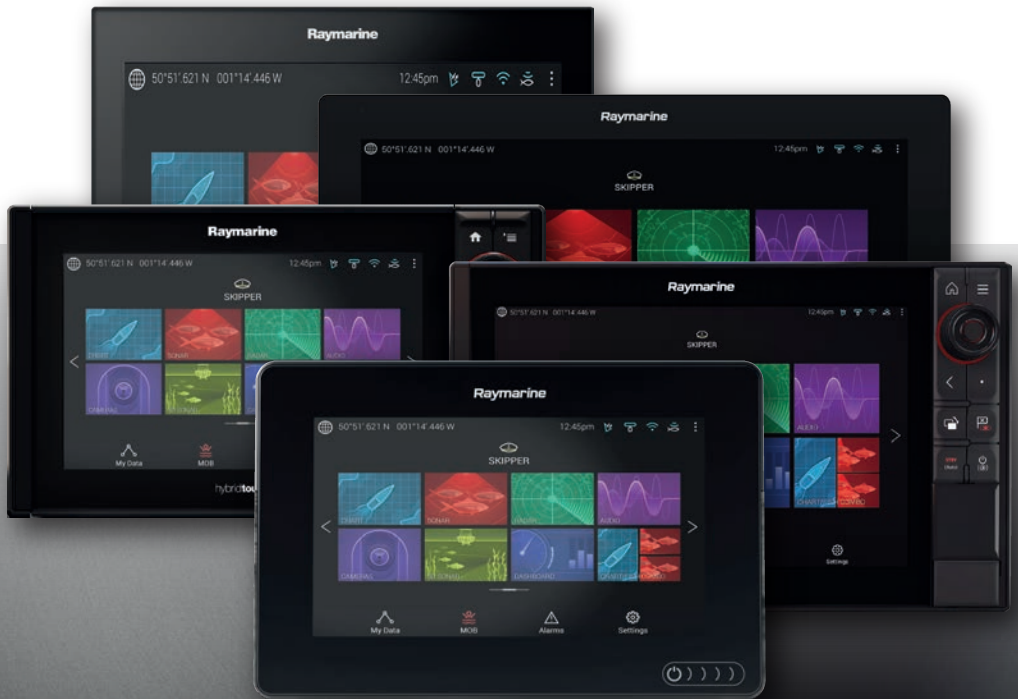


Raymarine®



LIGHTHOUSE 3

VERSION 3.7XX

Basic operation instructions

English (en-US)

Date: 10-2018

Document number: 81369-8

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Software updates



Check the Raymarine website for the latest software releases for your product.

www.raymarine.com/software

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Chapter 1: Important information



Warning: Ensure safe navigation

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

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.

Chapter 2: Set up

2.1 Getting started

Compatible MFDs

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

Software version	Compatible MFDs
LH3.7 LH3.6 LH3.5	<ul style="list-style-type: none">• Axiom XL• Axiom Pro• Axiom• eS Series• gS Series
LH3.4 LH3.3	<ul style="list-style-type: none">• Axiom Pro• Axiom• eS Series• gS Series
LH3.2	<ul style="list-style-type: none">• Axiom Pro• Axiom
LH3.1	<ul style="list-style-type: none">• Axiom
LH3.0	<ul style="list-style-type: none">• Axiom





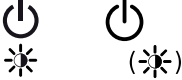
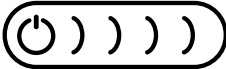
MFD physical buttons





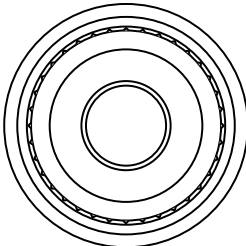
The table below shows the physical buttons that are available on LightHouse™ 3 compatible MFDs and remote keypads, along with their function.

Note:

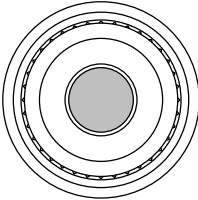
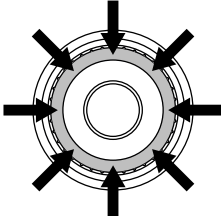
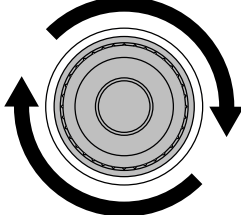
- Where 2 button symbols are shown, the symbols on the left represent Axiom™ Pro variant MFDs or RMK-10 keypad, and the symbols on the right represent an eS Series MFD or RMK-9 keypad.
- Axiom MFDs and gS Series MFDs only have a single power button.

Physical MFD buttons

Control	Button	Function
	Home	Press to display the Homescreen.
	Menu	Press to open or close menus.
	⁽¹⁾ User Programmable Button (UPB)	You can select which function this button controls. Refer to for more information.
	Waypoint / MOB	Press momentarily to place a waypoint at your vessel's location. A long press activates the Man overboard (MOB) alarm.
	Power	Press to power on the MFD. When the MFD is powered on, pressing this button displays the Shortcuts page.
	⁽²⁾ Power swipe	Swipe to power on the MFD. When the MFD is powered on, swipe again to display the Shortcuts page.
STBY Standby (Auto) (Auto)	Pilot	Press momentarily to display or hide the Pilot sidebar. A long press engages the autopilot in locked heading mode, or disengages an active autopilot.

Control	Button	Function
	Switch	Press momentarily to switch the active pane in a splitscreen page. A long press expands the selected pane.
	Back	Press to return to the previous menu or dialog.
	Range In	Press to Range or Zoom In.
	Range Out	Press to Range or Zoom Out.
	Uni-controller	The Uni-controller consists of a center OK button, Directional controls and a Rotary knob.

MFD Uni-controller

Control	Control	Function
	Ok	Push the button to confirm a selection.
	Directional	Use the 8-way directional controls to reposition the cursor onscreen.
	Rotary	Turn clockwise to Range or Zoom In and counterclockwise to Range or Zoom out.

Note:

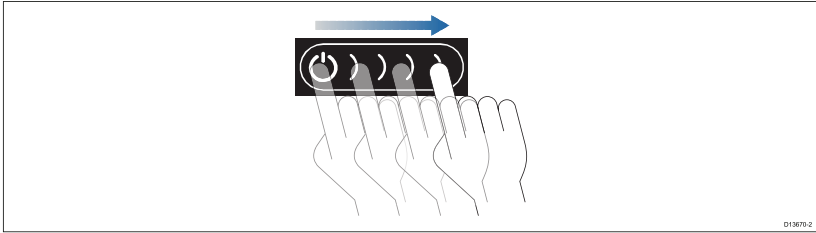
- (1) The UPB is only available on Axiom™ Pro MFDs.
- (2) The Power swipe is only available on Axiom™ MFDs.

Axiom and Axiom XL

Powering on the display

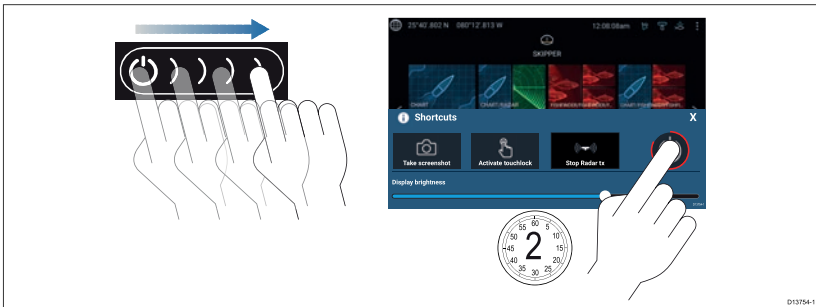
When power is available to the MFD but the MFD is switched off, the Power symbol will be illuminated.

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:

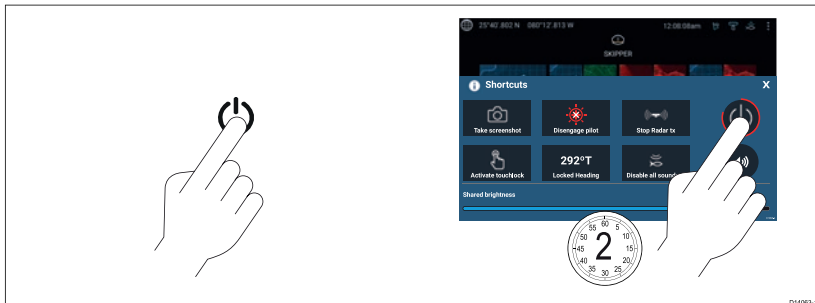
When powered off, the unit may still draw a small amount of power from the battery. If this is a concern, unplug the power supply or switch off at the breaker.

Axiom Pro, eS Series and gS Series

Powering on the display

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

Powering off the display



1. Press the **Power** button.
2. From the Shortcuts page press and hold the power icon for approximately 2 seconds.

Alternatively you can press and hold the **Power** button for approximately 6 seconds to power off your display.

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.

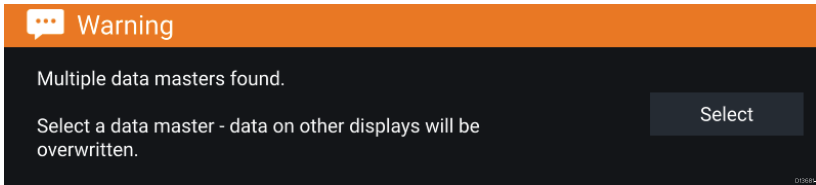
When the breaker is switched back on, or the cable is reconnected, the MFD will resume in the same power state that it was in when it was switched off.

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

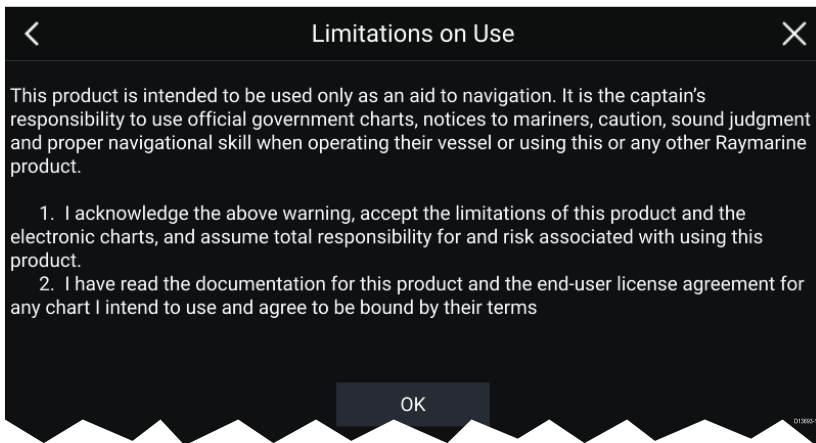
If the MFD is being installed as a stand alone installation or as part of a new system, then the first time the MFD is powered up the Startup wizard will be displayed. The Startup wizard will help you configure important settings on your MFD.

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.



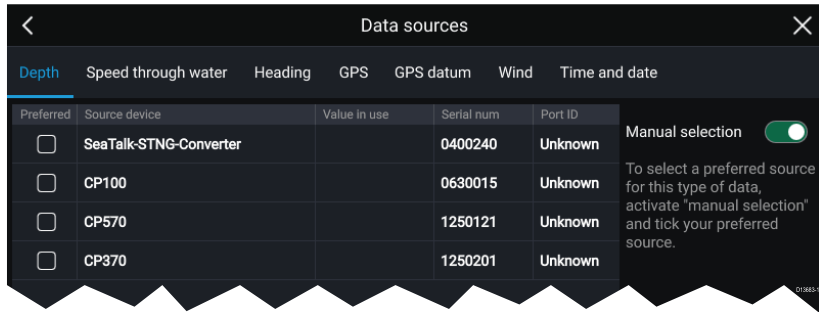
You must read and agree to the terms in order to use your MFD.

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

Data sources 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**.



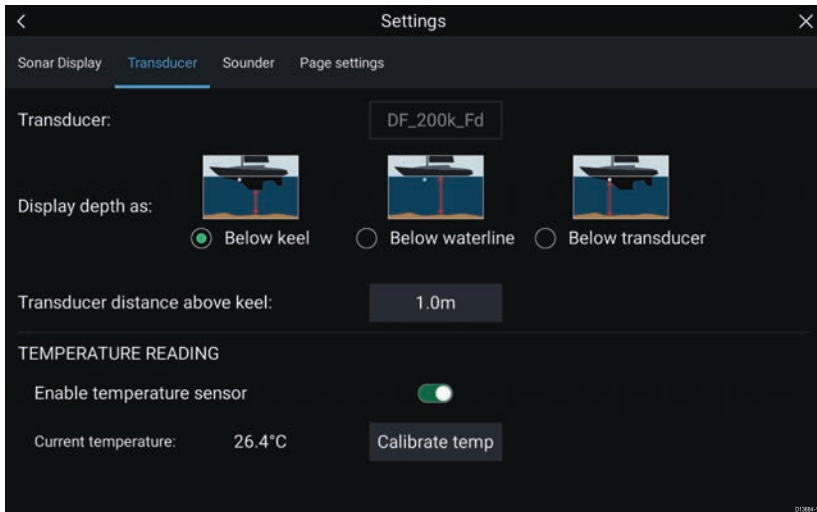
Each tab enables you to view and select your preferred data source. The currently active data source will display its current value in use. Data source selection can be manual or set to automatic:

- **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.

Configuring Transducer settings

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

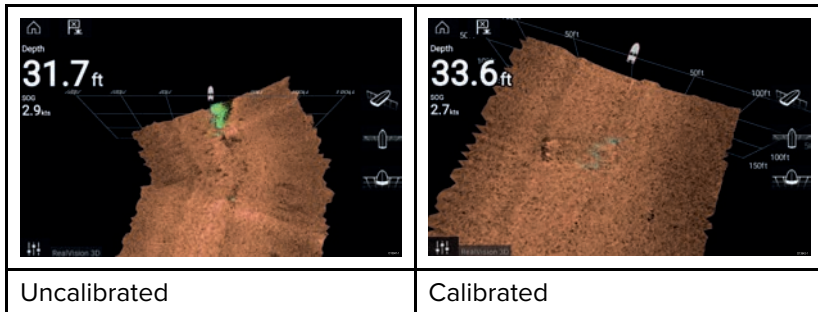


1. Select **Transducer** from the Sonar app's **Settings** menu: **Menu > Settings > Transducer**
2. Select how you want your depth to appear:
 - i. Below transducer (default) — No offset required
 - ii. Below keel — Enter the distance between the transducer face and the bottom of the Keel.
 - iii. Below waterline —Enter the distance between the bottom of your Keel and the waterline.
3. If your transducer includes a temperature sensor then you can also configure temperature settings as follows:
 - i. Enable or disable temperature readings as required.
 - ii. If enabled, check the temperature reading against the actual water temperature.
 - iii. If the current reading requires adjustment, select **Calibrate temp** and enter the difference between your 2 readings.

RealVision™ 3D AHRS calibration

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

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



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

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

- Marine pontoons
- Metal-hulled vessels
- Underwater cables

Note:

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

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.

Performing a settings or factory reset

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

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

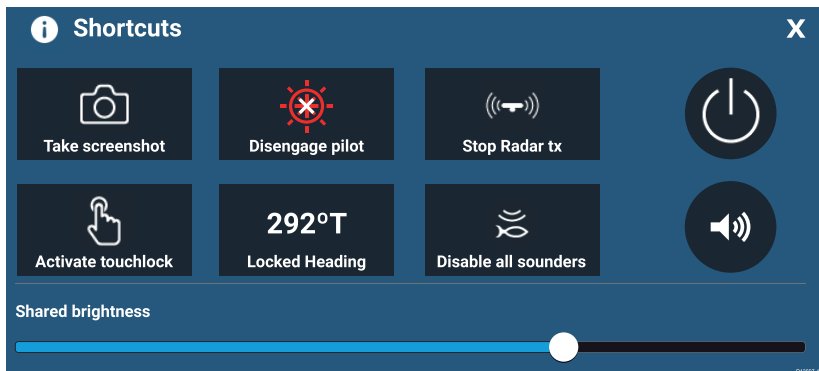
Importing user data

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

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

2.2 Shortcuts

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



The following shortcuts are available:

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

2.3 Memory card compatibility

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

Compatible cards

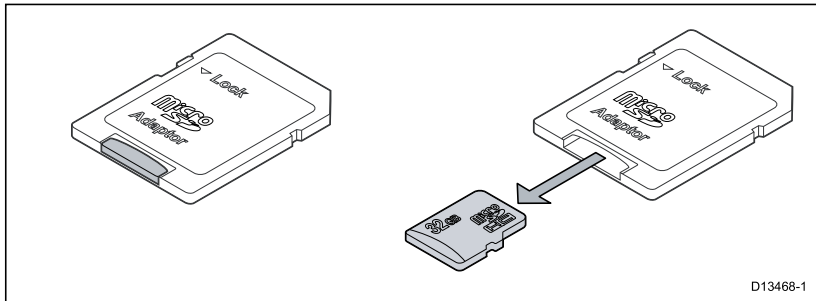
The following types of MicroSD cards are compatible with your MFD:

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

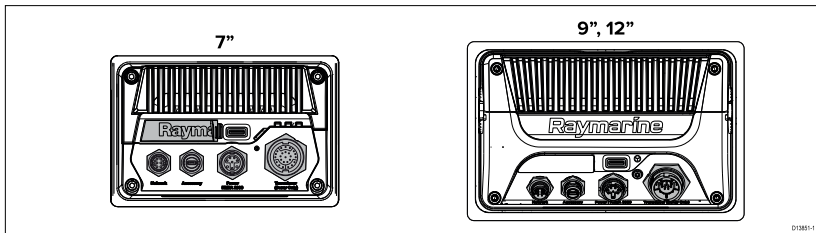
- **Speed class rating** — For best performance it is recommended that you use Class 10 or UHS (Ultra High Speed) class memory cards, or better.
- **Use branded memory cards** — When archiving data it is recommended that you use good quality branded memory cards.

Removing MicroSD card from its adaptor

MicroSD memory and cartography chart cards are usually supplied inserted into an SD card adaptor. The card will need to be removed from the adaptor before inserting into your display.



Inserting a MicroSD card — Axiom variants

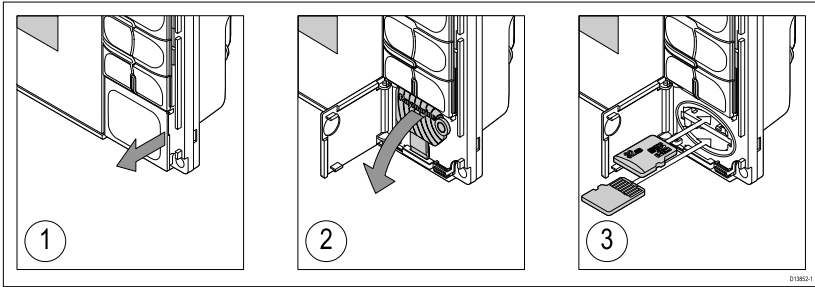


1. Pull back the microSD card reader cover as shown above.
2. Insert your microSD card with the contacts facing down.
3. Close the cover and ensure it is seated correctly.

Removing a MicroSD card

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

Inserting a MicroSD card – Axiom Pro variants



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

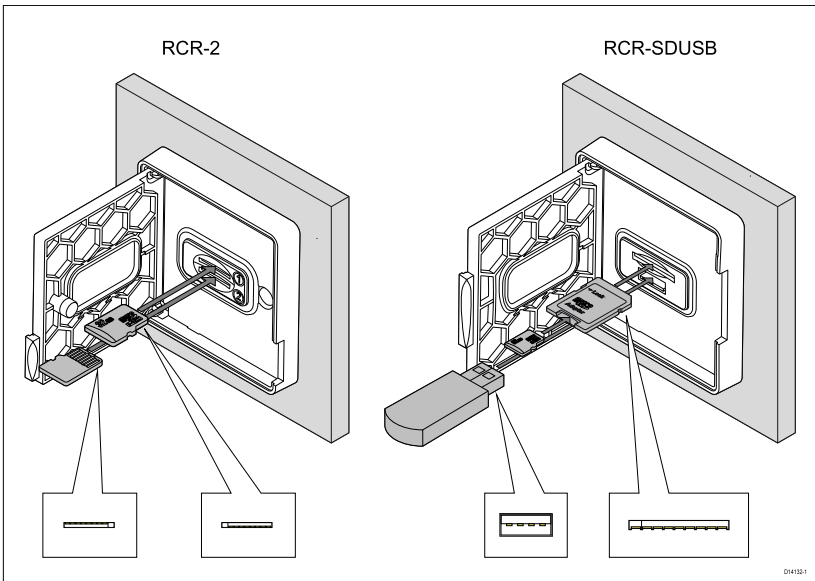
Note: When inserting a card into the lower card slot the memory card must be orientated with the contacts pointing upwards.

Removing a MicroSD card - Axiom Pro

With the card reader door open and cover pulled down:

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

Inserting external storage devices - RCR



1. Open the card reader door.

2. Insert the storage device into a card slot and push until it clicks into place.
 - RCR-SDUSB slot 1 — With the contacts facing down, insert an SD card (or an SD card adaptor containing a MicroSD card) into the upper slot, labelled (1), and push until it clicks into place.
 - RCR-SDUSB slot 2 — With the contacts facing down, insert a USB drive directly into the lower slot, labelled (2).
 - RCR-2 slot 1 — With the contacts facing down, insert a MicroSD card into the upper slot and push until it clicks into place.
 - RCR-2 slot 2 — With the contacts facing up, insert a MicroSD card into the lower slot and push until it clicks into place.

Removing external storage (SD and MicroSD)

With the card reader door open:

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

Removing external storage USB drive

With the card reader door open and cover pulled down:

1. Pull the drive free from the card slot.

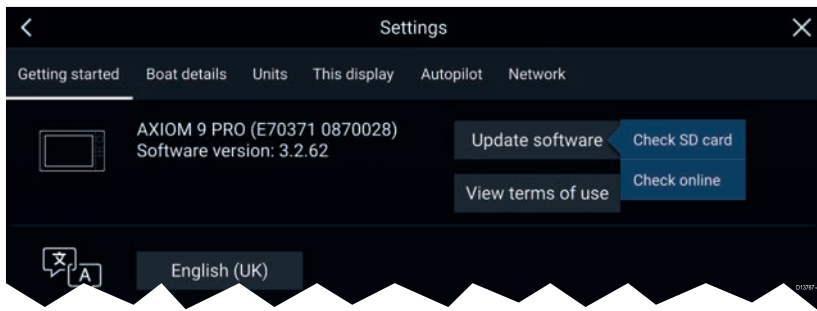
Caution: Ensure card reader cover or door is securely closed

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

2.4 Software updates

Raymarine® regularly issues software updates for its products which provide new and enhanced features and improved performance and usability. It's important to ensure that you have the latest software for your products by regularly checking the Raymarine® website for new software releases.

www.raymarine.com/software



Note:

- It is recommended that you always backup your User data before performing a software update.
- To update compatible SeaTalkng[®] products you must use the designated Datamaster MFD that is physically connected to the SeaTalkng[®] backbone.
- In order to perform a software update any connected autopilot or Radar must be switched to Standby.
- The MFD's "Check online" feature is only available when the MFD has an Internet connection.
- To check which products are compatible with the MFD software update process, please refer to the website: www.raymarine.com/software.

Updating software using a memory card

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

1. Check the software version of your product.

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

2. Check the latest available software on the Raymarine website: (**www.raymarine.com** > **Support** > **Software Updates**).
3. Download the software package.
4. Copy the files to MicroSD card.
5. With your MFD powered on, insert the MicroSD card into the card reader slot.
Your MFD will automatically detect software files.
6. Follow the onscreen instructions to update your product software.

7. Alternatively you can select **Check SD card** from the **Update software** pop-over options on the Getting started tab: (**Homescreen > Settings > Getting started > Update Software**).

Updating software via the internet

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

1. Select **Update software** from the Getting started tab: (**Homescreen > Settings > Getting started**).
2. Select **Check online** from the pop-over menu.
3. To set up a Wi-Fi connection select **Wi-Fi settings** and connect to the required Wi-Fi access point/hotspot.
4. Select **Start** and then follow any onscreen instructions.

2.5 Video tutorials

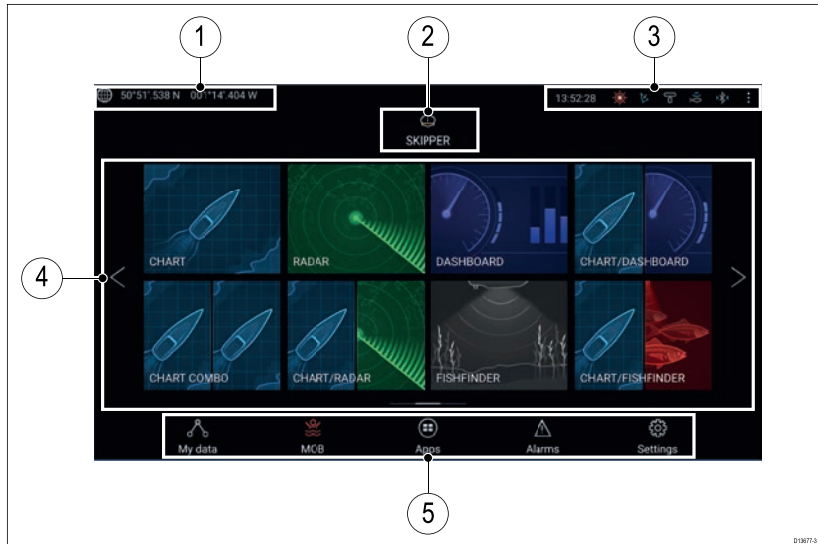
A range of tutorial videos is available on the Raymarine website to assist you in learning how to use your product.

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

Chapter 3: Homescreen

3.1 Homescreen overview

All settings and apps can be accessed from the Homescreen.




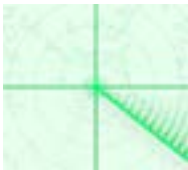



1. **GNSS position/fix details** — Select the area to view fix accuracy and access GNSS settings.
2. **Profile** — Select the area to change the profile in use or to create, edit or delete profiles.
3. **External devices and system time** — Select this area to access Bluetooth settings, Disengage your autopilot or adjust the UTC time offset.
4. **App page icons** — Select an icon to open the relevant MFD app 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**, **Apps** and **My data** menus. You can also activate the **Man Over Board** (MOB) alarm and disengage your autopilot.



Note:

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

MFD Apps

MFD apps are displayed on your MFD in App pages. Each app page is accessed from the app page icons on the Homescreen. App pages can include more than 1 app. The available MFD apps are:

	<p>Chart — The Chart app displays electronic cartographic information from your Chart cards and when used in conjunction with a GNSS receiver, plots your vessel's position. The Chart app can be used to mark specific locations using Waypoints, build and navigate Routes or keep a record of where you have been by recording a Track.</p>
	<p>Radar — The Radar app is a situational awareness aid that displays a graphical representation of your surroundings in relation to your vessel using the echo/target returns from a connected Radar scanner. The Radar app allows you to track targets and measure distances and bearings</p>
	<p>Sonar — The Sonar app uses a connected sonar module and transducer to help you to find fish by building up an underwater view of bottom structure and targets in the water column covered by your transducer.</p>
	<p>Audio — The Audio app allows you to control audio from a connected compatible entertainment system.</p>
	<p>Video — The Camera app allows you to control and view feeds coming from connected video equipment such as an IP camera or Thermal camera.</p>

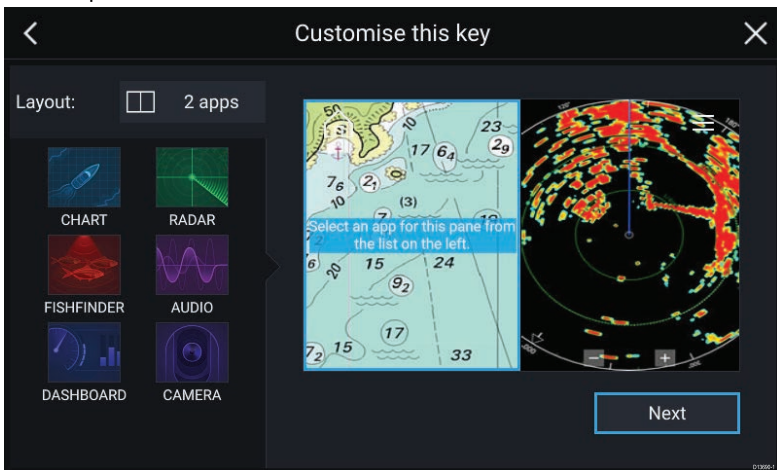
	<p>Dashboard — The Dashboard app provides data readings from connected sensors and equipment. The Dashboard app is also used for controlling, configured, compatible, Digital Switching hardware.</p>
	<p>UAV — The UAV (Unmanned Aerial Vehicle) app provides remote controls, settings and video display, including flight data for your compatible UAV device.</p>

3.2 Creating / Customizing an App page

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

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

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



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

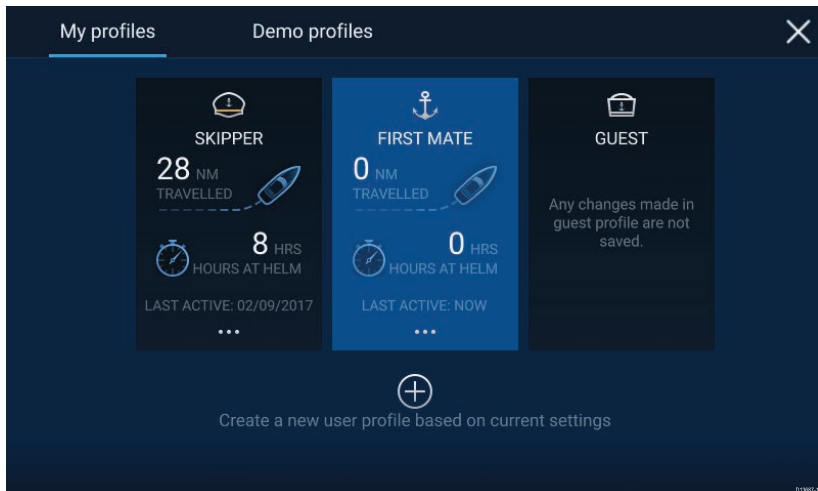
The page is saved and the new App page icon will be shown on the Homescreen.

3.3 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.

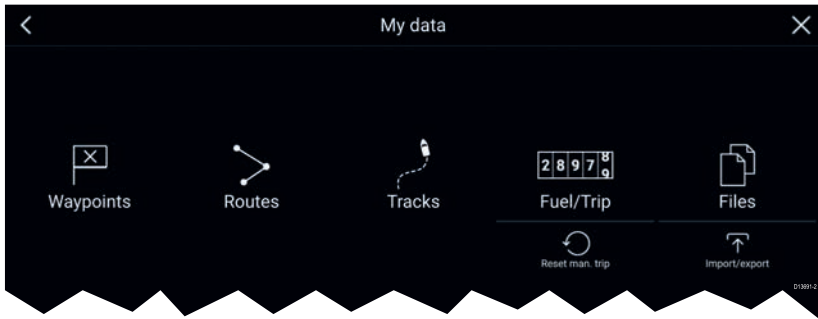
A Guest profile is available for temporary users. Setting changes to the Guest profile are not retained. Each time the Guest profile is activated the settings are based on the last used profile.

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.

3.4 My data

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



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

Selecting **Fuel/Trip** displays the Fuel manager and Trip counters.

Selecting **Reset man. trip** resets the **Trip (Manual)** counter to zero.

Selecting **Files** opens a file browser.

Selecting **Import/export** allows you to backup or restore user data and MFD settings using an external storage device.

3.5 Settings

The Settings menu is accessible from the bottom of the Homescreen and contains important information and settings for your MFD.

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

Tab	Settings
Getting started	<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• Set boat icon and name.• Configure Minimum safe depth, height and width.• Configure engines.

Tab	Settings
	<ul style="list-style-type: none"> • Configure batteries. • Configure fuel tanks.
Units	<ul style="list-style-type: none"> • Configure preferred units of measurement. • Configure Bearing mode. • Configure variation. • Configure GNSS (GPS) system datum.
This display	<ul style="list-style-type: none"> • Assign a Homescreen page or app to start on power up. • Select save location for screenshots. • ⁽¹⁾Configure User Programmable Button (UPB; Axiom Pro displays only). • Configure Shared brightness. • ⁽²⁾Change or reset Splashscreen graphic. • Pair / unpair connected RMK external keypads. • ⁽³⁾Enable / disable external alarm output. • ⁽²⁾Connect to a wireless display. • Wi-Fi Sharing, pair with a wireless Quantum Radar scanner, configure Wi-Fi settings and set mobile app access. • ⁽²⁾Connect to a Bluetooth device. • Perform a Settings or Factory reset.
Autopilot	<ul style="list-style-type: none"> • Enable / Disable Autopilot control. • Set autopilot response. • Access advanced autopilot settings.
Network	<ul style="list-style-type: none"> • View list of networked MFDs. • Assign the MFD Data master. • View software and network details for the MFD you are using. • Save or Erase diagnostics logs to external storage. • View and Save Diagnostic information about products connected to your MFD. • ⁽⁴⁾Set up NMEA 0183 options on an Axiom Pro.

Tab	Settings
	<ul style="list-style-type: none"> Assign your preferred data sources (Data master only).

Note:

- (1) Available on Axiom™ Pro MFDs.
- (2) Available on Axiom™, Axiom™ Pro and Axiom™ XL MFDs.
- (3) Available on Axiom™ XL and gS Series MFDs.
- (4) Available on Axiom™ Pro, Axiom™ XL, eS Series and gS Series MFDs.

3.6 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.

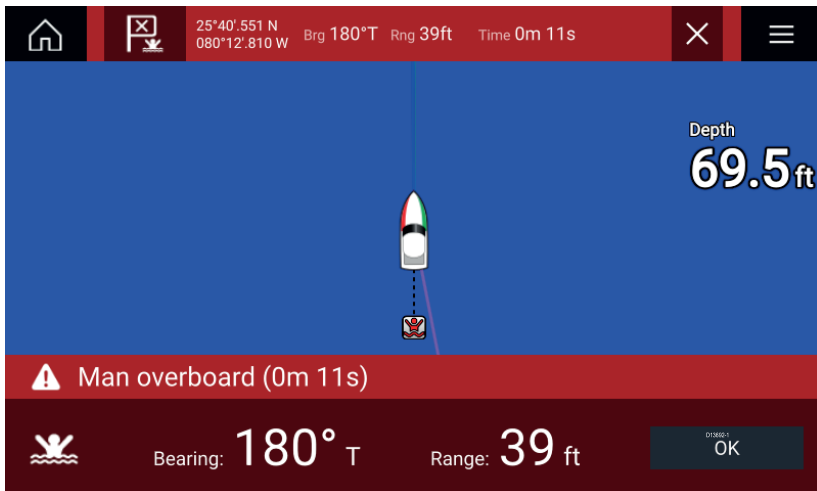
The MOB feature can be activated by pressing and holding on the



MOB icon: **MOB** on the Homescreen or the waypoint / MOB icon:



displayed at the top of all apps.



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

When you activate the MOB alarm:

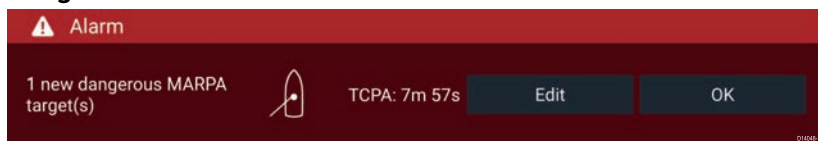
- an audible alarm is sounded which is repeated every 30 seconds until the alarm is cancelled.
- a MOB Databar providing Bearing and range from MOB, and elapsed time since MOB was initiated, is displayed along the top of the screen. The Databar persists across apps and the Homescreen, and remains until 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.

3.7 Alarms

Alarms are used to alert you to a situation or hazard requiring your attention. Alarms are triggered by system functions and external devices connected to the MFD (Multifunction Displays). Alarms are displayed on all networked MFDs.

Alarms are color coded to signify their severity:

Dangerous alarms



Red — A Red notification is used to signify a dangerous alarm condition, immediate action is required due to a potential or immediate danger to life or vessel. Dangerous alarms are accompanied by an audible tone. The Dangerous alarm notification and audible tone will continue to be displayed until acknowledged or the conditions that triggered the alarm are no longer present. Acknowledged alarms may remain active whilst the alarm condition persists but will not trigger further onscreen or audible notifications.

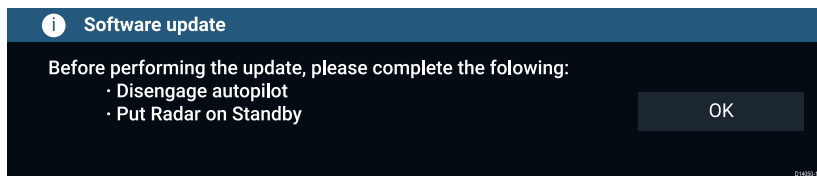
Warning alarms



Orange — An Orange notification is used to signify a warning alarm condition. Warnings alarms are used to signify that there has been a change in situation that you need to be aware of. Warnings alarms are accompanied by an audible tone. The warning alarm notification and audible tone will continue to be displayed until acknowledged

or the conditions that triggered the alarm are no longer present. Acknowledged alarms may remain active whilst the alarm condition persists but will not trigger further onscreen or audible notifications.

Notifications



Blue — A Blue notification is used to signify information requiring user acknowledgement. Unless they require user interaction, information notifications may self dismiss after 3 seconds. Information notifications are not accompanied by an audible tone and are not displayed in the Active alarms or Alarm history lists.

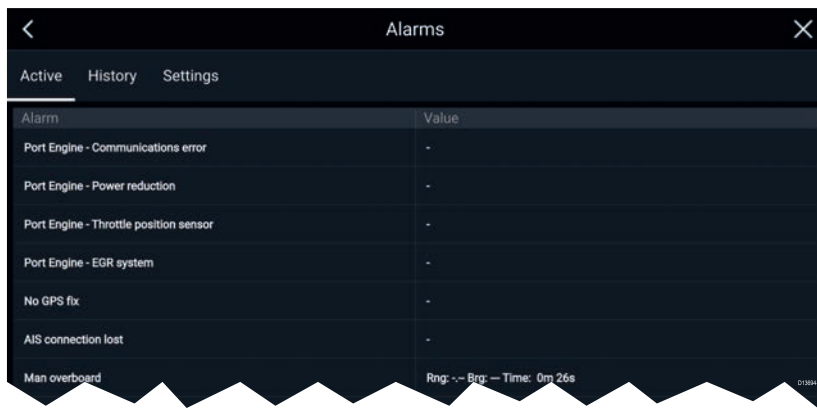
Alarm manager

The Alarm manager is used to list current active alarms, enable and disable alarms, adjust alarm thresholds and view Alarm history.

Active alarms

The Alarm manager can be accessed by selecting **Alarms** from the Homescreen.

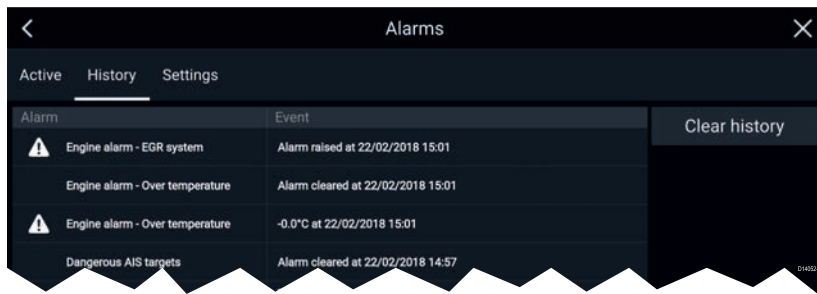
Example: Active alarms tab



The Active alarms tab lists all alarms that are currently active. Alarms will remain active until the conditions that triggered the alarm are no longer present, e.g.: a Shallow depth alarm will automatically dismiss when the depth becomes deeper.

Alarm history

Example: Alarm history tab

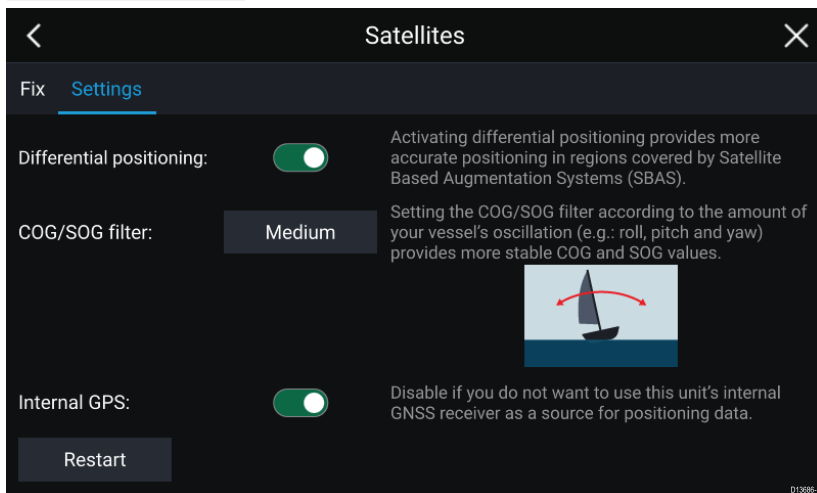


All Dangerous (Red) and Warning (Orange) alarms will appear in the Alarm history list. The history list will include an entry for the alarm being triggered (raised) and also for when the alarm is acknowledged (cleared). The Alarm field contains the name of the alarm and the events field contains details of the alarm condition and its time and date.

The Alarm history list can be cleared by selecting **Clear history**.

3.8 GNSS (GPS) Settings

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



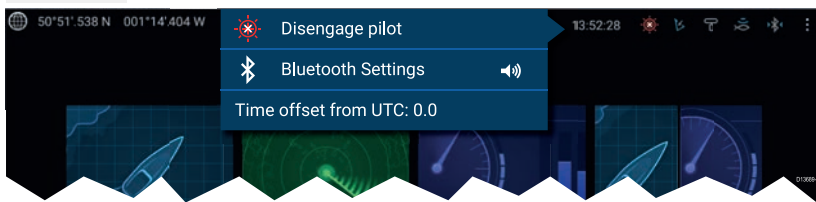
From the GNSS Settings tab you can:

- activate and deactivate use of Differential positioning (SBAS)

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

3.9 Status area

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



Status area icons

The status area provides icons which identify the status of connected Autopilot, AIS, Radar, Sonar/Transducer, and Bluetooth devices.

Pop-over menu options

From the **Options** pop-over you can:

- Disengage your autopilot.
- Access Bluetooth settings and volume controls.
- Adjust the Time offset from UTC.

3.10 Sidebar

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



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

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

3.11 PDF viewer

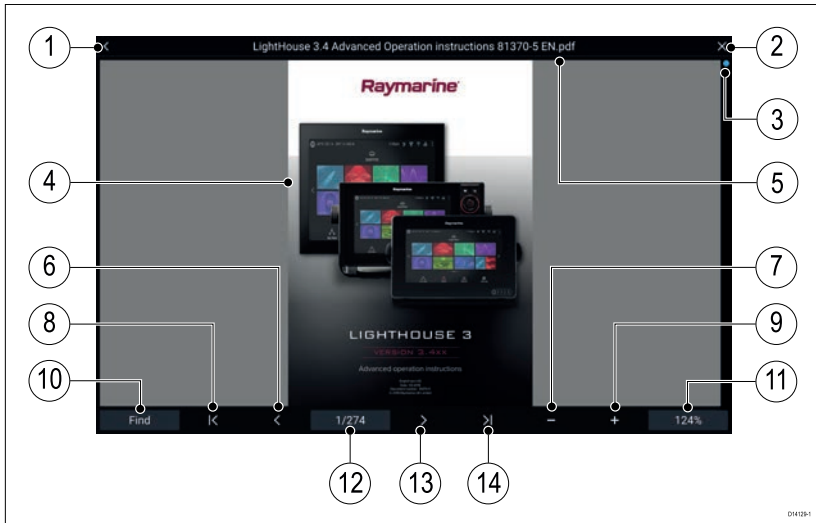
PDF files saved to an external storage device can be viewed using the File browser.

A typical use for the PDF viewer is to display Raymarine product handbooks that you've downloaded from the Raymarine website.

PDF files must first be copied to a MicroSD card using an external device (such as a PC or tablet). Then the MicroSD card can be inserted into the MFD's card slot and browsed using the File browser.

Note:

Secured PDF documents (encrypted with certificate or password) are not supported.

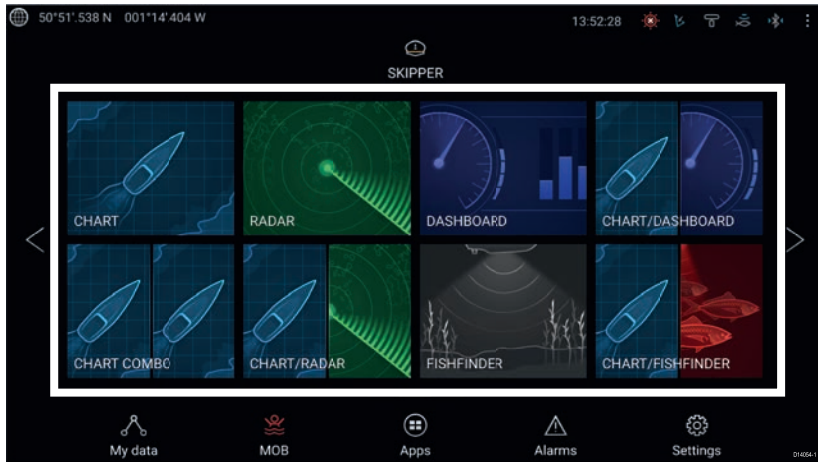


1. **Back** — Select to go back to the previous screen.
2. **Close** — Select to close the document and go back to the File browser.
3. **Position indicator** — Indicates the position of the current page within the document. You can also drag the indicator to scroll through the document.
4. **Document** — PDF document pages
5. **Document filename** — The filename of the current PDF.
6. **Page back** — Select to go back to the previous page.
7. **Zoom out** — Select to zoom out in 10% increments.
8. **First page** — Select to go back to the first page of the document.
9. **Zoom In** — Select to increase zoom in 10% increments.
10. **Find** — Select to open the onscreen keyboard and enter a word or phrase to search for.
11. **Zoom** — Select to use **Page Width** and **Page Height** pop-over options.
12. **Pages** — Indicates current page and total number of pages. You can also select the **Pages** setting field to enter a specific page number to view.
13. **Page forward** — Select to go to the next page.
14. **Last page** — Select to go to the last page in the document.

3.12 MFD and LightHouse apps

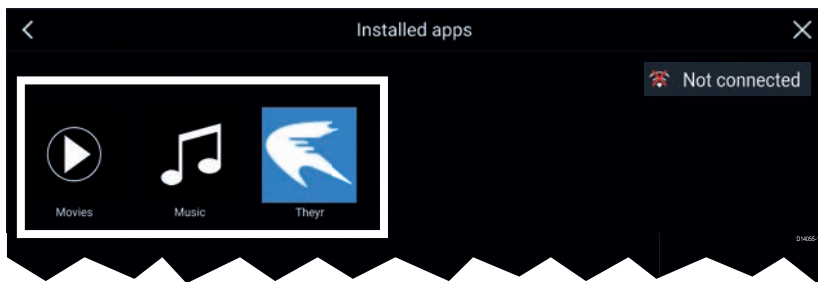
Depending on your MFD variant 2 types of app may be available on your display.

MFD apps



MFD apps are opened from app page icons available on the Homescreen, these apps include Chart, Radar, Fishfinder etc. MFD apps are available on all MFDs running the LightHouse™ 3 operating system. Multiple apps can be displayed simultaneously by creating splitscreen app pages.

LightHouse™ apps



LightHouse™ apps are developed entirely by 3rd parties and are approved by Raymarine. These apps are available from the LightHouse app launcher found on the Homescreen. LightHouse™ apps are only available on the Axiom™ range of MFDs.

Chapter 4: Autopilot control

4.1 Autopilot control

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

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



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

Engaging the autopilot — Locked heading

With Autopilot control enabled:

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

4. Select **Engage pilot**.

Engaging the autopilot — Navigation

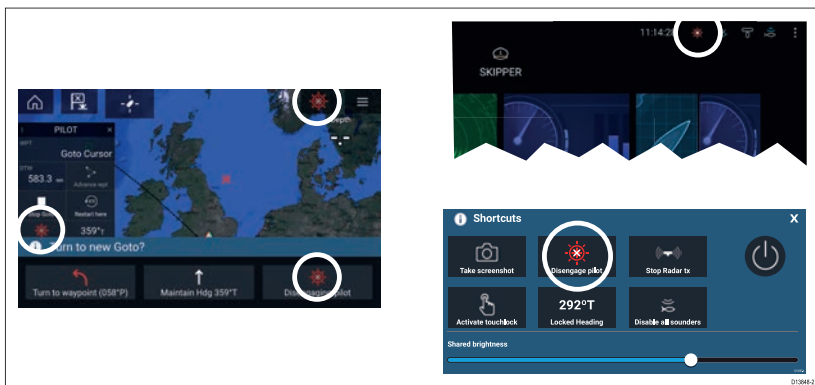
With Autopilot control enabled:

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

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

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

Disengaging the autopilot



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

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

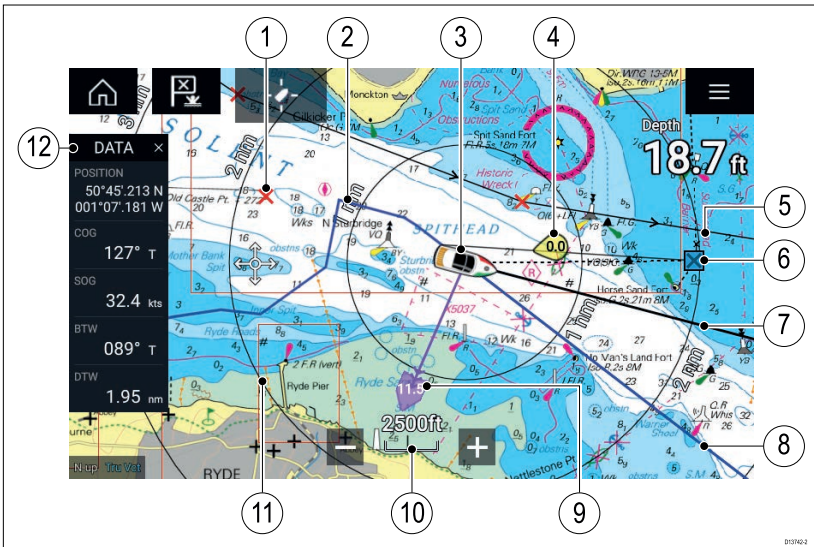
Chapter 5: Chart app

5.1 Chart app overview

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

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






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 locations or points of interest.	2	Track You can record the passage your vessel takes using Tracks.
3	Vessel icon This icon represents your vessel, only displayed when a GNSS (GPS) position fix is available. The 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, a Heading vector for your vessel can be displayed.	8	COG line If COG data is available, you can display a COG vector for your vessel.
9	Tide indicator Provides tide Set and Drift indicators. Requires the following data: COG, Heading, SOG, and STW (Speed Through Water).	10	Chart range Identifies the scale for the displayed Chart range.
11	Range rings Provides a distance indication around your vessel at set intervals.	12	Sidebar The Sidebar contains system data that can be viewed in all apps.

Chart app controls

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



Icon	Description	Action
	Range In	Decreases the range/distance displayed onscreen.
	Range Out	Increases the range/distance displayed onscreen.

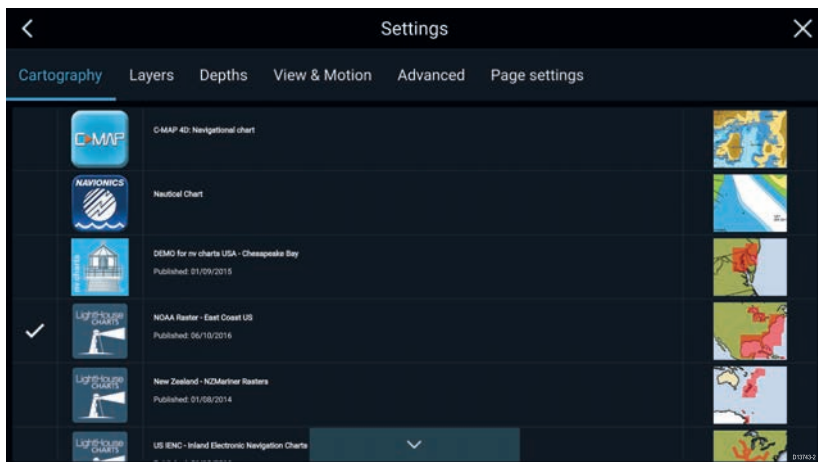
Chart ranging and panning

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.

Selecting a chart card

You can use LightHouse™ charts and compatible Navionics and C-MAP electronic charts. The electronic chart cards must be inserted into the MFD's MicroSD card reader (or the card reader of an MFD on the same network).



From the Chart app menu:

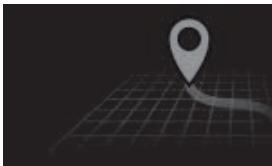
1. Select the **Settings** icon.
2. Select the cartography that you want to use from the Cartography tab.

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

Chart modes

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

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



SIMPLE

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



DETAILED

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



FISHING CHART

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



WEATHER

Weather mode is available when the MFD is connected to a compatible Weather receiver (SR150).

Weather mode allows you to overlay weather data directly on the chart and view animated weather graphics or read weather reports. Only Weather related menu options are available. Settings changes are saved to the user profile in use.

For further details on Weather mode refer to: [Chapter 6 Weather mode](#)

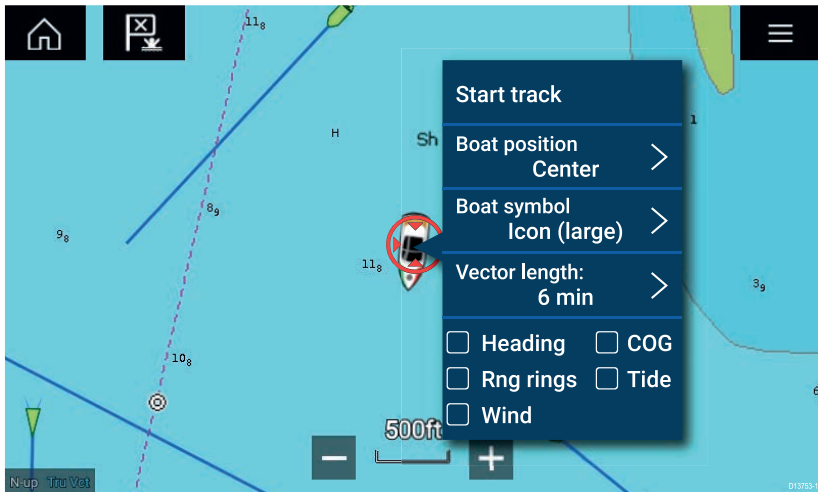


TIDES

In Tides mode, Tide Station and Current Station icons are replaced with graphics representing Tide and Current conditions. Animation controls are displayed that enable playback of Tide and Current predictions over a 24 hour period. Tides mode also suppresses chart detail, to enhance the Tide and Current graphics and enables own vessel Tide vector graphics.

Vessel details

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



From the Vessel details pop-over you can:

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

Note:

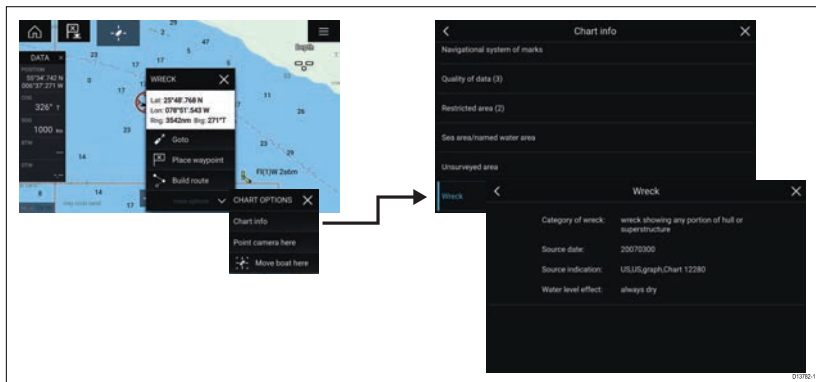
In **Simple mode**, the only option available is Start/stop track.

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.

View and motion

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

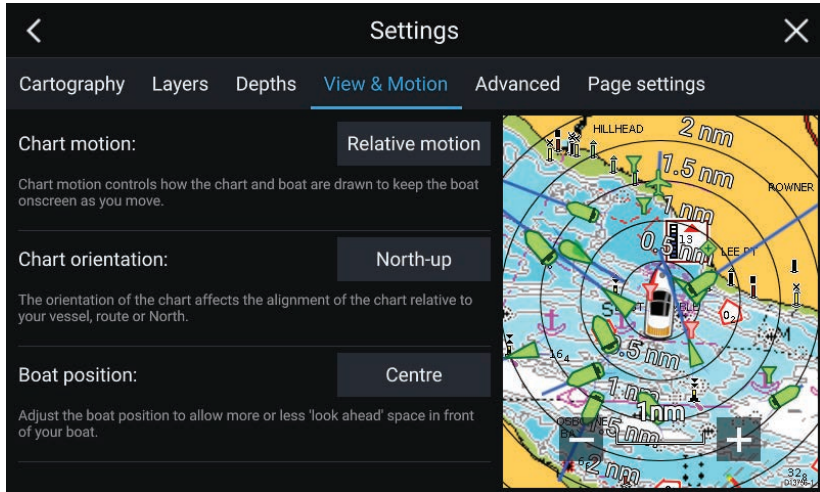


Chart motion

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

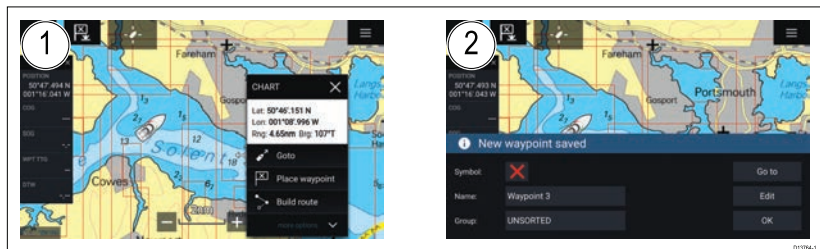
Chart orientation

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.

Placing a waypoint



1. Select and hold on the desired location and select **Place waypoint** from the context menu..

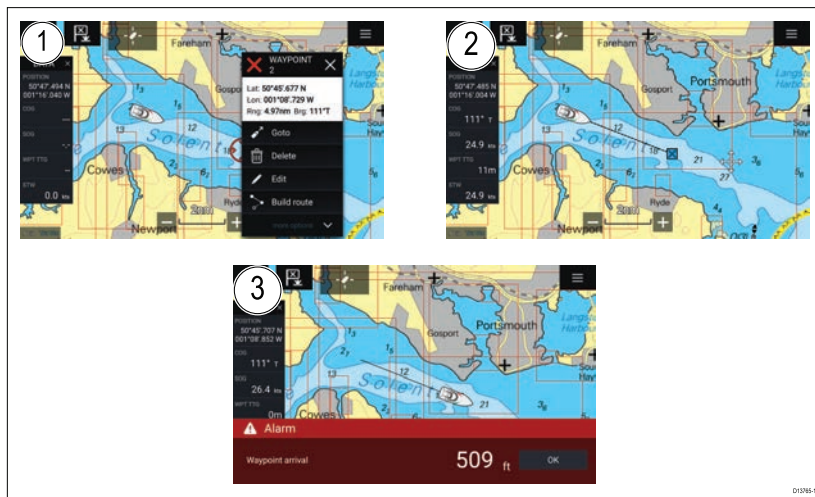
2. Select **Edit** to edit the waypoint details, **Goto** to navigate to the Waypoint, or **OK** to return to normal operation.



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

Navigating to a waypoint or point of interest

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



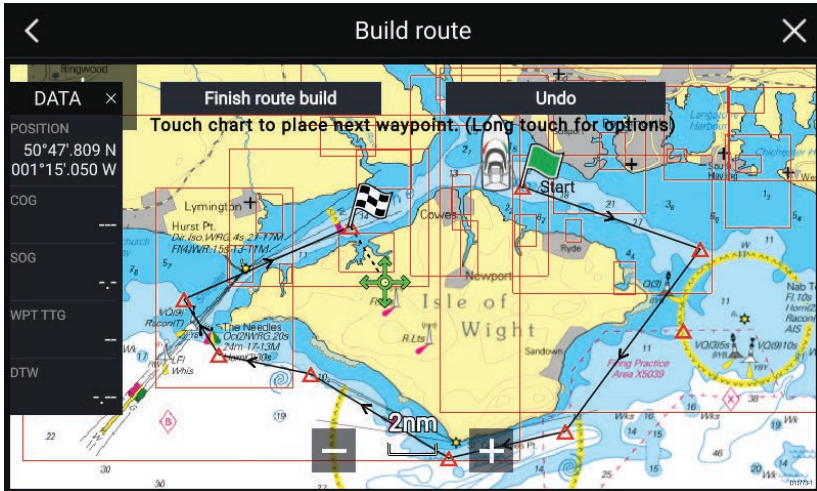
1. Select and hold on the waypoint or point of interest and select **Goto** from the context menu.

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

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

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

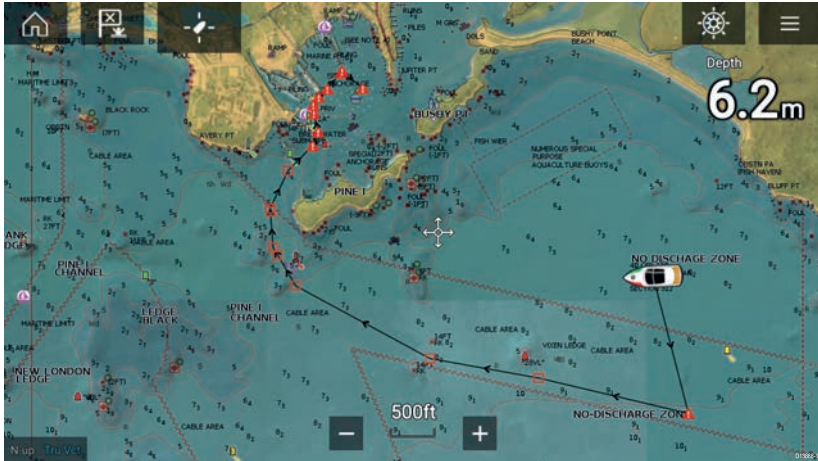
Creating a Route



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**.

Autorouting

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



You can select any point on the Chart and from the Chart context menu select **Autoroute to here** or you can select **Autoroute to** from an existing waypoint's context menu to create a route automatically between your vessel and the chosen point.

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

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

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

Reviewing an automatically generated route

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

Upon Route completion:

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

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

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

Following a Route

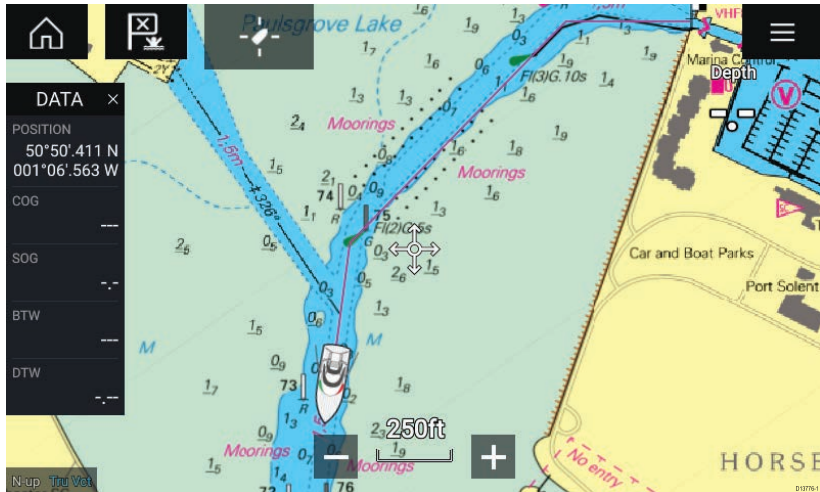
You can follow a saved route.

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.

Creating a track

You can record your vessel's journey using Tracks.



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

You can also start a new track recording at anytime from the Chart menu: **Menu > New > Start a new track**. When using the Chart menu to start a track, if a track is already recording then it will be saved before the new track is started. Once a Track is saved it can be converted to a Route so that the same passage may be followed again at a later date.

Chapter 6: Weather mode

6.1 Weather mode

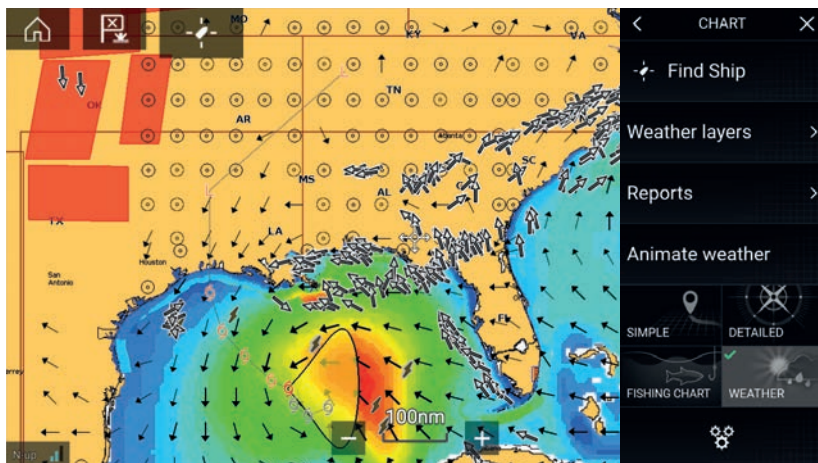
Weather mode is available in the Chart app if you have a weather receiver and valid subscription. Switching the Chart app to weather mode allows you to overlay weather data and information from your weather receiver.

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

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

Important:

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



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

The following Layers are available:

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

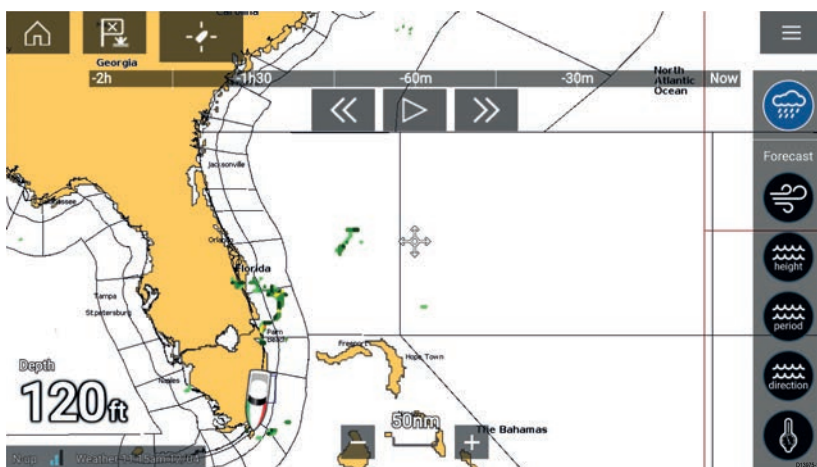
In Weather mode the **Chart orientation** is fixed in **North-Up**.

6.2 Animated weather

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

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

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









Player controls

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

Animated weather data

Duration of forecasts are dependent on subscription type.

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

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

Chapter 7: Sonar app

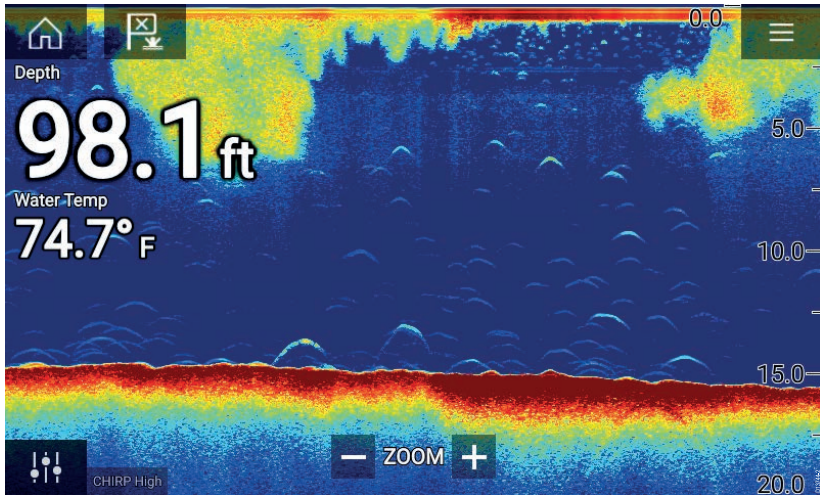
7.1 Sonar app overview

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



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








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

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



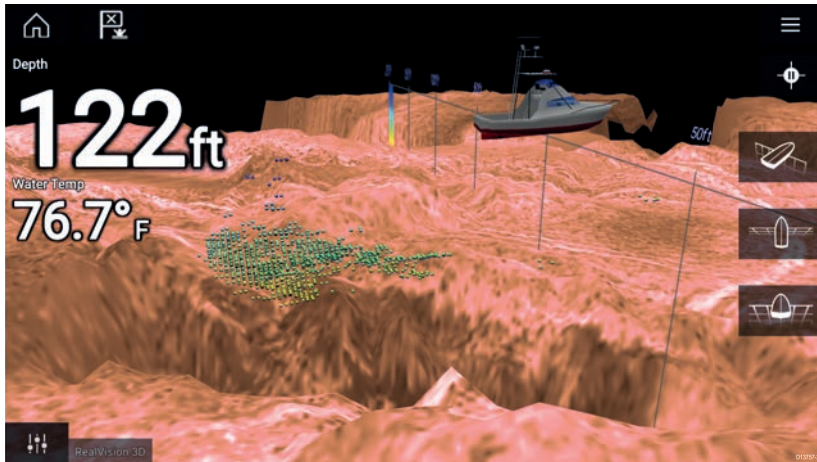
Sonar app controls

Icon	Description	Action
	Home icon	Takes you to the Homescreen
	Waypoint / MOB	Place waypoint / activate Man overboard (MOB) alarm

Icon	Description	Action
	Pilot icon	Opens and closes the Pilot Sidebar
	Menu icon	Opens the app menu
	Image adjustment	Displays onscreen sensitivity / image adjustment controls
	Pause	Pause RealVision™ 3D sonar image.
	Unpause	When the Sonar app is paused, you can recommence scrolling by selecting the Unpause icon.
	Range/Z-oom 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/Z-oom Out	When in Zoom mode, pressing the minus icon will decrease the Zoom factor and finally revert to normal mode. When Range is set to Manual pressing the Minus icon increases the distance displayed onscreen.

RealVision 3D controls

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



Touchscreen controls

- One finger swipe rotates the image.
- Two finger swipe pans the image around the screen.
- Pinch-to-zoom changes the magnification of the image.
- The Range control determines how far the sonar will ping.
- Press and hold onscreen to display the context menu

Physical buttons

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

Opening the Sonar app

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

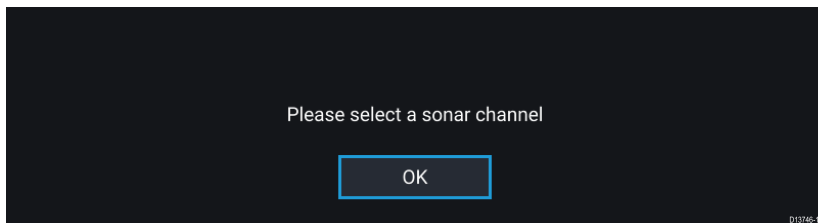
Pre-requisites:

1. Ensure your Sonar module is compatible (check the latest details available on the Raymarine website). If in doubt please contact an authorized Raymarine dealer for advice.
2. Ensure you have installed your Sonar module in accordance with the documentation that was supplied with the module.

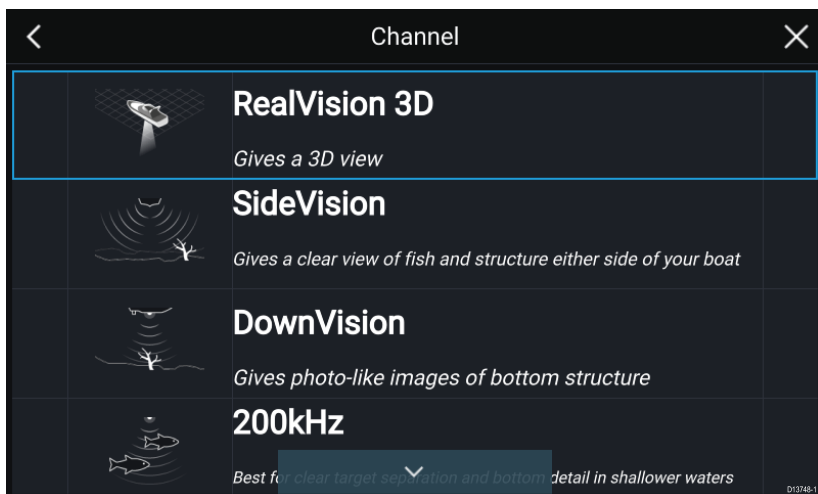
The Sonar app will open in 1 of 4 states:

Please select a sonar channel

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

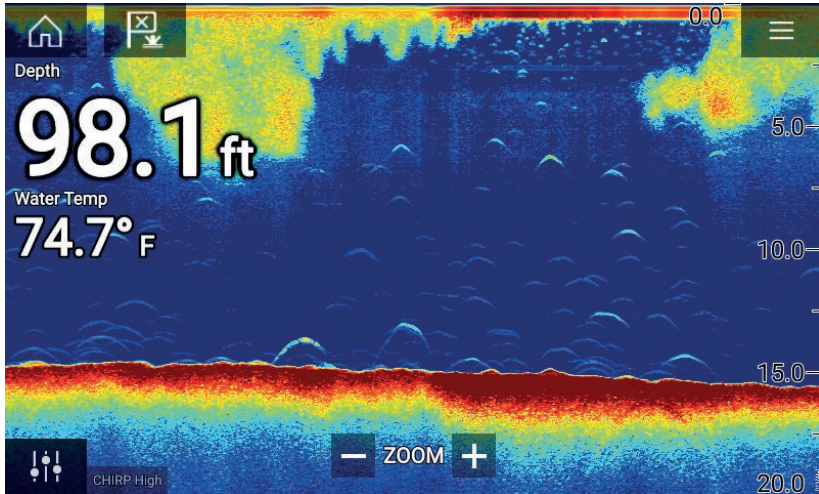


Select **OK** and then choose the Sonar channel you want to use from the list:



Sonar on and pinging

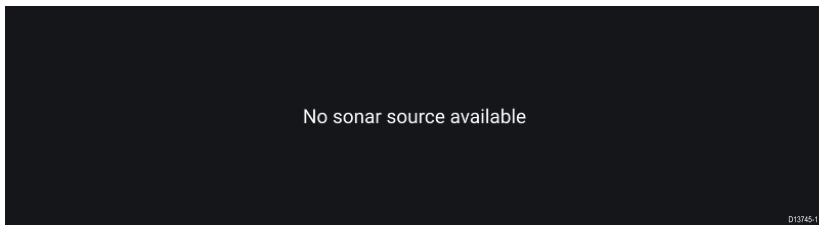
If your Sonar app has already been set up then when the Sonar app is opened the Sonar image will be displayed and start scrolling.



No sonar source available

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

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



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

No transducer connected

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

No transducer connected

Connect a transducer and restart the unit.

D13742-1

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.

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.

Sonar channels

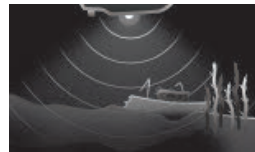
The Sonar channels that are available depend on the Sonar module and transducer you have connected.



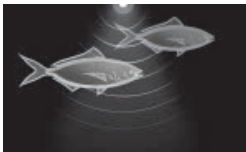
RealVision™ 3D



SideVision™



DownVision™



High CHIRP / High Frequency



Medium CHIRP / Medium Frequency



Low CHIRP / Low Frequency

Placing a Waypoint (Sonar, DownVision and SideVision)

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

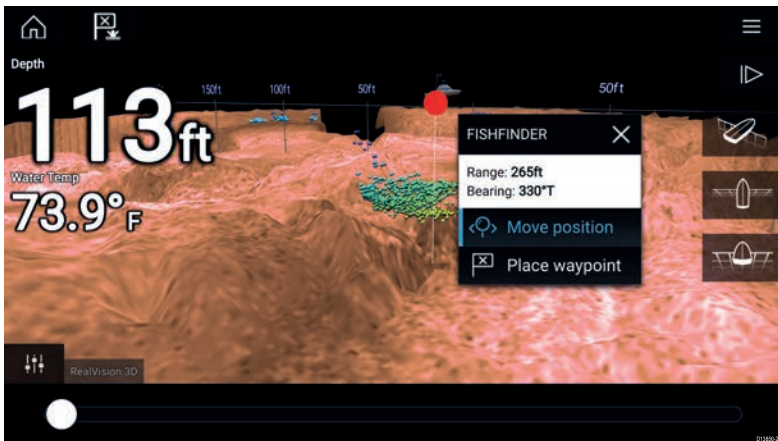
1. Select and hold on the point of interest onscreen.
The Context menu is displayed and scrolling is paused, temporarily.
2. Select **Add Waypoint** from the context menu.

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

Placing a waypoint RealVision 3D

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

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



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

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



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

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

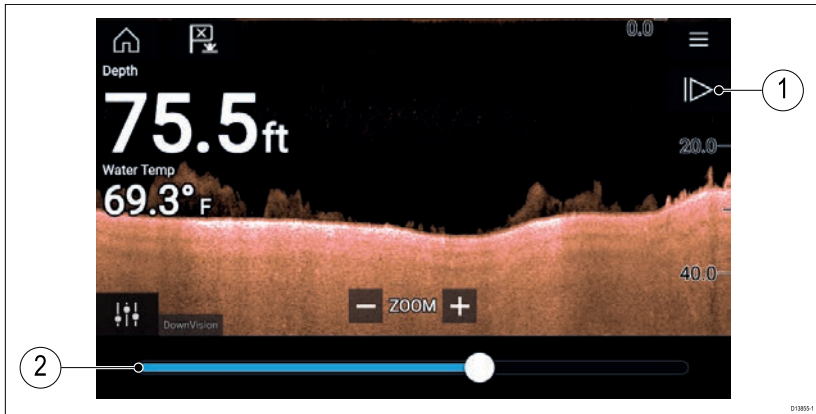
Sonar scroll back

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

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

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

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



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

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

Chapter 8: Radar app

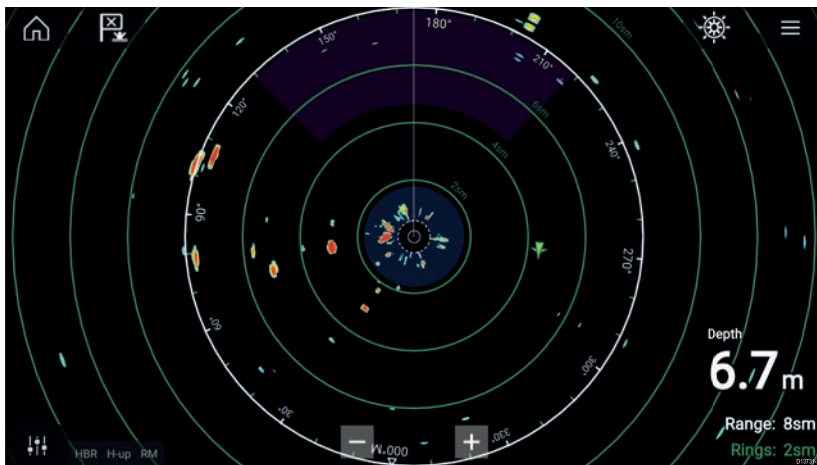
8.1 Radar app overview

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

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

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

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






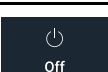
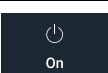
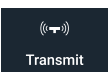




Tracked Radar targets and AIS targets are displayed using target symbols.

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

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

Radar app controls

Icon	Description	Action
	Home icon	Takes you to the Homescreen
	Waypoint / MOB	Place waypoint / activate Man Overboard (MOB) alarm
	Pilot icon	Opens and closes the Pilot Sidebar
	Menu icon	Opens the App menu
	Image adjustment	Displays onscreen sensitivity / image adjustment controls
	Power Off	Powers down the current Radar scanner
	Power On	Powers up the selected Radar scanner
	Transmit	Start Radar transmission
	Range In	Decreases the distance displayed onscreen (minimum range: 1/16nm).
	Range Out	Increases the distance displayed onscreen (up to your Radar scanner's maximum range).

Opening the Radar app

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

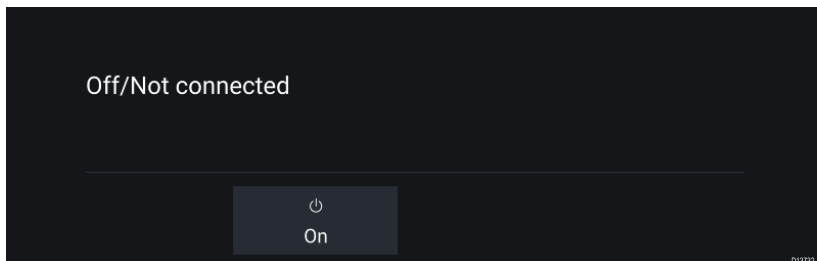
Pre-requisites:

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

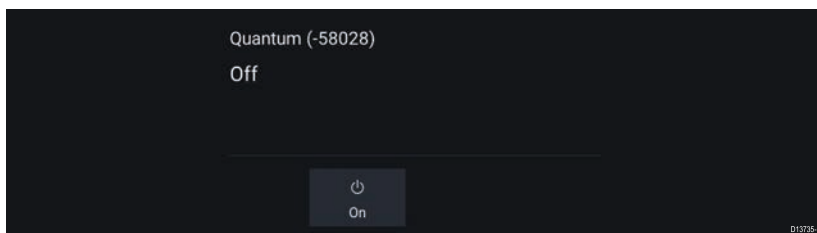


If the '**Off/Not Connected**' message is displayed then:

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

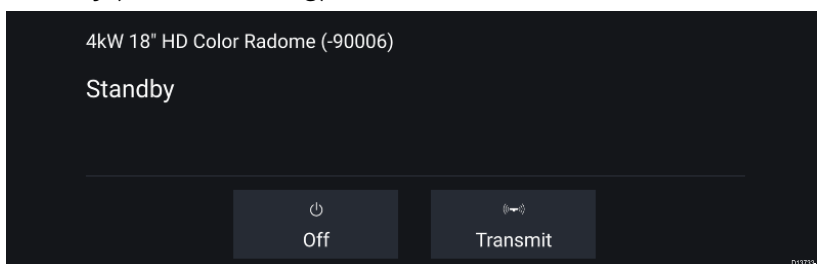
Select **On** to power up your Radar. If the '**Radar not found**' message is displayed then a connection could not be established, ensure that network and power connections to your Radar and MFD are correct and free from damage and then power cycle your system. If the Radar scanner can still not be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

Off



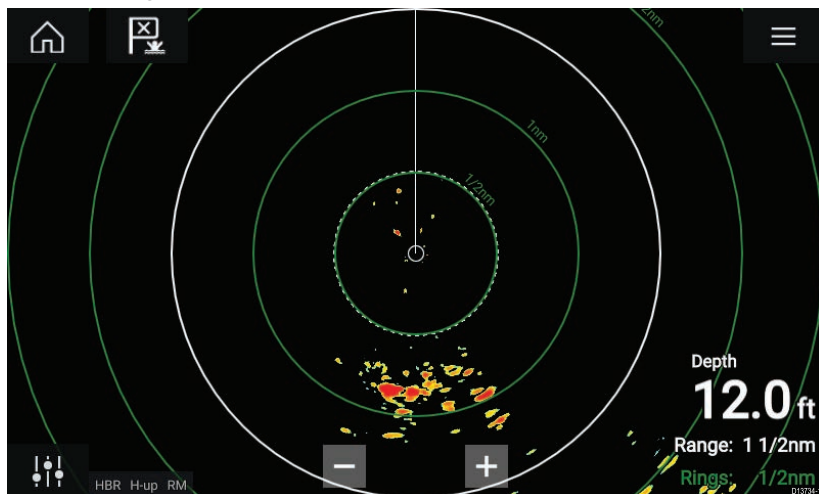
If the '**Off**' message is displayed then your Wi-Fi connected Radar scanner is paired but powered off, select **On** to power up your Radar

Standby (Not transmitting)



If the **'Standby'** message is displayed then select **Transmit** to begin transmitting.

Transmitting

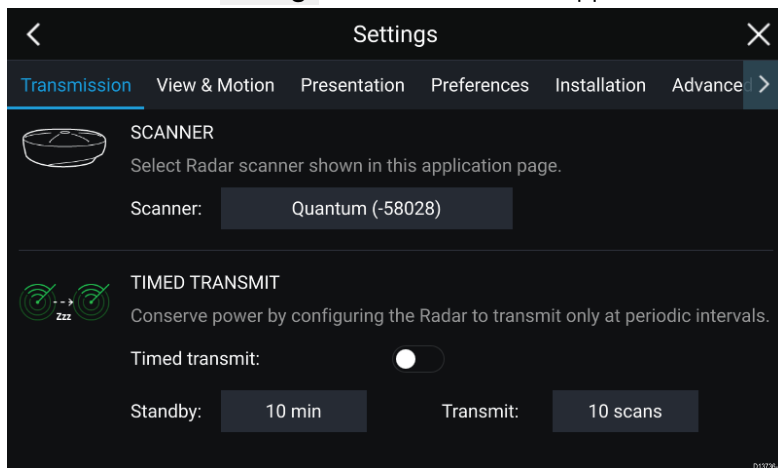


If your Radar scanner is connected, powered up and transmitting then the Radar image is displayed and echoes/targets are displayed onscreen.

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**.



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

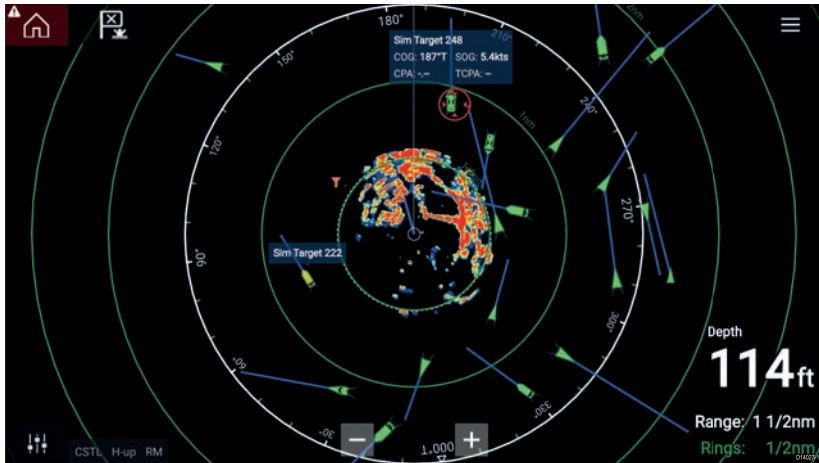
Weather mode optimizes the display to help identify precipitation, useful for helping determine weather fronts.

Radar scanners: Quantum™ and Quantum™ 2 Doppler.

AIS targets

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

Tracked AIS targets are identified onscreen using target symbols.



Up to 100 AIS targets can be tracked simultaneously. If more than 100 targets exist, within your range, the 100 targets nearest to your vessel will be displayed.

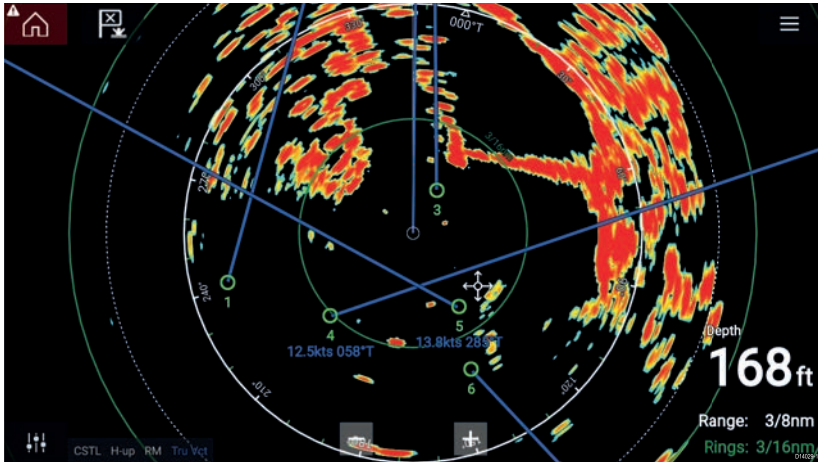
Target vectors and information can be displayed for each target by selecting the relevant option from the AIS target context menu. The AIS target context menu is accessed by selecting the AIS target.

You can also select the type of AIS targets that should be displayed, i.e.: **All**, **Dangerous**, **Buddies** and hide static targets from the AIS Settings tab.

Radar targets

With a compatible Radar scanner connected to your MFD, radar targets can be tracked in the Chart app and Radar app. Depending on your Radar scanner, radar targets can be acquired manually or automatically, based on your configured **Guard zones**.

Tracked radar targets are identified onscreen using target symbols.



Multiple radar targets can be tracked simultaneously.

Target vectors and information can be displayed for each target.

Radar target options are available from the Radar target context menu. The Radar target context menu provides options for you to **Cancel target**, **Show CPA** graphic or display **Target info** onscreen by selecting the relevant option. The Radar context menu is accessed by selecting the radar target.

Acquiring a target manually

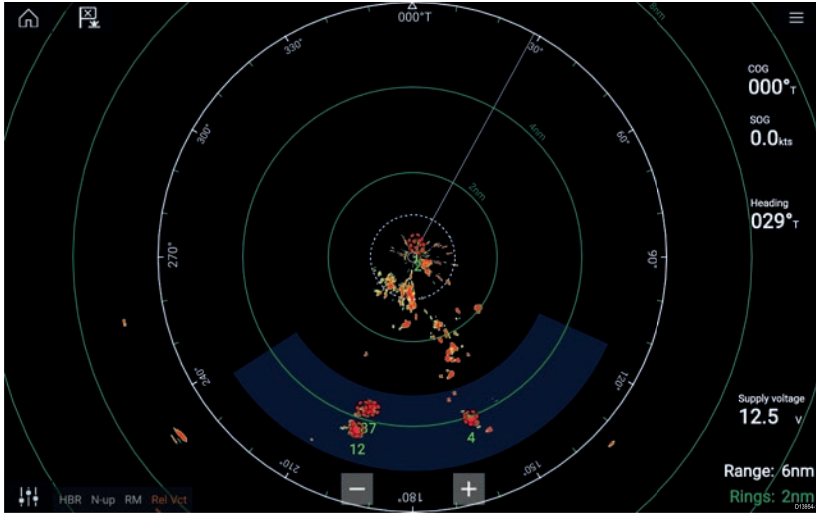
To acquire a Radar target manually using MARPA (Mini Automatic Radar Plotting Aid) follow the steps below.

With the Radar app, or Chart app with Radar overlay enabled:

1. Select the target.
The context menu is displayed.
2. Select **Acquire target**.
Once acquired the target will be tracked.

Automatic target acquisition

With a compatible Radar scanner connected, Radar targets can be acquired automatically.



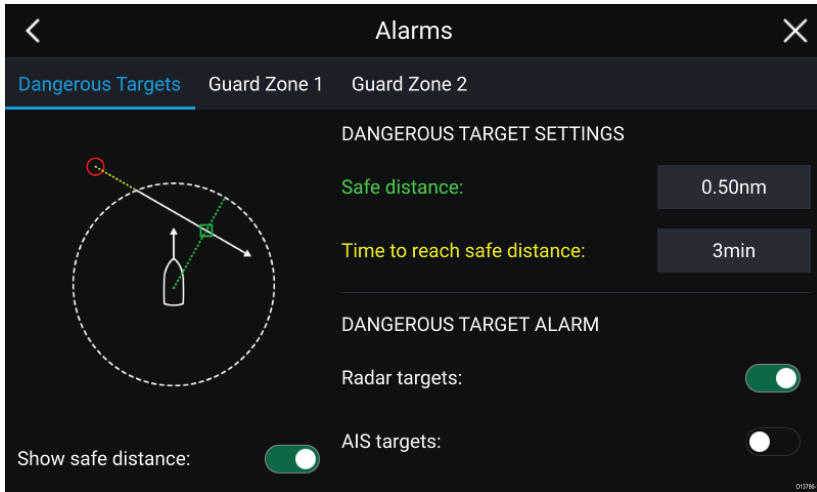
Once configured, targets which enter or appear in your chosen **Guard Zone(s)** will be automatically acquired.

Note:

- Automatic target acquisition cannot be enabled at the same time as **Timed Transmit** or **Dual Range**.
- Automatic target acquisition will be temporarily paused if the Radar display range is 12nm or greater.

Dangerous targets alarm

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



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

You can choose whether you want the Dangerous target alarm to trigger for Radar and / or AIS targets.

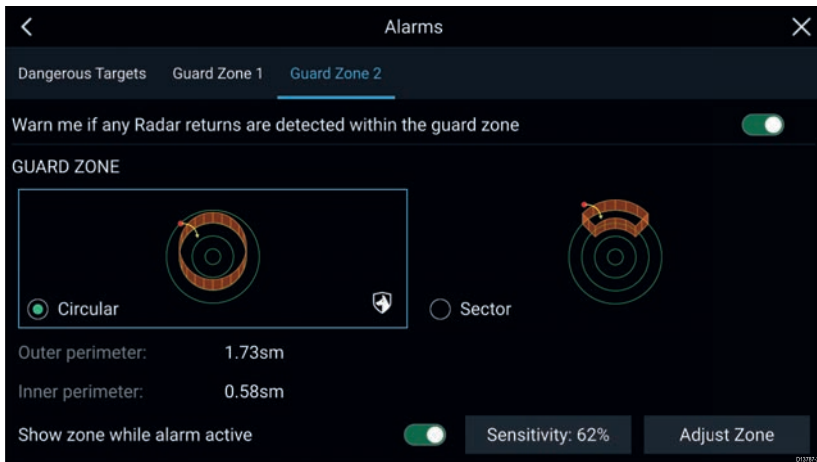
You can display a Safe distance ring around your vessel in the Radar app using the **Show safe distance** control.

Guard zone alarms

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

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

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



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

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



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

Once configure select **Back**.

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

Chapter 9: Dashboard app

9.1 Dashboard app overview

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

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



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





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



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

Dashboard app controls

Icon	Description	Function
	Home icon	Takes you to the Homescreen.
	Waypoint / MOB	Place waypoint / activate Man overboard (MOB) alarm.

Icon	Description	Function
	Pilot icon	Opens and closes the Pilot Sidebar
	Menu icon	Opens the app menu.
	Left arrow	Displays the previous data page.
	Right arrow	Displays the next data page.

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.

Customizing existing Data pages

The data items displayed on each page can be changed.

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

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

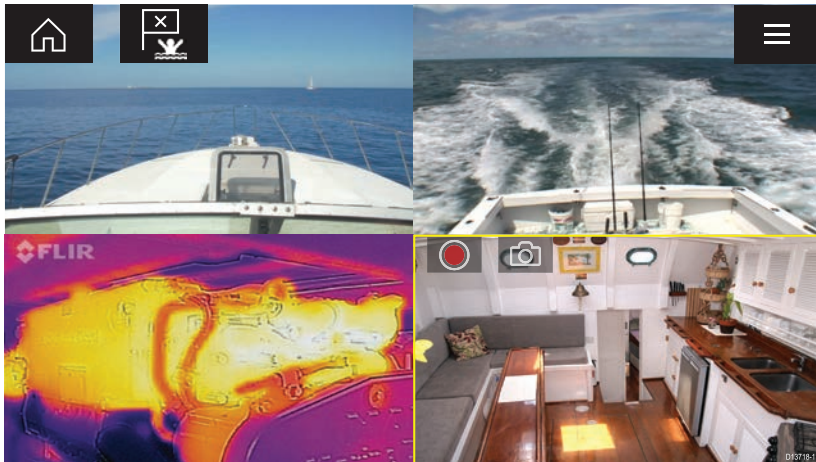
Chapter 10: Video app

10.1 Video app overview




Analog video feeds (Axiom™ Pro only) and IP (Internet Protocol) digital video feeds can be viewed, recorded and played back on the MFD using the Video app. Examples of video feeds include: CCTV cameras and Thermal imaging cameras, DVD player etc. It may also be possible to view analog video feeds from other sources using a suitable third party analog-to-IP video converter.





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

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



Video app controls

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

Icon	Description	Function
	Menu icon	Opens the app menu
	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.

Opening the Video app

The Video app is opened by selecting an app page icon from the Homescreen which includes the Video app.

Pre-requisites:

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

The Video app will open in 1 of 3 states:

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

Video feed displayed

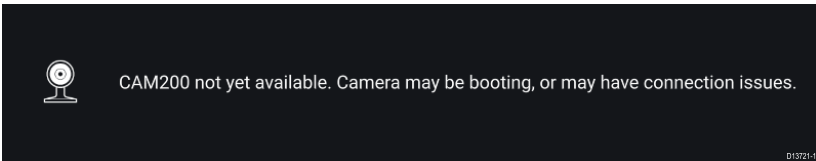
If your device is powered up and operational then the Device's video feed is displayed.



Camera not yet available

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

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



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

No camera detected

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

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

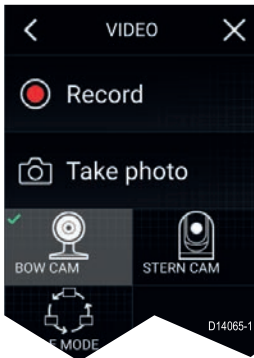


No camera detected

D13719-1

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

Selecting a video feed



You can change the feed that is displayed in the Video app.

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

Chapter 11: ClearCruise (Object Detection and Augmented Reality)

11.1 ClearCruise™ features

ClearCruise™ features are designed for enhancing situational awareness and aiding navigation.

ClearCruise™ technology provides 2 separate features:

- Object Detection
- Augmented Reality (AR)

Object Detection

Object Detection is a feature available for M100 and M200 Series thermal cameras. Intelligent thermal analytics technology provides audible and visual alerts when “non-water” objects are identified in the scene. Vessels, obstacles, and navigation markers can all be automatically identified by the camera without the need for Chart or Radar data.

Required components for Object Detection

- MFD: Axiom / Axiom Pro / Axiom XL, or eS Series / gS Series running LightHouse 3.
- Thermal Camera (M100 or M200 Series)
- LightHouse™ software (v3.0 or later)

For more information, refer to [11.2 ClearCruise™ object detection overview](#)



Augmented Reality

The **Augmented Reality** feature places layers of digital information directly over the top of the Video app’s video feed. Data from the Chart app is used to generate informative text and images (flags) on the Video app. When calibrated correctly, ClearCruise™ Augmented Reality accurately overlays automatically-updating flags on the Video app so they overlap real-life objects.

Required components for Augmented Reality

- MFD (Axiom, Axiom Pro or Axiom XL)
- AR200 Augmented Reality Sensor

- IP camera (CAM210IP or CAM220IP)
- LightHouse™ software (v3.7 or later)

For more information, please refer to [11.3 Augmented Reality \(AR\) overview](#)



Note: ClearCruise’s performance is dependent on environmental conditions and is not a replacement for maintaining a visual watch.

11.2 ClearCruise™ object detection overview

Object detection provides audible and visual alerts when “non-water” objects are identified by connected M100/M200 Series cameras.

Objects that visually differ from the water will be identified by the camera as a “non-water” object.

The following features are available with Object detection:

- **Highlight detected objects** — Enables/disables object highlighting, which automatically identifies and highlights “non-water” objects.
- **Beep on detection** — Enables/disables a beep when an object is detected (**Highlight detected objects** must be enabled)
- **Display estimated range** — Enables/disables display of an object’s estimated range from your vessel (**Highlight detected objects** must be enabled, and object must be closer than approximately 100 m (~300 ft)).



Object detection can be particularly useful at night or visually limiting environments such as storms or fog.

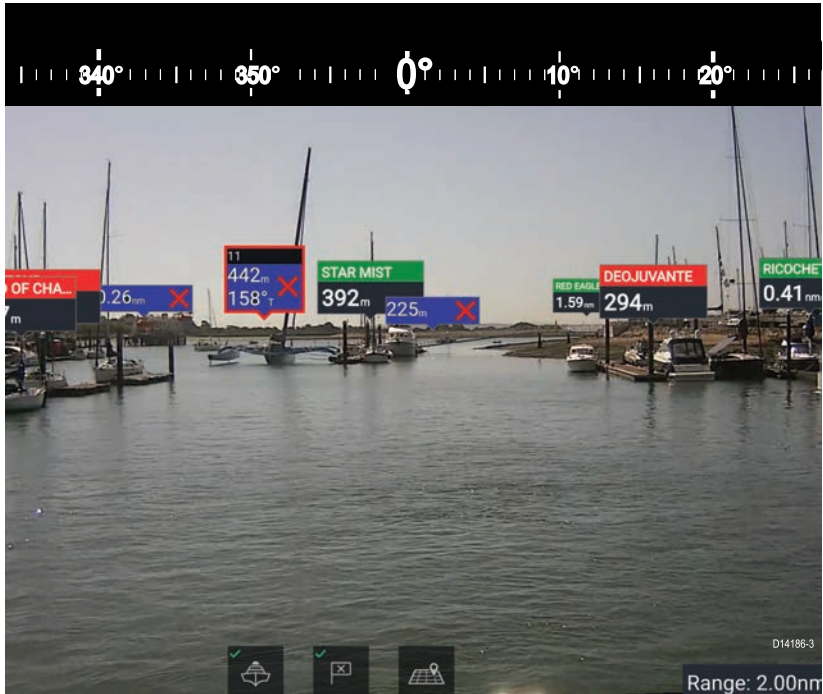
In the event of an emergency, such as man overboard, Object detection could be a useful aid that helps to identify and predict the distance from the MOB.



Note: ClearCruise's performance is dependent on conditions and is not a replacement for maintaining a visual watch.

11.3 Augmented Reality (AR) overview

ClearCruise™ Augmented Reality uses data from the Chart app and displays this data in realtime as an overlay in the Video app.



The **Augmented Reality** feature places layers of digital information directly over the top of the Video app's video feed. Data from the Chart app is used to generate informative text and images (flags) on the Video app. When calibrated correctly, ClearCruise™ Augmented Reality accurately overlays automatically-updating flags on the Video app so they overlap real-life objects.

The Augmented Reality feature requires an Axiom, Axiom Pro or Axiom XL MFD, an AR200 sensor and a compatible camera.

For more information, refer to: [11.1 ClearCruise™ features](#)

Note:

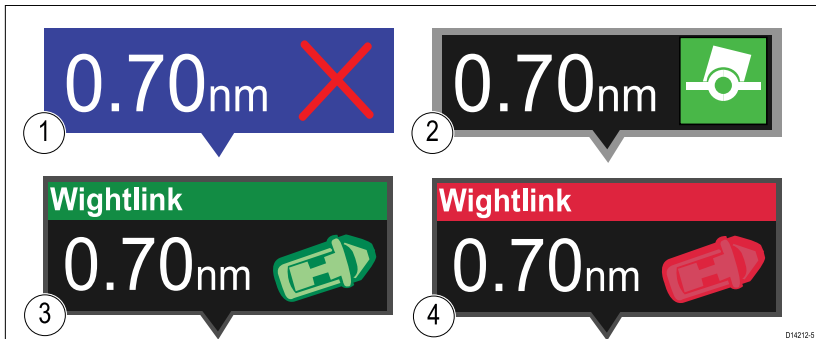
- The Augmented Reality feature requires correct camera calibration for accurate image overlay.
- The Augmented Reality feature serves as an aid to navigation and situational awareness only, and should not be solely relied on for precise navigation. Always maintain a visual watch.

Important: Rear-facing cameras with a flipped or mirrored image may not place Augmented Reality content as accurately as a forward-facing camera.

11.4 Augmented Reality flags

ClearCruise™ Augmented Reality displays AIS Targets, Waypoints and Chart Objects as individual Augmented Reality **Flags** in the Video app.

All flags display an icon and your vessel's distance from the target's location.



1	Waypoint flag
2	Chart Object flag (buoy)
3	AIS Target flag (passenger ferry; icon points in the direction of travel relative to the camera feed)
4	Dangerous AIS Target flag (passenger ferry; icon points in the direction of travel, relative to the camera feed)

Note: AIS flags update periodically; however, accurate placement is not guaranteed.

- AIS Targets, Waypoints and Chart Object flags can be quickly enabled/disabled via buttons on the Video app.
- The maximum range within which flags are automatically shown can also be adjusted in the Video app.
- For more information on adjusting flag settings, refer to:



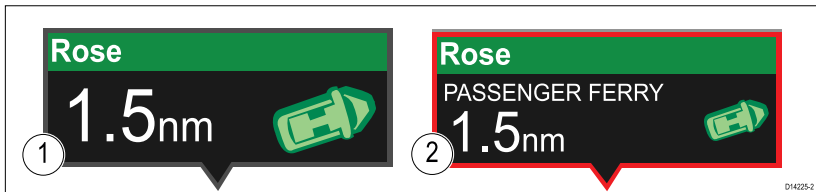
Selected flags

Augmented Reality flags in the Video app can be selected (highlighted), providing access to more information about the object and additional features.

A flag is an onscreen visual overlay element displayed in the Video app when the Augmented Reality features are enabled. A flag represents an object from the Chart application: e.g. AIS target, Waypoint, or other chart object.

When a flag is selected, the corresponding object is also highlighted in the Chart app. Conversely, selecting an object in the Chart app highlights the corresponding flag in the Video app.

Only one flag may be selected at a time.



1	AIS Flag
2	Selected AIS Flag



Selecting a flag highlights it in red and provides additional information about the object in a context menu. The menu also provides additional features. The range of features available in the context menu depends on the type of object selected:

AIS Target Flag

Option	Description
AIS Target name	The name of the target vessel.
Target data	Vessel (name), CPA, TCPA, COG, SOG.
View AIS data	Displays the AIS data transmitted by the target vessel.
Buddy (toggle ON/OFF)	Add the vessel to your “Buddy List”, with the option to rename it. The Buddy feature enables you to add AIS-equipped friends and regular contacts to a “Buddy List” on your MFD. As soon as a vessel on your Buddy List comes within range of your AIS receiver, the onscreen vessel icon changes to indicate this.
Goto	The Chart app will plot a direct route to the last known location of the target.
Place waypoint	The Chart app will place a waypoint at the last known location of the target.

Waypoint Flag

Option	Description
Waypoint name	The name of the waypoint.
Target data	Lat, Lon, Rng, Brg.
Goto	The Chart app will plot a direct route to the last known location of the target.
Delete	Delete the waypoint.
Edit	Edit the waypoint’s Name, Symbol, Group, Position, and add a Comment.

Chart Object Flag

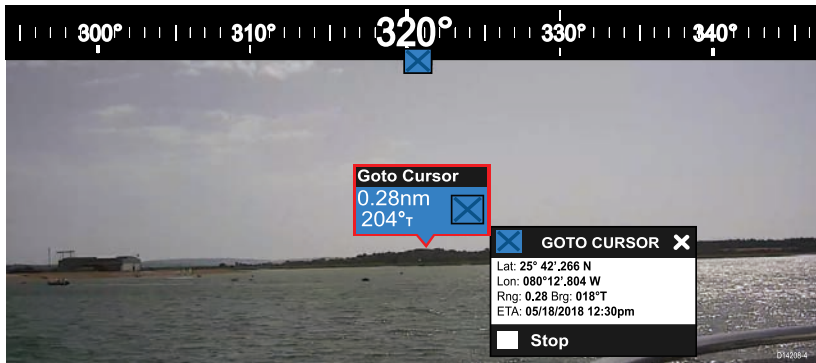
Option	Description
Chart Object name	The name of the chart object.
Target data	Lat, Lon, Rng, Brg.
Goto	The Chart app will plot a direct route to the last known location of the target.

Goto flag

Selecting **Goto** on a selected Augmented Reality flag will plot a direct course to the flag's last known location.

A **Goto** flag will appear in the last known location of the selected flag in both the Video and Chart apps, and in the Video app's **Compass bar**. The flag is displayed with a Goto icon, as a blue copy of the original flag.

Selecting the **Goto** flag makes it a selected flag, and also displays a context menu providing more information about the location of the flag, and the option to stop a goto action.

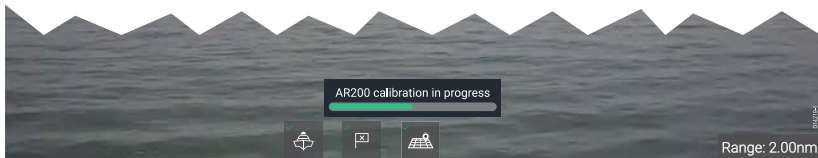


- Selecting **Stop** removes the Goto flag from the Video app and Chart app.
- If the camera loses sight of the **Goto** flag, it will display red and green navigational arrows on the **Compass bar**, indicating whether you need to turn port or starboard to regain sight of the flag. However, this only works if the camera is forward-facing.

11.5 AR200 Calibration (Linearization)

To enable accurate placement of Augmented Reality (AR) flags on the camera's video feed, the AR200's AHRS sensors need to compensate for local magnetic fields, as well as the Earth's magnetic fields.

Calibration is achieved using an automatic linearization process. The linearization process starts automatically after your vessel has turned approximately 100°, when travelling at a speed of between 3 to 15 knots. The linearization process requires no user input, however at least a 270° turn is required before linearization can be completed. The duration of the linearization process can be decreased by completing a full 360° turn, when travelling at a speed of between 3 to 15 knots. The linearization process can also be restarted at anytime.



In the Video app the Linearization progress bar is displayed when linearization is in progress. The bar is filled to indicate completeness, and will turn Red if the process is paused or otherwise interrupted.

The time taken to complete the linearization process will vary according to the characteristics of the vessel, the AR200's installation location, and the levels of magnetic interference present at the time linearization is performed.

Magnetic interference can be caused by objects onboard your vessel, such as:

- Speakers
- Electronic equipment
- Electrical cabling
- Metal bulkhead or hull

Magnetic interference can also be caused by external objects in close proximity to your vessel, such as:

- Metal hulled vessels
- Underwater electrical cables
- Marine pontoons

Continual monitoring and adaptation

To ensure optimum performance, after the initial linearization process is complete the unit continues to monitor and adapt the compass linearization to suit current conditions.

If the conditions for linearization are less than ideal, the automatic linearization process temporarily pauses until conditions improve again. The following conditions can cause the linearization process to temporarily pause:

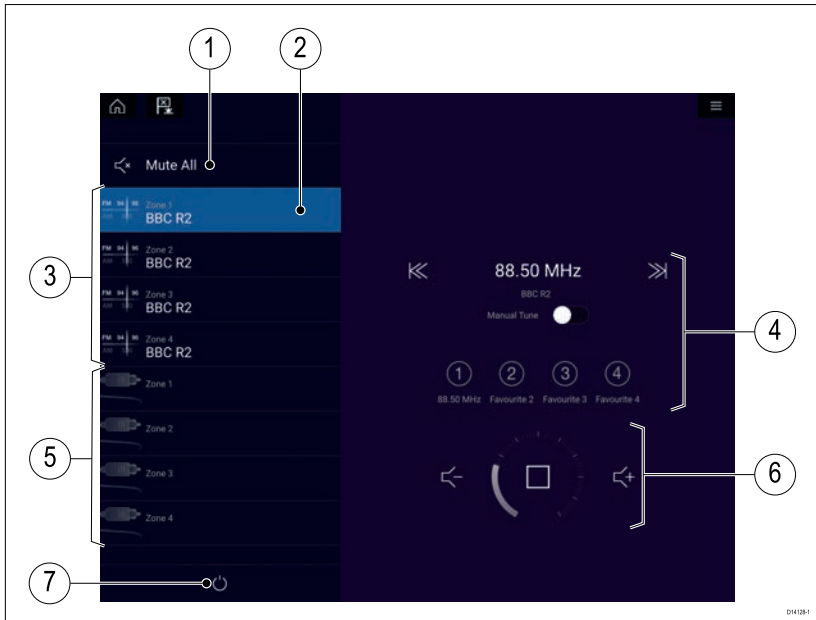
- significant magnetic interference is present
- vessel speed too slow or too fast
- rate-of-turn too slow or too fast

Chapter 12: Audio app

12.1 Audio app overview

The Audio app can be used to control compatible entertainment systems that are connected to the same network as your MFD.












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









1. **Mute All** — Mutes all zones on the currently selected system.
2. Currently selected zone.
3. System 1 available zones.
4. Audio source and controls for currently selected zone.
5. System 2 available zones.
6. Zone volume and player controls for currently selected zone.
7. **Power** — Power on or off connected entertainment systems.





Audio app controls

Audio player controls

Icon	Description	Function
	Power Off	Powers off the Entertainment system.
	Mute All	Mutes all audio zones.
	Volume Down	Decreases volume for current zone.
	Volume Up	Increases volume for current zone.
	Forwards	<ul style="list-style-type: none"> • Skip to the next track (USB and Bluetooth) • Seek/Search Forward (Radio)
	Backwards	<ul style="list-style-type: none"> • Skip back to beginning of current track (USB and Bluetooth) • Seek/Search Backward (Radio)
	Manual Tune	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Off • Repeat Track • Repeat All
	Shuffle	<ul style="list-style-type: none"> • On • Off

Icon	Description	Function
	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.

Standard app controls

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

Opening the Audio app

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

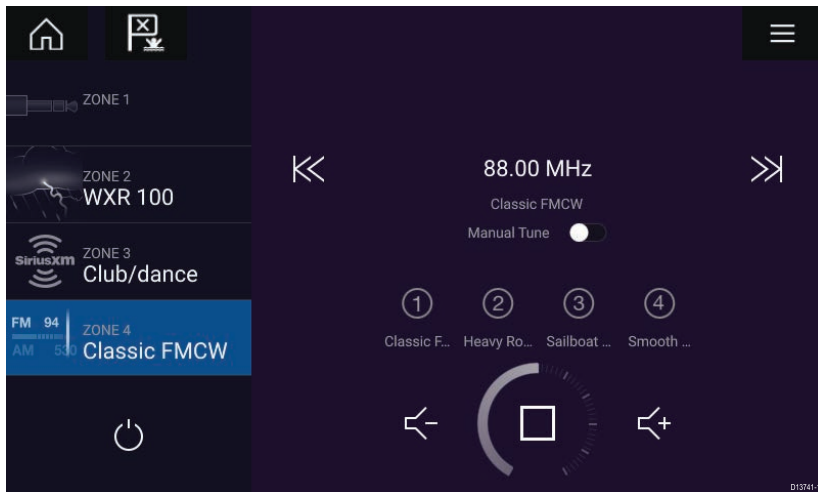
Pre-requisites:

1. Ensure your Entertainment system(s) are 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(s) in accordance with the documentation that was supplied with the system.

The Audio app will open in 1 of 3 states:

Audio app displayed

If your Entertainment system is powered up and operational then the player controls are displayed and can be used to control your system.



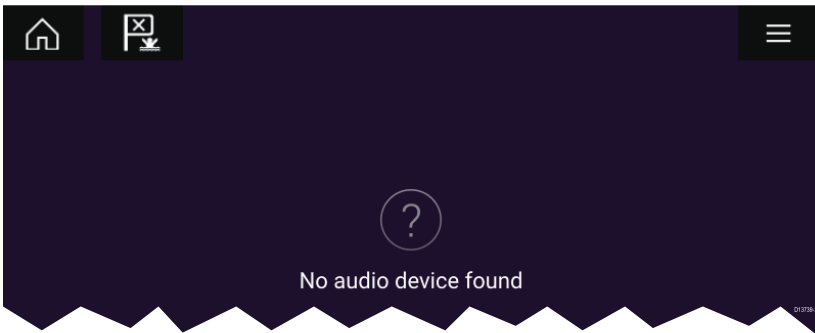
Entertainment system powered off

If all Entertainment systems are powered off then a Power icon is displayed for each connected system. An icon is also displayed to power on All systems. Selecting the **Power icon** will switch your Entertainment system on. Selecting the All icon will power on all connected systems.



No audio devices found

If the Audio app is opened soon after powering on your MFD, the **'No audio device found'** message may be displayed whilst the network is being established. If the message is displayed for more than 10 seconds, your MFD cannot connect to your Entertainment system(s). Ensure network and power connections to your Entertainment system(s) and MFD are correct and free from damage and then power cycle your system. If the Entertainment system(s) are still not displayed then refer to your equipment's installation documentation for further troubleshooting information.



Selecting an audio zone

If you have more than 1 zone configured, audio zones will be displayed on the left side of the screen. All zones for all connected systems will be displayed, grouped by entertainment system.

1. Select the required zone.

Details of the audio source playing in that zone are displayed along with audio controls.

Tip

Refer to the instructions provided with your entertainment system for details on naming your zones. This aids device and zone identification when multiple systems each with multiple zones are connected.

Selecting an audio source

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").

1. Select an audio source (mode) icon from the app **Menu**.

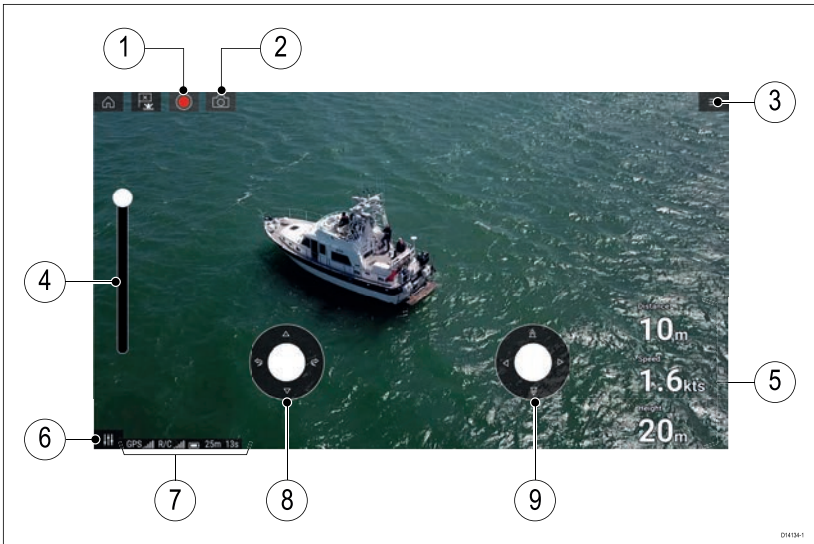
The currently selected zone will switch to the selected audio source. Depending on your entertainment system all zones will change and play the same audio source, or you may be able to play a different source on each zone. Check the instructions provided with your system for details.

Chapter 13: UAV (Unmanned Aerial Vehicle) app

13.1 UAV app overview

Axiom (Axiom™, Axiom™ Pro and Axiom™ XL) MFDs include the UAV (Unmanned Aerial Vehicle) app, which enables you to control a DJI Mavic Pro or Mavic Pro Platinum UAV using your MFD. The UAV app provides auxiliary remote controls, settings, video display and flight data for your connected UAV.

UAVs and MFDs have a one-to-one relationship, meaning that you can only control a UAV from the MFD that it is physically connected to. On an MFD network, each MFD can be connected to a different UAV, if required.



1	Record Start recording your UAV's video feed to a memory card inserted into the UAV's memory card slot. While recording, the Record icon is replaced with a Stop icon and a time counter is displayed.
2	Take photo Take a screenshot of what is currently displayed in the UAV's video feed. The image is saved to a memory card inserted into the UAV's memory card slot.
3	Menu Opens the UAV app menu.

4	<p>Gimbal pitch control Adjusts the pitch of the UAV's camera gimbal, from pointing forwards (control at top of slider) to pointing straight down (control at bottom of slider).</p>
5	<p>Flight data Distance, Speed and Height data is displayed onscreen.</p> <div style="border: 1px solid black; padding: 5px;"> <p>Note: Displayed Flight data is specific to the UAV app and cannot be edited.</p> </div>
6	<p>Controls Provides access to the onscreen virtual joystick controls.</p>
7	<p>Status area The status area provides the:</p> <ul style="list-style-type: none"> • signal strength of the UAV's GNSS (GPS) position fix. • signal strength from remote controller to UAV. • battery charge state. • flight time remaining. • identification of restricted no fly zones.
8	<p>Virtual joystick Provides Up, Down, Turn left and Turn right controls.</p>
9	<p>Virtual joystick Provides Forward, Backward, Move left and Move right controls.</p>

<p>Note:</p> <ul style="list-style-type: none"> • The UAV app is not available on eS Series and gS Series MFDs. • On an Axiom XL MFD the UAV connects to the same connection as a remote card reader. Therefore, on a standalone Axiom XL MFD installation, electronic cartography, via a chart card, will NOT be available at the same time as a connection to your UAV. Only pre-loaded world basemaps will be available in the Chart application.

UAV sport mode

When your UAV is in Sport mode (S-Mode), control via your MFD is limited.

In Sport mode the following MFD controls are disabled **virtual joystick**, **Gimbal pitch control**, **Take off**, **Return to boat** and **Fish on / Circle me**.



Warning: UAV disclaimer

The UAV app allows the FLIR multifunction display (“MFD”) to serve as an auxiliary controller for approved unmanned aerial vehicle (UAV) models. You are responsible for your own conduct while using the UAV and for any consequences thereof. You must use the UAV in accordance with all applicable legal regulations and safety recommendations of the UAV manufacturer. The primary controller should be readily accessible at all times while using the MFD as an auxiliary controller. FLIR accepts no liability for any damage, loss or injury caused by the UAV, whether caused by the use of the MFD or any other FLIR product. Particular attention must be paid to landing the UAV which must be done by the primary controller and not the MFD. By selecting continue, you confirm that you understand and accept these conditions.

13.2 Getting started

Initial steps to get up and running with your UAV.

1. Using a **USB A to USB Micro B** cable, connect the Micro B end of the cable to the Accessory connection on the rear of your MFD.
2. Power on the MFD.
3. Obtain a GNSS (GPS) position fix on the MFD.
4. Open the UAV app.
5. Connect the MFD to the internet. (An internet connection is only required the first time you open the UAV app, after a Factory reset, or after an MFD software update).

Ensure that an internet connection is available on your MFD at the point of registration. If your vessel is likely to be out-of-range of cellular or satellite internet service at registration time, you will need to register the UAV before heading out on the water.

6. Wait for successful registration.
7. Power on the UAV’s remote controller.
8. Power on the UAV.
9. Wait for the UAV to obtain a GNSS (GPS) position fix and for the “Ready to go” message to be displayed on the remote controller’s screen.
10. Connect the USB A end of the USB cable to the relevant connection on the UAV’s remote controller.

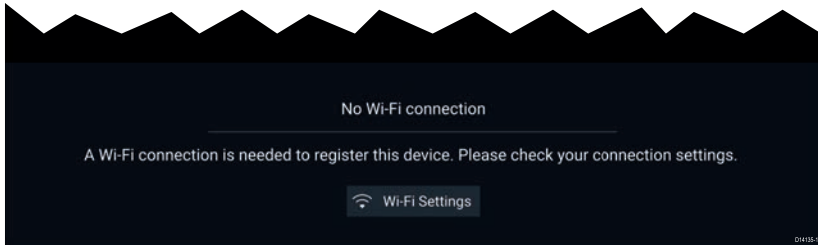
13.3 Opening the UAV app

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

The first time you open the UAV app and after each power cycle, a disclaimer is displayed. By selecting **Continue** you are agreeing to the terms of this disclaimer.

The UAV app will then open in 1 of 3 states:

No Wi-Fi connection

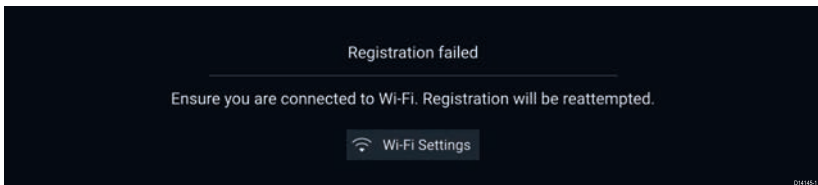


The first time you open the UAV app, after an MFD factory reset, or after you have updated your MFD's software, the UAV app must be registered using an internet connection on your MFD. Select **Wi-Fi Settings** to create an internet connection.



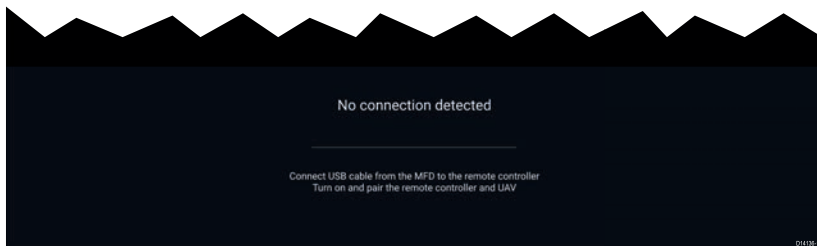
When registration is complete, if desired you can turn off your Wi-Fi connection by selecting **Wi-Fi Settings** and turning off your MFD's Wi-Fi. Selecting **OK** will close the info box keeping your Wi-Fi connection turned on.

Registration failed



The registration failed notification is displayed if the DJI servers cannot be reached. Registration will be re-attempted automatically. If the failure persists, check your Wi-Fi and internet or try again later.

No connection detected



After successful registration, the 'No connection detected' notification is displayed. Connect the USB A end of your USB cable to the UAV's primary controller. Once a successful connection is established, the notification will be closed.

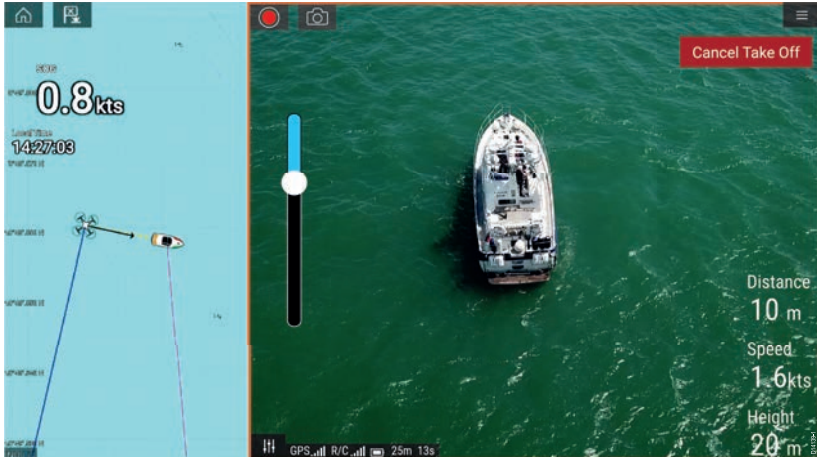
UAV app



Once your UAV is correctly set up and connected to your MFD and your MFD's UAV app is registered successfully, the UAV's video feed is displayed and the app is ready to be used as an auxiliary controller for your UAV.

13.4 Launching the UAV

When it is safe to do so you can use the UAV app to launch your UAV.



Prior to launch ensure that all necessary precautions have been taken to ensure no loss, damage or injury can occur.

1. Ensure your UAV is correctly connected and configured.
2. Ensure you have set an **Initial height after take-off**: in the appropriate Advanced settings menu: **Menu > Settings > Advanced > Initial height after take-off**:

Height needs to be sufficient so that your UAV will not collide with your vessel's sails, masts, rigging etc. or any other structure.

3. Place your UAV in an open space with sufficient room to launch unobstructed, taking into consideration the effects of wind direction and speed, tide direction and speed and the drift of your own vessel.
4. Select **Take off** from the UAV menu.
5. Select **Yes** to confirm take off.

The UAV will take off and lift to the height specified in step 2 above and hover.

The Take off can be cancelled at anytime by selecting the Red **Cancel Take Off** button. When **Cancel Take Off** is selected the UAV will stop and hover in its current position. If required, you can then use manual control to retrieve your UAV.

13.5 Controlling the UAV in flight

When in flight you can control the UAV using the onscreen virtual joysticks.

1. Select the **Controls** icon to display the **Virtual joysticks**.
2. The Virtual joysticks include controls for: **Up, Down, Turn left, Turn right, Forwards, Backwards, Move left** and **Move right**.
3. Use the **Gimbal pitch control** to move the UAV's camera to the required position.
4. If desired, use the **Record** and **Take photo** icons to record footage of your flight.

Note:

The Virtual joysticks take priority over your UAV's remote controller's joysticks, To use the remote controller's joysticks hide the Virtual joysticks by selecting the **Controls** icon.

13.6 Retrieving your UAV

To retrieve your UAV follow the instructions below:

1. Ensure that the **Minimum height** and **Return distance** settings are adequate for current conditions (Minimum height and Return distance can be adjusted from the Advanced settings menu: **Menu > Settings > Advanced**).
2. When you are ready to retrieve your UAV select the **Return to boat** option from the UAV app menu: **Menu > Return to boat**.

The UAV will return to your vessel's location within the specified Return distance and Minimum height, based on your MFD's current GNSS (GPS) position.

3. Once your UAV has reached the Return to boat position use the UAV's remote controller to manually retrieve your UAV safely.

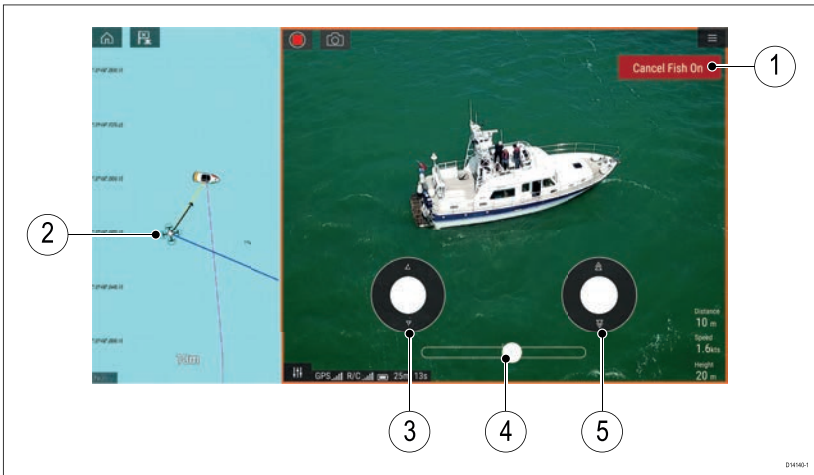
Note:

The Return home manoeuvre can be cancelled at any time by selecting the Red, onscreen **Cancel return to boat** option. Once selected the UAV will stop and hover in its current position.

13.7 Fish on / Circle me mode

When Fish on / Circle me mode is activated your UAV will launch and circle your vessel, maintaining its camera's view on your vessel and recording the camera's video feed. Fish on / Circle me mode can also be initiated when your UAV is already in flight.

When your UAV is in Fish on / Circle me mode you should ensure your vessel speed does not exceed 10 knots or the UAV may not be able to keep up with your vessel. If your UAV cannot keep up slow your vessel speed.



1	<p>Cancel Fish On / Cancel Circle me Selecting Cancel Fish On / Cancel Circle me will stop Fish On / Circle me mode and the UAV will hover in its current location. If required you can manually stop recording by selecting the Stop icon.</p>
2	<p>UAV icon The UAV icon can be displayed in the Chart app. The icon includes a camera heading graphic, a Course Over Ground (COG) vector and a line linking your vessel icon to your UAV icon.</p>
3	<p>Virtual joystick In Fish On / Circle me mode the left virtual joystick provides Up and Down controls to adjust the UAV's distance from your vessel.</p>

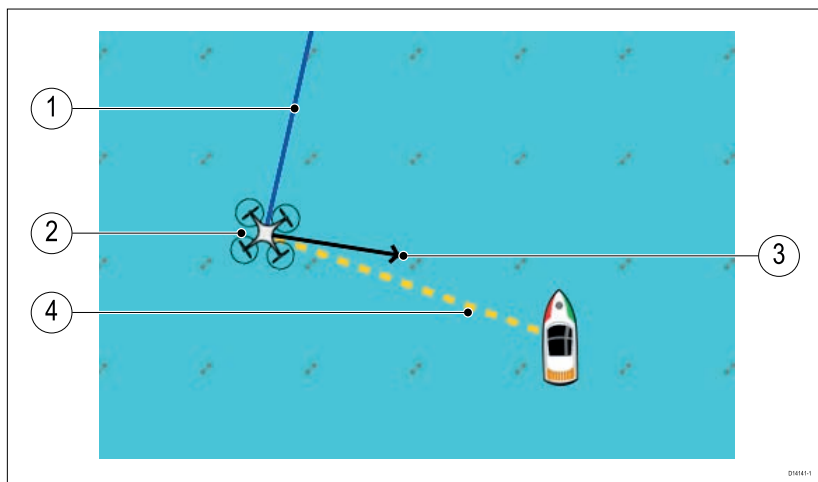
4	<p>Rotation</p> <p>The Rotation slider control is used to adjust the UAV's direction of rotation and rotation speed. With the control on the slider center line the UAV will maintain position in relation to your vessel. Moving the slider right of the slider center line rotates the UAV counter-clockwise and moving the slider control to the left of the center line rotates the UAV clockwise. The farther left or right the slider control is set the faster the rotation speed will be.</p>
5	<p>Virtual joystick</p> <p>In Fish On / Circle me mode the right virtual joystick provides Forward and Backwards controls to adjust the UAV's height from your vessel.</p>

Note:

During your initial MFD configuration the boating **Activity** you selected will determine whether the function is labelled **Fish on** or **Circle me**. If Fishing (freshwater), Fishing (saltwater) or Retail/demonstration is selected then the function is labelled **Fish on**, otherwise the function is labelled **Circle me**.

13.8 UAV Chart integration

When a compatible UAV with a GNSS (GPS) position fix is connected to your MFD, a UAV icon representing the position of the UAV is displayed in the Chart app.



1	<p>UAV COG</p> <p>The direction of the Blue line indicates the UAV's current Course Over Ground (COG). The length of the line indicates the UAV's predicted position when the specified vector Reference period has passed.</p> <p>The Vector Reference period can be adjusted from the vessel icon's context menu.</p>
2	<p>UAV Icon</p> <p>Displayed when the UAV option is enabled in the Chart app settings, and your UAV has a GNSS (GPS) position fix.</p>
3	<p>Camera heading</p> <p>The Black Camera heading arrow is fixed to provide an indication of the direction the UAV's camera is pointing towards.</p>
4	<p>Line to vessel</p> <p>The Yellow dotted line represents the angle of the UAV's position relative to your vessel.</p>

Chapter 14: LightHouse apps

14.1 LightHouse apps

LightHouse™ apps are apps that have been developed by third parties and approved for use on the LightHouse™ 3 operating system.

Note:

Raymarine does not warrant that LightHouse™ apps are error-free or offer support for in app problems or troubleshooting,

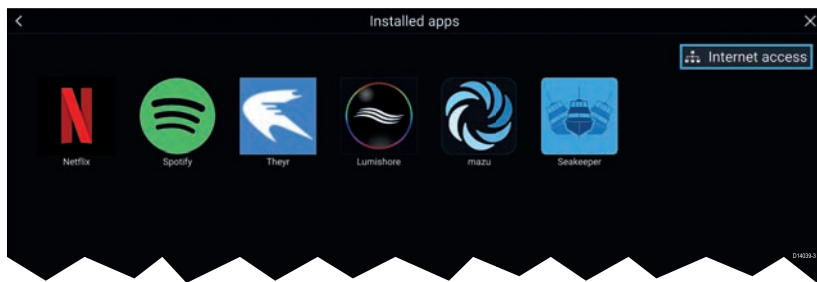
Raymarine will not be held liable for damages or injuries caused by improper or inappropriate use of these apps.

14.2 LightHouse app launcher

The app launcher provides a range of approved third-party apps on your MFD.

Important: The LightHouse app launcher and its associated third-party apps are not available on eS Series and gS Series MFDs.

Select **Apps** from the Homescreen to open the app launcher page.



Selecting an app icon will launch the app. Selecting the Wi-Fi connection status button, located on the top right of the screen, will open the Wi-Fi connection settings to enable you to connect to the internet over Wi-Fi.

Apps may run in the background, enabling you to use your MFD as usual whilst, for instance, listening to music.

MFD alarms will be displayed and sounded as normal whilst using LightHouse apps. When paired with a Bluetooth speaker, alarms will also be sounded through the speaker.

Bluetooth speaker volume can be controlled from the Shortcuts page or from the Status bar area on the Homescreen.

Note:

- Some app features or access to the apps may require your MFD to have an internet connection.
- If you use a wireless connection to a Quantum Radar, the Radar should be put in Standby before connecting your MFD to the internet.
- Some apps may also require an audio output. You can pair a Bluetooth speaker with your MFD to enable audio output.
- Please refer to the app developer for in-app assistance and troubleshooting.

14.3 Connecting to the internet

From the Homescreen:

1. Select **Apps**.
The app launcher is displayed.
2. Select the Wi-Fi connection status button, located on the top right of the app launcher page.
The Wi-Fi settings page is displayed and will scan for available networks.
3. Select the relevant connection.
4. Enter the password for the network and select **Connect**.
Your MFD will now connect to the chosen network.
5. Select the **Back** triangle symbol or the **Home** Circle symbol at the bottom of the screen.

You can now use LightHouse™ apps that require an internet connection.

14.4 Pairing a Bluetooth speaker

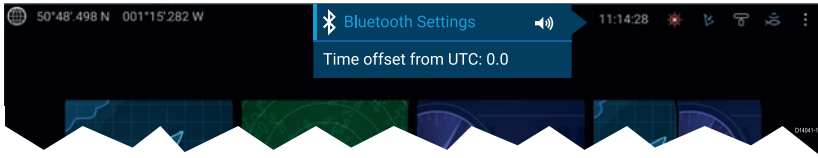
Before attempting to pair with a Bluetooth speaker, ensure that the speaker is switched on and discoverable.

With your MFD's Bluetooth enabled:

1. From the Bluetooth settings page, select the relevant device from the **Available devices** list.
2. If requested, confirm the bluetooth pairing code.

If pairing is successful the speaker will appear in the **Paired devices** list and display the **Connected** message.

Enabling and disabling Bluetooth



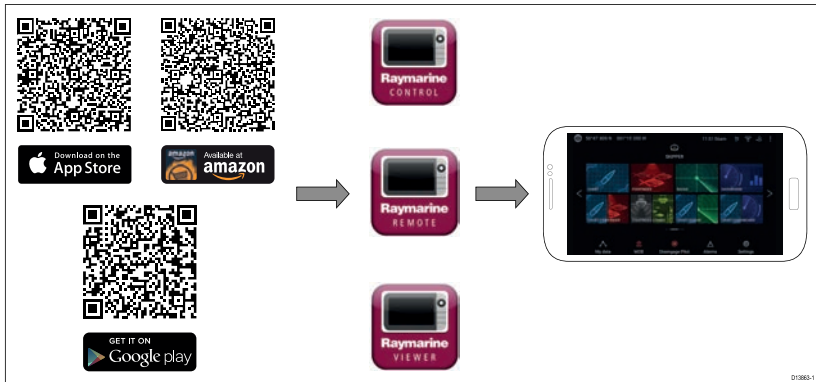
1. Select the Status bar area located in the top right of the screen.
2. Select **Bluetooth Settings**.
3. Select the Toggle switch on the right of the Bluetooth settings page to enable Bluetooth.

Alternatively the Bluetooth settings page can be accessed from the This display settings tab: **Homescreen > Settings > This display > Bluetooth > Bluetooth settings**.

Chapter 15: Mobile app support

15.1 Raymarine mobile apps

Please check the relevant app store for Raymarine mobile apps.

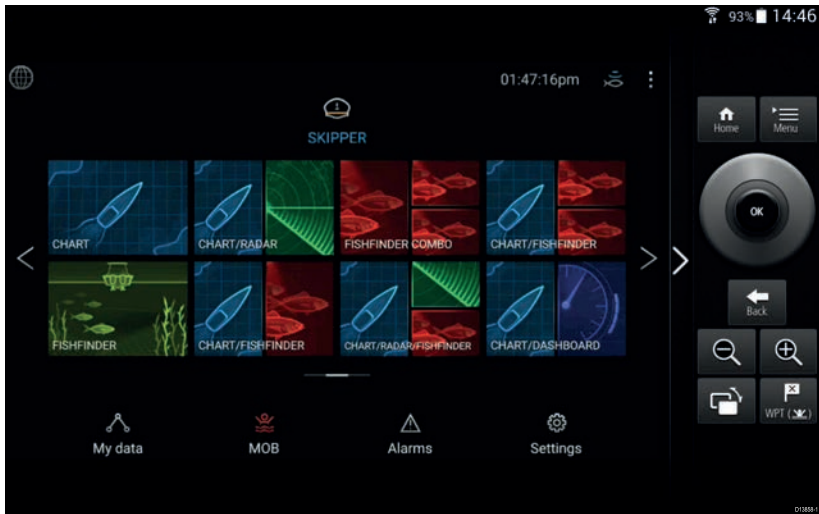


Note: When updating your MFD software ensure that you check for updates to your mobile apps.

Controlling your MFD using RayControl

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

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



Controlling your MFD using RayRemote

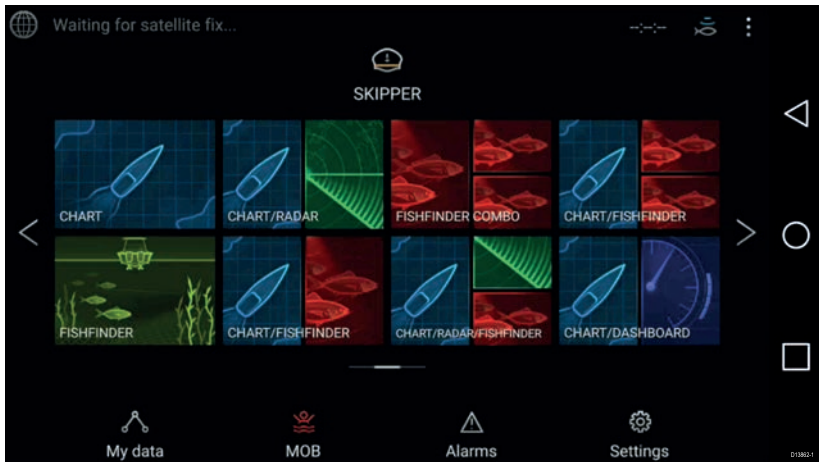
The RayRemote app allows you to remotely control your MFD from your mobile device.



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

Viewing your MFD screen using RayView

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



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



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