SIMRAD®

ADDENDUM, software release 20.2 for:
• NSS evo3S™
• NSS evo3™

This addendum documents the new features included in this software release.

* Support for this feature was available for NSS evo3™ in software release 20.0.

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Radar and AIS feature changes

Radar and AIS features are changed, for example:

- Radar panel has more refined symbology (e.g. compass and range rings).
- Radar panel menus are restructured.
- Watching specific radar targets option is added.
- Power saving is added which allows for radar sleeping and sweeping in intervals.
- The Radar and AIS target symbols are changed.
- Radar and AIS target trails are changed.
- Radar and AIS target tracking and filtering options are changed.
- To-scale own boat icon with settable radar antenna position has been added.

The following Radar and AIS sections include the changes. Options for different radar systems are described. The radar options available in your display unit depend on your radar system.
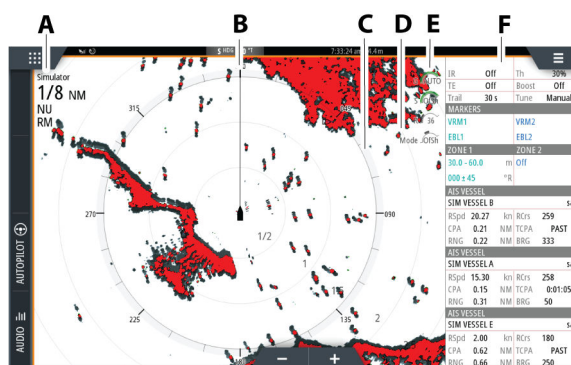
Radar

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 access buttons **
F	Data bar *

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

** The quick access buttons are accessed by touch operation.

Dual radar

You can use a dual panel page to show radar images from two different radar sources.

→ **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 vessel. 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.

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 page, 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 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.
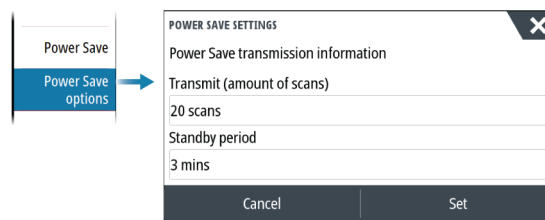
Power save

→ **Note:** The latest software must be installed in the radar transceiver in order to use the power save feature.

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.

8 NM
NU
RM

Dual range

➔ **Note:** Halo 20 does not support dual range.

When connected to a Halo radar (other than Halo 20), 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 5.

➔ **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

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.
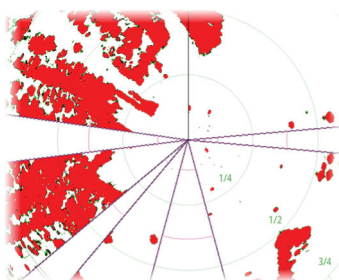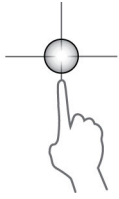
Main radar PPI   *Radar overlay on a chart*

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.

The cursor assist function

→ **Note:** The cursor assist function is available if it is enabled in the advanced settings dialog. Refer to the operator manual.

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.

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.

New waypoint

You can save a new waypoint at a selected position by positioning the cursor on the panel, and then using the new waypoint menu option.

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 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.
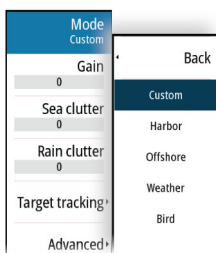
Offshore mode

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. The radar is set up for maximum sensitivity. 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
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.

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.

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. Refer to *"Target tracking zones"* on page 8. 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.

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 19.

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*
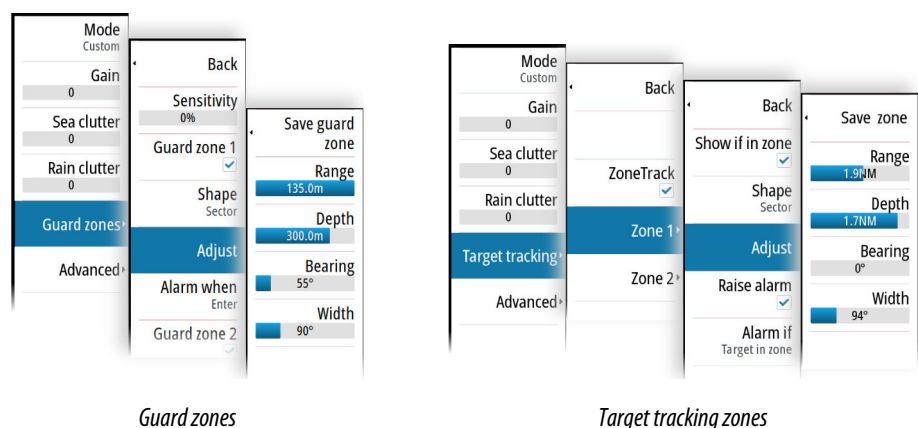
Two zones can be defined, each with individual settings.

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.

Creating guard zones or target tracking zones

A guard zone or target tracking 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 or a target tracking zone

1. Ensure that the cursor is not active.
2. Activate the menu, select guard zone or target tracking, then select one of the zones.
3. Select the shape for the zone.
   The adjustment options depend on the zone shape.
4. Select Adjust to define the settings for the 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
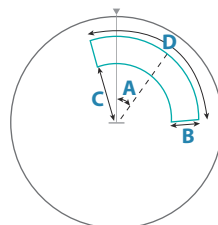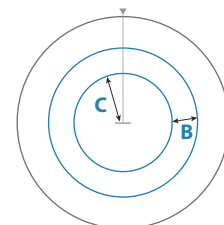
Shape: Sector   *Shape: Circle*

5. Select the save option to save your settings.

Guard zone or target tracking zone alarm settings

An alarm can be set to activate when a radar target breaches the zone limits.

Guard zones, select the **Alarm when** option to toggle between activating the alarm when the target enters or exits the guard zone.

Target tracking zones, select Raise alarm and select the **Alarm if** option to toggle between activating the alarm while the target is in or when the target exits the target tracking zone.
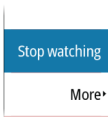
Sensitivity

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

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.

Watch target

More▸

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.

Radar target symbols

The system uses the target symbols shown below.

	Radar target, not moving.
	Tracked radar target, not moving. Tracked radar targets have a ring around them. They also show the target ID number.
	Tracked radar moving target with trail when target history is enabled. Shows the tracked target ring and the target ID number.
	Tracked moving radar target with no course extension (short line indicating the direction where the target moves). Shows the tracked target ring and the target ID number.
	Tracked moving radar target with course extension. Shows the tracked target ring and the target ID number.
	Tracked dangerous radar moving target (yellow), with trail when target history is enabled. 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.
	Tracked dangerous radar moving target (purple), with trail when the target history is enabled. The purple color is shown when the radar palette is white/red. Shows the tracked target ring and the target ID number.
	Tracked dangerous radar moving target (red), with trail when target history is enabled. The red color is shown when the radar palette is black/yellow. Shows the tracked target ring and the target ID number.
	Tracked associated 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. ➔ **Note:** The tracked radar target continues to be analyzed by the system when the target association is active.
	Selected radar target.

⌀	Lost radar target.

Possible target tracking errors

Some factors can generate tracking errors or make the radar image difficult to read, and therefore reduce target detection capability:

- Sea, rain, snow and low clouds returns
- Radar Interference
- Sidelobe echoes
- Blind sectors
- Low signal to noise ratio and signal to clutter ratio

> ⚠ Warning: The speed and course of a radar target are obtained by consecutive measurements of the echo position. The data is then filtered to reach the required precision. This means, that every abrupt change of speed and direction will be recognized with a certain delay to reach absolute certainty that the target is moving in a different way. The confirmation delay is about five scans and after that some additional time is needed to reach the same data precision as from before the maneuver.

Sea, rain, snow and low clouds returns

Radar echoes in sea, rain or weather clutter areas may be masked by the clutter. The effects of such errors appear as continuous big changes of the target course and speed vectors. Sometimes the symbol of a target that has been acquired at high speed can slip away from the real target position after a certain time, and this might generate the lost target alarm.

These errors can be avoided or at least minimized by proper manual adjustments of sea and rain controls, or by selecting the automatic control option. For more details, see *"Adjusting the radar image"* on page 6.

Radar interference

Other radars operating in the same frequency band can generate interference. Normally this is seen on the radar screen as a series of spirals. When the interference falls on the tracked target, it can cause a deformation of the size of the echo, and consequently a small error in the target's course and speed values.

Adjustment option is available in the advanced menu. See *"Rejecting radar interference"* on page 13.

Second trace echo

A second trace echo is an echo received from a distant target, received after the following pulse has been transmitted.

Second trace echoes are present only under abnormal atmospheric conditions, or in condition of super-refraction.

These echoes will be displayed at their correct bearing, but at a wrong range.

Second trace echoes can be recognized by their irregular shape. Since the period between two subsequent transmitted pulses is subject to small variations, the second trace echo appears undefined and hazy.

Second trace echoes are automatically suppressed by the radar when the interference rejection is turned on. Refer *"Rejecting radar interference"* on page 13.

Sidelobe echoes

Radar antennas have a radiation pattern consisting of a main lobe and several very small sidelobes. Most of the energy transmitted by the radar is radiated and received back on the main lobe, and a very small part on the sidelobes. This has no effect in case of distant or small targets, but the returns from a large target at short range (less than 3 NM) can generate, on both sides of the main echo and at the same range, arcs or series of small echoes. These

effects, when they are an extension of the main echo, can cause momentary errors for the tracking, and course and speed values given by the tracking can become unstable.

The problem can usually be eliminated or strongly reduced by an accurate adjustment of the Sea clutter control. Refer to *"Sea clutter"* on page 7.

Blind sectors
Funnels, masts or other obstructions (when located near the radar antenna) may cause blind or shadow sectors, where the target visibility may be completely lost or strongly reduced. Targets remaining in these sectors for a long time (more than 10 antenna revolutions) will be considered lost, and the lost target alert will be triggered.

Use the sector blanking feature to stop the radar from transmitting on up to four sectors in the image. Refer to *"Sector blanking"* on page 5.

Low signal to noise ratio and signal to clutter ratio
In situations where the signal to noise or the signal to clutter ratio of the radar echoes is low (small vessels in heavy sea or rain clutter, or big vessels close to the radar horizon), target detection is poor and the tracking will not detect the target at each antenna revolution. This will cause errors in the tracking, and it can range from missed information and up to complete loss of the target when it is missed for 10 consecutive antenna revolutions.

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 19.

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.
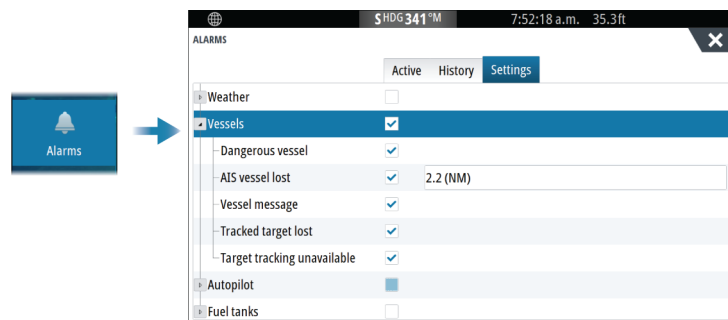
Dangerous target alert messages

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.
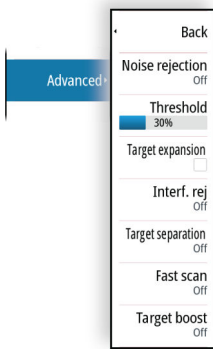
Advanced radar options

Menu options can vary depending on your radar's capability and the selected operation mode.

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.

Threshold

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

Target expansion

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

Rejecting radar interference

The Interference rejection (IR or Interf. rej.) option is used to eliminate second trace echoes from far distance targets, and the interference from radar units operating in the same frequency band.

When the IR is ON, transceiver pulse staggering is enabled. When enabled, the transceiver PRF is changed slightly for each sweep. By doing this, spiral interferences and second trace echoes are split in range from sweep to sweep. The IR processing clears all the echoes found at the same range if they are not present in each sweep.

The IR must be chosen according to the environment around own ship:

· IR off when the maximum signal from the receiver is needed
· IR on when the interference or second trace echoes disturb the radar image

To avoid missing weak targets, the interference rejection should be set to OFF when no interference exists.

Target separation

Controls 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.

Target boost

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

More options

Menu options can vary depending on your radar's capability.
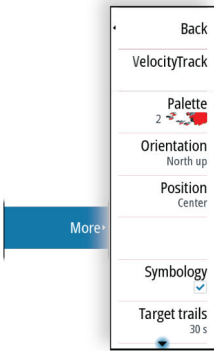
VelocityTrack

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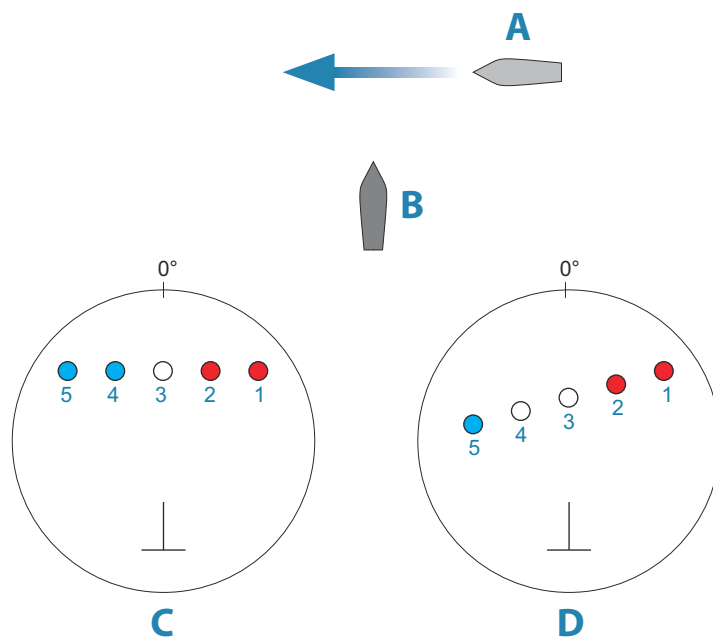
The examples show the target movement (1-5) over 5 radar scans with the radar in relative motion mode.

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.

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.
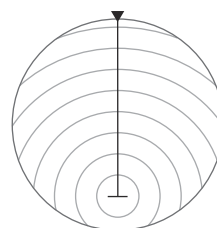
The course up orientation is reset by re-selecting the course up mode.
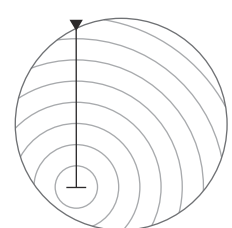
Offsetting the PPI center
You can set the antenna position origin to a different location on the radar PPI. The options described in the next sections are available.

Heading up	
Position Offset...	Back
	Center
	Look ahead
	Offset...
	True motion
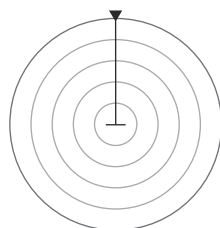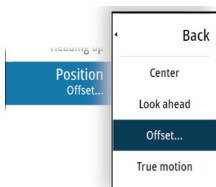
PPI center: Center

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:** The look ahead option 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.

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 15.

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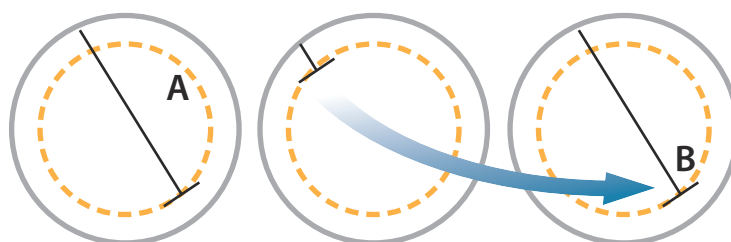
When true motion is selected, the true motion reset option is available from the menu. This allows for manually resetting the radar image and vessel symbol to its starting position.

➔ **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.

Radar symbology

Use this menu option to collectively turn on/off radar symbology which are selected to show in the Radar Settings panel (refer to *"Radar settings"* on page 18).

Target trails

A target trail indicates the target movement by leaving an afterglow, gradually reducing the intensity over time.

Target trails show where a target used to be, and the function is useful for quickly assessing the movement of targets relative to your own vessel.

You can set the length of the trails. The length represents the time it takes for the trails to fade out. You can also turn OFF target trails.

Clear trails

The clear trails option clears target trails from your radar panel temporarily. The trails start to build up again unless you switch the function off.
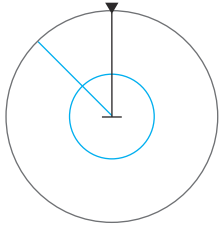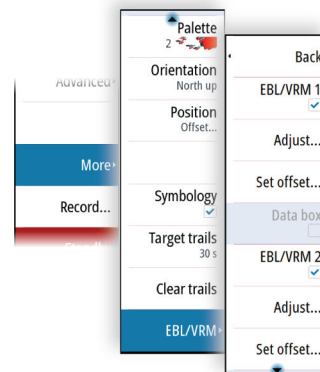
EBL/VRM markers

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.

Defining an EBL/VRM marker

1. Ensure that the cursor is not active.
2. Activate the More menu, select EBL/VRM, and 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.
4. Adjust the marker by dragging it into position.
5. 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.

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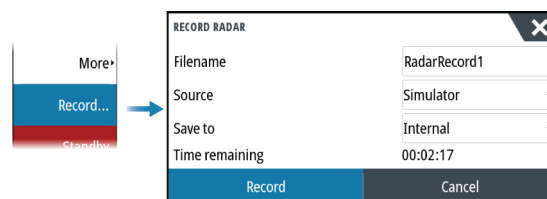
You can record radar data and save the file internally in the unit, or save it onto a storage device connected to the unit.

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.
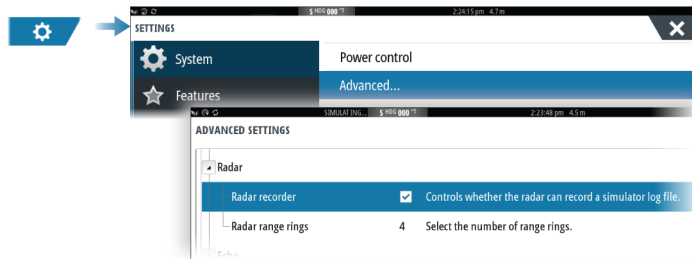
Radar settings
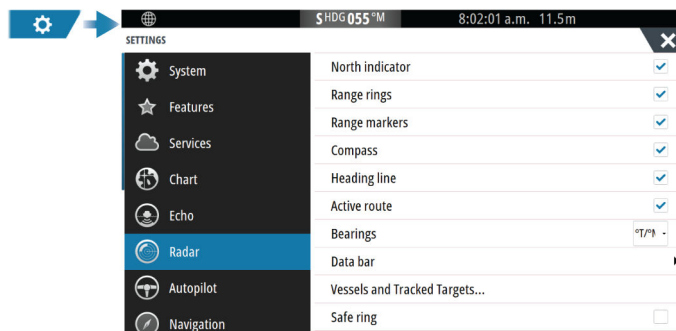
Radar panel symbology

Select to show or deselect to hide symbology on the radar panel:

- North indicator
- Range rings
  You can specify the number of rings to be displayed on the radar panel from the Advanced settings dialog.
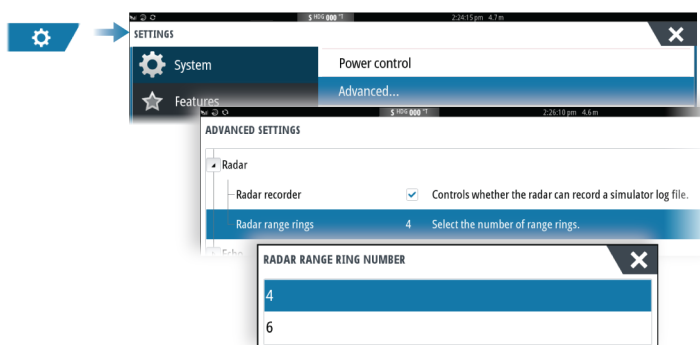
- Range markers
- Compass
- Heading line
- Active route

Radar panel symbology can be collectively turned on/off from the Symbology option in the More sub-menu if they are selected to show in the radar settings dialog.

Bearings

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

➔ **Note:** True bearing can only be selected when a compass is available.

Data bar

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

By default, the data shows targets arranged with the most dangerous targets on top. You can select to show radar targets on top and before any AIS targets, even if the AIS targets are considered more dangerous.

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 19.
- 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 19.

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.

New antenna setup option
The Antenna setup option is added to the radar installation dialog.

Antenna setup
Used for setting the position, height and span of the antenna.
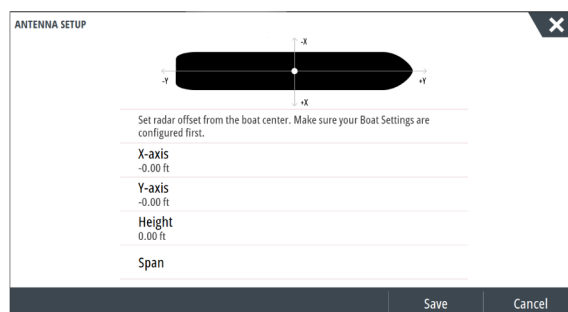
The approximate position of the antenna on the vessel must be set in order to correctly position the vessel outline when viewing close range settings. The PPI will be centered on the icon representing the position of the antenna.

The antenna height is the height of the antenna above the water line, when vessel is carrying a typical load. It is very important to set the antenna height correctly as this will affect the sea clutter function.

The antenna span is the total length of the antenna.

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.

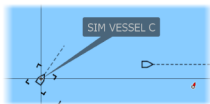AIS targets can be displayed as overlay on chart and radar images.

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.
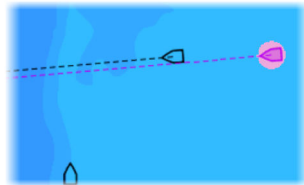
AIS vessels on a chart panel
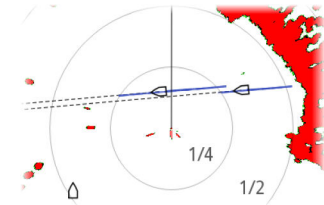
AIS vessels on a radar panel

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 in the chart setting dialog to see the vessel's name. Refer to chart settings in the operator manual.

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.
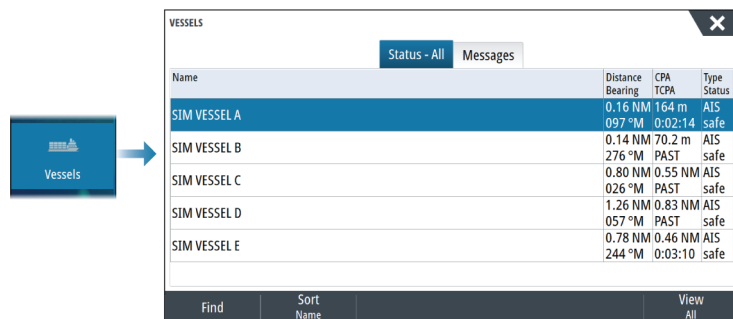
AIS vessel details

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 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, 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 20.

DSC Vessel tracking

DSC (Digital Selective Calling) is a semi-automated method of requesting or receiving position data from a vessel with a DSC VHF radio. For more information on how to use this, refer to your VHF radio manual.

There are various types of DSC position messages, including distress calls. The type of message made determines information sent with the call, and how the radio and MFD respond to the incoming call.

 When a DSC message has been received, the MFD will display a DSC vessel icon on the chart panel and radar panel at the received coordinates. In addition, some radios will send COG and SOG with the position data. This allows for correct orientation of the icon.

When receiving a distress message you will see an alarm box informing you that a message has been received. This can be read under the messages tab on the vessels dialog. Select the vessels button in the toolbar to display the vessels dialog.

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:
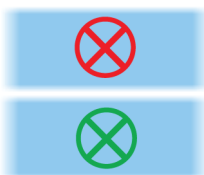

- An AIS SART icon is located on the chart in the position received from the AIS SART. The AIS SART icon is red when in 'Active' state. It is green when in 'Test' state.
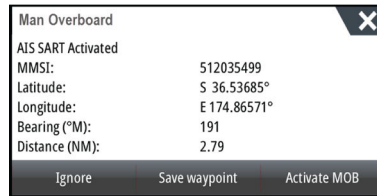- An alarm message is displayed.

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.
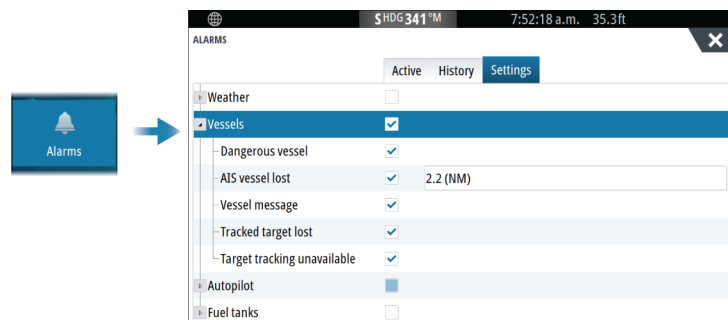
Dangerous targets

AIS targets are defined as dangerous targets in the Vessels and tracked targets dialog (TCPA/CPA settings), refer to *"Vessels and tracked targets"* on page 25.
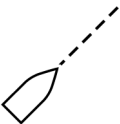
Dangerous target alerts

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:
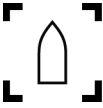
- **Disable**, closes the message dialog and cancels the dangerous target alert for all vessels. You can re-enable the dangerous vessel alert in the Vessels section of the Alarms settings dialog.

→ **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.
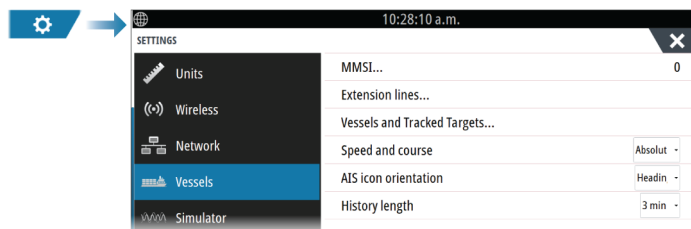- **Ignore**, closes the message dialog and disables the alert for that vessel. The alert for that vessel will reappear if the status of that vessel changes, i.e. that vessel becomes safe and then dangerous again.
- **View**, closes the message dialog and opens the chart panel with the dangerous vessel's pop-up activated. You can select the vessel's pop-up in the chart panel to see the AIS vessel details.

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.
	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.

Symbol	Description
	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.

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.

Vessels and tracked targets

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

→ *Note:* For radar specific settings, refer to *"Vessels and tracked targets"* on page 19.

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 using this option.

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.
- Targets of interest - targets further away than the following distance will be hidden:
  - **Range of interest** - options are Auto (based on radar range if radar is available) or 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 target tracking, the following target filter settings will also apply to tracked targets.
  Filter options are:
  - **Show** - all targets, dangerous targets, or no targets.
  - **Max AIS targets** - show all or only a maximum number of AIS targets.
  - **Hide slower targets** - show targets slower than a specific speed or all targets regardless of speed.
  - **Hide lost targets** - hide lost targets that are lost for the specified amount of time.

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.

History length

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

The history length defines the time presentation of the trail.

ActiveTarget sonar supported

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.

ActiveTarget forward panel
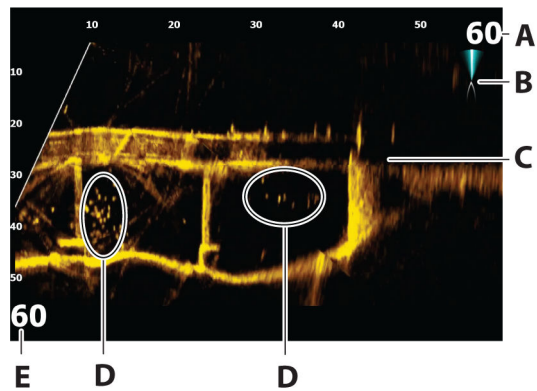
A	Distance range scale (distance away from the transducer)
B	ActiveTarget icon, indicating beam direction
C	Structure (a bridge) on bottom
D	Fish
E	Down range scale (distance below the transducer)

ActiveTarget down panel
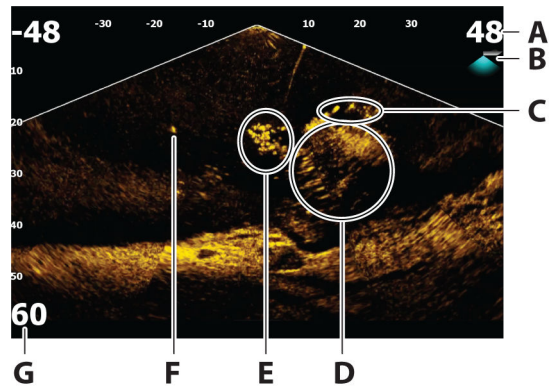
A	Distance range scale (distance away from the transducer)
B	ActiveTarget icon, indicating beam direction
C	School of fish
D	Underwater brush with schooling fish in and around it
E	School of fish
F	Single larger fish
G	Down range scale (distance below the transducer)

ActiveTarget scout panel
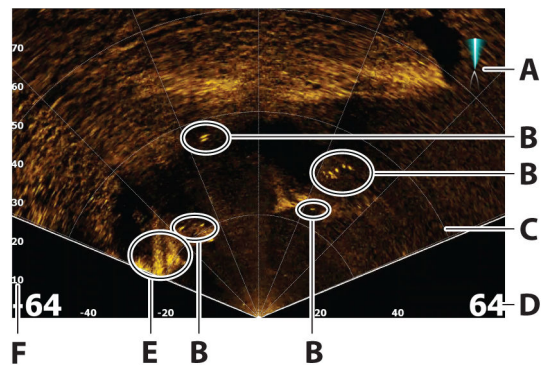
A	ActiveTarget icon, indicating beam direction
B	Fish
C	Range grid lines, the range grid lines can be turned off/on, and set to straight or arc from the More menu.
D	Distance range scale (distance to the left/right of the transducer)
E	Underwater structure (rock edge)
F	Range scale (distance in front 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.

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 be 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.

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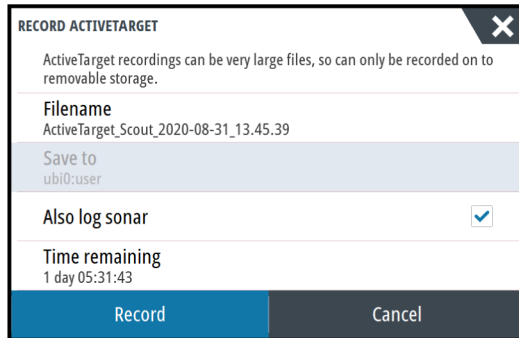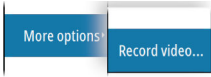
By default, the cursor is not shown on the image.

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.

RECORD ACTIVETARGET

ActiveTarget recordings can be very large files, so can only be recorded on to removable storage.

Filename
ActiveTarget_Scout_2020-08-31_13.45.39

Save to
ubi0:user

Also log sonar ✔

Time remaining
1 day 05:31:43

Record   Cancel

Stop recording video

When recording a video, the menu changes to show the stop record option.
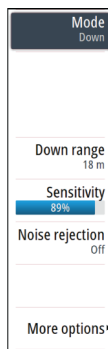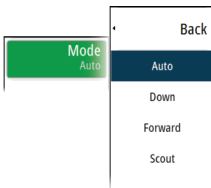
Modes and image settings

The unit comes with different predefined customization modes, used to control the image settings.
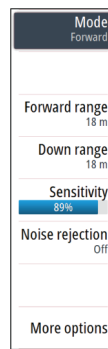
Changing modes

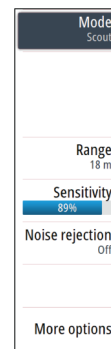Select the mode button and then the mode you want to use.

When the Down, Forward or Scout mode is selected the menu expands with options for that mode. All modes have More options which provides additional image settings.

Down mode menu   *Forward mode menu*   *Scout mode menu*

Auto mode

By default the unit is set to Auto mode. In this mode most settings are automated.

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.

Range

The range setting determines the range that is visible on the image.

→ **Note:** This option is only available when in Scout mode.

Sensitivity

Increasing sensitivity shows more detail on the screen. Decreasing sensitivity displays less. Too much detail clutters the screen. Conversely, desired targets may not be displayed if sensitivity is set too low.

Auto sensitivity

Auto sensitivity automatically adjusts the echosounder return to the optimal levels. Auto sensitivity can be adjusted (+/-) to your preference while still maintaining the auto sensitivity functionality.

→ **Note:** Auto Sensitivity is the preferred mode for most conditions.

Noise rejection

Filters out signal interference and reduces on-screen clutter.

More options

Target trails

A target trail indicates the target movement by leaving an afterglow, gradually reducing the intensity over time.

The function is useful for quickly assessing the movement of targets relative to your vessel.

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 no grid, straight line grid or arc line grid.

StableView

When selected the transducer will offset the motion of the boat and transducer to help provide a more stable image on the panel.

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.
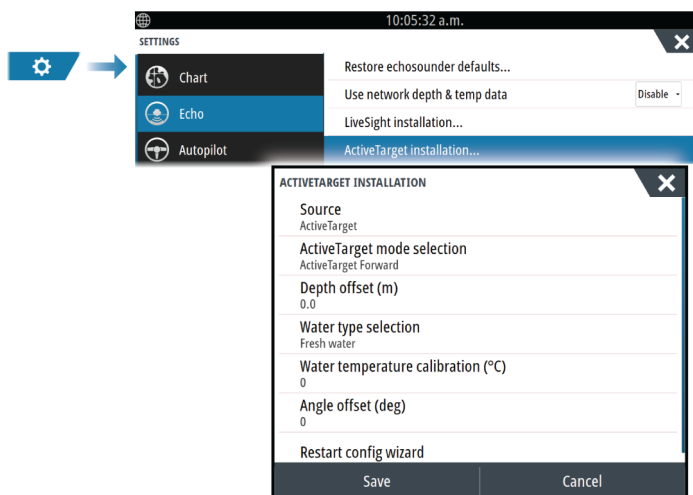
→ **Note:** The ActiveTarget platform only allows for a maximum of two ActiveTarget transducers on a network and they must be in different configurations. Possible configurations are down view, forward view and scout view. For example, one source can be set to the down view and the other set to forward view.

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

For source setup information, refer to *"ActiveTarget installation settings"* on page 30.
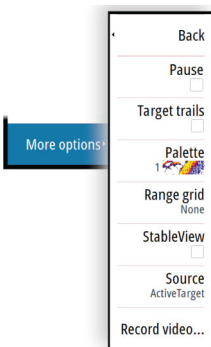
ActiveTarget installation settings

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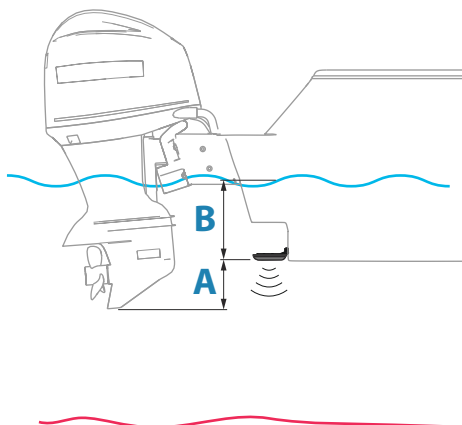
- To show the depth from the lowest point of the vessel to the bottom, set the offset equal to the vertical distance between the transducer and the lowest part of the vessel, **A** (negative value).
- To show the depth from the water surface to the bottom, set the offset equal to the vertical distance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

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.

Device connect and register

The 'Registration' buttons are changed to 'Connect and Register' in the system controls and system settings dialogs.

Example of changed system controls dialog:
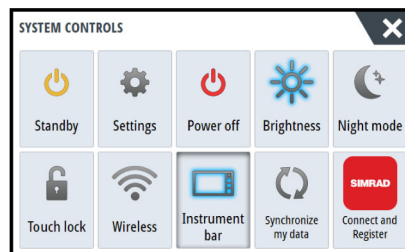
You can register your device by following the instructions when selecting the 'Connect and Register' button in the system settings dialog or system controls dialog.

SteadySteer supported

The SteadySteer feature is supported.

Requirements

- A SteadySteer compatible autopilot connected to the system, with the latest software installed.
- If your SteadySteer compatible autopilot uses a hydraulic steering system, a SteadySteer flow switch connected to the autopilot hydraulic steering system is required. Steering by wire autopilot systems do not require the flow switch.
- To enable the SteadySteer feature, the override or input option must be selected in the Autopilot installation dialog.

→ **Note:** For more information, refer to the documentation for your autopilot computer.

SteadySteer

The SteadySteer feature allows you to control how the autopilot system reacts to manual steering.

When enabled:

- Manual steering overrides the active mode.
- If Auto mode or NoDrift mode was active before going into manual steering, they will automatically re-engage when the vessel has stabilized on a new course.
- If NAV mode was active before going into manual steering a dialog will be shown.
    - Confirm course change to reactivate NAV mode.
    - Cancel the course change to activate Auto mode on the new heading.
    - If no action is taken the autopilot will go into Standby mode.
- For any other modes, the autopilot goes into Standby mode.

When disabled:

- Manual steering overrides the active mode.
- Independent of modes, the autopilot goes into Standby mode.

For more information and how to enable/disable the feature, refer to the documentation for your autopilot computer.

Multiple IP camera support

Multiple IP camera sources can be added to the system. The video from the camera source can then be displayed in the video panel. Also, the cycle menu option in the video panel can be used to cycle through displaying different cameras in the panel.

IP Cameras supported
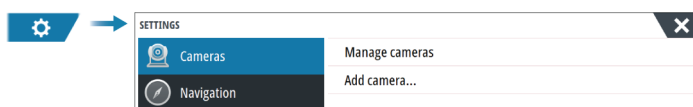
The following IP cameras are supported:
- IRIS S460
- AXIS P1244 A
- FLIR M232

Camera requirements

To add a camera to the system, the following are required:
- Ethernet connection IP camera
- H.264 video format with RTSP streaming
- The camera URL address (and username/password if applicable)

Cameras settings

Manage cameras
Use to manage defined cameras.

Add camera
Use to configure a new camera. Refer to the camera documentation.

ITC lighting

An ITC light 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 MFD.

For information on how to install the controller, refer to the ITC lighting controller documentation.

Activating/deactivating the ITC light controller
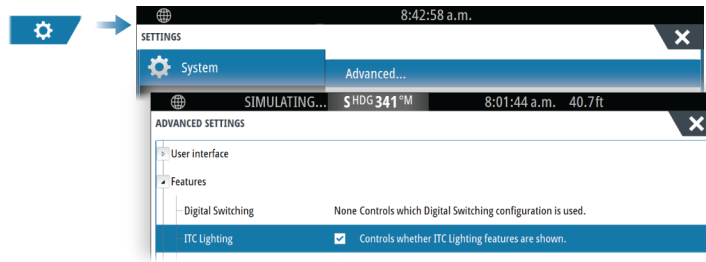
Once the ITC lighting controller is installed and connected to the NMEA 2000 network, it should appear in the control bar. If it is not appearing in the control bar, you can activate it from the Advanced settings dialog.

You can also use the Advanced settings dialog to deactivate ITC lighting in the control bar.

The ITC lighting control bar
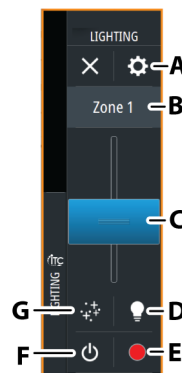
A	Zone management button
B	Select to toggle zones. The zone displayed is controlled with the buttons below.
C	Brightness adjustment of lights in the zone.
D	Activates/deactivates Quick White mode. Select to turn all unlocked and active zones immediately white, select again to return all zones back to previous state.
E	Color adjustment of lights in the zone.
F	Turns on/off the lights in the zone.
G	Select to define the mode of the lights in the zone: • Color fade • Music sync

No connection

If a connection problem occurs between the MFD and the ITC light controller, a not connected message is shown in the control bar.

CZone digital switching

A CZone digital switching device can be connected to the NMEA 2000 network and configured to allow control from the control bar of the MFD.

The digital switching bar is displayed in the control bar automatically when the CZone digital switching device is configured to be included in the control bar. For information on how to configure the device to be included in the control bar, refer to the CZone digital switching device documentation.

Digital switching configurations dialog

CZone digital switching devices can be disabled from the digital switching configurations dialog.
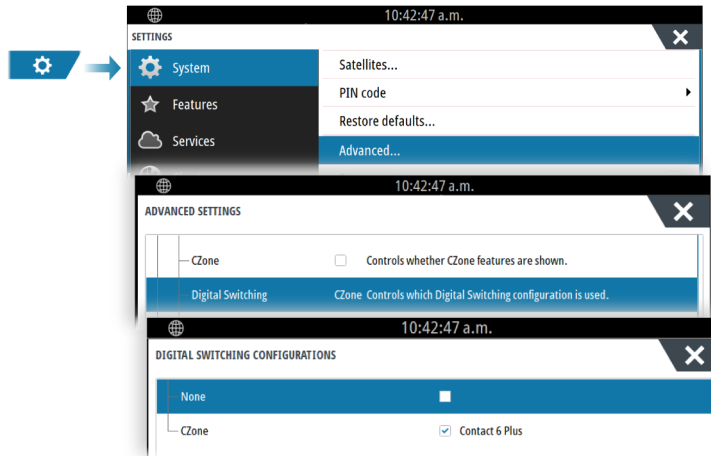

- Un-select the devices that are to be removed from the control bar.
- Select None to remove all CZone devices from the control bar.

Multiple switching devices can be connected to the network. When you select to display more than the maximum of devices allowed at a time, a message informs you the maximum has been reached.
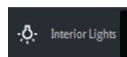
CZone digital switching control bar

If configured and setup properly, the CZone digital switching device can be operated from the control bar.
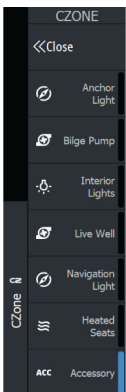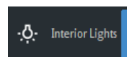

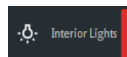### Control bar buttons

The button indicates the status of the switch.

 Off (black)
The switch is OFF.

 On (blue)
The switch is ON.

 Error (red)
There is a switch or communication error.

Communication error

If a communication error occurs between the MFD and the CZone digital switching device, an error message is shown in the control bar.

CZone panel disabled from opening at startup

The full-screen CZone panel is now disabled from opening at startup by default. If it is opening already on your unit and you do not want it to, you can stop it from automatically opening at start up from the CZone settings dialog.
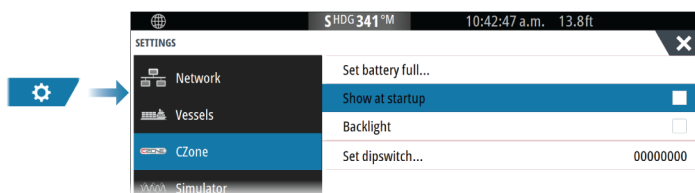
Fish mapping overlay

When the Navico WM-4 receiver is connected to your system and with the appropriate SiriusXM marine weather subscription, the Fish mapping overlay option is available.

→ **Note:** SiriusXM weather is available for North America only.

The Fish mapping overlay helps to identify specific areas with the highest likelihood of finding the fish you are seeking to catch. For more information, refer to www.siriusxm.com/sxmmarine.

When Fish Mapping is selected as the chart overlay, the chart menu expands to provide fish mapping options. For more information, refer to www.siriusxm.com/sxmmarine.