Navman

8120/8084

Fuel, AIS, & Radar Addendum 06/07

NAVMAN

www.navman.com

Warning

AIS: The AIS features on this chart-plotter are designed as a safety aid only and do not guarantee safety at sea. AIS transmission is mandatory on some, but not all, vessels. AIS should be used to complement radar, but AIS is not a substitute for radar.

Notes

- AIS and Radar functions require optional accessories to be installed.
- Radar is available in 2 kW, 4 kW, 6 kW units.
- The setup menu can be opened by pressing **MENU** twice (8084) / **SETUP** (8120) then select `System`:

Sonar

☐ Disable any sonar transducer and disable sonar functions.

☑ A sonar transducer is fitted. Enable sonar operation.

Radar

☐ No appropriate Radar system is fitted. Disable RADAR.

☑ An appropriate Radar receiver is fitted.
Enable Radar.

AIS

☐ No appropriate AIS receiver is fitted. Disable AIS.

☑ An appropriate AIS receiver is fitted.
Enable AIS.

Appendix

8084 Size: 190 mm (7.48") H x 285 mm (11.22") W x 76.8 mm (3.02") D. Allow 3 mm clearance on each side for dust cover.

8084 Display: 213.4 mm (8.4") diagonal, TFT color, 800 x 600 pixels.

CPA - Closest Point of Approach. The closest distance two vessels will come to each other based on their current course and speed.

Radar guard zone - An area around the boat, set up by the operator and defined by distance and bearing. If an object (e.g. another boat) enters the radar guard zone, an alarm is activated.

Rain clutter - Heavy rain or snow can cause interference with the radar image.

Range (radar) - The distance between the centre of the radar image and the outer range ring. The scale is shown in the top left corner of the radar window.

Range rings - Concentric circles extending from your boat (usually at the centre of the radar window) and used to estimate distances to objects. The scale is shown in the top left corner of the radar window.

Route - Two or more waypoints linked in sequence to form a course for the boat.

Sea clutter - Rough seas can cause interference with the radar image.

Fuel functions and display

What the fuel computer does

> ⚠️**WARNING**

To ensure the fuel data is accurate:

- When you add or remove fuel from a tank, tell the 8120/8084.
- If the boat has petrol/gasoline sensors, calibrate them during installation or if the fuel readings seem inaccurate.
- Choose an appropriate type of boat speed sensor or GPS source to calculate economy, range and the fuel consumption curve.
- If the boat uses a paddlewheel sensor to measure speed, calibrate it during installation or if the speed readings seem inaccurate.

Low fuel alarm

To set a low fuel alarm for a tank:

1 Press MENU twice, select Fuel, then select Setup tanks.
2 On a multi-tank boat, select the tank to set the alarm for.
3 Select Tank alarm and enter a fuel level to trigger the low fuel alarm; or enter zero to disable the alarm.

When a low fuel alarm is set, the alarm's fuel level is shown on the fuel display tank levels as a red bar. The alarm can also be set using the Alarms setup menu.

Boat speed sensors

Selecting a boat speed sensor

The fuel calculations can use boat speeds from the GPS, or from a paddlewheel sensor or pitot sensor if these optional sensors are installed:

- Paddlewheel and pitot sensors measure the speed through the water; GPS speed is speed over ground; these sensors can give different values for Range, Economy and the fuel consumption curves.
- A pitot sensor is more accurate than a paddlewheel sensor at high speeds but is not accurate at low speeds. A paddlewheel sensor is more accurate than a pitot sensor at low speeds.

To select an optional speed sensor

1 Press MENU twice, select Fuel, then select Speed source.
2 To use a paddlewheel or pitot sensor, select Water speed, otherwise select Ground speed to use GPS speed.
3 If you selected Water speed and you have both a paddlewheel sensor and a pitot sensor:
i Press ESC, select SmartCraft and select Speed type
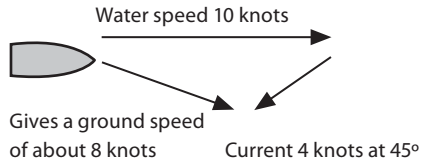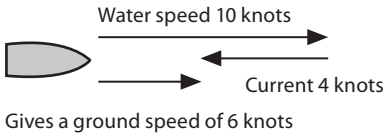ii Select Paddlewheel or Pitot.

💡 **Tip:** You can select a different speed sensor during a trip.

Water speed and ground speed

A paddlewheel sensor and a pitot sensor measure water speed, the boat speed through the water. A GPS measures ground speed, the boat speed over the bottom of the water. If there is a current, then these speeds will be different, and the log, trip log, economy and range will be different, as shown below.

Water speed is better for measuring the boat's potential performance, Ground speed is better for going to a destination because it takes currents into account.

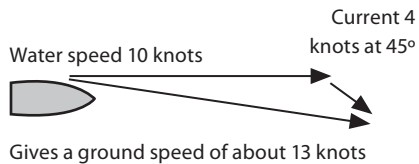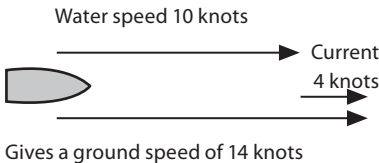### When the current is from ahead, ground speed is less than water speed

Water speed 10 knots

Current 4 knots

Gives a ground speed of 6 knots

Water speed 10 knots

Gives a ground speed of about 8 knots

Current 4 knots at 45º

For this example:

If the boat travels for one hour, uses 3 gallons of fuel per hour and has 50 gallons of fuel left:

	Speed	Log	Economy	Range
Using water speed:	10 knots	10 nm	3.3 nm / gal	165 nm
Using ground speed:	6 knots	6 nm	2.0 nm / gal	100 nm

When the current is from behind, ground speed is more than water speed

Water speed 10 knots

Current 4 knots

Gives a ground speed of 14 knots

Water speed 10 knots

Current 4 knots at 45º

Gives a ground speed of about 13 knots

For this example:

If the boat travels for one hour, uses 3 gallons of fuel and has 50 gallons of fuel left:

	Speed	Log	Economy	Range
Using water speed:	10 knots	10 nm	3.3 nm / gal	165 nm
Using ground speed:	14 knots	14 nm	4.7 nm / gal	235 nm

Calibration

Calibrate petrol/gasoline fuel flow sensors during installation, or if the fuel readings seem inaccurate and the other troubleshooting suggestions do not help.

Note

• SmartCraft fuel sensors and NAVMAN diesel sensors are factory calibrated and should never need recalibrating.

• On a multi engine boat, calibrate each engine's sensor. This can be done at the same time with a portable tank for each engine or at different times using one portable tank.

• Calibrating a sensor requires accurate measurement of the fuel consumption. This is best done using a small portable tank. At least 4 gallons (15 litres) of fuel should be used to ensure an accurate calibration.

• It is often very difficult to fill underfloor tanks to the same level twice due to air pockets, so the more fuel used, the more accurate the calibration.

To calibrate the sensor(s):

1   Record the level of the fuel in the tank(s).

2   Connect the portable tank(s) to the engine through the fuel sensor(s).

3   Run the engine at normal cruising speed until at least 4 gallons (15 litres) of fuel has been used per engine.

4   Check the actual amount of fuel used per engine by refilling the portable tank(s) to the original level and noting the reading(s) of the fuel dispenser's gauge.

5   Press MENU twice, select Fuel, then select Setup engines.

6   On a single engine boat, select Calibrate and change the displayed value to be equal to the reading of the fuel dispenser's gauge, then press ENTER.

On a multi-engine boat select the engine. Select Calibrate and change the displayed value to be equal to the reading of the fuel dispenser's gauge, then press ENTER. Repeat for the other engines.

AIS

AIS is short for Automatic Identification System. The International Convention for Safety of Life At Sea (SOLAS) requires all vessels greater than 300 tons and all passenger vessels to be equipped with AIS Transponders. All vessels equipped with AIS permanently broadcast via one or more of the two dedicated VHF channels. This transmission may include information about the vessels MMSI-number, its call sign, name, position, course, heading, speed, rate of turn and type of vessel.

This unit can receive and display AIS information when connected to an AIS receiver. Available AIS vessels transmitting in the local area are shown on the chart when this feature is enabled.

The following AIS receivers are supported by this unit:

- Comar SLR200 (external GPS).
- Weatherdock Two Channel AIS Receiver "EASY AIS", Part No. 5-A-013 (external GPS).
- NASA Marine AIS Engine 2 channel MultiPlex Receiver (external GPS).

Other AIS receivers may work but have not been tested with this unit.

To enable AIS from the system menu check the AIS box.

Viewing AIS Vessels

A typical AIS window shows:
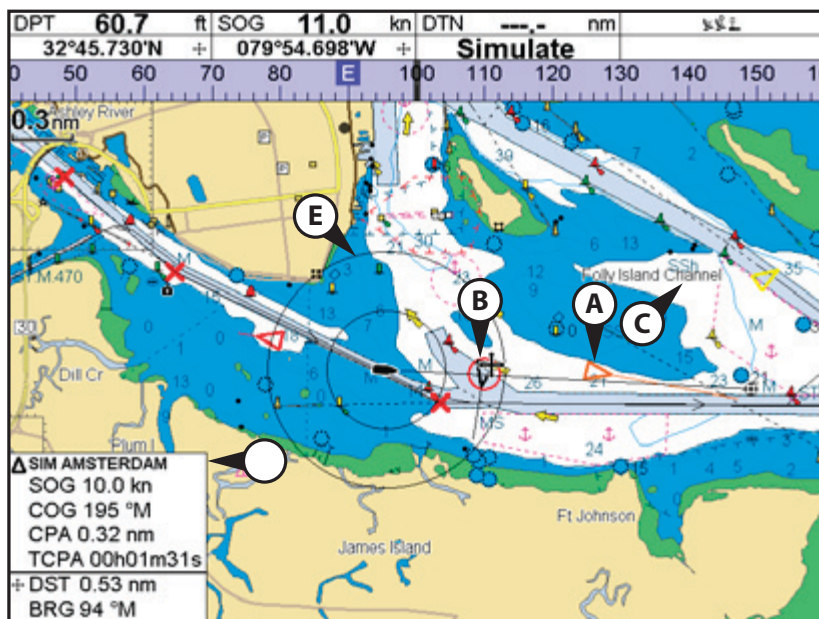
A AIS Vessel

B Dangerous Vessel

C Projected Course

D Data Box

E Range Rings

When the cursor is placed over an AIS vessel for at least two seconds, a data box appears at the bottom of the window with information about the AIS vessel.

For complete AIS information of the AIS vessel place the cursor over an AIS vessel for at least two seconds and press **ENTER**.

Press either **ENTER** or **ESC** to clear the information.
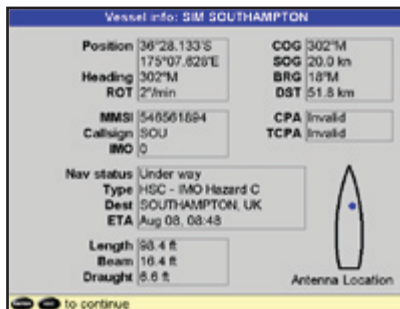

Dangerous Vessels

The 8120/8084 calculates the time of closest point of approach (TCPA) and closest point of approach (CPA) for each AIS vessel.

This is used to determine potential dangerous vessels. If the TCPA and the CPA is below the trigger values then it will be considered dangerous.

A dangerous vessel is indicated on the chart by a red circle around the icon.

TCPA 15 min

CPA 0.5 nm
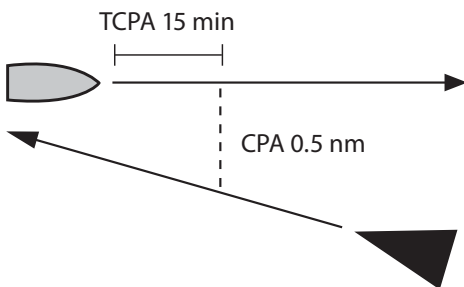
AIS Windows

To go to the AIS windows, press **DISPLAY**, select More, select AIS, then press ◄ or ► to select one of the two windows: Vessels or Safety msgs (rx).

If there are more items than will fit on the window, press ➕ or ➖ to see the others.

Vessels

This is a sorted list of vessels currently being received by the AIS receiver. The maximum number of vessels that the system will support is 250. Once maximum is reached, vessels furthest away from the current location will be replaced. A vessel will be removed from the list if no information is received within 6 minutes from the last message.

Displaying an AIS vessel on the chart

1 Press ▲ or ▼ to select a vessel.

2 Press **MENU** and select Display. The Instrument switches to chart window, with the selected vessel position in the middle.

Displaying Full AIS Details

1 Press ▲ or ▼ to select a vessel.

2 Press **MENU** and select More Info or press **ENTER**.

Displaying Full AIS Details

1 Press ⊗ or ⊗ to select a vessel.

2 Press ᴹᴱᴺᵁ and select `More Info` or press ᴱᴺᵀᴱᴿ.

This window displays all information for the selected AIS vessel provided by the AIS receiver.

Sorting Vessels

Press ᴹᴱᴺᵁ, select `Sort` and select one of the options.

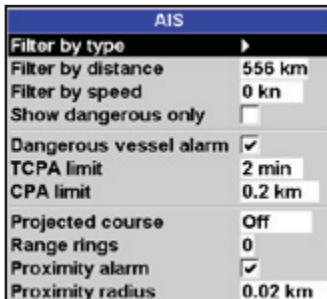This sorts the list based on the chosen category.

Safety msgs (rx)

Safety msgs (rx) are broadcasted messages received by the AIS receiver. This window displays the date and time of message received, MMSI of AIS vessel that broadcasted the message, and the message itself. Safety msgs (rx) list will store up to 10 messages. The oldest message is replaced when the list is full.

Note: This feature requires an AIS receiver.

There are multiple methods to filter AIS vessels that are displayed onto the charts.

Filter by Type

Vessel types that are not selected will be filtered off the chart. Default is set to all types enabled allowing all vessels to be displayed on the chart.

Filter by distance

Vessels outside the radius selected from our current position are filtered off the chart. Default value is set to 300 nm allowing all vessels to be displayed on the chart within that distance.

Filter by speed

Vessels with speed below the value selected are filtered off the charts. Default is set to 0 nm allowing all vessels to be displayed onto the chart.

Show Dangerous Only

Show only vessels that have a TCPA/CPA below the trigger values. This filter will override any other filter option.

Dangerous Vessel Alarm

When enabled an alarm will activate when both the TCPA and CPA are less than the trigger values.

Note: Even when this setting is disabled the dangerous vessels will still be indicated on the chart.

TCPA Limit

Set the Time of Closet Point of Approach limit.

CPA Limit

Set the Closet Point of Approach limit.

Projected Course

Show the estimated course of all vessels based on their current SOG and COG.

Range Rings

Show a selectable number of range rings around the boat. The rings are drawn in multiples of the current chart scale.

Proximity Alarm

When enabled an alarm will activate when any AIS vessel is within the proximity alarm radius.

Radar

Radar is the Radio Detection And Ranging system. Radar functions require an optional NAVMAN radar system to be installed. Three radar systems are available; 2 kW, 4 kW, or 6 kW.

When the radar is operating, the scanner transmits powerful microwave radio pulses which are reflected back from any solid objects such as land masses or other boats. These objects are called targets and are shown on the radar window.

The scanner rotates through 360° so the radar window shows all of the area around your boat within the range of the scanner, producing a map-like display called the PPI (Plan Position Indicator).

Typically, your boat is in the centre of the radar window with concentric range rings surrounding it. The range rings help you to quickly estimate the distance to various targets.

You can also view the radar overlaid on the chart screen.

Radar window
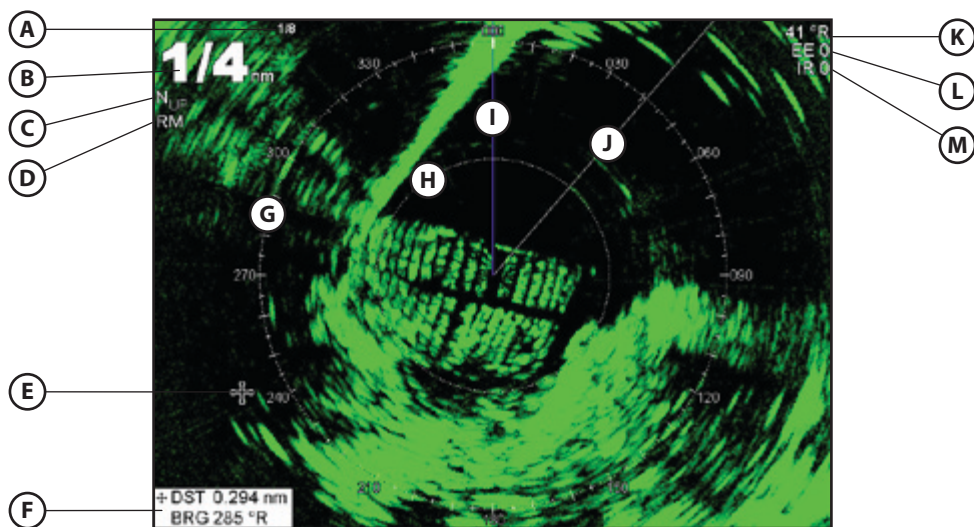
The radar window shows:

A Distance between each range ring (in this example, 1/8 nautical mile)

B Range of radar (in this example, shown in large digits)

C Radar rotation (in this example, North Up)

D Radar motion mode (in this example, Relative Mode)

E Cursor

F Distance and bearing to the cursor from the vessel position

G Compass ring

H Range ring

I North line (blue)

J Heading line (white)

K The bearing (in Relative, True, or Magnetic mode)

L Echo Expansion setting

M Interference Rejection setting

Radar modes

There are four radar modes:

- Disabled. This saves on power consumption and magnetron usage. If the radar is disabled, it has to warm up and enter standby mode before it can start transmitting.
- Warming. The radar on and is warming up. This can take up to 90 seconds, depending on your scanner type.

- Standby. The radar is on and is warmed up. It is ready to start transmitting immediately.
- Transmitting. The radar is actively sending and receiving microwave radio pulses. An open array will be rotating.

If you want to save on power but be able to start transmitting immediately, use standby mode.

Enabling the radar functionality

When the radar is enabled, it will turn on, warm up, and enter standby mode.

To enable the radar functionality:

1 Press ⬤MENU twice to display the Setup menu, then select System.
2 Set Radar to ☑.

3 The radar immediately turns on and enters warm-up mode. A message shows how long this will take.
4 When the warm-up period is complete, the radar enters standby mode and is ready to transmit.

Selecting standby mode or transmit mode

You can quickly change between these two modes.

1. From the radar window, press ⬤MENU and

set the Transmit option to ☑ (transmit mode) or ☐ (standby mode).

Disabling the radar functionality

1 Press ⬤MENU twice to display the Setup menu, then select System.
2 Set Radar to ☐.
3 A warning message appears. If you are

sure that you want to disable the radar functionality, select Yes.
4 The radar enters disabled mode immediately.

Radar Chart Overlay

If you have a radar installed, you can overlay the radar screen on your chart screen. This is extremely useful because it can help you to:

- interpret the radar image by matching the radar targets with charted objects
- quickly identify objects that are not on the chart, such as other boats

The radar overlay is also very useful in conditions of reduced visibility, at night, or in busy or hazardous waters.

To turn the radar overlay on or off:

From the chart window, press ⬤MENU and set Radar Overlay option to ☑ or ☐.

An extra menu item will them be displayed to control the radar and overlay.

Overlay Palette

The color of the radar overlay can be changed, to improve chart/ radar data

separation or take into account viewing conditions.

1 Press **MENU** twice.
2 Select `Radar`.
3 Select `Overlay palette`.
4 Select your color preference.

Overlay Transparency

The transparency of the radar overlay can be adjusted, in case it obscures important chart features.

1 From the chart screen or pane, press **MENU** once.

2 Select Radar overlay. If the box is unchecked, press **ENTER**. A Radar menu option appears below.
3 Select `Radar`.
4 Select `Transparency`.
5 Adjust the slider to suit. Changes are seen on the chart in real time.

Also available on the `Radar overlay` menu are shortcuts to enable/disable radar transmission (`Transmit`, see Manual, 18-4) and to access the radar setup options (`Adjust radar`, see manual, 18-6).

Adjusting the quality of the radar window

Common problems that can degrade the quality of the radar window include:

- sea clutter
- rain clutter
- false echoes (sometimes called ghost echoes) and background noise
- side lobe patterns (false echoes that appear as an arc or a broken arc)
- shadows (blind spots)
- multiple echoes off the same object
- incorrect threshold setting

If the radar is installed at a suitable height and in a suitable location on your boat, side lobe patterns and shadows (blind spots) caused by obstructions such as funnels or masts will be minimized. If you are having problems with these, you may need to relocate the scanner. Consult the Installation Guide for your NAVMAN scanner or talk to your dealer or installer.

Multiple echoes off the same object are most likely to occur when you are close to a large target and are usually only a temporary nuisance.
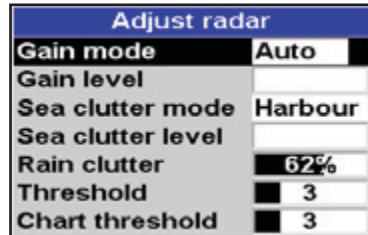
You can adjust the radar to reduce the effects of sea clutter, rain clutter, and interference from other radars. You can also change the gain mode setting and the gain level setting to help reduce false echoes.

From the radar window, press **MENU** then select `Adjust Radar` and press **ENTER**.

Changing the gain mode

Adjust radar	
Gain mode	Auto
Gain level	
Sea clutter mode	Harbour
Sea clutter level	
Rain clutter	62%
Threshold	3
Chart threshold	3

Use the radar gain mode to specify whether you want to adjust the radar gain yourself or have it adjusted automatically.

To change the radar gain mode:

1 From the radar window, press **MENU** then select `Adjust Radar`.
2 Select `Gain Mode`. There are three choices:

   - **Manual**. Adjust the radar gain yourself to suit your local conditions and preferences.
   - **Auto**. The radar gain is adjusted automatically.
   - **Range rider**. Select this to adjust the radar gain yourself for a particular radar range, then have these settings stored and automatically re-used whenever you operate at that range again.

Changing the gain level

Use the radar gain level to adjust the sensitivity of the radar receiver. Ideally, the radar gain level should be set so that background noise is just visible on the radar window.

If the radar gain level is too low, weak echoes won't be shown. If the radar gain level is too high, strong echoes will be difficult to see amongst the large amount of background noise.

(If the radar Gain Mode is set to Auto and you adjust the gain level manually, the Gain Mode is changed to Manual.)

To change the radar gain level:

1 From the radar window, press MENU then select Adjust Radar.

2 Select Gain Level then use ◀ and ▶ to decrease or increase the setting.

Changing the sea clutter mode (Manual mode)

Sea clutter usually appears as confusing, random signals close to your boat on the radar window.

High waves that can reflect the radar signal will produce the maximum amount of sea clutter.

You can change the sea clutter mode yourself or have it changed automatically to compensate for the sea conditions.

To change the sea clutter mode:

1 From the radar window, press MENU then select Adjust Radar.

2 Select Sea Clutter Mode. There are three choices:

   • **Manual**. Adjust the sea clutter setting yourself.

   • **Harbour**. The sea clutter setting is adjusted automatically to suit a harbour environment.

   • **Offshore**. The sea clutter setting is adjusted automatically to suit an offshore environment.

Changing the sea clutter level

If the sea clutter level is set too low, a lot of sea clutter will be displayed. If the sea clutter level is set too high, small targets may not be shown in the radar window.

If the sea clutter mode is set to Harbour or Offshore, and you adjust the sea clutter level manually, the sea clutter mode changes to Manual.

To change the sea clutter level:

1 From the radar window, press MENU then select Adjust Radar.

2 Select Sea Clutter Level then use ◀ and ▶ to decrease or increase the setting.

Changing the rain clutter

Rain clutter consists of random dots that can merge into badly-defined echoes on your radar screen.

The random signals are returned from rain, hail, sleet, or snow and can result in a confusing display.

If the rain clutter is set too low, there will be excessive rain clutter displayed whenever it's raining. If the rain clutter is set too high, very large targets such as the coastline will appear to be hollow.

To change the rain clutter setting:

1 From the radar window, press MENU then select Adjust Radar.

2 Select Rain clutter then use ◀ and ▶ to decrease or increase the setting.

Changing the threshold level

Use this to define the threshold level of the weakest echo that you want to show on the radar screen. The threshold level is shown as a percentage.

100% is the maximum threshold level, meaning that only the strongest echoes are shown. 0% is the minimum threshold level, meaning that all echoes are shown.

To change the threshold level:

1 From the radar window, press MENU then select Threshold then use ◀ and ▶ to decrease or increase the setting.

Changing the echo expansion setting

If you have several small targets in view and want to make them easier to see, use the echo expansion option. **Note** that the resolution decreases as the target size increases, so use this option only when target detection and visibility is more important that the quality of the display.

To change the echo expansion setting:

From the radar window, press [MENU] then select `Echo Expansion`. There are three choices:

- **Off**. No echo expansion.
- **1**. Targets expanded x 2.
- **2**. Targets expanded x 3.

Turning the target trails on or off

If you turn the target trails on, each target leaves a 30 second trail on the radar screen. You cannot change the length of the target trail.

If you turn the target trails off, the targets do not leave trails.

Note that if the radar motion mode is set to true, stationary targets won't leave a trail. If the radar motion mode is relative, any

target that is moving relative to your boat will leave a trail.

To change the target trails setting:

From the radar window, press [MENU] then set the `Target trails` option to ☑ (target trails are on) or ☐ (target trails are off).

Using the VRM/EBL

Use one, or both of the VRM/EBL (Variable Range Markers/Electronic Bearing Lines) to quickly find the precise range and bearing of a target.

A VRM can be fixed or floating. Use the VRM to find the range (distance) to the target.

- A fixed VRM is shown as a thin, dashed, circle centred around your boat. Use this to find the distance of a target from your boat.
- You can move the centre of the VRM away from your boat; for example, to measure the distance between two islands. This is called a floating VRM.

The EBL is shown as a thin, dashed line extending from the centre of the VRM to the edge of the radar window. Use the EBL to find the bearing of the target.

1 From the radar window, press [MENU] then select `VRM/EBL`.

VRM/EBL	
VRM/EBL	1
Enable	☐
EBL reference	°R
Adjust	
Set centre	
Reset centre	
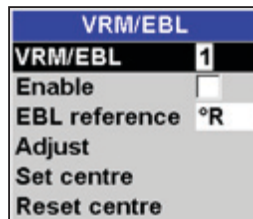
Finding range and bearing with a fixed VRM/EBL

1 From the radar window, press ⬤MENU⬤ then select `VRM/EBL`.

2 Select `VRM/EBL` then 1 (VRM/EBL 1) or 2 (VRM/EBL 2).

3 Set Enable to ☑ to show the VRM and EBL on the radar window (or ☐ to hide them).

4 Select EBL reference if you want to change the EBL bearing reference. There are two choices:
   - °R shows the EBL bearing relative to your boat's head.
   - °M/°T shows the EBL bearing relative to magnetic North or true North.

5 Select `Adjust` to adjust the VRM and the EBL so that you can align them with the target. Use:
   - ◀ and ▶ to decrease and increase the radius of the VRM until it touches the target to measure the range.
   - ▲ and ▼ to move the EBL until it touches the target to measure the bearing.

6 The range and bearing of the target is shown at the bottom of the screen.

7 If you want to hide (or change the settings for) the range rings, North line, and/or heading line, press ⬤MENU⬤ then select `Radar`.

8 To clear the VRM/EBL display, press ⬤ESC⬤ and repeat steps 1 and 2. Then set Enable to ☐.

If you want to find the range and bearing of another target, repeat the sequence using the other VRM/EBL. This is shown in a different pattern.

Finding range and bearing with a floating VRM/EBL

If you move the centre of a VRM away from your boat it is called a floating VRM. Use this to measure the range and bearing between two locations on the radar window, such as a headland and a buoy.

1 From the radar window, press ⬤MENU⬤ then select `VRM/EBL`.

2 Select `VRM/EBL` then 1 (VRM/EBL 1) or 2 (VRM/EBL 1).

3 Set Enable to ☑ to show the VRM and EBL on the radar window (or ☐ to hide them).

4 Select `EBL reference` if you want to change the EBL bearing reference. There are two choices:
   - °R shows the EBL bearing relative to your boat's head.
   - °M/°T shows the EBL bearing relative to magnetic North or true North.

5 Select `Set centre` to move the VRM and EBL centre away from your boat. Use the arrow keys to move the centre so that it is aligned over the first location.

6 Press ⬤ENTER⬤ to save the new centre position, then press ⬤MENU⬤ and reselect the VRM/EBL.

7 Select `Adjust` to adjust the VRM and the EBL so that you can align them with the second location. Use:
   - ◀ and ▶ to decrease and increase the radius of the VRM until it touches the second location to measure the range.
   - ▲ and ▼ to move the EBL until it touches the second location to measure the bearing.

8 The range and bearing of the target is shown at the bottom of the screen.

9 If you want to hide (or change the settings for) the range rings, North line, and/or heading line, press ⬤MENU⬤ then select Radar.

10 To clear the VRM/EBL display, press ⬤ESC⬤ and repeat steps 1 and 2. Then set Enable to ☐.

If you want to find the range and bearing between two other locations, repeat the sequence using the other VRM/EBL. This is shown in a different pattern in the radar window.

Changing the PPI position

You can move the PPI (Plan Position Indicator) centre to a different location if you are in Relative motion mode. (If you are in True motion mode, the radar automatically positions the PPI centre.)

To change the PPI position:

1 From the radar window, press MENU then select Position.

2 There are three choices:

• **Centre.** The PPI centre is in the centre of the radar window so that all other objects move relative to your boat.

• **Look Ahead.** The PPI centre is positioned so that the radar window is offset from the centre to give you the maximum view ahead.

• **Set.** Offset the PPI centre in the radar window. (This works only when you are using relative motion (RM) mode). Use the arrow keys to move the PPI centre to the new position then press ENTER to confirm. The new position must allow most of the radar sweep to appear on the radar window; if it doesn't, the PPI centre will be moved as close as possible to the desired position.
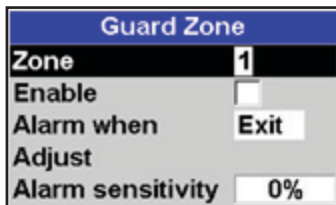
Using the radar guard zones

You can set one or two radar guard zones to notify you when a target enters or exits a specified area around your boat.

You can customize the size and shape of the radar guard zones and set up alarms.

1. From the radar window, press MENU then select Guard zone.

Turning a radar guard zone on or off

Two radar guard zones are available. You can turn either or both on or off.

To turn a radar guard zone on or off:

1 From the radar window, press MENU then select Guard zone.

2 Select Zone. There are two choices:

• 1 selects radar guard zone 1.

• 2 selects radar guard zone 2.

Displaying the area covered by a radar guard zone

1 From the radar window, press MENU then select Guard Zone.

2 Select Zone then radar guard zone 1 or radar guard zone 2.

3 Set Enable to ☑ (show the radar guard zone) or ☐ (hide the radar guard zone).

Change the setting for a radar guard zone alarm

When a radar guard zone is on, the guard zone alarm is set automatically but you can change the setting to suit your preferences.

1 From the radar window, press MENU then select Guard Zone.

2 Select Zone then radar guard zone 1 or radar guard zone 2.

3 Select Alarm preference. There are three choices:

• **Enter** sounds the alarm only when a target enters the radar guard zone.

• **Exit** sounds the alarm only when a target leaves the radar guard zone.

• **Both** sounds the alarm when a target enters or leaves the radar guard zone.

Adjusting the boundaries of a radar guard zone

To adjust the boundaries and change the area that is covered by a radar guard zone:

1 From the radar window, press [MENU] then select `Guard Zone.`

2 Select `Zone` then `1` (radar guard zone 1) or `2` (radar guard zone 2).

3 Select Adjust to display the current boundaries of that radar guard zone. The following information is also shown in the top left corner:

- **Guard Zone**: The number shows the radar guard zone that is selected.
- **Sector or Circular**: The shape of the radar guard zone.
- **INR**: The distance between the inner boundary and your boat.
- **OUR**: The distance between the outer boundary and your boat.
- **WDT**: The angular width of the radar guard zone (in degrees).
- **BRG**: The bearing of a line drawn from your boat through the centre of the radar guard zone (in degrees).

4 Use [◄] and [►] to select the parameter to change.

5 Then use [▲] and [▼] to change the parameter.

Adjusting the sensitivity of the alarm

You can set the sensitivity of the alarm for the radar guard zones, to define the size of the target that will trigger the alarm. The size of target is shown as a percentage.

100% is maximum sensitivity, meaning that very small targets will trigger the guard zone alarm. 0% is minimum sensitivity, meaning that only very large targets will trigger the alarm.

The same sensitivity setting is applied to both of the radar guard zones if both are turned on.

To set the alarm:

1 From the radar window, press [MENU] then select `Guard Zone.`

2 Select `Zone` then select `1` (radar guard zone 1) or `2` (radar guard zone 2).

3 Select Alarm sensitivity then use [◄] and [►] to decrease or increase the setting.

Radar setup

Note: This option is shown only when the radar is enabled (see Manual, 18-3)

1 Press [MENU] twice to display the Setup menu, then select `Radar`:

Radar	
Rotation	Heading up
Motion mode	Relative
Interference reject	Off
Palette	Black
Overlay palette	Red
Digit size	Small
Range ring	✔
Compass	✔
North line	✔
Heading line	✔
Installation	

Rotation

The current radar rotation is shown in the top left corner of the radar screen. If COG data or heading data is not available from a compass, the radar rotation is automatically set to Head up.

However, you are strongly recommended to use a good quality product (such as a NAVMAN HS02, HS03 or Autopilot) to provide heading data.

If heading data is available from a compass, the options are:

- North up works only when COG data or heading data from a heading sensor is available. North is always at the top of the radar screen.
  You can easily compare the radar screen to a chart in North up.

- Head up means that the radar image rotates underneath your boat, so the direction in which you are heading is pointing to the top of the radar screen.

You can easily compare the visual view in front of your boat with the radar screen.

- Course up works only when COG data or heading data from a heading sensor is available and there is an active route. It means that your desired heading is always pointing to the top of the radar screen so that you can compare the leg bearing of the active route with the radar screen. (If you're in Course up rotation but don't have an active route, the radar uses Head up rotation until a route is made active.)

Motion mode

True motion mode is not available if there is no position data, and no heading or COG data. However, you are strongly recommended to use a good quality product (such as a NAVMAN HS02, HS03 or Autopilot) to provide heading data.

There are two choices:

- Relative (RM). Your boat remains in a fixed location on the radar screen and all other objects move relative to your position. (You can choose the position of the fixed location, see Section 18-10). RM is the default.

- True (TM). Your boat, and moving targets, move across the radar screen as you travel. All stationary objects remain in a fixed position. You must have position data, and heading or COG data for this option to be available.

Interference filter

If the radar on another boat is operating at the same frequency as your radar, it can cause interference patterns on the radar window.

Interference patterns always appear in a different place with each sweep. They can be randomly scattered bright dots or dotted lines that extend from the centre to the edge of the radar window, often producing a spiral pattern. Generally, the stronger the interference, the wider the interference lines.

Use the interference rejection option to reduce both the interference patterns and the width of the interference lines.

There are four choices:

- Off. Interference rejection is off.
- Low operates the interference rejection at minimum strength.
- Medium operates the interference rejection at medium strength.
- High operates the interference rejection at maximum strength. This setting can make it more difficult to detect some targets and radar beacons. Use this setting only when necessary.

Palette

Select the color scheme for the radar window.

Digit size

The range of the radar is shown on the radar window; for example 1/16. You can show this information in small, medium or large digits.

Range ring

The range rings help you to quickly estimate the range of a target from your boat.

☑ The range rings are shown. The number of range rings and the spacing interval between them is set automatically according to the range setting. The current spacing interval is shown in the top left corner of the radar window.

Compass

☑ The compass ring is displayed.

North line

Whatever the radar windorotation, you can always show the blue North line.

If the bearing mode is set to:

- magnetic, the North line always points to magnetic North.
- true, the North line always points to true North.

☑ Show the North line.

☐ Hide the North line.

Heading line

The heading line is a white line that extends from your boat to the edge of the radar window.

☑ Show the heading line.

☐ Hide the heading line.

Setup > Radar > Installation

Note: This option is shown only when the radar is enabled (see Manual, 18-3)

1 Press **MENU** twice to display the Setup menu, then select `Radar`.

2 Select `Installation`:

Installation	
Park position	0.0 °
Zero bearing	0.0 °
Zero range	0.0 m
Antenna height	0.0 m

Park position

If your radar has an open array and you take it out of enabled mode, the open array continues to rotate for a short distance before it finally stops. The stop position is known as the park position. You can adjust the angle of the parking position so that the open array will always stop at your preferred position; for example, facing the bow.

1 Select `Park position` then enter the angle of the new park position.

Note: You may need to try a few different park positions to find the correct one. The strength of the wind will also affect the park position.

Zero bearing

Use the zero bearing alignment to rotate the radar image, one degree at a time, so that a known object dead ahead is directly under the boat's heading marker.

This means that the radar image is aligned with the displayed chart and the compass. An accurate bearing alignment is particularly important when the radar image is overlaid onto the chart.

Adjust this on a chart window with the radar overlay on.

1 Select `Zero bearing` then use the arrow keys to enter the new bearing angle.

Zero range

The zero range is also known as the radar range offset and as the trigger delay.

If your radar window shows a blank, black circle around the centre or a solid circle of color at the centre, you need to adjust the zero range setting until this circle disappears or almost disappears. Ideally, the radar sweep should start at your boat (a radar range of zero).

To adjust the zero range setting:

1 Position your boat about 45 to 90 m (50 to 100 yards) away from and parallel to a straight-walled jetty or similar feature.

2 Adjust the gain setting if necessary, so that a reasonably good image of the jetty echo is displayed on the radar window. At this stage, the jetty echo may appear to be bent.

3 Select Zero range then use the arrow keys to adjust the zero range setting until the jetty echo appears as a straight line on the radar window.

Antenna height

The Installation Manual for your NAVMAN radar explains how to find the optimum height for your radar scanner (antenna).

Select Antenna height then enter the height of the antenna above sea level.

Radar overlay doesn't appear on the chart screen

a Ensure that your boat is shown on the radar window. If it is, but the radar overlay still isn't shown, try zooming in on the charted area. (The charted area may be outside the maximum range of the radar).

b The threshold or transparency settings for the radar overlay are not correct.

Radar shows arcs and/or shadows

Side lobe patterns often appear as an arc or a broken arc. Shadows are blind spots.

If the radar is installed at a suitable height and in a suitable location on your boat, side lobe patterns and shadows caused by obstructions such as funnels or masts will be minimized.

If you are having problems with these, you may need to relocate your scanner. Consult the Installation Guide for your radar model for advice.

Radar shows different patterns on each sweep

Interference patterns always appear in a different place with each sweep. They can be randomly scattered bright dots or dotted lines that extend from the centre to the edge of the radar window, often producing a spiral effect. Generally, the stronger the interference, the wider the interference lines.

a Use the interference rejection feature to reduce interference patterns, and the width of the interference lines.

Radar shows false echoes and/or background noise

False echoes and/or background noise can be produced if the radar sensitivity is too high.

a Try using the Auto setting for the radar gain mode. If this doesn't work, or if the radar gain mode is already set to Auto, use the radar gain setting to reduce the radar sensitivity.

Radar shows multiple echoes off the same object

Multiple echoes off the same object are most likely to occur when you are close to a large target, and are usually only a temporary nuisance.

Radar shows random or grouped dots

Rain clutter often appears as random dots that can merge into badly-defined echoes on the radar window. The random signals are returned from rain, hail, sleet, or snow and can result in a confusing display

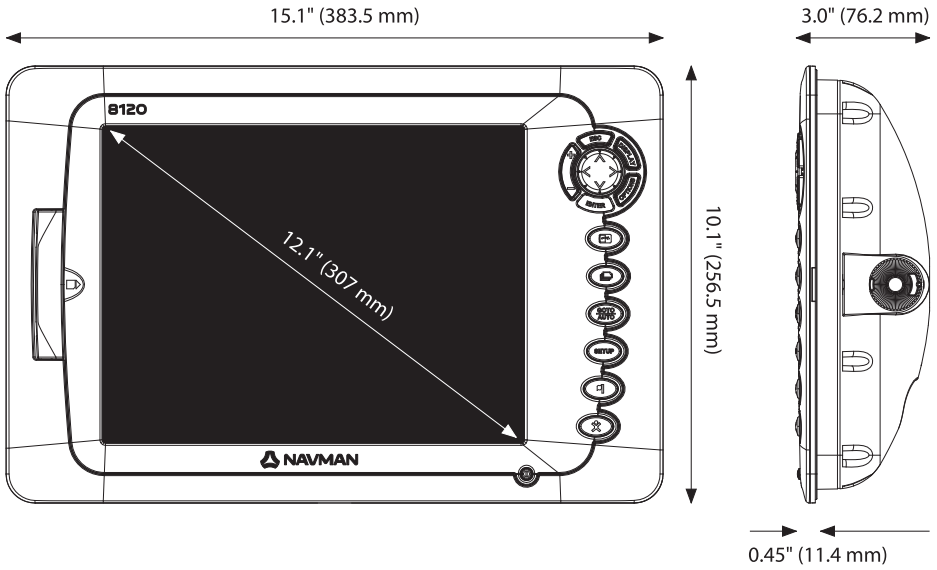**Radar shows random signals in centre**

Sea clutter usually appears as confusing, random signals around your boat. High waves will produce the maximum amount of sea clutter.
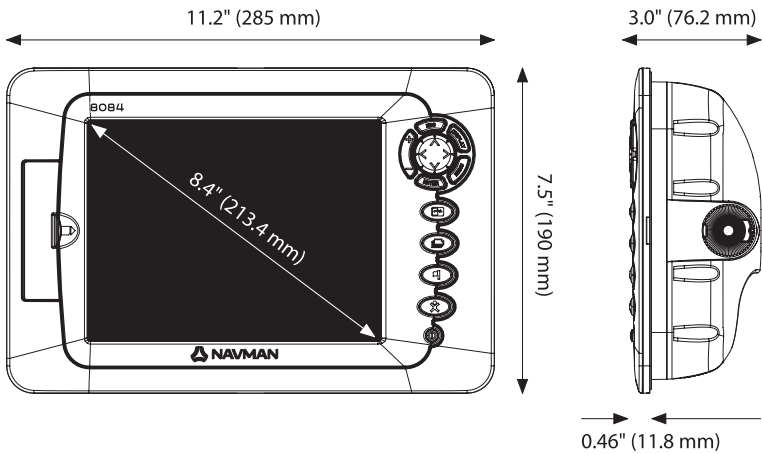
You can optimize your radar window to reduce the effects of sea clutter.

Physical Dimensions

NAVMAN 8120

15.1" (383.5 mm)

3.0" (76.2 mm)

8120

12.1" (307 mm)

10.1" (256.5 mm)

NAVMAN

0.45" (11.4 mm)

NAVMAN 8084

11.2" (285 mm)

3.0" (76.2 mm)

8084

8.4" (213.4 mm)

7.5" (190 mm)

NAVMAN

0.46" (11.8 mm)

Navman 8120/8084 Fuel, AIS, & Radar Addendum

FC CE

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