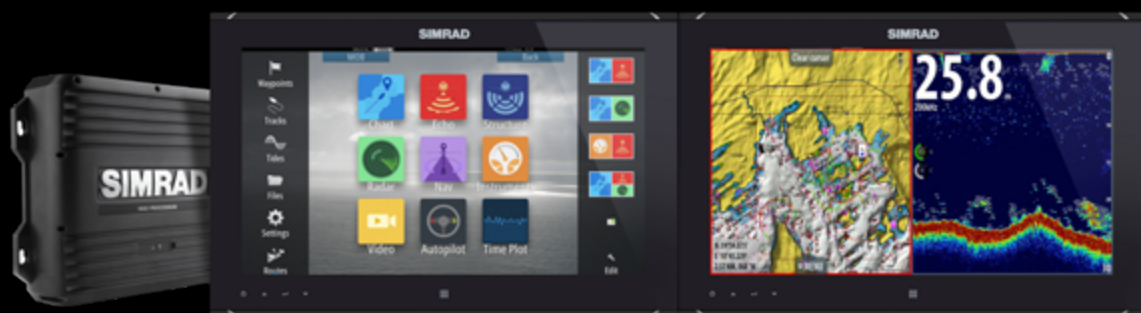


NSO evo3S™ MPU

Operator manual

English

Software version: 25.2



www.simrad-yachting.com

Preface

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Warranty

This product's warranty is supplied as a separate document.

Safety, disclaimer and compliance

This product's safety, disclaimer and compliance statements are supplied as a separate document.

More information

This document was prepared using software version 25.2.

Features described and illustrated in this document may vary from your unit due to continuous development of the software.

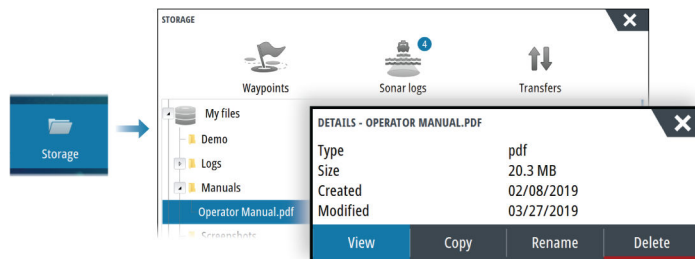
For the latest version of this document in supported languages, and other related documentation, visit www.simrad-yachting.com.

Viewing the manual on the screen

The PDF viewer included in this unit makes it possible to read manuals and other PDF files on the screen.

Manuals can be read from a storage device connected to the unit or copied to the unit's internal memory.

The following shows an example of a manual file name. Manual file names vary depending on the unit.



Contact us

For product support and service information, visit www.simrad-yachting.com/contact-us.

What's new

The following new features are included in this software version 25.2:

Page	Feature
63	AutoTrack radar targets
107	ActiveTarget Depth offset
109	ActiveTarget Reverse Range
170	Power-Pole® Anchors (now supporting NMEA 2000®)
171	Power-Pole® Charge module

Contents

11 Introduction

- 11 System overview
- 11 Operating the system
- 11 Card reader
- 11 USB port
- 12 Home page
- 14 Application pages
- 15 Device registration

16 Basic operation

- 16 Turning the system ON and OFF
- 16 System controls dialog
- 17 Screen capture
- 18 Single Sign-On

19 Customizing your system

- 19 Customizing the Home page wallpaper
- 19 Customizing the long press feature
- 19 Multiple panel pages
- 20 Customizing favorite pages
- 20 Customizing the instrument bar
- 21 Adjusting the split on multiple panel pages
- 22 Enabling or disabling features
- 22 Password Protection
- 22 Feature unlock
- 22 Bridge Control

25 Charts

- 25 The Chart panel
- 25 Chart data
- 25 Selecting chart source
- 25 Showing dual chart sources
- 25 Vessel symbol
- 26 Zooming the chart
- 26 Panning the chart
- 26 Chart orientation
- 26 Look ahead
- 26 Displaying information about chart items
- 27 Using the cursor on the panel
- 27 Measuring distance
- 27 Creating routes on the chart panel
- 28 Find objects on chart panels
- 28 Marine Search and Rescue (SAR) feature
- 29 3D charts
- 30 Color tracks based on data
- 30 Chart overlay
- 31 C-MAP charts
- 34 Navionics® charts
- 37 Chart settings

39 Waypoints, routes, and tracks

- 39 Waypoints, Routes, and Tracks dialogs
- 39 Waypoints
- 40 Routes
- 42 Tracks
- 43 Using the synchronize feature

45	Navigating
45	About navigating
45	Navigation panels
46	Menu options
46	Navigating with the autopilot
46	Navigation settings
49	TripiIntel
49	About TripiIntel
49	Current trip statistics
49	Automatic trip recording
49	Start and stop trip recordings
50	Long-term statistics
50	Estimated fuel range ring
50	Fuel gauge
50	Tide gauge
51	View trip recordings
52	Radar
52	About radar
52	The Radar panel
52	Dual radar
53	Radar overlay
53	Radar operational modes
54	Adjusting the radar range
54	Sector blanking
55	Adjusting the radar image
57	Using the cursor on a radar panel
58	Advanced radar options
59	Radar view options
62	EBL/VRM markers
63	Tracking targets
64	Setting a guard zone around your vessel
65	MARPA targets
66	Recording radar data
67	Radar settings
68	Dangerous targets
69	Watching targets
70	AIS
70	About AIS
70	Selecting an AIS target
70	Searching for AIS vessels
70	Displaying target information
71	Calling an AIS vessel
71	AIS SART
72	Vessel alarms
72	AIS target symbols and icons
74	Vessel settings
75	Echosounder
75	Requirements
75	The image
75	Multiple sources
75	Zooming the image
75	Using the cursor on the panel
75	Viewing history
76	Recording log data

76	Viewing recorded data
76	Upload sonar logs to C-MAP Genesis
77	Customizing the image
78	Advanced options
78	More options
83	Echosounder settings
85	SideScan
85	About SideScan
85	The SideScan panel
85	Zooming the image
85	Using the cursor on the panel
85	Viewing history
86	Recording SideScan data
86	Setting up the image
87	Advanced options
87	More options
88	Echosounder settings
89	DownScan
89	About DownScan
89	The DownScan panel
89	Zooming the image
89	Using the cursor on the panel
89	Viewing DownScan history
89	Recording DownScan data
90	Setting up the DownScan image
90	Advanced options
91	More options
91	Echosounder settings
92	3D Sonar
92	About 3D Sonar
92	The 3D panel
92	Zooming the image
92	Using the cursor on a 3D image
93	Using the cursor on a 3D image
93	Saving waypoints
93	3D mode options
94	Fish renderings
94	Viewing image history
94	Setting up the image
95	Advanced options
95	More options
96	Echosounder settings
97	StructureMap
97	About StructureMap
97	The StructureMap image
97	StructureMap sources
98	StructureMap tips
98	Using StructureMap with mapping cards
98	Structure options
100	ForwardScan
100	About ForwardScan
100	The ForwardScan image
100	Setting up the ForwardScan image
101	More options

- 101 Heading extension
- 102 ForwardScan installation settings

104 ActiveTarget

- 104 About ActiveTarget
- 104 Modes and image settings
- 107 ActiveTarget forward panel
- 109 ActiveTarget down panel
- 110 ActiveTarget scout panel
- 110 Zooming the image
- 110 Using the cursor on the panel
- 111 Recording ActiveTarget video
- 111 ActiveTarget installation settings

113 LiveSight

- 113 LiveSight support

114 Autopilot

- 114 Safe operation with the autopilot
- 114 Selecting active autopilot
- 114 The autopilot controller
- 115 Engaging and disengaging the autopilot
- 115 Autopilot indication
- 115 Autopilot modes
- 119 Operating a professional autopilot system
- 121 Autopilot settings

124 Trolling motor autopilot

- 124 Safe operation with the autopilot
- 124 Selecting active autopilot
- 124 The autopilot controller for trolling motor
- 125 Engaging and disengaging the autopilot
- 125 Autopilot indication
- 125 Autopilot modes
- 128 Recording and saving a track
- 128 Lower unit direction
- 129 Autopilot settings
- 133 Rhodan trolling motor support

134 Instruments

- 134 About Instrument panels
- 134 Activating/deactivating the Instrument app
- 134 Creating a dashboard
- 135 Selecting a dashboard

136 Video

- 136 About the video function
- 136 The video panel
- 136 Setting up the video panel

137 Audio

- 137 About the audio function
- 137 The audio controller
- 137 Setting up the audio system
- 138 Selecting audio source
- 138 Using an AM/FM radio
- 138 Sirius radio
- 139 Viewing DVD video

140 Weather

- 140 About the weather feature
- 140 Wind barbs
- 140 GRIB weather
- 142 Showing weather details
- 142 Navico WM-4 marine satellite receiver support
- 142 SiriusXM® weather
- 145 Weather alarms

147 Internet connection

- 147 Internet usage
- 147 External Wi-Fi® module required
- 147 Wireless settings

149 Remote control of the MFD

- 149 Remote control options
- 149 Simrad mobile app
- 149 Connecting to the external Wi-Fi® module acting as an access point
- 149 Managing Wi-Fi® connected remotes

150 Simulator

- 150 About
- 150 Retail mode
- 150 Simulator source files
- 150 Advanced simulator settings

151 Alarms

- 151 About the alarm system
- 151 Type of messages
- 151 Alarm indication
- 151 Acknowledging a message
- 151 Alarms

153 Tools and settings

- 153 The toolbar
- 153 Settings

156 Maintenance

- 156 Preventive maintenance
- 156 Checking the connectors
- 156 Touchscreen calibration
- 156 Software updates
- 157 Service report
- 158 Backing up your system data

161 Integration of 3rd party devices

- 161 SmartCraft VesselView integration
- 161 FLIR® camera control
- 162 Mercury outboard engine integration
- 168 Suzuki® engine integration
- 169 Yamaha® engine integration
- 169 BRP® engine integration
- 169 FUSION-Link™ integration
- 169 BEP® CZone® integration
- 170 Power-Pole® anchors
- 171 Power-Pole® Charge module
- 172 Naviop

173 NMEA 2000® RGBW lighting

- 173 Enabling/disabling the lighting controller
- 173 No connection
- 174 The NMEA 2000® RGBW Lighting control bar
- 174 All lights menu options
- 177 The Manage Lights dialog
- 178 Create new scene
- 179 Edit a scene

180 Appendix

- 180 Touchscreen operation
- 181 Keyboard operation
- 182 Mouse operation
- 182 Status bar icon definitions

1

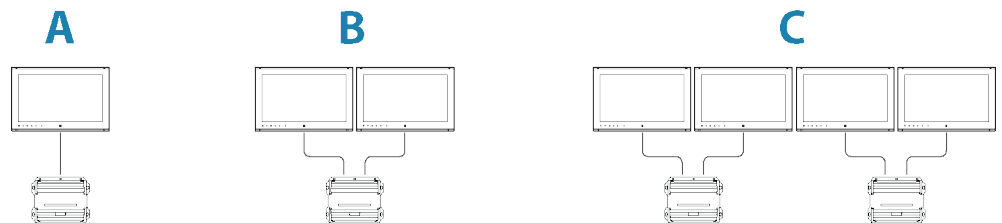
Introduction

System overview

The basic system consists of the processor and one or two monitors.

The system can be configured and installed in various configurations:

- One processor with one monitor (**A**)
- One processor with two independent monitors (**B**)
- A complex network where additional networked processors are connected to independent monitors throughout the boat (**C**)



For installation instructions refer to the separate installation manual.

Operating the system

The system supports single and dual touch-screen operation when compatible touch monitors are connected.

If a compatible remote controller is available on the network, this can control multiple processors and monitors, including power control. A separate manual is delivered with the remote controller units.

You can also use a keyboard and mouse/trackball to control the system. Once these devices are connected to the USB ports on a processor, they can be used to control the monitors connected to the same processor.

The USB ports can be configured to accommodate various types of controllers. If the USB port is set to switchable you can switch control of monitors by pressing the Ctrl key on a keyboard twice, or by clicking the middle button on the mouse.

The active controller is indicated with an icon in the status bar.

This manual does not include details about operation by alternative controllers, unless for features or options where it is required to show all options.

For touchscreen, keyboard and mouse operation details, refer to the *"Appendix"* on page 180.

Card reader

A memory card can be used for:

- Chart data
- Software updates
- Transfer of user data
- Logging user data
- System backup

→ **Note:** Do not download, transfer or copy files to a chart card. Doing so can damage chart information on the chart card.

→ **Note:** Maximum 32 GB memory cards should be used. Some higher capacity cards can also be used but require NTFS formatting.

USB port

The USB port can be used to:

- Connect a keyboard.
- Connect a mouse.
- Connect a storage device.

- Connect a card reader.

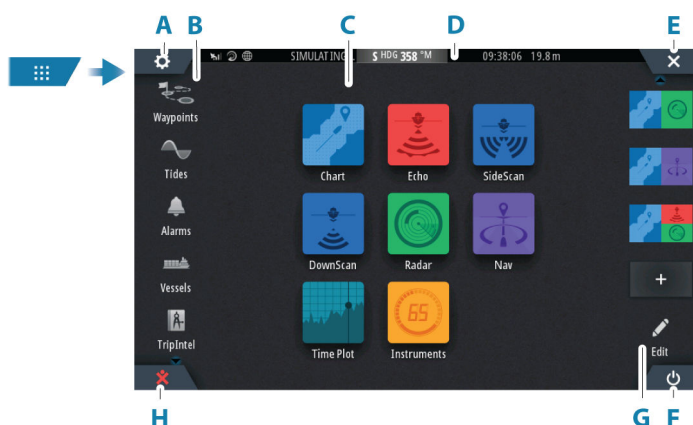
→ **Note:** If you want to read chart cards using a USB card reader connected to the USB port, an MI10 USB card reader is required.

The USB devices should be standard PC compatible hardware.

→ **Note:** USB cable length should not exceed 5 m when using regular cables. Lengths over 5 m may be possible with the use of an active USB cable.

Home page

The Home page is accessed from any operation by selecting the Home button.



- A** Settings button
- B** Toolbar
- C** Application page buttons
- D** Status bar
- E** Close button, closes the current panel
- F** System Controls button
- G** Favorites bar
- H** Man Over Board (MOB) button

Settings button

Select to access application and feature settings dialogs. These dialogs are used to configure the feature during installation and for making user settings. The settings dialogs are explained toward the end of each application chapter.

Toolbar buttons

Provide access to options and tools that are not specific to any panel. For toolbar button explanations, refer to *"Tools and settings"* on page 153.

Status bar

Shows the status of the system. For definitions of status bar icons, refer to *"Status bar icon definitions"* on page 182.

Application buttons

Select an application button to open it. The application buttons that appear on the home page depend on what applications are setup in your system.

Press and hold an application button to display predefined split pages for the application. Select a predefined split page button to open the split page.

Bridge control

Swipe down on the home page to access the Bridge control feature. The Bridge Control feature allows you to control which pages are shown on several displays at the same time. For more information, refer to *"Bridge Control"* on page 22.

Power button

Opens the System Control dialog. The System Controls dialog provides quick access to basic system settings. Refer to *"System controls dialog"* on page 16.

Favorites bar

The favorites bar lists preconfigured pages and favorite pages you have made. Select a favorite page button to open the page.

Favorite pages can be single or multiple-panel pages. The unit display size determines the number of application panels that can be included on a favorite page.

The favorites bar also provides favorite page editing tools. All favorite pages can be modified. For information how to add and modify favorite pages, refer to *"Customizing favorite pages"* on page 20.

Favorite bar as pop-up on a page

The favorite bar can be displayed on any application page by:

- Pressing and holding the Home button
- Pressing and holding the Pages key on a remote controller
- Simultaneously pressing the Ctrl and semicolon (;) keys on a keyboard

Man Overboard waypoint

If an emergency situation should occur, you can save a Man Overboard (MOB) waypoint at the vessel's current position.

Create a MOB

To create a Man Overboard (MOB) waypoint:

- Select the MOB button on the Home page
- Press the MOB key on a remote controller
- Press and hold the F12 key on a keyboard

When you activate the MOB function, the following actions are automatically performed:

- A MOB waypoint is created at the vessel's position
- The display switches to a zoomed chart panel, centered on the vessel's position
- The system displays navigation information back to the MOB waypoint

Multiple MOB waypoints can be created. The vessel continues to show navigation information to the initial MOB waypoint. Navigation to subsequent MOB waypoints needs to be done manually.

Delete a MOB

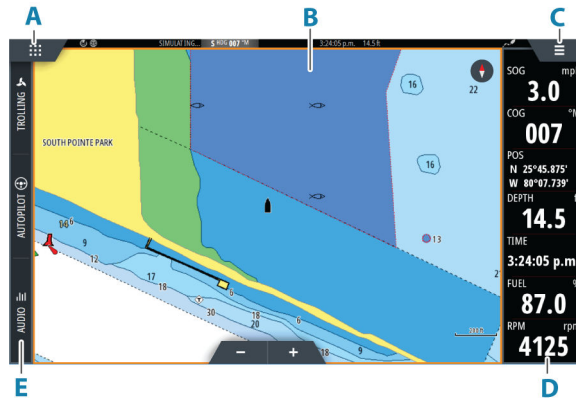
A MOB waypoint can be deleted from the menu when the MOB is activated.

Stop navigating to MOB

The system continues to display navigational information towards the MOB waypoint until you cancel the navigation from the menu.



Application pages



- A Home/pages button
- B Application panel
- C Menu button
- D Instrument bar
- E Control bar

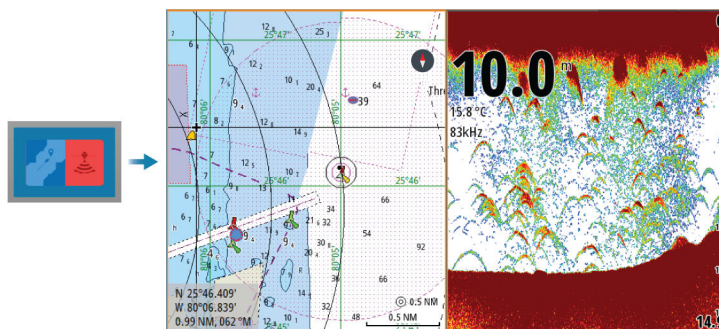
Application panels

An application panel shows the application and provides a menu with customize options. The application panels and the menu options are further explained in each application chapter in this manual.

Predefined split pages

A predefined split page shows more than one application page on a panel.

You can adjust the split on a predefined split page. Refer to *"Adjusting the split on multiple panel pages"* on page 21.



Menu button

Displays the menu of the active panel. Use menu options to customize the image. The panel menu options are further explained later in this manual in each application chapter.

Instrument bar

The instrument bar displays information from sensors connected to the system.

By default, the instrument bar is shown on the panel. You can turn the instrument bar off.

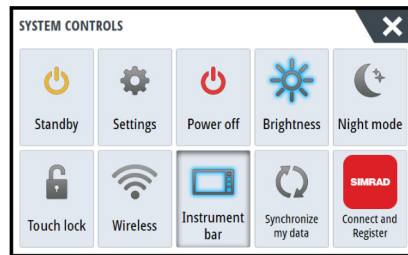
You can select the predefined bar to be shown and you can change the information displayed in the predefined bar. Refer to *"Customizing the instrument bar"* on page 20.

Control bar

The control bar contains buttons for launching controllers or features enabled in your system. The different controllers are described in applicable chapters later in the manual.

Device registration

You are prompted to register your device during startup. You can also register it by following the instructions when selecting the **Connect and Register** option in the system settings dialog or system controls dialog.



2

Basic operation

Turning the system ON and OFF

You can turn the system ON by pressing the power key on the front of the processor, or by pressing the power key on a remote controller.

You can turn the system OFF by pressing the power key, or by selecting the power button on the home page or the system controls dialog.

If the power key is released before the shut-down is completed, the power OFF process is cancelled.

→ **Note:** If the unit is configured as a satellite you cannot power OFF the unit by the power key, and the system controls dialog will not display the power OFF option. Refer to details in the unit's installation manual.

If a monitor is configured as power master, you can switch OFF the power to the system by pressing the power key on the monitor. See details in the monitor manual and in the unit's installation manual.

First time startup

When the unit is started for the first time, or after a reset, the unit displays a series of dialogs. Respond to the dialog prompts to make fundamental settings.

You can perform further setup and later change settings using the system settings dialogs.

Standby mode

In Standby mode, the backlight for screen and keys are turned off to save power. The system continues to run in the background.

You select Standby mode from the System Controls dialog.

Switch from Standby mode to normal operation by a short press on the Power key.

System controls dialog

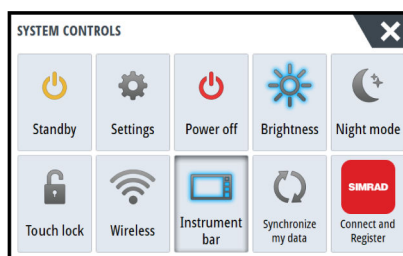
The System Controls dialog provides quick access to basic system settings.

The buttons displayed on the dialog vary with operational mode and connected equipment.

For those functions that toggle on and off, a highlighted button indicates the function is activated.

Display the dialog by:

- pressing the power key
- selecting the system controls button on the home page
- swiping down from the top of the screen on application pages



Activating functions

Select the button of the function you want to open, set or toggle on or off. For those functions that toggle on and off, a highlighted button indicates the function is activated.

Standby mode

In Standby mode, the backlight for screen and keys are turned off to save power. The system continues to run in the background.

You select Standby mode from the System Controls dialog.

Switch from Standby mode to normal operation by a short press on the Power key.

Display illumination

Brightness

You can cycle the preset backlight levels by short presses on the Power key.

The display backlighting can also be adjusted from the System Controls dialog.

Night mode

The night mode can be activated from the System Controls dialog.

The night mode option optimizes the color palette for low light conditions.

Locking the touchscreen

You can temporarily lock the touchscreen to prevent accidental operation of the system.

You lock the touchscreen from the System Controls dialog.

You remove the lock function by pressing and holding the power key.

Instrument bar

Toggles the Instrument bar on/off for the current page only.

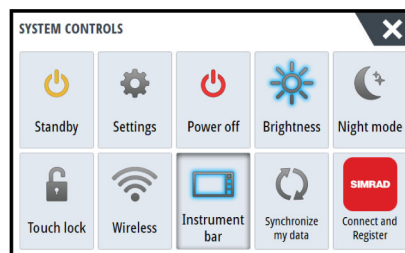
Synchronize my data

To synchronize the MFD data and your Simrad app account data, open the **Synchronize my data** feature from the System Controls dialog or the Services settings dialog.



Device registration

You are prompted to register your device during startup. You can also register it by following the instructions when selecting the **Connect and Register** option in the system settings dialog or system controls dialog.



Screen capture

You enable/disable the screen capture option in the system settings dialog.

To take a screen capture:

- Double-tap the status bar or the dialog title
- Keyboard operation: press the PrintScr key or press Ctrl + \

Screen captures are saved to internal memory.

Single Sign-On

Use the Single Sign-On (SSO) authentication method to log on to your app account and automatically gain secure access without having to enter your login credentials via the multi-function display (MFD). This authentication method simplifies the process of accessing your account via the MFD keyboard, while eliminating the need to keep a record of login credentials.

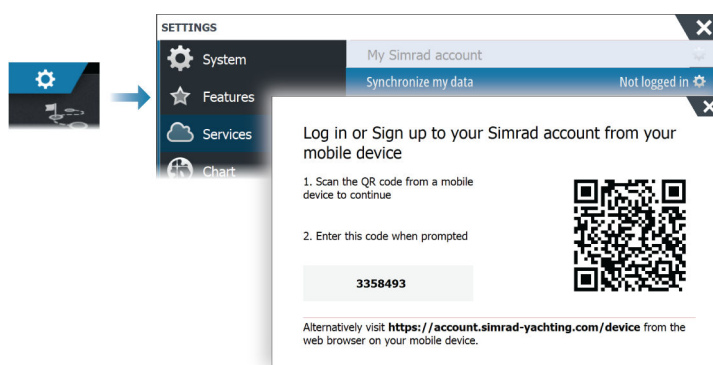
Single Sign-On login

Note: An internet connection is required to sign into your app account.

You can log in using SSO using a QR code® on your MFD, or via web browser.

To log in using SSO:

1. On your MFD, go to **Settings > Services** and select **Synchronize my data**.



2. Use your mobile device to scan the QR code® which displays on the login page, or open a web browser on your mobile device and manually enter the web address listed on the MFD.
3. When prompted, enter your email address.

Note: If you do not have an account, you will be redirected to the sign-up page. Add your information to create an account.

4. Verify code:
 - When logging on via web browser, enter the code which displays on the MFD.
 - When logging on via QR code®, verify that the code on your mobile device matches the code on the MFD, and select **Yes, Allow connection**. If the codes do not match, you can choose to enter the code manually, or reject the connection request.

When connected, a success message displays on both your mobile device and the MFD, and your user ID is displayed on the **My Simrad account** page.

To log out, go to **Settings > Services > My Simrad account**, and select **Log out**.

You can also access **Synchronize my data** from the **System controls** dialog.

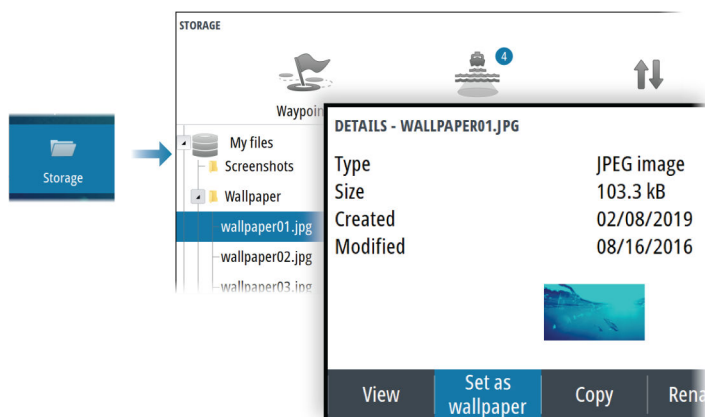
3

Customizing your system

Customizing the Home page wallpaper

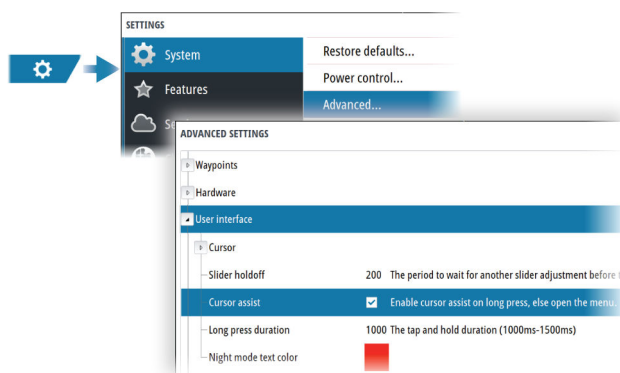
The Home page's wallpaper can be customized. You can select one of the pictures included with the system, or you can use your own picture in .jpg or .png format.

The images can be available on any location that can be seen in the storage browser. When a picture is chosen as the wallpaper, it is automatically copied to the Wallpaper folder.



Customizing the long press feature

You can specify if the long press on the panel opens the menu or displays the cursor assist feature on the panel.



Multiple panel pages

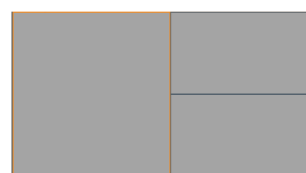
Panel sizes in a multiple panel page can be adjusted from the System Controls dialog. Refer to *"Adjusting the split on multiple panel pages"* on page 21.

In a multiple panel page, only one panel can be active at a time. The active panel is outlined with a border.

You can only access the menu of an active panel.



2 panels page



3 panels page

The shadow cursor on a multiple panel page

When using the cursor on a sonar (sonar, DownScan, or SideScan) image on a multiple panel page, the cursor is shadowed on the other sonar (sonar, DownScan, and SideScan), chart and radar panels.

Customizing favorite pages

Adding new favorite pages

Use the add icon in the home page panel to add a favorite page. In the Page Editor dialog, drag-and-drop the panels you want included in the favorite page.



Edit favorite pages

Select the edit button in the favorite panel and then:

- Select the X icon on a favorite button to remove the page
- Select the tool icon on a favorite button to display the page editor dialog



Customizing the instrument bar

→ **Note:** You must activate the instrument bar in the application to access the instrument bar menu.

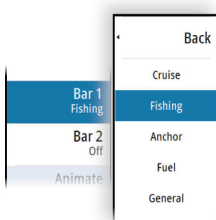
Turning the instrument bar ON or OFF

By default, the Instrument bar is shown on the panel.

You can turn the instrument bar ON/OFF from the System Controls dialog.

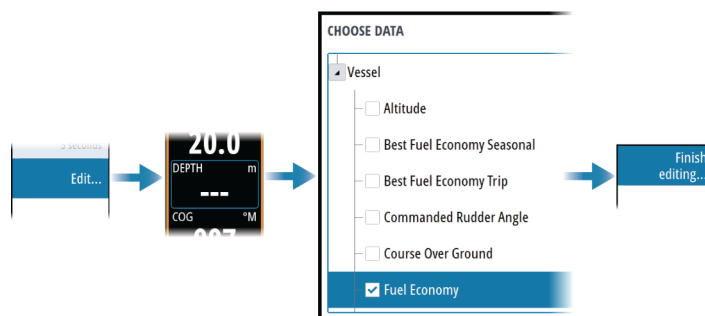
Select a predefined instrument bar

Use the menu to select a predefined activity based instrument bar.



Changing data

You can change data from the menu.

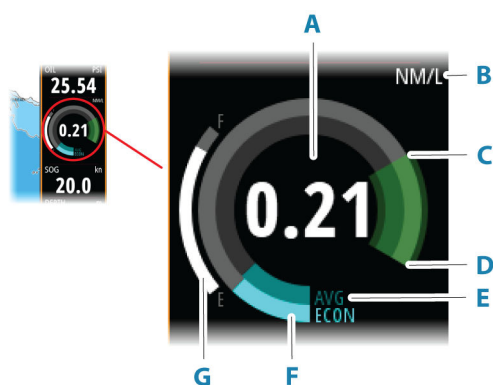


Reset the instrument bar

You can reset the instrument bar from the edit menu option to show the predefined default gauges.

Fuel economy gauge

You can display a fuel economy gauge in the instrument bar on application pages. Select the predefined Fuel bar or change a gauge source to the Fuel Economy option found in the Vessel category of the choose data dialog.



- A** Digital readout of current economy
- B** Fuel economy measurement units
- C** 100% efficiency, this equates to the 'nominal consumption'
- D** 120% efficiency
- E** Average fuel economy
- F** Instantaneous economy
- G** Current fuel level

The fuel economy gauge displays the instantaneous versus historical average fuel efficiency. The start of the green zone represents 'Nominal Fuel Economy', and it displays an additional 20% area to allow your fuel efficiency to be displayed above the nominal fuel economy.

The more efficient you consume fuel, the more the outer blue dial creeps up towards the green portion of the scale. If you achieve the nominal efficiency of your vessel you will be at the green zone. If you manage to achieve an efficiency better than your nominal efficiency, you will be somewhere in the upper green zone.

Nominal fuel economy can be entered in the Vessel Setup dialog displayed from the Fuel settings dialog.

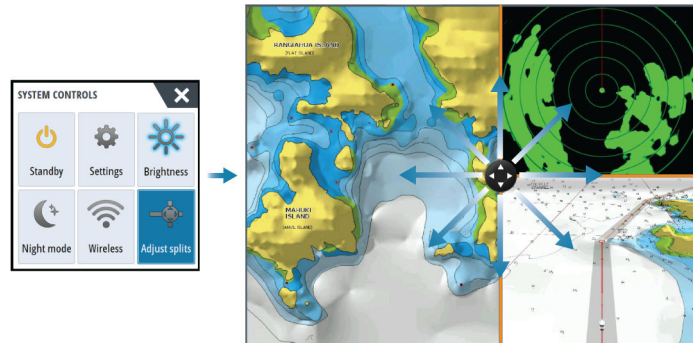
You can reset your average fuel economy from the Reset Fuel Economy button on the Fuel settings dialog. When you reset it, the system starts calculating the new average.

Set the measurement units for the fuel economy gauge in the Economy field in the Units settings dialog.

Adjusting the split on multiple panel pages

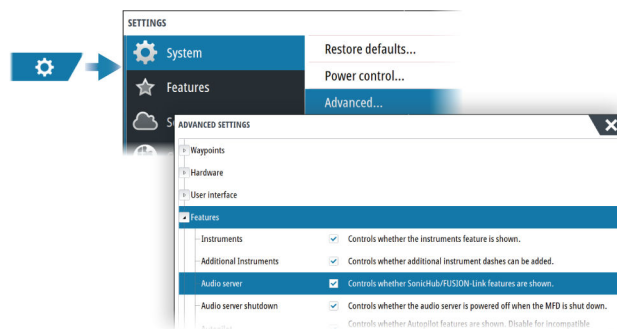
1. Open the multiple panel page

2. Open the System Controls dialog
3. Select the adjust splits option. The adjustment icon appears on the multiple panel page.
4. Select the adjustment icon and move the split to the desired position
5. Use menu options to save or discard your changes.



Enabling or disabling features

A compatible device connected to the unit should automatically be identified by the system. If not, enable the feature from the advanced settings dialog.



Password Protection

You can set a PIN code to prevent unauthorized access to your system's settings. Refer to "PIN code" on page 154.

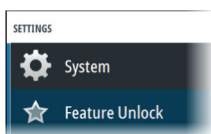
Feature unlock

Some additional features can be sold separately. These features can be unlocked by entering an unlock code.

Select the feature you want to unlock. Follow the instructions to purchase and enter the feature unlock code.

After a feature unlock code is entered in the unit, the feature is available for use.

→ **Note:** The feature unlock option is only available if your unit supports a locked feature.



Bridge Control

About Bridge Control

The Bridge Control feature allows you to control which pages are shown on several displays at the same time. The feature is used on vessels with multiple displays mounted in the same place to quickly configure what information is displayed.

There can be a maximum of four different bridges on your system, and you can have up to four displays grouped into one bridge. Each display can be configured to only one bridge.

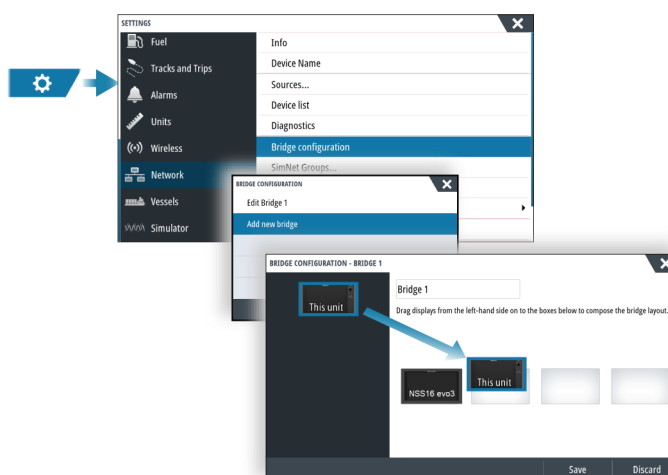
When the displays are included in a bridge, you can configure twelve page configurations (presets) for each bridge.

Adding displays to a Bridge

→ **Note:** All displays must be turned on to be available for bridge configuration.

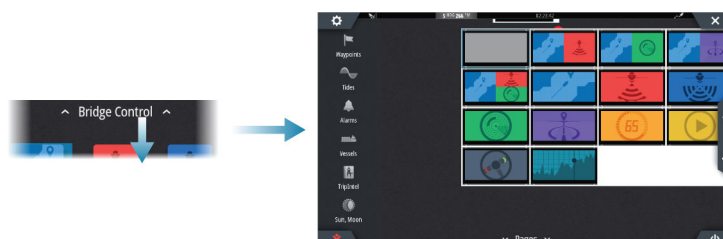
1. Open the Bridge Configuration dialog
2. Select to configure a new bridge or to edit an existing
 - The Bridge Configuration for the selected bridge will be shown, and all displays that are not already assigned to a bridge will be listed
3. Select the display you want to add to the bridge
 - Arrange the displays from left to right in the same physical layout as the displays on your current bridge/dashboard/helm
4. Rename the bridge if required
5. Save the configuration

The Bridge Control button will be displayed on the home page of all displays that are configured for a bridge.



Configuring the preset pages for displays in a bridge

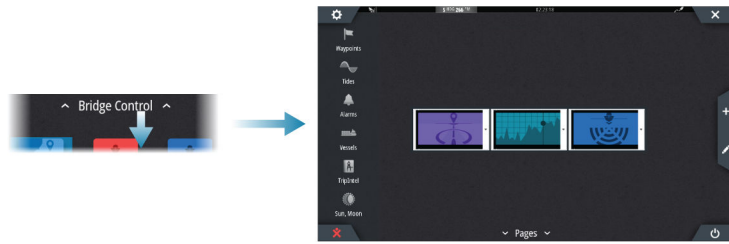
1. Activate the Bridge Control panel by swiping down on the home page.
2. To add a new bridge page, select the add icon. To edit an existing page, select the edit icon.
3. Select the display for which you want to define the preset page.
 - The page layout option for the selected display will be read from the network, showing main features and configured favorite pages.
4. Select the preferred page.
 - Select the blank page if you do not want that display to be included in the selected bridge preset.
5. Repeat step 3 and 4 until a page is configured for all displays in all bridge presets.
6. Select the edit icon to leave the add or edit mode and to save your configuration.



Selecting Bridge presets

You can display an overview of available bridge presets by opening the Bridge Control option on the home page.

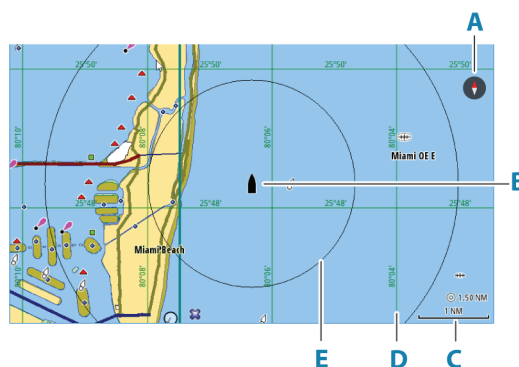
When you select one of the preset configurations all devices included in that bridge will switch to the pre-configured pages.



4

Charts

The Chart panel



- A** North indicator
- B** Vessel
- C** Chart range scale
- D** Grid lines*
- E** Range rings*

* Optional chart items. Optional chart items can be turned on/off individually from the chart settings dialog.

Chart data

The system can be delivered with preloaded cartography.

For a full selection of supported charts, visit the product web site.

→ **Note:** Chart menu options vary depending on the chart you are using.

Charts on chart cards are shared over the Ethernet network, so only one chart card per vessel is required.

→ **Note:** The system does not automatically switch to preloaded cartography if the chart card is removed. A low-resolution chart will be displayed until you re-insert the card or manually switch back to the preloaded cartography.

Selecting chart source

Available chart sources are listed in the menu.

If you have identical chart sources available, the system automatically selects the chart with most chart details for your displayed region.

Showing dual chart sources

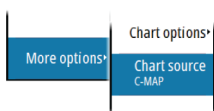
If you have different chart sources available, you can show two different chart sources simultaneously on a page that has two chart panels.

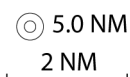
Activate each chart page and select its source in the menu.

Vessel symbol

When the system has a valid GPS position lock, the vessel symbol indicates vessel position. If no GPS position is available, the vessel symbol includes a question mark.

If heading information is not available, the vessel icon orientates itself using COG (Course over Ground).





Zooming the chart

The chart range scale and range rings interval (when turned on) are shown on the chart panel. You change the scale by zooming the chart in or out.

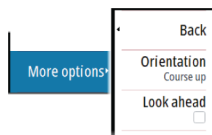
Panning the chart

You can move the chart in any direction by:

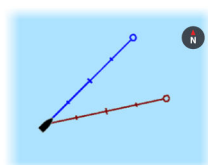
- Dragging the screen
- Move the cursor to the edge of the chart panel using the arrow keys

Chart orientation

You can specify how the chart is rotated in the panel.

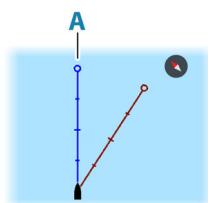


North up



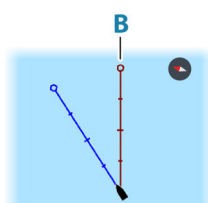
Displays the chart with north upward.

Heading up



Displays the chart with the vessel's heading (**A**) directed upward. Heading information is received from a compass. If heading is not available, then the COG from the GPS is used.

Course up



The chart direction is depending on if navigating or not:

- When navigating: the desired course line (**B**) is oriented up
- When not navigating: the direction the vessel is actually traveling (COG) is oriented up

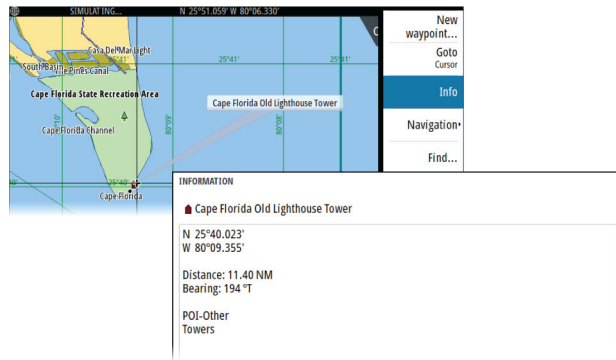
Look ahead

Moves the vessel icon on the panel to maximize your view ahead of the vessel.

Displaying information about chart items

When you select a chart item, a waypoint, a route, or a target, basic information for the selected item is displayed. Select the chart item's pop-up to display all available information for that item. You can also activate the detailed information dialog from the menu.

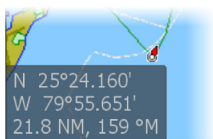
- **Note:** If you are viewing applicable C-MAP charts on your system, you can select marine objects to display information about services and available multimedia (photos) associated with the location or object.
- **Note:** Pop-up information has to be enabled in chart settings to see basic item information.



Using the cursor on the panel

By default, the cursor is not shown on the panel.

When you activate the cursor, the cursor position window is displayed. When the cursor is active, the panel does not pan or rotate to follow the vessel.

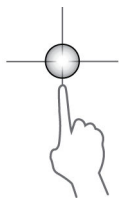


Go to cursor

You can navigate to a selected position on the image by positioning the cursor on the panel, and then using the go to cursor menu option.

The cursor assist function

→ **Note:** The cursor assist function is available if it is enabled. Refer to "*Customizing the long press feature*" on page 19.



The cursor assist function allows for fine tuning and precision placement of the cursor without covering details with your finger.

Activate the cursor on the panel, then press and hold your finger on the screen to switch the cursor symbol to a selection circle, appearing above your finger.

Without removing your finger from the screen, drag the selection circle to the desired position.

When you remove your finger from the screen the cursor reverts to normal cursor operation.

Measuring distance

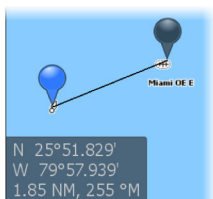
The cursor can be used to measure the distance between your vessel and a selected position, or between 2 points on the chart panel.

1. Position the cursor on the point where you want to measure the distance to. Start the measure function from the menu
 - The measuring icons appear with a line drawn from the vessel center to the cursor position, and the distance is listed in the cursor information window.
2. The measuring points can be repositioned by dragging either icon while the measuring function is active.

→ **Note:** The bearing is always measured from the grey icon to the blue icon.

The start measuring function can also be started without an active cursor. Both measuring icons are then initially located at the vessel position. The grey icon follows the vessel as the vessel moves, while the blue icon remains at the position given when you activated the function. The measuring points can then be repositioned by dragging either icon.

Terminate the measuring function by selecting the finish measuring option.



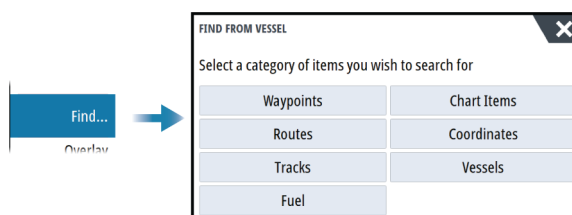
Creating routes on the chart panel

1. Activate the cursor on the chart panel
2. Select the new route option from the menu
3. Position the first waypoint on the chart panel
4. Continue positioning the remaining routepoints
5. Save the route by selecting the save option in the menu.

Find objects on chart panels

You can search for other vessels or various chart items from a chart panel.

Activate the cursor on the panel to search from the cursor position. If the cursor is not active, the system searches for items from the vessel's position.



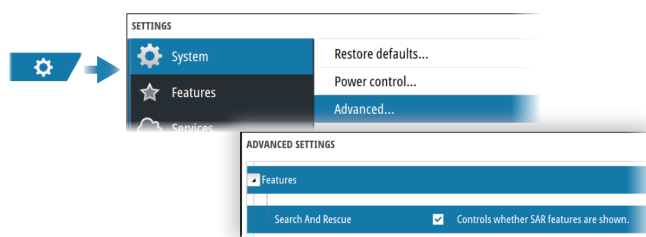
→ **Note:** You must have a SiriusXM® Marine subscription to search for fueling stations.

→ **Note:** You must have an AIS receiver connected to search for vessels.

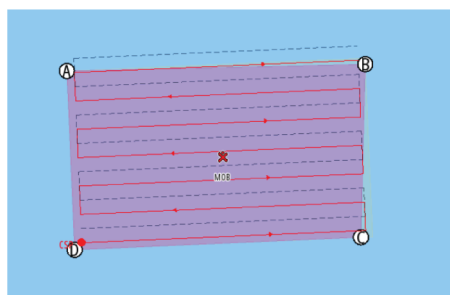
Marine Search and Rescue (SAR) feature

The marine SAR feature creates a search pattern route in the form of a parallel or creeping line search pattern on the chart.

To use the feature it must be enabled in the advanced features dialog.



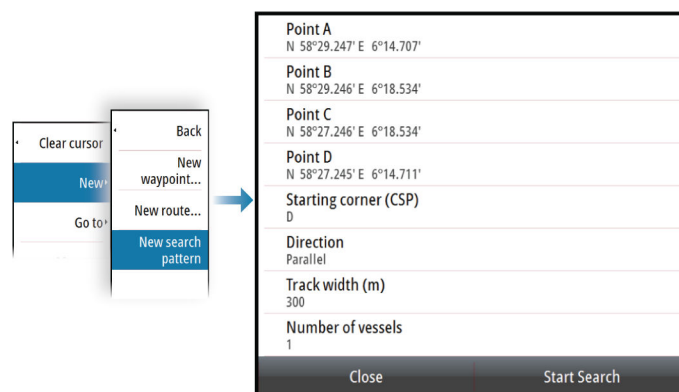
The following is an example of an SAR area on the chart.



The purple area is the area that is defined by you. The light orange shading is the area that is calculated by the system.

Setting up the search area

Place the cursor on the chart in the location of Point A. Then use the New search pattern menu option to set up the search area. This option opens the SAR Edit dialog.



Define the four corners of the search area, by entering corner coordinates.

The following settings must be defined:

- Track width - controls how much space is in between parallel legs (the legs with the longest length).
- Number of vessels - controls how many SAR routes are generated. An SAR route is created for each vessel. The first vessel will have a red route and the others will have a dashed black route. The space between each vessel is the track spacing distance.
- Direction - can be either Parallel or Creeping. Parallel direction makes the route move along the side with the longest length. Creeping is the opposite as it moves along the shortest side.
- Starting corner (CSP) - determines which corner you want to start from.

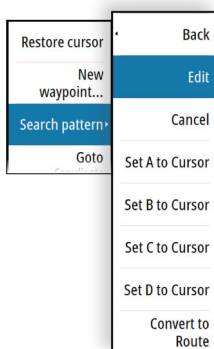
The system will calculate the number of legs and leg distances. It also calculates the Commence Start Position (CSP) as half the track spacing from the starting corner. The start heading is calculated as the heading parallel to the longest side of the search rectangle from the start position.

Editing the search parameters

Use the Edit SAR dialog to alter search pattern parameters.

You can also change the 4 corners of the search area using the set to cursor menu options. Position the cursor on the chart and then select the appropriate set to cursor menu option.

→ **Note:** The Close option on the Edit SAR dialog saves changes and closes the dialog. It does not terminate the SAR.



Detect participating vessels not on the search pattern

Turn on AIS targets and Radar overlay to see participating vessels that are not on their search pattern. Once identified, you can direct them back to the track.

Terminating the SAR session

Use the Cancel Search pattern menu option to stop the search.

Convert a SAR to a route

The Convert to route option allows you to name, edit, and save it to your route library.

3D charts

The 3D option provides a three dimensional graphical view of land and sea contours.

→ **Note:** All chart types work in 3D mode, but without 3D cartography for the appropriate area the chart appears flat.

When the 3D chart option is selected, the rotate (A) and the pan (B) icons appear on the chart panel.

Panning the 3D chart

You can move the chart in any direction by selecting the Pan icon and then panning in the desired direction.



To return the chart to vessel position use the return to vessel option.

Controlling the view angle

You can control the view angle by selecting the rotate icon, and then panning the chart panel.

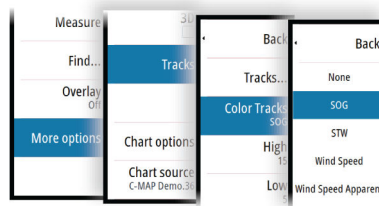
- To change the direction you are viewing, pan horizontally
- To change the tilt angle of the view, pan vertically

→ **Note:** When centered on the vessel position, only the tilt angle can be adjusted. The view direction is controlled by the chart orientation setting. Refer to "*Chart orientation*" on page 26.

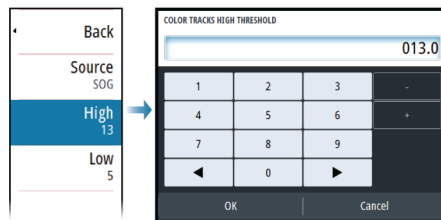
Color tracks based on data

A track can be colored based on what source data and the high/low limits you set:

- You can specify the source (data type) to be colored. To turn off coloring, select source **None**.



- Select the high and low options to set high and low values.



The colors can be shades of green, yellow, and red. Green is for the high limit you set. Yellow is the value that is the average of the high and low. Red is for the low limit. If the value is between the high and the middle values, it appears as a greenish-yellow color. If the value is between the middle and the low, it appears as an orange color.

→ **Note:** By default, tracks are colored according to the color setting in the Edit Track dialog. Coloring tracks based on source data overrides the coloring specified in the Edit Track dialog.

Chart overlay

You can add overlays on the chart panel.

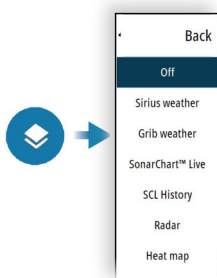
When an overlay is selected, the chart menu expands to include basic menu options for the selected overlay.

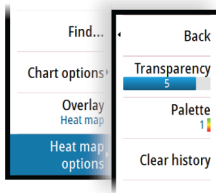
Information about the overlay menu options are described in more detail below or in their separate sections in this manual.

Heat map overlay

The Heat map overlay feature shows a history of water temperature coloring on the chart. A water temperature source is needed to provide the temperature data for the overlay.

The color range is adjusted automatically based on the minimum and maximum temperatures recorded.





Transparency

Adjusts the transparency of the overlay. With a minimum transparency setting, the panel details are almost hidden by the overlay.

Palette

Specifies the colors used to show water temperatures. A legend is shown on the panel that identifies the colors associated with the recorded temperatures.

Clear history

Deletes all heat map data gathered up to the moment it is selected. Heat map data is automatically deleted when the unit is turned off.

C-MAP charts

All possible menu options for C-MAP charts are described below. The features and menu options available can vary depending on the charts you use. This section shows menus from a C-MAP chart.

→ **Note:** A menu option is greyed out if the feature is not available on the chart displayed.

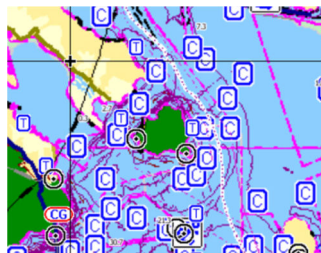
C-MAP tides and currents

The system can display C-MAP tides and currents. With this information it is possible to predict the time, level, direction and strength of currents and tides. This is an important tool when considering planning and navigation of a trip.

In large zoom ranges the tides and currents are displayed as a square icon including the letter **T** (Tides) or **C** (Current). When you select one of the icons, tidal or current information for that location are displayed.

Dynamic current data can be viewed by zooming inside a 1-nautical mile zoom range. At that range, the Current icon changes to an animated dynamic icon that shows the speed and direction of the current. Dynamic icons are colored in black (greater than 6 knots), red (greater than 2 knots and less than or equal to 6 knots), yellow (greater than 1 knot and less than or equal to 2 knots) or green (equal to or less than 1 knot), depending on the current in that location.

If there is no current (0 knots) this will be shown as a white, square icon.



Static Current and Tide icons

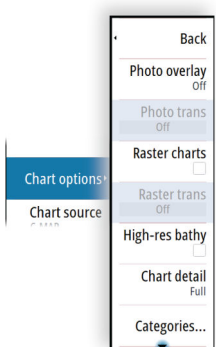


Dynamic Current icons

C-MAP specific chart options

Photo overlay

Photo overlay enables you to view satellite photo images of an area as an overlay on the chart. The availability of such photos is limited to certain regions, and cartography versions. You can view photo overlays in either 2D or 3D modes.





No Photo overlay



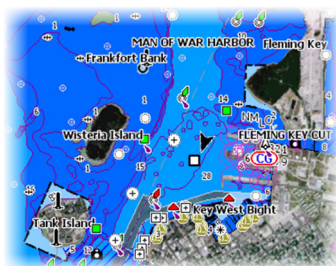
Photo overlay, land only



Full Photo overlay

Photo transparency

The Photo transparency sets the opaqueness of the photo overlay. With minimum transparency settings the chart details are almost hidden by the photo.



Minimum transparency



Transparency at 80

Raster charts

Changes the view to that of a traditional paper chart.

Raster transparency

Controls the transparency of raster imagery.

High resolution bathymetry

Enables and disables higher concentration of contour lines.

Chart detail

- Full - displays all available information for the chart in use.
- Medium - displays minimum information sufficient for navigation.
- Low - displays basic level of information that cannot be removed, and includes information that is required in all geographic areas. It is not intended to be sufficient for safe navigation.

Chart categories

Several categories and sub-categories are included. You can turn on/off individually depending on which information you want to see.

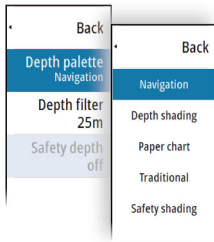
The categories listed in the dialog are dependent on the charts used.

Shaded relief

Shades seabed terrain.

No contours

Removes contour lines from the chart.



Depth palette

Controls the Depth palette used on the map.

Navigation

Color shades depth areas based on depth range values set by the system. If the depth is within a certain range the system will select the exact color of that range. It colors darker shades of blue in shallower water and whiter in deeper water.

Depth shading

Color shades depth areas based on the depth value of the depth range shade. The system will interpolate a color based on the depth within the range. It colors darker shades of blue in deeper water and whiter in shallower water.

Paper chart

Color shades the depths similar to the National Oceanic and Atmospheric Administration (NOAA) colors present in the paper charts.

Traditional

Color shades depth areas based on the data defined by the chart data. Charts have their own color palette that is defined in the chart data.

Safety shading

Color shades depth areas based on the safety depth limit. The limit determines which depths will be drawn without blue shading.

Depth filter

Filters out depth values shallower than the selected depth filter limit.

Safety depth

Charts use different shades of colors to distinguish between shallow and deep water. After enabling the safety shading depth palette, specify the desired safety depth limit and the color/shading for different depths.

Shading

Shades different areas of the seabed, depending on the selected Shading category.

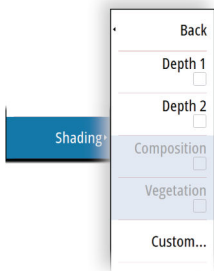
→ **Note:** Composition and Vegetation shading are not applicable to C-MAP charts.

Depth 1 and Depth 2

Depth presets that shade different depths in different colors.

Custom

You can adjust the depth threshold, color and opacity (transparency) of color shading for Depth 1 and Depth 2.



CUSTOM SHADING			
	Depth 1	Depth 2	
Depth (m)	Color	Opacity (%)	
0		100	
5		100	
10		100	
20		100	
40		100	
75		100	
100		100	
Add Point...			

3D exaggeration

Graphical settings that are available in 3D mode only. Exaggeration is a multiplier applied to the drawn height of hills on land, and troughs in water to make them look taller or deeper.

→ **Note:** This option is grayed out if the data is not available in the map card inserted.

Genesis Layer

The Genesis Layer displays high-resolution contours contributed by Genesis users that have passed a quality check.

This option toggles the Genesis layer on/off on the chart image.

Available only if the C-MAP chart contains Genesis Layer data.

Navionics® charts

Some Navionics® features require the most current data from Navionics®. For those features, a message is displayed stating that the feature is unavailable if you do not have the appropriate Navionics® charts or chart card inserted. For more information on what is required for these features, refer to www.navionics.com.

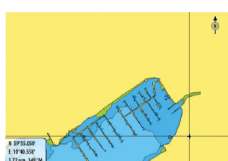
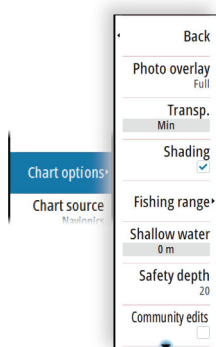
You can also get a message if you try to use a restricted feature when the Navionics® chart card is not activated. To activate the card, contact Navionics®.

Navionics® specific chart options

Photo overlay

Photo overlay enables you to view satellite photo images of an area as an overlay on the chart. The availability of such photos is limited to certain regions, and cartography versions.

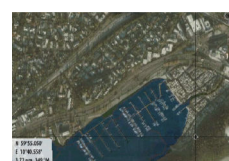
You can view photo overlays in either 2D or 3D modes.



No Photo overlay



Photo overlay, land only



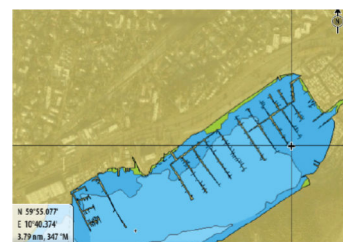
Full Photo overlay

Photo transparency

The Photo transparency sets the opaqueness of the photo overlay. With minimum transparency settings the chart details are almost hidden by the photo.



Minimum transparency



Maximum transparency

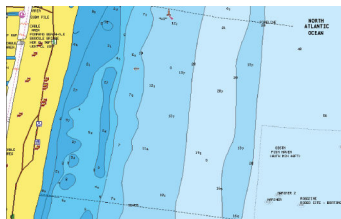
Chart shading

Shading adds terrain information to the chart.

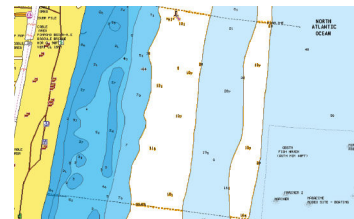
Fishing range

Select a range of depths between which Navionics® fills with a white color.

This allows you to highlight a specific range of depths for fishing purposes. The range is only as accurate as the underlying chart data, meaning that if the chart only contains 5 meter intervals for contour lines, the shading is rounded to the nearest available contour line.



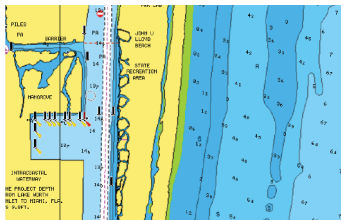
No Depth highlight range



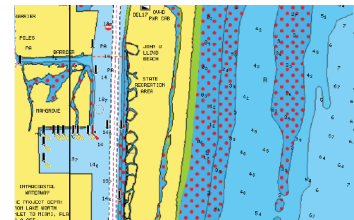
Depth highlight range: 6 m - 12 m

Shallow water highlight

This highlights areas of shallow water between 0 and the selected depth (up to 10 meters/30 feet).



No shallow water highlighted



Shallow water highlight: 0 m - 3 m

Safety depth

The Navionics® charts use different shades of blue to distinguish between shallow and deep water.

Safety depth, based on a selected limit, is drawn without blue shading.

→ **Note:** The built in Navionics® database features data down to 20 m, after which it is all white.

Community edits

Toggles on the chart layer including Navionics® edits. These are user information or edits uploaded to Navionics® Community by users, and made available in Navionics® charts.

For more information, refer to Navionics® information included with your chart, or to Navionics® website: www.navionics.com.

SonarChart

The system supports the Navionics® SonarChart feature.

SonarChart displays a bathymetry map showing high resolution contour detail and standard navigational data. For more information, refer to www.navionics.com.

SonarChart Live

SonarChart Live is a real-time feature where the device creates an overlay of depth contours based on your own live sonar soundings.

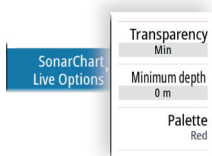
When you select SonarChart Live overlay the menu expands to display SonarChart Live options.

Transparency

The SonarChart Live overlay is drawn on top of other chart data. The chart data is completely covered at minimum transparency. Adjust the transparency to allow the chart details to be seen.

Minimum depth

Adjusts what SonarChart Live rendering treats as the safety depth. This affects the coloring of the SonarChart Live area. As the vessel approaches the safety depth, the SonarChart Live area will gradually change from a simple grey/white to red.



Palettes

Used for selecting the image's color palette.

SCL History

Select to display previously recorded data on the chart overlay.

→ **Note:** SonarChart live does not record while SCL history files are being viewed.

SC Density

Controls the density of the SonarChart and SonarChart Live contours.

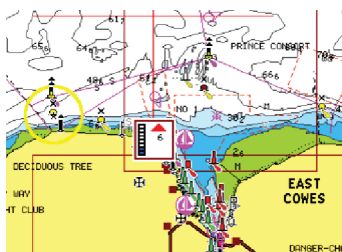
Colored seabed areas

Turns ON/OFF coloring seabed areas red.

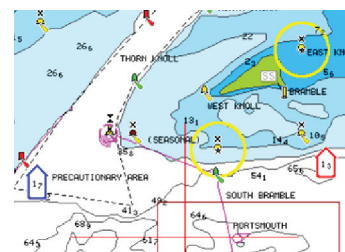
Navionics® Dynamic tides and current icons

Shows tides and currents with a gauge and an arrow instead of the diamond icons used for static tides and current information.

The tide and current data available in Navionics® charts are related to a specific date and time. The system animates the arrows and/or gauges to show the tides and currents evolution over time.



Dynamic tide information



Dynamic current information

The following icons and symbology are used:

Current speed

The arrow length depends on the rate, and the symbol is rotated according to flow direction. Flow rate is shown inside the arrow symbol. The red symbol is used when current speed is increasing, and the blue symbol is used when current speed is decreasing.



Tide height

The gauge has 8 labels and is set according to absolute max/min value of the evaluated day. The red arrow is used when tide is rising, and the blue arrow is used when tide is falling.



→ **Note:** All numeric values are shown in the relevant system units (unit of measurement) set by user.

Rock filter level

Hides rock identification on the chart beneath a given depth.

This helps you to declutter charts in areas where there are many rocks located at depths well below your vessel's draught.

Contours depth

Determines which contours you see on the chart down to the selected safety depth value.

Presentation type

Displays marine charting information such as symbols, colors of the navigation chart and wording for either International or U.S. presentation types.

Annotation

Determines what area information, such as names of locations and notes of areas, is available to display.

Chart details

Provides you with different levels of geographical layer information.

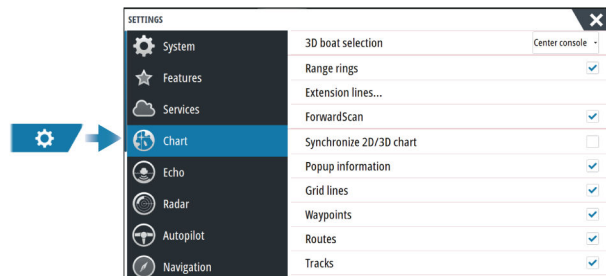
Easy View

Magnifying feature that increases the size of chart items and text.

→ **Note:** There is no indication on the chart showing that this feature is active.

Chart settings

The options in the chart settings dialog depends on which chart source is selected in the system.



3D boat selection

Determines which icon to use on 3D charts.

Range rings

The range rings can be used to present the distance from your vessel to other panel objects. The range scale is set automatically by the system to suit the panel scale.

Extension lines

Sets the lengths of the extension lines for your vessel and for other vessels shown as AIS targets.

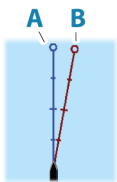
Select to show or hide the heading and course extension lines for your vessel.

Extension length

A: Heading

B: Course Over Ground (COG)

→ **Note:** When a compass source is available in the system, the heading line is displayed in blue. If no compass source is available, the COG line is displayed in blue.



The length of the extension line is either set as a fixed distance, or to indicate the distance the vessel moves in the selected time period. If no options are turned on for the vessel then no extension lines are shown.

Your vessel heading is based on information from the active heading sensor and the COG is based on information from the active GPS sensor.

For other vessels, COG data is included in the message received from the AIS system.

ForwardScan

If you have ForwardScan and this option is selected, the ForwardScan heading extension is shown on the chart. Refer to "*Heading extension*" on page 101.

SonarChart Live tide correction

When selected, the tide correction feature uses information from nearby tide stations (if available) to adjust the depth values used by SonarChart Live as the sonar is recorded.

Synchronize 2D/3D chart

Links the position shown on one chart with the position shown on the other chart when a 2D and a 3D chart are shown side by side.

Pop-up information

Determines whether basic information for panel items is displayed when you select the item.

Grid lines

Turns on/off viewing of longitude and latitude grid lines on the panel.

Waypoints, Routes, and Tracks

Turns on/off displaying of these items on chart panels.

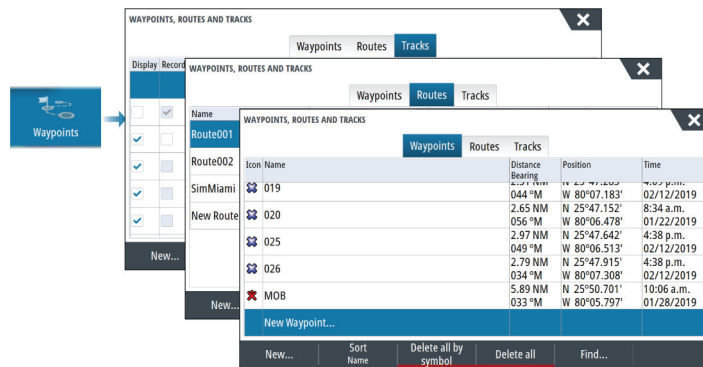
→ **Note:** To display tracks on the chart panel, the Display option in the Tracks dialog and the tracks option in the chart settings dialog both have to be enabled.

5

Waypoints, routes, and tracks

Waypoints, Routes, and Tracks dialogs

These dialogs give access to advanced edit functions and settings for these items.



Waypoints

About waypoints

A waypoint is a user generated mark positioned on the:

- chart
- echosounder image
- radar image
- navigation panel

Each waypoint has an exact position with latitude and longitude coordinates.

A waypoint positioned on the echosounder image has a depth value, in addition to position information.

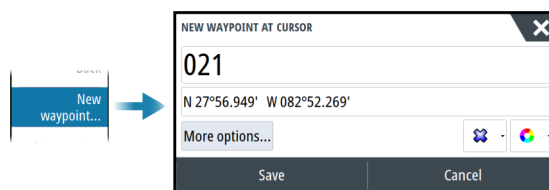
A waypoint is used to mark a position you later may want to return to. Two or more waypoints can also be combined to create a route.

Saving waypoints

Save a waypoint at the cursor position if active or at the vessel's position if the cursor is not active.

To save a waypoint:

- Select the new waypoint option in the menu



Moving a waypoint

A waypoint can be moved from the position if active and if the waypoint is selected in the menu.

To move a waypoint to a new position, select the move waypoint menu option and then select the new waypoint location on the image.

To save the waypoint at the new position, select the finish moving menu option

Edit a waypoint

You can edit all information about a waypoint from the edit waypoint dialog.

The dialog is activated by selecting the waypoint, and then selecting edit from the menu.

The dialog can also be accessed from the waypoints tool on the home page.

Deleting waypoints

You can delete a waypoint by selecting the delete menu option when the waypoint is activated on the panel.

You can also delete a waypoint by selecting it in the routes dialog and then deleting it in the edit waypoint dialog.

You can delete all waypoints or waypoints by symbols from the system using the waypoints dialog.

You can delete MOB waypoints the same way.

You can back-up your waypoints, routes and tracks before deleting them, refer to *"Maintenance"* on page 156.

Waypoint alarm settings

You can set an alarm radius for each individual waypoint you create. The alarm is set in the Edit Waypoint dialog.

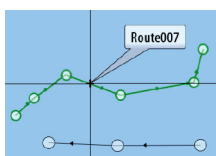
→ **Note:** The waypoint radius alarm must be toggled ON in the alarm dialog to activate an alarm when your vessel comes within the defined radius. For more information, refer to *"Alarm dialogs"* on page 151.

Routes

About routes

A route consists of a series of routepoints entered in the order that you want to navigate them.

When you select a route on the chart panel it turns green, and the route name is displayed.



Creating a new route on the chart panel

1. Activate the cursor on the chart panel
2. Select the new route option from the menu
3. Position the first waypoint on the chart panel
4. Continue positioning new routepoints on the chart panel until the route is completed
5. Save the route by selecting the save option in the menu.

Edit a route from the chart panel

1. Select the route to make it active.
2. Select the route edit option in the menu.
3. Position the new routepoint on the chart panel:
 - If you set the new routepoint on a leg, a new point is added between existing routepoints.
 - If you set the new routepoint outside the route, the new routepoint is added after the last point in the route.
4. Drag a routepoint to a new position.
5. Save the route by selecting the save option in the menu.

→ **Note:** The menu changes depending on the selected edit option. All edits are confirmed or cancelled from the menu.

Creating routes using existing waypoints

A new route can be created by combining existing waypoints from the Routes dialog. The dialog is activated by using the Waypoints tool on the Home page and then selecting the Routes tab.

Creating a route based on a trip

You can create a route based on a historical trip. Select a trip in the TripIntel history dialog and then the create route option.

Converting tracks to routes

You can convert a track to a route from the edit track dialog. The dialog is activated by activating the track, and then:

- Selecting the track's pop-up
- Selecting the track in the menu

The edit track dialog can also be accessed by selecting the waypoints tool on the home page.

Dock-to-dock Autorouting and Easy Routing

The Dock-to-dock Autorouting and Easy Routing features suggest new routepoint positions based on information in the map and on your boat's size. Before you can start using these features the boat draught, width and height must be entered into the system. The boat settings dialog is automatically displayed if the information is missing when you start the feature. To enter boat settings, refer to "*System settings*" on page 154.

⚠ Warning: Autorouting is for general planning only and must be used in conjunction with conventional navigational practices. It DOES NOT replace a human navigator and should never be used as the only reference source. It is the operator's sole responsibility to review the suggested route against official publications and situational awareness.

→ **Note:** It is not possible to start the Dock-to-dock Autorouting or Easy Routing if one of the selected routepoints is located in an unsafe area. A warning dialog is displayed, and you have to move the relevant routepoint(s) to a safe area to proceed.

→ **Note:** If no compatible cartography is available, the Dock-to-dock Autorouting or Easy Routing menu option is not available. Compatible cartography includes C-MAP MAX-N+, C-MAP Discover, C-MAP Reveal, Navionics+, and Navionics Platinum. For a full selection of available charts, visit www.c-map.com or www.navionics.com.

1. Position at least two routepoints on a new route, or open an existing route for editing.
2. Select the Dock-to-dock Autorouting menu option, followed by:
 - Entire Route - if you want the system to add new routepoints between the first and the last routepoint of the open route.
 - Selection - if you want to manually select the routepoints that define the limits for the autorouting, then select the relevant routepoints. Selected routepoints are colored red.
 - Only two routepoints can be selected, and the system discards any routepoints between your selected start and end points.
3. Select the accept option to start the automatic routing.
4. When the automatic routing is completed the route appears in preview mode, and the legs are color coded to indicate safe or unsafe areas.
 - Navionics® uses red (unsafe) and green (safe), while C-MAP uses red (unsafe), yellow (dangerous) and green (safe).
5. Move any routepoints if required when the route is in preview mode.
6. Select the keep option to accept the routepoints positions.
7. Repeat step 2 (selection) and step 3 if you want the system to automatically position routepoints for other parts of the route.

Dock-to-dock Autorouting and Easy Routing examples

- Entire route option used when first and last route points are selected.



First and last routepoint



Result after automatic routing

- Selection option used for autorouting part of a route.



Two route points selected



Result after automatic routing

The edit route dialog

You can manage routes and route points, and change route properties using the Edit Route dialog. This dialog is activated by selecting an active route's pop-up or from the menu by selecting the route then the details option.

The dialog can also be accessed by using the Waypoints tool on the Home page and then selecting a route in the dialog.

Select a route point in the edit dialog to insert a new route point after it or remove the route point.

Select the display option to show the route on the chart.

EDIT ROUTE

Route001

☒ Display

Leg	Waypoint	Distance (NM)	Bearing (°M)
0	Rpt001	211.1	357
1	Rpt002	35.3	079
2	Rpt003	31.4	152
3	Rpt004	24.9	173

Delete

Show

Start...

Deleting routes

You can delete a route by selecting the delete menu option when the route is activated on the panel.

You can also delete a route by selecting it in the routes dialog and then deleting it in the edit route dialog.

You can delete all routes from the system using the routes dialog.

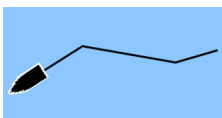
You can back-up your waypoints, routes and tracks before deleting them, refer to *"Maintenance"* on page 156.

Tracks

About tracks

Tracks are a graphical presentation of the historical path of the vessel. They allow for retracing where your boat has travelled.

Example of the Tracks dialog:



WAYPOINTS, ROUTES AND TRACKS

Waypoints

Routes

Tracks

Display	Record	Name	Color	Points
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Today's activity track		0
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Track001		2
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Track002		27
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Track003		3
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Track004		2
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Wed Dec 4 2019, 11:20 a.m.		0
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Wed Oct 9 2019, 8:47 a.m.		0

New...

Settings

Delete all

Find...

Creating a new track

You can start a new track from the Tracks dialog. The dialog is activated by:

- Using the Waypoints tool on the Home page and selecting the Tracks tab.
- Selecting the New track or Tracks option on the Plot dialog.
- Selecting the Tracks option in the chart menu.

Track logging settings

Tracks are made up of a series of points connected by line segments whose length depends on the frequency of the recording.

You can select to position track points based on time settings, distance, or by letting the system position a waypoint automatically when a course change is registered.

The logging settings can be made from the Tracks and Trips settings dialog or by selecting the Settings button in the Tracks dialog.

Coloring tracks

To color tracks:

- Select the track in the Tracks dialog and set the color for the entire track in the Edit Track dialog.
- Select to let the system color the track based on source data and high/low settings. Refer to *"Color tracks based on data"* on page 30.

Using the synchronize feature

You can use a browser to sign-in at <https://appchart.simrad-yachting.com> or you can sign-in to your SIMRAD® app account from your mobile device or tablet to manage (create new, change, move, and delete):

- Waypoints
- Routes
- Tracks

Use the MFD's Synchronize my data option to synchronize between the MFD and your SIMRAD® app account.

Requirements

- An account with the SIMRAD® mobile app

→ **Note:** Your C-MAP Embark or C-MAP app account credentials can be used to sign-in to the mobile app. You do not need to create a separate mobile app account.

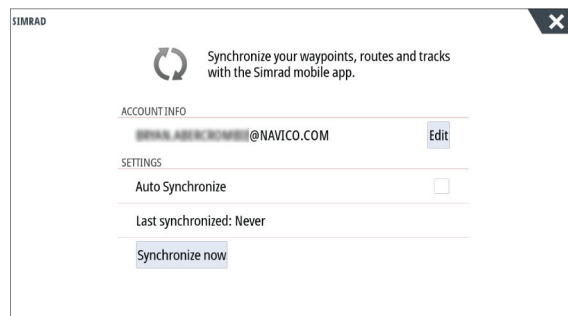
- To synchronize, the unit must be connected to the internet. To connect the unit to the internet, refer to *"Wireless settings"* on page 147.

Synchronizing

To synchronize the MFD data and your SIMRAD® app account data (includes your data at <https://appchart.simrad-yachting.com>), open the **Synchronize my data** feature from the System Controls dialog or the Services settings dialog.

After sign-in, the system advises the last time synchronizing occurred and the following options are available:

- Edit - use to change sign-in credentials
- Auto Synchronize - synchronizing occurs periodically in the background when connected to the internet
- Synchronize now - synchronizing occurs immediately



6

Navigating

About navigating

The navigation function included in the system allows you to navigate to the cursor position, to a waypoint, or along a predefined route.

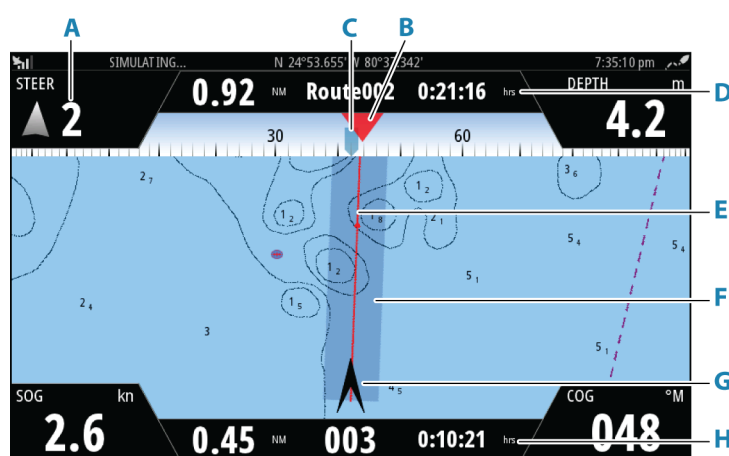
If autopilot functionality is included in your system, the autopilot can be set to automatically navigate the vessel.

For information about positioning waypoints and creating routes, refer to *"Waypoints, routes, and tracks"* on page 39.

Navigation panels

The Nav panel

The Nav panel is activated from the Home page, either as a full page panel or as part of a split page.



A Data fields

B Vessel heading

C Bearing to next routepoint

D Route information

Indicates the distance of the route, the route name, and the estimated time to reach the end of the route.

E Bearing line with allowed off course limit

When travelling on a route, the bearing line shows the intended course from one waypoint towards the next. When navigating towards a waypoint (cursor position, MOB or an entered lat/lon position), the bearing line shows the intended course from the point at which navigation was started towards the waypoint.

F XTE limit

If the XTE (Cross Track Error) exceeds the defined XTE limit, this is indicated with a red arrow including the distance from the track line. Refer to *"XTE limit"* on page 47.

G Vessel symbol

Indicates boat position and heading.

H Routepoint information

Indicates the distance to the routepoint, the routepoint name, and the estimated time to reach the routepoint.

The Position panels

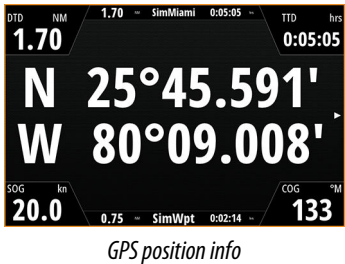
You can switch between displaying the Navigation panel or the Position panel. The Position panel is activated from the menu.

By default, there is one position panel available showing GPS position.

If Loran is enabled in the Navigation settings dialog, there are two position panels. This is indicated with arrow symbols on left and right side of the panel.

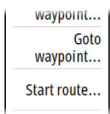
You toggle between the panels by:

- selecting the left or right arrow symbols



Menu options

You can use menu options to:



- navigate to cursor
- navigate to a waypoint
- navigate a route

While navigating, the menu expands to provide options to:



- skip waypoints when navigating a route
- restart navigating to cursor, a waypoint or a route
- cancel navigating to cursor, a waypoint or a route

Navigating with the autopilot

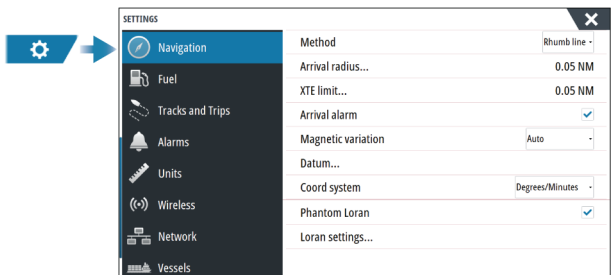
When you start navigation on a system with autopilot functionality, you are prompted to set the autopilot to navigation mode.

→ **Note:** The prompt to set the autopilot to navigation mode is disabled if the boat type is set to SAIL in the Autopilot Commissioning dialog.

If you choose not to engage the autopilot, the autopilot can be set to navigation mode from the Autopilot Controller later on.

For more information about autopilot functionality, refer to the autopilot chapter of the autopilot being used.

Navigation settings



Navigation method

Different methods are available for calculating the distance and bearing between any two geographical points.

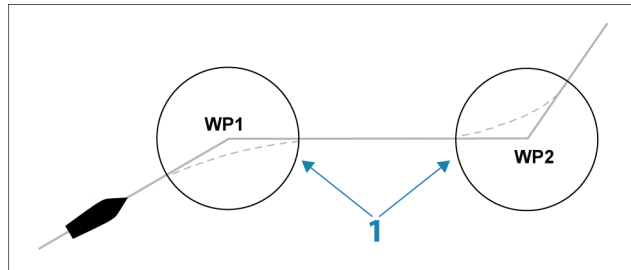
The Great circle route is the shortest path between two points. However, if you are to travel along such a route, it would be difficult to steer manually as the heading would constantly be changing (except in the case of due north, south, or along the equator).

Rhumb lines are tracks of constant bearing. It is possible to travel between two locations using Rhumb line computation, but the distance would usually be greater than if Great circle is used.

Arrival radius

Sets an invisible circle around the destination waypoint. The vessel is considered arrived at the waypoint when it is within this radius.

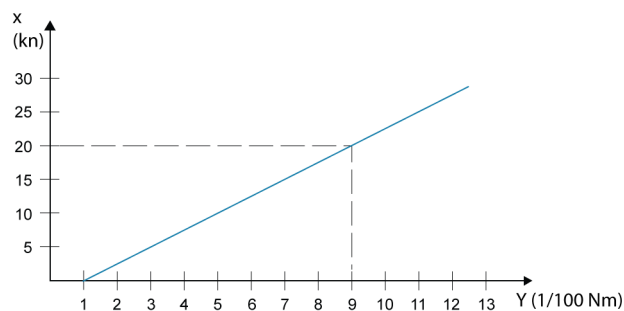
When you are navigating a route, the arrival radius defines the point at which a turn is initiated.



The arrival circle (1) should be adjusted according to boat speed. The higher the speed, the wider the circle.

The intention is to make the autopilot start the heading change in due time to make a smooth turn onto the next leg.

The figure below may be used to select the appropriate waypoint circle when creating the route.



→ **Note:** The distance between any waypoints in a route must not be smaller than the radius of the waypoint arrival circle.

XTE limit

Defines how far the vessel can deviate from the selected route. If the vessel goes beyond this limit, an alarm is activated.

Arrival alarm

When the arrival alarm is enabled, an alarm is activated when the vessel reaches the waypoint or when it is within the specified arrival radius.

Magnetic variation

Magnetic variation is the difference between true bearings and magnetic bearings, caused by different locations of the Geographic and the Magnetic north poles. Any local anomalies such as iron deposits might also affect the magnetic bearings.

When set to Auto, the system automatically converts magnetic north to true north. Select manual mode if you need to enter your own local magnetic variation.

Datum

This system uses the WGS datum format, which is a standard for use in cartography and satellite navigation (including GPS).

You can change the datum format to match other systems.

Coordinate system

Used to set the geographic coordinate system used on your system.

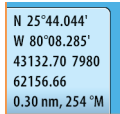
Phantom Loran

Enables use of Phantom Loran positioning system.

Defines Loran chains (GRI) and preferred station for waypoint entry, cursor position and position panel.

The graphic example shows a cursor position window with Loran position information.

For more information refer to your Loran system documentation.

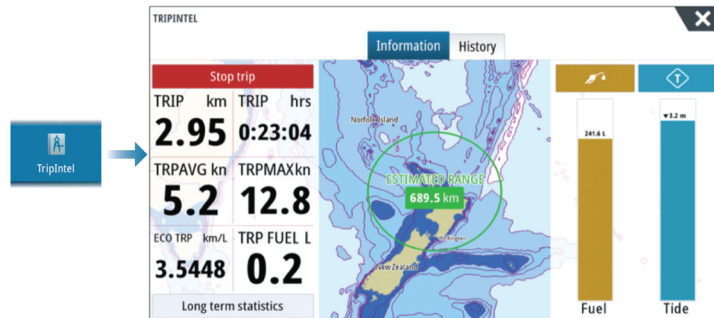


N 25°44.044'
W 80°08.285'
43132.70 7980
62156.66
0.30 nm, 254 °M

TripIntel

About TripIntel

TripIntel lets you store and recall information on trips. You can use the information to make informed decisions prior to commencing a trip, or when a trip is underway.



Current trip statistics

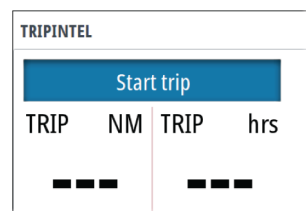
The Information tab on the TripIntel page shows current trip statistics:

- Distance traveled
- Time traveled
- Average speed
- Maximum speed
- Fuel economy
- Fuel used

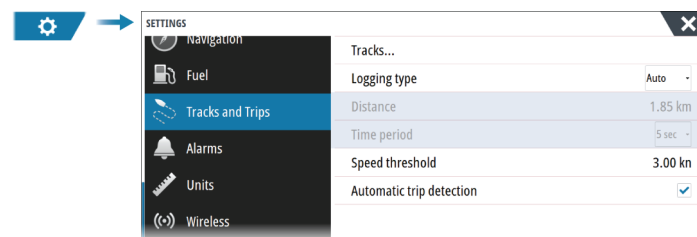
Automatic trip recording

There is an automatic trip detection feature. When you start navigating you are prompted to start recording the trip if no trip is currently underway and your vessel speed exceeds the Speed threshold setting in the Tracks and Trips settings dialog. You will be prompted to continue a trip or start a new trip if the trip was not explicitly saved before a power off.

You can manually start the recording later from the TripIntel page.



You can turn off the automatic trip detection feature from the Tracks and Trip settings dialog.



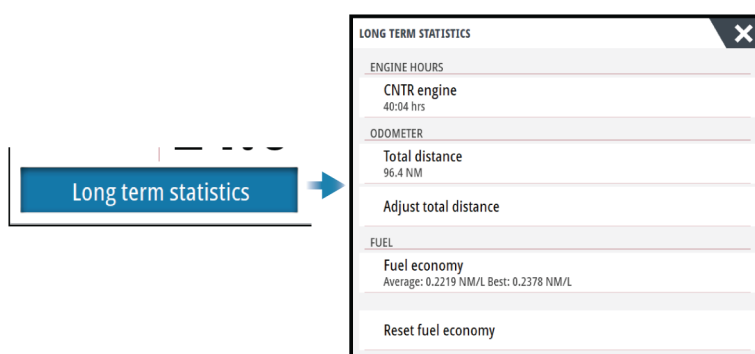
Start and stop trip recordings

If you have selected to not start recording a trip from the automatic trip detection prompt, you can manually start a recording from the TripIntel page.

The **Start** and **Stop** trip options let you specify a trip recording. You can use them to segment a single passage into multiple trips providing a finer level of control of the information that is logged for a journey.

Long-term statistics

Select Long Term Statistics to view seasonal trip information.



Adjust total distance

Select the Adjust total distance button to change the Total distance. Use this option if you have not recorded a trip or part of a trip that you have taken and want to include the distance in the Total distance statistic.

Reset fuel economy

Select **Reset fuel economy** to reset the fuel economy in the Fuel economy gauge on the Instrument bar.

Estimated fuel range ring

The Estimated fuel range ring on the TriplIntel page represents the estimated total distance that the boat can travel based on historical consumption, and the amount of fuel left in the tanks.

- **Note:** The Estimated fuel range ring represents fuel consumption on a one way trip only, it does not include fuel estimates for the return trip to your current location. It represents the distance in which your boat will completely run out of fuel.
- **Note:** The Estimated fuel range ring is calculated from the Vessel Fuel Remaining only, not level sensors. When recording your refueling, you must 'Set to full' or 'Add fuel' for the range ring to be accurate.

Fuel gauge

The Fuel Gauge on the TriplIntel page, and on the economy gauge is displayed based on the setting in the Vessel Setup page. You must select the Fuel Remaining measurement type.

- Fuel consumed by engine(s)
- Fuel tank level sensor(s)

- **Note:** This is only for the TriplIntel page and the economy graph.

Record your refueling

Select the Fuel button to record the amount of your refuel. The refuel information is used for calculating the Vessel Fuel Remaining amount.



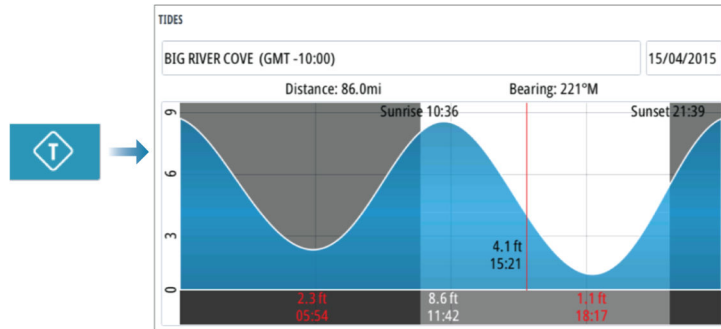
Tide gauge

The Tide gauge on the TriplIntel page shows the tide height at the selected tide station.

The Tide gauge can also be shown on the instrument bar. Refer to *"Customizing the instrument bar"* on page 20.

Tide graphs and stations

Tide stations on chart cards provide tide information displayed in TriplIntel.



View trip recordings

Recorded trips are listed in the history tab on the TripIntel page. To view detailed trip information select a trip in the list.

TRIPINTEL		
Current trip		History
Current trip		
TRIP HISTORY		
fre. jan 11 2019, 1:20 p.m.	37m 45s	11.37 NM
Tibbs Beach-Coxs Bay	45m 10s	14.10 NM
View Bay-Shelly Bay	1h 14m	20.00 NM

Change trip recording names

Trips are given generic names when they are created. You can change the trip name to a more meaningful one by selecting it on the History list and then select the name in the Trip History details dialog.

8

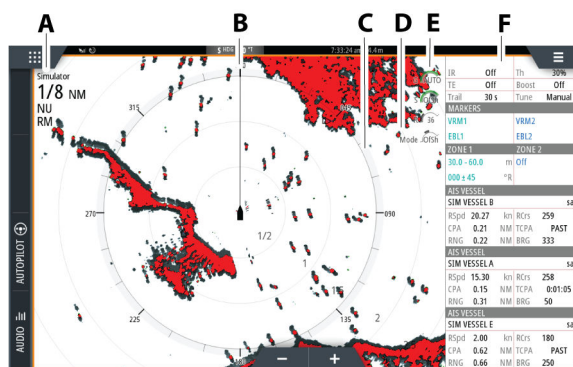
Radar

About radar

Several radar sensors are supported.

This chapter describes features and options for a variety of supported radars. The features and options available to you are dependent on the radar antenna(s) connected to your system.

The Radar panel



- A Radar information window
- B Heading line*
- C Compass*
- D Range rings *
- E Quick image controls
- F Data bar**

* Optional radar symbology. Radar symbology can be turned ON/OFF collectively from the radar menu, or individually as described in radar settings dialog.

** You can show or hide the data bar using the data bar option in the radar settings dialog.

Dual radar

You can connect to any combination of two supported radars and see both radar images at the same time.

→ **Note:** Interference will be seen on the Broadband Radar on most ranges when a pulse or Halo radar, and a Broadband radar are transmitting at the same time on the same boat. We recommend to only transmit on one radar at a time. For example, transmit Broadband radar for typical navigational usage, or pulse or Halo radar to locate weather cells, defined coastlines at a distance and to trigger Racons.

You can select a dual radar panel by pressing and holding the Radar application button on the home page, or by creating a favorite page with two radar panels.

Selecting the radar source

You specify the radar in the Radar panel by selecting one of the available radars in the radar source menu option. If you have a multiple Radar panel, the radar is set individually for each radar panel. Activate one of the radar panels, and then select one of the available radars in the radar source menu option. Repeat the process for the second radar panel, and select an alternative radar for this panel.

→ **Note:** The 3-digit radar source number is the last 3 digits of the radar's serial number.

Radar overlay

You can overlay the Radar image on the Chart. This can help you to easily interpret the radar image by correlating the radar targets with charted objects.

→ **Note:** A heading sensor must be present in the system for radar overlay.

When the radar overlay is selected, basic radar operational functions are available from the Chart panel's menu.

Selecting radar overlay source on chart panels

To select the radar source of the radar overlay displayed on the chart panel, use the **Radar options** and then **Source** chart panel menu options to select the radar source.

For chart pages with more than one chart with radar overlay, it is possible to set up different radars sources for each chart panel. Activate one of the chart panels and then select one of the available radars in the radar source menu option. Repeat the process for the second chart panel with radar overlay, and select an alternative radar for this panel.

Radar operational modes

The radar's operational modes are controlled from the Radar panel menu. The modes available are dependent on your radar's capability.

Standby

The power to the radar scanner is on, but the radar is not transmitting.

→ **Note:** You can also put the radar in standby mode from the System Controls dialog.

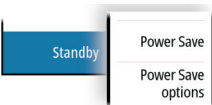
Power off



The power to the radar scanner is turned off. The power off option is only available when the radar is in standby mode.

Note: Not all radars can be powered off using the Power off menu option. For alternative power ON/OFF options refer to the radar installation manual.

Power save



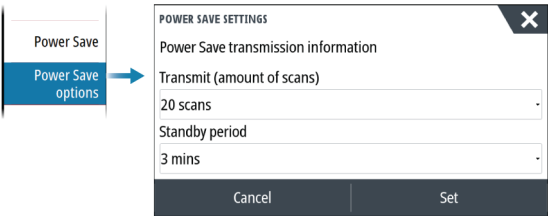
→ **Note:** This feature is only available for Halo20+ and Halo24 radars.

The power save menu option applies the settings made in the power save settings dialog to the radar source. The power save menu option is only available when the radar is in standby mode.

Select the standby option, and then the transmit option to return to normal transmit mode.

Power save options

Opens the power save settings dialog. The power save options menu option is only available when the radar source is in standby mode.



The settings made in the power save settings dialog are applied when the Set option is selected.

Use the power save settings dialog to specify the number of scans while transmitting and the amount of time the radar source will be in standby, during power save mode.

When in standby during power save mode, the radar image freezes and becomes grey-scaled. When the specified standby time period ends, the radar will commence transmitting until the completion of the number of scans specified is reached. The radar will then go into power save standby again. The power save cycle will continue until the radar source is in standby mode, transmit mode or powered off.

If a radar control is adjusted during the standby time period, the radar will commence transmitting until the completion of the number of scans specified is reached.

Guard Zone alarms remain available while power save mode is active. If an alarm is triggered while in power save mode, the radar will remain transmitting indefinitely. Power save mode will need to be re-enabled manually in this event.

Power save settings will be applied to both radar ranges in dual range mode.

Transmit

The scanner is on and transmitting. Detected targets are drawn on the radar PPI (Plan Position Indicator).

→ **Note:** You can also put the radar in transmit mode from the system controls dialog.

Adjusting the radar range



The radar range is shown in the system information area on the radar image.

Use the zoom buttons to increase or decrease the range.

Dual range

→ **Note:** Halo20 does not support dual range.

→ **Note:** Dual range is not supported by Halo 3000 radars in Bird+ mode.

When connected to a Broadband 4G or Halo radar (other than Halo20), it is possible to run the radar in Dual Range mode.

When connected to a Halo radar (other than Halo20), it is possible to run the radar in Dual Range mode.

The radar appears in the radar sources menu as two virtual radar sources A and B. Range and radar controls for each virtual radar source are fully independent and the source can be selected for a particular chart or radar panel in the same manner as dual radar described in "Selecting the radar source" on page 54.

→ **Note:** Some controls that are related to physical properties of the radar itself are not independent of source. These are Fast Scan, Antenna Height, Sector Blanking and Bearing alignment.

The number of targets that can be tracked for each virtual radar source depends on your radar source.

Up to two independent target tracking zones may be defined for each virtual radar source.

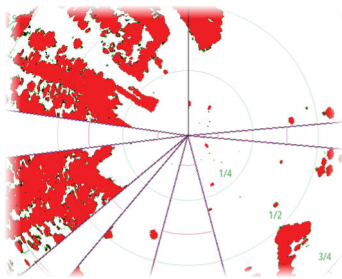
Sector blanking

→ **Note:** This feature is only supported by Halo radars.

Radar installed in close proximity to a mast or structure could cause unwanted reflections or interference to appear on the radar image. Use the sector blanking feature to stop the radar from transmitting on up to four sectors in the image.

The sector blanking option is available in the radar installation dialog. Refer to the installation manual.

- **Note:** Sectors are setup relative to the heading line of the radar. The bearing of the sector is measured from the center line of the sector.
- **Note:** Sector blanking should be applied very carefully to avoid reducing the radar’s usefulness in identifying valid and potentially dangerous targets.



Main radar PPI



Radar overlay on a chart

Adjusting the radar image

The radar image can be improved by adjusting the gain, by filtering out unwanted echoes due to sea clutter, rain or other weather conditions, and by tuning the sensitivity of the radar receiver.



You can adjust the gain, sea clutter, and rain clutter by selecting the relevant icon in the top right corner of the radar panel or from the radar panel main menu.

- **Note:** The radar image settings do not affect the AIS targets.

Sea and rain clutter can be present at the same time, and further degradation in detection performance will be experienced. As sea clutter is related to short range and rain clutter is usually present in a longer range, rain clutter settings can be adjusted without affecting the echoes in the sea clutter area.

The radar image can be adjusted as described in the next sections.

Radar modes

Use modes are available with preset control settings for different environments. Not all modes are available for all radar models.

Custom mode

All radar controls can be adjusted and settings will be retained after a mode change or radar power cycle. Radar defaults are set for general purpose use.

Harbor mode

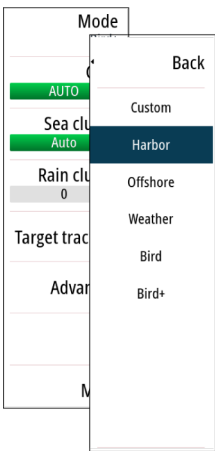
The radar settings are optimized for areas such as busy waterways and large man-made structures where good target discrimination and rapid image updates are needed.

Offshore mode

The radar settings are optimized for offshore sea conditions and making isolated targets larger and easy to see.

Weather mode

The radar settings are optimized for best detection and presentation of rain clutter. Image update rate is slowed and color depth is increased.



Bird mode

The radar settings are optimized for best detection of birds near shore and offshore. The radar is set up for high sensitivity.


 **Warning:** This mode is not recommended for use in congested harbor environments.

Bird+ mode

Bird+ mode works with Halo 3000 Series radars, offering enhanced, long-range offshore bird detection capabilities.

→ **Note:** Dual range is not supported by Halo 3000 radars in Bird+ mode, but either range A or range B will operate. If Bird+ mode is activated while the other range is already transmitting, the other range will automatically be put into Standby. Once Bird+ mode is exited, the other range will automatically resume transmission.

The maximum range is 24 NM.

 **Warning:** This mode is not recommended for use in congested harbor environments.

Available controls for the various use modes

Not all controls are adjustable in each mode. The following table shows preset controls and adjust-ability for each control.

	Custom	Harbor	Offshore	Weather	Bird/Bird+
Noise rejection	Adj.	Medium	High	Medium	High
Threshold	Adj.	30%	30%	0%	0%
Target expansion	Adj.	Low	Medium	Off	Off
Interf. reject	Adj.	Adj.	Adj.	Adj.	Adj.
Target separation	Adj.	Medium	Off	Off	Off
Fast scan	Adj.	High	High	Off	Off

Modes in dual ranges

When connected to a radar with dual range capability, it is possible to run the radar in Dual Range mode.

→ **Note:** Dual range is not supported by Halo 3000 radars in Bird+ mode.

Modes can be set independently for each range. For example, you can have Offshore mode for range A and Weather mode for range B. However, interaction between ranges occurs in some cases:

- When using Bird mode for both ranges, maximum range is restricted to 24 NM and range resolution is reduced.
- Fast scan - The antenna rotation speed is set to the slower of the two modes selected. For example, Fast Scan is disabled when using Harbor and Weather modes because Fast Scan is Off in Weather mode.
- The Interference reject setting can affect the interference seen or removed on both ranges.

Directional clutter rejection

This mode is active when Sea clutter is set to Auto or Harbor/Offshore (options are dependent on the radar model). The gain of the radar receiver is adjusted dynamically during

the 360 deg. sweep according to the sea clutter level, for increased target sensitivity to leeward and in heavier sea states. For Halo radars it is also possible to fine tune the directional clutter rejection with Auto offset adjustments.

→ **Note:** This mode is not selectable in the menu and you cannot see that it is activated in the panel or menu.

When Sea clutter is set to Manual, the Directional Clutter Rejection mode will be OFF (non-directional).

Sea state settings of Calm, Moderate or Rough are available in the menu to better optimize the radar image to your liking.

Gain

The gain controls the sensitivity of the radar receiver.

A higher gain makes the radar more sensitive to radar returns, allowing it to display weaker targets. If the gain is set too high, the image might be cluttered with background noise.

Gain has a manual and an automatic mode. You toggle between automatic and manual mode in the slide bar.

Sea clutter

Filters the effect of random echo returns from waves or rough water near the vessel.

When you increase the value, the sensitivity of the near field clutter caused by waves is reduced. If the value is increased too much, both sea clutter and targets will disappear from the display. Targets around own ship may then not be shown as potentially dangerous targets.

The system includes predefined sea clutter settings for harbor and offshore conditions, in addition to the manual mode where you can adjust the settings.

→ **Note:** At increasing levels of sea clutter, some targets cannot be detected even by means of sea clutter filtering, since buoys or other small objects are producing echoes of a level lower than the ones coming from waves.

Sea State

Set the Sea State control according to current sea conditions for best sea clutter rejection.

Rain clutter

Rain clutter is used to reduce the effect of rain, snow or other weather conditions on the radar image. When you increase the value, the sensitivity of the long distance field clutter caused by rain is reduced. The value should not be increased too much as this may filter out real targets.

If the precipitation is located over the ship's position, the adjustment of rain clutter will affect the presentation of near echoes.

Using the cursor on a radar panel

By default, the cursor is not shown on a radar panel.

When you position the cursor on the radar panel, the cursor position window is activated.

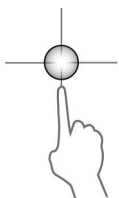
Go to cursor

You can navigate to a selected position on the image by positioning the cursor on the panel, and then using the go to cursor menu option.

The cursor assist function

→ **Note:** The cursor assist function is available if it is enabled. Refer to "*Customizing the long press feature*" on page 19.

The cursor assist function allows for fine tuning and precision placement of the cursor without covering details with your finger.

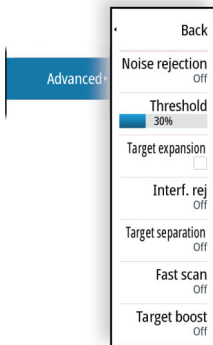


Activate the cursor on the panel, then press and hold your finger on the screen to switch the cursor symbol to a selection circle, appearing above your finger.

Without removing your finger from the screen, drag the selection circle to the desired position.

When you remove your finger from the screen the cursor reverts to normal cursor operation.

Advanced radar options



Noise Rejection

Sets the amount of noise filtering applied by the radar. Target sensitivity is increased at longer ranges when this control is set to Low or High, but does cause some loss of target discrimination.

→ **Note:** To get maximum range performance from the radar, transmit on one range only, set the Noise Reject control to High and the threshold as low as possible. The default is 30% for less clutter on the screen. In some areas where extreme high interference may exist, try OFF for best radar image.

Radar threshold

The threshold sets required signal strength for the lowest radar signals. Radar returns below this limit are filtered and are not displayed.

Default value: 30%.

Target expansion

Target expansion increases the length of targets in range, making them easier to see.

Rejecting radar interference

Interference could be caused by radar signals from other radar units operating in the same frequency band.

A high setting reduces the interference from other radars.

In order not to miss weak targets, the interference rejection should be set to low when no interference exists.

Target separation

The **Target separation** control allows you to control the target discrimination of the radar (separation between objects is more prominent).

Fast scan

Sets the speed of the radar antenna rotation. This option gives faster target updates.

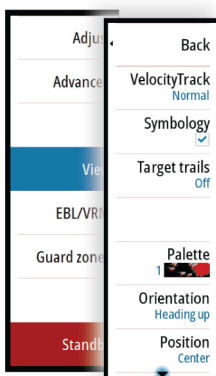
→ **Note:** Maximum speed may not be achieved depending on the radar Settings, Mode, and Range selected. The radar will only rotate as fast as the current control settings allow.

Sea State

Set the Sea State control according to current sea conditions for best sea clutter rejection.

Target boost

The target boost control increases pulse length or reduces radar bandwidth to make targets appear larger in range and increase radar sensitivity.



Radar view options

View menu options vary depending on your radar antenna.

VelocityTrack

→ **Note:** When VelocityTrack is enabled antenna rotation speed may be reduced.

→ **Note:** When operating the radar in Dual range mode with one of the ranges set to 36 nm or more, increased VelocityTrack coloring noise over land areas may be seen.

Doppler coloring is a navigation aid to distinguish moving targets approaching or diverging from your vessel. The radar indicates if a target is approaching or diverging from your vessel when both these conditions are true:

- The target's relative speed is greater than the VelocityTrack speed threshold.
- The target is not geo-stationary (e.g. land or a marker buoy).

The following options are available:

- Off - turns off Doppler coloring
- Normal - approaching targets and diverging targets are colored.
- Approaching targets - only approaching targets are colored

The color of approaching and diverging targets depends on the palette used:

- Diverging targets are blue colored on all radar image palettes.
- Approaching target colors on radar image palettes:
 - Black/Red palette - Yellow
 - White/Red palette - Yellow
 - Black/Green palette - Red
 - Black/Yellow palette - Red

VelocityTrack settings

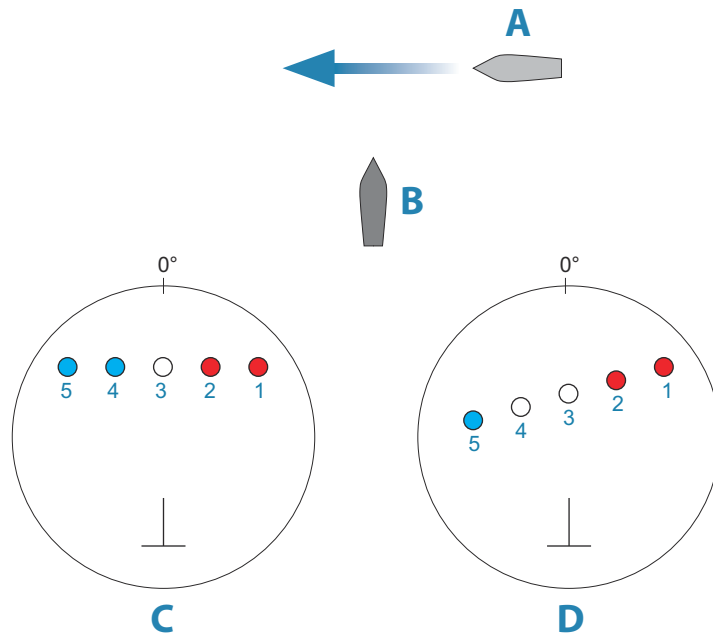
Use this dialog to set speed thresholds of targets to be colored.

The speed threshold can be defined to apply for the radar source of the selected radar panel only, or to all radar sources connected to the system. The setting is only applied to those radars powered and connected at the time the setting is made. If the all radar sources option is selected, newly connected radars will use the specified values automatically.

VelocityTrack examples

Approaching and diverging moving targets can be indicated as neutral (not colored) in some circumstances. The navigator should be aware of these situations to safely use the VelocityTrack feature as an aid for collision avoidance.

Examples of how VelocityTrack behaves in 2 navigation scenarios is illustrated below. The illustrations show a target **(A)** crossing own vessel's **(B)** path.



The examples show the target movement (1-5) over 5 radar scans with the radar in relative motion mode.

In example **C**, own vessel COG is 0°, and speed is 0 knots.

In example **D**, own vessel COG is 0°, and speed is 10 knots.

In both examples, the target COG is 270°, and the speed is 20 knots.

The colors in the examples are according to the colors used for black/green and black/yellow radar palettes:

- Red (**C1/C2** and **D1/D2**), indicating the target is on an approaching path to own vessel. Its relative speed at that point is greater than the VelocityTrack speed threshold.
- Not colored (**C3** and **D3/D4**), indicating it is temporarily neutral because its relative speed at that point is less than the VelocityTrack speed threshold.
- Blue (**C4/C5** and **D5**), indicating the target is diverging away from own vessel and its relative speed at that point is greater than the VelocityTrack speed threshold.

Radar symbology

Radar symbology defined in the Radar Settings panel can be turned on/off collectively. See the radar panel illustration showing optional radar items.

Target trails

You can set how long the trails generated from each target on your radar panel remain. You can also turn OFF target trails.

→ **Note:** True motion is recommended when using Target trails

Clearing target trails from the panel

When target trails are displayed on the panel, the radar menu expands to include an option where you can clear target trails from your radar panel temporarily. The target trails start to appear again unless you switch them off as described above.

The radar palette

Different colors (palettes) can be used to represent detail on your radar panel.

Orientation

Radar orientation is indicated on the upper left corner of the radar panel as either HU (Heading UP), NU (North Up) or CU (Course up).

Head-up

In head-up mode, the heading line on the PPI is oriented on the 0° on the bearing scale and towards the top of the screen. The radar image is displayed relative to own ship, and when the ship turns the radar image rotates.

→ **Note:** Head-up is only available in relative motion mode, and it is the only orientation mode available if the radar is not connected to a heading source.

North up

In North up mode the 0° indication on the PPI represents north. The heading line on the PPI is oriented according to own ship heading obtained from the compass. When the ship turns the heading line changes its direction according to the ship's heading, while the radar image remains stabilized.

The North up orientation is not available if no heading source is connected to the radar. If heading data is lost, the system will automatically switch to Head-up orientation.

Course up

In Course up mode, the top of the bearing scale indicates the ship's true course measured from north at the time Course up was activated. When the ship turns the bearing scale remains fixed, while the heading line rotates with the ship's yawing and course change.

The Course up orientation is reset by re-selecting the Course up mode.

Radar motion mode

Radar motion is indicated on the upper left corner of the radar panel as either TM (True motion) or RM (Relative motion).

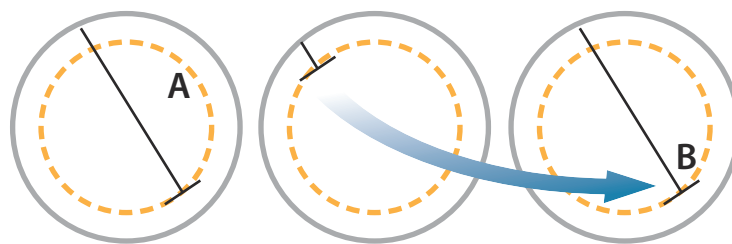
Relative motion

In relative motion your vessel remains in a fixed location on the Radar PPI, and all other objects move relative to your position.

You select the position of the fixed location as described in "Offsetting the PPI center" on page 61.

True motion

In true motion your vessel and all moving targets move across the Radar PPI as you travel. All stationary objects remain in a fixed position. When the vessel's symbol reaches 75% of the PPI radius (**A**), the radar image is redrawn with the vessel symbol re-positioned (**B**) 180° opposite the current heading bearing.

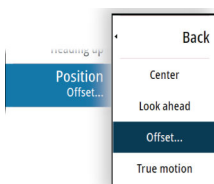


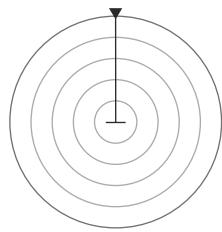
When true motion is selected, the true motion reset option is available from the menu. This allows for manually resetting the radar image and vessel symbol to its starting position.

→ **Note:** True motion is only available when the PPI is in either north up or course up orientation mode. To set to true motion in the MFD, select the Position option in the More menu and then select the True motion option.

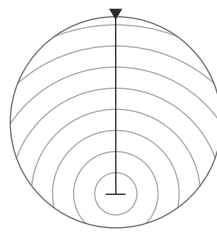
Offsetting the PPI center

You can set the antenna position origin to a different location on the radar PPI. The options described in the next sections are available.

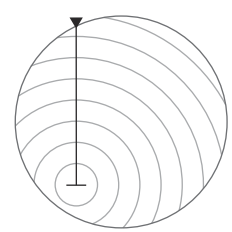




PPI center: Center



PPI center: Look Ahead



PPI Center: Offset

Center

The Center option resets the antenna position to the center of the PPI.

Look ahead

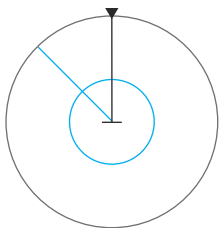
The Look ahead option is used to maximize the view ahead of the vessel. When selected the PPI center is placed at 70% of the radius of the PPI, 180° opposite the top of the display.

→ **Note:** Look ahead is only available for Heading Up radar orientation.

Offset

This option allows you to use the cursor for selecting the PPI center.

Move the cursor to the preferred offset position, and confirm your selection.



EBL/VRM markers

The electronic bearing line (EBL) and variable range marker (VRM) allows quick measurements of range and bearing to vessels and landmasses within radar range. Two different EBL/VRMs can be placed on the radar image.

The EBL/VRMs are by default positioned from the center of the vessel. It is, however, possible to offset the reference point to any selected position on the radar image.

When positioned, you can turn the EBL/VRM on/off by selecting the relevant markers on the data bar, or by deselecting the marker from the menu.

Defining an EBL/VRM marker

1. Ensure that the cursor is not active
2. Activate the menu, select **EBL/VRM**, then select **EBL/VRM 1** or **EBL/VRM 2**
 - The EBL/VRM is now positioned on the radar image
3. Select the adjustment option from the menu if you need to reposition the marker, then adjust the marker by dragging it into position on the radar image
4. Select the save option to save your settings

Placing EBL/VRM markers by using the cursor

1. Position the cursor on the radar image
2. Activate the menu
3. Select one of the EBL/VRM markers
 - The EBL line and the VRM circle are positioned according to the cursor position.

Offsetting an EBLVRM marker

1. Ensure that the cursor is not active.
2. Activate the menu and select EBL/VRM, then select the marker you wish to offset.
3. Select the set offset option.
4. Position the cursor on the radar panel to set the offset position.
5. Select the save option to save your settings.

You can reset the EBL/VRM center to vessel position from the menu.

Tracking targets

→ **Note:** This manual describes a variety of tracking options for different radar systems. The available tracking options in your system are dependent on your radar system's capabilities.

→ **Note:** Tracking targets requires a good heading source and a valid GPS position fix.

Any radar target within a preset range can be acquired and tracked. The system displays targets in the radar panel based on the settings you make in the menu and the vessels and tracked targets dialog.

You can set up tracking zones (max range 42 NM). Refer to "*Target tracking zones*" on page 63. The system will track targets that enter the zones, which meet the settings you make in the vessels and tracked targets dialog.

An alert is triggered if the number of tracked targets exceeds maximum system limitations and capacity. When the number of targets exceed limits or capacity, only the targets closest to own vessel will be displayed.

AutoTrack

AutoTrack tracks targets of interest or potentially dangerous targets automatically, with no interaction needed from the user.

Note: AutoTrack is available on compatible radars running software version 8.2 or above.

Note: Halo 20+ and Halo 24 dome radars will require a software update for AutoTrack feature to work.

Note: 3G, 4G, Halo 20 and Halo 3/4/6 radars do not have the AutoTrack feature.

Range & targeting capabilities

- Tracks targets up to 24 nautical miles away, while prioritizing the closer-range targets most relevant to your vessel and navigation.
- Monitors up to 50 targets simultaneously, so you benefit from a comprehensive view on surrounding movement.
- Automatically updates priority targets based on speed, bearing, and distance, ensuring the most critical information is always in front of you.

The system selects a target for AutoTrack based on several factors, such as:

- whether the target is dangerous
- its position in relation to your vessel
- how fast it is traveling
- whether it is approaching or diverging

Note: The region of interest for AutoTrack is related to the dangerous target criteria (see "*Dangerous targets*" on page 68). For best results, use smaller CPA and TCPA values near shore and use larger CPA and TCPA values when offshore.

Not all targets are tracked automatically when AutoTrack is enabled. For example, a target behind your vessel and moving away from it may not meet the criteria for automatic tracking. You are still able to select a target on screen manually for tracking if you want the system to track the target (see "*Watching targets*" on page 69).

Note: AutoTrack is an automatic radar target tracking feature. It is not an auto avoidance feature. Users must maintain a safe lookout and avoid obstacles and other vessels in a safe manner.

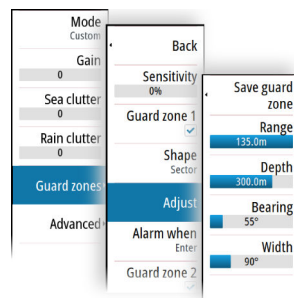
Target tracking zones

The target tracking zone function allows for automatic acquisition of radar targets when they enter a user defined zone.

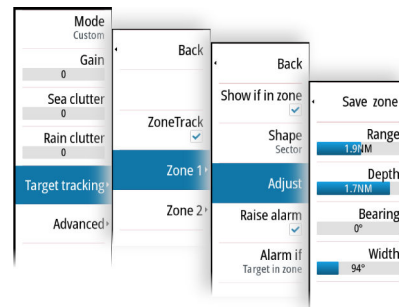
The guard zone function does not track targets automatically when they enter the guard zone. The function only raises an alarm specified for it when it enters the guard zone.

To specify which targets are displayed in the radar panel, use the vessels and tracked targets dialog to define dangerous targets, targets of interest and create target filters. Refer to "*Vessels and tracked targets*" on page 67.

The guard zone option or target tracking zone option depends on the radar source capability. Setting up the zones is similar.



Guard zones



Target tracking zones

Two zones can be defined, each with individual settings.

When a target enters a zone, it will automatically be considered as safe or dangerous based on the CPA/TCPA settings.

ZoneTrack

When selected, you can setup tracking zones or reactivate tracking zones which were already setup. Alarms can be received when the radar acquires a target inside a zone.

Unselect to disable all zones. The zones will be removed from the radar image. The radar stops acquiring targets inside the zones and no alarms will be sent.

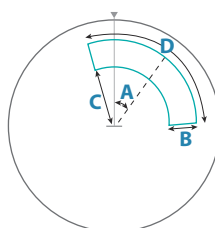
→ **Note:** The ZoneTrack target limit is 50 targets per zone. The target limit cannot be changed.

Setting a guard zone around your vessel

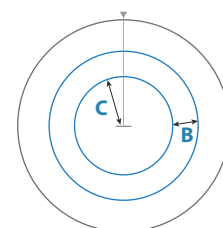
A guard zone is an area (either circular or a sector) that you can define on the radar image. When activated, an alarm alerts you when a radar target enters or exits the zone.

Defining a guard zone

1. Ensure that the cursor is not active
2. Activate the menu, select **Guard zones**, then select one of the guard zones
3. Select the shape for the zone
 - The adjustment options depend on the guard zone shape
4. Select **Adjust** to define the settings for the guard zone. The values can be set from the menu or by dragging on the radar panel.
 - **A:** Bearing, relative to the vessel heading
 - **B:** Depth
 - **C:** Range, relative to vessel center
 - **D:** Width
5. Select the save option to save your settings.



Shape: Sector



Shape: Circle

Alarm settings

An alarm is activated when a radar target breaches the guard zone limits. You can select if the alarm is activated when the target enters or exits the zone.

Sensitivity

The guard zone sensitivity can be adjusted to eliminate alarms for small targets.

MARPA targets

If the system includes a heading sensor, the MARPA function (Mini Automatic Radar Plotting Aid) can be used to track up to ten radar targets.










You can set alarms to notify you if a target gets too close. Refer to *"Radar settings"* on page 67.




MARPA tracking is an important tool for collision avoidance.

→ **Note:** MARPA requires heading data for both the radar and the unit.

MARPA target symbols

The system uses the target symbols shown below.

	Acquiring MARPA target. Typically it takes up to 10 full rotations of the scanner.
	MARPA target, not moving.
	Tracking MARPA target, not moving or at anchor. Tracked targets have a ring around them. They also show the target ID number.
	Tracking and safe MARPA target with extension lines. Shows the tracked target ring and the target ID number.
	Tracking MARPA moving target with trail when target history is enabled. Shows the tracked target ring and the target ID number.
	Tracking MARPA moving target with no course extension (short line indicating the direction where the target moves). Shows the tracked target ring and the target ID number.
	Dangerous MARPA target. A target is defined as dangerous when it enters the guard zone defined on the radar panel. The yellow color is shown when the radar palette is black/red or black/green. Shows the tracked target ring and the target ID number.
	Dangerous MARPA target. A target is defined as dangerous when it enters the guard zone defined on the radar panel. The purple color is shown when the radar palette is white/red. Shows the tracked target ring and the target ID number.
	Dangerous MARPA target. A target is defined as dangerous when it enters the guard zone defined on the radar panel. The red color is shown when the radar palette is black/yellow. Shows the tracked target ring and the target ID number.

	<p>Tracked associated MARPA target. Shows the tracked target ring and the target ID number. When the radar and the AIS signal acquire the same target for tracking, the system will display the target with one symbol. This reduces the number of AIS symbols and radar targets on the PPI. The association function also compensates for a possible failure in one of the two targets, e.g., if the radar tracked target is positioned behind an island, the system keeps tracking and visualizing the AIS target.</p> <p>→ Note: The tracked radar target continues to be analyzed by the system when the target association is active.</p>
	<p>When no signals have been received within a time limit a target will be defined as lost. The target symbol represents the last valid position of the target before the reception of data was lost.</p>
	<p>Selected MARPA target, activated by positioning the cursor on the target icon. The target returns to the default target symbol when the cursor is removed.</p>

Tracking MARPA targets

1. Position the cursor on the target on the radar image
2. Select **Acquire targets** from the menu
3. Repeat the process if you want to track more targets

After your targets are identified, it may take up to 10 radar sweeps to acquire and then track the target.

Cancelling MARPA target tracking

When targets are being tracked, the radar menu expands to include options for cancelling individual targets or to stop the tracking function.

Cancel tracking individual targets by selecting the target icon before activating the menu.

Viewing MARPA target information

If the pop-up is activated, you can select a MARPA target to display basic target information. Information for the 3 MARPA targets closest to the vessel is also displayed in the data bar.

When a target is selected, detailed information for the target can be displayed from the menu.

You can display information about all MARPA targets by using the Vessels tool option on the Home page.

MARPA alarm settings

You can define the following MARPA alarms:

- **MARPA target lost**
Controls whether an alarm is activated when a MARPA target is lost.
- **MARPA unavailable**
Controls whether an alarm is activated if you do not have the required inputs for MARPA to work (valid GPS position and heading sensor connected to the radar server).

Recording radar data

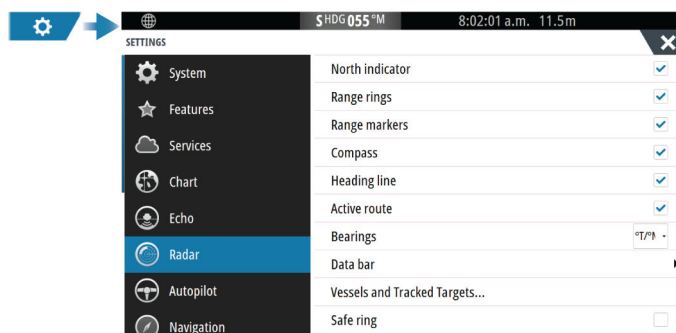
You can record radar data and save the file internally in the unit, or save it onto a storage device connected to the unit.

A recorded radar file can be used for documenting an event or an operational error. A logged radar file can also be used by the simulator.

→ **Note:** The record menu option is available if recording is turned on in the Advanced system settings.

If more than one radar is available, you can select which source you want to record.

Radar settings



Radar symbology

You can select which optional radar items that should be turned on/off collectively from the menu. Refer to the Radar panel illustration.

Bearings

Used for selecting whether the radar bearing should be measured in relation to True/ Magnetic North (°T/°M) or to your relative heading (°R).

Vessels and tracked targets

This dialog contains settings for both AIS and radar targets. AIS specific settings are only available if you have a capable AIS device connected to your system.

Use this option to specify:

- Dangerous targets
 - **Time to closest point of approach** - specify the time of approach in which a vessel is to be considered dangerous.
 - **Closest point of approach** - specify the closest point of approach in which a vessel is to be considered dangerous. This setting determines the size of the safe ring if safe ring is enabled, refer to "*Safe ring*" on page 67.
- Targets of interest - targets further away than the following distance will be hidden:
 - **Range of interest** - specify to show targets in all ranges (based on radar range) or targets within a specific distance of own vessel.
- Filtering - define which and how many AIS targets will be shown. If the amount of targets exceeds the set number, only the most interesting targets will be shown. For radars that support tracking targets, the following target filter settings will also apply to tracked targets.

Filter options are:

 - **Show** - specify to show all targets, dangerous targets, or no targets.
 - **Max AIS targets** - specify to show all AIS targets or specify a maximum number of AIS targets to be shown.
 - **Hide slower than** - specify to hide targets slower than a specific speed or all targets regardless of speed.
 - **Hide lost targets after** - specify to hide targets that are lost after a certain amount of time or do not hide any lost targets.

Safe ring

A safe ring can be added around your vessel to present the danger zone. The radius of the ring is the same as the closest point of approach as set in the Vessels and Tracked Targets dialog. Refer to "*Vessels and tracked targets*" on page 67.

Data bar

Turns on/off the radar data bar. Refer to the radar panel illustration.

The data bar can show up to 3 targets, arranged with the most dangerous targets on top. You can select to show MARPA targets on top and before any AIS targets, even if the AIS targets are closer to your vessel.

MARPA settings

History length

Trails can be used to visualize the previous positions of a tracked target.

The history length defines the time presentation of the trail.

Safe ring

A safe ring can be added around your vessel to present the danger zone. The radius of the ring is the same as the closest point of approach as set in the Dangerous Vessels dialog. Refer to *"Defining dangerous vessels"* on page 74.

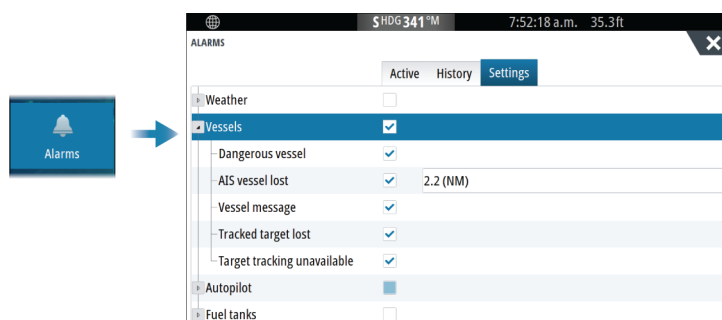
Installation

The Installation option is used for making radar installation settings. Installation settings must be made before using the radar. Installation setup settings are described in the separate Radar or the display unit's installation manuals.

Dangerous targets

Radar targets are defined as dangerous targets in the Vessels and tracked targets dialog (TCPA/CPA settings), refer to *"Vessels and tracked targets"* on page 67.

For the system to display dangerous target alert messages when dangerous targets are detected, the Dangerous vessel option must be enabled in the Vessels section of the Alarms settings dialog.



Dangerous target alert messages

When a vessel meets the dangerous target criteria set in the Vessels and tracked targets dialog (TCPA/CPA settings) and if the Dangerous target alert option in the Alarms settings dialog is enabled, a dangerous target alert message dialog is displayed. The following options are available in the message dialog:

- **Disable**, closes the message dialog and cancels the dangerous target alert for all vessels. You can re-enable the dangerous vessel alert in the Vessels section of the Alarms settings dialog.
- **Note:** When Disable is selected, the Dangerous target alert option in the Alarms settings dialog is turned off. When the Dangerous target alert option is turned off (disabled), dangerous target alert messages are not generated for either radar or AIS dangerous targets.
- **Ignore**, closes the message dialog and disables the alert for that vessel. The alert for that vessel will reappear if the status of that vessel changes, i.e. that vessel becomes safe and then dangerous again.
- **View**, closes the message dialog and opens the Radar panel with the dangerous vessel's pop-up activated. You can select the vessel's pop-up in the radar panel to see the vessel details.

Watching targets



Use this option to help you follow specific targets on the radar image.
Select a target, then select the Watch target option. The target becomes highlighted. Repeat the process to watch another target. Multiple targets can be watched.

Stop watching targets



You can stop watching targets which no longer need special attention.
To stop watching specific targets, select a watched target on the radar image, then the Stop watching option. The stop watching option is available in the menu while a watched target is selected.



Select the stop watching all option to stop watching all the watched targets. The stop watching all option is available when targets are being watched and while the cursor is cleared from the radar image.

9

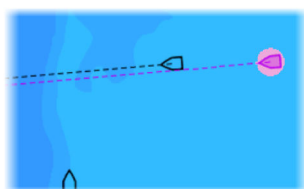
AIS

About AIS

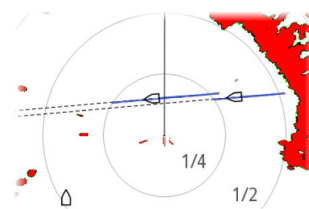
If a compatible AIS (Automatic Identification System) is connected to the system, AIS targets can be displayed and tracked. You can also see messages and position for DSC transmitting devices within range.

AIS targets can be displayed as overlay on chart and radar images.

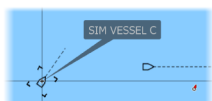
The AIS is an important tool for safe travelling and collision avoidance. You can set alarms to notify you if an AIS target gets too close or if the target is lost.



AIS vessels on a chart panel



AIS vessels on a radar panel



Selecting an AIS target

When you select an AIS icon, the symbol changes to selected target symbol. Only one target can be selected at a time.

→ **Note:** Pop-up information must be enabled to see the vessel's name. Refer to "Chart settings" on page 37.

Searching for AIS vessels

You can search for AIS targets by using the find option in the menu. If the cursor is active, the system searches for vessels around the cursor position. Without an active cursor, the system searches for vessels around your vessel's position.

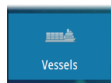
Displaying target information

The vessels dialog

The vessels dialog displays a list of all targets.

By default, the dialog lists targets, arranged by distance to own vessel. You can select to change the sort order, and to display only a selected target type.

The vessels dialog also lists received AIS messages.



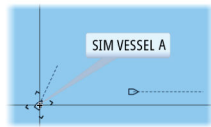
VESSELS					
Status - All Messages					
Name	Distance	Bearing	CPA	Type	Status
SIM VESSEL A	0.16 NM	164 m	0.97 °M	0:02:14	AIS safe
SIM VESSEL B	0.14 NM	70.2 m	276 °M	PAST	AIS safe
SIM VESSEL C	0.80 NM	0.55 NM	026 °M	PAST	AIS safe
SIM VESSEL D	1.26 NM	0.83 NM	057 °M	PAST	AIS safe
SIM VESSEL E	0.78 NM	0.46 NM	244 °M	0:03:10	AIS safe
Find Sort Name View All					

AIS vessel details

Detailed information about an AIS target is available from the AIS vessels details dialog.

To display the dialog:

- select the AIS pop-up
- select the info option in the menu



AIS VESSEL DETAILS	
SIM VESSEL A (MMSI: 366771124)	
Callsign: ABC1234 IMO: 123 AIS Class: A Type: Unknown Length (m): 12.2 Beam (m): 6.1	Status: Safe NavStatus: Under engine Draught (m): 1.0 Latitude: N 25°45.088' Longitude: W 80°07.152' Accuracy: High (10m) ROT (°/s): 0.0 SOG (kn): 15.00 COG (°M): 272 Heading (°M): 272 Destination: MIAMI ETA: 04/10/2008 12:00
Bearing (°M): 101 Distance (NM): 0.36 CPA (m): 55.8 TCPA (hrs): 0:00:48 Relative speed (kn): 26.91 Relative course (°M): 276	
Call	

AIS VESSEL	
SIM VESSEL A	
SOG	15.0 kn COG 271 °M
CPA	0.31 NM TCPA 0:00:12
RNG	0.32 NM BRG 9 °M
AIS VESSEL	
SIM VESSEL B	
SOG	20.0 kn COG 271 °M
CPA	- NM TCPA -
RNG	0.42 NM BRG 324 °M
AIS VESSEL	
SIM VESSEL E	
SOG	0.0 kn COG 006 °M
CPA	0.81 NM TCPA 0:00:09
RNG	0.81 NM BRG 269 °M

AIS information on radar panels

The radar data bar includes information about targets.

The targets are listed with the closest target on top, and are color coded to indicate target status.

Calling an AIS vessel

If the system includes a VHF radio supporting DSC (Digital Select Calling) calls over NMEA 2000® or NMEA 0183®, a DSC call can be initiated to other vessels from the unit.

The call option is available in the AIS vessel details dialog, and in the vessel status dialog. Refer to *"Displaying target information"* on page 70.

AIS SART

When an AIS SART (Search and Rescue Transponder) is activated, it starts transmitting its position and identification data. This data is received by your AIS device.

If your AIS receiver is not compliant with AIS SART, it interprets the received AIS SART data as a signal from a standard AIS transmitter. An icon is positioned on the chart, but this icon is an AIS vessel icon.

If your AIS receiver is compliant with AIS SART, the following takes place when AIS SART data is received:

- An AIS SART icon is located on the chart in the position received from the AIS SART. The AIS SART icon is red when in 'Active' state. It is green when in 'Test' state.
- An alarm message is displayed.

If you have enabled the siren, the alarm message is followed by an audible alarm.

→ **Note:** The icon is green if the received AIS SART data is a test and not an active message.

AIS SART alarm message

When data is received from an AIS SART, an alarm message is displayed. This message includes the AIS SART's unique MMSI number, and its position, distance, and bearing from your vessel.

Man Overboard	
AIS SART Activated	
MMSI:	512035499
Latitude:	S 36.53685°
Longitude:	E 174.86571°
Bearing (°M):	191
Distance (NM):	2.79
Ignore Save waypoint Activate MOB	

You have the following options:

- Ignore the alarm
 - The alarm is muted and the message closed. The alarm does not reappear.

→ **Note:** If you ignore the alarm, the AIS SART icon remains visible on your chart, and the AIS SART remains in the vessels list.

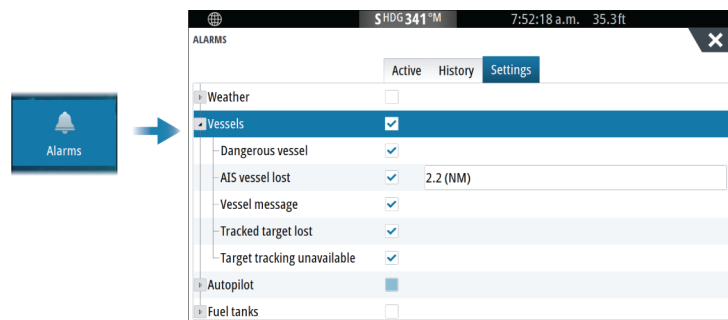
- Save the waypoint

- The waypoint is saved to your waypoint list. This waypoint name is prefixed with MOB AIS SART - followed by the unique MMSI number of the SART. For example, MOB AIS SART - 12345678.
 - Activate the MOB function
 - The display switches to a zoomed chart panel, centered on the AIS SART position.
 - The system creates an active route to the AIS SART position.
- **Note:** If the MOB function is already active, this will be terminated and replaced by the new route towards the AIS SART position.
- **Note:** If the AIS stops receiving the AIS SART message, the AIS SART remains in the vessels list for 10 minutes after it receives the last signal.






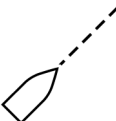
Vessel alarms





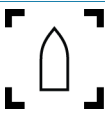








You can define several alarms to alert you if a target shows up within predefined range limits, or if a previously identified target is lost.

- **Note:** For the system to display dangerous target alert messages when dangerous targets are detected, the Dangerous vessel option must be enabled.

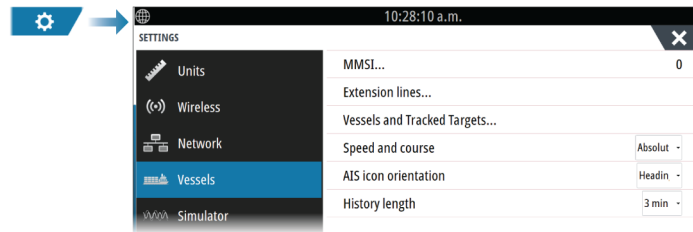


AIS target symbols and icons

Symbol	Description
	AIS target, stationary or moving if no extension lines enabled
	AIS dangerous target (yellow). The yellow color is shown when the radar palette is black/red or black/green.
	AIS dangerous target (purple). The purple color is shown when the radar palette is white/red.
	AIS dangerous target (red). The red color is shown when the radar palette is black/yellow.
	AIS scaled target. The symbol is scaled according to physical size of the vessel as obtained from AIS info, if available.
	AIS moving target with predicted course extension (dashed line). Will show as a straight line if going straight or if no rate-of-turn AIS data is available.

Symbol	Description
	AIS moving target with trail.
	AIS moving target with predicted turn extension (based on rate-of-turn AIS data.)
	AIS moving target with predicted turn extension (based on rate-of-turn AIS data) and turn trail.
	Associated target. When the radar and the AIS signal acquire the same target, the system will display the target with one symbol. This reduces the number of AIS symbols and radar targets on the PPI. The association function also compensates for a possible failure in one of the two targets, e.g., if the radar target is positioned behind an island, the system keeps tracking and visualizing the AIS target. → Note: The radar target continues to be analyzed by the system when the target association is active.
	Selected AIS target, indicated with square corners around the target symbol.
	Lost AIS target, indicated with a line on the target symbol. The symbol is located at the last received position from the target
	AIS AtoN (Aids To Navigation) target symbol.
	AIS AtoN (Aids To Navigation) target symbol.
	AIS AtoN (Aids To Navigation) dangerous target. The yellow color is shown when the radar palette is black/red or black/green.
	AIS AtoN (Aids To Navigation) dangerous target. The purple color is shown when the radar palette is white/red.
	AIS AtoN (Aids To Navigation) dangerous target. The red color is shown when the radar palette is black/yellow.
	AIS SART 'active' icons are red.
	AIS SART 'tests' icons are green.

Vessel settings

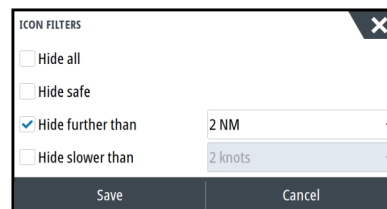


MMSI

Used for entering your own MMSI (Maritime Mobile Service Identity) number into the system. You need to have this number entered to receive addressed messages from AIS and DSC vessels. You also need to have your MMSI number entered to avoid seeing your own vessel as an AIS target.

Icon filters

By default, all targets are shown on the panel if an AIS device is connected to the system. You can select not to show any targets, or to filter the icons based on security settings, distance, and vessel speed.



Extension lines

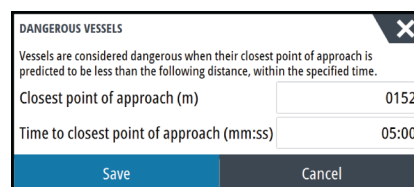
Defines the length of course over ground and heading extension lines for your own vessel and for other vessels.

The length of the extension lines is set to indicate the distance the vessel will move in the selected time period.

Your own vessel heading information is read from the active heading sensor, and COG information is received from the active GPS. For other vessels COG data is included in the message received from the AIS system.

Defining dangerous vessels

You can use the CPA (Closest point of approach) and TCPA (Time to closest point of approach) values to define when a target should be considered as dangerous. When a target comes within the distance for CPA or within the time limit for TCPA, the symbol changes to the dangerous target symbol.



Speed and course

The extension line can be used to indicate speed and course for targets, either as absolute (true) motion or relative to your vessel.

AIS icon orientation

Sets the orientation of the AIS icon, either based on heading or COG information.

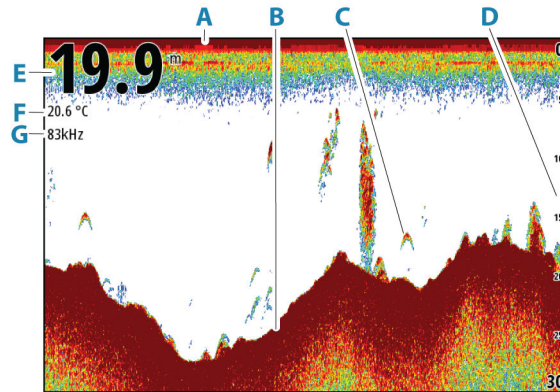
10

Echosounder

Requirements

Transducers must be connected to a sonar hub or another unit that is sharing sonar data.

The image



- A** Surface
- B** Bottom
- C** Fish arches
- D** Range scale
- E** Depth
- F** Temperature
- G** Frequency

Multiple sources

You can specify the source for the image in the active panel. You can display different sources simultaneously using a multi-panel page configuration.

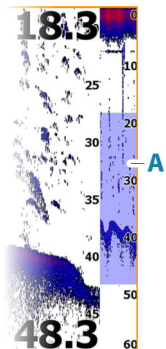
For more information on how to select the source for a panel, refer to "Source" on page 77.

Zooming the image

You can zoom the image.

The zoom level is shown on the image. If the cursor is active, the system zooms in where the cursor is positioned.

kHz / 4x



Zoom bar

The zoom bar (**A**) is displayed when you zoom the image.

→ **Note:** The zoom bar is displayed if the zoom bar menu option is selected.

Drag the zoom bar up or down to view different parts of the water column.

Using the cursor on the panel

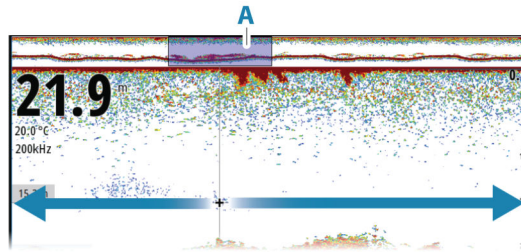
By default, the cursor is not shown on the image.

When you position the cursor on the panel, the image pauses and the cursor information window is activated. The depth and range of the cursor is shown at the cursor position.

Viewing history

Whenever the cursor is shown on the panel, the history bar (**A**) is shown at the top of the panel. The history bar shows the image you are currently viewing in relation to the total image history stored.

You can view history by panning the image.
To resume normal scrolling, clear the cursor.



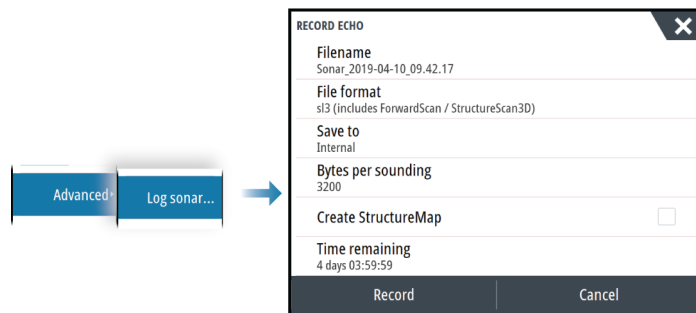
Recording log data

Start recording log data

You can start recording log data and save the file internally in the unit, or save it onto a storage device connected to the unit.

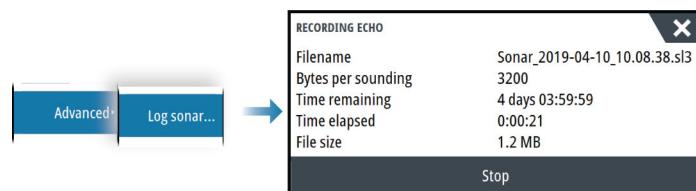
When the data is being recorded, there is a flashing red symbol in the top left corner and a message appears periodically at the bottom of the screen.

Specify recording settings in the recording dialog.



Stop recording log data

Use the stop logging option to stop recording log data.



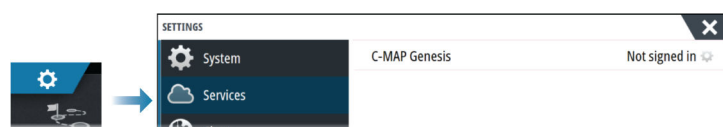
Viewing recorded data

Both internally and externally stored sounder records can be reviewed when the view sonar log option is selected in the echo settings dialog. Refer to *"Echosounder settings"* on page 83.

Upload sonar logs to C-MAP Genesis

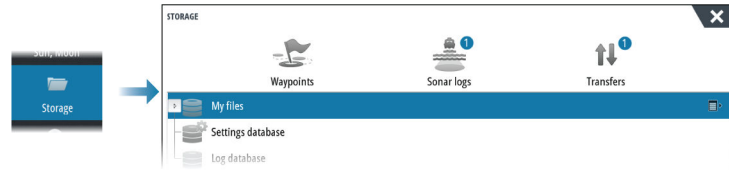
To upload sonar logs to C-MAP Genesis do one of the following:

- Use the services option. Follow the prompts to sign in and transfer the log files to C-MAP Genesis.



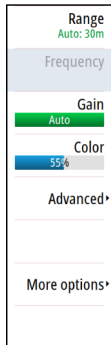
- Use the Storage dialog. Select the sonar logs icon and the logs you want to transfer. If you are already signed in to C-MAP Genesis the files are transferred. If you are not signed in, select the transfers icon and follow the prompts to sign in and transfer the log files to C-

MAP Genesis. You can sign in and transfer files at a later time when the unit is connected to the internet.



Customizing the image

Use the menu to customize the image. When the cursor is active, some options in the menu are replaced with cursor mode features. Select the clear cursor option to return to the normal menu.



Range

The range setting determines the water depth that is visible on the screen.

→ **Note:** Setting a deep range in shallow water may cause the system to lose track of the depth.

Frequency

The unit supports several transducer frequencies. Available frequencies depend on the transducer model that is configured for use.

- A low frequency, for example 50 kHz, will go deep. It generates a wide cone but is more sensitive to noise. It is good for bottom discrimination and wide area search.
- A high frequency, for example 200 kHz, offers higher discrimination and is less sensitive to noise. It is good for separating targets and for higher speed vessels.

Gain

The gain controls the sensitivity. The more you increase the gain, the more details are shown on the image. However, a higher gain setting may introduce more background clutter. If the gain is set too low, weak echoes might not be displayed.

A manual and an automatic gain mode are available. By default, the gain is set to Auto.

Color

Strong and weak echo signals have different colors to indicate the different signal strengths. The colors used depend on which palette you select.

The more you increase the color setting, the more echoes are displayed in the color at the strong return end of the scale.

Source

→ **Note:** Available only if multiple sources with the same capability are available.

Used to specify the source for the image in the active panel.

You can display different sources simultaneously, using a multi-panel page configuration. Menu options for each panel are independent.

→ **Note:** Using transducers at the same frequency can cause interference.

For source setup information, refer to the NSO evo3S MPU Installation Manual.

Measuring distance

The cursor can be used to measure the distance between the positions of two observations on the image.

1. Position the cursor on the point from where you want to measure the distance
2. Select the measure menu option

→ **Note:** The measure option is not available unless the cursor is placed on the image.

3. Position the cursor on the second measuring point

- A line is drawn between the measuring points, and the distance listed in the Cursor Information window

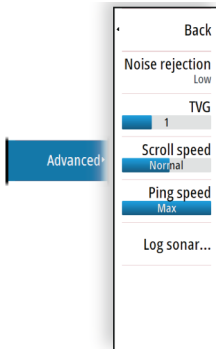
4. Continue selecting new measuring points if required

Use menu options to re-position the start point and the end point as long as the measuring function is active.

Select the finish measuring menu option to resume normal image scrolling.

Advanced options

The Advanced menu option is only available when the cursor is not active.



Noise rejection

Filters out signal interference and reduces on-screen clutter.

TVG

Wave action and boat wakes can cause onscreen clutter near the surface. The TVG (Time Variable Gain) option reduces surface clutter by decreasing the sensitivity of the receiver near the surface.

Scroll speed

You can select the scrolling speed of the image on the screen. A high scroll speed updates the image quicker, while a low scroll speed presents a longer history.

→ **Note:** In certain conditions it may be necessary to adjust the scroll speed to get a more useful image. Such as adjusting the image to a faster speed when vertically fishing without moving.

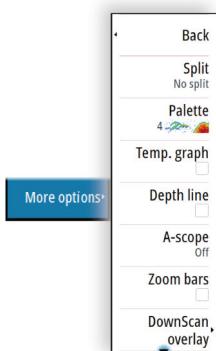
Ping Speed

Ping speed controls the rate the transducer transmits the signal into the water. By default, the ping speed is set to max. It may be necessary to adjust the ping speed to limit interference.

Log sonar

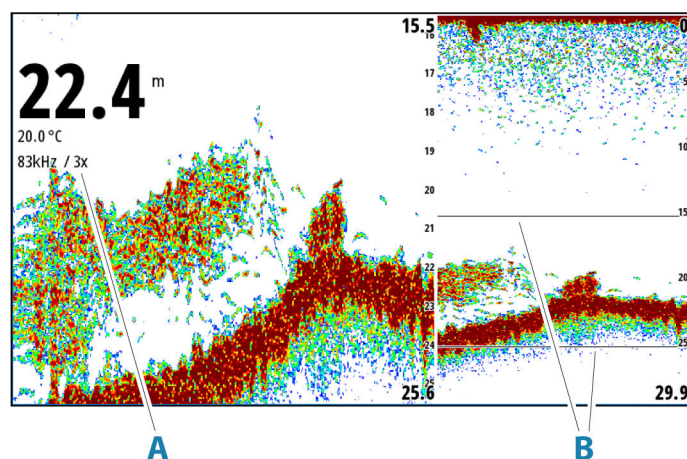
Select to start and stop recording of echosounder log data. For more information, refer to "Recording log data" on page 76.

More options



Split screens

Zoom



A Zoom level

B Zoom bars

The Zoom mode presents a magnified view of the sounder image on the left side of the panel.

By default, the zoom level is set to 2x. You can select up to 8x zoom.

The range zoom bars on the right side of the display shows the range that is magnified. If you increase the zooming factor the range is reduced. You see this as reduced distance between the zoom bars.

Move the zoom bars up/down on the image to view different depths of the water column.

Bottom lock

The bottom lock mode is useful when you want to view targets close to the bottom. In this mode, the left side of the panel shows an image where the bottom is flattened. The range scale is changed to measure from the seabed (0) and upwards. The bottom and the zero line are always shown on the left image, independent of the range scale. The scaling factor for the image on the left side of the panel is adjusted as described for the Zoom option.

Palettes

Used for selecting the image's color palette.

Temperature graph

The temperature graph is used to illustrate changes in water temperature.

When toggled on, a colored line and temperature digits are shown on the image.

Depth line

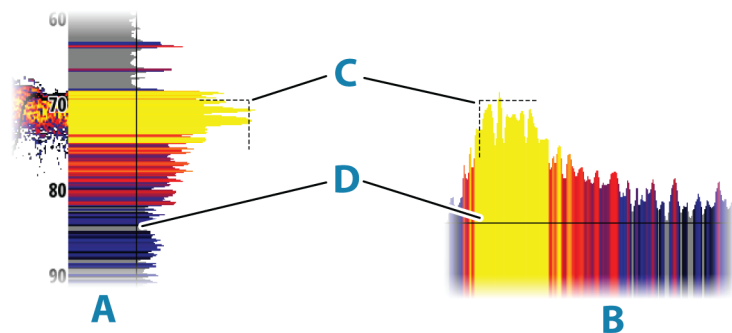
When toggled on, a line is shown on the bottom surface. The depth line makes it easier to distinguish the bottom from fish and structures.

Amplitude scope

The amplitude scope is a display of an echo sounding on the panel. The strength of the actual echoes are indicated by both width and color intensity.

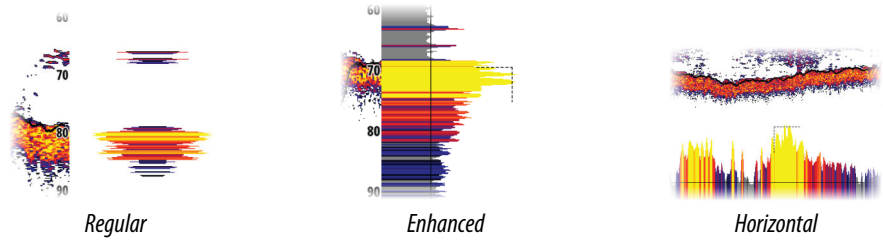
Enhanced and horizontal amplitude scope indicators

The enhanced and horizontal amplitude scope show 2 indicators:



- A** Enhanced amplitude scope image
- B** Horizontal amplitude scope image
- C** Cross indicator - indicates where in the echo sounding the bottom is located.
- D** Threshold line - indicator of the current gain. It tells you the amplitude of the return echo displayed on the panel. The gain setting helps to distinguish return echoes between echo targets and noise.

Amplitude scope options



Off

Removes the amplitude scope from the panel.

Regular

Displays the amplitude scope vertically on the side of the panel. There are no customizable options to the appearance of the regular amplitude scope display.

If the cursor is placed on the panel, the amplitude scope continues to display the newest echo sounding as it appears on the panel.

Enhanced

Displays the amplitude scope vertically on the side of the panel. Select the appearance menu option to change the enhanced amplitude scope display.

If the cursor is placed on the panel, the amplitude scope displays the echo sounding at the cursor.

Horizontal

Displays the amplitude scope horizontally at the bottom of the panel. Select the appearance menu option to change the horizontal amplitude scope display.

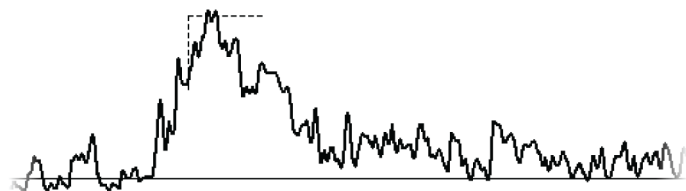
If the cursor is placed on the panel, the amplitude scope displays the echo sounding at the cursor.

Appearance

The appearance menu option is available when the amplitude scope is set to enhanced or horizontal.

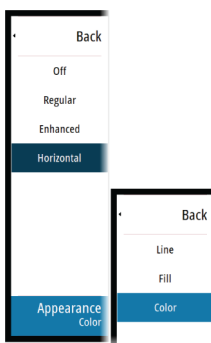
Line

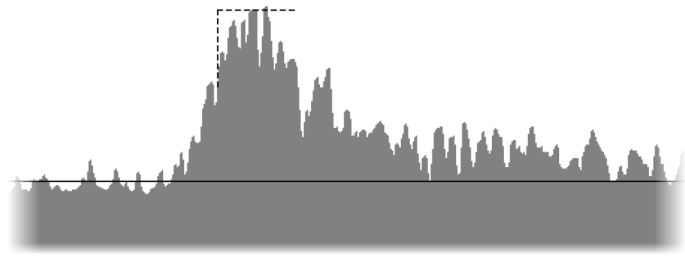
Displays the amplitudes as a single line.



Fill

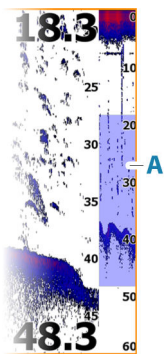
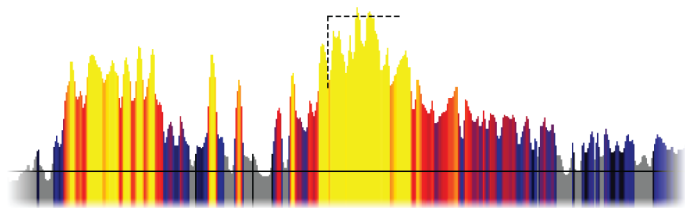
Illustrates the amplitudes with a gray fill color.





Color

Displays each amplitude value with the same color as in the panel. For amplitudes close to or below the gain threshold, the color is gray. The gray amplitudes indicate no echo target returns. The gray amplitudes replace the background color that is shown on the panel which also indicates no echo targets.



Zoom bar

The zoom bar (A) is displayed when you zoom the image.

→ **Note:** The zoom bar is displayed if the zoom bar menu option is selected.

Drag the zoom bar up or down to view different parts of the water column.

Overlay DownScan

When a DownScan capable transducer is connected to your system, you can overlay DownScan images on the regular Echosounder image.

When overlay DownScan is activated, the Echosounder panel menu expands to include basic DownScan options.

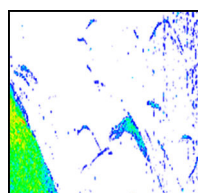
Pause

Pauses the image, allowing you to examine the image in detail.

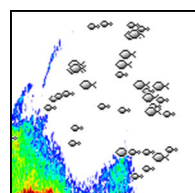
The pause function stops the echosounder from pinging. The system is not collecting data when paused in this manner.

Fish ID

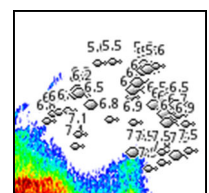
You can select how you want the fish targets to appear on the screen. You can also select if you want to be notified by a beep when a fish ID appears on the panel.



Traditional fish arches



Fish symbols



Fish symbols and depth indication

→ **Note:** Not all fish symbols are actual fish.

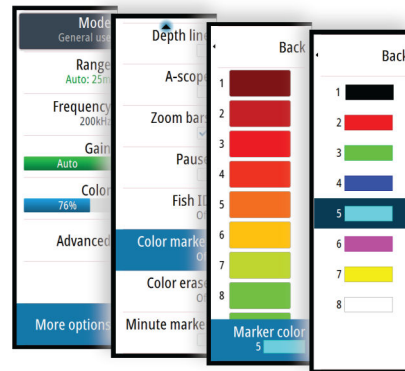
Color marker

This option allows you to change certain colors on the image.

→ **Note:** Only the colors above the sea floor are changed in the image.

Changing colors

→ **Note:** Use carefully, some color changes can hide obstructions and other objects.



1. Select the color marker menu option
2. Select one or more colors you want to change
3. Select the marker color menu option to display replacement colors
4. Select the replacement color
5. Select the back menu option to save your changes.

When color changes are applied, the color marker menu option changes from off to showing a color bar.



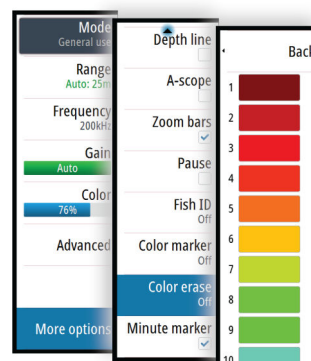
If the palette is changed, the color changes are applied to it. However, if white is selected for a dark background palette, then changing to a palette with a light background will automatically turn the replacement color to black. If a dark color is selected on a light background image, it will change to white if the palette is changed to a dark color background.

Removing color changes

To remove color changes, select the color marker menu option and then de-select the color. Remove all color changes to turn the color marker feature off.

Color erase

Erases specific colors on the image so the palette background color is shown in their place. This effectively hides the selected colors on the image.



→ **Note:** Use carefully, some color changes can hide obstructions and other objects.

1. Select the color erase menu option
2. Select one or more colors you want to erase. The color selected will change to white in the menu. The color selected will be removed from the image and the palette background color shown instead.
3. Select the back menu option to save your changes.

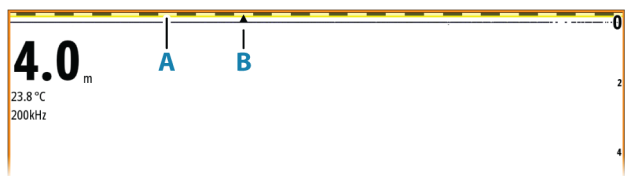
When color erase is applied, the color erase menu option changes from off to showing a color bar.



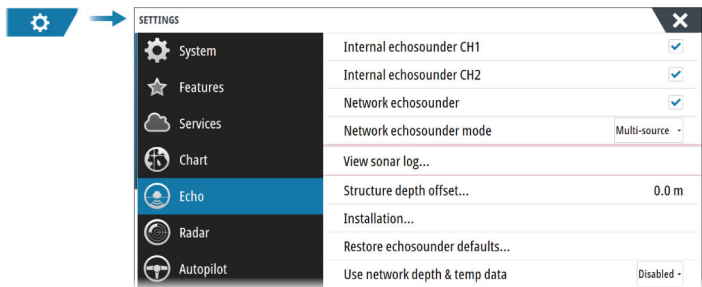
Remove all color changes to turn the color erase feature off.

Minute marker

Determines if the minute marker line (A) is shown on the image. Each black and each white stripe in the line represents 1 minute. If there is a discontinuity in the signal, this is indicated with a triangle (B).



Echosounder settings



Network Echosounder

Select to share transducers from this unit with other units connected on the Ethernet network. In addition, the setting must be selected in order to see other enabled sonar devices on the network.

When unselected, transducers connected to this unit cannot be shared with other units connected on the network, nor can it see other sources on the network that have this feature enabled.

For more information about how to setup the echosounder, refer to the separate Installation manual.

Network echosounder mode

The network echosounder mode setting selects whether only one or multiple echosounder sources can be selected at the same time.

- **Note:** Single source is automatically selected if there are older legacy echosounders on the network. You cannot change this setting if older legacy echosounders are on the network. Multi-source mode should be selected if no legacy echosounder is connected to the network.
- **Note:** When changing the mode to multi-source you must wait 30 seconds and then power down all sources. Wait 1 minute, then restart all connected sources.

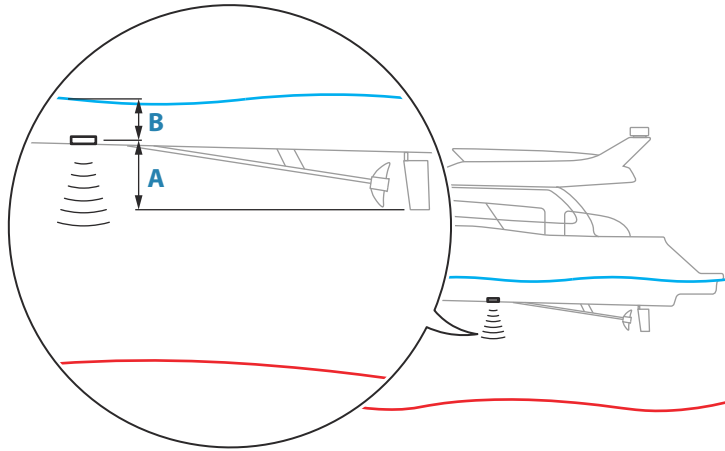
View sonar log

Used to view recordings. The log file is displayed as a paused image, and you control the scrolling and display from the menu.

You can use the cursor on the image, measure distance, and set view options as on a live image. If more than one channel was recorded in the selected log file, you can select which channel to display.

Structure depth offset

All transducers measure water depth from the transducer to the bottom. As a result, water depth readings do not account for the distance from the transducer to the lowest point of the boat in the water or from the transducer to the water surface.



- To show the depth from the lowest point of the vessel to the bottom, set the offset equal to the vertical distance between the transducer and the lowest part of the vessel, **A** (negative value).
- To show the depth from the water surface to the bottom, set the offset equal to the vertical distance between the transducer and the water surface, **B** (positive value)
- For depth below transducer, set the offset to 0.

Installation

Used for installation and setup. See the separate Installation manual.

Restore echosounder defaults

Restore echosounder settings to the factory supplied defaults.

ForwardScan installation

Available when a ForwardScan transducer is connected.

For setup information, refer to "*ForwardScan installation settings*" on page 102.

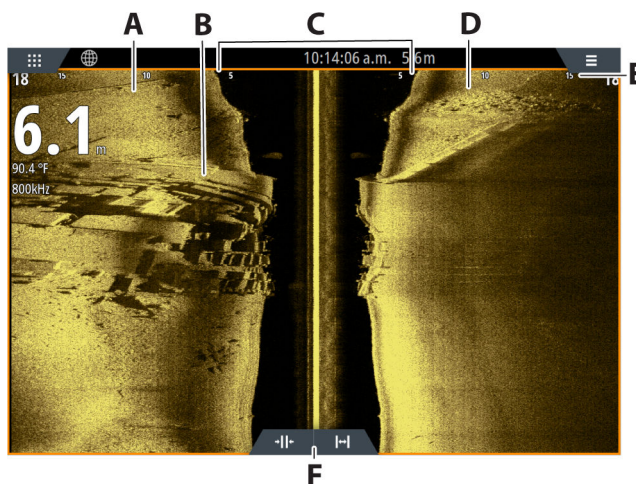
11

SideScan

About SideScan

SideScan provides a wide coverage in high detail of the seabed to the sides of your boat. The SideScan panel is available when a SideScan capable transducer is connected to the system.

The SideScan panel



- A** Left-side bottom
- B** Structure on bottom
- C** Center water column
- D** Right-side bottom
- E** Range scale
- F** Range (zoom) buttons

Zooming the image

A change in the range causes a zoom in or out of the image.

The range represents the distance out to the left and right of the center.

To change the range:

- Press the +/- keys.
- Select the range buttons.
- Use the range menu setting.

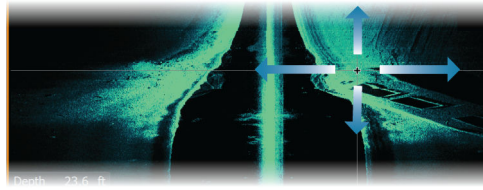
Using the cursor on the panel

When you position the cursor on the panel, the image pauses and the cursor information window is activated. The left/right distance from the vessel to the cursor are shown at the cursor position.

Viewing history

In a SideScan view, pan the image to see sides and history by maneuvering the image left, right, and up.

To resume normal SideScan scrolling, select the clear cursor option.

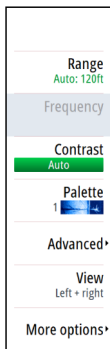


Recording SideScan data

Displays the record log dialog. SideScan data can be recorded by selecting the correct file format (xtf) in the record dialog. For more information, refer to *"Recording log data"* on page 76.

Setting up the image

Use the SideScan menu to set up the image. When the cursor is active, some options in the menu are replaced with cursor mode features. Select the clear cursor option to return to the normal menu.



Source

→ **Note:** Available only if multiple sources with the same capability are available.

Used to specify the source for the image in the active panel.

You can display different sources simultaneously, using a multi-panel page configuration. Menu options for each panel are independent.

→ **Note:** Using transducers at the same frequency can cause interference.

For source setup information, refer to the NSO evo3S MPU Installation Manual.

Range

The range setting determines the distance out to the left and right of the center.

Preset range levels

Select a preset range level manually from the menu.

Auto range

In auto range, the system automatically displays the whole range from the water surface to the bottom.

Auto is the preferred setting for fish finding.

Select the range option and then the auto option in the menu.

Frequency

Higher frequencies provide the sharpest image without sacrificing range, while lower frequencies can be used in deeper waters, or for expanded range capabilities.

SideScan frequency options depend on the type of connected SideScan transducer:

- 455 kHz and 800 kHz, or
- CHIRP: 455 kHz and 1075 kHz (requires an Active Imaging™ HD transducer connected to your display unit through an S3100 sonar module).

→ **Note:** If your SideScan transducer supports just one frequency, the **Frequency** option won't show in the SideScan panel.

Contrast

Determines the brightness ratio between light and dark areas of the screen.

→ **Note:** We recommend you use the auto contrast option.

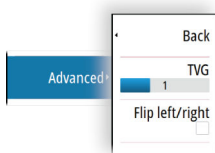
Palettes

Use for selecting the image's color palette.

View

Specifies if the SideScan page displays the left side of the image only, right side only, or left and right side at the same time.

Advanced options



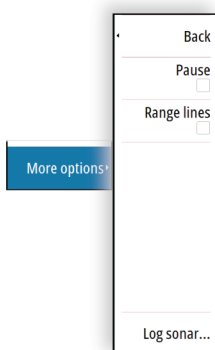
TVG

Wave action and boat wakes can cause onscreen clutter near the surface. The TVG (Time Variable Gain) option reduces surface clutter by decreasing the sensitivity of the receiver near the surface.

Flip left/right

If required, flips the left/right side of the image to match the direction of the transducer installation.

More options



Pause

Pauses the image, allowing you to examine the image in detail.

The pause function stops the echosounder from pinging. The system is not collecting data when paused in this manner.

FishReveal

Select FishReveal to display fish arches in the image.

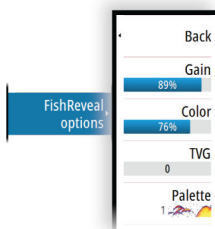
When FishReveal is enabled, the menu expands to include FishReveal options.

Gain

Controls the sensitivity of the FishReveal data on the DownScan image. Increasing gain shows more detail on the screen. Decreasing gain displays less. Too much detail clutters the screen. If the gain is set too low, weak fish arch data might not be displayed.

Color

Adjusts the colors of the fish arch data to help differentiate them from other targets. Adjusting the color can help separate fish and important structures on or near the bottom from the actual bottom.



TVG

Wave action and boat wakes can cause onscreen clutter near the surface. The TVG (Time Variable Gain) option reduces surface clutter by decreasing the sensitivity of the receiver near the surface.

Palette

Select between several display palettes optimized for a variety of fishing conditions.

→ **Note:** Palette choice is often a user preference, and may vary depending on the fishing conditions. It is best to select a palette that provides good contrast between the image details and FishReveal arches.

Range Lines

Range lines can be added to the image to make it easier to estimate distance.

Recording SideScan data

Displays the record log dialog. SideScan data can be recorded by selecting the correct file format (xtf) in the record dialog. For more information, refer to "Recording log data" on page 76.

Echosounder settings

Use the echosounder settings dialog to make settings to your echosounder system. Refer to *"Echosounder settings"* on page 83.

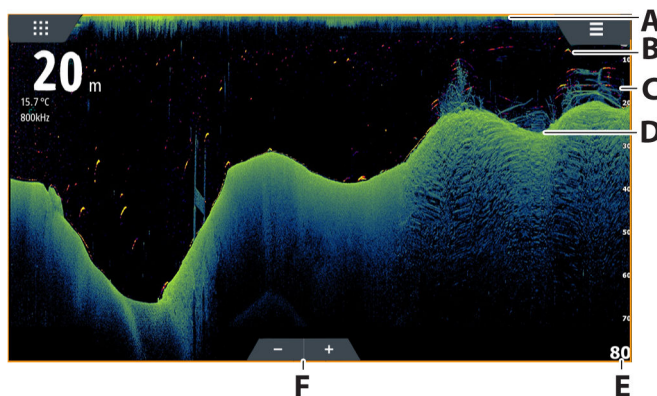
12

DownScan

About DownScan

DownScan provides detailed images of structure and fish directly below your boat. The DownScan panel is available when a DownScan capable transducer is connected to the system.

The DownScan panel



- A** Surface
- B** Fish arch
- C** Under water brush pile
- D** Bottom
- E** Depth scale
- F** Depth range (zoom) buttons

Zooming the image

You can zoom the image.

The zoom level is shown on the image. If the cursor is active, the system zooms in where the cursor is positioned.

kHz / 4x

Using the cursor on the panel

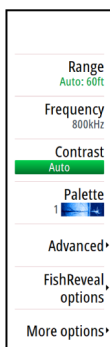
When you position the cursor on the panel, the image pauses and the cursor information window is activated. The depth of the cursor is shown at the cursor position.

Viewing DownScan history

You can pan the image history by dragging the image to the left and right. To resume normal DownScan scrolling, clear the cursor from the image.

Recording DownScan data

Displays the record log dialog. DownScan data can be recorded by selecting the correct file format (xtf) in the record dialog. For more information, refer to "Recording log data" on page 76.



Setting up the DownScan image

Use the DownScan menu to set up the image. When the cursor is active, some options in the menu are replaced with cursor mode features. Select the clear cursor menu option to return to the normal menu.

Source

→ **Note:** Available only if multiple sources with the same capability are available.

Used to specify the source for the image in the active panel.

You can display different sources simultaneously, using a multi-panel page configuration. Menu options for each panel are independent.

→ **Note:** Using transducers at the same frequency can cause interference.

For source setup information, refer to the NSO evo3S MPU Installation Manual.

Range

The range setting determines the water depth that is visible on the screen.

→ **Note:** Setting a deep range in shallow water may cause the system to lose track of the depth.

Preset range levels

Select a preset range level manually from the menu.

Auto range

In auto range, the system automatically displays the whole range from the water surface to the bottom.

Auto is the preferred setting for fish finding.

Select the range option and then the auto option in the menu.

Frequency

Higher frequencies provide the sharpest image without sacrificing range, while lower frequencies can be used in deeper waters, or for expanded range capabilities.

DownScan frequency options depend on the type of connected DownScan transducer:

- 455 kHz and 800 kHz, or
- CHIRP: 700 kHz and 1200 kHz (requires an Active Imaging™ HD transducer connected to your display unit through an S3100 sonar module).

→ **Note:** If your DownScan transducer supports just one frequency, the **Frequency** option won't show in the DownScan panel.

Contrast

Determines the brightness ratio between light and dark areas of the screen.

→ **Note:** We recommend you use the auto contrast option.

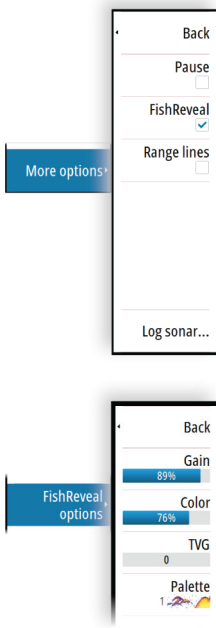
Palettes

Use for selecting the image's color palette.

Advanced options

TVG

Wave action and boat wakes can cause onscreen clutter near the surface. The TVG (Time Variable Gain) option reduces surface clutter by decreasing the sensitivity of the receiver near the surface.



More options

Pause

Pauses the image, allowing you to examine the image in detail.

The pause function stops the echosounder from pinging. The system is not collecting data when paused in this manner.

FishReveal

Select FishReveal to display fish arches in the image.

When FishReveal is enabled, the menu expands to include FishReveal options.

Gain

Controls the sensitivity of the FishReveal data on the DownScan image. Increasing gain shows more detail on the screen. Decreasing gain displays less. Too much detail clutters the screen. If the gain is set too low, weak fish arch data might not be displayed.

Color

Adjusts the colors of the fish arch data to help differentiate them from other targets.

Adjusting the color can help separate fish and important structures on or near the bottom from the actual bottom.

TVG

Wave action and boat wakes can cause onscreen clutter near the surface. The TVG (Time Variable Gain) option reduces surface clutter by decreasing the sensitivity of the receiver near the surface.

Palette

Select between several display palettes optimized for a variety of fishing conditions.

→ **Note:** Palette choice is often a user preference, and may vary depending on the fishing conditions. It is best to select a palette that provides good contrast between the image details and FishReveal arches.

Range lines

Range lines can be added to the image to make it easier to estimate depth.

Recording DownScan data

Displays the record log dialog. DownScan data can be recorded by selecting the correct file format (xtf) in the record dialog. For more information, refer to *"Recording log data"* on page 76.

Echosounder settings

Use the echosounder settings dialog to make settings to your echosounder system. Refer to *"Echosounder settings"* on page 83.

13

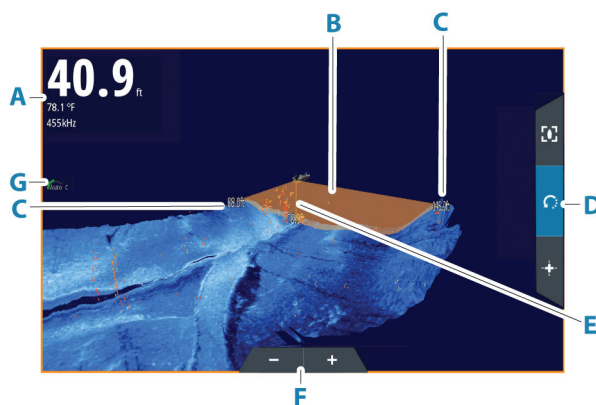
3D Sonar

About 3D Sonar

3D Sonar is a multi-beam sonar technology that allows anglers to see fish, underwater structures and bottom contours in customizable, three-dimensional views.

The 3D panel

In 3D view, the sea floor image is built up in real-time directly under the vessel as the boat moves. If you are not moving the image will remain stagnant. You can also see other underwater objects and clusters of fish. The 3D view shows both the left and right channels of data.



- A** Depth, temperature, and frequency
- B** Transducer beam
- C** Range
- D** 3D panel buttons
- E** Depth indication line
- F** Zoom panel buttons
- G** Contrast

Zooming the image

You can zoom the image.

The zoom level is shown on the image. If the cursor is active, the system zooms in where the cursor is positioned.

Using the cursor on a 3D image

By default, the cursor is not shown on the image.

On a 3D image, select the Cursor Enable panel button to use the cursor.

When the cursor is positioned on an image, the cursor information window and the history bar are activated.

The cursor information window shows available data at the cursor position, including the distance and range from the vessel to the cursor position.

The history bar is used to pan back in the stored data. The highlighted part of the History bar shows the image you are currently viewing in relation to the total image history stored. Refer to "Viewing image history" on page 94.

→ **Note:** The history bar can be turned off. Refer to "Clear live history" on page 95.

kHz / 4x





Depth 42.00 ft
Temp 32.0 °F
N 30°25.627'
W 81°14.483'
519 ft, 277 °M

Using the cursor on a 3D image

By default, the cursor is not shown on the image.

On a 3D image, select the Cursor Enable panel button to use the cursor.

When the cursor is positioned on an image, the cursor information window and the history bar are activated.

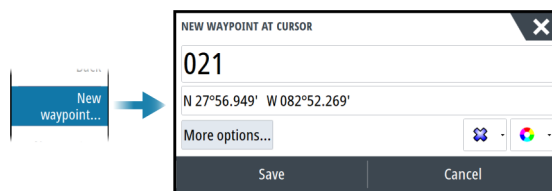
The cursor information window shows available data at the cursor position, including the distance and range from the vessel to the cursor position.

The history bar is used to pan back in the stored data. The highlighted part of the History bar shows the image you are currently viewing in relation to the total image history stored. Refer to *"Viewing image history"* on page 94.

→ **Note:** The history bar can be turned off. Refer to *"Clear live history"* on page 95.

Saving waypoints

To save a waypoint, position the cursor on the panel and then select the new waypoint menu option.



If the cursor is positioned on a 3D image, no depth information is included for the waypoint. The waypoint on a 3D image is drawn with a line beneath it to indicate its point on the sea floor.

3D mode options

There are two modes for the 3D panel:

- Vessel mode
- Cursor mode

Switch between vessel mode and cursor mode by selecting the 3D panel buttons. You can also return from cursor mode to vessel mode by selecting the clear cursor menu option.

3D vessel mode

In this mode, the view is locked to the vessel, and the image moves with the vessel.

The camera can be rotated around the vessel, and the camera elevation changed to look down or look more sideways from the vessel:

- To change the camera rotation, drag horizontally on the screen
- To change the camera elevation and tilt, drag vertically on the screen

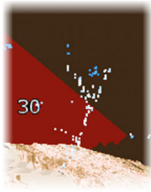
3D cursor mode

When you activate cursor mode, the camera position is the same as when cursor mode was enabled.

In cursor mode, the image does not move with the vessel. The image can be zoomed, and the camera can be rotated in any direction by dragging on the screen.

Cursor mode includes the cursor functions described in *"Using the cursor on a 3D image"* on page 92.





Fish renderings

When objects are identified in the water column, they are shown as clusters of dots. The point color corresponds to the target intensity, and the point colors are automatically adjusted to complement the chosen palette.

Viewing image history

The highlighted part of the history bar shows the image you are currently viewing in relation to the total image history stored.

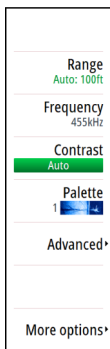
The history bar appears by default when the cursor is active. You can turn off the history bar, have it always shown at the top of the screen, or have it appear only when the cursor is active. Refer to *"Clear live history"* on page 95.

The history bar is at the top of the screen on 3D images.

You pan the image history by dragging on the image, or by dragging the highlighted region of the history bar.

To resume scrolling showing current data, clear the cursor.

Setting up the image



Source

→ **Note:** Available only if multiple sources with the same capability are available.

Used to specify the source for the image in the active panel.

You can display different sources simultaneously, using a multi-panel page configuration. Menu options for each panel are independent.

→ **Note:** Using transducers at the same frequency can cause interference.

For source setup information, refer to the NSO evo3S MPU Installation Manual.

Range

The range setting determines the distance out to the left and right of the center.

Preset range levels

Select a preset range level manually from the menu.

Auto range

In auto range, the system automatically displays the whole range from the water surface to the bottom.

Auto is the preferred setting for fish finding.

Select the range option and then the auto option in the menu.

Frequency

Two frequencies are supported. 800 kHz provides the sharpest image without sacrificing range, while 455 kHz can be used in deeper waters, or for expanded range capabilities.

→ **Note:** If your SideScan transducer supports just one frequency, the **Frequency** option won't show in the SideScan panel.

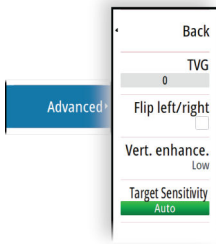
Contrast

Determines the brightness ratio between light and dark areas of the screen.

→ **Note:** We recommend you use the auto contrast option.

Palettes

Used for selecting the image's color palette.



Advanced options

TVG

Wave action and boat wakes can cause onscreen clutter near the surface. The TVG (Time Variable Gain) option reduces surface clutter by decreasing the sensitivity of the receiver near the surface.

Flip left/right

If required, flips the left/right side of the image to match the direction of the transducer installation.

Vertical enhancement

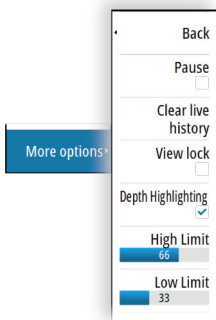
This option stretches the data so that the differences between depths are greater on the panel, which help you to see the changes in depth in relatively shallow areas.

Target sensitivity

This setting adjusts how many and what intensity points are included in the water column. Turn it down to see less noise or things you don't want to see, and turn it up to see more information.

The Auto option automatically adjusts the settings to the optimal levels. Auto sensitivity can be adjusted (+/-) to your preference while still maintaining the auto sensitivity functionality.

More options



Pause

Pauses the image, allowing you to examine the image in detail.

The pause function stops the echosounder from pinging. The system is not collecting data when paused in this manner.

Clear live history

Clears existing live history data from the screen and begins showing only the most current data.

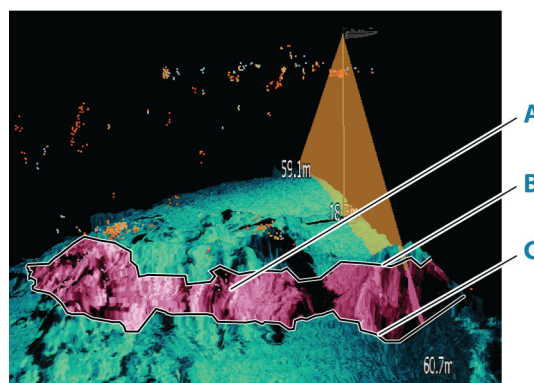
View lock

When enabled, the camera will maintain the set relative rotation from the vessel. For example, if you rotate to face the starboard side of the vessel, the camera will rotate to maintain the starboard view when the vessel rotates.

Depth highlighting

Highlights (A) the specified depth range. The low limit sets the shallowest depth of the range to be highlighted (B). The high limit sets the deepest depth of the range to be highlighted (C).

The highlight color depends on the color of the selected palette.



Echosounder settings

Use the echosounder settings dialog to make settings to your echosounder system. Refer to *"Echosounder settings"* on page 83.

14

StructureMap

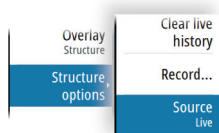
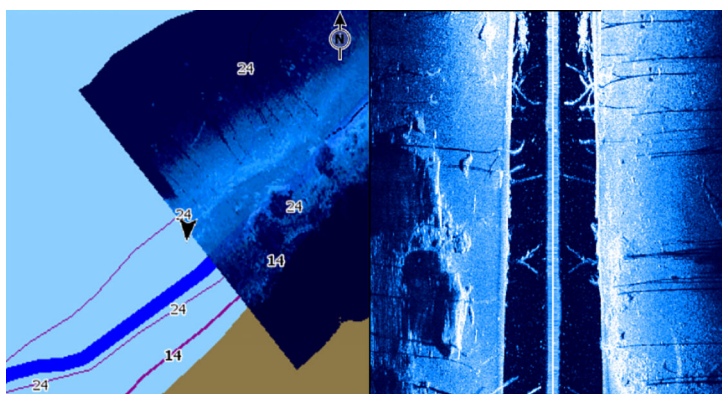
About StructureMap

The StructureMap feature overlays SideScan images from a SideScan source on the map. This makes it easier to visualize the underwater environment in relation to your position, and aids in interpreting SideScan images.

The StructureMap image

StructureMap can be displayed as an overlay on your chart panel. When the Structure overlay is selected, the chart menu increases to show the Structure options.

The example below is a two-panel page. It shows a chart with Structure overlay on the left-side panel and a traditional SideScan image on the right-side panel.



StructureMap sources

Two sources can be used to overlay Structure logs on the charts, but only one can be viewed at a time:

- Live data - Used when SideScan data is available
- Saved files - recorded SideScan data that are converted to StructureMap (*.smf) format

Live data

When live data is selected, the SideScan imaging history is displayed as a trail behind the vessel icon. The length of this trail varies depending on available memory in the unit and range settings. As the memory fills up, the oldest data is automatically deleted as new data is added. When increasing the search range, the ping speed of the SideScan transducer is reduced, but the width and the length of the image history is increased.

→ **Note:** Live mode does not save any data. If the unit is turned off, all recent data is lost.

Saved files

Saved mode is used to review and examine StructureMap files, and to position the vessel on specific points of interest on a previous scanned area. Saved files can be used as source if no SideScan sources are available.

With this mode selected, the StructureMap file is overlaid on the map based on position information in the file.

If the chart scale is large, the StructureMap area is indicated with a boundary box until the scale is large enough to show Structure details.

→ **Note:** When saved files are used as the source, all StructureMap files found on the storage device and in the system's internal memory are displayed. If there is more than one StructureMap of the same area, the images overlap and clutter the chart. If several logs of the same area are required, the maps should be put on separate storage devices.

StructureMap tips

- To get a picture of taller structures (a wreck, etc.) — do not drive over it, instead, steer the boat so the structure is on the left or right side of your vessel.
- Do not overlap history trails when conducting a side-by-side scan of an area.

Using StructureMap with mapping cards

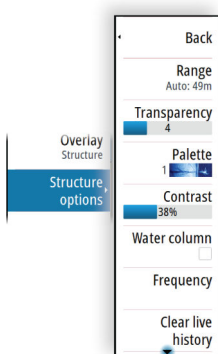
StructureMap allows you to maintain full chart capability and can be used with preloaded cartography as well as C-MAP, Navionics®, and other third-party charting cards compatible with the system.

When using StructureMap with mapping cards, copy the StructureMap (.smf) files to the unit's internal memory. We recommend keeping copies of StructureMap files on external mapping cards.

Structure options

You adjust the StructureMap settings from the Structure options menu. The menu is available when Structure overlay is enabled.

Not all options are available when saved StructureMap files are used as the source. Unavailable options are greyed.



Range

Sets the search range.

Transparency

Sets the opaqueness of the Structure overlay. With minimum transparency settings, the chart details are almost hidden by the StructureMap overlay.

Palettes

Used for selecting the image's color palette.

Contrast

Determines the brightness ratio between light and dark areas of the screen.

Water column

Shows/hides the water column in Live mode.

If turned OFF schools of bait fish might not be seen on the SideScan image.

If turned ON the accuracy of the SideScan image on the map might be affected by the water depth.

Frequency

Two frequencies are supported. 800 kHz provides the sharpest image without sacrificing range, while 455 kHz can be used in deeper waters, or for expanded range capabilities.

→ **Note:** If your SideScan transducer supports just one frequency, the **Frequency** option won't show in the SideScan panel.

Clear live history

Clears existing live history data from the screen and begins showing only the most current data.

Log sonar data

Displays the log sonar dialog. Refer to "Recording log data" on page 76.

Source

Determines the StructureMap source displayed on the chart overlay. Refer to "*StructureMap sources*" on page 97.

15

ForwardScan

About ForwardScan

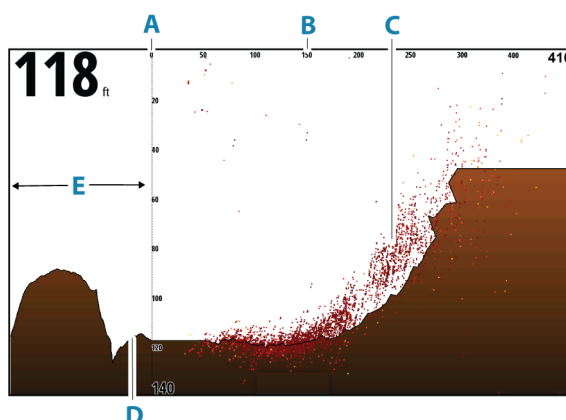
ForwardScan sonar is a navigational aid that helps you monitor the underwater environment in front of your vessel while carrying out slow speed maneuvers.

To use the ForwardScan feature you must have a ForwardScan transducer mounted on your vessel.

⚠ **Warning:** Do not rely on this equipment as your principle source of navigation or hazard detection.

⚠ **Warning:** Do not use this equipment to gauge depth or other conditions for swimming or diving.

The ForwardScan image



- A Depth range scale and vessel position
- B Forward range scale
- C Point data
- D Bottom
- E Depth history

Setting up the ForwardScan image

Source

→ **Note:** Available only if multiple sources with the same capability are available.

Used to specify the source for the image in the active panel.

You can display different sources simultaneously, using a multi-panel page configuration. Menu options for each panel are independent.

→ **Note:** Using transducers at the same frequency can cause interference.

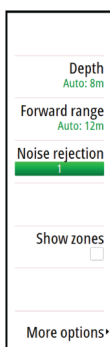
For source setup information, refer to the NSO evo3S MPU Installation Manual.

Depth

Controls depth range. Depth range is set to auto mode by default.

Forward range

Controls the forward looking search range. Maximum Forward range is 91 meters (300 feet).



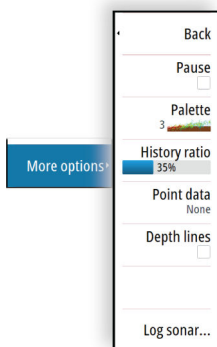
Noise rejection

Filters out signal interference and reduces on-screen clutter.

Show zones

Displays warning zones (yellow) and critical zones (red) on the screen. Refer to "*Critical forward range and Critical depth*" on page 102.

More options



Pause

Pauses the image, allowing you to examine the image in detail.

The pause function stops the echosounder from pinging. The system is not collecting data when paused in this manner.

Palettes

Used for selecting the image's color palette.

History ratio

Controls how much sonar history is shown behind the boat. The higher the ratio, the more history will be shown.

Point data

By default, ForwardScan only shows the bottom. Select this option to specify to view no sonar data points, all data points, or only points (objects) in the water column.

Depth lines

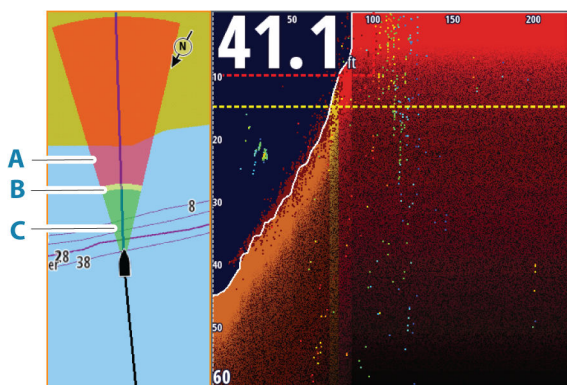
Displays lines on the screen that make it easier to quickly estimate depth and the underwater objects.

Recording ForwardScan data

Displays the record dialog. ForwardScan log data can be recorded by selecting the correct file format (sl3) in the record dialog. For more information, refer to "*Recording log data*" on page 76.

Heading extension

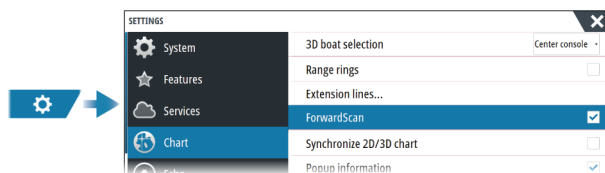
Heading extension line colors change dynamically based on the detected depth ahead, and the colors shown depend on the ForwardScan critical and warning depth values set in the installation dialog.



- A Red - Critical
- B Yellow - Warning
- C Green - Safe

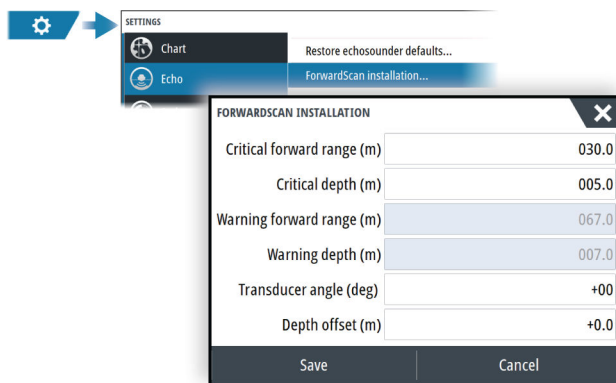
Setting up ForwardScan extensions

Select ForwardScan in the chart settings dialog to view the ForwardScan heading extension on the chart panel.



ForwardScan installation settings

Specify the setup in the ForwardScan installation dialog.



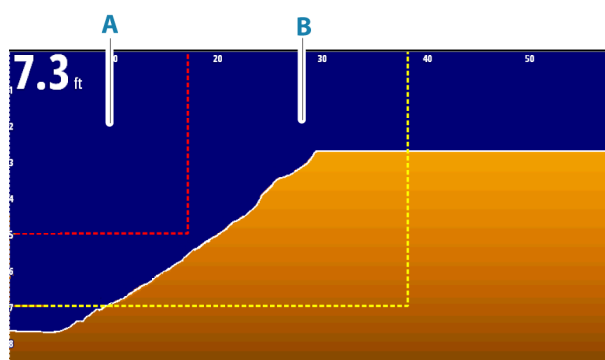
Critical forward range and Critical depth

Critical Forward Range and Critical Depth are user-selected thresholds that define a critical zone forward of your vessel.

If the alarm is turned ON and you travel into water shallow enough to cross into the critical zone, the Critical Zone alarm is activated.

To receive Critical Zone alarms, enable the Forward range alarm in the Alarm settings dialog. For more information about enabling alarms, refer to *"Alarms"* on page 151.

You can show the critical warning zones on the image by activating the Show zones menu option.



- A** Critical zone
- B** Warning zone

Warning forward range and warning depth

Set the warning forward range and warning depth thresholds that define the warning zone lines shown on the ForwardScan image.

Transducer angle

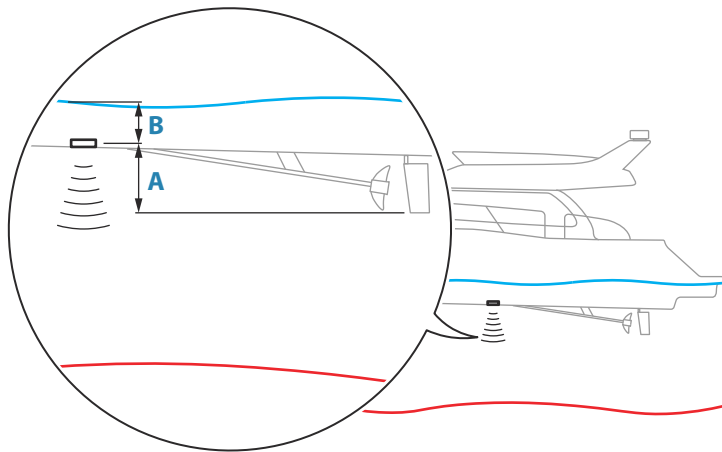
It is recommended the transducer is installed vertical to the waterline. In cases where that is not possible, the transducer angle setting helps offset the difference between the transducer angle and the waterline.

If the transducer is angled toward the front of the vessel, a positive value (0 to +15°) is entered in the Transducer angle dialog. If the transducer is angled toward the rear of the vessel, a negative value (0 to -15°) is entered in the Transducer angle dialog.

⚠ Warning: Adjustments to the angle value should be done with caution. Large variations in the angle value can distort depth data, increasing the risk of striking underwater obstructions.

Depth offset

All transducers measure water depth from the transducer to the bottom. As a result, water depth readings do not account for the distance from the transducer to the lowest point of the boat in the water or from the transducer to the water surface.



- To show the depth from the lowest point of the vessel to the bottom, set the offset equal to the vertical distance between the transducer and the lowest part of the vessel, **A** (negative value).
- To show the depth from the water surface to the bottom, set the offset equal to the vertical distance between the transducer and the water surface, **B** (positive value)
- For depth below transducer, set the offset to 0.

16

ActiveTarget

About ActiveTarget

This feature is available if an ActiveTarget transducer and its sonar module are connected to the Ethernet network.

When an ActiveTarget transducer and its sonar module are connected to the Ethernet network, the ActiveTarget button is available on the home page.

The ActiveTarget transducer can be used in forward (ActiveTarget Forward), down (ActiveTarget Down) or horizontal (ActiveTarget Scout) looking mode. The mounting of the transducer determines the mode.

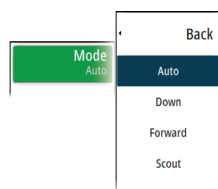
Multiple ActiveTarget sources operate independent of one another, and each source can be assigned to a panel on the display.

An ActiveTarget source can be shared over the Ethernet network. Refer to your system's installation manual for information about how to set up the system for sonar data sharing.

Modes and image settings

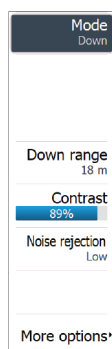
The unit comes with predefined modes and you can adjust image settings within the modes.

Changing modes

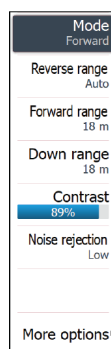


Select the **Mode** button and then the mode you want to use.

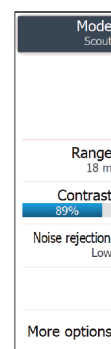
When the **Down**, **Forward**, or **Scout** mode is selected the menu expands with options for that mode.



Down mode menu



Forward mode menu



Scout mode menu

Auto mode

In **Auto** mode, the unit automatically switches between **Forward**, **Down**, or **Scout** based on the gyroscope information received from the transducer.

Down range

The down range setting determines the water depth that is visible on the image.

Forward range

The forward range settings determine the distance that is visible on the image.

→ **Note:** This option is only available when in Forward mode.

Reverse range

Reverse Range lets you shift the transducer view to show more in front or behind it, depending on your preference. Refer to "*ActiveTarget Reverse range*" on page 109 for more information.

Note: This option is only available in **Forward** mode.

Range

The range setting determines the range that is visible on the image and is available in all ActiveTarget modes.

Contrast

Increasing contrast shows more detail on the screen. Decreasing contrast displays less. Too much detail clutters the screen. Conversely, desired targets may not be displayed if contrast is set too low.

Auto contrast

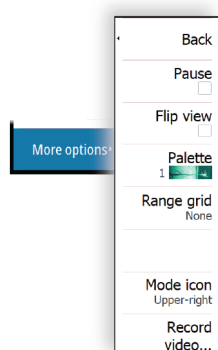
Auto contrast automatically adjusts the echosounder return to the optimal levels. Auto contrast can be adjusted (+/-) to your preference while still maintaining the auto contrast functionality.

→ **Note:** Auto contrast is the preferred mode for most conditions.

Noise rejection

Filters out signal interference and reduces on-screen clutter.

More options



Pausing the echosounder



When Pause is selected, the echosounder stops pinging. Use this option anytime you want to disable the echosounder but not power off the unit. Unselect this option to resume pinging.

→ **Note:** The transducer should not be pinging when the transducer is not submerged in water. If the transducer is mounted on the trolling motor and the trolling motor is stowed out of the water, then use this option to stop the transducer from pinging.

Flip view

If required, flips the left/right side of the image to match the direction of the transducer installation.

Palettes

Use for selecting the image's color palette.

Range grid lines

The range grid can be added to the image. The grid lines are useful for determining the distance to targets. When you select the menu option you can choose from no grid, straight line grid or arc line grid.

Note: The Arc line grid option is only available in Down and Scout modes.

StableView

When selected, the transducer will offset the motion of the boat and transducer to help provide a more stable image on the panel.

Mode-icon

Use to select the position of the beam direction icon as an overlay on the image or turn it off.

Source

→ **Note:** Available only if multiple sources with the same capability are available.

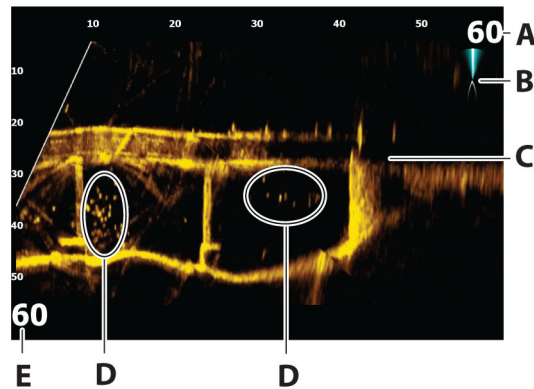
Used to specify the source for the image in the active panel.

You can display different sources simultaneously, using a multi-panel page configuration. Menu options for each panel are independent.

Note: The ActiveTarget platform supports a maximum of two ActiveTarget transducers on a single network. These transducers can be configured in any combination of the available viewing modes: **Down**, **Forward**, and **Scout**. For example, both transducers can be set to **Forward**, or one to **Down** and the other to **Scout**.

For source setup information, refer to the unit's Installation Manual.

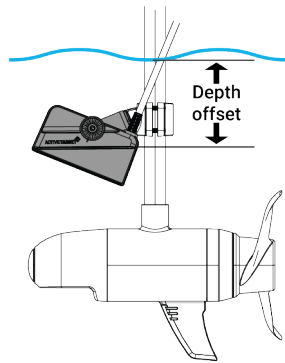
ActiveTarget forward panel



- A** Distance range scale (distance away from the transducer)
- B** ActiveTarget icon, indicating beam direction
- C** Structure (a bridge) on bottom
- D** Fish
- E** Down range scale (distance below the transducer)

ActiveTarget Depth offset

Depth offset allows you to compensate your ActiveTarget for the installation depth below the water surface.



When installed properly, your ActiveTarget transducer will be below the water surface. In Forward mode, setting the depth offset distance properly allows you to see your bait splash on the water surface without having to tilt up your ActiveTarget transducer. This setting allows visibility up to the water surface.

The image moves down on the screen by the depth offset value showing returns above the transducer to the water surface. The range ruler does not change. The displayed digital depth will be from the water surface and not the transducer location.

To turn on Depth offset, navigate to **Settings > Echo > ActiveTarget installation > Depth offset** to set the depth offset value.

Positive and Negative Offsets

Set the appropriate value based on the transducer's distance from the waterline or keel.

- Positive offset values are used to measure the distance from the transducer to the waterline
- Negative offset values measure the distance from the transducer to the keel.

Depth offset optimization in Forward mode

To get the best results from the depth offset improvements, follow these steps:

- Make sure your **ActiveTarget** transducer is set to the correct **Forward** mode orientation (not one click up).

- Restore Global settings to defaults, go to **Global Settings > Restore Defaults** to reset the **Angle Offset** to “0”, providing a clean baseline for further adjustments.

Fine-tuning with Angle Offset (if needed)

If your transducer is mounted on a shaft or pole that’s slightly angled, you may need to apply an angle offset to correct the sonar image.

- 1 Find a reference object, a flat bottom or a vertical structure like a dock pole or bridge pylon works best.
- 2 Navigate to **Settings > Echo > ActiveTarget installation > Angle offset**
- 3 Make small adjustments to the **Angle offset** until the object appears visually correct on your display.

ACTIVETARGET INSTALLATION

Source

ActiveTarget mode selection
ActiveTarget Forward

Depth offset (m)
0.0

Water type selection
Fresh water

Water temperature calibration (°C)
0

Angle offset (deg)
0

Heading offset (deg)
0

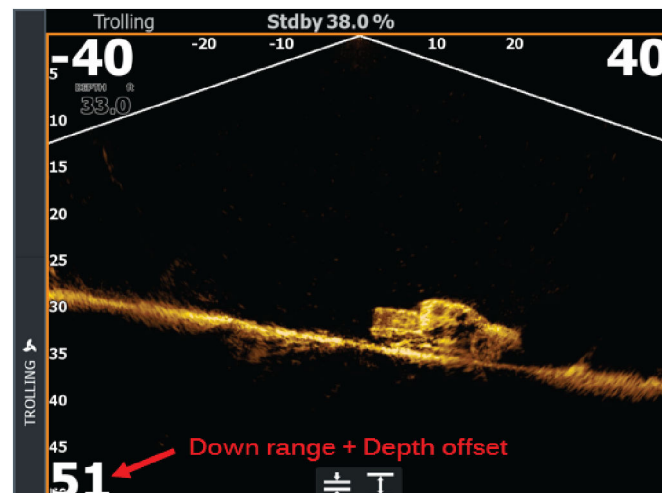
Save Cancel

- When StableView is enabled, angle offset compensates for sensor calibration differences and shaft/pole angle.
- When StableView is disabled, it only adjusts for shaft/pole angle.
- The ideal Angle offset value may differ depending on whether StableView is on or off.

Depth offset: Forward vs. Down mode

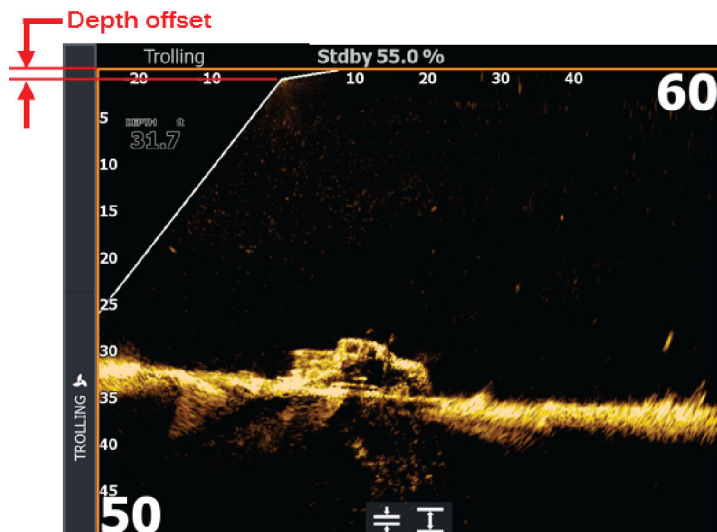
In Down mode:

- The image does not move on the screen.
- The range ruler on the left side of the screen is adjusted for the Down range + Depth offset.
- The displayed digital depth will be from the water surface and not the transducer location.



In Forward mode:

- The image moves down on the screen by the Depth offset value showing returns above the transducer to the water surface.
- The range ruler does not change.
- The displayed digital depth will be from the water surface and not the transducer location.

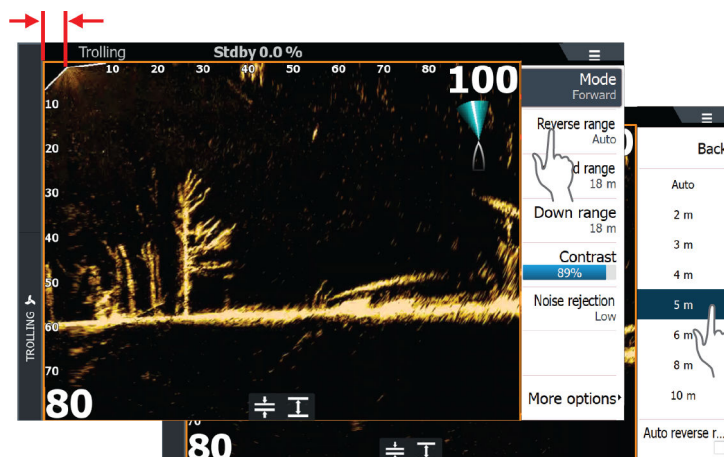


ActiveTarget Reverse Range

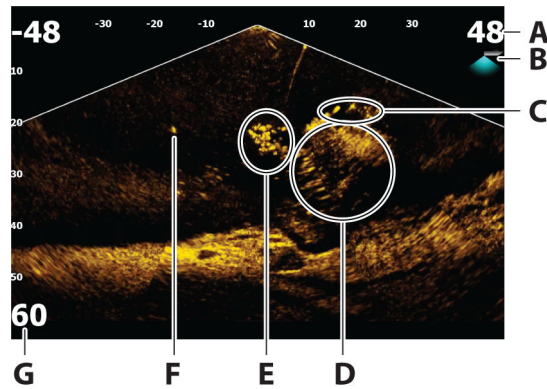
ActiveTarget Reverse Range allows you to adjust the relative position of the transducer on the screen to either maximize the view in front of the transducer or show more behind the transducer.

Ensure the transducer is in **Forward** mode, then select **Reverse range** to set the value as desired.

→ **Note:** By default, Reverse range is set to **Auto**. In **Auto**, the reverse range is ~50% of the Forward range.

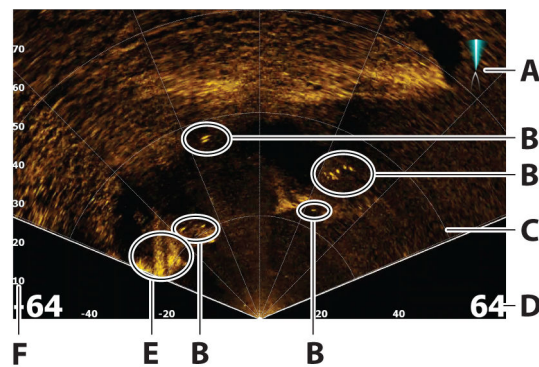


ActiveTarget down panel



- A** Distance range scale (distance away from the transducer)
- B** ActiveTarget icon, indicating beam direction
- C** School of fish
- D** Underwater brush with schooling fish in and around it
- E** School of fish
- F** Single larger fish
- G** Down range scale (distance below the transducer)

ActiveTarget scout panel



- A** ActiveTarget icon, indicating beam direction
- B** Fish
- C** Range grid lines, the range grid lines can be turned off/on, and set to straight or arc from the More menu.
- D** Distance range scale (distance to the left/right of the transducer)
- E** Underwater structure (rock edge)
- F** Range scale (distance in front of the transducer)

Zooming the image

You can zoom the image by using the display specific zoom options.

If the cursor is active, the system zooms in where the cursor is positioned.

Using the cursor on the panel

By default, the cursor is not shown on the image.

When you position the cursor on the panel, the image pauses and the cursor information window is activated. The depth and range of the cursor is shown at the cursor position.

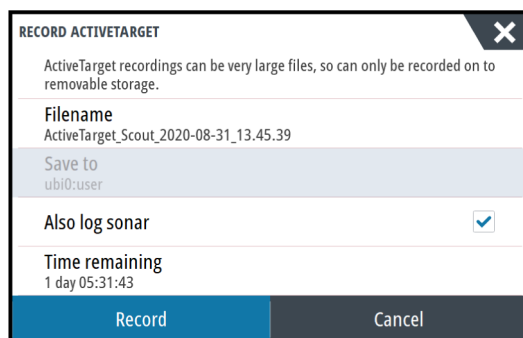
Recording ActiveTarget video



You can record ActiveTarget video to a memory card.

All ActiveTarget recordings are done in a standard .mp4 format, making them ideal for playback on a computer or sharing over the internet.

→ **Note:** This option is only available when a memory card is inserted.

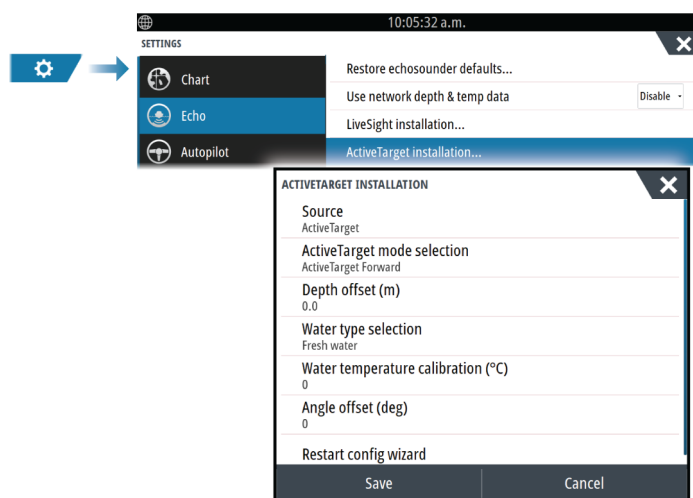


Stop recording video



When recording a video, the menu changes to show the stop record option.

ActiveTarget installation settings



Source

Select this option to display a list of sources available for setup. The settings you make in the rest of the dialog pertain to the source selected.

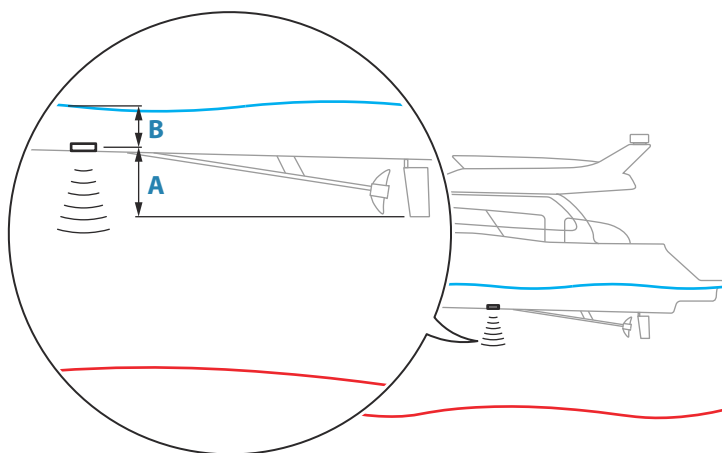
→ **Note:** The ActiveTarget platform only allows for a maximum of two ActiveTarget transducers on a network and they must be in different configurations. Possible configurations are down view, forward view and scout view. For example, one source can be set to the down view and the other set to forward view.

ActiveTarget selection

Use to specify if the ActiveTarget transducer is to be used in down looking, forward or scout mode.

Depth offset

All transducers measure water depth from the transducer to the bottom. As a result, water depth readings do not account for the distance from the transducer to the lowest point of the boat in the water or from the transducer to the water surface.



- To show the depth from the lowest point of the vessel to the bottom, set the offset equal to the vertical distance between the transducer and the lowest part of the vessel, **A** (negative value).
- To show the depth from the water surface to the bottom, set the offset equal to the vertical distance between the transducer and the water surface, **B** (positive value)
- For depth below transducer, set the offset to 0.

Water temperature calibration

Temperature calibration is used to adjust the water temperature value from the transducer. It may be required to correct for localized influences to the measured temperature.

Calibration range: -9.9° - $+9.9^{\circ}$. Default is 0° .

Angle offset (deg)

→ **Note:** This option is only available for forward mode.

The brackets only allow the transducer to be mounted at one set angle to the trolling motor arm. The best mounting angle for the transducer is obtained when the trolling motor arm is vertical to the waterline.

If the trolling motor arm is not vertical to the waterline, the offset angle is used to fine tune the transducer angle.

If the mounting angle of the transducer is off, the image can be misrepresented.

Restart config wizard

Use this option to manually start the setup configuration wizard.

17

LiveSight

LiveSight support

LiveSight Forward and LiveSight Down views are supported. When you connect a LiveSight transducer to your system and configure the setup of the transducer, the corresponding LiveSight app button will appear on the home page.

→ **Note:** A PSI-1 module and a LiveSight transducer are required to enable LiveSight support.

18

Autopilot

Safe operation with the autopilot

⚠ Warning: An autopilot is a useful navigational aid, but DOES NOT replace a human navigator.

Do not use automatic steering when:

- In heavy traffic areas or in narrow waters
- In poor visibility or extreme sea conditions
- When in areas where use of an autopilot is prohibited by law

When using an autopilot:

- Do not place any magnetic material or equipment near the heading sensor used by the autopilot system
- Verify at regular intervals the course and position of the vessel
- Always switch the autopilot to standby and reduce speed in sufficient time to avoid hazardous situations

Autopilot alarms

For safety reasons it is recommended to turn on all autopilot alarms when operating the autopilot.

For more information, refer to "Alarms" on page 151.

Selecting active autopilot

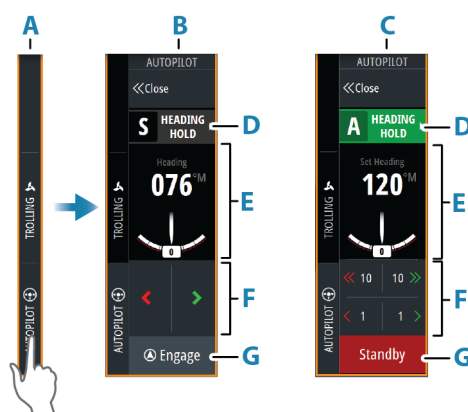
If both an autopilot computer and a trolling motor are configured for MFD control, only one of them can be active at a time.

Buttons for both autopilots are shown in the control bar.

Activate an autopilot by selecting the relevant button in the control bar, then select the **Switch autopilot** button in the autopilot controller.



The autopilot controller

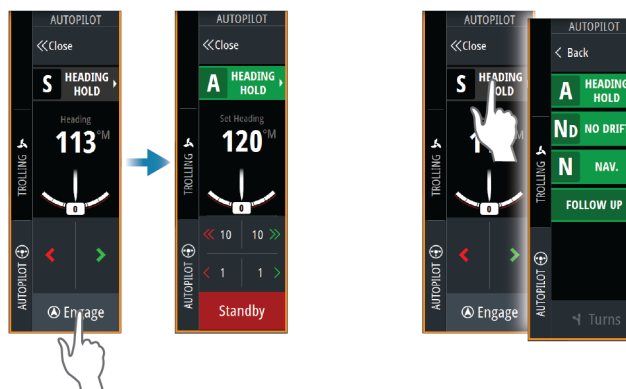


- A** Control bar
- B** Autopilot controller, disengaged
- C** Autopilot controller, engaged
- D** Mode button
- E** Mode dependent information
- F** Mode dependent buttons
- G** Engage/Standby button

Engaging and disengaging the autopilot

To engage the autopilot:

- Select the engage button to activate last active mode
- Select the mode button to display the list of available modes, then select the preferred mode



The autopilot will engage in the selected mode, and the autopilot controller will change to show active mode options.

To disengage the autopilot:

- Select the standby button

When the autopilot is in standby, the boat must be steered manually from a separate device.

Autopilot indication



The status bar shows autopilot information at all times as long as an autopilot computer is connected. You can hide it in Autopilot settings when not in anchor, nav or an autopilot mode.

Autopilot modes

The autopilot has several steering modes. The number of modes and features within the mode depend on the autopilot computer, the boat type and available inputs.

Non-Follow Up mode (NFU)

In this mode the port and starboard buttons are used to control the rudder.

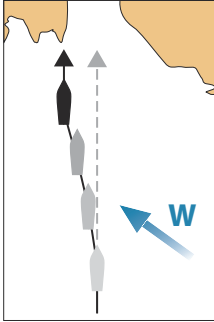
Activate this mode by selecting the port or starboard button when the autopilot is in standby.

Follow-Up mode (FU)

In this mode the rudder moves to a set rudder angle. The rudder position is maintained at the set angle.

To change the set rudder angle

- Select the port or starboard button



Heading hold mode (A)

In this mode the autopilot steers the vessel on the set heading.

When the mode is activated, the autopilot selects the current compass heading as the set heading.

→ **Note:** In this mode the autopilot does not compensate for any drifting caused by current and/or wind (**W**).

To change the set heading

- Select a port or starboard button

An immediate heading change takes place. The heading is maintained until a new heading is set.

Tacking in Heading hold mode

→ **Note:** Only available when the boat type is set to sail (autopilot configuration).

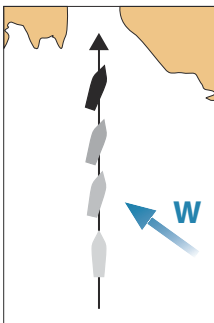
→ **Note:** Tacking should only be performed into the wind and must be tried out in calm sea conditions with light wind to find out how it works on your vessel.

Tacking in heading hold mode changes the heading by a fixed tack angle, either to port or starboard.

The rate of turn during the tack/gybe is set by the tack time in the autopilot settings dialog. Refer to "*Autopilot settings*" on page 121.

To initiate a tack:

- Selecting the tack button in the mode list, then selecting the tack direction.



NoDrift mode

In NoDrift mode the vessel is steered along a calculated track line, from present position and in a direction set by the user.

When the mode is activated, the autopilot will draw an invisible track line based on current heading from the vessel's position. The autopilot will now use the position information to calculate the cross track distance, and automatically steer along the calculated track.

→ **Note:** If the vessel is drifting away from the track line due to current and/or wind (**W**), the vessel will follow the line with a crab angle.

To change the set track line

- Select a port or starboard button

NAV mode

⚠ **Warning:** NAV mode should only be used in open waters. Navigation mode must not be used while sailing, as course changes may result in unexpected tacks or gybes.

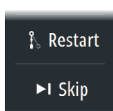
Prior to entering NAV mode you must be navigating a route or towards a waypoint.

In NAV mode the autopilot automatically steers the vessel to a specific waypoint location, or along a pre-defined route. Position information is used to change the course to steer to keep the vessel on the track line to the destination waypoint.

→ **Note:** For information about navigation, refer to "*Navigating*" on page 45.

NAV mode options

While in NAV mode the following buttons are available in the autopilot controller:



Restart

Restarts the navigation from the vessel's current position.

Skip

Skips the active route point and steers towards the next route point. This option is only available when navigating a route with more than one point between the vessel position and the end of the route.

Cancel

Cancels active navigation and deselects the current route or waypoint navigation. The autopilot is switched to heading hold mode, steering the vessel on the heading that was active when the cancel button was selected.

→ **Note:** This is different from selecting standby which does not stop current navigation.

Turning in NAV mode

When the vessel reaches a waypoint, the autopilot will display a dialog with the new course information.

There is a limit for the allowed automatic course change to next waypoint in a route:

- If the required course change to the next waypoint is less than the course change limit, the autopilot will automatically change the course
- If the required course change to next waypoint is more than the set limit, you are prompted to verify that the upcoming course change is acceptable. If the turn is not accepted, the vessel will continue with the current set heading.

The course change limit setting depends on the autopilot computer. Refer to the autopilot computer documentation.

Wind mode

→ **Note:** Wind mode is only available when the boat type is set to Sail. It is not possible to activate wind mode if wind information is missing.

In wind mode the autopilot captures the current wind angle as steering reference, and adjusts the heading of the boat to maintain this wind angle.

The autopilot will keep the boat on the set wind angle until a new wind angle is set.

⚠ **Warning:** In wind mode the autopilot steers to the apparent or true wind angle and not to a compass heading. Any wind shift could result in the vessel steering on an undesired course.

To change the set wind reference angle

- Select a port or starboard button
- With the autopilot controller active, turn the rotary knob

An immediate change of wind reference angle takes place.

Tacking and gybing in wind mode

The tack/gybe option in wind mode mirrors the set wind angle on the opposite tack.

Tacking and gybing in wind mode can be performed when sailing with apparent or true wind as the reference. In either case the true wind angle must be less than 90° (tacking) and more than 120° (gybing).

The rate of turn during the tack/gybe is set by the tack time in the autopilot settings dialog. Refer to "*Autopilot settings*" on page 121.

To initiate a tack or gybe:

- Select the Tack/Gybe option in the mode list

Turn patterns

The system includes a number of turn patterns.

Turn patterns are available when the autopilot is in auto mode. The number of turn patterns depend on autopilot computer.

→ **Note:** Turn patterns are not available if the boat type is set to sail.

To start a turn

Select the port or starboard options in the turn dialog.

Turn variables

All turn patterns, except the U-turn, have settings that you can adjust before you start a turn, or at any time when the boat is in a turn.

U-turn

Changes the current set heading by 180°. When activated, the autopilot is switched to Auto mode.

The turn rate is identical to Turn rate setting.

C-turn

Steers the vessel in a circle.

Turn variable:

- Rate of turn. Increasing the value makes the vessel turn a smaller circle.

Spiral

Makes the vessel turn in a spiral with a decreasing or increasing radius.

Turn variables:

- Initial radius
- Change/turn. If this value is set to zero, the boat will turn in a circle. Negative values indicate decreasing radius while positive values indicate increasing radius

Zigzag

Steers the vessel in a zigzag pattern.

Turn variables:

- Course change
- Leg distance

Square

Steers the vessel in a square pattern, doing 90° course changes.

Turn variable:

- Leg distance

S-turn

Makes the vessel yaw around the main heading. When activated, the autopilot is switched to S-turns mode.

Turn variables:

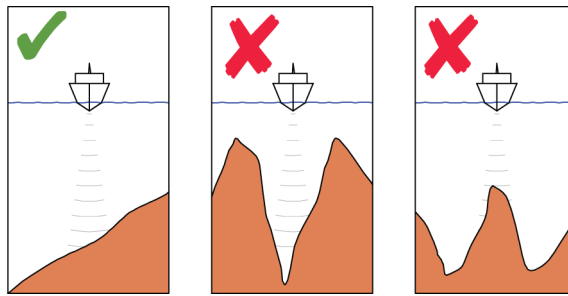
- Course change
- Turn radius

Depth contour tracking

Makes the autopilot follow a depth contour.

→ **Note:** DCT turn pattern is only available if the system has a valid depth input.

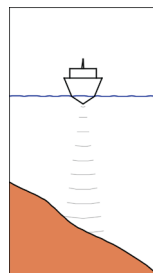
⚠ **Warning:** Do not use the DCT turn pattern unless the seabed is suitable. Do not use it in rocky waters where the depth is varying significantly over a small area.



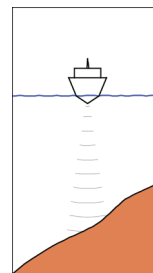
- **Note:** If depth data is lost during DCT the autopilot will automatically switch to auto mode.
- It is recommended to turn on the AP Depth Data Missing alarm when using DCT. When this alarm is activated an alarm will be raised if the depth data is lost during DCT.

To initiate a DCT turn

- Steer the boat to the depth you want to track, and in the direction of the depth contour
- Activate auto mode, then select depth contour tracking while monitoring the depth reading
- Select the port or starboard button to initiate the depth contour steering to follow the bottom sloping to starboard or to port



*Port option
(depth decreases to port)*



*Starboard option
(depth decreases to starboard)*

Turn variables

- Ref. depth: this is the reference depth for the DCT function. When DCT is initiated the autopilot reads the current depth and set this as the reference depth. The reference depth can be changed when the function is running
- Depth gain: this parameter determines the ratio between commanded rudder and the deviation from the selected depth contour. The higher depth gain value the more rudder is applied. If the value is too small it will take a long time to compensate for drifting off the set depth contour, and the autopilot will fail to keep the boat on the selected depth. If the value is set too high the overshoot will increase and the steering will be unstable.
- CCA: the CCA is an angle that is added to or subtracted from the set course. With this parameter you can make the boat yaw around the reference depth with s movements. The larger the CCA the bigger yawing will be allowed. If the CCA is set to zero there is no S-ing.

Operating a professional autopilot system

If the MFD system is connected to a professional autopilot system, the MFD can be used to operate the autopilot.

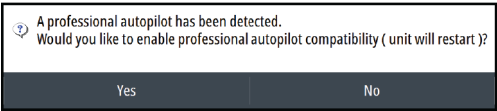
- **Note:** The MFD cannot be used to configure or commission a professional autopilot system.

For more information about the autopilot system, refer to the separate documentation following the autopilot system.

Autopilot sources

A professional autopilot system has its own source groups. If the MFD is going to be used to operate the professional autopilot system, the MFD must use the same source groups as the autopilot system.

The MFD will detect a connected professional autopilot system, and a prompt will be displayed asking if the MFD should enable professional autopilot compatibility.

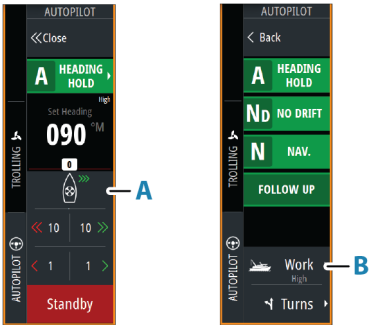


- Yes: the MFD restarts using the same source groups as the professional autopilot, and the MFD can be used to operate the autopilot
- No: the MFD remains with its own source groups. The MFD cannot be used to operate the autopilot

If No is selected the question is not asked again. The setting can be changed by selecting Professional autopilot compatibility in the Advanced settings dialog.

The autopilot controller for professional autopilots

The controller for professional autopilot has additional buttons and fields available.

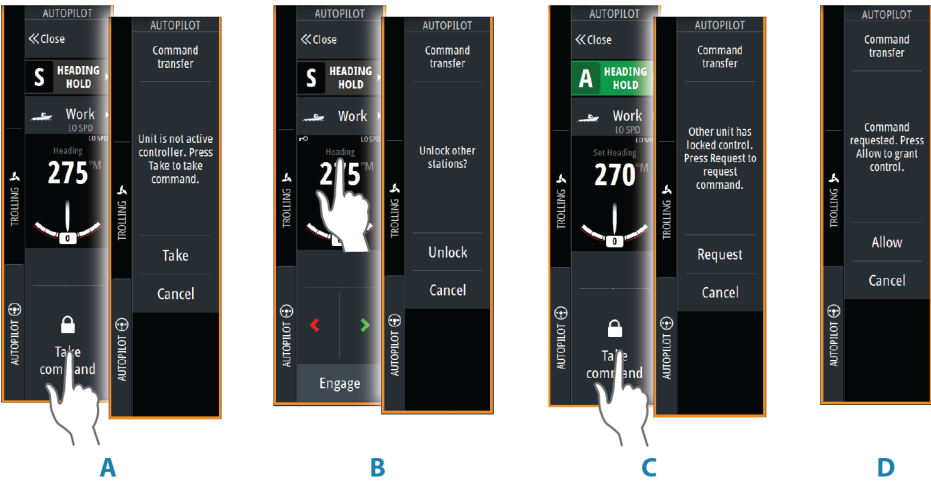


- A Thruster indication
- B Work profile button

Command transfer

The AP70/80 system can be set up as a Master system or as an Open system. These options control the command transfer between control units in the autopilot system. For details, refer to the AP70/80 Operator manual.

The command transfer action and request depends on system setup and status of the autopilot controller as illustrated below.



- A** Passive unit – open system: request command by selecting the Take command button
 - The command is immediately transferred
- B** Unlocked unit: lock/unlock other units by selecting the information field
- C** Locked unit: request command by selecting the Take command button
 - A request is sent to the unit in control
- D** Unit in control: confirm request for command transfer
 - The command is transferred when the requestor confirms take-over

Enabling/disabling thrusters

If a thruster is available for autopilot control, the Thruster button is shown in the autopilot control bar. The button has the following indications and function:



- Thruster available, but turned off.
- Select to enable the thruster



- Thruster in use. Red and green arrows indicate thrust direction.
- Select to disable the thruster



- Thruster available, but currently inhibited due to high speed.
- Reduce vessel speed to enable the thruster

Selecting a work profile

The AP70/AP80 supports multiple work profiles with different autopilot settings. On the MFD, the active work profile is shown on in the autopilot controller.

The Work profile button is available in the autopilot controller or in the autopilot controller's mode panel depending on MFD screen size.

To select the work profile:

- Select the work profile button to display the list of available work profiles, then select the preferred work profile

Autopilot settings

The Autopilot settings dialog depends on which autopilot computer is connected to the system. If more than one autopilot is connected, the Autopilot settings dialog shows options for the active autopilot.

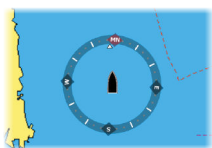
The settings are made during commissioning of the autopilot. Be careful of changing settings after commissioning is completed.

Common user settings

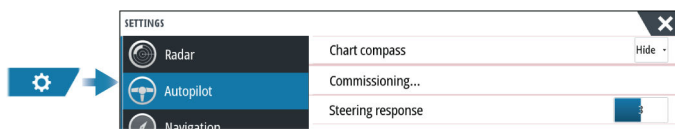
The following user settings are common to all autopilots.

Chart compass

Select to display a compass symbol around your boat on the chart panel. The compass symbol is not displayed when the cursor is active on the panel.



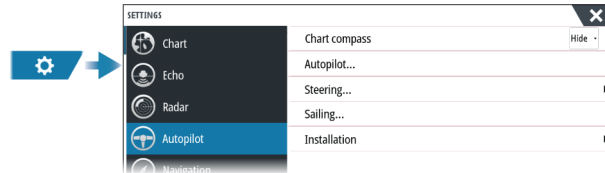
NAC-1 specific user settings



Steering response

Used to increase or decrease the steering sensitivity. A low response level reduces the rudder activity and provides a looser steering. A high response level increases the rudder activity and provides tighter steering. A too high response level will cause the boat to make S movements.

NAC-2/NAC-3 specific user settings



Autopilot

Switches the view to the last active page with the autopilot controller open.

Steering

These options allow for manually changing low speed and high speed parameters that were set during the commissioning of the autopilot computer. For more details, refer to the separate documentation for the autopilot computer.

Selecting the low speed option or the high speed option opens dialogs the following parameters can be changed.

- Turn rate: Preferred turn rate used while turning in degrees per minute.
 - Rudder gain: This parameter determines the ratio between commanded rudder and the heading error. The higher rudder value the more rudder is applied. If the value is too small it will take a long time to compensate for a heading error, and the autopilot will fail to keep a steady course. If the value is set too high the overshoot will increase and the steering will be unstable.
 - Counter rudder: Relation between change in heading error and applied rudder. Higher counter rudder will reduce applied rudder faster when approaching the set heading.
 - Auto trim: Controls how aggressively the autopilot will apply rudder to compensate for a constant heading offset, e.g. when external forces such as wind or current affects the heading. Lower auto trim will give faster, limitation of a constant heading offset.
- ➔ **Note:** In VRF mode this parameter controls the time constant of the rudder estimate. A lower value makes the rudder estimate faster, i.e. that it will more quickly catch up with the boat's movements.
- Init rudder: Defines how the system moves the rudder when switching from manual steering to an automatic mode.
 - Rudder limit: Determines the maximum rudder movement in degrees from midship position that the autopilot can command the rudder in the automatic modes. The Rudder limit setting is only active during autosteering on straight courses, not during course changes. Rudder limit does not affect Follow-up or Non-Follow-up steering.
 - Off heading limit: Sets the limit for the off heading alarm. An alarm occurs when the actual heading deviates from the set heading more than the selected limit.
 - Rudder limit: Determines the maximum rudder movement in degrees from midship position that the autopilot can command the rudder in the automatic modes. The Rudder limit setting is only active during autosteering on straight courses, not during course changes. Rudder limit does not affect Follow-up or Non-Follow-up steering.
 - Off heading limit: Sets the limit for the off heading alarm. An alarm occurs when the actual heading deviates from the set heading more than the selected limit.
 - Track response: Defines how fast the autopilot shall respond after having registered a cross track distance.
 - Track approach angle: Defines the angle used when the vessel is approaching a leg. This setting is used both when you start navigating and when you use track offset.

- Course change confirm angle: Defines the limits for course change to next waypoint in a route. If the course change is more than this set limit, you are prompted to verify that the upcoming course change is acceptable.

Sailing

→ **Note:** Sailing parameters are only available when the boat type is set to Sail.

This option allows for manually changing parameters that were set during the commissioning of the autopilot computer. For more details of the settings, refer to the separate documentation for the autopilot computer.

- Tack time: Controls the rate of turn (tack time) when performing a tack in wind mode.
- Tack angle: Controls the angle that the boat will tack to between 50° - 150° in Heading hold mode.
- Wind function: Select what wind function the autopilot will use when in wind mode.
 - Auto:
 - If TWA is <70°, Wind mode will use AWA.
 - If TWA is ≥70°, Wind mode will use TWA.
 - Apparent
 - True
- Manual speed: If neither boat speed or SOG data is available and or deemed reliable a manual value for speed source can be entered and used by the autopilot to aid steering calculations.

AC70/AC80 Specific user settings

The AC70/AC80 computers do not have any specific user settings available in the MFD.

→ **Note:** The MFD cannot be used to configure or commission an AP70/AP80 system. For more information, refer to the documentation included with the autopilot system.

19

Trolling motor autopilot

Safe operation with the autopilot

⚠ Warning: An autopilot is a useful navigational aid, but DOES NOT replace a human navigator.

Do not use automatic steering when:

- In heavy traffic areas or in narrow waters
- In poor visibility or extreme sea conditions
- When in areas where use of an autopilot is prohibited by law

When using an autopilot:

- Do not place any magnetic material or equipment near the heading sensor used by the autopilot system
- Verify at regular intervals the course and position of the vessel
- Always switch the autopilot to standby and reduce speed in sufficient time to avoid hazardous situations

Autopilot alarms

For safety reasons it is recommended to turn on all autopilot alarms when operating the autopilot.

For more information, refer to "Alarms" on page 151.

Selecting active autopilot

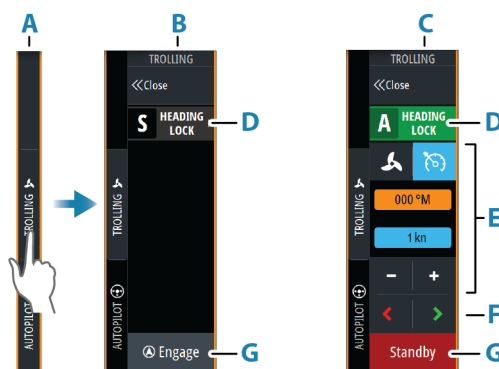
If both an autopilot computer and a trolling motor are configured for MFD control, only one of them can be active at a time.

Buttons for both autopilots are shown in the control bar.

Activate an autopilot by selecting the relevant button in the control bar, then select the **Switch autopilot** button in the autopilot controller.



The autopilot controller for trolling motor



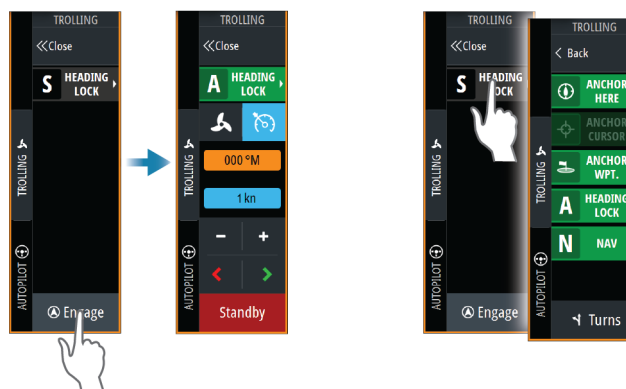
- A** Control bar
- B** Autopilot controller, disengaged
- C** Autopilot controller, engaged
- D** Mode button
- E** Mode dependent information
- F** Mode dependent buttons
- G** Engage/Standby button

When the autopilot controller is the active panel, it is outlined with a border.

Engaging and disengaging the autopilot

To engage the autopilot:

- Select the engage button to activate last active mode
- Select the mode button to display the list of available modes, then select the preferred mode



The autopilot will engage in the selected mode, and the autopilot controller will change to show active mode options.

To disengage the autopilot:

- Select the standby button

When the autopilot is in standby, the boat must be steered manually from a separate device.



Autopilot indication

The status bar shows autopilot information at all times as long as an autopilot computer is connected. You can hide it in Autopilot settings when not in anchor, nav or an autopilot mode.

Autopilot modes

The autopilot has several steering modes.

Anchor modes

In these modes, the trolling motor maintains the vessel position at a selected location.

→ **Note:** When in anchor mode, the vessel heading can be affected by wind or current.

The following anchor options are available:

Cursor

Navigates to the cursor position, and then maintains the vessel at that position.

Waypoint

Navigates to the selected waypoint, and then maintains the vessel at that position.

Here

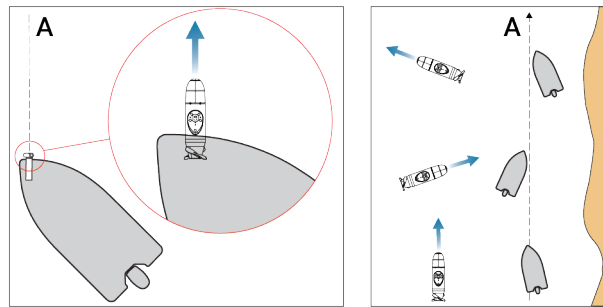
Maintains the vessel at the current position.

Change the anchor position (Anchor Jog)

Use the arrow buttons to reposition the vessel when in anchor mode. Each press on a button will jog the anchor position 1.5 m (5 ft) in the selected direction.

Course lock mode

Course lock mode maintains the heading/course, based on the direction of the lower unit. When you start Course lock mode, the trolling motor will draw an invisible track (A) based on the direction of the lower unit.



→ **Note:** In Course lock mode, wind and/or current may cause the vessel to follow the course at a crab angle.

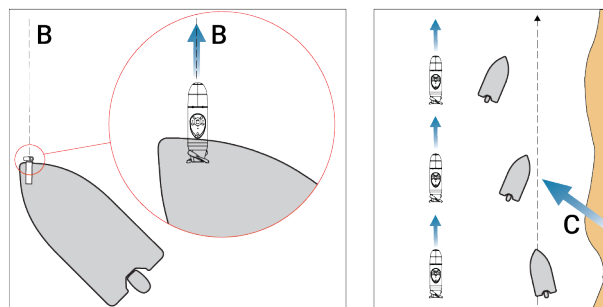
Heading lock mode

When **Heading lock** is selected as the default autopilot mode on the trolling motor, **Heading lock** will show on the top status bar.

Heading lock mode maintains the heading of the vessel, based on the direction of the lower unit.

Press the Port < or Starboard > key to adjust desired heading.

An immediate heading change takes place and is maintained until a new heading is set.



→ **Note:** In Heading lock mode, the trolling motor doesn't compensate for drift caused by current and/or wind (C).

NAV mode

Warning: NAV mode should only be used in open waters.

To enter NAV mode, you must first initiate a command to navigate a route, Go-To a waypoint, or Go-To cursor location.

In NAV mode the autopilot automatically steers the vessel to a specific waypoint, cursor location, or along a pre-defined route. GPS Position information is used to change the course, to steer to keep the vessel on the track line, and to the destination point(s).

When arriving at the destination or end of a route, the autopilot switches to the selected arrival mode. It is important to select an arrival mode that fits your navigation needs before NAV mode is activated. Refer to "*Arrival mode*" on page 129.

NAV mode options

While in NAV mode the following buttons are available in the autopilot controller:



Restart

Restarts the navigation from the vessel's current position.

Skip

Skips the active route point and steers towards the next route point. This option is only available when navigating a route with more than one point between the vessel position and the end of the route.



Trolling motor speed control

In Course lock mode, NAV mode and Turn pattern steering, the autopilot system can control the trolling motor speed.

The set target speed is displayed in the autopilot controller.

There are two ways to control the target speed of the trolling motor:

- Propeller rate, set as a percentage of power (**A**)
- Cruise control speed (**B**)

Switch between the speed options by selecting the speed icon.

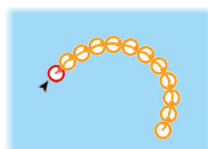
The speed is increased/decreased in preset steps by selecting the plus and minus buttons. The speed can also be set manually by selecting the speed field (**C**).

Turn pattern steering

The system includes a number of automatic turn steering features.

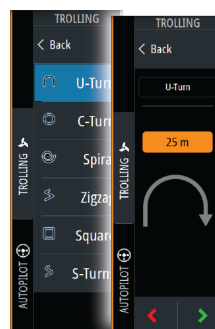
When a turn pattern is activated, the system creates temporary waypoints on the turn.

The last waypoint on the turn is the final waypoint. When the vessel reaches the final waypoint, the vessel goes into arrival mode. Refer to "*Arrival mode*" on page 129.



Starting a turn

- Press the Port < or Starboard > key to adjust desired heading.



Turn variables

All turn patterns have settings you can adjust before you start a turn, or at any time when the boat is in a turn.

U-turn

Changes the current set heading by 180°.

Turn variable:

- Turn radius

C-turn

Steers the vessel in a circle.

Turn variable:

- Turn radius
- Degrees to turn

Spiral

Makes the vessel turn in a spiral with a decreasing or increasing radius.

Turn variables:

- Initial radius
- Radius change per loop
- Number of loops

Zigzag-turn

Steers the vessel in a zigzag pattern.

Turn variables:

- Course change per leg
- Leg distance
- Number of legs

Square

Steers the vessel in a square pattern, doing 90° course changes.

Turn variable:

- Leg distance
- Number of legs

S-turn

Makes the vessel yaw around the main heading.

Turn variables:

- Turn radius
- Course change
- Number of legs

Recording and saving a track

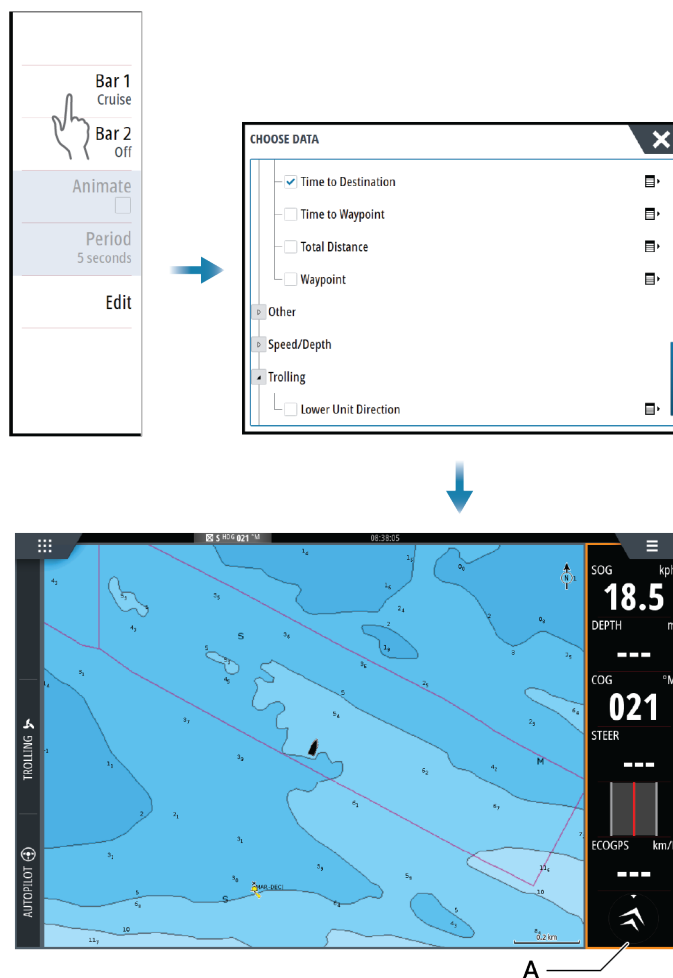
A track can be saved as a route from the autopilot controller. If track recording is disabled, the function can be enabled from the autopilot controller.

For more information, refer to "*Waypoints, routes, and tracks*" on page 39.

Lower unit direction

You can view the direction of the trolling motor's lower unit on the databar (A).

To view the lower unit direction, press **Menu > Bar 1 or Bar 2 > Trolling > Lower Unit Direction**.



Autopilot settings

The options in the Autopilot settings dialog can vary.

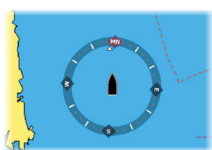
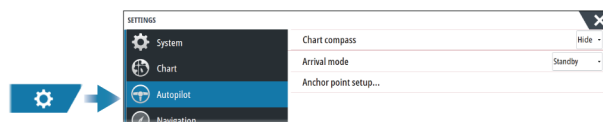


Chart compass

Select to display a compass symbol around your boat on the chart panel. The compass symbol is not displayed when the cursor is active on the panel.

Select active autopilot

Selects if the autopilot controls the trolling motor or the outboard motor(s).

Auto hide autopilot bar

Controls whether the autopilot information bar is shown when the autopilot is in standby.

Arrival mode

The autopilot switches from navigation mode to the selected arrival mode when the vessel reaches the destination point.

Standby

Disengages the autopilot. The trolling motor is controlled by hand-held remote or foot pedal.

Course lock

Locks the course and automatically steers the vessel along the course line.

Heading lock

Locks and maintains the last vessel heading.

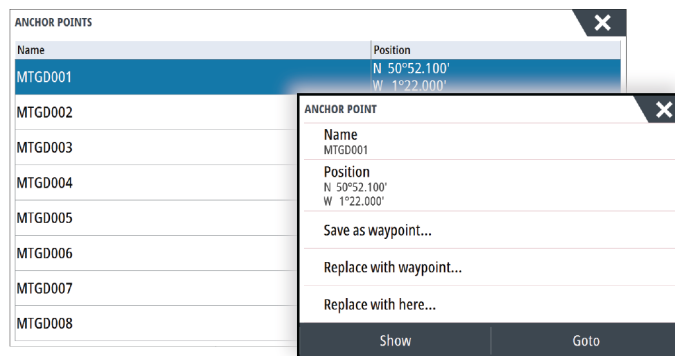
Anchor

Anchors the vessel at the destination point.

Anchor point setup

The trolling motor can store a number of anchor points, labelled with an MTG prefix for MotorGuide trolling motors. Anchor points in the trolling motor are displayed in the **Anchor point** dialog.

These MTG anchor points can be saved as a waypoint in the MFD system. The position of an MTG anchor point can be redefined to be identical to an existing waypoint, or to the current vessel position.



Stow direction

Sets the direction of the lower unit when stowing the trolling motor.

By default, the stow direction is set to **Auto** on Ghost trolling motors and **Prop-out** on Recon trolling motors.

→ **Note:** This feature is only available with Lowrance/Simrad® GPS trolling motors.

Warning: If accessories, such as transducers, are installed, set the stow direction so accessories are protected from hitting the trolling motor mount.

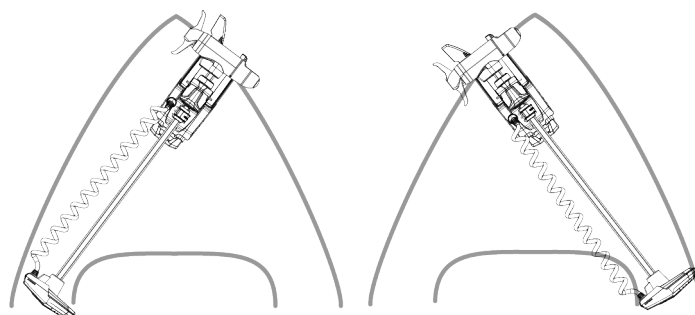
Auto / Off

For the Ghost trolling motor, in **Auto**, the unit automatically turns the lower unit towards the closest stowing position when stowing.

For the Recon trolling motor, in **Off**, the lower unit must be manually stowed in the correct position to avoid damage i.e. stow flat against the mount cradle, with either the propeller out or propeller in.

Prop-out

The propeller is on the port side of the mount when the trolling motor is stowed.



Prop-in

The propeller is on the the starboard side of the mount when the trolling motor is stowed.

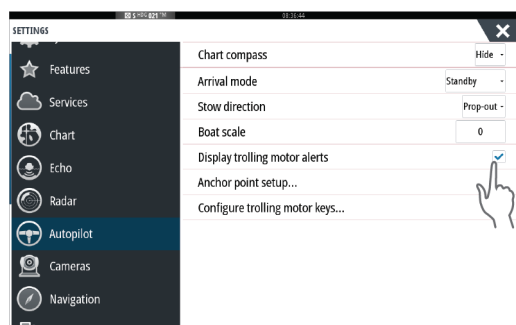
Boat scale

Use the boat scale to adjust the responsiveness of the trolling motor. Select a higher number for a large boat and a lower number for a smaller boat.

Alerts and diagnostics

Your MFD can display trolling motor alerts and diagnostic information. To turn on alert notifications, go to **Settings > Autopilot > Display trolling motor alerts**.

→ **Note:** This feature is only available with Lowrance/Simrad® GPS trolling motors.



Notification types

- Check notifications are yellow (**A**)
- Service notifications are red (**B**)

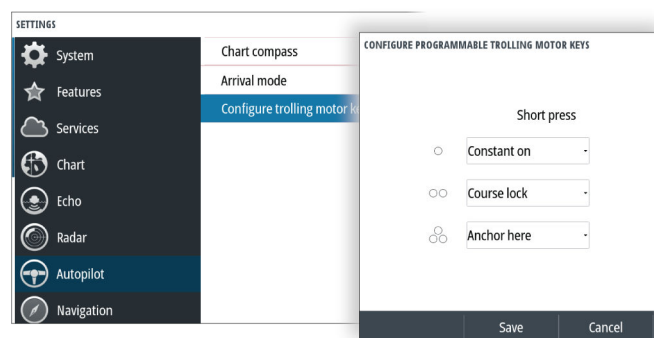
Select **More info** to view a QR code®, then scan it with your Lowrance or Simrad® mobile app to see more details.

Select **Acknowledge** to acknowledge the alert.



Configure Ghost trolling motor foot pedal keys

Use to configure the three action keys on the Ghost series trolling motor foot pedal. Select an action from the drop-down list for each of the keys you want to configure.

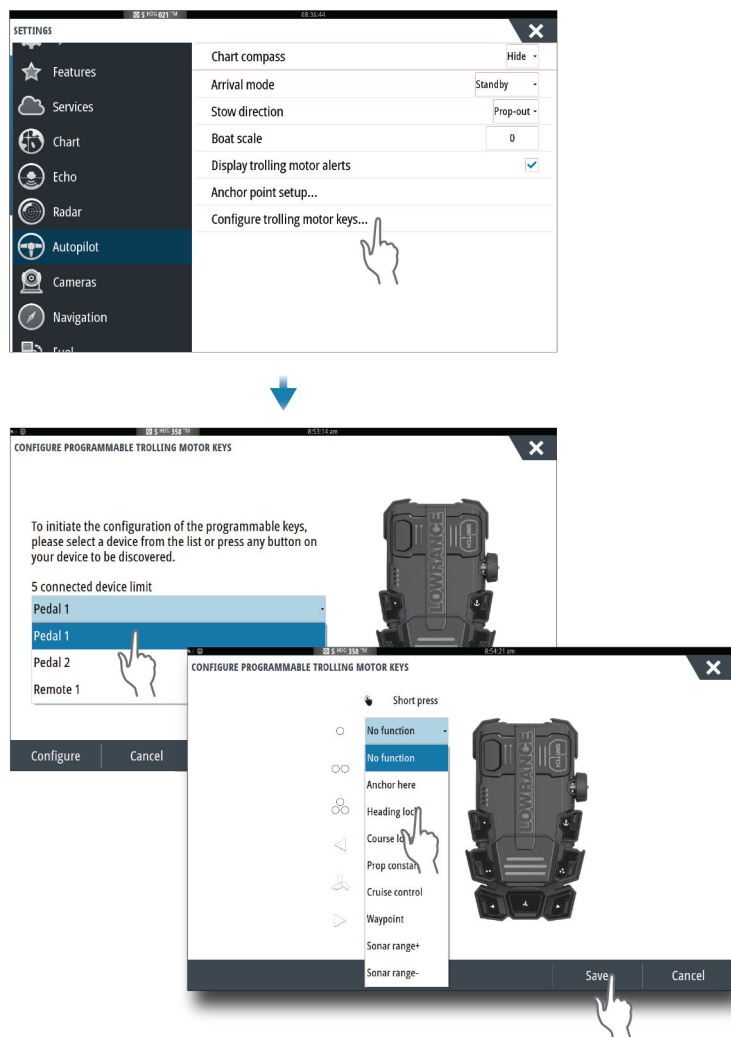


Configure Advanced Wireless Foot Pedal keys

Use to configure up to six action keys on the Advanced Wireless Foot Pedal. First select the foot pedal you want to configure, then select an action from the drop-down list for each of the keys you want to configure.

Select **Save** when you have finished the configuration changes.

→ **Note:** Up to eight devices can be paired and five devices can be connected simultaneously to the trolling motor. Follow pairing/unpairing instructions in the trolling motor operator manual.



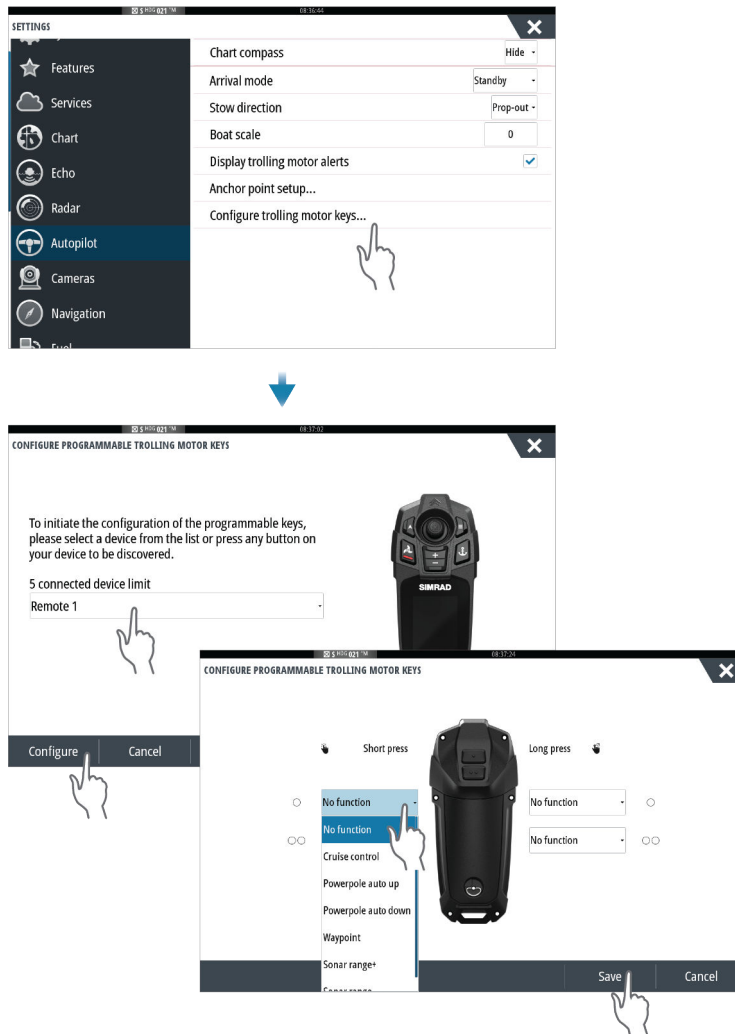
Configure FreeSteer Joystick remote keys

Use to configure two of the action keys on the FreeSteer Joystick remote.

First select the remote you want to configure, then select an action from the drop-down list for each of the keys you want to configure. Note that each key has two functions, one for short press and one for long press.

Select **Save** when you have finished the configuration.

→ **Note:** Up to eight devices can be paired and five devices can be connected simultaneously to the trolling motor. Follow pairing/unpairing instructions in the trolling motor operator manual.



Rhodan trolling motor support

If a Rhodan trolling motor is connected to the NMEA 2000® network, the trolling motor is supported and can be controlled from the MFD. For more information about this trolling motor, refer to Rhodan.

The trolling motor controls described in the operator manual are applicable to the Rhodan trolling motor.

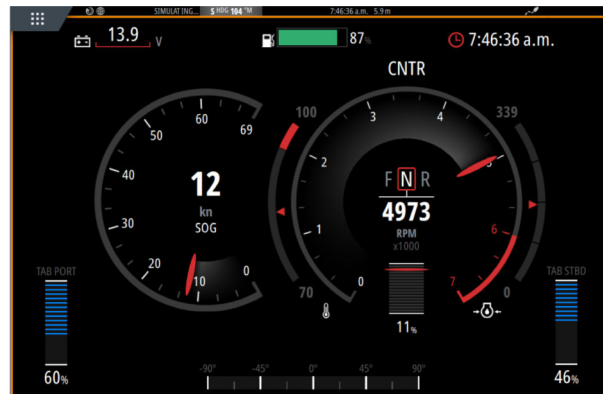
20

Instruments

About Instrument panels

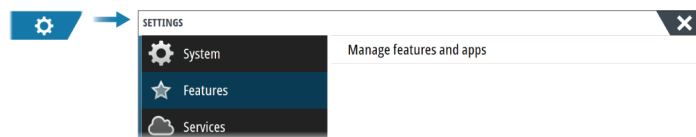
The panels consist of multiple gauges that can be arranged on dashboards. The panels can be created with analog, digital, and bar gauges. Pre-defined dashboards and templates are included.

Example:



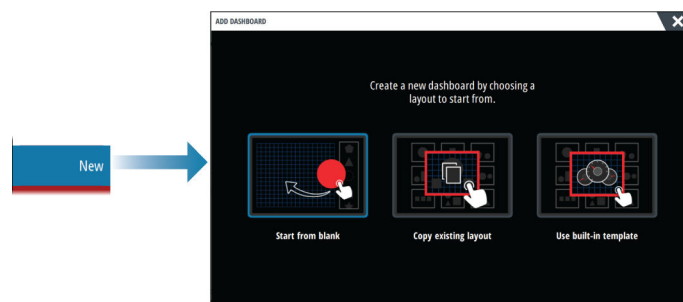
Activating/deactivating the Instrument app

Use the system settings features option to activate/deactivate the instrument app. When the app is uninstalled, the icon is removed from the home page. The feature/application can be installed again from this same dialog.



Creating a dashboard

Use the new menu option to create your own dashboard.



Starting from blank

Select to create your own dashboard from scratch.

Use menu options to name the dashboard and manage gauges on the dashboard.

Copying an existing layout

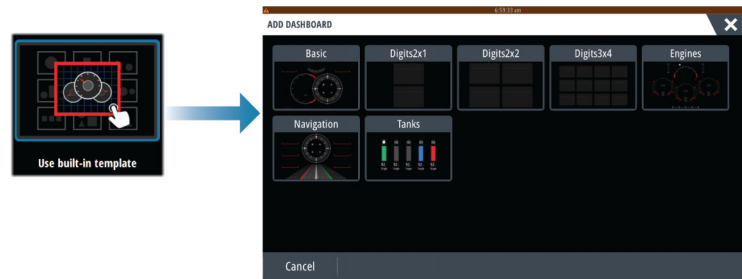
Select to copy an existing layout that you have made.

Use menu options to name the dashboard and manage gauges on the dashboard.

Using a built-in template

Select a pre-defined template to create a dashboard. The template dashboards reflect your vessel configuration.

Use menu options to name the dashboard and manage gauges on the dashboard.



Customizing the dashboard

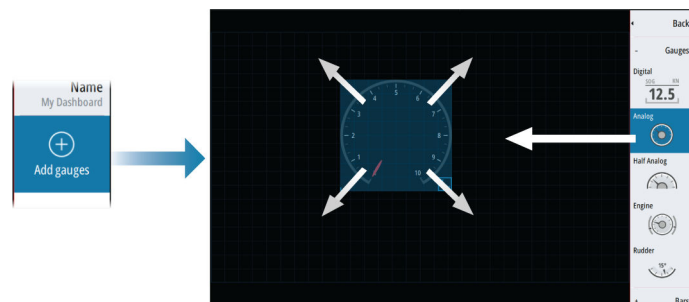
You can use edit menu options to:

- change the data for each of the gauges in any dashboard
- set limits for analog gauges
- change the dashboard layout

→ **Note:** You cannot change the layout of pre-defined dashboards or dashboards you have created using built-in templates.

Adding gauges

Select a gauge in the menu and then position it on the dashboard.

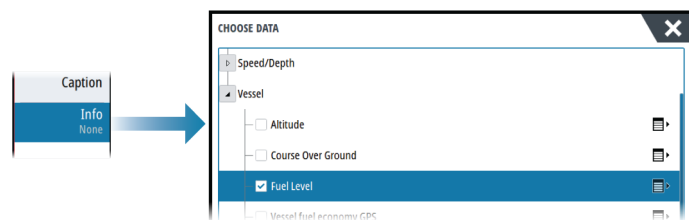


Key operation

Use arrow keys to select the item you want to add, and press the enter key.

Choosing gauge data

Select the gauge in the dashboard and then the info menu option to choose the data to be shown on the gauge.



Selecting a dashboard

You switch between the dashboards by:

- swiping left or right on the panel
- selecting the dashboard from the menu

Video

About the video function

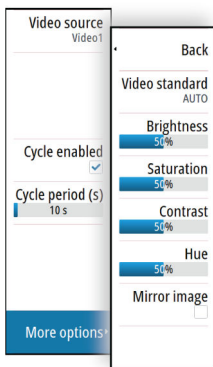
The video function allows you to view video or camera sources on your system.
For information about how to connect the camera, see the unit's separate installation manual.

The video panel

The video image is proportionally scaled to fit into the video panel. Areas not covered by the image are colored black.



Setting up the video panel



Video source

If more than one source is available, you can select to view one channel source only or to cycle the image between available video sources.

The cycle period can be set from 5 to 120 seconds.

Additional options

Depending on the selected video source the options in the menu may vary.

The settings are adjusted individually for each video source.

22

Audio

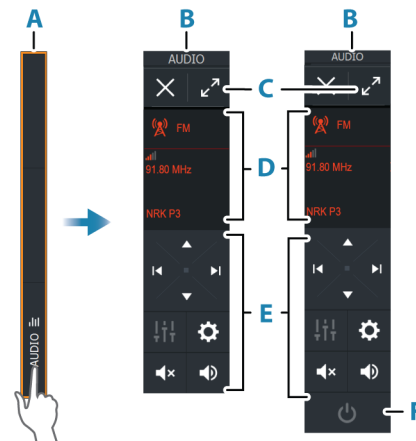
About the audio function

If a compatible audio server is properly installed/connected and setup with your system, you can use the unit to control and customize the audio system on your vessel.

For audio device installation, setup and connection information, refer to the documentation included with the audio device. For display unit wire connection information refer to the unit's installation manual.

The audio controller

The control buttons, tools and options vary from one audio source to another.



- A Control bar
- B Audio controller, small and large displays
- C Source and source information
- D Control buttons
- E ON/OFF button
The OFF button is located in the source list on small displays.

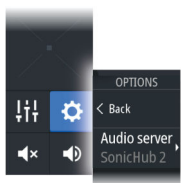
Setting up the audio system

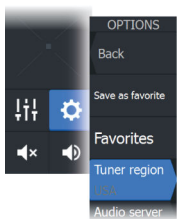
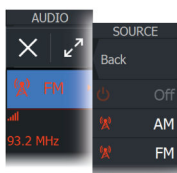
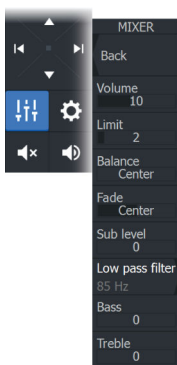
Audio server

If multiple audio sources are connected to the same network, one of the devices must be selected as the audio server. If only one device is present, it is the selected audio server by default.

Setting up the speakers

→ **Note:** The number of mixer options depends on active audio server.





Speaker zones

This device can be set up to control different audio zones. The number of zones depends on the audio server connected to your system.

You can adjust balance, volume and volume limit settings individually for each zone. Adjustments to the bass and tremble settings will alter all zones.

Master volume control

By default, the volume for all speaker zones are adjusted when you adjust the volume.

You can adjust each speaker zone individually. You can also define which zones that shall be altered when you adjust the volume.

Selecting audio source

Use the source button to display the list of audio source. The number of sources depends on the active audio server.

Bluetooth® devices

If your audio server supports Bluetooth®, Bluetooth® will be listed as a source.

Use the Bluetooth® icon in the audio controller to pair the audio server with a Bluetooth® enabled device such as a smartphone or tablet.

Using an AM/FM radio

Selecting the tuner region

Before using FM, AM or a VHF radio, you must select the appropriate region for your location.

Radio channels

To tune in to an AM/FM radio channel:

- press and hold the left or right audio control button

To save a channel as a favorite:

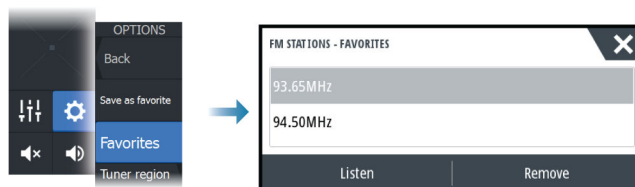
- select the favorite menu option

To page through favorite channels:

- select the up or down audio control button

List of favorite channels

The favorite list can be used for selecting a channel, and for deleting the saved channels from the list.



Sirius radio

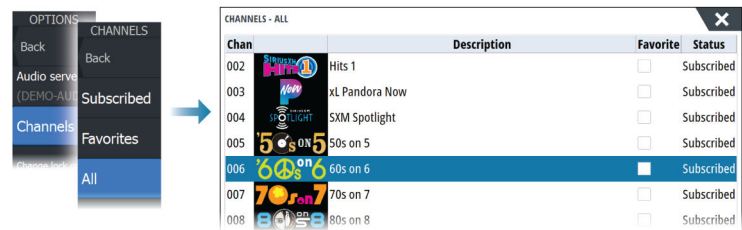
→ **Note:** SiriusXM® radio is available in North America only.

If you have a compatible SiriusXM® receiver connected to your system, you can control the receiver from the Audio control bar.

Sirius service covers inland U.S. waters and coastal areas into the Atlantic and Pacific oceans, Gulf of Mexico, and the Caribbean Sea. The SiriusXM® products received vary depending on your selected subscription package. For more information, refer to www.siriusXM.com and the server documentation.

Lists of Sirius channels

Several options are available for displaying the Sirius channels.



Sirius favorite channels

You can create your favorite channels from within the list of all channels and the list of subscribed channels.

Selecting a Sirius channel

To select a channel:

- select the left or right audio control button

To page through favorite channels:

- select the up or down audio control button

Locking channels

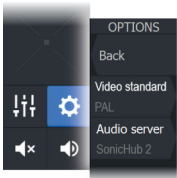
You can lock selected Sirius channels from being broadcasted. A user selected 4-digit code must be entered to lock and unlock channels.

Viewing DVD video

If your audio server supports DVD playback, you can control the DVD player from the audio controller when the audio source is set to DVD.

Video standard

Select the video format for the Audio server to match the display connected to the Audio server.



23

Weather

About the weather feature

The system includes weather functionality that allows the user to view forecast data overlaid on the chart. This helps gaining a clear understanding of the weather conditions that are likely to appear.





The system supports weather data in GRIB format, available for download from various weather service suppliers.

The system also supports weather data from SIRIUS Marine Weather Service. This service is available only in North America.


Wind barbs

The rotation of the wind barbs indicate the relative wind direction, with the tail showing the direction the wind is coming from. In the graphics below, the wind comes from the northwest.

Wind speed is indicated by a combination of small and large barbs at the end of the wind tail.

	Zero knots / Indeterminate wind direction
	Small barb = 5 knots
	Large barb = 10 knots
	Arrow barb = 50 knots

If a combination of 5 and 10 knot barbs are shown on a tail, then add them together to give you the total wind speed. The example below shows 3 x large barb + 1 x small barb = 35 knots, and 60 knots indicated with 1 x arrow barb + 1 x large barb.


Wind speed: 35 knots


Wind speed: 60 knots

GRIB weather

A GRIB file contains forecast information for a set number of days. It is possible to animate the weather data, which shows how weather systems are developing.

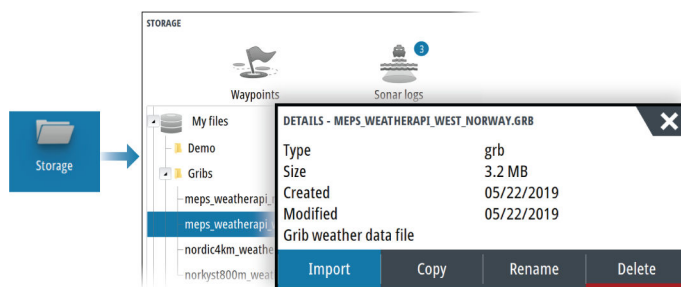
Importing GRIB data

GRIB data imported into memory can be displayed as chart overlay. The file can be imported from any location that can be seen in the storage manager.

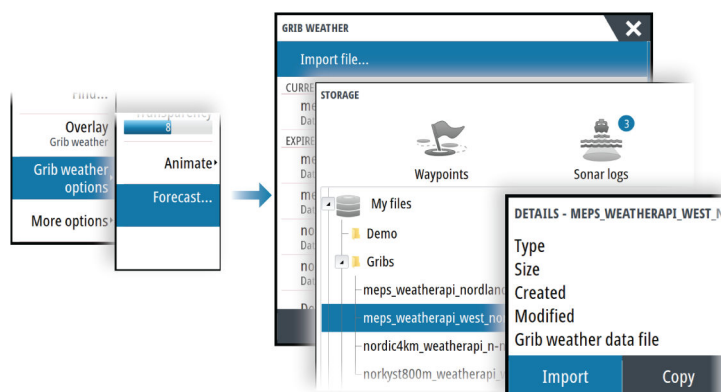
→ **Note:** GRIB data that is imported overwrites the GRIB data in memory.

You can import the GRIB files:

- From the storage manager



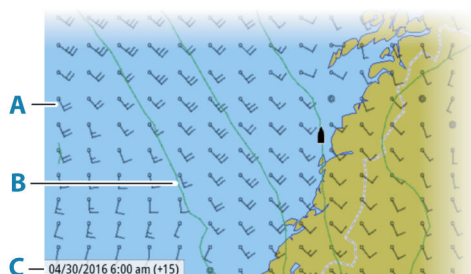
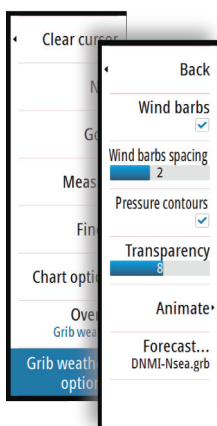
- From the forecast menu option on the chart panel. The Grib weather option is only available if Grib weather is set as the overlay on the chart.



Displaying GRIB weather as overlay

Imported GRIB weather data can be displayed as an overlay on your chart panel.

When the GRIB weather overlay option is selected, the chart menu increases to show GRIB weather options. From this menu you can select which weather symbols you want to display, set the distance between the barbs, and adjust the opaqueness of the weather symbols.



- A** Wind barbs
- B** Pressure contours
- C** GRIB information window

GRIB information window

The GRIB information window shows the date and time for the GRIB weather forecast, and the selected forecast time in brackets. A negative value in the brackets indicates historic weather data.

If you select a position on the chart, the information window expands to include weather details for the selected position.

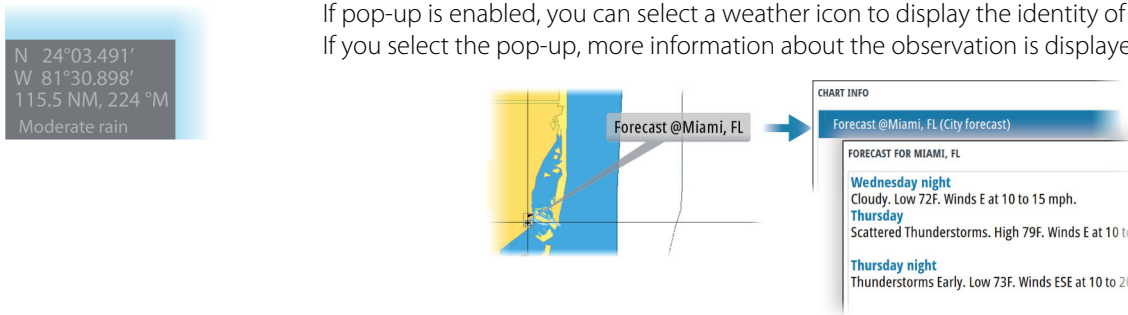
Animating GRIB weather forecast

The GRIB data contains forecast information for a set number of days. It is possible to animate the weather data and to show the predicted forecast for a specific time and date. The time scales vary depending on the file you are using.

The time shift is shown in brackets in the GRIB information window. The time is relative to the current time as provided by a GPS device connected to the system.
Select time and animation speed from the menu.

Showing weather details

If pop-up is enabled, you can select a weather icon to display the identity of the observation. If you select the pop-up, more information about the observation is displayed.



You can also display weather information from the menu when the weather icon is selected and the 'Info - Weather item' menu option is selected.

Navico WM-4 marine satellite receiver support

The Navico WM-4 marine satellite weather/audio receiver is supported. When the Navico WM-4 receiver is connected to your system and if you have the appropriate SiriusXM® subscription you can include SiriusXM® marine weather services and SiriusXM® radio on your system.

→ **Note:** SiriusXM® weather is available for North America only.

SiriusXM® weather

About SiriusXM® weather

→ **Note:** SiriusXM® weather is available for North America only.

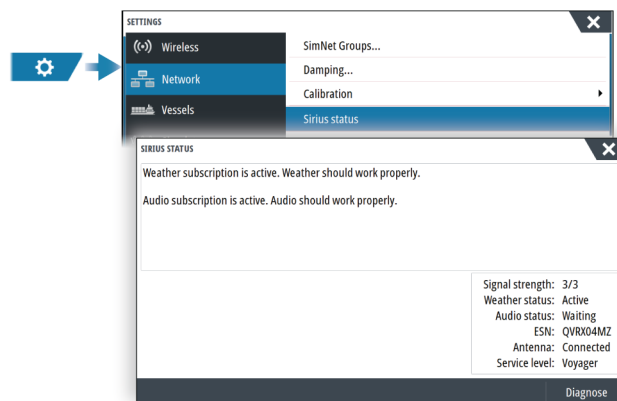
When a supported Navico satellite weather receiver module is connected to your system and with the appropriate subscription, SiriusXM® marine weather information is available.

The options available depend on the satellite weather receiver module connected to your system and your subscription.

SiriusXM® weather service covers a variety of North American inland waters and coastal areas. For more information refer to www.SiriusXM.com/sxmmarine.

Sirius status panel

When the weather module is connected to the system, you get access to the Sirius status panel.

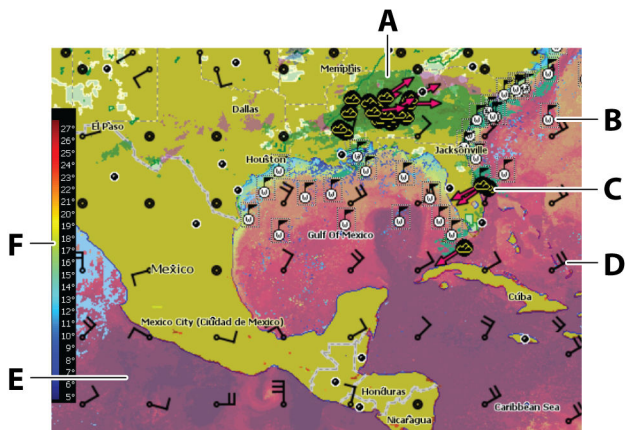


The status panel shows signal strength is indicated as 1/3 (weak), 2/3 (good) or 3/3 (preferred). It also includes antenna status, service level, and the electronic serial number for the weather module.

Sirius weather panel

Sirius weather can be displayed as an overlay on your chart panel.

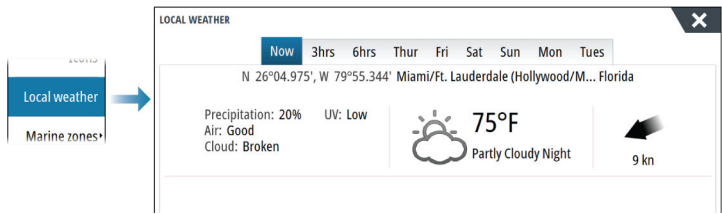
When weather overlay is selected, the chart menu increases to show the available weather options.



- A** Precipitation color shading
- B** Surface observations
- C** Storm icon
- D** Wind barb
- E** Sea Surface Temperature (SST) color shading
- F** SST color bar

Local weather

The local weather dialog shows current weather and weather forecast for your current location.



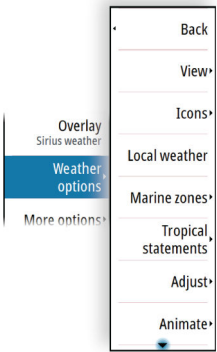
Weather options

View options

Precipitation

Shades of color are used to show precipitation type and intensity. The darkest color indicates the highest intensity.

Rain	From light green (light rain) - yellow - orange - to dark red (heavy rain)
Snow	Blue
Mixed	Pink



Sea Surface Temperature (SST)

You can show the SST as color shading or as text.

When color coding is selected, the SST color bar is shown on the left side of the display.

You define how the color codes are used to identify SST. Refer to *"Adjusting color codes"* on page 145.

Forecast wave indication

Colors can be used to indicate forecast wave height. The highest waves are dark red, while the lowest are blue.

You can define how the color codes are used to identify the wave height. Refer to *"Adjusting color codes"* on page 145.

Forecast wind barbs

Forecast wind barbs can be shown or hidden on the weather panel.

Surface features

Turns surface features on/off. Surface features include fronts, isobars, and pressure points. Surface features cannot be shown at the same time as Wind.

Cloud tops

Turn Cloud tops on/off. Cloud tops indicate the height of the top of the clouds. The color palette used is grey with darker greys indicating lower clouds. Cloud tops cannot be shown at the same time as Precipitation or Echo Tops.

→ **Note:** This feature is only available for certain SiriusXM® subscriptions.

Echo tops









Turns Echo tops on/off. Echo tops indicate the tops of storms. The color palette used is the same as for Precipitation. Echo tops cannot be shown at the same time as Precipitation or Cloud Tops.

→ **Note:** This feature is only available for certain SiriusXM® subscriptions.

Weather icons

Several weather icons are available to show current or predicted weather conditions.

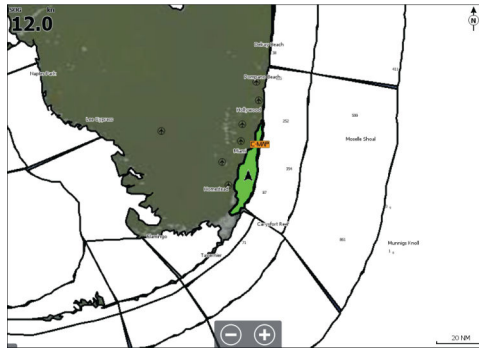
Select an icon to display detailed weather information.

	Surface observation
	Tropical storm tracking; past (grey) - present (red) - future (yellow)
	Hurricane (category 1-5) tracking; past (grey) - present (red) - future (yellow)
	Tropical disturbance/depression tracking; past (grey) - present (red) - future (yellow)
	Storm attributes
	Lightning
	Watch box location and warning
	Marine zone location

Marine zone

Depending on your selected subscription, SiriusXM® services includes access to weather reports for U.S. and Canadian marine zones, with the exception of the high seas zones.

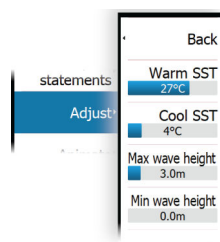
You can select a marine zone and view its forecast. You can also select a marine zone as your current zone of interest to be notified of any weather warnings in that zone.



Tropical statements

You can read tropical statements including information about tropical weather conditions. These statements are available for the entire Atlantic and the Eastern Pacific.

Adjusting color codes



You can define the Sea Surface Temperature (SST) range and wave height color coding. The temperature above warm and below cool values is displayed as progressively darker red and darker blue.

Waves higher than the maximum value are indicated with progressively darker red. Waves lower than the minimum value are not color coded.

Animating weather graphics

The weather information you have turned on is recorded. This information can be used to animate past or future weather conditions. The amount of information available in the system depends on the amount of weather activity; the more complex it is, the less time is available for animation.

You can animate the past or the future, depending on which weather view you have turned on:

- with precipitation overlay, you can animate for the past and only assume weather conditions in the immediate future.
- with colored wave height overlay, you can animate the future (the predictions).

When activated, the time for the current graphic animation is displayed in the panel.

Time: -3 hours

Transparency

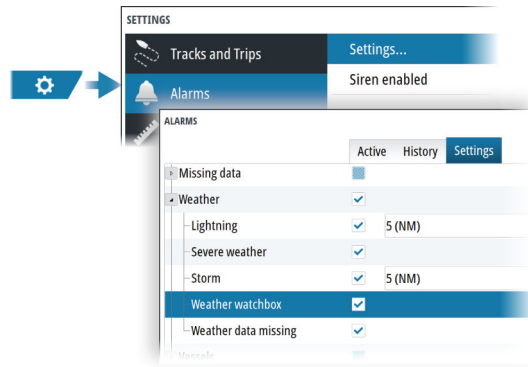
Adjusts the transparency of the overlay.

Weather alarms

You can setup lightning or storm alarms to occur when the conditions are within a certain range of your vessel.

You can also set up an alarm as a severe weather forecast alarm issued for your chosen marine zone.

A watchbox is defined by the National weather service. When the alarm for watchbox is turned on, an alarm occurs when your vessel is entering or inside a watchbox.



24

Internet connection

Internet usage

Some features in this product use an internet connection to perform data downloads and uploads.

Internet usage via a connected mobile/cell phone internet connection or a pay-per-MB type internet connection may require large data usage. Your service provider may charge you based on the amount of data you transfer. If you are unsure, contact your service provider to confirm rates and restrictions.

External Wi-Fi® module required

This unit does not have built-in Wi-Fi®. To connect to the internet or connect the unit to wireless devices such as smartphones and tablets, you must have a compatible external Wi-Fi® module connected to the same Ethernet network as this unit.

Ethernet connection

The unit is automatically connected to the internet when connected to an Ethernet network with internet access.

Wi-Fi® connection

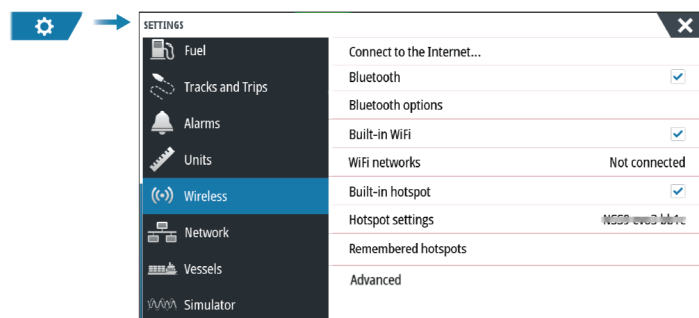
Use the Ethernet network to:

- Connect the unit to the internet. For more information, refer to *"Wireless settings"* on page 147.

Wireless settings

Provides configuration and setup options for the wireless functionality.

This unit does not have built-in Wi-Fi®. To connect to the internet or to use the Link app you must have a compatible external Wi-Fi® module connected to the same Ethernet network as this unit. The following image shows options available when the unit is connected to a compatible external Wi-Fi® module.



Connect to the internet

Used for connecting the external Wi-Fi® module to the internet.

When connected, the text changes to include Already connected.

External wireless modules setup

Use to set the external Wi-Fi® module mode, password or reset to defaults.

- Client mode allows the Wi-Fi® to connect to a hotspot and access the internet.
- Access point mode allows you to connect the Wi-Fi® module with your phone/tablet via the Link app.

External Wi-Fi®

Use to enable or disable the external Wi-Fi®.

Wi-Fi® networks

Shows the Wi-Fi® network connection status. If the MFD is connected to the internet (Wi-Fi® hotspot), the hotspot name (SSID) is shown.

External hotspot

Enables the external Wi-Fi® module to act as a hotspot. When acting as a hotspot other smart devices can connect to it and access the internet or other smart devices.

Hotspot settings

Select to display the external Wi-Fi® module name (SSID) and key. Only available when the external Wi-Fi® module is set to access mode.

Remembered hotspots

Displays hotspots the unit has been connected to in the past.

Advanced

Tools are available within the software to assist in fault-finding and setting up the wireless network.

25

Remote control of the MFD

Remote control options

→ **Note:** This unit does not have an internal Wi-Fi® module. To connect to the internet or the Simrad mobile app you must have a compatible external Wi-Fi® module connected to the same Ethernet network as this unit.

To remotely control the unit from a smartphone or tablet, the device must be connected to the same external Wi-Fi® module as the unit.

→ **Note:** For safety reasons, some functions cannot be controlled from a remote device.

Simrad mobile app

You can download the **Simrad: Boating & Navigation** app from the Apple® App Store® and Google Play® stores.

→ **Note:** The mobile app is an optional offering and will not affect the normal operation of your display unit. Refer to the app store description to check the app's compatibility with your mobile device.

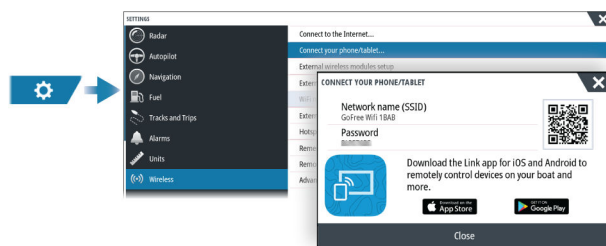
Once connected, you can use the app to:

- Register your display unit.
- View and download product documentation.
- Create and synchronize waypoints, routes, and tracks.
- Explore points of interest (POI).
- Monitor marine traffic and weather.
- Subscribe to Premium charts.
- Download and apply software updates to the display unit.

→ **Note:** An internet connection is required to synchronize your data with cloud services from the display unit or mobile device.

Connecting to the external Wi-Fi® module acting as an access point

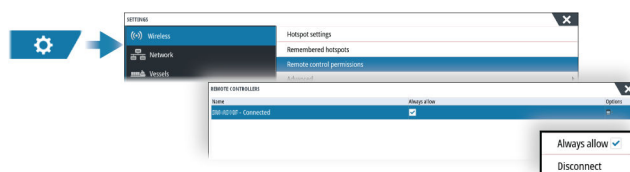
If your unit is connected to an external Wi-Fi® network, you can connect your phone/tablet to the same network to view and control the MFD.



The external Wi-Fi® network name (SSID) will be displayed as an available network in the phone/tablet.

Managing Wi-Fi® connected remotes

You can change the access level and remove the Wi-Fi® connected remote controllers.



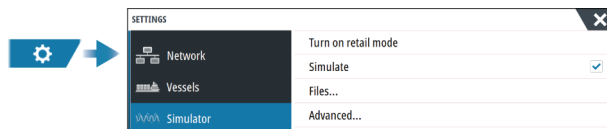
26

Simulator

About

The simulation feature lets you see how the unit works without being connected to sensors or other devices.

The status bar indicates if the simulator is toggled on.



Retail mode

In this mode a retail demonstration for the selected region is shown.

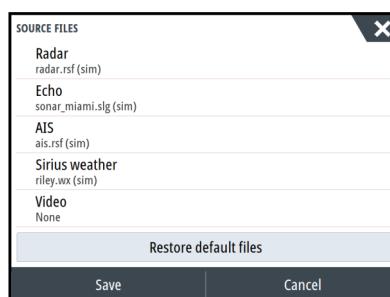
If you operate the unit when retail mode is running, the demonstration pauses.

After a time-out period, retail mode resumes.

→ **Note:** Retail mode is designed for retail/showroom demonstrations.

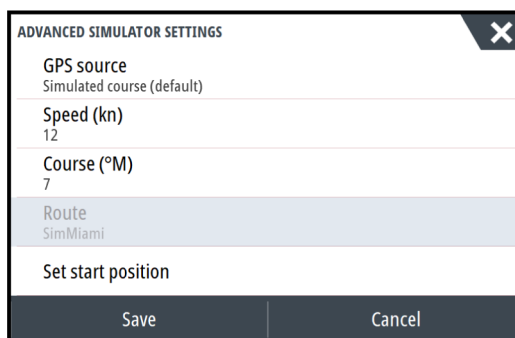
Simulator source files

You can select which data files that are used by the simulator. It can be either pre-recorded data files included in your device, your own recorded log files, or log files on a mass storage device connected to the unit.



Advanced simulator settings

The advanced simulator settings allows for manually controlling the simulator.



27

Alarms

About the alarm system

The system continuously checks for dangerous situations and system faults while the system is running.

Type of messages

The messages are classified according to how the reported situation affects your vessel. The following color codes are used:

Color	Importance
Red	Critical alarm
Orange	Important alarm
Yellow	Standard alarm
Blue	Warning
Green	Lite warning

Alarm indication

An alarm situation is indicated with:

- an alarm pop up message
- an alarm icon in the status bar, and with the status bar pulsing with the color of the alarm



If you have enabled the siren, the alarm message is followed by an audible alarm.

A single alarm is displayed with the name of the alarm as the title, and details for the alarm.

If more than one alarm is active at the same time, the alarm pop-up can display 3 alarms. The alarms are listed in the order they occur with the last activated alarm at the top. The remaining alarms are available in the alarms dialog.

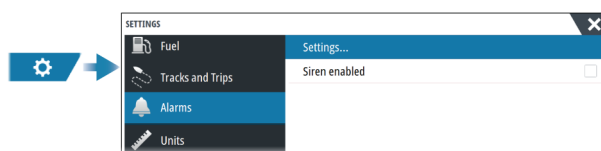
Acknowledging a message

The alarm dialog options for acknowledging a message vary depending on the alarm:

- **Close.** Sets the alarm state to acknowledged. The siren/buzzer stops and the alarm dialog is removed. However, the alarm remains active in the alarm listing until the reason for the alarm has been removed.
- **Disable.** Disables the current alarm setting. The alarm does not show again unless you turn it back on in the alarm settings dialog.

There is no time-out on a message or the siren. They remain active until they are acknowledged or until the reason for the message is rectified.

Alarms



Siren enabled

Enables/disables the siren.

Alarm dialogs

The alarm dialogs are activated from the Alarm settings dialog or by selecting the Alarm button on the toolbar.

ALARMS		
	Active	History
No GPS fix	<input checked="" type="checkbox"/>	
Shallow water	<input checked="" type="checkbox"/>	4.9 (m)
Deep water	<input checked="" type="checkbox"/>	35.5 (m)
Water temp rate	<input checked="" type="checkbox"/>	5 (°C/min)
Anchor	<input checked="" type="checkbox"/>	50 (m)
Low boat speed	<input checked="" type="checkbox"/>	5 (kn)

Active alarms

Lists all active alarms with details. Alarms remain active until the alarm is acknowledged or the reason for the alarm is removed.

Alarms history

Lists the alarm history with time stamp. The alarms remain in the list until they are manually cleared.

Settings

List of all available alarm options in the system, with current settings.
From this list you can activate, deactivate and change alarm limits.

28

Tools and settings

This chapter includes description for toolbar tools and for settings that are not specific to any application panel.

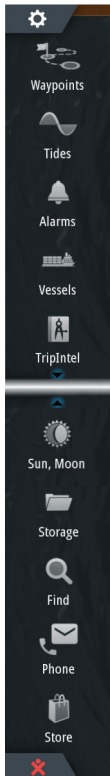
For application settings, refer to the relevant chapter for the application.

The options described in this chapter are available by selecting the toolbar or settings option from the Home page.

The toolbar

This chapter includes descriptions for toolbar tools.

The toolbar is displayed in the home page. Press the Pages/Home key to display the home page. You can scroll the toolbar to view its options.



Waypoints

Includes waypoints, routes, and trails dialogs used for managing these user defined items.

Tides

Displays tide information for the tide station nearest to your vessel. The system will show available tide stations, selected one from the list to see details.

Alarms

Dialogs for active and historical alarms. Also including the alarm settings dialog, listing options for all available system alarms.

Vessels

The status list displays status and available information for the following vessel types:

- AIS
- DSC

The messages tab shows messages received from other vessels. Select a message in the list to view details.

See details in "AIS" on page 70.

TriplIntel

TriplIntel lets you store and recall information on trips. Refer to "TriplIntel" on page 49.

Sun, Moon

Displays sunrise, sunset, moonrise and moonset for a position based on entered date and the position's latitude/longitude.

Storage

Access to the file management system. Use to browse and manage the contents of the unit's internal memory and storage devices connected to the unit.

Find

Search function for chart items (waypoints, routes, tracks, etc.).

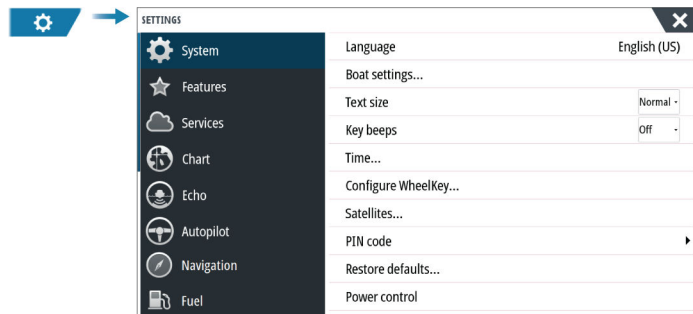
Store

Connects to the Navico internet store. At the store you can browse, purchase, acquire feature unlock keys, download compatible charts/maps for your system and much more.

→ **Note:** The unit must be connected to the internet to use this feature. Refer to "Internet connection" on page 147.

Settings

System settings



Language

Controls the language used on this unit.

Boat settings

Used to specify the physical attributes of the boat.

Text size

Used for setting the text size in menus and dialogs.

Key beeps

Controls the loudness of the beep sound that occurs when physical interaction is made with the unit.

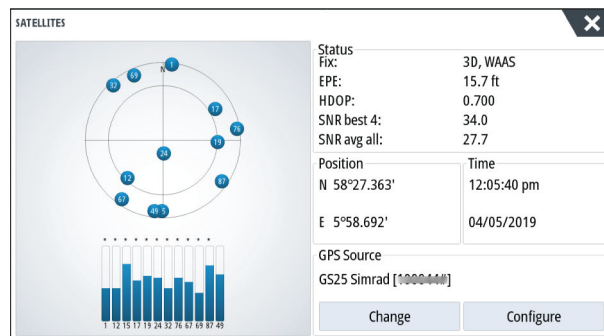
Time

Configure time settings to suit vessel location, along with time and date formats.

Satellites

The Satellites option displays a graphical view and numeric values for available satellites.

→ **Note:** The content in the Satellites dialogs varies with connected antenna.



From within this dialog you can select and configure the active GPS sensor.

PIN code

Sets a PIN code to prevent unauthorized access to your system's settings.

→ **Note:** Record the PIN code and store it in a safe place.

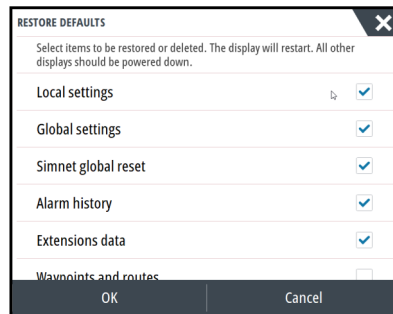
When you establish password protection, the PIN code must be entered when any of the following are selected. After the correct PIN code is entered, all of them can be accessed without re-entering the PIN code.

- Settings, activated from the home page or system controls dialog.
- Alarms, activated from the toolbar.
- Storage, activated from the toolbar.
- Store, activated from the toolbar.

Restore defaults

Restores selected settings to default factory values.

→ **Note:** If waypoints, routes, or tracks and trips are selected, they are permanently deleted.



Power control

Setting that determines unit's response to the signal applied to the power control wire. For more information, refer to the unit's installation manual.

Advanced

Used for configuration of advanced settings and how your system displays various user interface information.

Registration

Guides you how to register your device.

About

Displays copyright information, software version, and technical information for this unit. The Support option accesses the built-in service assistant, refer to "*Service report*" on page 157.

Services

Used for accessing web sites that provide feature services.

29

Maintenance

Preventive maintenance

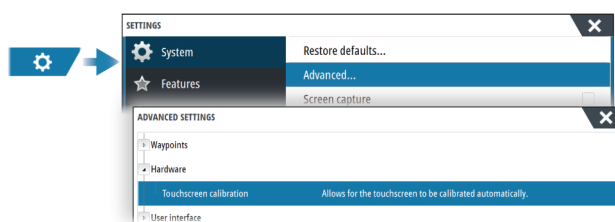
The unit does not contain any field serviceable components. Therefore, the operator is required to perform only a very limited amount of preventative maintenance.

Checking the connectors

Push the connector plugs into the connector. If the connector plugs are equipped with a lock or a position key, ensure that it is in the correct position.

Touchscreen calibration

Use the system setting option to calibrate the touchscreen.



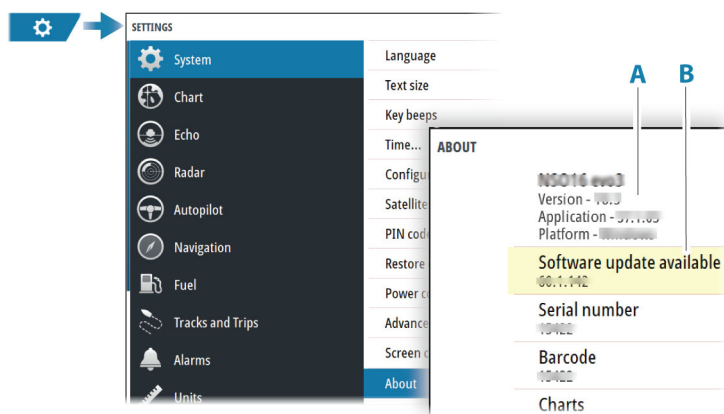
Software updates

Before initiating an update to the unit, be sure to back up any potentially valuable user data.

Installed software and software updates

The about dialog shows the software version currently installed on this unit (A).

If the unit is connected to the internet, the dialog also shows available software updates (B).

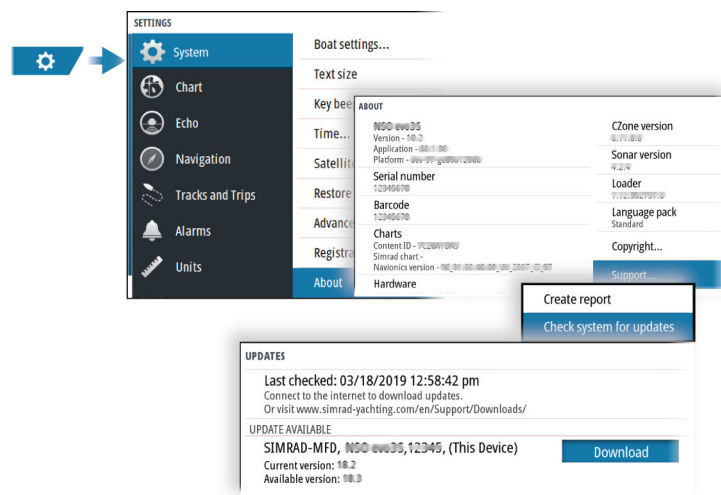


Update the software when connected to internet

If the unit is connected to the internet, the system will automatically check for software updates for the unit and for connected devices.

- **Note:** Some software files may be larger than the available free space on the unit's internal memory. In this case, you will be prompted to insert a memory card or a USB storage device into the unit.
- **Note:** Do not add software update files to a chart card.
- **Note:** Do not turn off the unit or a remote device until the update is completed, or until you are prompted to restart the unit.

You will be notified if new software updates are available. You can also manually start the update(s) from the Updates dialog.



Update the software from a storage device

You can download the software update from:

www.simrad-yachting.com

Transfer the update file(s) to a compatible storage device, and then insert the storage device in the unit.

→ **Note:** Do not add software update files to a chart card.

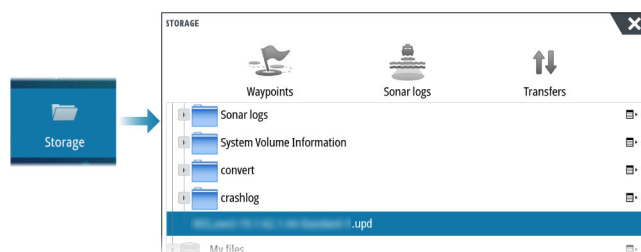
To update this unit only:

- restart the unit to start the update from the storage device

To update this unit or a connected device:

- Select the update file in the dialog

→ **Note:** Do not turn off the unit or a connected device until the update is completed, or until you are prompted to restart the unit.



Service report

The system has a built-in service assistant that creates a report about the unit. The service report is used to assist in technical support enquiries.

It can also include information about devices connected to the network(s).

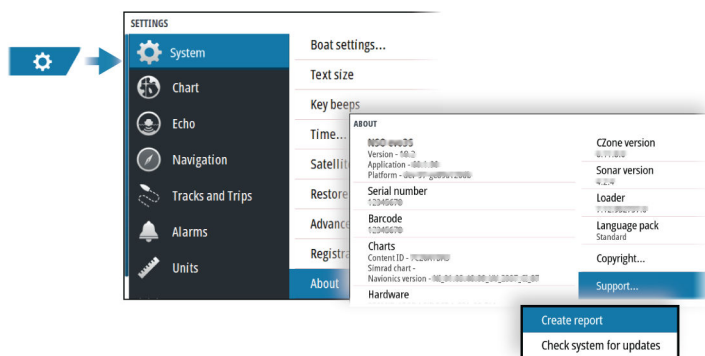
The report includes the software version, serial number, and information from the settings file.

If you call technical support before creating the report, you can enter an incident number to assist with tracking. You can attach screenshots and log files to the report.

→ **Note:** There is a 20MB limit for the report attachments.

The report can be saved to a storage device and emailed to support.

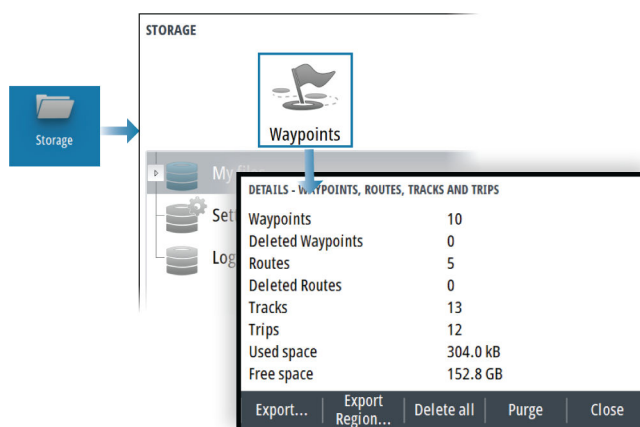
You can also upload it directly if you have an internet connection.



Backing up your system data

It is recommended to regularly copy user data and your system settings database as part of your back-up routine.

Waypoints



The waypoints option in the storage dialog allows for managing user data.

Export format

The following formats are available for export:

- **User Data File version 6**
Used to export waypoints, routes and colored tracks/trails.
- **User Data File version 5**
Used to export waypoints and routes with a standardized universally unique identifier (UUID), which is very reliable and easy to use. The data includes such information as the time and date when a route was created.
- **User Data File version 4**
Best used when transferring data from one system to another, since it contains all the extra bits of information these systems store about items.
- **User Data file version 3 (w/depth)**
Should be used when transferring user data from one system to a legacy product
- **User data file version 2 (no depth)**
Can be used when transferring user data from one system to a legacy product
- **GPX (GPS Exchange, no depth)**
This is the format most used on the web that shares among most GPS systems. Use this format if you are taking data to a competitor's unit.

Export all waypoints

The export option is used for exporting all waypoints, routes, tracks and trips.

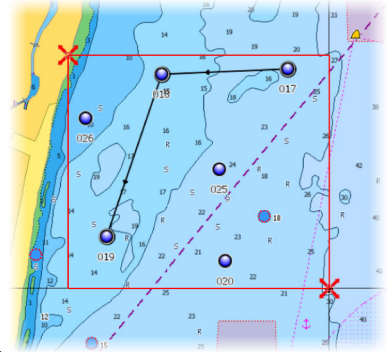
- **Note:** You can use the storage export feature to export the information to a memory card. Next, insert the card into another unit and select the file on the memory card to import it.

→ **Note:** Do not use chart cards to export/import data.

Export region

The export region option allows you to select the area from where you want to export data.

1. Select the export region option.
- 2.



Drag the boundary box to define the desired region.

3. Select the export option from the menu.
4. Select the appropriate file format.
5. Select the export option to export to the memory card.

→ **Note:** You can use the storage export-region feature to export the information to a memory card. Next, insert the card into another unit and select the file on the memory card to import it.

→ **Note:** Do not use chart cards to export/import data.

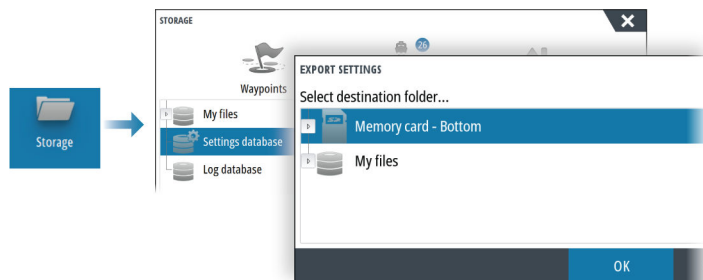
Purging user data

Deleted user data are stored in the unit's memory until the data is purged. If you have numerous deleted, unpurged user data, purging may improve the performance of your system.

→ **Note:** When user data is deleted and/or purged from the memory, it cannot be recovered.

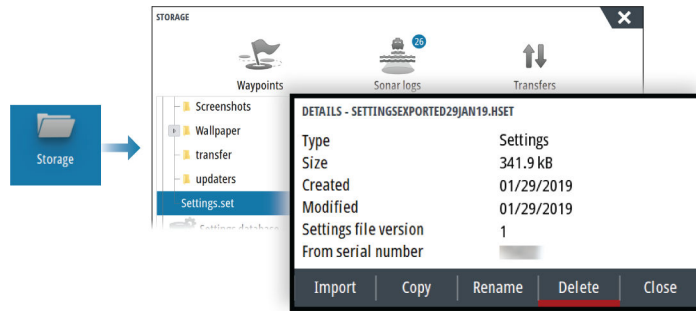
Exporting the settings database

Use the settings database option in the storage dialog to export your user settings.



Import system settings

⚠ **Warning:** Importing system settings overwrites all existing system settings.



- 1 Connect a storage device to the unit
- 2 Browse the memory and select the desired backup file to start the import

30

Integration of 3rd party devices

Several 3rd party devices can be connected to the unit. The applications are displayed on separate panels or integrated with other panels.

A device connected to the NMEA 2000® network should automatically be identified by the system. If not, enable the feature from the advanced option in the System settings dialog.

The 3rd party device is operated by using menus and dialogs as on other panels.

This manual does not include specific operation instructions for any 3rd party device. For features and functionality, refer to the documentation included with the 3rd party device.

SmartCraft VesselView integration

When a compatible Mercury Marine VesselView product or VesselView Link is present on the NMEA 2000® network, the engines can be monitored and controlled from the unit.

When the feature is also enabled in the advanced settings features dialog:

- A Mercury icon is added to the home page - select it to display the engine instrument panel.
You can customize which data is displayed on the instrument panel. Refer to *"Instruments"* on page 134.
- A Mercury settings dialog is added - use this dialog to change engine settings.
- Mercury and Vessel Control buttons are added to the control bar:
 - Selecting the Mercury button displays engine and vessel data.
 - Selecting the Vessel button opens the engine controller.

When the features are enabled, the display may prompt the user for some basic configuration information.

For more information, refer to the VesselView manual or engine supplier.

FLIR® camera control

If a compatible FLIR® M-series camera is available on the Ethernet network, you can display the video and control the camera from the system.

When the connection is established to a compatible FLIR® camera, the menu changes to include access to FLIR® camera controls.

→ **Note:** You can take over camera control from any unit connected to the Ethernet network.

Establishing connection with the FLIR® video camera

When a video panel is active, the unit automatically recognizes the compatible FLIR® camera if it is available on the Ethernet network.

→ **Note:** When there is a DHCP server present on the Ethernet network, the FLIR® camera needs to be configured and set to have a Static IP Address before the connection can be established. For instructions on how to configure your specific FLIR® camera model, refer to FLIR® documentation.

→ **Note:** Only one FLIR® camera can be connected to the Ethernet network.

When you activate a video panel, the system starts searching the Ethernet network for a compatible FLIR® camera.

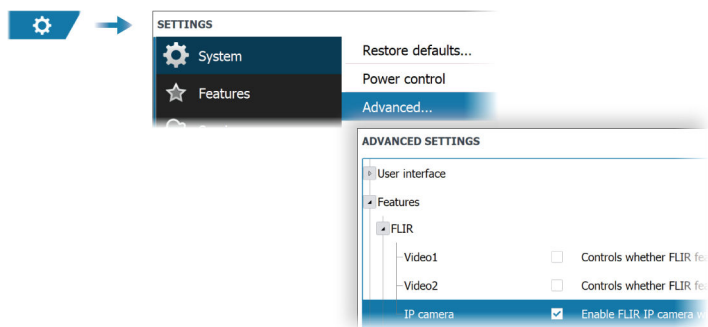
Lost connections are indicated on the panel. Select the indication to re-establish the connection.

When the connection is established the menu changes to include access to FLIR® camera control.

→ **Note:** You can take over camera control from any compatible unit connected to the Ethernet network.

FLIR® M-232 IP camera support

If a FLIR® M-232 IP camera is available on the Ethernet network, enable the feature in the Advanced settings dialog. Enabling the feature allows you to display the video and control the camera from the unit.



Panning and tilting the FLIR® camera

When the connection to the FLIR® camera is established, pan and tilt panel buttons appear on the video panel. The left and right arrow buttons control the camera's pan. The up and down arrow buttons tilt the camera.

Select one of the arrow buttons on the panel to control the camera. The camera continues to move for as long as you press the button.

Zooming the FLIR® video image

You zoom the video image by using the zoom panel buttons.

There are two zoom options available, depending upon your selected FLIR® camera source option:

- Digital zoom
Only available when the camera is in Infrared mode. In this mode, the zoom is represented in levels (0, 2 and 4 times zoom). Each press on a zoom button increments or decrements the zoom level.
- Optical zoom
Available in daylight mode. In this mode, the camera continues to zoom for as long as you press a zoom panel button.

The FLIR® camera's home position

You can set the current pan and tilt position as the camera's home position.

You can later quickly return to this camera position.

The FLIR® camera source options

The FLIR® camera includes both daylight and infrared video sources.

When the infrared source is selected, the following options are available:

- Toggle color scheme
Cycles through FLIR®'s video output color scheme. Each of these schemes maps a different color to a different temperature.
- Toggle polarity
Inverts the color scheme.

Mercury outboard engine integration

The multi-function displays (MFDs) now support the Mercury Verado 600 hp and SeaPro 500 hp V12 engines. When a compatible outboard engine is present on the NMEA 2000® network, it can be monitored and controlled from the unit.

For the new V12 outboard engines, the Mercury control panel displays the following new features in the **More** menu:

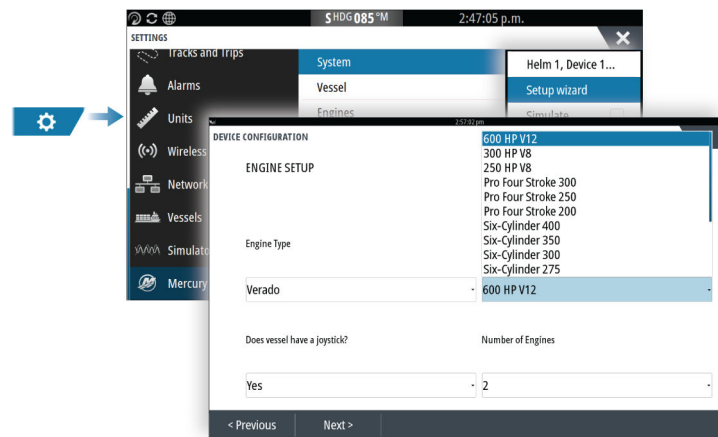
- Oil

- Oil level check
- Oil pressure
- Transmission fluid
- Maintenance
 - Engine hours
 - Oil life
- Steering angle indicator

The **Vessel control** bar also displays a propeller icon when using RPM based cruise control or Smart Tow. For more information, refer to "*Vessel control*" on page 166.

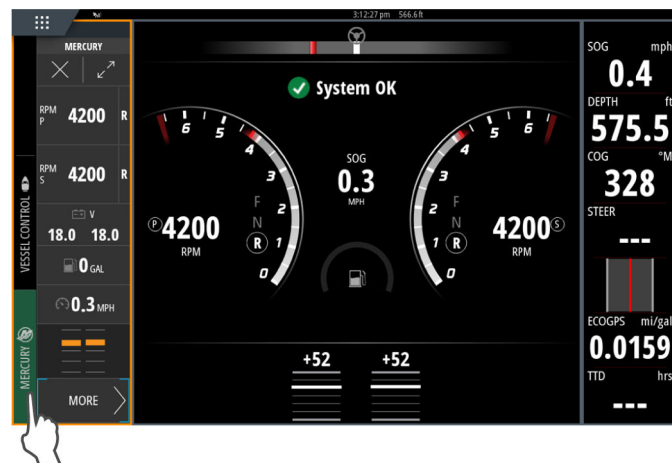
Setting up the engine

When the unit is started for the first time after the new Mercury V12 outboard engines have been connected to the NMEA 2000®, you must configure the device. Open the Mercury settings dialog and access the system setup wizard. Respond to the setup wizard prompts to select some fundamental outboard engine setup options, then select **Finish**. You can perform further setup using the system settings option and later change the settings made with the setup wizard.

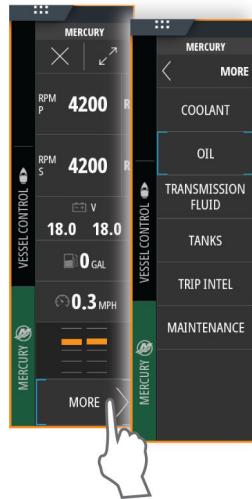


Accessing Mercury control panel

To access the control panel for Mercury, select the Mercury icon from the control bar. The panel displays engine and vessel data.



Mercury More menu



Oil

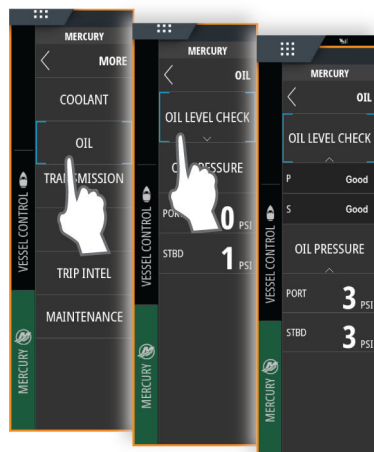
Access to view oil level and oil pressure data.

Oil level check

The new forced oil level check feature enables the user to request an oil level report at any time. Depending on the state, the engine will report the following oil level statuses:

- High
- Good
- Low
- Critical low
- Conditions low
- Checking
- Unavailable

Note: The oil level check can take several minutes depending on engine conditions.



Oil pressure

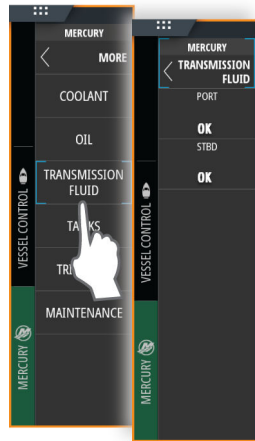
Displays individual oil pressure data for port and starboard engines.

Transmission fluid

Access to view transmission fluid data. Depending on the state, the engine will report the following transmission fluid statuses:

- OK
- Fault

- Unavailable

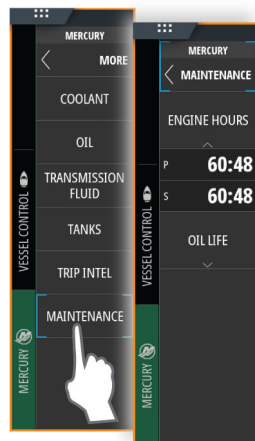


Maintenance

The **Maintenance** menu option displays engine maintenance data aimed to help you maintain the engines in optimal condition. When the engines require maintenance, a message displays on the panel to inform you that **Maintenance is due**. Maintenance icons also display to indicate where maintenance must be performed.

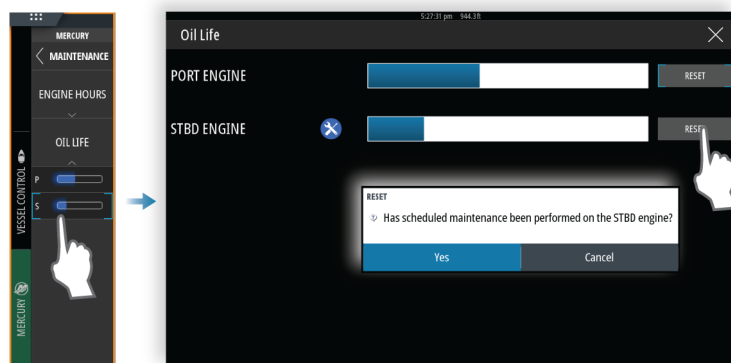
Engine hours

Displays the total running time for port and starboard engines.



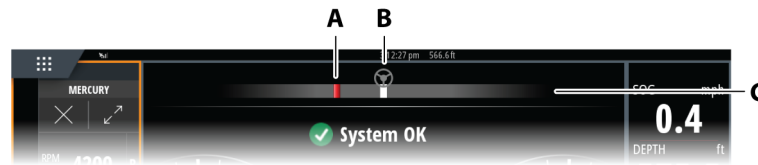
Oil life

Displays progress bars for port and starboard, that indicate when you should perform an oil change. You can reset the progress bar from the **Oil Life** dialog.



Steering angle indicator

The new Mercury V12 Verado outboard engines have an independently steerable gearcase. To ensure constant steering awareness, the Mercury Home page panel displays the steering angle indicator by default. The indicator shifts from port to starboard, depending on the boat's movement.

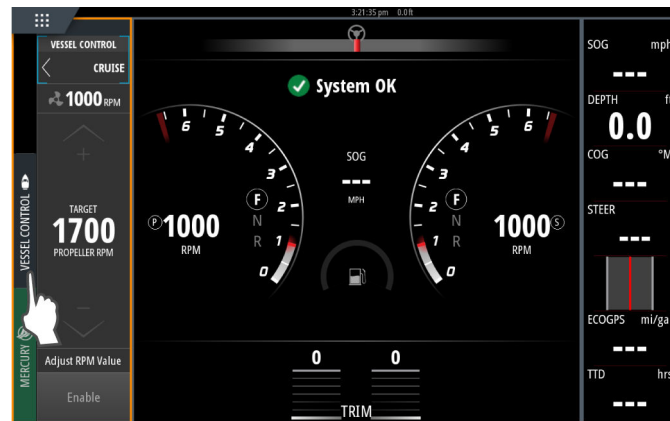


- A** Steering angle indicator
- B** Center point
- C** Steering angle indicator bar

Vessel control

When a compatible Mercury Marine VesselView product or VesselView Link is present on the NMEA 2000® network, the engines can be monitored and controlled from the unit. Selecting the **Vessel Control** button opens the engine controller.

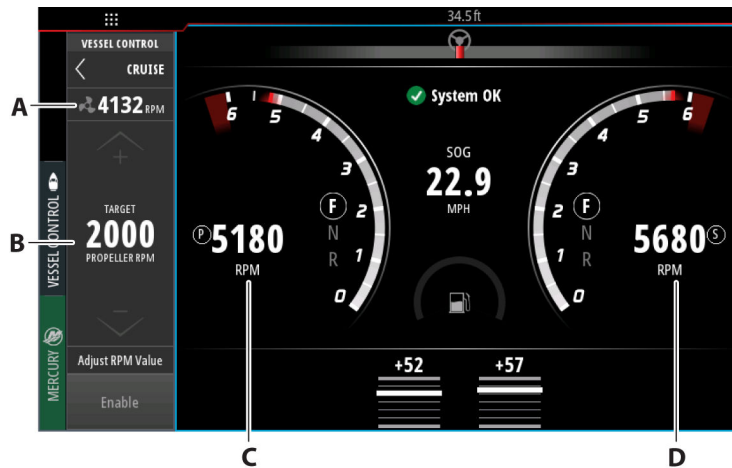
The system allows you to monitor up to six engines at a time.



Cruise control

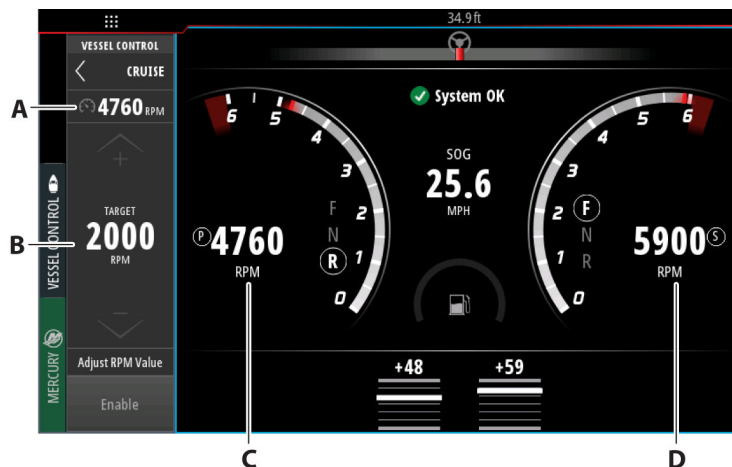
The new Mercury Verado 600 hp and SeaPro 500 hp V12 outboard engines have a two-speed transmission. When using RPM based cruise control or Smart Tow, the propeller RPM is displayed in the control bar and the selected RPM setpoint may not match the engine RPM. The engine corrects the power to maintain the right propeller RPM.

Cruise control panel for Mercury Verado 600 hp and SeaPro 500 hp V12 outboard engines:



- A Propeller RPM
- B Target Propeller RPM
- C Port engine RPM
- D Starboard engine RPM

Cruise control panel for other Mercury outboard engines:

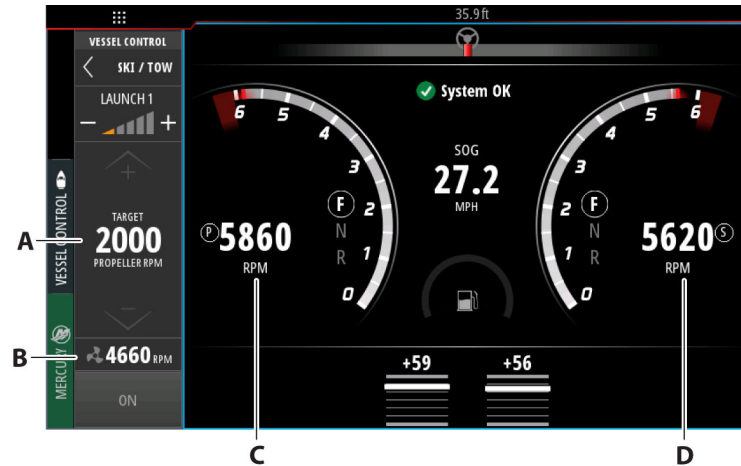


- A Engine RPM
- B Target RPM (engine)
- C Port engine RPM
- D Starboard engine RPM

Smart Tow

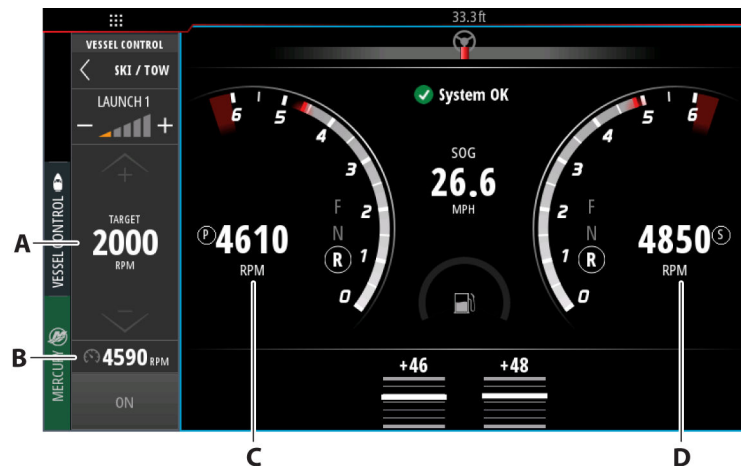
Smart Tow is designed to help provide the optimal launch and cruise speed for pulling skiers, tubers, or wakeboarders. For the new Mercury Verado 600 hp and SeaPro 500 hp V12 engines, which have a two-speed gear transmission, the **Ski/Tow** menu option provides a clear indication of the mode used. When in RPM mode, the propeller RPM is displayed in the control bar and the selected RPM setpoint may not have the same value as the engine RPM. The engine corrects the power to maintain the right propeller RPM.

Smart Tow control panel for Mercury Verado 600 hp and SeaPro 500 hp V12 outboard engines:



- A Target Propeller RPM
- B Propeller RPM
- C Port engine RPM
- D Starboard engine RPM

Smart Tow control panel for other Mercury outboard engines:



- A Target RPM (engine)
- B Engine RPM
- C Port engine RPM
- D Starboard engine RPM

Suzuki® engine integration

If a Suzuki® C-10 gauge or a Suzuki® engine interface sensor is available on the NMEA 2000® network, the engines can be monitored from the unit.

When the feature is also enabled in the advanced settings features dialog:

- A Suzuki® icon is added to the home page - select it to display the engine instrument panel.
You can customize which data is displayed on the instrument panel. Refer to *"Instruments"* on page 134.

For more information, refer to the engine manual or engine supplier.

Yamaha® engine integration

If a compatible Yamaha® gateway is connected to the NMEA 2000® network, the engines can be monitored from the unit.

When the feature is also enabled in the advanced settings features dialog:

- A Yamaha® icon is added to the home page - select it to display the engine instrument panel.
You can customize which data is displayed on the instrument panel. Refer to *"Instruments"* on page 134.
- If the Yamaha® system supports Troll Control, a Troll button is added to the control bar. Select this button to enable/disable troll control and control the trolling speed.

For more information refer to the engine manual or the engine supplier.

BRP® engine integration

If a BRP® engine control head is available on the NMEA 2000® network, the BRP® engines can be monitored and controlled from the unit. When the feature is available, a BRP® icon is added to the home page.

A maximum of two control heads and four engines is supported.

When the feature is also enabled in the advanced settings features dialog:

- A BRP® icon is added to the home page - select it to display the engine instrument panel. You can customize which data is displayed on the instrument panel. Refer to *"Instruments"* on page 134.
- A BRP® settings dialog is added - use this dialog to change engine settings.
- A BRP® button is added to the control bar - selecting this button opens the engine controller. Use the engine controller to control the engines.

For more information, refer to the engine manual or engine supplier.

FUSION-Link™ integration

Compatible FUSION-Link™ devices connected to the system can be controlled from the system.

The FUSION-Link™ devices appear as additional sources when using the audio function. No additional icons are available.

Refer to *"Audio"* on page 137 for more information.

BEP® CZone® integration

The unit integrates with the BEP® CZone® system. It is used for controlling and monitoring a distributed power system on your vessel.

The CZone® icon is available in the toolbar on the Home page when a CZone® system is available on the network.

A separate manual is provided with your CZone® system. Refer to this documentation and to the unit's Installation manual for how to install and configure the CZone® system.

CZone® dashboard

When the CZone® is installed and configured, an additional CZone® dashboard is added to the instrument panels.

You switch between a panel's dashboards by swiping left or right on the panel or by selecting the dashboard from the menu.

Editing a CZone® dashboard

You can customize a CZone® dashboard by changing the data for each of the gauges. Available editing options depend on the type of gauge and which data sources that are connected to your system.

For more information, refer to *"Instruments"* on page 134.



Power-Pole® anchors

You can control your Power-Pole® anchors from the unit using the built-in C-Monster® Control System. You can pair the anchors with the unit via Bluetooth® or via the C-Monster® gateway connected to the NMEA 2000® network.

→ **Note:** Power-Pole® One™ pump can only be controlled via the C-Monster® gateway connected to the NMEA 2000® network.

Power-Pole® controls

When a Power-Pole® unit is paired via Bluetooth® or NMEA 2000®, the Power-Pole button becomes available in the control bar. Select it to display the Power-Pole controller.

For pairing Bluetooth® devices, refer to "" on page 0 .

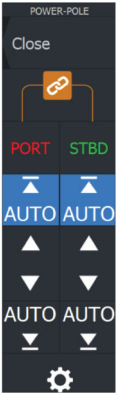
If you are pairing a dual Power-Pole®, also review *"Pairing with dual Power-Pole®"* on page 170.

The Power-Pole® controller displays control buttons for each Power-Pole® that is paired to the unit.

Single press the AUTO buttons to raise and lower the Power-Pole® anchors automatically all the way up and down. The manual up and down buttons raise and lower the poles as high or low as you want.



Single Power-Pole® controller



Dual Power-Pole® controller

→ **Note:** The single controller is displayed when connected to the Power-Pole® One™ pump or a single pump.

On a dual controller you can raise and lower the Power-Pole® anchors separately, or press the sync (links) button to allow for control of both with a single press of the auto buttons or the manual up and down buttons.

Stay connected

Select the Settings button on the Power-Pole controller to open the Power-Pole® Settings dialog where you can select to stay connected to all paired Power-Pole® anchors.

→ **Note:** Selecting to Stay connected speeds up access to the controls, but the anchors cannot be controlled from another unit when it is selected. Turn off this option to allow connection from other units.

The Power-Pole® Settings dialog also provides the option to add or remove Power-Pole®s. This option opens the same Bluetooth® Devices dialog you open from the Wireless settings dialog. Refer to "" on page 0 .

Some Power-Pole® units can also be connected via the C-Monster® gateway connected to the NMEA 2000® network. For more information refer to the Power-Pole® operator manual.

Pairing with dual Power-Pole®

If two Power-Pole® anchors are installed on your boat, the one that is paired first is automatically assigned to Port and the second is assigned to Starboard in the Power-Pole® controls.

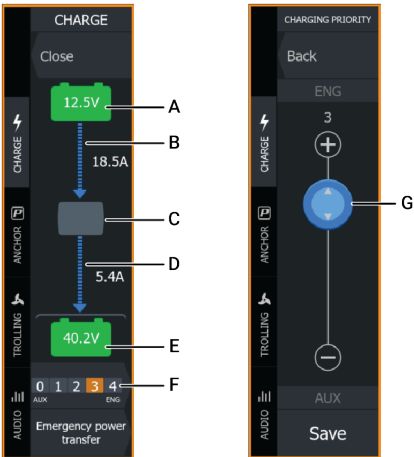


To swap them around, unpair the connected Power-Pole® anchors. And then, toggle off and on Bluetooth® in the **Wireless settings** dialog to reset the Bluetooth® memory. Once Bluetooth® has been toggled back on, proceed in pairing the Power-Pole® anchors in the correct order.

➔ **Note:** Power-Pole® One™ pump can only be controlled via the C-Monster® gateway connected to the NMEA 2000® network.

Power-Pole® Charge module

The Power-Pole® battery charge management system displays battery status information.



For installation, wiring and setup information, refer to the Power-Pole® documentation supplied with the charge module.

- A** Engine battery/batteries
- B** Battery connections
- C** Power-Pole® charge module
- D** Battery connections
- E** Auxiliary battery/batteries
- F** Charging priority level. Select to open the battery charging priority adjustment slider.
- G** Move the slider or press the + / - buttons to adjust the charging priority.

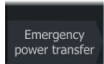
➔ **Note:** Power-Pole® Charge devices can only be controlled via the C-Monster® gateway connected to the NMEA 2000® network.

Battery icons

Color	Indicates
Green	Good level
Yellow	Marginal level
Red	Failing/critical level

Battery and AC source connections

Color	Indicates
Blue	Current flow
Grey	No current flow



Emergency power transfer

If your engine battery is low and you want to transfer power from the aux battery to the engine battery, select this option.

⚠ Warning: Using a battery at a very low charge level can damage the battery.

Naviop

If this device is on the same NMEA 2000® network as a Naviop Loop system, this device can be used to operate the Naviop Loop system.

For details, refer to the documentation following the Naviop system.

NMEA 2000® RGBW lighting

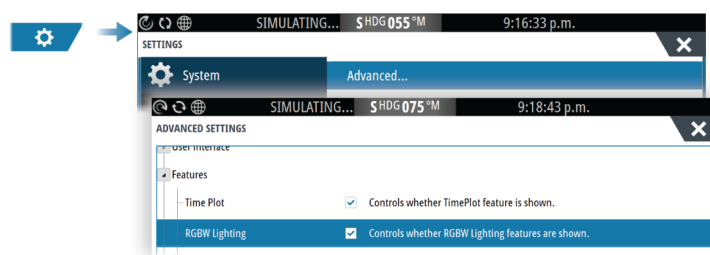
⚠ Warning: IT IS THE USER'S RESPONSIBILITY TO OPERATE THIS DEVICE IN COMPLIANCE WITH ALL APPLICABLE LAWS, REGULATIONS AND ORDINANCES. Navico does not assume any responsibility for any fines, penalties, or damages that may be incurred as a result of any state or local law or ordinance relating to the alteration of your vessel's lighting. Refer to local maritime laws and regulations to ensure lighting is compliant.

An RGBW lighting controller can be connected to the NMEA 2000® network and configured to allow control of your vessel's lighting from the control bar in the multi-function display (MFD). The new controls allow the user to customize lighting color, adjust brightness, synchronize lights with music, create various lighting scenes, and independently control and sync multiple zones of lighting on the vessel.

Enabling/disabling the lighting controller

When a lighting controller is connected to the NMEA 2000® network, it appears in the control bar. If it doesn't automatically appear in the control bar, verify the controller supports the NMEA 2000® standard or check if the controller is visible in the device list.

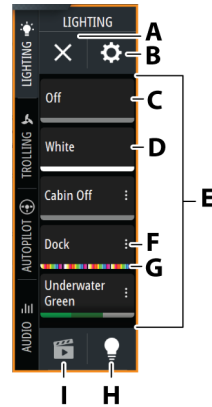
To manually enable/disable the lighting controller, go to **Settings > Advanced settings > Features**, and enable/disable **RGBW Lighting**.



No connection

If a connection problem occurs between the MFD and the lighting controller, a not connected message displays on the control bar.

The NMEA 2000® RGBW Lighting control bar



- A** **Close button** - hides the control panel.
- B** **Manage Lights button** - opens the **Manage Lights** dialog.
- C** **Off** - turns off the scene lights.
- D** **White** - turns the scene lights white.
- E** **Scenes/All lights list:**
 - Select the **Scenes** button to view available scenes.
 - Select the **All lights** button to view available lights.
- F** **Ellipsis icon** - opens the **Manage Scene** dialog.
- G** **Color preview** - indicates the color selected for the scene.
- H** **All lights button** - opens a list of zones followed by the single lighting devices. When selected, the icon is grayed out.
- I** **Scenes button** - opens a list of scenes. When selected, the icon is grayed out.

All lights menu options

Use the **All lights** button on the NMEA 2000® RGBW lighting control bar to view all lighting zones and individual lights. From this menu, you can turn the lights on/off, configure the lighting color, and apply various effects to zones.

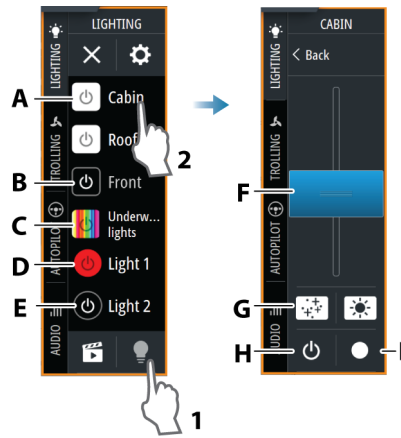
Zone lights are identified using a square and power icon. Individual lights are identified using a circle and power icon.

On the **All lights** list, tap the Power button icon next to the lighting zone/individual light label to turn the light on/off. When turned on, the Power icon displays the color selected for the zone/light. When turned off, the Power icon is black and white.

Tap the label for the lighting zone or the individual light to open the options menu.

Note: To turn a light on individually, it must first be removed from the zone.

Note: Controllers may support different levels of functionality.



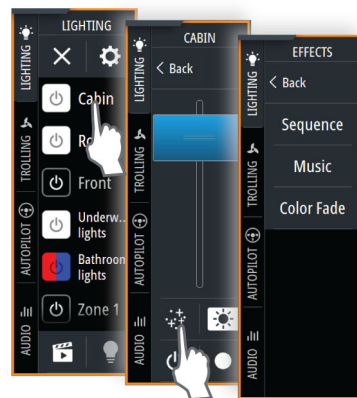
- A** **Lighting zone icon** - On
- B** **Lighting zone icon** - Off
- C** **Lighting zone icon** - with color sequence effect started.
- D** **Individual light icon** - On
- E** **Individual light icon** - Off
- F** **Intensity slider** - adjusts the brightness/intensity. If effects are started, the slider controls the intensity of the effects.
- G** **Effects** - select to apply different effects to lighting zones.
- H** **Power button** - turns the lights on/off.
- I** **Color** - opens the color selection sliders.

Note: Options vary depending on the controller/lights connected.

Effects menu options

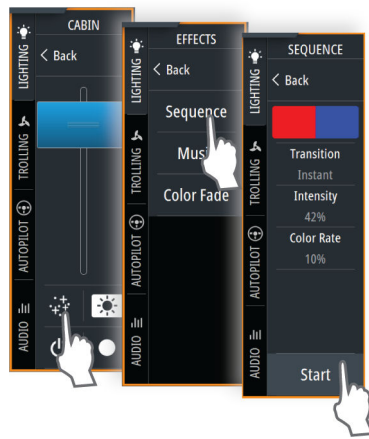
Use the **Effects** button to customize your lighting zones. Apply a color sequence to your lights, set the color rate, intensity, color transition, or synchronize lights with music.

Note: The effects available may vary depending on your controller.



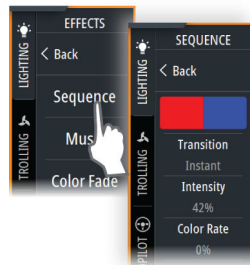
Start/stop an effect program

You can start/stop an effect program from the **Effects** menu. To start an effect, open one of the effects and select **Start**. To stop an effect without turning the zone lighting off, open the running effect and select **Stop**.



Effect program menu options

You can customize the lighting effects from the effect program's menu. The programs and menu options available vary depending on your lighting controller.



Create new color sequence

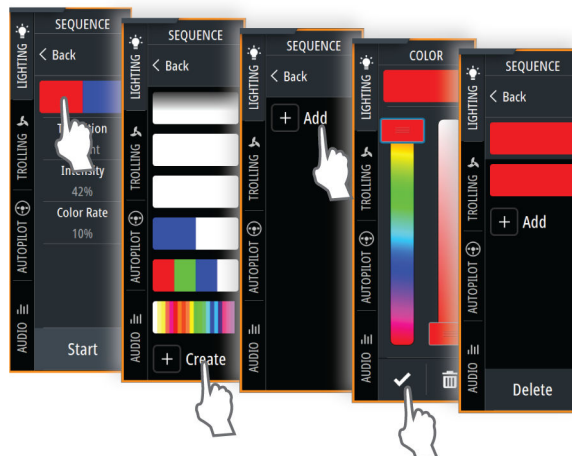
You can create a custom color sequence from the **Effects** menu.

To create a new color sequence:

1. Select the label of a lighting zone.
2. Select the **Effects** button. The Sequence menu opens.
3. Select the color block.
4. From the bottom of the menu, select **Create**.
5. Select **Add**.
6. Use the color and hue sliders to choose the color and select the check mark to add it.
7. Repeat steps 5 and 6 to add more colors to your sequence.
8. When finished, select **Back**. The color sequence created is automatically selected.

To select a sequence, tap on a color block; the selection is marked with a pencil icon.

To delete a sequence, tap it (tap twice if it is not the current selection), and select **Delete**.



Transition

Use this option to select the color transition for the lights. The options available may vary depending on your controller.

Intensity

Select this option to adjust the intensity of the color using the slider.

Rate

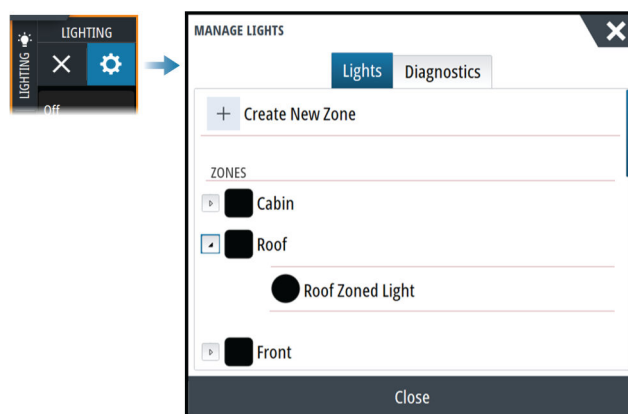
Select this option to adjust the rate at which the program effect changes.

Color rate

Select this option and use the slider to adjust the rate at which the color changes.

The Manage Lights dialog

Use the **Manage Lights** dialog to create a new lighting zone, to delete zones, and access zone and individual lighting information. From the **Diagnostics** tab, you can also verify the details of your lighting controllers and refresh data.



Create new zone

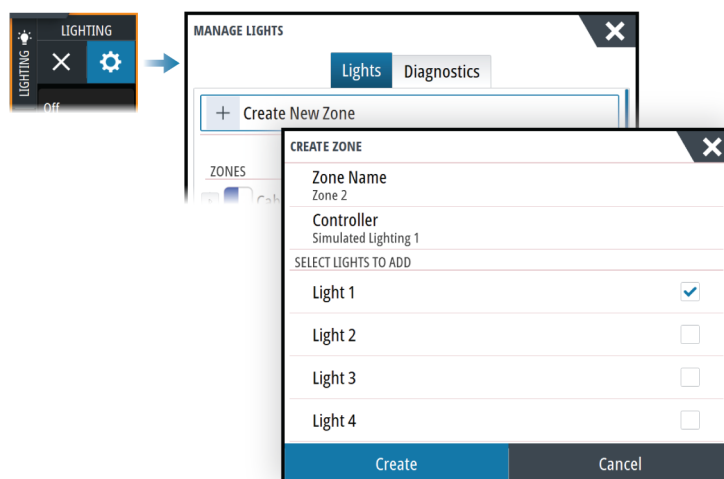
The NMEA 2000® RGBW lighting controller allows you to easily create and manage multiple zones of lighting on your vessel.

To create a new zone:

1. Open the lighting control bar on your MFD.
2. Select the **Manage Lights** button.
3. From the **Lights** tab, select **Create New Zone**.
4. Add a zone name, assign a controller, and select the lights assigned to the zone.
5. Select **Create**.

Note: To delete a zone, select the zone in the **Manage Lights** dialog. In the **Zone Details** dialog, select **Delete This Zone**.

Note: To turn a light on individually, it must first be removed from the zone.



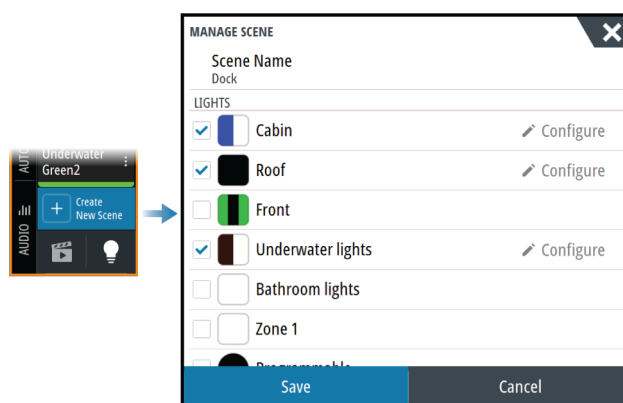
Create new scene

Selecting a scene causes all zones assigned to the scene to change to a specified color, intensity, and effect.

To create a new scene:

1. From the lighting control bar, select the **Scenes** button.
2. Select **Create New Scene**. The **Manage scene** dialog displays.
3. From the **Manage scene** dialog, add a name to the new scene, and select the lights you want to assign to it.
4. When a light is selected, the **Configure** button displays. Select it to open the **Manage effects** dialog and customize the light as desired, then select **Close**.
5. Select **Save**.

The icons display the color selected for the zone/light. If the lights have a color sequence selected, the icons display vertical bars in the selected color sequence.



The Manage effects dialog

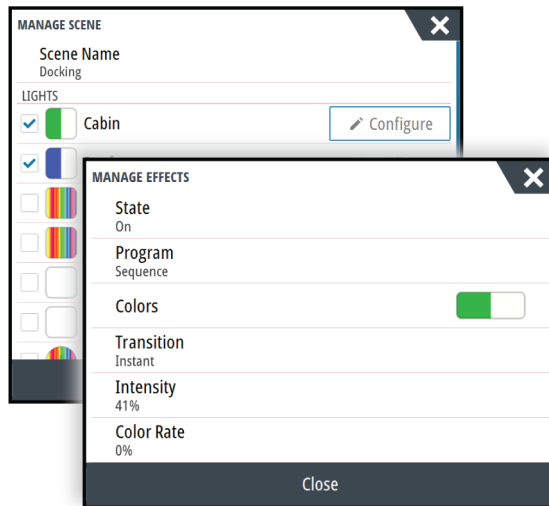
Zone lights and individual lights included in a scene can be customized individually from the **Manage effects** dialog. The dialog is accessed via the **Configure** button.

From the **Manage effects** dialog you can access the following settings:

- **State** - select to turn the program on/off. When off, the effects cannot be edited.
- **Program** - select a program for the lighting effect such as **Sequence**.
- **Colors** - select a color sequence.
- **Transition** - select the color transition. The transition options may vary depending on your controller.
- **Intensity** - select the intensity of the effect.
- **Rate** - select the rate at which the program effect changes.
- **Color rate** - select the rate at which the color changes.

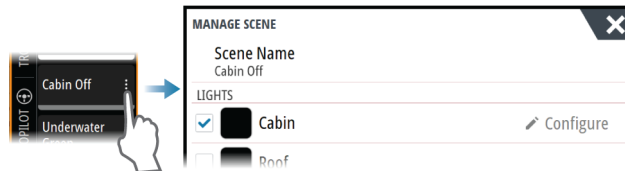
Effects can also be edited from the **Effects** menu.

Note: The options may vary depending on the **Program** selected.



Edit a scene








To edit an existing scene, from the lighting control panel, navigate to the scene and select the ellipsis icon to open the **Manage scene** dialog. Make the desired lighting changes and select **Save**.



Touchscreen operation

Basic touchscreen operation on the different panels is shown in the table below.

The panel sections in this manual have more information about panel specific touchscreen operation.

Icon	Description
	<p>Tap to:</p> <ul style="list-style-type: none"> • Activate a panel on a multi-panel page • Position the cursor on a panel • Select a menu and a dialog item • Toggle a checkbox option on or off • Show basic information for a selected item
	<p>Press and hold:</p> <ul style="list-style-type: none"> • On any panel with a cursor to either activate the cursor assist feature or open the menu. Refer to <i>"Customizing the long press feature"</i> on page 19. • On the Instrument bar to open the Choose data dialog. • On a panel button on the home page to see available split screen options. • On a favorite button on the home page to enter edit mode.
	<p>Scroll through a list of available options without activating any option. On a slide bar, move the slide up or down.</p>
	<p>Flick to quickly scroll through e.g. the waypoint list. Tap the screen to stop the scrolling.</p>
	<p>Pan to position a chart or sonar image on the panel.</p>
	<p>Pinch to zoom out on the chart or on an image.</p> <p>→ Note: Not available for zooming sonar images.</p>
	<p>Spread to zoom in on the chart or on an image.</p> <p>→ Note: Not available for zooming sonar images.</p>

Keyboard operation

To connect a keyboard, a free USB port on the unit is required.

All keys on the keyboard work as usual when entering text in a text field.

Keyboard operation and shortcuts are shown in the table below. Unless noted all references are single short presses on the key.

→ **Note:** The shortcuts refer to US keyboard layout. Some shortcuts may not work on different national keyboards.

Keyboard keys	Function
Menu	Opens the menu
Ctrl + M	
F1	Opens the Home page
Ctrl + P	
F2	Opens the Chart page
Ctrl + H	
F3	Opens the Radar page
Ctrl + R	
F4	Opens the Echo page
Ctrl + E	
F5	Opens the Nav page
Ctrl + N	
F6	Opens the Instrument page
Ctrl + I	
F12 (press and hold)	Positions a MOB mark at vessel position
Ctrl (double click)	Switches control to next monitor connected to the unit (USB port must be set to switchable) → Note: This is not applicable for all units.
Ctrl + B	Centers the chart on vessel position
Ctrl + D	Switches between panels on a multi-panel page
Ctrl + G	Opens the Goto menu
Ctrl + K	Places a waypoint at vessel/cursor position
Ctrl + L	Acts as the Wheel key, which can be configured.
Ctrl + O	Opens the New Waypoint dialog
Ctrl + Q	Opens the System Controls dialog
Ctrl + S	Switches the autopilot system to STANDBY mode
Ctrl + U	Switches the autopilot system to Heading hold mode
Ctrl + ;	Displays the Favorite panel as pop-up on active page
Ctrl + \	Take screenshot
PrintScn	
Esc	<ul style="list-style-type: none"> Cancel changes and returns to previous menu level Closes an open menu
Enter	Activates/confirms current selection
Arrow keys	<ul style="list-style-type: none"> Move the cursor on the panel, and maneuvers in the menus/dialogs. On a slide bar, up/down arrows to move the slide up or down.
- and +	Zoom

Mouse operation










To connect a mouse, a free USB port on the unit is required.












The mouse pointer becomes visible when you move the mouse, and it will auto-hide after a few seconds of inactivity.

- Press the left key to position the cursor on a panel or to select an option.
- Press and hold the left key and drag the mouse to:
 - Perform drag, flick, or swipe actions
 - Select text in an input field
 - Pan a chart
 - Pan to view sonar history or depth
 - Move the slide up or down on a slide bar
- Use the scroll wheel to zoom a zoomable panel or image, or to scroll through menu and dialog options.
- The use of the right key depends on if the cursor is active or not.
 - With active cursor: press the right key to display information about the item at cursor position.
 - Without active cursor: press the right key to toggle the panel menu on/off.

Status bar icon definitions

Depending on your system and set up, the following icons can appear on the status bar:

Icon	Definition
  	Alarm - a standard (yellow), important (orange) or critical (red) alarm is sent. To remove the icon in the status bar, acknowledge the alarm in the Alarms dialog. If needed, change the alarm setting or remedy the situation so the same alarm is not resent immediately by the system.
	Autopilot modes: Auto-Heading hold, Follow up, Navigation, No drift, Standby. Use the autopilot controller to select an autopilot mode.
	Autopilot turns - autopilot is turning the vessel in a turn mode: C turn, Depth turn, S turns, Spiral turn, Square turn, ZigZag turns. In most cases, when the turn is completed the turn icon is replaced with an autopilot mode icon. Use the autopilot controller to select an autopilot turn or cancel the turn.
	Downloading files, e.g.: software update file, logs from C-MAP Genesis, GRIB weather files, PredictWind routes, etc.
	The unit is connected to the internet. The unit can be used to download or upload files to the internet.
	GPS signal strength: strong, medium, and weak. The placement of the GPS and obstructions between it and satellites can affect the signal strength. In some cases, a well-placed external GPS antenna might be needed.
	GPS signal strength with the Wide Area Augmentation System (WAAS) is strong, medium, and weak.

Icon	Definition
	An external keyboard is connected to the unit.
	An external mouse is connected to the unit.
	A mobile (cell) phone is connected to the unit via Bluetooth®.
	The system is simulating. Turn ON/OFF the simulator from the simulator settings dialog.
	Radar is paused. If you want the radar to transmit, select the transmit option in the Radar page menu.
	Radar is transmitting. If you want to pause the radar, select the pause option in the Radar page menu.
	A compatible remote controller is connected to the unit.
	The system is synchronizing data during startup.
	File transfer problem, caused by an interruption in the internet communication.
	Trip recording. For more information, open the TripIntel tool option.
	Uploading files, e.g.: service report, C-MAP genesis, route files to PredictWind, etc.

