmasses on the screen.

- **Autorange** (AR) - selects and maintains the largest possible scale of chart that will display both the boat and the target waypoint This option is not available when radar/chart symchronization is ON.

To change the orientation mode:

PRESENTATION... ➧ CHART MODE AND ORIENTATION... ➧ MOTION MODE TM RM AR
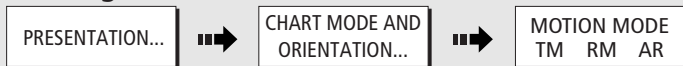
NOTE: When you pan the chart or toggle FIND SHIP/CURSOR to CURSOR, the motion mode is suspended.
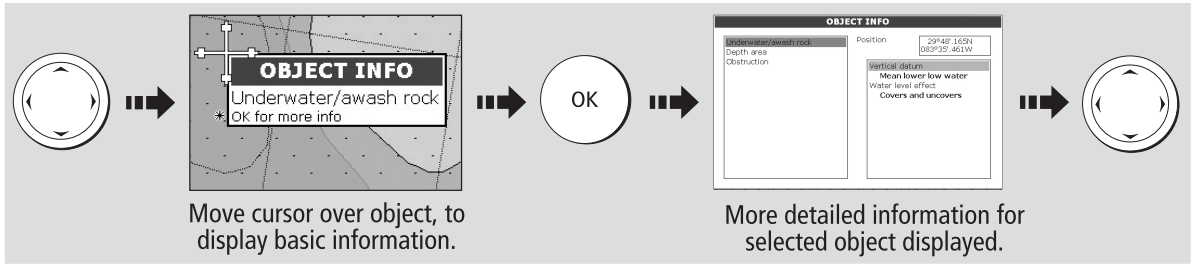
? More information .... See 'Using the Chart' chapter of the Reference Manual

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What can I see?
Displaying additional information
Card No. 7

Viewing object information

OBJECT INFO
Underwater/awash rock
* OK for more info

Move cursor over object, to
display basic information.

OK

OBJECT INFO
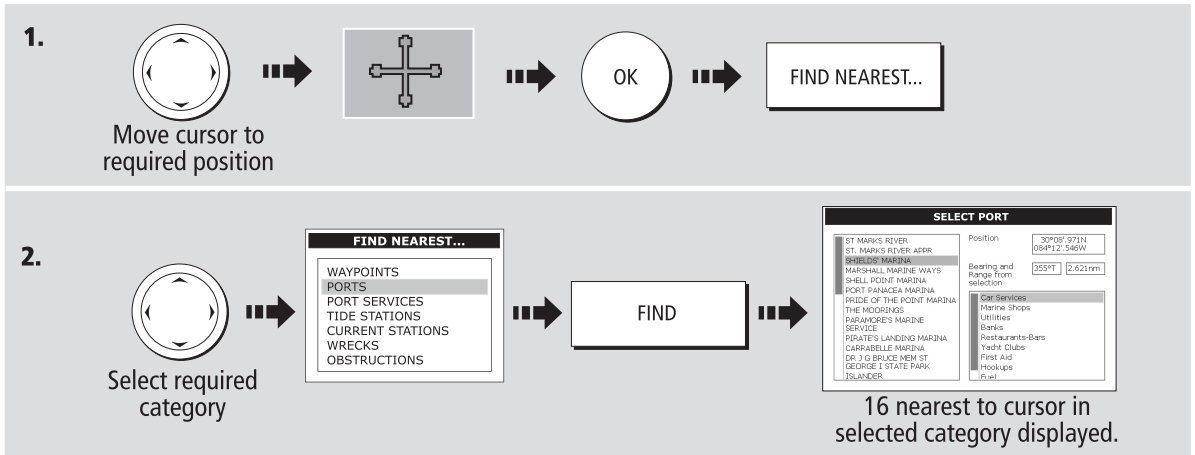| Underwater/awash rock | Position | 29°48'.165N 083°35'.461W |
Depth area		
Obstruction	Vertical datum	
	Mean lower low water	
	Water level effect	
	Covers and uncovers	

More detailed information for
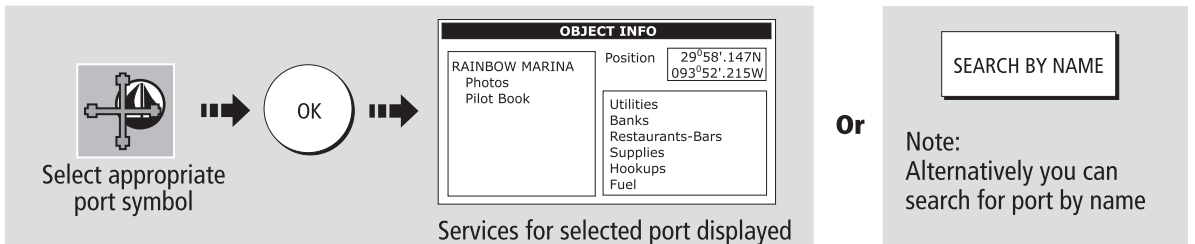selected object displayed.

You can now:

● Locate the nearest waypoint, port, port service, tidal and current stations, wreck or obstruction, to the selected position.

● Search for a named port.

● View detailed data for the selected port, tidal or current station.

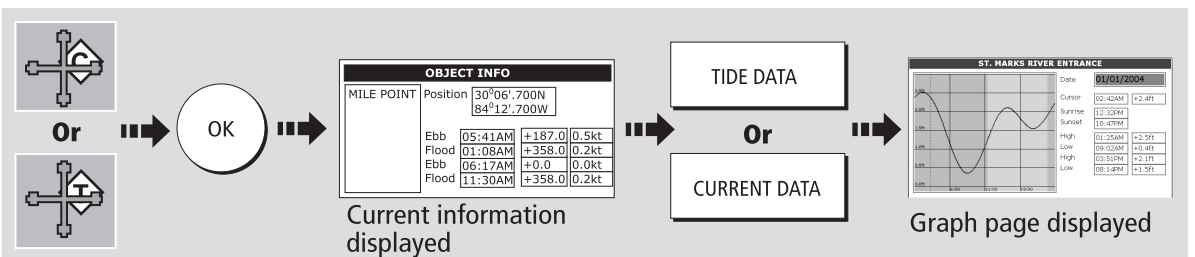● View panoramic photographs (dependent on the type of chart card in use)

Finding nearby features and services:

1.

Move cursor to
required position

OK

FIND NEAREST...

2.

Select required
category

FIND NEAREST...
WAYPOINTS
PORTS
PORT SERVICES
TIDE STATIONS
CURRENT STATIONS
WRECKS
OBSTRUCTIONS

FIND

SELECT PORT
ST MARKS RIVER	Position	30°08'.971N 084°12'.546W
ST. MARKS RIVER APPR		
SHIELDS MARINA	Bearing and	
MARSHALL MARINE WAYS	Range from	355°T 2.621nm
SHELL POINT MARINA	selection	
PORT PANACEA MARINA		
PRIDE OF THE POINT MARINA	Car Services	
THE MOORINGS	Marine Shops	
PARAMORE'S MARINE SERVICE	Utilities	
PIRATE'S LANDING MARINA	Banks	
CARRABELLE MARINA	Restaurants-Bars	
DR. J G BRUCE MEM ST	Yacht Clubs	
GEORGE I STATE PARK	First Aid	
ISLANDER	Hookups	
	Fuel	

16 nearest to cursor in
selected category displayed.

Displaying port services:

Select appropriate
port symbol

OK

OBJECT INFO
RAINBOW MARINA	Position	29°58'.147N 093°52'.215W
Photos		
Pilot Book	Utilities	
	Banks	
	Restaurants-Bars	
	Supplies	
	Hookups	
	Fuel	

Services for selected port displayed

Or

SEARCH BY NAME

Note:
Alternatively you can
search for port by name

Displaying tidal and current details:

Or

OK

OBJECT INFO
| MILE POINT | Position | 30°06'.700N 84°12'.700W |

Ebb	05:41AM	+187.0	0.5kt
Flood	01:08AM	+358.0	0.2kt
Ebb	06:17AM	+0.0	0.0kt
Flood	11:30AM	+358.0	0.2kt

Current information
displayed

TIDE DATA

Or

CURRENT DATA

ST. MARKS RIVER ENTRANCE
Date	01/01/2004
Cursor	02:42AM	+2.4ft
Sunrise	12:32PM	
Sunset	10:47PM	
High	01:25AM	+2.5ft
Low	09:02AM	+0.4ft
High	03:51PM	+2.1ft
Low	08:14PM	+1.5ft

Graph page displayed

? More information....   See the 'Using the Chart' chapter of the Reference Manual.

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What can I see?
Displaying additional information (continued)
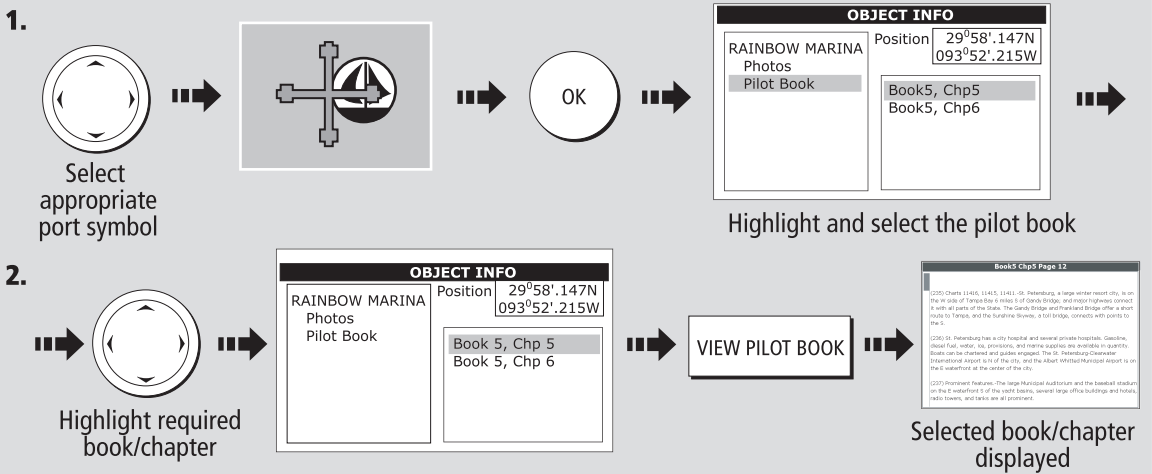### Card No. 8

How do I display a panoramic photo?

If you are using a suitable chart card, you can display a panoramic photo(s) of many ports and marinas. The availability of photos is indicated by the camera symbol on the chart. This symbol is placed where the photo was taken and the angle of the shot is indicated by the camera symbol.
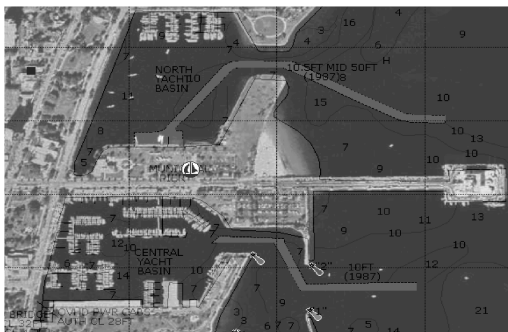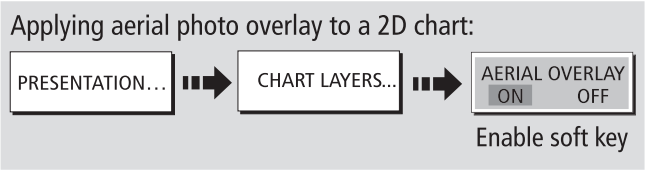
Select required
camera symbol

OK ➠ VIEW PHOTO
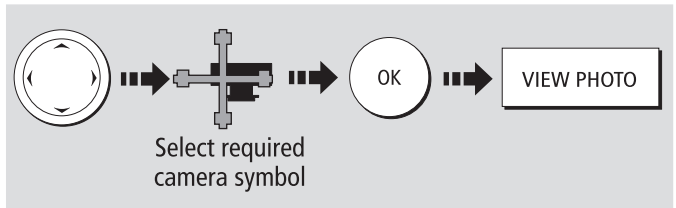
How do I display pilot book information?

This will enable you to view detailed information normally contained in an almanac..

1.

Select appropriate port symbol

OK

OBJECT INFO

RAINBOW MARINA
  Photos
  Pilot Book

Position $29^058'.147N$
         $093^052'.215W$

Book5, Chp5
Book5, Chp6

Highlight and select the pilot book

2.

Highlight required book/chapter

OBJECT INFO

RAINBOW MARINA
  Photos
  Pilot Book

Position $29^058'.147N$
         $093^052'.215W$

Book 5, Chp 5
Book 5, Chp 6

VIEW PILOT BOOK

Book5 Chp5 Page 12

(235) Charts 11416, 11415, 11411.-St. Petersburg, a large winter resort city, is on the W side of Tampa Bay 6 miles S of Gandy Bridge, and major highways connect it with all parts of the State. The Gandy Bridge and Frankland Bridge offer a short route to Tampa, and the Sunshine Skyway, a toll bridge, connects with points to the S.

(236) St. Petersburg has a city hospital and several private hospitals. Gasoline, diesel fuel, water, ice, provisions, and marine supplies are available in quantity. Boats can be chartered and guides engaged. The St. Petersburg-Clearwater International Airport is N of the city, and the Albert Whitted Municipal Airport is on the E waterfront at the center of the city.

(237) Prominent features.-The large Municipal Auditorium and the baseball stadium on the E waterfront S of the yacht basins, several large office buildings and hotels, radio towers, and tanks are all prominent.

Selected book/chapter displayed

How do I display aerial photo overlay?

The aerial photo overlay feature will help you to interpret your environment and its features. If you are using a suitable chart card, this overlay will appear by default on 3D chart windows and can be applied to individual 2D chart windows when required.

Applying aerial photo overlay to a 2D chart:

PRESENTATION… ➠ CHART LAYERS… ➠ AERIAL OVERLAY
                                    ON   OFF

Enable soft key

3D - Aerial photo overlay can be switched off via the 3D Chart Setup Menu.

2D - Adjust the opaqueness level using the rotary control. Specify land only or land/sea overlay via the cartographic menu.

? More information...   See the 'Using the Chart' chapter of the Reference Manual.

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What can I see?
Understanding the 3D chart
Card No. 9

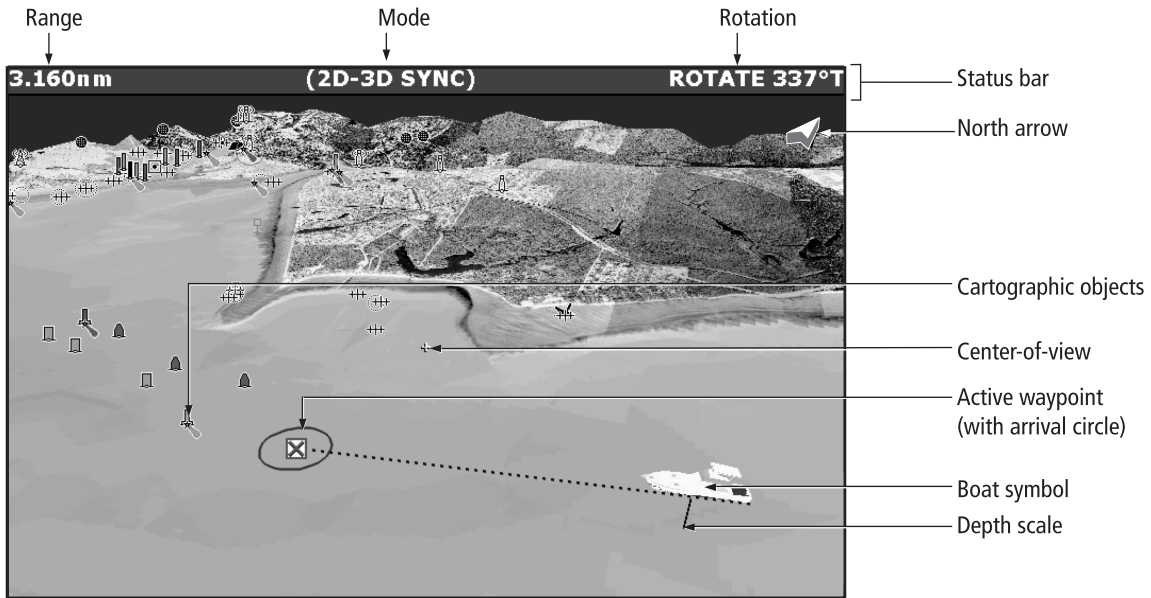| FIND SHIP	GOTO	ADJUST ON EYE CENTRE	ADJUST ROTATE PITCH	PRESENTATION

What can I use the 3D chart for?

If you are using a suitable chart card you will be able to:

- Display a 3D view of land, sea & features.
- Interpret your surroundings.

- Synchronize the 2D and 3D chart.
- Locate where you are.
- Monitor where you are going.

- Go to an existing waypoint.
- Navigate a route.

Range   Mode   Rotation

3.160nm   (2D-3D SYNC)   ROTATE 337°T

- Status bar
- North arrow
- Cartographic objects
- Center-of-view
- Active waypoint (with arrival circle)
- Boat symbol
- Depth scale

How do I move around the 3D chart?

To change the scale:

- Press **RANGE** (OUT) to see a larger area of the chart.
- Press **RANGE** (IN) to see a smaller area in more detail.

OUT RANGE IN

To pan the 3d chart:

- To pan a 3D chart to a different area

To adjust rotation/pitch

1. Select rotate or pitch:

   Press   Or   ADJUST ROTATE   PITCH

   Toggle control to required function

2. Adjust the rotation/pitch:
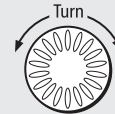
   Turn   Rotates the view or changes the vertical angle of view.

Changing the view on the 3D chart

To enhance objects and make it easier to see their shape and position:
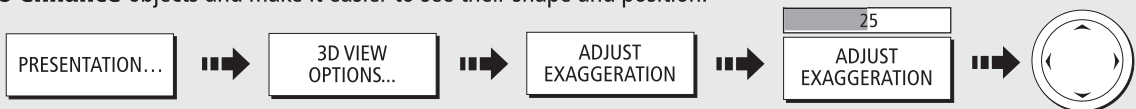
PRESENTATION… ➡ 3D VIEW OPTIONS... ➡ ADJUST EXAGGERATION ➡ 25 / ADJUST EXAGGERATION ➡ Adjust factor as required

To show/hide pre-set cartographic features:

PRESENTATION... ➡ DECLUTTER ON   OFF

? More information . . . See 'Using the 3D Chart' chapter of the E-Series Reference Manual

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How do I find where I am on the 3D chart?

Your position:

Or
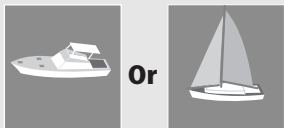
If you cannot see your boat symbol:

FIND SHIP
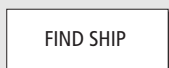
The 3D chart automatically redraws with the boat in forward looking view at your current position.

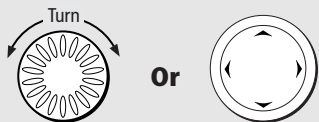## How do I change the motion mode?

Active motion mode
Default mode when 3D chart opened and there is a valid fix. Shows aerial view from above your boat.
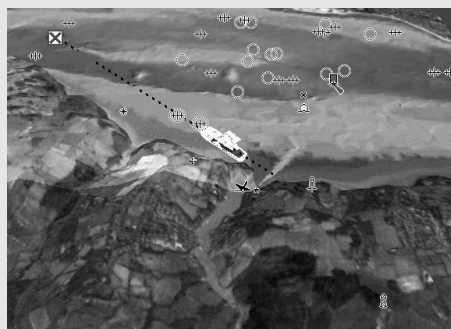
Planning mode:
To view an area of the chart you are not currently in. The boat may not remain on the screen.

To change to planning mode and pan to the area of the 3D chart you want to view:

Turn

Or

Using aerial photographs

The aerial photograph overlay helps you to interpret features in your environment. This option is accessed via the 3D Chart Setup menu.

Synchronize 3D chart with 2D chart
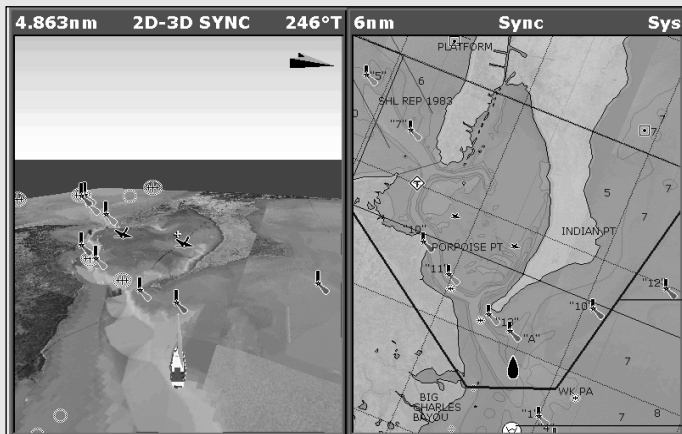
Note: When multiple windows are displayed and the current window is set to SYSTEM, changes made to the chart are reflected in all windows. If set to LOCAL no other window is affected.

—— 3D location

—— Eye point

With a 2D chart window active, synchronise 3D to 2D chart:

PRESENTATION... ➡ CHART MODE AND ORIENTATION... ➡ CHART SYNC   RDR   3D   OFF

? More information ... See 'Using the 3D Chart' chapter of the Reference Manual.

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Basic Navigation
Working with Waypoints

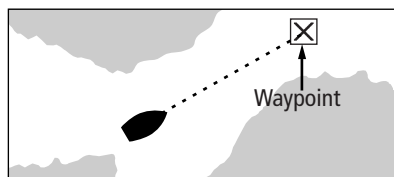| WAYPOINT AT CURSOR	WAYPOINT AT VESSEL	WAYPOINT AT LAT/LON	GO TO WAYPOINT OPTIONS	REVIEW AND EDIT WAYPOINTS

Card No. 11

What is a waypoint?

A waypoint is a position marked on a chart, radar or fishfinder screen to indicate a site (for fishing, diving etc), or as a position to go to. You can place a waypoint at the cursor or your boat's position or at a specified position. Waypoints are represented in chart or radar applications as an 'X' (default) and by a vertical line labeled WPT in Fishfinder. Active waypoints are displayed on 3D Chart and CDI windows. The details of each waypoint are stored in a waypoint list. Waypoints can be renamed, edited, grouped, or erased, as necessary. To make full use of waypoint features, ensure your display is receiving heading and position data. We recommend that you regularly back-up your waypoints by archiving them to a CompactFlash card. Waypoints can also be transferred to another NMEA compatible instrument.
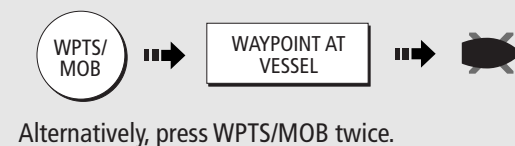
Waypoint

Networked systems

If you have networked two or more E-Series Displays, the waypoints are stored on the master display and transferred to other displays via the SeaTalk High Speed network.
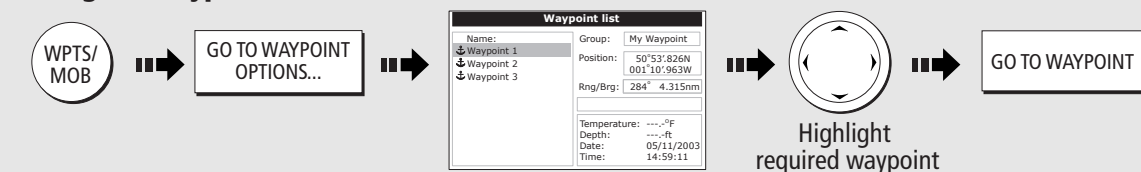
How do I place a waypoint?

... at the cursor?
Move cursor to position → WPTS/MOB → WAYPOINT AT CURSOR → WPT

... at the vessel?
WPTS/MOB → WAYPOINT AT VESSEL

Alternatively, press WPTS/MOB twice.

How do I navigate to a point?

Move cursor to position → GOTO... → GOTO CURSOR
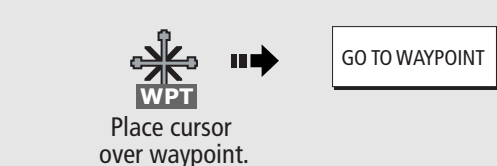
⚠ CAUTION
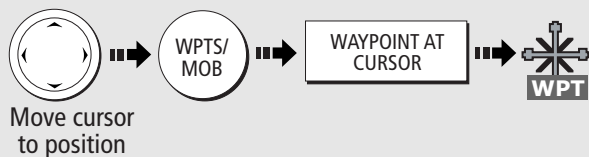
Always check that your route to a waypoint is safe before travelling towards it.

How do I navigate to a waypoint?

...using the waypoint list?
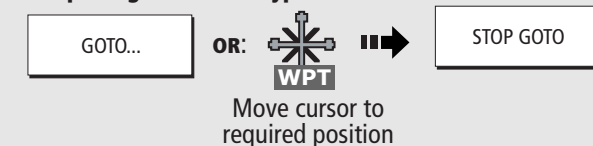
WPTS/MOB → GO TO WAYPOINT OPTIONS... →

Waypoint list
Name:
⚓ Waypoint 1
⚓ Waypoint 2
⚓ Waypoint 3
Group: My Waypoint
Position: 50°53'826N 001°10'963W
Rng/Brg: 284° 4.315nm
Temperature: ----.-°F
Depth: ----.-ft
Date: 05/11/2003
Time: 14:59:11

→ Highlight required waypoint → GO TO WAYPOINT

...using the cursor?
Place cursor over waypoint. WPT → GO TO WAYPOINT

To stop navigation to a waypoint:
GOTO... OR: Move cursor to required position WPT → STOP GOTO

Can I edit a waypoint?

Once a waypoint has been placed it can be edited in as variety of ways. You can:
- Change the waypoint details
- Move a waypoint.
- Change the default group or symbol
- Erase a waypoint

? More information ... See the 'Working with Waypoints' chapter of the Reference Manual
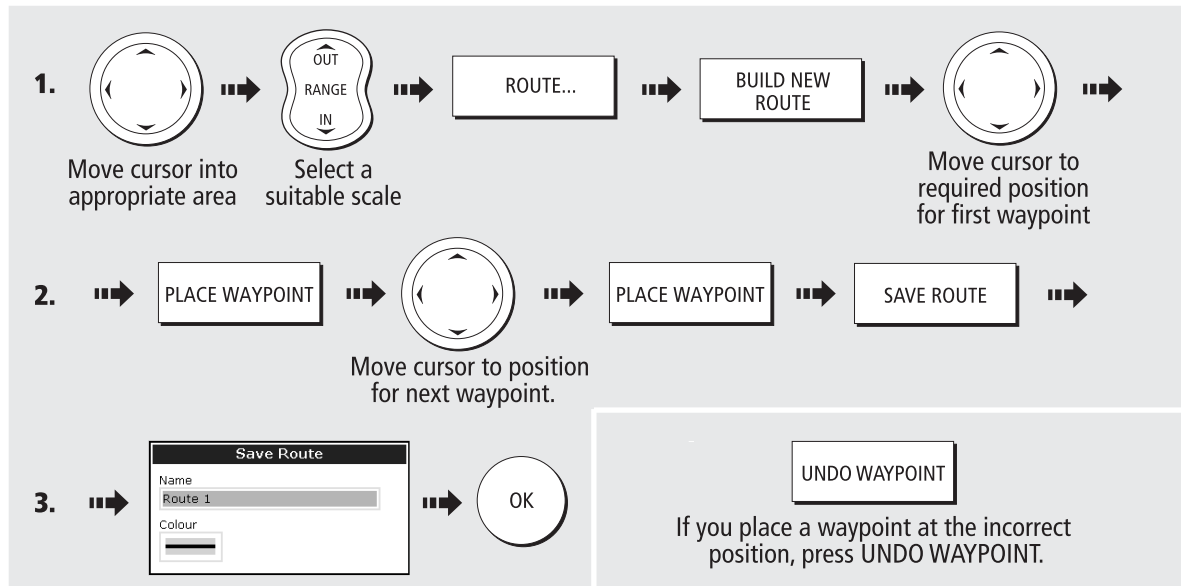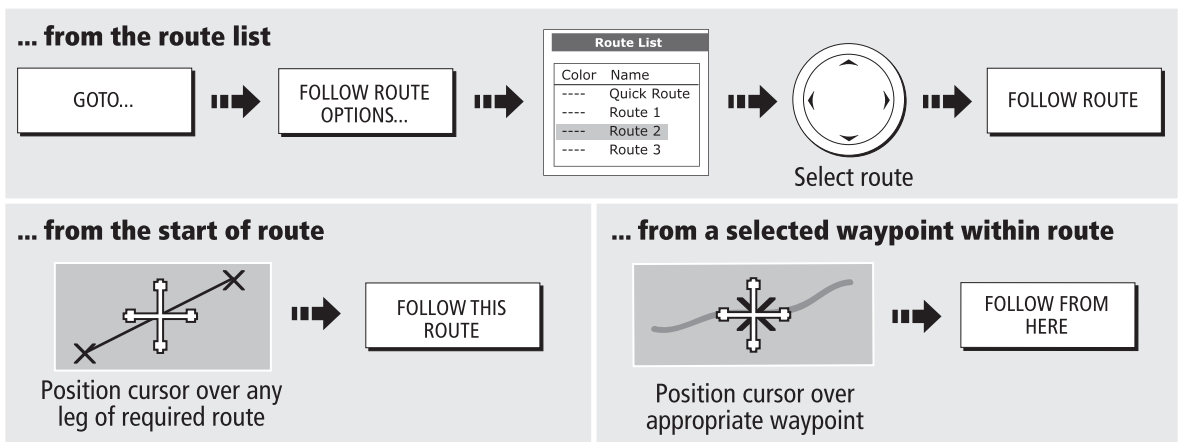
D6729_3

What is a route?

A route is made up of a series of waypoints. These waypoints can either be placed specifically for that route and/or you can use existing waypoints. You can save a route for future use or follow it immediately (Quick Route). Routes are stored in a route list. If you have networked two or more E-Series displays, the routes are stored in the master display and are transferred to the other displays via the SeaTalk High Speed network.

Routes can be named, edited, erased and archived. After routes have been created you can choose which ones are displayed on your chart.

Target waypoint highlighted

Course from start point to target waypoint

NORTH POINT

KNOLL

Remaining legs of route

COWES
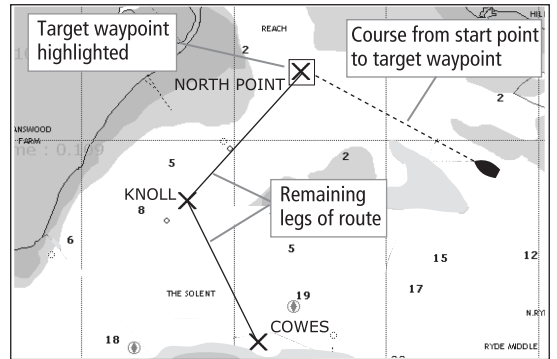
How do I build a route by placing waypoints on screen?

1. Move cursor into appropriate area → OUT RANGE IN — Select a suitable scale → ROUTE... → BUILD NEW ROUTE → Move cursor to required position for first waypoint →

2. → PLACE WAYPOINT → Move cursor to position for next waypoint. → PLACE WAYPOINT → SAVE ROUTE →

3. → Save Route / Name / Route 1 / Colour → OK

UNDO WAYPOINT

If you place a waypoint at the incorrect position, press UNDO WAYPOINT.

How do I follow a route?

... from the route list

GOTO... → FOLLOW ROUTE OPTIONS... →

Route List

Color	Name
----	Quick Route
----	Route 1
----	Route 2
----	Route 3

→ Select route → FOLLOW ROUTE

... from the start of route

Position cursor over any leg of required route → FOLLOW THIS ROUTE

... from a selected waypoint within route

Position cursor over appropriate waypoint → FOLLOW FROM HERE

? More information .... See the 'Using the Chart' chapter in the Reference Manual, for more information on routes.

D6730_3

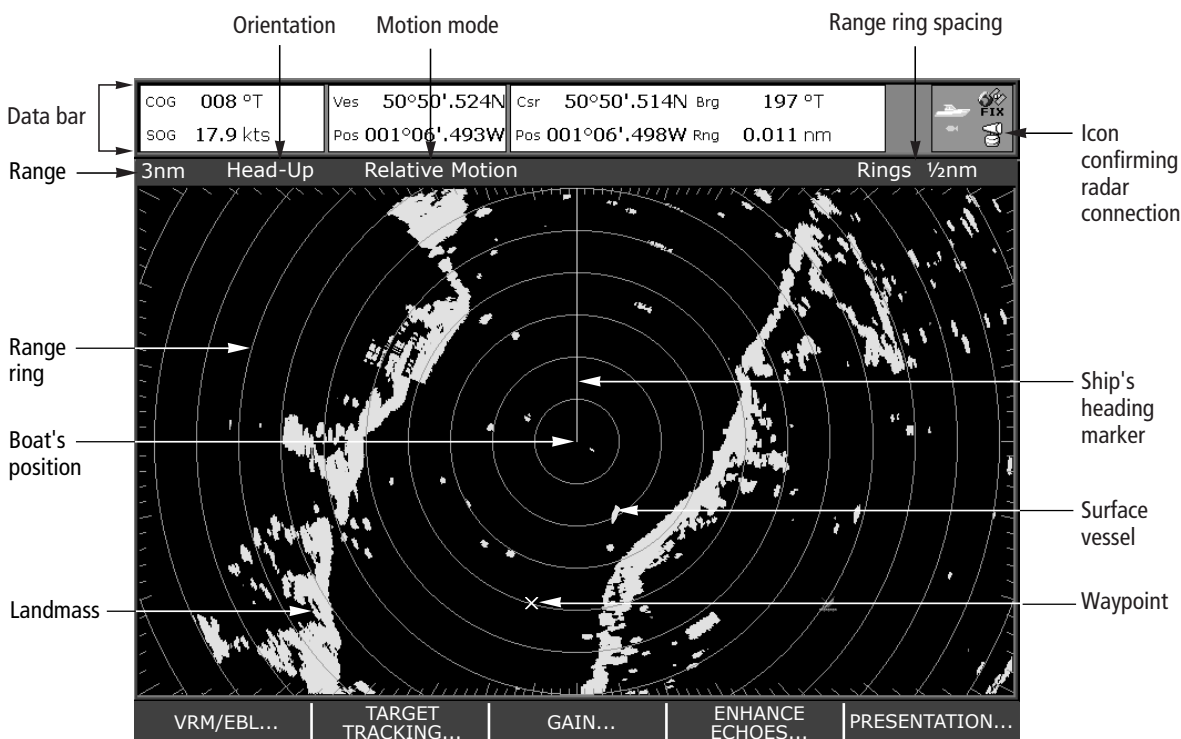# What is around me?
Understanding the radar

VRM/EBL	TARGET TRACKING	GAIN	ENHANCE ECHOES...	PRESENTATION

Card No. 13

What does the radar show me?....

Orientation   Motion mode   Range ring spacing

Data bar

| COG | 008 °T | Ves | 50°50'.524N | Csr | 50°50'.514N | Brg | 197 °T |
| SOG | 17.9 kts | Pos | 001°06'.493W | Pos | 001°06'.498W | Rng | 0.011 nm |

Range — 3nm   Head-Up   Relative Motion   Rings ½nm

Icon confirming radar connection

Range ring

Boat's position

Landmass

Ship's heading marker

Surface vessel

Waypoint

| VRM/EBL... | TARGET TRACKING... | GAIN... | ENHANCE ECHOES... | PRESENTATION... |

Typically your boat's position is at the centre of the display, and its dead ahead bearing is indicated by a vertical heading line, known as the Ship's Heading Marker (SHM).

Remember that the radar picture may vary from visual observations that you make; a nearby small object may appear the same size on the screen as a distant large object. However, with experience the approximate size of different objects can be determined by the relative size and brightness of the echoes.

How do I measure distances, ranges and bearings with the radar?
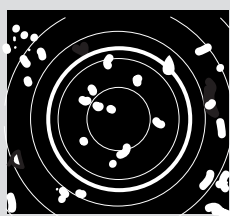
VRMs
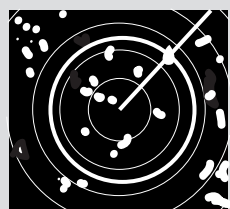Align a VRM on a target to display its range from your boat:

e.g.

| ADJUST VRM |
| 1.800nm |
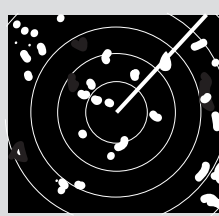
EBLs
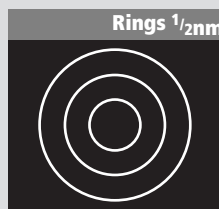Align an EBL on a target to display its bearing relative to your boat's heading:

e.g.

| ADJUST EBL |
| 30.0°S |

Combined VRM/EBL
Combine a VRM and EBL to measure range and bearing of specified target.
e.g.

| ADJUST VRM | ADJUST EBL |
| 1.800nm | 30.0°S |

Rings ¹/₂nm

Range rings
Use the range rings to gauge the approximate distances between two points or from your boat.
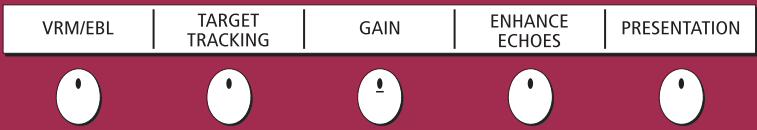
Note: Range/bearing also displayed when VRM/EBL selected with the cursor.

? More information ...   See the 'Using the Radar' chapter of the Reference Manual

D6731-3

What is around me?
Avoiding a collision
Card No. 14

VRM/EBL	TARGET TRACKING	GAIN	ENHANCE ECHOES	PRESENTATION

How can the radar help me avoid a collision?

You can set up your E-Series Display to sound an alarm when anything comes within a pre-set range of the boat. These guard zones allow you to take any necessary action to avoid a collision.

Guard zones
A sector or circular zone fixed with respect to the Ships Heading Marker (SHM). If the SHM moves, or the centre is offset, or the range scale changes, the zone moves accordingly.

What does a guard zone display?

SHM — Sector Zone

SHM — Circular Zone

IMPORTANT
A guard zone:
- Will only operate when a whole zone is displayed on screen, or displayed by offsetting the centre.
- Is inactive for 10 seconds after it is placed or re-sized, to avoid inappropriate alarms.

How do I set up a circular guard zone?

1. Select guard zone function:

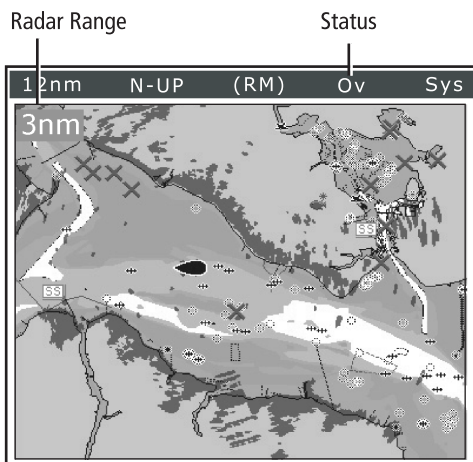TARGET TRACKING... ➟ MONITOR IN ZONES... ➟ ZONE 1 ON OFF ➟ SET UP ZONE 1 ➟

Toggle to ON

2. Select guard zone option:

ZONE SHAPE SECTOR CIRCLE ➟ SET INNER xx.xx nm ➟ Turn to set inner boundary ➟ Press ➟ Turn to set outer boundary ➟ OK

Toggle to required shape

How do I distinguish between fixed and moving objects?

Radar Range — Status

12nm N-UP (RM) Ov Sys
3nm

To switch radar overlay on/off:
You can overlay radar image data on your chart allowing better distinction between fixed objects and other marine traffic.

With a 2D chart window active:

PRESENTATION... ➟ CHART LAYERS ➟ RADAR OVERLAY ON OFF

To switch chart/radar synchronization on/off
For best results, also switch on chart/radar sychronization.

With a 2D chart window active:

PRESENTATION... ➟ CHART MODE AND ORIENTATION... ➟ CHART SYNC RDR 3D OFF

To change scanner range in this mode: RADAR OPTIONS... ➟ OUT RANGE IN

? More information.... See the 'Using the Radar' chapter of the Reference Manual.
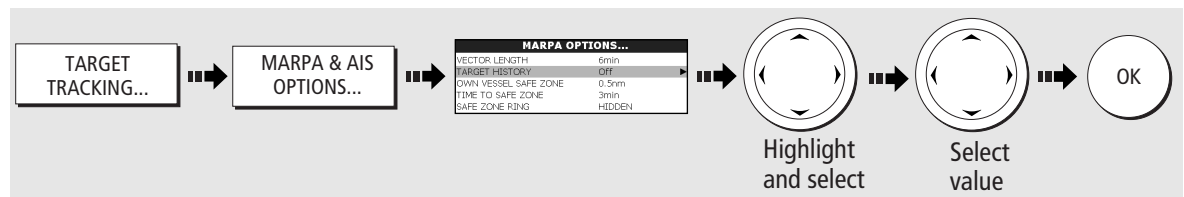
D8838_1

What is MARPA?

Mini Automatic Radar Plotting Aid (MARPA) functions are used for target tracking and risk analysis. MARPA improves your standards of collision avoidance by obtaining detailed information for up to 10 targets, and provides continuous and rapid situation evaluation.
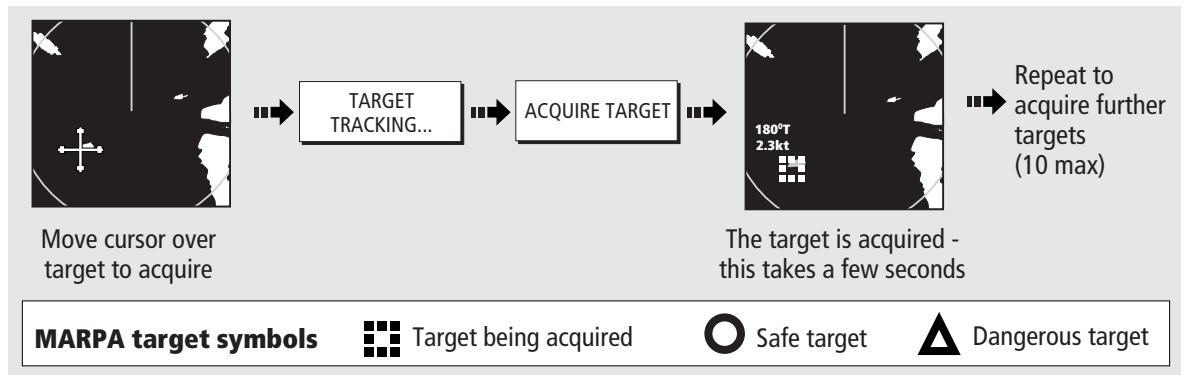
MARPA tracks the selected targets and calculates target bearing, range, true speed, course, Closest Point of Approach (CPA), and Time to Closest Point of Approach (TCPA). Each tracked target can be displayed with a CPA graphic depicting the approximate target speed (vector length) and course (vector direction). Alternatively, move the cursor over the target to display the range and CPA. You can now access bearing and speed. Each target is continually assessed. An alarm sounds if a target becomes dangerous or lost.

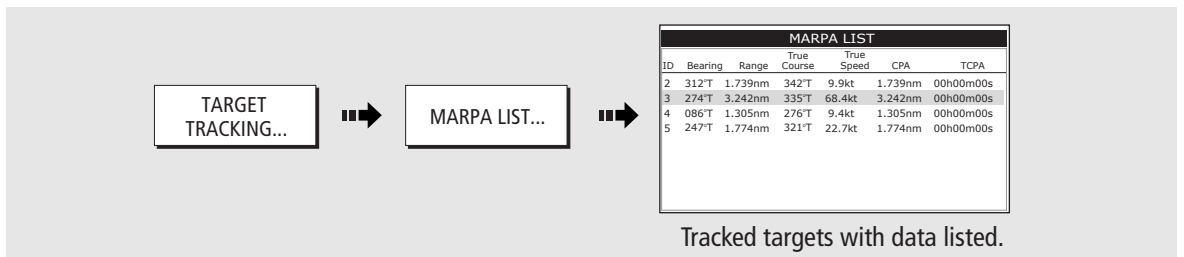NOTE: For MARPA to operate, fast heading data is required.
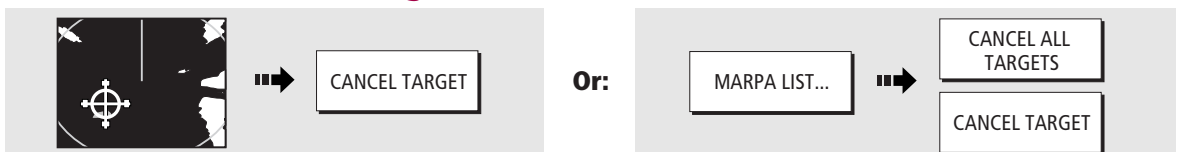
How do I set up the MARPA functions?

TARGET TRACKING... ➡ MARPA & AIS OPTIONS... ➡

MARPA OPTIONS...
VECTOR LENGTH	6min
TARGET HISTORY	Off
OWN VESSEL SAFE ZONE	0.5nm
TIME TO SAFE ZONE	3min
SAFE ZONE RING	HIDDEN

➡ Highlight and select ➡ Select value ➡ OK

How do I acquire a MARPA target?

Move cursor over target to acquire ➡ TARGET TRACKING... ➡ ACQUIRE TARGET ➡ 180°T 2.3kt — The target is acquired - this takes a few seconds ➡ Repeat to acquire further targets (10 max)

MARPA target symbols   ▦ Target being acquired   ⬤ Safe target   △ Dangerous target

How do I view details of MARPA targets?

TARGET TRACKING... ➡ MARPA LIST... ➡

MARPA LIST
ID	Bearing	Range	True Course	True Speed	CPA	TCPA
2	312°T	1.739nm	342°T	9.9kt	1.739nm	00h00m00s
3	274°T	3.242nm	335°T	68.4kt	3.242nm	00h00m00s
4	086°T	1.305nm	276°T	9.4kt	1.305nm	00h00m00s
5	247°T	1.774nm	321°T	22.7kt	1.774nm	00h00m00s

Tracked targets with data listed.

How do I cancel MARPA target(s)?

➡ CANCEL TARGET   **Or:**   MARPA LIST... ➡ CANCEL ALL TARGETS / CANCEL TARGET

? More information... See the 'Using the radar' chapter of the Reference Manual.

D6733_3

What is around me?
Using AIS

Card No. 16

| AIS VECTOR ON OFF | | | AIS DATA AUTO ON OFF | VIEW FULL AIS DATA | |

What is AIS?

AIS uses digital radio signals to broadcast 'realtime' information between vessels and shore based stations via dedicated VHF frequencies. This information is used to identify and track vessels in the surrounding area and to provide collision avoidance data. AIS will augment your radar application, as it can operate in radar blind spots.

In order to use the AIS feature, you will need a GPS and compass for timing and position information together with data from a suitable AIS receiver.

How do I display AIS?

On chart windows:

PRESENTATION... ➡ CHART LAYERS... ➡ AIS LAYER ON **OFF**
Toggle as required

On radar windows:

PRESENTATION... ➡ AIS LAYER ON **OFF**
Toggle as required

How is AIS data displayed?

The AIS system displays other AIS equipped vessels in the surrounding area as targets overlaid on a chart or radar window. Up to 100 targets are displayed and are scaled according to the size of the vessel. A vector indicates the direction of travel of the vessel. As the vessel's status changes, the symbol for the target will change accordingly.

You can view detailed AIS data, safety critical target information, alarm messages (ALR) and safety related messages (SRM). You can also set up a safe zone.

How do I view target information?

AIS DATA AUTO ON OFF ➡ 125°T 7.7kt 01.30nm 12h15m30s
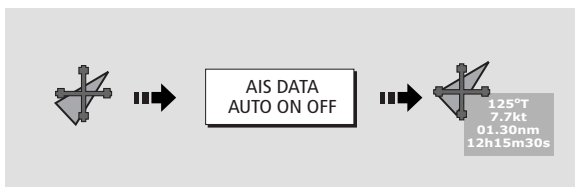
How do I view detailed AIS data?

VIEW FULL AIS DATA ➡ AIS Target info: Sim Target 6
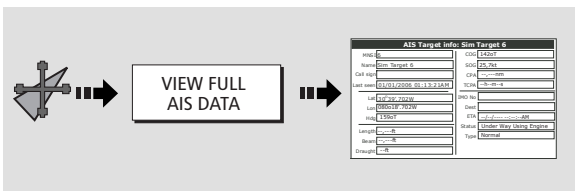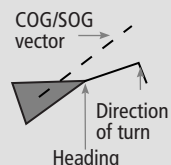
AIS target symbols

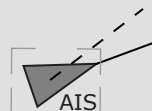**Sleeping target**
- Target not activated, dangerous or lost.

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 and target flashes.

Uncertain target
- Calculated CPA/TCPA value uncertain.

Lost target
- When signal of a dangerous AIS target not received for 10 seconds.
- Target orientated in COG or CSE direction as appropriate.
- Alarm sounds and target flashes

WARNING:

⚠ **Smaller vessels do not have to be fitted with AIS and whilst it is mandatory for larger commercial vessels to carry AIS, its use is not. You should not assume that your AIS will display ALL vessels in your area.**

? More information.... See the 'AIS' chapter of the reference manual for data classes and how to customise this feature.

D8809_1

## How do I monitor my course?....

- Your course is shown on the chart application whilst motion mode is active.
- Using COG and heading vectors (Press DATA - CHART VECTORS - COG/HDG VECTORS).
- Use the Course Deviation Indicator (CDI). With your display receiving accurate heading and position information, you can monitor your course and accurately steer to a target waypoint.

What does the CDI show me?....

The CDI gives a graphical representation of your boat's course. This 'rolling road' format represents a width of sea equal to the Cross Track Error (XTE) limits that you have specified in the Setup menu. As you travel towards the target waypoint, the checkered pattern moves down the screen to simulate movement at a rate proportional to your boat's speed.
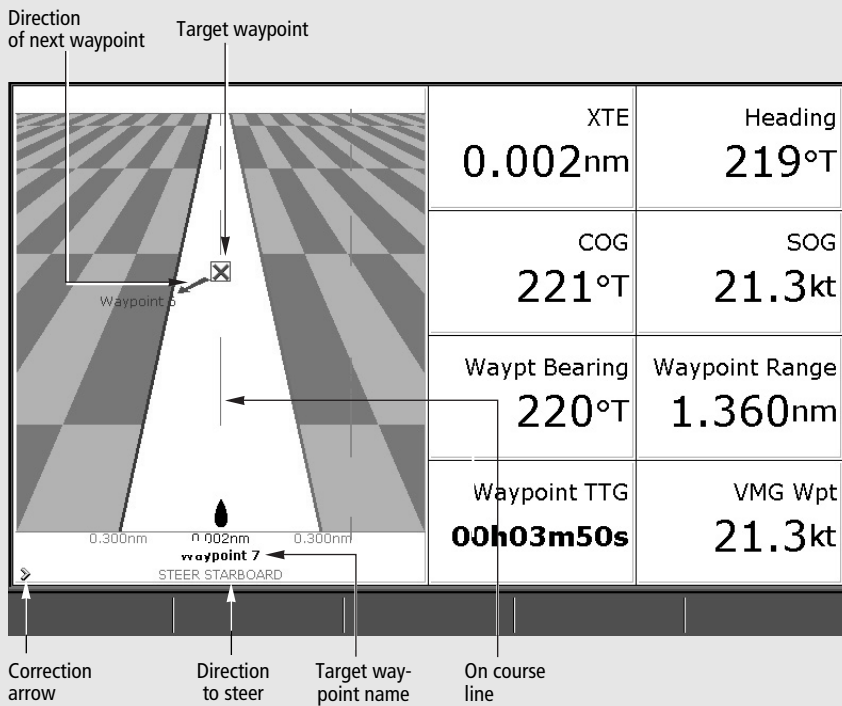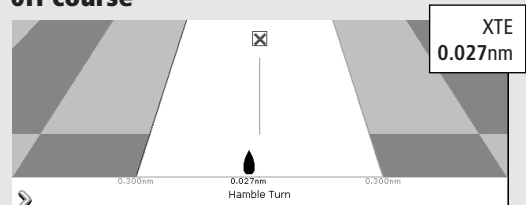

What do the steering instructions tell me?

On course
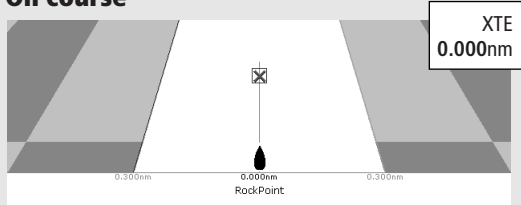
- Boat on center line.
- Zero XTE

Off course

- Boat off center line.
- Correction arrow(s) indicate direction to steer to maintain course to target waypoint.
- The greater the XTE, the more arrows.

? More information...   See the 'Using the CDI' chapter of the Reference Manual

D6734_3

What's under the boat?
Understanding the fishfinder
Card No. 18

FISHFINDER SETTINGS	ZOOM	BOTTOM LOCK	A-SCOPE	PRESENTATION

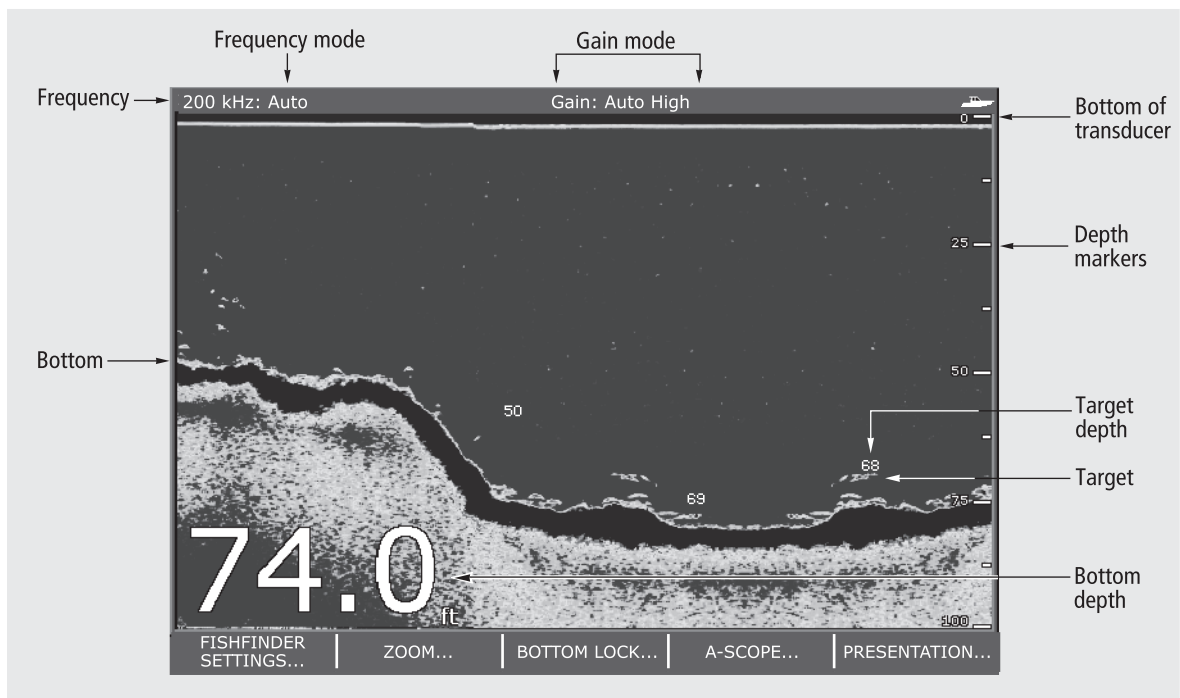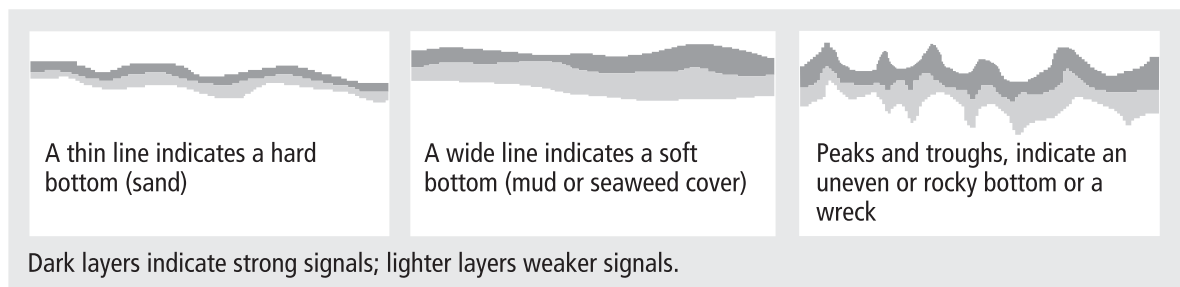## What's under the boat?

The fishfinder application, when connected to a suitable Digital Sounder Module (DSM) and transducer, will help you to see fish, bottom structure and underwater obstructions. The image scrolls from right to left at an automatically selected range and frequency to provide a record of the echoes seen. You can mark with a waypoint any positions of interest that you may wish to return to. These waypoints are added to the waypoint list and can be used by other applications.

What can I see on the screen?

Frequency mode

Gain mode

Frequency → 200 kHz: Auto   Gain: Auto High

Bottom of transducer

Depth markers

Bottom →

Target depth

Target

74.0 ft

Bottom depth

FISHFINDER SETTINGS...	ZOOM...	BOTTOM LOCK...	A-SCOPE...	PRESENTATION...

How do I interpret the bottom?

A thin line indicates a hard bottom (sand)

A wide line indicates a soft bottom (mud or seaweed cover)

Peaks and troughs, indicate an uneven or rocky bottom or a wreck

Dark layers indicate strong signals; lighter layers weaker signals.

What influences target display?

The shape and size of echoes indicating targets, is influenced by a combination of:

- Boat speed - flatter at slower speeds
- Target depth - larger near the surface
- Transducer frequency - broader at lower frequencies
- Target size - larger targets return larger echoes

? **More information.....** See the 'Using the Fishfinder' chapter of the Reference Manual.

D6735_4

## How do I change the range or shift the image?

Your system automatically adjusts the display depth range, selecting the shallowest depth that keeps the bottom on the lower half of the window. You can however, set this manually if required and move the image within the selected page up or down. Using the range controls will affect all fishfinder windows.

OUT RANGE IN → RANGE AUTO **MAN** → OUT RANGE IN → RANGE SHIFT xx FT → Turn

Press RANGE (IN or OUT)

IN - decrease depth.
OUT - increase depth.
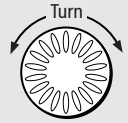
Turn to alter shift value.

How do I change the operating frequency?

Auto mode - automatically selects 50 kHz or 200 kHz. This is the default mode.

Manual (MAN) - Single or dual

- **200 kHz** - for maximum definition in shallow water.
- **50 kHz** - for maximum depth penetration in deep water.
- **Both** - 200 kHz & 50 kHz displayed simultaneously. Only available if FREQ MODE set to DUAL.

FISHFINDER SETTINGS... → FREQUENCY AUTO **MAN** → FREQ MODE SINGLE **DUAL** → SELECT FREQ **200** 50 BOTH
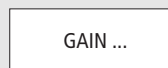
Select MAN | Select DUAL frequency mode | Select required frequency

How do I change the gain mode?

The system automatically adjusts the gain control to display the sharpest image. If required, you can select the gain level to suit your fishing mode:

- **Low** - when cruising
- **Med** - when trolling
- **High** - when fishing

FISHFINDER SETTINGS... → GAIN ... → GAIN MODE **AUTO** MAN → AUTO GAIN LO **MED** HIGH

Select gain level

To define the gain mode still further, select manual gain mode and then adjust the level using the rotary control.

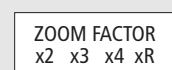## How do I zoom in on an area of the screen?

To see more detail of the bottom structure, target images etc, zoom in and enlarge a portion of the image.

Zoom
- **On** - zooms fishfinder image
- **Split** - displays zoomed image and standard fishfinder image simultaneously.

ZOOM... → ZOOM ON **SPLIT** OFF → ZOOM FACTOR x2 x3 x4 xR → OK
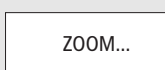
Toggle as required | Select zoom level

?More information... See the 'Using the Fishfinder' chapter of the Reference Manual.

D6736_3

● Monitoring data and engines
● Viewing video images

Card No. 20

How do I monitor data?....

NAVIGATION	WAYPOINT	ROUTE	FISHING	SAILING

Ves Pos	GOTO CURSOR	TTG	VMG Wpt
25°45'.940N 080°09'.718W	220°T 1.28nm	--h--m--s	-.-kt
Depth 78.8ft	Cog Sog 286°T 0.0kt	Heading 293°T	Speed 0.0kt
Set Drift 355°T 0.0kt	XTE 0.00nm Steer >	Trip 0.00nm	Local Time 01:42:12

The **data application** enables you to view numeric data generated by the system or by instruments available on NMEA 0183, SeaTalk, SeaTalk^2, NMEA 2000 and SeaTalk^{hs}. This information is displayed in a series of panels which contain data relating to a particular function or activity. These can be reconfigured to your needs.

Press the appropriate soft key to select the panel of your choice

How do I monitor the engine(s)?....

| ENGINE	ENGINE & FUEL	FUEL RESOURCES	ENGINE & RESOURCES	TWIN ENGINE
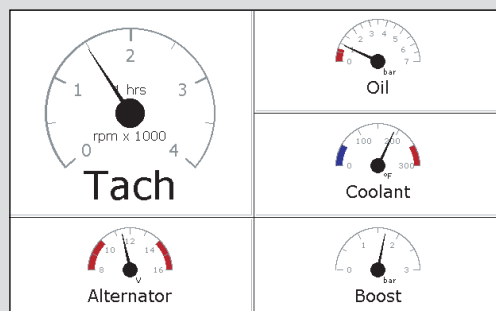
The **engine monitor application** enables you to view data from up to three compatible engines. The information is displayed in a series of panels which contain data relating to engine, fuel and fuel resources. These can be reconfigured to your needs.

Press the appropriate soft key to select the panel of your choice.
To view data from 3 engines, change the 'No. of engine' setting in the Panel Setup Menu

How do I view video images?....

VIDEO 1	VIDEO 2	VIDEO 3	VIDEO 4	PRESENTATION
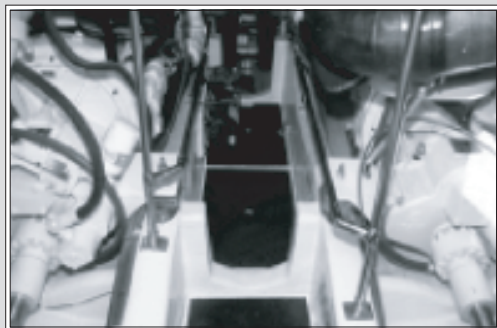
The **video application** enables you to view images from a saterlite TV, video or DVD player or on-board camera.

Press the appropriate soft key, to select the video input of your choice or set CYCLE VIDEO to ON (via the PRESENTATION key), to cycle through the video inputs.

Note: Video images can only be viewed on the display to which the video source is connected. They cannot be networked to other Displays.
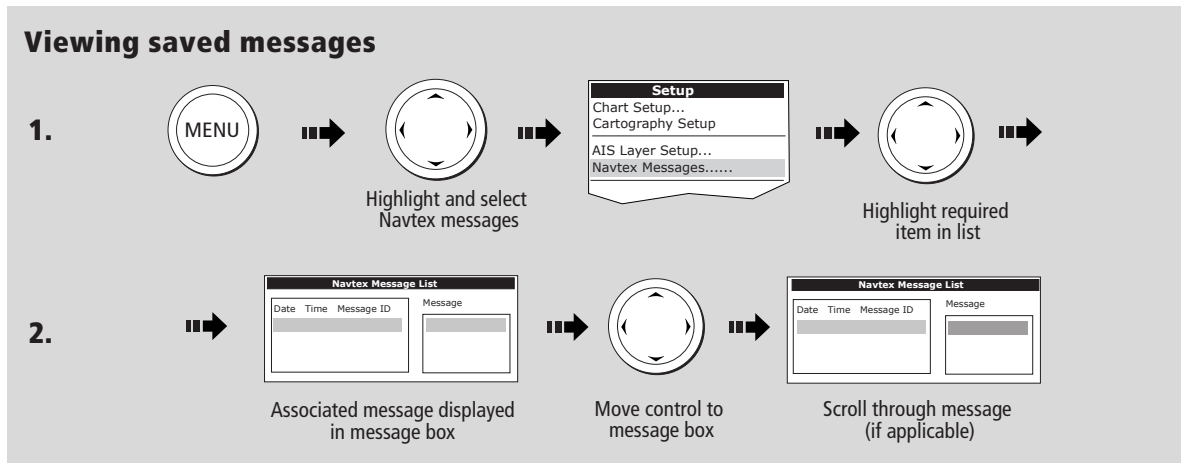
? More information... See the appropriate chapter of the Reference Manual.

D7521_3

Navtex and Sirius Weather Data

Navtex

If connected to a Navtex receiver, you can use your display to view navigation, meteorological and search and rescue alerts. You can choose which category of alerts will automatically be displayed when one is received by your display. After you have read the message you can either erase it or save it to the database (100 maximum). You can view the list of saved messages at any time. Messages are viewed and alerts set-up via the Setup Menu option Navtex Messages.

Viewing saved messages

1.
MENU ▶▶ [control] ▶▶

Setup
Chart Setup...
Cartography Setup

AIS Layer Setup...
Navtex Messages......

▶▶ [control] ▶▶

Highlight and select
Navtex messages

Highlight required
item in list

2.
▶▶

Navtex Message List
Date Time Message ID   Message

▶▶ [control] ▶▶

Navtex Message List
Date Time Message ID   Message

Associated message displayed
in message box

Move control to
message box

Scroll through message
(if applicable)

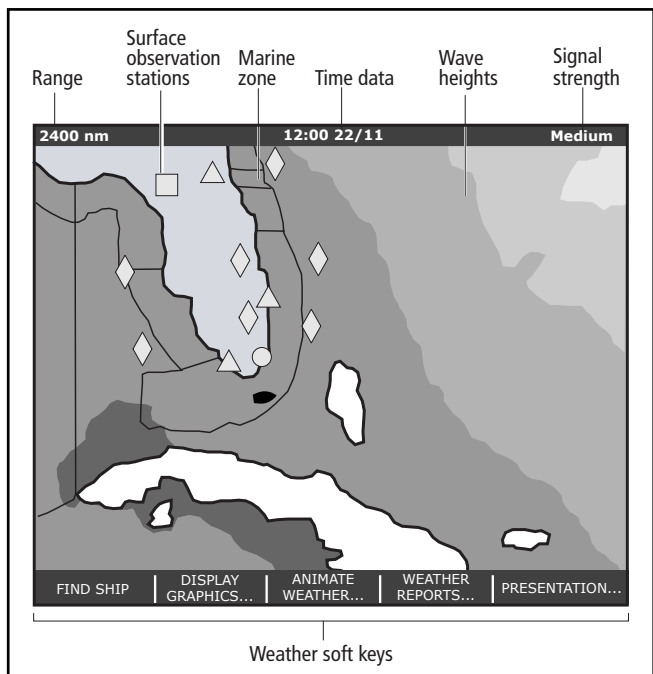## The Sirius Weather application (USA only)

To run the Sirius Weather application you will need to purchase an SR100 weather receiver and a subscription to Sirius weather.

Once connected, the weather application superimposes historical, current and forecasted weather graphics and environmental conditions on the world map and provides textual forecasts and warnings. These help you to determine the actual conditions in your vicinity or at a particular location.

As in the chart application, use the cursor to move around the map and view different locations, and the range button to zoom in and out.

To re-center the map on your boat use the FIND SHIP soft key.

Note: As with all weather services, the information presented is advisory only and you should be aware that errors may occur.

Range Surface observation stations Marine zone Time data Wave heights Signal strength

2400 nm   12:00 22/11   Medium

| FIND SHIP | DISPLAY GRAPHICS... | ANIMATE WEATHER... | WEATHER REPORTS... | PRESENTATION... |

Weather soft keys

? More information... See the appropriate chapter for the Reference Manual.

D8932_1

FIND SHIP	DISPLAY GRAPHICS	ANIMATE WEATHER	WEATHER REPORTS	PRESENTATION

By default, all weather graphics are set to OFF.
To display the required weather graphic:

DISPLAY GRAPHICS...

➡

Weather Graphics

NOWRad	OFF	OFF
Storm Cast	OFF	ON
Sea Surface Temp	OFF	
Canadian Radar	OFF	

Highlight, select and switch graphic on/off as required

Weather symbols (USA only)

Storm cast

Waves (blues-green-red)

Canadian radar (light green- dark red)

Lightning (light-med-dark yellow)

Wind (see below for details)

Sea surface temperature (blue-green-yellow -orange-red)

Surface observation station (pink)
NWS   Buoy   C-man   WST

Cities (grey)

Rain (green-yellow-red)
Snow (blues)
Mixture (pinks)

Marine zones

Surface pressure

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)

Storm Tracks symbols

Shown in three different colours:
● Grey - historical   ● Red - current   ● Orange - forecast

Note: Highlight the symbol for additional information

Hurricane (Category 1-5)

Tropical storm

L

Tropical disturbance or tropical depression

Wind speed symbols (knots)

| 3-7 | 8-12 | 13-17 | 18-22 | 23-27 | 28-32 | 33-37 | 38-43 | 44-47 | 48-52 | 53-57 | 58-62 | 63-67 | 68-72 | 73-77 | 78-82 | 83-87 | 88-93 | 94-97 | 98-102 | etc. |

? More information.... See the Weather (USA only) chapter of the Reference Manual.

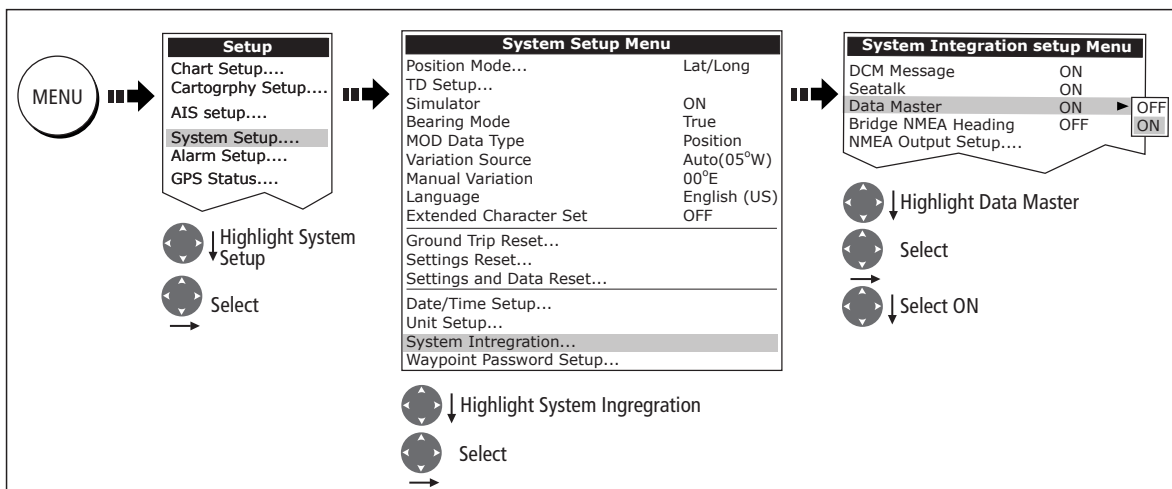D8810_1

What does a networked system do?

If you have connected two or more E-Series Displays (via either a crossover coupler or SeaTalk High Speed Switch), all system data (from NMEA 0183, SeaTalk, SeaTalk^2, NMEA 2000, SeaTalk^{hs} waypoints, routes etc) can be transferred across the network enabling you to input, view and maintain data across all your displays irrespective of the Display from which the data originated (excepting Video Input).

How is the network controlled?

The display that has been installed and nominated as the master, should always be switched on (preferably first). The master display maintains the waypoint, route and track lists as well as data from NMEA and SeaTalk. Each time the master display detects a change on any display e.g. waypoint, route or track added or edited, the data is copied to the database which in turn is copied to all other Displays that are switched on.

If the system does not detect a master, either because it is not switched on or because a master has not been selected, an alarm will sound and you will be prompted to set a master display.

How do I change the master display?

Raymarine