Raymarine®

AXIOM™

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.

Contents

Chapter 1: Important information

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

⚠	**Warning: 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 7.6m (25ft) 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.

Open source license agreements

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

Warranty registration

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

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

Technical accuracy

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

Chapter 2: Document and product information

Chapter contents

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
RMK-10 Remote Keypad Installation and operation instructions	81367
RMK-9 Remote Keypad Installation and operation instructions	81351

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 1.

Check the website for the latest software and user manuals:

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

Chapter 3: Set up

Chapter contents

3.1 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

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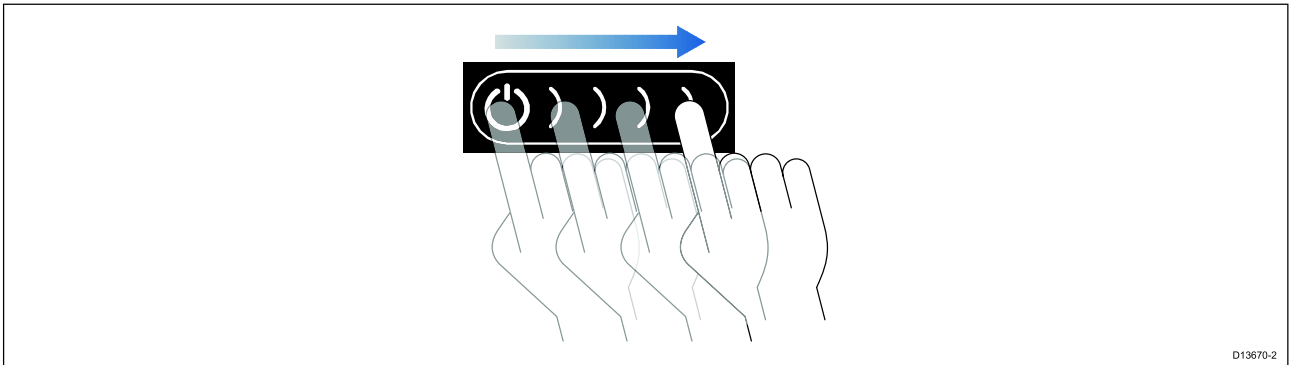
1. Swipe your finger from left to right across the **Power** button swipe area.
   The MFD will power up.

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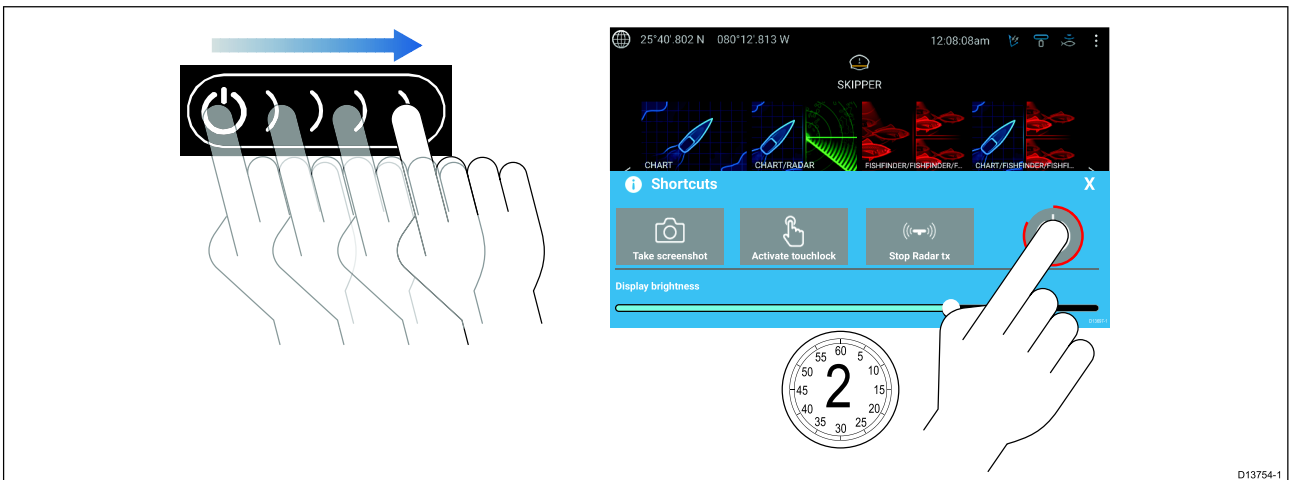
1. Swipe your finger from left to right across the **Power** button swipe area.
   The Shortcuts menu is displayed.
2. Press and hold the **Power symbol** until the screen switches off.

> **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.

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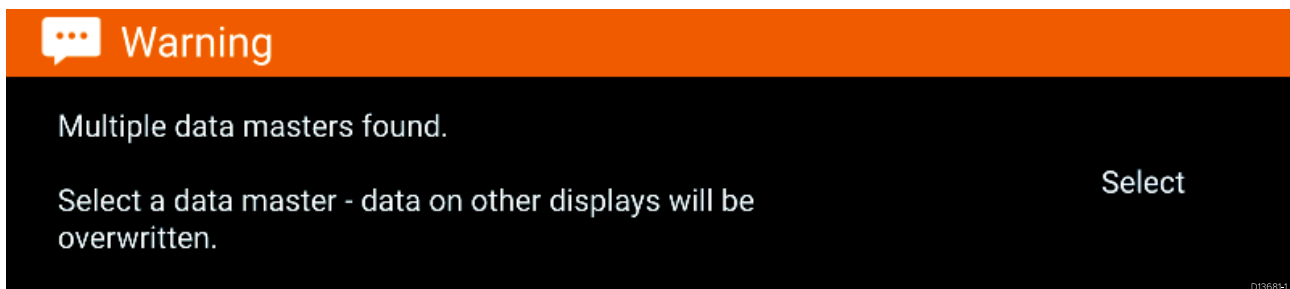
You can change your Data master at anytime by selecting **Assign as Data master** against a MFD listed in the Network tab of the Settings menu: **Homescreen** > **Settings** > **Network**.

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.
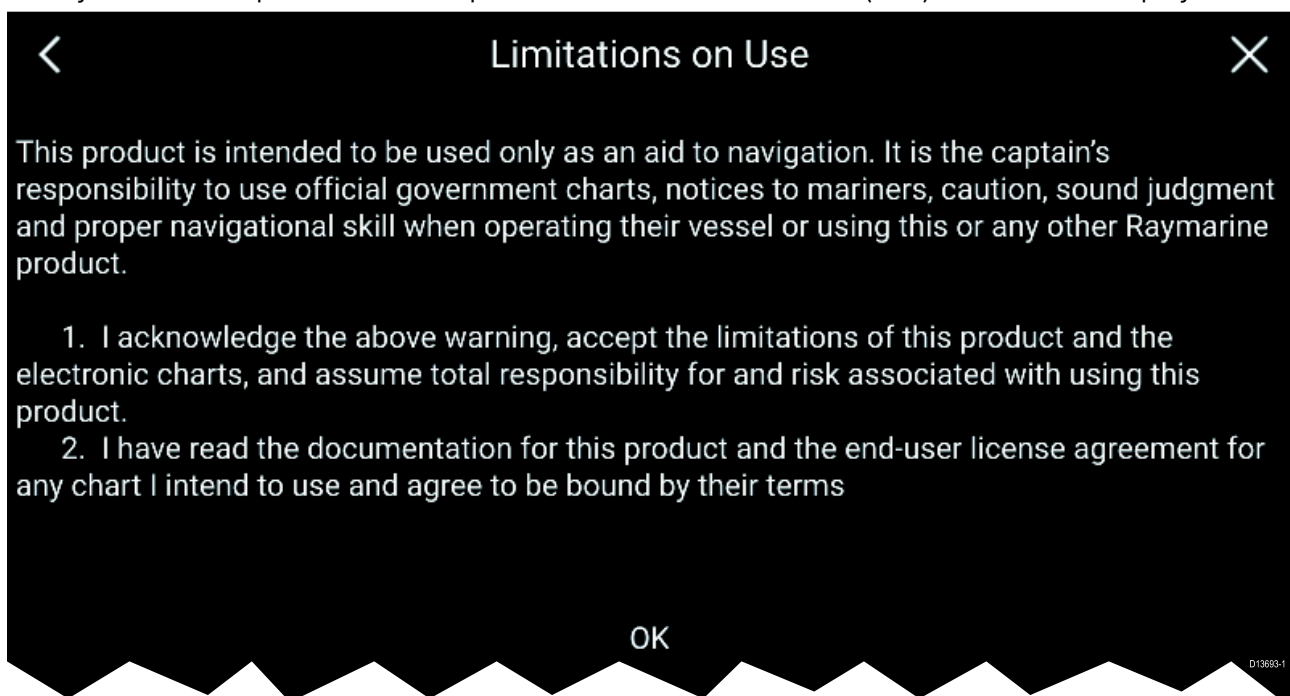
You must read and agree to the terms in order to use your MFD.

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

Data sources

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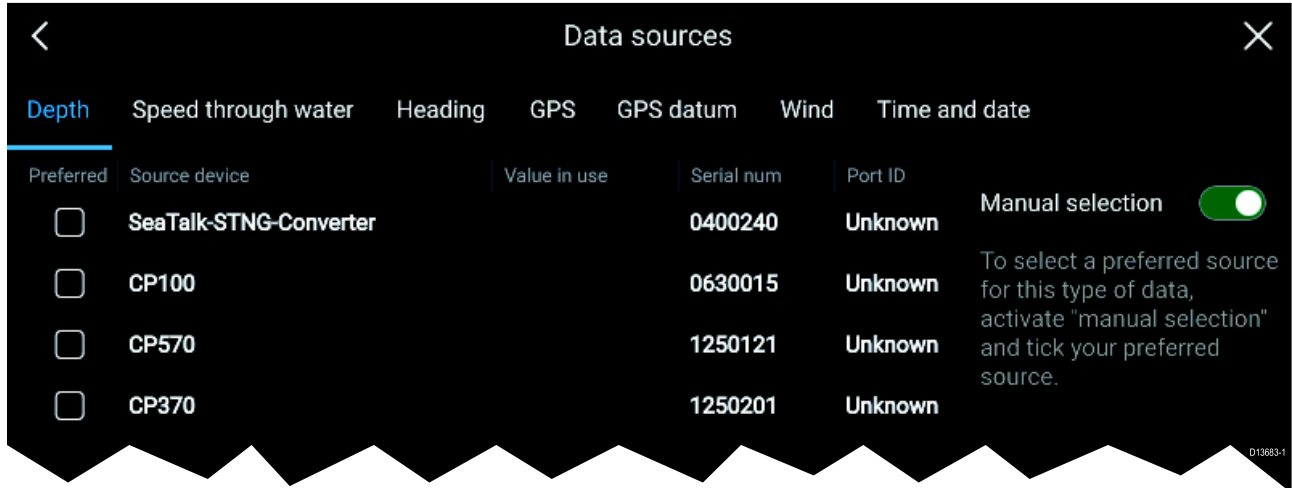
Each tab enables you to view and select your preferred data source. The currently active data source will display its current value in use. Data source selection can be manual or set to automatic:

- **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.

Data source types

Settings tab	Description
Depth	Enables you to choose a source of data for Depth readings.
Speed through water	Enables you to choose a source of data for Speed readings.
Heading	Enables you to choose a source of data for Heading data.
GPS	Enables you to choose a source of data for GPS data.
GPS Datum	In order for your GNSS receiver and MFD to correlate accurately with your paper charts, they must be using the same datum. This option enables you to choose a source for this datum.
Wind	Enables you to choose a source of data for Wind readings.
Time and Date	Enables you to select the device you want to use for the time and date information used by your MFD.

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.

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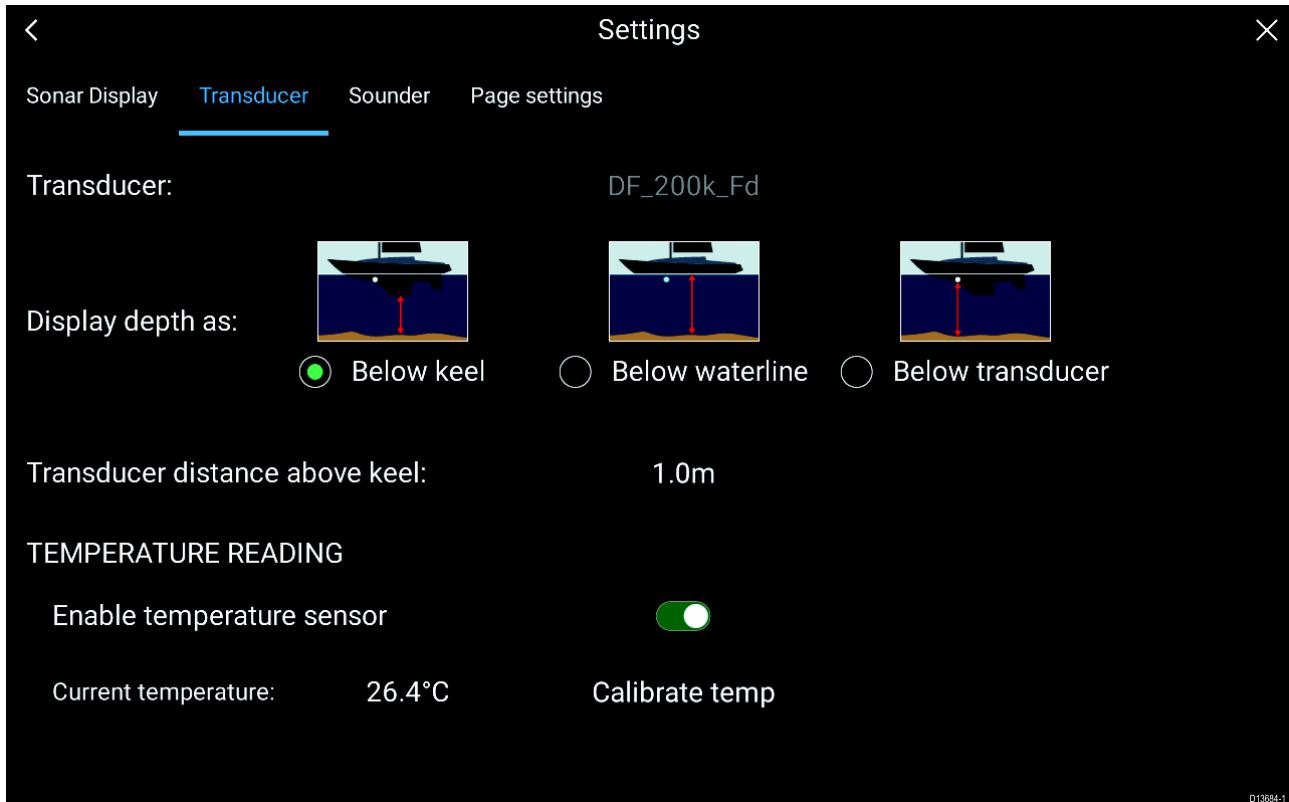
1. Select **Transducer** from the Sonar app's **Settings** menu: **Menu > Settings > Transducer**
2. Select how you want your depth to appear:
   i. Below transducer (default) — No offset required
   ii. Below keel — Enter the distance between the transducer face and the bottom of the Keel.
   iii. Below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

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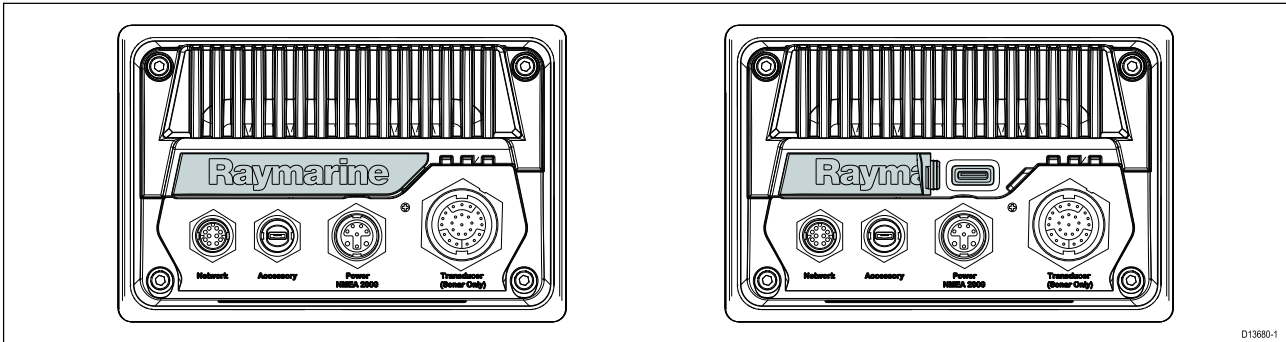
1. Pull back the microSD card reader cover as shown above.
2. Insert you microSD card with the contacts facing down.
3. Close the cover and ensure it is seated correctly.

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.

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.

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.

3.3 Shortcuts

The Shortcuts menu can be accessed by swiping left to right across the **Power** button swipe area.
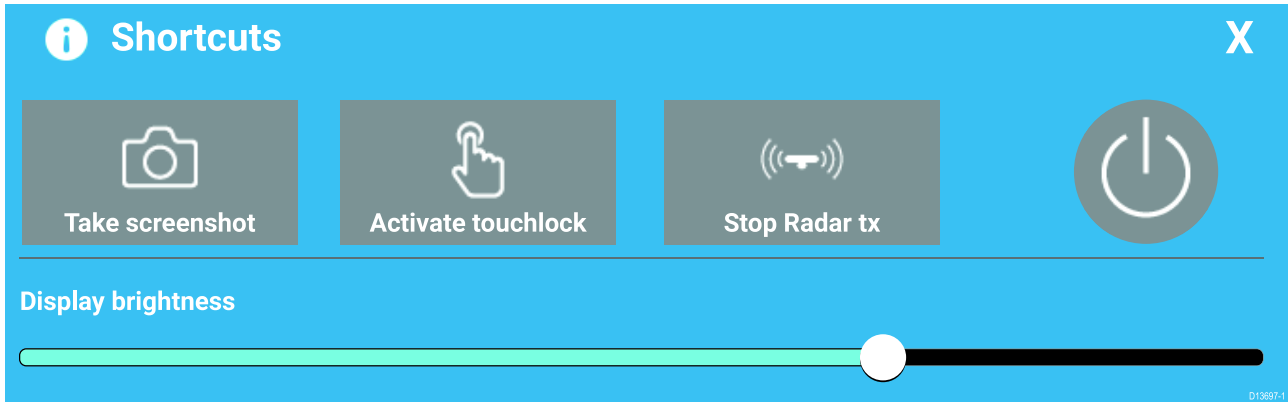
The following shortcuts are available:

- Take Screenshot
- Activate Touchlock
- Stop Radar transmitting
- Power off
- Adjust Brightness

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.*

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.

3.4 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
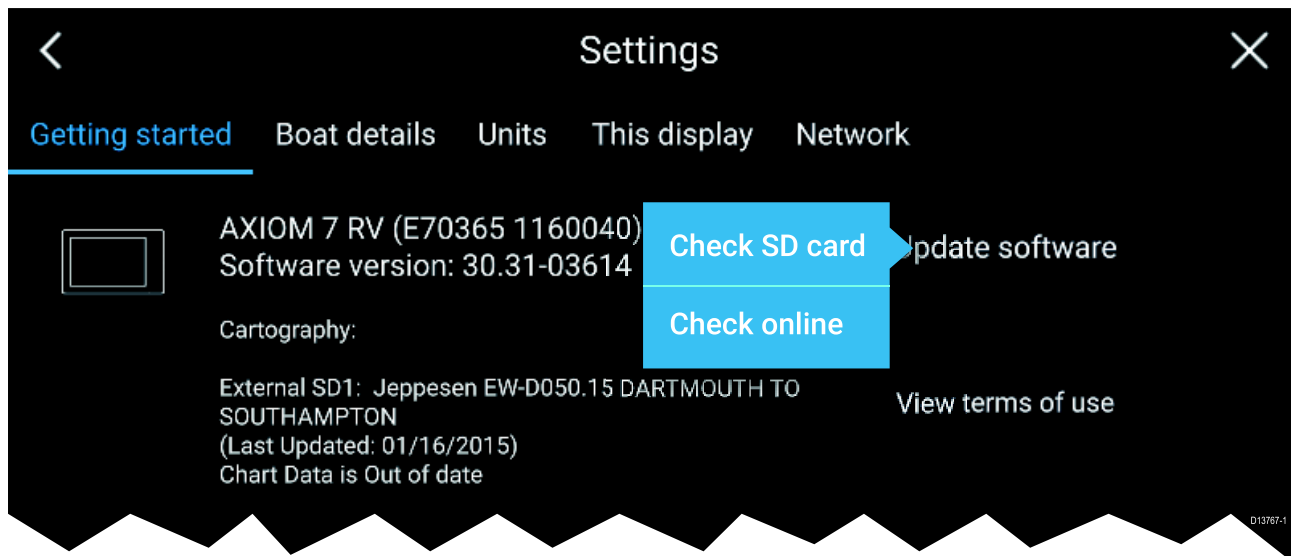
> **Note:**
>
> - It is recommended that you always back up your User data before performing a software update.
> - The MFD's "Check online" feature is only available when the MFD has an Internet connection.

Updating software using a memory card

1. Check the software version of your product.

   The software version can be found on the Getting started tab: (**Homescreen > Settings > Getting started**).

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. Insert the MicroSD card into the card reader slot on your MFD.
6. Select **Update software** from the Getting started tab: (**Homescreen > Settings > Getting started**).
7. Select **Check SD card** from the popover menu.
8. Follow the onscreen instructions to update your MFD software.

Updating software via the internet

1. Select **Update software** from the Getting started tab: (**Homescreen > Settings > Getting started**).
2. Select **Check online** from the popover 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**.
5. Your MFD will now check the internet for software updates, follow any onscreen instructions to complete the update.

3.5 Device pairing

Pairing a RMK remote keypad

You can control your MFD with an RMK external keypad.

1. Select **Pair keypad** from the **This display** tab of the **Settings** menu: **Homescreen > Settings > This display > Pair keypad**.
2. Follow the onscreen instructions to pair your keypad.

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

Note:

1. The **Standby/Auto** button will not function with Lighthouse™ 3.

2. Please refer to the controls section of the documentation supplied with your keypad for details on operating your MFD with the keypad.

Clear pairing (RMK)

1. Select **Clear pairings** to remove pairing for ALL RMK keypads that are 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.

3.6 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.

Chapter 4: Homescreen

Chapter contents

4.1 Accepting the Limitations on Use

After your MFD has powered up the Homescreen is displayed.
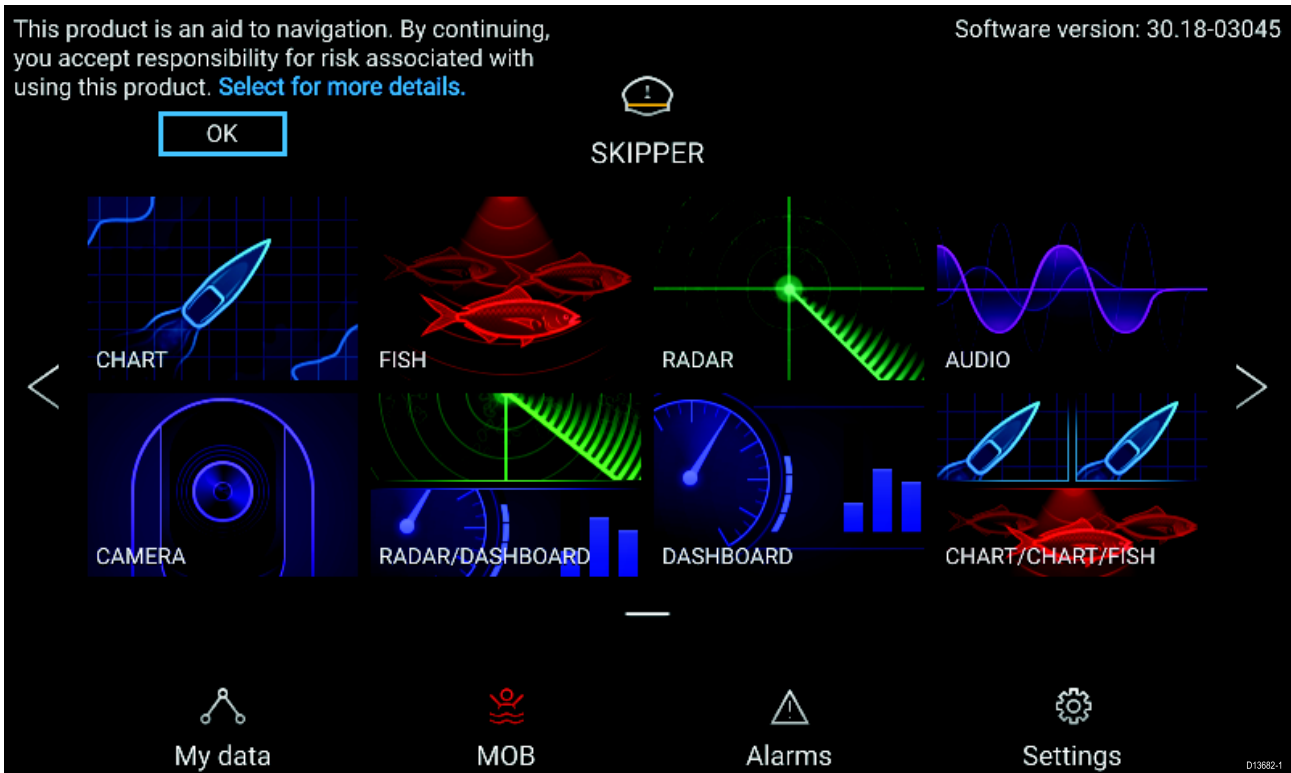
1. Before using the MFD you must accept the Limitations on Use (LoU) disclaimer. To view the full LoU Disclaimer, select 'more details'.

   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.
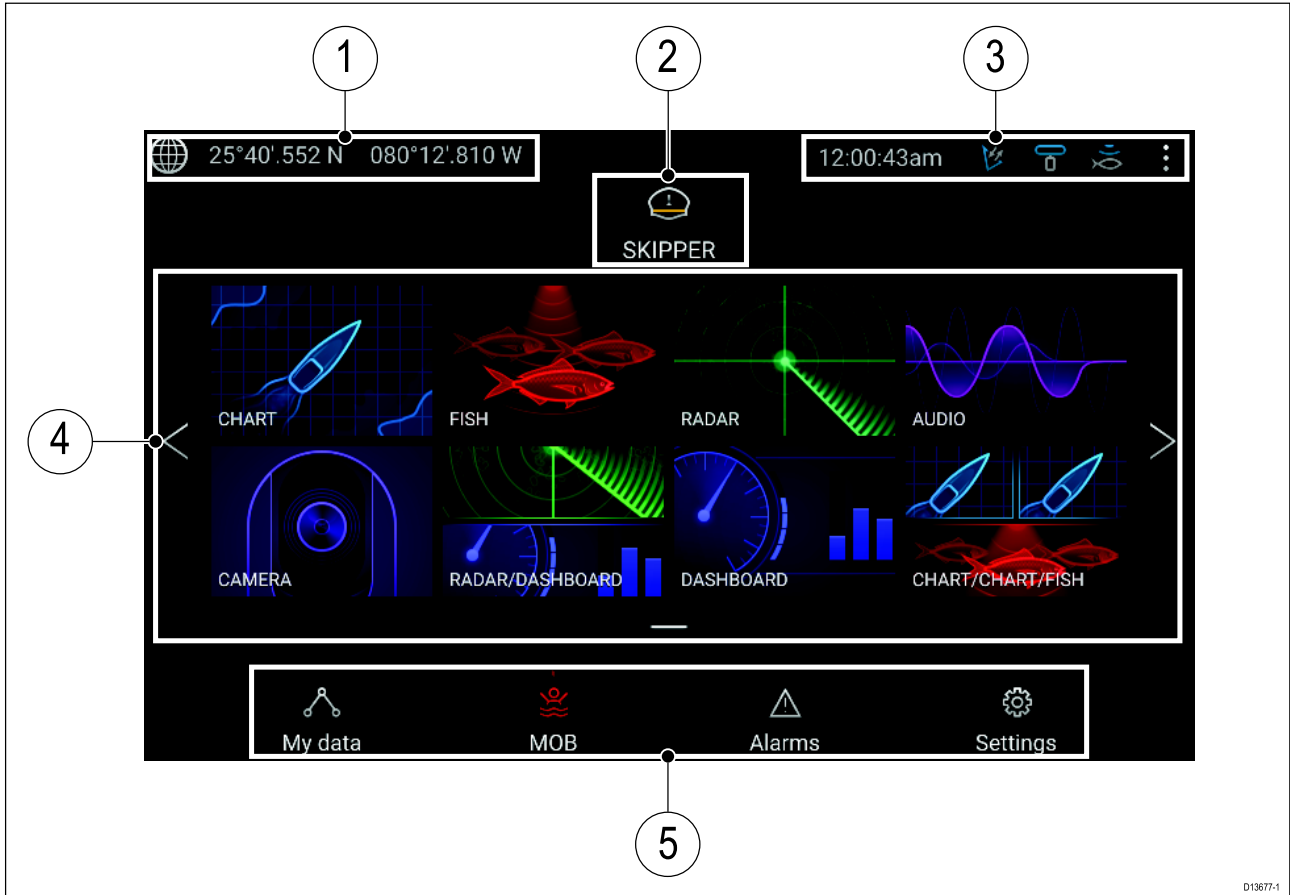
1. **GNSS position/fix details** — Select the area to view fix accuracy and access GNSS settings.

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.

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 Popover options.

    You can Customize, Rename or Delete app pages from the Popover options.

2. Select **Customize** from the Popover options to change page layout and apps used. To Create a new page press and hold on a blank space on the Homescreen.
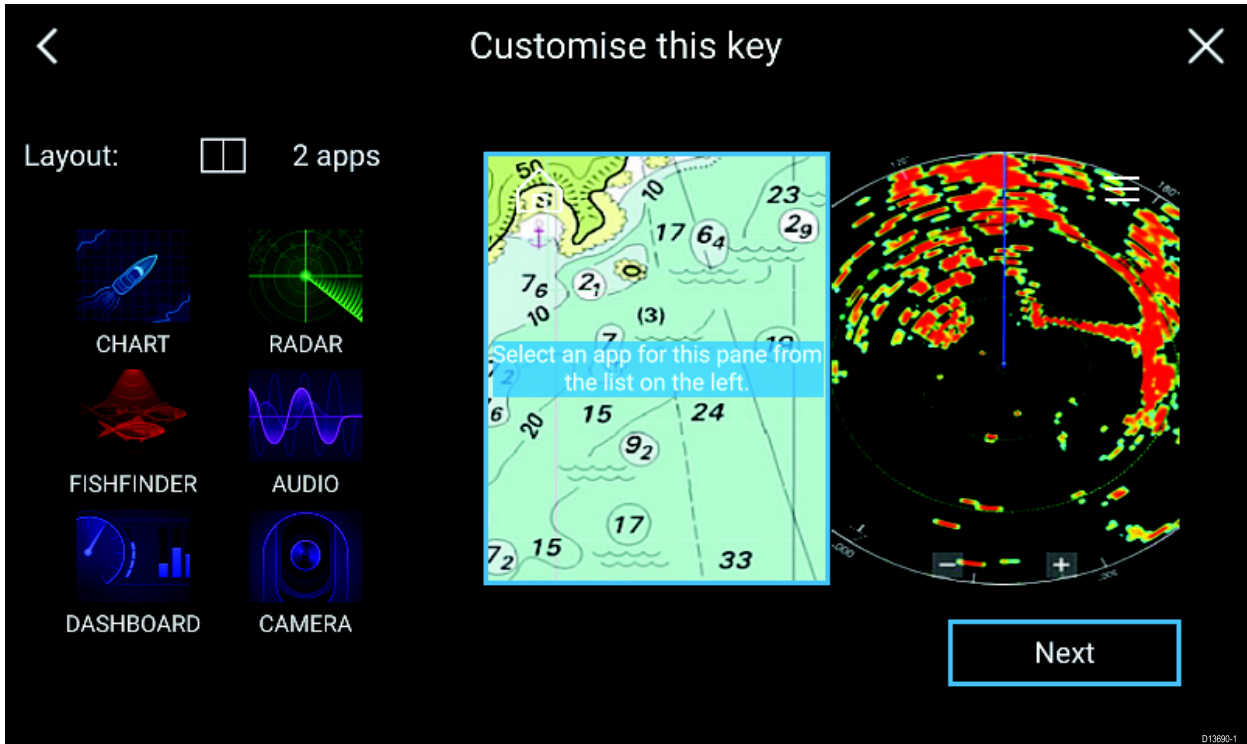
3. Select the **Layout:** option to change the page layout.
4. Select the icons for the Apps that you want to be displayed on the page.
5. Select **Next** and give the page a memorable name.
6. Select **Save**.

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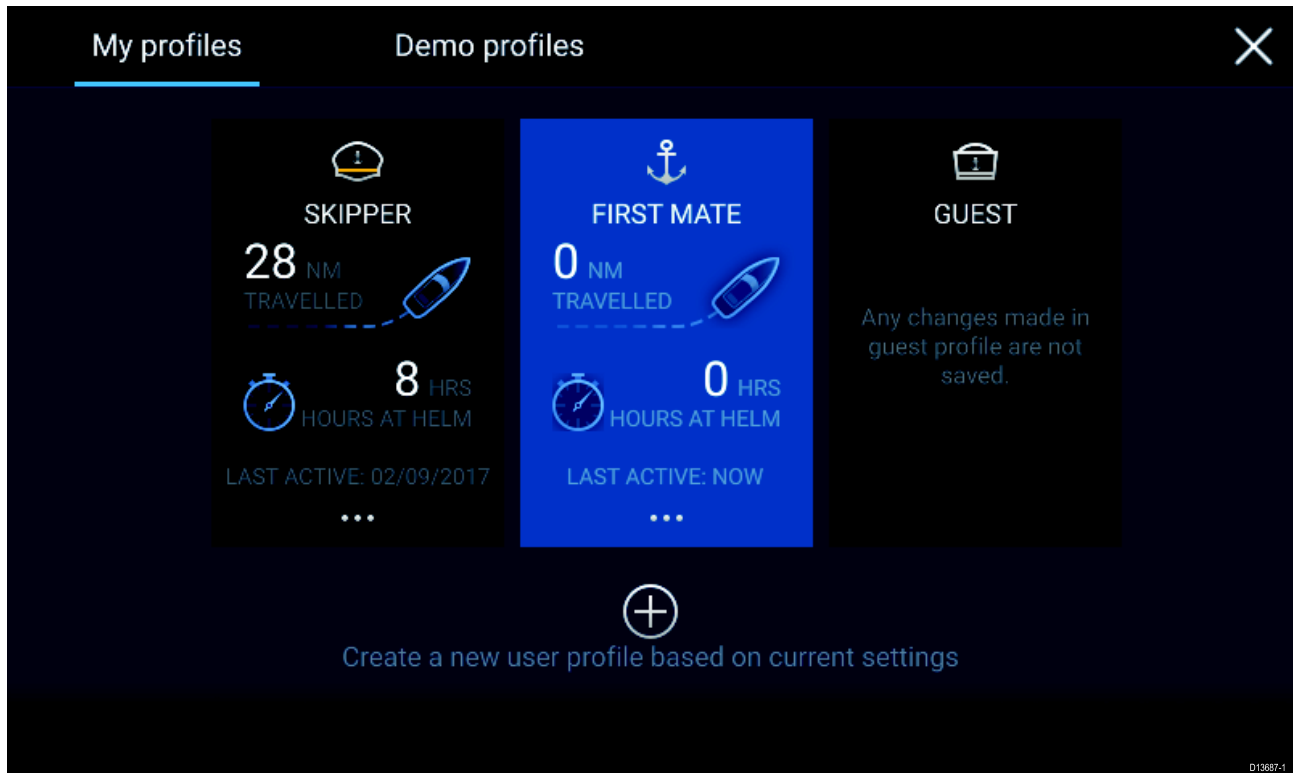
Selecting the **Plus (+)** icon will create a new profile based on the profile that is currently in use.

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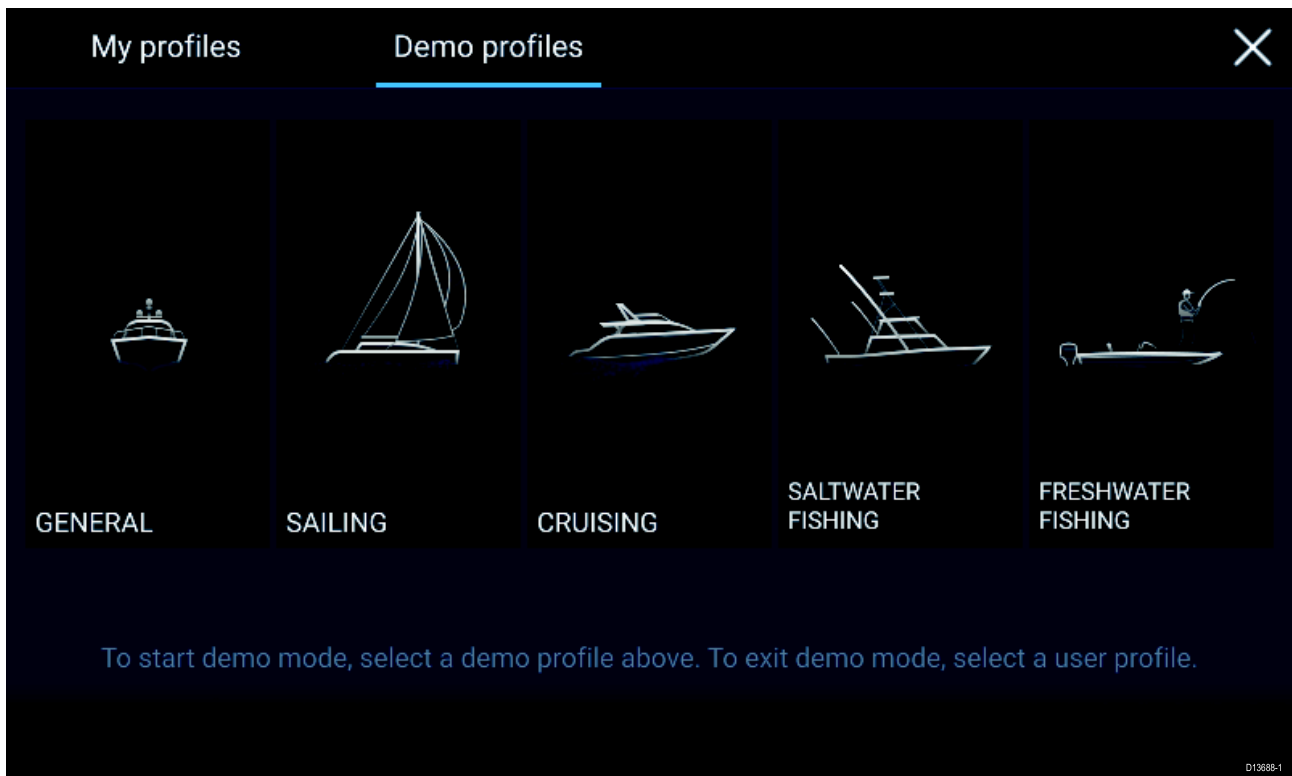
Selecting a Demo profile will provide your MFD with simulated data to help you practice operating your display.

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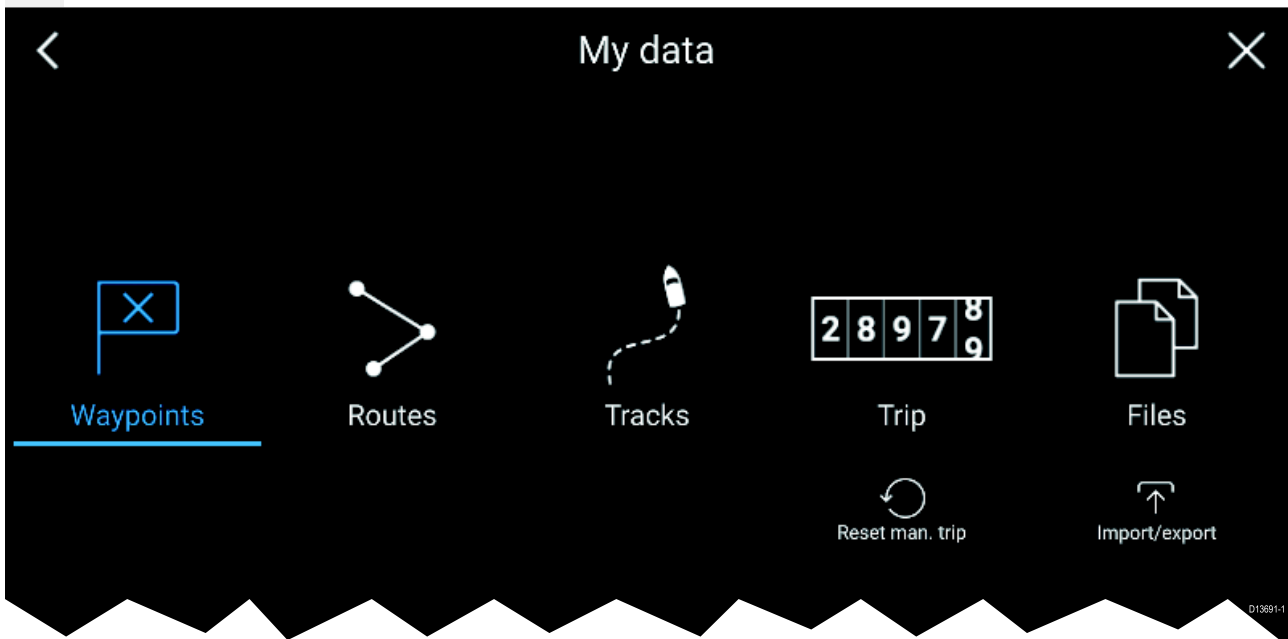
Selecting **Waypoints**, **Routes** or **Tracks** will take you to the relevant list where you can manage and customize your data.

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.

For further information on Waypoints, Routes and Tracks please refer to: Chapter 6 **Waypoints, Routes and Tracks**.

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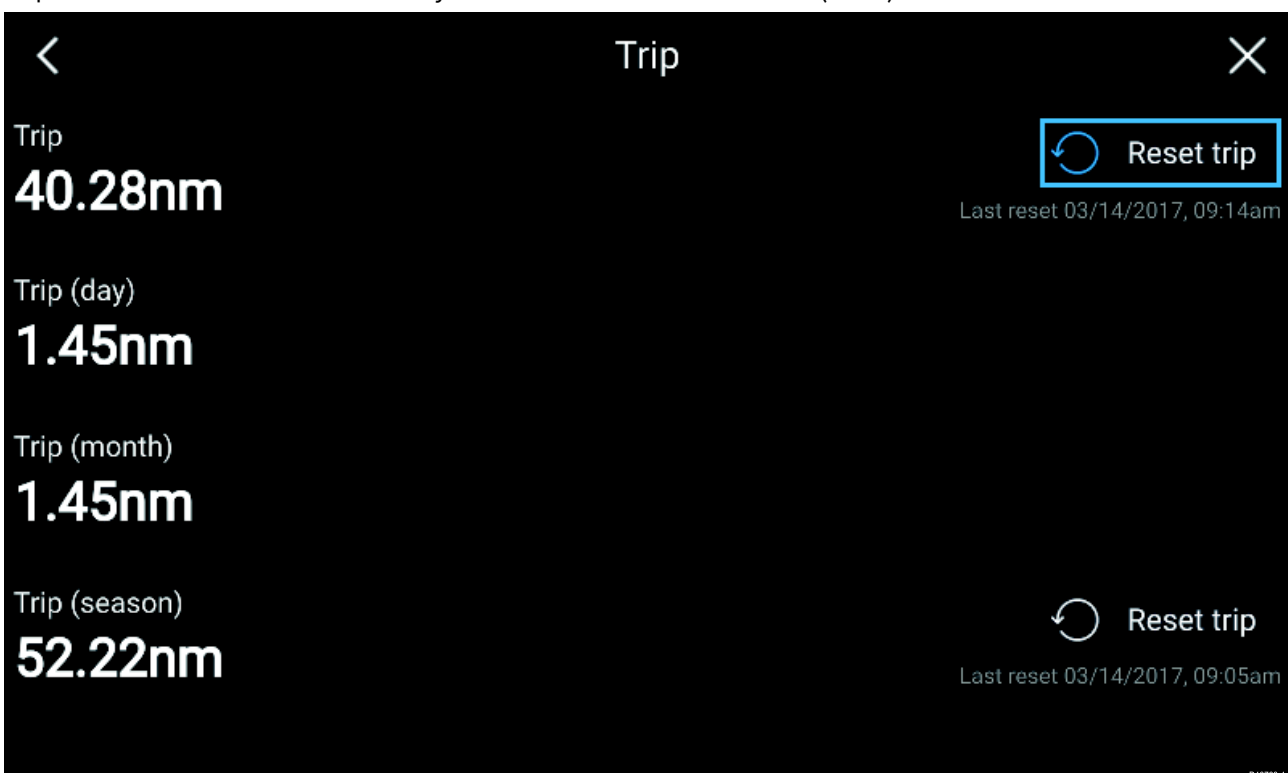
The manual trip log can be reset directly from the My data page by selecting **Reset man. trip**. Alternatively you can select **Reset trip** adjacent to the manual and season trip logs to reset the logs.

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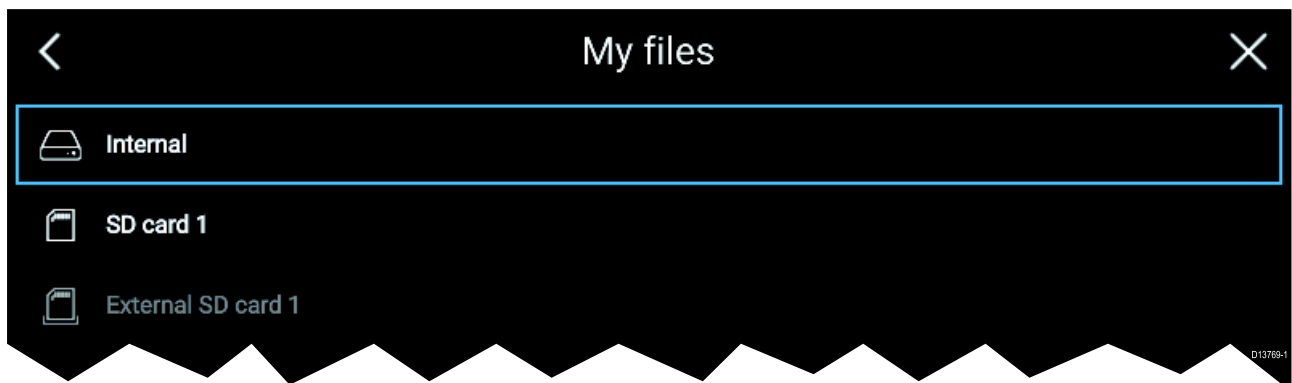
Select a device to view its contents. Select an image file to view or delete it. Select a gpx file to import or delete it.

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**.
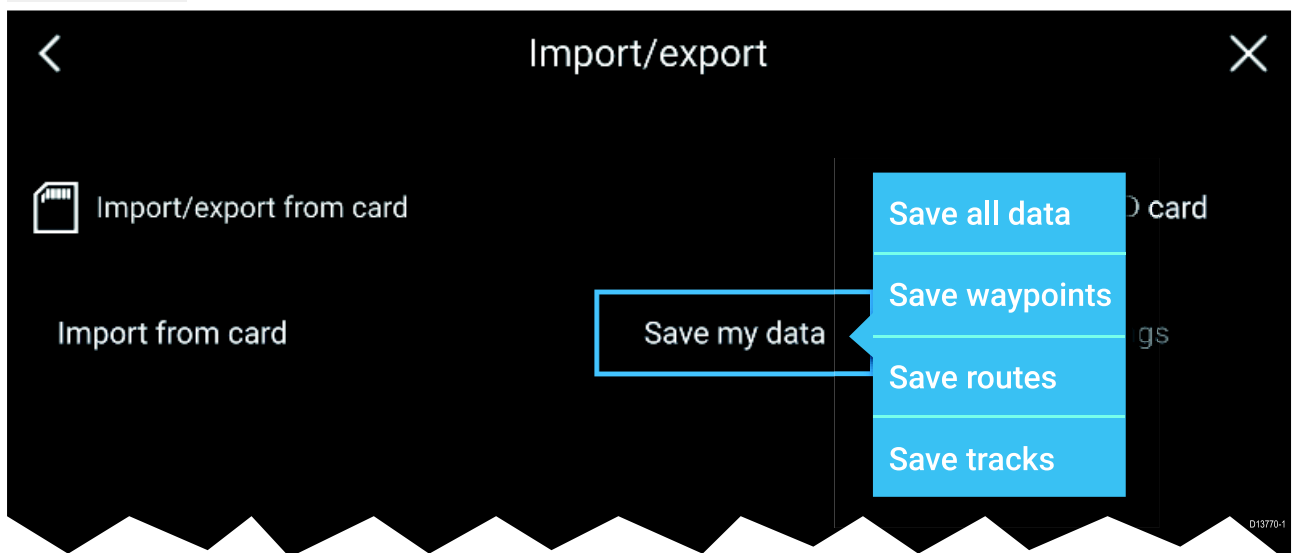
Save my data

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. • Pair/unpair with a RMK external keypads. • Pair with a wireless Quantum Radar scanner. • Perform a Settings or Factory reset.
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. • Assign your preferred data sources.

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.

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.

Option	Description
Min safe height:	Enter your vessel's maximum unladen height from the waterline. To ensure adequate clearance, it is recommended that you add a safety margin to this figure to allow for variation caused by vessel movements.
Min safe width:	Enter your vessel's maximum width at its widest point. To ensure adequate clearance on both sides, it is recommended that you add a safety margin for port and starboard to this figure to allow for variation caused by vessel movements.
Min safe depth:	Enter your vessel's maximum depth when fully laden. This is the depth from the waterline to the lowest point on the vessel's keel. To ensure adequate clearance, it is recommended that you add a safety margin to this figure to allow for variation caused by vessel movements.
Num of engines:	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 • 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

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.
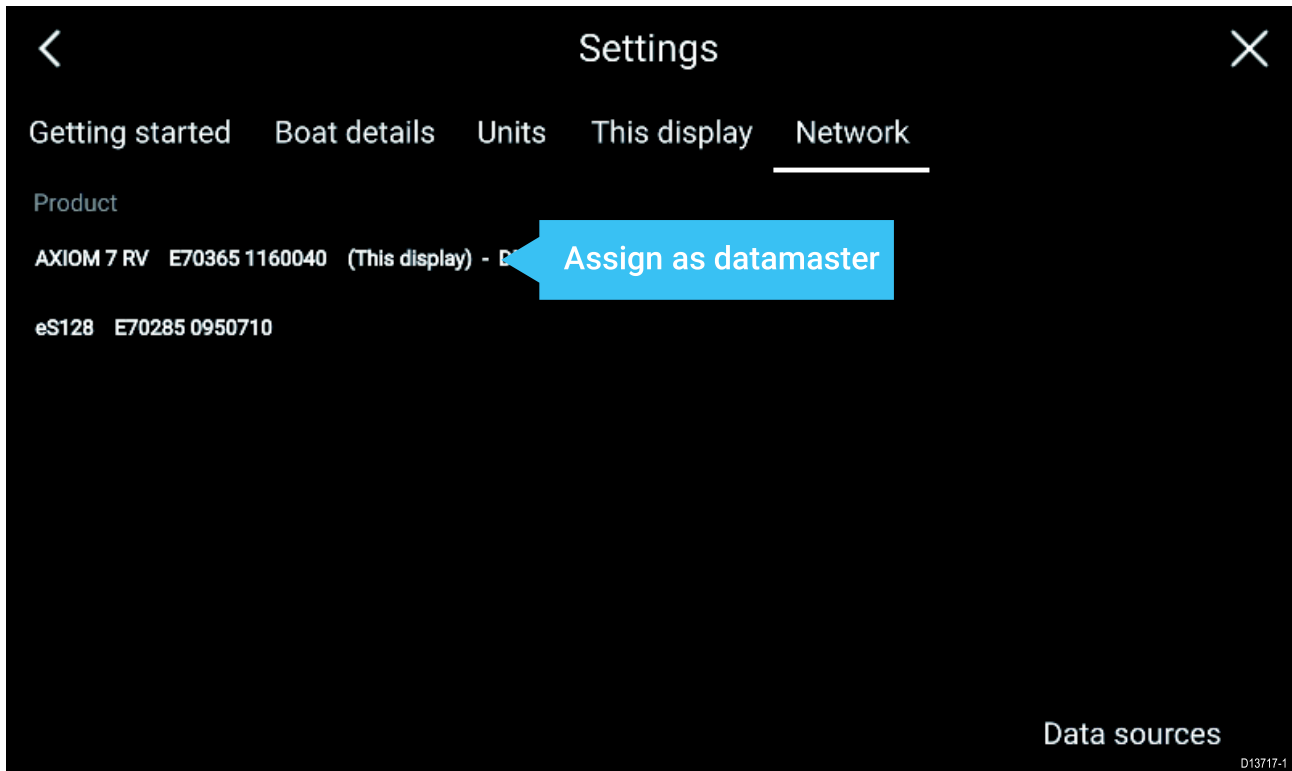
From the Network tab: **Homescreen > Settings > Network:**
1. Select an MFD from the list that you want to designate as the new Data master.
2. Select **Assign as Data Master** from the popover options.

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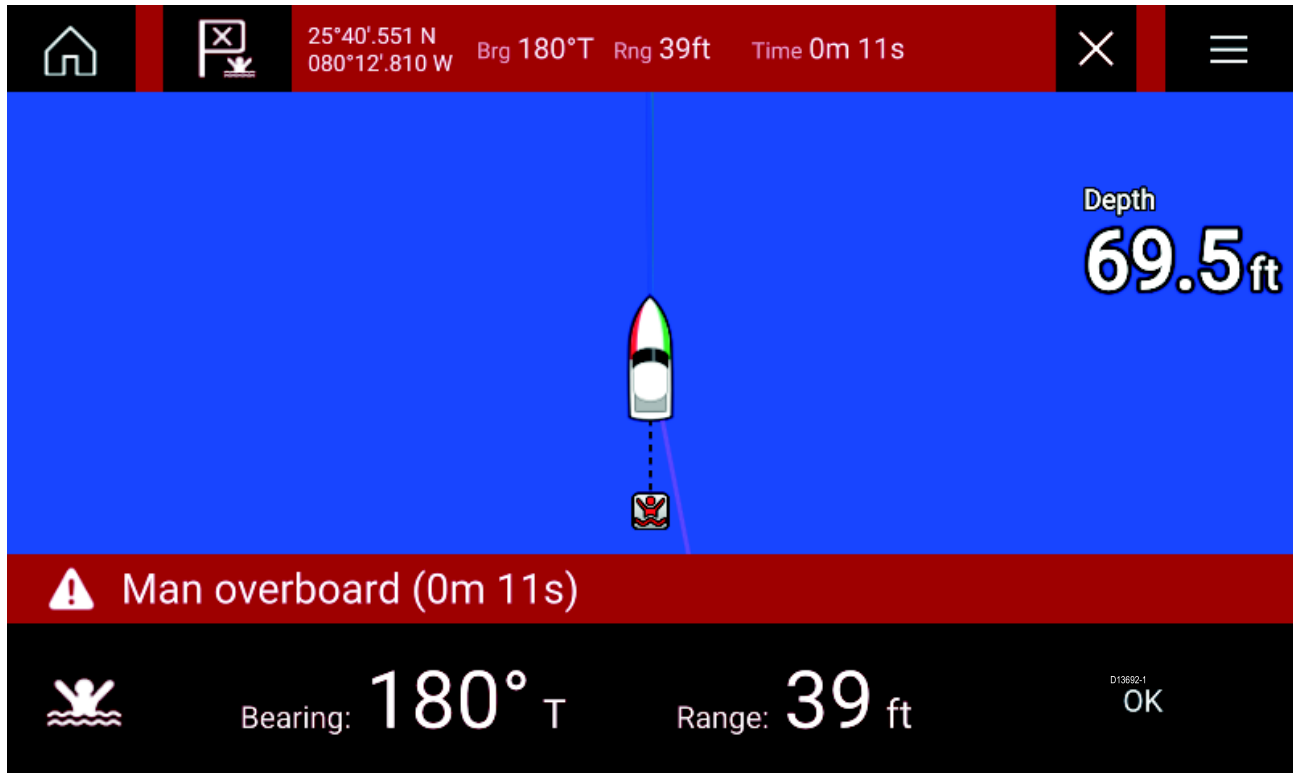
The MOB feature requires your vessel to have a valid position fix from a GNSS receiver. Dead reckoning mode also requires Heading and Speed data.

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.
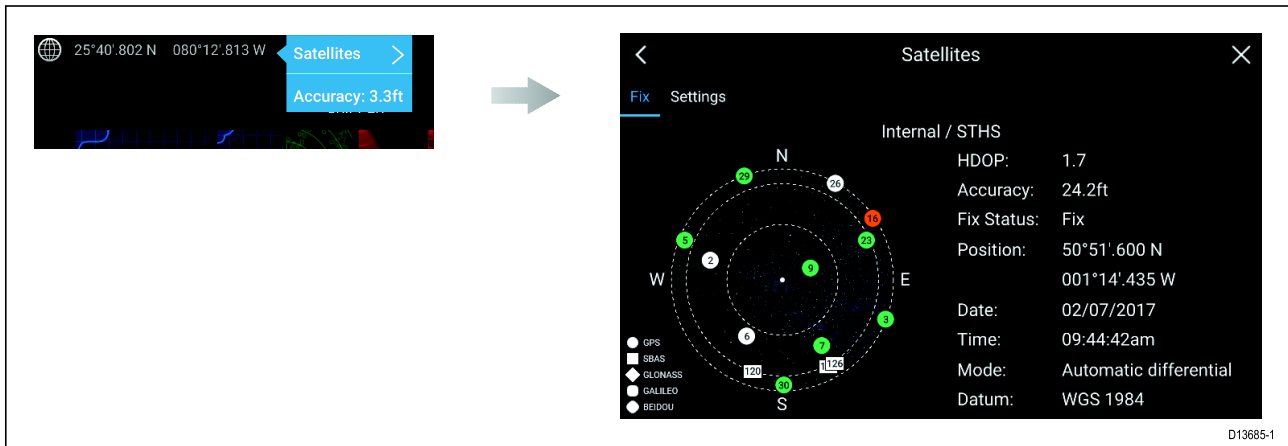

The sky view on the left side of the page shows the position of navigation satellites and the constellation they belong to. The color of the satellite identifies its status:

- 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 popover** > **Satellites** > **Settings**.
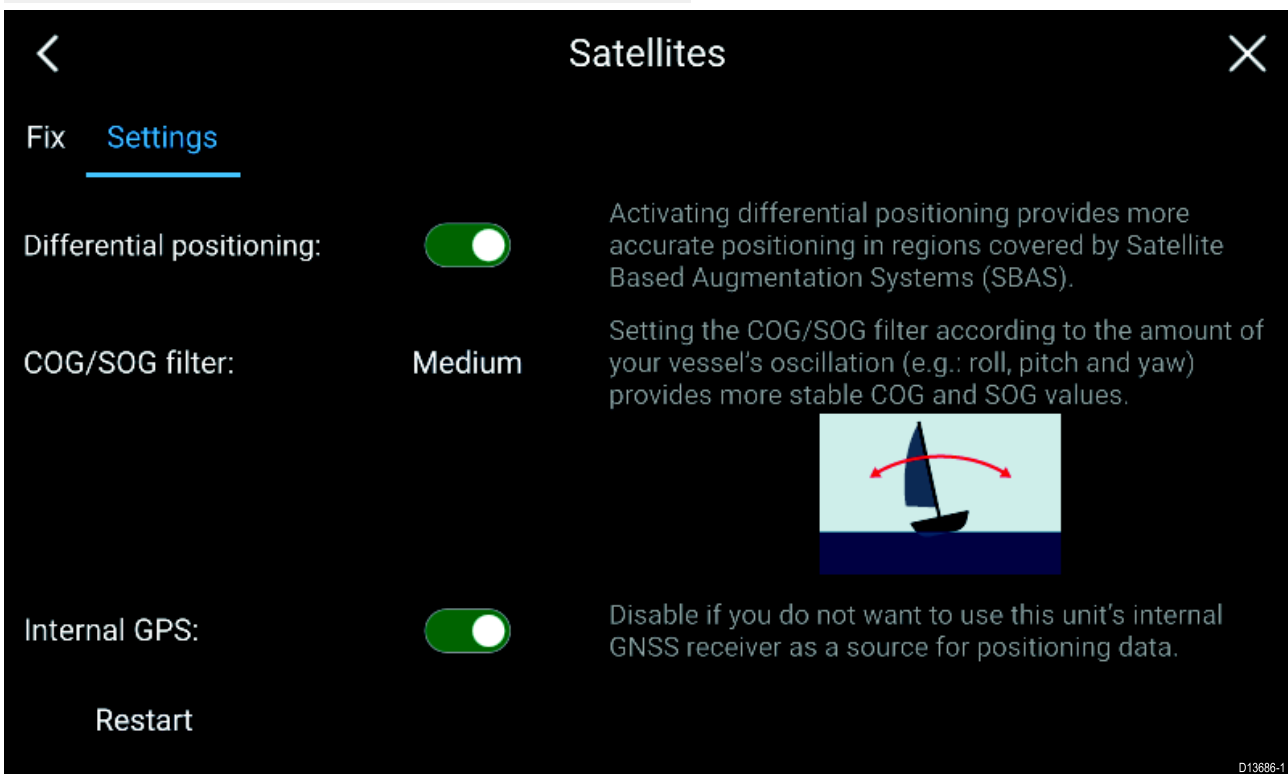
From the GNSS Settings tab you can:

- 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 External devices

You can view the status of peripheral devices connected to your MFD using the Status area, located at the top right of the Homescreen. You can also connect and disconnect from some devices using the Status area popover menu.
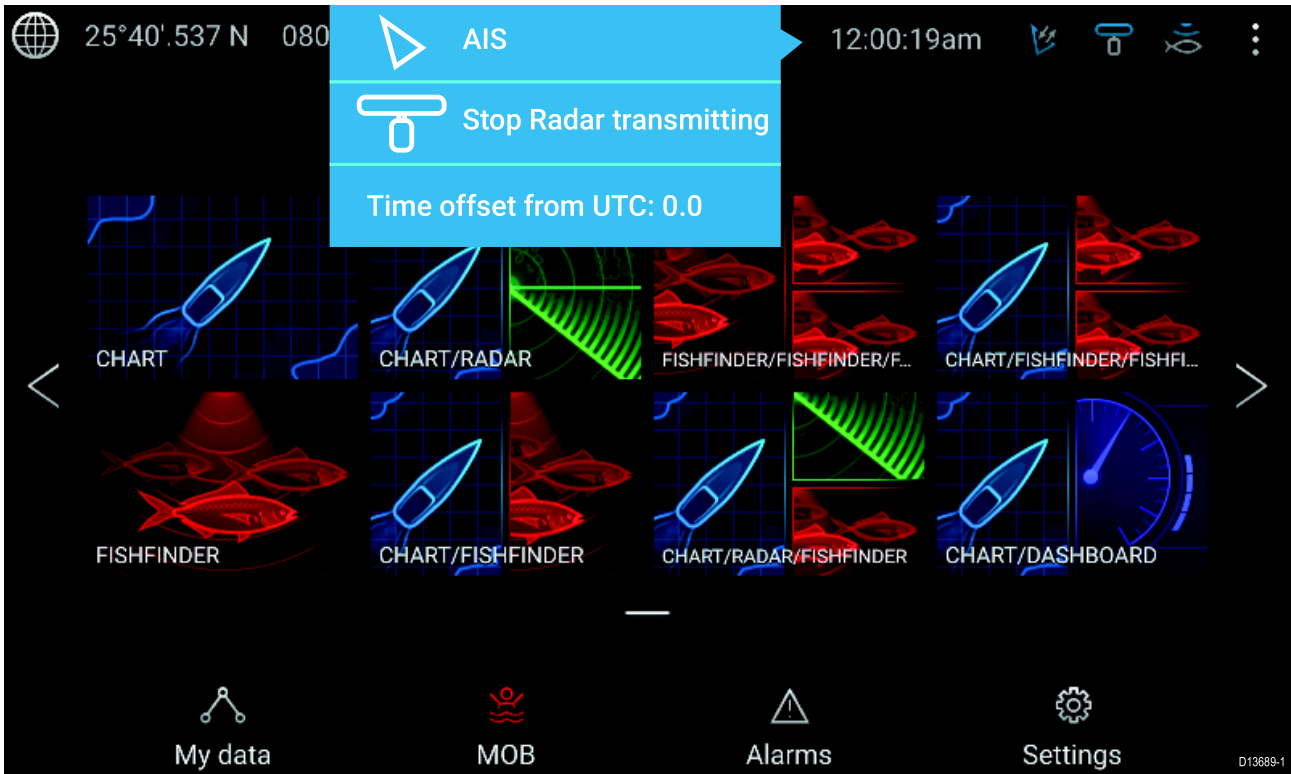
Status area icons

The following devices' status can be reported in the Status area:

- AIS
- Radar
- Sonar module/Transducer

Popover menu options

From the **Options** popover you can:

- Switch your AIS transceiver between transmitting and silent mode.
- Disable Radar transmission
- Adjust the Time offset from UTC.

The status area also provides the **Time** and identifies when the MFD is in **Touchlock** mode.

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

Icon	Status	Icon	Status
	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

Chapter 5: General app settings

Chapter contents

5.1 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 Popover 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 popover menu.
4. Select the data type you want to be displayed.

5.2 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.
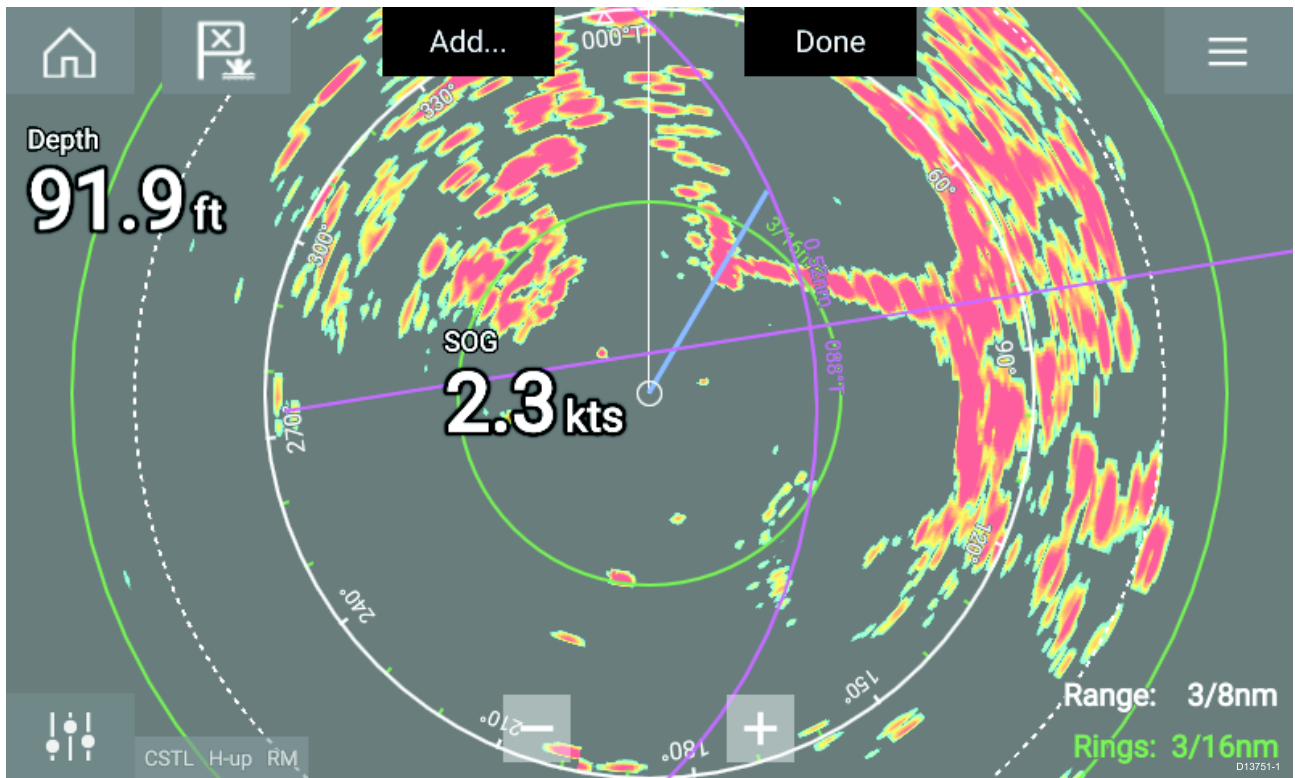
Data overlays can be placed anywhere on the app page and can be placed over any app in a Splitscreen app page.

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 Popover menu where you can **Edit**, **Move**, **Resize** or **Delete** the Data overlay

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

5.3 Editing the split ratio of a Splitscreen app page
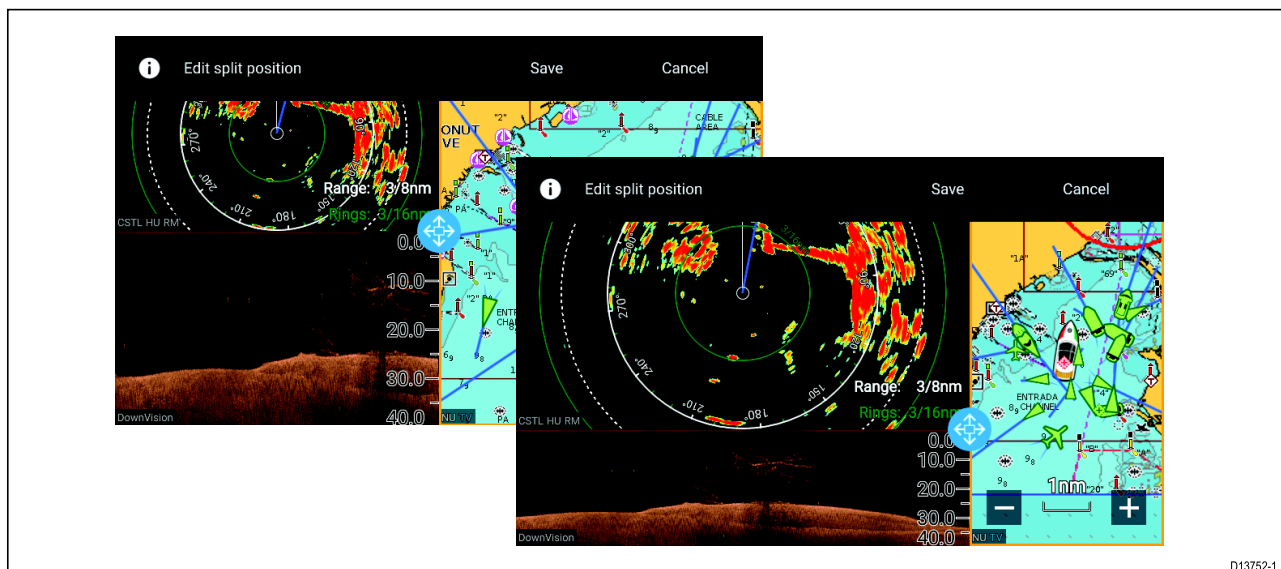
With a Splitscreen app page displayed:

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**.

5.4 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 6: Waypoints, Routes and Tracks

Chapter contents

6.1 Waypoints

Waypoints are used to mark specific locations or points of interest. Waypoints can be used in the Chart, 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
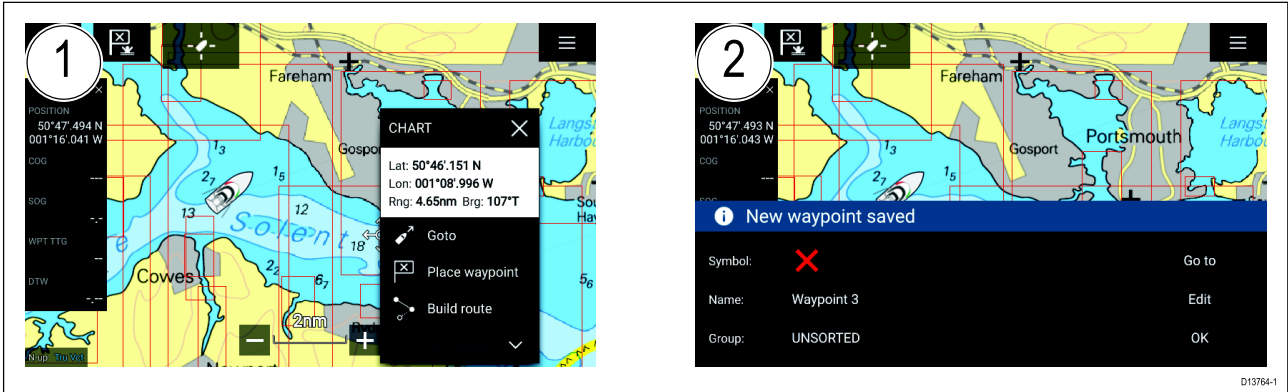
1. Select and hold on the desired location and select **Place waypoint** from the context menu..
2. Select **Edit** to edit the waypoint details, **Goto** to navigate to the Waypoint, or **OK** to return to normal operation.

 To place a waypoint at your vessel's current location press the Waypoint/MOB icon located next to the Homescreen icon.

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**.

Navigating to a waypoint

1. Select and hold on the waypoint and select **Goto** from the context menu.
2. The Chart app will begin navigation, if required, physically engage your autopilot.
3. An alarm will sound when you reach the waypoint.

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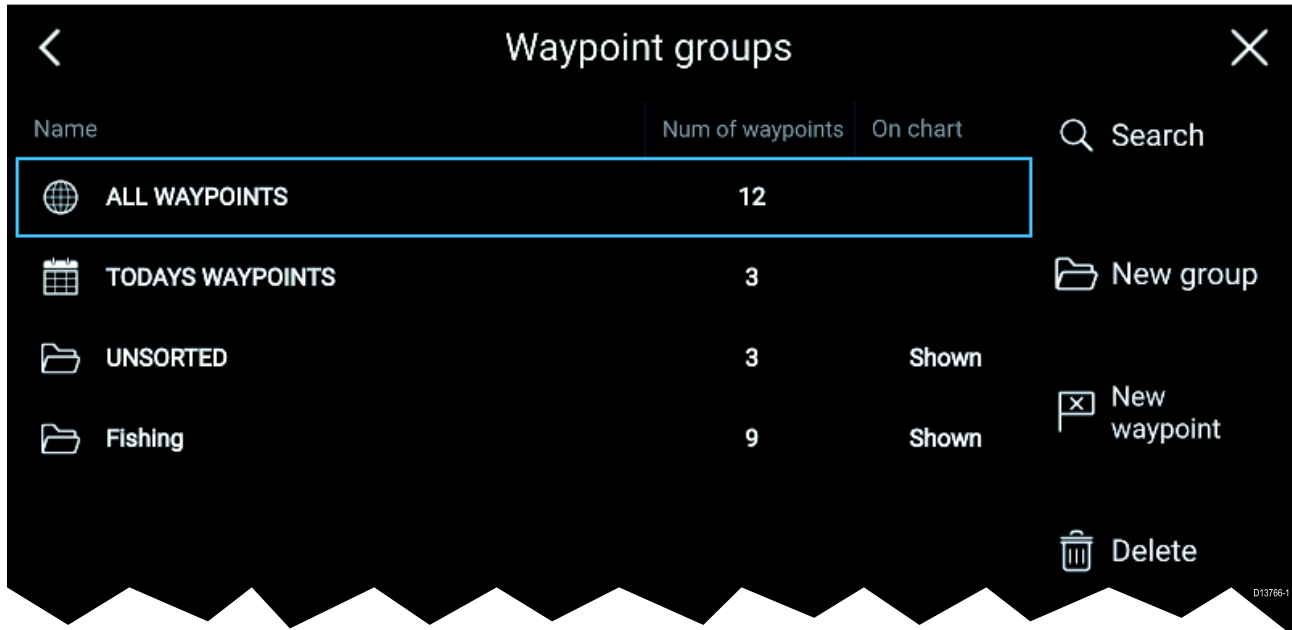
From the Waypoint list you can **Search** for a waypoint, Create a **New group**, Create a **New Waypoint** or **Delete** a waypoint group.

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**.

6.2 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
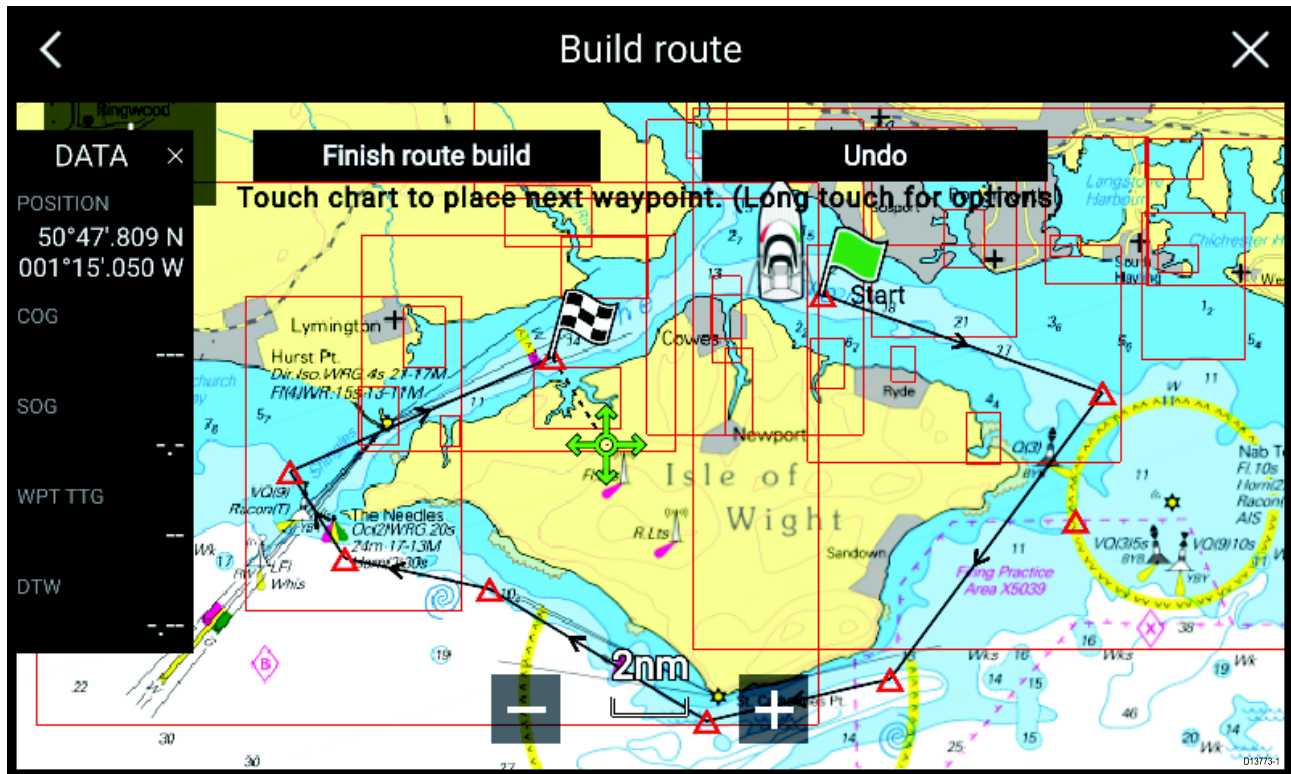
1. Select and hold on the location for the first waypoint.
2. Select **Build route** from the context menu.
3. Select the location for the second waypoint.
   The 2 waypoints will be joined by a line, creating the first leg of your route.
4. Select the location for subsequent waypoints.
5. Check your 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**.

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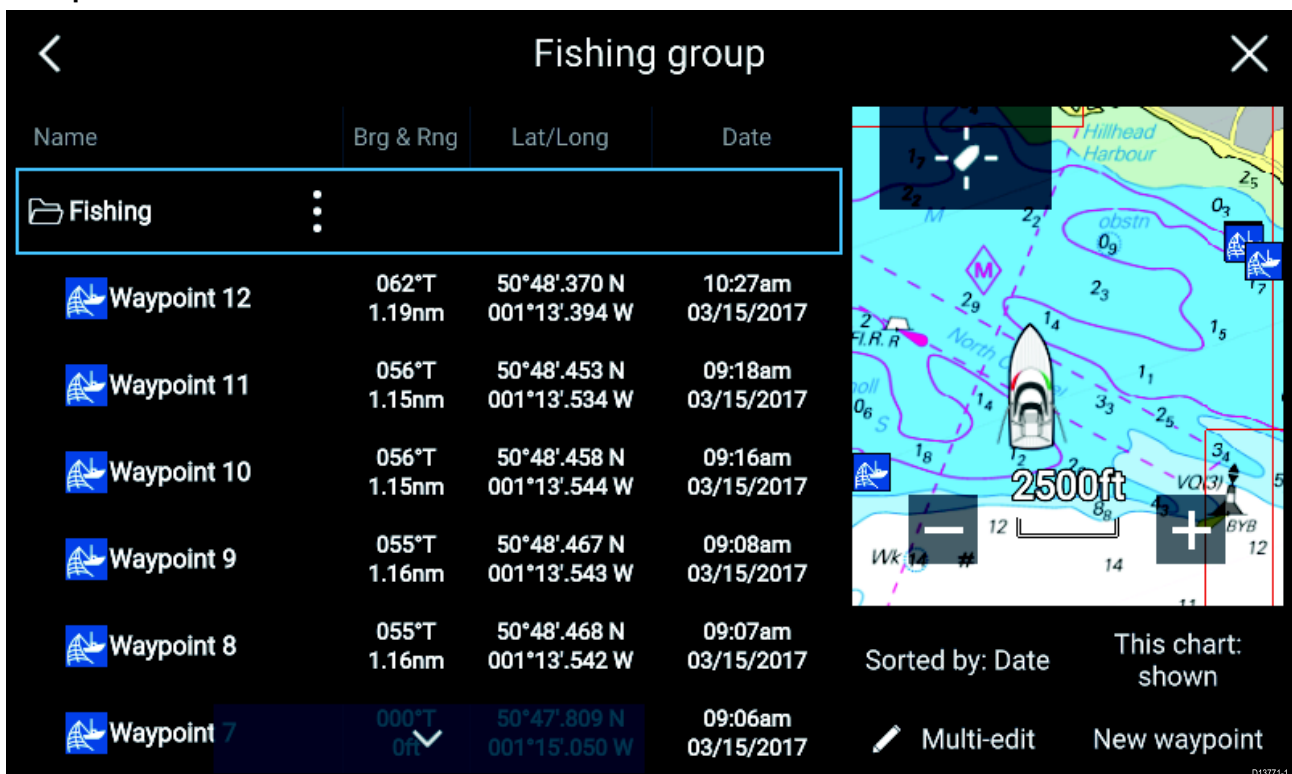
If the Route list is accessed from the Chart app menu, then the selected route is displayed in a Chart pane on the right of the screen.

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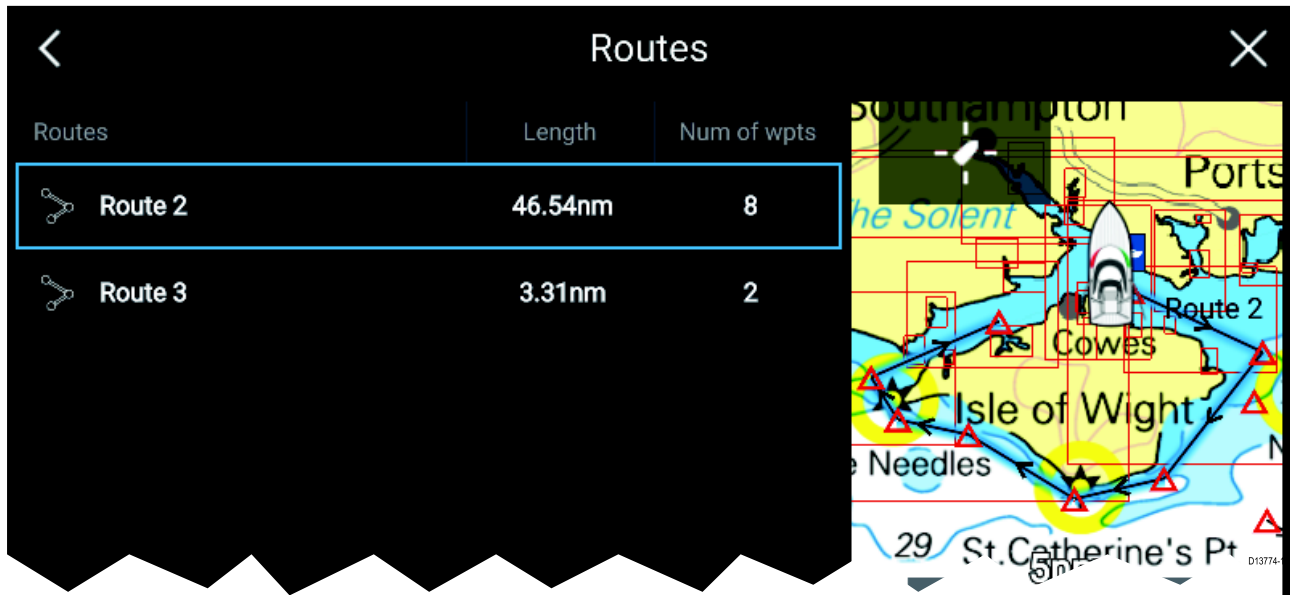
From the route list you can **Delete** routes or create a **New route** using existing waypoints.

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, remove the waypoint from the list, delete the waypoint, edit 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.

6.3 Tracks

Tracks are used to record where you have been. Tracks are made up of track points that are created at regular time or distance intervals. You can store up to 15 tracks on your 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
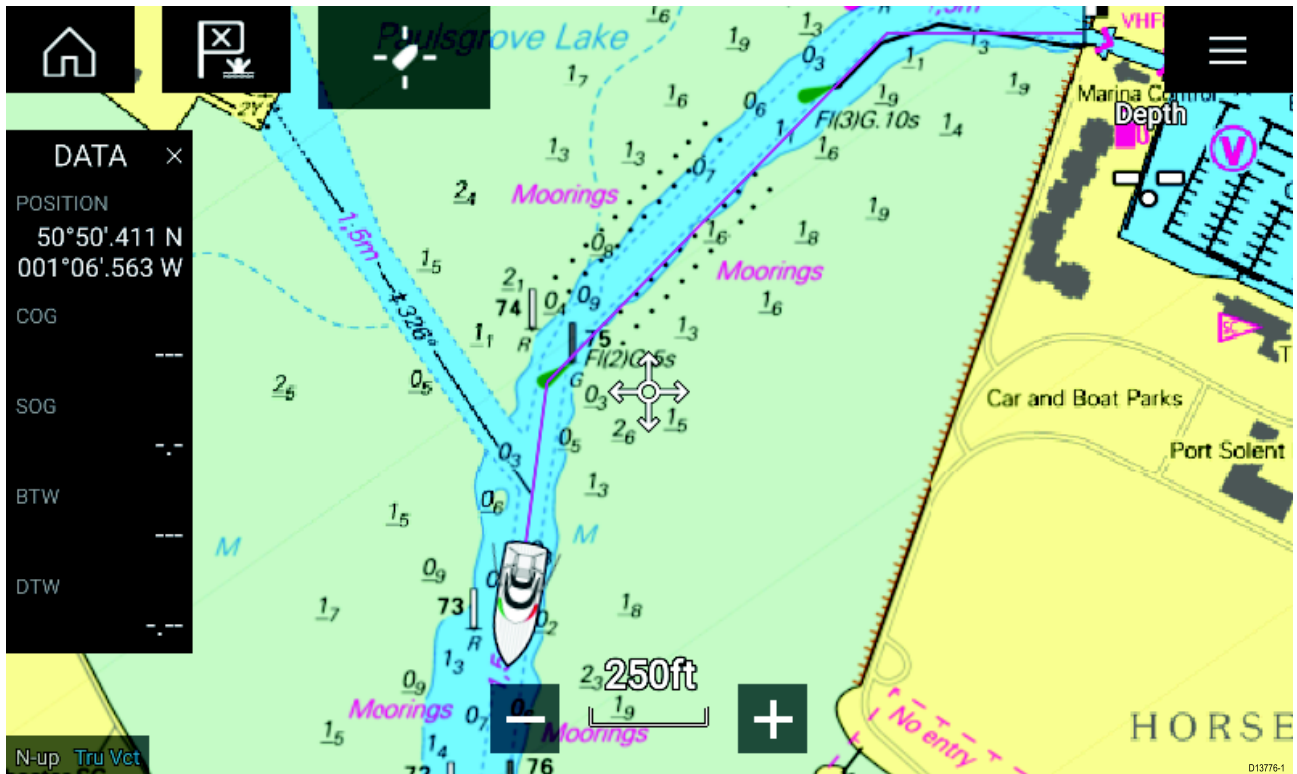
1. Select and hold on your vessel icon to display the vessel popover options.
2. Select **Start track**.
3. Select **Stop track** from the popover options when you have completed your track.
4. Select **Save** to save the track or **Delete** to remove the track.

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.

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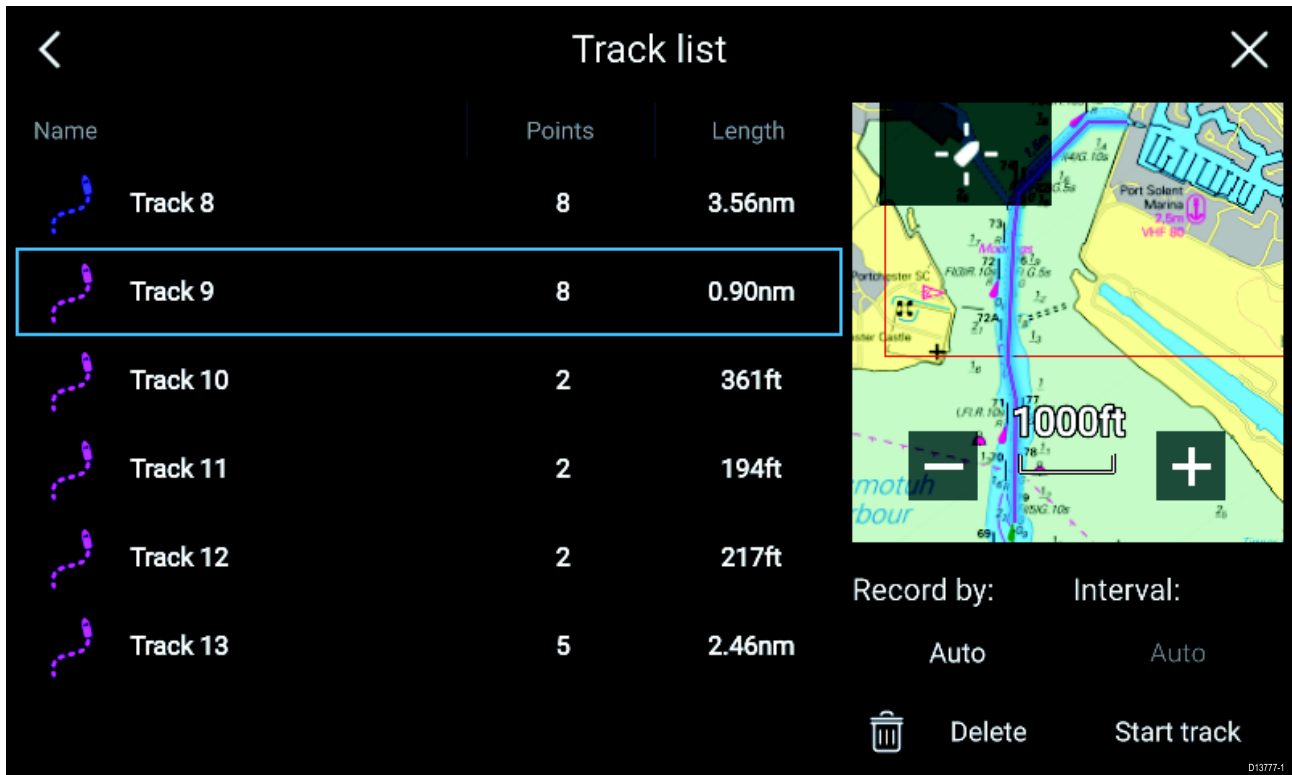
From the track list you can Start or Stop tracks recording, **Delete** a track or choose how tracks are recorded.

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 popover 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 7: Chart app

Chapter contents

7.1 Chart app overview

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

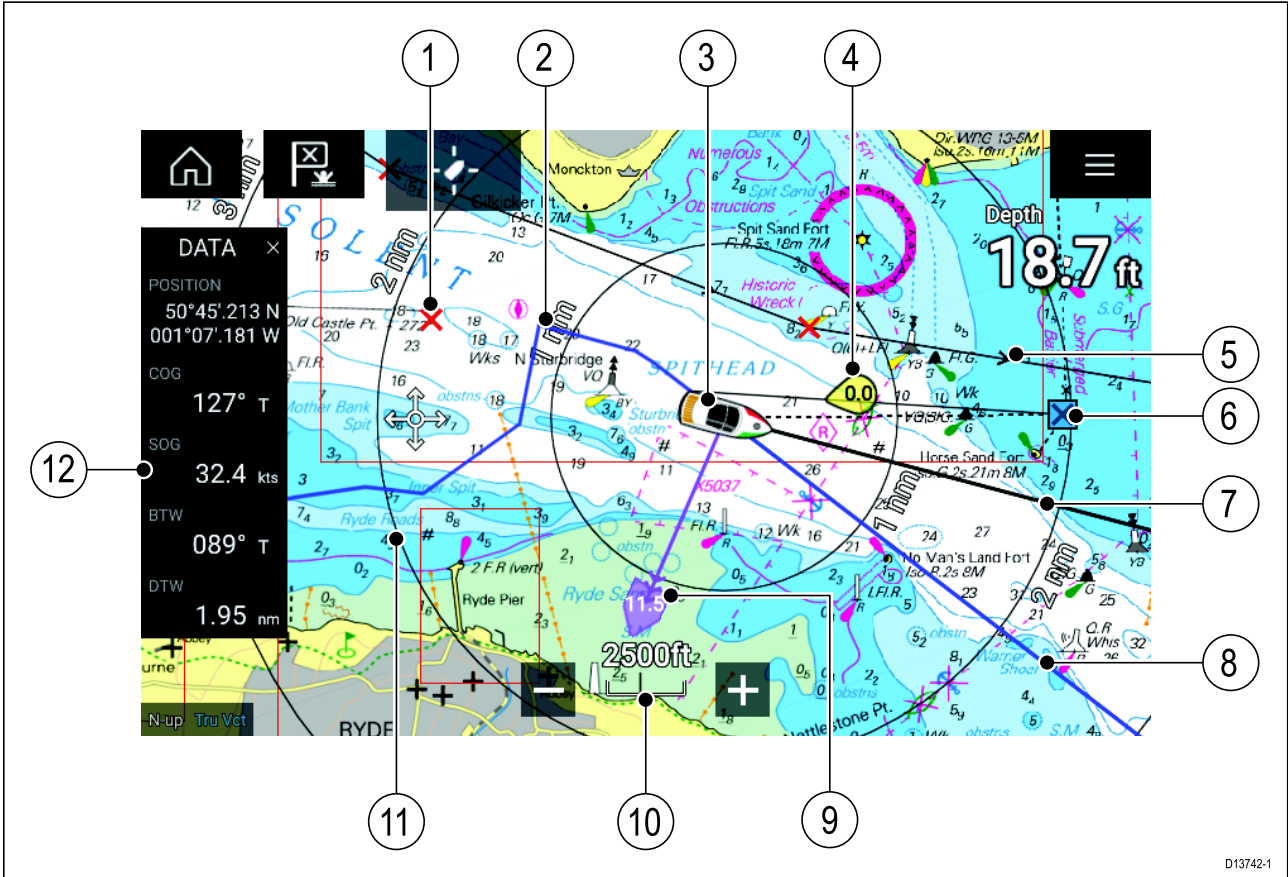For each instance of the Chart app you can select which electronic cartography that you want to use, the selection will persist over a power cycle.

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
	Menu icon	Opens the app menu
	Waypoint / MOB	Place waypoint / hold down to activate Man overboard (MOB) alarm
	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.
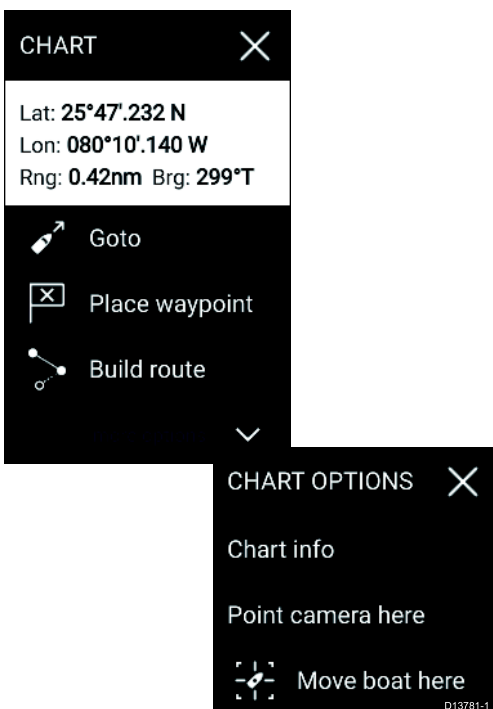
- Context menus are accessed in the Chart app by pressing and holding on a location or object.
- The context menu provides Latitude, longitude, range and bearing details for the selected location or object.
- The context menu provides quick access to relevant settings or features.
- Select **More options** to display further options.

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

Selecting a chart card

You can use electronic charts from supported vendors to enhance the level of detail provided by the Chart app. The electronic chart card must be inserted into the MFD's MicroSD card reader (or the card reader of an MFD on the same network).
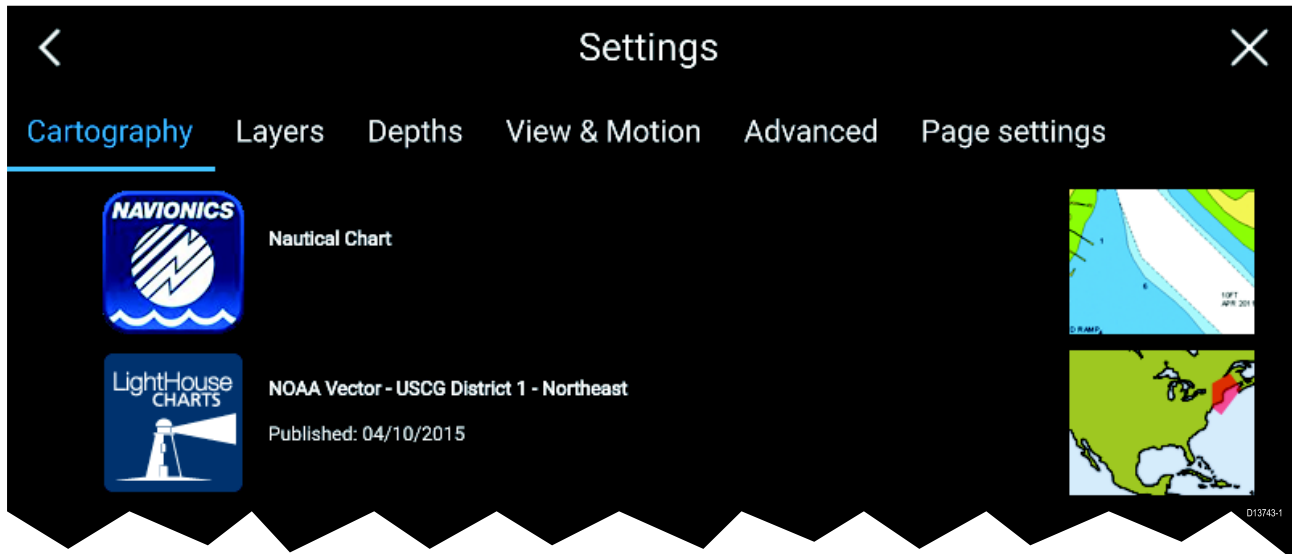
From the Chart app menu:
1. Select the **Settings** icon.
2. Select the cartography that you want to use.

Chart modes

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

DETAILED
This is the default chart mode. Full menu options are available and any changes made are saved to the user profile in use.

FISHING
Fishing mode optimizes the Chart app for Fishing and displays more detailed contour lines, if supported by your selected cartography. Full menu options are available and any changes made are saved to the user profile in use.
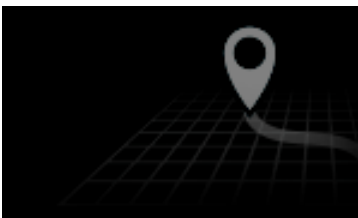
SIMPLE
In Simple mode chart detail is suppressed to provide a clearer, simpler view for navigation. Only navigation menu options are available. Changes to settings are not saved.

Vessel details

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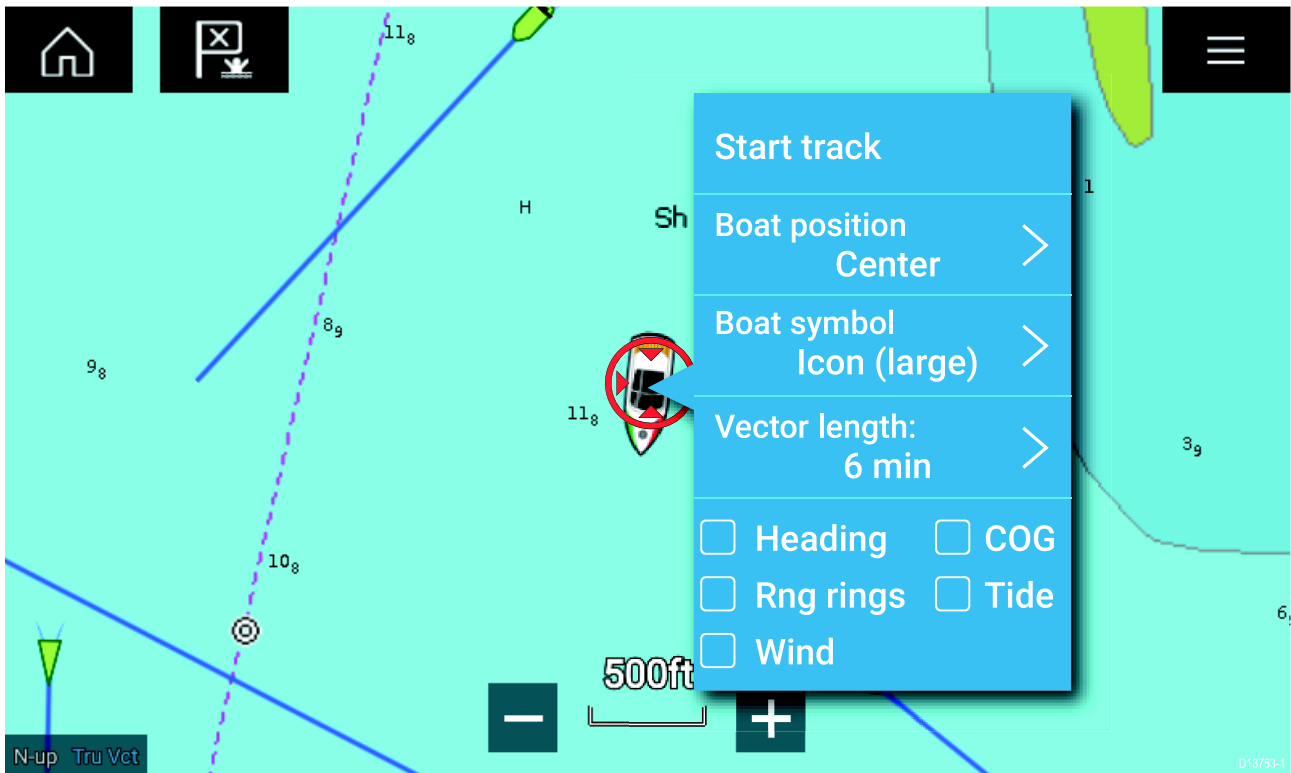
From the Vessel details popover you can:

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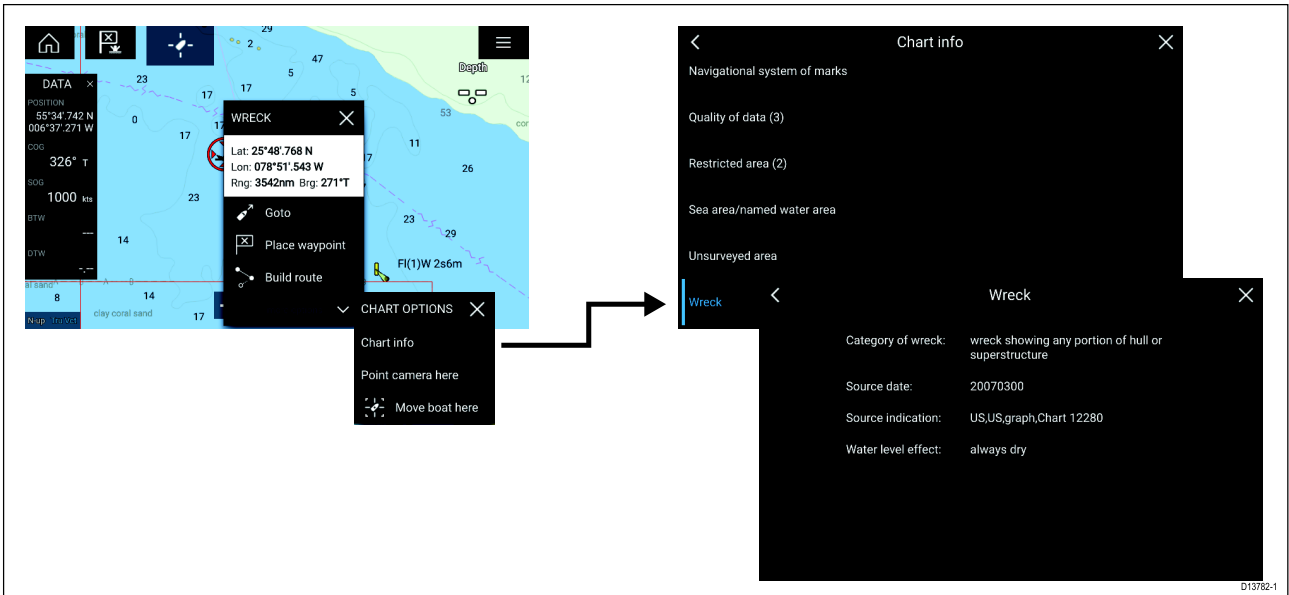
Selecting and holding on the object will display the object context menu.

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

Aerial, AIS, Radar and Range rings can be overlaid on the Chart app.
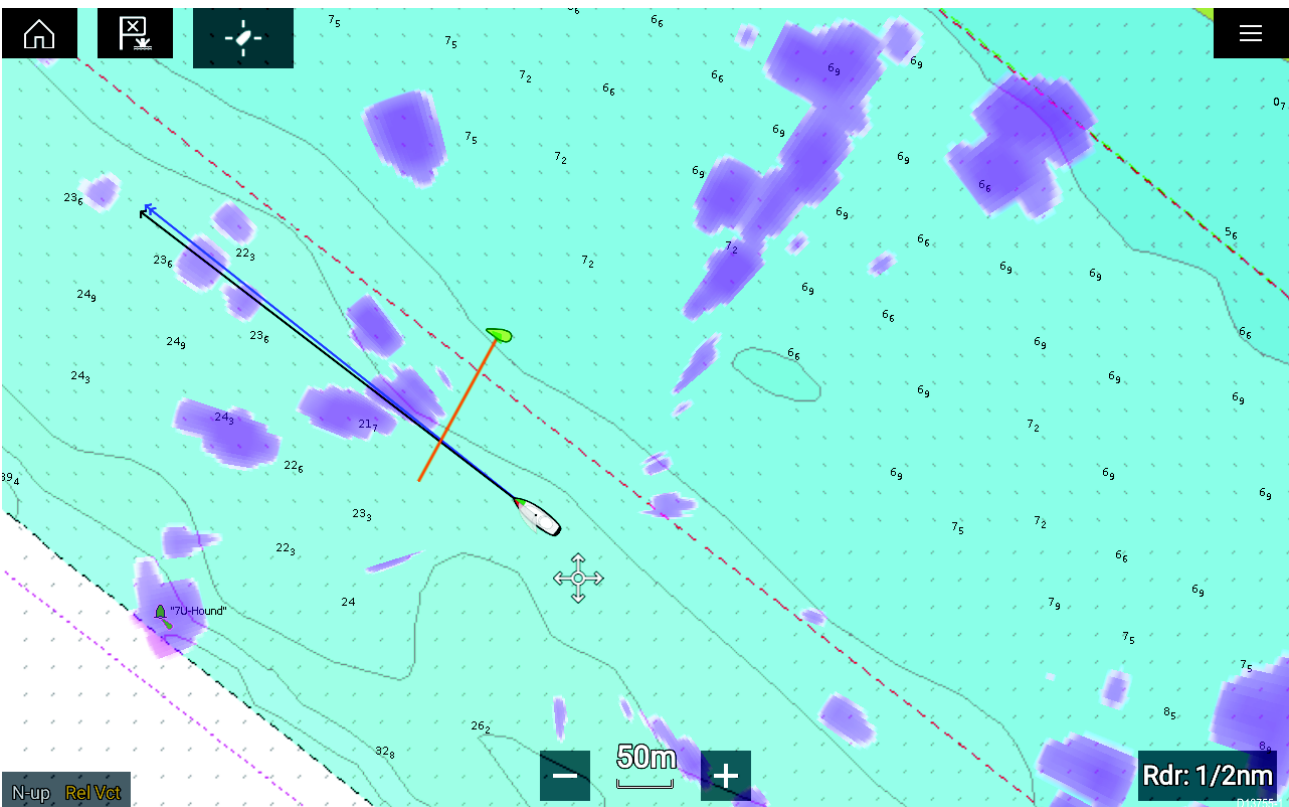
The Layers tab from the Chart app Settings menu: **Menu > Settings > Layers** provides controls for Chart layers.

View and motion

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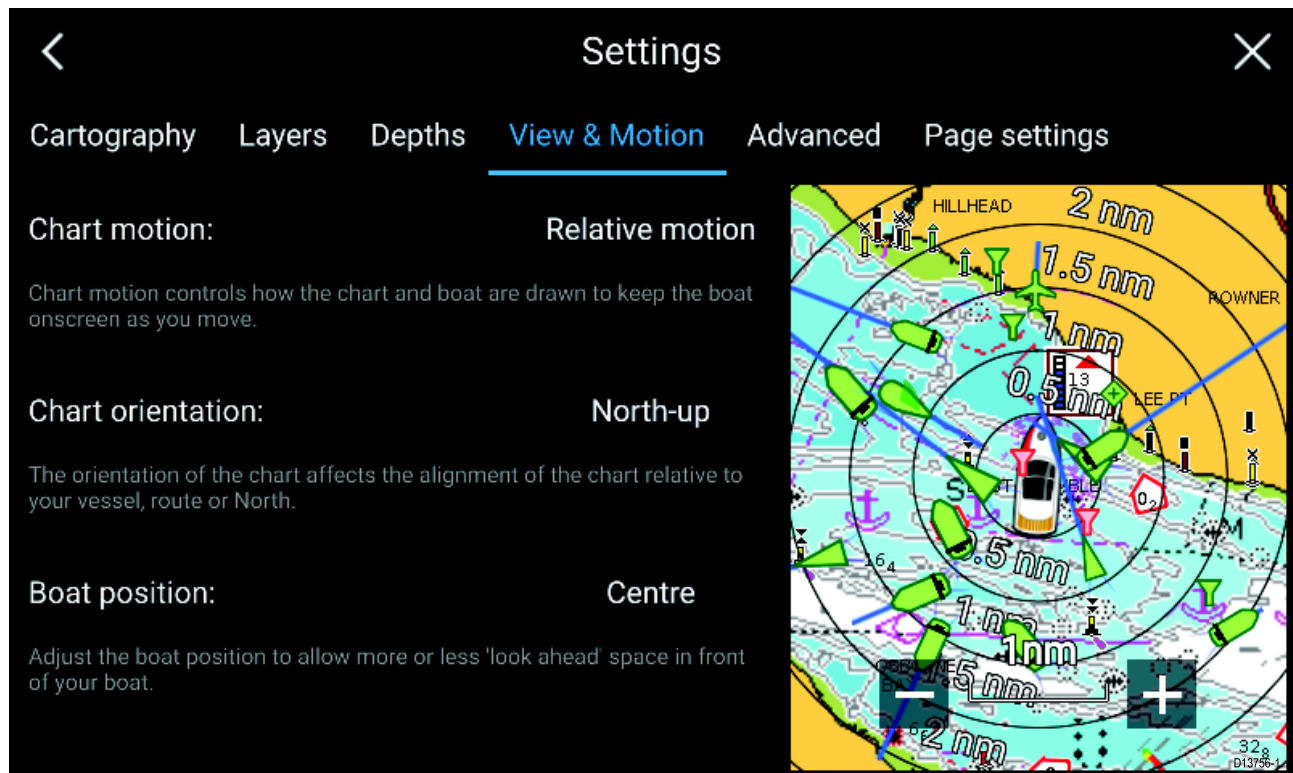
Chart motion

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.

7.2 Navigation

Performing a Goto

You can perform a "Goto" to a Waypoint or specific location.

1. Select and hold on the Waypoint or point of interest on the Chart.
2. 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**.*

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.

7.3 Target tracking

With compatible AIS and Radar hardware connected to your MFD, you can track AIS and Radar targets. AIS targets can be tracked in the Chart app and Radar targets can be tracked in the Radar app and also in the Chart app, when the Radar layer is switched on.

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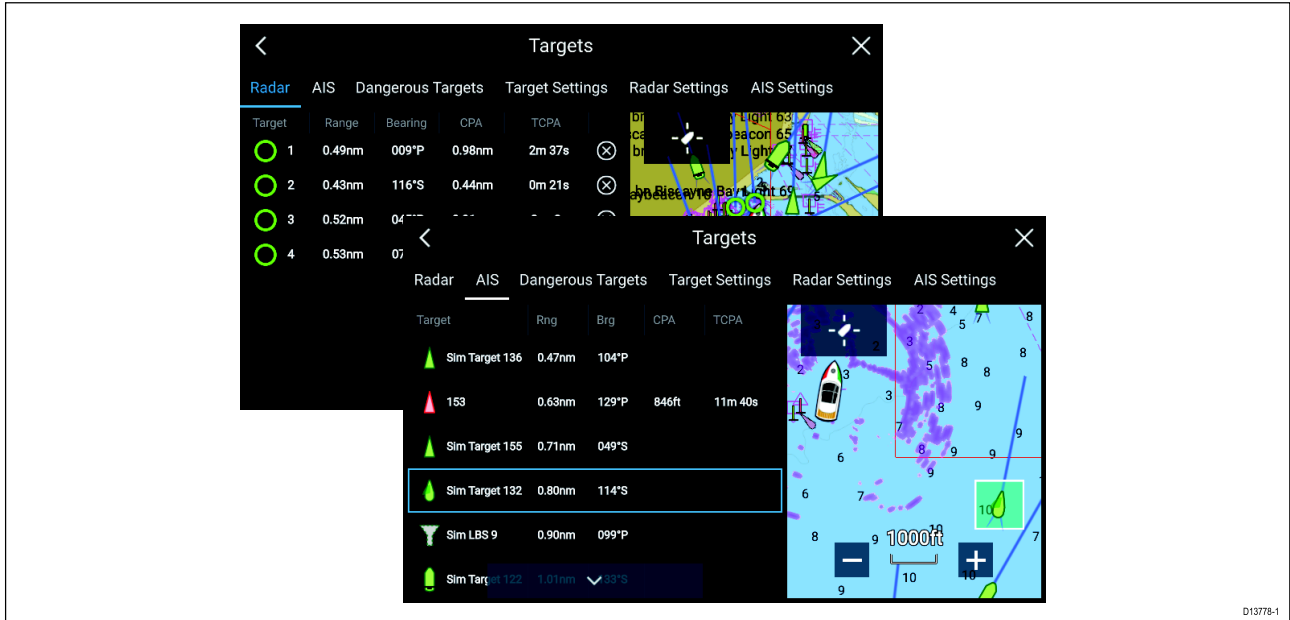
Selecting a target from the list will highlight the selected target in the app pane on the right of the screen.

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

AIS list

The AIS target list popover 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 them 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 popover 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**.
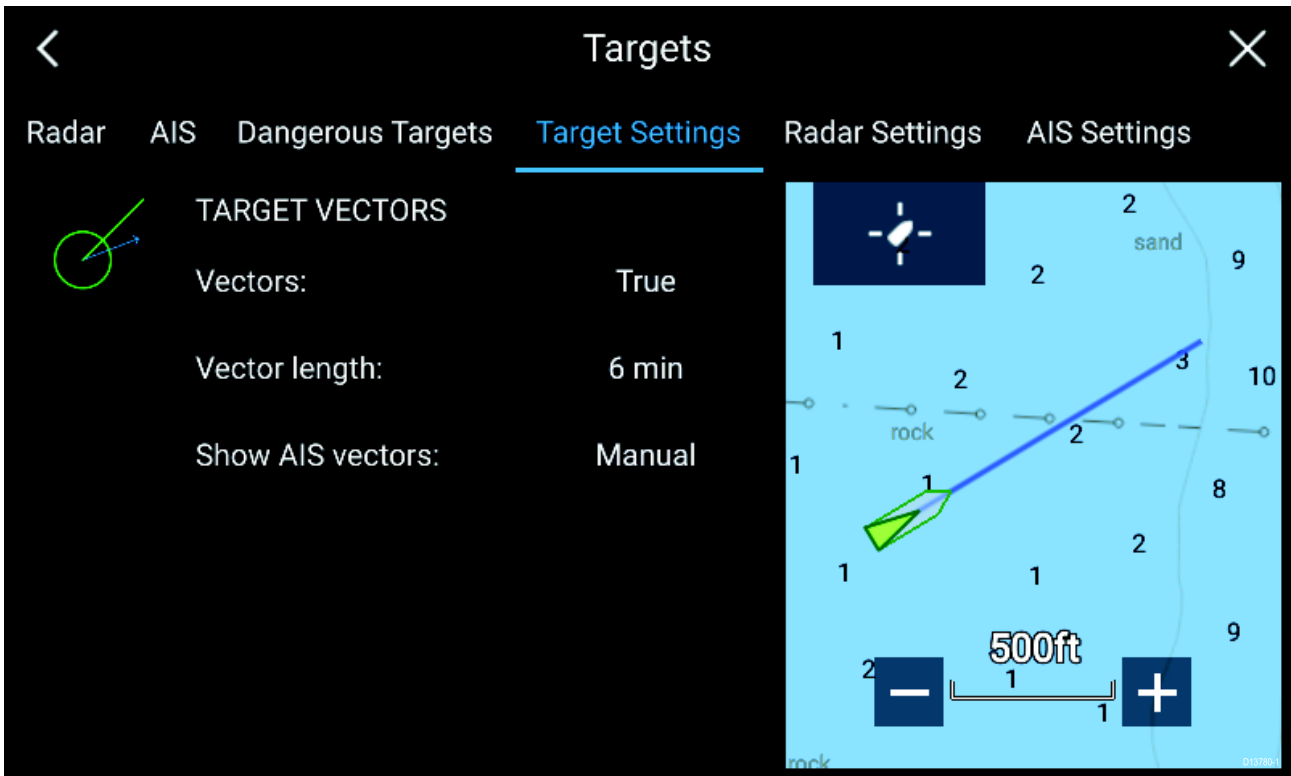
The vectors can be set to **True** or **Relative**.

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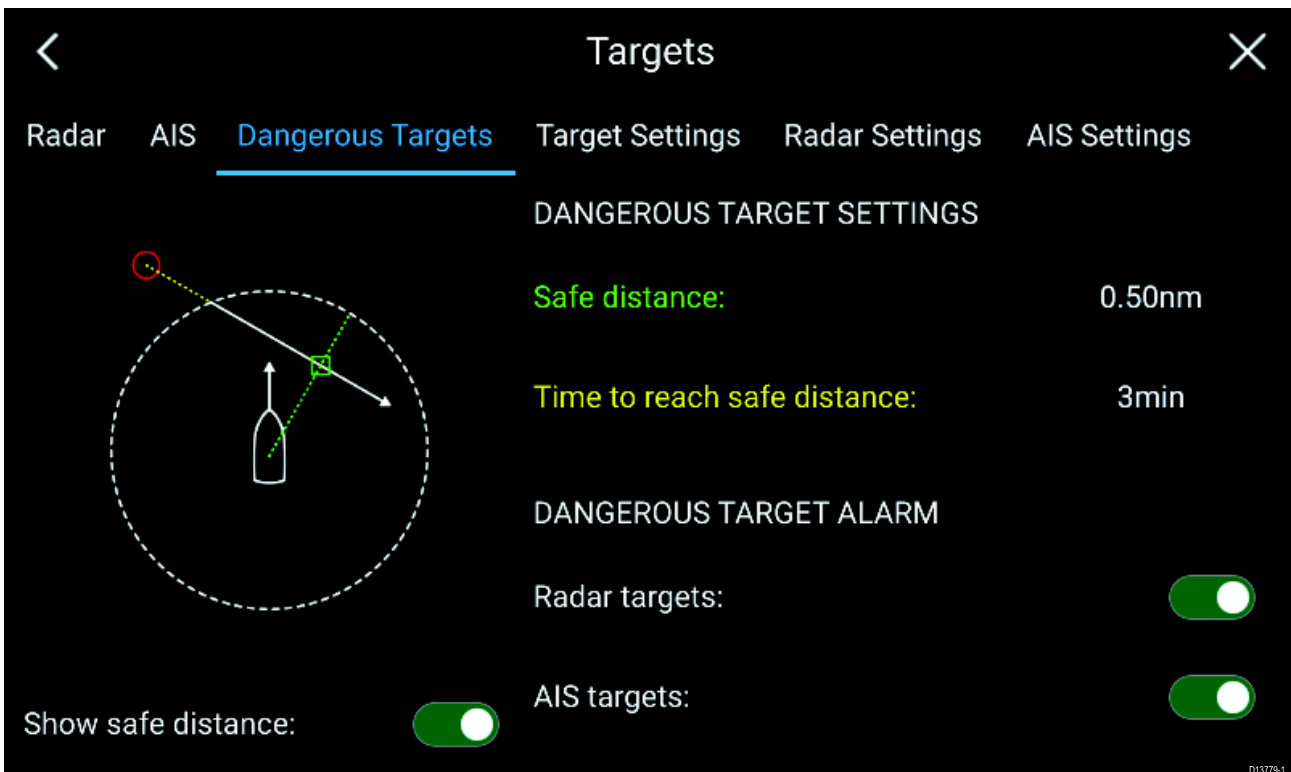
To set up the Dangerous target alarm, first adjust the **Safe distance** to the desired value and then select a **Time to reach safe distance**. The alarm will be triggered if a tracked target will reach the specified Safe distance from your vessel within the time period selected.

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	Enables and disables AIS targets in the Chart app.	• 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 app.	• All • Dangerous • Buddies

Setting	Description	Options
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

7.4 Chart settings menu

The table below lists settings applicable to the Chart app and their location within the app Settings menu.

Cartography

Settings	Description	Options
Navionics LightHouse Charts	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
Aerial	Provides photographic overlay on cartography.	• On • Off	Navionics
AIS	Allows you to display AIS targets overlaid in the Chart app. Requires AIS hardware.	• On • Off	All
Radar	Provides an overlay of your Radar scanner image on the Chart app. Requires Radar scanner hardware.	• On • Off	All
Range rings	Allows Radar like range rings to be overlaid in the Chart app	• On • Off	All
Community edits	Allows you to overlay community edits on your compatible cartography	• On • Off	Navionics
Tides	When using compatible cartography, enables you to view tide and current graphics overlaid on the chart.	• On • Off	Navionics
EasyView	When using compatible cartography, EasyView magnifies useful icons and text to make them easier to read.	• On • Off	Navionics

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 specified maximum depth.	• None • Manual • All	• Navionics • LightHouse (Vector)
Show contours	Enables and disables display of depth contours on the chart. When set to Manual, contours will be shown from zero to the specified maximum depth.	• None • Manual • All	Navionics
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	• Navionics • LightHouse (Vector)

Settings	Description	Options	Vendor
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	• Navionics • LightHouse (Vector)
Deep water color	Allows you to specify Deep water color	• White • Blue	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		• 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
Cartographic objects	The settings that are displayed 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 • Roads • Additional wrecks • Colored seabed areas
Chart appearance	The settings that are displayed are dependent on the cartography in use.	• 2D shading • Aerial overlay • Aerial overlay opacity • Grid • Chart text • Chart boundaries • 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

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.

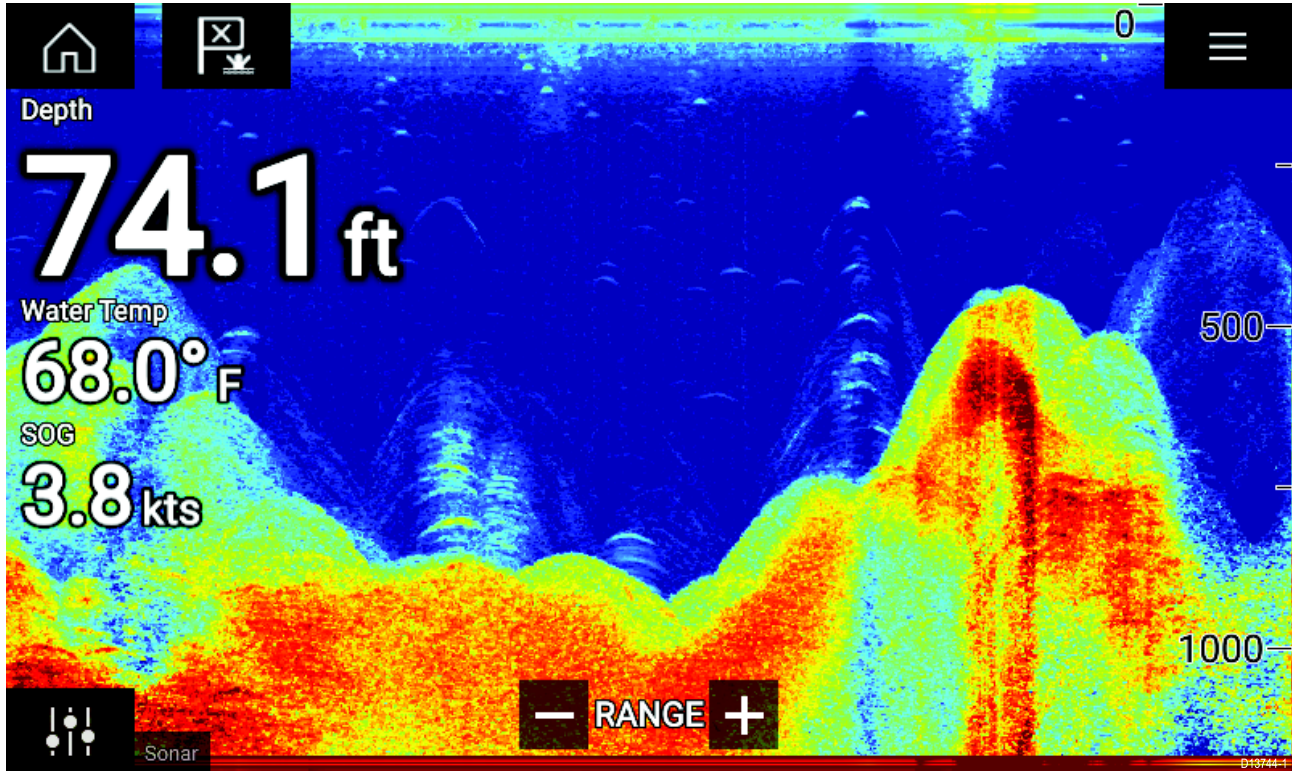# Chapter 8: Sonar app

Chapter contents

8.1 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	Home icon	Takes you to the Homescreen
Menu icon	Menu icon	Opens the app menu
Waypoint / MOB	Waypoint / MOB	Place waypoint / activate Man overboard (MOB) alarm
Image adjustment	Image adjustment	Displays onscreen sensitivity / image adjustment controls
Resume scrolling	Resume scrolling	When the Sonar app is paused, for Waypoint placement, you can recommence scrolling by selecting the Resume scrolling button.

Icon	Description	Action
+	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.
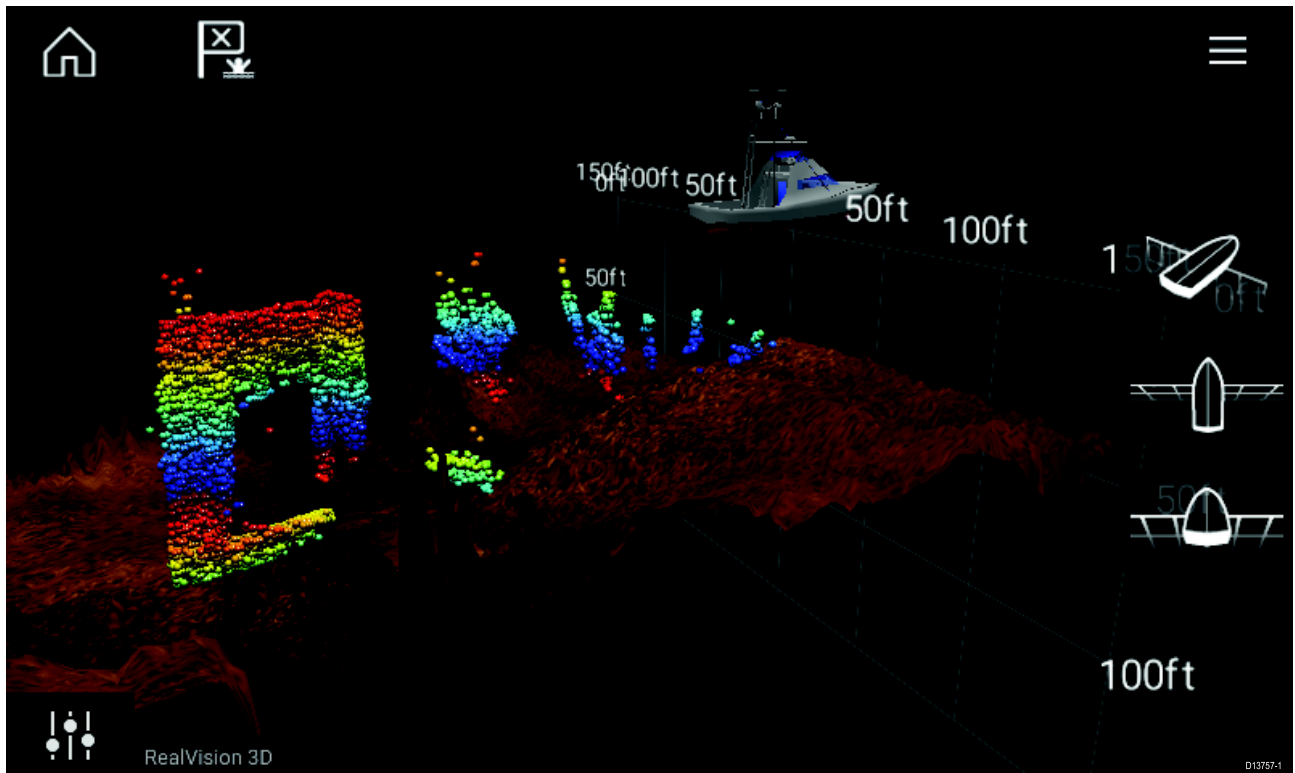
- One finger swipe rotates the image.
- Two finger swipe pans the image around the screen.
- Pinch-to-zoom changes the magnification of the image.
- The Range control determines how far the sonar will ping.

8.2 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.
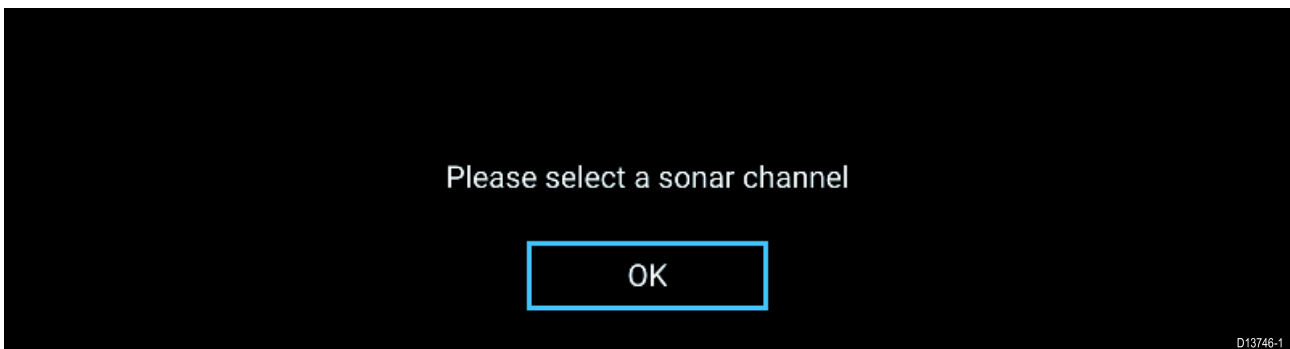
Select **OK** and then choose the Sonar channel you want to use from the list:
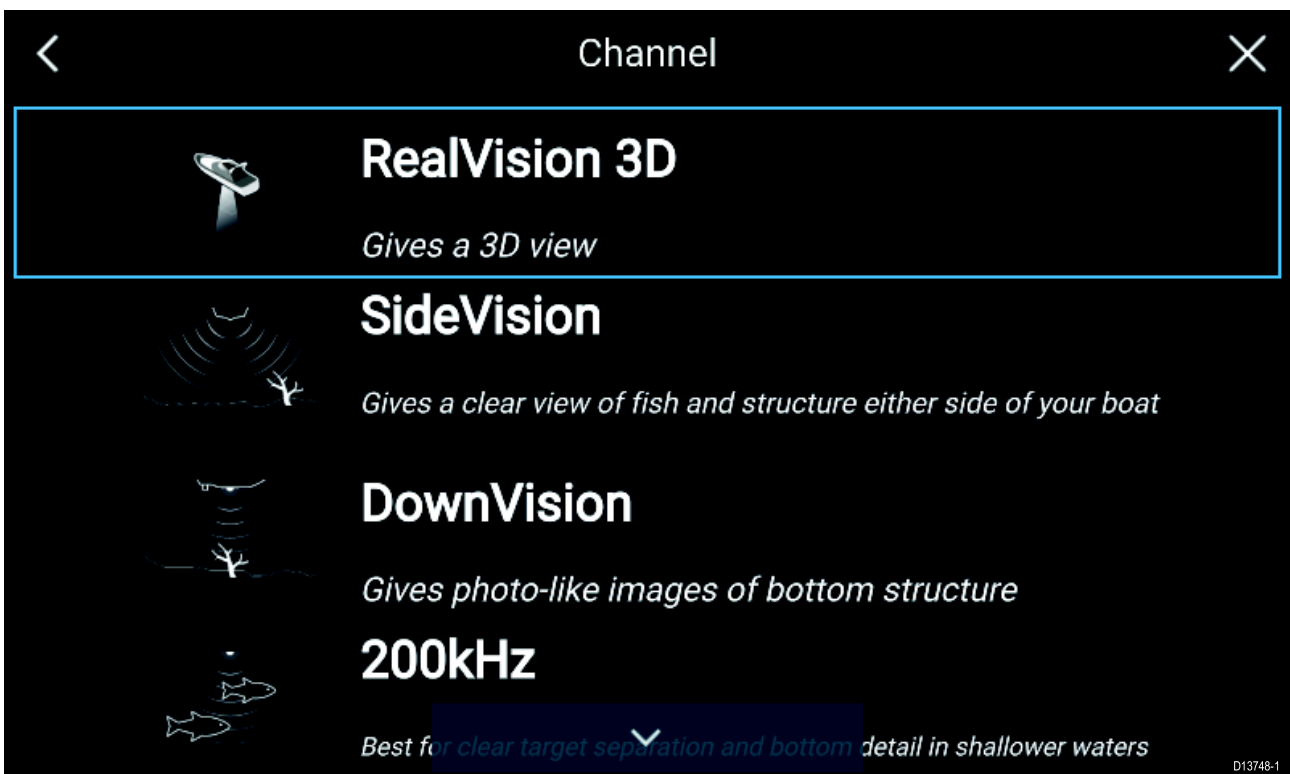
Sonar on and pinging

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.
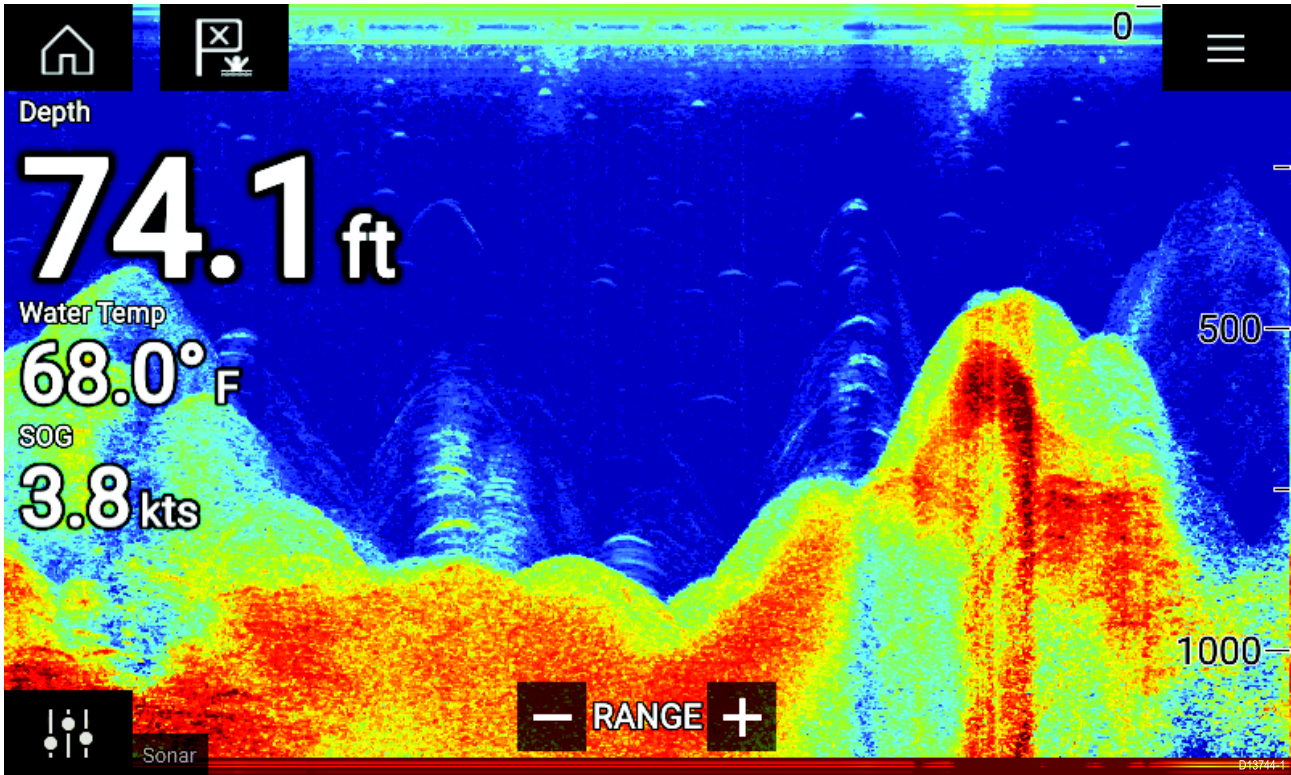
No sonar source available

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.

No sonar source available

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.

No transducer connected

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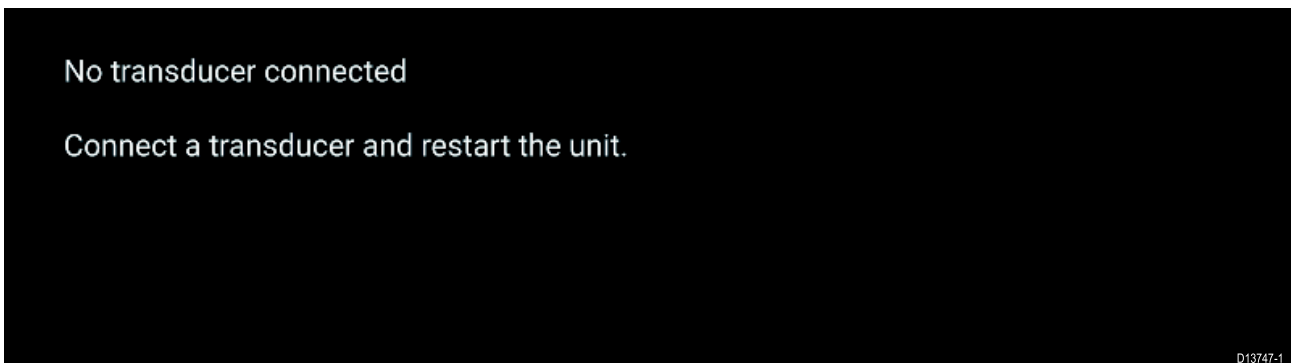
Check your transducer connection(s) are correct and free from damage, then power cycle your system. If the transducer is still not found then refer to your equipment's installation documentation for further troubleshooting information.

8.3 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.

8.4 Placing a Waypoint in the Sonar app

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.

Note: To place a waypoint in a RealVision™ 3D channel, use the onscreen Waypoint/MOB icon or the app menu: **Menu > Add waypoint** to place a waypoint at your vessel's current location..

8.5 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 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.

8.6 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, the deeper the target the darker the color used. **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.

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
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%

Settings	Description	Options
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.

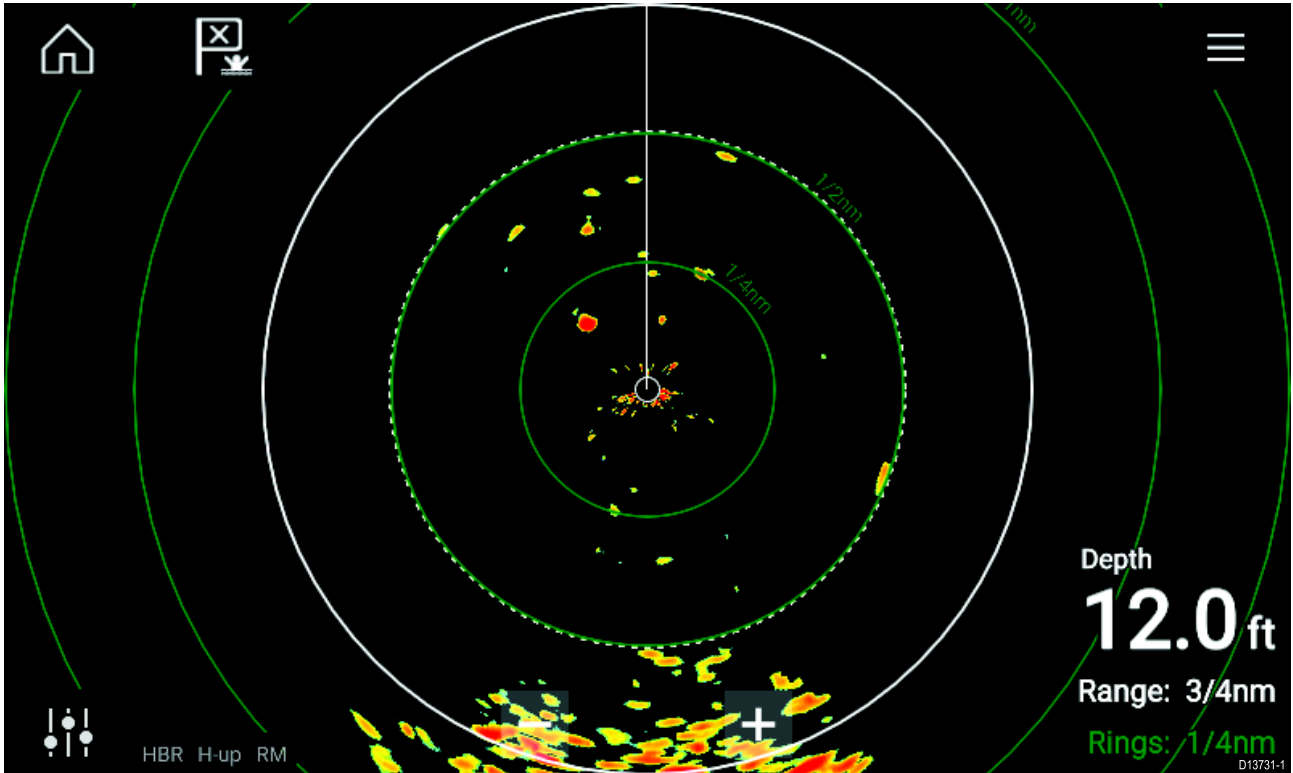# Chapter 9: Radar application

Chapter contents

9.1 Radar app overview

The Radar app displays a visualization of the echoes received from a connected Radar scanner. The Radar app is an aid used to help enhance collision and situational awareness by enabling target's distance and speed to be tracked in relation to your vessel.
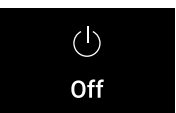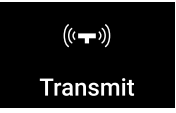
Up to 2 Radar scanners can be connected at the same time. However, only 1 Radar in a system can be a Quantum™ Radar.

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 4 instances of the Radar app.

Radar app controls

Icon	Description	Action
Home icon	Home icon	Takes you to the Homescreen
Menu icon	Menu icon	Opens the App menu
Waypoint / MOB	Waypoint / MOB	Place waypoint / activate Man Overboard (MOB) alarm
Image adjustment	Image adjustment	Displays onscreen sensitivity / image adjustment controls
Off	Power Off	Powers down the current Radar scanner
On	Power On	Powers up the selected Radar scanner
Transmit	Transmit	Start Radar transmission

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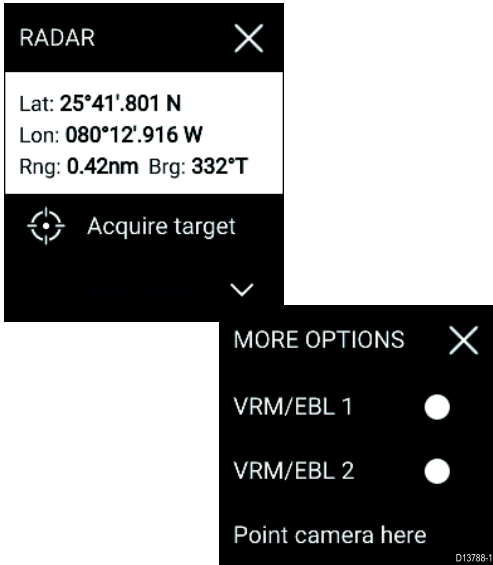
- Context menus are accessed in the Radar app by selecting a location or target.
- The context menu provides Latitude, longitude, range and bearing details for the selected location or object.
- The context menu provides quick access to relevant settings or features.
- Select **More options** to display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

9.2 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.

9.3 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
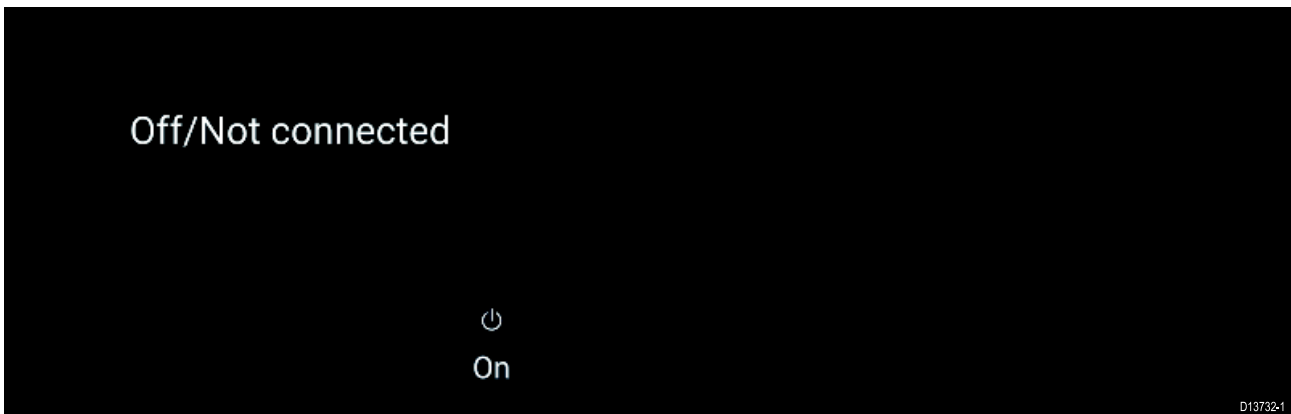
If the '**Off/Not Connected**' message is displayed then:

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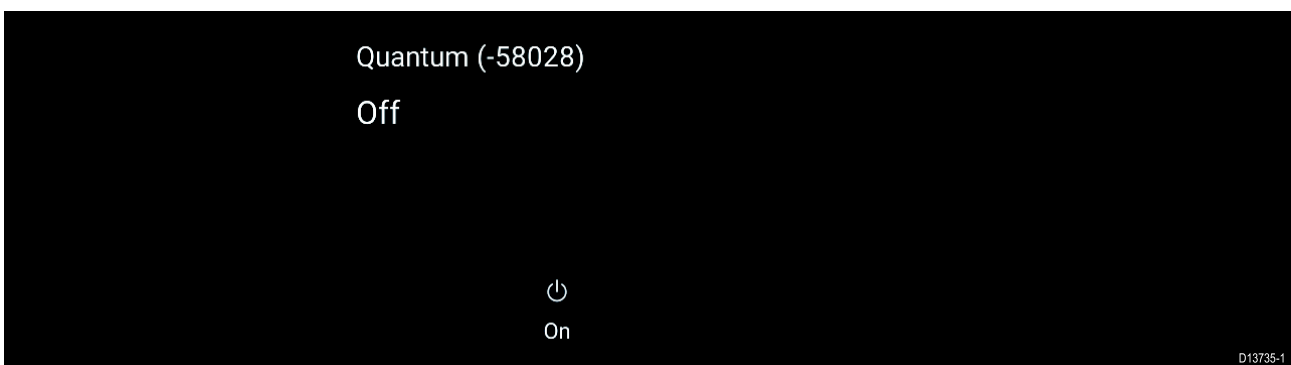
If the '**Off**' message is displayed then your Wi-Fi connected Radar scanner is paired but powered off, select **On** to power up your Radar

Standby (Not transmitting)
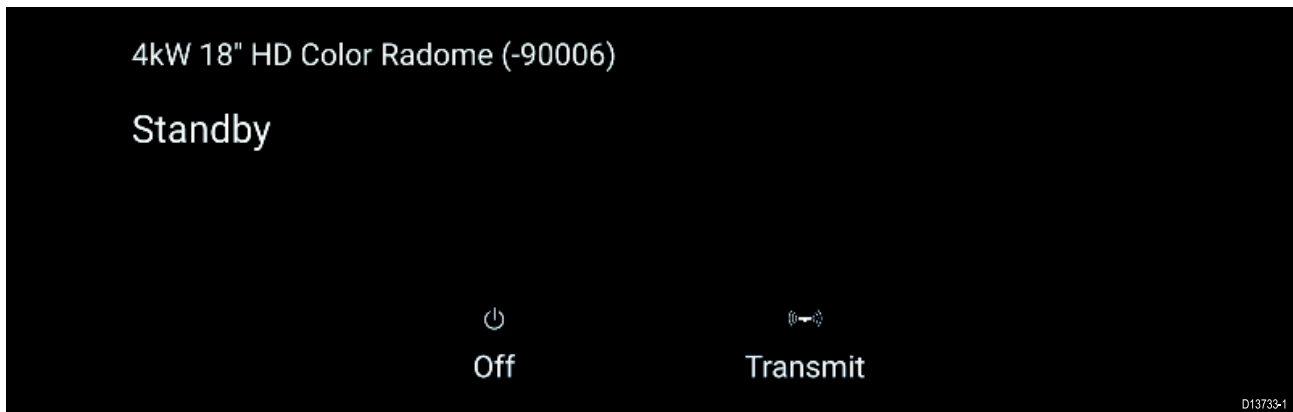
If the '**Standby**' message is displayed then select **Transmit** to begin transmitting.

Transmitting
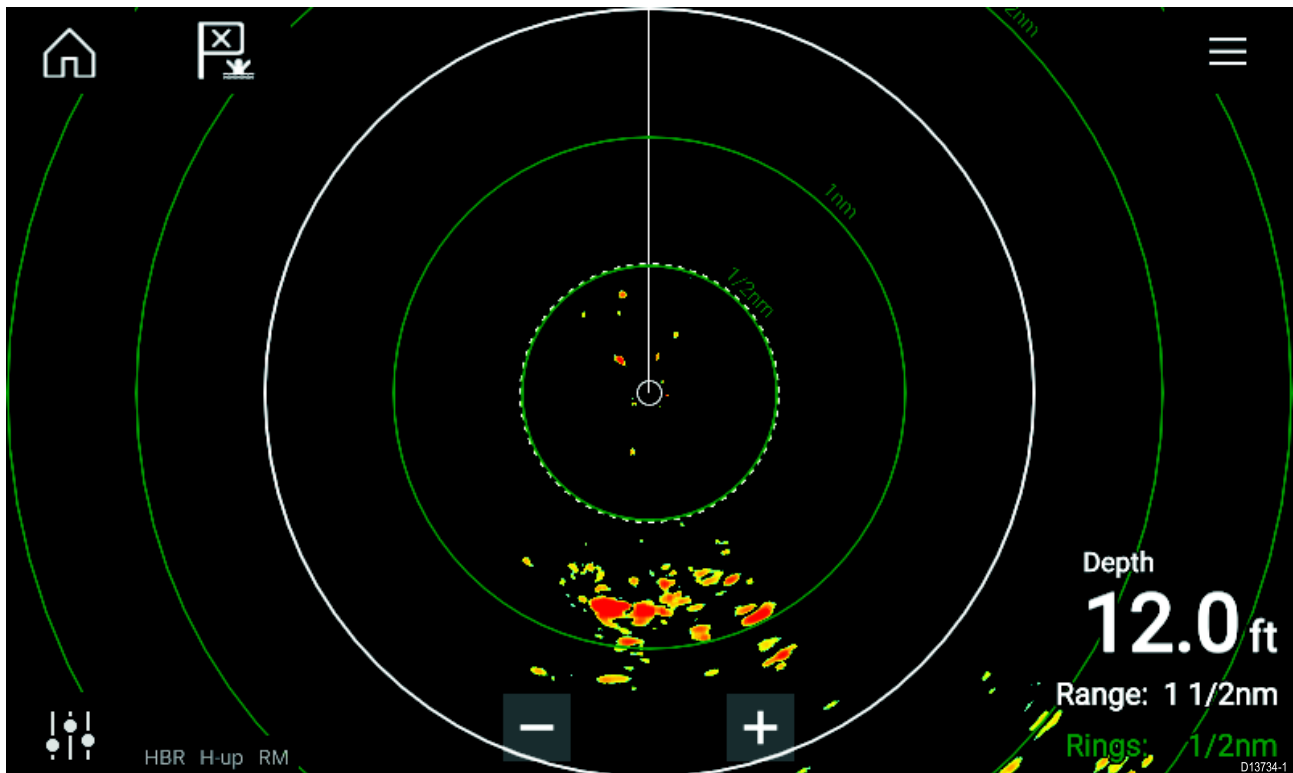
If your Radar scanner is connected, powered up and transmitting then the Radar image is displayed and echoes/targets are displayed onscreen.

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.

9.4 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.
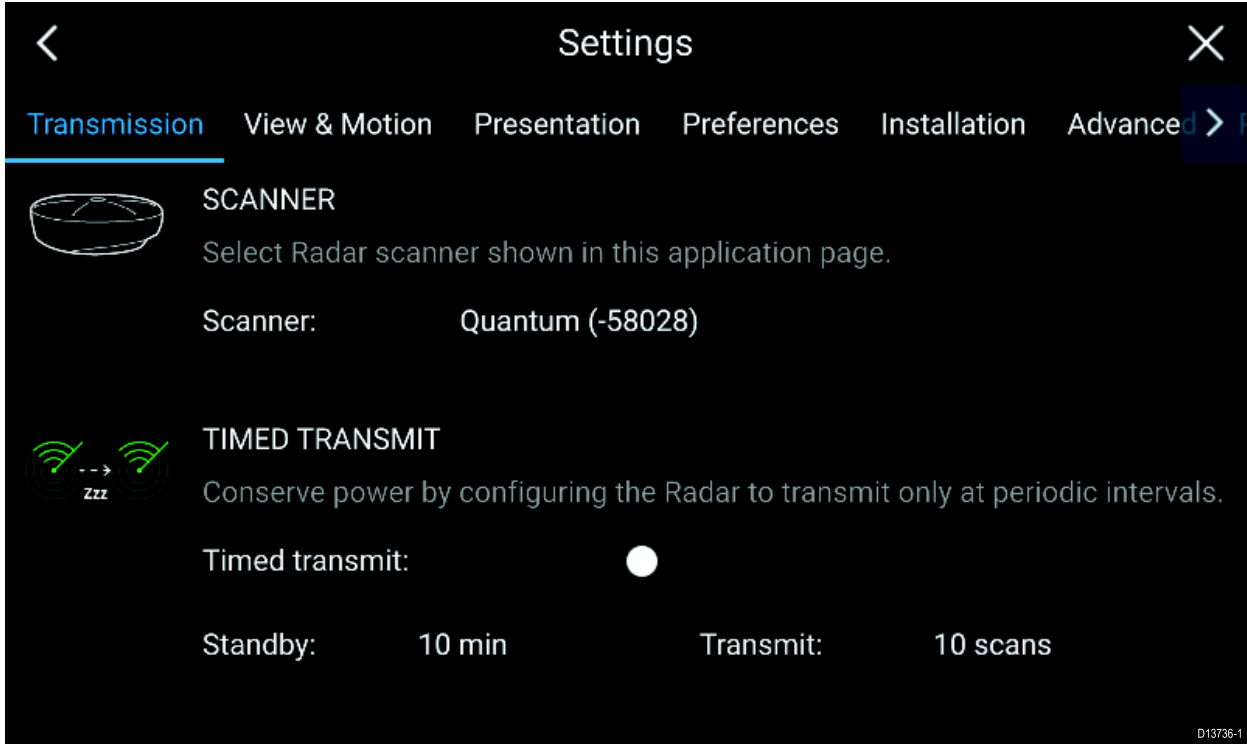
2. Select the **Scanner:** box on the **Transmission** tab.

   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**.
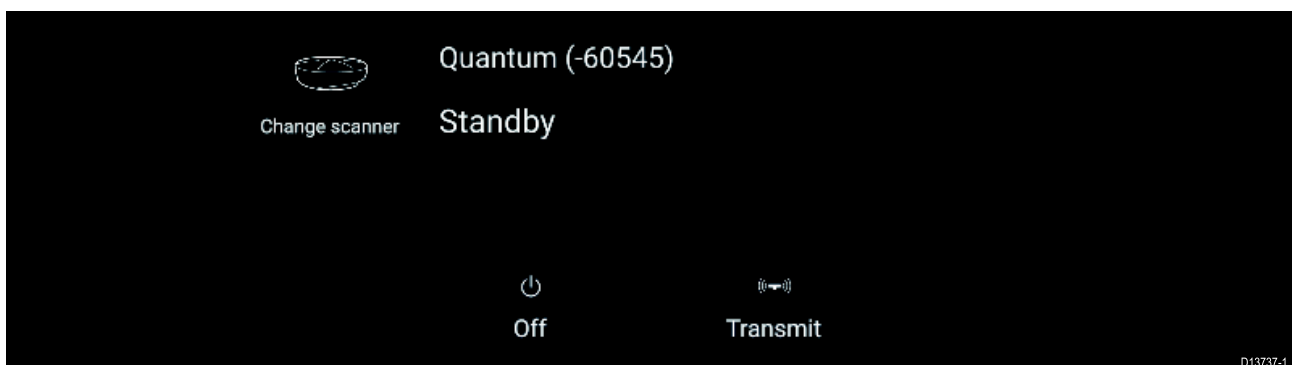
Dual range

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**.

9.5 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.
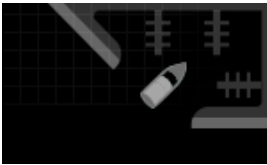
HARBOR
Harbor mode takes into account land clutter that is typically encountered in a Harbor, so that smaller targets are still visible. This mode is useful when navigating in a Harbor.
Radar scanners: All.

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.
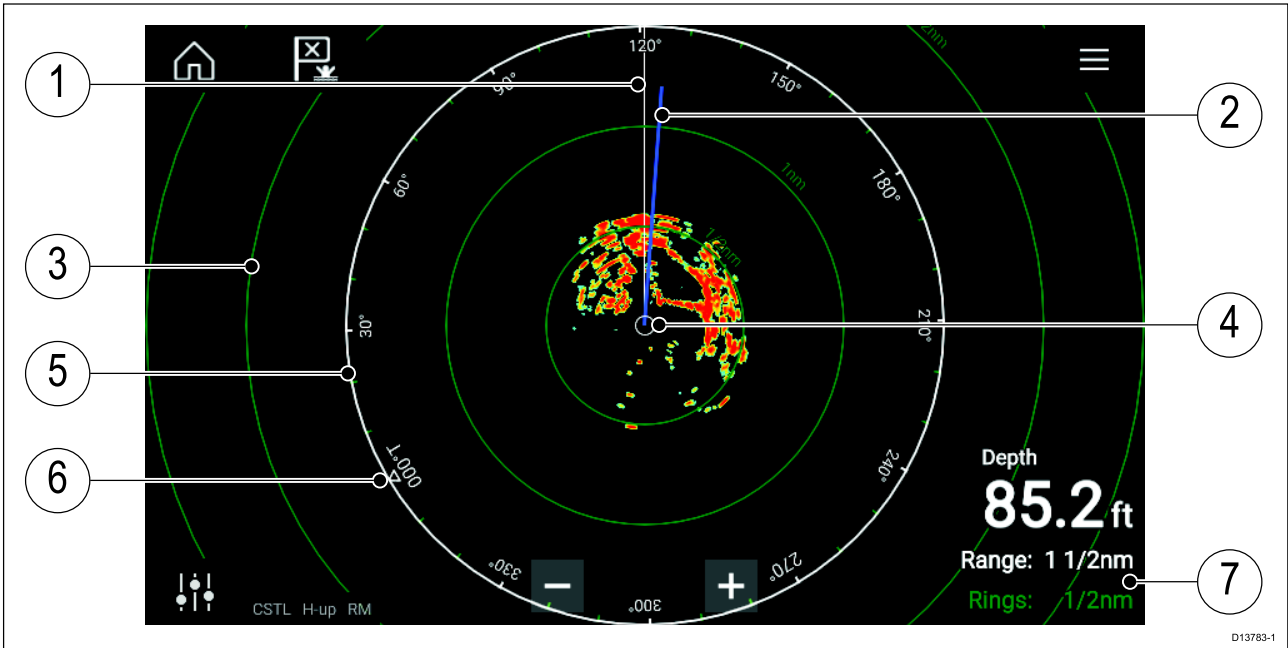**Radar scanners:** SuperHD™ Open Array, HD Open Array and HD Radome.

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

9.6 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**
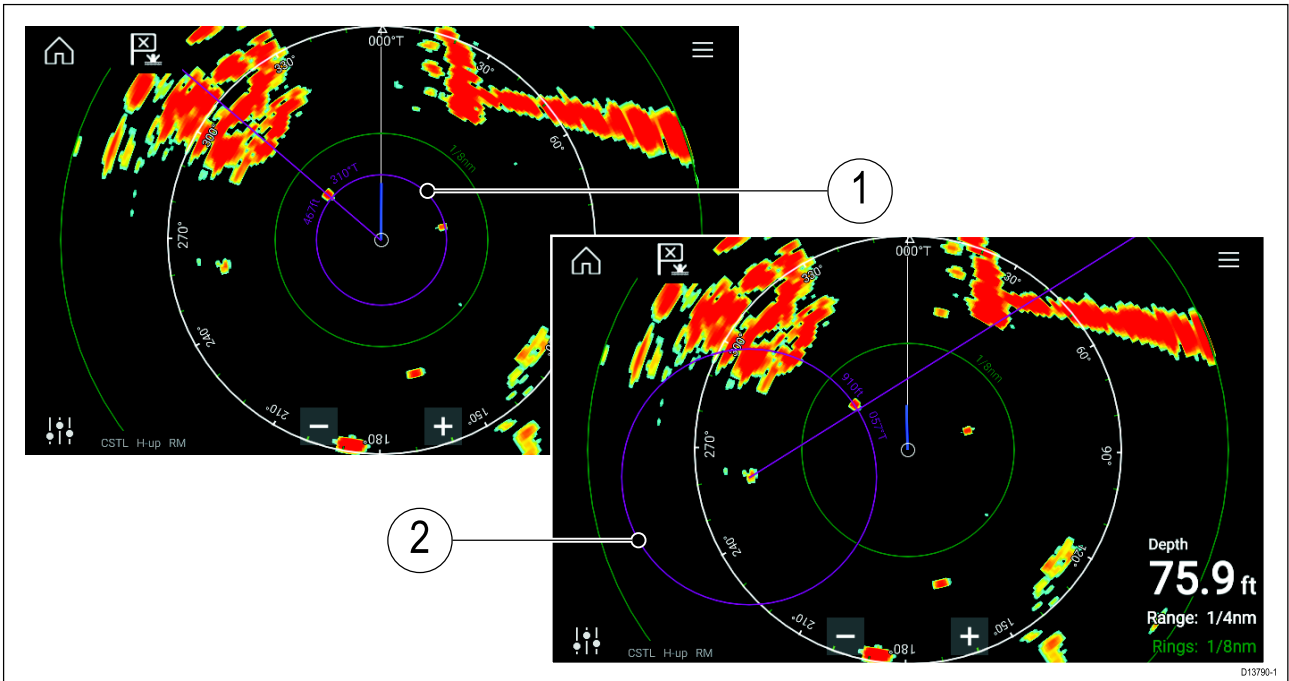
1. **Centered VRM/EBL** You can use a 'Centered' (on your vessel) VRM/EBL to determine the range and bearing of targets in relation to your vessel.
2. **Floating VRM/EBL** You can use a 'Floating' VRM/EBL to determine the range and bearing between 2 targets.

Editing a VRM-EBL

Once a VRM/EBL has been placed you can adjust its size and position.
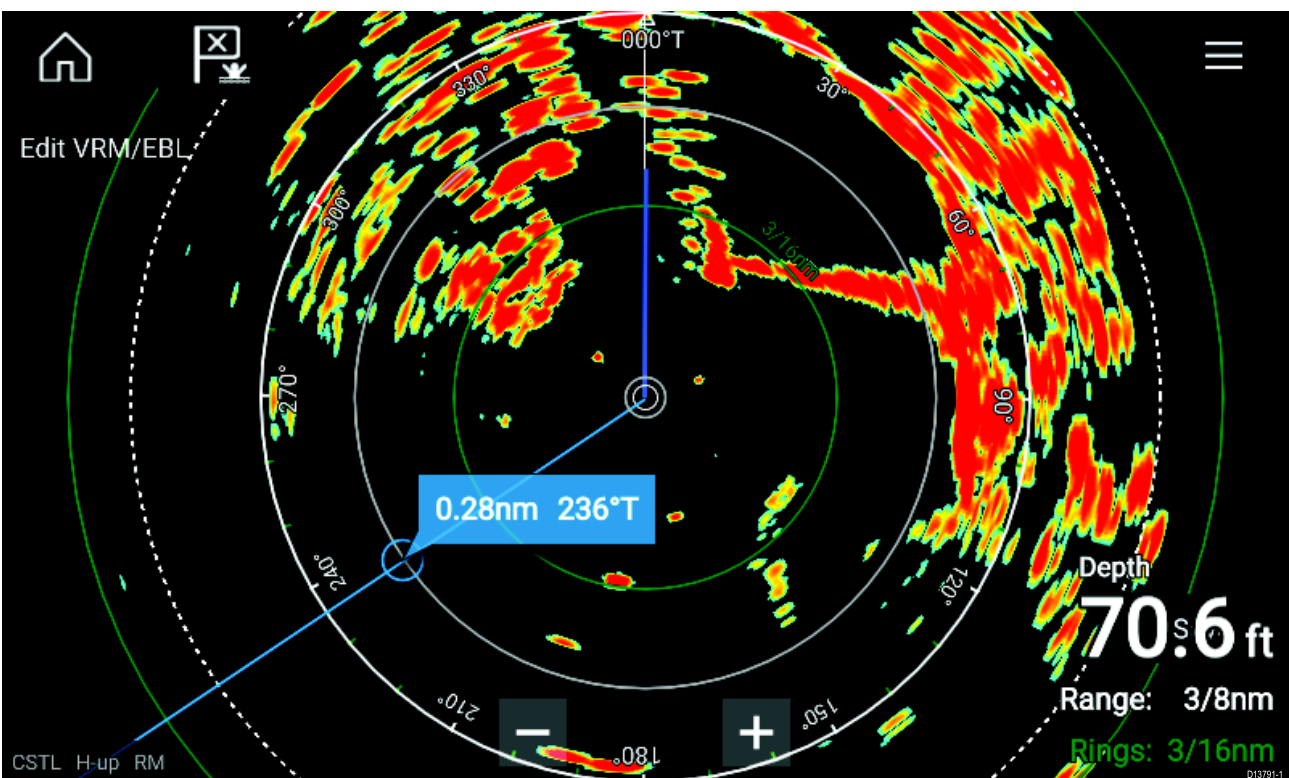
1. Select **Edit VRM/EBL** from the context menu.
2. To adjust the VRM/EBL select the desired target or drag the labelled circle to the target.
3. To create a floating VRM/EBL Drag the center circle to the desired target.

9.7 Target tracking

The Radar app can be used to acquire and track targets.

When a target is being tracked it will be displayed in the Radar target list.

The target lists can be accessed by selecting **Targets** from the app menu: **Menu > Targets** .
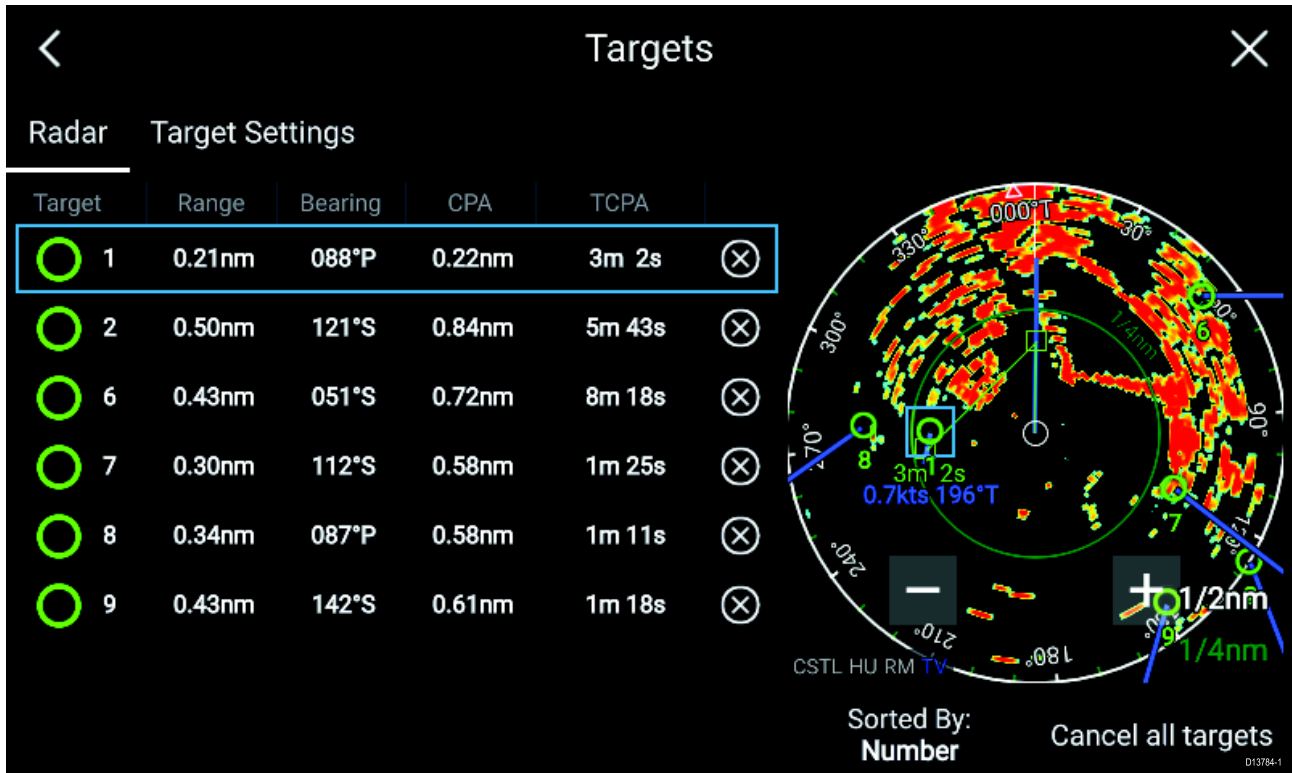
Selecting a target from the list will highlight the selected target in the app pane on the right of the screen.

The list identifies: Target ID, Range from your vessel, Bearing, and where relevant CPA (Closest point of approach) and TCPA (Time to Closest Point of Approach) values.

The Radar target list can be **Sorted By:** target **Number** or its **Range** from your vessel.
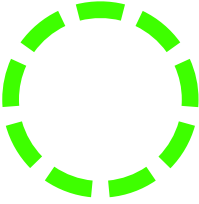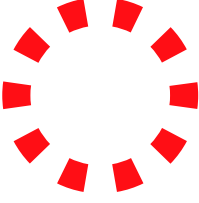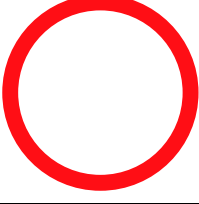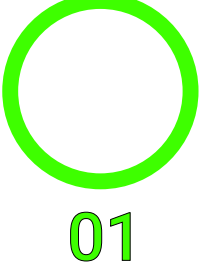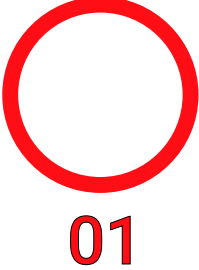
Radar targets can be cancelled individually by selecting the 'X' next to the target's details in the list or you can cancel all targets by selecting **Cancel all targets**.

You can display Radar target information onscreen by selecting **Target info** from the Radar target popover 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
01	Acquired target	Green circle with Target ID
01	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.

Target vectors and history

Vector vector and location history graphics can be displayed for Radar targets.

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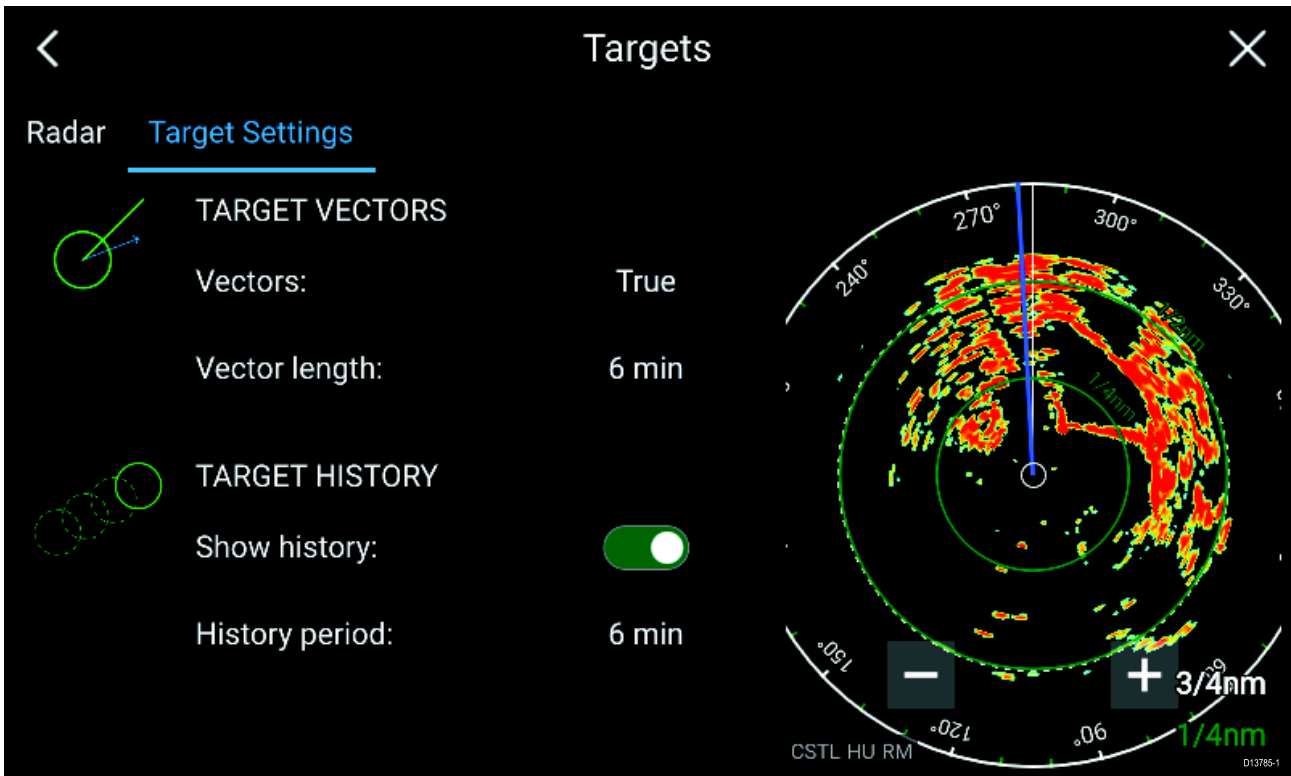
Target vectors

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** popover options.

Additional CPA and target information can be displayed for each target using the context menu (select a target to display the context menu).

Target history

Target history plots a target's previous position and displays it as a Gray target icon for the specified period of time.

Target history can be enabled and disabled and the history time period can be selected from the **Target Settings** tab.

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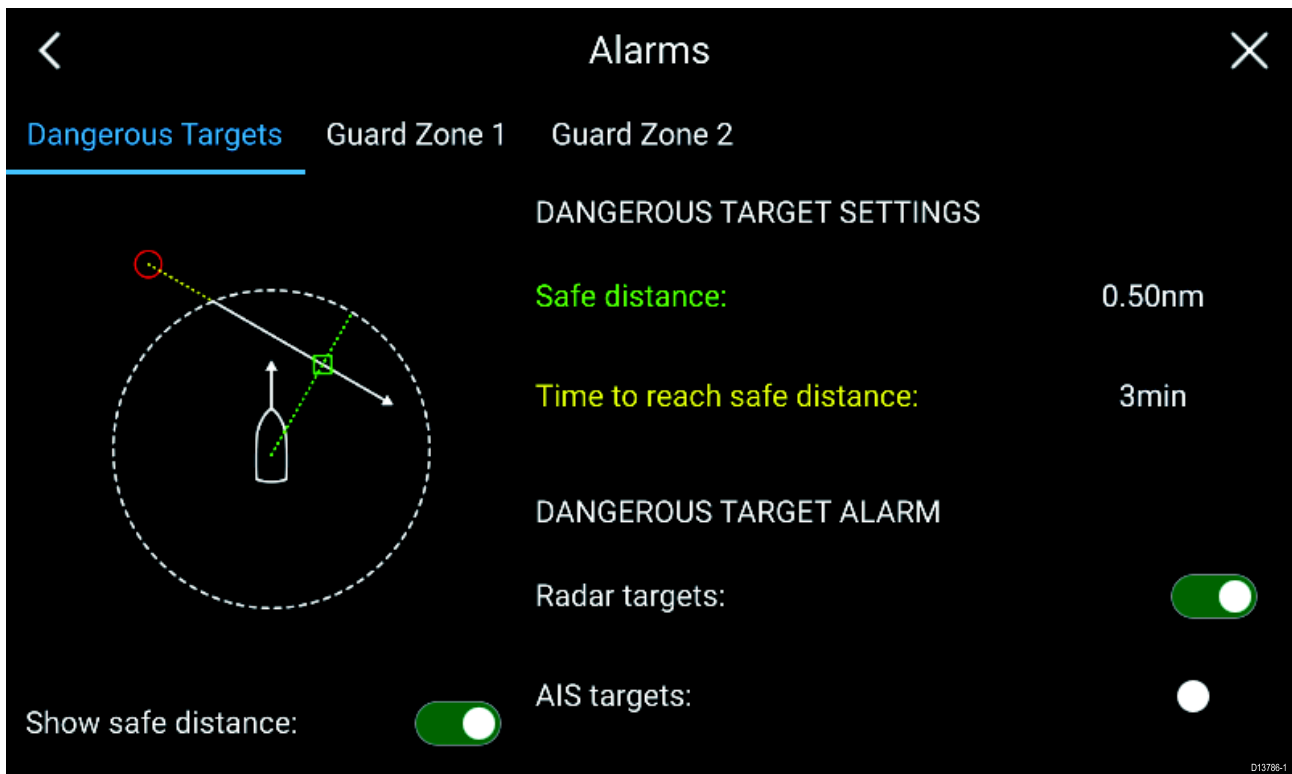
To set up the Dangerous target alarm, first adjust the **Safe distance** to the desired value and then select a **Time to reach safe distance**. The alarm will be triggered if a tracked target will reach the specified Safe distance from your vessel within the time period selected.

You can select whether you want the Dangerous target alarm to track **Radar targets**.

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 target is detected within the specified 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**
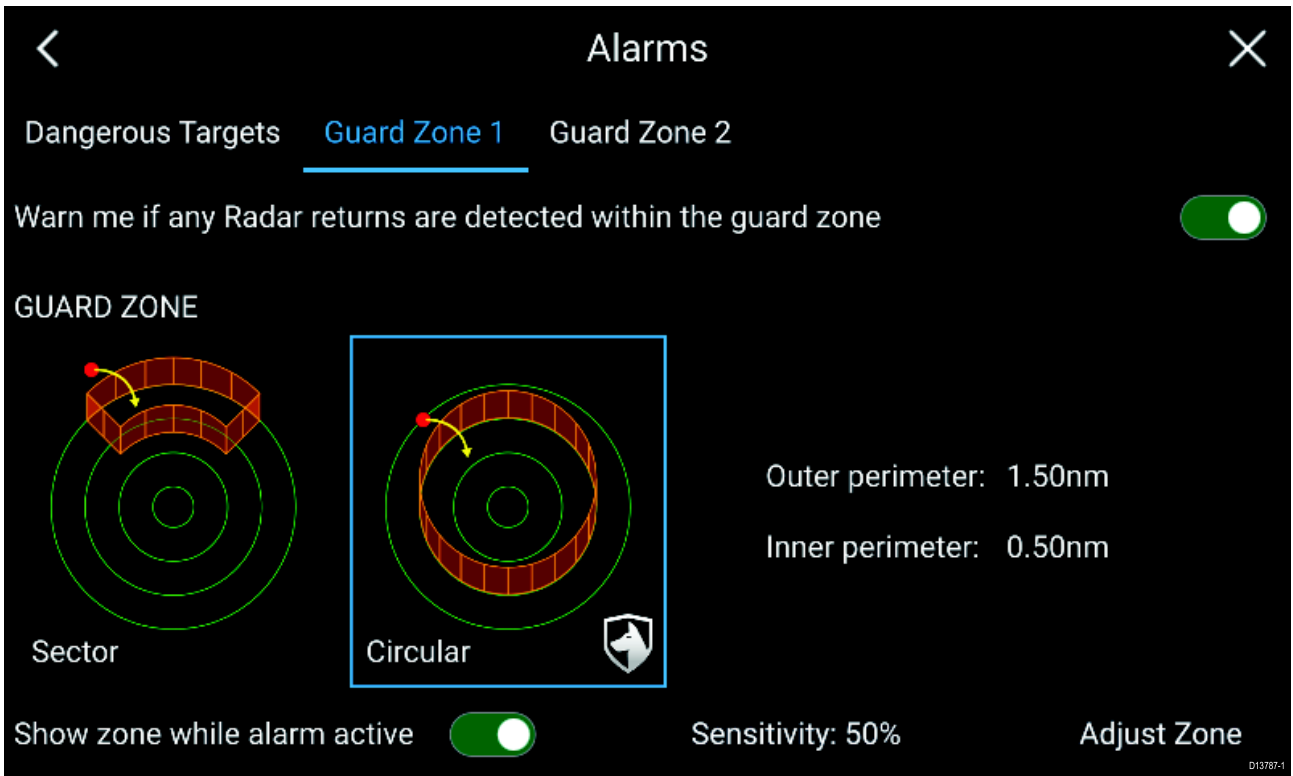
A Guard zone can be configured as a sector or as a circle around your vessel.

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

Adjust the guard zone 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 object are identified as targets, a lower setting will identify less targets.

9.8 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 Auto	**'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 Off	**'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 Auto	**'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 Auto	**'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	**All to Auto**	Sets all Sensitivity settings to **Auto** with 0% offset.

9.9 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 10: Dashboard app

Chapter contents

10.1 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.
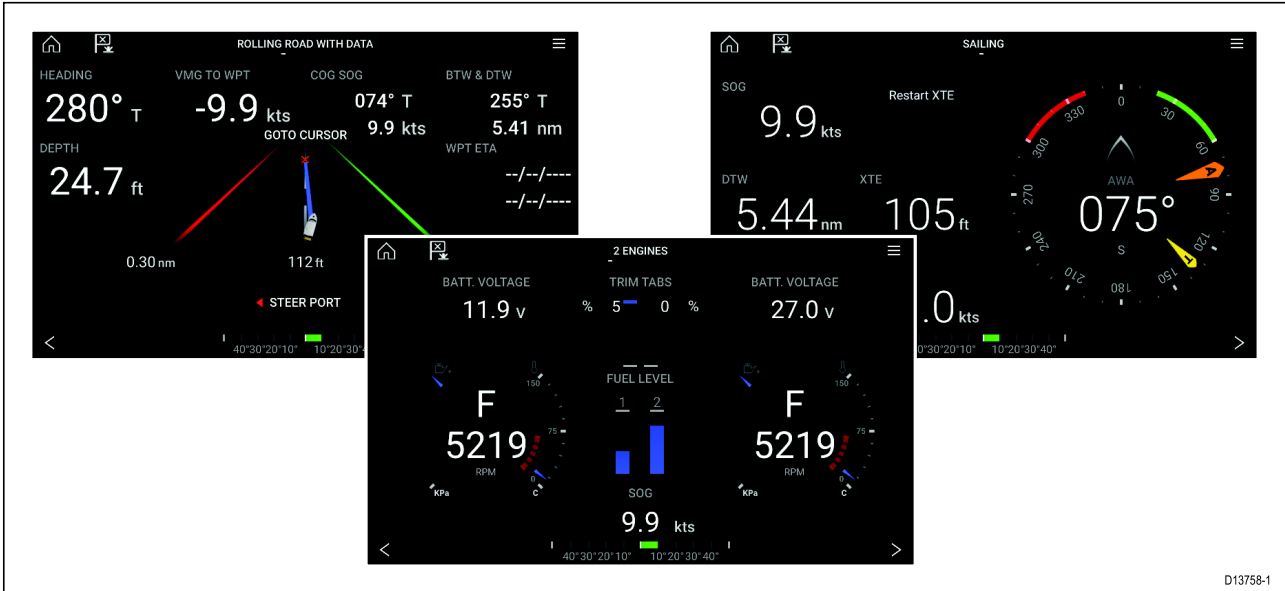
The Dashboard app is pre-configured with a number of customizable data pages.

Dashboard app controls

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

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 popover 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 popover 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**.

10.2 Dashboard settings menu

Pages tab

The Pages tab provides a list of all available pages.

Settings	Description	Options
List	Popover 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 Popover 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 11: Camera app

Chapter contents

11.1 Camera app overview

IP (Internet protocol) video feeds can be viewed, recorded and played back using the Camera app. Examples of IP video feeds include: IP CCTV camera and IP Thermal imaging camera. It may be possible to view analog video feeds when using a suitable Analog to IP video converter.

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

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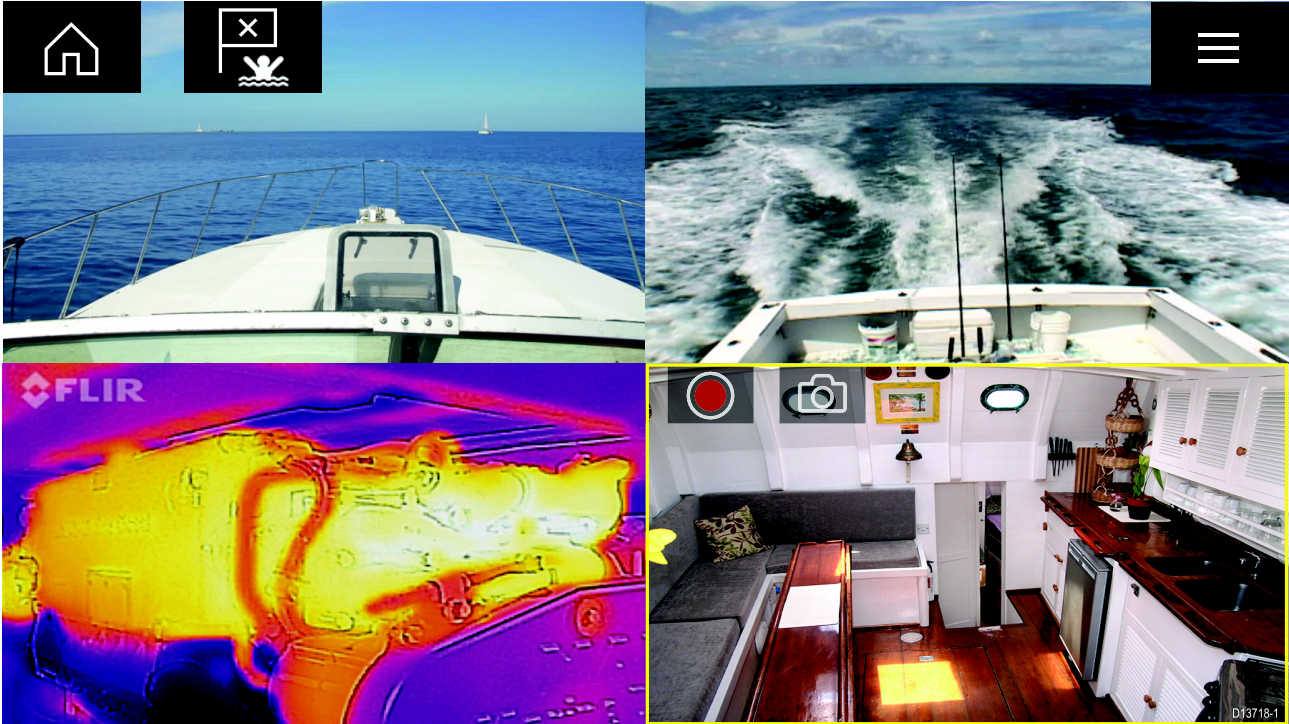
Camera app controls

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

11.2 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.

CAM200 not yet available. Camera may be booting, or may have connection issues.
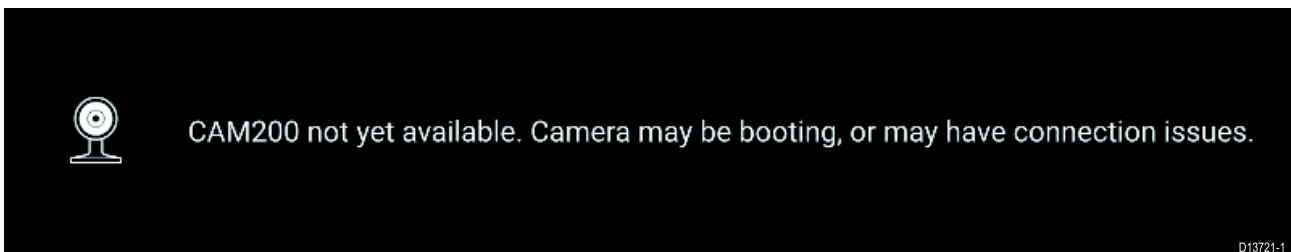
If the camera '**xxx not yet available.....**' message is displayed for more than 2 minutes, then your MFD cannot connect to your camera. Ensure network and power connections to your camera and MFD are correct and free from damage and then power cycle your system. If the camera feed is still not displayed, 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 an IP video feed

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

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

Alternatively, you can select **CYCLE MODE** to automatically cycle through available feeds.

11.3 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.

Cycling tab

Settings	Description	Options
Cycle Delay	Determines the time each camera will be displayed for before switching to the next camera.	• 5 seconds to 60 seconds
Included cameras	You can select which cameras you want to include when cycling camera.	• List of available 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.	• On • Off
Dangerous AIS targets	Enables and disables automatic tracking of Dangerous AIS targets.	• On • Off
Dangerous MARPA targets	Enables and disables automatic tracking of Dangerous Radar targets.	• 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 12: Audio application

Chapter contents

12.1 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.
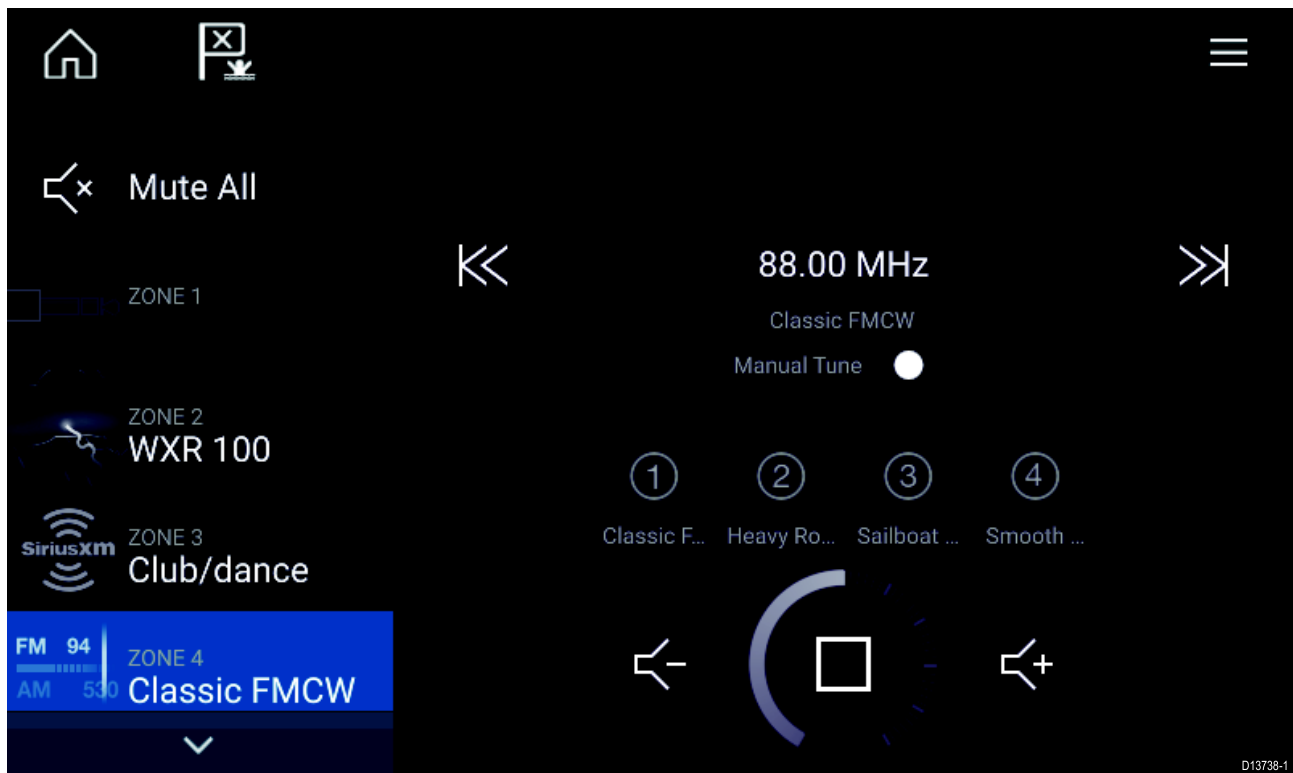
If more than 1 compatible Entertainment system is present on the network then the first system to obtain a network connection will be controlled by the Audio app. Only the Entertainment system that you want to control should be connected to the network.

Compatible entertainment systems

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

Device	Manufacturer
RMX-5 / RMX-8	Rockford Fosgate

Audio app controls

Icon	Description	Function
	Home icon	Takes you to the Homescreen.
	Menu icon	Opens the app menu.
	Waypoint / MOB	Place waypoint / activate Man overboard (MOB) alarm.
	Power Off	Powers off the Entertainment system.
	Mute All	Mutes all audio zones.
	Volume Down	Decreases volume for current zone.

Icon	Description	Function
	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	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.
	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.

12.2 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.
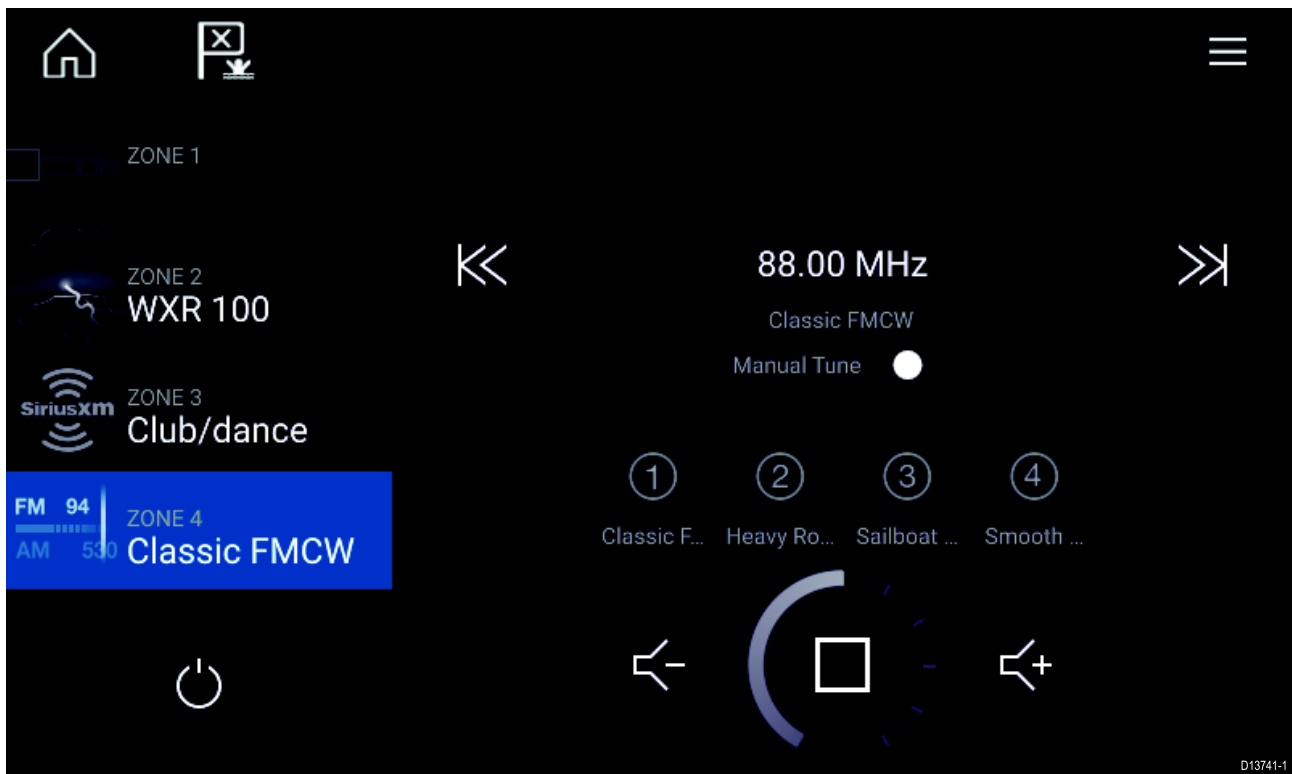
Entertainment system powered off

If the Entertainment system is powered off then the Power icon is displayed. Selecting the **Power icon** will switch your Entertainment system on.
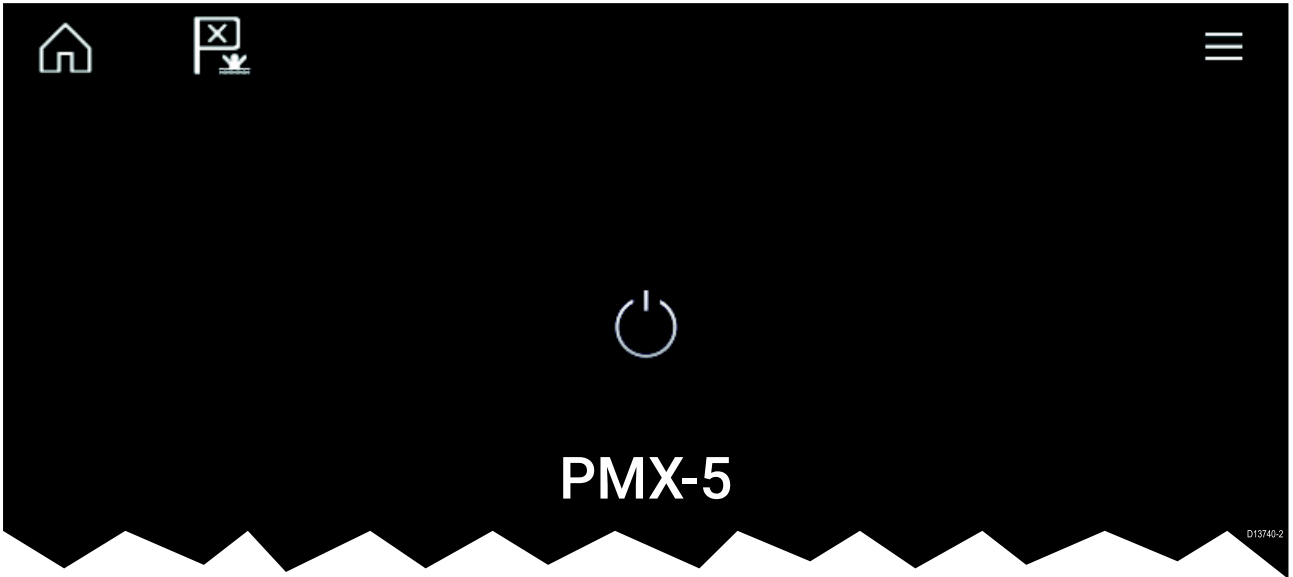
No audio devices found

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.
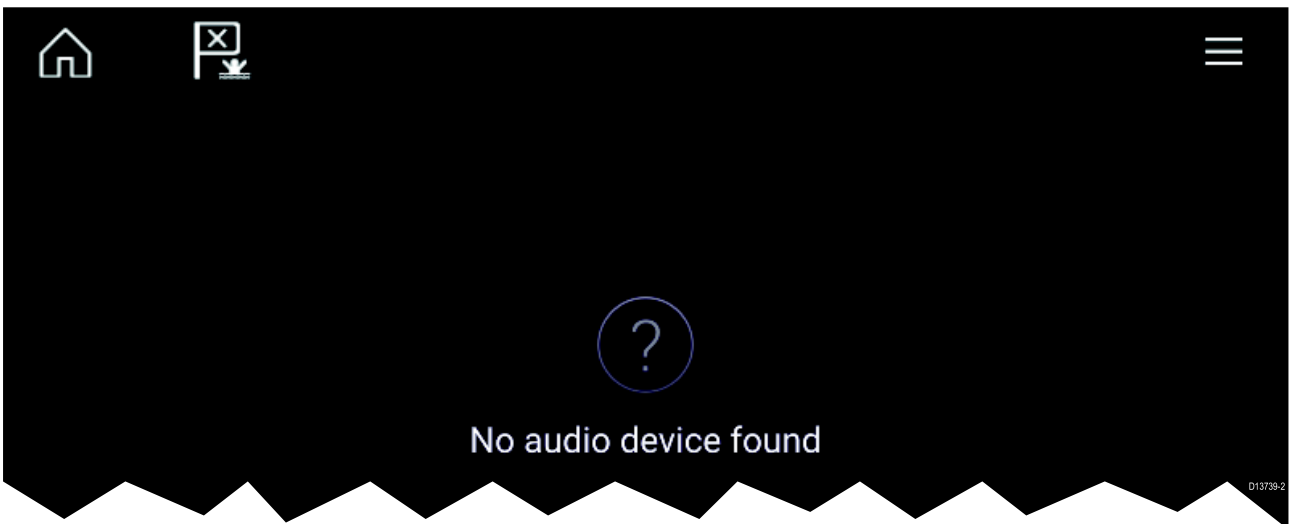
12.3 Getting started

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.
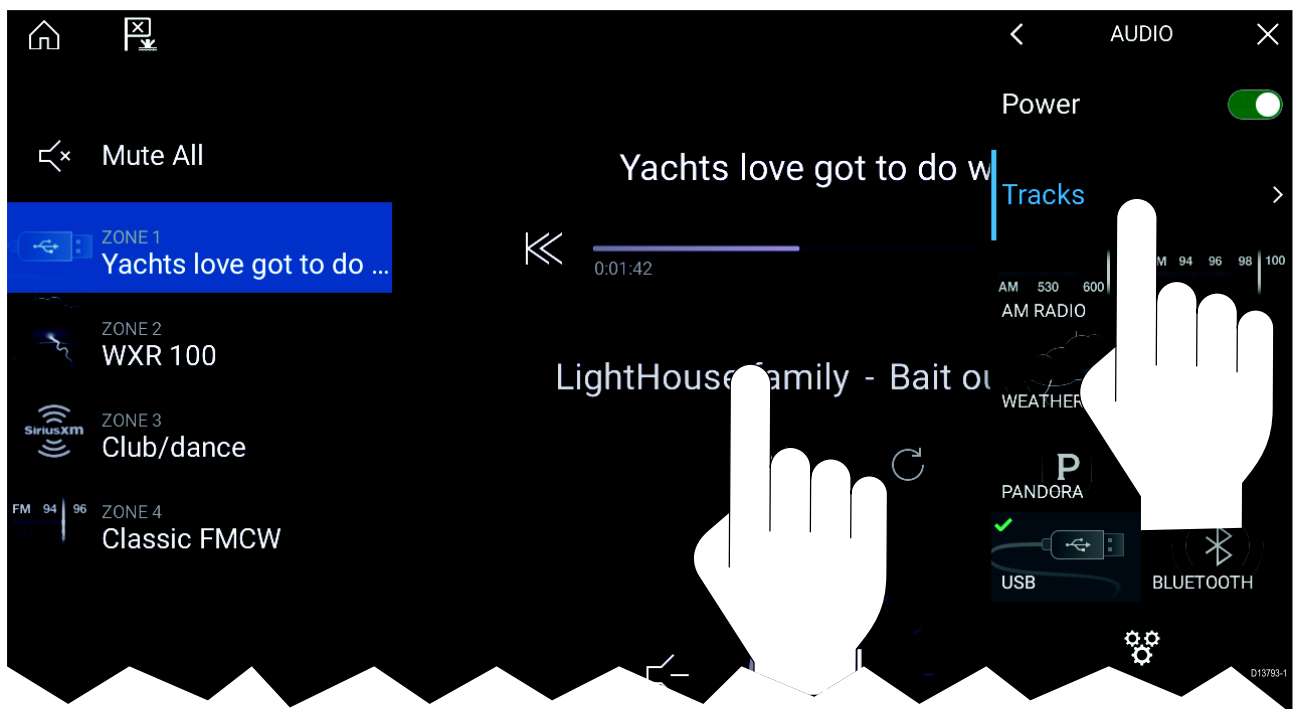
With the relevant USB or Bluetooth device selected as the audio source:
1. Select **Tracks** from the Menu.
   The file browser is displayed.
2. Alternatively, you can select the current track's details to open the file browser.
3. Browse to the file you want to play.

   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.

12.4 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 13: Troubleshooting

Chapter contents

13.1 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.

13.2 Power up troubleshooting

Problems at power up and their possible causes and solutions are described here.

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, 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 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, 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 boot up (re-boot loop)

Possible causes	Possible solutions
Power supply and connection	See possible solutions from 'Products does not turn on or keeps turning off' above.
Software corruption	1. In the unlikely event that the products software has become corrupted please try re-flashing the latest software from the Raymarine website.
	2. On display products, as a last resort, you can try to perform a 'Power on Reset', however this will delete all settings/presets and user data (such as waypoints and tracks) and revert the unit back to factory defaults.

Performing a Power on Reset

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

13.3 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.

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)

13.4 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.

13.5 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.

13.6 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.

13.7 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.

13.8 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 14: Technical support

Chapter contents

14.1 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.
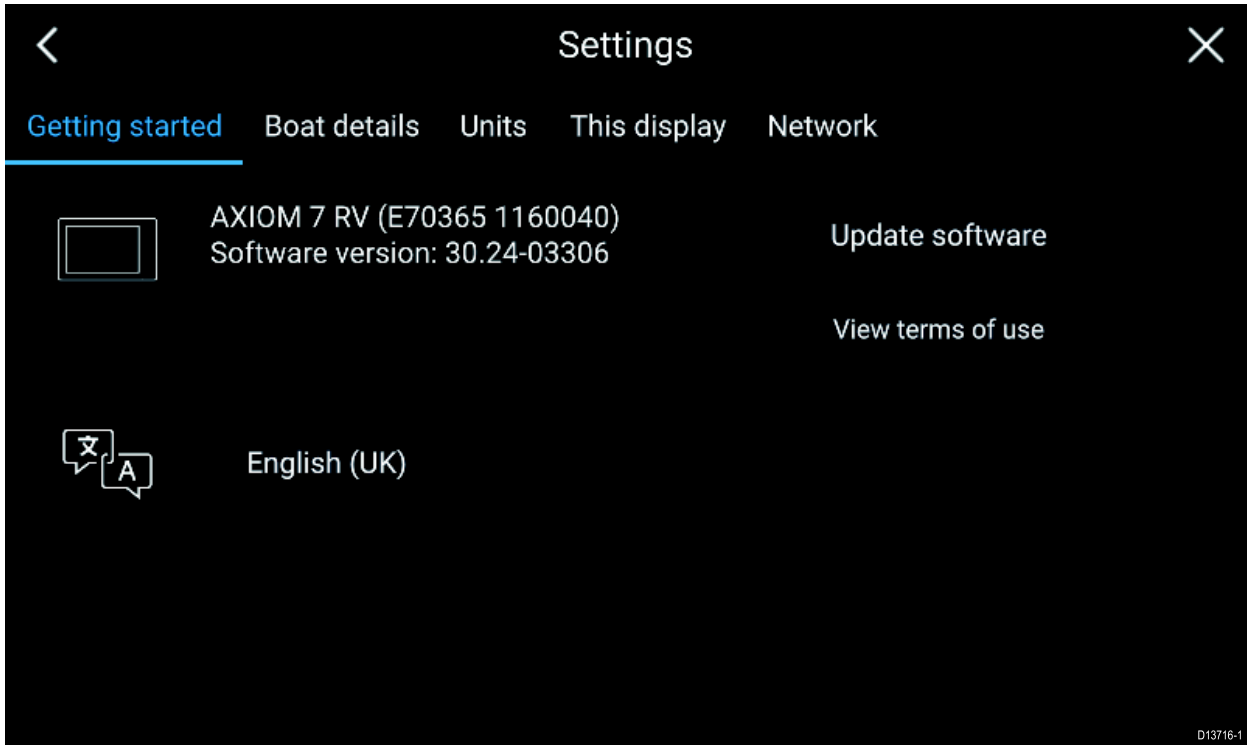
14.2 Learning resources

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
	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 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.

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