Raymarine®

LIGHTHOUSE 3

VERSION 3.3XX

Advanced operation instructions

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Software updates

Check the Raymarine website for the latest software releases for your product.
www.raymarine.com/software

Product documentation

The latest versions of all English and translated documents are available to download in PDF format from the website: www.raymarine.com/manuals.
Please check the website to ensure you have the latest documentation.

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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: Radar transmission safety

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

Warning: Sonar operation

- NEVER operate the sonar with the vessel out of the water.
- 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.

Disclaimers

Raymarine does not warrant that this product is error-free or that it is compatible with products manufactured by any person or entity other than Raymarine.

This product uses digital chart data, and electronic information from Global Navigation Satellite Systems (GNSS) which may contain errors. Raymarine does not warrant the accuracy of such information and you are advised that errors in such information may cause the product to malfunction. Raymarine is not responsible for damages or injuries caused by your use or inability to use the product, by the interaction of the product with products manufactured by others, or by errors in chart data or information utilized by the product and supplied by third parties.

This product supports electronic charts provided by third party suppliers which may be embedded or stored on memory card. Use of such charts is subject to the supplier's End-User Licence Agreement.

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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

Chapter contents

- 2.1 Product documentation on page 16

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 3 Basic operation instructions	81369
LightHouse 3 Advanced operation instructions	81370
Axiom MFD Installation instructions	87298
Axiom Pro MFD Installation instructions	87319
RMK-10 Remote Keypad Installation and operation instructions	81367
RMK-9 Remote Keypad Installation and operation instructions	81351

Video tutorials

A range of tutorial videos is available on the Raymarine website to assist you in learning how to use your product.

http://www.raymarine.com/multifunction-displays/lighthouse3/tips-and-tricks

Software revision

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

This handbook covers MFD operating system software: LightHouse™ 3 Release 3.3.

Check the website for the latest software and user manuals:

- www.raymarine.com/software
- www.raymarine.com/manuals

Compatible MFDs

The LightHouse™ 3 operating system is compatible with the MFDs listed below.

Software version	Compatible MFDs
LH3.3	• Axiom 7, 9 and 12 • Axiom Pro 9, 12 and 16 • eS Series • gS Series
LH3.2	• Axiom 7, 9 and 12 • Axiom Pro 9, 12 and 16
LH3.1	• Axiom 7, 9 and 12
LH3.0	• Axiom 7, 9 and 12

New software features

The following new features have been added to Release 3.3 of the LightHouse™ 3 operating system.

- Added support for upgrading eS Series and gS Series MFDs to LightHouse™ 3 — See Appendix D **LightHouse 3 on eS and gS Series**
- Added support for AIS targets in the Radar app — See 8.3 **Target tracking**
- Added new independent Reference mode for Radar targets — See **Target settings**
- Enhanced Radar Trails feature: only moving objects produce trails
- New Clear Trails option in Radar app
- Added new Weather mode in Chart app — See Chapter 9 **Weather mode**

- Added support for SiriusXM SR150 weather receiver
- Added support for Navionics plotter sync
- Added new **Disable all sounders** option on Shortcuts page
- Enhanced Sonar range transition algorithm
- New Depth and Intensity color scales for RealVision™ 3D
- Added new product diagnostics pages for networked products
- New Supply voltage data item available for Data overlays
- Added Bulgarian, Hebrew, and Thai user interface languages

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.

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

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: Set up

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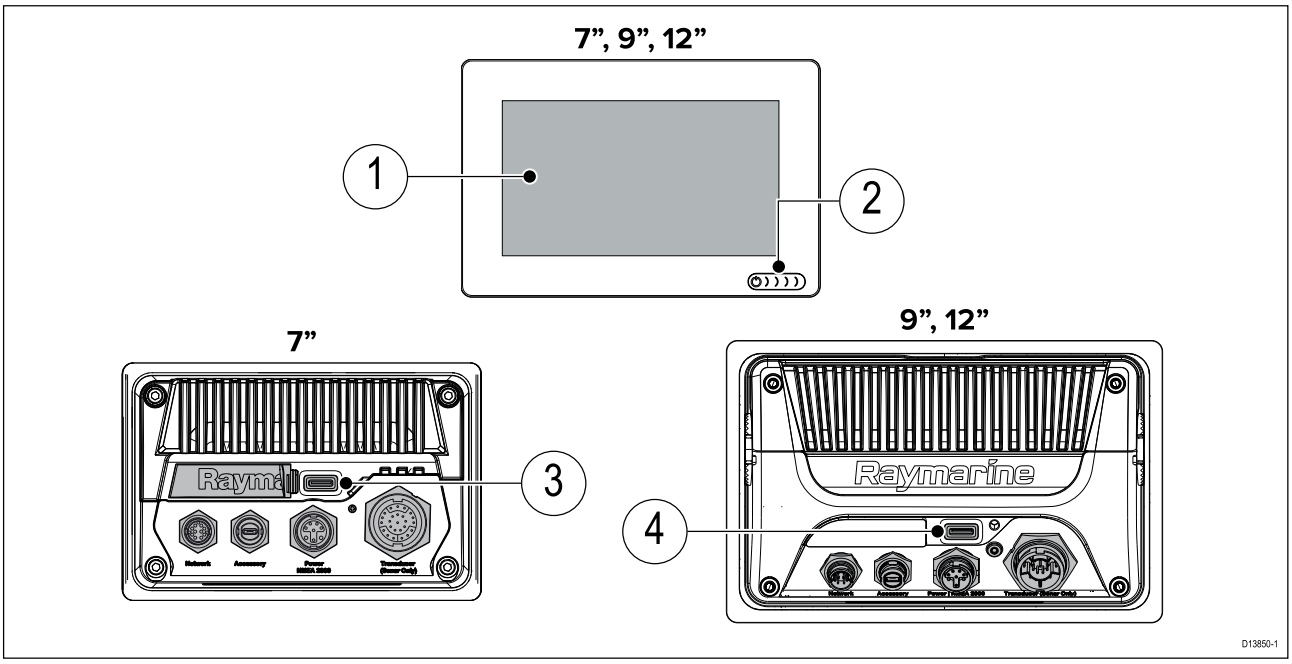
3.1 Controls — Axiom variants

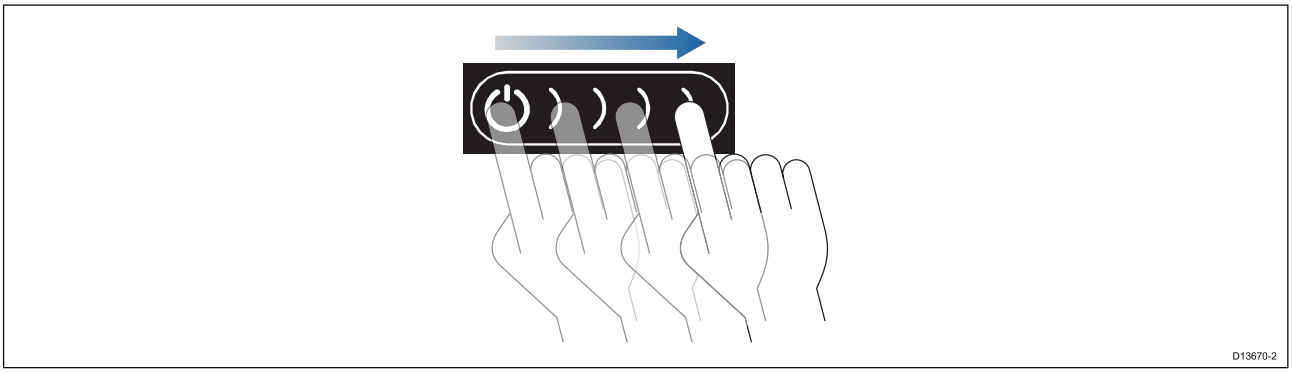


1	**Touchscreen**	2	**Power button**
3	**MicroSD card reader** (7” display only)	4	**MicroSD card reader** (9” & 12” displays)

Powering on the display

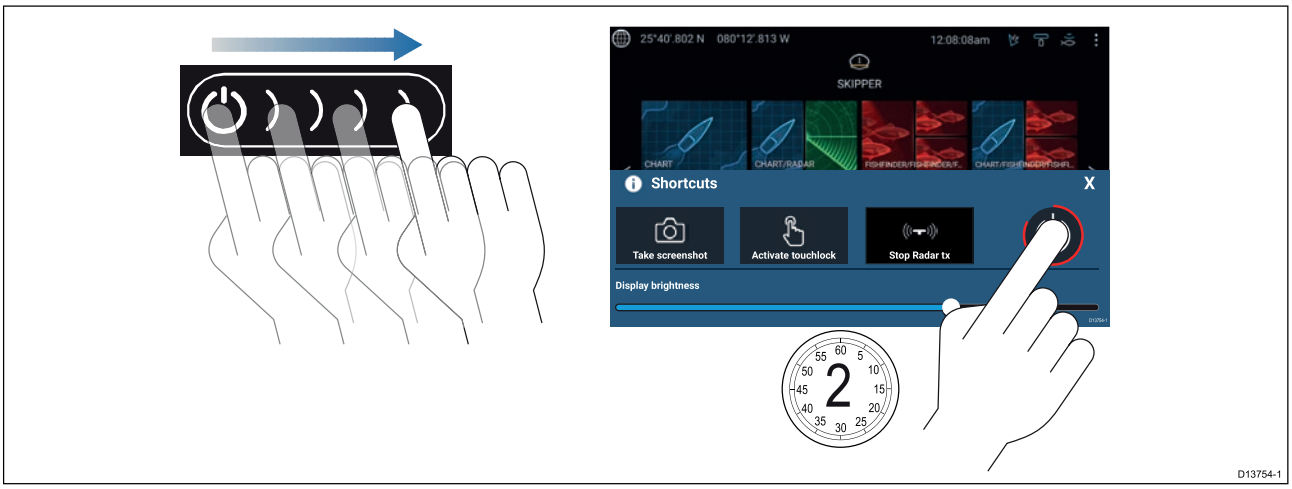
When power is available to the MFD but the MFD is switched off, the Power symbol will be illuminated.

To power on the display:



1. Swipe your finger from left to right across the **Power** button swipe area.
   The MFD will power up.

Powering off the display



1. Swipe your finger from left to right across the **Power** button swipe area.
   The Shortcuts menu is displayed.
2. Press and hold the **Power symbol** until the screen switches off.

Note: When powered off, the unit may still draw a small amount of power from the battery, if this is a concern unplug the power supply or switch off at the breaker.

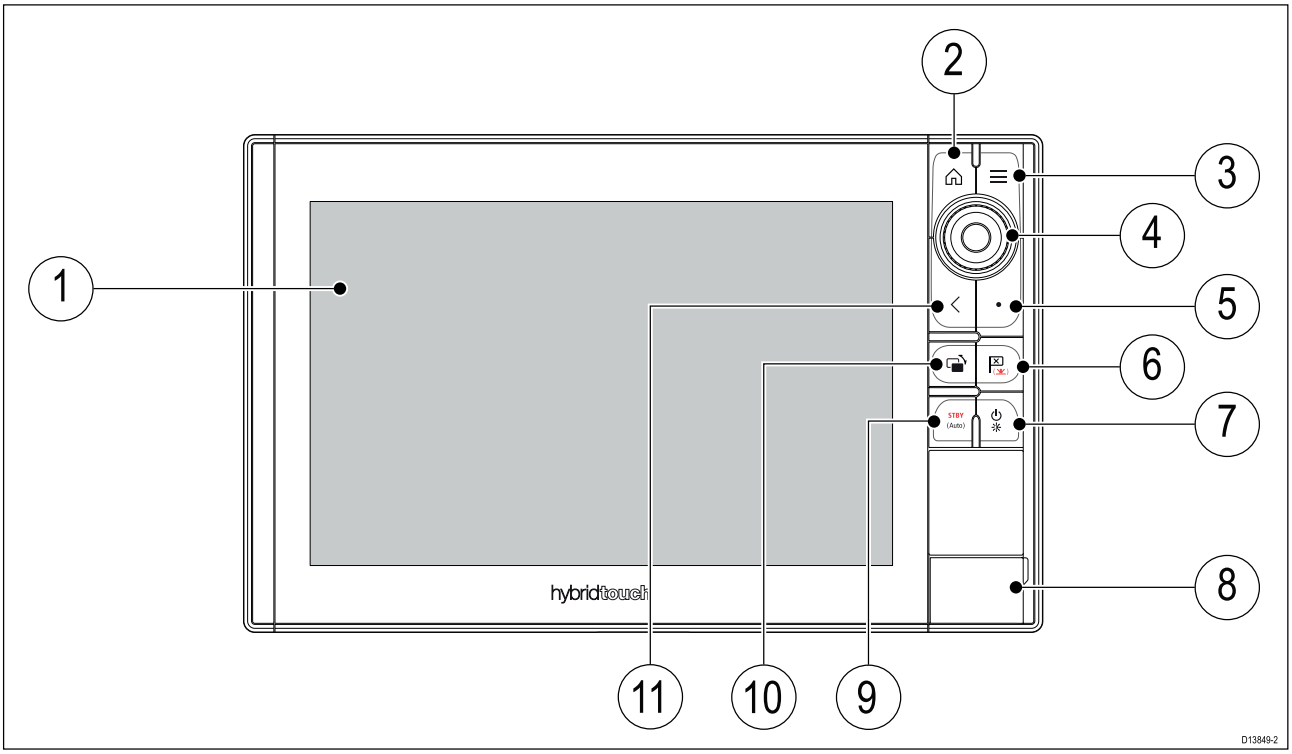
Switching on and off at the breaker

If you wish to ensure that the MFD 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 cable is reconnected, the MFD will resume in the same power state that it was in when it was switched off.

3.2 Controls — Axiom Pro variants

In addition to its touchscreen, the Axiom Pro also includes physical buttons that can be used to control the MFD.



1. **Touchscreen** — The touchscreen can be used to control the MFD.
2. **Home** — Press to display the Homescreen.
3. **Menu** — Press to open or close menus.
4. **Uni-controller** — The Uni-controller consists of a center **OK** button, **Directional** controls and a **Rotary** knob.
5. **User Programmable Button** — You can select a function for this button.
6. **Waypoint / MOB** — Press momentarily to place a waypoint at your vessel's location. A long press activates the Man overboard alarm.
7. **Power** — Press to power on the MFD. When powered on press to open the Shortcuts page.
8. **MicroSD card reader** — 2 x MicroSD card slots.
9. **Pilot** — Press momentarily to display or hide the Pilot sidebar. A long press engages the autopilot in locked heading mode, or disengages an active autopilot.
10. **Switch** — Press momentarily to switch the active pane in a splitscreen page. A long press expands the selected pane.
11. **Back** — Press to return to the previous menu or dialog.

Powering on the display

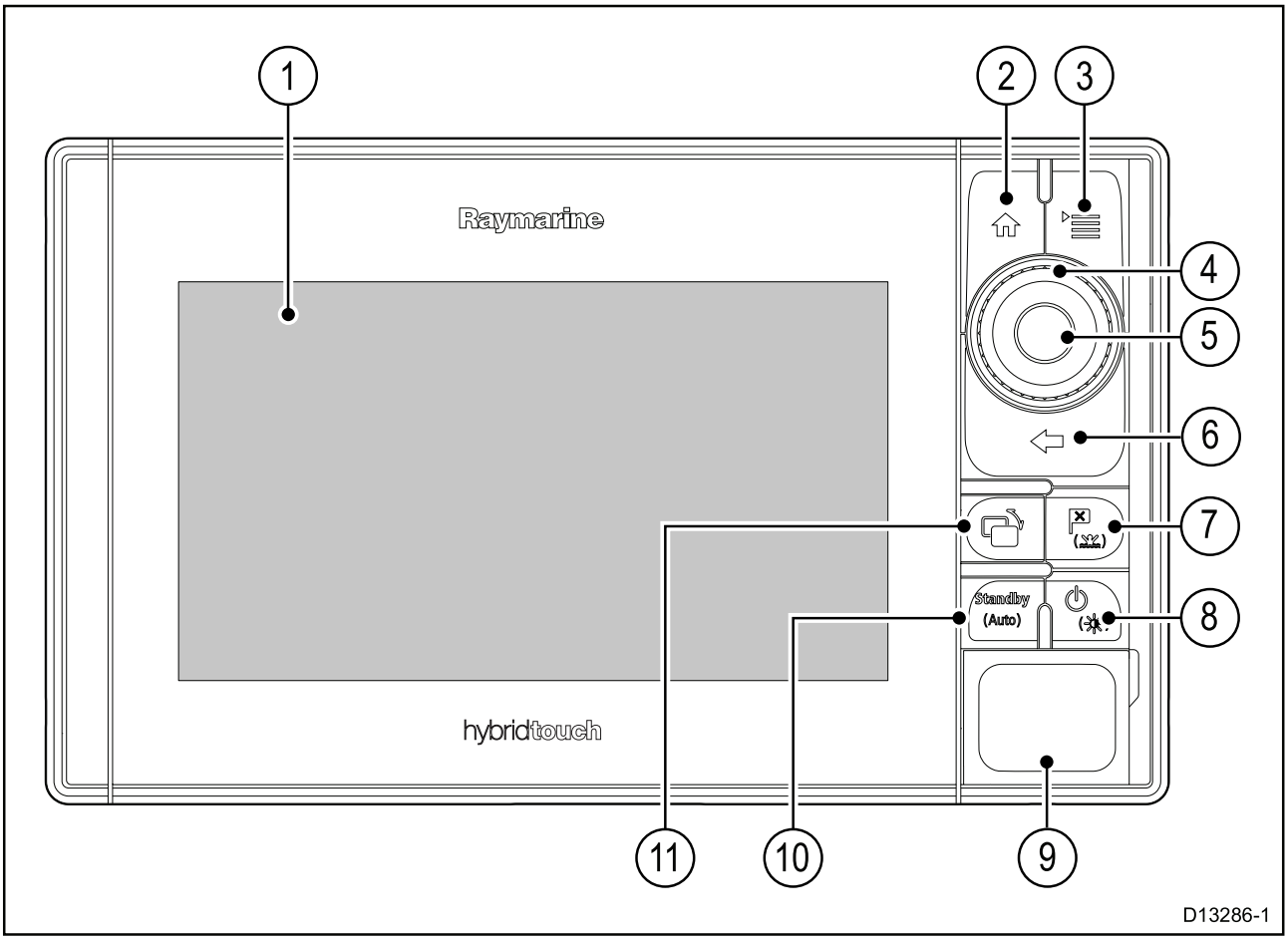
1. Press the power button to power on the display.

Powering off the display

1. Press and hold the **Power** button for approximately 6 seconds.

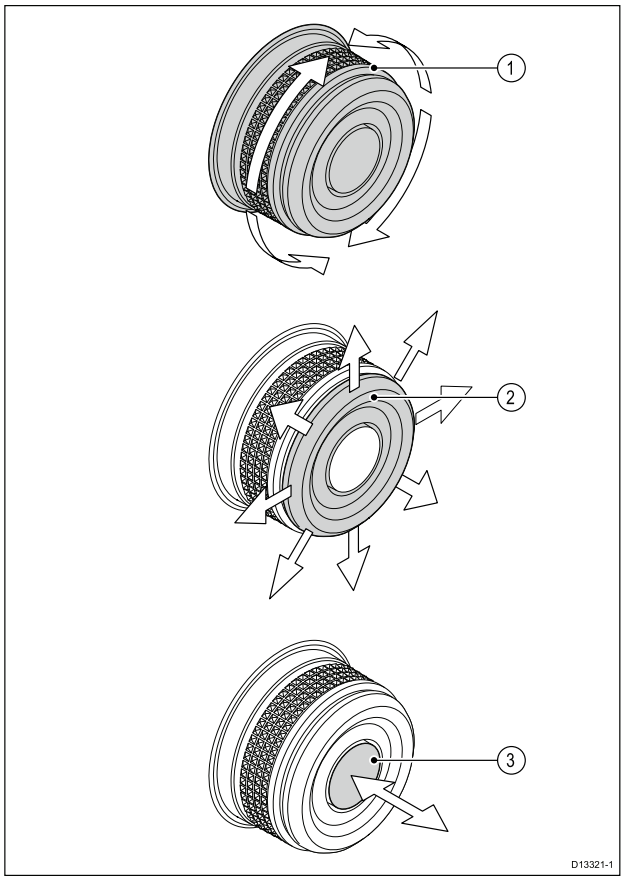
Note: When powered off, the unit may still draw a small amount of power from the battery, if this is a concern unplug the power supply or switch off at the breaker.

3.3 Controls — eS Series



1. **Touchscreen** — The touchscreen can be used to control the MFD.
2. **Home** — Press to display the Homescreen.
3. **Menu** — Press to open or close menus.
4. **Uni-controller** — The Uni-controller consists of a center **OK** button, **Directional** controls and a **Rotary** knob.
5. **Ok** button
6. **Back** — Press to return to the previous menu or dialog.
7. **Waypoint / MOB** — Press momentarily to place a waypoint at your vessel's location. A long press activates the Man overboard alarm.
8. **Power** — Press to power on the MFD. When powered on press to open the Shortcuts page.
9. **MicroSD card reader** — 2 x MicroSD card slots.
10. **Pilot** — Press momentarily to display or hide the Pilot sidebar. A long press engages the autopilot in locked heading mode, or disengages an active autopilot.
11. **Switch** — Press momentarily to switch the active pane in a splitscreen page. A long press expands the selected pane.

eS Series Unicontroller



1. **Rotary** — use to select menu items, move the onscreen cursor, and adjust the range in the Chart and Radar applications.
2. **Directional control** — use to move the cursor position in applications, pan up, down, left and right in the Chart, Weather and Sonar applications or to cycle through datapages in the Data application.
3. **OK** push button — push in to confirm a selection or entry.

Powering on the display

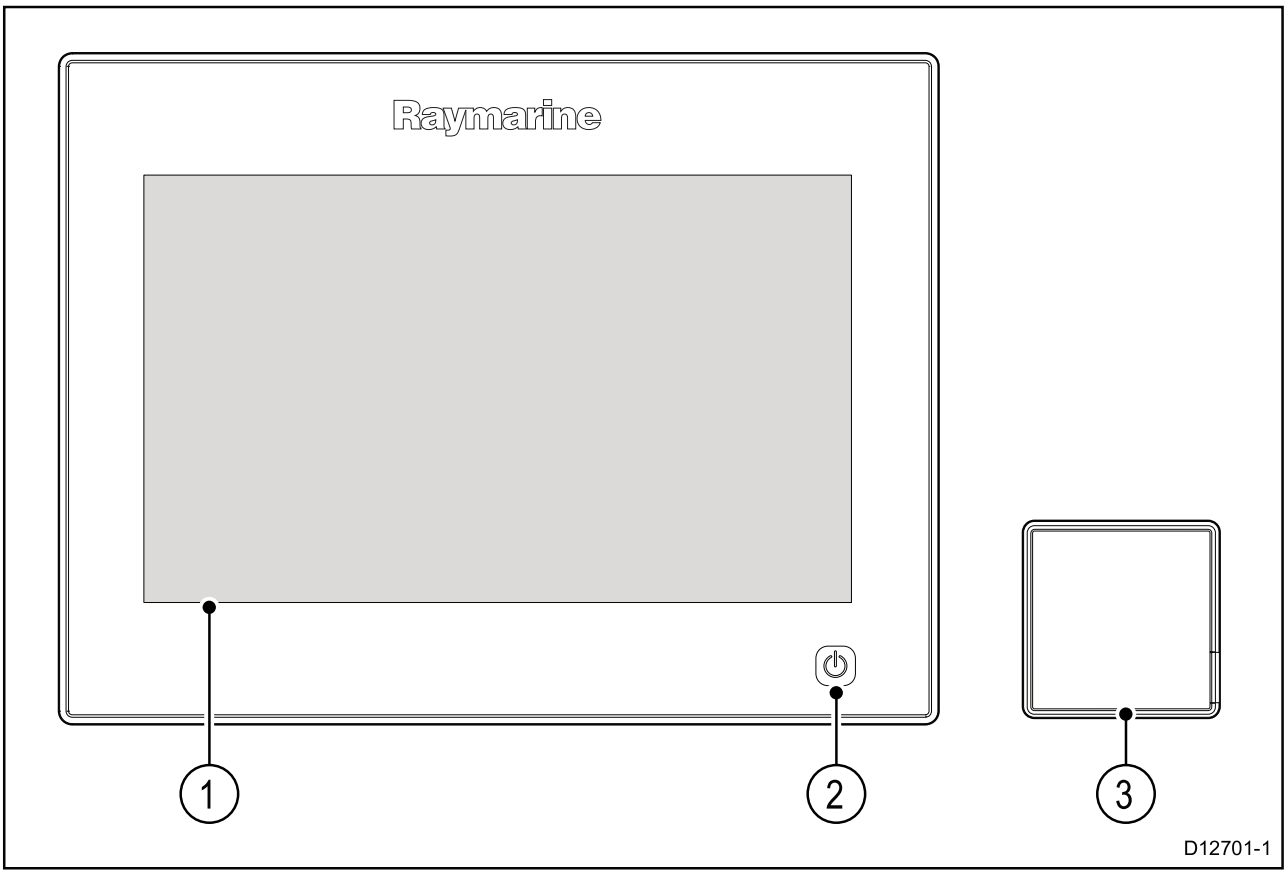
1. Press the power button to power on the display.

Powering off the display

1. Press and hold the **Power** button for approximately 6 seconds.

Note: When powered off, the unit may still draw a small amount of power from the battery, if this is a concern unplug the power supply or switch off at the breaker.

3.4 gS Series Controls



	Description	Functions
1	**Touchscreen**	Touch the screen to operate functions, including all menu operations.
2	**Power**	• Press once to switch the unit on. • When powered on, press the **Power** button again open the Shortcuts page. • When powered on, press and hold to put the display into Standby mode. • If an integrated pilot is engaged, press and hold to put the autopilot into STANDBY mode.
3	**Card reader**	Open the card door to insert or remove a MicroSD card. There are 2 card slots (labelled 1 and 2), used for electronic charts and archiving waypoint, route, track and settings data.

Powering on the display

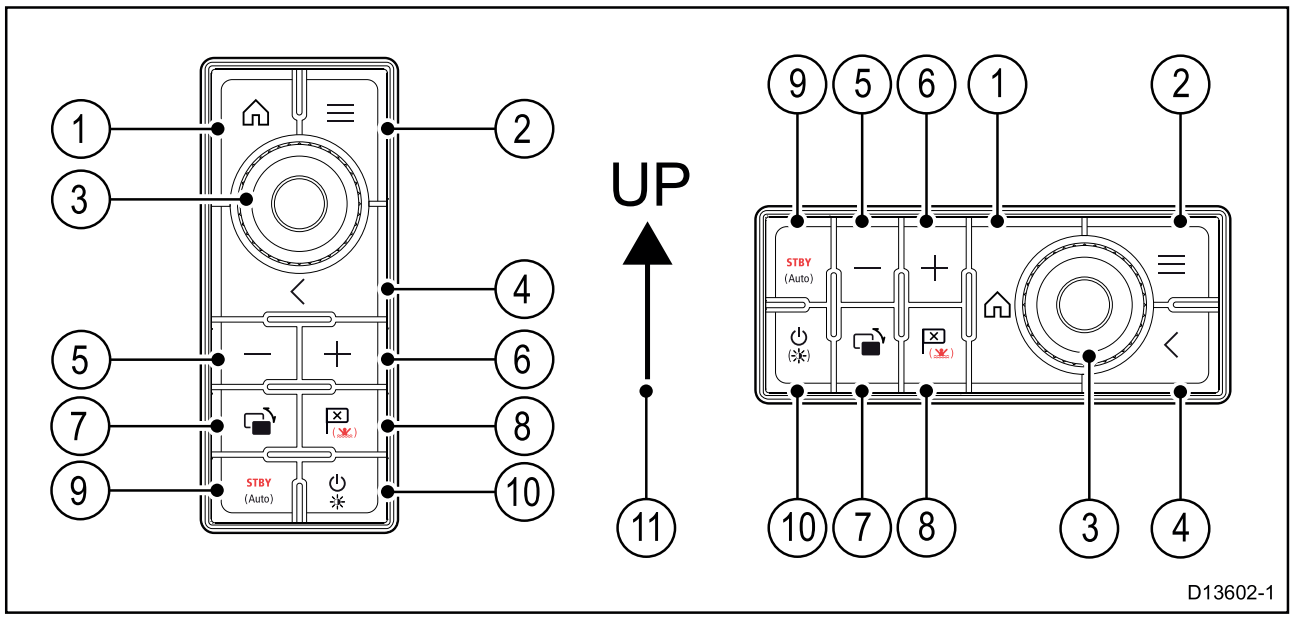
1. Press the power button to power on the display.

Powering off the display

1. Press and hold the **Power** button for approximately 6 seconds.

Note: When powered off, the unit may still draw a small amount of power from the battery, if this is a concern unplug the power supply or switch off at the breaker.

3.5 RMK-9 / RMK-10 controls



1. **Home** — Press to display the Homescreen.
2. **Menu** — Press to open or close menus.
3. **UniController** — Provides a rotary control and a joystick that includes an OK push button for using menus and applications.
4. **Back** — Press to return to the previous menu or dialog.
5. **-** (Minus/Negative symbol) — Press to range out.
6. **+** (Plus/Positive symbol) — Press to range in.
7. **Switch** — Press momentarily to switch the active pane in a splitscreen page. A long press expands the selected pane.
8. **Waypoint / MOB** — Press momentarily to place a waypoint at your vessel's location. A long press activates the Man overboard alarm.
9. **Pilot** — Press momentarily to display or hide the Pilot sidebar. A long press engages the autopilot in locked heading mode, or disengages an active autopilot.
10. **Power** — Press momentarily to open the Shortcuts page on the active display. Long press to power off all paired MFDs.
11. Direction of Joystick Up.

3.6 Getting started

First power up

When you power up your new Multifunction Display (MFD) for the first time a number of actions are required.

The list below shows the actions that should be performed on your new MFD:

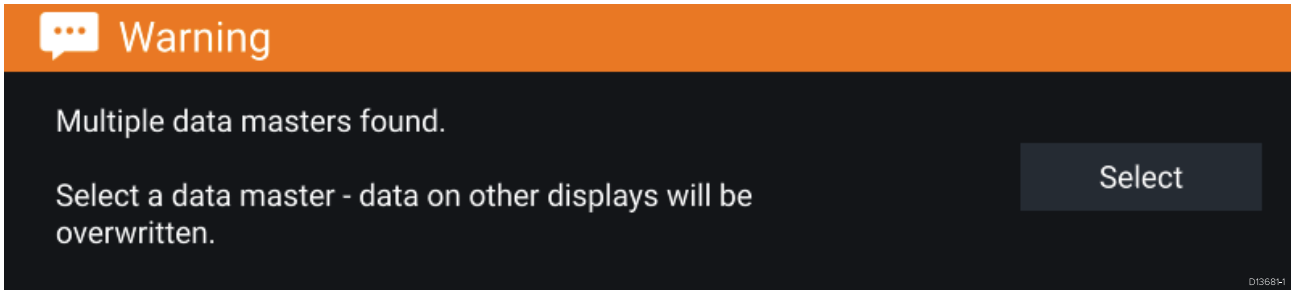
1. **Power** on the display.
2. Select your **Data master** (only required on networks with more than 1 MFD).
3. Complete the **Startup wizard** (the wizard will not be shown if you are connecting to an existing system that has already been set up).
4. Read and agree to the **Limitations on Use** disclaimer.
5. Select/check your preferred **Data sources**, if required.
6. Perform **Engine identification**, if required.
7. Select/check **Transducer settings**, if required

First power up Data master selection

Networks containing more than 1 MFD must have a designated Data master. The Data master is the primary MFD in the network and should be the MFD that is connected to the SeaTalkng ® / NMEA 2000 CAN bus network and any other devices and sources of data in your system. The Data master bridges the data over the SeaTalkhs ™ network to any compatible networked 'repeater' MFDs.

By default your MFD will be set as a Data master. If you are connecting to a network that already includes MFDs then on first power up you will be requested to confirm your Data master.

The "Multiple Data masters found" warning will be displayed whenever a new MFD is added to your network.



You can change your Data master at anytime by selecting **Assign as Data master** against a MFD listed in the Network tab of the Settings menu: **Homescreen > Settings > Network**.

Startup wizard

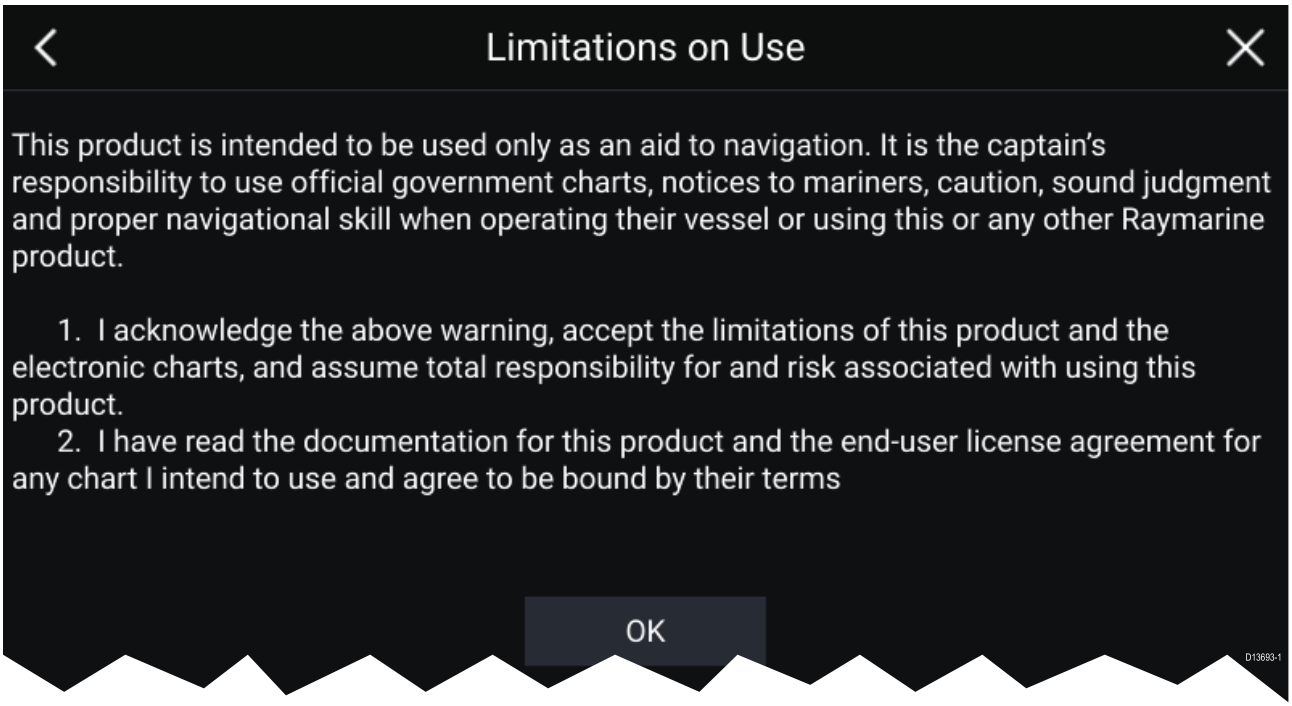
If the MFD is being installed as a stand alone installation or as part of a new system, then the first time the MFD is powered up the Startup wizard will be displayed. The Startup wizard will help you configure important settings on your MFD.

Follow the onscreen instructions and configure the relevant settings.

The Startup wizard will also be displayed after a **Factory reset** is performed.

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 MFD.

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

Multiple data sources (MDS)

For MDS to be available all products in the system that use the data sources, 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 products, to make them compliant. Visit the Raymarine website (www.raymarine.com) to obtain the latest software for your products.

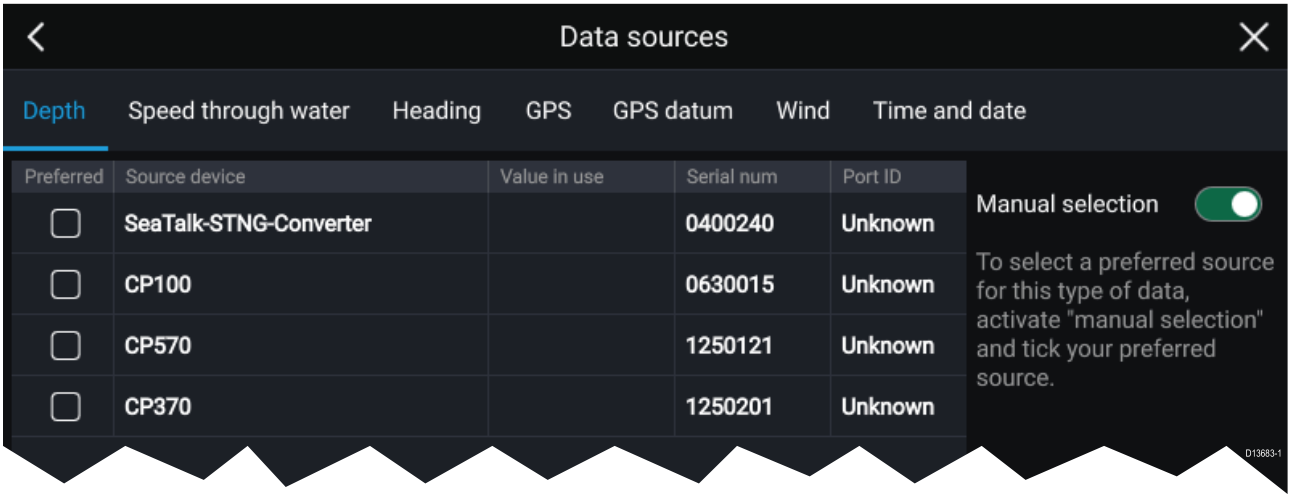
If MDS-compliant software is not available for the product and you do NOT want to use the systems preferred data source, you must remove any non-compliant products from the system. You should then be able to select your preferred data source.

Note: 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 system includes multiple sources of a data type, such as depth data, the system will choose the most appropriate source for the data. If you prefer, you can manually select your own data source.

The **Data sources** menu can be accessed on your Data master MFD, from the **Settings** menu: **Homescreen** > **Settings** > **Network** > **Data sources**.



Each tab enables you to view and select your preferred data source. The currently active data source will display its current value in use. Data source selection can be manual or set to automatic:

- **Auto** — your MFD will automatically select a device.
- **Manual** — you can manually select your preferred device.

Networked MFDs will automatically be updated to use the Data sources selected on your Data master MFD.

Identifying engines

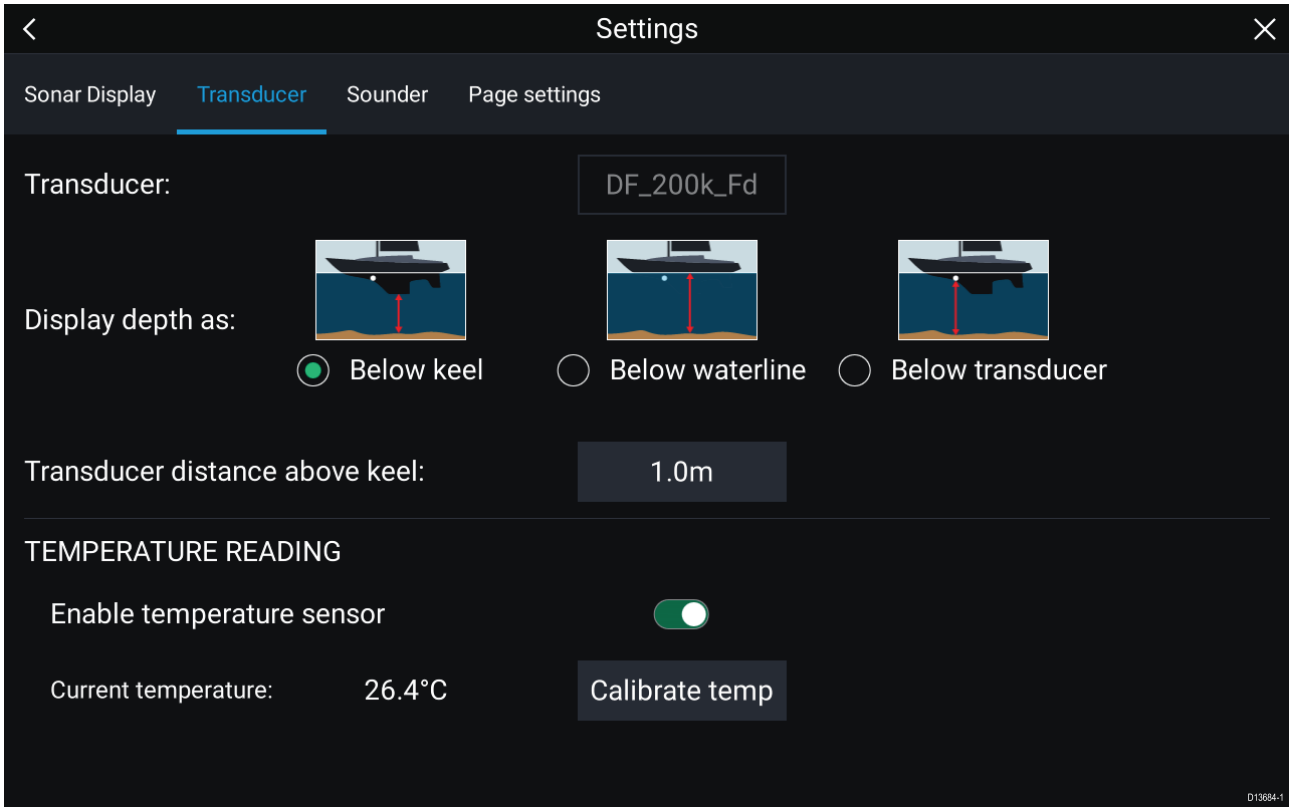
Engine data can be displayed on your MFD if your engines are transmitting the relevant supported data on to the MFD network. If your system has mislabelled your engines then you can correct this using the Engine identification wizard.

The Engine identification wizard can be accessed from the Boat details tab: **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.

Configuring Transducer settings

For systems set up with Sonar, you should configure your transducer settings.

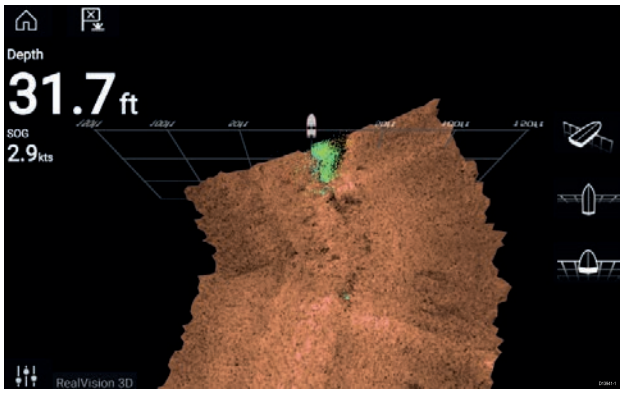
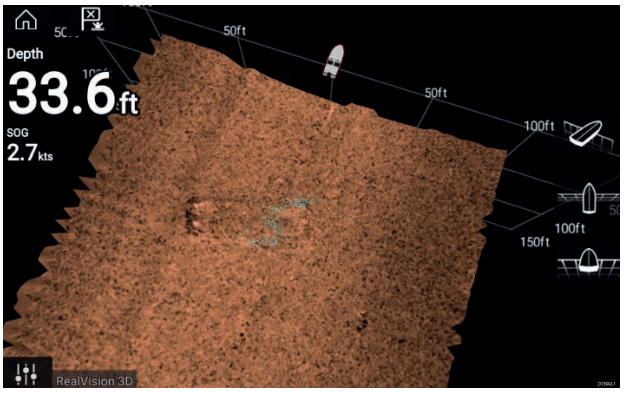


1. Select **Transducer** from the Sonar app's **Settings** menu: **Menu** > **Settings** > **Transducer**
2. Select how you want your depth to appear:
   i. Below transducer (default) — No offset required
   ii. Below keel — Enter the distance between the transducer face and the bottom of the Keel.
   iii. Below waterline —Enter the distance between the bottom of your Keel and the waterline.
3. If your transducer includes a temperature sensor then you can also 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.

RealVision™ 3D AHRS calibration

RealVision™ 3D transducers include a built-in AHRS (Attitude and Heading Reference Sensor), which measures the motion of your vessel to assist in the rendering of sonar images. After installation all RealVision™ 3D transducers require calibration.

An uncalibrated transducer can produce an offset to the front edge of the render of the bottom in the sonar image, as illustrated below.

	
Uncalibrated	Calibrated

Calibration is an automatic process and starts after your vessel has turned approximately 100° at a speed of between 3 –15 knots. Calibration requires no user input, however at least a 270° turn is required before the calibration process can determine the local deviation and apply a relevant offset.

The time it takes to complete the calibration process will vary according to the characteristics of the vessel, the installation environment of the transducer, and the levels of magnetic interference at the time of conducting the process. Sources of significant magnetic interference may increase the time required to complete the calibration process. Certain areas with substantial magnetic deviation may require extra circles or “figure of 8” manoeuvres to be performed. Examples of such sources of magnetic interference include:

- Marine pontoons
- Metal-hulled vessels
- Underwater cables

Note:

The Calibration process will require repeating after a **Sonar reset** or MFD **Factory reset**.

Assigning a function to the User Programmable Button

You can assign a function to the User Programmable Button on an Axiom™ Pro MFD.

1. Press and hold the **User Programmable Button**.
2. Select the function from the list.

You can also assign a function to the **User Programmable Button** from the Settings menu: **Homescreen** > **Settings** > **This Display** > **User Configurable Key**.

Performing a settings or factory reset

Performing a **Factory reset** will erase ALL user data and reset the MFD’s settings to Factory default values. Performing a **Settings reset** will restore your MFD’s settings to factory defaults, whilst retaining user data.

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

Importing user data

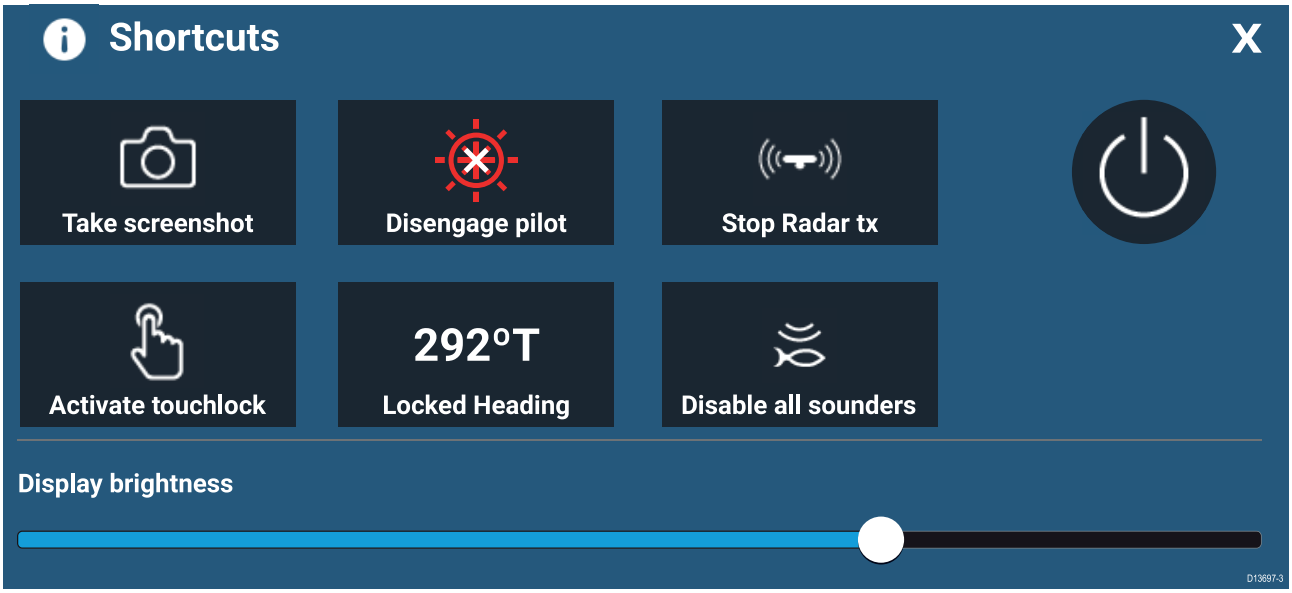
You can import user data (i.e.: Waypoints, Routes and Tracks) to your MFD.

1. Insert the MicroSD card that contains your user data files into a card reader slot on your MFD.

2. Select **Import from card** from the Import/export page:(**Homescreen > My data > Import/export > Import from card**).
3. Select the relevant SD card slot from the file browser and then navigate to your User data file (.gpx)
4. Select the relevant GPX file.
   Your user data has now been imported.
5. Select **OK**.

3.7 Shortcuts

The Shortcuts menu can be accessed by swiping left to right across the **Power** button swipe area on an Axiom™ MFD or by pressing the **Power** button on an Axiom™ Pro, eS Series or gS Series MFD.



The following shortcuts are available:

- Take Screenshot
- Activate Touchlock
- Stop Radar transmitting
- Power off
- Engage / Disengage autopilot
- Adjust Locked heading
- Adjust Brightness
- Disable all Sounders

Taking a screenshot

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

1. Swipe your finger from left to right across the **Power** button swipe area.
   The Shortcuts menu is displayed.
2. Select **Take screenshot**.

The screenshot will be saved in .png format to the **Screenshot file** location. The Screenshot file location can be selected from the **This Display** tab located in the **Settings** menu: **Homescreen > Settings > This Display > Screenshot file:**.

Activating touchlock

In rough weather conditions precipitation may lead to erroneous touches being detected by the touchscreen. In these conditions you can use touchlock to prevent this.

1. Select **Activate touchlock** from the **Shortcuts** menu.

   *With touchlock activated the touchscreen will be disabled. To re-enable the touchscreen, swipe from left to right across the **Power** button swipe area.*

Radar standby

You can place a transmitting Radar in Standby from the Shortcuts menu.

1. Select **Stop Radar tx** from the **Shortcuts** menu.

Autopilot shortcuts

When Autopilot control is enabled, the Shortcuts page provides an Autopilot icon which can be used to engage and disengage your autopilot. When the autopilot is engaged in Locked heading mode you can also adjust the locked heading from the Shortcuts page.

Adjusting brightness

LCD brightness can be adjusted from the Shortcuts menu.

1. Swipe your finger from left to right across the **Power** button swipe area.
   The Shortcuts menu is displayed
2. Move the **Display brightness** control along the slider bar to adjust the brightness.

   *With the Shortcuts menu displayed you can also use the **Power** button swipe area to increase the brightness level in increments, by repeating the left to right swipe.*

3.8 Memory card compatibility

MicroSD memory cards can be used to back up / 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

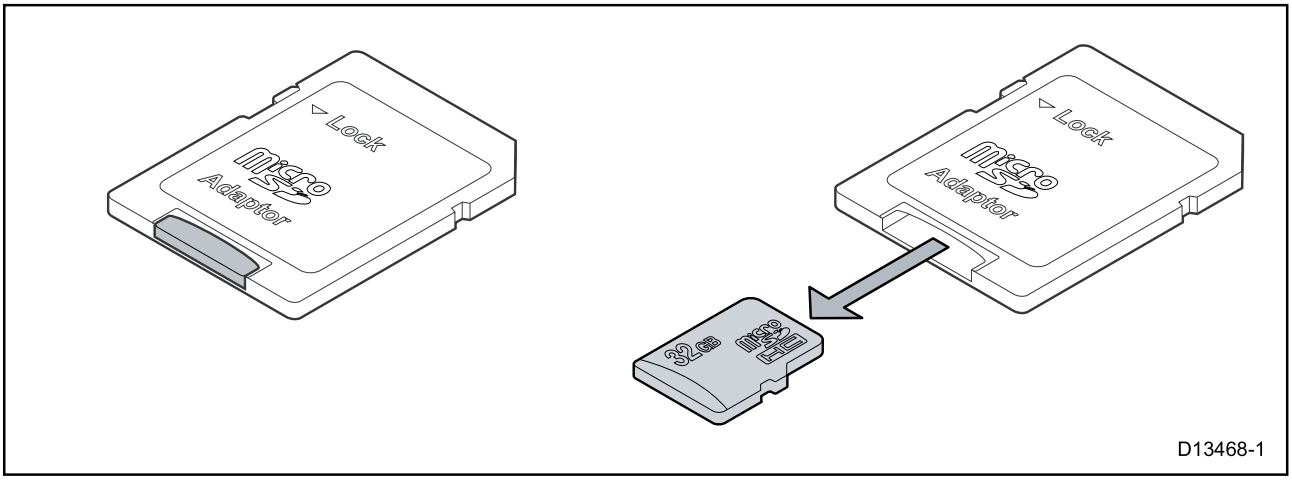
The following types of MicroSD cards are compatible with your MFD:

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

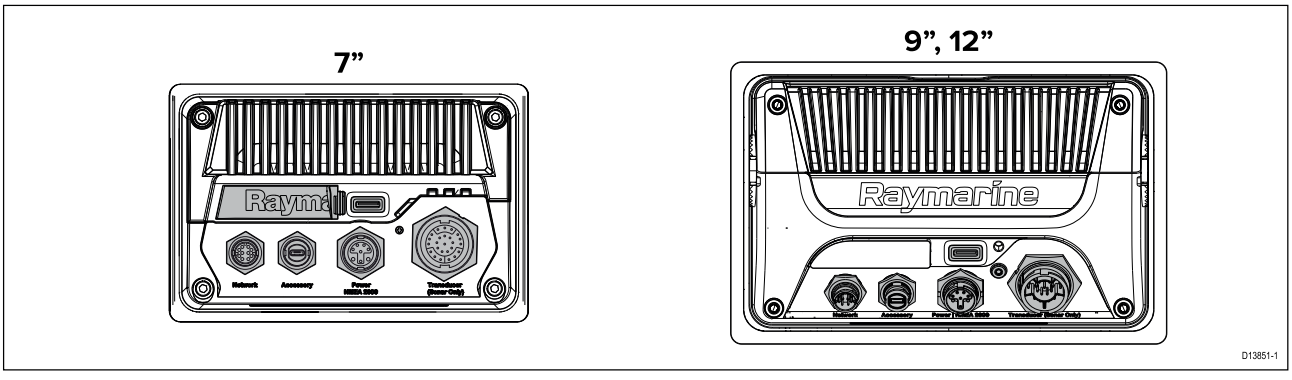
- **Speed class rating** — For best performance it is recommended that you use Class 10 or UHS (Ultra High Speed) class memory cards or better.
- **Use branded memory cards** — When archiving data it is recommended that you use good quality branded memory cards.

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 — Axiom variants

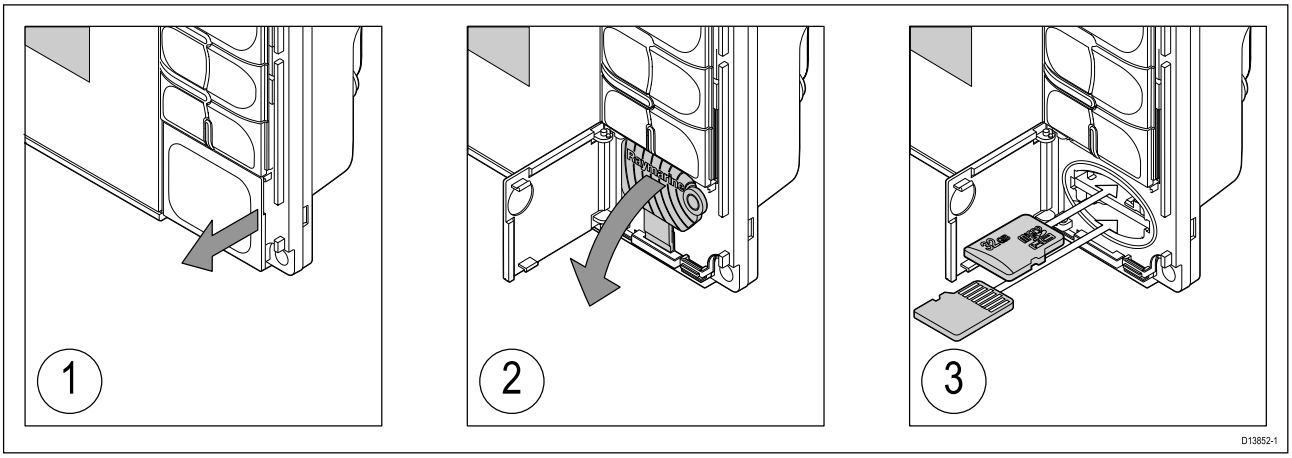


1. Pull back the microSD card reader cover as shown above.
2. Insert your microSD card with the contacts facing down.
3. Close the cover and ensure it is seated correctly.

Removing a MicroSD card

1. Select **Eject SD card** from the **Import/export** page: **Homescreen > My data > Import/export > Eject SD card.**
2. Remove the MicroSD card from the Rear of the MFD.
3. Ensure you close the card reader's cover.

Inserting a MicroSD card — Axiom Pro variants



1. Open the card reader door.
2. Pull down the card reader cover.
3. Insert the card into a card slot and push until it clicks into place.

Note: When inserting a card into the lower card slot the memory card must be orientated with the contacts pointing upwards.

Removing a MicroSD card - Axiom Pro

With the card reader door open and cover pulled down:

1. Push the card in until it clicks.
2. Pull the card free from the card slot.

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.

Caution: Care of chart and memory cards

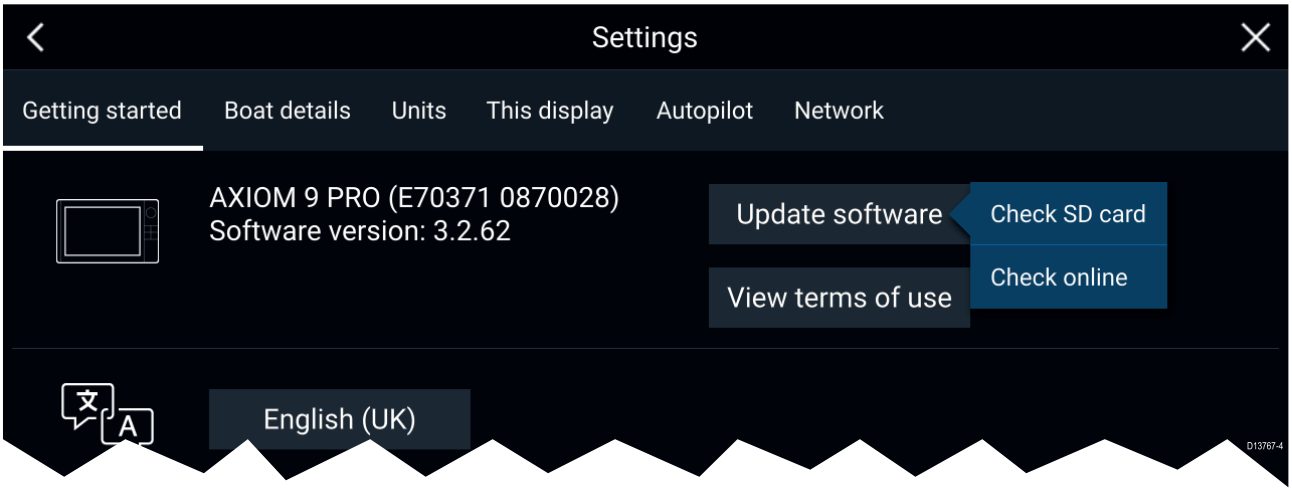
To avoid irreparable damage to and / or loss of data from chart and memory cards:

- 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.

3.9 Software updates

Raymarine® regularly issues software updates for its products which provide new and enhanced features and improved performance and usability. You should 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 back up your User data before performing a software update.
- To update compatible SeaTalkng ® products you must use the designated Datamaster MFD that is physically connected to the SeaTalkng ® backbone.
- In order to perform a software update any connected autopilot or Radar must be switched to Standby.
- The MFD's "Check online" feature is only available when the MFD has an Internet connection.
- To check which products are compatible with the MFD software update process please refer to the website: www.raymarine.com/software.

Updating software using a memory card

Compatible SeaTalkhs ® and SeaTalkng ® products can be updated by following the steps below.

1. Check the software version of your product.

   Refer to the documentation supplied with your product for information on checking software version.

2. Check the latest available software on the Raymarine website: (**www.raymarine.com** > **Support** > **Software Updates**).
3. Download the software package.
4. Copy the files to MicroSD card.
5. With your MFD powered on, insert the MicroSD card into the card reader slot.
   Your MFD will automatically detect software files.
6. Follow the onscreen instructions to update your product software.
7. Alternatively you can select **Check SD card** from the **Update software** pop-over options on the Getting started tab: (**Homescreen** > **Settings** > **Getting started** > **Update Software**).

Updating software via the internet

Compatible SeaTalkhs ® and SeaTalkng ® products can be updated by following the steps below.

1. Select **Update software** from the Getting started tab: (**Homescreen** > **Settings** > **Getting started**).
2. Select **Check online** from the pop-over menu.
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** and then follow any onscreen instructions.

3.10 Device pairing

Pairing a RMK remote keypad

You can control your MFD with an RMK keypad.

From the **This display** tab of the **Settings** menu: **Homescreen > Settings > This display** .

1. Select **Pair keypad**.
2. Follow the onscreen instructions to pair your keypad.

   Ensure you select the correct orientation for the keypad during the pairing process.

3. Repeat steps 1 and 2 on each MFD you want to control from your keypad.

Note:

Please refer to the controls section of your keypad's documentation for details on controlling MFDs using a keypad.

Clear pairing (RMK)

1. Select **Clear pairings** to unpair ALL RMK keypads currently paired with the MFD.

Pairing with a Quantum Radar scanner

You can connect a Quantum Radar scanner to your MFD using Wi-Fi.

Pre-requisites:

- Ensure you have connected your Quantum Radar scanner in accordance with the instructions provided with the Radar scanner.
- Ensure you know your Radar scanner's SSID and passcode.

1. Select **Pair with Quantum** from the **This display** tab: **Homescreen > Settings > This display > Pair with Quantum**.
2. Follow the onscreen instructions to pair with your Quantum Radar.

   The pairing process may take several minutes to complete.

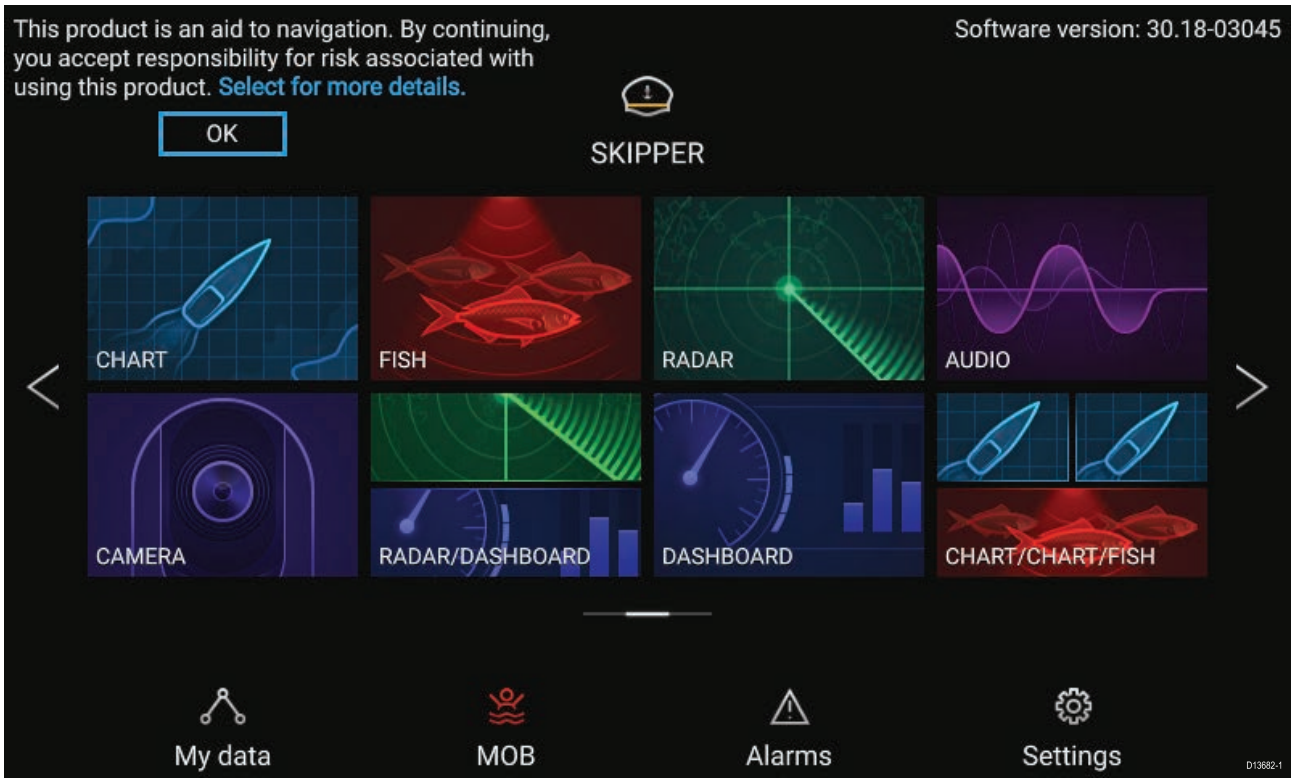
Chapter 4: Homescreen

Chapter contents

- 4.1 Accepting the Limitations on Use on page 40
- 4.2 Homescreen overview on page 41
- 4.3 Creating / Customizing an App page on page 42
- 4.4 User profiles on page 43
- 4.5 My data on page 45
- 4.6 Settings on page 47
- 4.7 Man Overboard (MOB) on page 52
- 4.8 Alarms on page 53
- 4.9 Satellite navigation / positioning on page 54
- 4.10 Status area on page 56
- 4.11 Connecting to a wireless display on page 57

4.1 Accepting the Limitations on Use

After your MFD has powered up the Homescreen is displayed.

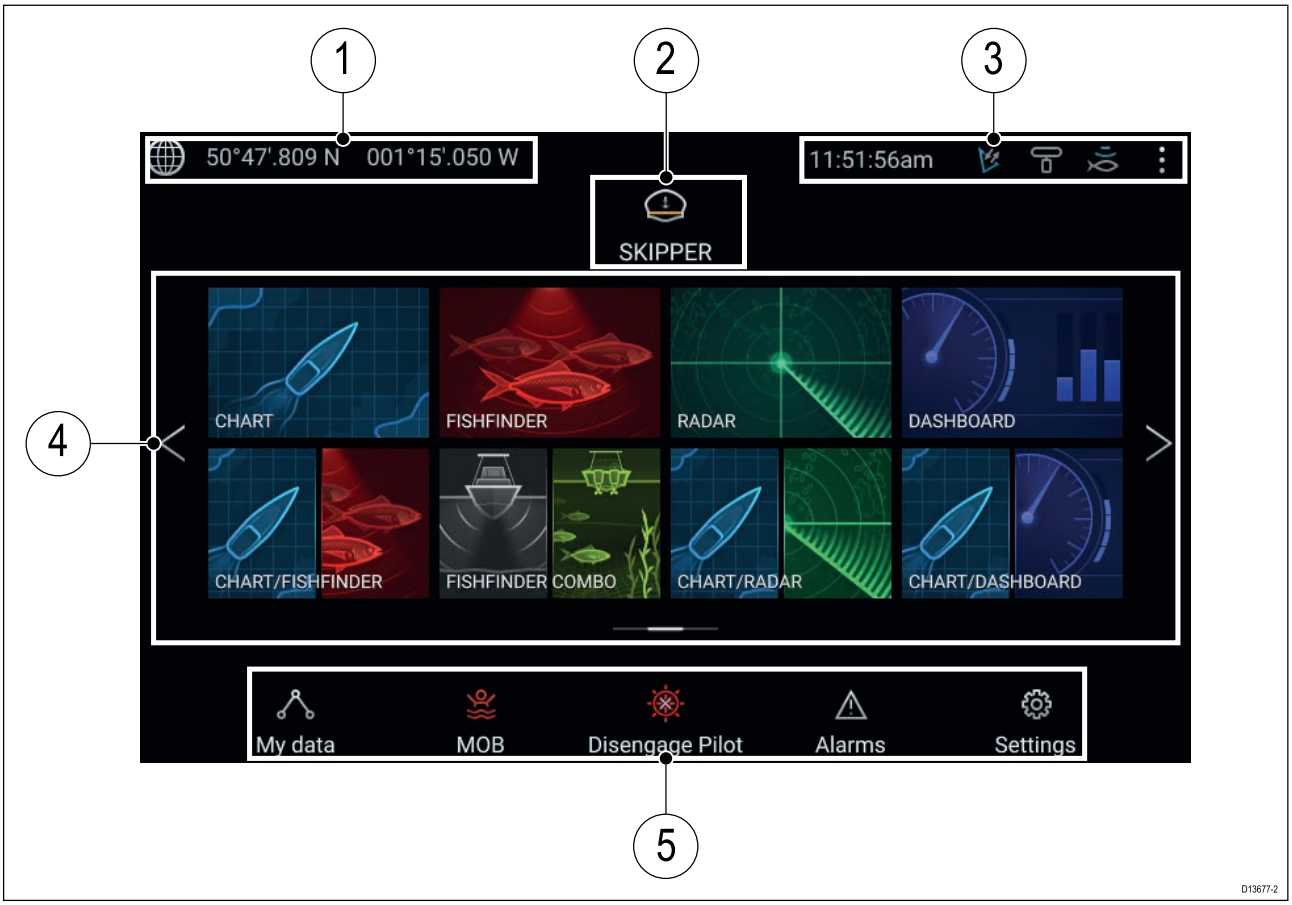


1. Before using the MFD you must accept the Limitations on Use (LoU) disclaimer. To view the full LoU Disclaimer, select 'more details'.

   The LoU acknowledgment is displayed each time the display is powered on and for each new user profile. The full LoU text can be accessed at any time from the ***Getting started*** *tab:* ***Homescreen > Settings > Getting started > View terms of use****.*

4.2 Homescreen overview

All settings and apps can be accessed from the Homescreen.



1. **GNSS position/fix details** — Select the area to view fix accuracy and access GNSS settings.
2. **Profile** — Select the area to change the profile in use or to create, edit or delete profiles.
3. **External devices and system time** — Select this area to adjust the UTC time offset.
4. **App page icons** — Select an icon to open the relevant application page. Use the **Left** and **Right** arrows , or swipe your finger left or right across the area to cycle through the available Homescreen pages.
5. **Settings and data** — This area provides access to the **Settings**, **Alarms** and **My data** menus. You can also activate the **Man Over Board** (MOB) alarm and disengage your autopilot.

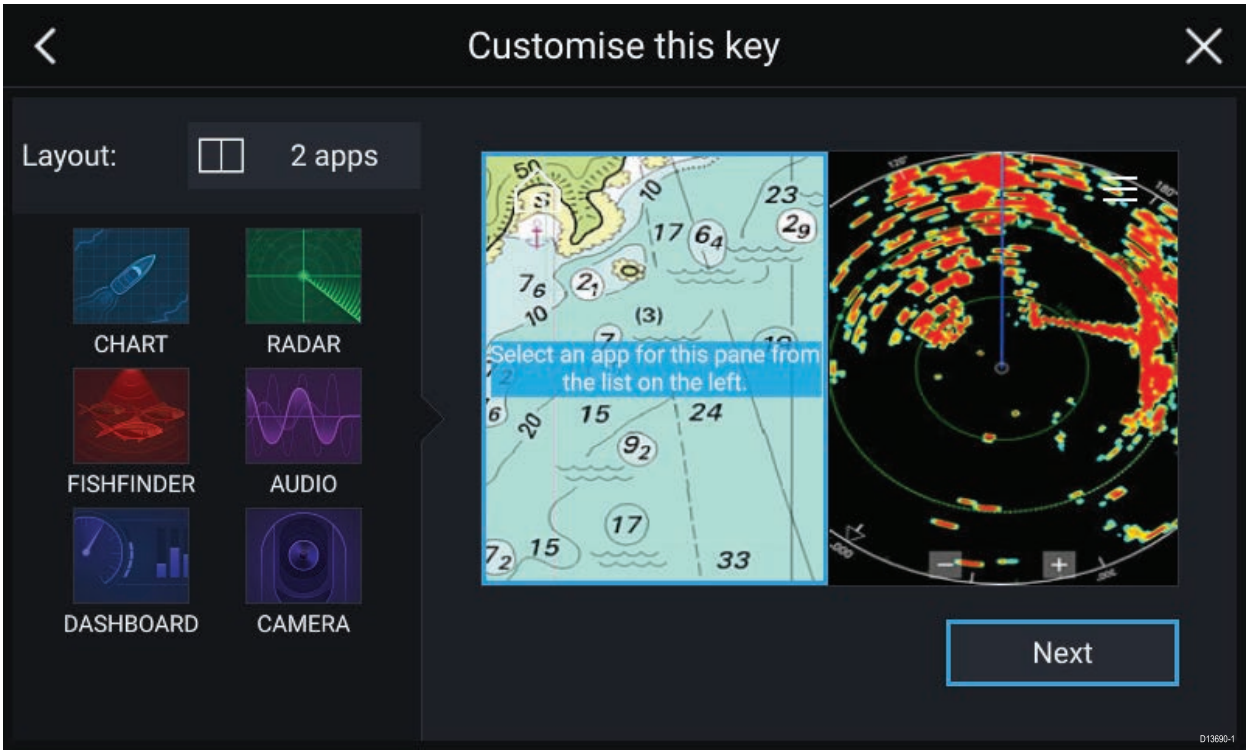
Note: When more than 1 display is connected to the same network, then the Homescreen of the MFD designated as Data Master will be mirrored on all MFDs.

4.3 Creating / Customizing an App page

1. Press and hold on an existing App page icon to display pop-over options.

   You can Customize, Rename or Delete app pages from the pop-over options.

2. Select **Customize** from the pop-over options to change page layout and apps used. To Create a new page press and hold on a blank space on the Homescreen.



3. Select the **Layout:** option to change the page layout.
4. Select the icons for the Apps that you want to be displayed on the page.
5. Select **Next** and give the page a memorable name.
6. Select **Save**.

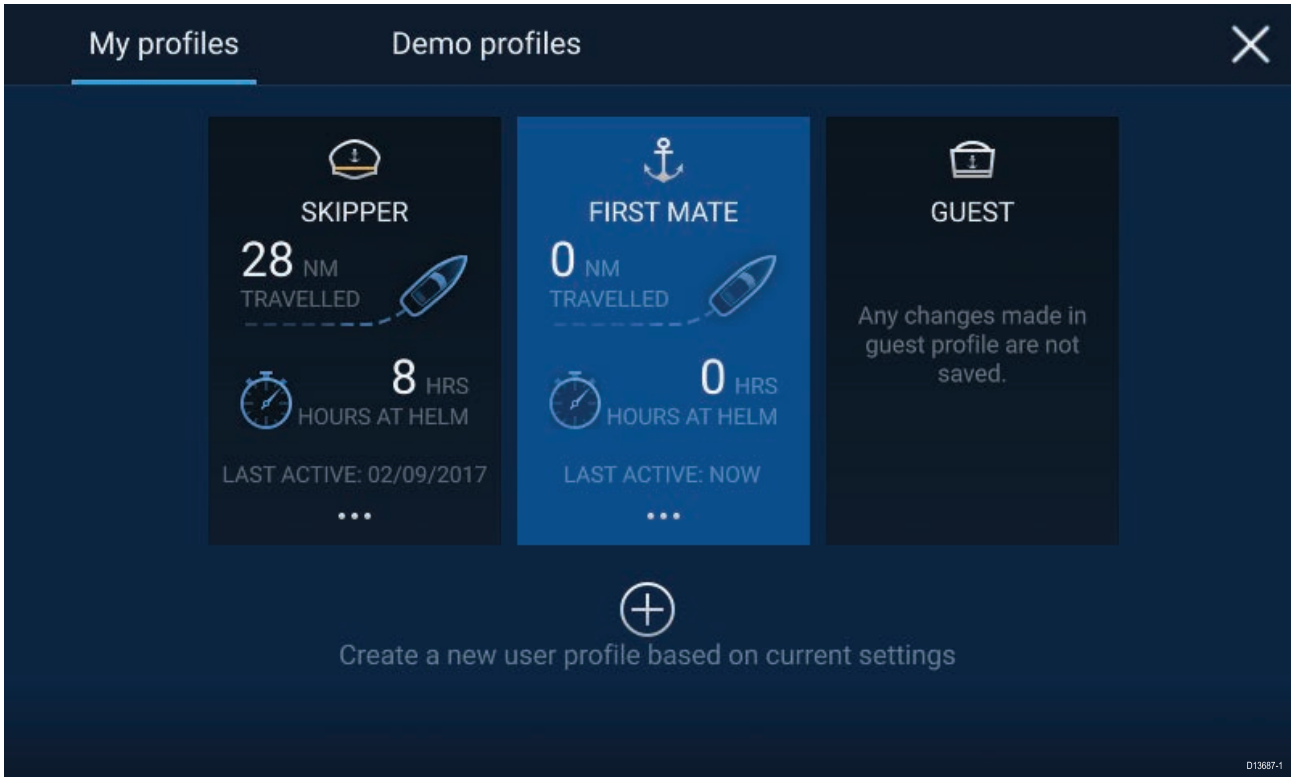
The page is saved and the new App page icon will be shown on the Homescreen.

4.4 User profiles

You can share your MFD with other users by creating user profiles on your MFD. Profiles enable you to retain your own personal settings whilst letting other users personalize the MFD's settings to their preference.

Note: User data such as Waypoints, Routes, Tracks, images and video recordings etc. will be available to all users.

You can access the Profiles page by selecting the Profile Icon on the Homescreen.



Selecting the **Plus (+)** icon will create a new profile based on the profile that is currently in use.

MFD settings changes are unique to the profile in use and are retained the next time the profile is used.

The distance and time that a profile has been active is displayed for each profile.

Profile names and icons can be customized. You can also reset the distance and time for each profile.

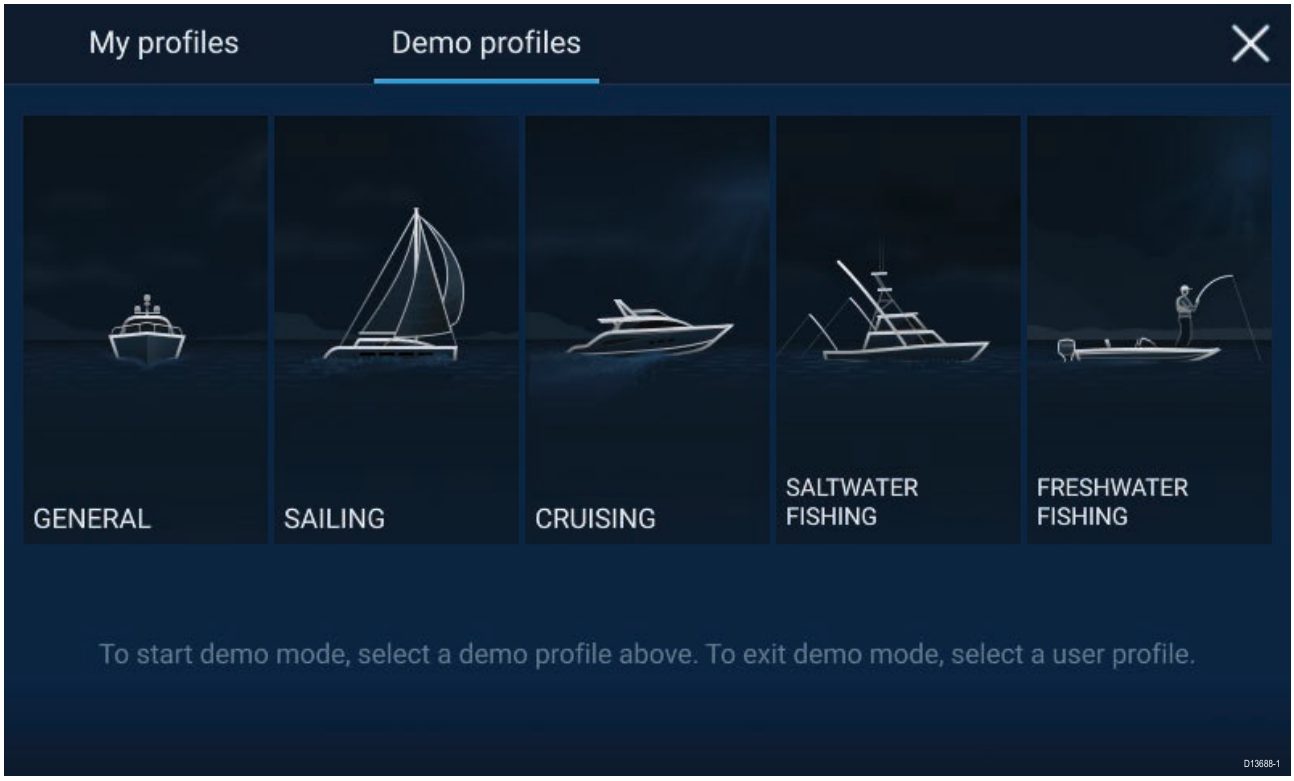
A Guest profile is available for temporary users. Setting changes to the Guest profile are not retained. Each time the Guest profile is activated the settings are based on the last used profile.

When the MFD is rebooted the last used profile will be active.

Demo profiles are also available to help you practice operating your MFD with simulated data.

Demo profiles

Profiles are available for simulation and demonstration purposes.



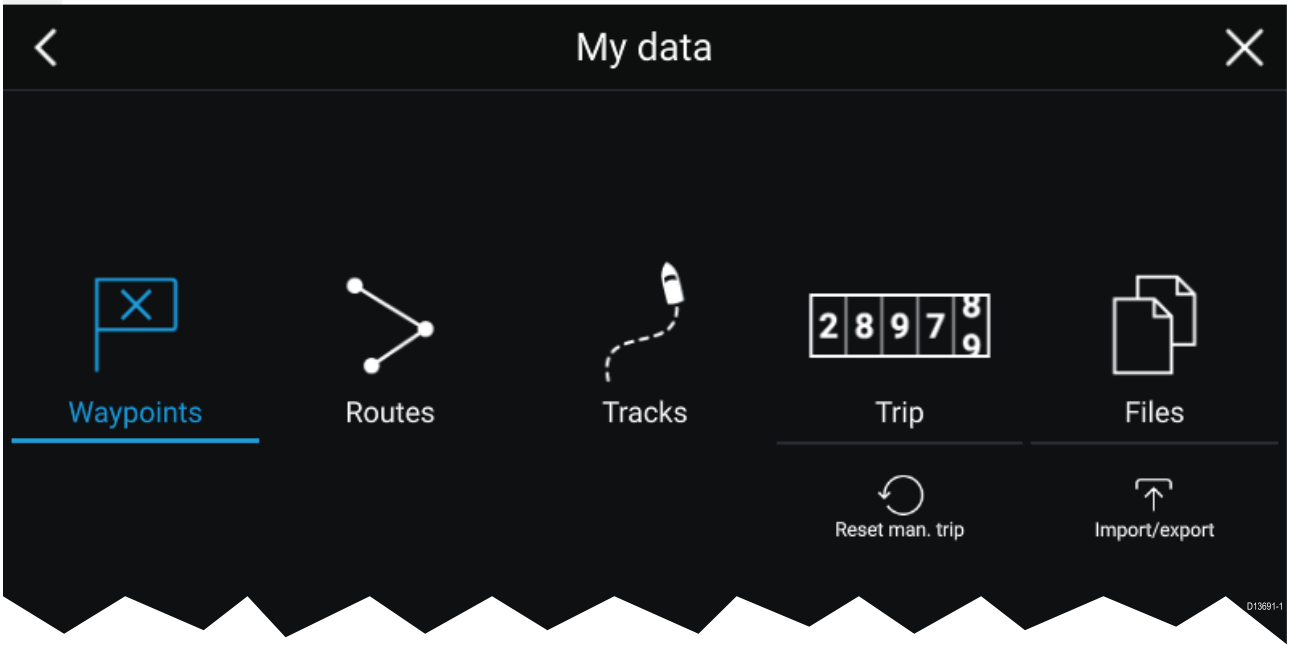
Selecting a Demo profile will provide your MFD with simulated data to help you practice operating your display.

Important:

- It is recommended that Demo profiles are NOT activated whilst navigating.
- Demo profiles will NOT display any real data, including safety warnings and messages.
- Any settings changes made will not affect User profiles.

4.5 My data

Selecting the **My data** icon from the Homescreen provides access to user data such as **Waypoints**, **Routes**, **Tracks**, **Trip** data and media **Files**. You can also **Import/export** User data from the **My data** menu.



Selecting **Waypoints**, **Routes** or **Tracks** will take you to the relevant list where you can manage and customize your data.

Selecting **Trip** will display the trip counters.

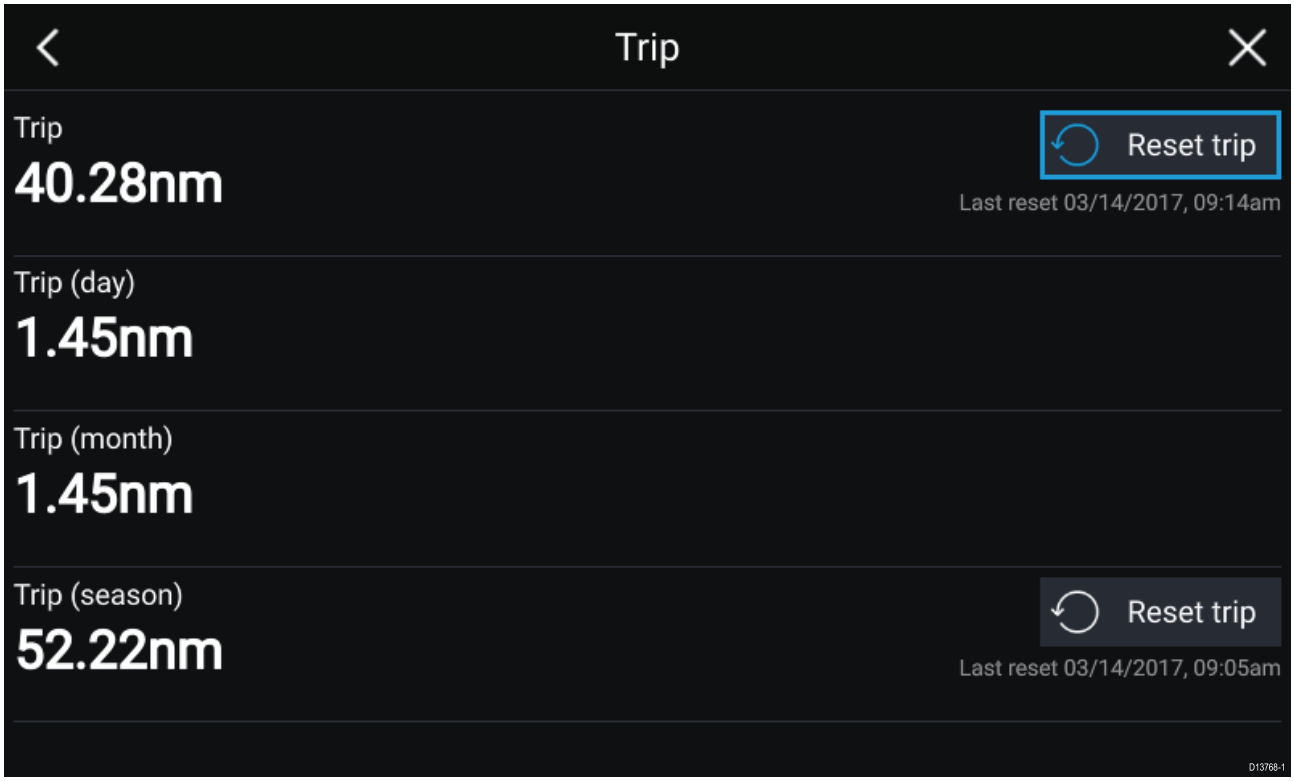
Selecting **Reset man. trip** will reset the Trip counter to zero.

Selecting **Files** opens a file browser.

Selecting **Import/export** allows you to back up or restore User data using external storage.

Trip data

Trip data is collected automatically based on distance travelled (SOG).



Trip logs can be viewed by selecting **Trip** from the **My Data** page: **Homescreen** > **My Data** > **Trip**.

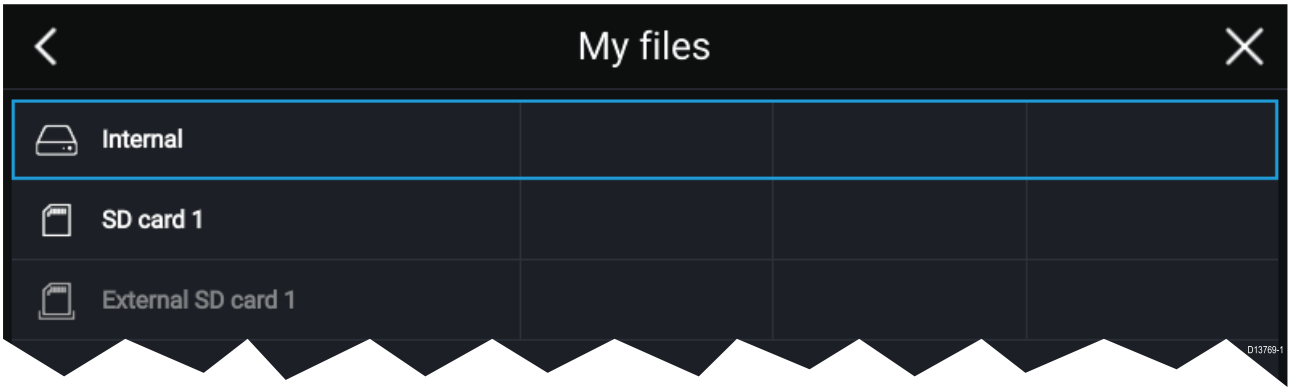
The Trip logs available are:

- **Trip (manual)** — accumulates data until reset.
- **Trip (day)** — resets automatically when local time passes midnight.
- **Trip (month)** — resets automatically on the 1st day of the month.
- **Trip (season)** — accumulates data until reset.

The manual trip log can be reset directly from the My data page by selecting **Reset man. trip**. Alternatively you can select **Reset trip** adjacent to the manual and season trip logs to reset the logs.

Files

The file browser can be used to view and delete photos/images saved to internal or external storage and can also be used to import or delete .gpx (User data files) from internal or external storage.



Select a device to view its contents. Select an image file to view or delete it. Select a gpx file to import or delete it.

Import/export

You can import and export User data (Waypoint, Routes and Tracks) files in .gpx format.

The Import/export page can be accessed from the My data page: **Homescreen** > **My data** > **Import/export**.

Save my data

You can back up your User data by selecting **Save my data**. You can **Save all data** (Waypoints, routes and tracks), **Save waypoints**, **Save routes** or **Save tracks** to an external storage device.

Import from card

You can import User data saved to an external storage device by selecting **Import from card** and locating a saved User data file (.gpx).

4.6 Settings

The Settings menu contains important information and settings for your MFD.

The **Settings** menu is split up into different tabs, the settings available are:

Tab	Options
Getting started	• View hardware and software information about your MFD. • View cartography details for inserted chart cards. • Update MFD software • View the LoU disclaimer (**Getting started** tab). • Change the user interface language
Boat details	• Set boat icon and name. • Configure Minimum safe depth, height and width. • Configure engines. • Configure batteries. • Configure fuel tanks.
Units	• Configure preferred units of measurement. • Configure Bearing mode. • Configure variation. • Configure GNSS system datum.
This display	• Assign a Homescreen page or app to start on power up. • Select save location for screenshots. • Configure Axiom Pro user programmable button. • Pair/unpair with a RMK external keypads. • Connect to a wireless display. • Wi-Fi Sharing, pair with a wireless Quantum Radar scanner, configure Wi-Fi settings and set mobile app access. • Perform a Settings or Factory reset.
Autopilot	• Enable/Disable Autopilot control. • Set autopilot response. • Access advanced autopilot settings.
Network	• View list of networked MFDs. • Assign a MFD Data master. • View software and network details for the MFD you are using. • Save or Erase diagnostics logs to external storage. • View and Save Diagnostic information about products connected to your MFD. • Set up NMEA 0183 options on an Axiom Pro. • Assign your preferred data sources (Data master only).

Selecting display language

You can choose which language you want the MFD to use.

1. Select the **Language** button from the **Getting started** tab: **Homescreen** > **Settings** > **Getting started**.
2. Select your desired language.

User Interface languages

The following languages are available:

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

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
Boat /Icon:	Selection determines the icon used to signify your vessel in the Chart app.
Boat Name:	Configures your system with your vessel's name.
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:	Select the number of engines on your vessel. When connected to a compatible system, your MFD can monitor engine data.
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.
Num of Batteries:	Configures your system with the number of batteries on your vessel.
Fuel tanks:	Configures your system with the number of fuel tanks on your vessel.

Units of measure

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

Measurement	Units	Measurement	Units
Distance units:	• Nautical Miles • NM & m • Statute Miles	**Volume units:**	• US Gallons • Imperial Gallons

Measurement	Units	Measurement	Units
	• Kilometers		• Liters
Speed units:	• Kts • MPH • KPH	**Economy units:**	• Distance per Volume • Volume per Distance • Liters per 100 km
Depth units:	• Meters • Feet • Fathoms	**Wind speed units:**	• Knots • Meters per Second
Temperature units:	• Celsius • Fahrenheit	**Pressure units:**	• Bar • PSI • Kilopascals
Date format:	• MM:DD:YYYY • DD:MM:YYYY • MM:DD:YY • DD:MM:YY	**Time format:**	• 12hr • 24hr

Data master

Systems containing more than one MFD must have a designated Data master MFD. The Data master is the primary MFD in the network, this should be the MFD that has the connection to the SeaTalkng ® / NMEA 2000 CAN bus network and any other devices and sources of data in your system. The Data master bridges the data over the SeaTalkhs ™ network to any compatible networked 'repeater' MFDs.

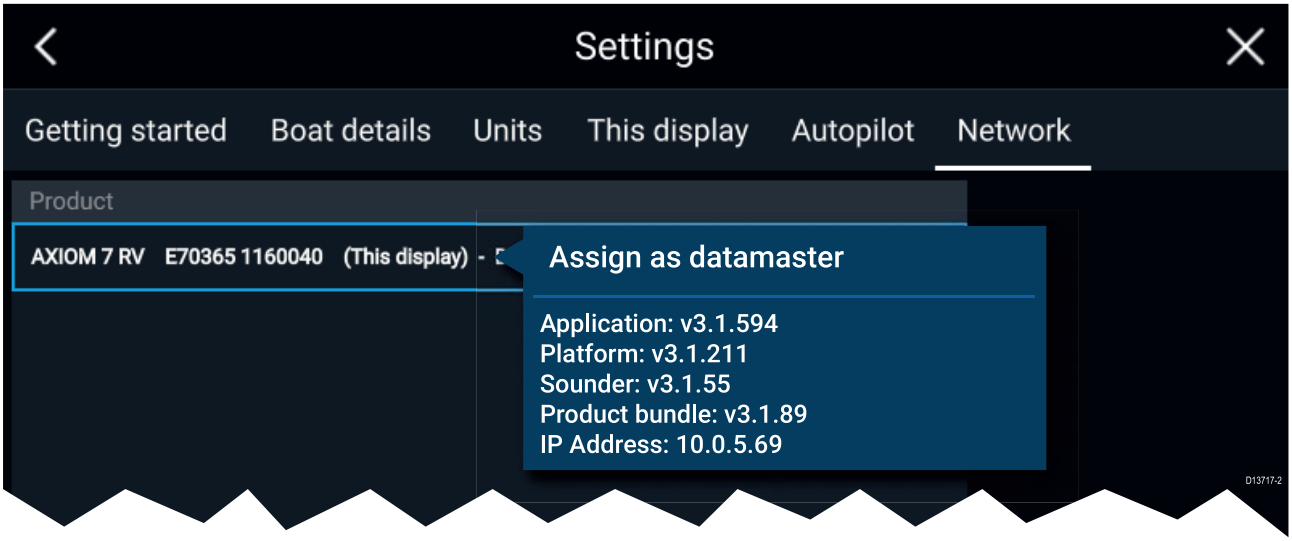
Information shared by the Data master includes:

- Cartography
- Waypoints, Routes and Tracks
- Radar
- Sonar
- Data received from the autopilot, GNSS receiver, instruments, transducers, the engine and any other compatible external sources.

Note: Your system may be wired for redundancy with data connections made to repeat displays. However these connections will only become active in the event of a fault and/or reassignment of the data master.

Switching Data Master

You can switch the MFD you want to be the Data master at anytime.



From the Network tab: **Homescreen** > **Settings** > **Network:**

1. Select an MFD from the list that you want to designate as the new Data master.
2. Select **Assign as Data Master** from the pop-over options.

NMEA 0183 settings

NMEA 0183 devices can be connected to Axiom™ Pro, eS Series and gS Series MFDs using the NMEA 0183 wires on the supplied Power/Video/NMEA 0183 cable.

2 NMEA 0183 ports are available:

- **Port 1**: Input and output, 4,800 or 38,400 baud rate.
- **Port 2**: Input only, 4,800 or 38,400 baud rate.

The baud rate for each input port must be specified in the **NMEA set-up** menu (**Homescreen** > **Settings** > **Network** > **NMEA set-up**).

Note:

- For Port 1, both the input and output communicate at the same baud rate. For example, if you have one NMEA 0183 device connected to Port 1 INPUT, and another NMEA 0183 device connected to Port 1 OUTPUT, both NMEA devices must use the same baud rate.

NMEA 0183 settings

The following options are available from the **NMEA Set-up** menu.

Menu item	Description	Options
NMEA Port 1	Baud rate selection.	• 4,800 • 38,400
NMEA input port 2	Baud rate selection.	• 4,800 • 38,400
Bridge heading	Bridge heading data from NMEA 0183 to NMEA 2000 / SeaTalkng ®	• Yes • No

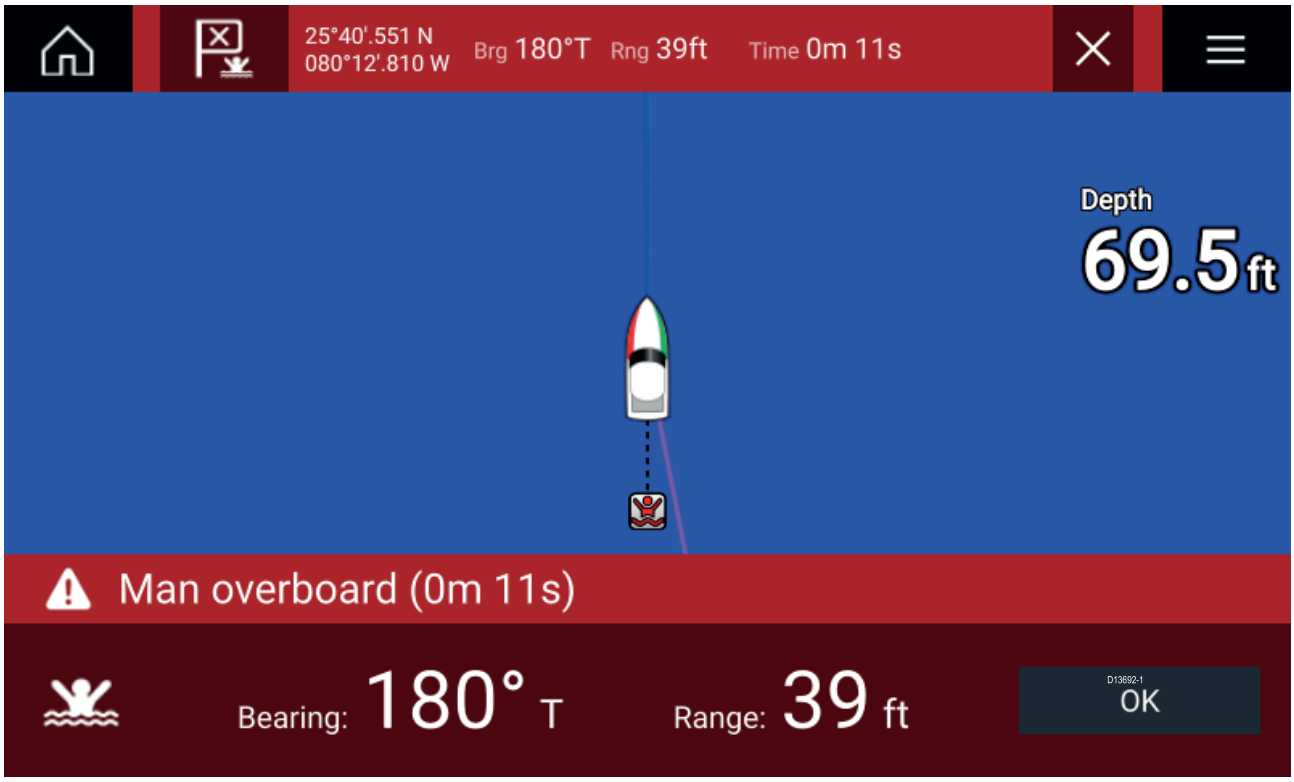
Menu item	Description	Options
Transmission mode	Switches between Single-ended and Differential transmission modes. The Differential transmission mode supports higher speeds, longer cable runs, and better data integrity. Differential mode works when connected to opto-isolated inputs, as specified by the NMEA 0183 standard. The Single-ended mode is required when sending a signal to a single-ended receiver device, such as a PC for example. Refer to the *NMEA 0400 Installation Standard* for wiring guidelines for the different transmission modes. **Note:** Only available on an Axiom™ Pro MFD.	• Single-ended • Differential
Individual outputs	List of NMEA 0183 sentences for which the output can be disabled.	• Enabled • Disabled

4.7 Man Overboard (MOB)

If a person or object falls overboard, you can use the Man Overboard (MOB) feature to mark the position that your vessel was at when the MOB alarm was activated.

The MOB feature can be activated by pressing and holding on the MOB icon:

on the Homescreen or the waypoint/MOB icon: found at the top of all apps.



The MOB feature requires your vessel to have a valid position fix from a GNSS receiver. Dead reckoning mode also requires Heading and Speed data.

When you activate the MOB alarm:

- an audible alarm is sounded which is repeated every 30 seconds until the alarm is cancelled.
- a MOB Databar providing Bearing and range from MOB, and elapsed time since MOB was initiated, is placed along the top of the screen. The Databar persists across apps and the Homescreen, and remains until the MOB alarm is cancelled.
- a MOB warning is displayed in the bottom of the screen which requires acknowledgement.
- the Chart app is placed in a special MOB mode to help you navigate back to the point your vessel was at when the MOB was initiated.

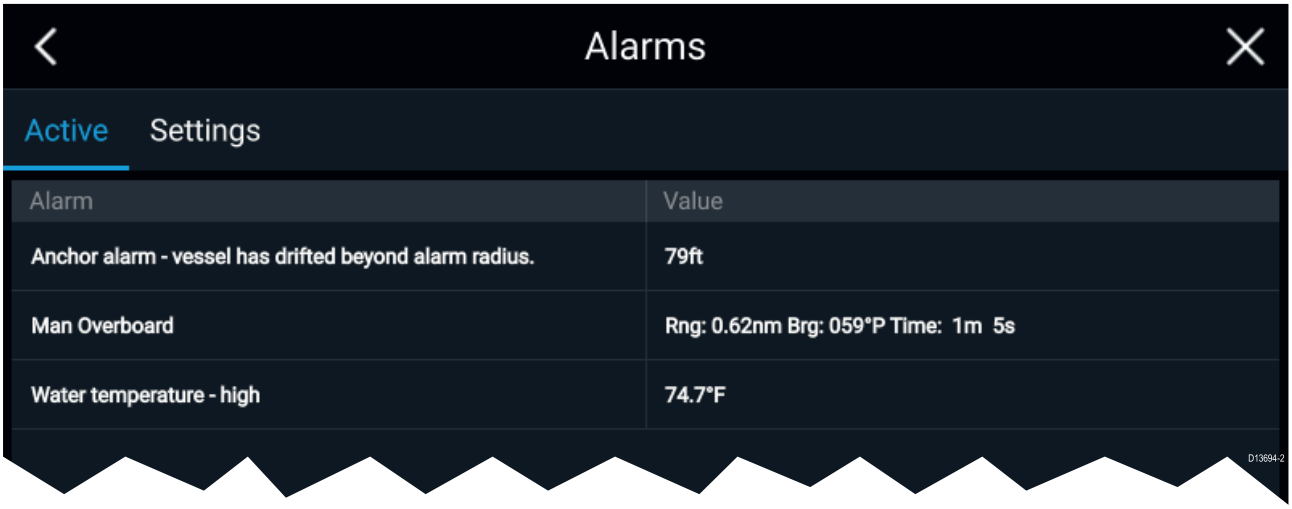
MOB mode

MOB can be set to Dead Reckoning or Position mode. Dead Reckoning mode will take into consideration the effects of wind and tides. This usually provides a more accurate course. Position mode does not take these factors into account. You can change the MOB mode at anytime from the Alarms menu: **Homescreen > Alarms > Settings > MOB data type:**.

4.8 Alarms

The Alarm manager can be accessed from the Homescreen.

Example: Active alarms list



Alarms are raised by system functions, and also external equipment connected to your display.

When an Alarm is triggered all networked MFDs will display audible and visual warnings. The onscreen warning provides details of why the alarm has been triggered.

Example: Waypoint arrival alarm

The Alarm manager can be used to:

- list current, active alarms
- enable and disable alarms
- adjust alarm thresholds

The Active alarms list can be accessed from the **Active** alarms tab: (**Homescreen** > **Alarms** > **Active**)

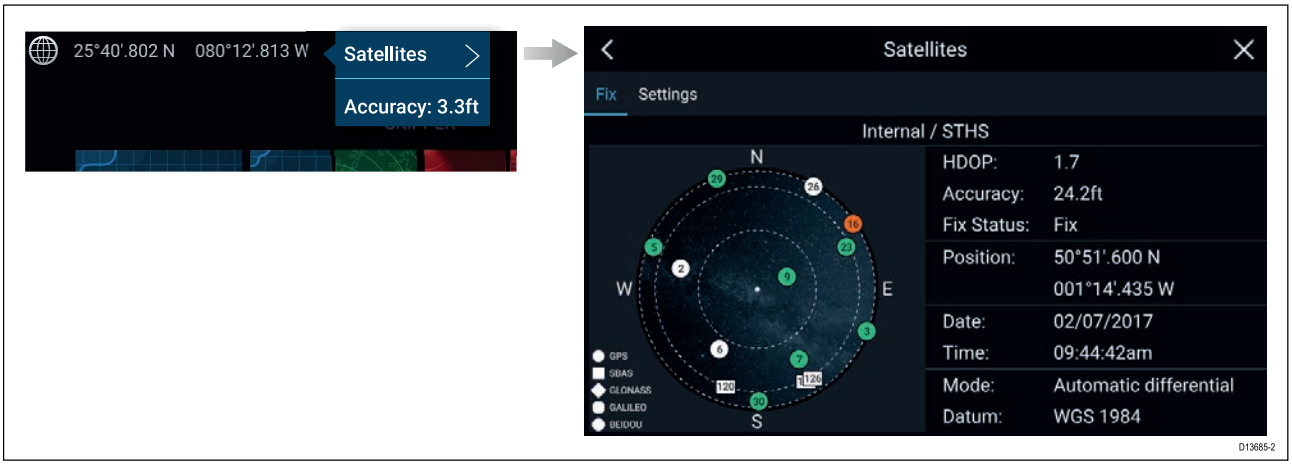
Alarm settings can be accessed from the **Settings** tab: (**Homescreen** > **Alarms** > **Settings**)

4.9 Satellite navigation / positioning

GNSS Status

Your vessel's GNSS position is provided in the top left corner of the Homescreen. You can access fix accuracy and settings by selecting the area.

If latitude and longitude is displayed on the Homescreen then you have a valid position fix. If the text turns red then your fix accuracy is low.

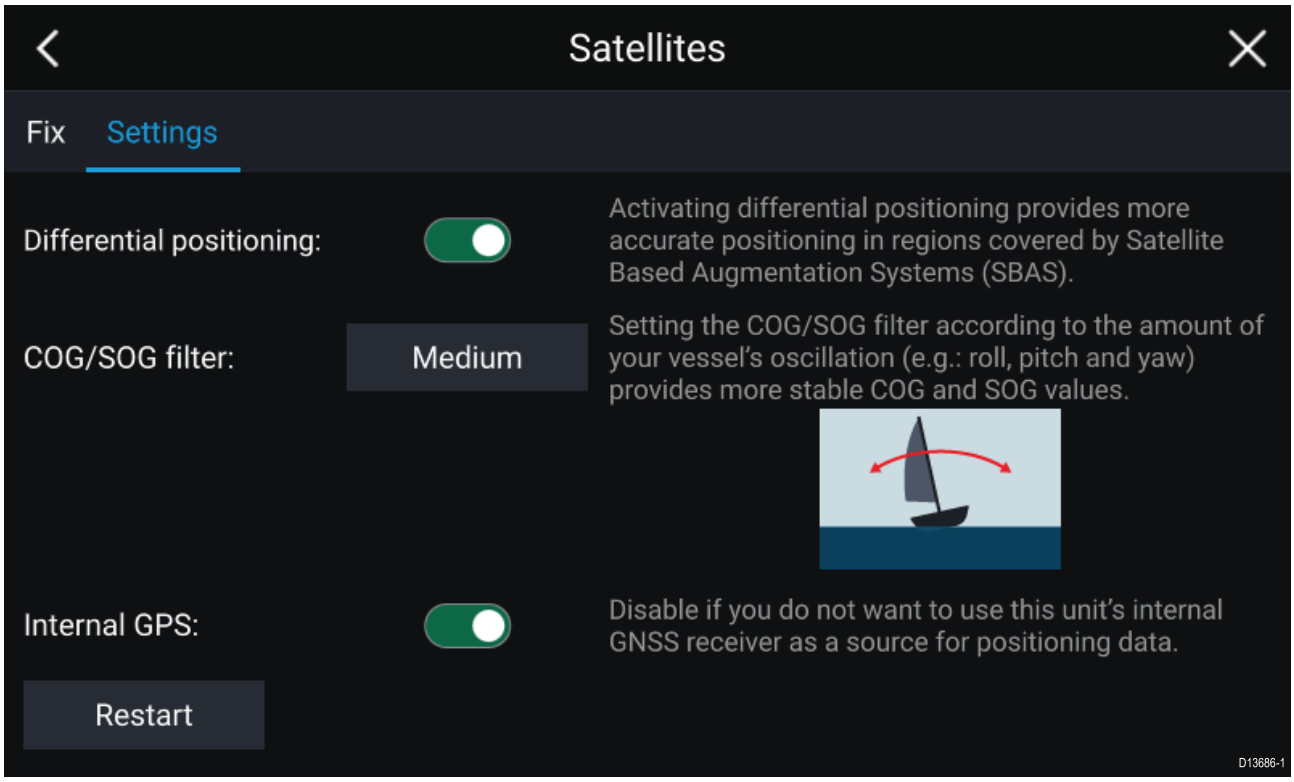


The sky view on the left side of the page shows the position of navigation satellites and the constellation they belong to. The color of the satellite identifies its status:

- Grey = searching for satellite
- Green = satellite in use
- Orange = tracking satellite

GNSS Settings

The settings for your GNSS receiver (internal or external) can be accessed from the **Satellites** menu: **Homescreen > GNSS pop-over > Satellites > Settings**.



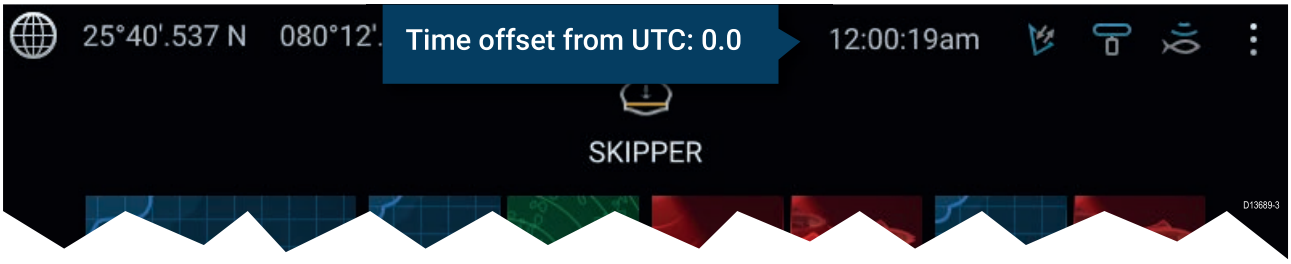
From the GNSS Settings tab you can:

- activate and deactivate use of Differential positioning (SBAS)

- set the COG/SOG filter according to your vessel's oscillation, which provides more stable COG and SOG readings
- enable and disable your MFD's internal GNSS receiver. Disable if you do not want to use this unit's internal GNSS receiver as a source for positioning data.
- restart the GNSS receiver that is being used as the source for your positioning data.

4.10 Status area

You can view the status of peripheral devices connected to your MFD using the Status area, located at the top right of the Homescreen. This area also provides the **Time** and identifies when the MFD is in **Touchlock** mode.



Status area icons

The status of connected AIS, Radars Sonars/Transducers are reported in the Status area:

pop-over menu options

From the **Options** pop-over you can adjust the Time offset from UTC.

Status area symbols

The icons used in the Status area signifies the current status of some connected devices.

Icon	Status	Icon	Status
	AIS transmitting and receiving		Radar transmitting
	AIS receive only		Radar standby
	AIS Error		Radar error
	Sonar pinging		Wi-Fi connected, signal strength High
	Sonar not pinging		Wi-Fi connected, signal strength Medium
	Sonar error		Wi-Fi connected, signal strength Low
	Touchlock active		Wi-Fi not connected
			Wi-Fi error

4.11 Connecting to a wireless display

Axiom™ and Axiom™ Pro MFDs can be connected to a wireless display using an external dongle or a display that has built-in support. When connected the MFD's screen is mirrored on the wireless display.

1. Follow the instructions provided with your wireless display/dongle to set up the device.
2. Select the display icon found under **Wireless display:** on the **This Display** tab of the **Settings** menu: (**Homescreen > This Display > Wireless Display:**).

   Your MFD will search for available displays.

3. Select the display you want to use.
4. If your MFD has Wi-Fi Sharing enabled then a pin number is displayed on the wireless display, input this pin number when requested by your MFD.
5. You may also be requested to allow the MFD to connect automatically in future, select **Yes** or **No** as appropriate on your wireless display.

   Your MFD screen will now be displayed on the select device.
6. To allow the wireless display to connect each time your MFD is powered on, then enable **Connect on power up** from the pop-over options.

Note:

1. Don't forget to check your wireless display for any required confirmations/acknowledgements.
2. Some non Miracast certified devices may not be able to connect with Wi-Fi Sharing enabled, in this case disable Wi-Fi Sharing and try again.
3. If you experience issues connecting try disabling and enabling the wireless display feature on your display and MFD or power cycle both devices.
4. Once connected/paired to a wireless display do not change your MFD's Wi-Fi Passphrase as on certain devices a factory reset maybe required to re-establish a connection.

Disconnecting a wireless display

With a wireless display connection active:

1. Select Disconnect from the **This Display** tab: (**Homescreen > Settings > This Display > Wireless Display: > Disconnect**).

Unpairing a wireless display

With the wireless display connection active:

1. Select the connected display from the Wireless display menu: (**Homescreen** > **Settings** > **This Display** > **Wireless Display:**).
2. Select the connected display from the list of available displays.
3. Select **Unpair** from the pop-over menu.

Chapter 5: Autopilot control

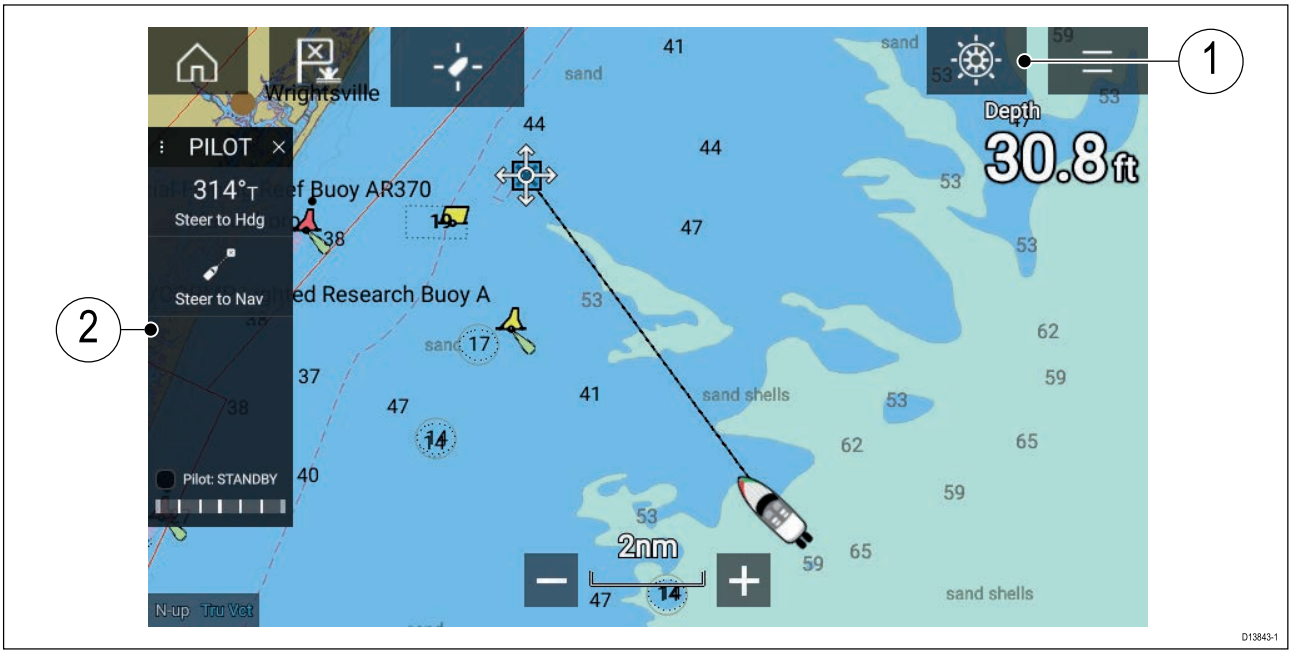
Chapter contents

- 5.1 Autopilot control on page 60
- 5.2 Pilot sidebar on page 62
- 5.3 Pilot pop-up on page 64
- 5.4 Autopilot Control — Advanced settings on page 65

5.1 Autopilot control

Your MFD can be integrated with an Evolution autopilot system and act as the autopilot's controller. Please refer to the documentation supplied with your autopilot for details on installing and connecting your autopilot to your MFD.

Autopilot control from your MFD can be enabled and disabled from the **Autopilot** tab in the **Settings** menu: **Homescreen > Settings > Autopilot > Pilot control**.



1. **Pilot icon** — With **Autopilot control** enabled, the Pilot icon is displayed onscreen; selecting the icon displays the Pilot sidebar. When the Autopilot is engaged the Pilot icon is replaced with the Disengage pilot icon.
2. **Pilot sidebar** — The Pilot sidebar provides controls and information relating to your autopilot system. With the Autopilot engaged the Pilot sidebar's content is expanded to provide further controls and information. The Pilot sidebar can be hidden by swiping the sidebar to the left. The sidebar can be displayed again by swiping from the left of the screen towards the center of the screen.

Engaging the autopilot — Locked heading

With Autopilot control enabled:

1. For Wheel and Tiller pilots, engage the mechanical drive by either engaging the wheel drive's clutch or attaching the pushrod onto the tiller pin.
2. Select the **Autopilot icon**.
   The Pilot sidebar is displayed.
3. Select **Steer to Hdg**.
4. Select **Engage pilot**.

Engaging the autopilot — Navigation

With Autopilot control enabled:

1. For Wheel and Tiller pilots, engage the mechanical drive by either engaging the wheel drive's clutch or attaching the pushrod onto the tiller pin.
2. Initiate a Goto or Follow from the chart app.
3. Select the **Autopilot icon**.
   The Pilot sidebar is displayed.
4. Select **Steer to Nav**.
5. Select either **Engage pilot** or if a cross track error exists then select **ALONG route leg** or **DIRECT from here**.

   *Selecting **ALONG route leg** will steer along the original track.*

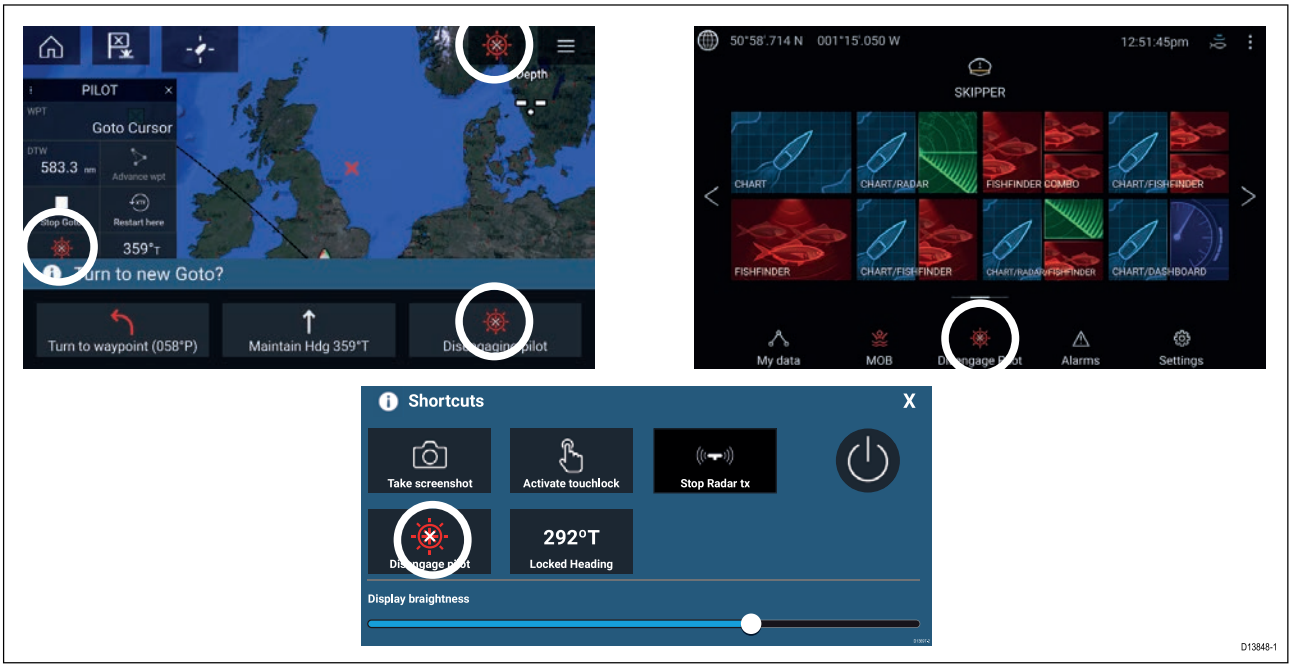
   *Selecting **DIRECT from here** will plot a new track from your current position to the destination.*

Engaging and disengaging the autopilot - physical buttons

The process for engaging your autopilot using the physical buttons available on a RMK remote keypad or an Axiom Pro is shown below.

1. Press and hold the **Pilot** button to engage the autopilot in Locked heading mode.
2. Press the **Pilot** button again to disengage the autopilot.

Disengaging the autopilot



You can disengage your autopilot at any time by selecting the **Disengage pilot icon**.

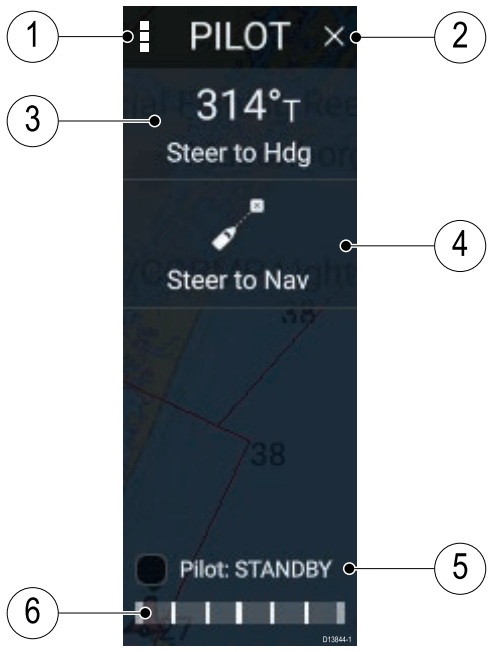
The **Disengage pilot icon** is available in all apps. It is also available on the Pilot sidebar, in Pilot pop up messages, on the Homescreen and on the Shortcuts page.

5.2 Pilot sidebar

Depending on the state of your autopilot the following information and controls are available on the Pilot sidebar.

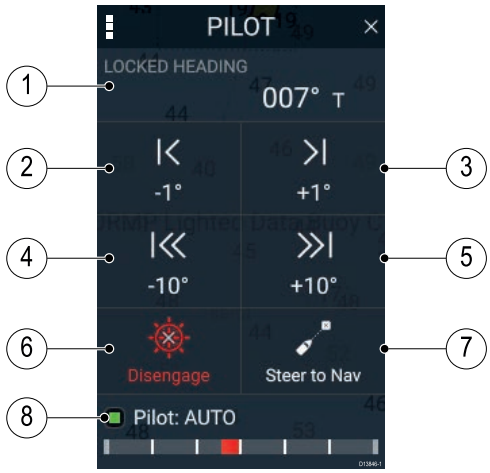
Note: The Pilot sidebar is controlled using the Touchscreen.

Pilot sidebar — Standby



1	**Sidebar selection** Enables you to switch between Pilot and Data sidebars.
2	**Close** Closes the Pilot sidebar.
3	**Steer to Hdg** Enables you to engage the autopilot in locked heading (Auto) mode.
4	**Steer to Nav** Enables you to engage the autopilot in Navigation (Track) mode.
5	**Pilot status** Provides the status of the autopilot.
6	**Rudder bar** Provides visual indication of rudder position.

Pilot sidebar — Locked heading (Auto)



1	**Heading** Displays your autopilot's current locked heading. Selecting displays the Locked Heading adjustment pop-over.
2	**–1°** Selecting will adjust your locked heading by minus 1 degree.
3	**+1°** Selecting will adjust your locked heading by plus 1 degree.
4	**–10°** Selecting will adjust your locked heading by minus 10 degrees.
5	**+10°** Selecting will adjust your locked heading by plus 10 degrees.
6	**Disengage** Selecting will disengage your autopilot.
7	**Steer to Nav** Selecting will engage your autopilot in Navigation mode.
8	**Pilot state** Displays the current state / mode of your autopilot.

Pilot sidebar — Navigation (Track)

1	**Destination** Displays your current destination.
2	**User customizable data** Displays user customizable data. Select to customize data.
3	**Advance wpt** Selecting will advance your destination to the next waypoint in the current route.
4	**Stop Route** / **Stop Goto** Selecting will stop current navigation.
5	**Restart here** Selecting will restart the cross track error (XTE) at your current location.
6	**Disengage** Selecting will disengage your autopilot.
7	**Steer to Hdg** Selecting will switch your autopilot to Locked heading mode.
8	**Pilot state** Displays the current state / mode of your autopilot.

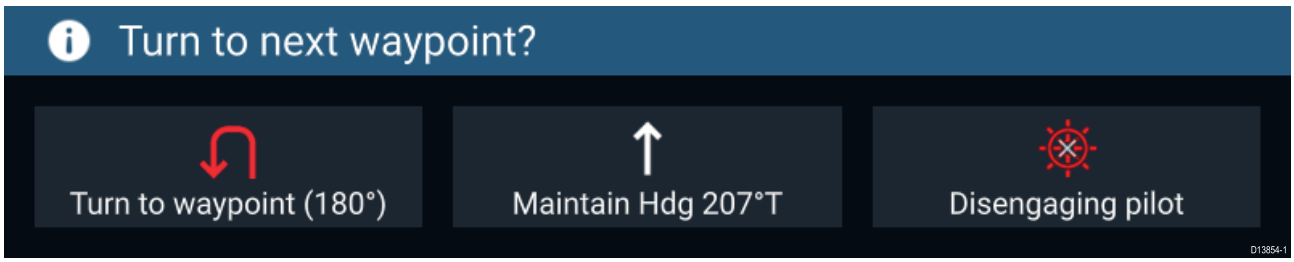
5.3 Pilot pop-up

During active navigation, when you reach your current destination the Pilot pop-up is displayed.

Goto

When performing a Goto the Pilot pop-up provides options to disengage the autopilot or to maintain the current course in Locked heading mode.

Follow



When following a Route the Pilot pop-up provides options to make the required turn to the next waypoint, disengage the autopilot or to maintain the current course in Locked heading mode.

5.4 Autopilot Control — Advanced settings

Menu item	Description	Options
Vessel hull type	Selecting the hull type that is the closest match for your vessel provides optimum steering performance.	• Sail • Sail (slow turn) • Sail Catamaran • Power • Power (slow turn) • Power (fast turn)
Drive type	Selecting the drive type that matches your vessel's drive will provide optimum drive performance.	List of drives compatible with your ACU.
Compass offset	Adjust the Compass offset so that your autopilot's heading matches the ship's compass. The display of autopilot heading data requires a second networked MFD or pilot controller. Compass offset will be adjusted automatically during the **Align compass to GPS procedure**.	• -10° to +10° • 0° (default)
Speed input (1)	Selects the source for speed data.	• Auto (default) • Water speed (STW) • SOG • Default cruise speed
Cruise speed (1)	Set the Cruise speed value to your vessel's typical cruising speed.	• 4.0kts to 60.0kts
Calibration lock	The calibration lock is used to lock out specific calibration settings which if changed may require recommissioning of the autopilot system. If your system has been dealer installed then the lock may be turned on.	• On • Off
Dockside wizard	Dockside calibration must be carried out before using your autopilot for the first time. The Dockside wizard guides you through the dockside calibration process. The steps included in the dockside wizard are dependent on whether you have a rudder reference transducer fitted to your vessel.	• Drive type • Rudder limit • Align rudder • Hard over time • Rudder drive check
Restart compass	Select to restart the compass linearization procedure.	• Start • Cancel
Compass lock	Locks the compass linearization so that further automatic linearization is not performed.	• On • Off
Align compass to GPS (1)	Follow the onscreen instructions to align your compass with your GPS heading.	
Pilot factory reset	Resets your autopilot's settings to factory default values.	• Yes • No
CCU debug level (1)	Sets a debug value for troubleshooting purposes. The debug level should only be set when requested by Technical Support as part of a troubleshooting process.	• 0 to 63

Menu item	Description	Options
ACU debug level (1)	Sets a debug value for troubleshooting purposes. The debug level should only be set when requested by Technical Support as part of a troubleshooting process.	• 0 to 63
Rudder damping (1)	Rudder damping in used to prevent the autopilot from “hunting” maneuvers. Always use the lowest acceptable value.	• 1 to 9 • 3 (default)
Auto turn angle (1)	Determines the amount of course change when performing an auto turn.	• 10° to 125° • 90° (default)
Power steering (3)	Determines the behavior of the Rotary or Joystick.	• Off • Proportional • Bang Bang
Reverse rudder ref (3)	Inverts the rudder reference display graphic.	• On • Off
Motor phasing (1)	Switches the polarity of your drive motor. Use if your drive polarity is inverted.	• A • B
Rudder offset (3)	Adjust to specify the rudder offset from amidships.	• -10° to +10° • 30° (default)
Rudder limit	Specifies how far the rudder can move before hitting its end stops. The value should be set to approximately 5° less than your maximum rudder angle.	• 10° to 50° • 30° (default)
Hard over time	Specifies the time it takes for the rudder to move from hard port to hard starboard or vice versa. The default value is determined by your **Drive type** selection.	• 1 to 100.0 seconds
Gybe inhibit (2)	When set to **Prevent Gybe** the autopilot will prevent you from performing an Auto tack away from the wind.	• Allow Gybe • Prevent Gybe
Wind vane type (2)	Selects whether wind data is True or Apparent.	• Apparent • True
Wind shift alarm (2)	Enables and disables the Wind shift alarm.	• On • Off

Note:

(1) Option not available when **Calibration lock** is **On**.

(2) Only available when Vessel hull type is set to a Sailing vessel.

(3) Only available when a rudder reference transducer is connected.

Chapter 6: General app settings

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- 6.1 Sidebar on page 68
- 6.2 Data overlays on page 69
- 6.3 Editing the split ratio of a Splitscreen app page on page 70
- 6.4 App settings menus on page 71

6.1 Sidebar

The Sidebar is available in all apps and provides quick access to system data. By default the Sidebar is set up to display navigation data.

The Sidebar is displayed automatically in the Chart app when a Goto or follow is initiated. It can also be displayed at anytime by sliding your finger from left to right from the left edge of the screen. Swiping right to left will hide the Sidebar.

To customize the displayed data, press and hold on the Data item you want to change and select **Edit** from the pop-over options.

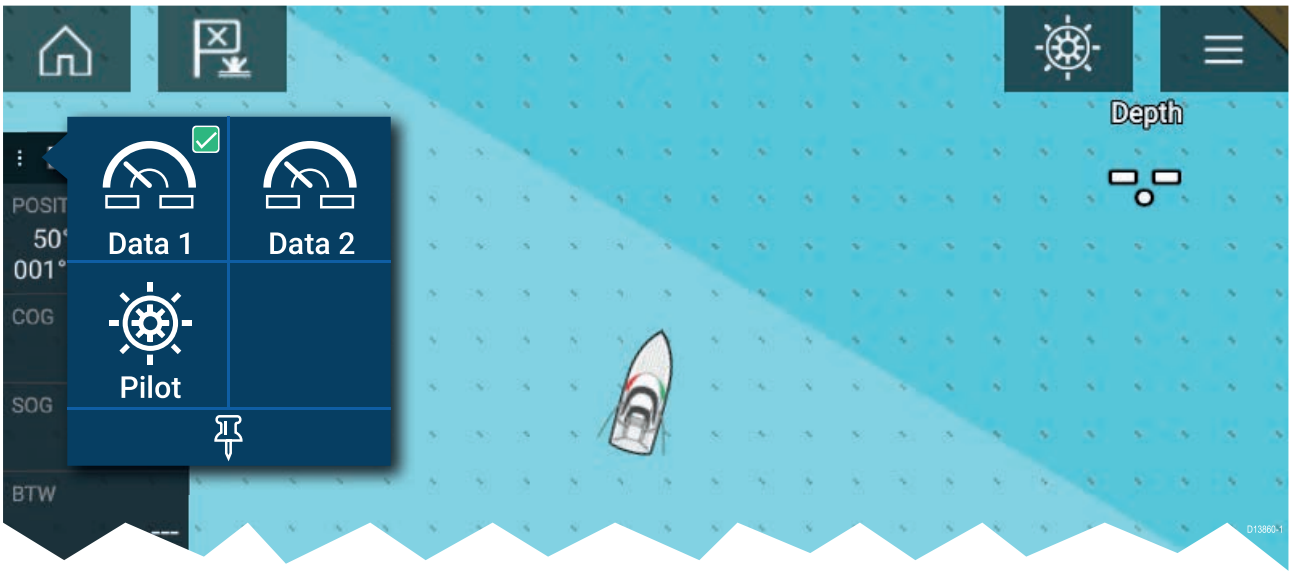
Customizing Sidebar data

The data displayed in the Sidebar can be customized by following the steps below.

1. Open any app and from the left edge of the screen swipe from left to right.
2. Press and hold on the Data type you want to customize.
3. Select Edit from the pop-over menu.
4. Select the data type you want to be displayed.

Switching sidebars

Different Sidebars are available.

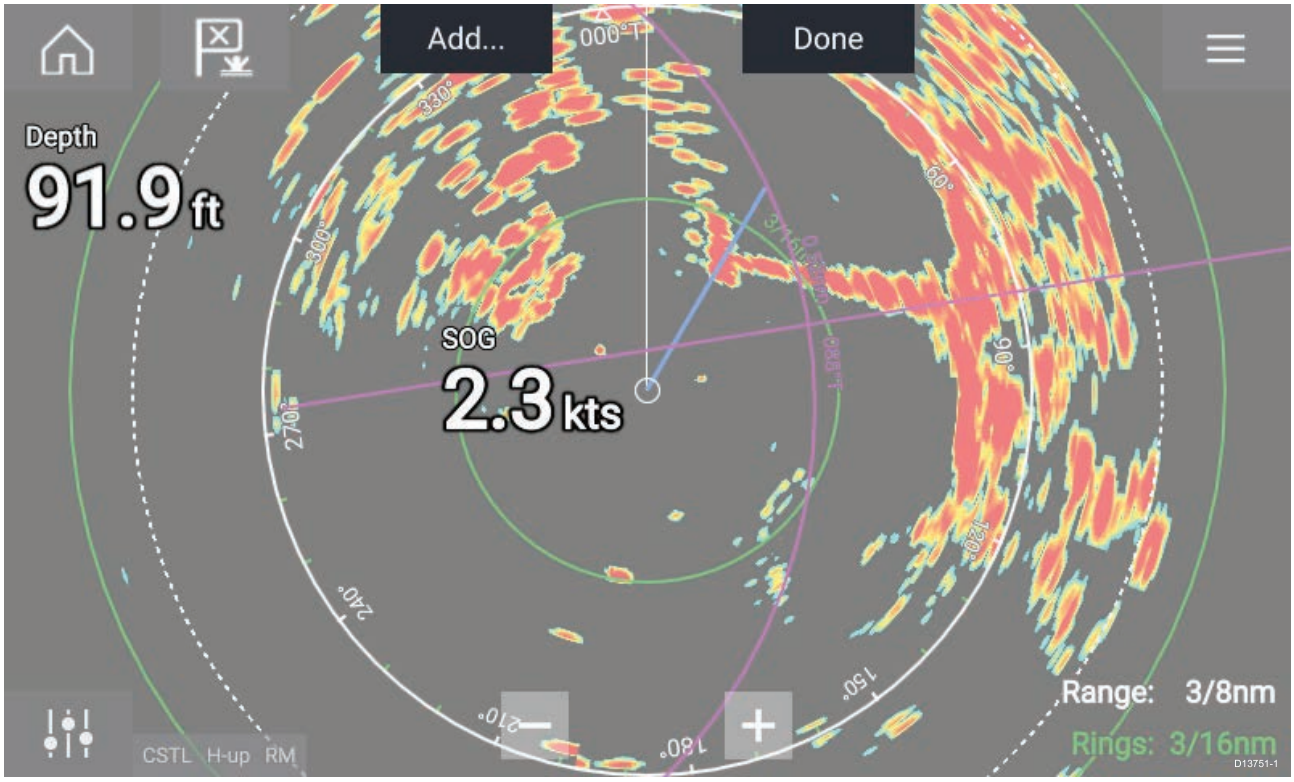


To switch Sidebars:

1. Select the **Sidebar selection** icon.
2. Select the Sidebar you want to use.
3. You can also pin the Sidebar so that it is always displayed onscreen in the app you are in.

6.2 Data overlays

System data can be overlaid onto the Chart app, Radar app, Sonar app and Camera app. Some apps have Data overlays enabled by default.



Data overlays can be placed anywhere on the app page and can be placed over any app in a Splitscreen app page.

Data overlays can be customized from: **Menu** > **Settings** > **Page Settings** > **Edit data overlays**.

In edit mode, drag the data overlay to the desired location, then pressing and holding on a Data overlay displays the pop-over menu where you can **Edit**, **Move**, **Resize** or **Delete** the Data overlay

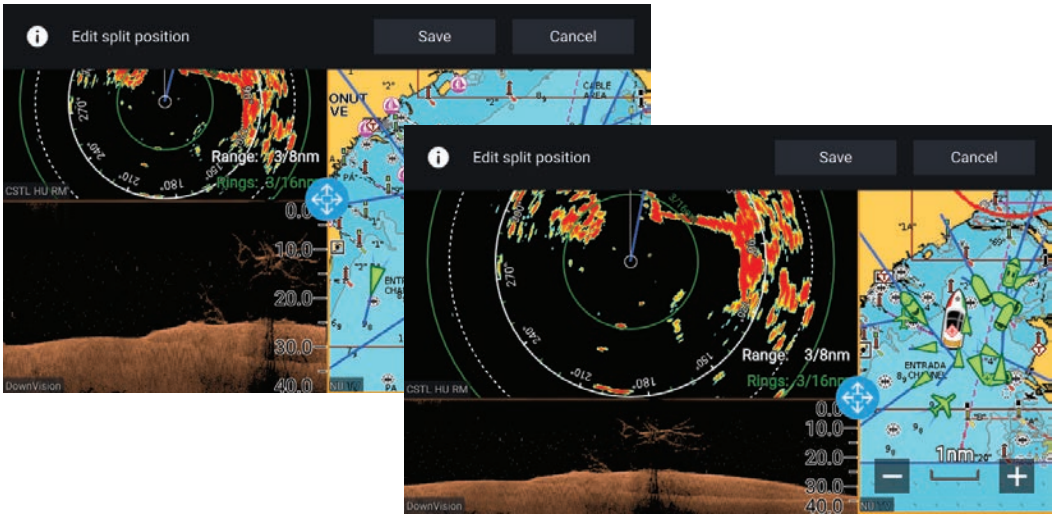
Select **Add** to add another overlay or **Done** to exit edit mode.

Data overlay - data items

The following data items are available to be displayed in Data overlays and Sidebars.

GPS Position (one line)	**Heading**
GPS Position (two line)	**STW**
Local time	**Bearing to waypoint**
Depth	**Distance to waypoint**
Water temperature	**Supply voltage**
Cursor position	**Waypoint TTG**
COG	**Waypoint ETA**
SOG	

6.3 Editing the split ratio of a Splitscreen app page



With a Splitscreen app page displayed:

1. Select **Edit split ratio** from the **Page settings** tab: **Menu > Settings > Page settings > Edit split ratio.**
2. Drag the Resize icon to create the desired split ratio.
3. Select **Save**.

6.4 App settings menus

Each app includes a settings menu that provides access to app settings and features.

The settings menu in each app is signified by the Settings icon.

Chapter 7: Waypoints, Routes and Tracks

Chapter contents

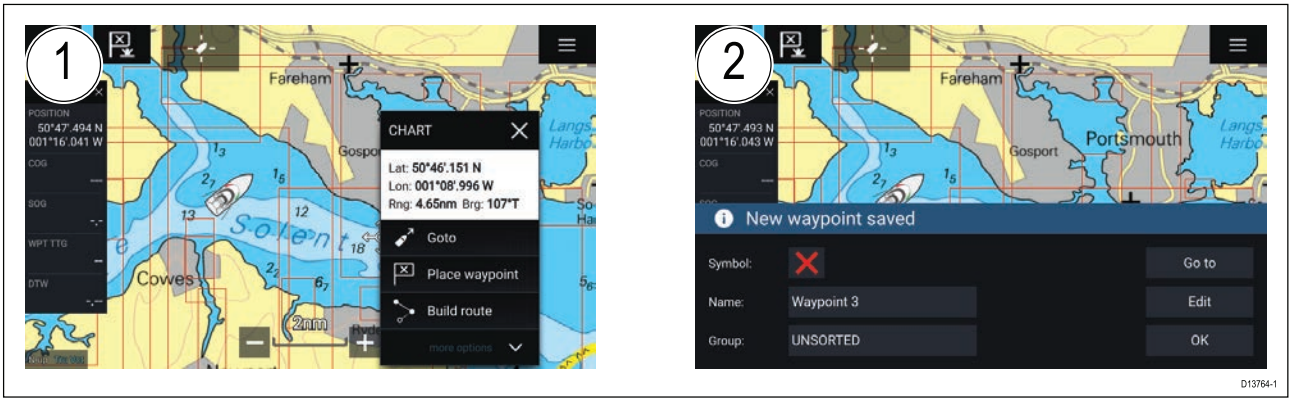
- 7.1 Waypoints on page 74
- 7.2 Routes on page 77
- 7.3 Tracks on page 81

7.1 Waypoints

Waypoints are used to mark specific locations or points of interest. Waypoints can be used in the Chart, Radar and Sonar apps. Your MFD can store up to 10,000 waypoints which can be sorted into up to 200 waypoint groups.

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

Placing a waypoint



1. Select and hold on the desired location and select **Place waypoint** from the context menu..
2. Select **Edit** to edit the waypoint details, **Goto** to navigate to the Waypoint, or **OK** to return to normal operation.

To place a waypoint at your vessel's current location press the Waypoint/MOB icon or physical button.

Placing a waypoint at a specified lat/long

You can place a waypoint at a specified latitude and longitude.

1. Select **New waypoint at lat/long** from the New page in the Chart app menu: **Menu** > **New** > **New waypoint at lat/long**
2. Enter the latitude and longitude for the waypoint.
3. Select **Save**.

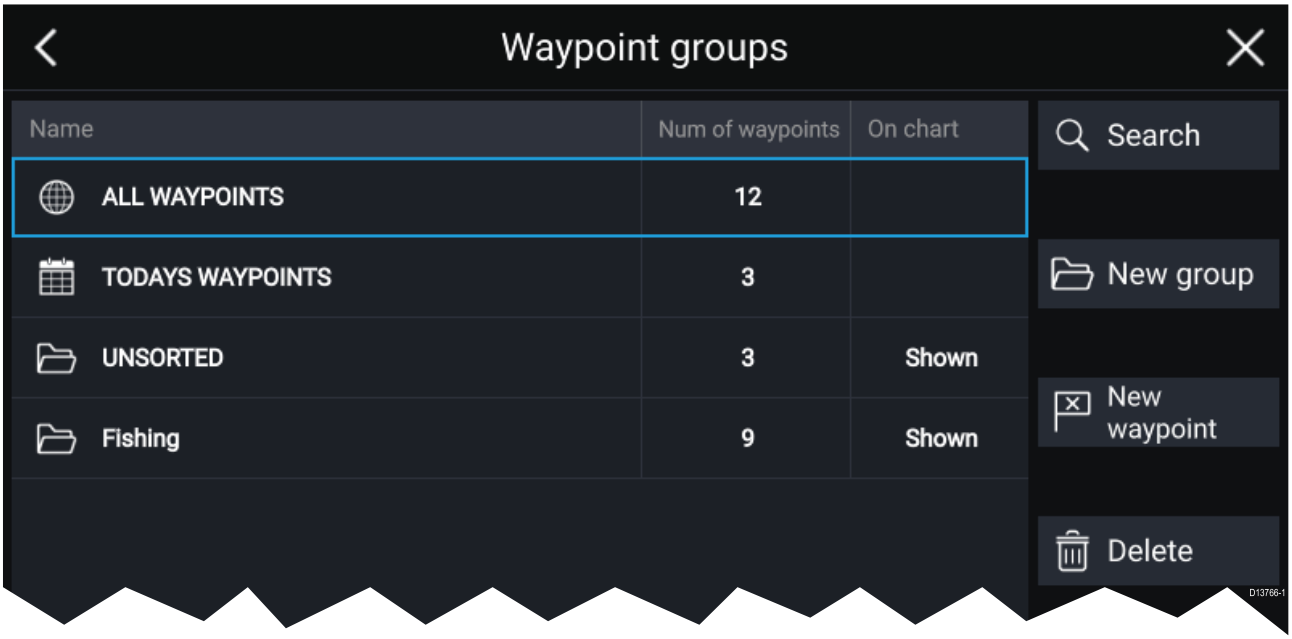
Waypoint management

Waypoints are managed using the Waypoint list.

The Waypoint list can be accessed from the Homescreen and from the Chart app: **Homescreen** > **My data** > **Waypoints**, or **Chart app** > **Menu** > **Waypoints, routes, tracks** > **Waypoints**.

Waypoint list

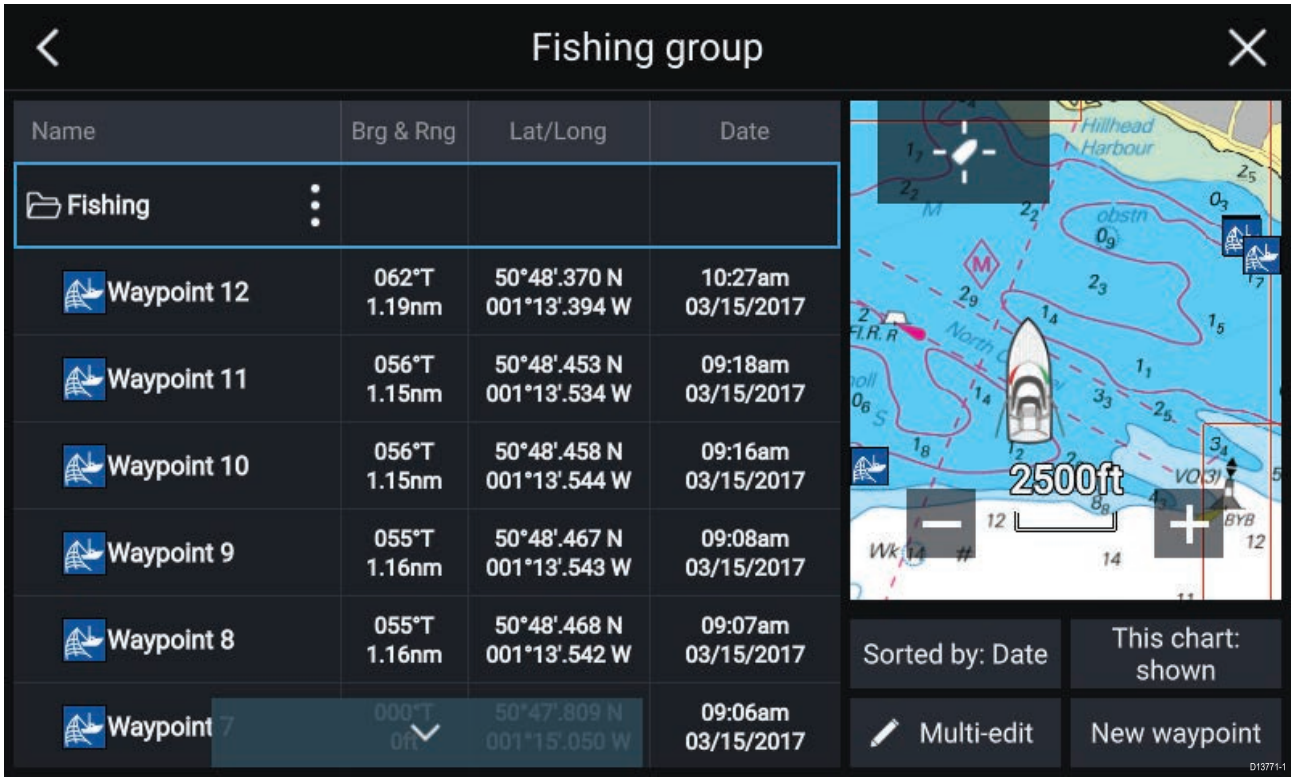
The Waypoint list is sorted into groups. Selecting a group displays a list of all the waypoints included in that group. Selecting a waypoint displays the customizable details for that waypoint.



From the Waypoint list you can **Search** for a waypoint, Create a **New group**, Create a **New Waypoint** or **Delete** a waypoint group.

Selecting a Waypoint group from the list displays a list of all waypoints in that group.

Group lists



If the Waypoint list is accessed from the Chart app menu, the selected group or waypoint is displayed in a Chart pane on the right of the screen.

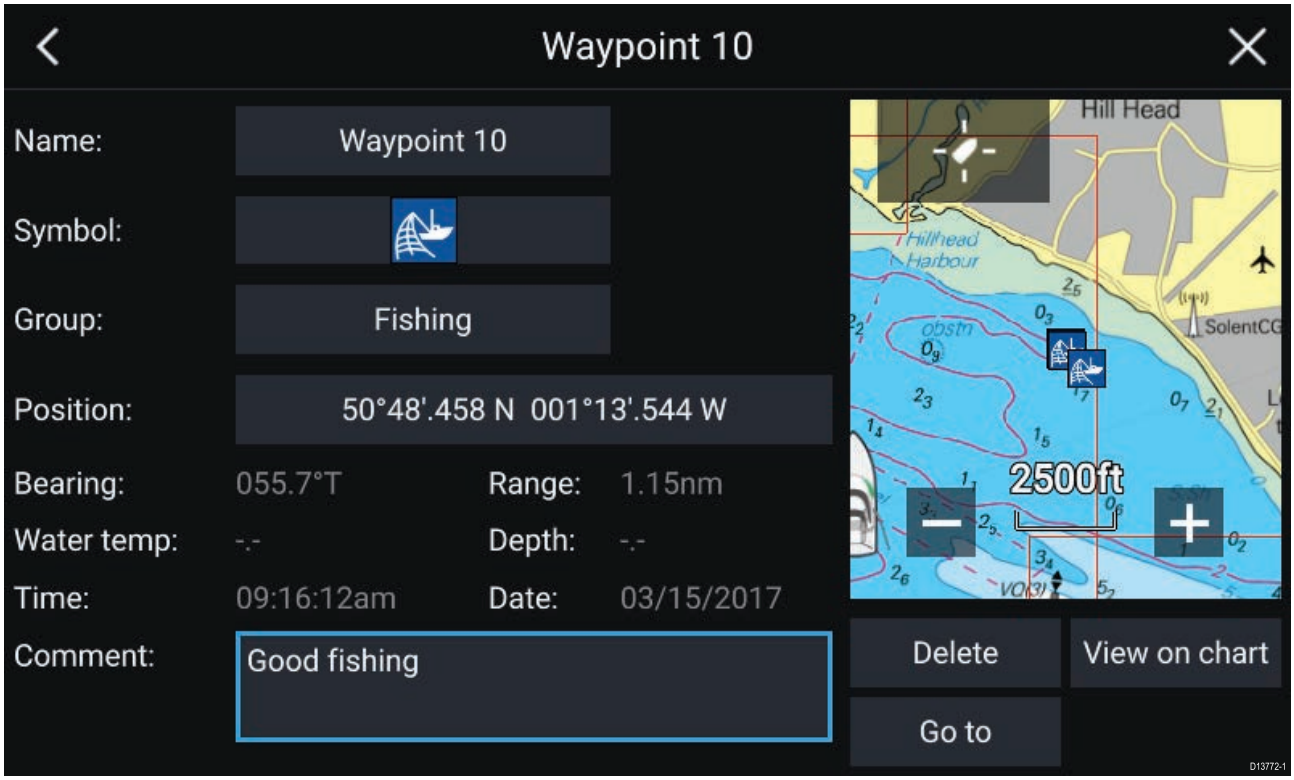
You can **Rename**, **Delete** or **Hide/Show** the group by selecting the Group name at the top of the list.

From the group list you can change the list sort order, Hide/Show the Waypoint group in the current Chart app instance or create a **New waypoint**.

Use the **Multi-edit** option to make the same change to multiple Waypoints (e.g. change symbol, delete waypoints or move to a different group).

Select a waypoint to view its details.

Waypoint details



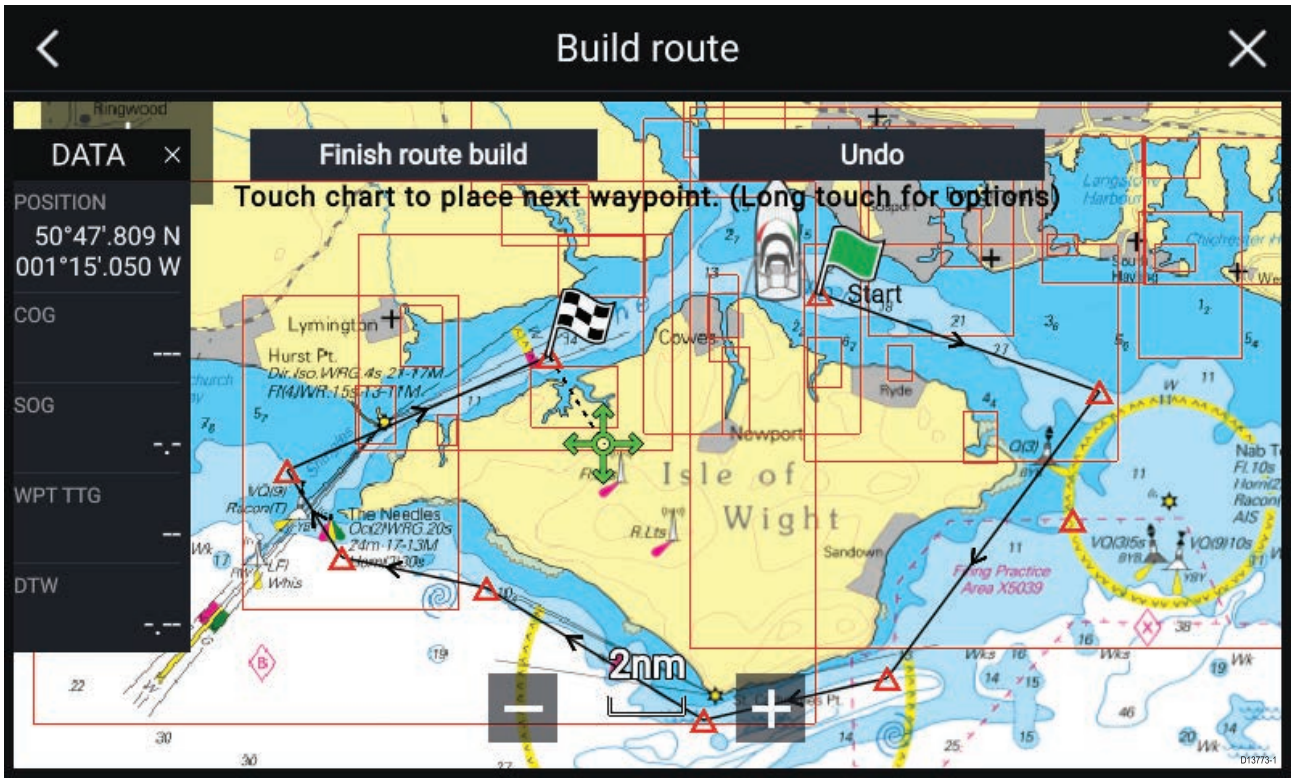
The details for the waypoint can be customized by selecting the relevant field. You can also **Delete** the waypoint, set a **Goto**, or **View on chart**.

7.2 Routes

Routes are used to plan your journey in advance. You can plan your journey directly on your MFD, or at home using software capable of exporting Waypoints and Routes in standard .gpx format, such as Raymarine's Voyage Planner software.

Routes consist of a number of waypoints. Your MFD can store up to 250 Routes, each Route consisting of up to 500 waypoints. The Route capacity limit is subject to your MFD's 10,000 Waypoint limit (for example, your MFD could store 20 Routes each containing 500 waypoints).

Creating a Route



1. Select and hold on 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 subsequent waypoints.
5. Check your Route will be safe to follow, you can move the waypoints in your route by dragging them to a new location.
6. When your Route is complete select **Finish route build**.

Use Autorouting during route creation

Whilst building a route you can use Autorouting to add a route leg to a route you have already started to create.

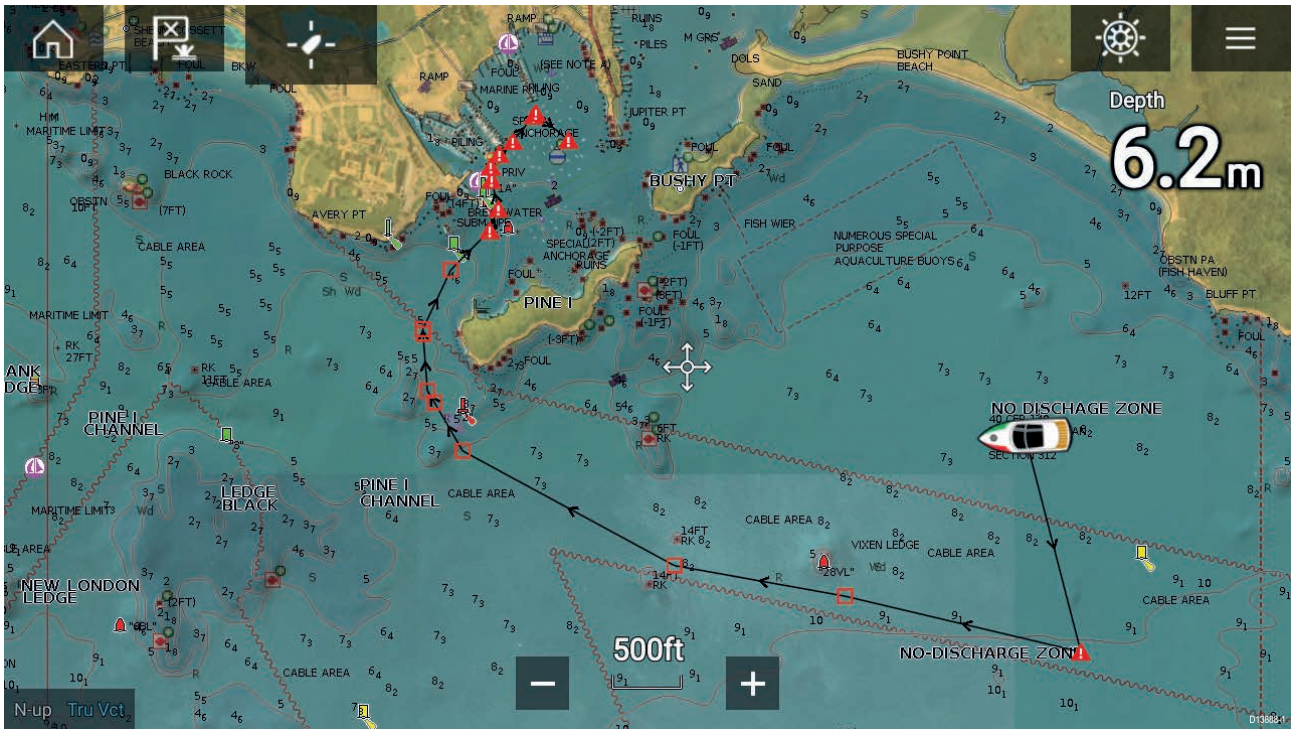
1. Press and hold anywhere on screen and select either **Autoroute to wpt** or **Autoroute to here**.

   *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 **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.



You can select any point on the Chart and from the Chart context menu select **Autoroute to here** or you can select **Autoroute to** from an existing waypoint's context menu to 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.

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.

Importing a route

You can import routes created in standard gpx format.

1. Save your route to a memory card.
2. Insert the memory card into your MFD.
3. Select Import from card from the Import/export page: **Homescreen** > **My data** > **Import/export** > **Import from card**.
4. Locate and select the gpx file that contains your Route.
   The Route will be imported to your MFD.

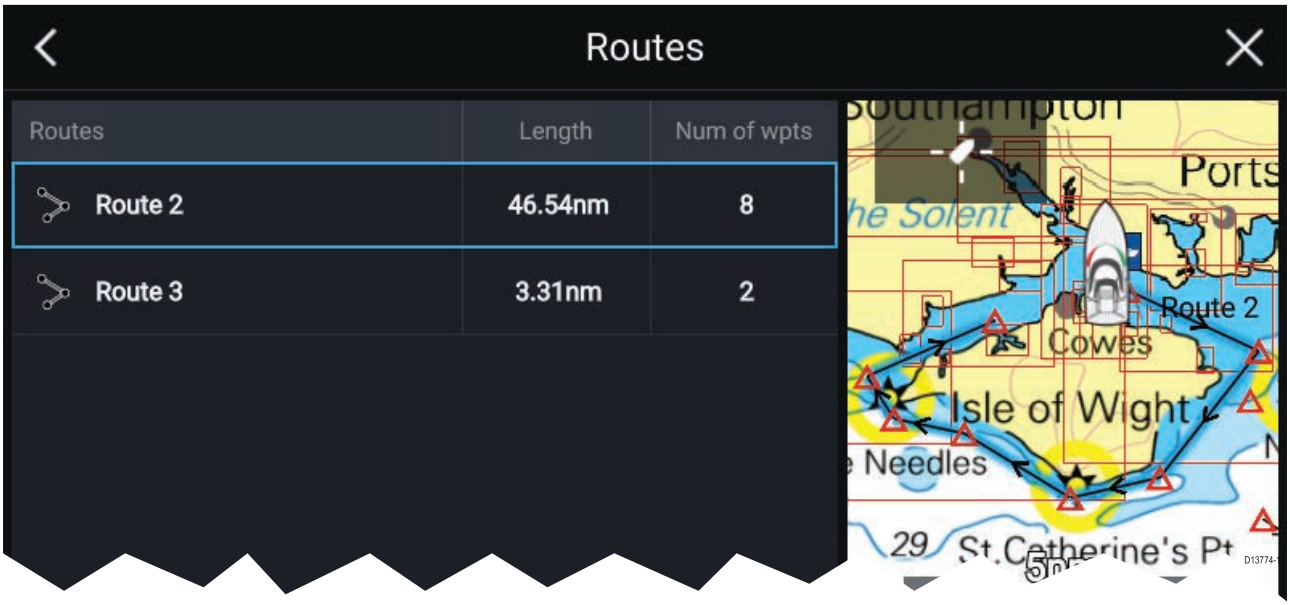
Route management

Routes are managed using the Route list.

The Route list can be accessed from the Homescreen and from the Chart app: **Homescreen** > **My data** > **Routes**, or **Chart app** > **Menu** > **Waypoints, routes, tracks** > **Routes**.

If the Route list is accessed from the Chart app menu, then the selected route is displayed in a Chart pane on the right of the screen.

Route list

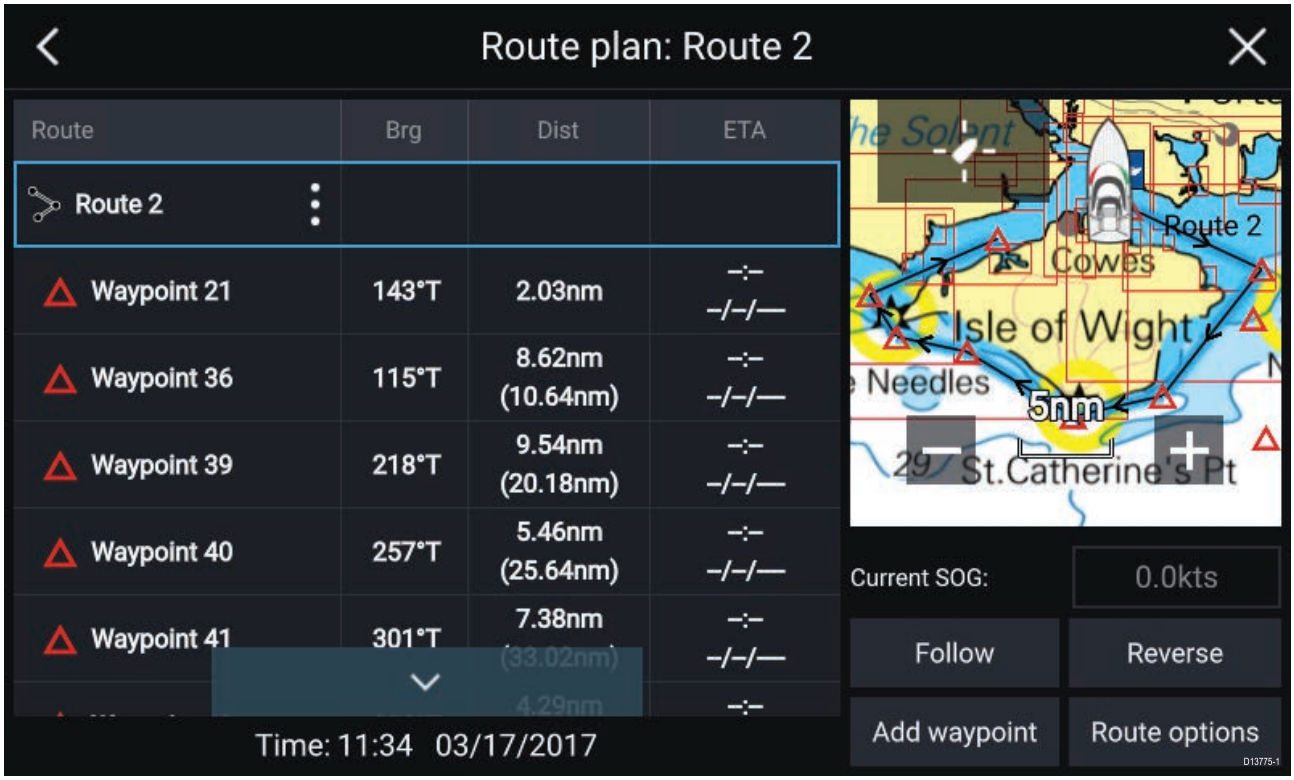


From the route list you can **Delete** routes or create a **New route** using existing waypoints.

To view a route plan, select a route and choose **View route plan**.

Route plan

The route plan displays a list of all waypoints in the route and when accessed from the Chart app also includes a Chart 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 by selecting **Route options**

By selecting a waypoint from the route plan you can change the waypoint order by moving the waypoint up and down the list. You can also remove the waypoint from the list, delete the waypoint, edit the waypoint details or start the Route follow from any waypoint in the route.

Route options

Rename route	Give the route a name.
Color	Change the color the route appears in the Chart app.
Time	Switch the time between ETA (Estimated Time of Arrival) and TTG (Time To Go).
Speed	Switch the speed between **Actual** (SOG) and **Planned**. When the speed is set to Planned you can select a desired speed for navigating the route.
Hide/show on chart	Choose whether the Route should be displayed in the Chart app or not.
Export	Export the route to a memory card.
Delete route	Delete the route.

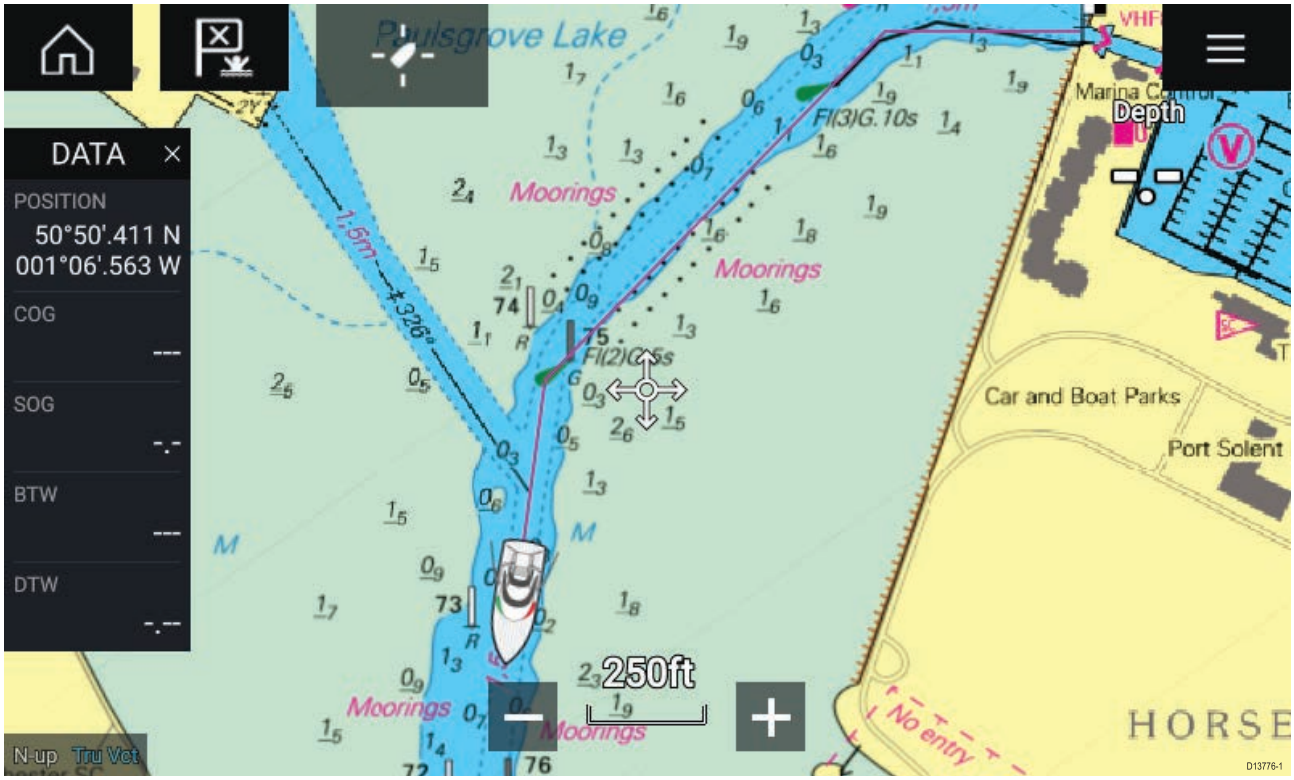
7.3 Tracks

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 MFD, each track can contain up to 10,000 points.

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

Creating a track

You can record your vessel's journey using Tracks.



1. Select and hold on your vessel icon to display the vessel pop-over options.
2. Select **Start track**.
   Your vessel's journey will now be recorded.
3. Select **Stop track** from the pop-over options when you have completed your track.
4. Select **Save** to save the track or **Delete** to remove the track.

You can also start a new track recording at anytime from the Chart menu: **Menu > New > Start a new track**. When using the Chart menu to start a track, if a track is already recording then it will be saved before the new track is started. 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.

Converting a track to a route

From the Track list: **Menu > Waypoints, routes, tracks > Tracks**.

1. Select a track.
2. Select **Create route from track** from the pop-over options.
3. Select **OK**.

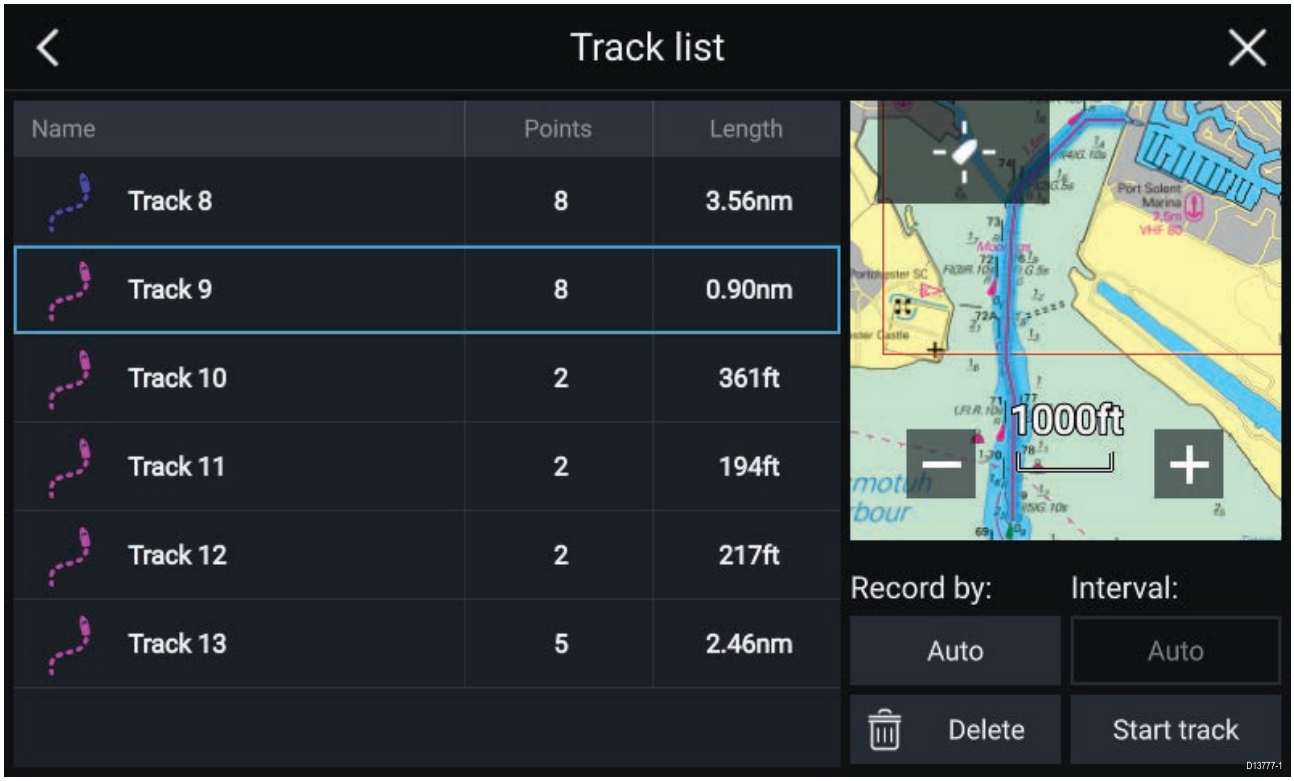
Track management

Tracks are managed using the Track list.

The Track list can be accessed from the Homescreen and from the Chart app: **Homescreen > My data > Tracks**, or **Chart app > Menu > Waypoints, routes, tracks > Tracks**.

If the Track list is accessed from the Chart app menu, then the selected track is displayed in a Chart pane on the right of the screen.

Track list



From the track list you can Start or Stop tracks recording, **Delete** a track or choose how tracks are recorded.

Track interval

The track interval determines the time period or distance between track points when recording a track. You can choose whether to record track points by Time, by Distance or set to Auto.

- In **Auto** the track interval is set automatically to minimize the track points used whilst maintaining the actual path taken.
- When set to **Time**, you can choose a specified time period between track points.
- When set to **Distance** you can choose a specified distance between track points.

Customize tracks

From the Track pop-over options you can rename a track, change track color, Create a route form a track, Delete a track or Hide/Show the track in the Chart app.

Chapter 8: Chart app

Chapter contents

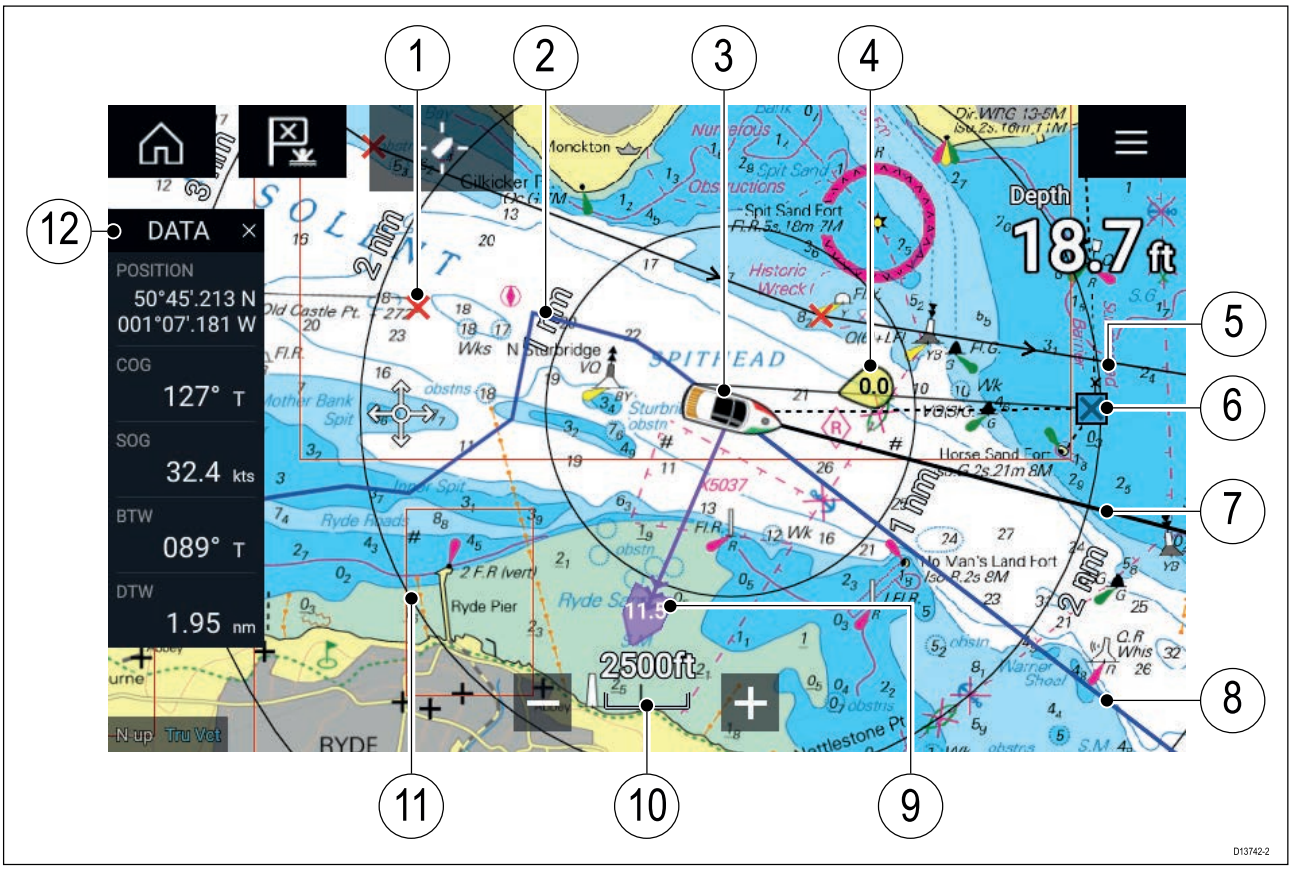
- 8.1 Chart app overview on page 84
- 8.2 Navigation on page 91
- 8.3 Target tracking on page 92
- 8.4 Chart settings menu on page 97

8.1 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 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 that you want to use, the selection will persist over a power cycle.

The Chart app can be displayed in both Fullscreen and splitscreen app pages. App pages may consist of up to 4 instances of the Chart app.



1	**Waypoint** Use waypoints to mark specific location or points of interest.	2	**Track** You can record the passage your vessel takes using Tracks.
3	**Vessel icon** Represents your vessel, only displayed when GNSS position fix is available (icon will be a black dot if no Heading is available).	4	**Wind indicator** Provides indication of wind direction and speed (Wind transducer required).
5	**Route** You can plan your route in advance by creating a Route using Waypoints to mark each route leg.	6	**Destination waypoint** During a goto, this is the current destination waypoint.
7	**Heading line** If Heading data is available then a Heading vector for your vessel can be displayed.	8	**COG line** If COG data is available then you can display a COG vector for your vessel.
9	**Tide indicator** Provides Set and drift indicators. Requires the following data; COG, Heading, SOG, and STW (Speed Through Water)..	10	**Chart range** Identifies the scale for the chart range displayed.
11	**Range rings** Provides a distance indication around your vessel at set intervals.	12	**Sidebar** The Sidebar contains system data that can be viewed in all apps.

Chart app controls

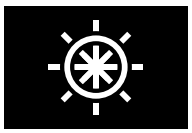
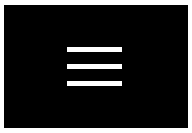
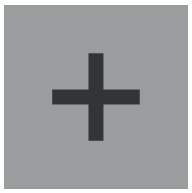
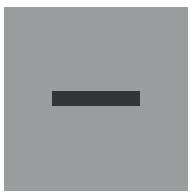
Icon	Description	Action
	Home icon	Takes you to the Homescreen
	Waypoint / MOB	Place waypoint / hold down to activate Man overboard (MOB) alarm
	Pilot icon	Opens and closes the Pilot Sidebar
	Menu icon	Opens the app menu
	Find vessel	Centers your vessel onscreen.
	Range In	Decreases the range/distance displayed onscreen.
	Range Out	Increases the range/distance displayed onscreen.

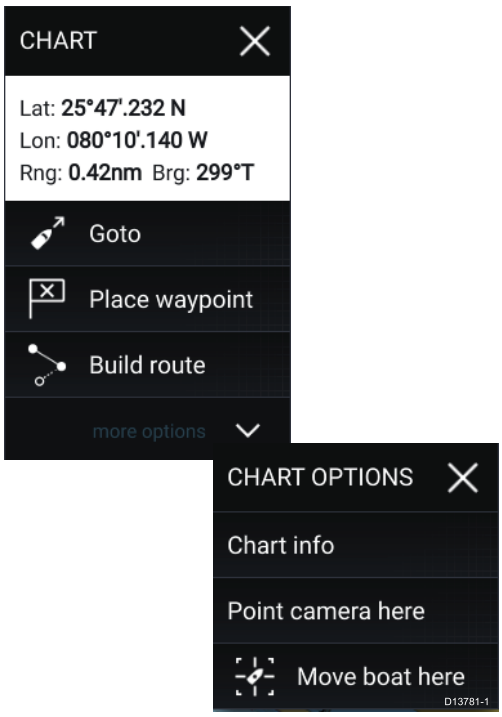
Chart ranging and panning

You can change the range displayed in the Chart app using the onscreen Range controls or by using the pinch-to-zoom multi-touch gesture.

You can pan the chart area by swiping your finger across the chart.

Chart app context menu

Context menus provide context sensitive menu options.



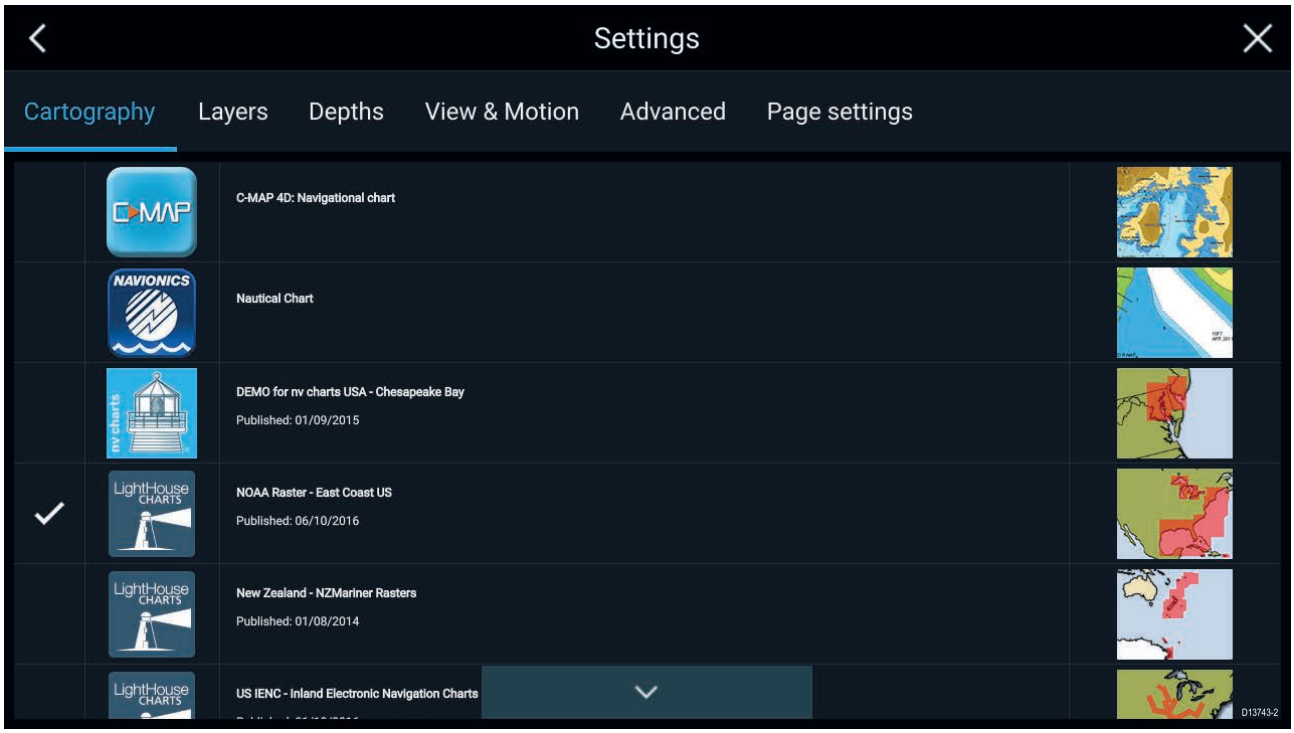
- Context menus are accessed in the Chart app by pressing and holding on a location or object.
- The context menu provides Latitude, longitude, range and bearing details for the selected location or object.
- The context menu provides quick access to relevant settings or features.
- Select **More options** to display further options.

Note:

The **Move boat here** option is only available in Demo/simulator mode.

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 the MFD's MicroSD card reader (or the card reader of an MFD on the same network).



From the Chart app menu:

1. Select the **Settings** icon.
2. Select the cartography that you want to use from the Cartography tab.

You may choose a different chart for each instance of the Chart app, accessed from the Homescreen. Cartography selection will persist until changed.

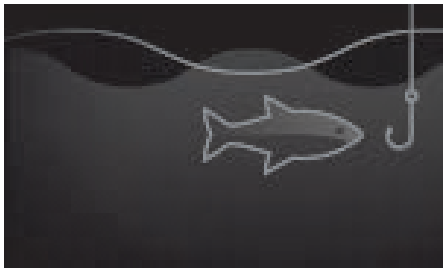
Chart modes

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
In Simple mode, chart detail is suppressed to provide a clearer, simpler view for navigation and only navigation related menu options are available. Settings changes are not saved.

DETAILED
Detailed is the default mode. Full chart detail and menu options are available. Settings changes are saved to the user profile in use.

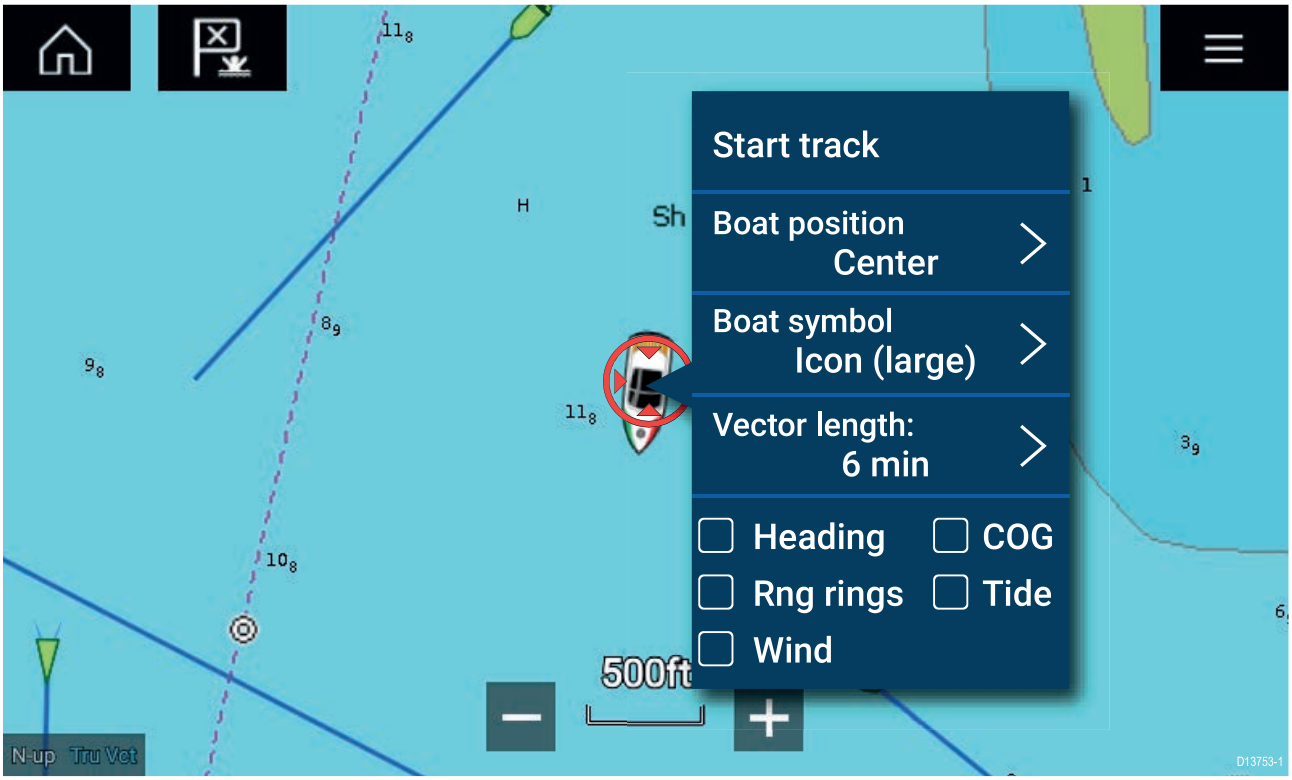


FISHING CHART
Fishing mode optimizes the Chart app for Fishing and if supported by your selected cartography, displays more detailed contour lines. Full menu options are available. Settings changes are saved to the user profile in use.

WEATHER
Weather mode is available when the MFD is connected to a compatible Weather receiver (SR150).
Weather mode allows you to overlay weather data directly on the chart and view animated weather graphics or read weather reports. Only Weather related menu options are available. Settings changes are saved to the user profile in use.
The further details on Weather mode refer to: Chapter 9 **Weather mode**

Vessel details

The Vessel details pop-over provides access to vessel-related settings.



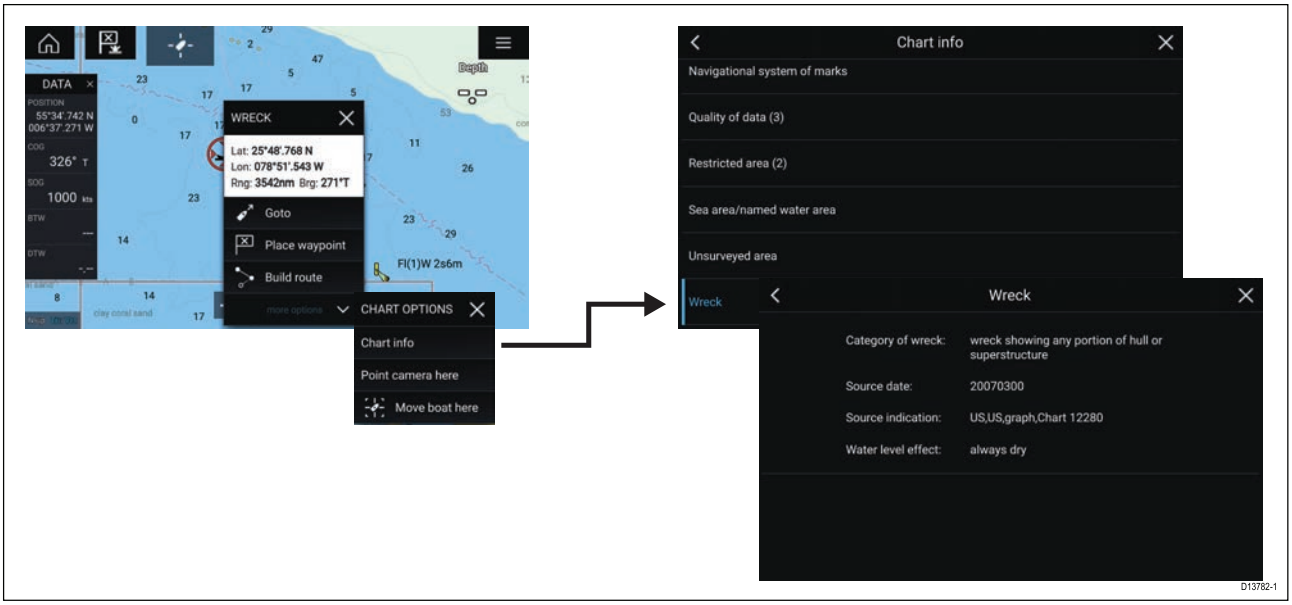
From the Vessel details pop-over you can:

- start/stop a track.
- offset the position of the vessel symbol.
- change the symbol used to represent your vessel.
- set the length of vessel vectors.
- show / hide Heading and COG vectors.
- show / hide Range Rings.
- show / hide Tide and Wind graphics.

Object selection and information

Charted objects, available on your cartography can be selected and object information can be viewed.

When you select an object the cursor will change to the Object cursor.



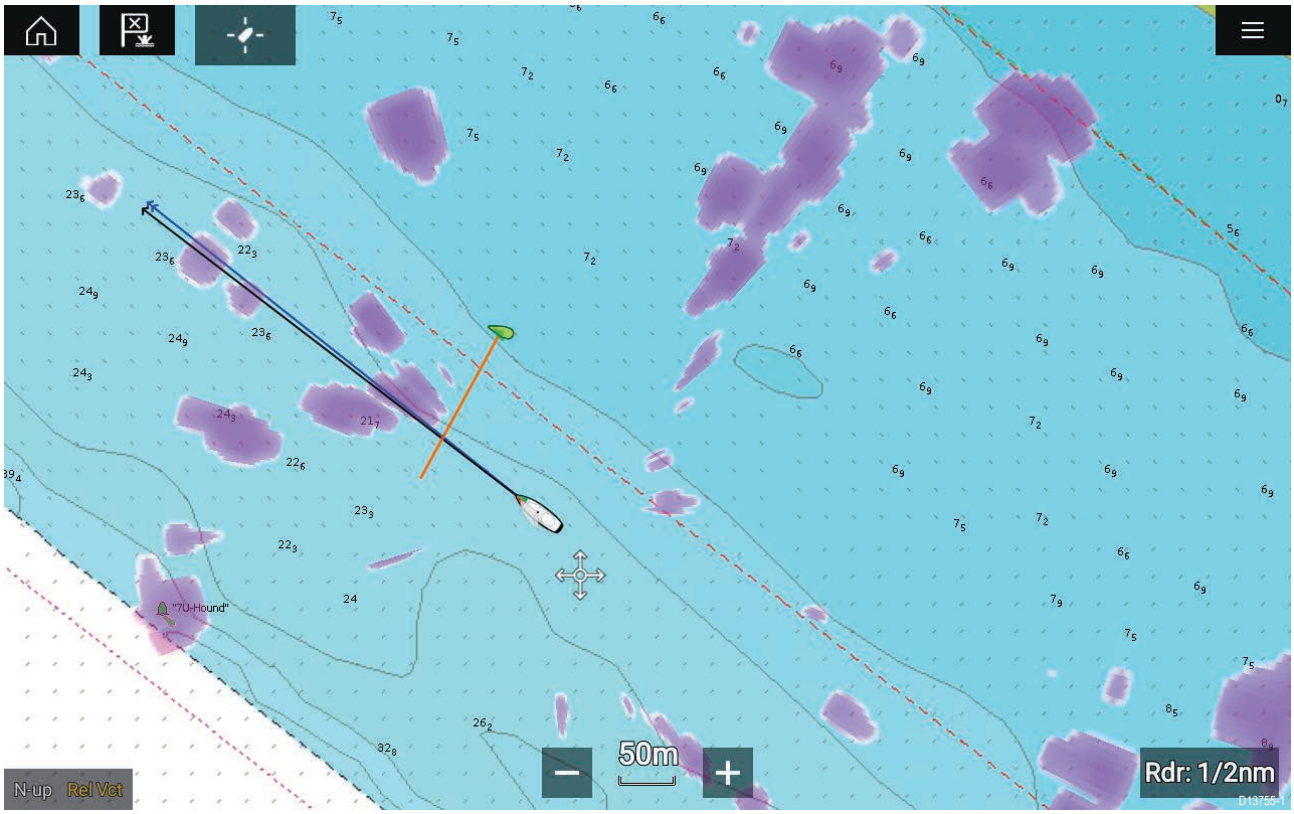
Selecting and holding on the object will display the object context menu.

From the context menu select: **More options** > **Chart info** and then select the object from the list to view its details.

In areas where there is a high concentration of charted objects, selecting **Nearby objects** from the context menu will display a list of objects located nearby for you to choose from.

Layers

Layers are available that can overlaid on the Chart app. Layers include Aerial photographs, AIS targets, Radar image, Range rings, Tide graphs, Weather Radar and Crowd sourced content.



The Layers tab from the Chart app Settings menu: **Menu** > **Settings** > **Layers** provides controls for Chart layers.

View and motion

The view and motion tab allows you to control how the chart is displayed in relation to your vessel.

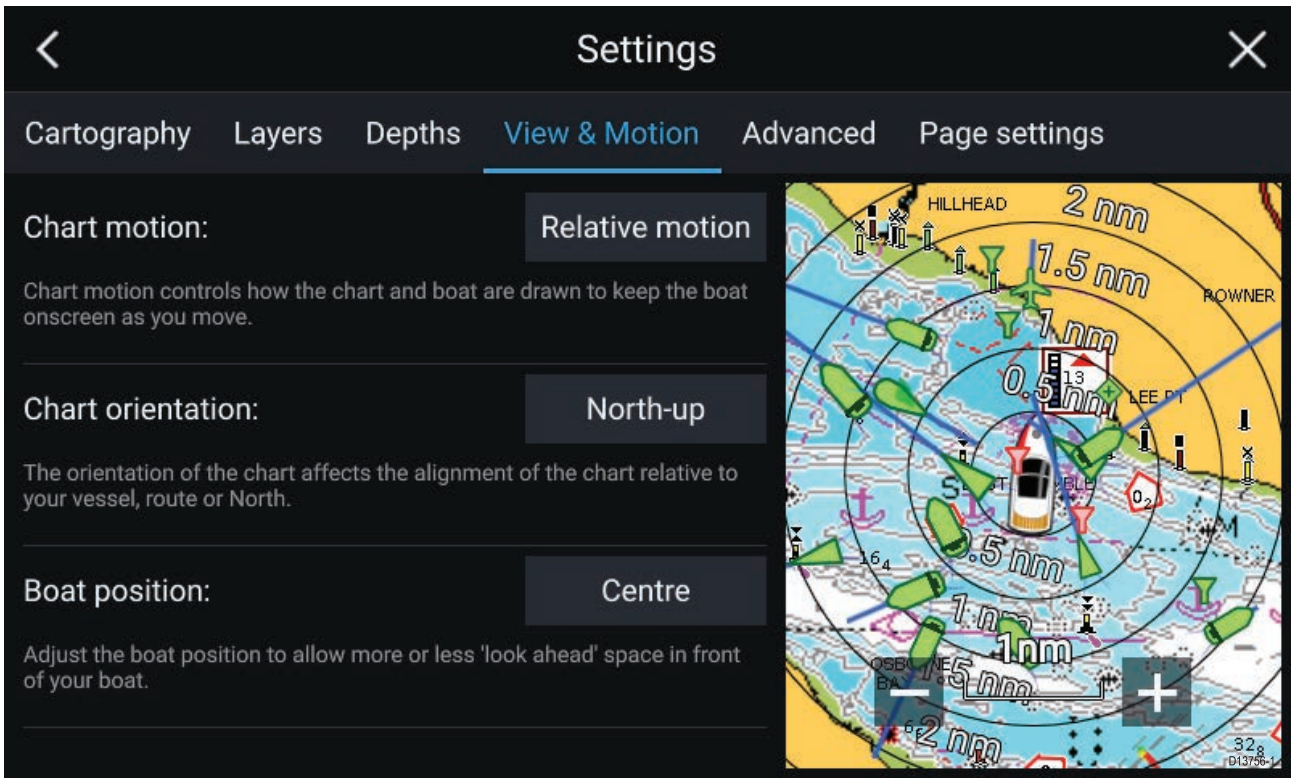


Chart motion

Chart motion controls how the chart and boat are drawn to keep the boat onscreen as you move.

Chart orientation

The orientation of the chart affects the alignment of the chart relative to your vessel, route or North.

Boat position

Adjust the boat position to allow more or less ‘look ahead’ space in front of your boat.

Camera tracking

When connected to a compatible Pan and Tilt Thermal camera you can track targets or point your camera at a specific target or area.

2 options are available for camera tracking:

- **Point camera here** — Points the camera at a specific point onscreen, the camera will remain pointed at this area regardless of your own vessel’s course.
- **Track with camera** — Tracks a selected target regardless of your own vessel’s or target’s course.

Camera tracking options are available from the Context menu in the Chart and Radar apps: **Context menu** > **more options** > **Point camera here**, or **Context menu** > **more options** > **Track with camera**.

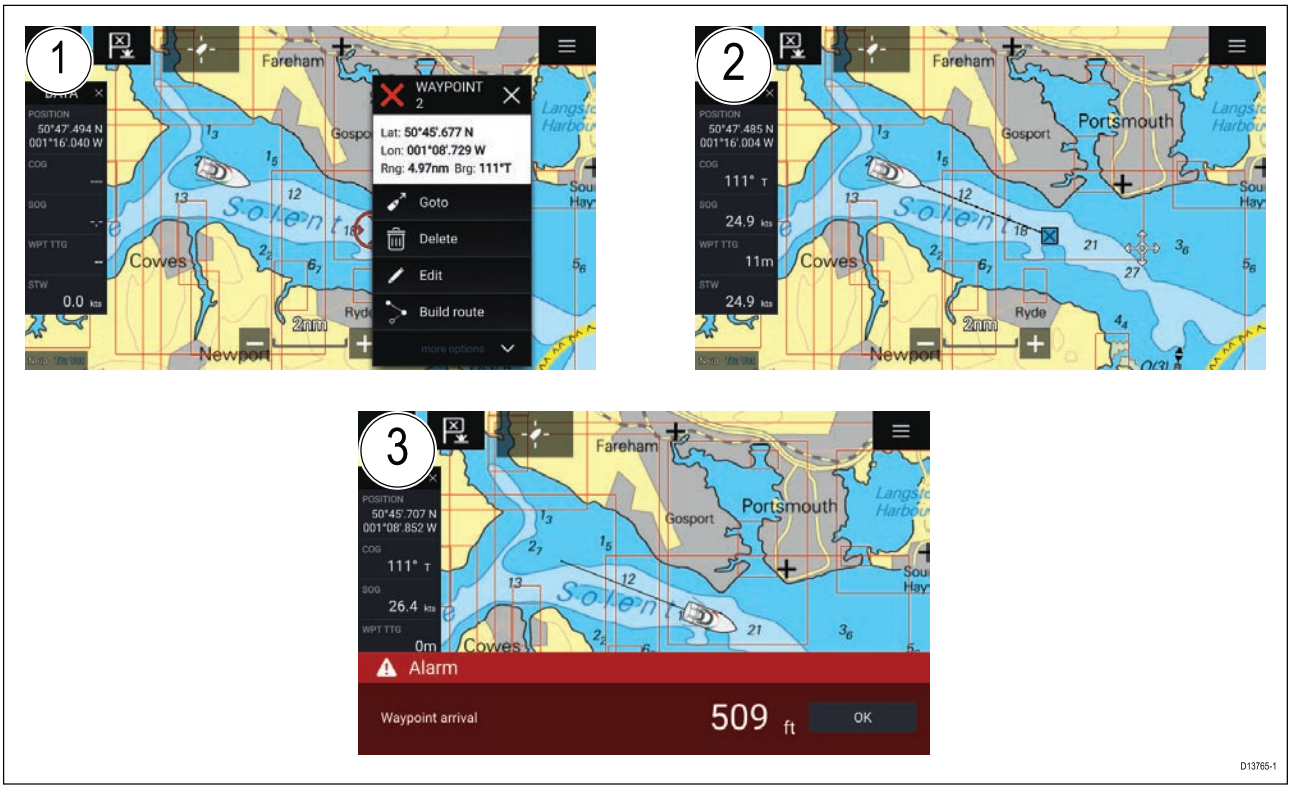
Automatic tracking

You can use the Camera app settings to configure automatic tracking for AIS, Radar and MoB targets: **Camera app** > **Menu** > **Settings** > **Camera motion** > **AUTO TRACKING**

8.2 Navigation

Navigating to a waypoint or point of interest

You can perform a “Goto” to a Waypoint or specific location.



1. Select and hold on the waypoint or point of interest and select **Goto** from the context menu.

   *You can stop the **Goto** at any time by selecting and holding anywhere in the Chart app and choosing **Stop**, or selecting another **Goto**.*

2. The Chart app will begin navigation, if required physically engage your autopilot.
3. An alarm will sound when you reach the waypoint.

You can also perform a Goto from the **Go** menu: **Menu > Go > Waypoint** or **Menu > Go > Lat/long**.

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

You can follow a saved route.

With the Route displayed in the Chart app:

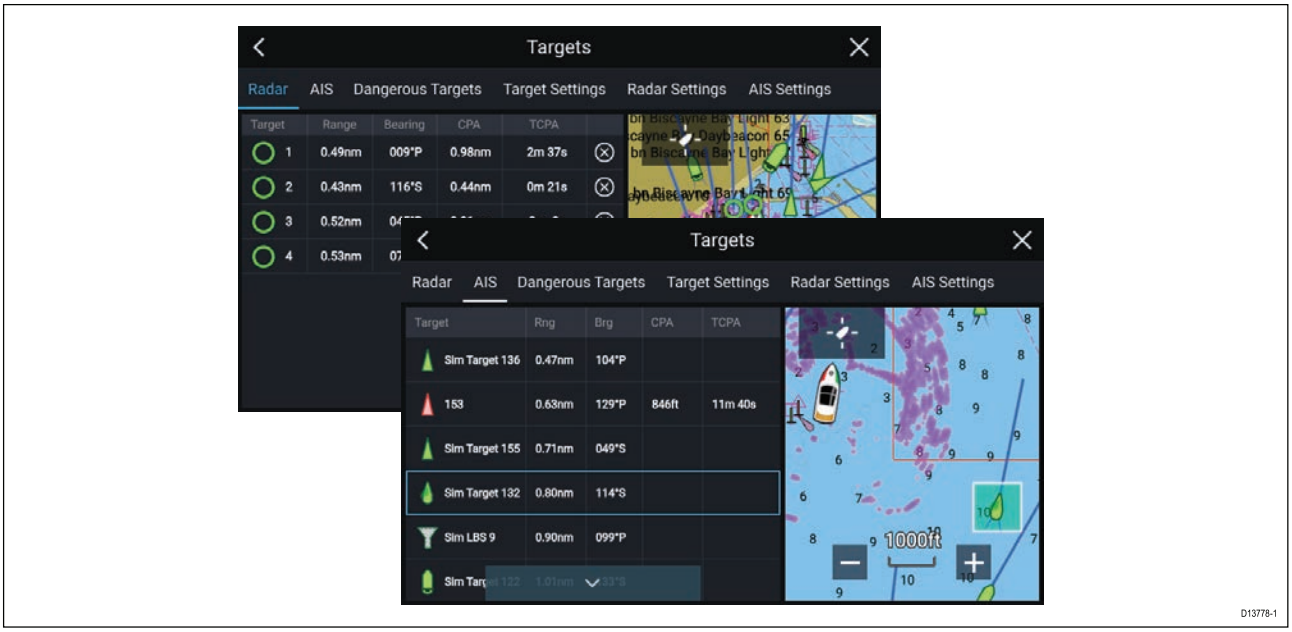
1. Select and hold on a Route leg within the Route you want to follow.
2. Select **Follow Route** from the Route context menu.

8.3 Target tracking

With compatible AIS and Radar hardware connected to your MFD, AIS and Radar targets can be tracked in the Chart app and Radar app.

When targets are being tracked they appear in the AIS or Radar targets list.

The target lists can be accessed by selecting **Targets** from the app menu: **Menu** > **Targets** and then selecting the relevant tab.



Selecting a target from the list will highlight the selected target in the **LiveView** app pane on the right of the page.

The list will identify: Target name, Range from your vessel, and Bearing. Where relevant, CPA (Closest point of approach) and TCPA (Time to Closest Point of Approach) values will also be displayed.

AIS list

The AIS target list pop-over options enable you to **View full target data** or add a target as an AIS buddy by selecting **Add as buddy**.

AIS icons used for targets marked as buddies will be filled yellow. You can also rename buddy targets or remove targets as a buddy.

Radar list

The Radar target list can be **Sorted By:** target **Number** or its **Range** from your vessel.

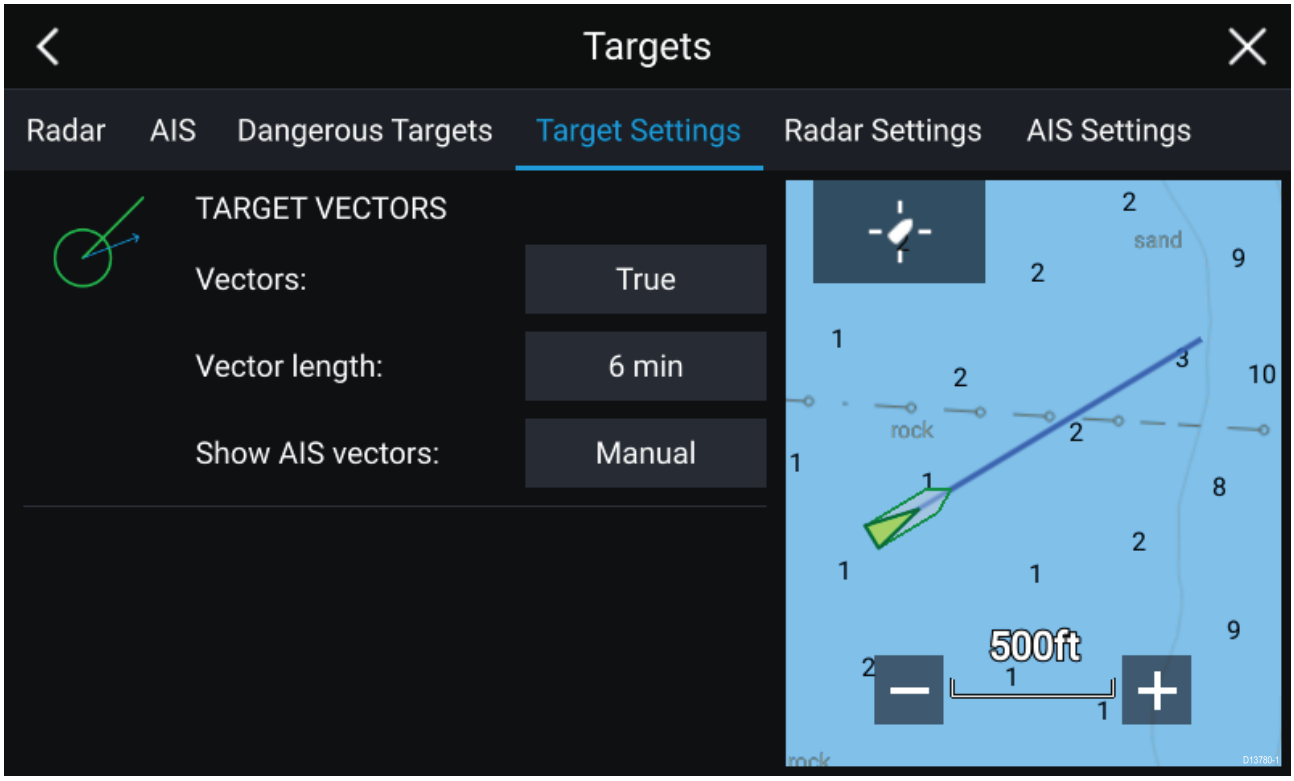
Radar targets can be cancelled individually by selecting the '**X**' next to the target's details in the list, or you can cancel all targets by selecting **Cancel all targets**.

You can display Radar target information onscreen by selecting **Target info** from the Radar target pop-over options.

Target vectors

Vector graphics can be displayed for AIS targets.

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



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

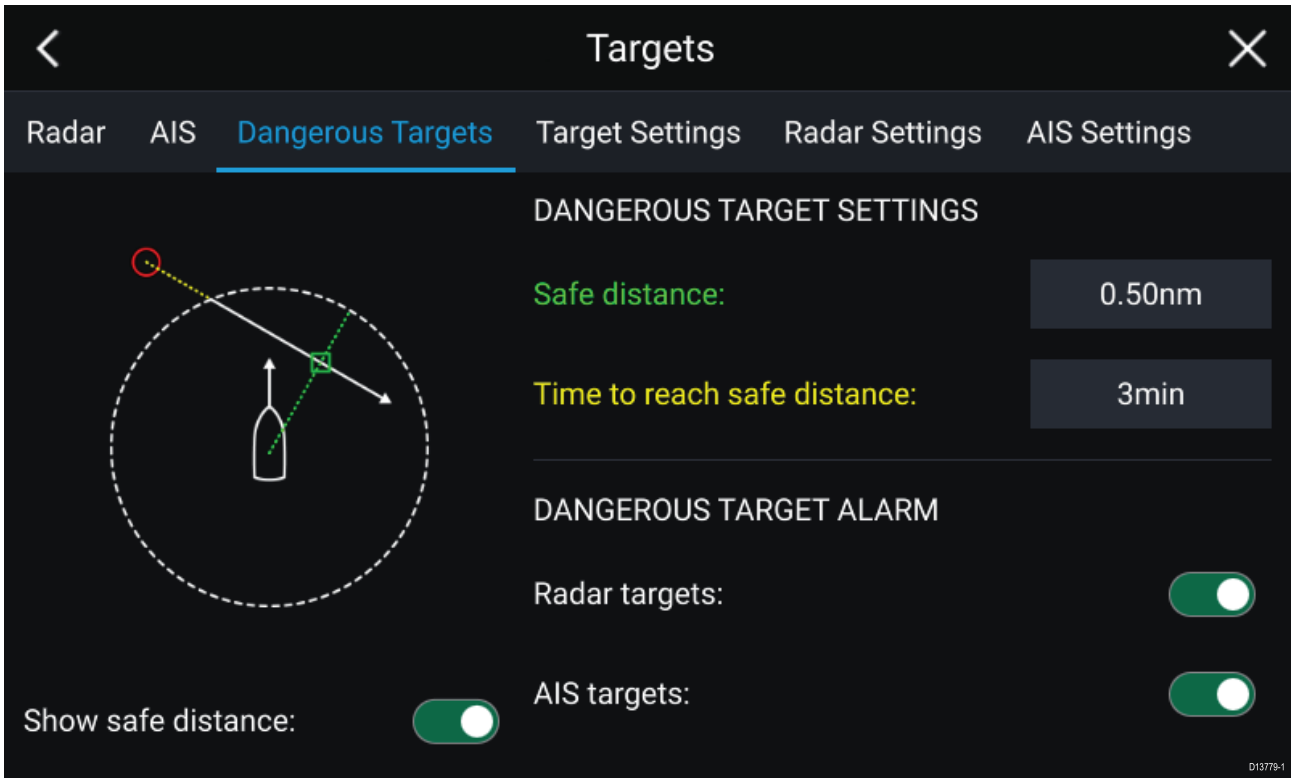
The Vector length identifies where the target will be after the specified time has passed. You can adjust the length of the vector by selecting a time from the **Vector length** pop-over options.

AIS vectors can be set to **All** (displayed for all targets) or **Manual** (only displayed when turned on using the target's context menu).

Target vectors can be enabled and disabled for individual targets by, pressing and holding on an AIS target to display the context menu and selecting Vector.

Dangerous targets alarm

You can use the Dangerous targets alarm to notify you if a target will reach a specified distance from your vessel within a specified time.



To set up the 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 select whether you want the Dangerous target alarm to track **Radar targets**, **AIS targets** or both.

You can display a Safe distance ring around your vessel in the Radar app using the **Show safe distance** control.

Radar settings

When the Radar layer is enabled in the Chart app you can configure the **Radar settings** from the **Targets** menu: **Menu** > **Targets** > **Radar settings**.

Setting	Description	Options
Radar selection	When more than 1 Radar scanner is connected you can choose which Radar to use for the Radar layer in the Chart app.	List of available Radar scanners
Transmit	Start the Radar scanner transmitting or put it in Standby.	• On • Off
Dual range	Enables and disables dual range on compatible Radar scanners	• On • Off
Channel	When Dual range is active, you can switch between channels.	• 1 • 2
Show Radar overlay	Enables and disables the Radar layer in the Chart app.	• On • Off
Visibility	Determines the visibility (opacity) of the Radar layer.	• 0% to 100%
Palette	Selects the color used for the Radar layer	• Purple • Black • Red
Use Radar without heading data	Enables use of Radar layer when Heading data is not available.	• On • Off
Range	Determines the range used for the Radar layer.	Radar range values

AIS settings

When the AIS layer is enabled in the Chart app you can configure **AIS settings** from the **Targets** menu**Menu** > **Targets** > **AIS settings**.

Setting	Description	Options
Show AIS targets in Chart / **Show AIS targets in Radar**	Enables and disables AIS targets in the Chart and Radar apps.	• On • Off
Enhanced AIS targets	Enables and disables display of enhanced AIS target icons.	• On • Off

Setting	Description	Options
Show these AIS types	Determines the types of AIS target displayed in the Chart and Radar apps.	• All • Dangerous • Buddies
Hide static targets	When enabled AIS target travelling under 2 knots will be hidden, unless they are or become dangerous.	• On • Off
Silent mode	When enabled your vessel's AIS will not transmit your position or details.	• On • Off

AIS target symbols

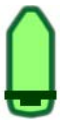
By default, standard AIS symbols are used to identify AIS targets. You can enable display of enhanced AIS target symbols from the Advanced Settings menu: (**Menu > Settings > Advanced > Enhanced AIS targets**). With enhanced mode enabled, the enhanced symbols are used in place of the standard vessel symbol.

Standard AIS symbols — type

	Vessel		SART (Search and Rescue Transponder)
	Land based station		ATON
	SAR (Search and Rescue)		Virtual ATON
	* Blueforce vessel		* Blueforce SAR

Note: * Requires STEDS-EAIS hardware.

Enhanced AIS symbols — type

	Sailing Vessel		Other
	High speed vessel / Wing In Ground vessel		Cargo vessel
	Passenger vessel		

Enhanced AIS symbols are scaled or outlined according to the reported size of the vessel.

AIS symbol status

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

8.4 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

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

Layers tab

Settings	Description	Options	Vendor
Chart detail	Allows you to select the level of detail displayed onscreen for vector based cartography.	• Low • Medium • High	• All (Vector)
Aerial	Enables and disables display of a photographic aerial overlay.	• On • Off	• Navionics • C-MAP (Vector)
AIS	Enables and disables display of AIS targets in the Chart app. Requires AIS hardware.	• On • Off	• All
Radar	Enables and disables display of your Radar scanner's image in the Chart app. Requires Radar scanner hardware.	• On • Off	• All
Range rings	Enables and disables display of Radar like range rings in the Chart app.	• On • Off	• All
Weather Radar	Enables Weather Radar precipitation data overlay on the Chart app. Only available when connected to a compatible SiriusXM weather receiver with a valid subscription.	• On • Off	• All
Tides	Enables and disables display of Tide and Current graphics at Tide and Current stations in the Chart app.	• On • Off	• Navionics
EasyView	Enables and disables magnification of useful icons and text, making them easier to read.	• On • Off	• Navionics
Community edits	Enables and disables display of crowd sourced data.	• On • Off	• Navionics
High res bathy	Enables and disables display of High Resolution Bathymetry charts which provides improved bottom detail, contours and structure.	• On • Off	• C-MAP
Sports fishing	Allows you to display easy-to-use information pages about fishing locations including fish type, size, depth and reef and bottom composition.	• On • Off	• C-MAP
Marine protected areas	Allows clear identification of areas where commercial and recreational fishing is prohibited or restricted.	• On • Off	• C-MAP

Settings	Description	Options	Vendor
Fishing AOI	Enables and disables display of Fishing AOIs (Areas Of Interest).	• On • Off	• C-MAP
ActiveCaptain	Enables and disables display of crowd sourced data.	• On • Off	• C-MAP

Depths tab

Settings	Description	Options	Vendor
Show soundings	Enables and disables display of depth soundings on the chart. When set to Manual depth soundings will be shown from zero to the maximum depth you specify.	• None • Manual • All	• LightHouse (Vector) • Navionics • C-MAP
Show contours	Enables and disables display of depth contours on the chart. When set to Manual, contours will be shown from zero to the maximum depth you specify.	• None • Manual • All	• Navionics • C-MAP
Shallow water	Determines the depth at which the Shallow contour is displayed. The Shallow contour cannot be set above the Safety or Deep contour value.	Numeric value	• LightHouse (Vector)
Safe water from	Determines the depth at which the Safety contour is displayed. The Safety contour cannot be set less than the Shallow contour or greater than the Deep contour.	Numeric value	• LightHouse (Vector)
Deep water from	Allows you specify the depth at which Deep water begins.	Numeric value	• LightHouse (Vector) • Navionics • C-MAP
Deep water color	Allows you to specify Deep water color	• White • Blue	• Navionics • C-MAP
Sonar logging	Allows logging of depth and position data to your Navionics chart card.	• On • Off	• Navionics
SonarChart Live	Enables and disables Navionics SonarChart Live feature which enables real time creation and display of high resolution bathymetry charts.	• On • Off	• Navionics
Visibility	Determines the transparency of the SonarChart data onscreen.	• 0% to 100%	• Navionics
Tide correction	Enables your depth measurements to be offset by tide height data from nearby tide stations.	• On • Off	• Navionics
Shallow depth shading	Enables and disables identification of areas deemed to be shallow. When set to On, a red hatched area is displayed in areas less shallow than the depth specified.	• On • Off	• Navionics

Settings	Description	Options	Vendor
Density	Selects the density of available depth contours.	• Very high • High • Medium • Low	• Navionics
Fishing Range	You can set up a Fishing Range by enabling **Fishing Range** 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 depth is colored Blue.	• On • Off	• Navionics

View & Motion tab

Settings	Description	Options
Chart motion	**Relative motion** In Relative motion the vessel icon remains fixed onscreen and the chart area moves relative to your position. In Relative motion mode you can adjust your vessel's fixed position using the Boat position setting. **True motion** In True motion the chart is fixed and your vessel icon moves around the chart, as your vessel's position 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.	• Relative motion • True motion • Auto range
Chart orientation	**North-up** In North-up the top of the screen always points towards north and 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.	• North-up • Head-up • Course-up
Boat position	The boat position determines the position of your vessel icon onscreen. The default is Center but you can adjust this to provide a greater distance in front of your vessel. Your boat position can only be changed when Chart motion is set to Relative motion.	• Center • Partial offset • Full offset

Advanced tab

Settings	Description	Options
Chart orientation	The orientation of the chart affects alignment relative to your vessel, route or North.	• North-up • Head-up • Course-up
Enhanced AIS targets	When the AIS layer is enabled, switches between using standard and enhanced AIS targets.	• On • Off
Use Radar without heading data	Enables use of Radar overlay without Heading data.	• On • Off
Cursor info boxes	Allows display of the cursor's Range and Bearing from your vessel. When an object is highlighted the object name is also displayed.	• On • Off
Cartographic objects	Enables and disables display of cartographic objects. The settings available are dependent on the cartography in use.	• Navigation marks • Navigation mark symbols • Rocks • Light sectors • Routing systems • Caution areas • Marine features • Land features • Business services • Panoramic photos • Roads • Additional wrecks • Colored seabed areas
Chart appearance	Allows you to change the appearance of the Chart app. The settings available are dependent on the cartography in use.	• 2D shading • Aerial overlay • Aerial overlay opacity • Relief shading • Visibility • Grid • Chart text • Chart boundaries • Text/symbol size • Deep water color • Community edits
My data appearance	You can change how your User data appears in the Chart app.	• Waypoints names • Route names • Track names • Route width • Track width • Vector width • Vector length

Weather settings tab

Settings	Description
Wind symbol	Determines whether Arrows or Barbs are used for Wind direction graphics in Weather mode..
Marine zone boundaries	Determines whether marine boundaries are shown in Weather mode.
Watchbox alerts	Enables and disables Watchbox alerts.
Watchbox range	Determines the range from your vessel that Watchbox alerts are displayed
Signal strength	Show your weather receivers signal strength
Receiver ESN	Displays your receiver's Electronic Serial Number (ESN).

Note:

The Weather settings tab is only displayed when the Chart app is set to Weather mode.

Page settings tab

Settings	Description
Data Overlays	Enables configuration of Data overlays
Edit split ratio	Enables you to customize the position of the partitions in splitscreen app pages.

Chapter 9: Weather mode

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- 9.2 Activating your SiriusXM receiver on page 105
- 9.3 Animated weather on page 106
- 9.4 Weather mode context menu on page 108
- 9.5 Weather Radar layer on page 109
- 9.6 Cities and Surface observation stations layers on page 110
- 9.7 Cloud top and Lightning layers on page 111
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9.1 Weather mode

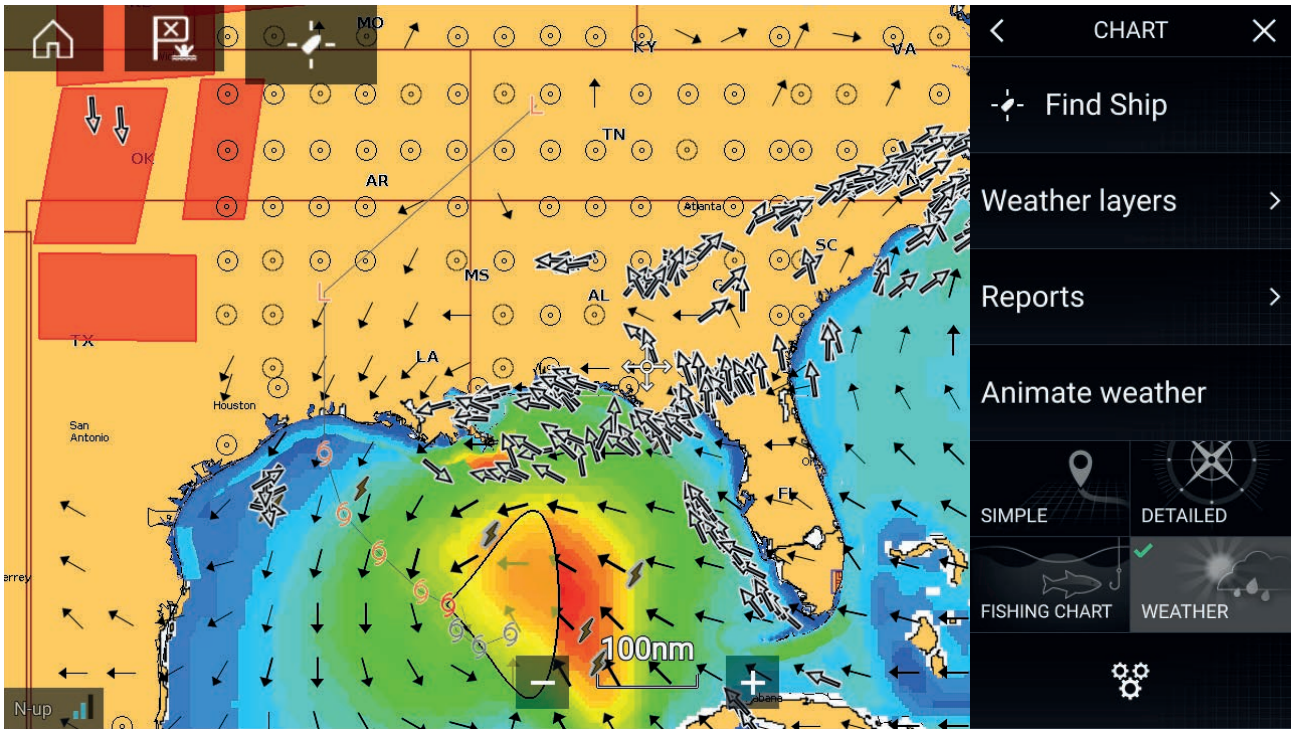
Weather mode is available in the Chart app if you have a weather receiver and valid subscription. Switching the Chart app to weather mode allows you to overlay weather data and information from your weather receiver.

To enter Weather mode, open the Chart app menu and select **WEATHER**.

Weather mode allows you to track weather systems in relation to your vessel by overlaying live, historical and forecasted weather data directly on the chart. In Weather mode you can also view animated weather graphics and read weather reports. Weather mode sets the **Chart detail** setting to Low and hides other data which increases the visibility of Weather data.

Important:

- Compatible hardware and a valid subscription is required to enable Weather mode.
- By enabling Weather mode you agree to its terms of use.
- Do not use Weather mode for navigation.
- Weather data is only available in North America and its coastal waters.



Weather symbols are organized into layers, accessible from the Chart menu: **Menu > Weather layers**. Each layer can be enabled and disabled independently.

The following Layers are available:

Weather radar	**Surface pressure**
Cities	**Surface observation stations**
Cloud top	**Wind**
Lightning	**Watchbox**
Sea surface temperature	**Wave height**
Storm cast	**Wave period**
Storm tracks	**Wave direction (from)**

In Weather mode the **Chart orientation** is fixed in **North-Up**.

9.2 Activating your SiriusXM receiver

Your SR150 SiriusXM receiver must be activated before using Weather mode on your MFD

The following information is required to activate your receiver:

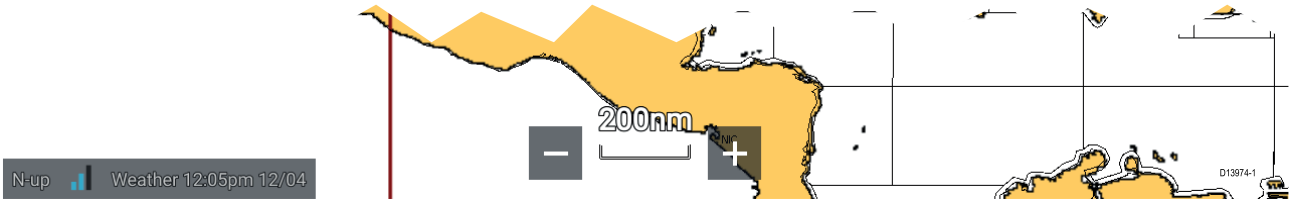
- Electronic Serial Number (ESN) — The ESN is printed on the product label located on the underside of your receiver. You can also access the ESN from the Weather settings tab in the Chart app: (**Menu** > **Settings** > **Weather** > **Receiver ESN**).
- Current billing information — If you already have a valid subscription.
- Desired subscription package.

1. Obtain your receiver's ESN.
2. Visit the Sirius Marine Weather website: http://www.siriusxm.com/sxmmarine and choose a subscription.
3. Follow the link to activate your receiver online, Alternatively call 1–855–796–9847.

Once activated you will be able to display enable Weather mode and display Weather layers in the Chart app.

Weather receiver status

The status of your weather receiver is displayed in the app info area in the bottom left of the screen.



The app info area displays:

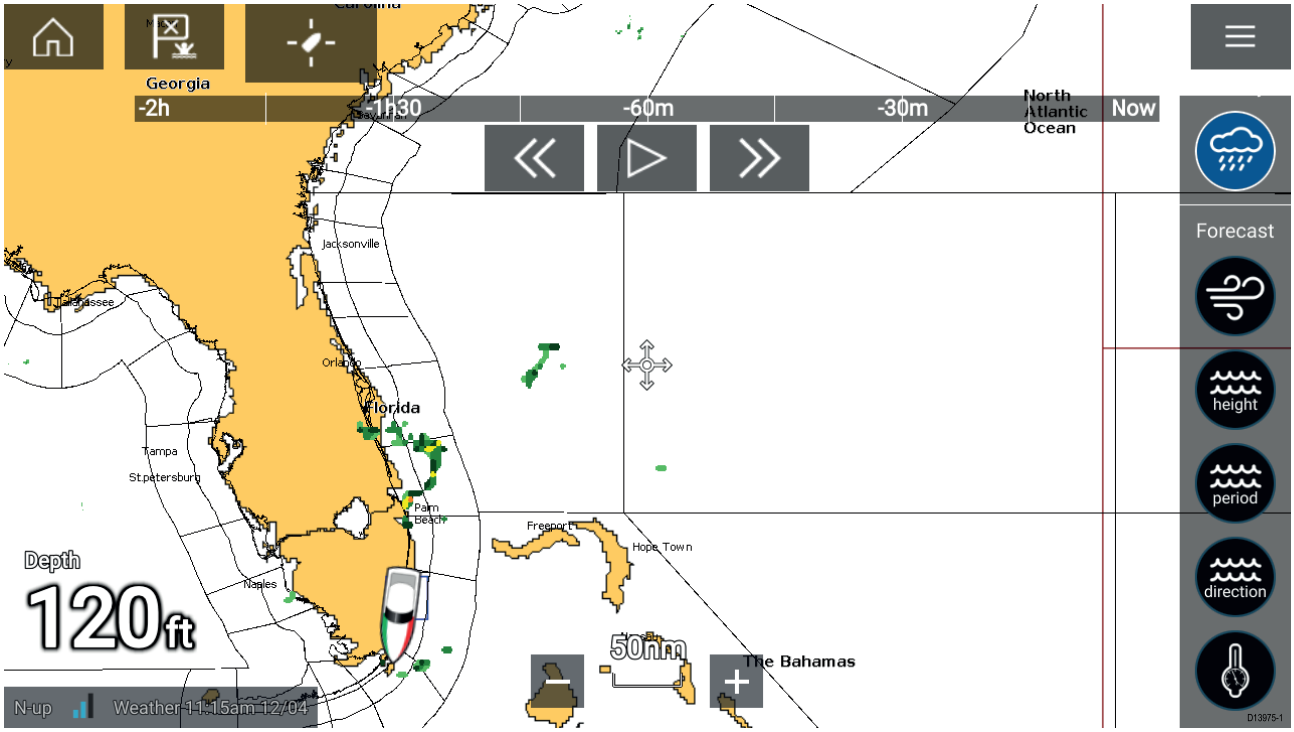
- signal strength of your Weather receiver.
- chart orientation mode — (N-up) orientation is fixed in weather mode.
- time and date related to the weather data being displayed.

9.3 Animated weather

In Weather mode you can play weather animations of historical **Weather radar** data and forecasted wind, wave and surface pressure data.

Weather animations can be accessed in Weather mode by selecting **Animate weather** from the menu.

When Animate weather is selected the animation player controls and symbols representing the type of animated data available are displayed onscreen.



Player controls

Player controls include a progress bar, Play/Pause, Fast forward and rewind options.

Animated weather data

Duration of forecasts are dependent on subscription type.

	Weather Radar Historical precipitation data for the previous 2 hours can be played.
	Wind Offshore wind forecast for up to 48 hours. High resolution coastal and inland wind forecast for up to 24 hours.
height	**Wave height** Offshore wave height forecast for up to 48 hours. High resolution coastal wave height forecast for up to 24 hours. Great Lakes wave height forecast for up to 24 hours.
period	**Wave period** Offshore wave period forecast for up to 48 hours. Great Lakes wave period forecast for up to 24 hours.

	Wave direction Offshore wave direction forecast for up to 48 hours. Great Lakes wave direction forecast for up to 24 hours.
	Surface pressure Surface pressure forecast for up to 48 hours.

To exit Animate weather open the main **Menu**.

9.4 Weather mode context menu

The Weather context menu provides Lat/Lon and Range and Bearing from you vessel. The context menu also provides access to further weather related data.

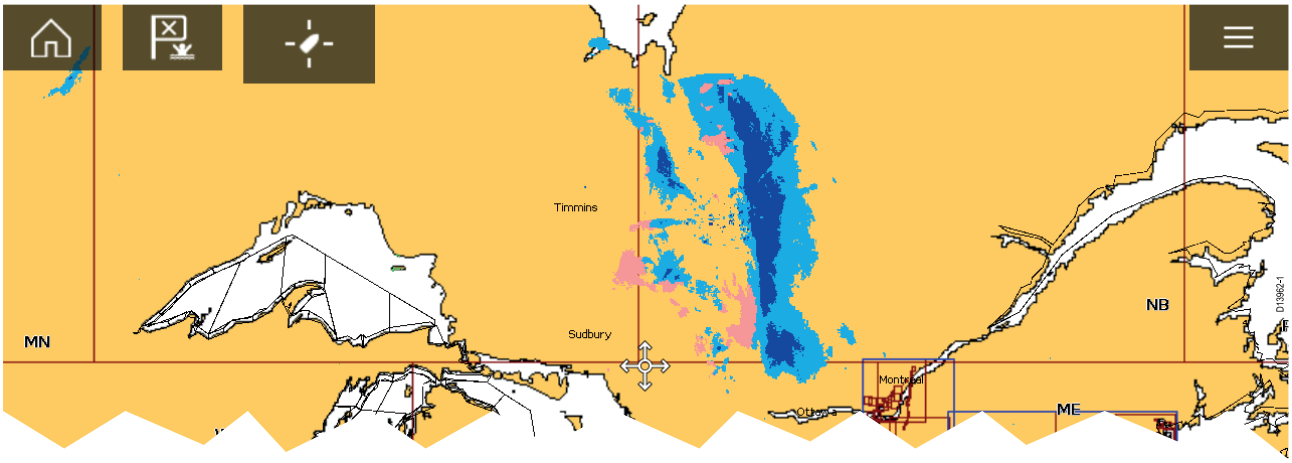
The context menu provides access to:

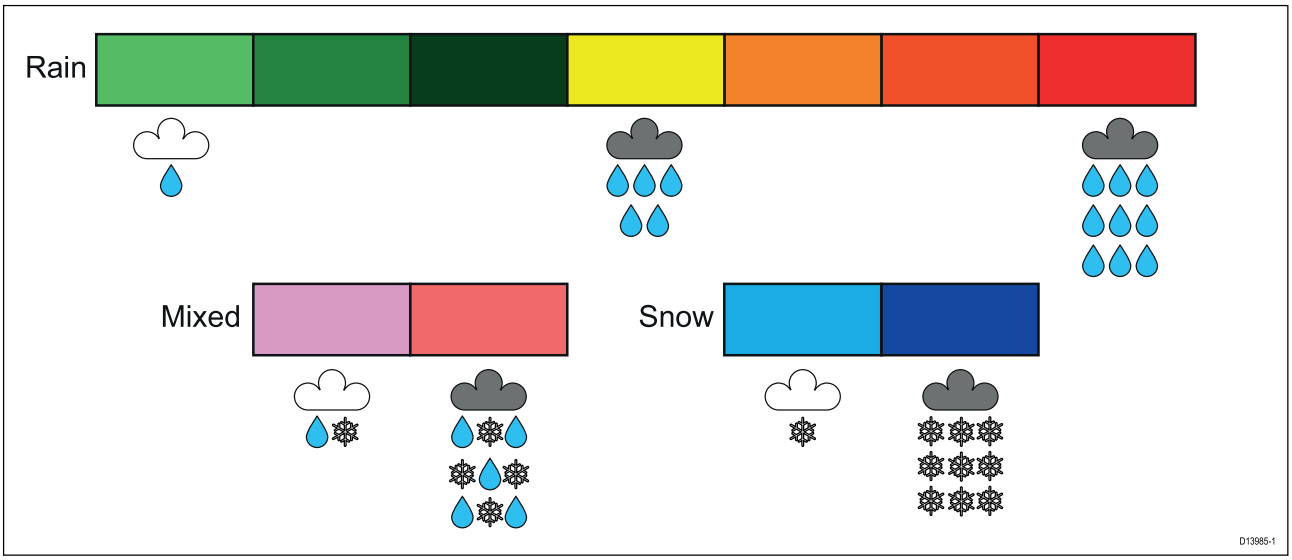
- Weather info
- Reports

Depending on the symbol selected, the context menu also provides additional data when a Cities, Storm cast, Storm tracks or Watchbox is selected.

9.5 Weather Radar layer

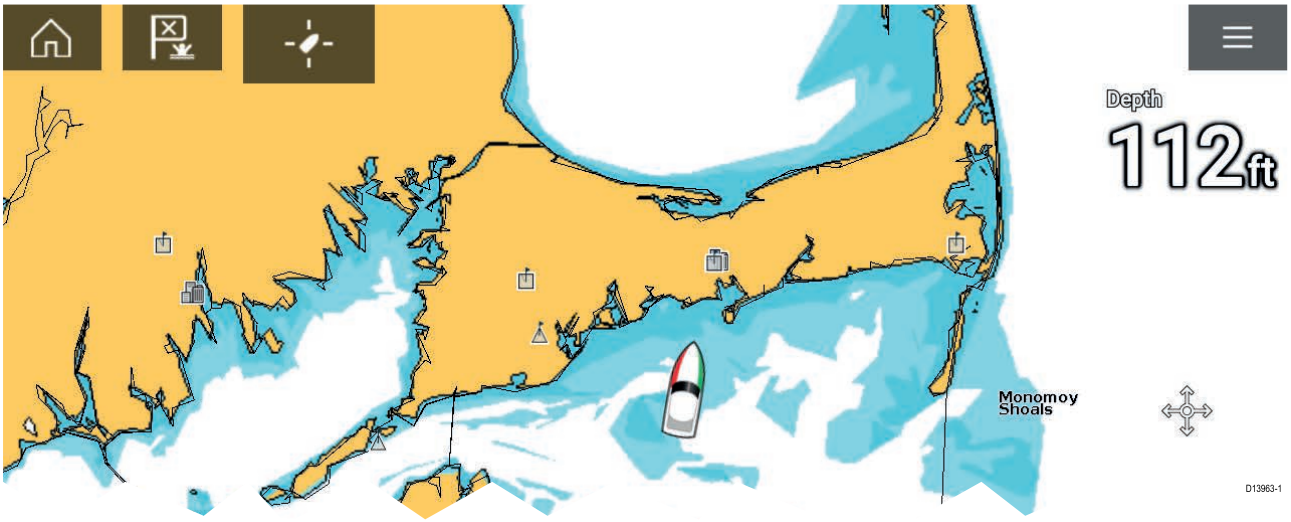
With the Weather Radar layer enabled a color coded Radar image is displayed. This image shows a complete view of any precipitation across North America, including the type and intensity. Rain is shown as light green, dark green, yellow, orange and red as intensity increases. Hail, freezing rain and snow are represented with colors from bright pink to blue. The images are displayed as pixels on screen and the resolution of this feature is 2 km per pixel. Coverage includes the Continental US, Canada, and portions of Mexico/Caribbean.





9.6 Cities and Surface observation stations layers

The Cities layer and Surface observation stations layer display symbols which represent the location of Cities and Surface observation stations respectively. The symbols used for Surface observation stations also identify the station type.

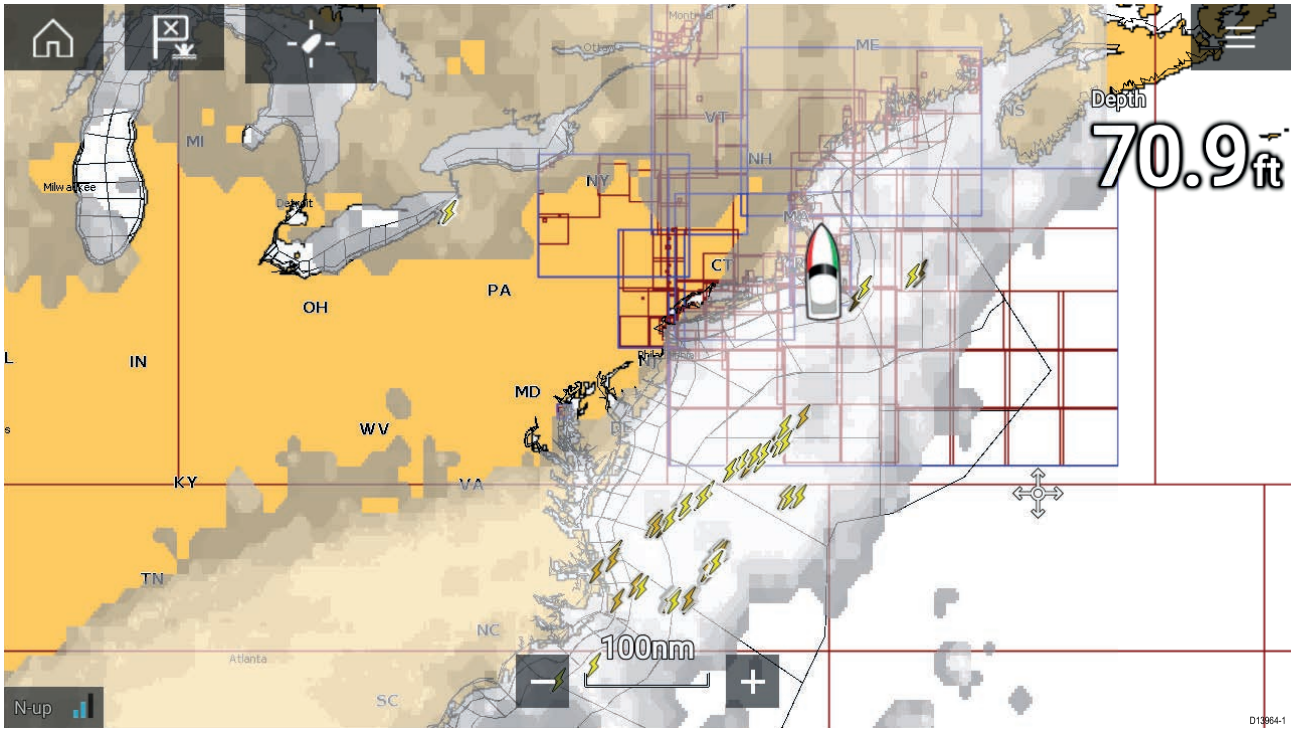


Layer	Symbol	Description
Cities		City
Surface observation station		Buoy station
		Coastal-marine automated network (C-MAN)
		Weather services international (WSI)
		National weather service (NWS)

City forecasts are available from the context menu when a City is selected.

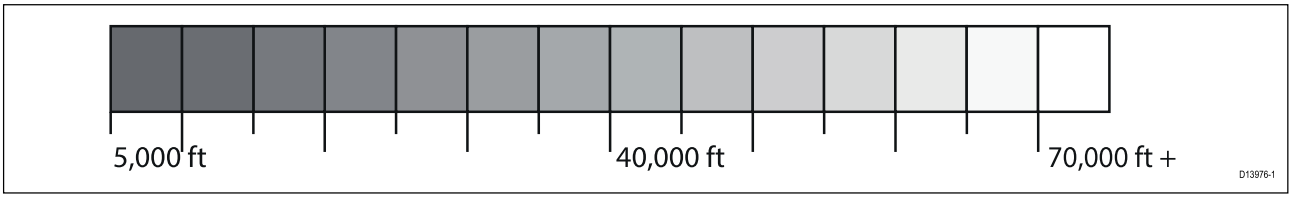
9.7 Cloud top and Lightning layers

The Cloud top layer provides a satellite image of current cloud coverage and the Lightning layer provides symbols to show the location of recent lightning strikes.



Cloud tops

Cloud tops use Gray shading to identify cloud top height. The shading changes at 5,000 feet increments, from Dark Gray to White. Clouds lower than 5,000 feet are not displayed.



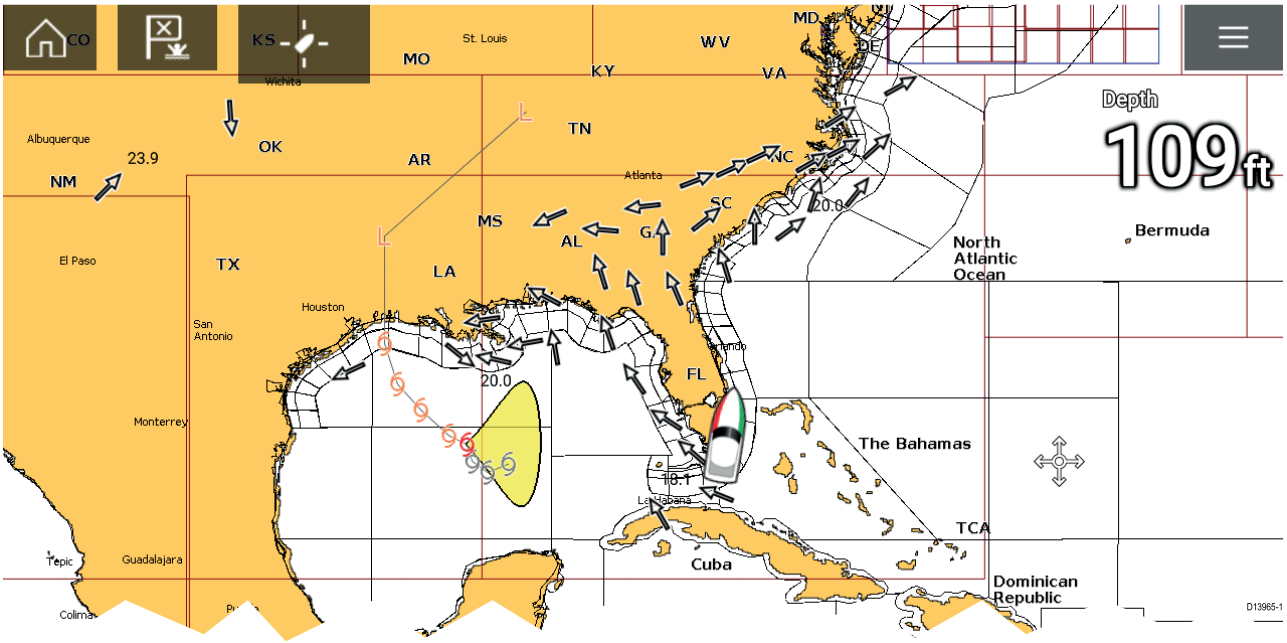
Lightning

The shade of the lightning symbols represent the time the lightning strike was detected.

0 to 5 minutes ago	5 to 10 minutes ago	10 to 15 minutes ago

9.8 Storm cast and Storm tracks layers

The Storm cast layer displays arrows that show a storm's direction and speed. The Storm tracks layer identifies a storm's historic, current and forecasted path. Associated wind fields are also shown for the storm's current location.



Storm tracks

Storm track symbols identify the type and time period of the storm.

Historical (Gray)	Current (Red)	Forecast (Orange)	Description
			Hurricane (Category 1–5)
			Tropical storm
L	L	L	Tropical disturbance, tropical depression

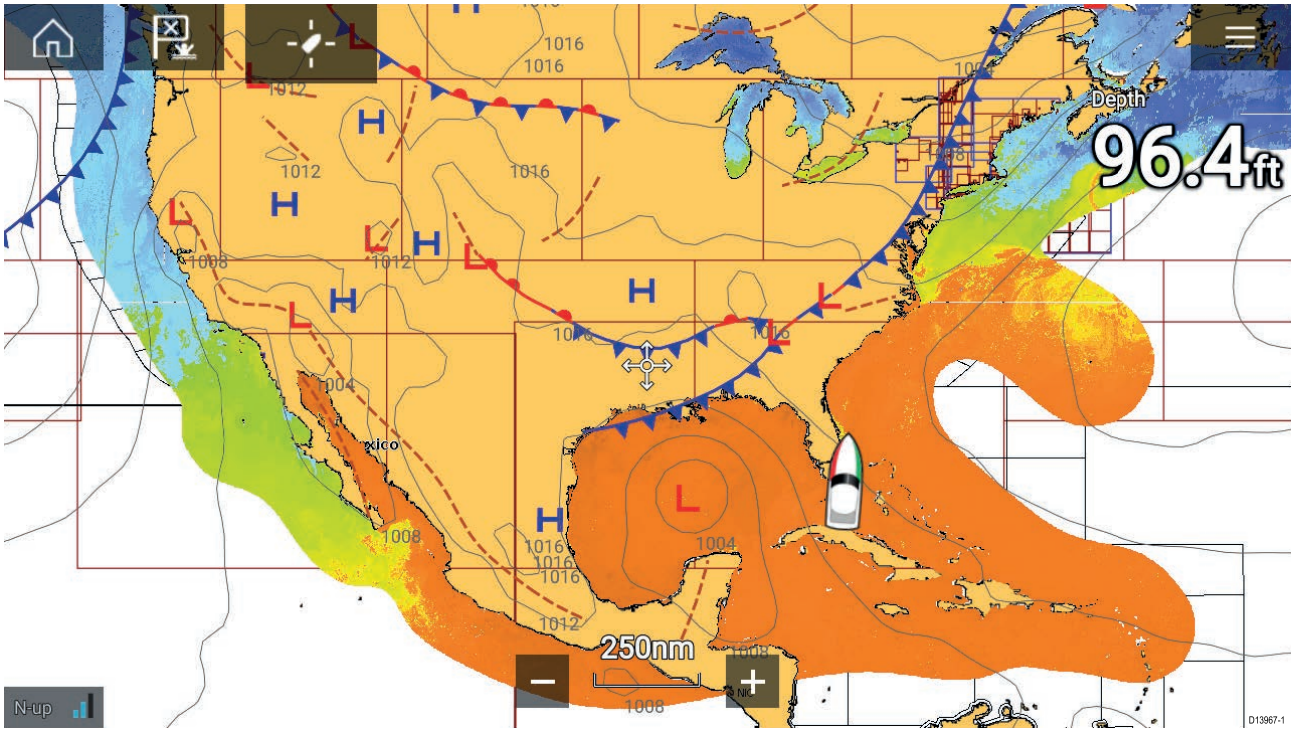
Storm data is available from the context menu when a symbol is selected.

Surface wind fields (Wind Radii) are shown using colored shapes representing the wind field area and speed.

- **Pink** — wind speed = 64 knots or greater.
- **Orange** — wind speed = 50 knots or greater.
- **Yellow** — wind speed = 34 knots or greater.

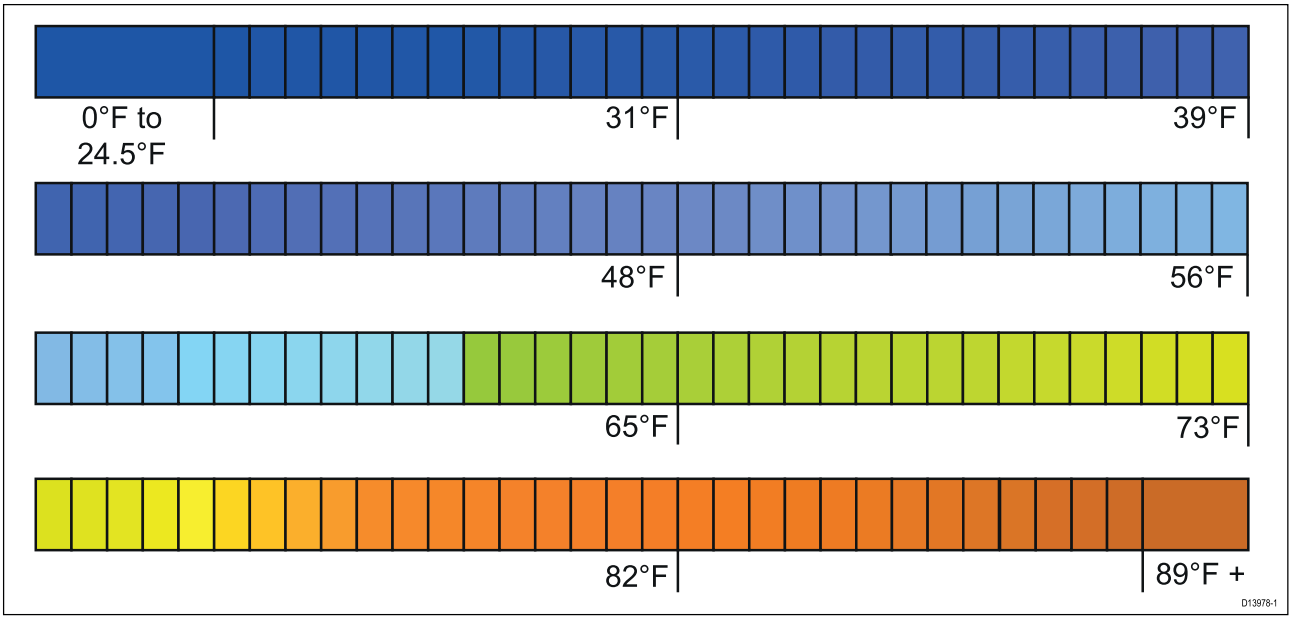
9.9 Sea surface temperature and Surface pressure layers

The Sea surface temperature layer uses color coding to identify water temperature. The Surface pressure layer uses standard pressure patterns and Isobars to identify surface pressure.



Sea surface temperature color coding

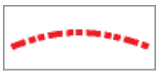
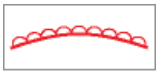
The colors used for the Sea surface temperature are shown below:



Surface pressure patterns

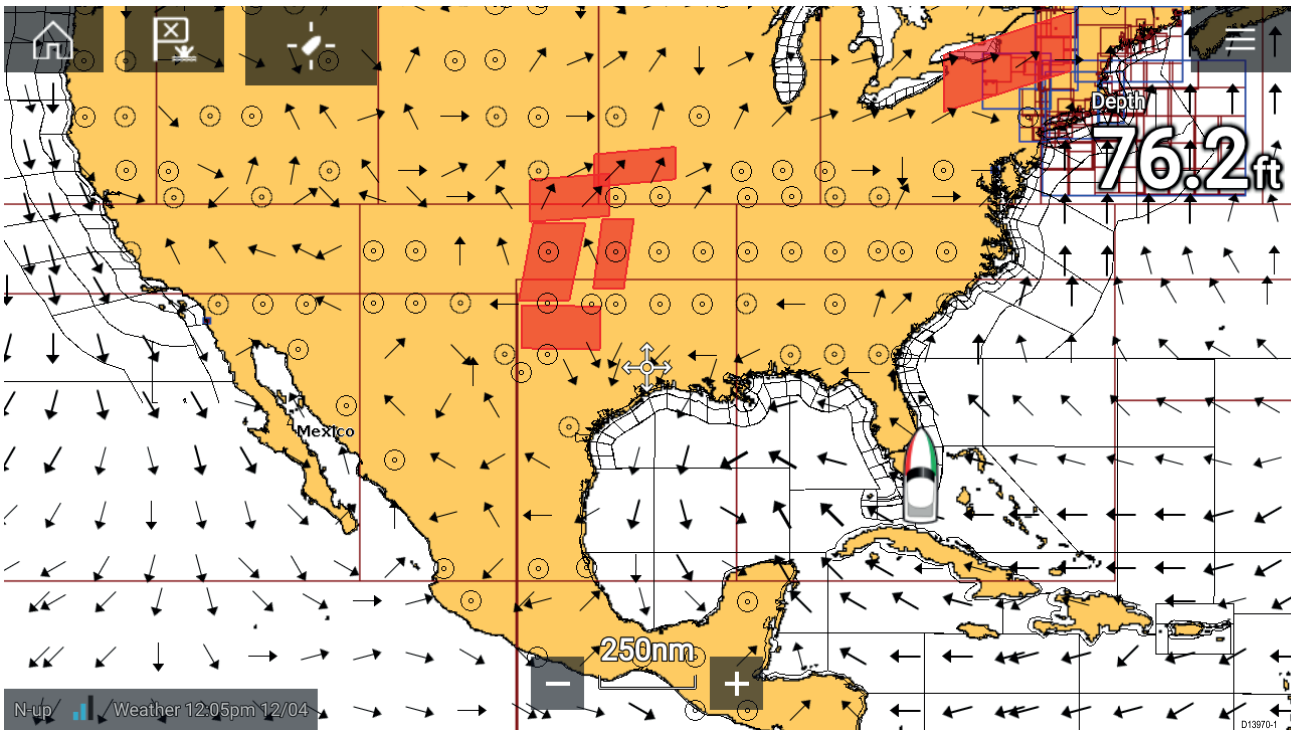
The Surface pressure layer uses a standard meteorological patterns to represent surface pressure conditions.

Symbol	Description
	High / low pressure (Blue and Red)
	Warm front (Red)

Symbol	Description
	Cold front (Blue)
	Occluded front (Purple)
	Stationary front (Red-Blue)
	Trough (Brown)
	Squall line (Red)
	Dry line (Red)
	Isobars (Gray)

9.10 Wind and Watchbox layers

The Wind layer uses Arrows or Barbs to identify wind direction and speed. The Watchbox layer identifies areas where severe weather is occurring or forecast within a specified range.



Wind arrows

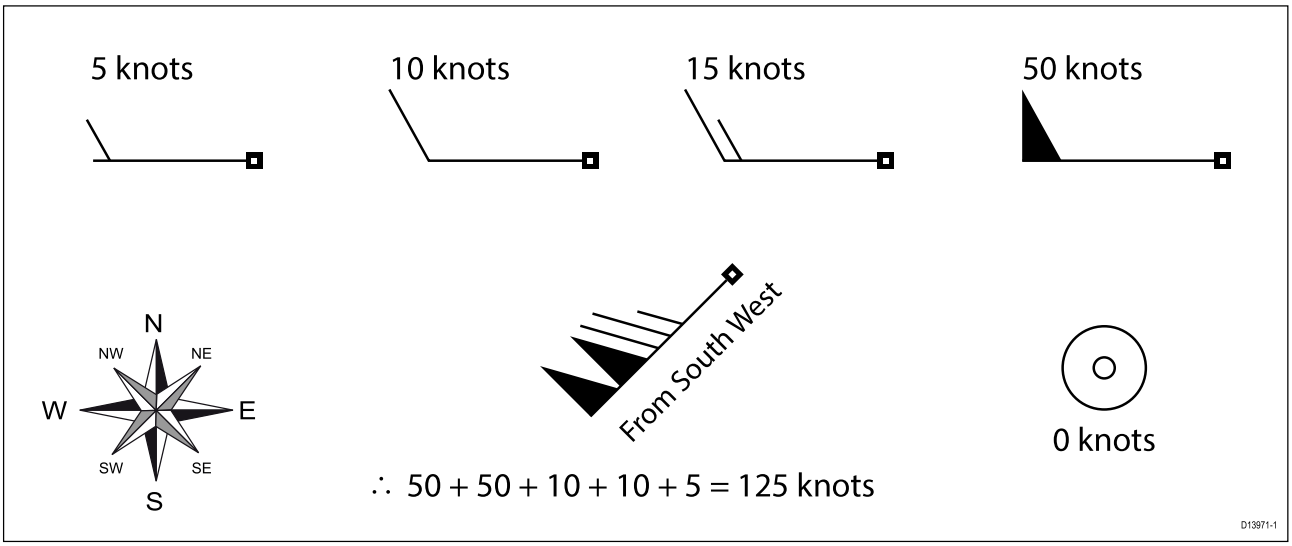
The direction of the arrow indicates wind direction and the size of the arrow indicates wind speed, the larger the arrow the greater the wind speed. Where conditions are calm a circular symbol is used.

You can switch between using Arrows or Barbs for Wind data from the Weather tab of the Chart menu: **Menu > Settings > Weather > Wind symbol**.

Wind barbs

Wind barbs identify wind direction and speed.

Barbs provide a more accurate speed resolution than arrows.



Adding the half barbs, full barbs and flags together provides wind speed. The direction the barbs point towards indicates where the wind is coming from.

- Half barbs = 5 knots
- Full barbs = 10 knots
- Flag = 50 knots

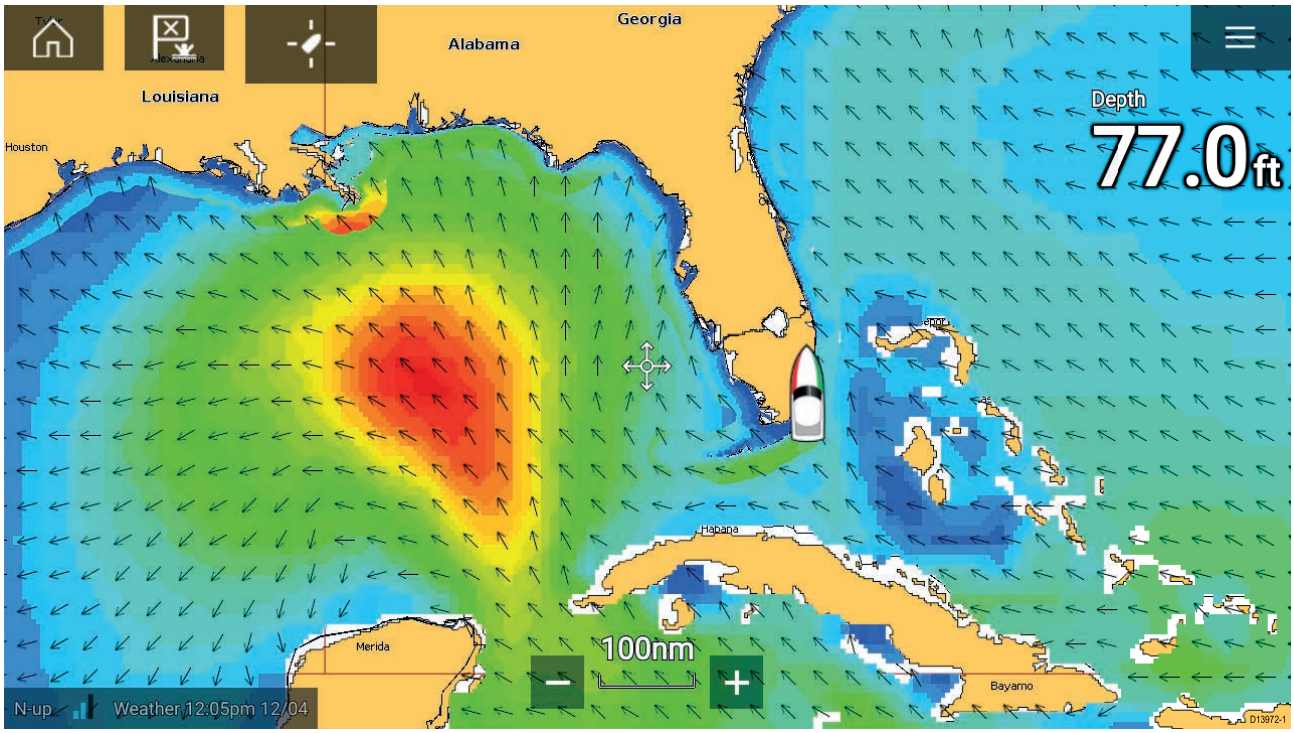
Watchbox

Selecting Watchbox data from the Weather context menu display the data associated with the Watchbox alert.

Watchbox alerts can be enabled and disabled from the Chart menu: **Menu > Settings > Weather > Watchbox alerts**.

You can also adjust the area that is monitored for Watchbox alerts using the **Watchbox range** control on the **Weather** tab.

9.11 Wave direction, height and period layers

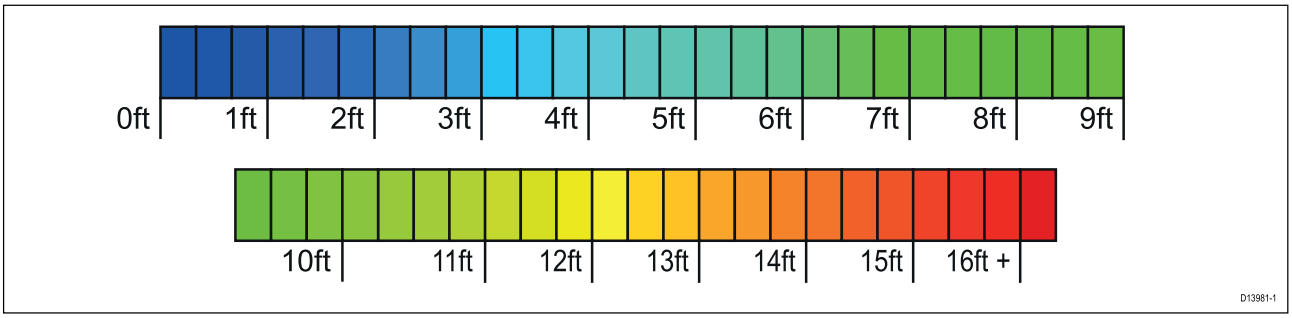


Wave direction

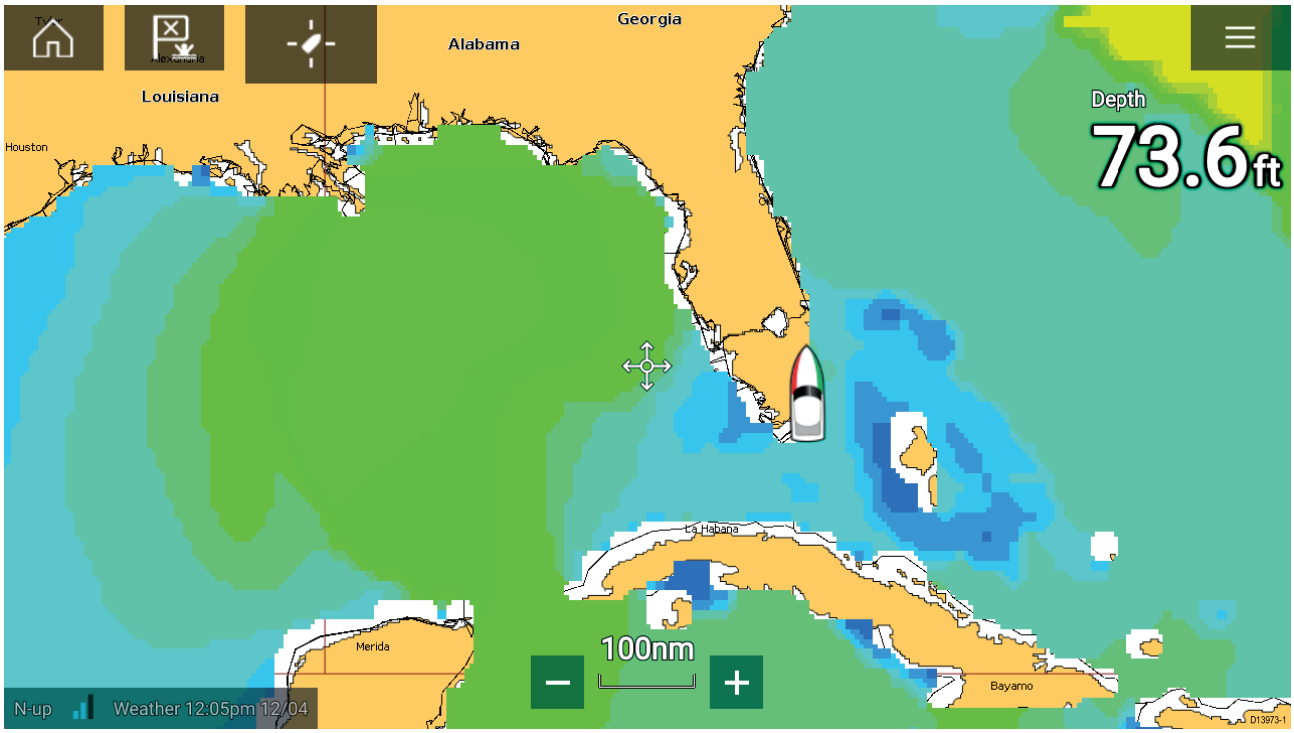
The **Wave direction** layer uses arrows to identify the direction of waves.

Wave height

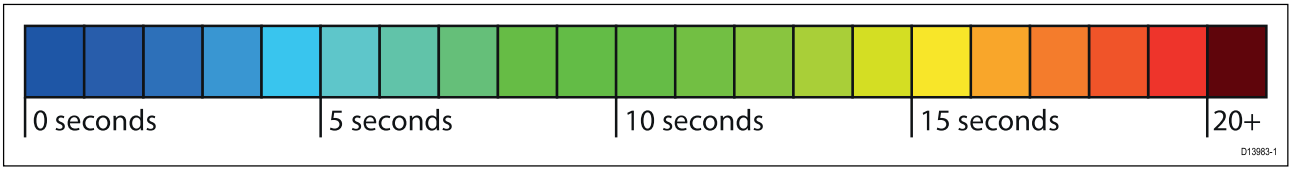
Wave height uses colors to identify the height of waves. The colors used are as follows:



Wave period



Wave period uses colors to identify the gap between successive waves. The colors used are as follows:



Chapter 10: Sonar app

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- 10.1 Sonar app overview on page 120
- 10.2 Opening the Sonar app on page 123
- 10.3 Sonar channels on page 126
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- 10.5 Sonar scroll back on page 129
- 10.6 Sonar sensitivity controls on page 130
- 10.7 Sonar settings menu on page 131

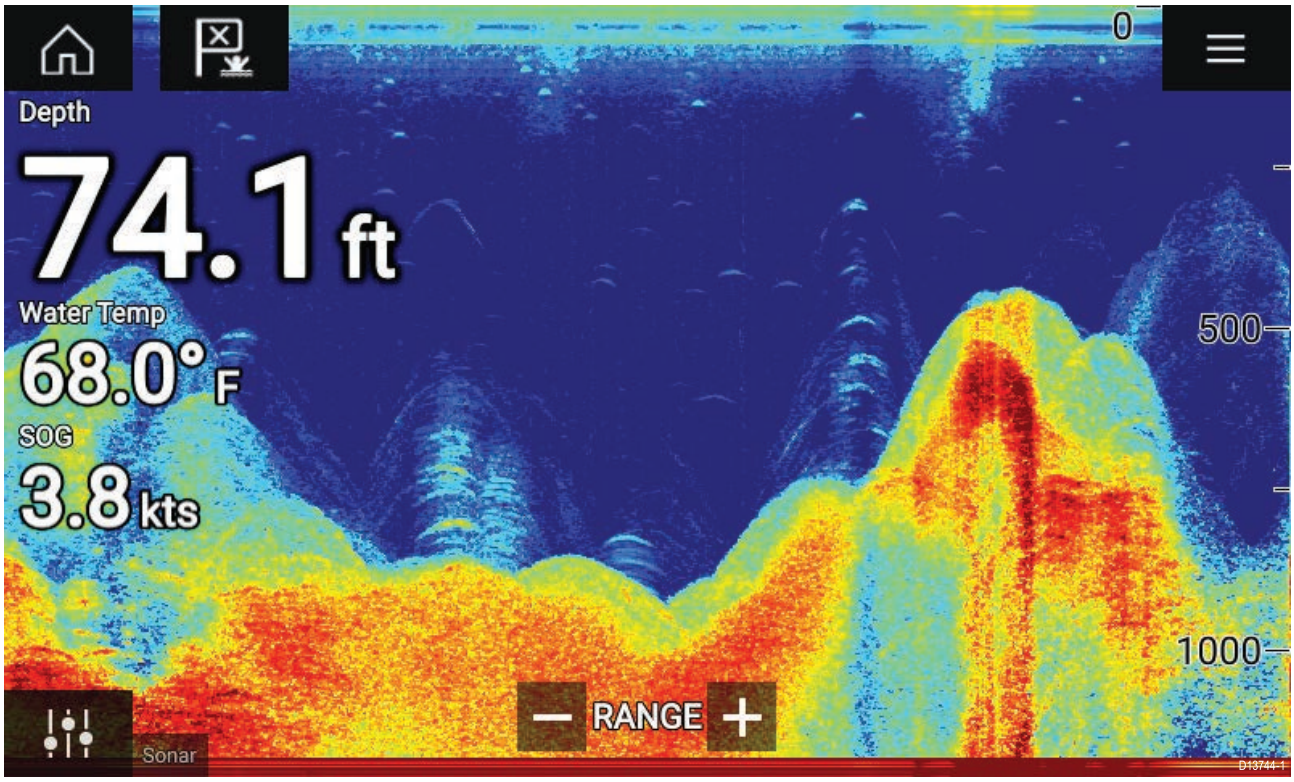
10.1 Sonar app overview

The Sonar app displays a visualization of the echoes received from a Sonar module and transducer. The Sonar app is compatible with Traditional, CHIRP, DownVision™, SideVision™ and RealVision™ 3D sonar modules and transducers. The Sonar app builds an underwater view of bottom structure and targets in the water column.

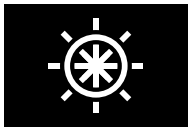
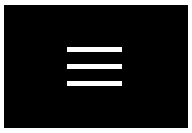
Multiple Sonar modules can be connected at the same time. Sonar modules can be internal (built-in to your MFD) or external (a separate box on your network).

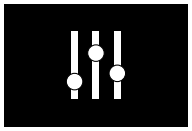
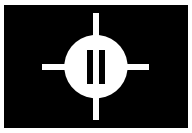
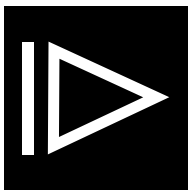
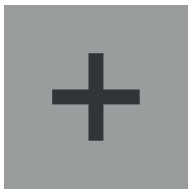
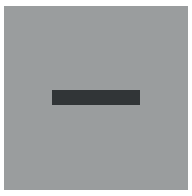
For each instance of the Sonar app you can select which Sonar module and channel that you want to use, the Sonar module and channel selection will persist over a power cycle.

The Sonar app can be displayed in both Fullscreen and splitscreen app pages. App pages may consist of up to 4 instances of the Sonar app.



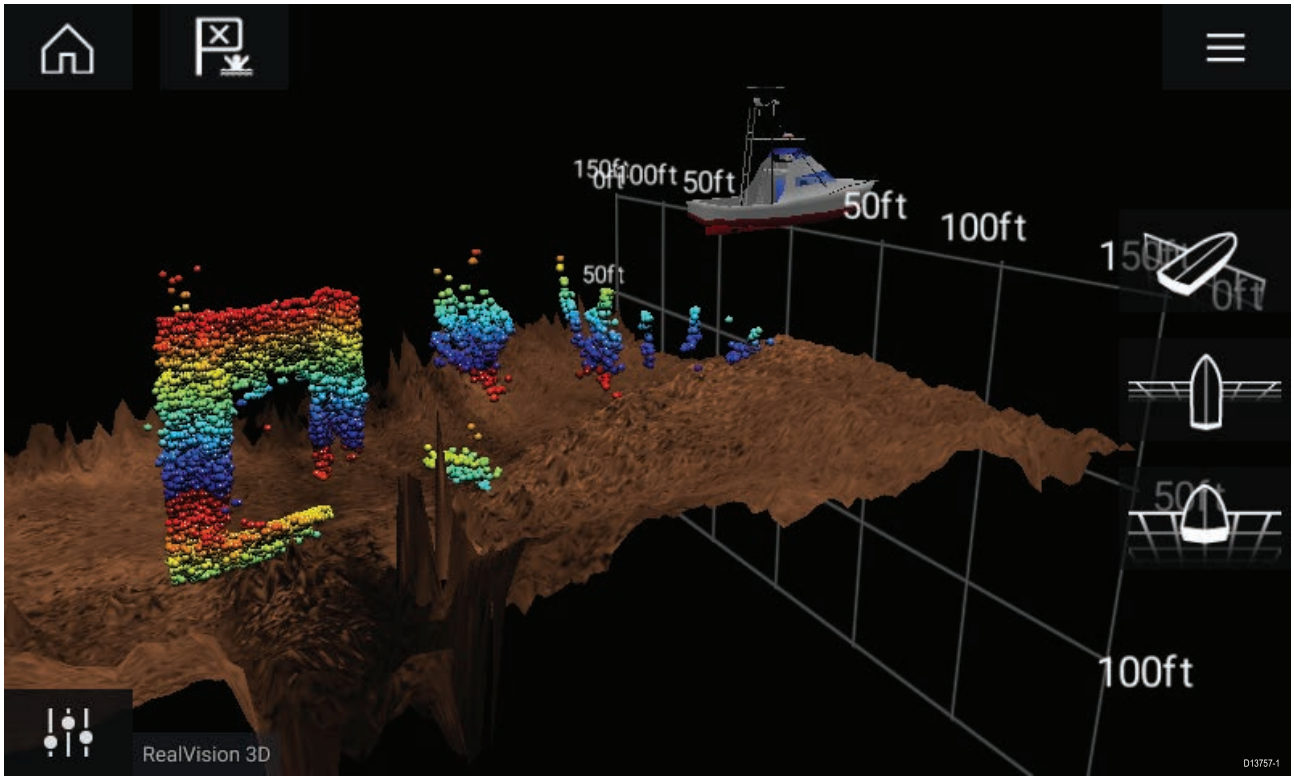
Sonar app controls

Icon	Description	Action
	Home icon	Takes you to the Homescreen
	Waypoint / MOB	Place waypoint / activate Man overboard (MOB) alarm
	Pilot icon	Opens and closes the Pilot Sidebar
	Menu icon	Opens the app menu

Icon	Description	Action
	Image adjustment	Displays onscreen sensitivity / image adjustment controls
	Pause	Pause RealVision™ 3D sonar image.
	Unpause	When the Sonar app is paused, you can recommence scrolling by selecting the Unpause icon.
	Range/Zoom In	When **Auto range** is enabled, pressing the plus icon activates Zoom mode, subsequent presses will increase the Zoom factor. When Range is set to Manual pressing the Plus icon decreases the distance displayed onscreen. Auto range can be enabled and disabled from the Menu: **Menu** > **Auto range**.
	Range/Zoom Out	When in Zoom mode, pressing the minus icon will decrease the Zoom factor and finally revert to normal mode. When Range is set to Manual pressing the Minus icon increases the distance displayed onscreen.

RealVision 3D controls

When using RealVision 3D sonar you can manipulate the view using touch gestures.



Touchscreen controls

- One finger swipe rotates the image.
- Two finger swipe pans the image around the screen.

- Pinch-to-zoom changes the magnification of the image.
- The Range control determines how far the sonar will ping.
- Press and hold onscreen to display the context menu

Physical buttons

- **Ok** button pauses Sonar scrolling.
- **Back** button resumes Sonar scrolling.
- **Ok** button when paused opens the context menu.
- Use the Uni-controller's **Directional** (Up, Down, Left, Right) controls to rotate the image.
- Use the Uni-controller's **Rotary** control or a RMK's **Range In** and **Range Out** buttons to Range in and out.

10.2 Opening the Sonar app

The Sonar app is opened by selecting a page icon from the Homescreen that includes a Sonar app.

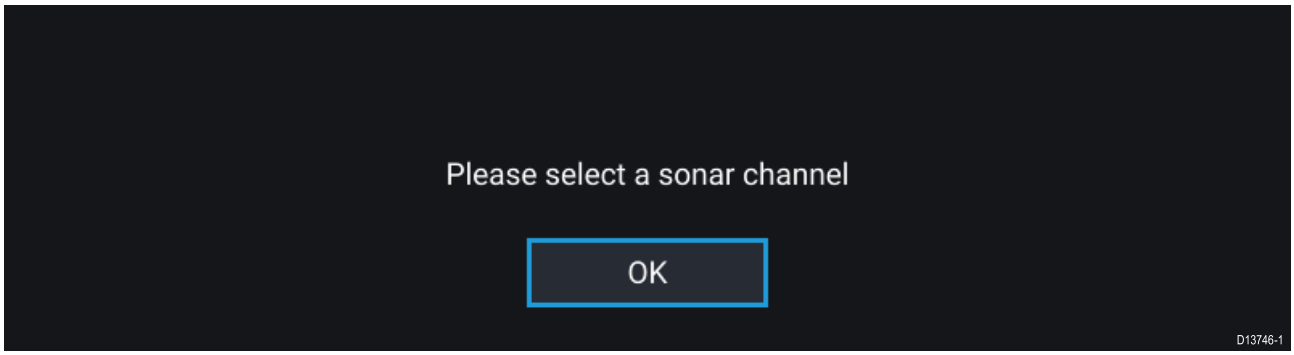
Pre-requisites:

1. Ensure your Sonar module 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 Sonar module in accordance with the documentation that was supplied with the module.

The Sonar app will open in 1 of 4 states:

Please select a sonar channel

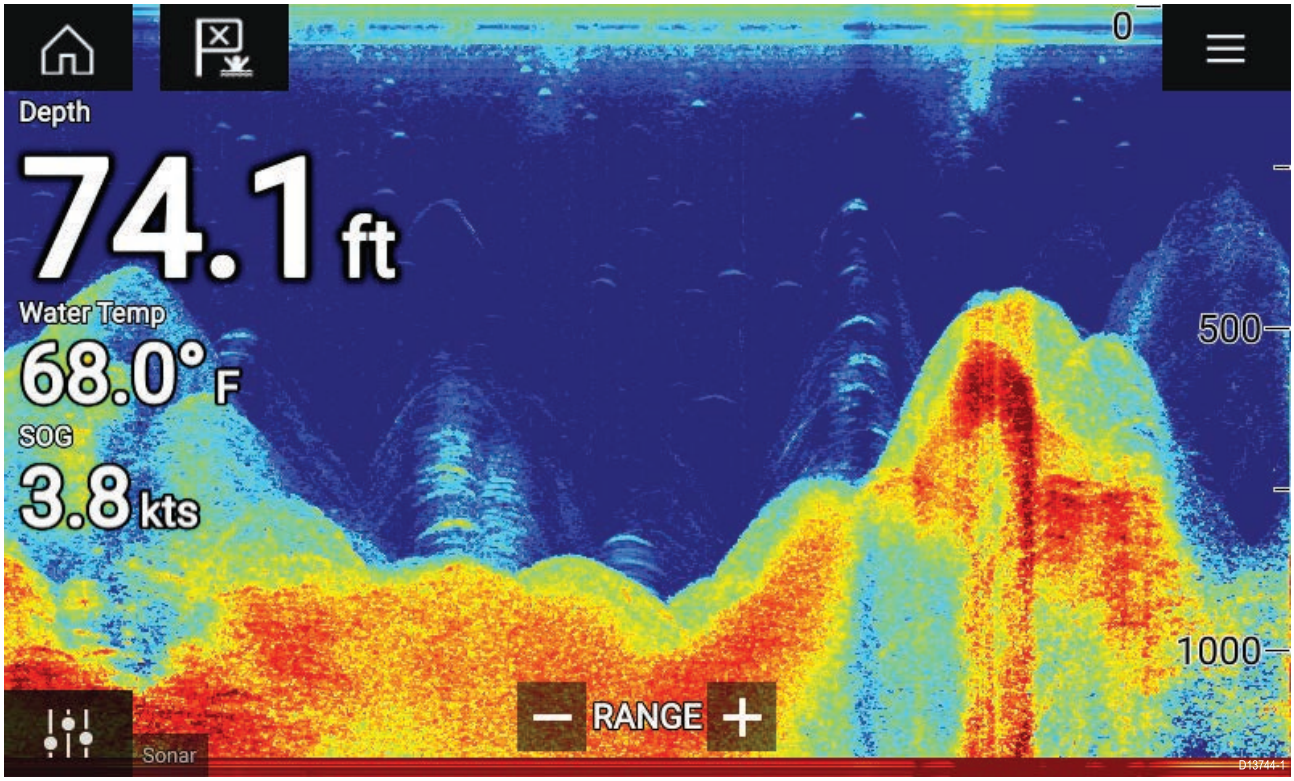
The first time you open a new app page that includes the Sonar app you will need to select a Sonar channel.



Select **OK** and then choose the Sonar channel you want to use from the list:

Sonar on and pinging

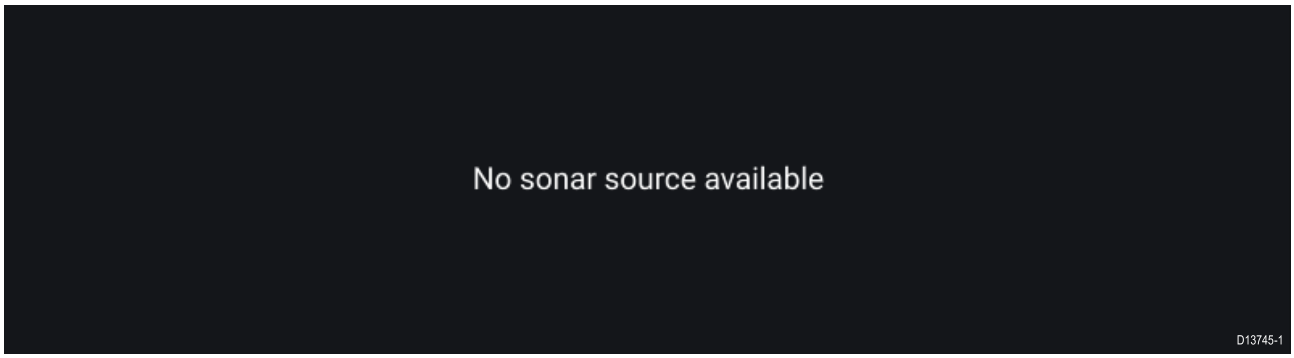
If your Sonar app has already been set up then when the Sonar app is opened the Sonar image will be displayed and start scrolling.



No sonar source available

If the '**No sonar source available**' warning is displayed then either:

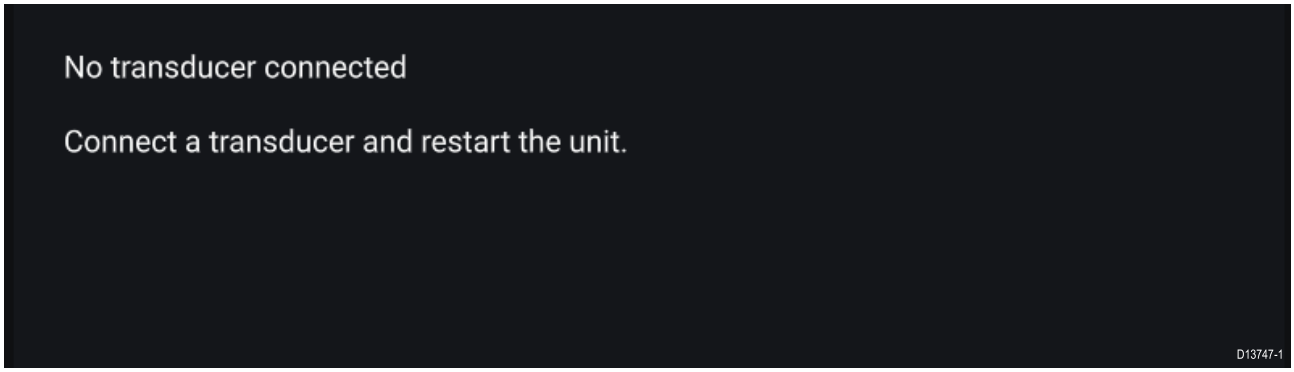
- your sonar module is still powering up.
- your MFD cannot establish a connection with your external Sonar module
- your Internal Sonar module has no transducer connected.



Check your external sonar module's network and power connection, check your MFD's network or transducer connection ensuring the connections and cabling is correct and free from damage, then power cycle your system. If the Sonar module is still not found then refer to your equipment's installation documentation for further troubleshooting information.

No transducer connected

If the '**No transducer connected**' warning is displayed then your Sonar module cannot connect to your transducer.

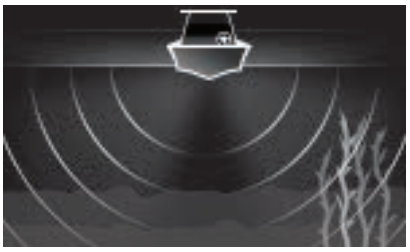


Check your transducer connection(s) are correct and free from damage, then power cycle your system. If the transducer is still not found then refer to your equipment's installation documentation for further troubleshooting information.

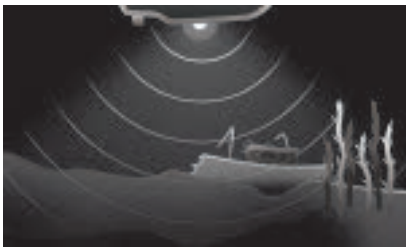
10.3 Sonar channels

The Sonar channels that are available depend on the Sonar module and transducer you have connected.

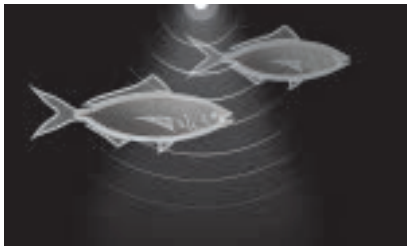
RealVision™ 3D



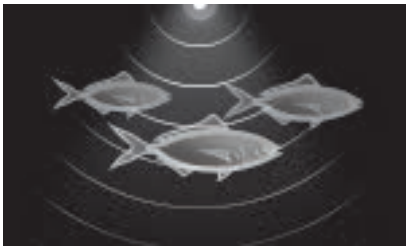
SideVision™



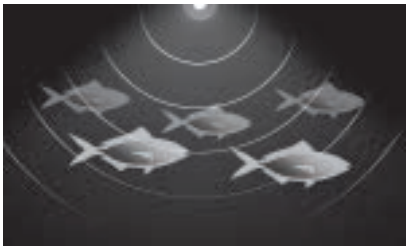
DownVision™



High CHIRP / High Frequency



Medium CHIRP / Medium Frequency



Low CHIRP / Low Frequency

Selecting a Sonar channel

The first time you open a new Sonar app page you will be requested to select a channel, subsequently you can change the sonar channel by selecting a channel icon from the Sonar app menu.

1. Select a relevant channel icon from the Menu.
2. Alternatively select **All channels** from the Menu and then choose your desired sonar module and channel.

10.4 Placing a Waypoint (Sonar, DownVision and SideVision)

When you observe something of interest in the Sonar app you can place a waypoint at its location so that you can find the area again.

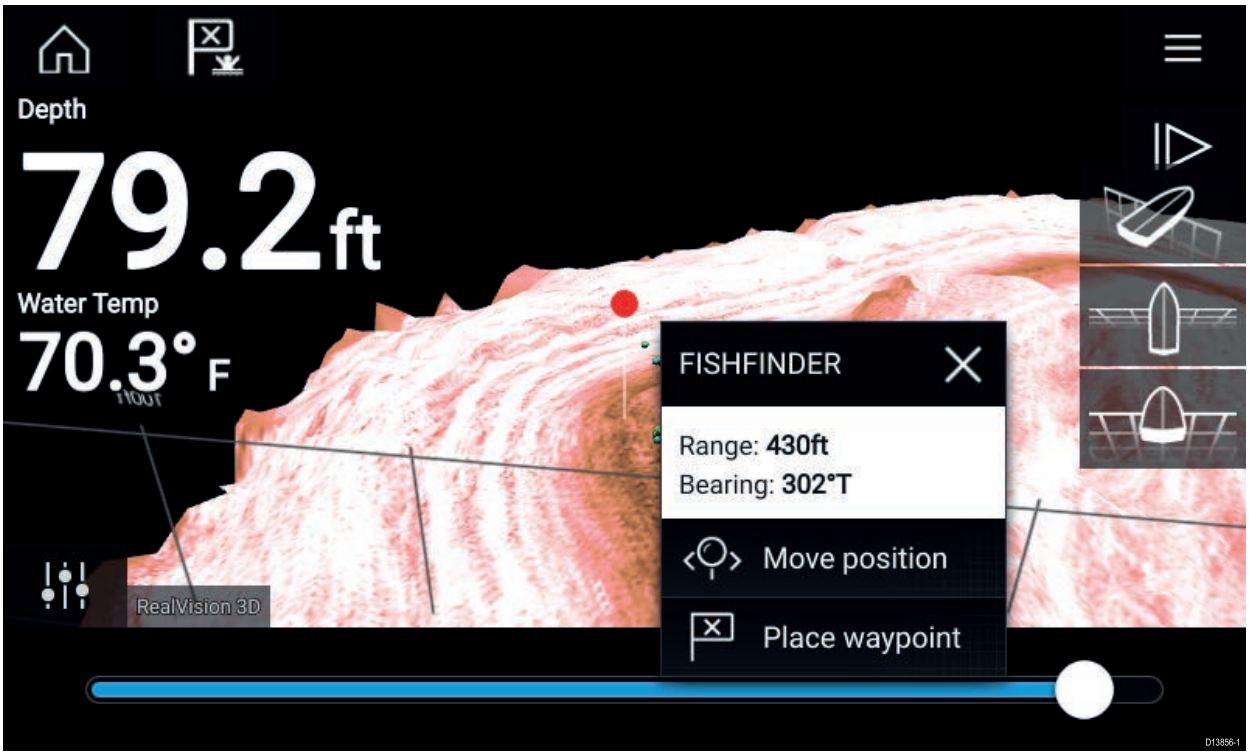
1. Select and hold on the point of interest onscreen.
   The Context menu is displayed and scrolling is paused, temporarily.
2. Select **Add Waypoint** from the context menu.

   The Sonar image will remain paused for approximately 10 seconds after the Waypoint has been placed.

Placing a waypoint RealVision 3D

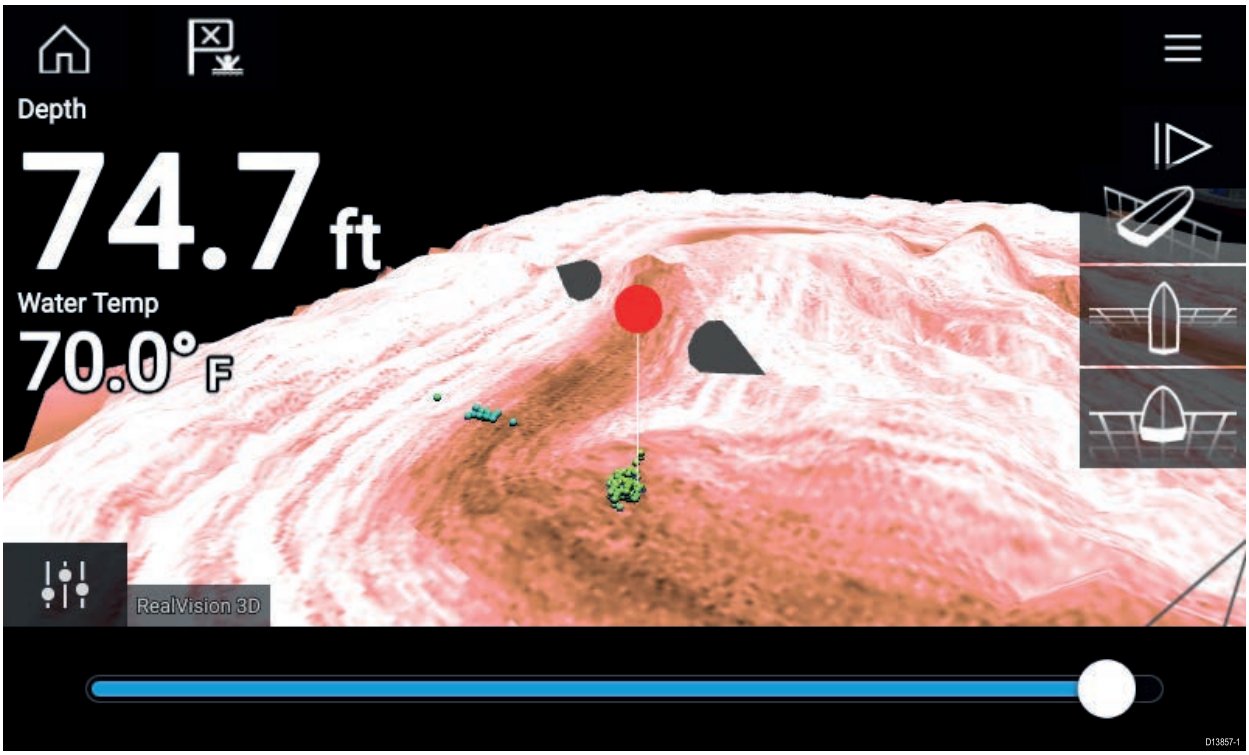
To place a waypoint whilst viewing a RealVision 3D channel follow the steps below.

1. Select and hold a location onscreen.
   The Waypoint context menu and Red waypoint marker is displayed:



2. Select **Place waypoint** to create a waypoint at the marker's location, or

3. Select **Move position** to adjust the marker's position before creating the waypoint.



You can move the waypoint along its current axis by sliding 1 finger across the screen. You can also adjust the view onscreen using the usual 2 finger touch gestures.

4. When the marker is over the desired location select **Place waypoint** to save a waypoint at the marker's location.

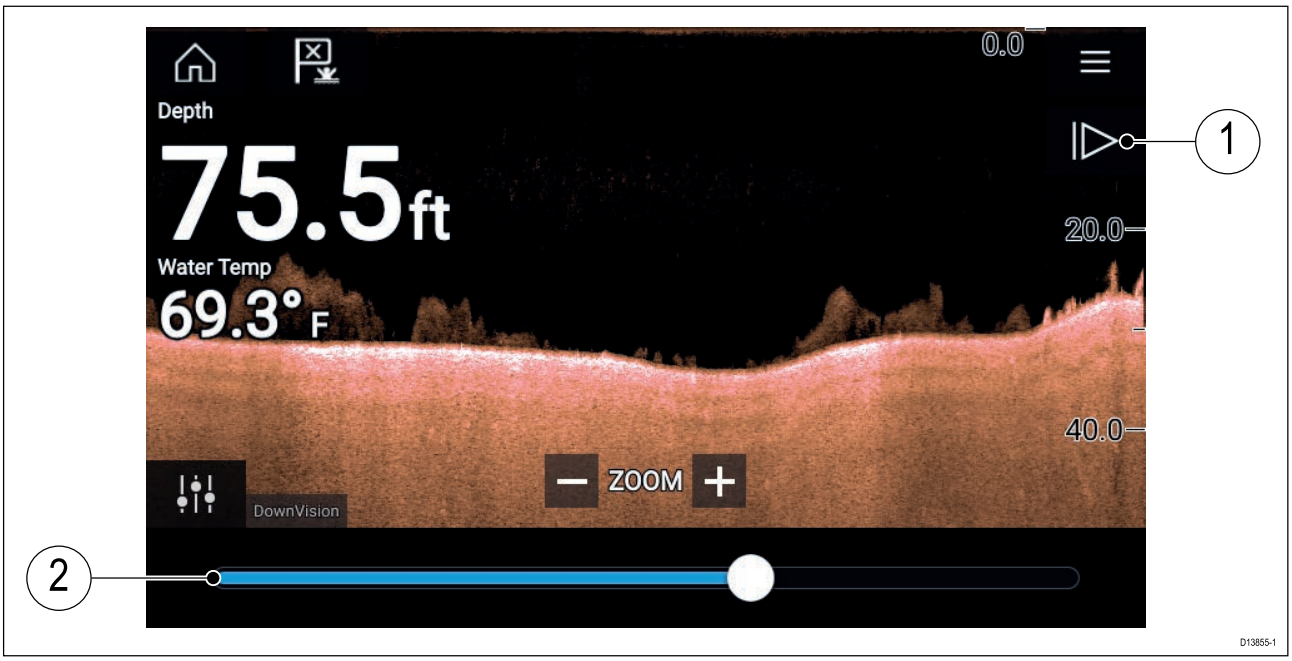
10.5 Sonar scroll back

You can “scroll back” in the Sonar app to view sonar history.

To activate sonar “scroll back”, perform the following:

- **Sonar and DownVision** — Swipe your finger left to right across the sonar screen.
- **SideVision** — Swipe your finger from the bottom to the top of the sonar screen.
- **RealVision 3D** — Select the onscreen **Pause** icon.

When sonar scroll back is active the sonar **Scroll back bar** and **Unpause** icons are displayed.



1. **Unpause** — Selecting this option resumes live sonar scrolling.
2. **Scroll back bar** — Use this to move back and forward through the available sonar history. You can either drag the position indicator right or left or select a specific location on the bar to jump to that position.

In Sonar, DownVision and SideVision channels, subsequent swipes will rewind the sonar history and swiping in the opposite direction will fast forward the sonar history.

10.6 Sonar 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.

Sensitivity settings can be accessed using the onscreen **Image adjustment** icon, or the Adjust sensitivity menu option: **Menu** > **Adjust sensitivity**.

The Sensitivity controls available are dependant upon the Sonar module in use.

Control	Name	Description
	'G' Gain	The control determines the signal strength at which target returns are shown onscreen. The Gain control can be set to **Auto** or **Manual**. Depending on Sonar module, in Auto you can add an offset of up to ± 50%. A higher value produces more target returns and noise onscreen.
	'I' Intensity, or **'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. The control can be set to **Auto** or **Manual**. Depending on Sonar module, in Auto you can add an offset of up to ± 50%.
	'SF' Surface Filter , or **'NF' Noise filter**	The 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**.
	'TVG' Time Varied Gain	The control determines the amount of attenuation applied throughout the water column to ensure that targets of a similar size appear the same regardless of depth. A higher value produces weaker targets and less noise onscreen. The control can be set to 1 of 3 **Auto** modes or can be set to **Manual**.
	All to Auto	Sets all Sensitivity settings to **Auto** with 0% offset.

10.7 Sonar settings menu

The table below lists settings applicable to the Sonar app and their location within the app Settings menu. The settings available are dependant upon the Sonar module in use.

Sonar display tab

Settings	Description	Options
Color palette	Various color palettes are available to suit different conditions or your personal preference.	List of color palettes.
View selection buttons	Enables and disables SideVision™ **Left**, **Right** and **Both** onscreen channel selection icons.	• On • Off
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 • Center • Right • Cone
Bottom lock	Bottom lock flips the range indication so that the bottom always appears flat.	• On • Off
Range lines	Displays vertical range lines when viewing.	• On • Off
Depth lines	Displays horizontal depth lines.	• On • Off
White line	Displays a solid white line along the bottom contour.	• On • Off
Bottom fill	Displays a solid color fill for the bottom.	• On • Off
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.	• 0% to 100%
Scroll speed	Determines the scrolling speed for the Sonar image.	• 10% to 500%

RealVision™ 3D — Sonar display tab

Settings	Description	Options
Boat icon	Choose which boat icon to use.	List of available Boat icons.
Image stabilization	Uses RealVision™ 3D transducer's built-in sensors to counter-act the rocking motion of your vessel to produce a stable sonar image.	• On • Off
Target colors	Changes the color palette used for target returns.	List of color palettes.
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 • Intensity
Show targets as	Changes the method of rendering targets, **Point** provides the highest resolution, **Sphere** provides a lower resolution but increases target size for increased visibility.	• Point • Sphere

Settings	Description	Options
Bottom colors	Changes the color used for bottom structure.	List of colors.
Background	Changes the color used for the app background.	List of colors.
View mode	In **GPS track** mode the boat icon will remain in the same position and bottom structure and target detail will move in true relation to your vessel movements. In **Scrolling image** mode the sonar pings at a constant speed and displays a scrolling image behind the boat icon.	• GPS track • Scrolling image

Transducer tab

Settings	Description	Options
Transducer	Allows selection of Sonar transducer.	List of available transducers.
Display depth as	Determines the position from where depth readings are taken from.	• Below keel • Below waterline • Below transducer
Speed transducer	Allows selection of Speed transducer.	List of available transducers.
Calibrate speed	Allows you to enter an offset between actual measured speed and the current speed displayed by your transducer.	Offset value.
Enable temperature sensor	Enables and disables the selected transducer's temperature sensor.	• On • Off
Calibrate temp	Allows you to enter an offset between actual measured water temperature and the current temperature displayed by your transducer.	Offset value.

Sounder tab

Settings	Description	Options
Sounder name	Allows you to rename your sonar module.	Onscreen keyboard.
Ping enable	Enables and disables transducer ping.	• On • Off
Ping rate limit	Allows you to restrict the transducer's maximum ping rate to suit current conditions.	• 1 to 100
Power mode	Adjusts the transducer's signal strength. In **Auto** the sonar module will automatically determine the optimal power based on current depth, speed and bottom signal. In **Manual** you can adjust the power to the desired level.	• 1 to 100
Ping rate	Hyper ping should be used at speeds of up to 40 knots in shallower waters (6 metres or less). When the depth reaches 6 metres or above the ping rate will automatically reduce to normal until depth conditions are met.	• Normal • Hyper

Settings	Description	Options
Dual channel ping mode	On sonar modules that offer simultaneous dual channel operation, such as the CP570, The ping mode can be changed. **Auto** the Sonar app will select the best mode chosen based on range settings. **Independent pings** maximizes ping rate but may introduce interference. **Simultaneous pings** reduced ping rate and reduces chance of interference.	• Auto • Independent pings • Simultaneous pings
Tune frequency	Enables manual tuning of non-CHIRP frequency channels.	• -50% to +50%
AHRS stabilization	The AHRS built in to the RealVision™ 3D transducer is used to stabilize the sonar image onscreen based on your vessel's detected movements.	• On • Off
Reverse Port/Starboard	When a RV100 transducer is hull/step mounted the transducer can be installed with the cable orientated towards either the bow or the stern of the vessel. On installations where the transducer cable is orientated towards the stern of the vessel then the **Reverse Port/Starboard** control must be enabled.	• Enabled • Disabled
Interference rejection	Removes interference caused by other transducers on your vessel or from vessels equipped with transducers close by.	• Auto • 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 • High
Reset sounder	Resets the sonar module to factory default settings.	• Yes • No
Reset trip	In installations that include a speed transducer connected via the sonar module a trip log is automatically recorded. Selection this option will reset the sonar modules trip log.	• Yes • No

Page settings tab

Settings	Description
Data Overlays	Enables configuration of Data overlays
Edit split ratio	Enables you to customize the position of the partitions in splitscreen app pages.

Chapter 11: Radar app

Chapter contents

- 11.1 Radar app overview on page 136
- 11.2 Radar feature comparison on page 139
- 11.3 Opening the Radar app on page 142
- 11.4 Set up on page 144
- 11.5 Radar modes on page 146
- 11.6 Range and bearing on page 147
- 11.7 Target tracking on page 149
- 11.8 Radar sensitivity controls on page 156
- 11.9 Radar settings on page 157

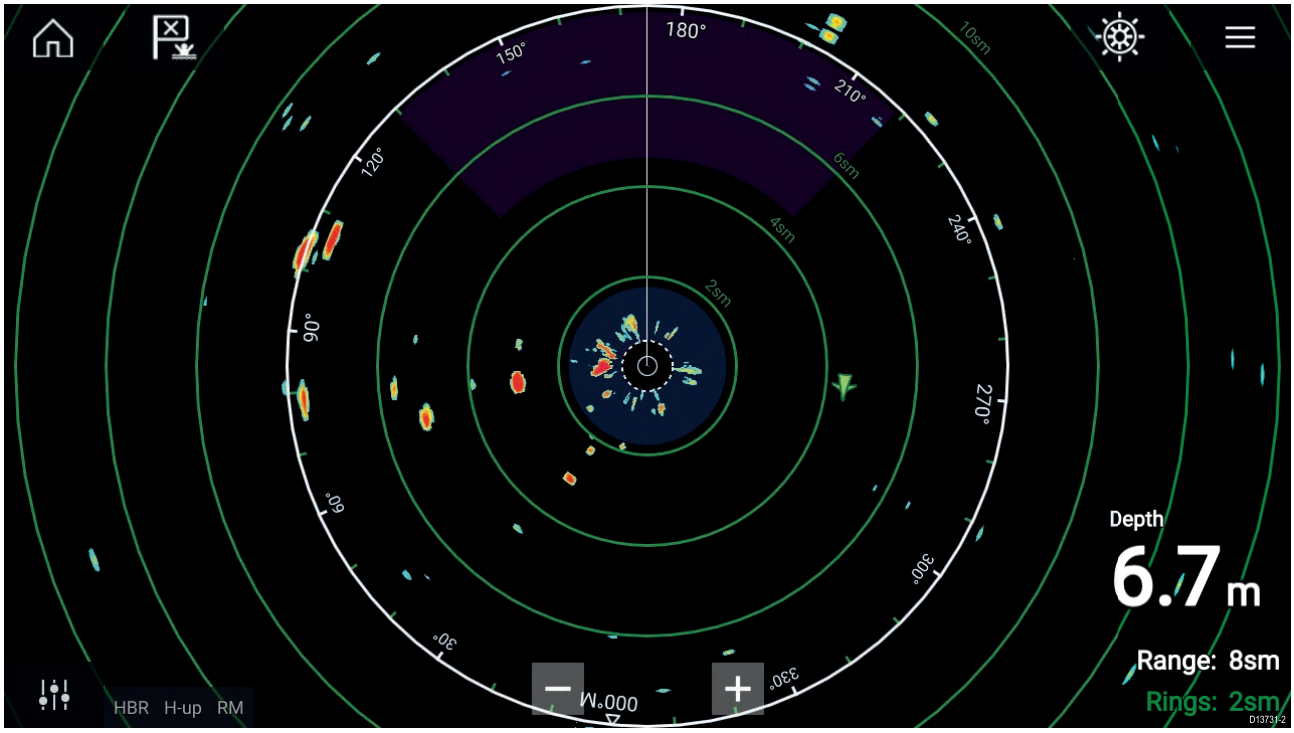
11.1 Radar app overview

The Radar app displays a visualization of the echoes received from a connected Radar scanner. The Radar app is a navigation aid used to help enhance collision and situational awareness by enabling target's distance and speed to be tracked in relation to your vessel.

Up to 2 Radar scanners can be connected at the same time. However, only 1 Radar in a system can be a Quantum™ Radar.

For each instance of the Radar app you can select which Radar scanner you want to use, the Radar scanner selection will persist over a power cycle.

The Radar app can be displayed in both Fullscreen and splitscreen app pages. App pages may consist of up to 2 instances of the Radar app.

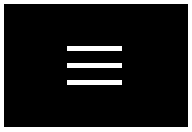


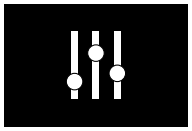
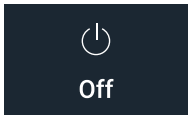
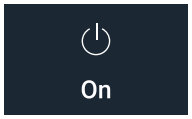
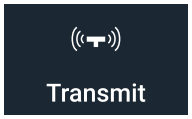
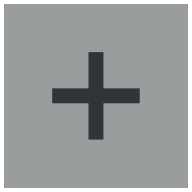
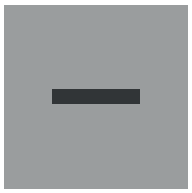
Tracked Radar targets and AIS targets are displayed using target symbols.

The Radar app allows you to configure alarms which are triggered when a target or object conflicts with the **Dangerous targets** or **Guard Zone** alarm settings.

The Range rings, bearing ring and VRM/EBLs can be used to identify a targets distance and heading in relation to your vessel.

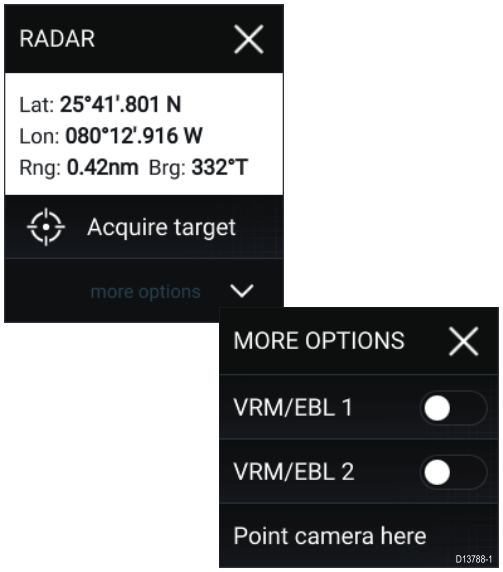
Radar app controls

Icon	Description	Action
	Home icon	Takes you to the Homescreen
	Waypoint / MOB	Place waypoint / activate Man Overboard (MOB) alarm
	Pilot icon	Opens and closes the Pilot Sidebar
	Menu icon	Opens the App menu

Icon	Description	Action
	Image adjustment	Displays onscreen sensitivity / image adjustment controls
	Power Off	Powers down the current Radar scanner
	Power On	Powers up the selected Radar scanner
	Transmit	Start Radar transmission
	Range In	Decreases the distance displayed onscreen (minimum range: 1/16nm).
	Range Out	Increases the distance displayed onscreen (up to your Radar scanner's maximum range).

Radar app context menu

Context menus provide context sensitive menu options.



- Context menus are accessed in the Radar app by selecting a location or target.
- The context menu provides Latitude, longitude, range and bearing details for the selected location or object.
- The context menu provides quick access to relevant settings or features.
- Select **More options** to display further options.

Camera tracking

When connected to a compatible Pan and Tilt Thermal camera you can track targets or point your camera at a specific target or area.

2 options are available for camera tracking:

- **Point camera here** — Points the camera at a specific point onscreen, the camera will remain pointed at this area regardless of your own vessel's course.

- **Track with camera** — Tracks a selected target regardless of your own vessel's or target's course.

Camera tracking options are available from the Context menu in the Chart and Radar apps: **Context menu > more options > Point camera here**, or **Context menu > more options > Track with camera**.

Automatic tracking

You can use the Camera app settings to configure automatic tracking for AIS, Radar and MoB targets: **Camera app > Menu > Settings > Camera motion > AUTO TRACKING**

11.2 Radar feature comparison

The range of features and settings that are available in the Radar app is dependent on the type of connected Radar scanner.

Sensitivity controls

Features/settings	Radar type
Gain	• All
Color Gain	• Quantum™ • SuperHD™ Open Array • HD Open Array • HD Radome
Rain	• All
Sea Clutter	• All
FTC (Fast Time Constant)	• Digital Radome
Power Boost	• SuperHD™ Open Array
Antenna Boost	• SuperHD™ Open Array

Gain Modes

Features/settings	Radar type
Buoy	• SuperHD™ Open Array • HD Open Array • HD Radome
Harbor	• All
Coastal	• All
Offshore	• All
Bird	• SuperHD™ Open Array • HD Open Array • HD Radome
Weather	• Quantum™

Features

Features/settings	Radar type
Dual Range	• SuperHD™ Open Array • HD Open Array • HD Radome
Interference Rejection	• All
Interference Rejection Level	• Quantum™ • Digital Radome
Target Expansion	• All
Expansion Level	• Digital Radome
Guard Zones	• All = 2
Guard Zone Sensitivity	• All

Features/settings	Radar type
Radar Targets	• Quantum™ = 10 • SuperHD™ Open Array = 25 • HD Open Array = 25 • HD Radome = 25 • Digital Radome = 10
Tuning	• SuperHD™ Open Array • HD Open Array • HD Radome
Transmit Frequency	• Quantum™
Scanner Rotation Speed	• Quantum™ = 24 RPM • SuperHD™ Open Array = 24 RPM / Auto (48 RPM) • HD Open Array = 24 RPM / Auto (48 RPM) • HD Radome = 24 RPM / Auto (48 RPM) • Digital Radome = 24 RPM
Sea Clutter Curve	• All
Parking Offset	• SuperHD™ Open Array • HD Open Array
Antenna Size selection	• SuperHD™ Open Array = 4ft / 6ft • HD Open Array = 4ft / 6ft
Timed Transmit	• All
Bearing Alignment	• All
MBS (Main Bang Suppression) Off	• All
Tuning Preset	• SuperHD™ Open Array • HD Open Array • HD Radome • Digital Radome
STC (Sensitivity Time Control) Preset	• Digital Radome
VRM/EBL (Variable Range Markers/Electronic Bearing Line)	• All
Display Timing	• SuperHD™ Open Array = 0–767m • HD Open Array = 0–767m • HD Radome = 0–767m • Digital Radome = 0–153.6m
Max Range	• Quantum™ = 24nm • SuperHD™ Open Array = 72nm • HD Open Array = 72nm • HD Radome = 48nm • Digital Radome = 48nm
Colors	• Quantum™ = 256 • SuperHD™ Open Array = 256 • HD Open Array = 256 • HD Radome = 256 • Digital Radome = 8

Compatible Radar scanners

The table below lists Radar scanners that can be used with the Radar app.

- Quantum™.
- SuperHD™ Open Array.
- HD Open Array.
- HD Radome.
- Digital Radome.

11.3 Opening the Radar app

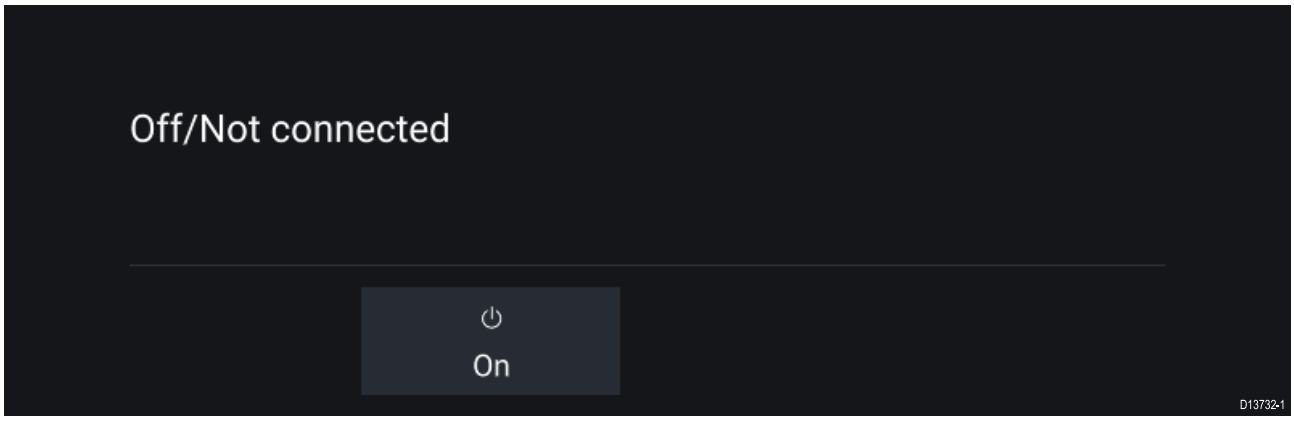
The Radar app is opened by selecting a page icon from the Homescreen that includes the Radar app.

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 1 of 3 states:

Off/Not Connected

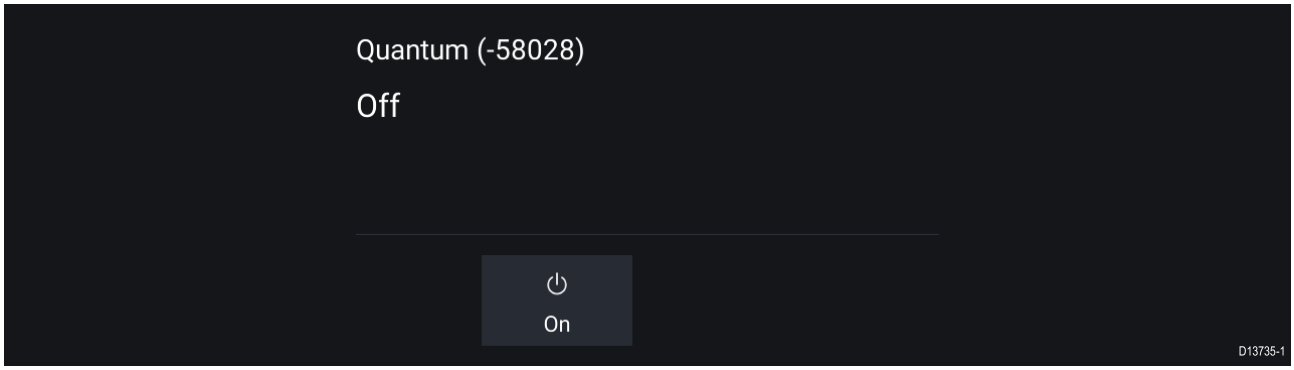


If the '**Off/Not Connected**' message is displayed then:

- your Radar scanner may be powered down, or
- your MFD cannot establish a connection with your Radar scanner

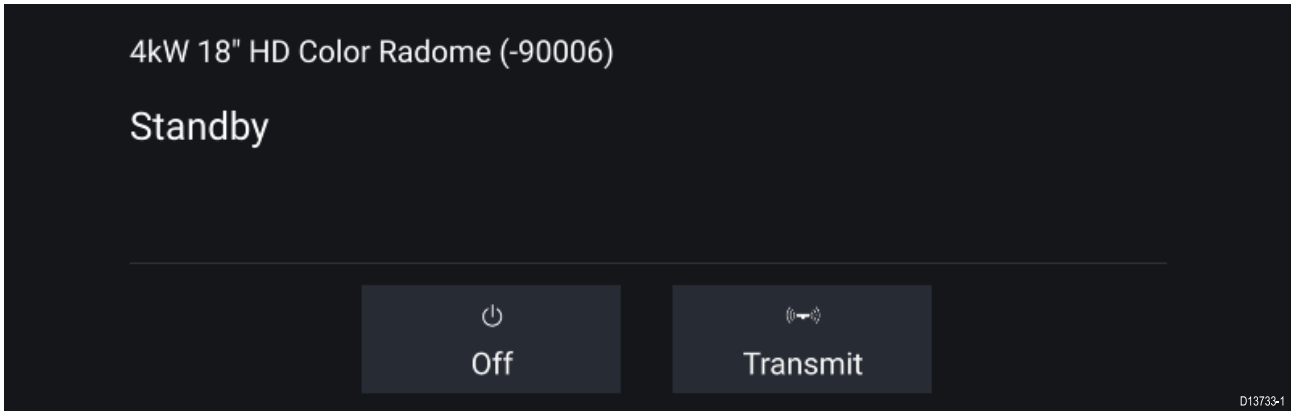
Select **On** to power up your Radar. If the '**Radar not found**' message is displayed then a connection could not be established, ensure that network and power connections to your Radar and MFD are correct and free from damage and then power cycle your system. If the Radar scanner can still not be found refer to your Radar's installation documentation for further troubleshooting information.

Off



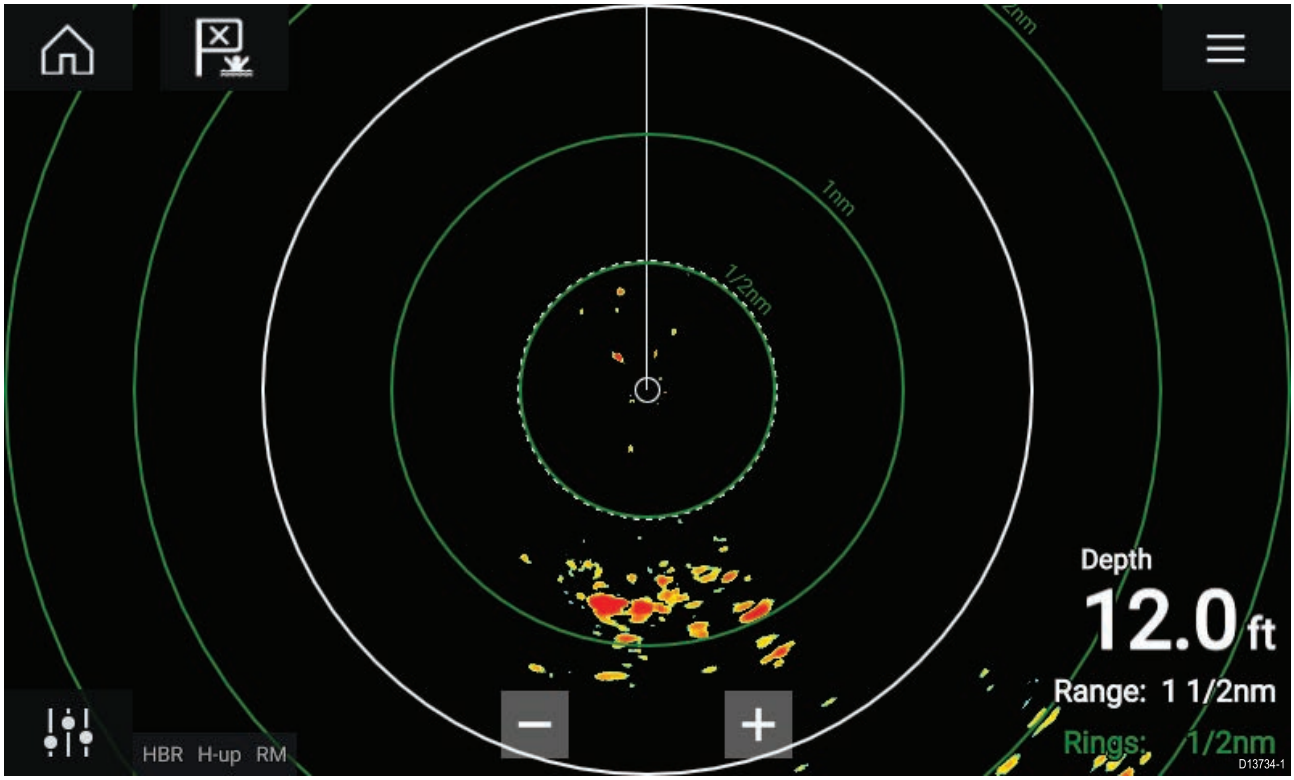
If the '**Off**' message is displayed then your Wi-Fi connected Radar scanner is paired but powered off, select **On** to power up your Radar

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/targets 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

With your Radar scanner in Standby:

1. Select the **Off** icon.
2. Select **Yes** to confirm power down.

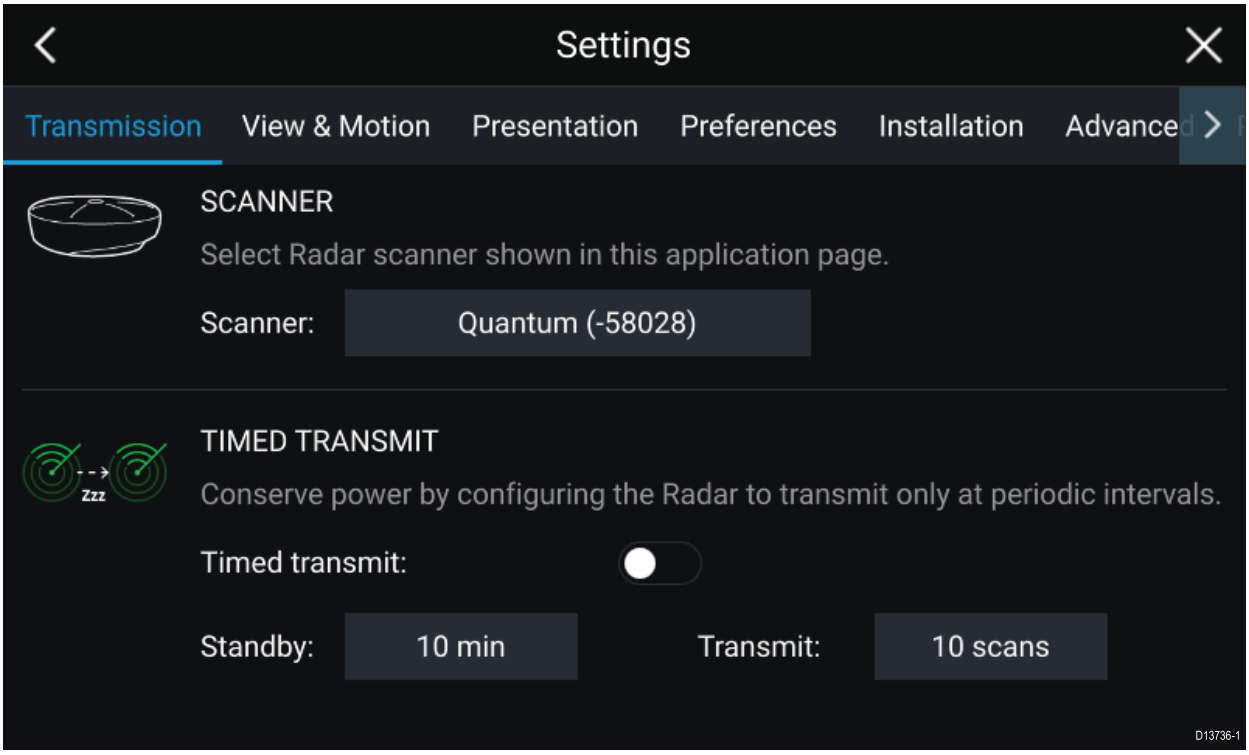
   The Radar scanner will still consume a small amount of power whilst it is powered off, this is to ensure the Radar can be powered back up quickly.

11.4 Set up

Selecting a Radar scanner

On systems with 2 Radar scanners, you can select which Radar scanner is used in each instance of the Radar app.

1. Select the **Settings** icon from the Radar app menu.



2. Select the **Scanner:** box on the **Transmission** tab.
   A list of available Radar scanners is displayed.
3. Select the Radar scanner that you want to associate with the current instance of the Radar app.
4. Close the **Settings** page.

The current instance of the Radar app will change to display the selected Radar scanner. Radar scanner selection shall persist over a power cycle.
Alternatively, with the Radar powered off or in Standby, you can select switch Radar scanner by selecting **Change scanner**.

Dual range

HD and SuperHD Radar scanners are capable of **Dual range**. Dual range enables you to view 2 ranges (i.e. Short range and Long range) simultaneously.

To view both ranges you will need to configure a splitscreen, dual Radar, app page that displays the same Radar scanner in each window. You can then enable **Dual Range** mode and set the **Channel** for each window from the **Transmission** tab: **Menu** > **Settings** > **Transmission**.

Dual range limitations:

- Dual range cannot be enabled when Radar targets are being tracked (clear the target list and try again).
- When Dual range is enabled Radar target tracking is disabled.
- When Dual range is enabled Automatic Radar target acquisition is disabled.
- In Dual range the maximum rotation speed is 24rpm.
- When using a SuperHD Radar **Antenna boost** and **Power boost** controls are only applied to the Long range channel.Open Array Radar scanners running version 1.xx or 2.xx software will have the Short range channel's maximum range restricted to 3 nm.
- When Dual range is enabled on a Radar scanner running version 1.xx or 2.xx software the **Expansion** control will be disabled.

Timed Radar transmission

To help conserve power you can configure your Radar to only transmit periodically.

From the Radar menu:

1. Select the **Settings** icon.
   The settings page is displayed.
2. Switch on **Time Transmit:** using the toggle switch.
3. Select **Standby:** and choose a time interval.
4. Select **Transmit:** and choose the number of rotations you want the Radar to perform.

The Radar will transmit for the specified number of rotations and then will switch to Standby for the specified time interval, the sequence will repeat until Timed Transmit is switched off.

The Timed transmit will revert to Off after a power cycle.

Setting open array antenna size

When connected to an Open Array Radar Scanner you can configure the **Antenna size**. Setting the antenna size can help when setting a **Parking offset**.

From the Radar app:

1. Select **Menu** > **Settings** > **Transmission**.
2. Select the correct size for your Radar's antenna from the **Antenna size** option.

Bearing alignment

The Radar bearing alignment ensures that Radar objects appear at the correct bearing relative to your vessel's bow. You should check the bearing alignment for any new installation.

Checking alignment

With your vessel under way: Align the bow with a stationary object between 1 & 2 NM away.

Note the position of the object on the Radar screen. If the target is not under the ships heading marker (SHM), then bearing alignment adjustment is required.

Adjusting alignment

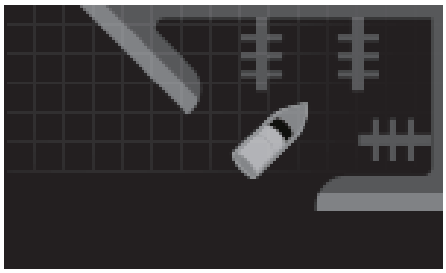
Adjust the **Bearing alignment** setting until the target object appears under the SHM.

Bearing alignment setting can be accessed from the **Installation** tab: **Menu** > **Installation** > **Bearing alignment**.

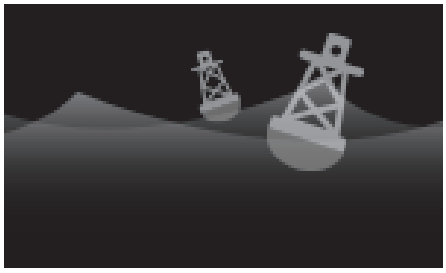
11.5 Radar modes

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.
Radar scanners: All.



BUOY
Buoy mode enhances the detection of smaller targets such as mooring buoys, and is useful at ranges up to 3/4nm.
Radar scanners: SuperHD™ Open Array, HD Open Array and HD Radome.

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.
Radar scanners: All.

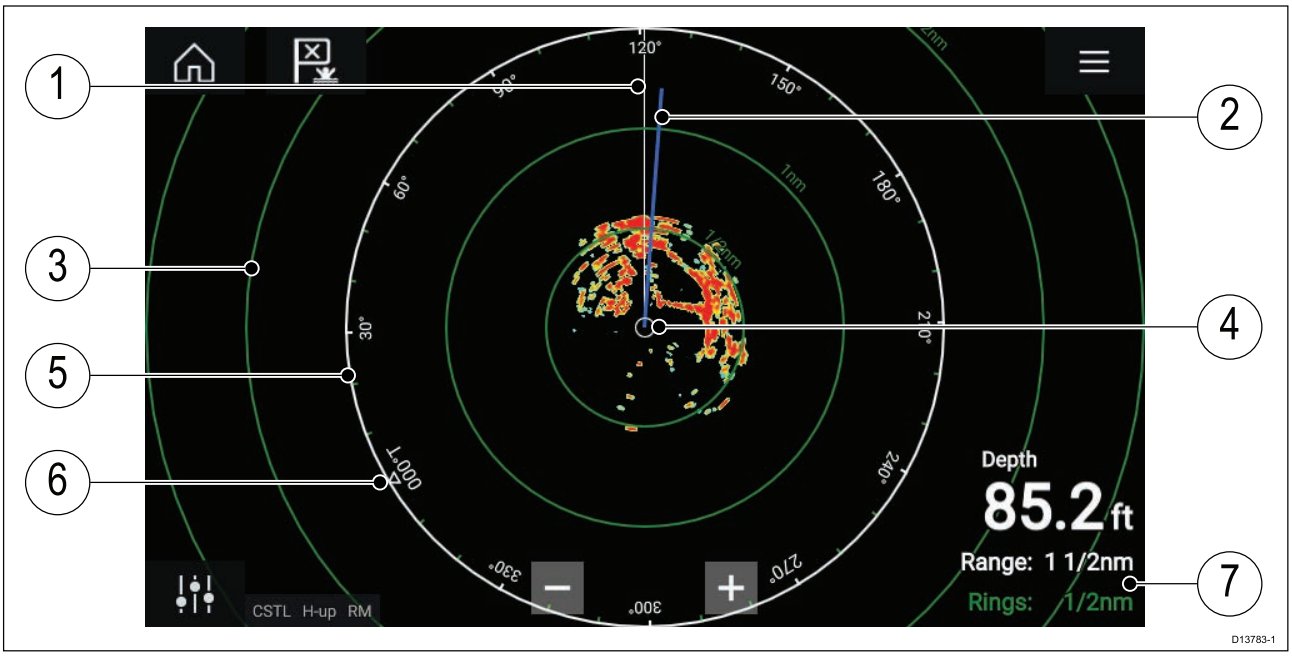
OFFSHORE
Offshore mode takes into account high levels of Sea clutter so that targets are still visible, useful when navigating in open water away from the coast.
Radar scanners: All.

BIRD
Bird mode optimizes the display to help identify flocks of birds, useful when trying to locate a fishing area.
Radar scanners: SuperHD™ Open Array, HD Open Array and HD Radome.

WEATHER
Weather mode optimizes the display to help identify precipitation, useful for helping determine weather fronts.
Radar scanners: Quantum™.

11.6 Range and bearing

The Radar app helps you identify a target's range (distance) and bearing from your vessel.



1. SHM (Ships heading marker).
2. COG/SOG line (Points in the direction of travel (COG), with the length of the vector providing an indication of speed (SOG)).
3. Range rings.
4. Vessel position.
5. Range and bearing indicator (The White ring identifies the distance from your vessel to the top edge of the screen. Bearing indicators are also provided around the ring).
6. North indicator (Always points North).
7. Current displayed Range and Ring separation distance (Range: identifies the distance from your vessel to the top edge of the screen. Rings: identifies the distance between each Range Ring).

The displayed range can be adjusted at anytime using the Range controls.

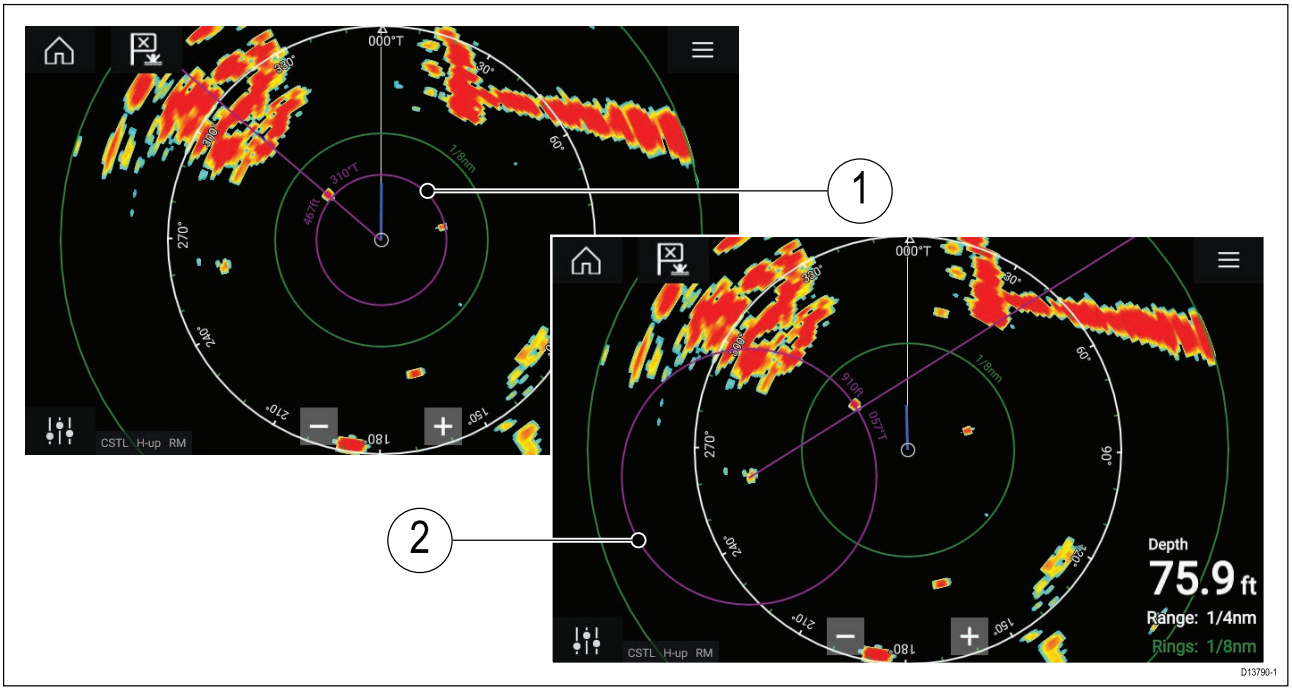
Range rings can be switched off from the Presentation tab: **Menu > Settings > Presentation > Range rings:**

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)

VRM/EBL is used to determine a targets range and bearing from your vessel, or from another target. 2 VRM/EBLs are available which are enabled from the context menu.

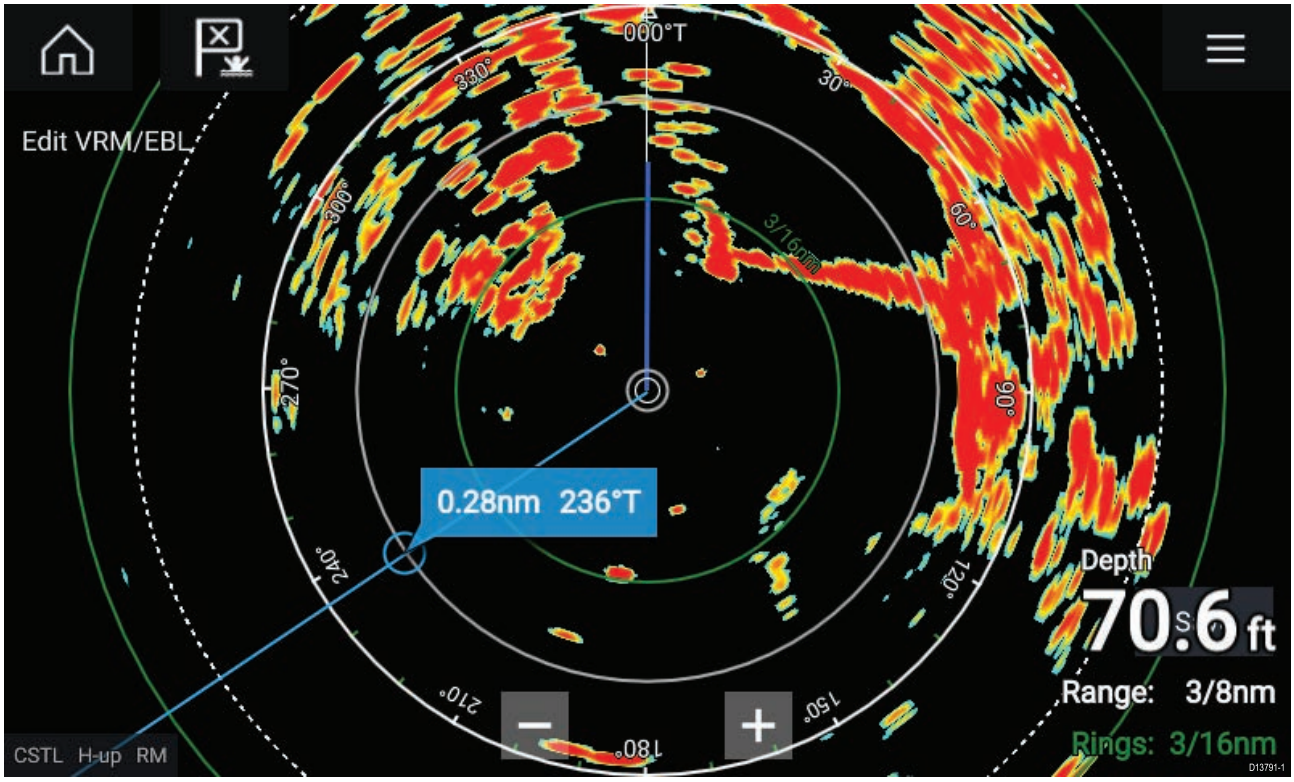
Context menu > More options > VRM/EBL 1 or **Context menu > More options > VRM/EBL 2**



1. **Centered VRM/EBL**You can use a ‘Centered’ (on your vessel) VRM/EBL to determine the range and bearing of targets in relation to your vessel.
2. **Floating VRM/EBL**You can use a ‘Floating’ VRM/EBL to determine the range and bearing between 2 targets.

Editing a VRM-EBL

Once a VRM/EBL has been placed you can adjust its size and position.



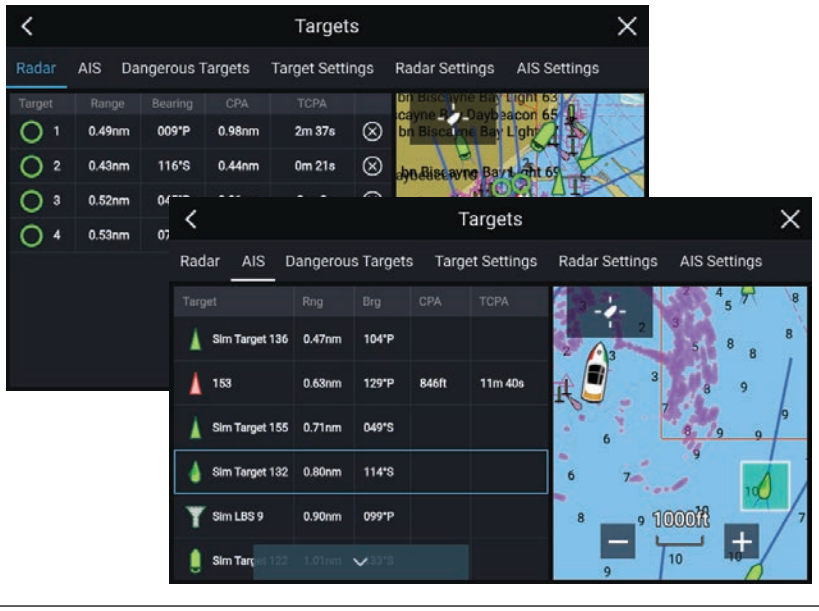
1. Select **Edit VRM/EBL** from the context menu.
2. To adjust the VRM/EBL select the desired target or drag the labelled circle to the target.
3. To create a floating VRM/EBL Drag the center circle to the desired target.

11.7 Target tracking

With compatible AIS and Radar hardware connected to your MFD, AIS and Radar targets can be tracked in the Chart app and Radar app.

When targets are being tracked they appear in the AIS or Radar targets list.

The target lists can be accessed by selecting **Targets** from the app menu: **Menu** > **Targets** and then selecting the relevant tab.



Selecting a target from the list will highlight the selected target in the **LiveView** app pane on the right of the page.

The list will identify: Target name, Range from your vessel, and Bearing. Where relevant, CPA (Closest point of approach) and TCPA (Time to Closest Point of Approach) values will also be displayed.

AIS list

The AIS target list pop-over options enable you to **View full target data** or add a target as an AIS buddy by selecting **Add as buddy**.

AIS icons used for targets marked as buddies will be filled yellow. You can also rename buddy targets or remove targets as a buddy.

Radar list

The Radar target list can be **Sorted By:** target **Number** or its **Range** from your vessel.

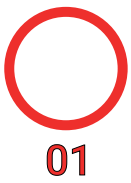
Radar targets can be cancelled individually by selecting the '**X**' next to the target's details in the list, or you can cancel all targets by selecting **Cancel all targets**.

You can display Radar target information onscreen by selecting **Target info** from the Radar target pop-over options.

Acquiring a target

1. Select the target.
   The context menu is displayed.
2. Select **Acquire target**.

Radar target symbols

Symbol	Status	Description
	Acquiring target — Manual	Thin dashed Green circle
	Acquiring target — Auto	Thick dashed Red circle, flashes until acknowledged
	Auto-acquired target — Unacknowledged	Red circle, flashes until acknowledged
	Acquired target	Green circle with Target ID
	Dangerous target	Red circle with Target ID, flashes until acknowledged
	Lost target (Target not detected for 4 Radar scans)	Gray circle with Red cross through

Once acquired the target's COG (Course Over Ground) and SOG (Speed Over Ground) can be displayed below the target ID.

The Target info is colored Blue if COG and SOG values are True or Orange if values are Relative. Target info will turn Red if the target becomes dangerous.

AIS settings

When the AIS layer is enabled in the Chart app you can configure **AIS settings** from the **Targets** menu**Menu** > **Targets** > **AIS settings**.

Setting	Description	Options
Show AIS targets in Chart / **Show AIS targets in Radar**	Enables and disables AIS targets in the Chart and Radar apps.	• On • Off
Enhanced AIS targets	Enables and disables display of enhanced AIS target icons.	• On • Off
Show these AIS types	Determines the types of AIS target displayed in the Chart and Radar apps.	• All • Dangerous • Buddies
Hide static targets	When enabled AIS target travelling under 2 knots will be hidden, unless they are or become dangerous.	• On • Off
Silent mode	When enabled your vessel's AIS will not transmit your position or details.	• On • Off

AIS target symbols

By default, standard AIS symbols are used to identify AIS targets. You can enable display of enhanced AIS target symbols from the Advanced Settings menu: (**Menu** > **Settings** > **Advanced** > **Enhanced AIS targets**). With enhanced mode enabled, the enhanced symbols are used in place of the standard vessel symbol.

Standard AIS symbols — type

	Vessel		SART (Search and Rescue Transponder)
	Land based station		ATON
	SAR (Search and Rescue)		Virtual ATON
	* Blueforce vessel		* Blueforce SAR

Note: * Requires STEDS-EAIS hardware.

Enhanced AIS symbols — type

	Sailing Vessel		Other
	High speed vessel / Wing In Ground vessel		Cargo vessel
	Passenger vessel		

Enhanced AIS symbols are scaled or outlined according to the reported size of the vessel.

AIS symbol status

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

Target settings

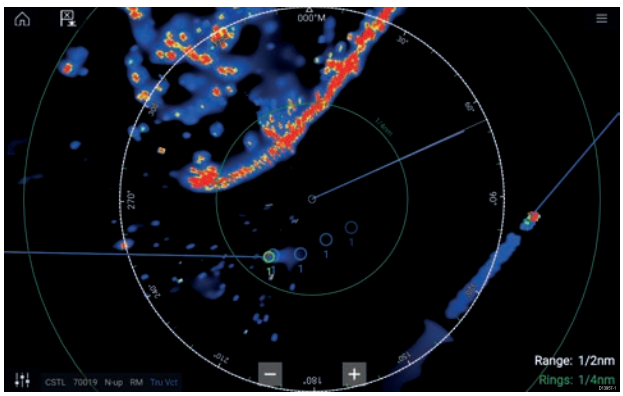
Target vectors, target history and object trail graphics can be displayed onscreen to improve situational and collision awareness.

Target settings can be accessed from the **Target Settings** tab: **Menu** > **Targets** > **Target settings**.

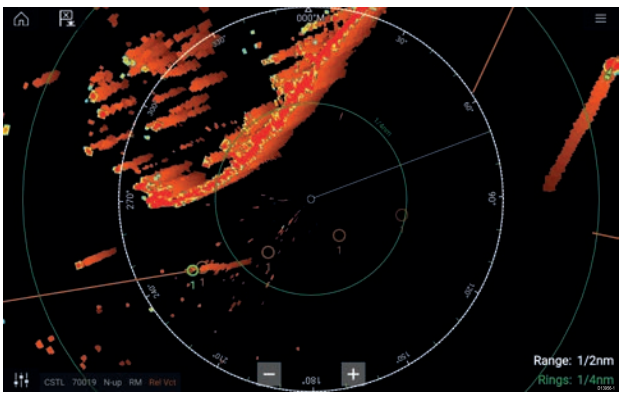
Reference mode

Target settings can be configured to either **True** or **Relative** mode. In True mode, Trails, Vectors and History are colored Blue and are shown ground referenced (i.e. the object or target's actual Course Over Ground (COG)). In Relative mode, Trails, Vectors and History are colored Orange and are shown relative to your vessel's movement.

To switch the target reference mode, select the **REFERENCE MODE** setting. Alternatively, you can switch reference mode by selecting the onscreen **Image Adjustment** icon and then selecting either **True** or **Relative**.

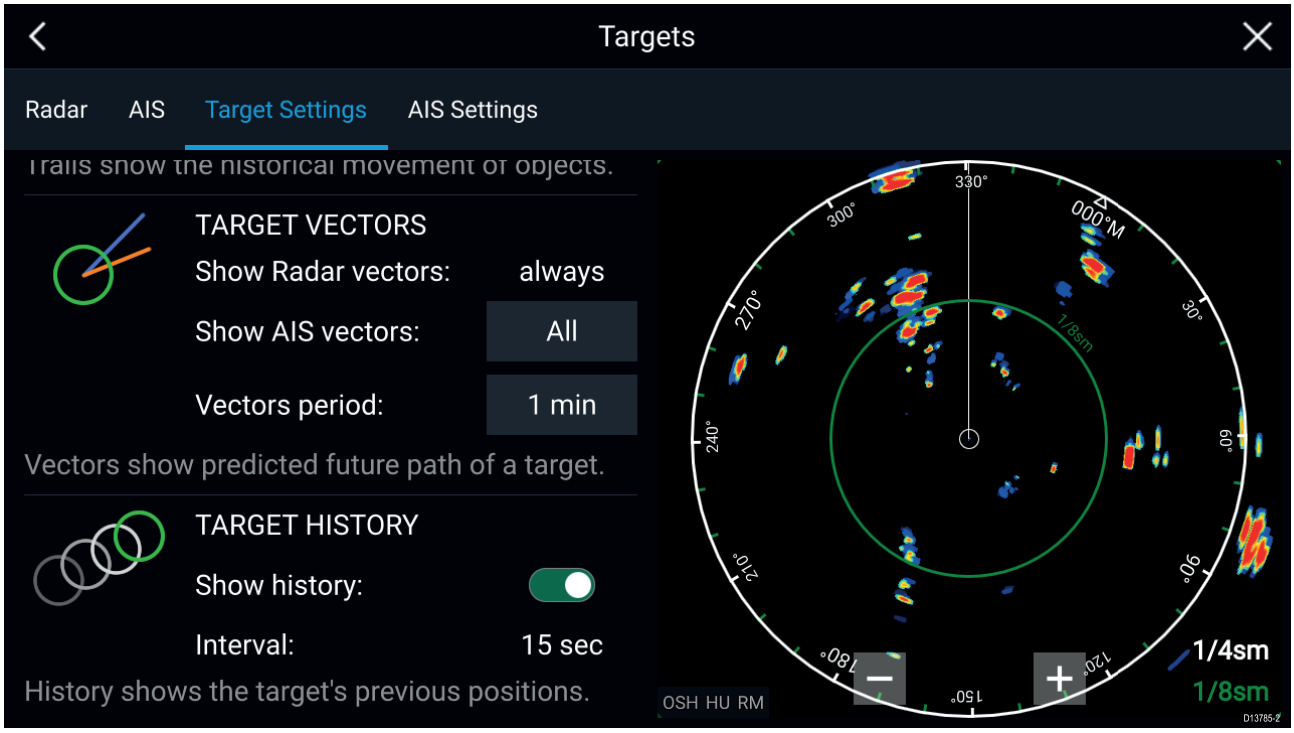


True mode



Relative mode

The **Target Settings** reference mode is independent of your vessel's motion mode.



Target vectors

Target vectors show the predicted future course of a target.

Target vectors for acquired Radar targets are always shown. By default, target vectors are also shown for all AIS targets. You can switch the **Show AIS vectors** to Manual, enabling you to switch vectors for AIS targets On or Off for each target individually, via the target context menu.

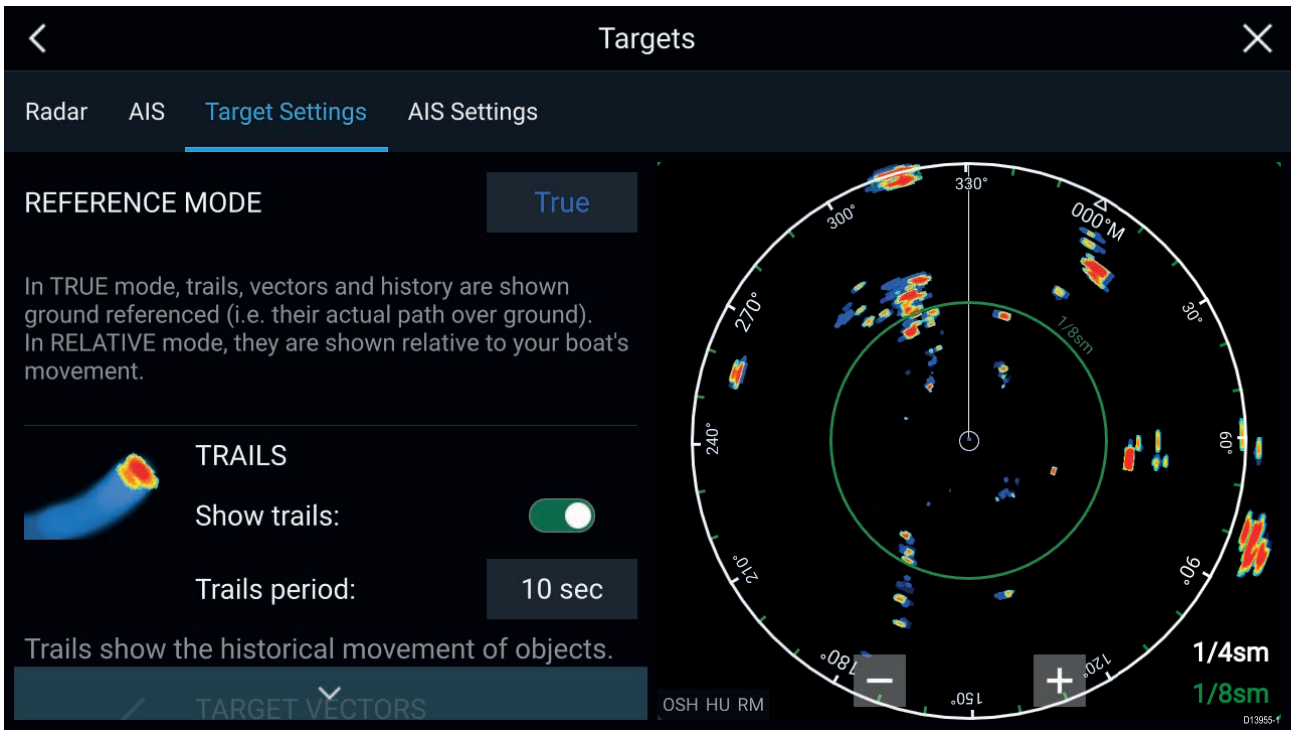
The length of the Vector line signifies where the target will be after the time specified in **Vector period** has passed. The Vector period can be adjusted by selecting the current **Vector period** value and choosing a time from the Pop-over options.

Target history

Target history shows a target's previous positions.

Target history can be enabled or disabled using the **Show history** toggle switch.

Target history is plotted by displaying a target symbol at the vessel's position each time the value specified in the **Interval** setting has passed. The **Interval** is automatically calculated based on the target vector's **Vector period**, divided by 4.



Trails

Trails plot the historical movements of objects (Radar returns) for the time specified in the **Trails period** setting.

Trails are subject to the selected "Reference Mode" (i.e. **True**, to show actual motion over "ground" (COG), or **Relative**, to show motion relative to your vessel).

Trails can be enabled and disabled using the **Show trails** toggle switch.

Historical object position is shown as a colored trail behind the object.

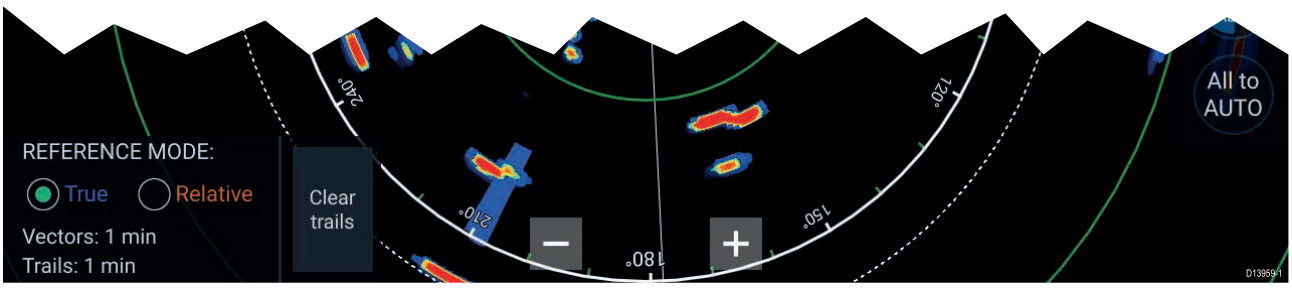
Clearing / resetting trails

In an area with multiple target returns, trails can clutter the Radar image, reducing its ability to provide a target's path, under these circumstances you can remove all existing trails using the onscreen **Clear trails** option.

1. Select the onscreen **Image adjustment** icon.
2. Select **Clear trails**.

Onscreen target settings

Target settings and information are also available using the onscreen **Image adjustment** icon.



The following target settings and information is available:

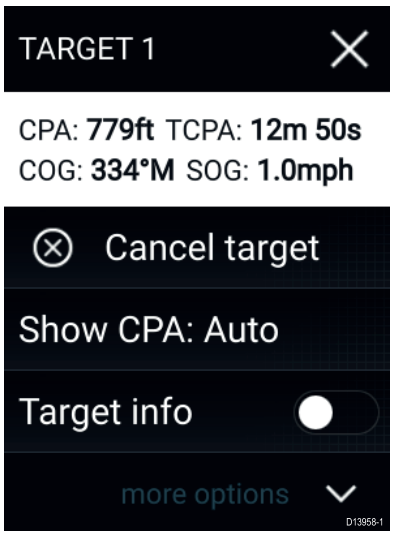
- **REFERENCE MODE** — Choose whether Radar targets and objects are displayed in **True** or **Relative** reference mode.
- **Vector period and Trail interval** — Displays currently selected values.

- **Clear trails** — Clears and resets the trails displayed onscreen.

Target context menu

A target context menu is available that provides quick access to useful target settings.

To open the Radar target context menu, select a target onscreen.

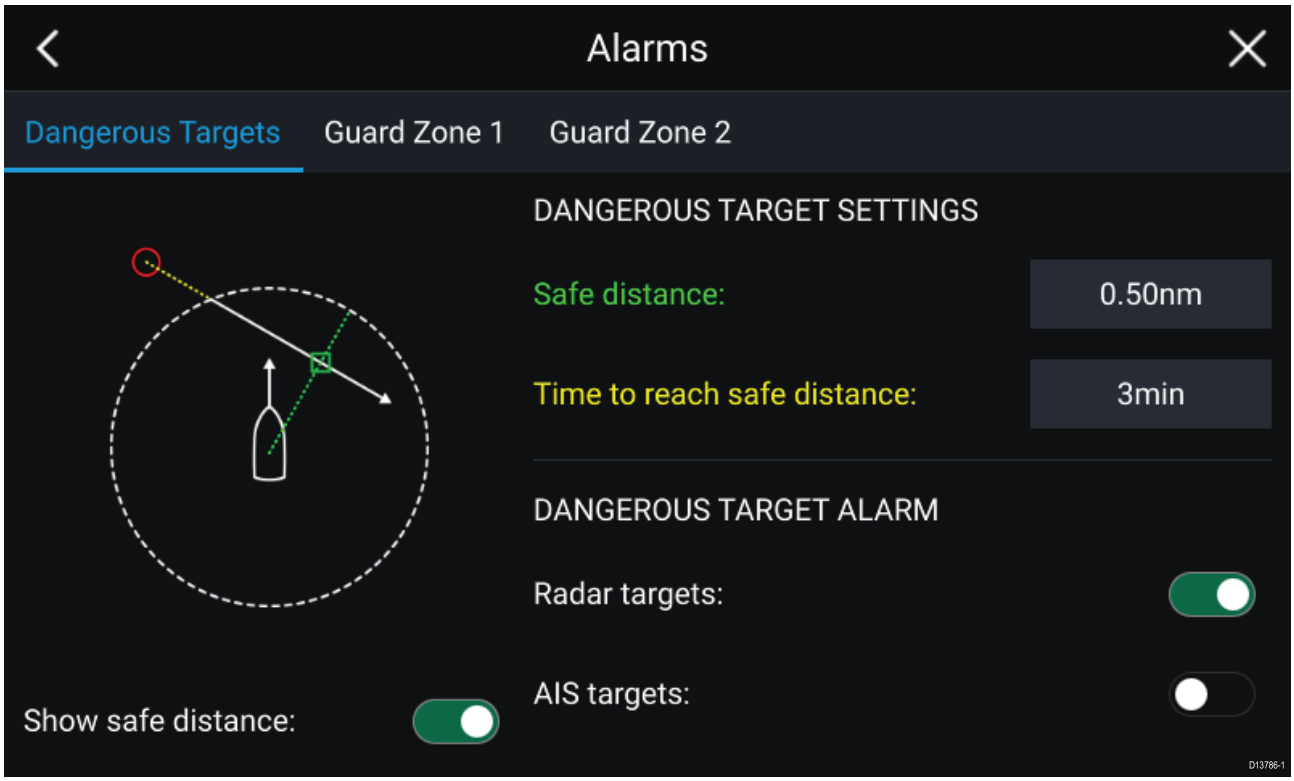


The Radar context menu provides CPA, TCPA, COG and SOG data for the selected target.
The context menu also provides the following target menu options:

- **Cancel target** — The Radar target will no longer be tracked.
- **Show CPA** — Determines whether CPA graphics are shown.The default option is Auto which displays CPA graphics for the target if it becomes dangerous. You can also set CPA graphics to On, which displays CPA graphics, if there is an intersect point between your vessel's current course and the target's. When set to Off no CPA graphics will be displayed for the target.
- **Target info** — Determines whether the target's SOG and COG information is displayed under the target onscreen.

Dangerous targets alarm

You can use the Dangerous targets alarm to notify you if a Radar or AIS target will reach a specified distance from your vessel within a specified time.



To set up the 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 choose whether you want the Dangerous target alarm to trigger for Radar and / or AIS targets.

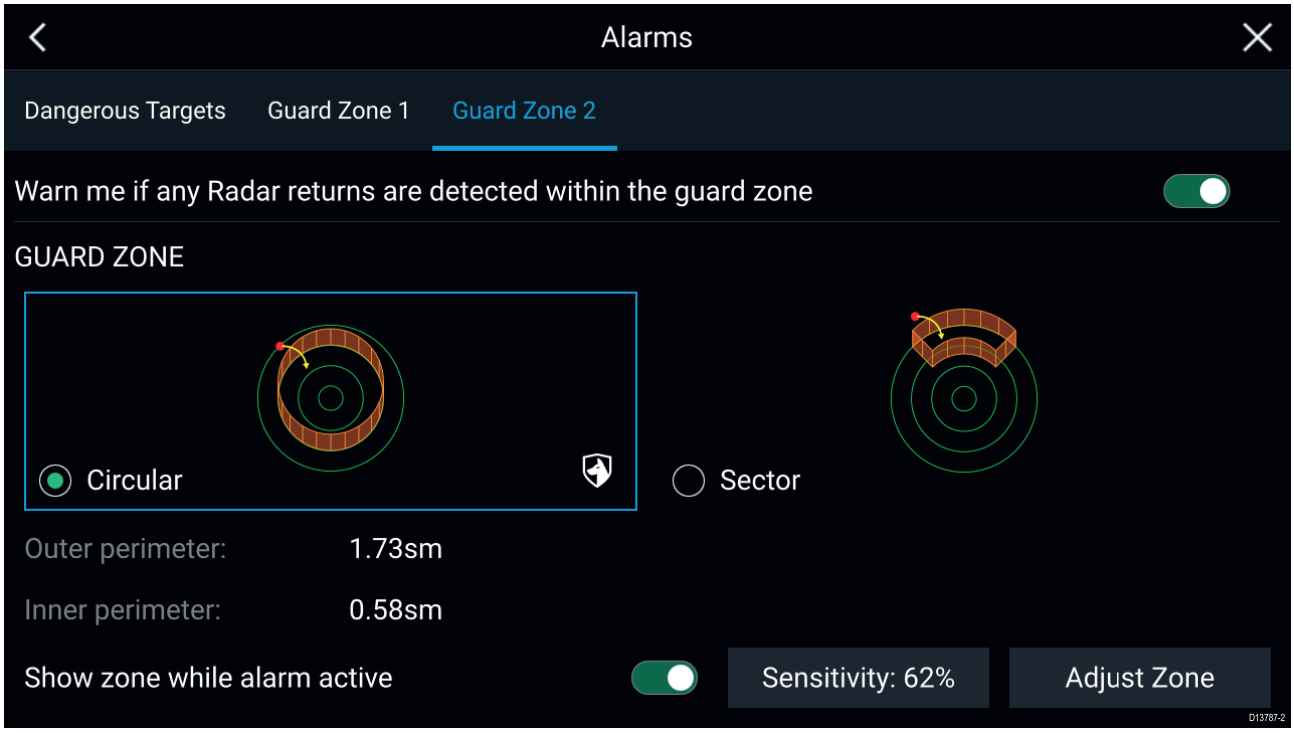
You can display a Safe distance ring around your vessel in the Radar app using the **Show safe distance** control.

Guard zone alarms

Guard zones alert you if a Radar return is detected within the Guard zone area.

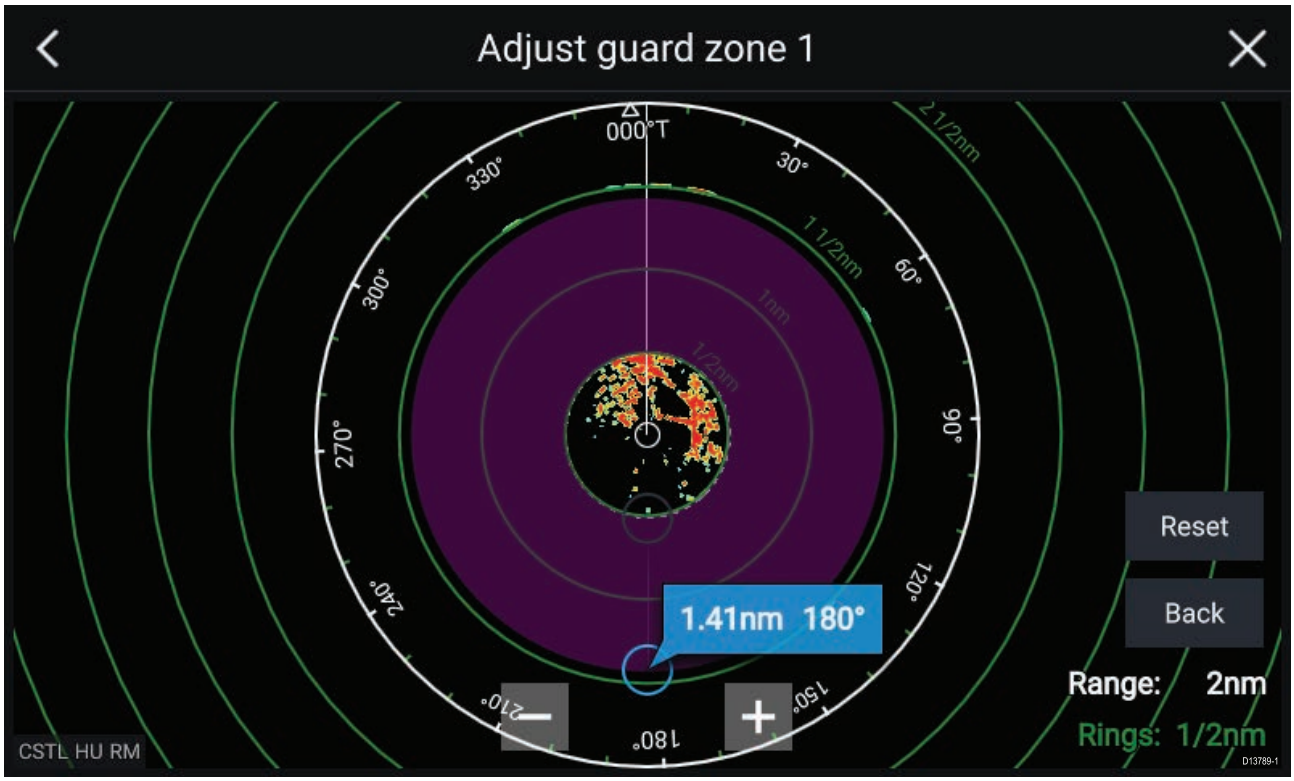
2 Guard zones can be configured for each connected Radar scanner.

The Guard zones can be configured from the **Alarms** menu: **Menu > Alarms > Guard zone 1** or **Menu > Alarms > Guard zone 2**



A Guard zone can be configured as a sector or as a circle around your vessel.

Selecting **Adjust Zone** allows you to configure the size of the Guard Zone.



Adjust the guard zone's size by dragging the inner and outer perimeter end points (circles) to the desired locations.

Once configure select **Back**.

If required, you can also adjust the Guard zone sensitivity. Sensitivity determines the size at which objects trigger the alarm.

11.8 Radar 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 settings can be accessed using the onscreen **Image adjustment** icon, or the Adjust sensitivity menu option: **Menu > Adjust sensitivity**.

The Sensitivity controls available are dependant upon the Radar scanner in use.

Control	Name	Description
	'G' Gain	The control determines the signal strength at which target returns are shown onscreen. The Gain control can be set to **Auto** or **Manual**. 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 object. The higher the Rain control is set the more echoes will be suppressed.
	'S' Sea	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.
	'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. The control can be set to **Auto** or **Manual**.
	All to Auto	Sets all Sensitivity settings to **Auto** with 0% offset.

11.9 Radar settings

The Settings menu provides access to the Radar app's features and functions. The options available in the Settings menu are dependent on the type of Radar scanner connected.

Transmission tab

Settings	Description	Options
Scanner	Allows you to select the Radar scanner that you want to use.	List of available Radar scanners.
Dual range	Enables and Disables dual range.	• On • Off
Channel	Determines which channel is shown in the Radar app.	• Channel 1 • Channel 2
Antenna size selection	Open Array Radar antenna size selection.	• 4ft • 6ft
Timed transmit	Enables and disables Timed transmit. Timed transmit configures your Radar to transmit at periodic intervals to conserve power.	• On • Off
Standby	Determines the length of time the Radar is in Standby for in Time transmit mode.	• 3 min • 5 min • 10 min • 15 min
Transmit	Determines the amount of scans the Radar will perform when transmitting in Time transmit mode..	• 10 scans • 20 scans • 30 scans

View & Motion tab

Settings	Description	Options
Orientation	**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.	• Head-up • North-up • Course-up
Motion mode	**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	• Relative motion • True motion

Settings	Description	Options
	screen, the image is redrawn to reveal the area ahead. In True motion mode the boat position is fixed to **Full offset**.	
Boat position	The boat position determines the position of your vessel onscreen. You can adjust the Boat position to provide a greater distance ahead of your vessel. Your boat position can only be changed in **Relative motion** mode.	• Center • Partial offset • Full offset

Presentation tab

Settings	Description	Options
Range rings	Enables and disables Range rings in the Radar app.	• On • Off
Range ring labels	Enables and disables Range ring distance labels in the Radar app.	• On • Off
Color palette	Allows selection of the color palette.	List of color palettes.

Preferences tab

Settings	Description	Options
VRM/EBL reference	Determines the reference point used for VRM/EBLs.	• True/Mag • Relative
Interference rejection	Suppresses interference from other close by Radar scanners.	• On • Off
Interference rejection level	Determines the level of suppression used. Only available when **Interference rejection** is enabled.	**Quantum™** • Level 1 to Level 5 **Non-HD Digital Radomes** • Normal • High
Target expansion	When enabled, increases the Radar pulse length to provide larger target returns.	• On • Off
Expansion level	Determines the level of expansion used. Only available when **Target expansion** is enabled.	• Low • High
Tune adjust	Allows you to adjust the Radar scanners receiver for maximum target returns. It is recommended that the Radar scanner is allowed to warm up for at least 10 minutes prior to making adjustments.	• Auto • Manual (0% to 100%)
Radar speed	Allows you to select the appropriate rotation speed for your range. The Auto option provides an increased refresh rate at Radar ranges up to 3 nm.	• 24 RPM • Auto (24 / 48 RPM)
Transmit frequency	Changing the Transmit frequency can reduce interference on the Radar image.	• Low • Normal • High

Installation tab

Under normal circumstances it should not be necessary to adjust Installation settings.

Settings	Description	Options
Bearing alignment	Enables you to align the Radar image correctly in relation to your vessel's bow.	• 179.5° Port to 180° Starboard
Parking offset	Allows you to select the 'parked position of your Open Array's antenna The Open Array must be in Standby to adjust the parking offset.	• 0° to 359°
Main Bang Suppression (MBS)	MBS eliminates saturation immediately around your vessel. When adjusting **Zero range** it is recommended that MBS is set to Off.	• Off • On
Sea clutter curve	Adjusts the Radar scanners sensitivity to Sea clutter.	• 1 to 8

Advanced tab

Under normal circumstances it should not be necessary to adjust Advanced settings.

Settings	Description	Options
Tune preset	Radar tuning is controlled either automatically or manually, using the **Tune adjust** setting. Tune preset controls the range available to the **Tune adjust** control.	• 0 to 255
STC preset	The Sensitivity Time Control (STC) can be used to equalize targets across the image. If you find targets are brighter or dimmer nearer the center of the image adjust the STC preset until the desired result is achieved.	• 0% to 100%
Zero range	Zero range (Display timing) is used to configure the zero range of the Radar scanner so that objects appear at the correct distance.	• 0 to 153m / 502ft
Reset	Resets Installation and advanced settings to factory defaults.	• Yes • No

Page settings tab

Settings	Description
Data Overlays	Enables configuration of Data overlays
Edit split ratio	Enables you to customize the position of the partitions in splitscreen app pages.

Chapter 12: Dashboard app

Chapter contents

- 12.1 Dashboard app overview on page 162
- 12.2 Dashboard settings menu on page 168

12.1 Dashboard app overview

The Dashboard app enables you to view system data. System data may be generated by your MFD or by devices connected to your MFD via SeaTalkng ® / NMEA 2000 and SeaTalkhs ™. The Dashboard app can also be configured to provide control of your compatible Digital Switching devices.

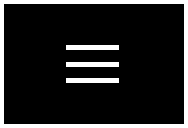
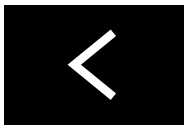
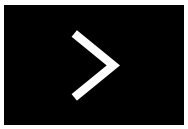
Note: For data to be available in the Dashboard app it must be being transmitted to your MFD from compatible hardware using supported protocols and messages.

The Dashboard app can be displayed in Fullscreen and half screen portrait app pages.

For each instance of the Dashboard app you can select which Data pages you want to use, the Data page selection will persist over a power cycle.

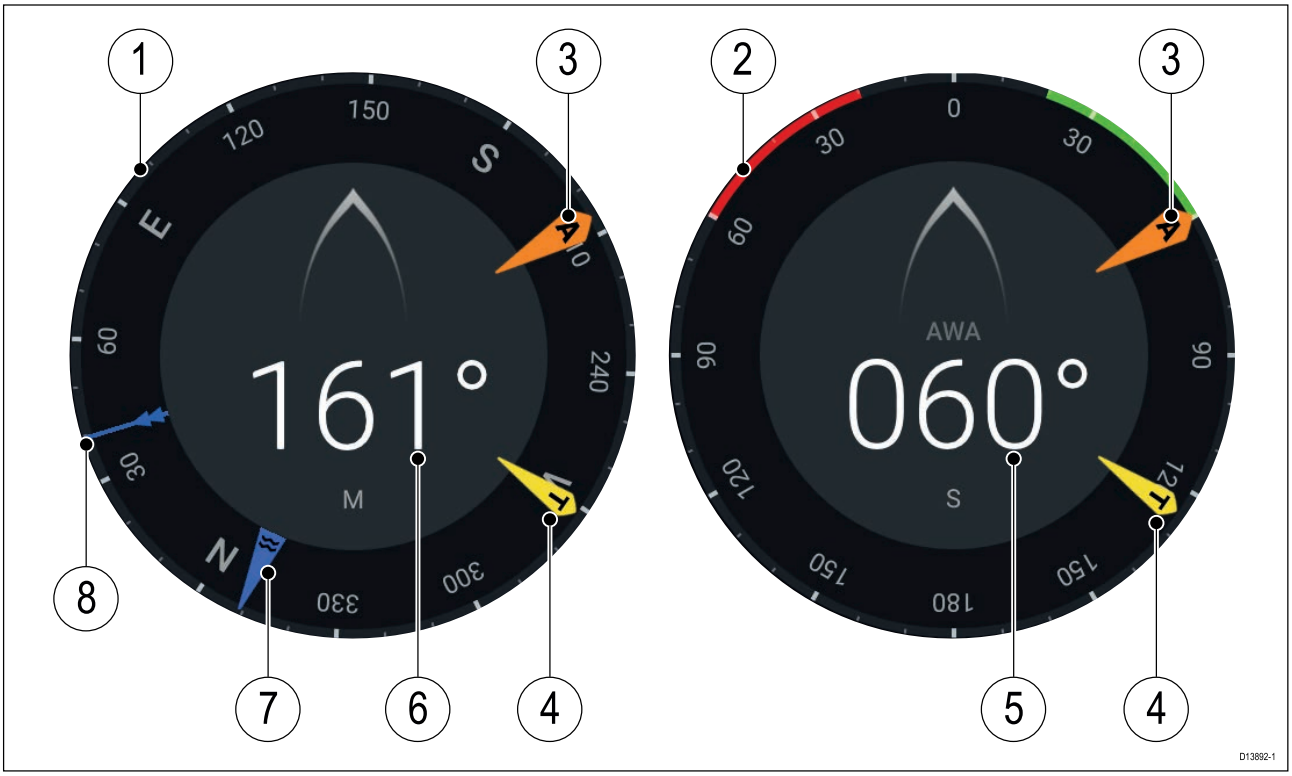
The Dashboard app is pre-configured with a number of customizable data pages.

Dashboard app controls

Icon	Description	Function
	Home icon	Takes you to the Homescreen.
	Waypoint / MOB	Place waypoint / activate Man overboard (MOB) alarm.
	Pilot icon	Opens and closes the Pilot Sidebar
	Menu icon	Opens the app menu.
	Left arrow	Displays the previous data page.
	Right arrow	Displays the next data page.

Navigation and Sailing dials

Navigation and Sailing dials are available which provide a compass dial with various data indicators.



1. Navigation dial
2. Sailing dial
3. Apparent Wind Angle (AWA) indicator
4. True Wind Direction (TWD) indicator
5. Apparent Wind Angle (AWA)
6. Heading
7. Tide direction indicator
8. Course Over Ground (COG) indicator

Switching data page

1. Use the **Left arrow** and **Right arrow** buttons, located at the bottom of the screen, to cycle through the available data pages.
2. Alternatively, you can select a specific data page from the Dashboard app menu.

Selecting Data pages to display

For each instance of the Dashboard app you can select which Data pages you want to be able to view.

1. Select the **Pages** tab: **Menu > Settings > Pages**.
2. Select the relevant page from the list.
3. Select **Hide page** from the pop-over options.

The selected page will no longer be available in the current instance of the Dashboard app.

*Selecting **Show page** for a hidden page will include the page in the app instance again.*

Customizing existing Data pages

The data items displayed on each page can be changed.

1. Select and hold on the relevant Data item.
2. Select **Edit** from the Data item pop-over menu.
3. Select the new Data item that you want to display.

Alternatively you can select **Customize page** from the app menu: **Menu > Customize page**.

Available data items

The data items listed below can be added to a Dashboard data page or to an app's Data overlay.

Data type	Data item	Notes
Battery	• Temperature • Voltage • Current	Data items available for up to 5 batteries.
Boat	• Mast rotation • Starboard Trim Tab • Port Trim Tab • Live Well • Black Water • Gray Water • Fresh Water • Roll • ROT (Rate Of Turn)	
Depth	• Maximum Depth • Minimum Depth • Depth	
Distance	• Trip season • Trip month • Trip day • Trip manual • Ground Trip 4 • Ground Trip 3 • Ground Trip 2 • Ground Trip 1 • Ground Log • Trip • Log • Cardinal Wind	
Engine	• Eco Mode • Transmission Oil Temperature • Transmission Oil Pressure • Fuel Pressure • Average Fuel Rate • Instantaneous Fuel Economy • Engine Fuel Rate • Engine Tilt • Engine Hours • Engine Load • Coolant Temperature • Coolant Pressure	Data items available for up to 5 engines.

Data type	Data item	Notes
	• Alternator • Oil Pressure • Oil Temperature • Boost Pressure • RPM • RPM Engine Hours	
Fuel	• Fuel Level • Fuel Economy • Total Fuel Rate • TTE (Time To Empty) • DTE (Distance To Empty)	Fuel Level data item available for up to 5 engines.
Environment	• Humidity • Pressure • Drift from position • Apparent Wind Chill • True Wind Chill • Dew Point • Maximum Air Temperature • Minimum Air Temperature • Air Temperature • Maximum Water temperature • Minimum Water Temperature • Water Temperature • Set • Drift • Set & Drift	
GPS	• COG (Course Over Ground) • Average SOG • Maximum SOG • SOG (Speed Over Ground) • Position • COG & SOG	
Heading	• Locked Heading Error • Track Heading • Locked Heading • Heading • Locked Heading & Locked Heading Error • Heading & STW (Speed Through Water)	

Data type	Data item	Notes
Navigation	• BOTW • XTE (Cross Track Error) • Next waypoint name • Original target distance • Next turn angle • Route ETA (Estimated Time of Arrival) • Route TTG (Time To Go) • Waypoint • Waypoint TTG • Target position • VMG (Velocity Made Good) to Waypoint • Waypoint ETA • DMG (Distance Made Good) • CMG (Course Made Good) • DTW (Distance To Waypoint) • XTE (Cross Track Error) • BTW (Bearing To Waypoint) • Compass • CMG & VMG to Waypoint • CMG & DMG • BTW & DTW	
Speed	• VMG to Wind • Average STW • Maximum STW • STW	
Time	• Sunset Time • Sunrise Time • UTC Time • Local Time • UTC Date • Local Date	
Wind	• Beaufort • GWD (Ground Wind Direction) • GWS (Ground Wind Speed) • TWD (True Wind Direction) • Minimum TWA (True Wind Angle) • Maximum TWA • TWA (CH) • TWA • Maximum TWS (True Wind Speed) • Minimum TWS	

Data type	Data item	Notes
	• TWS • Minimum AWA (Apparent Wind Angle) • Maximum AWA • AWA (CH) • AWA • Minimum AWS (Apparent Wind Speed) • Maximum AWS • GWS & GWD • AWA & VMG to Wind • AWA (CH) & AWS • AWA & AWS • TWA & VMG to Wind • TWA (CH) & TWS • TWA & TWS • GWD & Beaufort	

12.2 Dashboard settings menu

Pages tab

The Pages tab provides a list of all available pages.

Settings	Description	Options
List	pop-over options allow you to customize the Dashboard app. You can rearrange pages, add new pages, rename existing pages or reset pages to default settings. **Note:** * You can only delete pages added using the Add page option.	• Hide/Show page • Move up • Move down • Add page • * Delete page • Rename • Reset all
Import custom pages	You can import custom pages that have been created using approved PC based page creation software. Please refer to Raymarine Product support for more details.	Displays file browser

Circuits tab

Settings	Description	Options
List of tripped channels	In Digital Switching systems the Circuit tab provides a list of tripped channels. Tripped circuits can be acknowledged and reset from the pop-over options.	• Acknowledged • Reset

Units tab

Measurement	Units	Measurement	Units
Distance units:	• Nautical Miles • NM & m • Statute Miles • Kilometers	**Volume units:**	• US Gallons • Imperial Gallons • Liters
Speed units:	• Kts • MPH • KPH	**Economy units:**	• Distance per Volume • Volume per Distance • Liters per 100 km
Depth units:	• Meters • Feet • Fathoms	**Wind speed units:**	• Knots • Meters per Second
Temperature units:	• Celsius • Fahrenheit	**Pressure units:**	• Bar • PSI • Kilopascals
Date format:	• MM:DD:YYYY • DD:MM:YYYY • MM:DD:YY • DD:MM:YY	**Time format:**	• 12hr • 24hr

Settings	Description	Options
Bearing mode	Determines how bearing and heading data is displayed.	• True • Magnetic
System Datum	Determines the datum used by your MFD. This should be set to the same datum used by your paper charts.	List of available datums.
Variation	When set to **Auto** the MFD will automatically compensate for the naturally occurring offset of the Earth's magnetic field.	• Auto • Manual
Manual variation	When variation is set to **Manual** you can specify an offset.	• 30° W to 30° E

Advanced tab

Settings	Description	Options
Maximum RPM	You can select a maximum RPM for your engine dials, or allow the system to automatically configure the Maximum RPM.	• Auto • 3,000 RPM to 10,000 RPM
Custom RPM Red zone	You can create a custom Red zone for your RPM dials.	• 0 RPM to 10,000 RPM
Wind angle response	You can configure the rate at which Wind angle data is updated on the MFD. The Higher the response setting the faster the update rate will be.	• 1 to 15
Wind speed response	You can configure the rate at which Wind speed data is updated on the MFD. The Higher the response setting the faster the update rate will be.	• 1 to 15

Page settings tab

Settings	Description
Data Overlays	Enables configuration of Data overlays
Edit split ratio	Enables you to customize the position of the partitions in splitscreen app pages.

Chapter 13: Camera app

Chapter contents

- 13.1 Camera app overview on page 172
- 13.2 Opening the Camera app on page 174
- 13.3 Camera settings on page 176

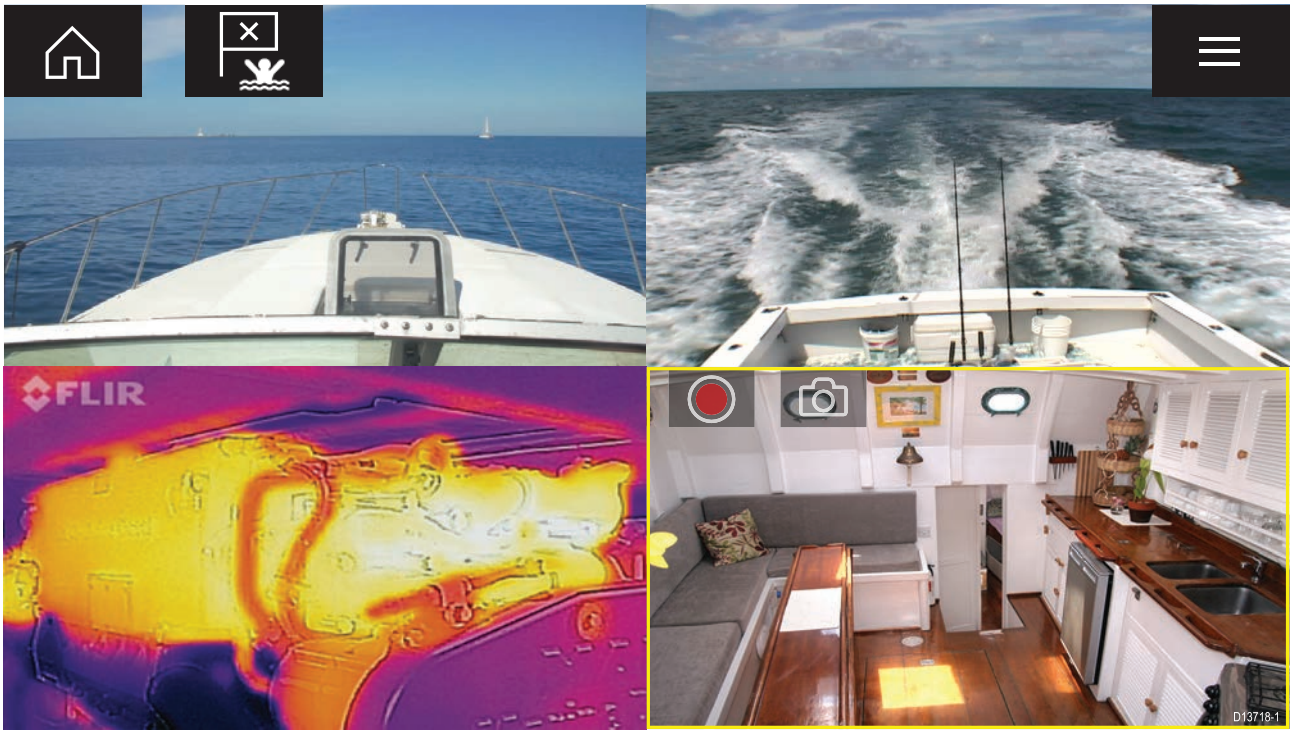
13.1 Camera app overview

IP (Internet Protocol) video feeds and analog camera feeds available via an Axiom™ Pro MFD can be viewed, recorded and played back using the Camera app. Examples of video feeds include: CCTV cameras and Thermal imaging cameras. It may be possible to view analog video feeds from other sources using a suitable Analog to IP video converter.

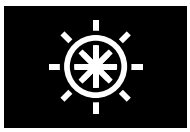
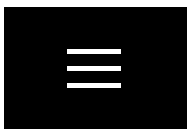
Up to 4 video feeds can be displayed simultaneously when using a splitscreen app page.

For each instance of the Camera app you can select which video feed you want to use, the selection will persist over a power cycle.

Axiom™ Pro MFDs will transmit a connected analog video feed over ethernet to enable the feed to be viewed on networked MFDs.



Camera app controls

Icon	Description	Function
	Home icon	Takes you to the Homescreen
	Waypoint / MOB	Place waypoint / activate Man overboard (MOB) alarm
	Pilot icon	Opens and closes the Pilot Sidebar
	Menu icon	Opens the app menu
	Record	Start recording (Replaced by Stop icon whilst recording.)

Icon	Description	Function
	Stop	Stop recording (Replaced Record icon when not recording.)
	Take photo	Take a photo of what is currently displayed in the active feed.

Pan, Tilt, Zoom (PTZ) camera controls

Extra controls are available for cameras that can pan, tilt or zoom.

Swiping your finger across the screen to pan or tilt the camera.

Use Pinch-to-Zoom to zoom in and out.

When not in use place the camera in the Parked position by selecting **Park camera** from the menu: **Menu** > **Park camera**

Select **Home** from the menu: **Menu** > **Home** to move the camera to its Home position.

13.2 Opening the Camera app

The Camera app is opened by selecting an app page from the Homescreen that includes the Camera app.

Pre-requisites:

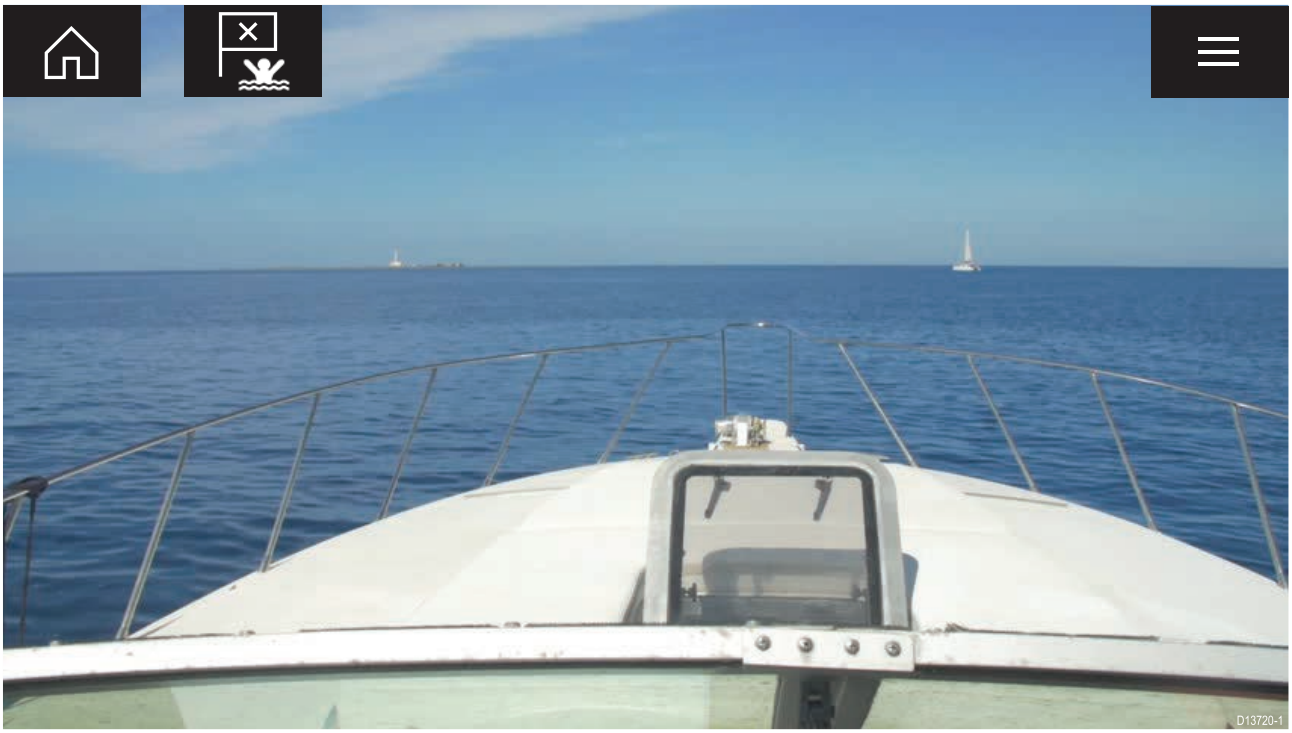
1. Ensure your camera is compatible by checking the latest details available on the Raymarine website against your IP camera's specification. If in doubt please contact an authorized Raymarine dealer for advice.
2. Ensure you have installed your camera in accordance with the documentation that was supplied with your camera.

The Camera app will open in 1 of 3 states:

Note: If the Camera app is opened soon after powering on your system, you may have to wait for the camera(s) to finish booting before the video feed is displayed.

Camera feed displayed

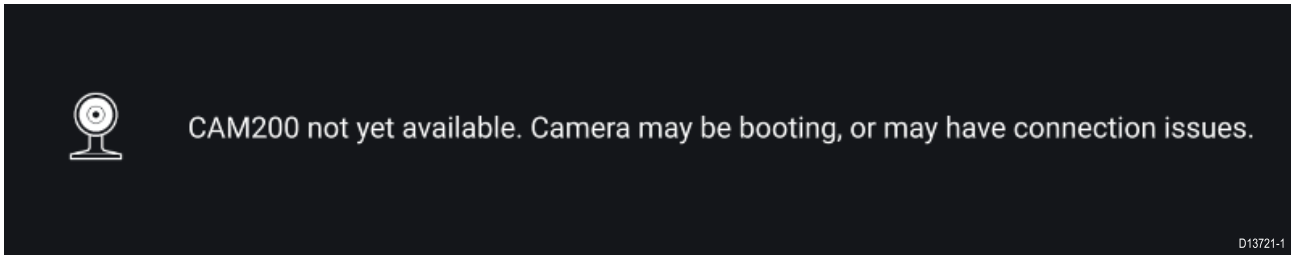
If your camera is powered up and operational then the Camera's video feed is displayed.



Camera not yet available

The camera '**xxx not yet available.....**' message is displayed if:

- a Camera app page is opened before the camera has finished booting up.
- connection to the camera is lost.

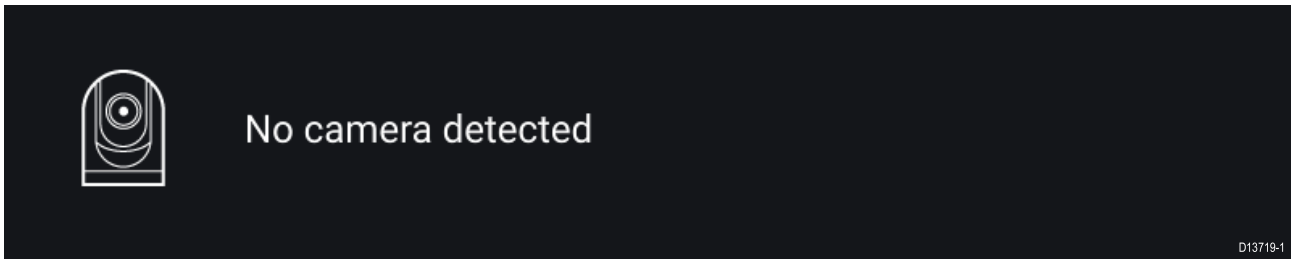


If the camera '**xxx not yet available.....**' message is displayed for more than 2 minutes, then your MFD cannot connect to your camera. Ensure network and power connections to your camera and MFD are correct and free from damage and then power cycle your system. If the camera feed is still not displayed, refer to your equipment's installation documentation for further troubleshooting information.

No camera detected

The '**No camera detected**' message is displayed if:

- a Camera app page is opened for the first time and no compatible camera is connected.
- a Camera app page is opened for the first time before the camera has finished booting up.



If the '**No camera detected**' message is displayed for more than 2 minutes, then your MFD cannot connect to your camera. Ensure network and power connections to your camera and MFD are correct and free from damage and then power cycle your system. If the camera feed is still not displayed, refer to your equipment's installation documentation for further troubleshooting information.

Selecting a video feed

You can change the video feed that is displayed in the Camera app.

From the Camera app menu, select the camera icon for the camera that you want to display.

13.3 Camera settings

The Settings menu provides access to the Camera app's features and functions. The options available in the Settings menu are dependent on your system configuration and connected Cameras.

Image tab

Settings	Description	Options
Active feed	On cameras with more than 1 payload you can select which feed to display in the Camera app.	• Thermal MSX • Thermal • Visible
Palette	Various color palettes are available to suit different conditions or your personal preference.	List of color palettes.
Light	For cameras that include a light, such as the AX8, use this setting to switch the camera's light on and off.	• On • Off
Scene	The Scene presets provide settings that have been optimized for different running conditions.	• Day • Night • Docking • High contrast
Contrast	Provides Contrast adjustment.	• 0% to 100%
Brightness	Provides Brightness adjustment.	• 0% to 100%
Color	Provides Color adjustment.	• 0% to 100%
Flip image vertical	Flips the camera image upside down, suitable for Ball-down installations.	• On • Off
Flip image horizontal	Flips the camera image to provide a mirror image, suitable for rear view installations.	• On • Off

Camera setup tab

Settings	Description	Options
Standby	Activates or places your camera in standby.	• On • Off
Camera name	Enables you to provide your camera with a memorable/unique name.	Displays the onscreen keyboard.
Icon	Allows you to select the icon to be used for the camera.	List of icons.
On-screen icons	Sets the level for the camera's built-in onscreen icons	• None • Minimal • All
Heater	Enables and disables he camera's built-in heater used to de-mist the camera lens.	• On • Off

Photo & Video recording tab

Settings	Description	Options
Save files to:	Determines the save location for photos and video recordings. **Note: External SD 1** and **USB Media** are available when using the RCR-SDUSB Accessory.	• SD 1 • External SD 1 USB Media

ClearCruise tab

Settings	Description	Options
Highlight detected objects	Uses proprietary ClearCruise™ technology to highlight and track objects detected in the water.	• On • Off
Beep on detection	When enabled the MFD will beep when an object is detected.	• On • Off

Camera motion tab

Settings	Description	Options
Camera height above the waterline	To ensure correct alignment of the camera for tracking purposes the height the camera has been installed at, above the waterline, must be set.	• 0ft to 99ft
Set forward position	Allows you to adjust the Forward position for you camera Adjust the camera so that it is point in forward and select **Save** to set the forward position.	Displays the forward alignment picture
Man overboard	Enables and disables automatic tracking of a MOB alarm. The most recent target is tracked.	• On • Off
Dangerous AIS targets	Enables and disables automatic tracking of Dangerous AIS targets. The most recent target is tracked.	• On • Off
Dangerous MARPA targets	Enables and disables automatic tracking of Dangerous Radar targets. The most recent target is tracked.	• On • Off
Enable scan	Enables and disables Surveillance mode. Surveillance mode pans the camera left to right continuously to the specified speed	• On • Off
Scan width	Determines how far the camera pans from left to right when in Surveillance mode.	• Narrow • Medium • Wide
Scan speed	Determines the speed at which the camera pans from left to right when in Surveillance mode.	• Slow • Medium • Fast

Chapter 14: Audio app

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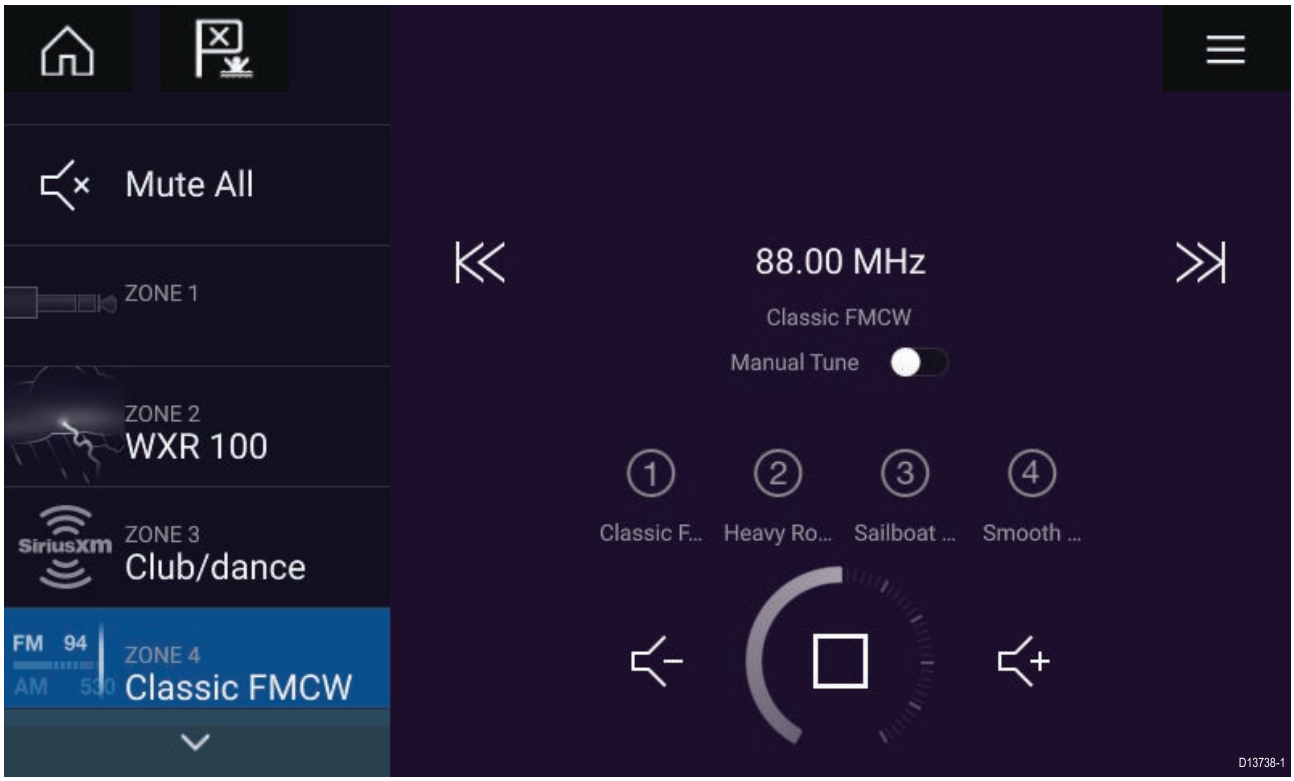
- 14.2 Opening the Audio app on page 183
- 14.3 Getting started on page 185
- 14.4 Audio app menu options on page 187

14.1 Audio app overview

The Audio app can be used to control a compatible NMEA 2000 entertainment system that is connected to the same SeaTalkng ® network.

The Audio app can be displayed in Fullscreen and half screen portrait app pages.



If more than 1 compatible Entertainment system is present on the network then the first system to obtain a network connection will be controlled by the Audio app. Only the Entertainment system that you want to control should be connected to the network.

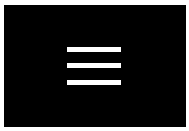
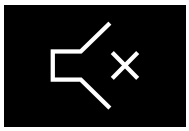
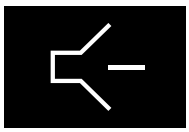
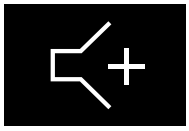
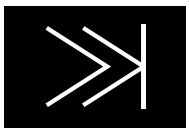
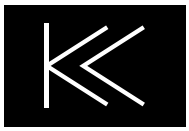
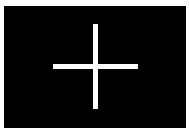
Compatible entertainment systems

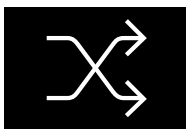
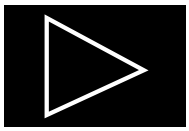
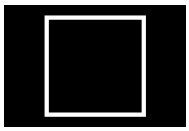
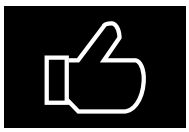
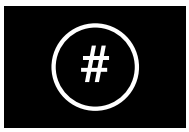
The table below shows compatible NMEA 2000 entertainment systems, that have been approved for use with the Audio app.

Manufacturer	Raymarine model number	Raymarine part number
Rockford Fosgate	RMX8DH	E70394
Rockford Fosgate	RMX8BB	E70395
Rockford Fosgate	RMX5	E70396
Rockford Fosgate	RMX2	E70397
Rockford Fosgate	RMX1R	A80383
Rockford Fosgate	RMX0	E70398
Fusion	650 / 600	N/A
Fusion	750 / 700*	N/A
Fusion	BB100 / BB300	N/A
Fusion	RA70 / RA205	N/A

Note: * CAN only connection, ethernet connection not supported.

Audio app controls

Icon	Description	Function
	Home icon	Takes you to the Homescreen.
	Waypoint / MOB	Place waypoint / activate Man overboard (MOB) alarm.
	Pilot icon	Opens and closes the Pilot Sidebar
	Menu icon	Opens the app menu.
	Power Off	Powers off the Entertainment system.
	Mute All	Mutes all audio zones.
	Volume Down	Decreases volume for current zone.
	Volume Up	Increases volume for current zone.
	Forwards	• Skip to the next track (USB and Bluetooth) • Seek/Search Forward (Radio)
	Backwards	• Skip back to beginning of current track (USB and Bluetooth) • Seek/Search Backward (Radio)
	Manual Tune	• On (switches Forwards and Backwards icons with Manual Tune icons) • Off
	Tune Up	Manually searches up for radio stations/channels.
	Tune Down	Manually searches down for radio stations/channels.

Icon	Description	Function
	Repeat	• Off • Repeat Track • Repeat All
	Shuffle	• On • Off
	Play	Select to commence playback.
	Pause	Select to Pause playback.
	Stop	Select to Stop (Mute) Radio devices.
	Like	Like a track (Pandora only).
	Dislike	Dislike a track (Pandora only).
	Radio presets	Save your favorite radio stations/channels to 4 preset buttons. Press and hold to save, press once to change to saved station/channel.

14.2 Opening the Audio app

The Audio app is opened by selecting an app page from the Homescreen that includes the Audio app.

Pre-requisites:

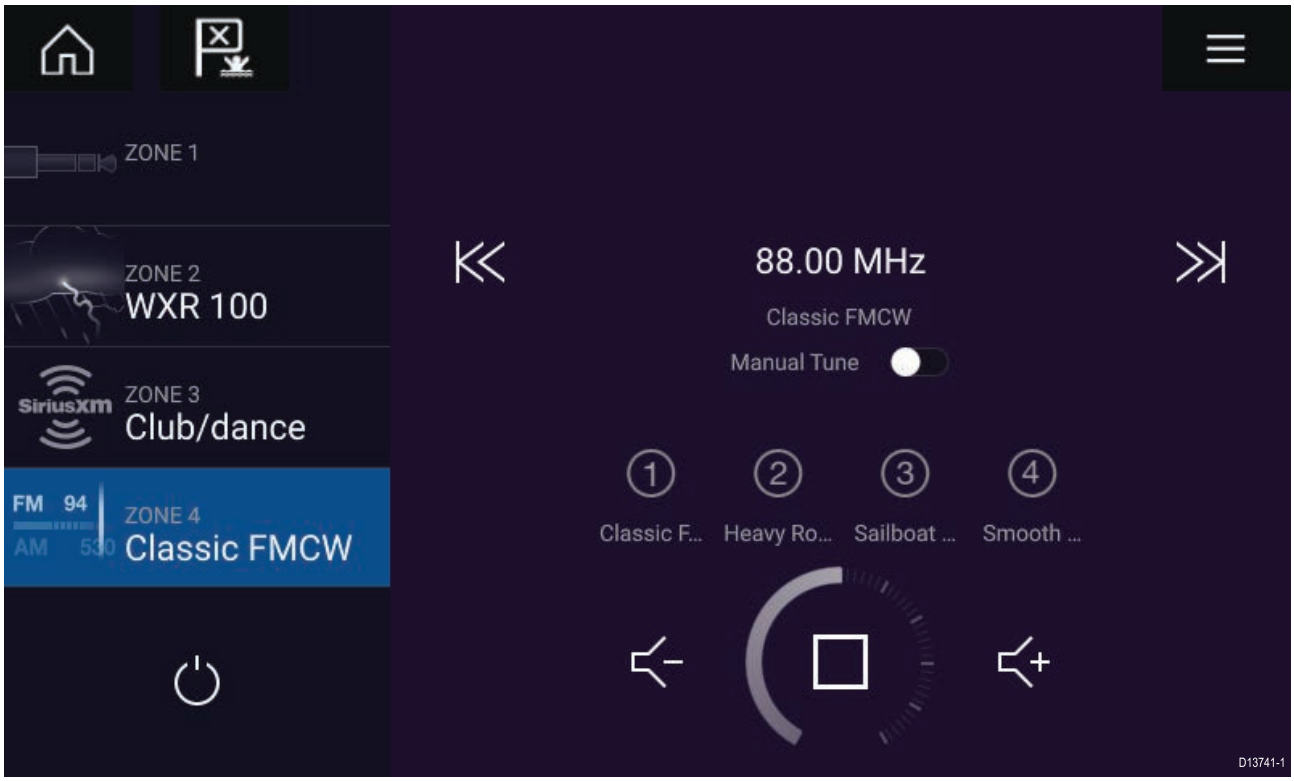
1. Ensure your Entertainment system is compatible by checking the latest details available on the Raymarine website. If in doubt please contact an authorized Raymarine dealer for advice.
2. Ensure you have installed your Entertainment system in accordance with the documentation that was supplied with the system.

The Audio app will open in 1 of 3 states:

Note: If the Audio app is opened soon after powering on your MFD, then the '**No audio device found**' message may be displayed whilst the network is being established.

Audio app displayed

If your Entertainment system is powered up and operational then the Audio app is displayed and can be used to control your system.

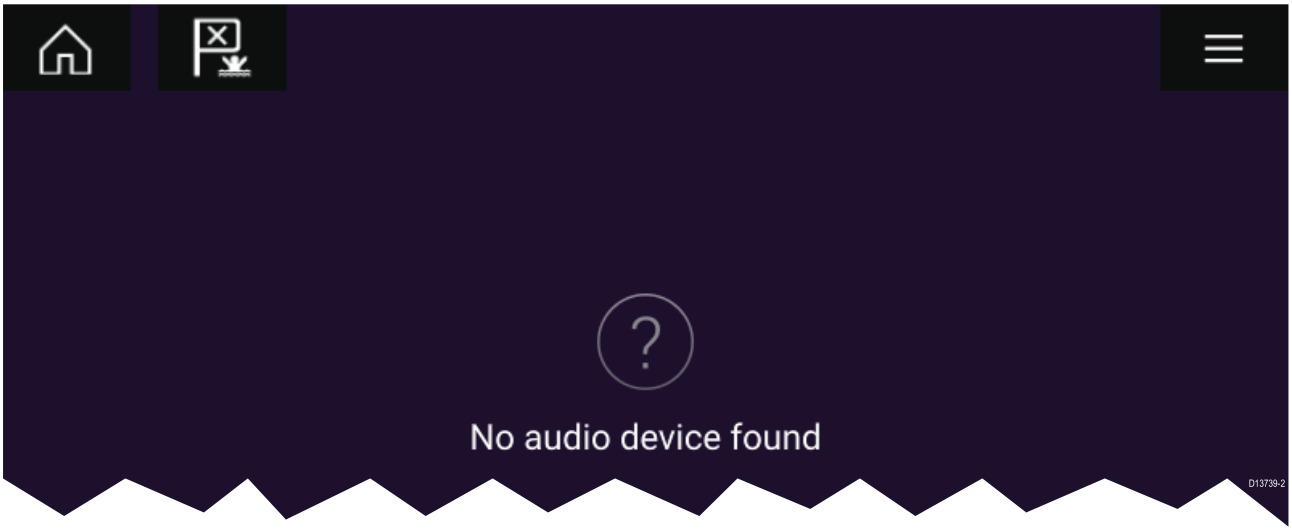


Entertainment system powered off

If the Entertainment system is powered off then the Power icon is displayed. Selecting the **Power icon** will switch your Entertainment system on.

No audio devices found

If the '**No audio device found**' message is displayed for more than 10 seconds, then your MFD cannot connect to your Entertainment system. Ensure network and power connections to your Entertainment system and MFD are correct and free from damage and then power cycle your system. If the Entertainment system is still not displayed then refer to your equipment's installation documentation for further troubleshooting information.



14.3 Getting started

Selecting an audio source

1. Select the audio source you want to listen to from the app **Menu**.

   Before you can select an audio source from your MFD, the source must already be available to your Entertainment system's main control unit ("head unit").

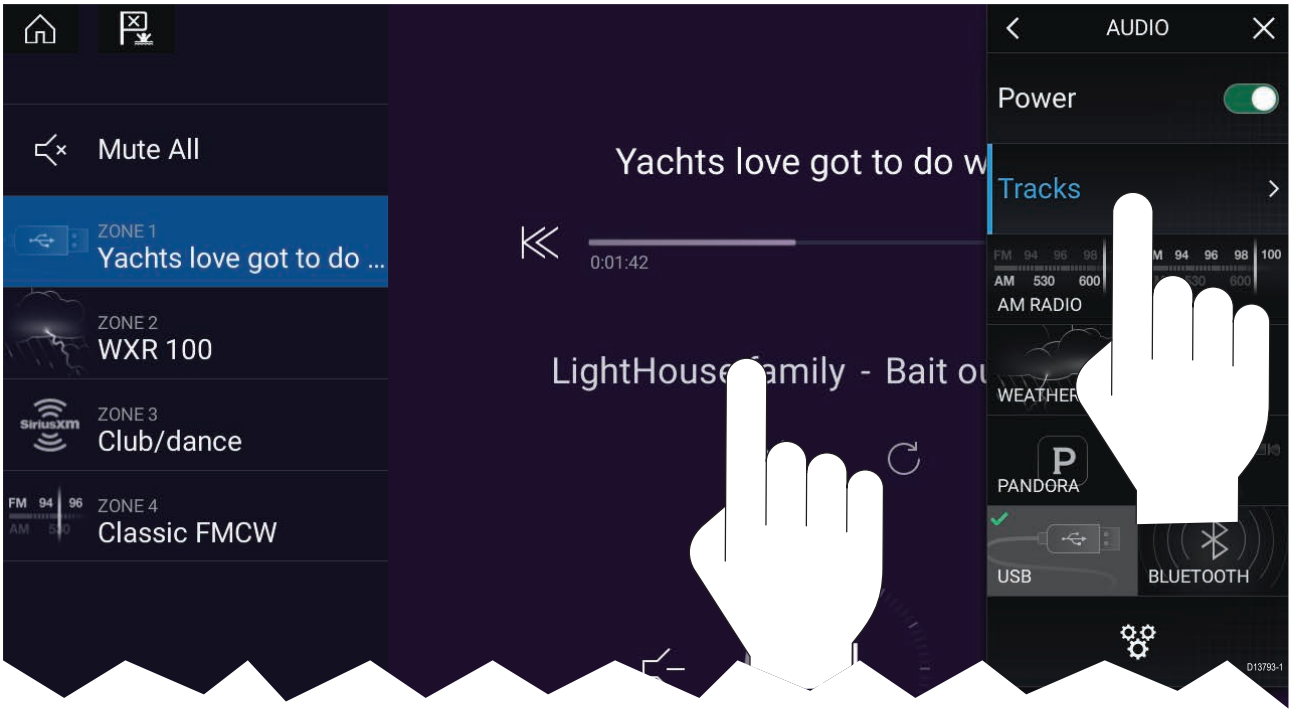
Muting and unmuting

1. To mute the audio for all zones, select **Mute All**, located on the right of the screen.
2. To Unmute an audio zone select **Unmute**.

   *If **Mute All** was selected then each zone will need to be unmuted individually.*

Browsing for tracks

You can browse USB and Bluetooth devices for tracks.



With the relevant USB or Bluetooth device selected as the audio source:

1. Select **Tracks** from the Menu.
   The file browser is displayed.
2. Alternatively, you can select the current track's details to open the file browser.
3. Browse to the file you want to play.

   Wait for the file list to finish loading before selecting a track.

4. Select the track you want to play.

Browsing for stations/channels

You can browse available Radio stations/channels.

With the relevant Radio device selected as the audio source:

1. Select **Stations** or **Channels** from the Menu.
   The station or channel browser is displayed.
2. Browse to and select the station or channel you want to listen to.

Saving presets

Up to 4 presets can be saved for each Radio audio source (i.e.: AM Radio, FM Radio, Weather, SiriusXM and Pandora).

1. Whilst listening to the station you want to save, press and hold the relevant Preset button for approximately 3 seconds.

14.4 Audio app menu options

Menu item	Description	Options
Tracks	Enables you to browse for tracks on USB/Bluetooth devices connected to your Entertainment system	• Folder • Play Queue
Channels	Provides a list of available SiriusXM channels	Channel list
Stations	Provides a list of available Pandora stations	Station list
Audio sources	Enables you to select an audio source connected to your Entertainment system	• AM Radio • FM Radio • Weather • Sirius XM • Pandora • Auxiliary • USB • Bluetooth
Power	Enables you to Power your Entertainment system on and off	• On • Off
	Displays the Settings page	• Audio setting • Page settings

Audio app settings menu

Audio settings tab

Menu item	Description	Options
Crossover (Low pass filter):	Allows you to change the crossover frequency	• 60 Hz • 80 Hz • 120 Hz • APF
Crossover (High pass filter):	Allows you to change the crossover frequency	• 60 Hz • 80 Hz • 120 Hz • APF

Page settings tab

Settings	Description
Data Overlays	Enables configuration of Data overlays
Edit split ratio	Enables you to customize the position of the partitions in splitscreen app pages.

Chapter 15: Mobile app support

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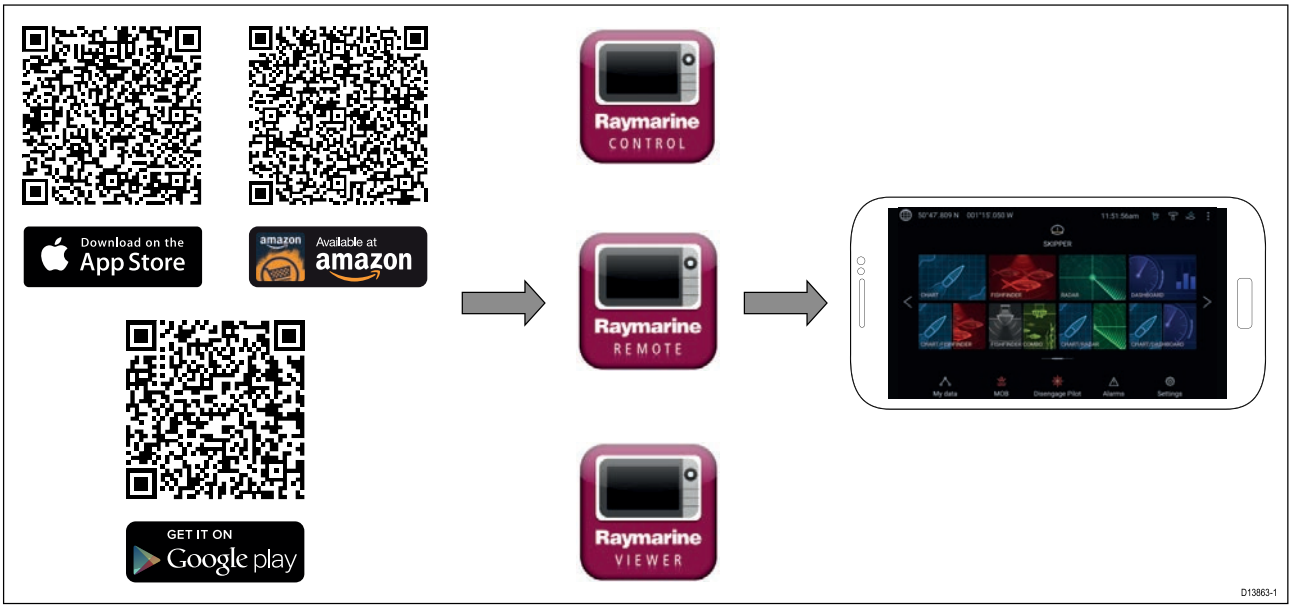
- 15.1 Raymarine mobile apps on page 190
- 15.2 Connecting a mobile device to your MFD on page 191
- 15.3 Controlling your MFD using RayControl on page 192
- 15.4 Controlling your MFD using RayRemote on page 193
- 15.5 Viewing your MFD screen using RayView on page 194
- 15.6 Navionics plotter sync on page 195

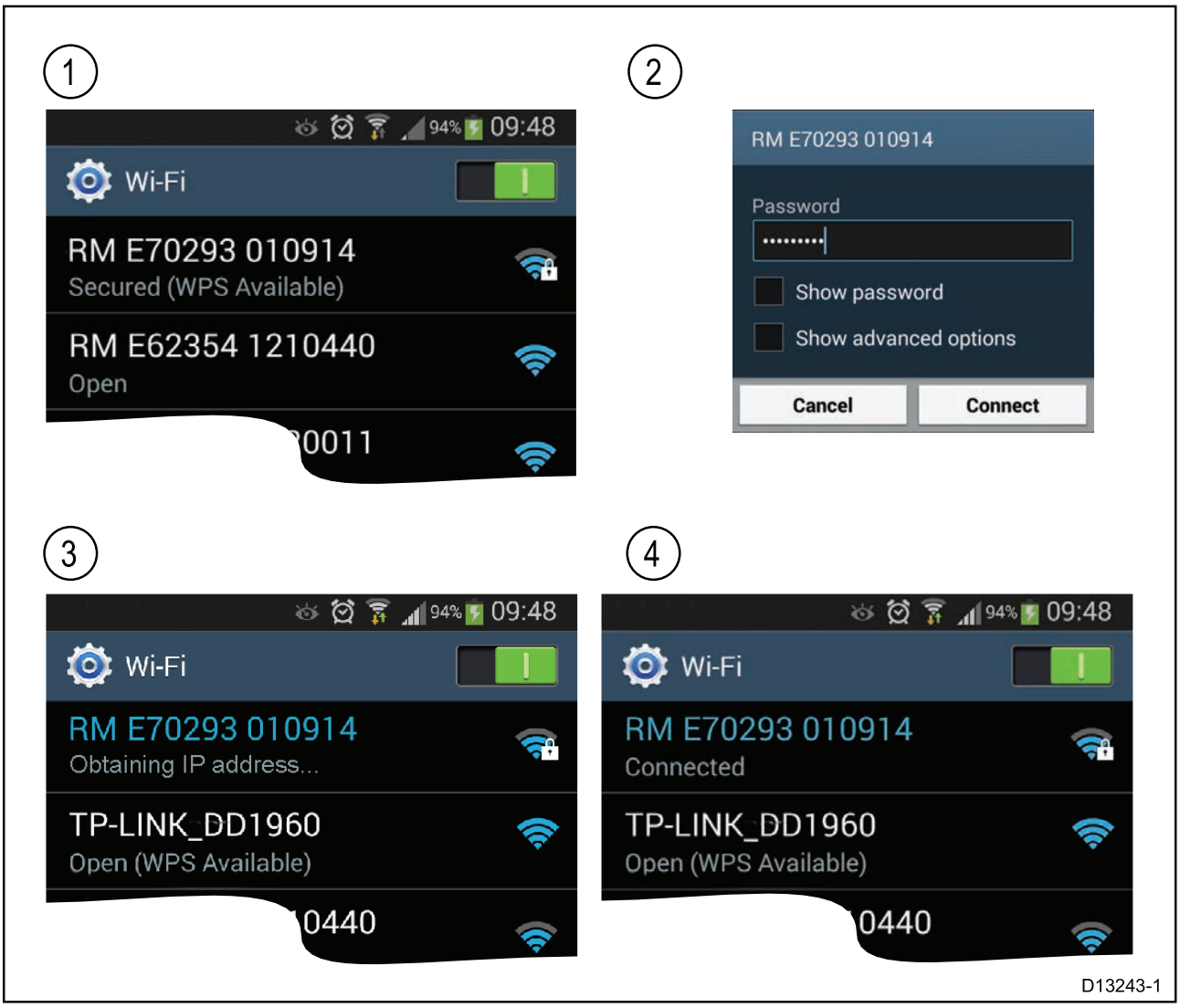
15.1 Raymarine mobile apps

Please check the relevant app store for Raymarine mobile apps.



Note: When updating your MFD software ensure that you check for updates to your mobile apps.

15.2 Connecting a mobile device to your MFD



1. Open the Wi-Fi settings on your mobile device and select your product's Wi-Fi Name / SSID from the list of available networks.

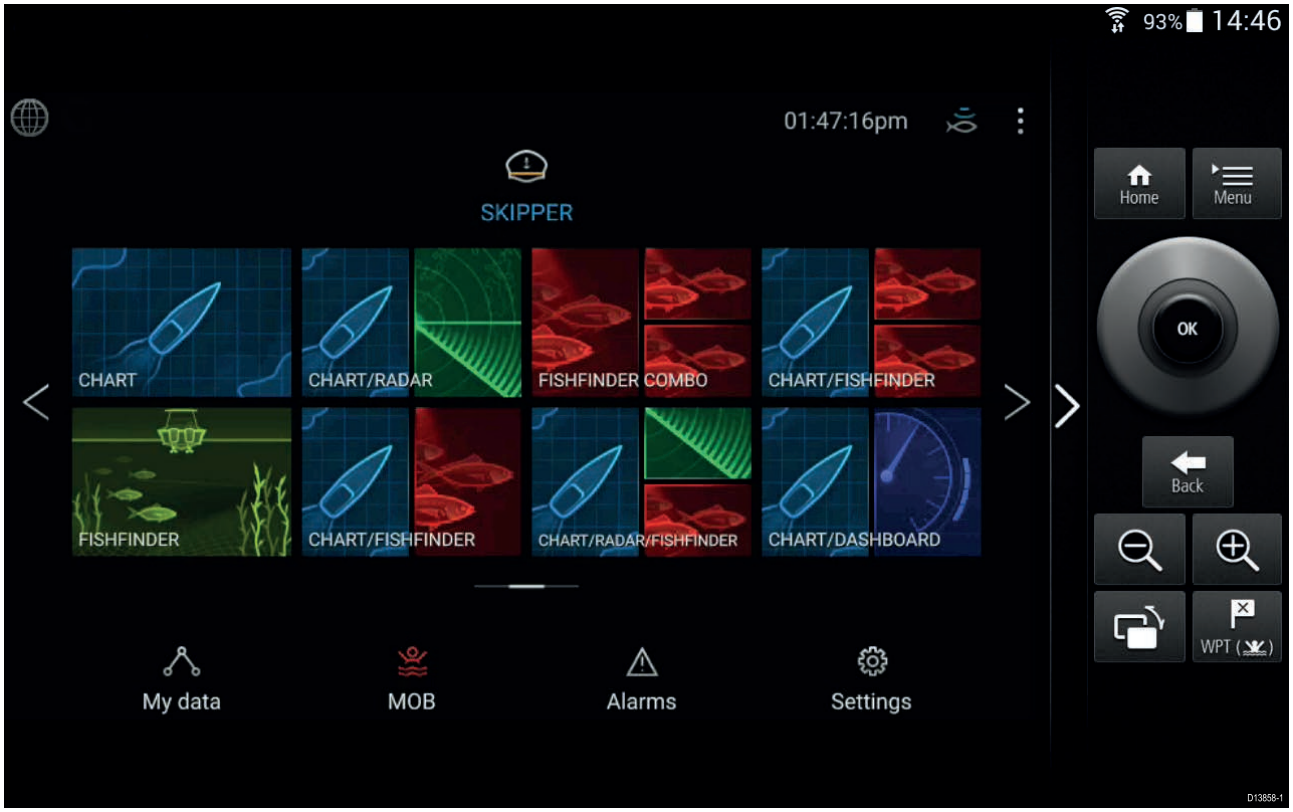
   You can establish your MFD's SSID and Passphrase by selecting ***Configure*** *from the* ***This display*** *tab of the* ***Settings*** *menu:* ***Homescreen > Settings > This display > Configure*** *.*

2. Enter your product's Wi-Fi Passphrase and select **Connect**.
3. Your mobile device will now connect to your MFD.
4. The network status will change to **Connected**.

15.3 Controlling your MFD using RayControl

The RayControl app allows you to remotely view and control your MFD from your mobile device.

1. Download and install RayControl from your app store.
2. Ensure your mobile device is connected to your MFD's Wi-Fi.
3. Open the RayControl app.
4. Control your MFD using your mobile device's touchscreen in the same way you would interact with the MFD's touchscreen.
5. You can also use a representation of an Axiom Pro's or RMK remote's physical buttons by sliding the controls sidebar out from the right of the screen or on smaller devices selecting **Remote Control**.



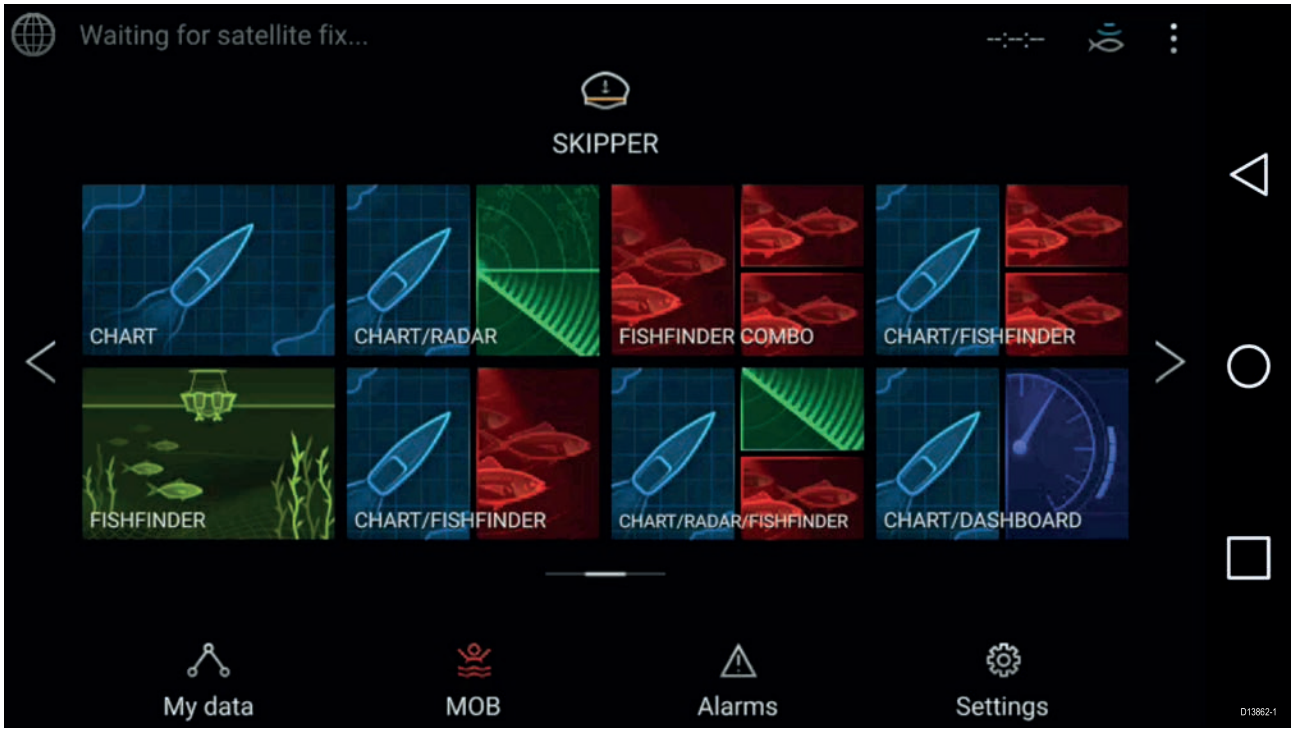
15.4 Controlling your MFD using RayRemote

The RayRemote app allows you to remotely control your MFD from your mobile device.

1. Download and install RayRemote from your app store.
2. Ensure your mobile device is connected to your MFD's Wi-Fi.
3. Open the RayRemote app.
4. Control your MFD on your mobile device using the on-screen equivalents of the physical buttons found on the Axiom Pro MFD or RMK remote keypad.

15.5 Viewing your MFD screen using RayView

The RayView app allows you to remotely view your MFD from your mobile device.



1. Download and install RayView from your app store.
2. Ensure your mobile device is connected to your MFD's Wi-Fi.
3. Open the RayView app.
4. Your mobile device's screen will now mirror your MFD's screen.

15.6 Navionics plotter sync

You can use the Navionics boating mobile app to:

- transfer waypoints and routes between your MFD and mobile device.
- update, activate and renew your Navionics cartography

Chapter 16: Troubleshooting

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- 16.1 Troubleshooting on page 198
- 16.2 Diagnostic product information on page 199
- 16.3 Power up troubleshooting on page 200
- 16.4 Radar troubleshooting on page 202
- 16.5 GNSS troubleshooting on page 204
- 16.6 Sonar troubleshooting on page 205
- 16.7 Camera troubleshooting on page 208
- 16.8 Wi-Fi troubleshooting on page 210
- 16.9 Wireless display troubleshooting on page 213
- 16.10 Data troubleshooting on page 214
- 16.11 Touchscreen troubleshooting on page 215

16.1 Troubleshooting

The troubleshooting information provides possible causes and corrective action required for common problems associated with installation and operation of your product.

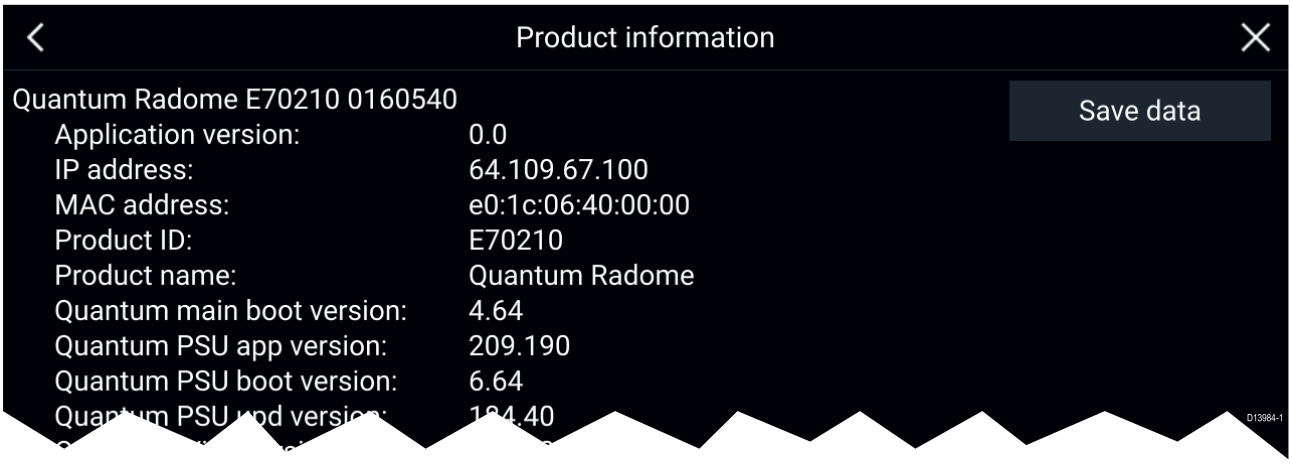
Before packing and shipping, all Raymarine products are subjected to comprehensive testing and quality assurance programs. If you do experience problems with your product this section will help you to diagnose and correct problems in order to restore normal operation.

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.

16.2 Diagnostic product information

Diagnostic product information can be viewed from your MFD, for products networked using SeaTalkhs ® and SeaTalkng ® / NMEA 2000.

To view diagnostic product information, select **View all product info** from the **Diagnostics** pop over menu: **Homescreen** > **Settings** > **Network** > **Diagnostics** > **View all product info**.



Saving product information

Diagnostic product information can be saved to MicroSD card for off boat records.

With the Diagnostics product information page displayed:

1. Select **Save data**.
2. Select the storage device you want to save the data to.
3. Enter a filename.
4. Select **Save**.
5. Select **OK**.

A JSON (JavaScript Object Notation) file will be saved, using your chosen filename, to the selected storage device.

You may view the file using a compatible PC application (e.g.: Microsoft Word).

16.3 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 fully inserted into the unit 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 unit 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.
Power source insufficient	With the product under load, using a multi-meter, check the power supply voltage as close to the unit as possible to establish actual voltage when the current is flowing. (Refer to the *Technical Specification* section of your product's installation instructions for power supply requirements.)

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.

Warning: Factory reset warning

Performing a factory reset will restore all system and app settings to factory defaults and erase all user data (such as waypoints, routes, tracks, camera recordings and photos).

Performing a power on reset — Axiom™

1. Within 60 seconds of powering on your MFD, swipe your finger from right to left (opposite direction to powering on) across the **Power** button swipe area 5 times.
   Recovery options are displayed.
2. Swipe your finger from right to left twice to highlight **Wipe data/factory reset**.
3. Swipe your finger from left to right once to accept.
4. Swipe your finger from right to left once to highlight **Yes**.
5. Swipe your finger from left to right once to restore your MFD to factory default settings.

6. When **Data wipe complete** is displayed, swipe your finger from left to right to reboot your MFD.

Performing a power on reset - Axiom Pro

1. Within 60 seconds of powering on your MFD, press and hold the **Back** and **Switch active** buttons until the screen goes black and the Raymarine logo appears.

   The MFD will boot into Recovery mode.
2. Use the directional controls to highlight **Wipe data/factory reset**.
3. Press **Ok**.
4. Select **Yes** to restore your MFD to factory default settings.
5. When 'Data wipe complete' is displayed, select **Reboot system** now.

Performing a Power on Reset - eS and gS Series MFDs

1. Power the MFD off.
2. Power the MFD back on.
3. When the Raymarine logo appears press and hold the **Power** button, until the Initialization screen is displayed.
4. Press the Waypoint button to restore your MFD to factory default settings.

The MFD will reboot when complete.

16.4 Radar troubleshooting

No connection can be made to the scanner

Possible Causes	Possible Solution
Radar powered down	• If the scanner product has shut down, power it up by opening the Radar app and selecting the **Power** icon. • A Quantum Radar will shut down after 30 minutes if neither a wired (RayNet) , nor a wireless (Wi-Fi) connection can be made to a MFD.
Radar not transmitting	• Select **Transmit** for the relevant Radar scanner from the Radar app.
Missing or incorrect Wi-Fi credentials	• If using a wireless (Wi-Fi) connection, check that you have entered the correct SSID and passcode for your Radar. Both the SSID and passcode are provided on the Radar scanner's packaging, and are also shown on the serial number label on the underside of the product.
Damaged or disconnected Power cable / RayNet cable	1. Check that the cable connectors are fully inserted and locked in position. 2. Check the power supply cable and connectors for signs of damage or corrosion, replace if necessary. 3. With the product turned on, try flexing the cable near to the display connector to see if this causes the product to re-boot/loose power, replace if necessary. 4. Check the vessel's battery voltage, 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 (this can cause the product to reset/turn off), replace if necessary. 6. Check condition of relevant breakers and fuses, replace if necessary. If the breaker keeps tripping or fuses keep blowing, contact a Raymarine authorized dealer for assistance.
Open Array power in Off position	• Ensure Open Array power switch is in the On position.
Software mismatch between equipment may prevent communication	• Ensure all Raymarine products contain the latest available software, check the Raymarine website: www.raymarine.com/software for software compatibility.

Poor image quality

Possible Causes	Possible Solution
High network bandwidth usage may interfere with a Quantum Radar connected wirelessly	• Disconnect Wireless display and close the Wireless display page. • Disconnect other devices connected wirelessly.

Displayed bearing is different to the true bearing

Possible Causes	Possible Solution
Bearing alignment adjustment required	• Carry out the Bearing Alignment procedure.

Radar will not initialize (Voltage control module (VCM) stuck in “sleep mode”

Possible Causes	Possible Solution
Intermittent or poor power connection	Check power connection at VCM. (Voltage at input = 12 / 24 V, Voltage at output = 40 V)

16.5 GNSS troubleshooting

No fix displayed

Possible causes	Possible solutions
Geographic location or prevailing conditions preventing satellite fix.	Check to see if a fix is obtained in better conditions or another geographic location.
GNSS connection fault.	Ensure that external GNSS connections and cabling are correct and fault free.
External GNSS receiver in poor location e.g.: • Below decks. • Close proximity to transmitting equipment such as VHF radio.	Ensure GNSS receiver has a clear view of the sky.
GNSS installation problem.	Refer to the installation instructions supplied with your product.

Note: A GNSS Status screen is accessible from the display. This provides satellite signal strength and other relevant information.

16.6 Sonar troubleshooting

Scrolling image is not being displayed

Possible causes	Possible solutions
Sonar disabled	Enable **Ping** from the Sonar app's sounder tab: **Menu** > **Settings** > **Sounder** > **Ping**.
Incorrect transducer selected	Check that the correct transducer is selected in the Sonar app's Transducer tab: **Menu** > **Settings** > **Transducer** > **Ping**.
Damaged cables	1. Check that the transducer cable connector is fully inserted and locked in position. 2. Check the power supply cable and connectors for signs of damage or corrosion, replace if necessary. 3. With the unit turned on, try flexing the cable near to the display connector to see if this causes the unit to re-boot/loose power, replace if necessary. 4. Check the vessel's battery voltage, 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 (this can cause the Fishfinder applications to stop scrolling or the unit to reset/turn off), replace if necessary.
Damaged or fouled transducer	Check the condition of the transducer ensuring it is not damaged and is free from debris/fouling, clean or replace as necessary.
Wrong transducer fitted	Check product and transducer documentation and ensure that the transducer is compatible with your system.
External sonar module: SeaTalkhs / RayNet network problem.	• Check that the unit is correctly connected to the MFD or network switch. Check all connections ensuring connections are secure, clean and free from corrosion, replace if necessary.
External sonar module: Software mismatch between equipment may prevent communication.	Ensure all Raymarine products contain the latest available software, check the Raymarine website: www.raymarine.com/software for software compatibility.

No depth reading / lost bottom lock

Possible causes	Possible solutions
Transducer location	Check that the transducer has been installed in accordance with the instructions provided with the transducer.
Transducer angle	If the transducer angle is too great the beam can miss the bottom, adjust transducer angle and recheck.
Transducer kicked-up	If the transducer has a kick-up mechanism, check that it has not kicked up due to hitting an object.
Power source insufficient	With the product under load, using a multi-meter, check the power supply voltage as close to the unit as possible to establish actual voltage when the current is flowing. (Check your product's Technical specification for power supply requirements.)
Damaged or fouled transducer	Check the condition of the transducer ensuring it is not damaged and is free from debris / fouling.

Possible causes	Possible solutions
Damaged cables	1. Check the unit's connector for broken or bent pins. 2. Check that the cable connector is fully inserted into the unit and that the locking collar is in the locked position. 3. Check the cable and connectors for signs of damage or corrosion, replace if necessary. 4. With the unit turned on, try flexing the power cable near to the display connector to see if this causes the unit to re-boot/loose power, replace if necessary. 5. Check the vessel's battery voltage, the condition of the battery terminals and power supply cables, ensuring connections are secure, clean and free from corrosion, replace if necessary. 6. With the product under load, using a multi-meter, check for high voltage drop across all connectors/fuses etc (this can cause the Fishfinder applications to stop scrolling or the unit to reset/turn off), replace if necessary.
Vessel speed too high	Slow vessel speed and recheck.
Bottom too shallow or too deep	The bottom depth may be outside of the transducers depth range, move vessel to shallower or deeper waters as relevant and recheck.

Poor / problematic image

Possible causes	Possible solutions
Targets will appear differently if your vessel is stationary (e.g.: fish will appear on the display as straight lines).	Increase vessel speed.
Scrolling paused or speed set too low	Unpause or increase sonar scrolling speed.
Sensitivity settings may be inappropriate for present conditions.	Check and adjust sensitivity settings or perform a Sonar reset.
Damaged cables	1. Check the unit's connector for broken or bent pins. 2. Check that the cable connector is fully inserted into the unit and that the locking collar is in the locked position. 3. Check the cable and connectors for signs of damage or corrosion, replace if necessary. 4. With the unit turned on, try flexing the power cable near to the display connector to see if this causes the unit to re-boot/loose power, replace if necessary. 5. Check the vessel's battery voltage, the condition of the battery terminals and power supply cables, ensuring connections are secure, clean and free from corrosion, replace if necessary. 6. With the product under load, using a multi-meter, check for high voltage drop across all connectors/fuses etc (this can cause the Fishfinder applications to stop scrolling or the unit to reset/turn off), replace if necessary.

Possible causes	Possible solutions
Transducer location	• Check that the transducer has been installed in accordance with the instructions provided with the transducer. • If a transom mount transducer is mounted too high on the transom it may be lifting out of the water, check that the transducer face is fully submerged when planing and turning.
Transducer kicked-up	If the transducer has a kick-up mechanism, check that it has not kicked up due to hitting an object.
Damaged or fouled transducer	Check the condition of the transducer ensuring it is not damaged and is free from debris / fouling.
Damaged transducer cable	Check that the transducer cable and connection is free from damage and that the connections are secure and free from corrosion.
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.
Unit power supply fault	Check the voltage from the power supply, if this is too low it can affect the transmitting power of the unit.

16.7 Camera troubleshooting

Video not displayed

Possible causes	Possible solutions
Incorrect power up sequence	Your MFD needs to be powered up before your camera to enable the MFD to provide the camera with a valid IP address.
Camera not compatible.	Ensure the camera feed and network settings are compatible: • Camera feed should be set to 720p max. • Network should be set to obtain network address automatically (DHCP). • Anonymous login should be enabled.
Too many IP feeds on network.	Displaying multiple feeds on multiple MFDs simultaneously may cause some feeds to not be displayed. Try viewing less feeds.
Problem with the camera connections.	1. Check the unit's connector for broken or bent pins. 2. Check that the cable connector is fully inserted into the unit and that the locking collar is in the locked position. 3. Check the cable and connectors for signs of damage or corrosion, replace if necessary. 4. With the unit turned on, try flexing the power cable to see if this causes the unit to re-boot/loose power, replace if necessary.
Problem with power supply to the camera or thermal camera's JCU (if used as the primary controller)	• Check the power connections to the camera, JCU, and PoE injector (if used). • Ensure that the power switch / breaker is on. • Check the fuse / breaker state.
Camera is in Standby mode.	Use the camera controls (either the Camera app or a Thermal camera's JCU) to "wake" the camera from standby.

PTZ cameras — Erratic or unresponsive controls

Possible causes	Possible solutions
Network problem.	• Check that the controller and camera are correctly connected to the network. • If used, check the status of the network switch. • Check that RayNet cables are free from damage.
Control conflict, e.g. caused by multiple users at different stations.	Ensure that no other controllers are in use at the same time.
Problem with the controller.	• Check power / network cabling to the controller and PoE injector, if used. • Check other controllers, if available.

Cannot switch between camera feeds

Possible causes	Possible solutions
Camera is not a dual payload model.	Only "dual payload" (dual lens) cameras support feed switching.

Noisy image

Possible causes	Possible solutions
Poor quality or faulty cabling.	• Ensure cable runs are no longer than they need to be. • Use only high quality shielded cable suitable for the marine environment.
Cable is picking up electromagnetic interference (EMI) from another device.	• Ensure you are using a high quality shielded cable. • Ensure proper cable separation, for example do not run data and power cables in close proximity with each other. • In certain conditions it may be necessary to fit suppression ferrites to cabling to eliminate interference.

Image too dark or too light

Possible causes	Possible solutions
Brightness set too low.	Check MFD brightness and adjust if necessary.
The contrast and / or brightness settings in the Camera app are set too low.	Check Camera brightness and contrast, adjust if necessary.
The Scene Mode is not appropriate for the current conditions.	When viewing a thermal camera feed, a particular environment may benefit from using a different Scene Mode setting. For example, a very cold background (such as the sky) could cause the camera to use a wider temperature range than appropriate. Adjust the Scene as appropriate.

Image freezes momentarily

Possible causes	Possible solutions
FFC (Flat Field Correction).	A Thermal camera's image will pause momentarily on a periodic basis during the Flat Field Correction (FFC) cycle. Just prior to the FFC, a small green square may appear in the upper left corner of the screen.

Image is inverted (upside down or mirror image)

Possible causes	Possible solutions
Vertical or Horizontal flip control incorrectly set	Check the image flip controls to ensure they are set correctly for your installation.

16.8 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 network

Possible cause	Possible solutions
Wi-Fi not currently enabled on devices.	Ensure Wi-Fi is enabled on both Wi-Fi devices and rescan available networks.
Some devices may automatically turn off Wi-Fi when not in use to save power.	Power cycle / reboot devices and rescan available networks.
Device not broadcasting.	1. Try to enable broadcasting of the device's network using the Wi-Fi settings on the device you are trying to connect to. 2. You may still be able to connect to the device, when it is not broadcasting, by manually entering the device's Wi-Fi Name / SSID and passphrase in the connection settings of the device you are trying to connect.
Devices out of range or signal being blocked.	Move devices closer together or, if possible remove the obstructions and then rescan available network.

Cannot connect to network

Possible cause	Possible solutions
Some devices may automatically turn off Wi-Fi when not in use to save power.	Power cycle/reboot devices and retry the connection.
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 Wi-Fi settings on the broadcasting device (the device that you are trying to connect to).
Incorrect network credentials	Ensure you are using the correct passphrase, the Wi-Fi network's passphrase can be found in the Wi-Fi settings on the broadcasting device (the device that you are trying to connect to).
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 devices so the structure is removed from the direct line of sight between the devices, or 2. If possible use a wired connection instead.
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. Change the Wi-Fi Channel of the device you are trying to connect to and retry the connection. You can use free Wi-Fi analyzer apps on your 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 2.4GHz frequency See list below of some common devices that use the 2.4GHz 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 drop outs or not being able to connect at all.	• Move devices closer together. • For fixed installations such as a Quantum Radar, enable the Wi-Fi connection on an MFD installed closer to the device.
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. Change the Wi-Fi Channel of the device you are trying to connect to and retry the connection. You can use free Wi-Fi analyzer apps on your smart device to help you choose a better channel (channel with least traffic). 2. 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 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. Change the Wi-Fi Channel of the device you are trying to connect to and retry the connection. You can use free Wi-Fi analyzer apps on your 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
Connected to the wrong network.	Ensure that your devices is connected to the correct network.
Device software incompatibility	Ensure both devices are running the latest available software.
It may be possible that the device has become defective	1. Try updating software to a later version, or 2. try reinstalling the software. 3. Obtain new replacement device.

Mobile application running slowly or not at all

Possible cause	Possible solutions
Raymarine app not installed	Install mobile app from relevant app store.
Raymarine app version not compatible with MFD software	Ensure mobile app and MFD software are latest available versions.
Mobile apps not enabled on MFD	Enable “Viewing only” or “Remote Control” as required in the Mobile Apps setting on your MFD.

16.9 Wireless display troubleshooting

Cannot connect to wireless display

Possible cause	Possible solutions
Some Miracast compatible but non certified devices may not be able to connect with Wi-Fi Sharing enabled.	Disable Wi-Fi Sharing on your MFD and retry connection.
WiFi Sharing has been enabled or disable since the wireless display was first connected.	Try power cycling devices and trying again. Depending on dongle used a factory reset may be required to establish a connection.
Missed confirmation on wireless display	Restart connection procedure and ensure you check the wireless display for confirmation dialogs.
Wireless display too far away	Try moving the wireless display closer to the MFD and retry connection.
Chromecast devices are not supported.	Purchase a Miracast compatible device.

Poor performance

Possible cause	Possible solutions
High video processing demand.	The Camera app, Raymarine mobile app connections can interfere with the wireless display performance as they use shared video processing resource. Try switching off video feeds and/or mobile app connections.
Wireless display too far away	Try moving the wireless display closer to the MFD and retry connection.

Wireless display disconnects

Possible cause	Possible solutions
Changing the Wi-Fi Sharing option on your MFD will cause the wireless display to disconnect.	Do not change Wi-Fi sharing options whilst connected to a wireless display. Wireless display may require factory reset to re-establish connection.
Quantum wireless pairing process will cause wireless display to disconnect.	Do not pair with a Quantum Radar whilst wireless display connection is active.
Wireless display too far away	Try moving the wireless display closer to the MFD and retry connection.

16.10 Data troubleshooting

Instrument, engine or other system data is unavailable at all displays

Possible causes	Possible solutions
Data is not being received at the display(s).	• Check transmitted data is compatible with your display. Refer to MFD supported PGN list. • Check the data bus (e.g. **SeaTalk ng**) wiring and connections.
Data source (e.g. instrument display or engine interface) is not operating.	• Check the source of the missing data (e.g. instrument display or engine interface). • Check power to the data bus.
Software mismatch between equipment may prevent communication.	• Check the Raymarine website and ensure all your Raymarine products have the latest software.

Instrument or other system data is missing from some but not all displays

Possible causes	Possible solutions
Network connection problem.	• Check that all required equipment is connected to the same network. • Check correct operation of network switch, if used. • Check network cabling is correct and free from damage.
Software mismatch between equipment may prevent communication.	Check all MFDs are using the same version of software.

16.11 Touchscreen troubleshooting

Touchscreen does not operate as expected.

Possible causes	Possible solutions
Touch lock is enabled.	Disable TouchLock, using the power button..
Screen is not being operated with bare fingers, for example gloves are being worn.	Bare fingers must make contact with the screen for correct operation. Alternatively you may use conductive gloves.
Saltwater deposits on the screen.	Carefully clean and dry the screen with a damp non-abrasive cloth.

Chapter 17: Technical support

Chapter contents

- 17.1 Raymarine product support and servicing on page 218
- 17.2 Learning resources on page 220

17.1 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 the menus within your product.

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.

Region	Telephone	E-mail
United Kingdom (UK), EMEA, and Asia Pacific	+44 (0)1329 246 932	emea.service@raymarine.com
United States (US)	+1 (603) 324 7900	rm-usrepair@flir.com

Web support

Please visit the "Support" area of the Raymarine website for:

- **Manuals and Documents** — http://www.raymarine.com/manuals
- **FAQ / Knowledgebase** — http://www.raymarine.com/knowledgebase
- **Technical support forum** — http://forum.raymarine.com
- **Software updates** — http://www.raymarine.com/software

Telephone and e-mail support

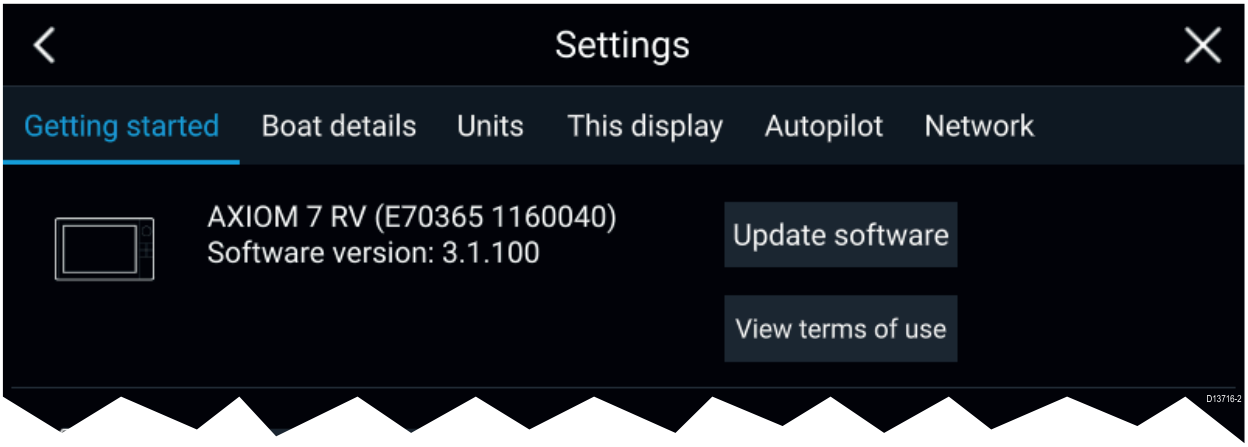
Region	Telephone	E-mail
United Kingdom (UK), EMEA, and Asia Pacific	+44 (0)1329 246 777	support.uk@raymarine.com
United States (US)	+1 (603) 324 7900 (Toll-free: +800 539 5539)	support@raymarine.com
Australia and New Zealand	+61 2 8977 0300	aus.support@raymarine.com (Raymarine subsidiary)
France	+33 (0)1 46 49 72 30	support.fr@raymarine.com (Raymarine subsidiary)
Germany	+49 (0)40 237 808 0	support.de@raymarine.com (Raymarine subsidiary)
Italy	+39 02 9945 1001	support.it@raymarine.com (Raymarine subsidiary)
Spain	+34 96 2965 102	sat@azimut.es (Authorized Raymarine distributor)
Netherlands	+31 (0)26 3614 905	support.nl@raymarine.com (Raymarine subsidiary)
Sweden	+46 (0)317 633 670	support.se@raymarine.com (Raymarine subsidiary)
Finland	+358 (0)207 619 937	support.fi@raymarine.com (Raymarine subsidiary)

Region	Telephone	E-mail
Norway	+47 692 64 600	support.no@raymarine.com (Raymarine subsidiary)
Denmark	+45 437 164 64	support.dk@raymarine.com (Raymarine subsidiary)
Russia	+7 495 788 0508	info@mikstmarine.ru (Authorized Raymarine distributor)

Viewing product information

The **Getting started** tab contains hardware and software information for your MFD.

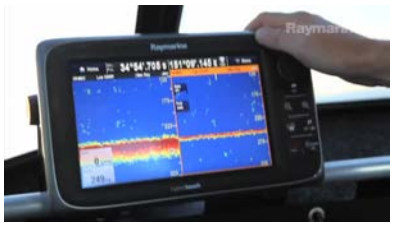
1. Select **Settings**, from the Homescreen.



17.2 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 LightHouse 3 video tutorials: • http://www.raymarine.com/multifunction-displays/light-house3/tips-and-tricks
	Video Gallery: • http://www.raymarine.co.uk/view/?id=2679
	Product Support videos: • http://www.raymarine.co.uk/view/?id=4952

Note:

- Viewing the videos requires a device with an Internet connection.
- Some videos are only available in English.

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

FAQs and Knowledge Base

Raymarine has produced an extensive set of FAQs and a Knowledge Base to help you find more information and troubleshoot any issues.

- http://www.raymarine.co.uk/knowledgebase/

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:

- http://forum.raymarine.com

Appendix A NMEA 0183 sentence support

Sentence	Description	Transmit	Receive
APB	Heading/Track controller pilot sentence “B”	•	•
BWC	Bearing & distance to waypoint — great circle	•	•
BWR	Bearing & distance to waypoint — rhumb line	•	•
DBT	Depth below transducer	•	•
DPT	Depth	•	•
GGA	GNSS fix data	•	•
GLL	Geographic position lat/long	•	•
GSA	GNSS DOP & active satellites	•	•
GSV	GNSS satellites in view	•	•
MTW	Water temperature	•	•
MWV	Wind speed & angle	•	•
RMA	Recommended minimum specific Loran C data	•	•
RMB	Recommended minimum navigation information	•	•
RMC	Recommended minimum specific GNSS data	•	•
RSD	Radar system data	•	•
TTM	Tracked target message	•	•
VHW	Water speed and heading	•	•
VLW	Dual ground/water distance	•	•
VTG	COG & ground speed	•	•
ZDA	Time & date	•	•

Appendix B NMEA 2000 PGN support

PGN	Description	Transmit	Receive
59392	ISO Acknowledgment	•	•
59904	ISO Request	•	•
60928	ISO Address Claim	•	•
126208	NMEA - Request group function	•	•
126464	Receive/Transmit PGN's group function	•	•
126992	System Time	•	•
126996	Product Information	•	•
127237	Heading/Track Control		•
127245	Rudder		•
127250	Vessel Heading	•	•
127488	Engine Parameters, Rapid Update		•
127489	Engine Parameters, Dynamic		•
127493	Transmission Parameters, Dynamic		•
127496	Trip Parameters, Vessel		•
127498	Engine Parameters, Static		•
127505	Fluid Level		•
128259	Speed	•	•
128267	Water Depth	•	•
128275	Distance Log	•	•
129025	Position, Rapid Update	•	•
129026	COG & SOG, Rapid Update	•	•
129029	GNSS Position Data	•	•
129033	Time & Date	•	•
129038	AIS Class A Position Report		•
129039	AIS Class B Position Report		•
129040	AIS Class B Extended Position Report		•
129041	AIS Aids to Navigation (AtoN) Report		•
129044	Datum	•	•
129283	Cross Track Error	•	•
129284	Navigation Data	•	•
129291	Set & Drift, Rapid Update	•	•
129301	Time to/from Mark		•
129539	GNSS DOPs		•
129540	GNSS Sats in View	•	•
129545	GNSS RAIM Output		•
129550	GNSS Differential Correction Receiver Interface		•
129551	GNSS Differential Correction Receiver Signal		•
129793	AIS UTC and Date Report		•
129794	AIS Class A Static and Voyage Related Data		•
129801	AIS Addressed Safety Related Message		•
129802	AIS Safety Related Broadcast Message		•

PGN	Description	Transmit	Receive
129809	AIS Class B "CS" Static Report, Part A		•
129810	AIS Class B		•
130306	Wind Data	•	•
130310	Environmental Parameters	•	•
130311	Environmental Parameters		•
130576	Small Craft Status		•
130577	Direction Data	•	•
130578	Vessel Speed Components		•

Raymarine® provides field programmability of the Device and System Instances within PGN 60928 which can be commanded via use of PGN 126208 as required by the latest **NMEA 2000** standard.

Appendix C Document change history

Document revision	Date	Software version	Changes
81370–4	11–2017	LH3.3	• Updated New features list to reflect LH3.3. • Added RV transducer calibration details. • Added MFD controls information for eS Series and gS Series. • Added new LH3 compatible MFDs table. • Updated Radar target tracking to include AIS targets. • Updated Radar target settings information to include independent Reference mode for targets, and new Trails settings. • Added new Weather mode chapter. • Updated User interface languages table. • Added lists of data items available in Dashboard app and for data overlays and sidebars. • Added Navionics plotter sync details to Mobile app chapter. • Added diagnostic product information details to troubleshooting chapter. • Added LH2 to LH3 upgrade procedure to Appendix. • Updated RV Depth and intensity setting details. • Updated shortcuts page information to include new Disable all sounders option.
81370–3	09–2017	LH3.2	• Updated software revision to reflect LH3.2. • Updated New features section to reflect LH3.2. • Added User programmable button details for Axiom Pro MFDs. • Updated Software updates section to reflect updating SeaTalkng products. • Added wireless display information, connection details and troubleshooting. • Added NMEA0183 setting for Axiom Pro MFDs. • Added Autorouting related information and procedures. • Updated Chart selection information to include C-MAP cartography. • Added AIS symbols tables. • Updated Chart settings tables to include C-MAP specific and Enhanced Navionics cartography features support. • Added Sailing and Navigation dial overview to Dashboard chapter. • Updated Camera app overview to include analog feeds via an Axiom Pro. • Updated Audio app compatible entertainment systems to include compatible Rockford Fosgate and Fusion units. • Updated Radar troubleshooting to include high network bandwidth. • Added NMEA0183 supported sentences table.

Document revision	Date	Software version	Changes
81370–2	07–2017	LH3.1	• Updated software revision to reflect LH3.1. • Added controls details for Axiom and Axiom Pro • Added powering on and off details for Axiom Pro. • Removed Data source type table from Data sources. • Re-ordered Data source and MDS paragraphs. • Moved Factory reset procedure to para 3.3. • Added Pilot controls to shortcuts page. • Re-ordered memory card paragraphs and added details for Axiom Pro. • Added details for software updating networked MFDs. • Removed restriction of RMK pilot button in LH3 and added new step for repeating pairing process on each MFD. • Updated Homescreen overview to include Disengage pilot icon. • Added Wi-Fi sharing and Mobile app details to This display setting tab. • Added new Autopilot tab to Settings menu. • Added table of available UI languages. • Removed device disconnection details from External devices options. • Added new Autopilot control chapter. • Added details for switching between Sidebars. • Added camera tracking (Point camera here and Track with camera controls to Chart and Radar chapters. • Added details for placing waypoints in RV channels. • Added details of Sonar scroll back. • Added details of sensitivity adjustments effecting sonar scroll back. • Added View mode in RV channel settings to switch between scrolling and GPS tracking modes. • Added details of AHRS stabilization control in Sounder tab settings. • Added new Mobile app support chapter. • Added document change history to appendix.
81370–1	04–2017	LH3.0	First release.

Appendix D LightHouse 3 on eS and gS Series

eS Series and gS Series MFDs running the LightHouse™ 2 operating system can be upgraded to run the new LightHouse™ 3 operating system.

To ensure upgrading is the correct option for you, please ensure you fully understand and accept the differences between the 2 operating systems, before upgrading.

Upgrade considerations

Before you perform the upgrade, the following considerations need to be taken into account:

Digital switching

Upgrading to LightHouse™ 3 will erase all Digital switching files loaded on your MFD. Once erased, these files will be unrecoverable, potentially rendering the Digital switching system unusable.

Digital switching solutions must be converted, before performing the upgrade to LightHouse™ 3. Contact Raymarine Technical Support, who will guide you through the process and perform the necessary file conversion.

Autopilots

Legacy SeaTalk ® and SPX autopilots cannot be controlled by MFDs running LightHouse™ 3. A Pilot control head will be required to control legacy autopilot systems.

MFD networking

- LightHouse™ 2 MFDs cannot be connected to the same network as LightHouse™ 3 MFDs.
- a Series, c Series and e Series MFDs cannot be upgraded to LightHouse™ 3 and cannot be connected to the same network as MFDs running LightHouse™ 3.
- If you have a mixed MFD network all a Series, c Series and e Series MFDs must be permanently disconnected, before upgrading eS Series and gS Series MFDs to LightHouse™ 3.
- In a mixed Axiom™ / eS Series / gS Series MFD network, it is recommended that an Axiom™ MFD is selected as the Datamaster. Where this is not desirable, due to your electronics wiring layout, you may notice a difference in system performance when an eS Series or gS Series MFD is set as Datamaster.

MFD performance

LightHouse™ 3 was developed for use with the latest processing technology, utilized by Axiom™ MFDs. Performance of eS Series and gS Series MFDs upgraded to use LightHouse™ 3 will be limited to the processing power available to the MFD.

Unsupported features

- Checking online for software updates is not supported.
- The Wireless (Miracast) display feature is not supported.

Compatible MFDs

The MFDs listed below can be upgraded to run Raymarine's new LightHouse™ 3 operating system.

eS Series MFDs

eS75 (E70263	eS77 (E70264)
eS78 (E70265)	eS97 (E70274)
eS98 (E70275)	eS127 (E70275)
eS128 (E70285)	

gS Series MFDs

gS95 (E70124)	gS95 INV (E70183)
gS125 (E70125)	gS125 INV (E70184)
gS165 (E70126)	gS165 INV (E70185)
gS195 (E70213)	

Feature differences

The table below shows the differences between LightHouse™ 2 R19 and LightHouse™ 3 version 3.3 running on an eS or gS Series MFD. If in any doubt, contact Raymarine Technical Support for advice.

Navigation

Feature	**LightHouse™ 2**	**LightHouse™ 3**
3D chart mode	Yes	No
Number of Boat icons	2 – changes automatically with boat type selection.	12 – independent selection.
Boat icon context menu	No	Yes
Chart measurement ruler	Yes	No
Chart synchronization — split screen pages	Yes	No
Enhanced AIS symbols	No	Yes
Find nearest (info)	Yes	No
Fuel manager	Yes	No
GRIB weather viewer	Yes	No
Nearby objects (selection)	No	Yes
Race sailing features	Yes	No
SAR (Search And Rescue) patterns	Yes	No
Target interception	Yes	No
Tide and Current graphs	Yes	No
Waypoint capacity	3,000	10,000
Waypoint search area box	Yes	No

Data and controls

Feature	**LightHouse™ 2**	**LightHouse™ 3**
Alarm history	Yes	No
Databars	Top Databar	Sidebar
Available data items	117	134

Feature	LightHouse™ 2	LightHouse™ 3
Dashboard — more available page layouts	10	7
Dashboard — each app instance unique	No	Yes
Digital switching alarm settings	Yes	No
Light color theme	Yes	No
Shared brightness	Yes	No

Sonar

Feature	LightHouse™ 2	LightHouse™ 3
Channel specific Homescreen sonar icons	No	Yes
Number of DownVision and SideVision color palettes	4	10
Fish alarm	Yes	No
Historical sensitivity	No	Yes
Range/zoom controls	Standard	Improved
* RealVision™ 3D	No	Yes
SideVision — Auto range	No	Yes
Scrollback (sonar history)	No	Yes
Disable all Sonar from Shortcuts page	No	Yes
VRM (Variable Range Marker	Yes	No

Note:

* Available when networked to a RV variant Axiom™ or Axiom™ Pro MFD.

Radar

Feature	LightHouse™ 2	LightHouse™ 3
Bearing ring	Standard	Enhanced
Place waypoints in Radar app	Yes	No
Radar overlay color options	No	Yes
True/Relative vector button	No	Yes

Camera / Thermal

Feature	LightHouse™ 2	LightHouse™ 3
Align Thermal camera to mobile device	Yes	No
ClearCruise IR analytics	No	Yes
Single app for both Thermal and daylight cameras	No	Yes
Unique Camera app instances	No	Yes
Camera cycling	Yes	No

Entertainment

Feature	LightHouse™ 2	LightHouse™ 3
Bluetooth audio control	Yes	No
Bluetooth — RCU-3 connection	Yes	No
Document (pdf) viewer	Yes	No

Feature	LightHouse™ 2	LightHouse™ 3
SiriusXM audio	Yes	No
Video player (demo movie)	Yes	No

General

Feature	LightHouse™ 2	LightHouse™ 3
Alarm Clock / Timer	Yes	No
App modes	No	Yes
Custom splash screens	Yes	No
Number of Data overlays	2	4
Data overlays movable	No	Yes
Homescreen — Lat/Lon display	No	Yes
Homescreen — Move pages	Yes	No
Homescreen — Wi-Fi and time info	No	Yes
Homescreen customization — drag and drop app pages	Yes	No
Menus — close when tapping away from menu	No	Yes
NMEA Logging	Yes	No
LiveView (in menu app display)	No	Yes
Sidebar	No	Yes
Simulated — Demo profiles	No	Yes
Simulator — Move boat here	No	Yes
Splitscreen app page — pane size adjustment	No	Yes
Transducer calibration	Yes	No
User profiles	No	Yes

Engine integration

Feature	LightHouse™ 2	LightHouse™ 3
Honda ECO mode	Yes	No
Trim tab calibration	Yes	No

Performing the LightHouse™ 3 upgrade

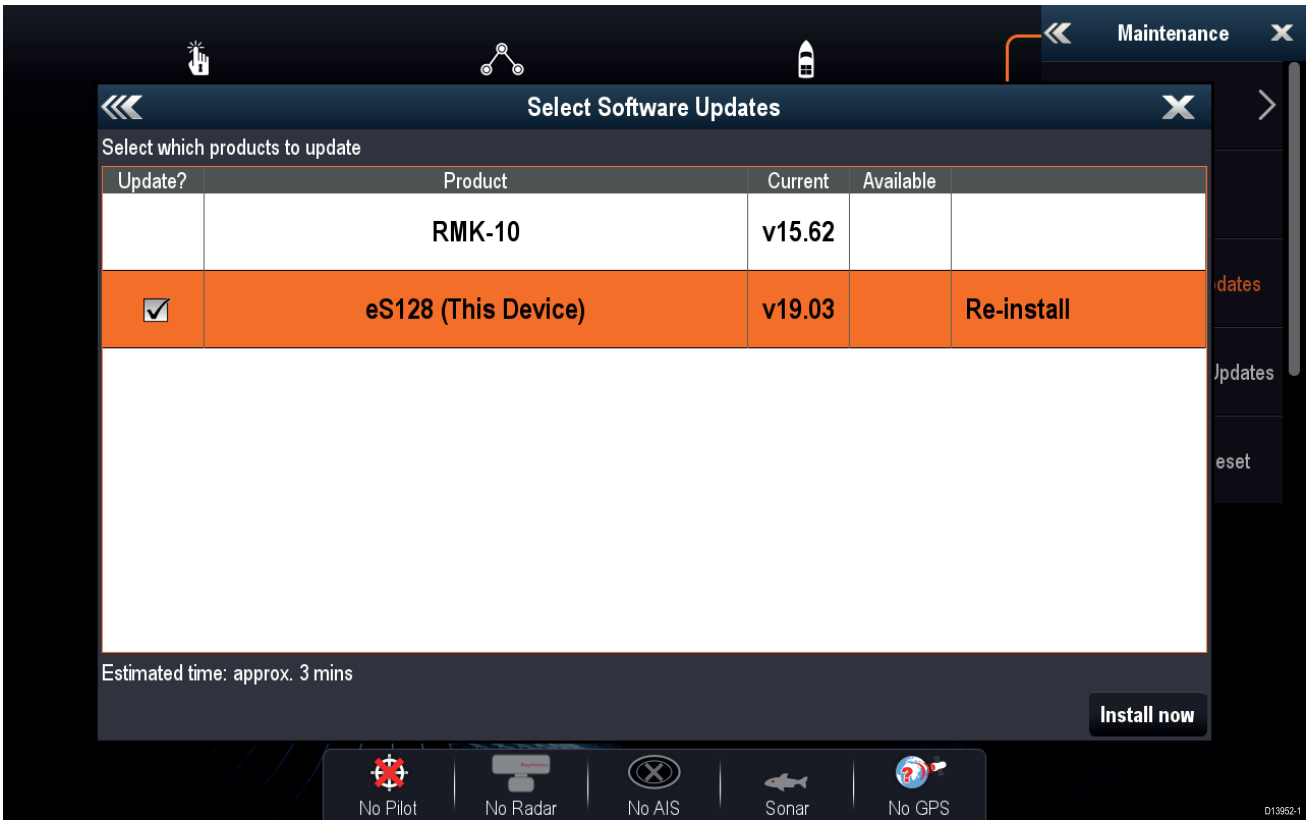
Performing the upgrade procedure will upgrade all eS Series and gS Series MFDs on the network.

Pre-requisites:

- Your eS or gS Series MFD must be running LightHouse™ 2 Release 15 or greater to perform the upgrade. Prior releases of LightHouse™ 2 will not recognise the software upgrade file.
- You should back up your user data and any media files before performing the upgrade.

1. Disconnect and remove any a Series, c Series or e Series MFDs from your network.
2. Download the LightHouse™ 3 upgrade file from the Raymarine® website:
   i. Go to ww.raymarine.com/software.
   ii. Click **MFD software**.
   iii. Click **eS & gS Series Models Only**.
   iv. Follow the instructions to download the upgrade file.
3. Perform a User data backup following the Saving all user data to a memory card procedure.
4. If you have any media files saved on your MFD that you want to keep, these should also be copied to a MicroSD card following the Copying media files procedure.
5. Copy the downloaded upgrade file to the root directory of your MicroSD card, ensuring that no other software update files are present on the card.
6. Insert the MicroSD card into a card reader slot on your MFD.
7. Perform the software update procedure:

i. Select **Check Card for Updates** from the Maintenance menu: (**Homescreen** > **Set-up** > **Maintenance** > **Check Card for Updates**).
ii. Select **OK**.
iii. Select the check box for each MFD that you want to upgrade.



*When upgrading from LightHouse™ 2 to LightHouse™ 3 the Available software version column will remain blank and 'Re-install' is displayed. Select and hold on the Available column to confirm the version number of the software upgrade you are about to install and then select **Install**.*

iv. Select **Install now**.

The software upgrade procedure will commence. Please be patient and do not power off the MFD whilst the upgrade is in progress. During the upgrade process the MFD will re-boot. When complete your MFD will boot up with the new LightHouse™ 3 operating system.

8. Perform a Factory reset following the Performing a settings or factory reset procedure.
9. If applicable, update any Axiom™ MFDs so that the software version matches your upgraded eS or gS Series MFD.
10. If applicable, add any Axiom MFDs to your system or, add your upgraded eS or gS MFD to a system already containing Axiom™ MFDs.
11. If requested, select a Datamaster MFD and / or complete the Startup wizard.

    In a mixed MFD network it is recommended that an Axiom™ MFD is selected as the Datamaster.

12. If applicable, restore your user data following the Import user data procedure.
13. Familiarise yourself with the new LightHouse™ 3 operating system by reviewing the LightHouse™ 3 operation instructions available from the website.

Saving all user data to a memory card

You can save all user data to one archive file.

With the Homescreen displayed:

1. Ensure you have a memory card (NOT a chart card) inserted into a card slot.
2. Select **My Data**.
3. Select **Import/Export**.
4. Select **Save Data**.
5. Select **Save All**.
   The onscreen keyboard is displayed.
6. Using the keyboard, enter the filename you want to save the file as.
7. Select **SAVE**.
   The select external storage dialog is displayed.
8. Select **SD1** (single or top card reader slot) or **SD2** (bottom card reader slot).
   A confirmation dialog is displayed.
9. Select **OK**.

Copying media files

Recorded video and images, that are stored on your MFDs internal memory, can be copied to MicroSD card.

With a MicroSD card inserted into a card reader slot of your MFD:

From the **Homescreen**:

1. Select **My Files** from the **My Data** menu: (**Homescreen** > **My Data** > **My Files**.
2. Navigate to the required file by selecting folders to see its contents.
3. Highlight the file that you want to copy.
4. Select **Copy** from the File options.

   *If you have more than 1 MicroSD card inserted, you will need to select which card to save the file to by selecting **SD1** or **SD2**.*

5. Select **Yes**.
   The file will now copy to your MicroSD card.
6. Once the file has copied, select **OK** from the confirmation dialogue.
7. Repeat steps 2 to 5 above for each file that you want to copy.

Performing a settings or factory reset

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

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

Importing user data

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

1. Insert the MicroSD card that contains your user data files into a card reader slot on your MFD.
2. Select **Import from card** from the Import/export page:(**Homescreen > My data > Import/export > Import from card**).
3. Select the relevant SD card slot from the file browser and then navigate to your User data file (.gpx)
4. Select the relevant GPX file.

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

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