LIGHTHOUSE SPORT 3.18

ELEMENT DISPLAY OPERATING SYSTEM

OPERATION INSTRUCTIONS

Raymarine®

CONTENTS

CHAPTER 1: IMPORTANT INFORMATION

⚠ Warning: Ensure safe navigation

This product is intended only as an aid to navigation and must never be used in preference to sound navigational judgment. Only official government charts and notices to mariners contain all the current information needed for safe navigation, and the captain is responsible for their prudent use. It is the user's responsibility to use official government charts, notices to mariners, caution and proper navigational skill when operating this or any other Raymarine product.

⚠ Warning: Minimum Safe Depth, Width and Height

Depending on cartography vendor, the *[Minimum safe depth]*, *[Minimum safe width]*, and *[Minimum safe height]* settings that you specify for your vessel will be used during automatic route generation. These settings will ensure that automatic routes are not generated in areas that are unsuitable for your vessel.

Minimum safe settings are user-defined calculations. As these calculations are outside of Raymarine's control, Raymarine will not be held liable for any damage, physical or otherwise, resulting from the use of the automatic route generation feature or the *[Minimum safe depth]*, *[Minimum safe width]* or *[Minimum safe height]* settings.

⚠ Warning: Automatic route generation

- Do NOT rely on automatically generated routes to guarantee that the route is safe to navigate. You MUST review the suggested route carefully and where necessary edit the route before following it.

- If a waypoint within any automatically generated route is added or moved the Automatic route generation algorithm will NOT be used, extra care should be taken to ensure that the route leg and any moved waypoints are safe to navigate.

⚠ Warning: Traffic separation

Automatic route generation features do not adhere to the Traffic Separation Schemes identified in Rule 10 of the *International Regulations for Preventing Collisions at Sea 1972* as amended.

Raymarine® therefore recommends that you do NOT use Automatic route generation to create any part of a route which will cross traffic lanes or pass near to traffic separation lines. In these situations Automatic route generation MUST be switched Off and the route or route leg MUST be built manually, ensuring compliance to the rules laid out in the above regulations.

⚠ Warning: Radar transmission safety

The radar scanner transmits electromagnetic energy. Ensure all personnel are clear of the scanner when the radar is transmitting.

⚠ Warning: Minimum Sonar Depth

Accurate bottom tracking can be unreliable in depths shallower than 0.8 m/2.62 ft When operating at or below this depth be cautious of misleading sonar returns or false bottom tracking.

⚠ Warning: Sonar operation

- NEVER touch the transducer face when the sonar is powered on.

- SWITCH OFF the sonar if divers are likely to be within 7.6 m (25 ft) of the transducer.

Electronic chart data

Raymarine does not warrant the accuracy of such information, and is not responsible for damages or injuries caused by errors in chart data or information utilized by the product and supplied by third parties. Use of electronic charts provided by third parties is subject to the supplier's End-User License Agreement (EULA).

End-User License Agreements (EULAs)

The EULAs for third-party electronic charts are available via the following links:

- **LightHouse charts:** — LightHouse Navigation Charts EULA 84231-3-EN.pdf
- **Navionics charts:** https://www.navionics.com/usa/la
- **CMAP charts:** https://www.c-map.com/legal/terms-and-conditions-eula

Open source license agreements

This product is subject to certain open source license agreements. Copies of the license agreements can be found on the Raymarine website: www.raymarine.com/manuals.

Warranty registration

To register your Raymarine product ownership, please visit www.raymarine.com and register online.

It is important that you register your product to receive full warranty benefits. Your unit package includes a bar code label indicating the serial number of the unit. You will need this serial number when registering your product online. You should retain the label for future reference.

Technical accuracy

To the best of our knowledge, the information in this document was correct at the time it was produced. However, Raymarine cannot accept liability for any inaccuracies or omissions it may contain. In addition, our policy of continuous product improvement may change specifications without notice. As a result, Raymarine cannot accept liability for any differences between the product and this document. Please check the Raymarine website (www.raymarine.com) to ensure you have the most up-to-date version(s) of the documentation for your product.

CHAPTER 2: DOCUMENT AND PRODUCT INFORMATION

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2.1 Product documentation

The following documentation is applicable to your product:

All documents are available to download in PDF format from the Raymarine website www.raymarine.com.

Description	Part number
LightHouse Sport Basic operation instructions	81384
LightHouse Sport Advanced operation instructions (This document)	81388
Element HV Installation instructions	87360

Applicable software version

Product software is updated regularly to add new features and improve existing functionality.

This document has been updated to reflect displays running version 3.18 of the LightHouse™ Sport operating system.

Check the website for the latest software and user manuals:

- www.raymarine.com/software

- www.raymarine.com/manuals

Applicable products

This document details operations of the LightHouse™ Sport operating system which is compatible with the following displays:

Product part numbers
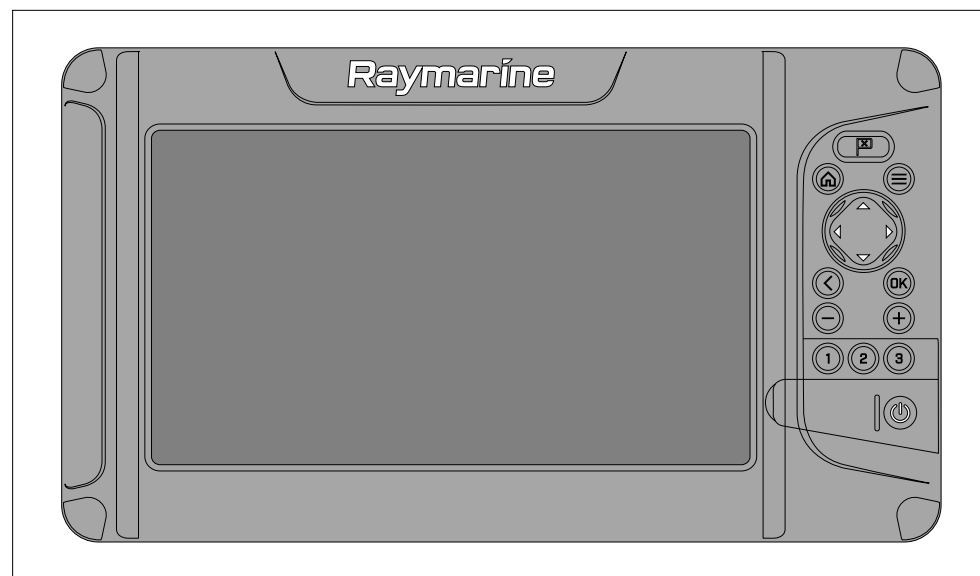
Part number	Description
E70532 / E70644	Element™ 7 HV — HyperVision™ sonar / GPS combo with Wi-Fi.
E70531	Element™ 7 S — Conical sonar / GPS combo with Wi-Fi.
E70534 / E70645	Element™ 9 HV — HyperVision™ sonar / GPS combo with Wi-Fi.
E70533	Element™ 9 S — Conical sonar / GPS combo with Wi-Fi.
E70536 / E70646	Element™ 12 HV — HyperVision™ sonar GPS combo with Wi-Fi.
E70535	Element™ 12 S — Conical sonar GPS combo with Wi-Fi.

New features

The following new features have been added to version 3.18 of the LightHouse™ Sport operating system. Version 3.18 replaces all previous versions of LightHouse™ Sport.

- Support for updated Australia and New Zealand region LightHouse™ Charts, including Tide and Current data for those regions. **These charts must be purchased separately from the Raymarine Chart Store**: https://chartstore.raymarine.com

- Improved performance for LightHouse™ charts.

User manuals Print Shop

Raymarine® provides a Print Shop service, enabling you to purchase a high-quality, professionally-printed manual for your Raymarine® product.

Printed manuals are ideal for keeping onboard your vessel, as a useful source of reference whenever you need assistance with your Raymarine product.

To order a printed manual, delivered directly to your door, visit: http://www.raymarine.co.uk/view/?id=5175

For further information about the Print Shop, please visit the Print Shop FAQ pages: http://www.raymarine.co.uk/view/?id=5751

Note:

- Accepted methods of payment for printed manuals are credit cards and PayPal.

- Printed manuals can be shipped worldwide.

- Further manuals will be added to the Print Shop over the coming months for both new and legacy products.

- Raymarine user manuals are also available to download free-of-charge from the Raymarine® website, in the popular PDF format. These PDF files can be viewed on a PC / laptop, tablet, smartphone, or on the latest generation of Raymarine® multifunction displays.

CHAPTER 3: GENERAL INFORMATION

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3.1 Document conventions

The following conventions are used throughout this document:

- **Highlight** — The term 'highlight' refers to using the *[Directional pad]* to highlight an item.

- **Select** — The term 'select' refers to using the *[Directional pad]* to highlight an item, and then pressing the *[OK]* button to select the item.

- **Scroll** — The term 'scroll' refers to using the *[Directional pad]* to move up or down a menu to an item that is not currently shown onscreen.

- **Adjust** — The term 'adjust' is used to denote using the *[Directional pad]* to change a numeric value or slider bar control.

- **Enable** — The term 'enable' refers to using the *[Directional pad]* to highlight a toggle switch and press *[OK]* to activate the switch (when activated the switch background will turn green and the toggle is positioned to the right).

- **Disable** — The term 'disable' refers to using the *[Directional pad]* to highlight a toggle switch and press *[OK]* to deactivate the switch (when deactivated the switch background will turn gray and the toggle is positioned to the left).

The term 'select the *[Settings]* menu' refers to selecting the settings icon found at the bottom of app menus.

Example (Chart databoxes)
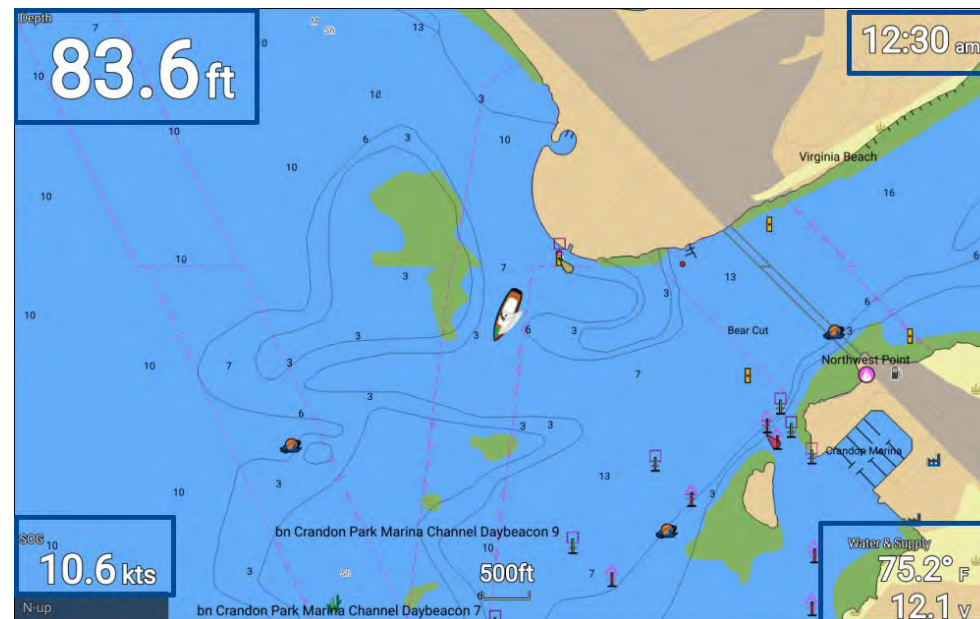
Databoxes can be edited or shown and hidden from the app menu: *[Menu > Settings > Databoxes]*.

3.2 Databoxes

System data is overlaid onto the Chart, and Fishfinder apps using databoxes located around the edge of the app screen.

Editing databoxes
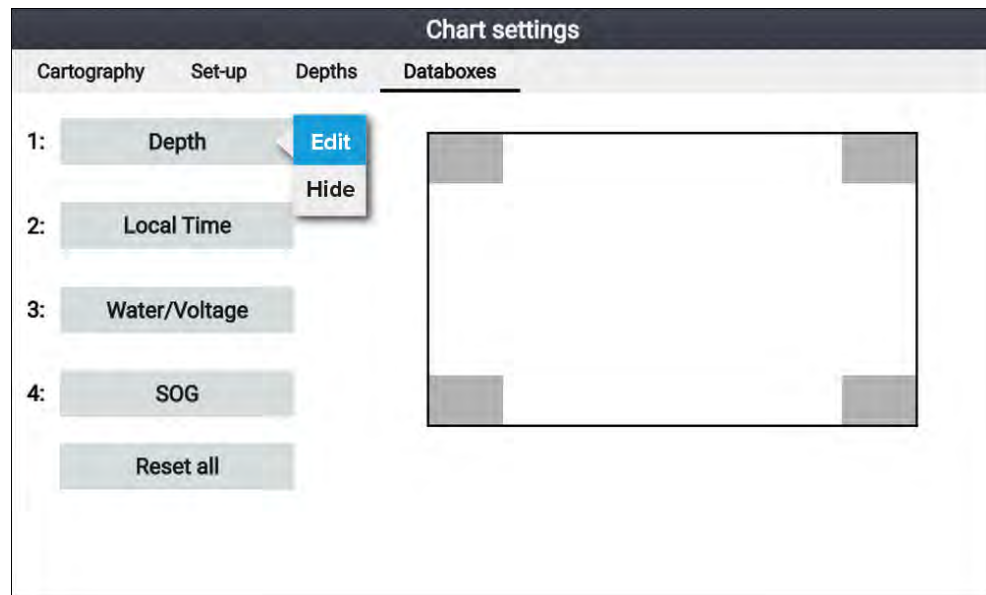
With the app displayed and in focus.
1. Press the *[Menu]* button.
2. Select the *[Settings]* icon.
3. Select The *[Databoxes]* tab.
4. Select the databox you want to edit.
   The pop-over menu is displayed.
5. Select *[Edit]* to change the data item that is displayed in the databox.
6. Select the Data item category.
7. Select the data item.
8. Press the *[Menu]* button to return to the app screen.

Note:

To remove or display the databox, selecting *[Hide]* or *[Show]* from the pop-over menu.

Data items

The following data items can be displayed in Databoxes.

Note:

Where more than 1 data source is available for a data item, based on the specified Boat details (*[Homescreen > Settings > Boat details]*), then data items will be available for each data source.

Category	Data item
[Battery] • *[Battery 1]* • *[Battery 2]* • *[Battery 3]*	• *Time till zero charge* • *State of charge* • *Battery temperature* • *Battery voltage* • *Battery current*
[Boat]	• *Fresh water (%)* • *Live well (%)* • *Gray water (%)* • *Black water (%)*
[Depth]	• *Depth*
[Display]	• *Supply voltage*
[Distance]	• *Trip (season)* • *Trip (month)* • *Trip (day)* • *Ground Log*

Category	Data item
[Engine] • [Port engine] • [Starboard engine] • [All engines]	• Engine hours • Engine RPM (Revolutions per minute) • Boost pressure • Oil temperature • Oil pressure • Alternator • Coolant pressure • Coolant temperature • Engine load • Engine trip • Fuel flow • Fuel flow (inst) • Fuel flow (avg) • Fuel pressure • Gear • Trans oil pressure • Trans oil temperature

Category	Data item
[Fuel] • [Tank 1] • [Tank 2] • [All Tanks]	[Tank 1] and [Tank 2]: • Fuel level (%) [All Tanks]: • Engine economy total • Fuel flow total • Time to empty • Distance to empty • Fuel used (season) • Fuel used (trip) • Est. fuel remaining • Total fuel (%)
[Environment]	• Max water temp • Min water temp • Water temp • Set • Drift • Water & Supply (Water temp and supply voltage) • Sunrise/set
[GPS]	• Course over ground • Average SOG (Average Speed Over Ground) • Maximum SOG • SOG • Vessel position • Course over ground SOG
[Heading]	• Heading

Category	Data item
[Navigation]	• *Route ETA* (Route Estimated Time of Arrival) • *Route TTG* (Route Time To Go) • *Active waypoint* • *Waypoint TTG* • *Estimated arrival time* • *Distance to waypoint* • *Cross track error* • *Bearing to waypoint* • *Wpt info* (Waypoint information)
[Speed]	• *VMG to waypoint* (Velocity Made Good to Waypoint) • *VMG to windward* (Velocity Made Good to Wind) • *Avg speed* • *Max speed* • *Speed thru water*
[Time]	• *Time* • *Date* • *Time and Timer*
[Wind]	• *Cardinal* • *Beaufort* • *Ground wind direction* • *True wind direction* • *Minimum true wind angle* • *Maximum true wind angle* • *True wind angle* • *Maximum true wind speed* • *Minimum true wind speed*

Category	Data item
	• *True wind speed* • *Minimum app wind angle* • *Maximum app wind angle* • *App wind angle* • *Minimum app wind speed* • *Maximum app wind speed* • *App wind speed*

3.3 Menu types

The different types of menu available in LightHouse™ Sport are shown below.

App menus

• Each app includes a menu. Menus provide access to the app's features and settings.

• The menu is displayed on the right side of the screen when the *[Menu]* button is pressed.

• From a single app page, pressing the *[Back]* button or the *[Menu]* button will close the app menu.

• From a multi-app splitscreen page, pressing the *[Back]* button will close the app menu and return to the multi-app page view.

• From a multi-app splitscreen page, pressing the *[Menu]* button will close the app menu, maintaining the app in fullscreen page view.

• Menu options that include a '>' symbol will open a menu page or related menu options for that item.
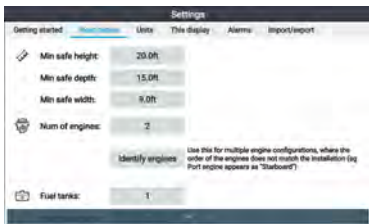
Menu pages and tabs

- Menu pages are accessed from app menu options and icons on the homescreen.

- Menu pages are fullscreen pages containing menu options and settings, menu pages are usually set out in tabs with each tab containing options relevant to the tab's title.

- Selecting tab titles will display the contents for that tab.

- Pressing the *[Back]* button will return you to the previous menu.

Context menus

- Context menus are available in the Chart and Fishfinder apps. Context menus are accessed by highlighting an object or location on the app screen and pressing the OK button.

- Context menus provide context-sensitive information and options.

- Selecting *[more options]* will display further contextual menu options.

- Pressing the *[Back]* button or the *[Menu]* button will close context menus.

Pop-over menus

- Pop-over menus are available on the homescreen, in apps and from menu pages. Pop-over options provide access to further menu options and settings.

- Pressing the *[Back]* button will close pop-over menus.

Controls and settings

Common menu controls and options are detailed below.

	Toggle switch • Toggle switches are used to enable (switch on) or disable (switch off) various features and settings. • When enabled (switched on) the white circle will be moved right and the switch's background will be filled Green.
	Setting field Setting fields show the selected value for that control. Selecting a setting field will display the available options relevant to the options available. Depending on field selected the options could be in the following formats: • Pop-over options (selection list) • Numeric value control (as shown) • Onscreen keyboard • File browser • Selection list (full page)
Identify engines	**Setting button** • Setting buttons are available on Menu pages and Notification / Alarm messages to access further settings or confirm setting changes.
⌄	**Page down** • Further options are available off screen. • Scroll *[Down]* to display these options.

CHAPTER 4: SET UP

CHAPTER CONTENTS

4.1 Display controls

The buttons available on Element™ displays and their function are detailed below.
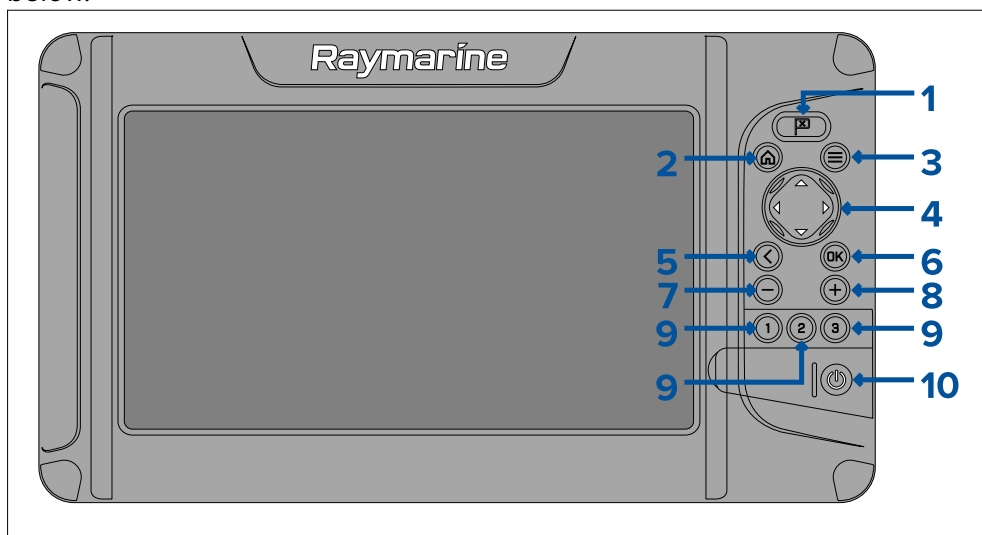
1. *[Waypoint]*
   - Press to place a waypoint at your vessel's position (unless cursor mode is active in the Chart or Fishfinder app).
   - Press to place a waypoint at the cursor's position in the Chart and Fishfinder apps (when in cursor mode).

2. *[Home]*
   - Press to display the Homescreen.

3. *[Menu]*
   - Press to open Homescreen menus and app menus.
   - Press and hold for approximately 2 seconds to switch which app has focus in a multi app page.
   - Press to close Homescreen menus and app menus.

4. *[Directional pad]* (8–axis directional controls)
   - Use to navigate Homescreen and menus.
   - Press any direction to activate cursor mode in the Chart and Fishfinder apps.
   - Use to position the cursor in the Chart and Fishfinder apps.

5. *[Back]*
   - Return to previous menu or dialog.

6. *[OK]* — Confirms menu selections, opens context menus
   - Press to confirm a currently highlighted option.
   - Press to open context sensitive menus in the Chart and Fishfinder apps.

7. *[Minus]* (Zoom / Range out)
   - Press to increase the area displayed onscreen in the Chart app.
   - Press to decrease the zoom level in the Fishfinder app, when in Zoom mode.
   - Press to revert to scrolling mode from lowest zoom level in the Fishfinder app.

8. *[Plus]* (Zoom / Range in)
   - Press to decrease the area displayed onscreen in the Chart app.
   - Press once to initiate Zoom mode in the Fishfinder app, subsequent presses will increase the zoom level.

9. *[Quicklaunch 1]* / *[Quicklaunch 2]* / *[Quicklaunch 3]*
   - Press to open the assigned app page.
   - Press and hold to assign the quick launch button to the app page currently highlighted on the Homescreen.

10. *[Power]*
    - Power on — Press and hold until the display beeps (approximately 2 seconds).
    - Shortcuts menu — Press once to open the shortcuts menu.
    - Power off — Press and hold until the display turns off (approximately 5 seconds).
    - Power off — Press to open the Shortcuts menu and then select *[Power down display]*.

Switching on and off at the breaker

When powered off the display will still consume a small amount of power.

If you wish to ensure that the display is not consuming any power then it must be switched off at the breaker or have the power cable unplugged.

When the breaker is switched back on or the power cable is reconnected the display will remain powered off, until switched back on using the *[Power]* button.

Switching active app

On app pages that contain more than 1 app you can select which app has the current focus (i.e.: which app responds to your control).

Press and hold the *[Menu]* button to move focus to the next app.
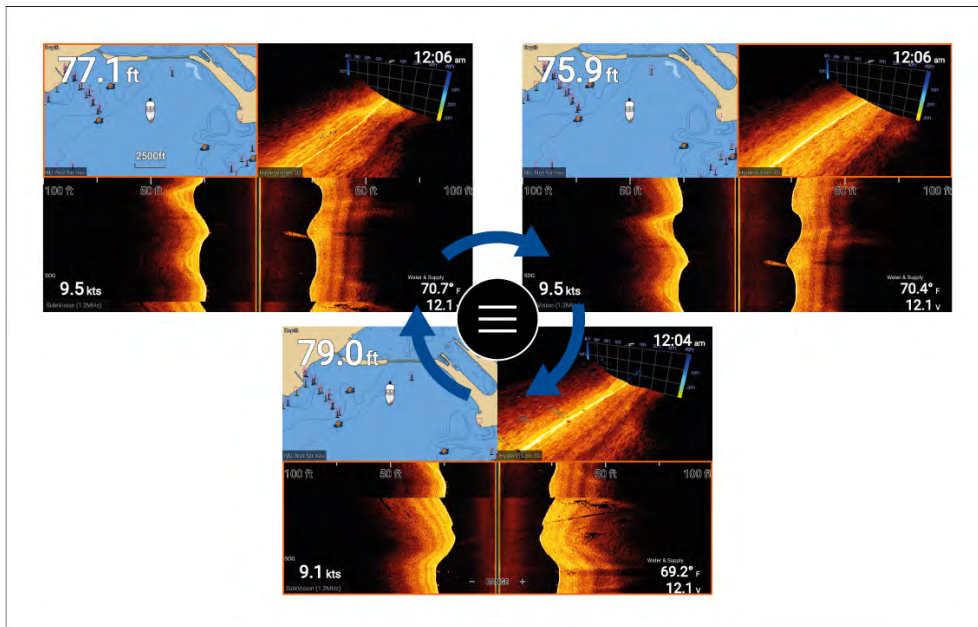
In addition to pressing and holding on the *[Menu]* button you can also switch app focus from the app menu. With a multi app page displayed:

1. Press the *[Menu]* button.
2. Highlight the *[Switch to]* option.
3. In app pages with more than 2 apps, use the *[Right]* and *[Left]* buttons to highlight the app you want to make active.
4. Press the *[OK]* button.
5. Press the *[Back]* button to close the menu.

4.2 Getting started

Startup wizard

The first time the display is powered up, or after a *[Factory reset]* the startup wizard is displayed.

The startup wizard guides you through the configuration of important display settings.

The settings included in the startup wizard are listed below:

- **User interface language** — for a list of available user interface languages see: **Languages**
- **Activity** — activity selection determines default settings and homescreen app page icons:
  – Fishing (inland)
  – Fishing (coastal)
  – Fishing (ice)
  – Motor cruising
  – Sailing
  – Paddle
  – Other
- *****Boat details** — boat details include important safety related settings:

Note: * Boat details are skipped when the *[Fishing (ice)]* activity is selected. If required, boat details can be configured manually from the *[Boat details]* settings tab.

  – Safety clearances
  – Number of engines
  – Number of tanks
  – Number of batteries
  – Sonar transducer selection
  – Radar selection

Changing activity type

To change the selected activity type after the startup wizard has finished a factory reset must be performed.

1. Backup your user data before performing a factory reset..

   For details on exporting you user data refer to: **p.31 — Saving user data**

2. Perform a factory reset.

   For instructions on performing a factory reset refer to: **p.26 — Performing a settings or factory reset**

3. follow the startup wizard instructions, selecting your new activity.

4. Import your user data.

   For instructions on importing your user data refer to: **p.26 — Importing user data**

First power up Limitation on Use acknowledgement

After you have completed the Startup wizard the Limitation on Use (LoU) disclaimer is displayed.
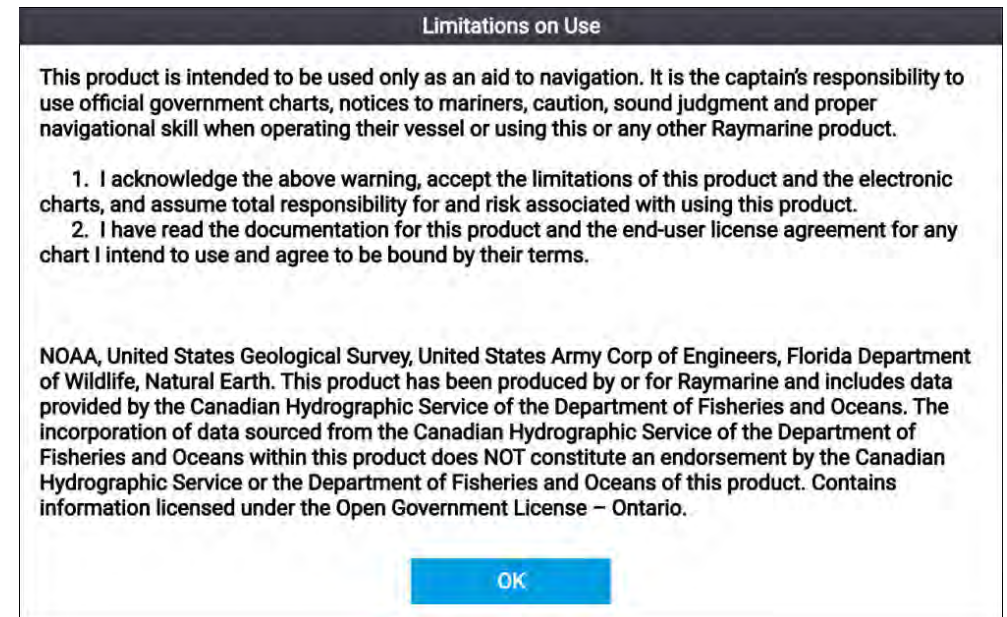
You must read and agree to the terms in order to use your display.

Selecting *[OK]* means you have accepted the terms of use.

Identifying engines

If your MFD has mislabelled your engines this can be corrected by running the engine identification wizard.

When the engine manufacturer is set to *[Other]* the engine identification wizard will be enabled in the *[Boat details]* menu: *[Homescreen > Settings > Boat details > Identify engines]*.

1. Ensure the correct number of engines is selected in the *[Num of Engines:]* box.

2. Select *[Identify engines]*.

3. Follow the onscreen prompts to complete the engine identification wizard.

Sonar transducer calibration

Sonar transducers should be calibrated to ensure accurate readings are displayed on the MFD.

Depth offset

Depths are measured from the transducer face to the bottom (e.g.: seabed). An offset value can be applied to the depth data so that the displayed depth reading represents the depth reading taken from either the keel (negative offset) or the waterline (positive offset).

Before setting a waterline or keel offset, establish the vertical distance between the transducer and waterline or the bottom of your vessel's keel, as appropriate. Then set this distance as the depth offset value.

1. *[Below waterline]* — The depth reading will be increased from the transducer's default reading.
2. *[Below transducer]* — This is the default reading from the transducer (zero offset applied).
3. *[Below keel]* — The depth reading will be decreased from the transducer's default reading.

Configuring transducer settings

For systems with a transducer connected, as part of setting up your system for the first time it is important that you correctly configure your transducer.

Transducer configuration settings are available from the **Fishfinder app**.

1. Select *[Transducer]* from the Fishfinder app's *[Settings]* menu: *[Menu > Settings > Transducer]*
2. If your installation required you to install an all-in-one transducer backwards (e.g.: this may occur when connecting the transducer to a trolling motor), then select *[Backwards]* from the *[HV transducer alignment]* option. This ensures that the port and starboard channels appear correctly orientated onscreen, otherwise keep the default setting: *[Forwards]*.
3. Select where you want your depth measurements taken from:
   i. *Below transducer (default)* — No offset required
   ii. *Below keel* — Enter the distance between the transducer face and the bottom of the keel.
   iii. *Below waterline* —Enter the distance between the bottom of your keel and the waterline.
4. You can configure temperature settings as follows:
   i. Enable or disable temperature readings as required.
   ii. If enabled, check the temperature reading against the actual water temperature.
   iii. If the current reading requires adjustment, select *[Calibrate temp]* and enter the difference between your 2 readings.

Performing a settings or factory reset

Performing a *[Factory reset]* will erase ALL user data and reset the display's settings to their Factory default values. Performing a *[Settings reset]* will restore your display's settings to factory defaults, whilst retaining user data.

1. Select *[Settings reset]*, from the *[This display]* menu: *[Homescreen > Settings > This display > Settings reset]* to perform a settings reset.
2. Select *[Factory reset]*, from the *[This display]* menu: *[Homescreen > Settings > This display > Factory reset]* to perform a factory reset.

Importing user data

You can import user data (i.e.: GPX format Waypoints, Routes and Tracks) to your display.

1. Insert the MicroSD card that contains your user data files into the memory card reader on your display.
2. Select *[Import from card]* from the Import/export menu: (*[Homescreen > Settings > Import/export > Import from card]*).
3. Navigate to your User data file (.gpx).
4. Select the relevant GPX file.

   Your user data has now been imported.
5. Select *[OK]*.

4.3 Shortcuts

The Shortcuts menu can be accessed by pressing the *[Power]* button.
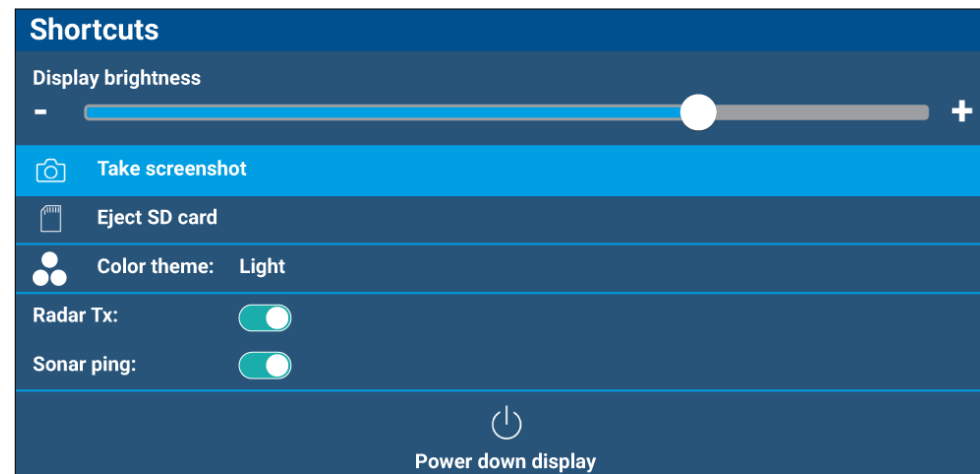
The following shortcuts are available:

- *[Display brightness]*
- *[Take Screenshot]*
- *[Eject SD card]*
- *[Color theme:]*
- (1)*[Radar Tx:]*
- *[Sonar ping:]*
- *[Power down display]*

> **Note:**
> - If no controls are pressed, the *[Shortcuts]* menu will automatically close after approximately 5 seconds.
> - (1)Radar transmission controls are only available when the display is paired with a compatible radar scanner.

Taking a screenshot

You can take a screenshot and save the image to external memory.

1. Insert a memory card into the card reader slot.

2. Press the *[Power]* button.

   The Shortcuts menu is displayed.

3. Select *[Take screenshot]*.

The screenshot will be saved in .png format to the inserted memory card.

Note:

Screenshots can also be taken by pressing and holding the *[Back]* button.

Adjusting brightness

Display brightness (backlight illumination level) can be adjusted from the *[Shortcuts]* menu. Lower brightness levels are recommended for viewing the display during low light conditions (e.g.: at night) and higher levels for daylight viewing. Lower brightness levels will also help to preserve battery power.

With the Shortcuts menu displayed (accessible via the Power button):

1. Use the *[Plus]* and *[Minus]* buttons or the *[Left]* and *[Right]* buttons to adjust display brightness.

Note:

When the brightness is not set to maximum and the shortcuts menu is displayed, each press of the *[Power]* button will increment the brightness level.

Changing the display's color theme

You can change the color theme of your display's user interface from the *[Shortcuts]* menu.
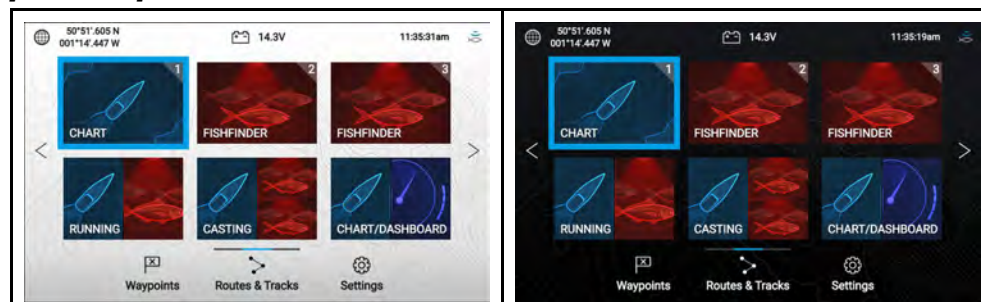
Light theme (Default)	Dark theme

With the Shortcuts menu displayed (accessible via the Power button):

1. Select *[Color theme:]*

   The pop-over menu with available color themes is displayed.

2. Select the desired color theme.

Note:

Changing the *[Color theme]* inverts the Black and White colors used for text and in Homescreen and menu backgrounds. The dark theme is recommended in lower light conditions e.g.: at night.

Disabling and enabling sonar ping

You disable and enable the your sonar module ping from the *[Shortcuts]* menu.

With the Shortcuts menu displayed (accessible via the Power button):

1. Select *[Sonar ping:]* to disable or enable sonar pinging.

Disabling and enabling radar transmission

You can disable and enable radar scanner transmission from the *[Shortcuts]* menu.

With the Shortcuts menu displayed (accessible via the *[Power]* button):

1. Select *[Radar Tx]* to disable or enable radar transmission.

4.4 Memory card compatibility

MicroSD memory cards can be used to backup / archive data (e.g. Waypoints, Routes and Tracks). Once data is backed up to a memory card, old data can be deleted from the system. The archived data can be retrieved at any time. It is recommended that your data is backed up to a memory card on a regular basis.

Compatible cards

The following types of MicroSD cards are compatible with your display. **If the card's native format does not match one of the display's supported formats, the card will not be recognized by the display. In this situation, it will be necessary to re-format the card using a separate device, such as a laptop or PC for example.**

Type	Size	Native card format	Display supported Format
MicroSDSC (Micro Secure Digital Standard Capacity)	Up to 4GB	FAT12, FAT16 or FAT16B	NTFS, FAT32, exFAT
MicroSDHC (Micro Secure Digital High Capacity)	4GB to 32GB	FAT32	NTFS, FAT32, exFAT
MicroSDXC (Micro Secure Digital eXtended Capacity)	32GB to 2TB	exFAT	NTFS, FAT32, exFAT

- **Speed class rating** — For best performance it is recommended that you use Class 10 or UHS (Ultra High Speed) class memory cards, or better.

- **Use branded memory cards** — When archiving data it is recommended that you use good quality branded memory cards.

Removing MicroSD card from its adaptor

MicroSD memory and cartography chart cards are usually supplied inserted into an SD card adaptor. The card will need to be removed from the adaptor before inserting into your display.
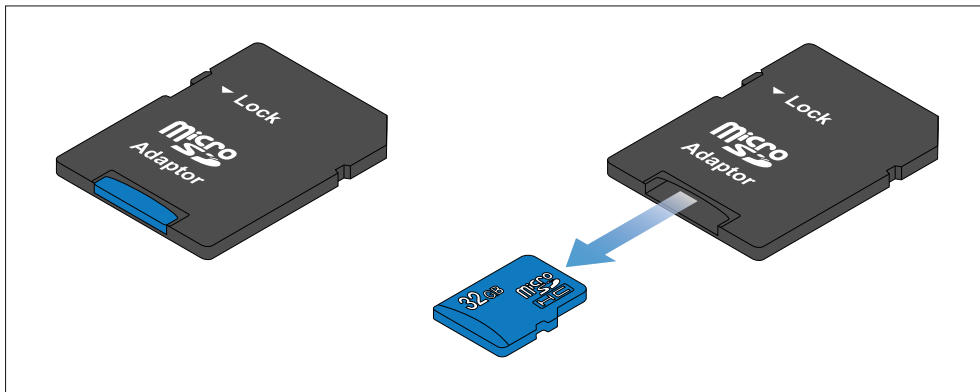
Inserting a MicroSD card
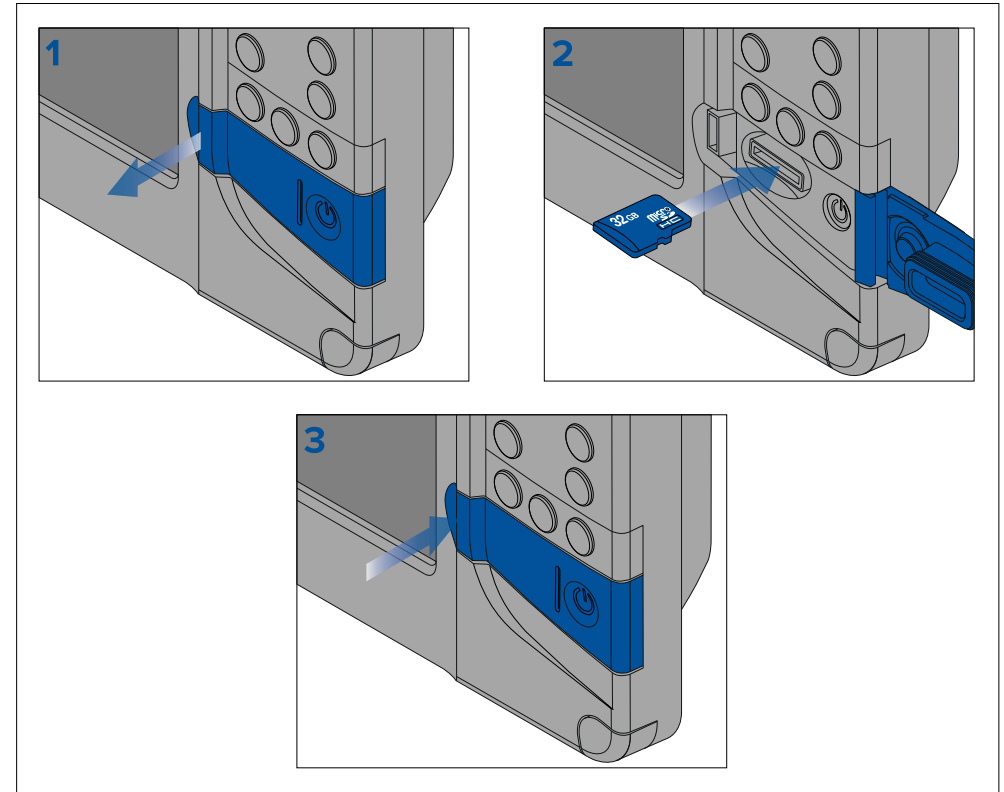
1. Open the card reader door.
2. Ensuring correct orientation (contacts facing down), insert the MicroSD card into the card reader slot.
3. Close the card reader door, ensuring that the edges of the door are flush.

Removing the MicroSD card

1. Press the [Power] button.

   The [Shortcuts] menu is displayed.
2. Select [Eject SD card].
3. Wait for the 'You may now safely remove SD cards.' message to be displayed.
4. Open the card reader door.
5. Remove the MicroSD card from the card reader.

Push in to release the MicroSD card from its slot.

6. Close the card reader door.
7. Select *[I have removed SD cards]* on the displayed message.

Caution: Ensure card reader cover or door is securely closed

To prevent water ingress and consequent damage to the product, ensure that the card reader door or cover is firmly closed.

4.5 Software updates

Raymarine® regularly issues software updates for its products which provide new and enhanced features and improved performance and usability.

It is important to ensure that you have the latest software for your products by regularly checking the Raymarine® website for new software releases.

www.raymarine.com/software

Note:

- It is recommended that you always backup your User data before performing a software update.

- The "Check online" feature is only available on display variants that include built-in Wi-Fi that have been configured with an active Internet connection.

- In order to perform a software update any connected radar scanner must be switched to standby.

In addition to updating your display's software, your display can also be used to update the software of devices connected to the same SeaTalkng ® backbone.

Important:

If you need to downgrade the display's software to an earlier version follow the software downgrade procedure: **p.135 — Downgrading software**

Identify display variant and software version

Refer to the Getting started menu: *[Homescreen > Settings > Getting started]* on your display to identify product variant and current software version.
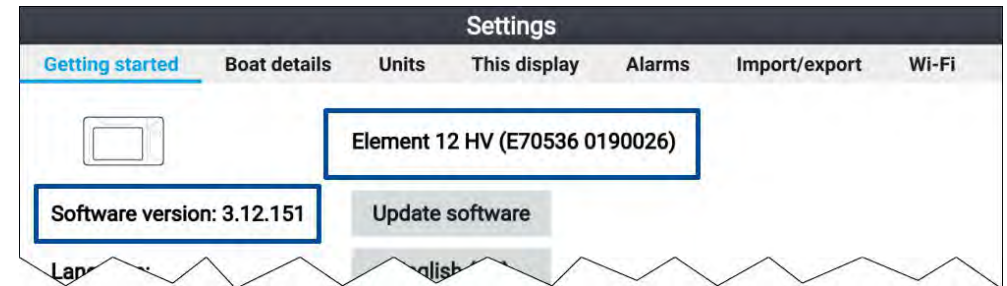
Identifying connected products

To display a list of products that are connected to the same SeaTalkng ® backbone follow the steps below.
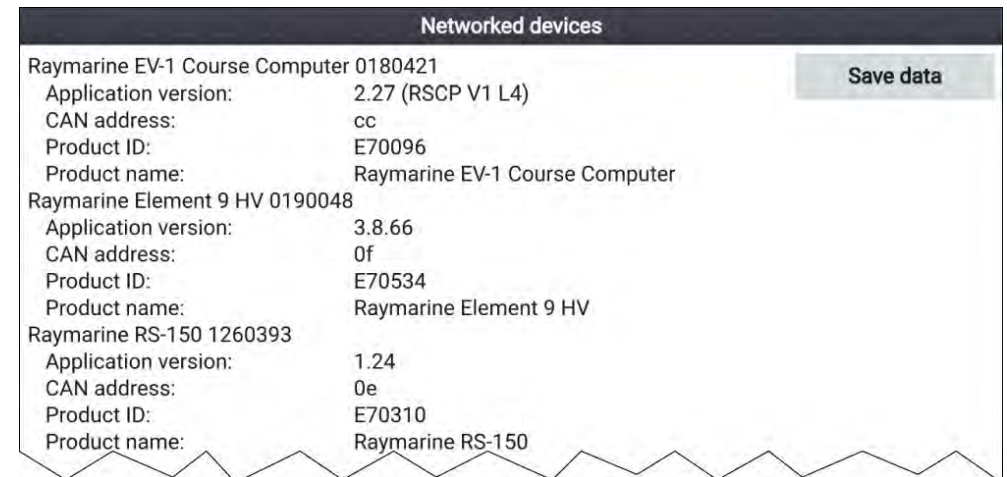
From the Homescreen:

1. Select *[Settings]*.
2. Select the *[This display]* tab.
3. Select *[Networked devices]*.

   Product information for compatible products is displayed. The software version can be located against *[Application version:]*.

4. If required, use the *[Up]* and *[Down]* buttons to scroll through the list of product information.

5. You can also save the list of product information to memory card by selecting *[Save data]*.

   The product information file will be saved in .json file format that can be viewed using most standard notepad applications.

Updating display software using a memory card

Follow the steps below to update the software on your display.

1. Check the product hardware variant and the software version of the products you want to update.
2. Go to the Raymarine website: (*[www.raymarine.com > Support > Software Updates]*).
3. Browse for your product.
4. Check if an updated software version is available for your product.
5. Download the relevant software package(s) (ISO files).
6. Copy the files to MicroSD card.
7. With your display powered on, insert the MicroSD card into the card reader slot.

   The software update files will be recognized automatically.

8. Select *[Yes]* to update the software.

   A list of available products is displayed. The list will include your display and products that are connected to the SeaTalkng ® backbone.

   Software update list example

9. Select each device that you want to update.

If a notification is displayed asking if you want to reinstall the current software version, unless you are experiencing problems with the product select [No], otherwise select [Yes] and the current version of software will be reinstalled.

10. When all relevant products have been chosen, select *[Update selected]* to commence the software update process.
11. Wait for the update process to complete.
12. Select *[Exit]*.

Note:

- Your products may reboot automatically as part of the update process.
- You can also select *[Check SD card]* from the *[Update software]* pop-over options (*[Homescreen > Settings > Getting started > Update software]*.

Updating software using an internet connection

When using an Element™ display that includes built-in Wi-Fi, follow the steps below to update your display's software and software on approved devices connected to the same SeaTalkng ®backbone, using an internet connection.

1. Select *[Update software]* from the Getting started menu: (*[Homescreen > Settings > Getting started]*).
2. Select *[Check online]* from the pop-over menu.

   If you do not have an active internet connection then you will be requested to create one.
3. To set up a Wi-Fi connection select *[Wi-Fi settings]* and connect to the required Wi-Fi access point/hotspot.
4. Select *[Start]*.

   A list of available products is displayed. The list will include your display and products that are connected to the SeaTalkng ® backbone.

Software update list example

5. Select each device that you want to update.

   If a notification is displayed asking if you want to reinstall the current software version, unless you are experiencing problems with the product select [No], otherwise select [Yes] and the current version of software will be reinstalled.

6. When all relevant products have been chosen, select *[Update selected]* to commence the software update process.
7. Wait for the update process to complete.
8. Select *[Exit]*.

Note:

Your products may reboot automatically as part of the update process.

4.6 User data import and export

User data (i.e.: Waypoint, Routes and Tracks) can be imported and exported from your display. User data is saved in the common .gpx file format.

The Import/export menu can be accessed from the homescreen settings menu *[Homescreen > Settings > Import/export]*.

Saving user data

You can backup your user data (waypoints, routes and tracks) to a MicroSD card.

1. Insert a memory card into your display's card reader.
2. Select *[Save data to card]* from the Import/export menu: *[Homescreen > My data > Import/export]*.

   A pop-over menu is displayed.
3. Select the desired option:
   • *[Save all data]* to save (export) all waypoints, routes and tracks.
   • *[Save waypoints]* to save (export) all waypoints.
   • *[Save routes]* to save (export) all routes.
   • *[Save tracks]* to save (export) all tracks.
4. Select *[Save]* to save the user data using the default filename. Alternatively:
   i. Use the onscreen keyboard to enter your own filename and then select *[Save]*.
5. Select *[OK]* to return to the Import/export menu, or select *[Eject card]* to safely remove the memory card.

The user data file is saved to the '\Raymarine\My Data\' directory of your memory card in gpx format.

Importing user data

You can import user data (i.e.: GPX format Waypoints, Routes and Tracks) to your display.

1. Insert the MicroSD card that contains your user data files into the memory card reader on your display.
2. Select *[Import from card]* from the Import/export menu: (*[Homescreen > Settings > Import/export > Import from card]*).
3. Navigate to your User data file (.gpx).
4. Select the relevant GPX file.

   Your user data has now been imported.
5. Select *[OK]*.

4.7 EV-1 heading sensor

You can connect an EV-1 heading sensor to your display, this will ensure that accurate heading data is available, regardless of vessel movement.

The EV-1 heading sensor will automatically calibrate (linearize) itself while the following conditions are met:

- vessel speed is between 3 to 15 knots, and

- at least a 270° turn has been made.

Note:

The time it takes for automatic calibration can be reduced by completing a full 360° turn at between 3 to 15 knots.

After the initial calibration has been completed a notification will be displayed and a Max deviation value will be reported in the *[EVO COMPASS]* section of the *[This display]* menu. If dashes are displayed then the calibration has not been successful.

If the Maximum deviation is 45° or greater, it is recommended that either the EV-1 is relocated, in a location with less magnetic interference, or that any devices causing magnetic interference are moved farther away from the EV-1.

Manually adjusting an EV-1 heading sensor

If there is a difference between Heading and the reported COG (Course Over Ground), which is not attributable to tide and wind conditions, then you can adjust the EV-1 heading sensor's settings to compensate.

The EV-1 settings can be accessed from the *[This display]* menu: *[Homescreen > Settings > This display > EVO set-up]*.
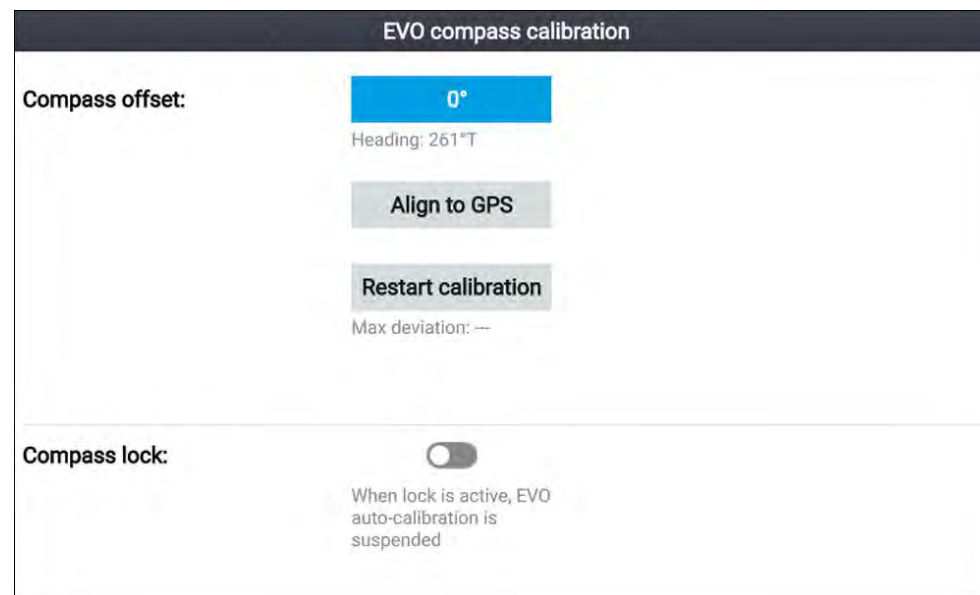
1. If the difference is within plus or minus 10°, then select the *[Compass offset]* field and adjust until COG and heading values are the same, or
2. If the difference is greater than plus or minus 10° you can align your heading sensor to the COG, reported by you GPS/GNSS, by selecting *[Align to GPS]* and following the onscreen instructions.

Restarting calibration

If you experience problems with your heading data or have had to relocate the EV-1 sensor then you can restart the automatic calibration.

From the this display menu:

1. Select *[EVO set-up]*.

2. Select *[Restart calibration]*.

The maximum deviation will be reset and automatic calibration will commence once vessel speed (3 to 15 knots) and turn circle ()at least 270° turn) conditions are met.

Locking compass calibration

The EV-1 sensor is designed to continually adjust its calibration settings in the background to improve its accuracy.

If your vessel is regularly in environments with strong magnetic disturbances (e.g.: offshore wind farms or busy rivers) it may be desirable to use the compass lock feature to prevent the continual adjustment, as over time this may cause an error in reported heading.

To enable compass lock:

1. Select *[EVO set-up]* from the *[This display]* menu.
2. Select the Compass lock toggle switch so that it is enabled.

> **Note:**
>
> You can disable the calibration lock at anytime by disabling the *[Compass lock]* toggle switch.

4.8 Multiple data sources (MDS)

MDS is a Raymarine scheme for managing multiple sources of identical data types on the same network (e.g.: in an MFD network you may have more than one source of GPS / GNSS position data).

The MFD will automatically select a preferred data source (device) to use for that data type.

MDS can be used for the following data types:

- *Depth*
- *Speed through water*
- *Heading*
- *GPS*
- *GPS Datum*
- *Wind*

- *Time & Date*

If you do not want to use the automatically selected data source you can manually select your preferred data source.

> **Note:**
>
> For MDS to be available on your system, all products in the system that report data must be MDS-compliant. The system will report any products that are NOT MDS-compliant. It may be possible to upgrade the software for these non-compliant products, to make them compliant. Visit the Raymarine website (www.raymarine.com) to obtain the latest software for your products.
>
> If MDS-compliant software is not available for the product and you do NOT want to use the system's preferred data source, you must remove any non-compliant products from the system. You should then be able to select your preferred data source.
>
> Once you have completed setting up your preferred data sources, you may be able to add non-compliant products back into the system.

Data sources menu

When a network / system includes multiple sources of the same data type, such as GPS / GNSS position data, the display will choose the most appropriate source for the data. If you prefer, you can manually select your own source for the data.

The *[Data sources]* menu can be accessed from the *[Settings]* menu: *[Homescreen > Settings > This display > Data sources]*.

Each tab in the data sources menu enables you to view and select your preferred data source for that type of data. The currently active data source will display its current 'value in use'. By default data sources are selected automatically and the source for the data may change depending on conditions.

With the *[Manual selection]* toggle enabled, you can manually assign your preferred source for the data. Manually selected data sources will not change.

Manually assigning a data source

To manually assign a data source follow the steps below.

From the Homescreen:
1. Select *[Settings]*.
2. Select the *[This display]* tab.
3. Select the *[Data sources]* button.
4. Select the tab for the type of data you want to assign a source for.

    Once a tab is selected the display will search the network and list all compatible devices that provide that data type.
5. Use the *[Up]* and *[Down]* buttons to highlight a device.
6. Press the *[OK]* button to select the device as the source for that data type.

The selected device will become the only source used for that data.

Note:

Unless manual selection is required for a specific reason, it is recommended that *[Manual selection]* remains disabled, so that the display can determine the best source for the data.

4.9 Wireless (Wi-Fi) connections

Connecting the display to a Wi-Fi access point

The display can access the internet via a Wi-Fi access point. When connected to a Wi-Fi access point that has internet access, software updates can be downloaded and installed directly on the display.
1. Open the Wi-Fi settings tab: (*[Homescreen > Settings > Wi-Fi]*).
2. Select *[Not connected]* in the 'Connect Element to Wi-Fi Network' section of the Wi-Fi tab.

    The display will search for and display a list of all Wi-Fi access points in range.

3. Select the Wi-Fi access point you want to connect to
4. Enter the Wi-Fi access point's password.
5. Select *[Next]*.
6. Select *[CONNECT]*.
7. Press the *[Back]* button to return to the Wi-Fi settings tab.

The display will now connect to the chosen Wi-Fi access point.

Configuring Wi-Fi credentials for mobile device connections

Mobile devices can be connected to the display using a Wi-Fi connection. Connecting your mobile device to the display enables the use of Raymarine apps e.g.: RayConnect. The credentials for your display's Wi-Fi connection can be identified and configured from the Wi-Fi settings tab.
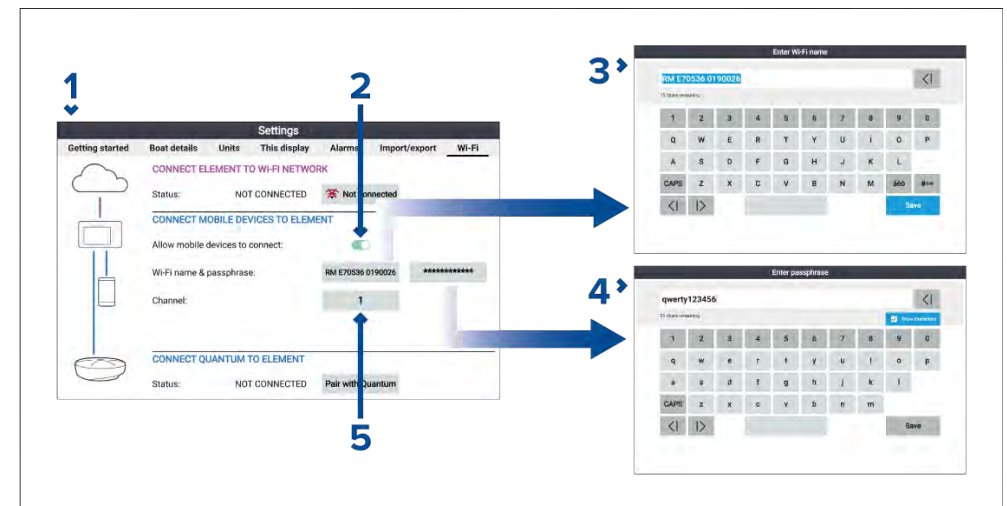
1. The Wi-Fi settings tab is accessed from the Settings menu: (*[Homescreen > Settings > Wi-Fi > CONNECT MOBILE DEVICES TO ELEMENT]*).

2. To enable a mobile device to connect to the display *[Allow mobile devices to connect]* must be enabled

3. The display's Wi-Fi network name can be viewed from the Wi-Fi settings tab and can be changed by selecting the name field.

4. The display's Wi-Fi network passphrase can be viewed by selecting the passphrase field and then selecting *[Show characters]* on the Enter

passphrase page. The passphrase can also be changed from the same page.

5.   The display's Wi-Fi network channel can be viewed from the Wi-Fi settings tab and can be changed by selecting the channel field.

Connecting an Android device to the display

Android devices can be connected to the display's Wi-Fi connection.

Open your Android device's Wi-Fi settings from the top drop down menu or via the *[Settings]* icon.

Example Android Wi-Fi connection
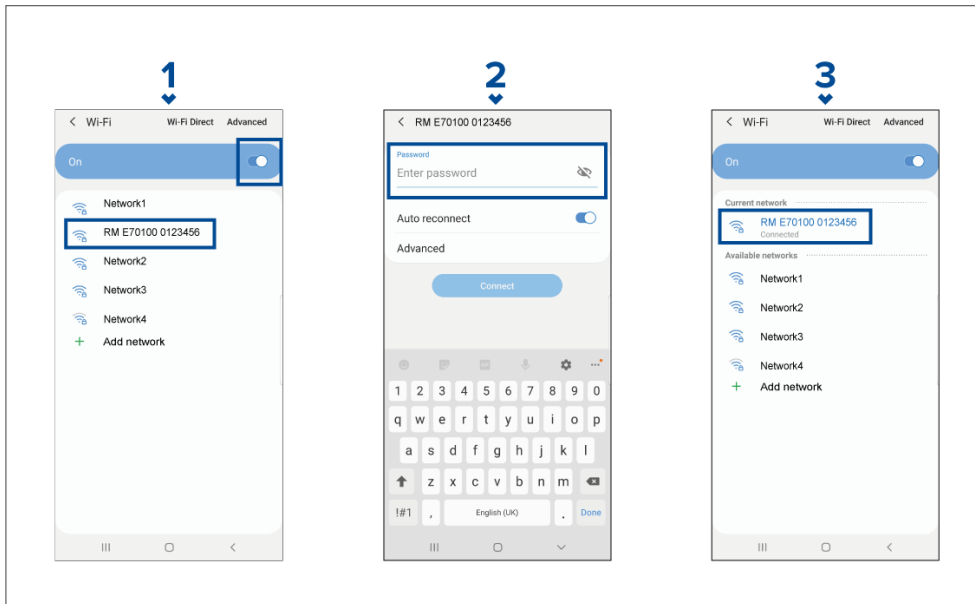
> **Note:**
>
> Depending on device type, manufacturer and version of the Android operating system in use, screens and options may be different than in the example above.

1.   Enable Wi-Fi by setting the toggle to on (blue) and select your MFD from the available networks.
2.   Enter your MFD's Wi-Fi passphrase and select *[Connect]*.

   Make sure the password you enter is case sensitive.

3.   When your Android device is connected to your MFD's Wi-Fi it will display connected under the MFD's name.

For troubleshooting advice refer to the Wi-Fi troubleshooting information on the Troubleshooting chapter **p.133 — Troubleshooting**

Connecting an iOS device to the display

iOS devices can be connected to the display's Wi-Fi connection.

Open your iOS device's Wi-Fi settings from the top drop down menu or via *[Settings]*.

> **Note:**
>
> Depending on device type, and iOS version in use, screens and options may be different than in the example above.

1.   Enable Wi-Fi by setting the toggle to on (green) and select your MFD from the available networks.
2.   Enter your MFD's Wi-Fi passphrase and select join.

   Make sure the password you enter is case sensitive.

3. When your iOS device is connected to your MFD's Wi-Fi it will display a tick next to the MFD's name.

For troubleshooting advice refer to the Wi-Fi troubleshooting information on the Troubleshooting chapter **p.133 — Troubleshooting**

Raymarine app

Use the Raymarine app to purchase and download LightHouse™ Charts from the Chart Store.

Follow the steps below to use the Raymarine app:

1. Log in with an existing Raymarine account or create one using the app.

2. Purchase LightHouse™ Charts with the Chart Store.

3. Define the regions and types of cartographic data you want the chart to contain.

4. Download the charts to an SD card inserted in your display, or download the chart data directly to an Axiom® or Axiom® 2 display's internal memory.

LightHouse charts

LightHouse™ charts is the brand name for Raymarine's electronic navigational charts. LightHouse™ charts can include a premium subscription which adds new and enhanced features.
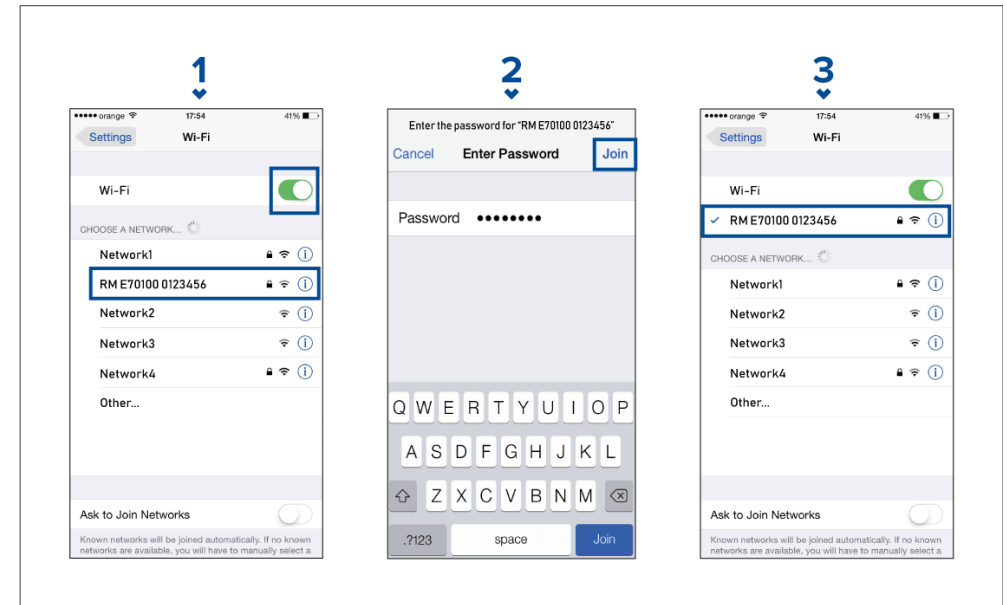
> **Note:**
>
> Legacy LightHouse™ Vector, Raster and NC2 charts have now been discontinued and can no longer be downloaded or updated.

New LightHouse™ charts come with a free 1 year subscription to LightHouse™ Premium. The premium subscription unlocks data-rich points of interest (POI), high-resolution satellite aerial overlays and regular chart updates. After the free subscription ends the premium features can be continued for an annual fee.

LightHouse™ charts can be purchased from Raymarine dealers, as either a pre-loaded chart card or a blank chart card that includes a voucher that can be redeemed from the chart store.

To find out more about available regions and latest features visit the LightHouse™ charts store: https://chartstore.raymarine.com/lighthouse-charts

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LightHouse Chart Store

LightHouse™ charts can be purchased from the LightHouse™ Chart Store, which can be accessed from a personal computer (PC) or from a mobile device via the Raymarine app.

You must have a Chart Store account and be logged in to the account before you can purchase charts in the Chart Store. This account can be created during the checkout process if required.

The Chart Store can be accessed using the following link: https://chartstore.raymarine.com/lighthouse-charts

Downloading charts using the Raymarine app

Purchased LightHouse™ charts can be downloaded to a MicroSD (µSD) memory card inserted into your display or to the internal storage of an Axiom® or Axiom® 2 display using a mobile device and the Raymarine app.

The following pre-requisites should be observed:

- If using mobile data, ensure you have sufficient data allowance remaining to prevent being charged.

- Ensure you have sufficient free space on your mobile device's internal storage for the charts to be downloaded to.

- Ensure that the memory card you want to use is formatted in the exFAT file system format (Chart cards purchased from the Raymarine chart store will arrive in this format).

- Ensure that the memory card has been inserted into the display's card reader prior to commencing the process (this will create the necessary Lighthouse_ID file in the card's root directory.

- A file named 'Lighthouse_charts' must be created in the memory card's root directory (Chart cards purchased from the Raymarine chart store will already include this file).

- It is recommended that there are no other files on the memory card prior to downloading charts to it.

- Ensure *[Allow devices to connect]* is enabled in your display settings:

  – Element™ displays: *[Homescreen > Settings > Wi-Fi]*.

  – Axiom® displays: *[Homescreen > Settings > This display > Wi-Fi SHARING]*.

- Part of the process involves connecting your mobile device's Wi-Fi to your display. For information on connecting your mobile device, refer to:

  – Android — **p.35 — Connecting an Android device to the display**

  – iOS — **p.35 — Connecting an iOS device to the display**

Note:

- Once a storage location (memory card or internal memory) has been chosen for your charts you cannot change it. Charts cannot subsequently be saved to a different card.

- Charts cannot be downloaded to the internal storage of Element™ displays.
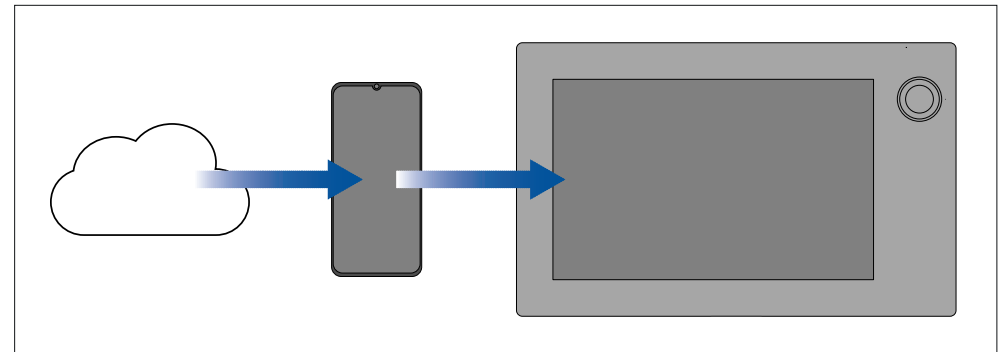
1. Install and open the Raymarine app from the relevant app store, using the relevant QR code provided below.
2. Create an account or Log in to the Raymarine app.
3. If requested select *[ALLOW ONLY WHILE USING THE APP]*.
4. Go to the *[MY CHARTS]* area.
5. Select the chart region you want to download.
6. If you have more than one region on the same continent in MY CHARTS, to minimize download file size, you can group up to 3 regions together.
7. If updates are available click *[Get latest data]*.
8. If you have a valid Premium subscription you can add *[Streets & Points of Interest]* and *[Aerial photos]* by clicking *[Add now]*, next to the items you want to include.

   When adding [Streets & Points of Interest] and [Aerial photos] you can create up to 5 area boxes for each feature per purchased region. Follow the onscreen instructions to define each area of coverage.

9. Select *[Download]* and then follow the onscreen instructions to download your charts to your display.

Account settings

You can edit your Raymarine account details using the *[Account]* menu.

You can edit the account's:

- Name
- Email address
- Password
- Region
- News and offers notification settings

Pairing a Quantum™ radar scanner

You can connect a Quantum™ radar scanner to your display using the Wi-Fi connection.

Pre-requisites:

- Ensure you have installed and connected your Quantum™ radar scanner to a power supply following the instructions supplied with the radar scanner.

- Ensure you know your Quantum™ radar scanner's SSID and passcode.

1. Select *[Pair with Quantum]* from the *[This display]* tab: *[Homescreen > Settings > This display > Quantum Radar: > Pair with Quantum]*.

2. Enter the SSID and passcode for your Quantum™ radar.

3. Select *[Connect]*.

4. Follow any onscreen instructions to continue pairing with your Quantum™ radar.

   The pairing process may take several minutes to complete.

   For more information on the Quantum™ radar pairing process (including troubleshooting information), refer to your Quantum™ radar documentation.

CHAPTER 5: HOMESCREEN

CHAPTER CONTENTS

5.1 Homescreen overview

All settings and apps can be accessed from the Homescreen.

1. **Position/fix details** — Shows your vessel's current position coordinates. Select the area to view fix accuracy and to access position settings.

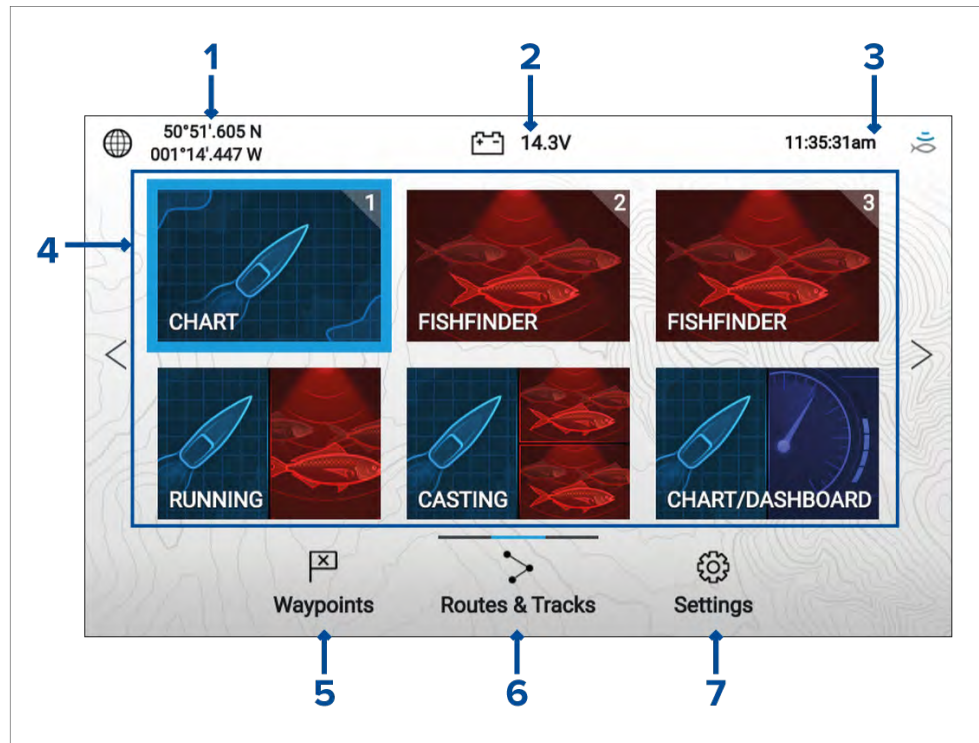2. **Supply voltage** — Shows the display's supply voltage. The Voltage reading is colored Red if the current supply voltage is lower than the value specified in the *[Low voltage threshold]* alarm setting: *[Homescreen > Settings > Alarms > Low voltage threshold]*.

3. **Status area** — Displays system time, count down/up timer and sonar ping status. Select the area to set count down / up timer, time zone and to set daylight savings.

4. **App page icons** — The Homescreen is made up of 3 pages that can each contain up to 6 app page icons. Selecting an app page icon opens the relevant app page.To view a different Homescreen page, keep pressing the Directional pad's *[Left]* or *[Right]* buttons until the Homescreen page

changes. You can identify which Homescreen page is being shown using the indicator bar, located above the *[Routes & Tracks]* icon.

5. **Waypoints** — Select to view the *[Waypoints]* list.

6. **Routes & Tracks** — Select to view the *[Routes and Tracks]* lists.

7. **Settings** — Select to view the display's *[Settings]* menu.

> **Note:**
>
> The combination of the selected *[Activity]* and *[Transducer selection]* during the Start up wizard determines the default app page icons displayed on the Homescreen.

Accepting the Limitations on Use

After your display has powered up the Homescreen is displayed.
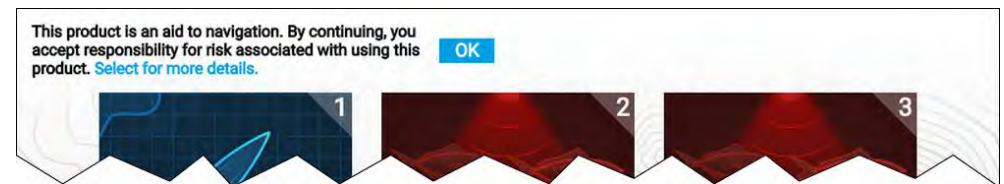
1. Before using the display you must accept the Limitations on Use (LoU) disclaimer. To view the full LoU Disclaimer, use the *[Left]* button to highlight the text and press the *[OK]* button.

   The LoU acknowledgment is displayed each time the display is powered on. The full LoU text can be accessed at any time, it is located at the bottom of the [Getting started] menu: [Homescreen > Settings > Getting started].

Available apps

Apps are used in App pages. Each app page is represented on the Homescreen by an app page icon.

Each app page can include up to 4 apps. The individual apps available are:

[Chart] — The Chart app displays electronic cartographic information from your Chart cards and when used in conjunction with a GNSS (GPS) receiver, plots your vessel's position. The Chart app can be used to: mark specific locations using Waypoints; build and navigate Routes; or, keep a record of where you have been by recording a Track.

For detailed information about the Chart app refer to:
p.65 — Chart app

[Fishfinder] — The Fishfinder app uses a connected transducer to help you find fish by creating an underwater view of bottom structure and targets in the water column that is covered by your transducer.

> **Note:**
>
> - The channels available in the Fishfinder app are determined by the display variant and connected transducer.
> - The icon used on the homescreen will reflect the fishfinder channel in use.

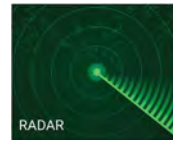For detailed information about the Fishfinder app refer to:
p.92 — Fishfinder app

[Dashboard] — The Dashboard app provides data readings from connected sensors and equipment.

> **Note:**
>
> The Dashboard app is only available in splitscreen app pages.

For detailed information about the Dashboard app refer to: **p.110 — Dashboard app**

[Radar] — The Radar app is a situational awareness aid that displays a graphical representation of your surroundings in relation to your vessel using the echo/target returns from a connected Quantum radar scanner. The Radar app allows you to track targets and measure distances and bearings

> **Note:**
>
> The Radar app is included in homescreen app page icons when the [Radar installed] option is enabled in the initial start up wizard, otherwise and must be added manually.

For detailed information about the Radar app refer to:
p.118 — Radar app

Fishfinder app pages

The icons used to represent fishfinder app pages on the homescreen change to reflect the fishfinder channel that has been selected for that instance of the fishfinder app.

Sonar
The conical beam fishfinder channel is represented using the sonar app icon.
The conical beam fishfinder channel provides a traditional scrolling 2D view of the water beneath your vessel.
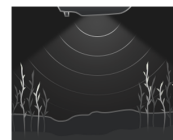
DownVision™
The DownVision™ fishfinder channel is represented using the DownVision™ app icon.
The DownVision™ fishfinder channel provides a photo like scrolling 2D view of the water beneath and to the sides of your vessel.

SideVision™

The SideVision™ fishfinder channel is represented using the SideVision™ app icon.

The SideVision™ fishfinder channel provides a photo like Scrolling 2D view of the water on each side of your vessel.

RealVision™ 3D

The RealVision™ 3D fishfinder channel is represented using the RealVision™ app icon.

The RealVision™ 3D fishfinder channel provides a scrolling 3D view of the water behind and to the sides of your vessel.
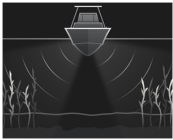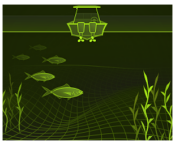
Ice fishing app pages

When the display is configured for ice fishing (via the Startup wizard), the available fishfinder modes will be represented using ice fishing app page icons on the homescreen. These app pages enable you to select different types of sonar view, optimized for ice fishing activities.

Trail & Radial

The trail and radial app page is a splitscreen page that includes a traditional (historical), scrolling, 2D view and an instantaneous (real-time) radial view of the water beneath the transducer. The radial view shows the returns from the sonar signal (using the same color coding as the traditional scrolling view), organized in a circular formation. This view enables you to quickly identify what is currently passing under your transducer (e.g. bottom structure or target etc), in each segment of the depth range.

Trail & A-Scope

The trail and A-scope app page is a splitscreen page that includes a traditional (historical), scrolling, 2D view and an instantaneous (real-time) A-scope view of the water beneath the transducer.

Radial

The radial app page is a fullscreen page that provides an instantaneous (real-time), radial view of the water beneath the transducer. The radial view shows the returns from the sonar signal (using the same color coding as the traditional scrolling view), organized in a circular formation. This view enables you to quickly identify what is currently passing under your transducer (e.g. bottom structure or target etc), in each segment of the depth range.

A-Scope

The A-scope app page is a fullscreen page that provides an instantaneous (real-time) view of the water beneath the transducer. This allows you to see what is currently passing under your transducer (e.g. bottom structure or target etc), rather than the historical display provided by the traditional, scrolling, 2D view.

Assigning app pages to Quicklaunch buttons

App pages assigned to the Quicklaunch buttons are identified using the associated Quicklaunch button number in the top right corner of the app page icon.
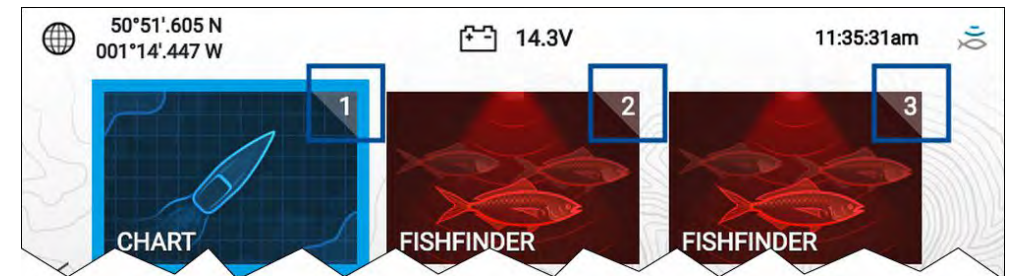
You can change which app page is assigned to the Quicklaunch buttons by following the steps below:

1. Using the *[Directional pad]*, highlight the app page icon that you want to assign to a Quicklaunch button.

2. Press and hold the relevant *[Quicklaunch]* button until the 'Quicklaunch button configured' message is displayed.

   The app page icon is updated to show the associated *[Quicklaunch]* button number in the top right corner of the icon.

3. Repeat steps 1 and 2 for the remaining *[Quicklaunch]* buttons, if required.

5.2 Customizing app pages

You can customize the homescreen app pages.

1. Highlight the app page icon you want to change.
2. Press and hold the *[OK]* button.

   The pop-over menu is displayed.
3. Select the relevant option:

   - *[Customize]* — select customize to change the app page to one of the available configurations.

   - *[Delete]* — select delete to delete the app page icon from the homescreen.

   - *[Rename]* — select rename to change the name of the app page icon using the onscreen keyboard.

   - *[Assign as Quicklaunch 1/2/3]* — select to assign the app page to a Quicklaunch button.

5.3 Creating a new app page

The homescreen consists of 3 homescreen pages, the first page is populated with app page icons by default. New pre-configured app pages can be added to the homescreen.
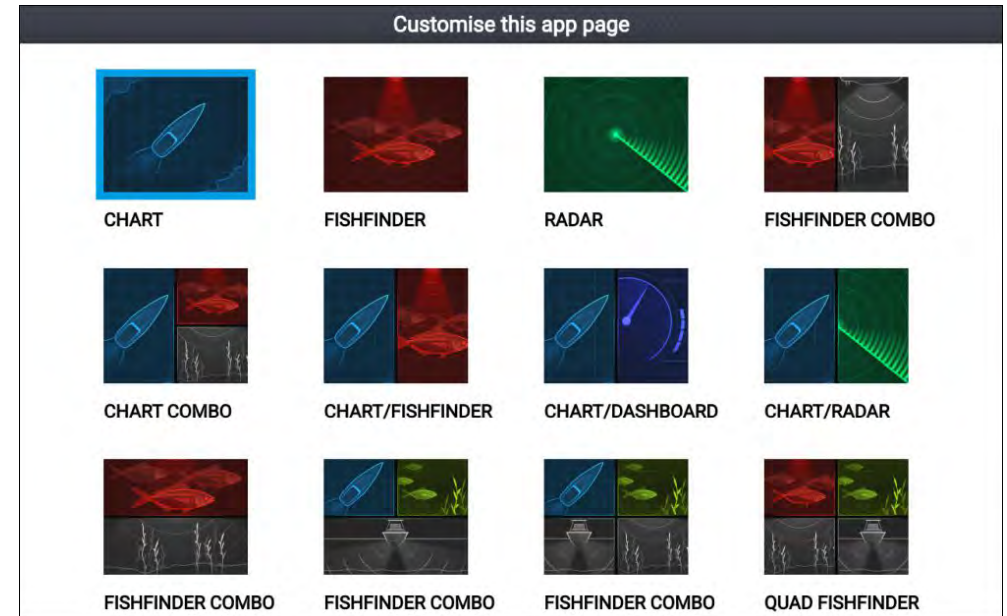
1. If required, use the *[Left]* and *[Right]* buttons to display a homescreen page that has space available.
2. Highlight a blank space on the homescreen.
3. Press and hold the *[OK]* button.
4. Select the desired app page configuration.

   Use the [Down] button to display further available page layouts.

The new app page icon will now be available on the homescreen.

5.4 Global positioning

GPS/GNSS status

Your vessel's GPS/GNSS position coordinates are provided in the top left corner of the homescreen. You can access fix accuracy and settings by selecting this area.

If latitude and longitude is displayed on the homescreen, your vessel has a valid position fix. If the text turns red, it means that your fix accuracy is low.


The sky view on the left side of the page shows available satellites and identifies the GNSS constellation to which they belong. The color of the satellite symbol identifies its status:

- White = searching for satellite

- Green = satellite in use

- Orange = tracking satellite

The [Show Signal (dB)] toggle switch can be used to show or hide a signal strength bar for each satellite.

GPS / GNSS settings

Settings for your GPS / GNSS receiver can be accessed by selecting the top left corner of the homescreen and then selecting the [Settings] tab.
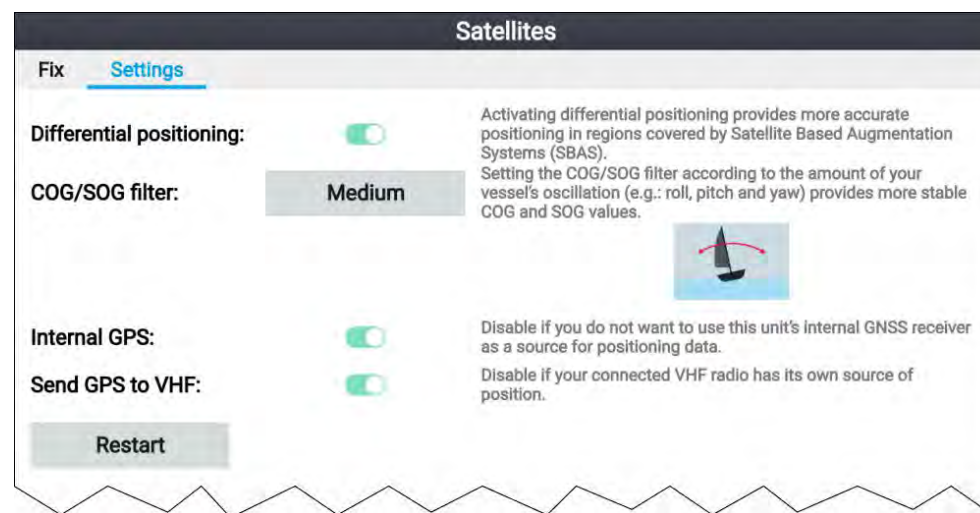

From the GPS / GNSS settings tab you can:

- [Differential positioning:] — Enabling differential positioning provides more accurate positioning in regions covered by Satellite Based Augmentation Systems (SBAS).

- [COG/SOG filter:] — Setting the COG / SOG filter according to the amount of your vessel's oscillation (e.g.: roll, pitch and yaw) provides more stable COG and SOG readings.

- [Internal GPS:] — Enable and disable your display's built-in GPS / GNSS receiver.

- [Send GPS to VHF:] — Enable and disable output of GPS / GNSS data from your display to a connected VHF radio.

- [Restart] — Restart the GPS / GNSS receiver in use by the display.

5.5 Status area

The status area is located at the top right of the homescreen. This area displays the current time and identifies the status of the display's sonar ping. The status area pop-over menu provides access to the timer and time and date settings.
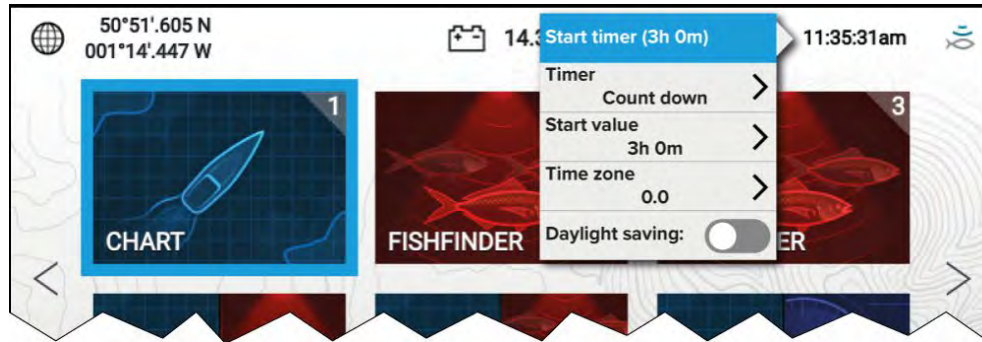
Status area icons

The icons displayed in the Status area signify the current status of certain connected devices.

1. Sonar pinging.

2. Sonar ping disabled.

3. Sonar error.

5.6 Timer

A timer is provided in the homescreen status area. The timer can be used as a countdown timer or as a count-up (stopwatch).

Whilst the countdown or count-up timer is in use it is displayed in the status area, below the current time.

Using the count down timer

From the homescreen:

1. Select the status area, located in the top right corner of the homescreen.
2. The status area pop-over menu is displayed.
3. Ensure that *[Count down]* is selected in the *[Timer]* option.
4. Select *[Start value]* and adjust to the desired value.

   The count down timer can be set to a maximum of 9 hours and 59 minutes.

5. Press the *[Back]* button to return to the pop-over menu.
6. Select *[Start timer]*.

The count down timer can be stopped or reset at anytime from the pop-over menu.

Using the count up timer

From the homescreen:

1. Select the status area, located in the top right corner of the homescreen.
2. The status area pop-over menu is displayed.
3. Ensure that *[Count up]* is selected in the *[Timer]* option.
4. Select *[Start timer]*.

   *The count up timer can count upwards to a maximum of 23 hours and 59 minutes.*

The count up timer can be stopped or reset at anytime from the pop-over menu.

5.7 Alarms

Alarms are used to alert you to a hazard or situation requiring your attention. Alarms are triggered based on their specified thresholds.

Alarms are color coded to signify their severity:

Dangerous alarm example

⚠ Alarm			
Waypoint arrival	**180** ft	Edit	OK
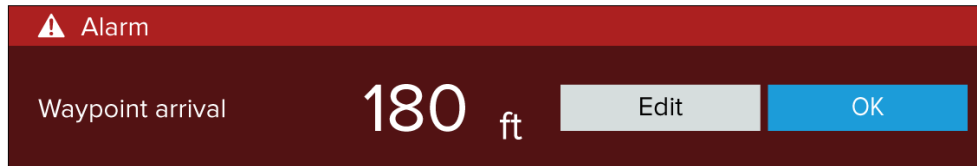
Red — is used to signify a dangerous alarm condition, immediate action is required due to a potential or immediate danger to life or vessel. Dangerous alarms are accompanied by an audible tone. The Dangerous alarm notification and audible tone will continue to be displayed until acknowledged or the conditions that triggered the alarm are no longer present.

Warning alarm example

💬 Warning			
Low voltage	**8.7** v	Edit	OK
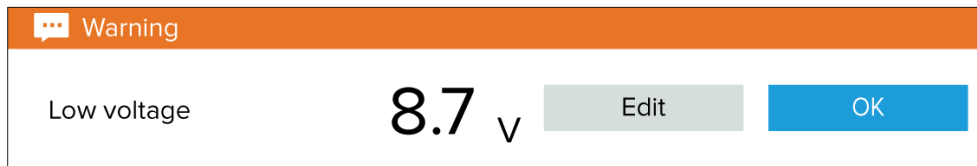
Orange — is used to signify a warning alarm condition. Warning alarms are used to signify that there has been a change in situation that you need to be aware of. Warnings alarms are accompanied by an audible tone. The warning alarm notification and audible tone will continue to be displayed until acknowledged or the conditions that triggered the alarm are no longer present.

Notification example

ⓘ Software update		
Software update found. Install the update now?	Yes	No

Blue — is used to signify information requiring user acknowledgement. Information notifications may self dismiss after 3 seconds, unless they require user interaction. Information notifications are not accompanied by an audible tone.

Acknowledging alarms

Follow the steps below to acknowledge an active alarm.

With an alarms notification displayed onscreen:

1. Select *[OK]*.

   The notification is dismissed and the audible tone is stopped.

An acknowledged alarm remains active until the conditions that triggered the alarm are no longer present.

> **Note:**
>
> If an alarm notification includes an *[Edit]* button, selecting it will display the relevant setting in the Alarms menu so that, if required, you can change the alarm threshold.

Alarm settings

Depending on connected peripheral hardware and configuration the alarms listed below can be enabled and disabled and where applicable alarm thresholds can be set or changed.

> **Note:**
>
> Alarms are only triggered when relevant hardware (e.g.: sensors) is connected and reporting the data required for the alarm.

- *[Dangerous AIS targets]* — If enabled, an alarm is triggered when AIS targets become dangerous. AIS targets are deemed dangerous when they have the potential to cross your path within a specified distance and time. For alarm parameters refer to: **p.47 — AIS dangerous targets**

- *[Depth]* — If enabled, when the depth detected by your depth transducer passes the specified value the depth alarm is triggered.

> **Note:** The MFD depth alarm is independent of the Shallow depth alarm available on instrument displays and other MFDs. If you have Instrument displays or Axiom MFDs connected to your system it is recommended that the shallow depth alarm is only enabled on one device.

- *[Waypoint arrival]* — If enabled, when you arrive at a waypoint, an alarm is triggered. This setting allows you to specify a radius size for the alarm. When your vessel crosses the specified radius, the Waypoint Arrival alarm is triggered.
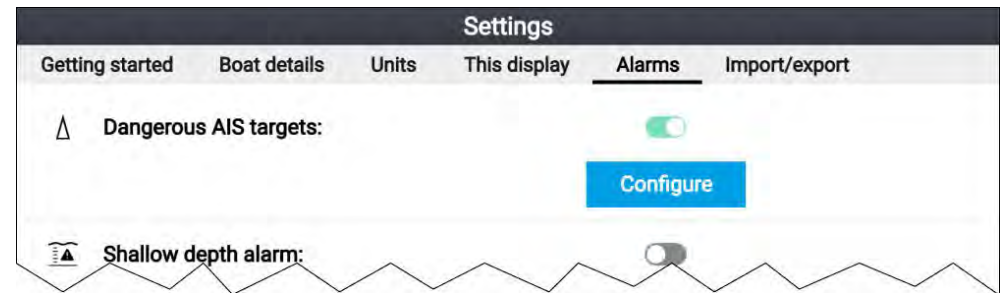
- [Low voltage] If enabled, the alarm is triggered if the supply voltage to the display drops below the value specified in the [Low voltage threshold]field.

- [Off track] — If enabled, during active navigation an alarm is triggered when your vessel steers off track by more than the specified [Cross track error] value.

- [Position drift] — If enabled, an Alarm is triggered when your vessel drifts from its current GNSS (GPS) position by more than the specified [Drift range].

- [Water temperature alarm] — If enabled, an alarm is triggered when the water temperature reading reaches the temperature specified in [Lower temp limit] or [Upper temp limit].

- [Fish detection beep] If, enabled the alarm is triggered when the Fishfinder app detects a sonar targets that the fish detection algorithm considers to be a fish. For further details refer to: **p.102 — Fish detection**

- [Engine alarms] — If enabled, alarms will be triggered when engine warning alarms are received from connected, compatible engine management systems or interfaces.

- [Satellite fix lost] If enabled, the alarm is triggered if the position fix of the GNSS (GPS) receiver currently in use is lost.

- [Minimum sonar depth] — When your sonar transducer detects depths of 0.8 m/2.62 ft the alarm is triggered.

Important: Accurate bottom tracking can be unreliable in depths shallower than 0.8 m/2.62 ft. When operating at or below this depth be cautious of misleading sonar returns or false bottom tracking.

AIS dangerous targets

If AIS targets enter a dangerous target state they can trigger an alarm on your display. AIS targets are considered to be dangerous if they will pass within a specified safe distance from your vessel within a specified time interval.

The dangerous target alarm can be enabled and disabled from the alarms menu: [Homescreen > Settings > Alarms > Dangerous AIS targets].

The dangerous target alarm can be configured from the Dangerous target page, accessed from the alarms menu:[Homescreen > Settings > Alarms > Dangerous AIS targets > Configure].

To set up the AIS dangerous target alarm, first adjust the [Safe distance] to the desired value and then select a [Time to reach safe distance]. The alarm will be triggered if a tracked target will reach the specified Safe distance from your vessel within the time period selected.

You can display a Safe distance ring around your vessel in the Chart app and Radar app by enabling [Show safe distance].

5.8 Settings menu

The display's settings can be accessed by selecting the [Settings] icon on the Homescreen.

The following settings and details are available for your display.

Tab	Settings
[Getting started]	• Hardware and software information about your display. • Update display software. • Change the user interface language. • Enable/disable Retail/demo mode (Simulator mode). • Choose a *[Demo type]*. • Enable/disable Demo movie. • View the Terms of Use disclaimer.
[Boat details]	• Configure Minimum safe depth, height and width. • Configure engines. • Configure tanks. • Configure batteries. • Select transducer
[Units]	• Configure preferred units of measurement. • Configure date and time settings. • Configure Bearing mode. • Configure system datum. • Configure variation.
[This display]	• Switching between *[Light]* and *[Dark]* user interface color themes. • Calibrate an EV-1 heading sensor. • Select data sources. • Diagnostics: View display product information, view product information for connected products, save / erase system logs. • Pair Quantum™ radar scanner. • Perform a Settings or Factory reset.
[Alarms]	• Configure alarm settings.

Tab	Settings
[Import/export]	• Import and export user data (Waypoints, Routes and Tracks) from MicroSD card. • Eject SD card.
[Wi-Fi]	• Connect display to a Wi-Fi access point. • Connect mobile devices to the display. • Connect Quantum™ Radar to display using Wi-Fi connection.

Selecting display language

You can choose which language you want the display's user interface to use.

1. Select the *[Language]* button from the *[Getting started]* menu: *[Homescreen > Settings > Getting started > Language:]*.

2. Select your desired language.

Languages

The following user interface languages are available:

Arabic (ar-AE)	Bulgarian (bg-BG)	Chinese (Simplified) (zh-CN)	Chinese (Traditional) (zh-TW)
Croatian (hr-HR)	Czech (cs-CZ)	Danish (da-DK)	Dutch (nl-NL)
English (en-GB)	English (en-US)	Estonian (et-EE)	Finnish (fi-FI)
French (fr-FR)	German (de-DE)	Greek (el-GR)	Hebrew (he-IL)
Hungarian (he-IL)	Icelandic (is-IS)	Indonesian (Bahasa) (id-ID)	Italian (it-IT)
Japanese (ja-JP)	Korean (ko-KR)	Latvian (lv-LV)	Lithuanian (lt-LT)
Malay (Bahasa) (ms-MY ZSM)	Norwegian (nb-NO)	Polish (pl-PL)	Portuguese (Brazilian) (pt-BR)
Russian (ru-RU)	Slovenian (sl-SI)	Spanish (es-ES)	Swedish (sv-SE)
Thai (th-TH)	Turkish (tr-TR)	Vietnamese (vi-VN)	

The selected language also determines the display's default units of measure.

Boat details

To ensure correct operation and display of data you should set the Boat Details settings according to your requirements.

Boat details can be accessed from the *[Settings]* menu: *[Homescreen > Settings > Boat Details]*

Option	Description
[Min safe height:]	Enter your vessel's maximum unladen height from the waterline. To ensure adequate clearance, it is recommended that you add a safety margin to this figure to allow for variation caused by vessel movements.
[Min safe width:]	Enter your vessel's maximum width at its widest point. To ensure adequate clearance on both sides, it is recommended that you add a safety margin for port and starboard to this figure to allow for variation caused by vessel movements.
[Min safe depth:]	Enter your vessel's maximum depth when fully laden. This is the depth from the waterline to the lowest point on the vessel's keel. To ensure adequate clearance, it is recommended that you add a safety margin to this figure to allow for variation caused by vessel movements.
[Num of engines:]	You can configure your system to display data for up to 2 engines, when connected to a compatible engine management system.
[Identify engines:]	Once you have selected the number of engines, select *[Identify engines]* and follow the onscreen instructions to configure your engines. May require an extra hardware interface to enable engine data to be displayed.
[Fuel tanks:]	You can configure your system to display data for up to 2 fuel tanks.
[Fresh water tanks:]	You can configure your system to display data for up to 2 fresh water tanks.
[Live well tanks:]	You can configure your system to display data for up to 2 Live well tanks.
[Gray water tanks:]	You can configure your system to display data for a Gray water tank.

Option	Description
[Black water tanks:]	You can configure your system to display data for a Black water tank.
[Batteries:]	You can configure your system to display data for up to 3 batteries.
[Transducer:]	You can select the transducer type that is connected to your display. **Important:** Ensure the display is powered off before physically changing your transducer.

Units of measure

You can select your preferred units for data readings from the *[Units]* menu: *[Homescreen > Settings > Units]*.

Default units of measure are determined by the selected user interface language.

Measurement	Units
[Distance units]	• *[NM & ft]* — Nautical miles & Feet • *[NM & m]* — Nautical miles & Meters • *[mi & ft]* — Miles & Feet • *[km & m]* — Kilometers and Meters • *[NM & yd]* — Nautical miles & Yards
[Speed units]	• *[Kts]* — Knots • *[MPH]* — Mile per hour • *[KPH]* — Kilometers per hour
[Depth units]	• *[Meters]* — m • *[Feet]* — ft • *[Fathoms]* — Fm

Measurement	Units
[Temperature units]	• [Celsius] — C • [Fahrenheit] — F
[Wind speed units]	• [Knots] — kts • [Meters per Second] — m/s
[Volume units]	• [US Gallons] — Gsl • [Imperial Gallons] — Gal • [Liters] — Ltr
[Economy units]	• Distance per Volume • Volume per Distance • Liters per 100 km
[Pressure units]	• [Bar] • [PSI] • [Kilopascals] — KPa
[Date format]	• MM : DD : YYYY • DD : MM : YYYY • MM : DD : YY • DD : MM : YY
[Time format]	• 12hr • 24hr
[Time zone:]	• UTC offsets • Daylight saving

Measurement	Units
[Bearing mode:]	• True • Magnetic
[System datum:]	List of available datums.

Measurement	Units
[Variation:]	• Auto • Manual
[Manual variation:]	• 30°W to 30°E

CHAPTER 6: WAYPOINTS, ROUTES AND TRACKS

CHAPTER CONTENTS

6.1 Waypoints

Waypoints are used to mark specific locations or points of interest.

Waypoints can be used in the Chart and Fishfinder apps. Your display can store up to 5,000 waypoints, which can be sorted in up to 200 waypoint groups.

In the Chart app you can navigate to a waypoint by selecting *[Goto]* from the Waypoint context menu.

Waypoints can be imported and exported from the display. For more information, refer to: **p.63 — User data import and export**

Placing a waypoint (Quick method)

To place a waypoint at a specific location in the Chart or Fishfinder apps, follow the steps below.

1. Use the *[Directional pad]* to place the cursor over the desired location and press the *[Waypoint]* button.

    The app will be in cursor mode and the waypoint saved notification is displayed.
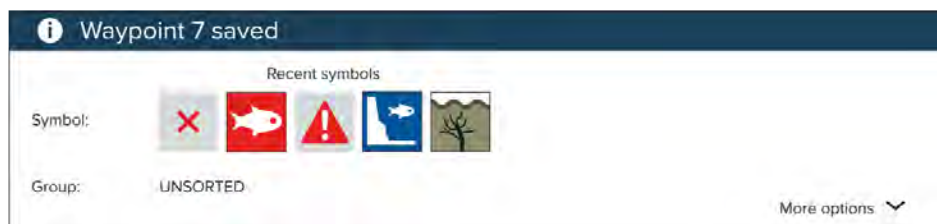
Note:

If there is no interaction with the notification within 5 seconds the notification will automatically close, saving the waypoint with the default values.

2. If required, select a recent waypoint symbol that you want to assign to the waypoint.

3. Press the *[OK]* button.

The waypoint will be saved with the chosen symbol, in the waypoint group shown against *[Group:]*.

Placing a waypoint at your vessel's location

To place a waypoint at your vessel's locations follow the steps below.

Note:

For a waypoint to be placed at your vessel's location your display must have a GPS/GNSS position fix.

1. If, required press the *[Back]* button to enter Motion mode in the Chart app, or Scrolling mode in the Fishfinder app.

2. Press the *[Waypoint]* button.

    The app will be in cursor mode and the waypoint saved notification is displayed.
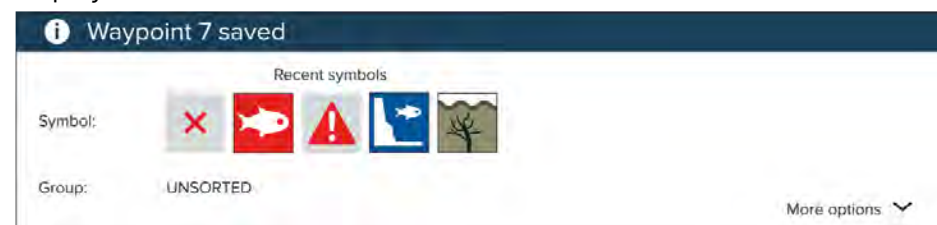
Note:

If there is no interaction with the notification within 5 seconds the notification will automatically close, saving the waypoint with the default values.

3. If required, select the a recent waypoint symbol that you want to assign to the waypoint.

4. Press the *[OK]* button.

The waypoint will be saved with the chosen symbol, in the waypoint group shown against *[Group:]*.

Placing a waypoint (Detailed method)

You can place a waypoint at a specified location or at the vessel's location and modify the defaults settings (e.g.: waypoint name, symbol or group etc.) by following the steps below.

1. Use the *[Directional pad]* to place the cursor over the desired location and press the *[Waypoint]* button.

    The app will be in cursor mode and the 'waypoint saved' notification is displayed.
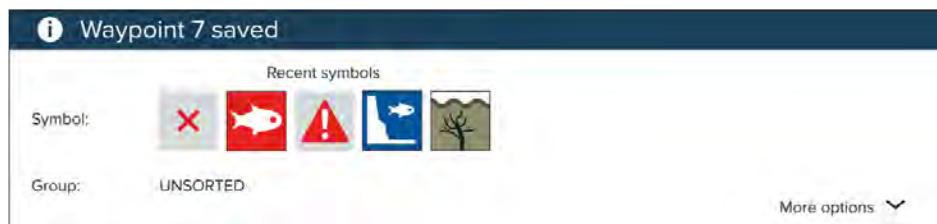
Note:

If there is no interaction with the notification within 5 seconds the notification will automatically close, saving the waypoint with the default values.

2. Press the *[Down]* button.

    The 'new waypoint options' menu is displayed.

3. You can select the waypoint symbol to view a list of available symbols and then select the symbol you want to use.
4. You can select the *[Name:]* field to open the onscreen keyboard and customize the name of your waypoint.
5. You can select the *[Group:]* field to open the list of waypoint groups and either choose an existing or create a *[New group]*.
6. You can also add notes about the waypoint by selecting the *[Comment:]* field and using the onscreen keyboard.
7. When you have finished customizing the waypoint details, press the *[OK]* button to save the details.
8. You can select *[Goto]* to begin navigation to the new waypoint.

Note:

Selecting *[Delete]* will delete the waypoint.

Moving a waypoint

You can move an existing waypoint to a new location by following the steps below.

1. Select the waypoint that you want to move.
2. Select *[more options]* from the context menu.
3. Select *[Move]*.
4. Use the Directional pad to move the waypoint to the new location.
5. Press the *[OK]* button.

The waypoint has now been moved to its new location.

Note:

When moving a waypoint from a route that was generated using autorouting, the new position and route leg are not recalculated using the autorouting feature and the waypoint symbol will not change.

Waypoint management

Waypoints are sorted and displayed in waypoint groups menu.

Waypoint groups menu
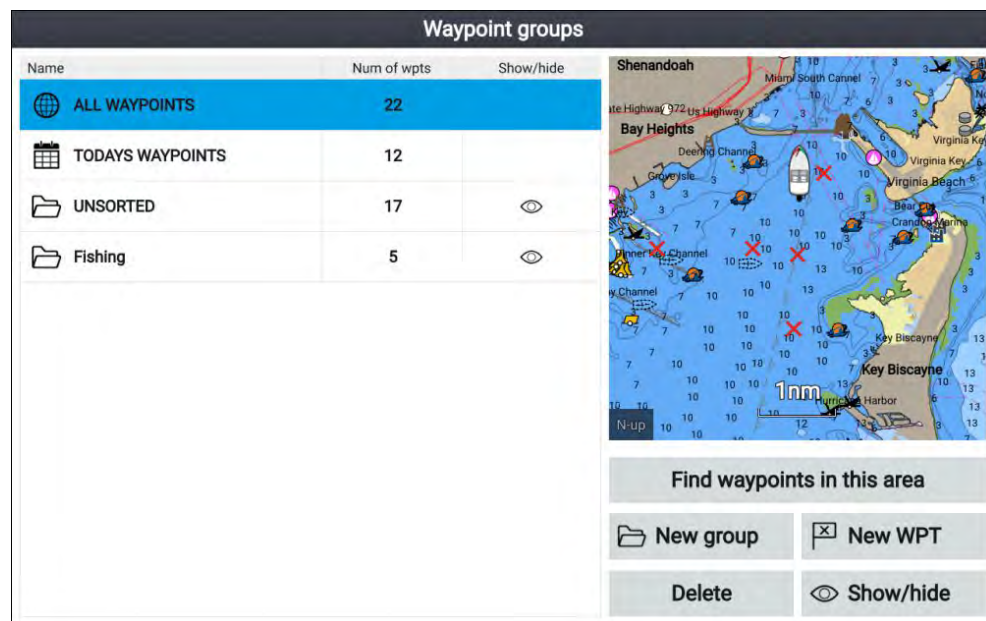
Waypoints can be viewed from the waypoint menu which can be accessed from the Homescreen (*[Homescreen > Waypoints]*) and from the Chart app (*[Chart app > Menu > Waypoints]*).

Waypoints will be saved to the same group as the last waypoint you created. All waypoints can also be viewed by selecting *[ALL WAYPOINTS]* and waypoints created the same day can be viewed by selecting *[TODAYS WAYPOINTS]*.

You can use the waypoint groups menu options to:

- Find nearby waypoints.
- Create a new waypoint group.

Note: Waypoint group names can be any combination of letters, numbers, symbols and special characters and can include up to 16 characters. Waypoint group names must be unique.

- Create a new waypoint.

- Delete a waypoint or waypoint group.

Waypoint groups
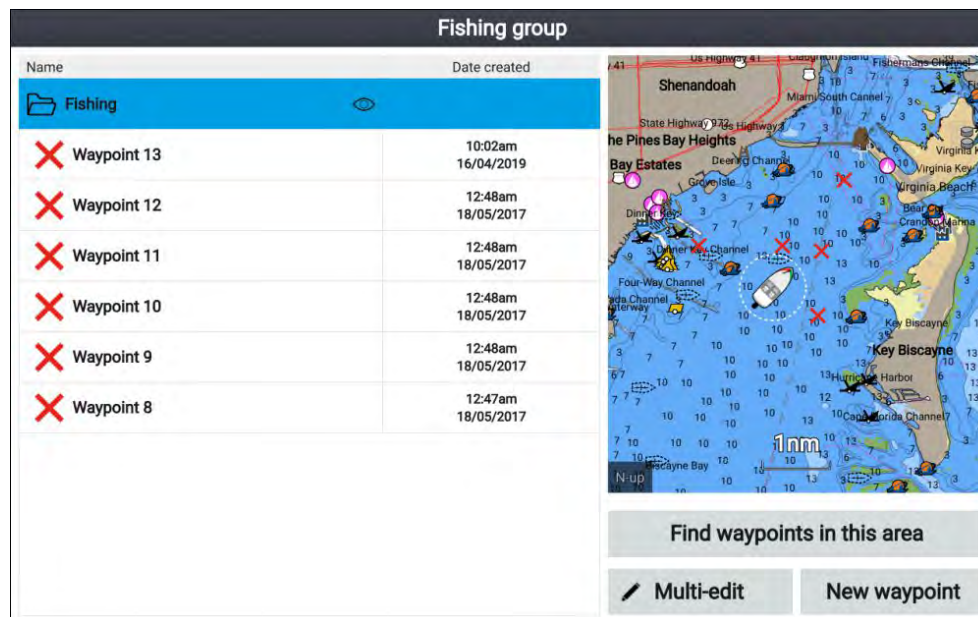
Selecting *[ALL WAYPOINTS]*, *[TODAYS WAYPOINTS]*, *[UNSORTED]* or a user created waypoint group will display a list of all the waypoints in that group / category.

With a list of waypoint displayed you can:

- Find waypoints located in the area covered by the LiveView pane.
- Edit multiple waypoints (i.e.: you can change the symbol used for multiple waypoints, move multiple waypoints to a different group or delete multiple waypoints).
- Create a new waypoint in the current waypoint group.
- View and customize waypoint details.

Waypoint details

Selecting a waypoint from the list displays customizable details for that waypoint. The waypoint's location is also displayed in the LiveView pane on the right side of the screen

With the waypoint details displayed you can:

* Edit the waypoint's Name.

Note: Waypoint names can be any combination of letters, numbers, symbols and special characters and can include up to 16 characters. Waypoint names must be unique.

* Change the waypoint's symbol.
* Assign or change the waypoint group.
* Enter new position coordinates for the waypoint.
* Add or edit the waypoint comment.

Note: Waypoint comments can be any combination of letters, numbers, symbols and special characters and can include up to 32 characters.

* Delete the waypoint.

* Perform a Go to.
* View the waypoint in the Chart app.

Creating a waypoint group

To create a new waypoint group follow the steps below.

From the homescreen:
1. Select *[Waypoints]*.
2. Select *[New group]*.
3. Enter a name for the group using the onscreen keyboard.
4. Select *[Save]*.

The new waypoint group will become the new default group for all new waypoints.

Deleting a waypoint group

To delete a waypoint group follow the steps below.

From the homescreen:
1. Select *[Waypoints]*.
2. Select *[Delete]*.
3. Select the Group that you want to delete.
4. Select *[Delete selected]*.
5. Select *[Yes]*.

The waypoint group and waypoints that are assigned to that group will be deleted.

Creating a waypoint based on coordinates

You can manually create a waypoint based on the coordinates of the location where you want the waypoint placed.

From the homescreen:
1. Select *[Waypoints]*.
2. Select *[New WPT]*.
3. Enter the relevant details in the available fields.
4. Choose a waypoint symbol.
5. Enter the position coordinates where you want the waypoint placed by selecting on the *[Position:]* field and using the onscreen keypad to enter the latitude and longitude for the location where you want the waypoint placed..

By default your vessel's coordinates will be displayed.

6. Select *[Save]* to return to the waypoint details.
7. Press the *[Back]* button to return to the Waypoint groups menu.

Finding nearby waypoints

You can find waypoints that are within the LiveView pane by following the steps below.

The waypoint find feature will find and create a list of all waypoints located within the area covered by the LiveView pane.

From the homescreen:
1. Select *[Waypoints]*.
2. To find waypoints that are located within the area covered by the LiveView pane, select *[Find waypoints in this area]*, otherwise
3. Highlight a waypoint in the waypoint list and select *[Find waypoints in this area]*.

A list of all the found waypoints will be shown in the waypoint list.

Panning the LiveView area

You can change the chart area displayed in the LiveView.
1. Open the *[Waypoints]* menu.

   The waypoints menu can be accessed from the Homescreen ([Homescreen > Waypoints]) and from the Chart app ([Chart app > Menu > Waypoints]).

2. Press the *[Right]* button.

   [Find waypoints in this area] will be highlighted.
3. Press the *[Up]* button.

   Focus will move to the LiveView pane.
4. Press the *[OK]* button.

   The LiveView pane will enter panning mode.
5. Use the *[Directional pad]* to pan the chart area to the desired location.
6. Press the *[Back]* button.
7. Select *[Find waypoints in this area]*.

Showing and hiding waypoint groups

When the waypoint menu is accessed from the Chart app you can hide and show waypoints.

From the Chart app:
1. Press the *[Menu]* button.
2. Select *[Waypoints]*.
3. Select *[Show/hide]*.

   The list of waypoint groups is displayed, all waypoint groups are selected (ticked) by default.
4. Deselect any groups that you do not want to change.

   You can also use the *[Show all]* and *[Hide all]* options if you want to show or hide all of your waypoints.
5. Press the *[Back]* button to return to the waypoints menu.

Note:

The *[Show/hide]* options is not available when accessing the waypoint menu form the homescreen.

Waypoint sharing

An Element™ display will share waypoints with a second Element™ display connected to the same SeaTalkng ® / NMEA 2000 network.

Note:

- More than 2 Element™ displays cannot be connected to the same network.
- Routes and tracks are not shared. If a route is created on display 1 only the route's waypoints will be shared with display 2.

The following waypoint functions will be synchronized between displays:
- Creating individual waypoints
- Deleting waypoints
- Editing waypoint details
- Moving waypoint location
- Creating an empty waypoint group
- Adding individual waypoints to a group

The following waypoint functions will NOT be synchronized between displays:

- Moving a waypoint to a different group
- Multi-move of waypoints
- Multi-edit of waypoint details
- Multi-delete of waypoints
- Deleting a waypoint group

Note:

Performing a waypoint function that does not support synchronization will break the link between the waypoints on each Element™ display. Those waypoints must then be managed individually on each display.

6.2 Routes

Routes are used to plan your journey in advance. You can plan your journey directly on your display, or at home using software capable of exporting waypoints and routes in standard .gpx format.

Routes consist of a number of waypoints. Your display can store up to 50 routes, each route consisting of up to 250 waypoints. When creating routes the route capacity is subject to the display's 5,000 waypoint limit (e.g.: your display could store 20 routes each containing 250 waypoints).

To navigate a saved route, place the cursor over the route and press the *[OK]* button, then select *[Follow route]* from the context menu.

Routes can be imported and exported from the display. For more information, refer to:

Creating a Route

Follow the steps below to build a new route

Routes can be created in the Chart app.

Important:

Before following a route, you must ensure that each waypoint and leg of your route is safe for your vessel to navigate.
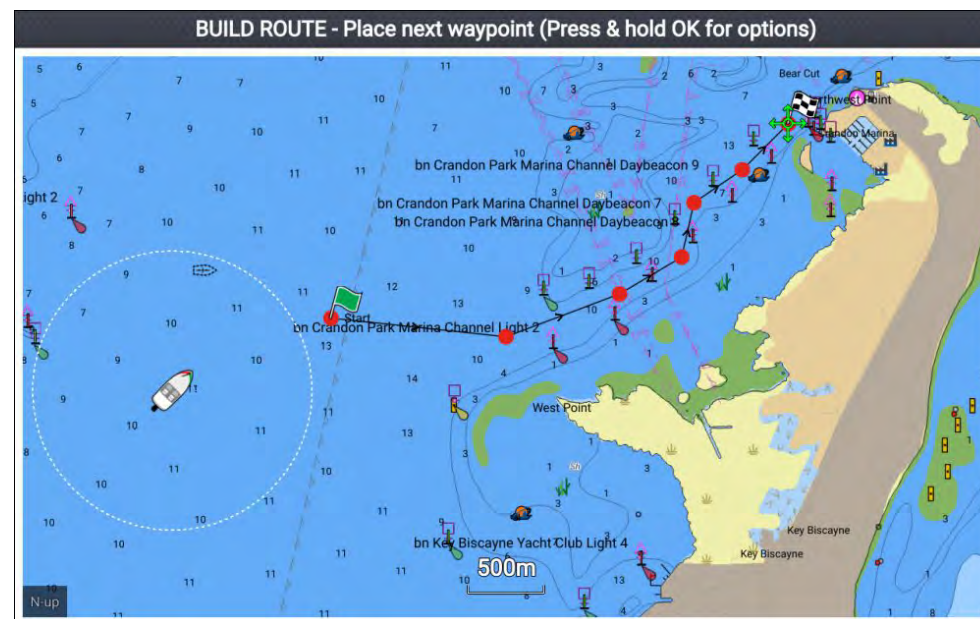
1. Select the location for the first waypoint.
2. Select *[Build route]* from the context menu.
3. Select the location for the second waypoint.
   The 2 waypoints will be joined by a line, creating the first leg of your route.
4. Select the location for the subsequent waypoints, required to complete your route.
5. When your route is complete press and hold the *[OK]* button and then select *[Finish build]* from the context menu.
   The finish route build notification is displayed.
6. From the notification you can either:
   - Select *[Follow]* to immediately start following the route, or
   - Select *[Follow in reverse]* to follow the route in reverse waypoint order, or
   - Select *[Route plan]* to view the route plan menu, or
   - Select *[Exit]* to return to the Chart app.

Note:

You can press the *[Back]* button at anytime during route building to remove the last waypoint you placed.

Use Autorouting during route creation

Whilst building a route you can use Autorouting to automatically add a route leg to a route you have already started to create. The Autorouting features require compatible cartography.

1. Press and hold anywhere on screen and select either *[Autoroute to wpt]* or *[Autoroute to here]*.

    Selecting [Autoroute to wpt] will allow you to select a waypoint from your Waypoints list to include in your route, selecting [Autoroute to here] will create a route leg to the cursor's current position.

Once an Autoroute leg has been added you can select *[Finish route build]* or add further manual or autoroute route legs.

Autorouting

Autorouting is available when using compatible cartography. Autorouting allows you to build a route automatically between a point on the chart and your vessel.

Selecting *[Autoroute to here]* from the chart context menu, or selecting *[Autoroute to]* from an existing waypoint's context menu will create a route automatically between your vessel and the chosen point.

The created route is generated by comparing data available on your cartography against the minimum safe distances specified in the *[Boat details]* menu: *([Homescreen > Settings > Boat details])*.

Waypoints will not be placed in areas that conflict with your specified minimum safe distances. Caution symbols are used for waypoints that are near objects or restricted areas.

Never follow a route before checking each route leg is safe for your vessel.

Caution: Easy Routing - Dredged areas

The C-MAP® Easy Routing feature will ignore some hazards in dredged areas. Easy Routing is intended for passage planning between harbors rather than within a harbor.

Warning: Traffic separation

Automatic route generation features do not adhere to the Traffic Separation Schemes identified in Rule 10 of the *International Regulations for Preventing Collisions at Sea 1972* as amended.

Raymarine® therefore recommends that you do NOT use Automatic route generation to create any part of a route which will cross traffic lanes or pass near to traffic separation lines. In these situations Automatic route generation MUST be switched Off and the route or route leg MUST be built manually, ensuring compliance to the rules laid out in the above regulations.

> ⚠ **Warning: Minimum Safe Depth, Width and Height**
>
> Depending on cartography vendor, the *[Minimum safe depth]*, *[Minimum safe width]*, and *[Minimum safe height]* settings that you specify for your vessel will be used during automatic route generation. These settings will ensure that automatic routes are not generated in areas that are unsuitable for your vessel.
>
> Minimum safe settings are user-defined calculations. As these calculations are outside of Raymarine's control, Raymarine will not be held liable for any damage, physical or otherwise, resulting from the use of the automatic route generation feature or the *[Minimum safe depth]*, *[Minimum safe width]* or *[Minimum safe height]* settings.

Autoroute - compatible cartography vendors

The Autoroute feature is compatible with the following cartography vendor features.

- Navionics® Autorouting.

- Navionics® Dock-to-dock

- C-MAP® Easy Routing

Differences between automatic route generation functions

There are important differences between the way different vendors handle automatic route generation.

Depth clearances (Tidal height)

- Navionics® Autorouting and Dock-to-dock avoids shallow areas based on the user defined *[Minimum safe depth]* setting plus an additional Navionics® safety margin. it assumes the lowest tide level, normally Lowest Astronomical Tide (LAT). The tide can be lower than LAT due to atmospheric effects such as high air pressure, wind direction, etc.

- C-MAP® Easy Routing assumes that there will be some tide. The user must apply their own safety margin as appropriate to current conditions. Route legs that cross areas shallower than the user defined *[Minimum safe depth]* setting are marked with hazard waypoint symbols, it is critical that these legs are checked to ensure that there is sufficient tide to avoid the hazard.

Width & Height clearances

- Navionics® Autorouting and Dock-to-dock does not use the user defined *[Minimum safe width]* or *[Minimum safe height]* settings when generating routes. Objects with width / height constraints are marked with hazard waypoint symbols, it is critical that these legs are checked to ensure that there is sufficient clearance to avoid the hazard.

- C-MAP® Easy Routing uses the user defined *[Minimum safe width]* and *[Minimum safe height]* settings to determine if sufficient clearance is available. The user must apply their own safety margin as appropriate to current conditions. The Height datum must be checked, as it could be Mean High Water Springs (MHWS) or Highest Astronomical Tide (HAT). In both cases the tide can be higher than the datum due to atmospheric effects such as high air pressure, wind direction, etc.

Reviewing an automatically generated route

Before following any route you must ensure that it is safe to do so.

Upon Route completion:

1. Range in on each route leg and waypoint that make up the Route.
2. Check either side of the route leg and around the waypoint for any possible obstructions.

   Obstructions can be charted objects or restricted areas. Routes generated automatically should use the caution waypoint symbol in areas where there are possible obstructions.

3. Where obstructions exist move the necessary waypoints so that the waypoint and route leg is no longer obstructed.

Route management

Routes are managed using the routes and tracks menu.

The *[Routes & Tracks]* menu can be accessed from the Homescreen and from the Chart app: *[Homescreen > Routes & Tracks]*, or *[Chart app > Menu > Routes & Tracks]*.

When the routes and tracks menu is opened the routes menu is displayed by default.

Routes menu

From the route menu you can *[Delete]* routes, create a *[New route]* using existing waypoints or *[Show/hide]* routes.

To view the route plan, select a route and choose *[View route plan]* from the pop-over menu.

Route plan

The route plan displays a list of all waypoints in the route and includes a LiveView pane showing the route's location.

From the route plan you can:

- navigate the route by selecting *[Follow]*
- change the route direction by selecting *[Reverse]*
- add an existing waypoint to the route by selecting *[Add waypoint]*
- change route options, such as route name, route color, route hide or delete the route by selecting the relevant option from the *[Route options]* pop-over menu.

Note: Route names can be any combination of letters, numbers, symbols and special characters and can include up to 16 characters. Route names must be unique.

By selecting a waypoint from the route plan you can use the pop-over menu to:

- change the position of the waypoint in the route by selecting *[Move up]* or *[Move down]*.
- remove the waypoint from the route by selecting *[Remove from route]*.
- delete the waypoint by selecting *[Delete waypoint]*.
- edit the waypoint details by selecting *[Edit waypoint]*.

- start to follow the route from the selected waypoints by selecting *[Follow from here]*.

6.3 Tracks

Tracks are used to record where you have been. Tracks are made up of track points that are created at regular time or distance intervals.

You can store up to 15 tracks on your display, each track can contain up to 10,000 points.

Tracks can be converted into routes so that they can be followed.

Tracks can be imported and exported from the display. For more information, refer to: **p.63 — User data import and export**

Creating a track

You can record your vessel's voyage using Tracks. Once a Track is saved it can be converted to a route so that the same passage may be followed again at a later date.

With the Chart app displayed:

1. If required, press the *[Back]* button to enter motion mode.
2. Press the *[OK]* button.

   The boat details pop-over menu is displayed.
3. Select *[Start track]*.

   Your vessel's voyage will now be recorded.
4. When your voyage is complete, select *[Stop track]* from the boat details pop-over menu.

You can also start a new track recording at anytime from the Routes & Tracks menu: accessible from the homescreen: *[Homescreen > Route & Tracks]* and from the Chart app menu:*[Menu > Routes & Tracks]*.

Converting a track to a route

From the *[Routes & Tracks]* menu, accessible from the home-screen*[Homescreen > Routes & Tracks]* and the Chart app: *[Menu > Routes & Tracks]*.

1. Select the *[Tracks]* tab..
2. Select the track that you want to convert.
3. Select *[Create route from track]* from the pop-over menu.
4. Select *[OK]* to return to the tracks menu, or.
5. Select *[Edit]* to view the route plan.

Track management

Tracks are managed using the tracks menu.

The *[Routes & Tracks]* menu can be accessed from the Homescreen and from the Chart app: *[Homescreen > Routes & Tracks]*, or *[Chart app > Menu > Routes & Tracks]*.

When the routes and tracks menu is opened the routes menu is displayed by default. Select the *[Tracks]* tab to display the tracks menu.

Track menu

From the tracks menu you can:

- Start or Stop tracks recording.
- Change track recording settings.
- Delete tracks.
- Show or hide tracks.

By selecting a track from the list you can use the pop-over menu to:

- edit the track name.

Note: Track names can be any combination of letters, numbers, symbols and special characters and can include up to 16 characters. Track names must be unique.

- change the line color the track uses.
- Convert the track into a route.
- Delete the track.

Track settings

The following track settings are available which change the way tracks are recorded.

Menu item and description	Options	
[Color mode:] Track line color can be set to a specific color, or you be changed automatically every day or after every track.	• *Red* • *Yellow* • *Green* • *Blue* • *Purple* • *Orange* • *Black* • *Change each day (default)* • *Change each track*	
[Record by:] You can change the way that the track points, which make up the track are dropped In Auto the track interval is set automatically to minimize the track points used whilst maintaining the actual path taken	• *Auto* • *Time (default)* • *Distance*	
[Interval:] You can change the interval at which track points are dropped.	Time intervals: • *2 secs (default)* • *5 secs* • *10 secs* • *30 secs* • *1 min* • *3 mins* • *5 mins* • *10 mins*	Distance intervals • *120 ft (default)* • *300 ft* • *600 ft* • *0.20 nm* • *0.50 nm* • *1.00 nm*

Menu item and description	Options	
	• *30 mins*	

6.4 User data import and export

User data (i.e.: Waypoint, Routes and Tracks) can be imported and exported from your display. User data is saved in the common .gpx file format.

The Import/export menu can be accessed from the homescreen settings menu *[Homescreen > Settings > Import/export]*.

Saving user data

You can backup your user data (waypoints, routes and tracks) to a MicroSD card.

1. Insert a memory card into your display's card reader.
2. Select *[Save data to card]* from the Import/export menu: *[Homescreen > My data > Import/export]*.
   A pop-over menu is displayed.
3. Select the desired option:
   • *[Save all data]* to save (export) all waypoints, routes and tracks.
   • *[Save waypoints]* to save (export) all waypoints.
   • *[Save routes]* to save (export) all routes.
   • *[Save tracks]* to save (export) all tracks.

4. Select *[Save]* to save the user data using the default filename. Alternatively:
    i.   Use the onscreen keyboard to enter your own filename and then select *[Save]*.
5. Select *[OK]* to return to the Import/export menu, or select *[Eject card]* to safely remove the memory card.

The user data file is saved to the '\Raymarine\My Data\' directory of your memory card in gpx format.

Importing user data

You can import user data (i.e.: GPX format Waypoints, Routes and Tracks) to your display.

1. Insert the MicroSD card that contains your user data files into the memory card reader on your display.
2. Select *[Import from card]* from the Import/export menu: (*[Homescreen > Settings > Import/export > Import from card]*).
3. Navigate to your User data file (.gpx).
4. Select the relevant GPX file.

    Your user data has now been imported.
5. Select *[OK]*.

CHAPTER 7: CHART APP

CHAPTER CONTENTS

7.1 Chart app overview

The Chart app displays a representation of your vessel in relation to land masses and other charted objects, which enables you to plan and navigate to your desired destination. The Chart app requires a GNSS (GPS) position fix in order to display your vessel at the correct location on a world map.

For each instance of the Chart app you can select which electronic cartography you want to use. The selection will persist over a power cycle.
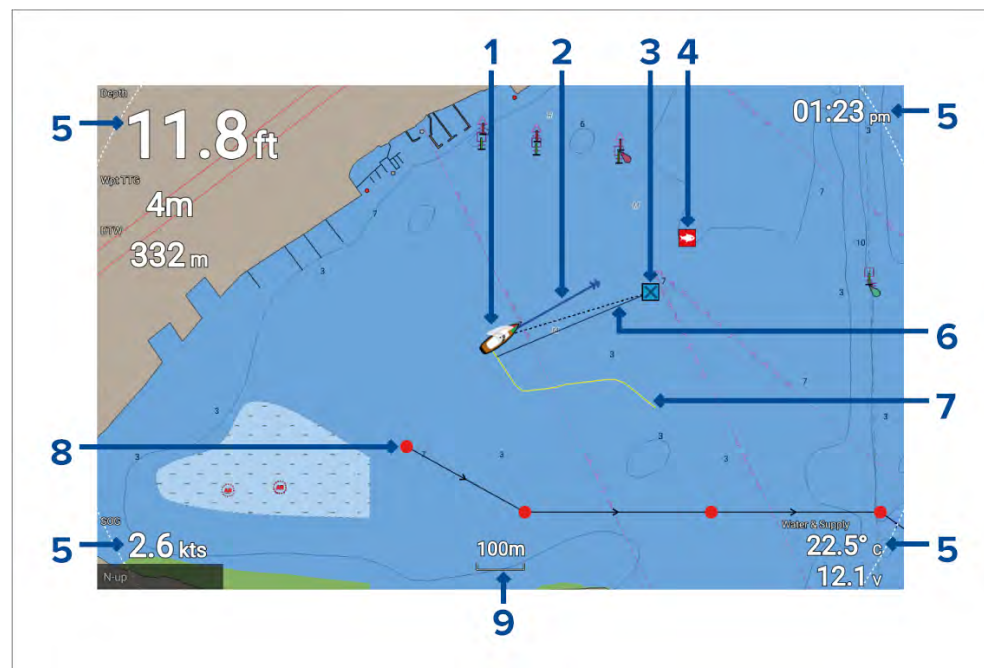
1	Vessel icon
	This icon represents your vessel, only displayed when a GNSS (GPS) position fix is available. The icon is replaced with a Black dot if no heading or COG data is available).
2	COG line
	If Course Over Ground (COG) data is available, you can display a COG vector for your vessel.
3	Destination waypoint
	During a go to, this is the current destination waypoint.

4	Waypoint
	Use waypoints to mark specific locations or points of interest.
5	Databoxes
	Databoxes display key information that is available on your system. You can configure which data is shown in each databox or the databoxes can be hidden.
6	Destination line
	During a go to, a dashed line connects your vessel to the destination point.
7	Track
	You can record the passage your vessel takes using Tracks.
8	Route
	You can plan your route in advance by creating a Route using waypoints to mark each route leg.
9	Chart range
	Identifies the scale for the displayed chart range.

Chart app controls

The Chart app has 2 control modes, motion mode and cursor mode. The behavior of some controls are dependent upon control mode.

Motion mode

Motion mode is the default mode when the Chart app is opened. In motion mode the vessel icon remains centered onscreen and the chart area automatically pans as progress is made.

Controls behavior:

- Pressing the *[OK]* button opens the vessel context menu.
- Pressing any button on the *[Directional pad]* will switch to Cursor mode.
- Pressing the *[Waypoint]* button will place a waypoint at your vessel's current location.
- Pressing the *[Plus]* or *[Minus]* buttons will range in and range out respectively, centered around your vessel .

Cursor mode

In cursor mode the chart area remains static and the vessel icon moves in the direction of travel.

Controls behavior:

- Pressing the *[OK]* button opens the context menu for the area or charted object directly under the cursor's position.

- Pressing any button on the *[Directional pad]* moves the cursor in the respective direction, when the cursor reaches the edge of the app window the chart area will pan in that direction.

- Pressing the *[Waypoint]* button will place a waypoint at the cursor's location.

- Pressing the *[Plus]* or *[Minus]* buttons will range in and range out respectively, centered around the cursor position.

- Pressing the *[Back]* button will re-center the vessel icon and switch back to Motion mode.

Chart ranging and panning

You can change the range (zoom level) in the Chart app using the *[Plus]* and *[Minus]* buttons.

You can pan the chart area using the *[Directional pad]*.

Chart app context menu

Context menus provide context sensitive information and menu options.
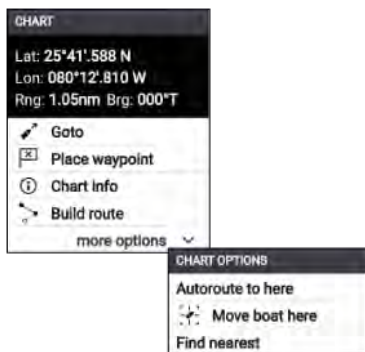
- The Chart app context menu is accessed by selecting a location or a cartographic object in the Chart app.

- The context menu provides Latitude, longitude, range and bearing details for the selected location or object.

- The context menu provides quick access to relevant menu options.

- Select *[more options]* to display further options.

> **Note:**
>
> The *[Move boat here]* option is only available in Demo/simulator mode.

The following options are available from the chart context menu:

- *Goto*

- *Place waypoint*

- *Chart info*

- *Build route*

- *Autoroute to here*

- *Move boat here*

- *Find nearest*

Selecting a chart card

You can use LightHouse™ charts and compatible Navionics and C-MAP electronic charts. The electronic chart cards must be inserted into your display's MicroSD card reader.

From the Chart app:

1. Press the *[Menu]* button.
2. Select the *[Settings]* icon.

   Pressing the Directional pad's [Up] button once the menu opens will move the selection to the bottom of the menu and highlight the settings icon.

3. Select the cartography that you want to use from the Cartography tab.

The menu will close and the Chart app will display your chosen cartography.

Chart modes

The Chart app provides preset modes that can be used to quickly set up the Chart app for your intended use.

To change chart mode select the required mode from the app menu.

[SIMPLE]

Simple mode suppresses chart detail to provide a clearer, simpler view for general orientation. In simple mode only navigation-related menu options are available. Changes made to settings are not saved in simple mode.

[DETAILED]

Detailed mode is the default mode. Full chart details and menu options are available. Changes made to settings are saved.

[FISHING]

Fishing mode optimizes the Chart app for fishing. If supported by your cartography, fishing mode also displays more detailed contour lines. Full menu options are available. Changes made to settings are saved.

RUNNING

Running mode optimizes the Chart app for fast running. In running mode, chart detail is suppressed and full vessel offset is applied. This provides a clearer view ahead, which is ideal for faster running conditions. Full menu options are available. The Chart app can be configured to enter running mode automatically when vessel speed exceeds 10 knots. Changes made to settings are saved.

TIDES

In Tides mode, tide and current station icons are replaced with graphics representing tide and current conditions. Animation controls are displayed that enable playback of Tide and Current predictions over a 24 hour period.

Tides mode also suppresses chart detail, to enhance the tide and current graphics. In this mode, set and drift vector graphics are displayed on the Chart around your vessel position.

View and motion

Controls are available which determine how the chart is displayed in relation to your vessel icon.

Chart motion

Chart motion controls how the chart and boat are drawn in relation to each other.

The following options are available:

- *[Relative motion]* — In relative motion the vessel icon remains fixed onscreen and the chart area moves relative to your position. In this mode you can adjust the fixed position of the vessel icon using the *[Boat position]* setting..

- *[True motion]* — In true motion the chart is fixed and your vessel icon moves around the chart. As the vessel icon reaches the edge of the screen, the chart is redrawn to reveal the area in front of your vessel.

- *[Auto range]* — In auto range the largest possible scale is maintained that will display both your vessel and the destination / target waypoint simultaneously.

Chart orientation

The orientation of the chart affects the alignment of the chart relative to either your vessel heading, your course or North.

The following options are available:

- *[North-up]* — In north-up the top of the screen always points towards north. As your vessel's heading changes, the vessel icon rotates accordingly.

- *[Head-up]* — In head-up the top of the screen always points towards your vessel's current heading, and as your heading changes the chart rotates accordingly.

- *[Course-up]* — In course-up the top of the screen always points towards your destination, and as your destination changes the chart rotates accordingly.

Boat position

The boat position determines the position of the vessel icon onscreen. Your boat position can only be changed when the *[Chart motion]* setting is set to *[Relative motion]*. You can change the position of the vessel icon to provide a greater distance in front of your vessel.

The following options are available:

- *[Center]* — Center is the default boat position and places the vessel icon in the center of the screen.

- *[Partial offset]* — Partial offset positions the vessel icon half way between the center and the bottom of the screen.

- *[Full offset]* — Full offset positions the vessel icon toward the bottom of the screen providing the greatest view ahead.

Vessel details

The Vessel details pop-over provides access to vessel-related settings.
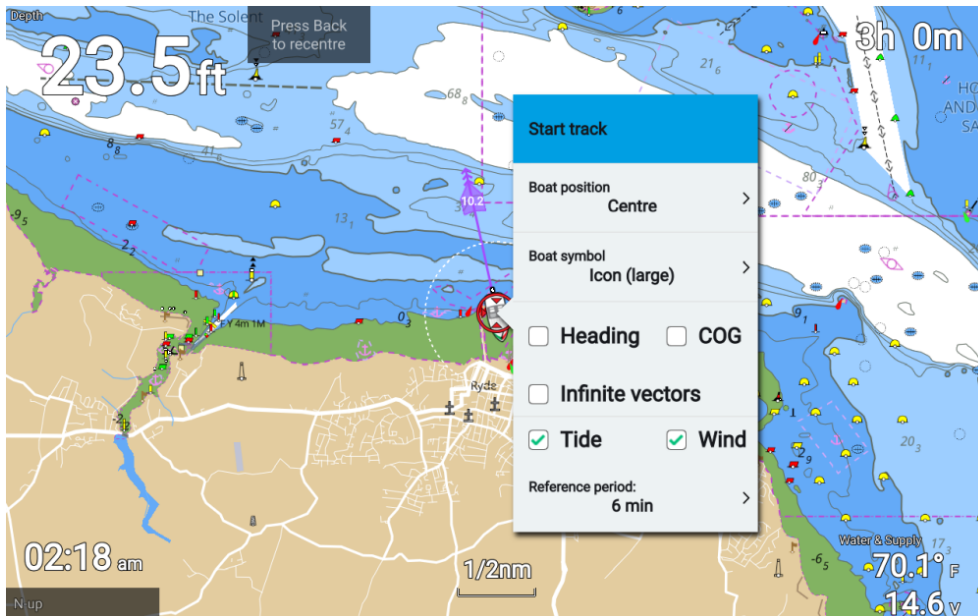
From the Vessel details pop-over you can:

- start/stop a track.

- offset the position of the boat symbol.

- change the symbol used to represent your vessel.

- show / hide Heading vector.

- show / hide COG vector.

- change vectors to display infinite length vectors or reference period length vectors.

- show / hide Tide graphics

- show / hide Wind graphics

- set the length of reference periods for vectors.

Note:

When the Chart mode is set to simple the available options are reduced.

Viewing object information

Charted objects that are available with your cartography can be selected, and object information viewed.

When you select an object, the cursor will change to the Object cursor.
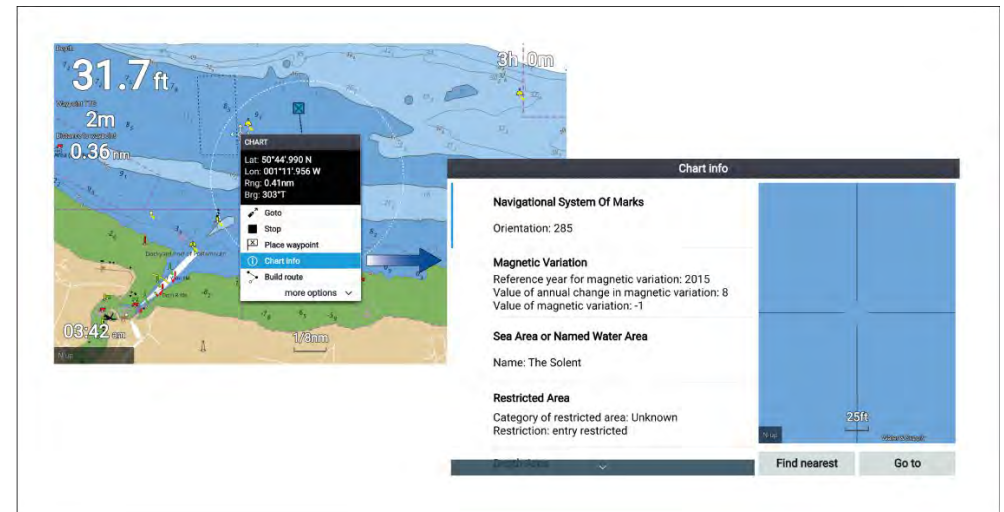
1. Press the *[OK]* button to display the object context menu.

2. Select *[Chart info]*.

   A list of nearby objects is displayed.

3. Scroll through the list to display detailed information for the required object.

7.2 Cartography overview

The Chart app includes a basic world base map. To use the Chart app for navigation purposes, compatible, detailed Electronic Navigational Charts (ENC) or Raster Navigational Charts (RNC) are required.

- **Raster Navigational Chart (RNC)** — A Raster chart is a digital image of a paper chart and therefor the available information is limited to the information available on the paper equivalent.

- **Electronic Navigational Chart (ENC)** — ENCs are Vector based charts and include information that is not available on paper or Raster charts. Objects and features on Vector charts can be selected to obtain databased information that otherwise would not be readily available. Object and features can also be enabled and disabled or customized.

Note:

- The level of detail and features available on charts is dependent on vendor, chart type, subscription level and geographic region. Prior to purchasing charts check the vendor's website to establish what level of detail is available on the charts you want to purchase.
- The information relating to available chart detail and settings in this manual should be treated as guidance only as it is subject to change that is not under Raymarine's control.

The Chart app range scale will also effect the level of detail shown onscreen. Generally more detail is available at lower ranges. The chart scale in use is indicated by the scale indicator, the value displayed is the distance that the line represents across the screen.

You can remove and insert chart cards at any time. The chart screen is automatically redrawn when the system detects that a compatible chart card has been inserted or removed.

Different cartography types can be viewed simultaneously using an app page that includes multiple instances of the Chart app.

Supported electronic navigational charts

MFDs running the LightHouse Sport operating system can utilize the electronic navigational charts (ENC) listed below.

- Next generation LightHouse™ charts

- Retired LightHouse™ vector, raster and NC2 charts.

- Navionics charts

- C-Map

Refer to the Raymarine website for the latest list of supported chart cards: www.raymarine.com

To check the current availability of Navionics chart cards and types, please visit www.navionics.com

To check the current availability of C-MAP® chart cards and types, please visit: lightmarine.c-map.com.

3rd party raster charts

Raster navigational charts from the 3rd party vendors listed below are supported.

Note:

Raster charts are created by scanning paper charts, each segment of the paper chart is turned into a digital image. The detail available on raster charts is limited to the detail on the paper chart it was created from. Raster charts do not offer dynamic content that is typically available on vector based electronic charts.

- **Standard mapping** — USA only.(For details visit: https://www.standard-map.com/)
- **CMOR Mapping** — USA only.(For details visit: https://www.cmormap-ping.com/)
- **Strike Lines Charts** — USA only.(For details visit: https://strikelines.com/)

Note:

For assistance using these charts refer to the chart vendor.

Caution: Care of chart and memory cards

To avoid irreparable damage to and / or loss of data from chart and memory cards:

- Ensure that chart and memory cards are fitted the correct way around. DO NOT try to force a card into position.
- DO NOT use a metallic instrument such as a screwdriver or pliers to insert or remove a chart or memory card.
- Ensure correct memory card ejection procedure is carried out before removing the chart or memory card from the card reader.

LightHouse charts

LightHouse™ charts is the brand name for Raymarine's electronic navigational charts. LightHouse™ charts can include a premium subscription which adds new and enhanced features.

Note:

Legacy LightHouse™ Vector, Raster and NC2 charts have now been discontinued and can no longer be downloaded or updated.

New LightHouse™ charts come with a free 1 year subscription to LightHouse™ Premium. The premium subscription unlocks data-rich points of interest (POI), high-resolution satellite aerial overlays and regular chart updates. After the free subscription ends the premium features can be continued for an annual fee.

LightHouse™ charts can be purchased from Raymarine dealers, as either a pre-loaded chart card or a blank chart card that includes a voucher that can be redeemed from the chart store.

To find out more about available regions and latest features visit the LightHouse™ charts store: https://chartstore.raymarine.com/lighthouse-charts

LightHouse Chart Store

LightHouse™ charts can be purchased from the LightHouse™ Chart Store, which can be accessed from a personal computer (PC) or from a mobile device via the Raymarine app.

You must have a Chart Store account and be logged in to the account before you can purchase charts in the Chart Store. This account can be created during the checkout process if required.

The Chart Store can be accessed using the following link: https://chartstore.raymarine.com/lighthouse-charts

Pre-loaded LightHouse Chart Cards

LightHouse™ charts are also available pre-loaded on MicroSD cards. Simply insert the card into your MFD's card reader to start using.

Note:

New regions are added all the time, check with your local Raymarine dealer for the latest available regions.

- North America LightHouse™ preloaded chart card (part number: **R70794**).
- Australia/New Zealand LightHouse™ preloaded chart card (part number: **R70794–AUS** / **R70794–ANZ**).
- Denmark LightHouse™ preloaded chart card (part number: **R70794–DEN**).
- Finland LightHouse™ preloaded chart card (part number: **R70794–FIN**).
- France LightHouse™ preloaded chart card (part number: **R70794–FRA**).
- Germany LightHouse™ preloaded chart card (part number: **R70794–GER**).
- Greece LightHouse™ preloaded chart card (part number: **R70794–GRE**).
- Great Britain & Ireland LightHouse™ preloaded chart card (part number: **R70794–IGB**).
- Italy LightHouse™ preloaded chart card (part number: **R70794–ITA**).
- Netherlands LightHouse™ preloaded chart card (part number: **R70794–NED**).
- Norway LightHouse™ preloaded chart card (part number: **R70794–NOR**).
- Portugal LightHouse™ preloaded chart card (part number: **R70794–POR**).
- Spain LightHouse™ preloaded chart card (part number: **R70794–SPA**).
- Sweden LightHouse™ preloaded chart card (part number: **R70794–SWE**).
- Blank 32 GB MicroSD card for LightHouse™ Charts (part number: **R70838**).

Hybrid LightHouse charts

LightHouse™ version 4.1.75 and LightHouse™ Sport version 3.17 (for Element™) operating system updates include a new hybrid chart engine which provides improved performance for supported LightHouse™ charts. From September 2022 new LightHouse™ chart regions will start to be available which will include support for the new hybrid chart engine.

The following charts will include support for the hybrid chart engine:
- North America Region (part number: **R70794**).
- Western Europe region (part number: **R70794–WEU**).
- Northern Europe Region (part number: **R70794–NEU**).
- Mediterranean Region (part number: **R70794–MED**).
- France (part number: **R70794–FRA**).
- Australia/New Zealand (part number: **R70794–AUS** / **R70794–ANZ**).

Note:

New regions are added all the time, check with your local Raymarine dealer for the latest available regions.

Redeeming chart voucher

If you have purchased a download chart card with a voucher code then the voucher is redeemed from the LightHouse™ chart store.

1. Go to the LightHouse™ chart store: https://chartstore.raymarine.com/light-house-charts
2. Click *[Redeem]*.
3. Create a new account, or login to your existing account.
4. Enter your voucher code and click *[Submit]*.
5. Click *[View charts]* from the voucher accepted page.
6. Select the required region.
7. If your voucher entitles you to a second region click *[Pick 2nd chart]* and then select your second region.
8. Click *[Done]*.
   Your selected region(s) will now be available in *[MY CHARTS]*.

Downloading charts from My Charts

Once redeemed charts can be downloaded from the MY Charts area of the LightHouse™ charts store.

1. Log in to your account.
2. Go to the *[MY CHARTS]* area.
3. Expand the Download options for the region(s) you want to download.
4. If updates are available click *[Get latest data]*.
5. If you have a valid Premium subscription add the *[Streets & POI]* and *[Aerial photos]* that you want to include.

   When adding [Streets & Points of Interest] and [Aerial photos] you can create up to 5 area boxes for each feature per purchased region. Follow the onscreen instructions to define each area of coverage.

6. Click *[Download]*.
7. If you have more than 1 region you can group them together by selecting the relevant grouping option.

   Grouping allows you to minimize download file size, by grouping up to 3 regions, from the same continent together.

8. Check the SD card requirements.

9. Click *[CONTINUE]*.
10. Check unique ID file.

11. Click *[CONTINUE]*.
12. Check 'LightHouse_charts' folder

13. Click *[CONTINUE]*.
14. Click *[Browse to file]* and locate the Lighthouse_id.txt file in the root directory of the chart card.
15. Click *[CONTINUE]*.

    The download package will now be prepared and downloaded to your computer.

Note:

- Depending on files size and connection speed the package preparation and download may take some time, click *[receive email notification]* to get an email when the package is ready to be downloaded.

- If the download does not start automatically once the package has been prepared click *[Download]*.

16. Locate the downloaded file and copy to the Lighthouse_charts folder on your SD card.

17. The memory card can now be inserted into your MFD.

7.3 Automatic Identification System (AIS) support

With compatible AIS hardware connected to your display, AIS targets can be tracked.

AIS equipped vessels that are transmitting their position, and are within range of your vessel, can be represented in the Chart app using AIS target icons.

Note:

A maximum of 100 AIS targets can be tracked simultaneously. If there are more than 100 AIS targets within range of your vessel the closest 100 targets will be displayed.
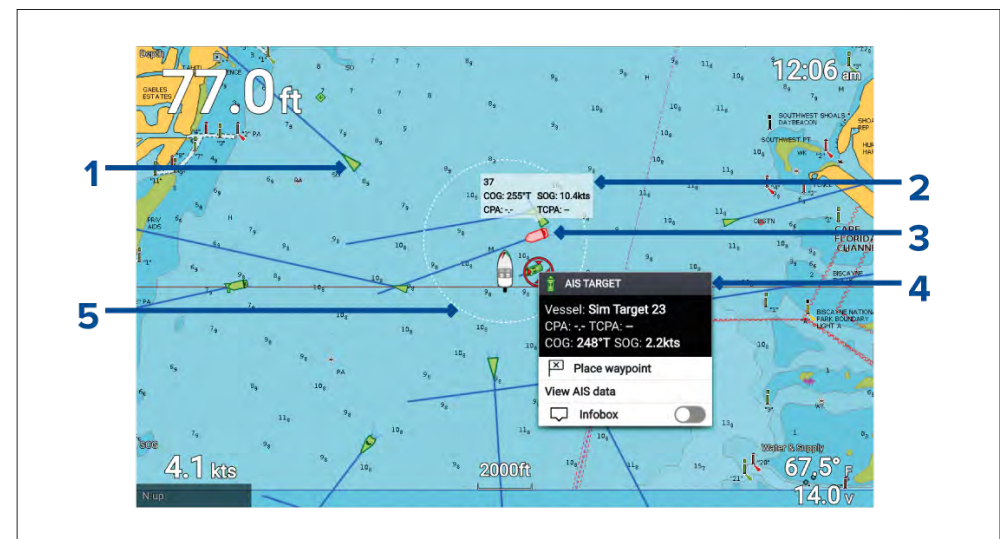
1. **AIS target icon** — Example of an AIS target icon.

2. **AIS Infobox** — Information can be displayed for each target individually.

3. **Dangerous AIS target icon** — Example of an AIS target icon that is dangerous.

4. **AIS context menu** — The AIS context menu is displayed when an AIS target is selected.

5. **Safe distance ring** — A ring can be displayed which represents the dangerous target *[Safe distance]*.

AIS target context menu

The AIS target context menu provides context sensitive data and menu options related to AIS targets.
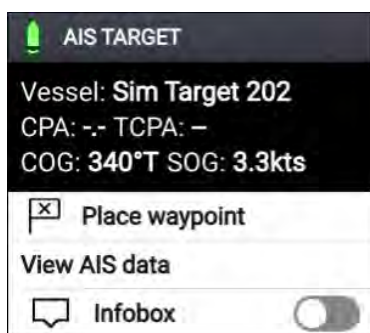
- The AIS target context menu is accessed by highlighting an AIS target onscreen and pressing the *[OK]* button.

- The context menu provides vessel name or MMSI CPA and TCPA, if available, COG and SOG data.

- The following menu options are available:

  – *[Place waypoint]* (places a waypoint at the cursor's location)

  – *[View AIS data]* (displays more detailed AIS data on a fullscreen page)

  – *[Infobox]* (displays the AIS data that is shown in the context AIS target context menu onscreen, next to the AIS target)

AIS dangerous targets

If AIS targets enter a dangerous target state they can trigger an alarm on your display. AIS targets are considered to be dangerous if they will pass within a specified safe distance from your vessel within a specified time interval.

The dangerous target alarm can be enabled and disabled from the alarms menu: *[Homescreen > Settings > Alarms > Dangerous AIS targets]*.

The dangerous target alarm can be configured from the Dangerous target page, accessed from the alarms menu:*[Homescreen > Settings > Alarms > Dangerous AIS targets > Configure]*.

To set up the AIS dangerous target alarm, first adjust the *[Safe distance]* to the desired value and then select a *[Time to reach safe distance]*. The alarm will be triggered if a tracked target will reach the specified Safe distance from your vessel within the time period selected.

You can display a Safe distance ring around your vessel in the Chart app and Radar app by enabling *[Show safe distance]*.

AIS vectors

Vectors can be displayed for AIS targets.

AIS target vectors settings can be accessed from the *[Target Settings]* tab: *[Menu > AIS Targets > Target Settings]*.

The length of the vector indicates the predicted position of the target after the time interval specified in *[Vectors period]* has passed. Adjusting the *[Vectors period]* option will adjust the length of the vector.

AIS vectors can be enabled and disabled using the *[AIS vectors]* toggle switch.

Target vectors can be enabled and disabled for individual targets: Press and hold on an AIS target to display the context menu, and then select *[Vector]*.

The vectors can be set to *[True]* or *[Relative]*.

	True vectors In true mode the vectors are shown ground referenced (i.e.: their actual path over ground).
	Relative vectors In relative mode the vectors are shown relative to your vessel's position.

AIS targets list

Tracked AIS targets are listed in the AIS targets list.

The AIS targets list can be accessed from the Chart app menu: *[Menu > AIS Targets]*.

When an AIS target is highlighted the LiveView pane will pan and zoom to show the AIS target.

When an AIS target is selected the AIS target details page is displayed.

AIS Settings

Settings related to AIS can be accessed from the Target Settings menu: *[Menu > AIS Targets > Target Settings]*.

[AIS:]	Enables and disables display of AIS targets in the Chart app. **Note:** When disabled AIS targets and details are still available in the AIS targets list.
[Silent mode (don't transmit my position:]	Your AIS hardware will not transmit any data when in silent mode. In Silent mode AIS data can still be received from other vessels.
[Hide static targets:]	Targets travelling under 2 knots will be hidden, unless the target is dangerous or becomes dangerous.
[AIS vectors:]	Enables and disables display of vectors on AIS targets.
[Vectors period:]	Determines the predicted position of the target (and therefore the length of the vector). **Note:** The Vectors period settings also applies to your vessel's COG vector.
[Reference mode:]	Determines whether vectors are shown in true or relative mode.

AIS target symbols

Different symbols are used to identify type of AIS target and their status.

AIS symbols

	Sailing Vessel		Commercial
	High speed vessel / Wing In Ground vessel		Cargo vessel
	Passenger vessel		Other
	Land based station		ATON

	SAR (Search and Rescue)		Virtual ATON
	SART (Search and Rescue Transponder)		

AIS target symbol status

	Lost (No border, crossed through)		Uncertain (Dashed outline)
	Dangerous and Uncertain (Dashed outline and Flashes Red)		
	Dangerous (Flashes Red)		ATON off position (Red border)

7.4 Navigation

Autopilot command

Element™ displays can send navigation data to a connected Evolution™ autopilot systems..

Note:

- Your autopilot system must have a compatible dedicated autopilot controller connected. For a list of compatible autopilot controllers refer to: **p.145 — Compatible autopilot controllers**

- For information on Evolution™ autopilot systems and required system components refer to the Evolution installation instructions document number: 87180 which is available to download from the Raymarine website: www.raymarine.com

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[Goto], *[Follow]* and *[Stop]* commands initiated on the Element™ display are sent to the autopilot controller for acknowledgement.

Navigating to a waypoint or point of interest

You can perform a "Goto" to a Waypoint or to a specific location.
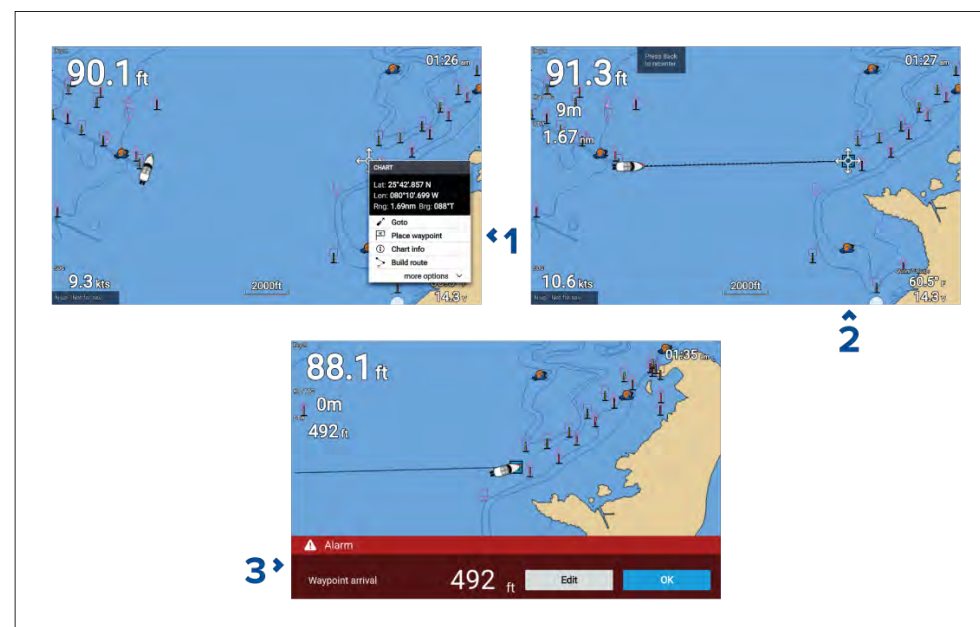
1. Select the waypoint or point of interest and select *[Goto]* from the context menu.

   You can stop the [Goto] at any time by selecting Stop from the context menu, or by selecting another [Goto].

   The Chart app will begin active navigation.

2. Navigate your vessel to the destination point, using the Chart app as a guide.

3. Select *[OK]* to accept the waypoint arrival alarm, which is triggered when you reach a specified distance from the waypoint.

You can also perform a Goto from the *[Go]* menu: *[Menu > Go]*.

Note:

In a network that contains 2 Element™ displays, with one display performing active navigation (i.e.: performing a *[Goto]* or a *[Follow]*) navigation options will not be available on the networked display.

Adjusting the waypoint arrival alarm

The waypoint arrival alarm is enabled by default. The waypoint arrival alarm creates a virtual circle, of the specified radius, around the destination point. When your vessel reaches the virtual circle the alarm is triggered.

From the homescreen:

1. Select *[Settings]*.
2. Select the *[Alarms]* tab.
3. Select the *[Arrival radius:]* setting field.
4. Adjust the distance to the desired value.
5. Press the *[Back]* button to return to the alarms menu.

Note:

The waypoint arrival alarm can be disabled or enabled using the *[Waypoint arrival:]* toggle switch.

Restarting cross track error (XTE)

A cross track error (XTE) occurs when your actual route diverges from your original planned route. Restarting XTE plots a new course directly from your current position to your destination, rather than continuing to follow the original planned route.

1. Select *[Restart XTE]* from the *[Navigation]* menu: *[Menu > Navigation > Restart XTE]*.

Following a Route

Follow the steps below to navigate a saved route.
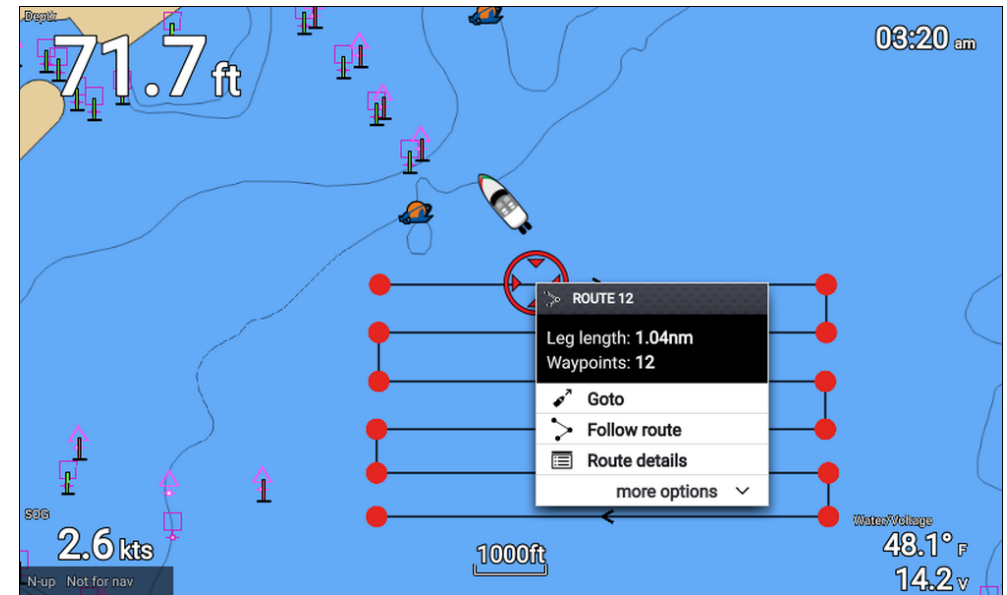
From the Chart app, with the route displayed onscreen:

1. Select a route leg.

   The route context menu is displayed.

2. Select *[Follow route]* to follow the route from start to finish.

Alternatively you can select Follow route from the route pop-over menu, accessed from the Routes menu. *[Menu > Routes & Tracks > Routes > <Route name> > Follow]*.

For more information on routes and route management refer to: 6.2 **Routes**

Following a route from a specified waypoint

You can start following a route from any waypoint in that route.

From the Chart app, with the route displayed onscreen:

1. Select the waypoint that you want to start following your route from.

   The route context menu is displayed.

2. Select *[more options]*
3. Select *[Follow from here]*.

Creating a track

You can record your vessel's voyage using Tracks. Once a Track is saved it can be converted to a route so that the same passage may be followed again at a later date.

With the Chart app displayed:

1. If required, press the *[Back]* button to enter motion mode.
2. Press the *[OK]* button.

   The boat details pop-over menu is displayed.
3. Select *[Start track]*.

   Your vessel's voyage will now be recorded.
4. When your voyage is complete, select *[Stop track]* from the boat details pop-over menu.

You can also start a new track recording at anytime from the Routes & Tracks menu: accessible from the homescreen: *[Homescreen > Route & Tracks]* and from the Chart app menu:*[Menu > Routes & Tracks]*.

7.5 Find nearest

The Find nearest feature allows you to select a location and search for nearby objects or points of interest.

Note:

- The level of detail available on charts is dependent on vendor, chart type, subscription level and geographic region. Prior to purchasing charts check the vendor's website to establish what level of detail is available on the charts you want to purchase.

- The information relating to available chart detail and settings in this manual should be treated as guidance only as it is subject to change that is not under Raymarine's control.
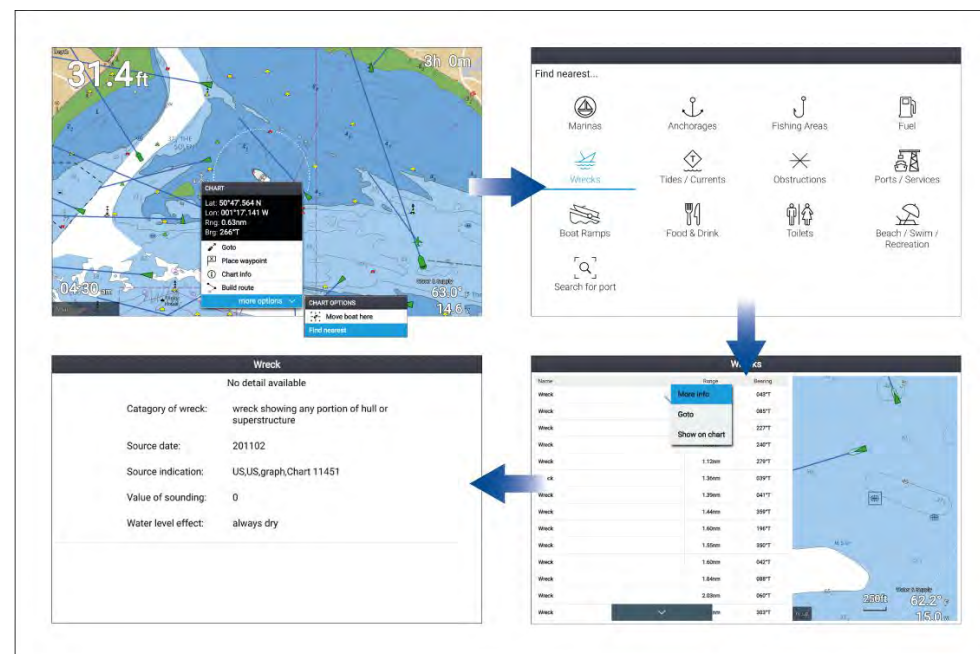
Selecting a location and pressing the *[OK]* button will open the Chart context menu, selecting *[more options]* and then *[Find nearest]* will display the Find nearest options page where you can select the type of place or object you want to search for.

Selecting an option will display a list of all nearby objects for that type. The list is sorted by an object's proximity to the selected location. However, the Range and Bearing displayed is relative to your vessel's position.

Find nearest options

> **Note:**
>
> Legacy LightHouse Charts refers to retired LightHouse vector, raster and NC2 Charts.

The options available on the find nearest page depend on the cartography type you are using:

- *[Marinas]* (LightHouse Charts, Navionics and C-Map)
- *[Anchorages]* (LightHouse Charts)
- *[Fishing Areas]* (LightHouse Charts)
- *[Fuel]* (LightHouse Charts)
- *[Wrecks]* (LightHouse Charts, Legacy LightHouse Charts, Navionics and C-Map)
- *[Tides]* (LightHouse Charts, Legacy LightHouse Charts, Navionics and C-Map)
- *[Currents]* (LightHouse Charts, Legacy LightHouse Charts, Navionics and C-Map)
- *[Lakes]* (Navionics and C-Map)
- *[Obstructions]* (LightHouse Charts, Legacy LightHouse Charts, Navionics and C-Map)
- *[Ports/Services]* (LightHouse Charts, Navionics and C-Map)
- *[Boat Ramps]* (LightHouse Charts)
- *[Food & Drink]* (LightHouse Charts)
- *[Toilets]* (LightHouse Charts)
- *[Beach/Swim/Recreation]* (LightHouse Charts)
- *[Search for port]* (LightHouse Charts, Legacy LightHouse Charts, Navionics, C-Map)
- *[Small Craft Facility]* (Legacy LightHouse Charts)
- *[Harbor Facility]* (Legacy LightHouse Charts)
- *[Businesses]* (Navionics)
- *[Point of interest]* (C-Map)

- *[Outdoor Recreational Areas (ORA)]* (C-Map)
- *[ORA Services]* (C-Map)

List options

From the list of found objects or places the following pop-over options are available for each item in the list:

- View more information about the object by selecting *[More info]*.
- Navigate to the selected object by selecting *[Goto]*.
- Display the selected object in the Chart app by selecting *[Show on chart]*.

When an item from the list is selected the *[LiveView]* on the right of the screen will highlight and zoom to the selected object.

7.6 RealBathy™

You can create precise personal bathymetric charts in real time using Raymarine's RealBathy™ feature.
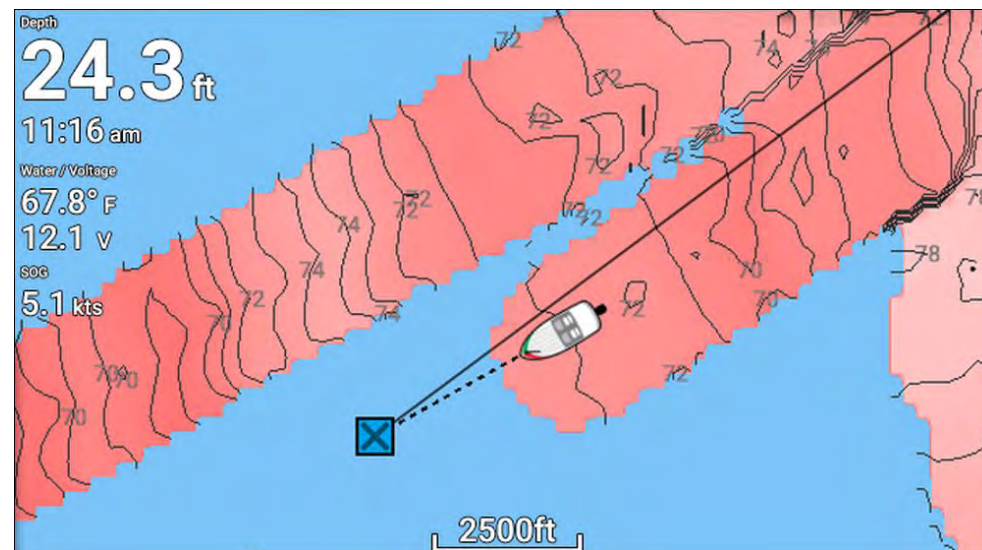
> **Note:**
>
> RealBathy™ requires compatible LightHouse™ NC2 charts and a MicroSD card with sufficient free space to record depth and bathymetry data.

When using RealBathy™, new contour lines are drawn in real time on the screen based on your transducer's depth readings. Color shading is used to reflect depth, with darkest shade signifying the shallowest area. The sonar data is recorded to the inserted memory card.

Setting up and creating RealBathy contours

To enable creation of RealBathy™bathymetric contours in real time follow the steps below:

Important:

- You will need to know the distance above the bottom face of your transducer to the waterline.

- For tidal environments LightHouse™ NC2 cartography is required that includes tide station information for your location.

From the Chart app.

1. Insert your LightHouse™ NC2 chart card into the display's card reader.

2. Select your LightHouse™ chart card as your cartography for the Chart app.

   For details on choosing your cartography refer to: **Selecting a chart card**

3. Enter the distance above the bottom face of your transducer to the waterline in the *[Waterline to tdcr:]* setting field.

4. Enable the *[RealBathy;]* toggle switch, located in the *[Depths]* menu: *[Menu > Depths]*

5. Select the relevant *[Height correction]* option:

   - *[None]* — No corrections are made.

   - *[Tidal]* — Uses nearby tide station data to correct height. When *[Tidal]* is selected a tidal station search is performed and a list of available stations is displayed. Select the closest tide station to your location.

- *[Lake level]* — User specified value using the water level marker for your location.

Note:

To ensure accurate contour depths it is recommended that:

- in tidal environments (e.g.: seas and oceans) you use LightHouse™ NC2 cartography that includes tide station information and select the tide station closest to your location, or

- in fresh water environments (e.g.: lakes) select *[Lake level]* in the *[Height correction:]* field and then enter the current reading from the water level marker for your location into the field located under the height correction option.

6. Adjust the *[Visibility:]* setting to the desired transparency.

   100% provides full visibility of the RealBathy contours, as the percentage decreases the chart detail behind the RealBathy contours becomes more visible.

7. Select the required *[Density:]* setting.

   Steep drop-offs can result in overlapping contour lines, lowering the density in these situations provides a clearer view.

7.7 Reeds almanac

The Reeds almanac is available on for supported regions of Raymarine LightHouse charts .

The Reeds symbols are displayed in the Chart app when the *[Streets & POI]* layer is enabled: *[Chart app > Menu > Settings > Layers > Street & POI]*.
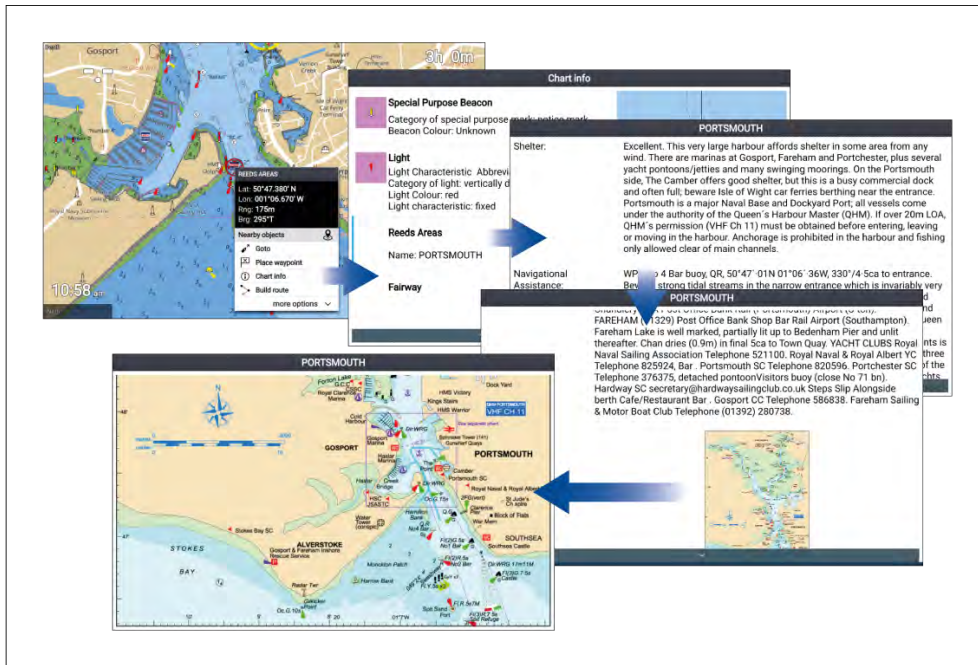
Selecting a Reeds symbol will display the context menu. Selecting *[Chart info]* and then selecting the *[Reeds Areas]* displays the full details and any related images. Selecting images will open the image fullscreen.

7.8 Tides mode

Tides mode suppresses chart detail to enhance tide and / or current information and provides set and drift vectors for your vessel. Tide mode also displays an animation progress bar. Depending on the cartography in use,

tide and / or current station symbols may be replaced with dynamic graphics. Dynamic graphics can be animated using the *[Animate tides]* option which enables playback of tide and / or current predictions for a 24 hour period.

Note:

- Set and drift vectors require a paddle wheel transducer.
- Animations are only available on supported cartography. Refer to your cartography provider for more information.
- Tides mode requires accurate date information, taken from your GNSS / GPS position data. Alternatively, you can input a specific date manually.

1. Animation progress bar — The bar fills with Blue as the animation progresses for the current 24 hour period, or Green when playing animations from a different period.

2. Playback controls — Provides controls to play and stop animation playback or skip forwards or backwards through the animation.

3. Dynamic tide graphic — Available when using Navionics cartography.

4. Drift value — Provides drift value in specified speed units.

5. Set vector — Vector arrow identifies tide direction

6. Dynamic current graphic — Available when using Navionics cartography.

Note:

The data provided in the tide and current graphs and graphics is for information purposes only and must NOT be relied upon as a substitute for prudent navigation. Only official government charts and notices to mariners contain all the information needed for safe navigation.

Using animation controls

The animation controls can be selected using the *[Directional pad]* and *[OK]* button.

With cartography containing tide data selected in the Chart app:

1. Select the *[TIDES]* mode icon from the menu.
2. Select *[Animate tides]* from the menu.
3. Use the *[OK]* button to start and stop playback.
4. Use the *[Left]* button to skip backwards through the animation.
5. Use the *[Right]* button to skip forwards through the animation.

Note:

Pressing and releasing the *[Left]* or *[Right]* buttons will skip the animation in 15 minute intervals. Pressing and holding the *[Left]* or *[Right]* buttons will skip the animation continuously, until the button is released.

Selecting a date for tide animations

You can select a specific date for tide and current animations.

1. Select *[Select date]* from the menu.
2. Use the *[Left]* and *[Right]* buttons to select the month, day or year.
3. Use the *[Up]* and *[Down]* buttons to highlight the *[Up]* or *[Down]* arrows
4. Use the *[OK]* button to change the highlighted value.
5. Select *[Save]*.

Tide station information

Depending on your cartography, Tide station information may be available.

Tide station symbol

The location of Tide stations is marked on the chart using a diamond-shaped symbol with a 'T' in the middle.

- The symbol is colored Red when using Navionics cartography.
- The symbol is colored Black when using LightHouse Charts or C-Map cartography.

Dynamic tide graphic

Using Navionics cartography, when the Tides is enabled (*[Menu > Settings > Set-up > Tides]*) the tide symbol is replaced with a dynamic tide height graphic:
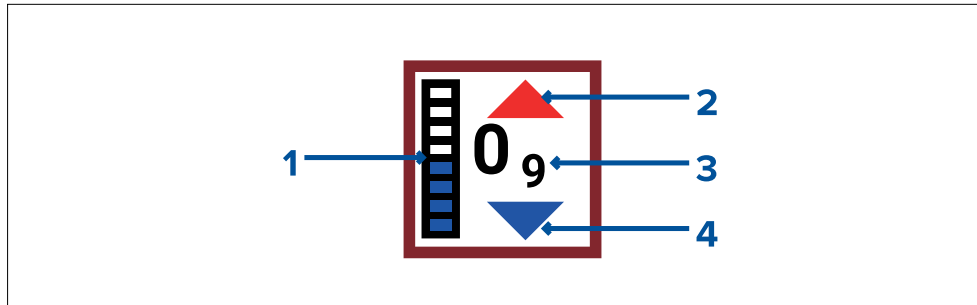
1. Tide bar — The tide bar plots the current tide height against the maximum predicted tide height for that day.

2. Red arrow indicates tide height is increasing.

3. Tide height — Tide height is displayed in user-selected depth units, with decimals displayed in subscript. Decimals are not shown for values of 10 or greater.

4. Blue arrow indicates tide height is decreasing.

Tide graph

Tide graphs are available with compatible cartography by selecting *[more options]* and then *[Tide station]* from the tide station's context menu.
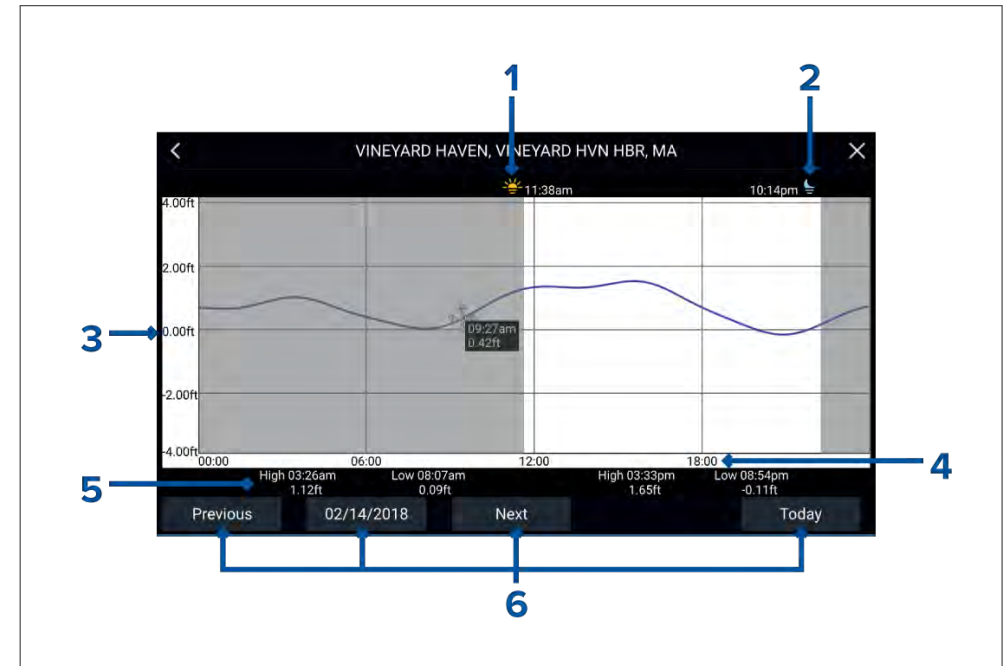
1. **Sunrise** — Indicates time of sunrise.

2. **Sunset** — Indicates time of sunset.

3. **Height** — Provides tide height in selected units.

4. **Time** — Indicates time of day.

5. **Low / High tide** — Indicates the time of low and high tides.

6. **Time and date options** — Use the buttons to view previous, next or today's tide predictions, or enter a date by selecting the date field.

Current station information

Depending on your cartography, Current station information may be available.

Current station symbol

Current station locations are marked on the chart using a diamond-shaped symbol with a 'C' in the middle.

- The symbol is colored Blue when using applicable Navionics cartography.
- The symbol is colored Black when using applicable C-Map cartography.

Dynamic current graphic

Using Navionics cartography, when the Tides option is enabled (*[Menu > Settings > Set-up > Tides]*), the current station symbol is replaced with a dynamic current graphic:

The dynamic current graphic is an arrow pointing in the direction of current flow. Arrow length indicates the speed of the current; the longer the arrow, the faster the speed. The arrow's border indicates current status:

- Red = increasing current speed.
- Blue = decreasing current speed.

Current speed is shown inside the arrow. Current speed is displayed in user-selected speed units, with decimals displayed in subscript. Decimals are not shown for values of 10 or greater. If tidal conditions are "slack", the word "SLACK" appears in a box with a Blue border.

When using C-Map cartography, arrows are used to indicate the direction of current flow. The size and color of the arrow indicates the strength of the current:
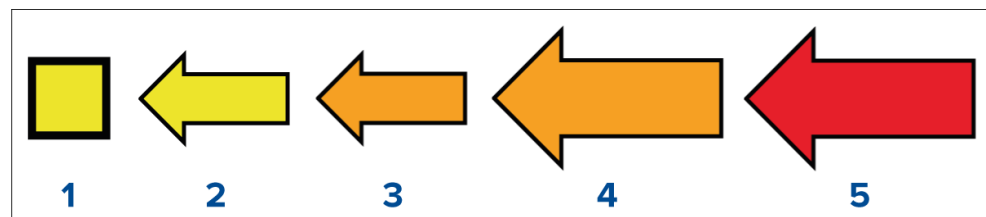
	Color	Speed
1	Yellow	0 to 0.1 Knots
2	Yellow	0.2 to 1.0 Knots
3	Orange	1.1 to 2.0 Knots
4	Orange	2.1 to 3.0 Knots
5	Red	>3.0 Knots

Current graph

Current graphs are available by selecting *[more options]* and then *[Current station]* from the current station's context menu.
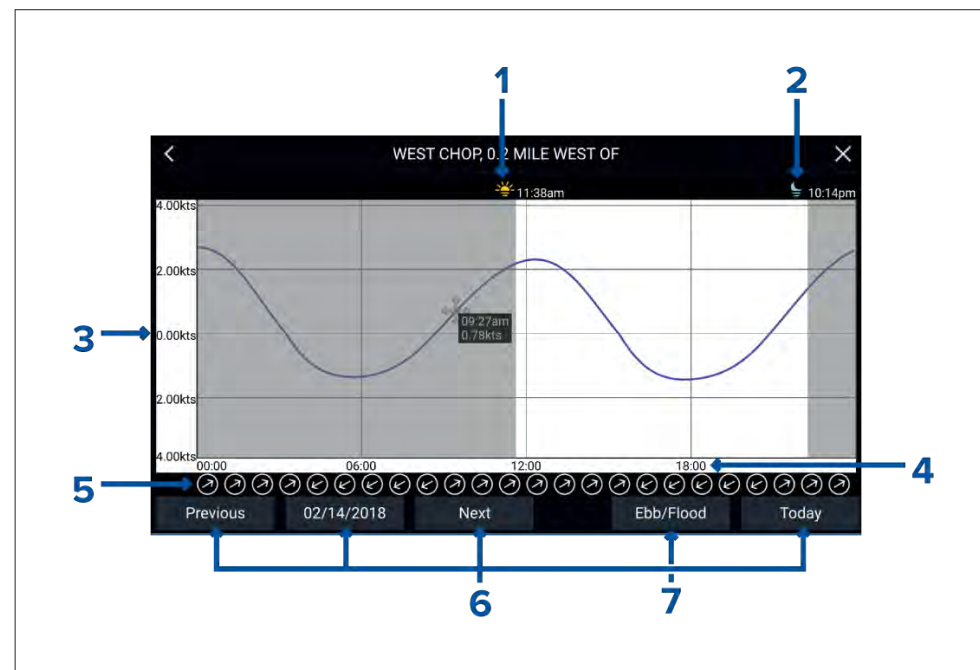
1. **Sunrise** — Indicates time of sunrise.
2. **Sunset** — Indicates time of sunset.
3. **Speed** — Provides current speed in selected units.
4. **Time** — Indicates time of day.

5. **Direction** — Indicates the direction of the current (relative to North).

6. **Time and date options** — Use the buttons to view previous, next or today's tide predictions, or enter a date by selecting the date field.

7. **Ebb / Flood** — Displays a list showing ebb, slack and flood tides.

Displaying tide or current graphs

1. Select a tide or current station symbol or dynamic graphic.
2. Select *[more options]* from the context menu.
3. Select *[Tide station]* or *[Current station]*

Note:

You can also access tide and current graphs by selecting *[More info]* from the pop-over options when performing a *[Find nearest]* search for tides.

7.9 Chart settings menu

The table below lists settings applicable to the Chart app and their location within the app's *[Settings]* menu. Available settings are dependent on the cartography in use. If a setting is not displayed then the feature is not compatible with your cartography. If a feature is grayed out then it requires a subscription to activate the feature.

Cartography tab

Description	Options
Allows you to select the cartography that you want to use in the current Chart app.	• *LightHouse Charts* • *Navionics* • *C-MAP*

Layers tab

Menu item and description	Options
[Chart detail:] Allows you to select the level of detail displayed onscreen for vector based cartography. This setting is available when using LightHouse™, Legacy LightHouse™, C-MAP® and Navionics® charts.	• *Low* • *Medium* • *High*
[Navigation mark symbols] Determines whether International or US navigation mark symbols are used This setting is available when using Navionics® charts.	• *US* • *International*
[Chart Object Size] Adjust the display size of chart objects. This setting is available when using LightHouse™ charts.	Slider bar control.
[Day color palette] When enabled *[Bright sun]* switches to a darker color palette in the Chart app which is more easily readable in bright sunlight. This setting is available when using LightHouse™ charts.	Bright sun: • *On* • *Off*
[Chart style] Switch between chart presentation styles. This setting is available when using LightHouse™ charts.	• *Leisure* • *Government*
[Auto enter RUNNING mode:] When enabled the Chart app will automatically switch to running mode when vessel speed exceeds 10 knots, the Chart app will automatically switch to the previously used mode when vessel speed drops below 10 knots. This setting is always available and not dependent on the cartography in use.	• *On* • *Off*

Menu item and description	Options
[AIS] Enables and disables the display of AIS targets in the Chart app. **Note:** AIS hardware is required. This setting is always available and not dependent on the cartography in use.	• *On* • *Off*
[Radar] Enables and disables the display of a Radar overlay in the Chart app. **Note:** Radar hardware is required. This setting is always available and not dependent on the cartography in use.	• *On* • *Off*
[Use Radar without heading data] Enables use of the Radar overlay in the Chart app when heading data is not available. This setting is always available and not dependent on the cartography in use.	• *On* • *Off*
[Aerial overlay] Enables and disables display of a photographic aerial overlay. This setting is available when using C-MAP® or Navionics® charts.	• *On* • *Off*
[Coverage:] Determines where the aerial overlay will be used. This setting is available when using Navionics® charts.	• *Land only* • *Land and sea* • *Land and shallow*

Menu item and description	Options
[Aerial overlay opacity] Allows opacity percentage of the aerial overlay to be set. This setting is always available and not dependent on the cartography in use.	*0%* to *100%*
[Range rings] Enables and disables the display of Radar style range rings in the Chart app. This setting is always available and not dependent on the cartography in use.	• *On* • *Off*
[Streets & POI] Enables and disables the display of enhanced street details and point of interest in the Chart app. This setting is available when using LightHouse™ charts. with a valid premium subscription.	• *On* • *Off*
[Tides] Enables and disables display of Tide and Current graphics at tide and current stations. This setting is available when using Navionics® charts.	• *On* • *Off*
[Waypoint names] Enables and disables the display of waypoint name next to waypoint symbols. This setting is always available and not dependent on the cartography in use.	• *On* • *Off*
[Fishing AOI] Enables and disable the display of Fishing areas of interest. This setting is available when using LightHouse™ orC-MAP® charts.	• *On* • *Off*
[Community edits] Enables and disables display of crowd sourced data. This setting is available when using Navionics® charts.	• *On* • *Off*

Menu item and description	Options
[Chart boundaries] Enables and disables the display of chart boundary lines. This setting is always available and not dependent on the cartography in use.	• *On* • *Off*
[High res bathy] Enables and disables display of High Resolution Bathymetry charts which provides improved bottom detail, contours and structure. This setting is available when using C-MAP® charts.	• On • Off
[Sports fishing] Allows you to display easy-to-use information pages about fishing locations including fish type, size, depth and reef and bottom composition. This setting is available when using C-MAP® charts.	• On • Off

View & Motion tab

Menu item and description	Options
[Chart motion:] Chart motion controls how the chart and boat are drawn in relation to each other. This setting is always available and not dependent on the cartography in use.	• *Relative motion* • *True motion* • *Auto range*
[Chart orientation:] The orientation of the chart affects the alignment of the chart relative to either your vessel heading, your course or North. This setting is always available and not dependent on the cartography in use.	• *North-up* • *Head-up* • *Course-up*
[Boat position] Adjust the boat position to allow more or less 'look ahead' space in front of your boat. This setting is always available and not dependent on the cartography in use.	• *Center* • *Partial offset* • *Full offset*

Menu item and description	Options
[Boat type:] The icon used to represent your vessel can be customized to better reflect your vessel. This setting is always available and not dependent on the cartography in use.	• *Inboard Speed Boat* • *Outboard Speed Boat* • *Power Cruiser* • *Pro Fishing Boat* • *RIB* • Sail Cruiser • Race Sail • Catamaran • *Kayak* • *Pontoon*
[Icon type:] The type of icon used to represent your vessel can be customized. This setting is always available and not dependent on the cartography in use.	• *Icon (large)* • *Icon (small)* • *Outline* • *Teardrop*

Depths tab

Menu item and description	Options
[Show soundings] Enables and disables the display of depth soundings on the chart. When set to [Manual], depth soundings will be shown from [Zero to] the maximum depth you specify. This setting is always available and not dependent on the cartography in use.	• *None* • *Manual* • *All*
[Show contours] Enables and disables the display of depth contours on the chart. When set to [Manual], contours will be shown from [Zero to] the maximum depth you specify. This setting is available when using LightHouse™, C-MAP® and Navionics® charts.	• *None* • *Manual* • *All*

Menu item and description	Options
[Shallow area] Enables and disables identification of areas deemed to be shallow. When enabled, a red hatched area is displayed in areas shallower than the depth specified in the *[Zero to]* field. This setting is available when using Navionics® charts.	• *On* • *Off*
[Shallow contour] Determines the depth at which the Shallow contour is displayed. The Shallow contour cannot be set to a value greater than the Safe contour or Deep contour value. This setting is available when using LightHouse™ and legacy LightHouse™ charts.	Numeric depth value
[Safe contour] Determines the depth at which the Safe contour is displayed. The Safe contour cannot be set to a value that is less than the Shallow contour or greater than the Deep contour. This setting is available when using LightHouse™ and legacy LightHouse™ charts.	Numeric depth value
[Deep contour:] Determines the depth at which the deep contour. This setting is always available and not dependent on the cartography in use.	Numeric depth value
[Deep water color] Allows you to specify the color used to identify deep water This setting is available when using C-MAP® and Navionics®charts.	• *Blue* • *White*
[Depth gradient] Allows you to specify the gradient shade between shallow water and deep water. This setting is available when using LightHouse™and legacy LightHouse™ charts.	• *Dark to light* • *Light to dark*

Menu item and description	Options
[Record depth data] Enables depth and position data to be recorded to memory card This setting is available when using LightHouse™ and legacy LightHouse™ vector charts.	• *On* • *Off*
[SD card:] When a suitable MicroSD card has been inserted the free space available for recording depth data and RealBathy is displayed. This setting is available when using LightHouse™ and legacy LightHouse™ vector charts.	N/A
[Waterline to tdcr:] Enter the distance between the waterline and your depth transducer. This setting is available when using LightHouse™ and legacy LightHouse™ vector charts.	0 ft to 9.9 ft
[RealBathy:] Displays previously recorded RealBathy™ data saved on memory card on the chart. This setting is available when using LightHouse™ and legacy LightHouse™ vector charts.	• *On* • *Off*
[Visibility] Determines the transparency of the RealBathy data displayed onscreen. This setting is available when using LightHouse™ and legacy LightHouse™ vector charts.	• *0% to 100%*
[Height correction:] Determines the level of height correction applied to RealBathy and depth data. This setting is available when using LightHouse™ and legacy LightHouse™ vector charts.	• *None* • *Tidal* • *Lake level*
[Density] Selects the density of available depth contours. This setting is available when using LightHouse™ and legacy LightHouse™ vector charts.	• *Low* • *Medium* • *High* • *Very high*

Menu item and description	Options
[Fishing Zone:] You can set up a Fishing zone by enabling [Fishing zone] and specifying a minimum depth and maximum depth. Areas on the chart that are between these depths will be colored White, areas outside of these depths will be colored Blue. This setting is available when using Navionics® cartography.	• On • Off
[Sonar logging] Allows logging of depth and position data to your Navionics chart card. This setting is available when using Navionics® charts.	• On • Off
[SonarChart Live] Enables and disables Navionics SonarChart Live feature which enables real time creation and display of high resolution bathymetry charts. This setting is available when using Navionics® charts.	• On • Off
[Tide correction] Enables Sonar logging depth measurements to be offset by tide height data from nearby tide stations. This setting is available when using Navionics® cartography.	• On • Off
[Density] Selects the density of available depth contours. This setting is available when using Navionics® charts.	• Low • Medium • High • Very high
[2D shading] Enables and disables 2D shading. This setting is available when using Navionics® charts.	• On • Off
[Density] Determines the density of available depth contours. This setting is available when using Navionics®charts.	• Very high • High • Medium • Low

Databoxes tab

• *[1:]* — Determines the data item displayed in databox 1.

• *[2:]* — Determines the data item displayed in databox 2.

• *[3:]* — Determines the data item displayed in databox 3.

• *[4:]* — Determines the data item displayed in databox 4.

• *[Reset all]* — Selecting will reset all databoxes to factory defaults.

7.10 SonarChart™ Live

You can create personal bathymetry charts using your depth transducer and the SonarChart™ Live feature, available with compatible Navionics® electronic cartography cards.

Note: Before using SonarChart™ Live ensure you have correctly configured your transducer depth settings.

When using SonarChart™ Live, new contour lines are drawn in real time on the screen based on your transducer's depth readings. Color shading is used to reflect depth, with dark red signifying the shallowest area. The sonar data is recorded to your cartography card and is shared with Navionics when you update your chart card online.

Tide correction

SonarChart™ Live records the actual readings from your depth transducer under current tide / water level conditions. You can enable automatic adjustment of depth readings based on normalized low tide / low water level depth data taken from a nearby Tide station.

Enabling SonarChart Live

SonarChart™ Live enables creation of real time bathymetry contours.

With your transducer depth settings correctly configured and compatible cartography selected:

1. Select the *[Depths]* tab from the chart app settings menu: *[Chart app > Menu > Settings > Depth]*.
2. Enable the *[Sonar logging]* toggle switch.
3. Select the *[SonarChart Live]* field and select *[On]* from the pop-over options.

The SonarChart™ Live options are:

- *[Off]* — SonarChart™ Live contours are not displayed onscreen and are not being created.

- *[On]* — SonarChart™ Live contours are being recorded and displayed in realtime.

- *[History]* — SonarChart™ Live contours are not being recorded but historical recordings are displayed onscreen.

4. Select the *[Visibility]* setting field, and adjust to your preferred value.

5. Enable *[Tide correction]*.

   When enabled tide correction will automatically adjust depth readings based on normalized low tide / low water level data taken from a nearby Tide station.

6. Select a *[Density]* level.

CHAPTER 8: FISHFINDER APP

CHAPTER CONTENTS

8.1 Sonar technologies

Traditional sonar technology

Traditional sonar uses a single carrier frequency or carrier wave for the sonar ping. The sonar works by measuring the time it takes the ping echo to return to the transducer to determine target depth.
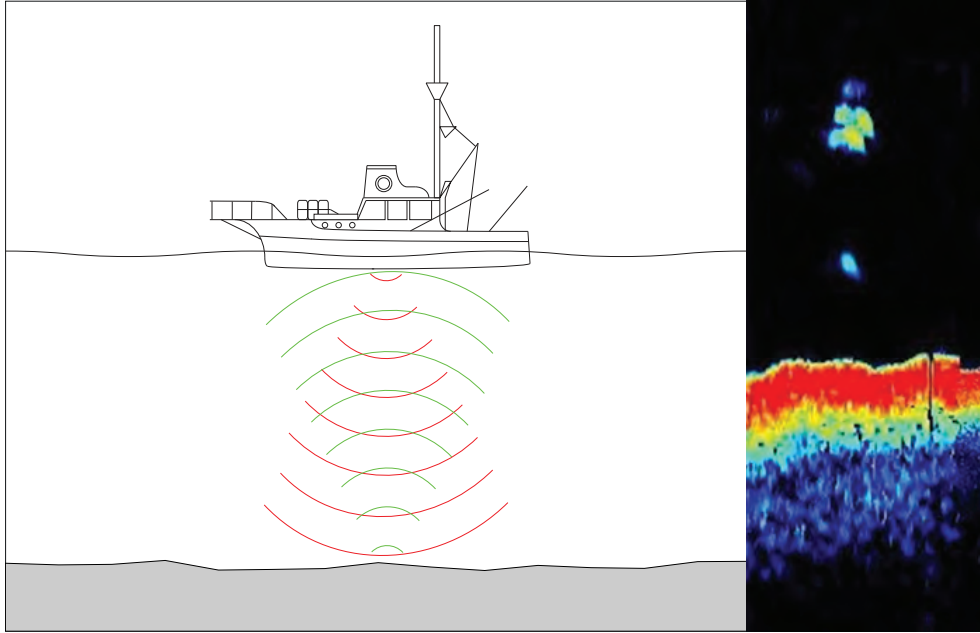
CHIRP technology

CHIRP sonars use a swept frequency 'CHIRP' signal which can distinguish between multiple close targets. This enables the sonar to display multiple targets instead of large combined targets that you would see when using traditional non-CHIRP sonar.

Benefits of CHIRP include improvements to target resolution, bottom detection (through bait balls and thermoclines) and detection sensitivity.

CHIRP is utilized by RealVision™ Max 3D, RealVision™ 3D, SideVision™ and DownVision™ transducers.
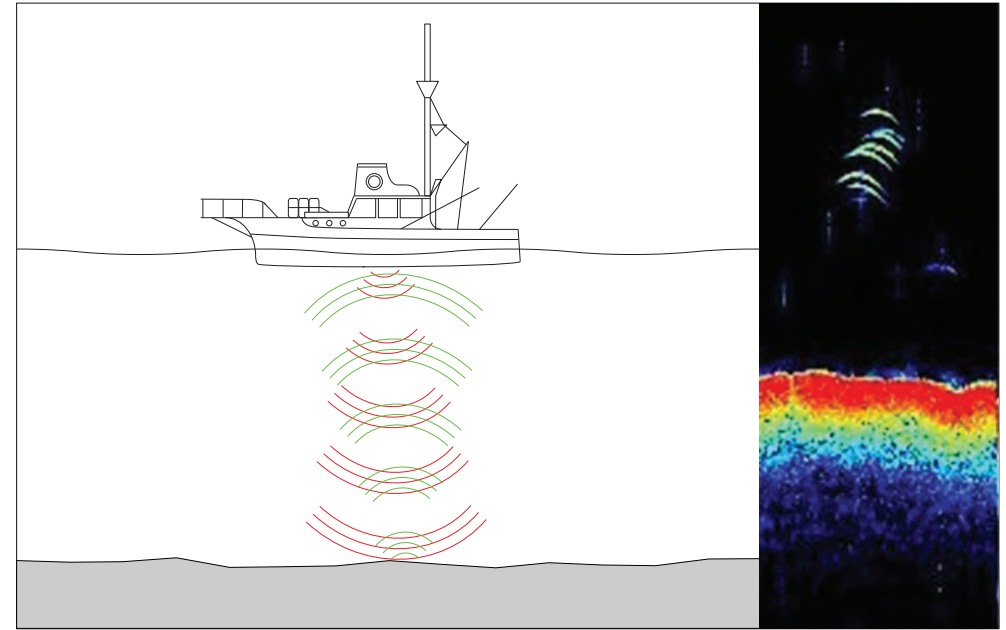
CHIRP Sonar overview

CHIRP sonar produces a conical shaped beam. The coverage of the conical beam is the water column directly beneath the vessel.

Conical beam
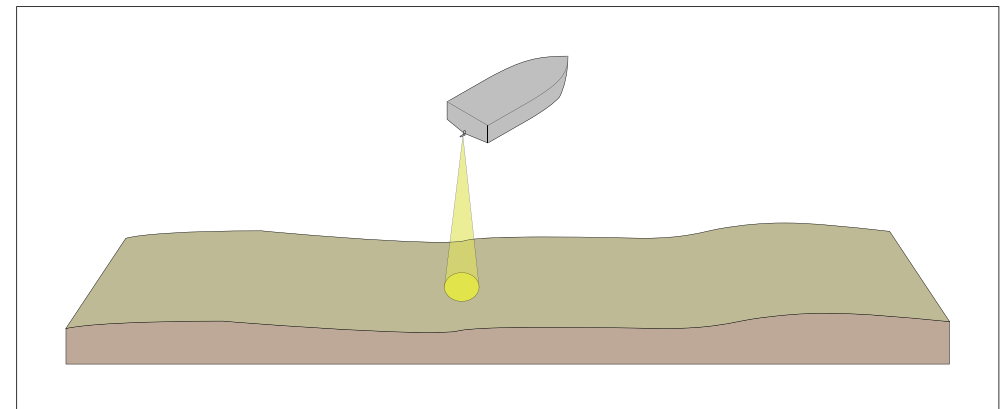
Sonar is effective at a range of speeds. In deeper waters the CHIRP bandwidth is automatically optimized to improve bottom lock and the detection of moving objects (e.g. fish) in the wider water column.

CHIRP sonar screen example

High Chirp RVM 3D Xdc
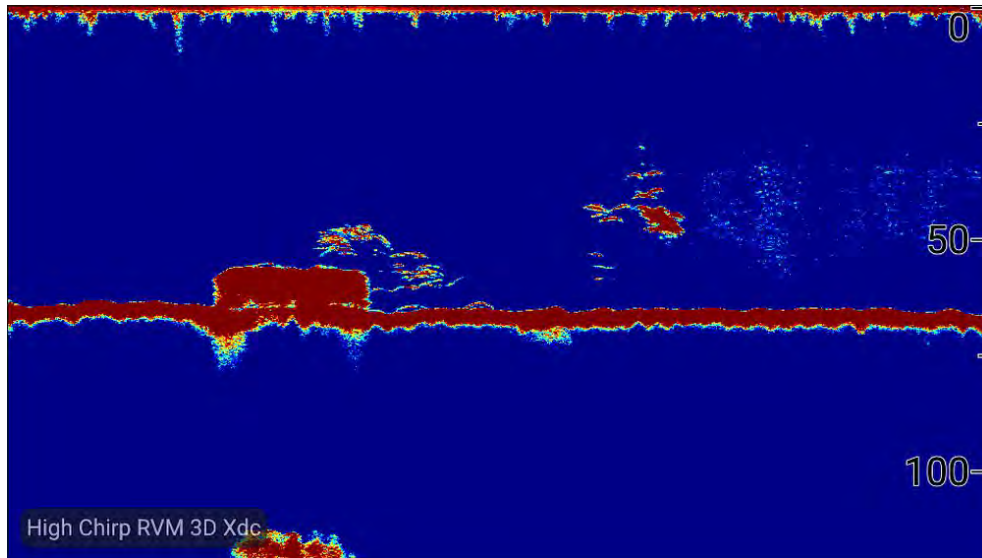
DownVision™ overview

DownVision™ produces a wide-angle side-to-side beam and a thin fore-to-aft beam. The coverage of the DownVision™ beam is a water column directly beneath and to the sides of the vessel.

DownVision™ beam
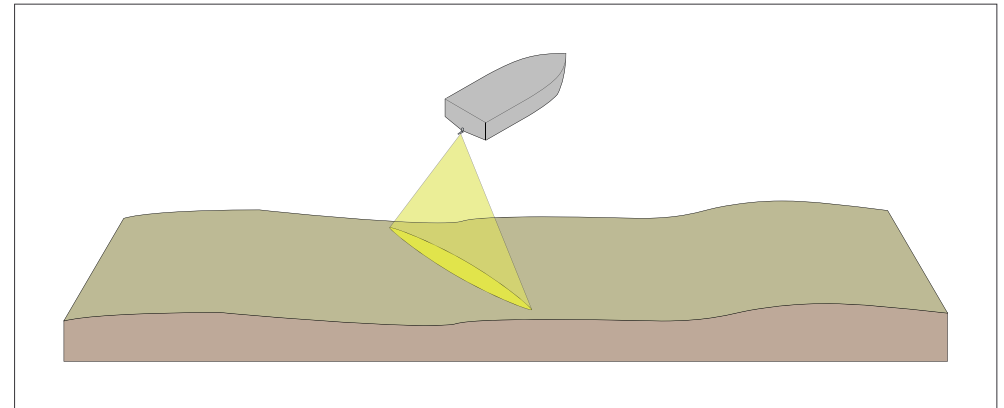
DownVision™ is effective at lower vessel speeds. In deeper waters the CHIRP bandwidth is automatically optimized to improve bottom lock and the detection of moving objects (e.g. fish) in the wider water column.

The wide, thin beam produces clear target returns. The use of CHIRP processing and a higher operating frequency provide a more detailed image, making it easier to identify bottom structures around which fish may reside.

DownVision™ screen example

DownVision RVM 3D Xdc
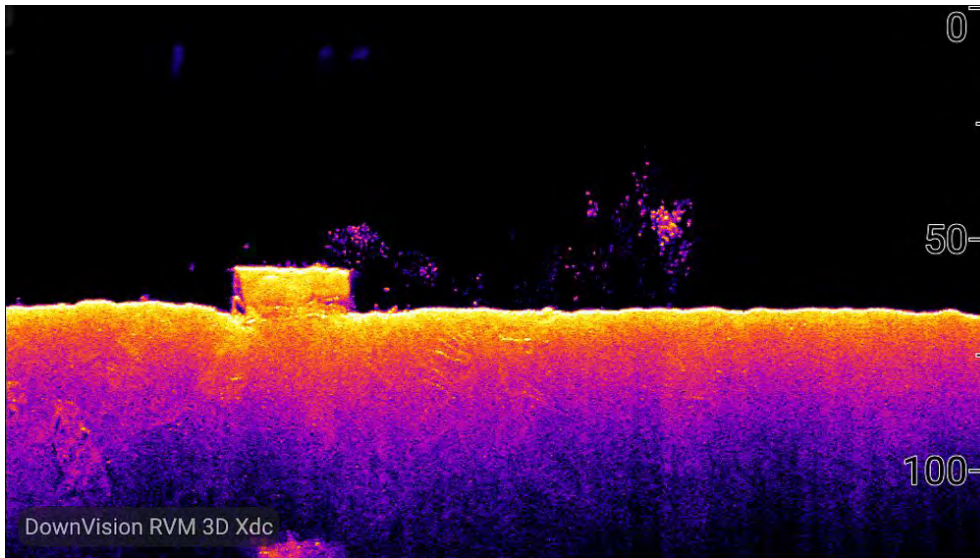
SideVision™ overview

SideVision™ transducers are side looking transducers that produce 2 wide-angle side-to-side beams, each with a thin fore-to-aft beam to build up a detailed underwater view as your vessel moves forward.. The coverage of the SideVision™ beams is an area to both side of your vessel.

SideVision™ beams
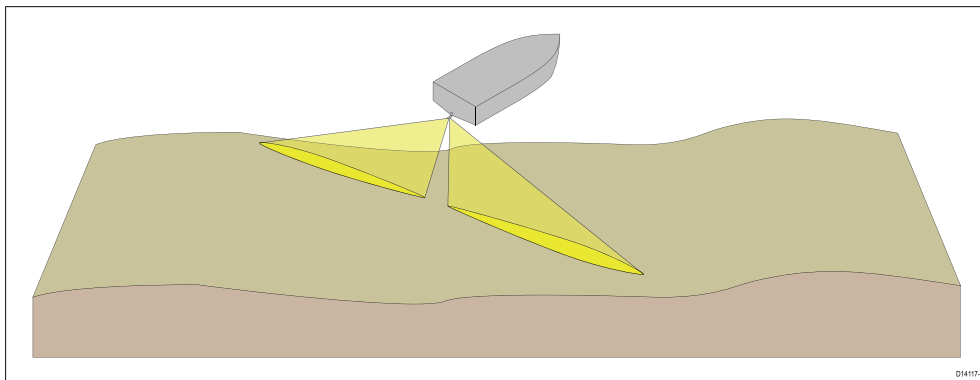
The transducers send pulses of sound waves into the water on each side of your vessel, and records the sound waves that are reflected off objects suspended in the water column and the bottom,, known as sonar returns.

The sonar image is constructed line-by-line, similar to the way a television picture is composed of many horizontal lines. Each successive ping from the transducer adds a new line of image data to the top of your display. Each new line shows sonar returns from both the port and starboard sides of your vessel. As new lines are added with each successive ping, older data gradually scrolls down the display, building up a detailed image of the water column and bottom to the sides of your vessel. If your vessel maintains the same bearing and speed for a period of time, you can interpret the image as a plan of the bottom along your vessel's course. SideVision™ is effective at lower vessel speeds.

Note:

SideVision™ does not provide direct depth readings. The scale shown across the top of the image indicates the distance of features from your vessel.

SideVision™ screen interpretation
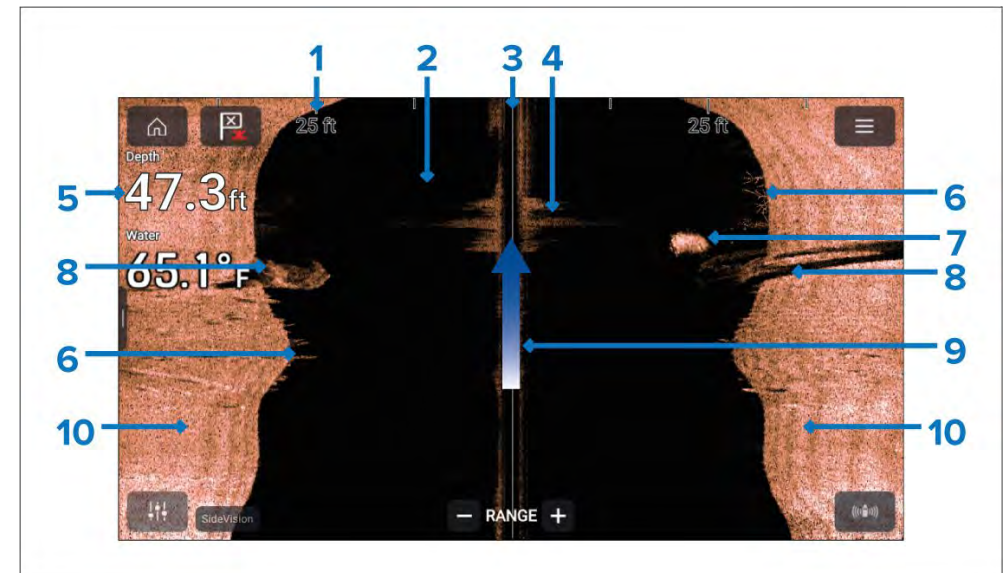
1.   **Range scale** — The range scale indicates distance (range) to port and starboard from your vessel.

2.   **Water** — Using the default color palette black indicates no sonar returns i.e.: clear water.

3. **Centerline** — The solid line represents the centerline of your vessel. left of the centerline represents the water, objects and bottom to the port side of your vessel, right of the centerline represents the starboard side.

4. **Turbulent water** — turbulence in the water caused by such things as vessel wake can produce a sonar return due to the aeration in the water.

5. **Water depth** — When using a separate depth transducer current depth can be displayed in a data overlay.

6. **Vegetation** — Examples of vegetation growth (e.g: trees) on the bottom.

7. **Bait ball** — Example of a bait ball at an approximate distance of 18.5 ft from your vessel.

8. **Structure** — Example of bottom structure. Underwater structures such as pipelines, piers and other large solid structures may cause an area of shadow directed away from your vessel's direction.

9. **Vessel direction** — Vessel direction of travel. The sonar image will scroll from top to bottom as your vessel moves.

10. **Bottom** — Solid mass indicating the bottom, using the default color palette the bottom is colored copper. It may be possible to identify the transition of bottom material (e.g.: where an area of mud meets an area of gravel).

RealVision™ 3D overview

RealVision™ 3D transducers combine DownVision™, SideVision™, high frequency CHIRP Sonar, and RealVision™ 3D to deliver life-like 3D sonar imagery.

RealVision™ 3D provides a true, easy-to-understand view of bottom topography, debris, and fish.

RealVision™ 3D screen example
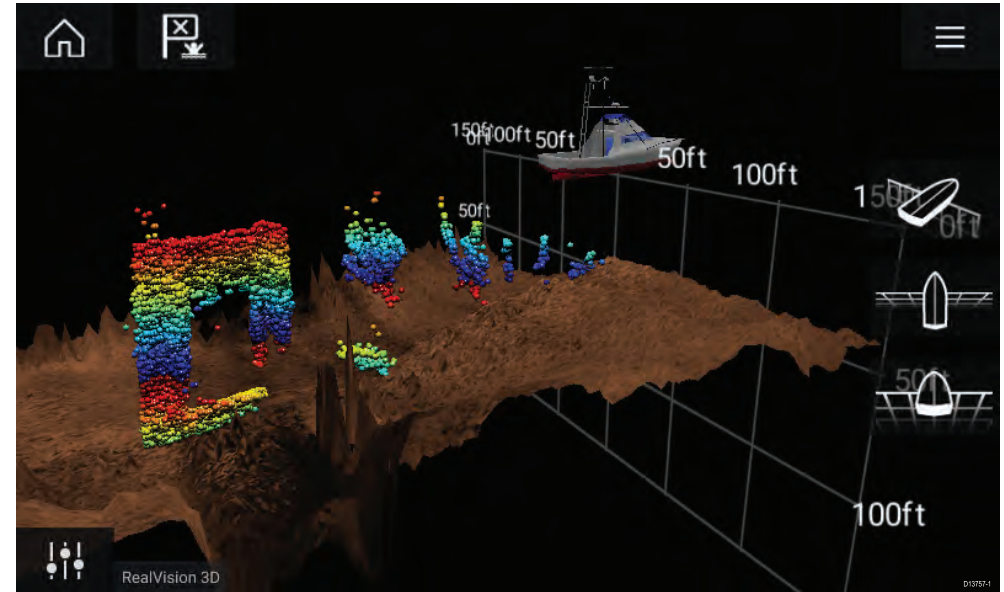
Note:

The "Depth" figure shown in the illustration above assumes that you have a device in your system that provides depth data. Please be aware that not all transducers and / or sonar modules support depth sensing. For more information, refer to the latest specifications and documentation available for your particular products on the Raymarine® website (www.raymarine.com).

8.2 Sonar channel range

Range capabilities of the available sonar channels are shown below.

Note:

Stated range are for optimum conditions and are dependent upon connected transducer.

Sonar module / sonar channel	Minimum depth	Maximum depth
RealVision™ 3D	0.6 m (2 ft)	91 m (300 ft)
SideVision™	0.6 m (2 ft) each side	91 m (300 ft) each side
DownVision™	0.6 m (2 ft)	183 m (600 ft)
HyperVision™ (RealVision™ 3D, SideVision™ or DownVision™)	0.6 m (2 ft)	38 m (125 ft)
CHIRP sonar channel (when using RealVision™ 3D, SideVision™ or DownVision™ transducers	0.6 m (2 ft)	274 m (900 ft)

Sonar minimum depths

Accurate bottom tracking can be unreliable in depths shallower than 0.8 m/2.62 ft. When operating at or below this depth be cautious of misleading sonar returns, false bottom tracking and incorrect depth readings

The Minimum sonar depth alarm is triggered when your vessel reaches or is in water shallower than this depth.

Below are examples of the Sonar app when it is tracking a false bottom in shallow waters.
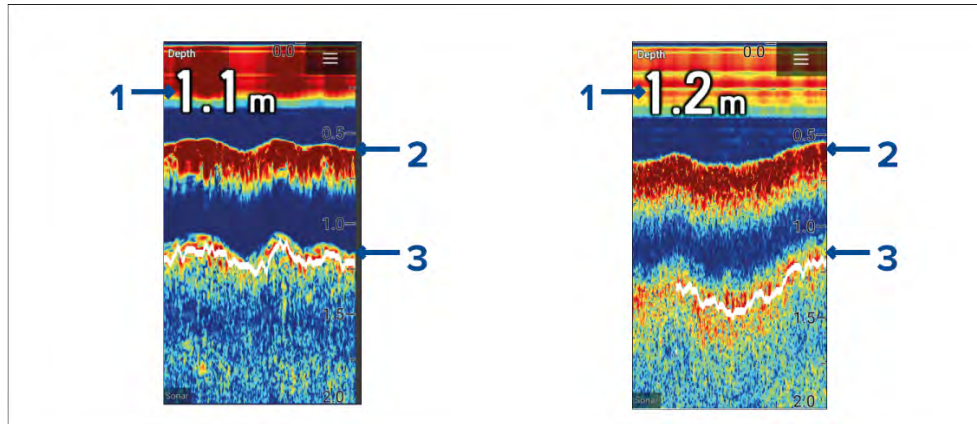
1. Examples of incorrect depth readings due to false bottom tracking.

2. Actual bottom tracking and water depth.

3. False bottom tracking providing false depth readings.

8.3 Fishfinder app overview

The Fishfinder app displays a visualization of the echoes received from the transducer connected to your display and builds an underwater scrolling view of bottom structure and targets that pass under your transducer. Fishfinder channels are available that represent the different sonar technologies that are available depending on your display variant and connected transducer.

Example — Element HV display
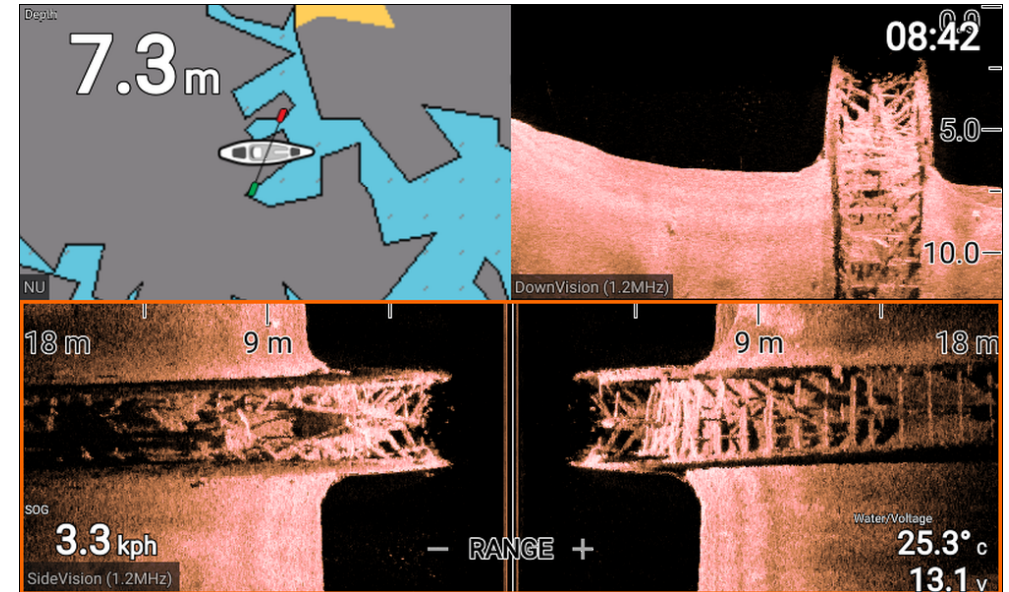
Example — Element S display
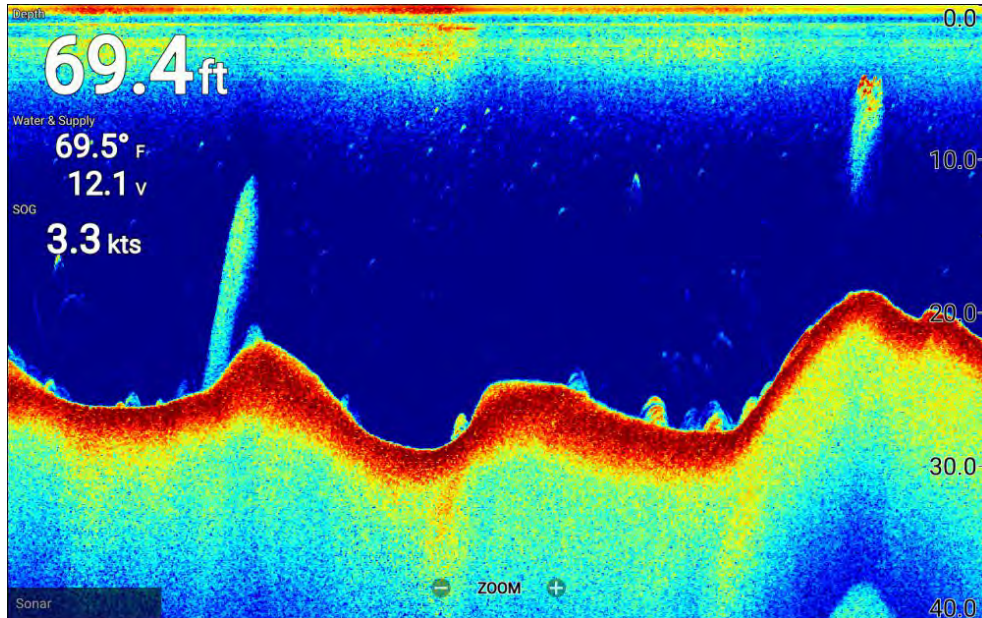
For each instance of the Fishfinder app that is available on the homescreen you can select which fishfinder channel that you want to use. The channel selection will persist over a power cycle.

Opening the Fishfinder app

Select an app page icon from the homescreen that includes the Fishfinder app.

Pre-requisites:

1. Ensure your transducer is compatible (check the latest details available on the Raymarine website). If in doubt please contact an authorized Raymarine dealer for advice.

2. Ensure you have installed and connected your transducer in accordance with its supplied documentation.

When opened the Fishfinder app will scroll across the screen, displaying target returns of objects and bottom structure that has passed under your transducer.
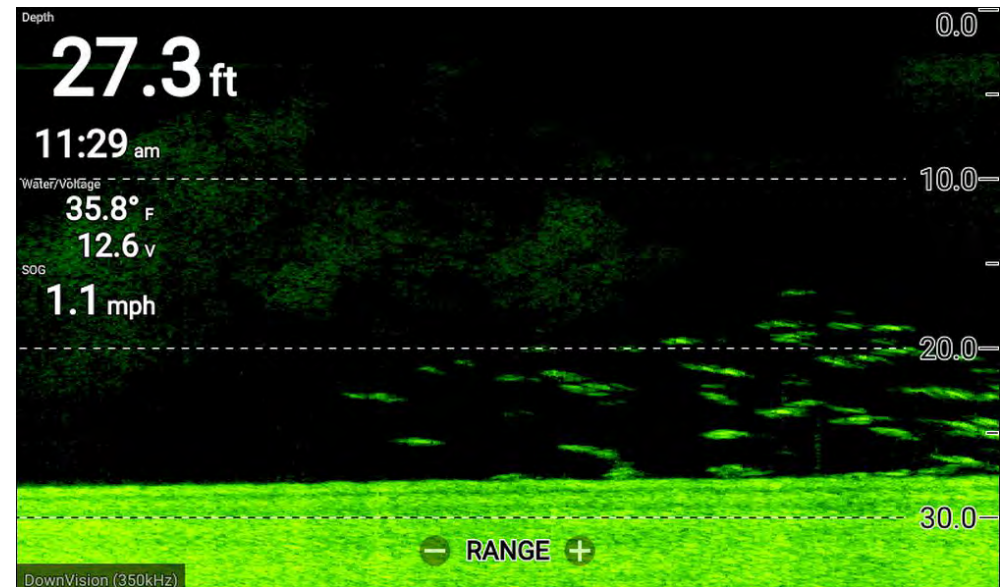
If the '**No transducer connected**' warning is displayed then your transducer has not been detected.

Check your transducer connection(s) are correct and free from damage, then power cycle your display. If the transducer is still not found then refer to your transducer's installation documentation for further troubleshooting information.

Fishfinder channels — Element™ HV displays

The following fishfinder channels are available on Element™ HV displays, depending on your connected transducer.
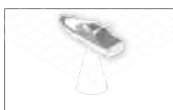
RealVision™ 3D channel (350 kHz / 1.2 MHz)
The RealVision™ 3D channel is available when connected to a HyperVision™ transducer.
The RealVision™ 3D fishfinder channel provides a scrolling 3D view of the water behind and to the sides of your vessel.
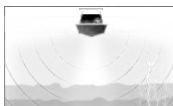
SideVision™ channel (350 kHz / 1.2 MHz)
The SideVision™ channel is available when connected to a HyperVision™ transducer.
The SideVision™ fishfinder channel provides a photo like Scrolling 2D view of the water on each side of your vessel.
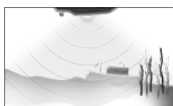
DownVision™ channel(350 kHz / 1.2 MHz)
The DownVision™ channel is available when connected to a HyperVision™ or DownVision™ transducer.
The DownVision™ fishfinder channel provides a photo like scrolling 2D view of the water beneath and to the sides of your vessel.
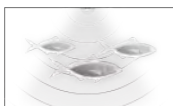
Sonar channel (Conical high CHIRP (200 kHz))
The sonar channel is available when connected to any compatible transducer.
The conical beam fishfinder channel provides a traditional scrolling 2D view of the water beneath your vessel.

Switching fishfinder channel frequency

On Element™ HV variant displays DownVision™, SideVision™ and RealVision™ 3D channels are available in both 350 kHz (Standard) and 1.2 MHz (Hyper) frequencies.

With either DownVision™, SideVision™ or RealVision™ 3D channel displayed:

1. Press the *[Menu]* button.
2. Select the *[Freq:]* option.
3. Select either *[Standard (350 kHz)]* or *[HyperVision (1.2 MHz)]* as required.

   HyperVision™ channels provide higher resolution than standard channels with reduced range.

RealVision™ modes

When the RealVision™ fishfinder channel is selected the RealVision™ fishfinder modes will be available from the main menu.
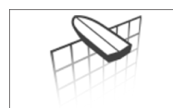
[OFFSET PORT]
Offset port provides a scrolling, 3D view looking at your vessel from the port side.

[OFFSET STBD]
Offset stbd provides a scrolling, 3D view looking at your vessel from the starboard side.
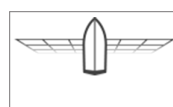
[ABOVE]
Above provides a scrolling, 3D view looking down at your vessel from above.
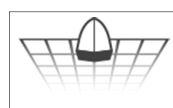
[FOLLOW]
Follow provides a scrolling, 3D view looking at your vessel from off the stern.

SideVision™ modes

When the SideVision™ fishfinder channel is selected the SideVision™ fishfinder modes will be available from the main menu.

[LEFT / RIGHT]
Left / right mode is a photo like, scrolling, 2D view of the water on both sides of your vessel.
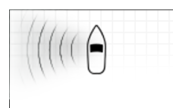
[LEFT]
Left mode is a photo like, scrolling, 2D view of the water on the port side of your vessel.
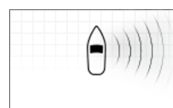
[RIGHT]
Right mode is a photo like, scrolling, 2D view of the water on the starboard side of your vessel.

Ice fishing modes

When the display is configured for ice fishing (via the Startup wizard), the available fishfinder modes are accessible from the main menu. These modes enable you to select different types of sonar view, optimized for ice fishing activities.

[TRAIL / RADIAL]
The trail and radial mode is a splitscreen view that includes a traditional (historical), scrolling, 2D view and an instantaneous (real-time) radial view of the water beneath the transducer. The radial view shows the returns from the sonar signal (using the same color coding as the traditional scrolling view), organized in a circular formation. This view enables you to quickly identify what is currently passing under your transducer (e.g. bottom structure or target etc), in each segment of the depth range.

[TRAIL / ASCOPE]
The trail and A-scope mode is a splitscreen view that includes a traditional (historical), scrolling, 2D view and an instantaneous (real-time) A-scope view of the water beneath the transducer.

[RADIAL]
The radial mode is a fullscreen view that provides an instantaneous (real-time), radial view of the water beneath the transducer. The radial view shows the returns from the sonar signal (using the same color coding as the traditional scrolling view), organized in a circular formation. This view enables you to quickly identify what is currently passing under your transducer (e.g. bottom structure or target etc), in each segment of the depth range.

[A-SCOPE]
The A-scope mode is a fullscreen view that provides an instantaneous (real-time) view of the water beneath the transducer. This allows you to see what is currently passing under your transducer (e.g. bottom structure or target etc), rather than the historical display provided by the traditional, scrolling, 2D view.

Fishfinder channels — Element™ S displays

The following fishfinder channels are available on Element™ S variant displays.

Sonar channel (Conical high CHIRP (200 kHz))
The sonar channel is available when connected to any compatible transducer.

8.4 Fishfinder app controls

The Fishfinder app has 2 control modes, scrolling mode and pause / playback mode. The behavior of some controls are dependent upon control mode and also the fishfinder channel in use. The following controls apply to DownVision™, SideVision™ and sonar channels. The controls below do not apply to RealVision™ 3D channels.

Scrolling mode

Scrolling mode is the default mode when the Fishfinder app is opened. In scrolling mode an image is displayed which scrolls from right to left across the screen.

Control behavior:

- Pressing the *[Plus]* button will switch to zoom mode.
- When in zoom mode pressing the *[Plus]* or *[Minus]* buttons will increase and decrease the zoom level.
- Pressing the *[OK]* button displays the onscreen gain controls on the left side of the screen.
- Pressing the *[Waypoint]* button will place a waypoint at your vessels's current location.
- Pressing the *[Menu]* button will open the app menu.
- Pressing any button on the *[Directional pad]* will switch to pause / playback mode.

Pause / Playback mode

In pause / playback mode the image is temporarily paused and the cursor can be moved around the screen.

Control behavior:

- Pressing the *[Plus]* button will switch to zoom mode and the scrolling image remains paused.

- When in Zoom mode pressing the *[Plus]* or *[Minus]* buttons will increase and decrease the zoom level.

- Pressing the *[OK]* button displays the fishfinder context menu.

- Pressing the *[Waypoint]* button will place a waypoint at the cursor's location.

- Pressing any button on the *[Directional pad]* will move the cursor in that direction.

- With the cursor at the far left of the screen, continuing to press the *[Left]* button will display the scrolling image history, which enables you to view structure and targets you have already passed.

- Pressing the *[Menu]* or *[Back]* button will return the Fishfinder app to scrolling mode.

RealVision™ 3D app controls

When viewing RealVision™ 3D channels the controls behave differently to other fishfinder channels.
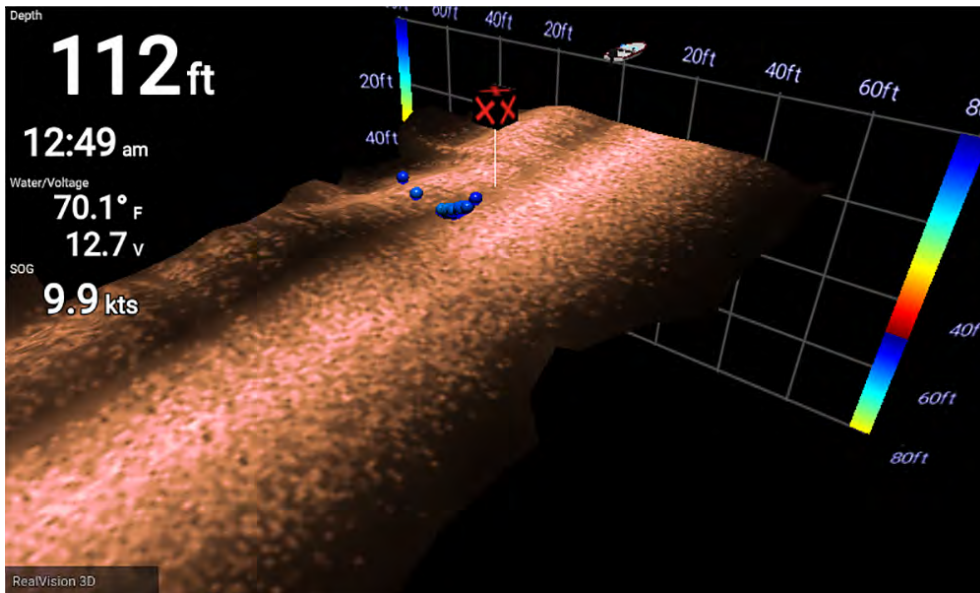
Scrolling mode

Scrolling mode is the default mode when the Fishfinder app is opened. In scrolling mode an image is displayed which scrolls across the screen.

Control behavior:

- Pressing the *[Plus]* or *[Minus]* buttons will increase and decrease the zoom level.

- Pressing any button on the *[Directional pad]* will rotate the image in the respective direction.

- Pressing the *[Waypoint]* button will place a waypoint at your vessels's current location.

- Pressing the *[Menu]* button will open the app menu.

- Pressing the *[OK]* button pauses scrolling and switches to pause / playback mode.

Pause / Playback mode

In pause / playback mode the image is paused and the cursor can be moved around the screen.

Control behavior:

- Pressing the *[Plus]* or *[Minus]* buttons will increase and decrease the zoom level.

- Pressing the *[OK]* button displays the fishfinder context menu.

- Pressing the *[Waypoint]* button will place a waypoint at the cursor's location.

- Pressing any button on the *[Directional pad]* will move the cursor in that direction.

- With the cursor positioned at the opposite edge of the screen to the vessel icon, continuing to move the cursor in the same direction will display the scrolling image history, which enables you to view structure and targets you have already passed.

- Pressing the *[Menu]* button will return the Fishfinder app to scrolling mode and open the app menu.

- Pressing the *[Back]* button will return the Fishfinder app to scrolling mode.

Placing a Waypoint in the Fishfinder app

When you observe something of interest in the Fishfinder app you can place a waypoint at its location so that you can find the area again.

1. Use the *[Directional pad]* to highlight a point of interest onscreen.

   Scrolling is paused, temporarily.

2. Press the *[Waypoint]* button and, if required enter relevant waypoint details.

   Scrolling will resume automatically if no buttons are pressed for approximately 15 seconds.

8.5 Fish detection

Fish detection options are available when using Raymarine® transducers.

The Fish detection feature is only available when using the *[SONAR]* channel.

The Fish detection feature can be accessed from the Fishfinder app menu: *[Fishfinder > Menu > Settings > Fish detection]*

Fish detection options include:

- *[Fish detection beep]* — An audible 2 tone beep is sounded when a sonar target is detected that the fish detection algorithm considers to be a fish.
- *[Fish icons]* — A fish icon is placed onscreen over sonar targets that the fish detection algorithm considers to be fish.
- *[Fish depth labels]* — The depth of sonar targets are displayed next to the target that the fish detection algorithm considers to be fish.
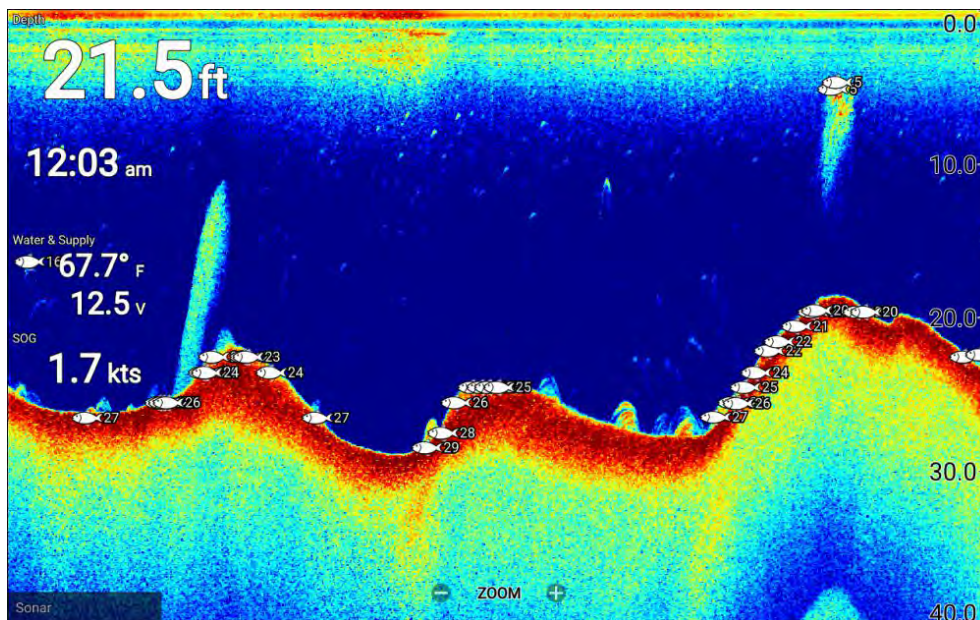
The fish detection feature can be adjusted manually as follows:

- *[Detection sensitivity]* — The detection sensitivity setting determines the size at which sonar targets are considered to be fish. The higher the value, the more sonar targets will be considered to be fish.
- *[Ignore fish shallower than:]* — Specifies the depth at which the fish detection algorithm will be used.
- *[Ignore fish deeper than:]* — Specified the depth at which the fish detection algorithm will stop being used.

Using these options allows you to specify a depth band of water where you will be fishing and the size of the fish you want to catch.

8.6 Sonar scroll back

You can "scroll back" in the Fishfinder app to playback sonar history when the Fishfinder app is in Pause / Playback mode.

To activate pause / playback mode:

- **Sonar / DownVision / SideVision** — Press any *[Directional pad]* button.
- **RealVision 3D** — Press the *[OK]* button.

In pause / playback mode the *[Scroll back bar]* is displayed.

The scrolling image can be played back from any point since the Fishfinder app was opened.

Playing back sonar history

The Fishfinder app's sonar history can be played back.

With the Fishfinder app in scrolling mode:

1. Press any button on the *[Directional pad]* or press the *[OK]* button when viewing a RealVision channel.

   The Fishfinder app will enter Pause / playback mode.

2. Using the *[Directional pad]*, move the cursor in the same direction that the image is scrolling, until you reach the edge of the screen.

   e.g.: when viewing a DownVision channel use the [Left] button on the [Directional pad] to position the cursor on the left edge of the screen, continue to press the [Left] button to start scrolling back through the available sonar history.

8.7 Fishfinder sensitivity controls

Optimum performance is usually achieved using the default settings. You can adjust the image using the Sensitivity controls to improve the displayed image. Sensitivity setting adjustment is also applied to the sonar history that is displayed when using sonar scroll back.

The sensitivity controls can be accessed from the Fishfinder app menu: *[Menu > Adjust sensitivity]*.

The following sensitivity controls are available to help you optimize the sonar image.

Control	Description
G Auto	*[Gain]* The gain control determines the signal strength at which target returns are shown onscreen. The gain control can be set to *[Auto]* or *[Manual]*. In Auto you can apply an offset of up to ± 50%. A higher value produces more target returns and noise onscreen.
I Auto	*[Intensity]* The intensity control sets the lower limit for the color used for the strongest target returns. All target returns above this value are displayed in the strongest color. Those with a weaker value are divided equally between the remaining colors. The intensity control can be set to *[Auto]* or *[Manual]*. In Auto you can apply an offset of up to ± 50%.
SF Auto	*[Surface Filter]* The surface filter control determines the amount of noise displayed onscreen by varying the gain throughout the water column. A lower value decreases the depth at which the control is applied. The control can be set to *[Auto]* or *[Manual]*.
All to AUTO	*[All to Auto]* Sets all Sensitivity controls to *[Auto]* with 0% offset, where applicable.

8.8 Sonar transducer calibration

Sonar transducers should be calibrated to ensure accurate readings are displayed on the MFD.

Depth offset

Depths are measured from the transducer face to the bottom (e.g.: seabed). An offset value can be applied to the depth data so that the displayed depth reading represents the depth reading taken from either the keel (negative offset) or the waterline (positive offset).

Before setting a waterline or keel offset, establish the vertical distance between the transducer and waterline or the bottom of your vessel's keel, as appropriate. Then set this distance as the depth offset value.

1. *[Below waterline]* — The depth reading will be increased from the transducer's default reading.

2. *[Below transducer]* — This is the default reading from the transducer (zero offset applied).

3. *[Below keel]* — The depth reading will be decreased from the transducer's default reading.

Configuring transducer settings

For systems with a transducer connected, as part of setting up your system for the first time it is important that you correctly configure your transducer.

Transducer configuration settings are available from the **Fishfinder app**.

1. Select *[Transducer]* from the Fishfinder app's *[Settings]* menu: *[Menu > Settings > Transducer]*

2. If your installation required you to install an all-in-one transducer backwards (e.g.: this may occur when connecting the transducer to a trolling motor), then select *[Backwards]* from the *[HV transducer alignment]* option. This ensures that the port and starboard channels appear correctly orientated onscreen, otherwise keep the default setting: *[Forwards]*.

3. Select where you want your depth measurements taken from:
    i.   *Below transducer (default)* — No offset required
    ii. *Below keel* — Enter the distance between the transducer face and the bottom of the keel.
    iii. *Below waterline* —Enter the distance between the bottom of your keel and the waterline.

4. You can configure temperature settings as follows:
    i.   Enable or disable temperature readings as required.
    ii. If enabled, check the temperature reading against the actual water temperature.
    iii. If the current reading requires adjustment, select *[Calibrate temp]* and enter the difference between your 2 readings.

8.9 Fishfinder settings menu

The table below details the settings available in the Fishfinder app.

> **Note:**
>
> The availability of some fishfinder settings are dependent on the fishfinder channel being viewed.

Sonar display tab (RealVision™ 3D channel)

Menu item and description	Options
[Boat icon] Choose which boat icon to use.	List of available boat icons.
[Target colors] Changes the color palette used for target returns.	• Rainbow (default) • Burnt Yellow • Cool Blue • Lime Green • Ruby Red
[Color targets by] Changes the way targets are colored. [Depth] colors targets according to their depth, a gradient scale can be shown on the 3D grid to aid depth identification. [Intensity] colors targets according to their size, the bigger the target the darker the color used.	• Depth (default) • Intensity
[Bottom colors] Changes the color used for bottom structure.	• Copper • Inv Copper • Slate Gray • Lime Green • Inv Lime Green • Burnt Yellow (default) • Inv Burnt Yellow • Cool Blue • Inv Cool Blue

Menu item and description	Options
	• Ruby Red
[Background] Changes the color used for the app background.	• Black (default) • Blue • White • Gray
[Target size] Determines the size that target returns will appear onscreen. The higher the number the larger the target returns appear.	Value between 0 to 25 (5 (default))

Sonar display tab (SideVision™ channel)

Menu item and description	Options
[Color palette] Various color palettes are available to suit different conditions or your personal preference.	• Copper • Inv Copper • Slate Gray • Lime Green • Inv Lime Green • Burnt Yellow (default) • Inv Burnt Yellow • Cool Blue • Inv Cool Blue • Ruby Red
[Range lines] Displays vertical range lines onscreen.	• On • Off (default)
[Color threshold] Color threshold determines the signal strength below which target returns are not shown. A low value results in only the strongest colors or lightest shades being displayed.	Value between 0% to 100%.(100% (default))
[Scroll speed] Determines the scrolling speed for the Sonar image.	Value between 0% to 500% (100% (default)).

Sonar display tab (DownVision™ channel)

Menu item and description	Options
[Color palette:] Various color palettes are available to suit different conditions or your personal preference.	• *Copper* • *Inv Copper* • *Slate Gray* • *Lime Green* • *Inv Lime Green* • *Burnt Yellow (default)* • *Inv Burnt Yellow* • *Cool Blue* • *Inv Cool Blue* • *Ruby Red*
[Depth lines:] Displays horizontal depth lines.	• *On* • *Off (default)*
[Temperature graph:] When enabled overlays a temperature line on the scrolling sonar image. The temperature line will help to determine change in water surface temperature. In Pause / playback mode temperature labels are displayed on the temperature line.	• *On* • *Off (default)*
[Manual temp range:] When enabled you can specify a fixed manual minimum and maximum limit for water surface temperature. The Maximum and Minimum limits are displayed in the temperature graph. The temperature graph overlay must be enabled before manual temperature range can be enabled.	• *On* • *Off (default)*
[Maximum temp:] Specifies the fixed maximum water temperature limit for the temperature graph.	Temperature value.

Menu item and description	Options
[Current temp:] Displays the temperature currently being recorded by your transducer's temperature sensor.	Temperature value.
[Minimum temp:] Specifies the fixed minimum water temperature limit for the temperature graph.	Temperature value.
[Beep:] When manual temperature range has been selected the display can trigger an audible beep when the current temperature reading passes the minimum and maximum temperature thresholds.	• *On* • *Off (default)*
[Color threshold] Color threshold determines the signal strength below which target returns are not shown. A low value results in only the strongest colors or lightest shades being displayed.	Value between 0% to 100%.(*100% (default)*)
[Scroll speed] Determines the scrolling speed for the Sonar image.	Value between 0% to 500% (*100% (default)*).

Sonar display tab (Sonar high CHIRP channel)

Menu item and description	Options
[Color palette] Various color palettes are available to suit different conditions or your personal preference.	• *Classic Blue (default)* • *Classic Black* • *Classic White* • *Sunburst* • *Grayscale* • *Inv. Grayscale* • *Copper* • *Night Vision*
[A-scope] A-Scope mode provides a splitscreen view that includes the normal scrolling sonar image and a smaller pane which shows a 'live' image of what is directly below your transducer.	• *Off (default)* • *Center* • *Right* • *Cone*
[Depth lines] Displays horizontal depth lines.	• *On* • *Off (default)*
[White line] Displays a solid white line along the detected bottom contour.	• *On* • *Off (default)*
[Bottom fill] Fills the area below the detected bottom contour with a solid color.	• *On* • *Off (default)*
[Temperature graph:] When enabled overlays a temperature line on the scrolling sonar image. The temperature line will help to determine change in water surface temperature. In Pause / playback mode temperature labels are displayed on the temperature line.	• *On* • *Off (default)*

Menu item and description	Options
[Manual temp range:] When enabled you can specify a manual minimum and maximum limit for water surface temperature. The temperature graph overlay must be enabled before manual temperature range can be enabled.	• *On* • *Off (default)*
[Maximum temp:] Specifies the fixed maximum water temperature limit for the temperature graph.	Temperature value.
[Current temp:] Displays the temperature currently being recorded by your transducer's temperature sensor.	Temperature value.
[Minimum temp:] Specifies the fixed minimum water temperature limit for the temperature graph.	Temperature value.
[Beep:] When manual temperature range has been selected the display can trigger an audible beep when the current temperature reading passes the minimum and maximum temperature thresholds.	• *On* • *Off (default)*
[Color threshold] Color threshold determines the signal strength below which target returns are not shown. A low value results in only the strongest colors or lightest shades being displayed.	Value between 0% to 100%.(*100% (default)*)
[Scroll speed] Determines the scrolling speed for the Sonar image.	Value between 0% to 500% (*100% (default)*).

Transducer tab

Menu item and description	Options
[Transducer:] Displays the type of connected transducer.	N/A
[Display depth as:] Determines the position from where depth readings are taken.	• *Below keel* • *Below waterline* • *Below transducer (default)*
[HV transducer alignment:] You can select which orientation your HyperVision™ transducer has been installed in. E.g.: if you have installed the transducer on a trolling motor, the transducer may have been installed with the bow arrow pointing towards the stern of the trolling motor instead of the bow. *[Forwards]* should be selected if the transducer's bow arrow is pointing towards the bow. *[Backwards]* should be selected if the transducer's bow arrow is pointing towards the stern.	• *Forwards (default)* • *Backwards*
[Enable temperature sensor:] Enables and disables the selected transducer's temperature sensor.	• On • Off
[Current temperature:] Displays the transducer's current temperature reading.	N/A
[Calibrate temp] Allows you to enter an offset between the actual measured water temperature and the current temperature displayed by your transducer.	Offset temperature value.

Sounder tab

Menu item and description	Options
[Ping enable:] Enables and disables transducer ping.	• *On (default)* • *Off*
[Ping rate limit:] Allows you to restrict the transducer's maximum ping rate to suit current conditions.	Value between 1 and 100 (*80 (default)*).
[Interference rejection] Removes interference caused by other transducers on your vessel or from vessels equipped with transducers close by.	• *Auto (default)* • *Low* • *Medium* • *High* • *Off*
[2nd echo rejection] The control helps to remove false target returns or false bottom that can be caused by signal reflection.	• *Off* • *Low (default)* • *High*
[Reset sounder] Resets the sonar module to factory default settings.	• *Yes* • *No*

Note:

The fish detection tab is only available when viewing a high CHIRP sonar channel.

Fish detection tab

Menu item and description	Options
[Fish detection beep:] Enables and disables audible beep when a target is detected that is considered to be a fish.	• *On* • *Off (default)*
[Fish icons:] Enables and disables display of a fish icon over targets considered to be fish.	• *On* • *Off (default)*

Menu item and description	Options
[Fish depth labels:] Enables and disables display of depth labels next to targets considered to be fish.	• *On* • *Off (default)*
[Detection sensitivity:] Determines how sensitive the fish detection algorithm is. The higher the value, the more target returns will be considered to be fish.	Values from 0 to 10 (*8 (default)*).
[Ignore fish shallower than:] Targets returns found in water shallower than the specified depth will not be considered to be fish. **Note:** The shallow limit cannot be greater than the deep limit.	0 ft to 1000 ft (*3.3 ft (default)*) or equivalent units.
[Ignore fish deeper than:] Targets returns found in water deeper than the specified depth will not be considered to be fish. **Note:** The deep limit cannot be less than the shallow limit.	0 ft to 1000 ft (*984 ft (default)*) or equivalent units.

Databoxes tab

Description	Option
Determines the data item displayed in databox 1.	*[1:]*
Determines the data item displayed in databox 2.	*[2:]*
Determines the data item displayed in databox 3.	*[3:]*

Description	Option
Determines the data item displayed in databox 4.	*[4:]*
Selecting will reset all databoxes to factory defaults.	*[Reset all]*

CHAPTER 9: DASHBOARD APP

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9.1 Dashboard app overview

The Dashboard app enables you to view system data. System data may be generated by your display or by devices connected to your display via SeaTalkng ® / NMEA 2000.

> **Note:**
>
> For data to be available in the Dashboard app it must be transmitted to your display from compatible hardware using supported protocols and messages.
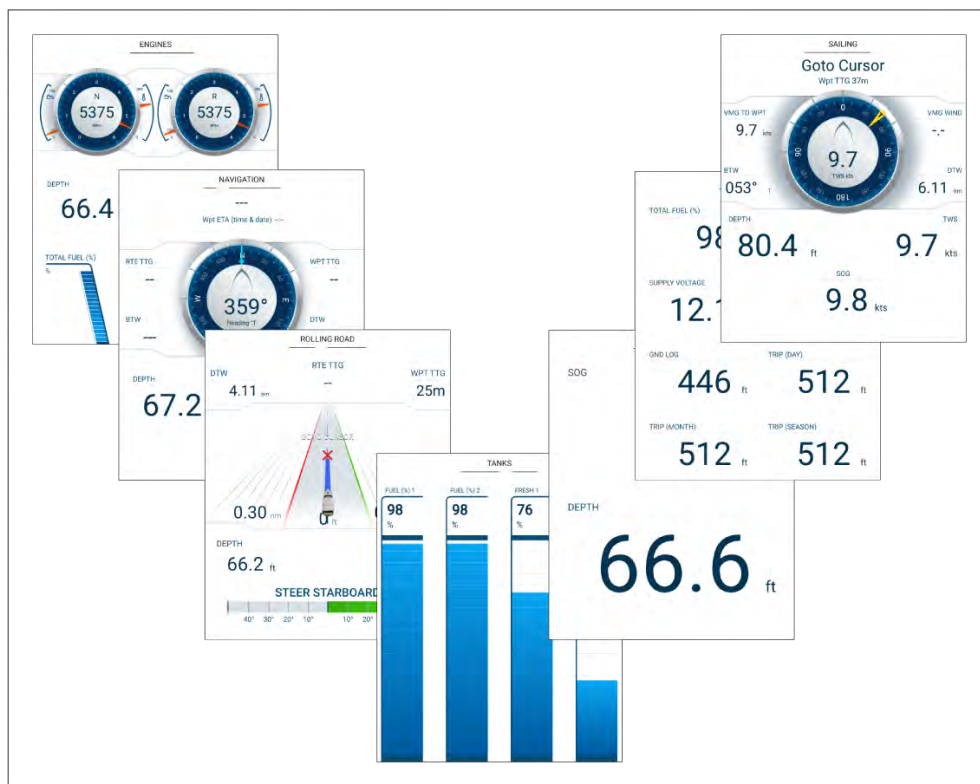
You can configure which data pages you want visible in the Dashboard app, the Data page selection will persist over a power cycle.

The Dashboard app is pre-configured, based on start up wizard selections, with a number of customizable data pages.

Switching data page

When the Dashboard app is the active app you can cycle through the available data pages.

1. Use the *[Left]* and *[Right]* buttons to cycle through the available data pages.

Alternatively, you can select a page you want to display using the page icons found in the app menu.

Hiding and showing data pages
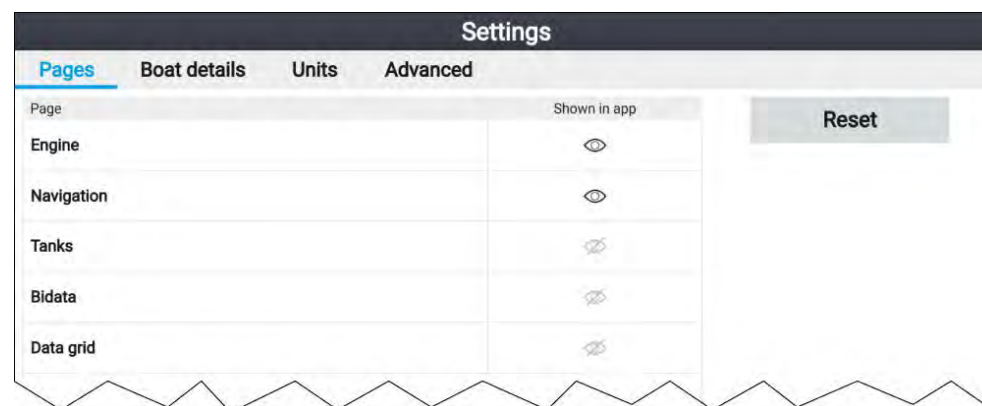
With the Dashboard app displayed and active:

1. Press the *[Menu]* button.
2. Select the *[Settings]* icon.

   The menu is opened on the *[Pages]* tab.
3. Using the *[Up]* button and *[Down]* button, highlight the page you want to hide or show.
4. Press the *[OK]* button.
5. Select either *[Hide page]* or *[Show page]*.
6. Press the *[Menu]* button to close the menu.

9.2 Navigation and sailing dials

Dials are available for the navigation and sailing pages which provide a compass dial that includes various data indicators.
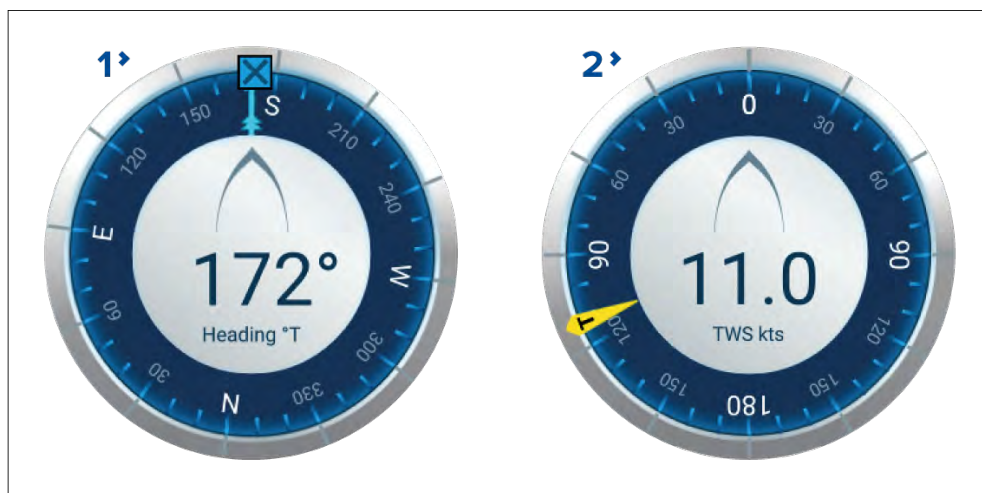
1. **Navigation dial** — The navigation dial provides a full compass with Heading read out, COG indicator and destination waypoint indicator.

2. **Sailing dial** — The sailing dial provides a full compass with wind speed read out and wind angle indicator. The sailing dial can be switched between displaying True wind and Apparent wind.

Dial indicators:

	COG indicator Visual identification of your course over the ground. The COG indicator is available on the navigation dial when COG data is available.
	Destination waypoint indicator Visual identification of the course to your current destination. The Destination waypoint indicator is available during active navigation (i.e.: Navigating to a waypoint, performing a goto or following a route).

	True wind angle indicator Visual identification of the true wind angle. The indicator is available on the sailing dial when wind data is available and the dial is set to TWS.
	Apparent wind angle indicator Visual identification of the apparent wind angle. The indicator is available on the sailing dial when wind data is available and the dial is set to AWS.

Switching between TWS and AWS sailing dials

The sailing dial can be configured to display either True wind data or Apparent wind data.

From the Dashboard app with the sailing page displayed:

1. Press the *[Menu]* button.
2. Select *[Customize page]*.

   The Dashboard app page will enter edit mode with the sailing dial highlighted.
3. Press the *[OK]* button.
4. Select *[Edit]* from the pop-over menu.
5. Select *[Wind]*.
6. Select *[TWS]* to display the True wind dial, or select *[AWS]* to display the Apparent wind dial.
7. Press the *[Back]* button to exit edit mode.

9.3 Rolling road

The rolling road dashboard page provides a graphical representation of your vessel's course and indicates if your vessel has deviated from its course.

With your display receiving accurate heading and position data, you can use the rolling road page to monitor your course and accurately steer to a target destination.

Goto cursor / Goto waypoint	Follow route
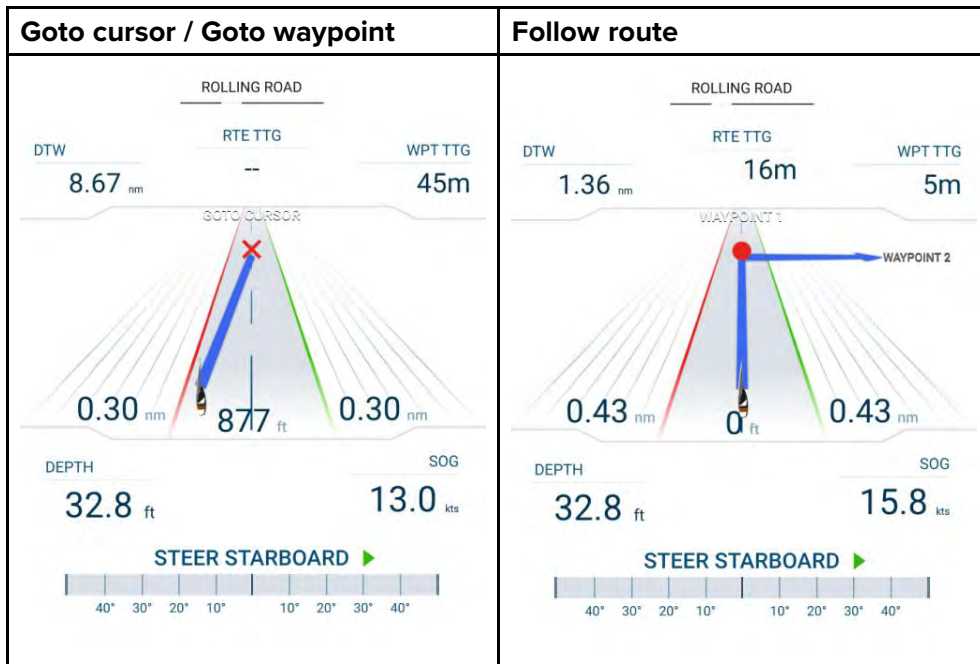
The rolling road graphic represents a width of water, equal to the limit specified in the cross track error (XTE) alarm, on each side of your vessel. The Cross track error alarm can be configured from the alarms menu: *[Homescreen > Settings > Alarms > Cross-track error:]*.

During active navigation (performing a *[Goto]* or *[Follow]*) , navigational data and steering advise are provided on the page.

Follow the steering advise to correct any course deviation that occurs and maintain your course to the target destination.

9.4 Customizing existing data pages

The data items displayed on each page can be changed.
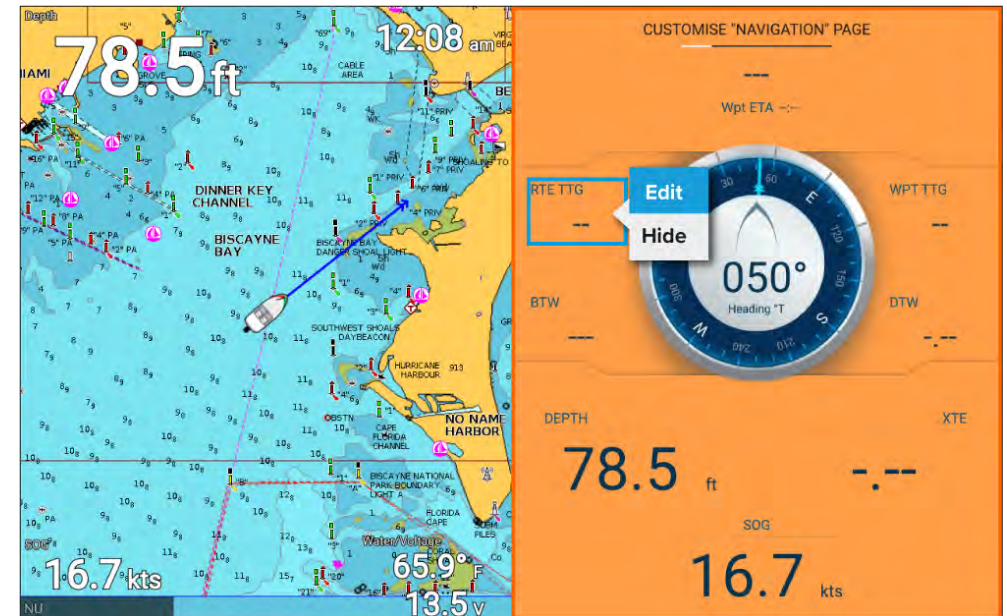
1. Select *[Customize page]* from the Dashboard app menu: *[Menu > Customize page]*.
2. Select the data item that you want to change.
3. Select *[Edit]* from the data item pop-over menu.
4. Select the new data item that you want to display.

9.5 Data items

The following data items can be displayed in Databoxes.

Note:

Where more than 1 data source is available for a data item, based on the specified Boat details (*[Homescreen > Settings > Boat details]*), then data items will be available for each data source.

Category	Data item
[Battery] • [Battery 1] • [Battery 2] • [Battery 3]	• Time till zero charge • State of charge • Battery temperature • Battery voltage • Battery current
[Boat]	• Fresh water (%) • Live well (%) • Gray water (%) • Black water (%)
[Depth]	• Depth
[Display]	• Supply voltage
[Distance]	• Trip (season) • Trip (month) • Trip (day) • Ground Log
[Engine] • [Port engine] • [Starboard engine] • [All engines]	• Engine hours • Engine RPM (Revolutions per minute) • Boost pressure • Oil temperature • Oil pressure • Alternator • Coolant pressure • Coolant temperature • Engine load • Engine trip • Fuel flow • Fuel flow (inst)

Category	Data item
	• Fuel flow (avg) • Fuel pressure • Gear • Trans oil pressure • Trans oil temperature
[Fuel] • [Tank 1] • [Tank 2] • [All Tanks]	[Tank 1] and [Tank 2]: • Fuel level (%) [All Tanks]: • Engine economy total • Fuel flow total • Time to empty • Distance to empty • Fuel used (season) • Fuel used (trip) • Est. fuel remaining • Total fuel (%)
[Environment]	• Max water temp • Min water temp • Water temp • Set • Drift • Water & Supply (Water temp and supply voltage) • Sunrise/set
[GPS]	• Course over ground • Average SOG (Average Speed Over Ground) • Maximum SOG • SOG

Category	Data item
	• *Vessel position* • *Course over ground SOG*
[Heading]	• *Heading*
[Navigation]	• *Route ETA* (Route Estimated Time of Arrival) • *Route TTG* (Route Time To Go) • *Active waypoint* • *Waypoint TTG* • *Estimated arrival time* • *Distance to waypoint* • *Cross track error* • *Bearing to waypoint* • *Wpt info* (Waypoint information)
[Speed]	• *VMG to waypoint* (Velocity Made Good to Waypoint) • *VMG to windward* (Velocity Made Good to Wind) • *Avg speed* • *Max speed* • *Speed thru water*
[Time]	• *Time* • *Date* • *Time and Timer*
[Wind]	• *Cardinal* • *Beaufort* • *Ground wind direction* • *True wind direction* • *Minimum true wind angle* • *Maximum true wind angle*

Category	Data item
	• *True wind angle* • *Maximum true wind speed* • *Minimum true wind speed* • *True wind speed* • *Minimum app wind angle* • *Maximum app wind angle* • *App wind angle* • *Minimum app wind speed* • *Maximum app wind speed* • *App wind speed*

9.6 Dashboard app settings menu

Pages tab

[Navigation]	The pop-over menu provides the following options:
[Tanks]	
[Bidata]	• *[Hide page / Show page]* — When hidden the page will not be displayed in the Dashboard app.
[Data grid]	
[Engines]	• *[Move up]* — Moves the page up in the page order. • *[Move down]* — Moves the page down in the page order. • *[Rename]* — Renames the page. The data pages can be reset to factory defaults using the *[Reset]* button,

Boat details

To ensure correct operation and display of data you should set the Boat Details settings according to your requirements.

Boat details can be accessed from the *[Settings]* menu: *[Homescreen > Settings > Boat Details]*

Option	Description
[Min safe height:]	Enter your vessel's maximum unladen height from the waterline. To ensure adequate clearance, it is recommended that you add a safety margin to this figure to allow for variation caused by vessel movements.
[Min safe width:]	Enter your vessel's maximum width at its widest point. To ensure adequate clearance on both sides, it is recommended that you add a safety margin for port and starboard to this figure to allow for variation caused by vessel movements.
[Min safe depth:]	Enter your vessel's maximum depth when fully laden. This is the depth from the waterline to the lowest point on the vessel's keel. To ensure adequate clearance, it is recommended that you add a safety margin to this figure to allow for variation caused by vessel movements.
[Num of engines:]	You can configure your system to display data for up to 2 engines, when connected to a compatible engine management system.
[Identify engines:]	Once you have selected the number of engines, select *[Identify engines]* and follow the onscreen instructions to configure your engines. May require an extra hardware interface to enable engine data to be displayed.
[Fuel tanks:]	You can configure your system to display data for up to 2 fuel tanks.
[Fresh water tanks:]	You can configure your system to display data for up to 2 fresh water tanks.
[Live well tanks:]	You can configure your system to display data for up to 2 Live well tanks.
[Gray water tanks:]	You can configure your system to display data for a Gray water tank.

Option	Description
[Black water tanks:]	You can configure your system to display data for a Black water tank.
[Batteries:]	You can configure your system to display data for up to 3 batteries.
[Transducer:]	You can select the transducer type that is connected to your display. **Important:** Ensure the display is powered off before physically changing your transducer.

Units of measure

You can select your preferred units for data readings from the *[Units]* menu: *[Homescreen > Settings > Units]*.

Default units of measure are determined by the selected user interface language.

Measurement	Units
[Distance units]	• *[NM & ft]* — Nautical miles & Feet • *[NM & m]* — Nautical miles & Meters • *[mi & ft]* — Miles & Feet • *[km & m]* — Kilometers and Meters • *[NM & yd]* — Nautical miles & Yards
[Speed units]	• *[Kts]* — Knots • *[MPH]* — Mile per hour • *[KPH]* — Kilometers per hour
[Depth units]	• *[Meters]* — m • *[Feet]* — ft • *[Fathoms]* — Fm

Measurement	Units
[Temperature units]	• [Celsius] — C • [Fahrenheit] — F
[Wind speed units]	• [Knots] — kts • [Meters per Second] — m/s
[Volume units]	• [US Gallons] — Gsl • [Imperial Gallons] — Gal • [Liters] — Ltr
[Economy units]	• Distance per Volume • Volume per Distance • Liters per 100 km
[Pressure units]	• [Bar] • [PSI] • [Kilopascals] — KPa
[Date format]	• MM : DD : YYYY • DD : MM : YYYY • MM : DD : YY • DD : MM : YY
[Time format]	• 12hr • 24hr
[Time zone:]	• UTC offsets • Daylight saving

Measurement	Units
[Bearing mode:]	• True • Magnetic
[System datum:]	List of available datums.

Measurement	Units
[Variation:]	• Auto • Manual
[Manual variation:]	• 30°W to 30°E

Advanced settings menu

Menu item and description	Options
[Maximum RPM:] The maximum RPM (Revolutions Per Minute) field determines the maximum RPM value displayed on the engine dial. when set to auto the system decides the maximum RPM value.	• Auto (default) • 3000RPM • 4000RPM • 5000RPM • 6000RPM • 7000RPM • 8000RPM • 9000RPM • 10000RPM
[Custom RPM red zone:] When enabled the engine RPM dial will show a Red zone between the [Custom RPM red zone] and the value specified in the RPM red zone start value field.	• On • Off (default)
RPM red zone start value	0 RPM to 10,000 RPM

CHAPTER 10: RADAR APP

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10.1 Adding the Radar app icon to the homescreen

If the Radar app icon is not displayed on the homescreen it can be added manually following the steps below.
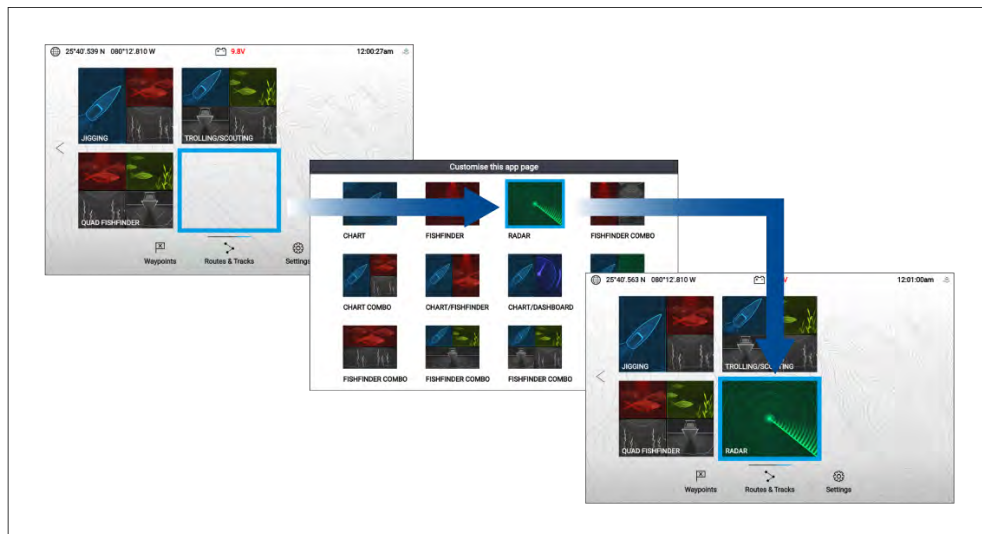
From the homescreen:

1. Using the *[Directional pad]*, highlight a blank space on the homescreen.
2. Press and hold the *[OK]* button.
3. Highlight the Radar app icon and press the *[OK]* button.

The Radar app icon is now displayed on the homescreen.

Pairing a Quantum™ radar scanner

You can connect a Quantum™ radar scanner to your display using the Wi-Fi connection.

Pre-requisites:

- Ensure you have installed and connected your Quantum™ radar scanner to a power supply following the instructions supplied with the radar scanner.
- Ensure you know your Quantum™ radar scanner's SSID and passcode.

1. Select *[Pair with Quantum]* from the *[This display]* tab: *[Homescreen > Settings > This display > Quantum Radar: > Pair with Quantum]*.
2. Enter the SSID and passcode for your Quantum™ radar.
3. Select *[Connect]*.
4. Follow any onscreen instructions to continue pairing with your Quantum™ radar.

   The pairing process may take several minutes to complete.

   For more information on the Quantum™ radar pairing process (including troubleshooting information), refer to your Quantum™ radar documentation.

10.2 Opening the Radar app

The Radar app is opened by selecting a page icon from the homescreen that includes the Radar app.

Pre-requisites:

1. Ensure your radar scanner is compatible, check the latest details available on the Raymarine website, if in doubt please contact an authorized Raymarine dealer for advice.

2. Ensure you have installed your radar scanner in accordance with the documentation that was supplied with your Radar.

The Radar app will open in one of the following states:

Off/Not Connected
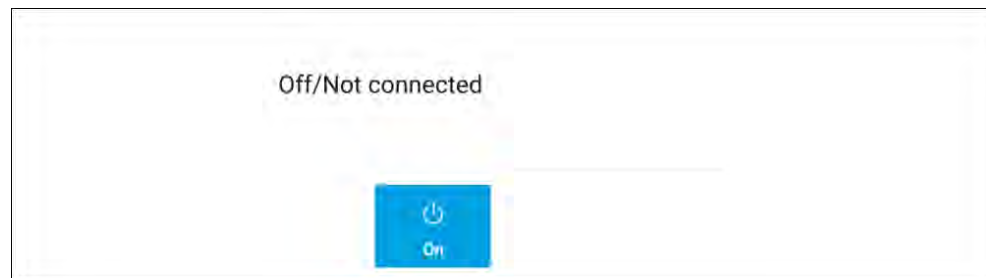
If the '**Off/Not Connected**' message is displayed then the display cannot establish a connection with your radar scanner:

Ensure that your display and radar scanner are paired correctly and then select *[On]* to power up your radar.

If the '**Radar not found**' message is displayed then power cycle your system and perform the pairing procedure again. If the radar scanner still cannot be found refer to your Radar's installation documentation for further troubleshooting information.

Off
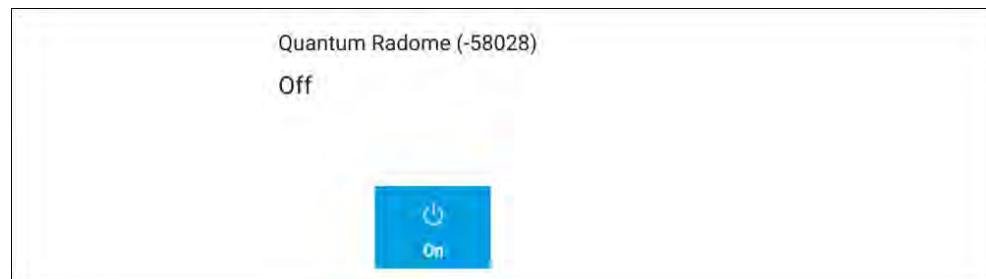
If the '**Off**' message is displayed then your radar scanner is powered off, select *[On]* to power up your Radar

Standby (Not transmitting)

If the '**Standby**' message is displayed then select *[Transmit]* to begin transmitting.

Transmitting
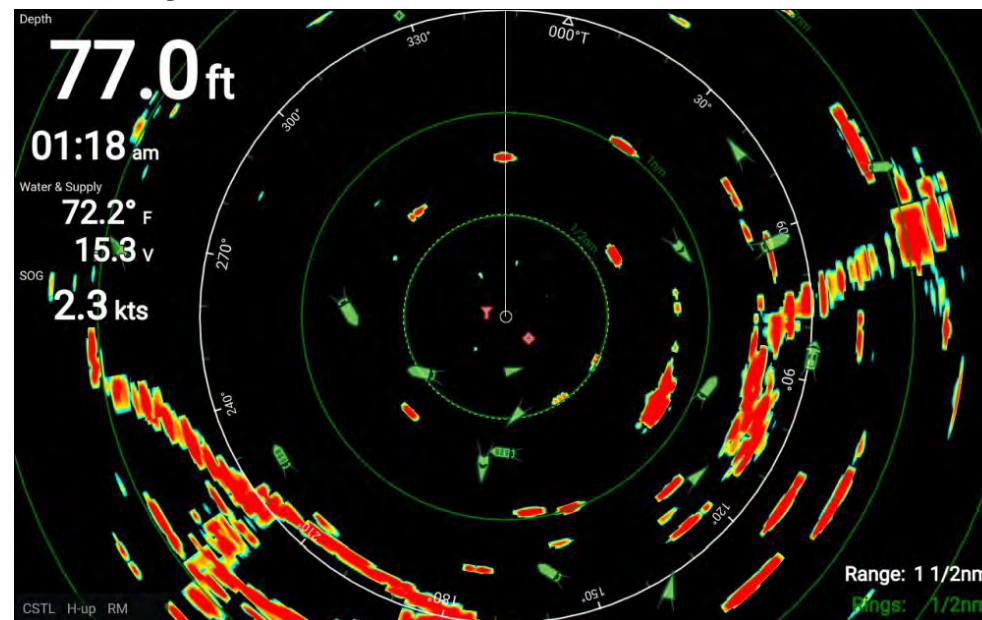
If your radar scanner is connected, powered up and transmitting then the radar image is displayed and echoes returns are displayed onscreen.

Putting the radar into standby

With your selected radar displayed onscreen:

1. Select *[Transmit]* from the main menu.

    The radar scanner will stop transmitting and is put into standby mode.

Powering down your radar scanner

With your radar scanner in standby mode:

1. Select the *[Off]* icon.
2. Select *[Yes]* to confirm power down.

   The radar scanner will still consume a small amount of power whilst it is powered off, this is to ensure the radar can be powered back up quickly.

10.3 Radar app overview

Radio Detection and Ranging (RADAR) is used on the water to detect the presence of objects at a distance, and if they are moving, detect their speed. Radar works by transmitting radio pulses, then detecting reflections of these pulses (echoes) from objects in the area. The Radar app is a navigation aid, used to enhance situational awareness by displaying a visualization of the echoes received by a connected radar scanner.

The Radar app can be displayed in Fullscreen and splitscreen app pages.
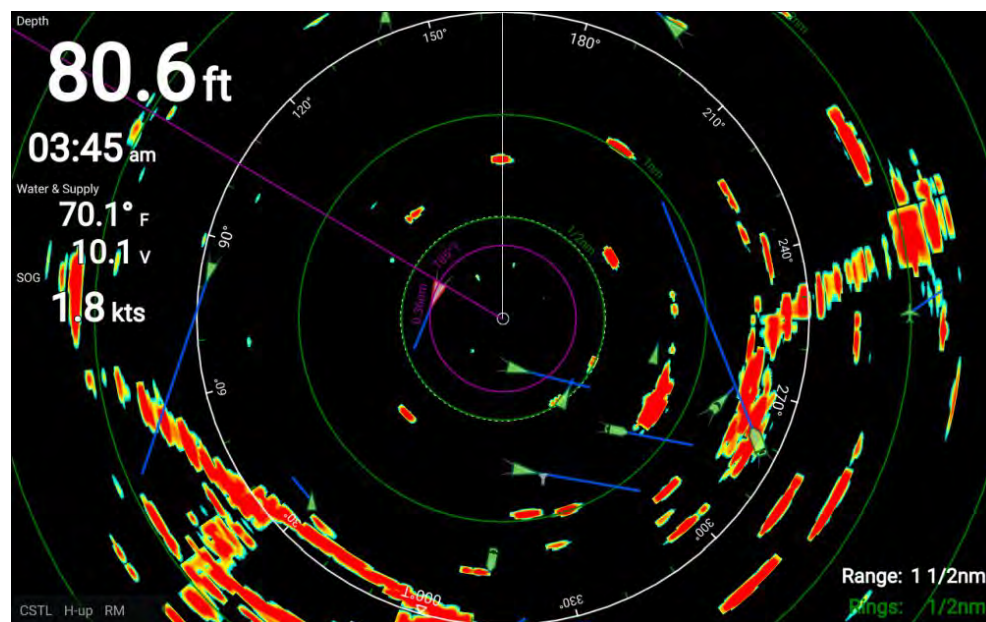
Note:

- Some features of the Radar app require your display to have both a GNSS (GPS) position fix and compass heading data available, e.g.: to enable accurate display of AIS targets in relation to your vessel and to report geographical positions (Latitude and Longitude) of the cursor position.
- Radar target tracking and Doppler features are not available in LightHouse™ Sport.

The Radar app allows you to configure a *[Guard Zone]* alarm which is triggered when an object is located within the specified guard zone area.

The Range rings, the bearing ring and a VRM/EBL can be used to identify a target's range and bearing in relation to your vessel.

AIS targets can also be displayed and tracked in the Radar app.

Compatible radar scanners

Element™ displays that include Wi-Fi can be connected wirelessly to the following radar scanners:

- Quantum™ Q24W (E70344)
- Quantum™ Q24C (E70210)
- Quantum™ 2 Doppler Q24D (E70498)

Note:

Element displays do not support tracking of radar targets or doppler features

Radar app controls

The Radar app has 2 control modes, motion mode and cursor mode. The behavior of some controls are dependent upon control mode.

Motion mode

Motion mode is the default mode when the Radar app is opened. In motion mode the cursor is not displayed onscreen.

Controls behavior:

- Pressing the *[OK]* button opens the sensitivity controls.
- Pressing any button on the *[Directional pad]* will switch to Cursor mode.

- Pressing the *[Waypoint]* button will place a waypoint at your vessel's current location.
- Pressing the *[Plus]* or *[Minus]* buttons will range in and range out respectively, centered around your vessel .

Cursor mode

In cursor mode the cursor can be used to select objects onscreen.

Controls behavior:

- Pressing the *[OK]* button opens the context menu for the area or object directly under the cursor's position.
- Pressing any button on the *[Directional pad]* moves the cursor in the respective direction.
- Pressing the *[Waypoint]* button will place a waypoint at your vessel's current location.
- Pressing the *[Plus]* or *[Minus]* buttons will range in and range out respectively.
- Pressing the *[Back]* button will switch back to Motion mode.

Note:

Waypoints are not shown in the Radar app.

Radar app context menu

The Radar context menu provides context sensitive data and menu options.
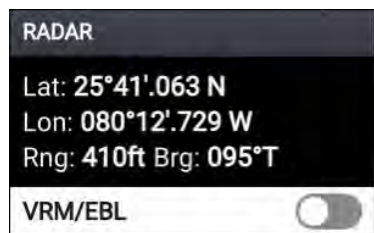
- The Radar context menu is accessed by highlighting a location or object onscreen and pressing the *[OK]* button.
- The context menu provides Latitude, longitude, range and bearing details for the selected location or object in relation to your vessel's position.
- The context menu provides access to the VRM/EBL marker control

10.4 Radar modes

The Radar app provides preset modes that can be used to quickly achieve the best picture depending on your current situation. Only Radar modes supported by your Radar scanner are shown.

To change radar mode select the required mode from the Radar app menu.

[HARBOR]
Harbor mode takes into account land clutter that is typically encountered in a Harbor, so that smaller targets are still visible. This mode is useful when navigating in a Harbor.

[COASTAL]
Coastal mode takes into account slightly higher levels of Sea clutter that are encountered out of Harbor areas. This mode is useful when in open water but keeping to coastal areas.

[OFFSHORE]
Offshore mode takes into account high levels of Sea clutter so that targets are still visible, useful when navigating in open water away from the coast.

[WEATHER]
Weather mode optimizes the display to help identify precipitation, useful for helping determine weather fronts.

10.5 Automatic Identification System (AIS) support

With compatible AIS hardware connected to your display, AIS targets can be tracked.

AIS equipped vessels that are transmitting their position, and are within range of your vessel, can be represented in the Radar app using AIS target icons.

Note:

A maximum of 100 AIS targets can be tracked simultaneously. If there are more than 100 AIS targets within range of your vessel the closest 100 targets will be displayed.
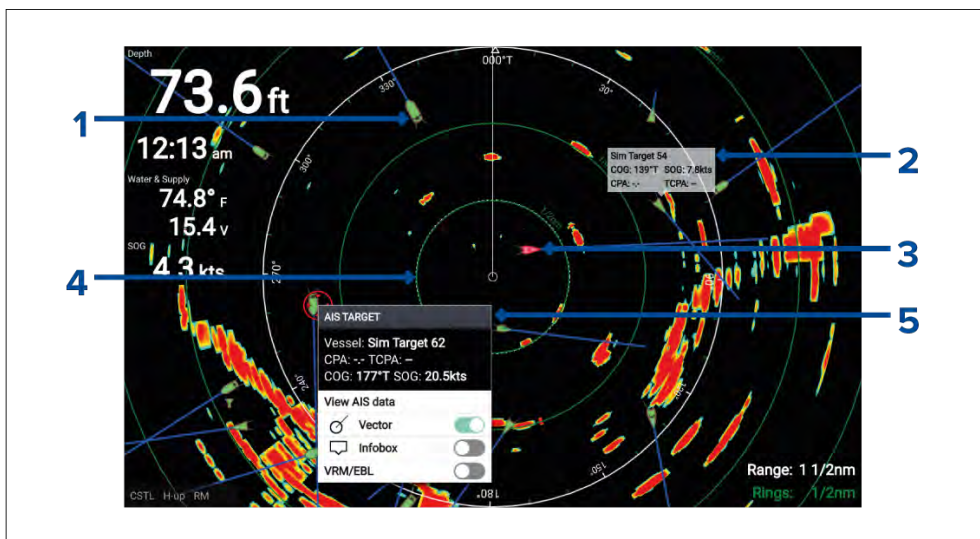
1. **AIS target icon** — Example of an AIS target icon.

2. **AIS Infobox** — Information can be displayed for each AIS target.

3. **Dangerous AIS target icon** — Example of an AIS target icon that is dangerous.

4. **Safe distance ring** — A ring can be displayed which represents the dangerous AIS target alarm's *[Safe distance]*.

5. **AIS context menu** — The AIS context menu is displayed when an AIS target is selected.

AIS target context menu

The AIS target context menu provides context sensitive data and menu options related to AIS targets.
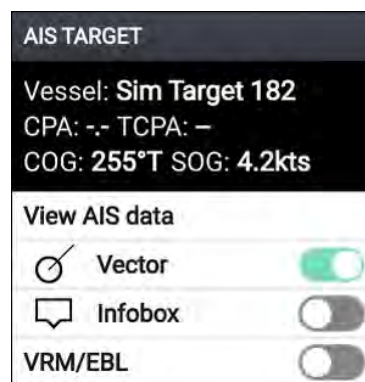
- The AIS target context menu is accessed by highlighting an AIS target onscreen and pressing the *[OK]* button.

- The context menu provides vessel name or MMSI, CPA and TCPA, if available, COG and SOG data.

- The following menu options are available:

  – *[View AIS data]* (displays more detailed AIS data on a fullscreen page)

  – *[Vector]* (enables and disables display of the AIS target vector)Vector is a global setting and applies to both the Radar app and Chart app.

  – *[Infobox]* (displays the AIS data that is shown in the context AIS target context menu onscreen, next to the AIS target)

  – *[VRM/EBL]* (allows creation of a Variable Range Marker / Electronic Bearing Line)

AIS dangerous targets

If AIS targets enter a dangerous target state they can trigger an alarm on your display. AIS targets are considered to be dangerous if they will pass within a specified safe distance from your vessel within a specified time interval.

The dangerous target alarm can be enabled and disabled from the alarms menu: *[Homescreen > Settings > Alarms > Dangerous AIS targets]*.

The dangerous target alarm can be configured from the Dangerous target page, accessed from the alarms menu:*[Homescreen > Settings > Alarms > Dangerous AIS targets > Configure]*.

To set up the AIS dangerous target alarm, first adjust the *[Safe distance]* to the desired value and then select a *[Time to reach safe distance]*. The alarm will be triggered if a tracked target will reach the specified Safe distance from your vessel within the time period selected.

You can display a Safe distance ring around your vessel in the Chart app and Radar app by enabling *[Show safe distance]*.

AIS vectors

Vectors can be displayed for AIS targets.

AIS target vectors settings can be accessed from the *[Target Settings]* tab: *[Menu > AIS Targets > Target Settings]*.

The length of the vector indicates the predicted position of the target after the time interval specified in *[Vectors period]* has passed. Adjusting the *[Vectors period]* option will adjust the length of the vector.

AIS vectors can be enabled and disabled using the *[AIS vectors]* toggle switch.

Target vectors can be enabled and disabled for individual targets: Press and hold on an AIS target to display the context menu, and then select *[Vector]*.

The vectors can be set to *[True]* or *[Relative]*.

	True vectors In true mode the vectors are shown ground referenced (i.e.: their actual path over ground).
	Relative vectors In relative mode the vectors are shown relative to your vessel's position.

AIS targets list

Tracked AIS targets are listed in the AIS targets list.

The AIS targets list can be accessed from the Radar app menu: *[Menu > AIS Targets]*.
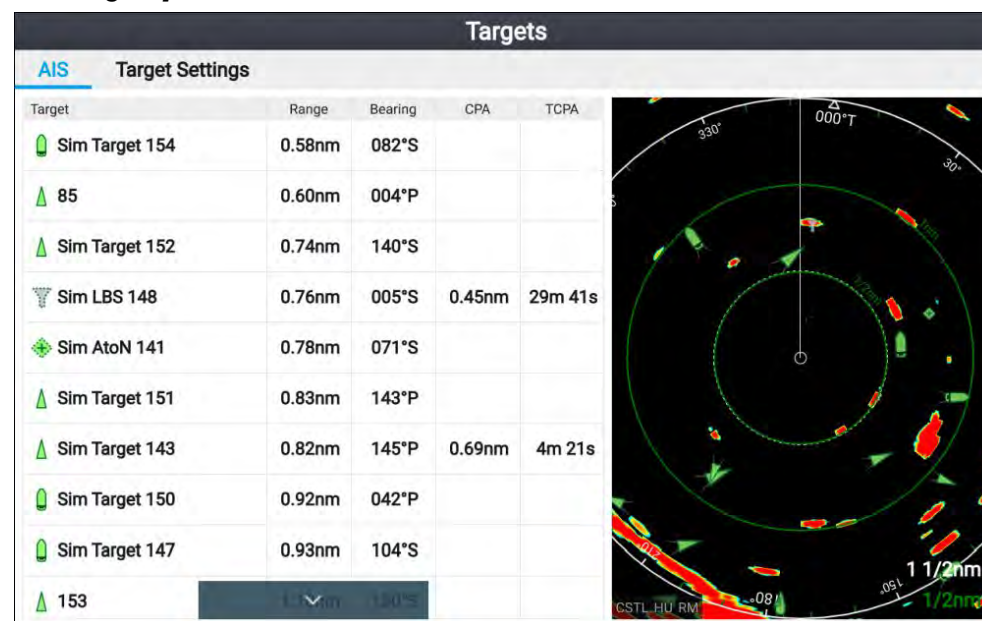
When an AIS target is highlighted in the list the selected AIS target will also be highlight in the LiveView pane.

When an AIS target is selected the AIS target details page is displayed.

AIS Settings

Settings related to AIS can be accessed from the Target Settings menu:
[Menu > AIS Targets > Target Settings].

[AIS:]	Enables and disables display of AIS targets in the Chart app. **Note:** When disabled AIS targets and details are still available in the AIS targets list.
[Silent mode (don't transmit my position:]	Your AIS hardware will not transmit any data when in silent mode. In Silent mode AIS data can still be received from other vessels.
[Hide static targets:]	Targets travelling under 2 knots will be hidden, unless the target is dangerous or becomes dangerous.
[AIS vectors:]	Enables and disables display of vectors on AIS targets.
[Vectors period:]	Determines the predicted position of the target (and therefore the length of the vector). **Note:** The Vectors period settings also applies to your vessel's COG vector.
[Reference mode:]	Determines whether vectors are shown in true or relative mode.

AIS target symbols

Different symbols are used to identify type of AIS target and their status.

AIS symbols

	Sailing Vessel		Commercial
	High speed vessel / Wing In Ground vessel		Cargo vessel
	Passenger vessel		Other
	Land based station		ATON

	SAR (Search and Rescue)		Virtual ATON
	SART (Search and Rescue Transponder)		

AIS target symbol status

	Lost (No border, crossed through)		Uncertain (Dashed outline)
	Dangerous and Uncertain (Dashed outline and Flashes Red)		
	Dangerous (Flashes Red)		ATON off position (Red border)

10.6 Range and bearing

The Radar app helps you identify a target's range (distance) and bearing from your vessel.
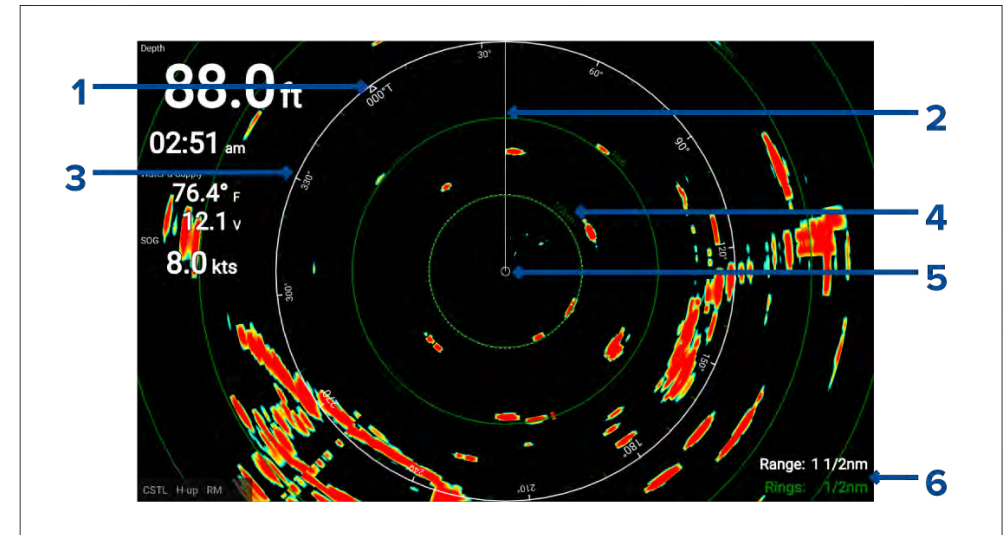
1. North indicator (Always points north).

2. SHM (Ships Heading Marker).

3. Bearing indicator ring (White).

4. Range rings with range indicator (Green).

5. Vessel position.

6. Current displayed bearing and range ring separation distance (Range: identifies the distance from your vessel to the bearing indicator ring. Rings: identifies the distance between each range ring).

The displayed range can be adjusted at anytime using the *[Plus]* and *[Minus]* buttons.

Range rings can be switched off from the Presentation tab: *[Menu > Settings > Presentation > Range rings:]*

You can also choose whether to display a numerical range indicator against each ring using the *[Range ring labels:]* option.

VRM (Variable Range Marker) / EBL (Electronic Bearing Line)

The VRM/EBL is used to determine range and bearing of radar objects.

Variable range marker (VRM)

The VRM is a circle centered on one object and then adjusted so that the circle meets a second object. The range between the 2 objects is displayed along the circle.

Electronic Bearing Line (EBL)

The EBL is a straight line from the center of the VRM to the edge of the screen and signifies the bearing from the object in the center of the VRM to the second object which the EBL should pass through.
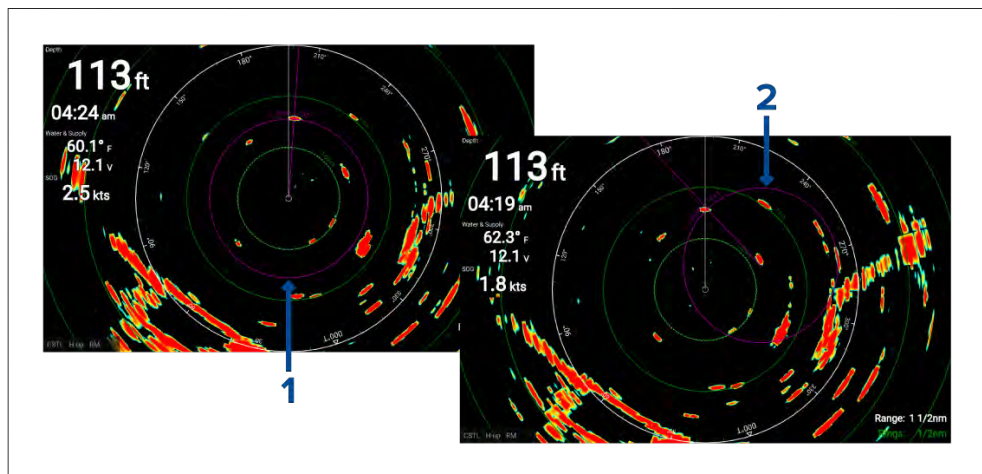
1. **Centered VRM/EBL** By default when the VRM/EBL is enabled it will be centered around your vessel. You can use the 'centered' VRM/EBL to determine the range and bearing of an object in relation to your vessel.
2. **Floating VRM/EBL** You can adjust the VRM/EBL so that it is centered on another object, know as a 'floating' VRM/EBL. You can use the floating VRM/EBL to determine the range and bearing between the 2 objects.

The reference point used for the VRM/EBL can be configured to either measure bearing from true north / magnetic north or be a bearing relative to your vessel.

When set to *[True/Mag]* bearing is measured from the display's selected bearing reference (i.e.: True or Magnetic north). The display's bearing reference can be specified from the *[Units]* menu: *[Homescreen > Units > Bearing]*.

When set to *[Relative]* bearings are taken from the Ships Heading Marker (SHM).

Creating a centered VRM/EBL

To create a VRM/EBL centered on your vessel follow the steps below.

From the Radar app:

1. Press a button on the *[Directional pad]* to enter cursor mode.
2. Press the *[OK]* button.

   The radar context menu is displayed.
3. Enable the *[VRM/EBL]* toggle switch.
4. Use the *[Directional pad]* to change the size of the VRM and location of the EBL.
5. Press the *[Back]* button to place the VRM/EBL.

Creating a floating VRM/EBL

To create a floating VRM/EBL follow the steps below

From the Radar app:

1. Press a button on the *[Directional pad]* to enter cursor mode.
2. Press the *[OK]* button.

   The radar context menu is displayed.
3. Enable the *[VRM/EBL]* toggle switch.
4. Press and hold the *[OK]* button for approximately 3 seconds, until the VRM/EBL lines turn White.
5. Use the *[Directional pad]* to change the center location of the VRM.
6. Press and hold the *[OK]* button for approximately 3 seconds, until the VRM/EBL lines turn Blue.
7. Use the *[Directional pad]* to change the location where the VRM and EBL intersect.
8. Press the *[Back]* button to place the VRM/EBL.

Editing a VRM/EBL

Once the VRM/EBL has been placed you can adjust its size and position.

With a VRM/EBL displayed:

1. Press a button on the *[Directional pad]* to enter cursor mode.
2. Press the *[OK]* button.

   The radar context menu is displayed.

3. Select *[Edit VRM/EBL]*.

4. Use the *[Directional pad]* to change the size of the VRM and location of the EBL.

5. Press and hold the *[OK]* button for approximately 2 seconds, until the VRM/EBL lines turn White to move the center of the VRM.

6. Press the *[Back]* button to place the VRM/EBL.

10.7 Guard zone alarm

The guard zone alerts you if radar returns (objects) are detected within the specified guard zone area.

The guard zone can be configured from the Guard zone menu:

The guard zone can be configured from the *[Guard zone alarm]* menu: *[Menu > Guard zone alarm]*.
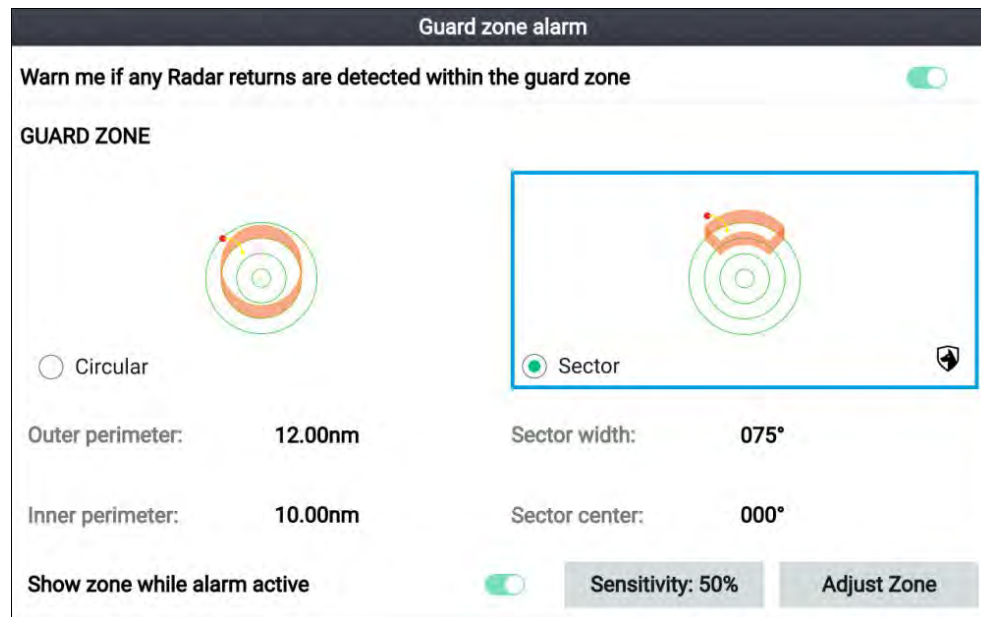
The guard zone can be configured as a sector or as a circle around your vessel.

If required, the sensitivity of the guard zone can be adjusted using the *[Sensitivity:]* field. Sensitivity determines the size at which objects will trigger the alarm. A Higher sensitivity setting will detected smaller objects than a lower sensitivity setting.

Adjusting the guard zone alarm

The size and position of the guard zone can be adjusted.
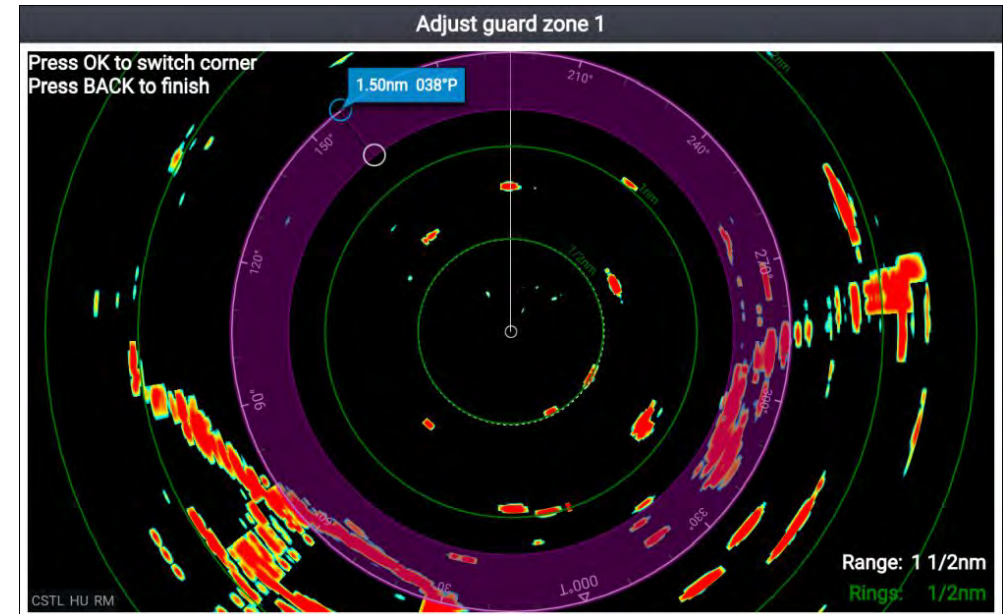
1. Select *[Adjust zone]* from the guard zone alarm menu.

2. Use the *[Directional pad]* to adjust the size and position of the outer perimeter to the desired location.

3. Press the *[OK]* button to switch to the inner perimeter.

4. Use the *[Directional pad]* to adjust the size and position of the inner perimeter to the desired location.

5. Press the *[Back]* button to set the guard zone.

10.8 Sensitivity controls

Optimum performance is usually achieved using the default settings. You may be able to enhance the radar image using the sensitivity controls.

Sensitivity settings can be accessed by pressing the *[OK]* button while in motion mode, or the *[Adjust sensitivity]* menu: *[Menu > Adjust sensitivity]*.
.

Control	Description
	['G' Gain]
	The control determines the signal strength at which target returns are shown onscreen.
	A higher value produces more target returns and noise onscreen.
	['R' Rain]
	Precipitation appears on the radar screen as lots of small echoes which continuously change size, intensity and position. The rain control suppresses these echoes making it easier to identify real objects.
	The higher the rain control is set the more echoes will be suppressed.
	['S' Sea clutter]
	Radar echoes from waves can clutter the radar screen. The sea control suppresses these echoes (for up to 5 nm depending on conditions) making it easier to identify real objects.
	The higher the sea control is set the more echoes will be suppressed.

Control	Description
	['CG' Color Gain]
	The control sets the lower limit for the color used for the strongest target returns. All target returns above this value are displayed in the strongest color. Those with a weaker value are divided equally between the remaining colors.
	[All to Auto]
	Sets all Sensitivity settings to *[Auto]*.

10.9 Radar settings menu

The settings menu provides access to the Radar app's settings and options.

Transmission tab

Description	Options
[Scanner] Displays the name of the connected radar scanner.	N/A

View & Motion tab

Description	Options
[Orientation:] The orientation setting determines how the radar image is displayed onscreen in relation to your vessel.	• *Head-up* — The top of the screen always points towards your vessel's current heading and as your heading changes the radar image rotates accordingly. In head-up the motion mode is fixed to relative motion. • *North-up* — The top of the screen always points towards north and as your vessel's heading changes the SHM rotates accordingly. • *Course-up* — In course-up the top of the screen always points towards your destination and as your heading changes the SHM rotates accordingly.
[Motion mode] Motion mode determines whether your vessel remains in a fixed position onscreen or moves relative to other moving objects. **Note:** In True motion mode the boat position is fixed to *[Full offset]*.	• *Relative motion* — The position of your vessel remains fixed onscreen and the radar image moves relative to your position. In relative motion mode you can adjust your vessel's onscreen position using the boat position setting. • *True motion* — Stationary radar targets remain fixed and moving targets, including your vessel, move in true perspective to each other and to landmass. As your vessel's position reaches the edge of the screen, the image is redrawn to reveal the area ahead.
[Boat position] Boat position determines the position of your vessel onscreen. You can adjust the boat position to	• *Center* — Vessel position is in the center of the screen • *Partial offset* — Vessel position is partially offset from the center to

Description	Options
provide a greater distance ahead of your vessel. **Note:** Boat position can only be changed in *[Relative motion]* mode.	provide greater distance in front of your vessel. • *Full offset* — Vessel position is fully offset to provide the maximum distance in front of your vessel.

Presentation tab

Description	Options
[Range rings:] Enables and disables display of range rings.	• *On* • *Off*
[Range ring labels:] Enables and disables display of distance labels on each range ring.	• *On* • *Off*
[Show AIS targets in radar:] Enables and disables the display of AIS targets.	• *On* • *Off*
[Silent mode (don't transmit my position):] Enables and disables your vessel's transmission of AIS data.	• *On* • *Off*
[Hide static targets:] Enables and disables the display of static AIS targets.	• *On* • *Off*
[Color palette:] Allows selection of the color palette.	List of color palettes.

Advanced tab

Note:

Under normal circumstances it should not be necessary to adjust Advanced settings.

Description	Option
[VRM/EBL reference:] Determines the reference point used for VRM/EBLs.	• *True/Mag* When set to [True/Mag] bearing is measured from the display's selected bearing reference (i.e.: True or Magnetic north). The display's bearing reference can be specified from the [Units] menu: [Homescreen > Units > Bearing]. • *Relative* When set to [Relative] bearings are taken from the Ships Heading Marker (SHM).
[Interference rejection:] Suppresses interference from other close by radar scanners.	• *On* • *Off*
[IR level:] Determines the level of suppression used. The higher the suppression the less interference will be displayed. **Note:** Only available when [Interference rejection] is enabled.	• *Level 1* (lowest suppression) • *Level 2* • *Level 3* • *Level 4* • *Level 5* (highest suppression)
[Main Bang Suppression (MBS):] MBS eliminates saturation which appears immediately around your vessel.	• *On* • *Off*
[Target expansion:] When enabled, increases the radar pulse length to provide larger target returns.	• *On* • *Off*
[Bearing alignment:] Enables you to align the radar image correctly in relation to your vessel's bow.	• 179.5° Port to 180° Starboard

Description	Option
[Sea clutter curve (manual mode):] When the sea sensitivity control is set to manual the sea clutter curve setting is available. Radar echoes produced by waves can make it difficult to distinguish between waves and real objects. these echoes are known as 'sea clutter'. The sea clutter curve setting adjusts your radar scanner's sensitivity to sea clutter. The higher setting will display less sea clutter.	• *1* • *2*
[Transmit frequency] Changing the transmit frequency can reduce interference on the radar image by shifting the frequency band used by your radar scanner. **Note:** The transmit frequency settings is only not available when the radar range is set to less than 1/2 nm.	• *Low* • *Normal* • *High*
[Reset advanced settings] Resets the advanced settings to factory defaults.	N/A

Databoxes tab

Settings	Description
[1:]	Determines the data item displayed in databox 1.
[2:]	Determines the data item displayed in databox 2.
[3:]	Determines the data item displayed in databox 3.

Settings	Description
[4:]	Determines the data item displayed in databox 4.
[Reset all]	Selecting will reset all databoxes to factory defaults.

Bearing alignment

The radar's bearing alignment ensures that radar echoes (objects) appear at the correct bearing relative to your vessel's bow. You should check the bearing alignment for any new installation.

Checking alignment

Align the bow with a stationary object between 0.25 nm and 2 nm away.

Reduce the gain sensitivity control to make the target as small as possible on the screen.

Note the position of the object on the screen. If the object is not under the ship's heading marker (SHM), then bearing alignment is required.

Adjusting alignment

Adjust the *[Bearing alignment]* setting until the target object appears under the SHM.

[Bearing alignment] setting can be accessed from the *[Advanced]* tab: *[Menu > Advanced > Bearing alignment]*.

CHAPTER 11: TROUBLESHOOTING

CHAPTER CONTENTS

11.1 Troubleshooting

The troubleshooting section provides possible causes and the corrective action required for common problems that are associated with the installation and operation of your product.

Before packing and shipping, all Raymarine® products are subjected to comprehensive testing and quality assurance programs. If you do experience problems with your product, this section will help you to diagnose and correct problems to restore normal operation.

If after referring to this section you are still having problems with your product, please refer to the *Technical support* section of this manual for useful links and Raymarine® Product Support contact details.

11.2 Power up troubleshooting

Product does not turn on or keeps turning off

Possible causes	Possible solutions
Blown fuse / tripped breaker.	1. Check condition of relevant fuses and breakers and connections, replace if necessary. (Refer to the *Technical Specification* section of your product's installation instructions for fuse ratings.) 2. If fuse keeps blowing check for cable damage, broken connector pins or incorrect wiring.
Poor / damaged / insecure power supply cable / connections	1. Check that the power cable connector is correctly orientated and fully inserted into the display connector and locked in position. 2. Check the power supply cable and connectors for signs of damage or corrosion, and replace if necessary. 3. With the display turned on, try flexing the power cable near to the display connector to see if this causes the unit to restart or lose power. Replace if necessary. 4. Check the vessel's battery voltage and the condition of the battery terminals and power supply cables, ensuring connections are secure, clean and free from corrosion. Replace if necessary. 5. With the product under load, using a multi-meter, check for high voltage drop across all connectors / fuses etc, and replace if necessary.
Incorrect power connection	The power supply may be wired incorrectly, ensure the installation instructions have been followed.

Product will not start up (restart loop)

Possible causes	Possible solutions
Power supply and connection	See possible solutions from the table above, entitled 'Product does not turn on or keeps turning off'.
Software corruption	1. In the unlikely event that the product's software has become corrupted, try downloading and installing the latest software from the Raymarine website. 2. On display products, as a last resort, attempt to perform a 'Power on Reset'. Be aware that this will delete all settings / presets and user data (such as waypoints and tracks), and revert the unit back to factory defaults.

Performing a power on reset

There may be circumstances in which it is necessary to reset your display to factory (default) settings; for example, as part of a troubleshooting activity.

Important:

Before performing a power on reset ensure you have backed up your settings and user data to a memory card.

With the display powered off:

1. Press and hold the *[Home]* button.
2. Press and hold the *[Power]* button until the display beeps.
3. Release the *[Power]* button.
4. When the Raymarine logo appears, release the *[Home]* button.
5. Use the *[Down]* button to highlight *[Wipe data/factory reset]*.
6. Press the *[OK]* button.
7. Use the *[Down]* button to highlight *[Yes]*.
8. Press the *[OK]* button.

   The display will now be reset to factory default settings, and all user data will be removed. *'Data wipe complete'* is displayed at the bottom of the screen when the reset is finished.

9. The display will then restart automatically.

Downgrading software

In the unlikely event that you need to downgrade your display's software follow the instructions below.

1. Insert a Micro SD card containing only the downgraded software version into the display's card reader slot.
2. Select *[Update software]* from the Getting started, settings tab (*[Homescreen > Settings > Getting started]*).
3. Select *[Check SD card]*.
4. Use the *[Left]* directional button to highlight the software version and press *[OK]*.

   Details of the current and new software version are displayed.

5. Select *[Yes]*.
6. Use the *[Directional]*buttons to highlight *[Update]* and then press the *[OK]* button.

   The software will now be downgraded and the display will reboot.

Important:

If you are downgrading from version **3.13** or above to version **3.10** or below you must immediately perform a factory reset following the 'Factory reset' instructions:

11.3 GPS / GNSS troubleshooting

Potential problems with the GPS / GNSS receiver and possible causes and solutions are described here.

Problem	Possible causes	Possible solutions
"No Fix" status icon is displayed. or display keeps losing position fix.	Geographic location or prevailing conditions preventing satellite fix.	Check periodically to see if a fix is obtained in better conditions or another geographic location.
	Display in poor location. For example: • Below decks. • Close proximity to transmitting equipment such as VHF radio.	Ensure the display has an unobstructed view of the sky.

Note:

A GPS / GNSS status screen is accessible from the display's Homescreen. This provides satellite signal strength and other relevant information.

11.4 Sonar troubleshooting

Problems with the sonar and their possible causes and solutions are described here.

No transducer connected message displayed

Possible causes	Possible solutions
Incorrect display software version	Display software may be incompatible with your connected transducer. Check the Raymarine website and ensure that the display is running the latest available software.
Transducer not connected	Connect compatible transducer / Ensure that the transducer cable connector is fully inserted and locked in position and reboot the display.
Wrong transducer selected	Transducer selection is performed as part of the initial start up wizard, if an incorrect transducer was selected then the 'No transducer connected' message is displayed each time a new instance of the Fishfinder app is opened. to view the Fishfinder image, press the Menu button and select the fishfinder channel you want to view. To prevent further 'No transducer connected' warnings perform a factory reset and ensure the correct transducer is selected from the bottom of the Boat details page of the startup wizard.
Damaged display connector	Check that the transducer connector pins on the back of the display are not bent or broken / missing. If damage is detected replace the display or send it to an authorized service agent for repair.
Damaged transducer or cable	1. Check that the transducer cable connector is free from damage, is correctly orientated and fully inserted into the display and that the connector is locked in position. If damage is detected, replace the transducer. 2. Check the condition of the transducer and cabling for signs of damage. If damage is detected, replace the transducer.
Wrong transducer fitted	Check product and transducer documentation and ensure that the transducer is compatible with your system. Replace with a compatible transducer, if necessary.

Scrolling image is not being displayed or is intermittent

Possible causes	Possible solutions
Sonar ping disabled	Enable sonar ping from the shortcuts page by pressing the *[Power]* button and enabling *[Sonar ping]*.
Transducer location	Check that the transducer has been installed in accordance with the instructions provided with the transducer. The transducer must be installed where it is , always submerged, is parallel to the waterline and in an area free from turbulence and aeration.

Possible causes	Possible solutions
Damaged display connector	Check that the transducer connector pins on the back of the display are not bent or broken / missing. If damage is detected replace the display or send it to an authorized service agent for repair.
Damaged transducer or cable	1. Check that the transducer cable connector is free from damage, is correctly orientated and fully inserted into the display and that the connector is locked in position. If damage is detected, replace the transducer. 2. Check the condition of the transducer and cabling for signs of damage. If damage is detected, replace the transducer.
Fouled transducer	Check transducer condition, ensuring it is free from debris/fouling. If necessary, clean or replace your transducer. After cleaning or replacement coat the transducer using a water-based anti-fouling paint.
Wrong transducer fitted	Check product and transducer documentation and ensure that the transducer is compatible with your system.
Proximity of high power cables	If the transducer cable runs too close to engine and other high power cables the transducer signal may be interrupted causing loss of transducer connection and or electrical noise to appear onscreen. These issues may be more prevalent at higher engine revs. Move transducer cable as far away from high power cables as possible.

Poor / problematic image

Possible causes	Possible solutions
Poor and problematic images can be caused by the same issues as when no depth reading or bottom lock is possible. In addition to the solutions listed under 'No depth reading / lost bottom lock try the following:	
Vessel stationary	Fish arches are not displayed if the vessel is stationary; fish will appear on the display as straight lines.
Cursor mode is active	The scrolling screen is paused in cursor mode, press the *[Back]* button to resume scrolling.
Sensitivity settings may be inappropriate for present conditions.	Check and adjust sensitivity settings or perform a Sonar reset.
Turbulence around the transducer at higher speeds may affect transducer performance	Slow vessel speed and recheck.
Interference from another transducer	1. Turn off the transducer causing the interference. 2. Reposition the transducers so they are farther apart.

11.5 Wi-Fi troubleshooting

Before troubleshooting problems with your Wi-Fi connection, ensure that you have followed the Wi-Fi location requirements guidance provided in the relevant installation instructions and performed a power cycle/reboot of the devices you are experiencing problems with.

Cannot find router network

Possible cause	Possible solutions
Router out of range or signal blocked.	• Ensure router is broadcasting and in range of your display. If necessary, move router and display closer together and then turn the display's Wi-Fi off and back on again. • If possible, remove any obstructions and then turn the display's Wi-Fi off and back on again.
Display Wi-Fi disabled.	Ensure Wi-Fi is enabled on the Display.
Router problem.	If possible, power cycle the router and then turn the display's Wi-Fi off and back on again.
Device not broadcasting.	1. If possible, enable broadcasting in the router's settings. 2. You may still be able to connect to the router, when it is not broadcasting, by manually entering the router's network name and password in the Display's Wi-Fi settings page.
Router's Wi-Fi network is incompatible	The Display's Wi-Fi can only connect to 2.4 GHz networks.

Cannot connect to network

Possible cause	Possible solutions
Trying to connect to the wrong Wi-Fi network.	Ensure you are trying to connect to the correct Wi-Fi network; the Wi-Fi network's name can be found in the router's settings.
Incorrect network credentials.	Ensure you are using the correct password; the Wi-Fi network's password can be found in the router's settings.
Bulkheads, decks and other heavy structure can degrade and even block the Wi-Fi signal. Depending on the thickness and material used, it may not always be possible to pass a Wi-Fi signal through certain structures.	1. Try repositioning the display and if possible the router, so the structure is removed from the direct line of sight between the devices.
Interference being caused by other Wi-Fi enabled or older Bluetooth enabled devices (Bluetooth and Wi-Fi both operate in the 2.4 GHz frequency range, some older Bluetooth devices may interfere with Wi-Fi signals.)	1. If possible, change the Wi-Fi Channel that your router is using and retry the connection. You can use free Wi-Fi analyzer apps on a smart device to help you choose a better channel (channel with least traffic). 2. Temporarily disable each wireless device in turn until you have identified the device causing the interference.

Possible cause	Possible solutions
Interference caused by other devices that use the 2.4 GHz frequency. See following list of some common devices that use the 2.4 GHz frequency: • Microwave ovens • Fluorescent lighting • Cordless phones / baby monitors • Motion sensors	Temporarily switch off each device in turn until you have identified the device causing the interference, then remove or reposition the offending device(s).
Interference caused by electrical and electronic devices and associated cabling could generate an electromagnetic field which may interfere with the Wi-Fi signal.	Temporarily switch off each item in turn until you have identified the device causing the interference, then remove or reposition the offending device(s).

Connection extremely slow and / or keeps dropping out

Possible cause	Possible solutions
Wi-Fi performance degrades over distance, so products farther away will receive less network bandwidth. Products installed close to their maximum Wi-Fi range will experience slow connection speeds, signal dropouts or not being able to connect at all.	Move display closer to router.
Interference being caused by other Wi-Fi enabled or older Bluetooth enabled devices (Bluetooth and Wi-Fi both operate in the 2.4 GHz frequency range, some older Bluetooth devices may interfere with Wi-Fi signals.)	1. If possible, change the Wi-Fi Channel that your router is using and retry the connection. You can use free Wi-Fi analyzer apps on a smart device to help you choose a better channel (channel with least traffic).. 2. Temporarily switch off each item in turn until you have identified the device causing the interference, then remove or reposition the offending device(s).
Interference from devices on other vessels. When in close proximity to other vessels (for example, when moored up in a marina), many other Wi-Fi signals may be present.	1. If possible, change the Wi-Fi Channel that your router is using and retry the connection. You can use free Wi-Fi analyzer apps on a smart device to help you choose a better channel (channel with least traffic). 2. If possible, move your vessel to a location with less Wi-Fi traffic.

Network connection established but no data

Possible cause	Possible solutions
No internet connection to router.	Ensure that your display is connected to a network with an internet connection.

CHAPTER 12: TECHNICAL SUPPORT

CHAPTER CONTENTS

12.1 Raymarine product support and servicing

Raymarine provides a comprehensive product support service, as well as warranty, service, and repairs. You can access these services through the Raymarine website, telephone, and e-mail.

Product information

If you need to request service or support, please have the following information to hand:

- Product name.
- Product identity.
- Serial number.
- Software application version.
- System diagrams.

You can obtain this product information using diagnostic pages of the connected display.

Servicing and warranty

Raymarine offers dedicated service departments for warranty, service, and repairs.

Don't forget to visit the Raymarine website to register your product for extended warranty benefits: http://www.raymarine.co.uk/display/?id=788.

United Kingdom (UK), EMEA, and Asia Pacific:

- E-Mail: emea.service@raymarine.com
- Tel: +44 (0)1329 246 932

United States (US):

- E-Mail: rm-usrepair@flir.com
- Tel: +1 (603) 324 7900

Web support

Please visit the "Support" area of the Raymarine website for:

- **Manuals and Documents** — http://www.raymarine.com/manuals
- **Technical support forum** — https://raymarine.custhelp.com/app/home
- **Software updates** — http://www.raymarine.com/software

Worldwide support

United Kingdom (UK), EMEA, and Asia Pacific:

- Help desk: https://raymarine.custhelp.com/app/ask

- Tel: +44 (0)1329 246 777

United States (US):

- Help desk: https://raymarine.custhelp.com/app/ask
- Tel: +1 (603) 324 7900 (Toll-free: +800 539 5539)

Australia and New Zealand (Raymarine subsidiary):

- E-Mail: aus.support@raymarine.com
- Tel: +61 2 8977 0300

France (Raymarine subsidiary):

- E-Mail: support.fr@raymarine.com
- Tel: +33 (0)1 46 49 72 30

Germany (Raymarine subsidiary):

- E-Mail: support.de@raymarine.com
- Tel: +49 40 237 808 0

Italy (Raymarine subsidiary):

- E-Mail: support.it@raymarine.com
- Tel: +39 02 9945 1001

Spain (Authorized Raymarine distributor):

- E-Mail: sat@azimut.es
- Tel: +34 96 2965 102

Netherlands (Raymarine subsidiary):

- E-Mail: support.nl@raymarine.com
- Tel: +31 (0)26 3614 905

Sweden (Raymarine subsidiary):

- E-Mail: support.se@raymarine.com
- Tel: +46 (0)317 633 670

Finland (Raymarine subsidiary):

- E-Mail: support.fi@raymarine.com
- Tel: +358 (0)207 619 937

Norway (Raymarine subsidiary):

- E-Mail: support.no@raymarine.com
- Tel: +47 692 64 600

Denmark (Raymarine subsidiary):

- E-Mail: support.dk@raymarine.com

- Tel: +45 437 164 64

Russia (Authorized Raymarine distributor):

- E-Mail: info@mikstmarine.ru

- Tel: +7 495 788 0508

Identify display variant and software version

Refer to the Getting started menu: *[Homescreen > Settings > Getting started]* on your display to identify product variant and current software version.
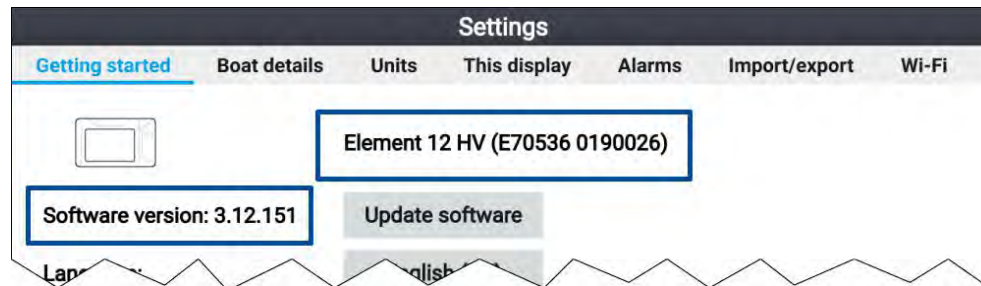
Viewing product information

You can view detailed product information about your display.
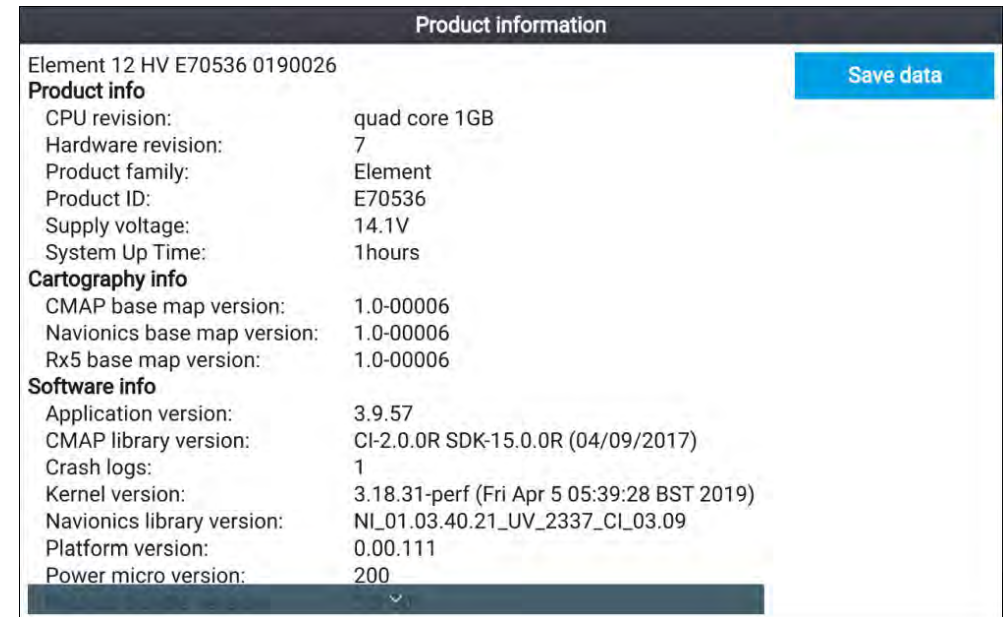
1. Select the *[Settings]* icon from the *[Homescreen]*.
2. Select the *[This display]* tab.
3. Select *[About this product]* from the *[DIAGNOSTICS]* section.
4. If the *[Save data]* button is highlighted press the *[Left]* button.
5. Use the *[Up]* button and *[Down]* button to scroll through the available information.

Saving product information

The information displayed on the Product information page can be saved to memory card.

With the Product info page displayed:

1. Use the *[Right]* button to select *[Save data]*.
2. Enter a filename for the data using the onscreen keyboard, or keep the default filename.
3. Select *[Save]*.
4. Select *[Eject card]* to safely remove the memory card, or select *[OK]* to return to the *[Product information]* page.

Viewing information about networked products

Product information for networked products can be viewed from the Networked devices list.
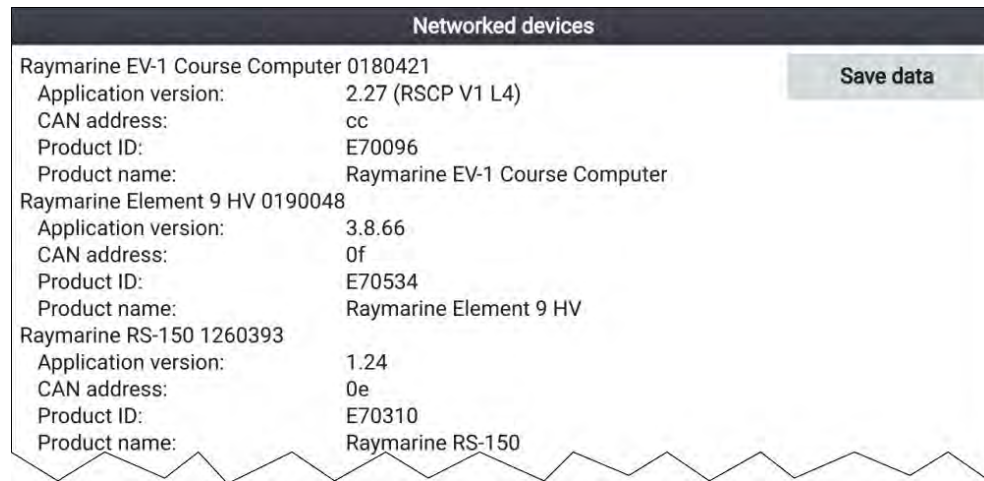
From the Homescreen:

1. Select *[Settings]*.
2. Select *[This display]*.
3. Select *[Networked devices]*.

   Product information for compatible connected products is displayed.

4. If required, use the *[Up]* and *[Down]* buttons to scroll through the list of product information.
5. Press the Right button to highlight the *[Save data]* button, to save product information to a memory card.

Saving system logs

You can save system logs to memory card for diagnostic purposes.

From the Homescreen settings menu: *[Homescreen > Settings]*.

1. Select *[This display]*.
2. Select *[Logs]*.

   The Logs pop-over menu is displayed. The pop-over menu will identify whether there are any logs that can be saved.

3. Select *[Save system logs]*.

12.2 Learning resources

Raymarine has produced a range of learning resources to help you get the most out of your products.

Video tutorials

Raymarine official channel on YouTube

• http://www.youtube.com/user/RaymarineInc

Training courses

Raymarine regularly runs a range of in-depth training courses to help you make the most of your products. Visit the Training section of the Raymarine website for more information:

• http://www.raymarine.co.uk/view/?id=2372

Technical support forum

You can use the Technical support forum to ask a technical question about a Raymarine product or to find out how other customers are using their Raymarine equipment. The resource is regularly updated with contributions from Raymarine customers and staff:

• https://raymarine.custhelp.com/app/home

Appendix A Compatible autopilot controllers

A SeaTalkng ® autopilot controller is required to operate your autopilot system. A SeaTalk autopilot controller can be used when connected via a SeaTalk to SeaTalkng ® converter, but may have limited functionality.

More than 1 autopilot controller can be used to control your autopilot system.

SeaTalkng ® autopilot controllers
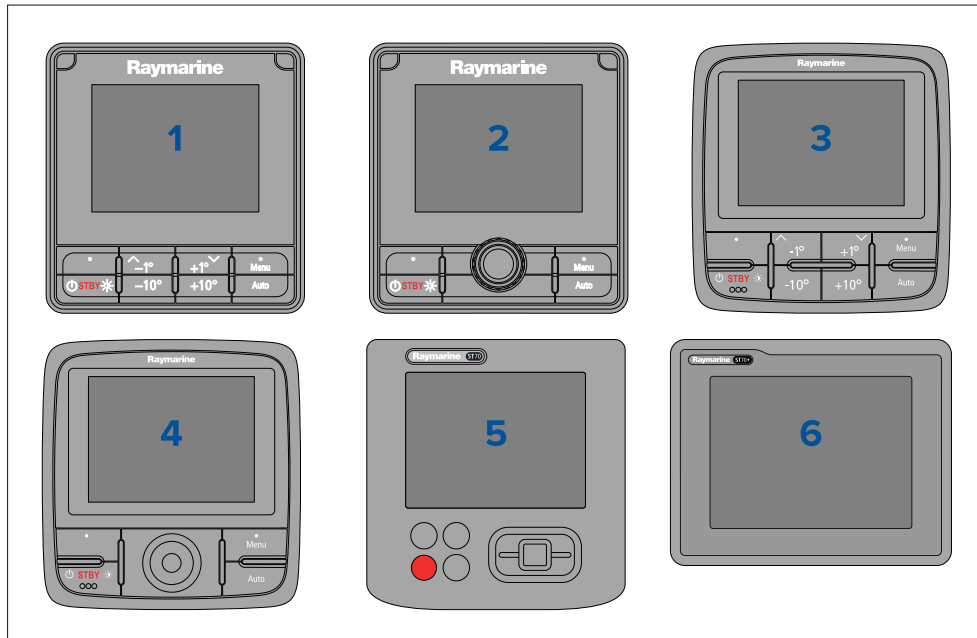
	Product details		Product details
1	p70s (E70328)	2	p70Rs (E70329)
3	p70 (E22166)	4	p70R (E22167)
5	ST70 (E22105)	6	ST70+ (E22115)

SeaTalk ® autopilot controllers
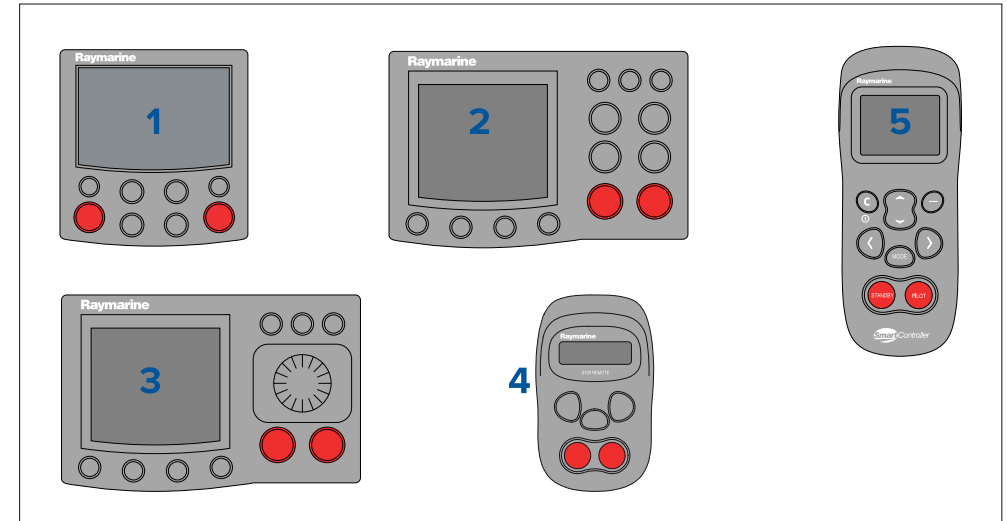
	Product details		Product details
1	ST6002 (E12098–P / E12100–P)	2	ST7002 (E12099–P / E12182)
3	ST8002 (E12119–P / E12183)	4	S100 (repeat controller only) (E15024)
5	SmartController (repeat controller only) (E15023)		

Appendix B NMEA 2000 PGNs

Administration PGNs

- **59392** — ISO Acknowledge (Receive / Transmit)
- **59904** — ISO Request (Receive / Transmit)
- **60160** — ISO Transport Protocol, Data Transfer (Receive)
- **60416** — ISO Transport Protocol, Connection Management — BAM Group Function (Receive)
- **60928** — ISO Address Claim (Receive / Transmit)
- **65240** — ISO Commanded address (Receive)
- **126208** — NMEA — Request, Commanded, Acknowledged Group Function (Receive / Transmit)
- **126464** — PGN Transmit and Receive List (Receive / Transmit)
- **126996** — Product Information (Receive / Transmit)
- **126998** — Configuration Information (Receive / Transmit)

Data PGNs

- [1]**126992** — System Time (Receive / Transmit)
- **126993** — Heartbeat (Receive / Transmit)
- **127237** — Heading/Track Control (Receive)
- **127245** — Rudder (Receive)
- **127250** — Vessel Heading (Receive)
- **127251** — Rate of Turn (Receive)
- **127258** — Magnetic Variation (Transmit)
- **127488** — Engine Parameters, Rapid Update (Receive)
- **127489** — Engine Parameters, Dynamic (Receive)
- **127493** — Transmission Parameters, Dynamic (Receive)
- **127496** — Trip Parameters, Vessel (Receive)
- **127497** — Trip Parameters, Engine (Receive)
- **127498** — Engine Parameters, Static (Receive)
- **127503** — AC input status (Receive)
- **127504** — AC output status (Receive)
- **127505** — Fluid Level (Receive)

- **127506** — DC detailed status (Receive)
- **127507** — Charger status (Receive)
- **127508** — Battery status (Receive)
- **127509** — Inverter status (Receive)
- **128259** — Speed, (Receive / Transmit)
- **128267** — Water Depth (Receive / Transmit)
- **129025** — Position rapid update (Transmit)
- [1]**129026** — COG & SOG, Rapid Update (Receive / Transmit)
- [1]**129029** — GNSS Position Data (Receive / Transmit)
- [1]**129033** — Time & Date (Transmit)
- **129038** — AIS Class A Position Report (Receive)
- **129039** — AIS Class B Position Report (Receive)
- **129040** — AIS Class B Extended Position Report (Receive)
- **129041** — AIS Aids to Navigation (AtoN) Report (Receive)
- [1]**129044** — Datum (Transmit)
- **129283** — Cross Track Error (Receive / Transmit)
- **129284** — Navigation Data (Transmit)
- **129285** — Navigation — Route / WP Information (Transmit)
- **129291** — Set & Drift, Rapid Update (Receive / Transmit)
- [1]**129539** — GNSS DOPs (Receive / Transmit)
- [1]**129540** — GNSS Sats in View (Receive / Transmit)
- [1]**129542** — GNSS Pseudorange Noise Statistics (Receive / Transmit)
- [1]**129547** — GNSS Pseudorange Error Statistics (Receive / Transmit)
- **129793** — AIS UTC and Date Report (Receive)
- **129794** — AIS Class A Static and Voyage Related Data (Receive)
- **129798** — AIS SAR Aircraft Position Report (Receive)
- **129801** — AIS Addressed Safety Related Message (Receive)
- **129802** — AIS Safety Related Broadcast Message (Receive)
- **129809** — AIS Class B "CS" Static Report, Part A (Receive)
- **129810** — AIS Class B "CS" Static Report, Part B (Receive)
- **130064** — Route and WP Service — Database List (Receive / Transmit)

- **130070** — Route and WP Service — WP Comment (Receive / Transmit)
- **130072** — Route and WP Service — Database Comment (Receive / Transmit)
- **130074** — Route and WP Service — WP List — WP Name & Position (Receive / Transmit)
- **130306** — Wind Data (Receive)
- **130310** — Environmental Parameters (Receive)
- **130311** — Environmental Parameters (Receive)
- **130312** — Temperature (Receive)
- **130576** — Small Craft Status (Receive)
- **130577** — Direction Data (Receive)

Note:

(1) Only transmitted when *[Send GPS to VHF:]* setting is enabled, from the GPS / GNSS Settings menu.

Appendix C Document change history

Document	Changes
Document: 81388–10 Software version: LHS 3.18 Date: 12–2022	• Updated software version to 3.18. • Updated new features list, including support for updated Australia and New Zealand region LightHouse Charts and Tides and Current data for those regions.
Document: 81388–9 Software version: LHS 3.17.25 Date: 09–2022	• Updated software version to 3.17.25. • Updated new features list. • Updated LightHouse chart details to include new regions.
Document: 81388–8 Software version: LHS 3.16.xx Date: 10–2021	• Nautical miles & Yards (NM & yd) added as a unit of measure for distance. • Explanation added for all Distance and Speed units of measure abbreviations. • Added details for calibrating sonar transducers to Fishfinder app chapter. • Added abbreviations for all units of measure. • Changed Fathoms units from 'Fa' to 'Fm'.
Document: 81388–7 Software version: LHS 3.15.50 Date: 07–2021	• Updated applicable software version references to LHS3.15. • Updated new features list to reflect LH3.15. • Changed name of Anchor drift alarm to Position drift. • Added details for each alarm and copied existing AIS dangerous targets details to Alarms section. • Added details of LightHouse charts Reeds almanac. • Included extra autorouting warnings and detail.

Document	Changes
	• Added details of new minimum sonar depth alarm.
	• Added sonar technology overviews.
	• Added sonar depth range details.
Document: 81388–6 Software version: LHS 3.14.092 Date: 07–2021	• Updated LightHouse chart details.
	• Expanded Fish detection details.
	• Updated NMEA 2000 PGN list.
Document: 81388–5 Software version: LHS 3.13.076 Date: 01–2021	• Updated Chart app chapter to include new LightHouse chart features and settings.
	• Updated Set up chapter to include new Wi-Fi connections section.
	• Updated new features to reflect LHS V3.13
	• Updated Document change history to reflect 81388–5.
	• Added software downgrade procedure to Troubleshooting.
Document: 81388–4 Software version: LHS 3.10.10 Date: 01–2020	• Updated new features to reflect LHS 3.10.10.
	• Updated startup wizard details to include list of activities and information regarding ice fishing. Removed requirement for a factory reset if wrong transducer is selected.
	• Added transducer selection to boat details settings.
	• Added app page icons for different fishfinder channels and views to homescreen chapter.
	• Added descriptions of different fishfinder channel modes to fishfinder chapter.

Document	Changes
	• Moved list of compatible autopilot controllers to the appendix.
Document: 81388–3 Software version: LHS 3.9.98 Date: 05–2019	• Updated new features to reflect LHS 3.9.98.
	• Updated compatible displays to include S variants and non-Wi-Fi SKUs.
	• Updated shortcuts menu details to include Radar transmission controls.
	• Removed limited list of SeaTalkng products that can be updated.
	• Added Quantum pairing procedure to Set up chapter.
	• Added Radar app chapter.
	• Added Radar selection to start up wizard.
	• Updated data item names.
	• Added Waypoint sharing details.
	• Added autopilot commands information.
	• Added new rolling road page details to Dashboard app.
	• Updated supported PGN list.
Document: 81388–2 Software version: LHS 3.9.40 Date: 04–2019	• Updated to include new support for AIS.
	• Updated Document conventions to include "enable" and "disable".
	• Added new document change history to appendix.
	• Updated LoU and software and hardware info screenshots to latest version.
	• Updated applicable software version to 3.9.
	• Updated viewing product information task.

Document	Changes
	• Updated to include details of MDS support.
	• Added details for new support of Wind data.
	• Added Estonian User Interface language.
	• Updated available data items to include wind and speed data.
	• Added details for wind and navigation dials in Dashboard app.
	• Updated list of supported PGNs.
	• Updated Chart app chapter to include Tides mode.
	• Updated Fishfinder app chapter to differentiate between HV and S variant displays.
Document: 81388–1 Software version: LHS 3.8.64 Date: 03–2019	• Initial release

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