

# Raymarine

## Fishfinder application with DownVision™

**Warning: Sonar operation**

- NEVER operate the sonar with the vessel out of the water.
- NEVER touch the transducer face when the sonar is powered on.
- SWITCH OFF the sonar if divers are likely to be within 7.6 m (25 ft) of the transducer.

**Sonar overview**

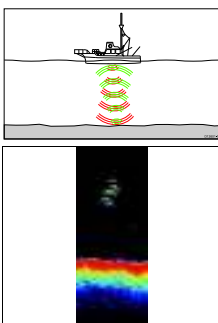
Various sonar technologies are available, all of which work on the same basic principles. The sonar transducer sends pulses of sound waves into the water and measures the time it takes for the sound waves to travel to the bottom and back. The returning echoes are affected by bottom structure and by any other objects in their path, for example reefs, wrecks, shoals or fish. The Sonar module interprets these signals and builds up a detailed underwater view which is displayed in the Fishfinder application.

**CHIRP technology**

CHIRP sonars use a swept frequency 'CHIRP' signal which can distinguish between multiple close targets, this enables the sonar to display multiple targets instead of large combined targets that you would see using traditional non-CHIRP sonar.

Some of the benefits of CHIRP are improved:

- Target resolution.
- Bottom detection even through bait balls and thermoclines.
- Detection sensitivity.



**CHIRP Sonar overview**

CHIRP sonar produces a 25° conical shaped beam, the coverage of the conical beam is the water column directly beneath the vessel

**Conical beam**

Sonar is effective at a range of speeds. In deeper waters the CHIRP bandwidth is automatically restricted to improve bottom lock and the detection of moving objects (e.g. fish) in the wider water column.

**CHIRP sonar screen example**

## Fishfinder display modes

### Selecting a fishfinder display mode

- From the fishfinder application:
- Select **Menu**.
  - Select **Display Mode**.
  - With a split-screen view displayed, select **Adjust**.
  - Select **Sonar, DownVision or Both**.
  - Select the **Select Mode** menu item.
  - Select the required display mode:
    - None
    - Zoom
    - A-Scope (Not available in DownVision views)
    - Bottom Lock



- Selecting split screen in zoom mode**
- From the fishfinder application, with the zoom display mode selected:
- Select **Menu**.
  - Select **Display Mode**.
  - Select **Zoom** so that Split is highlighted.
  - Select **Zoom** to switch between Split and Full.

### Fishfinder zoom mode

The zoom display mode magnifies a region of the fishfinder screen to display more detail. This zoom option enables you to:

- Replace the standard fishfinder image with the zoomed image, or display the zoomed image alongside the standard fishfinder image.
- Set the zoom factor to a predefined level, or adjust it manually.
- Reposition the zoomed portion of the image to a different part in the display.

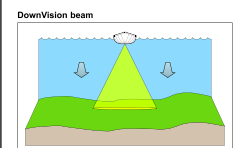
When the range increases, the area shown in the zoom window also increases.

### Zoom split

With the zoom display mode you can split the screen and display the zoomed image alongside the standard fishfinder image (ZOOM SPLT). The zoomed section is indicated on the standard fishfinder screen by a zoom box.

## CHIRP DownVision overview

DownVision covers a 60° side to side and 1.4° fore to aft beam. The coverage of the DownVision beam is a water column directly beneath and to the sides of the vessel.



**Raymarine sonar modules**

The table below lists Raymarine's sonar modules and the technology used.

Model	Technology
CP450C	CHIRP — ClearPulse™
CP100	CHIRP — DownVision™
Dragonfly (internal sonar)	CHIRP — DownVision™
868 / 878 (internal sonar)	CHIRP — DownVision™
CP300	ClearPulse™
i67 / i67 Wi-Fi / i77 / i77 Wi-Fi (internal sonar)	ClearPulse™
i67 / i67 (internal sonar)	ClearPulse™
i70 / i67 / i127 (internal sonar)	ClearPulse™

**Note:** The Fishfinder application menu options and settings will differ depending on the type of sonar module in use.

### Switching between internal and external sonar modules

- If you want to switch your active sonar module between internal and external follow the steps below.
- Power off the active sonar module.
    - Internal sonar module is turned off from the Fishfinder application menu: **Menu** — **Set-up** — **Sounder Setup** — **Internal Sounder**.
    - External sonar modules should be turned off by disconnecting the network connection.
  - Wait for the No Sounder Source Available message to be displayed in the Fishfinder application.
  - Power on the new sonar module.

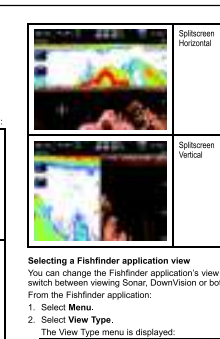
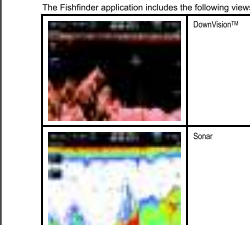
### Fishfinder with DownVision™ features

- The Fishfinder application includes various features to help you interpret what is beneath your vessel. The Fishfinder application features include:
- Dual channel CHIRP sonar: (Combining High resolution CHIRP Sonar and Ultra high resolution DownVision™ sonar).
  - Display modes (Zoom, A-Scope or Bottom Lock), and Adjustable range and zoom.
  - Noise and gain filters to simplify the image.
  - Pausing and adjusting the speed of the scrolling image.
  - Using waypoints to mark a position.
  - Determining depths and distances of targets.
  - Fishfinder alarms (fish, depth or water temperature).

### Fishfinder views

On multifunction displays with DownVision™ capability you can select which view you want to see or choose a split-screen view displaying both Sonar and DownVision™ sonar at the same time. The Fishfinder screen displays:

- a scrolling image of the water column and bottom beneath your vessel including any bottom structure such as reefs and shipwrecks etc.
  - target images indicating fish.
  - a status bar displaying setting information.
  - bottom depth.
- The Fishfinder application includes the following views:



**Selecting a Fishfinder application view**

You can change the Fishfinder application's view to switch between viewing Sonar, DownVision or both. From the Fishfinder application:

- Select **Menu**.
- Select **View Type**.
- The **View Type** menu is displayed:

- Select the view you want to use.
- Selecting a view when changing settings**
- In split-screen views you can choose which view you want setting changes to be applied to or changes can be applied to both views at the same time. Form the Fishfinder application with a split-screen view displayed.
- Select the relevant item from the menu. If it is possible to change this setting independently for each view then an **Adjust** option is displayed in the menu.
  - Select **Adjust**. The **Adjust** menu is displayed:

## Fishfinder context menu

The fishfinder application includes a context menu to menu items.

The context menu provides the data for the position of the cursor:

- Depth
- Range

The context menu also provide the following menu items:

- Place Waypoint
- Place Marker
- Move Marker — (only available if a marker has been placed.)
- Erase Marker — (only available if a marker has been placed.)
- Display mode — (opens the display mode menu.)
- Adjust Range — (opens the Range mode menu.)

Item	Description
1	A hard bottom (sand) produces a thin line.
2	A soft bottom (mud or seaweed cover) produces a wavy line.
3	A rocky or uneven bottom or a wreck produces an irregular image with peaks and troughs.

The dark layers indicate a good echo; the lighter areas indicate weaker echoes. This could mean that the upper layer is soft and therefore allowing sound waves to pass to the more solid layer below. It is also possible that the sound waves are making two complete trips — hitting the bottom, bouncing off the vessel, then reflecting off the bottom again. This can happen if the water is shallow or the bottom is hard.

**Factors influencing the sonar display**

The quality and accuracy of the display can be influenced by a number of factors including vessel speed, depth, object size, background noise and transducer frequency.

**Vessel speed**

The shape of the target changes along with your speed. Slower speeds return flatter, more horizontal marks. Higher speeds cause the target to thicken and arch slightly, until at fast speeds the mark resembles a double vertical line.

**Target depth**

The closer the target to the surface, the larger the mark on screen.

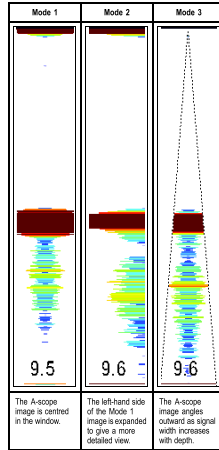
The depth of individual targets can be displayed by switching on the **Target Depth ID** in the fishfinder menu **Menu** — **Presentation**. The number of target depths displayed is influenced by the fish alarm sensitivity level.

## Adjusting the position of the fishfinder zoomed area

- When the zoom function is selected, the system automatically selects the zoom position so that the bottom details are always in the lower half of the display. If you can reposition the portion of the image to be zoomed so that an alternative area is displayed. From the fishfinder application, with Zoom preset selected:
- Select **Menu**.
  - Select **Display Mode**.
  - Select **Zoom Position**.
  - Select **Zoom Position**.
- Selecting the zoom position displays the zoom position slider bar control.
- Adjust the setting to the required value, or select Auto to switch to automatic.

## Fishfinder A-Scope mode

- The A-Scope mode enables you to view a live (rather than historical) image of the seabed and fish directly below your vessel. The standard fishfinder display shows a historical record of fishfinder echoes. If required, you can display a live image of the bottom structure and the fish directly below the transducer by using the A-Scope feature. The width of the bottom covered by the A-Scope is indicated at the bottom of the window. A-Scope provides a more precise and easier to interpret indication of the target strength.
- There are three A-Scope modes:



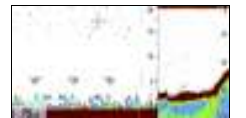
## Selecting A-Scope mode

- From the fishfinder application, with the A-Scope display mode selected:
- Select **Menu**.
  - Select **Display Mode**.
  - Select **A-Scope Mode**.
  - Select **A-Scope** to display a list of A-Scope modes.
  - Select the required A-Scope mode.

## Bottom Lock

The Bottom Lock function applies a filter to flatten the image of the seabed and make any objects on or just above it easier to see. This feature is particularly useful for finding fish that feed close to the bottom.

Adjusting the range of the bottom lock image allows you to view more bottom details. You can also reposition the image on screen to anywhere between the bottom of the window (0%) and the middle of the window (50%) by using the Bottom Shift control.



## Adjusting the bottom lock range/position

- From the fishfinder application, with bottom lock display mode selected:
- Select **Menu**.
  - Select **Display Mode**.
  - Select **Bottom Lock** to switch between Full screen and Split screen.
  - Select **B-L Lock Range**. Selecting Bottom Lock Range will display the B-L Lock Range numeric adjust dialog.
  - Adjust the setting to the required value.

- Select **Back** or use the **Ok** button to confirm the setting.
- Select **B-Lock Shift** to reposition the image on-screen. Selecting Bottom Lock Shift will display the B-Lock Shift numeric adjust dialog.
- Adjust the setting to the required value.
- Select **Back** or use the **Ok** button to confirm the setting.

## Fishfinder range

The Range and Range Shift functions enable you to change the range of depth displayed by the fishfinder. The Range function enables you to define the range of depth that you see in the fishfinder display. In Auto Range, the fishfinder application automatically adjusts the range to ensure the water column and bottom are always displayed. In Manual Range, you can adjust the range displayed on-screen to suit your needs.

**Range Shift**

The Range Shift function enables you to define which area of the water column you want displayed. Example screen with range and range shift used to view the seabed at a depth range of 20-100 ft

## Changing the depth range

- You can choose from either:
- automatic adjustment whereby the display automatically shows the shallowest required range.
  - manual adjustment of the depth range, up to the maximum depth.
- From the application menu:
- Select **Range**.
  - Select **Range** to switch between Auto and Man.
  - With manual mode selected you can now adjust the depth range.
- When viewing a split-screen view the range will change for both views at the same time.
- Range in and out**
- The method of ranging in and out of the fishfinder application is dependant upon your multifunction display variant.
- The table below shows the Range controls available for each display variant.

Variant	Rotary Control	Touchscreen
Standard	New c Series New e Series RMK-9 keypad	None
Advanced	New c Series New e Series (excluding e7 and e7D) RMK-9 keypad	None
Professional	New e Series gS Series	Slide the screen 'Up or Down'

## Using range shift

The default setting adjusts the display to keep the bottom in the lower half of the display window. Alternatively you can shift the image within the current range. Changes to the range shift are reflected in all windows. From the application menu, with Range set to Manual:

- Select **Range**.
- Select **Range Shift**. The range shift dialog is displayed.
- Adjust the setting to the required value.
- Select **Back** or press the **Ok** button to confirm the setting and close the range shift dialog.

## Fishfinder sensitivity settings

The Sensitivity settings menu provides access to features and functions which enhance what is displayed on screen. Sensitivity options include:

- Gain
- Color Gain
- Noise Filter
- Color Threshold

Sensitivity settings for Sonar and DownVision™ can be changed independently or both at the same time.

**Gain**

The gain settings alter the way the sonar module processes background noise (also called clutter). Adjusting the gain settings can improve the sonar image. However for optimum performance in most conditions, we recommend that you use the auto settings. The gain adjusts the return threshold (echo strength) above which the fishfinder will show an object on the screen.

There are two gain modes:

- Auto
- Manual

**Auto**

In Auto mode, the sonar module automatically adjusts the gain setting to suit current conditions.

**Manual**

If necessary you can set the gain controls manually, between a value of 0% to 100%. This value should be set high enough to see fish and bottom detail but without too much background noise. Generally a high gain is used in deep and/or clear water; a low gain in shallow and/or murky water.

The new values remain set even when you switch off the display.

## Selecting the view for gain adjustments

- To select a view to apply gain adjustments to follow the steps below. From the fishfinder application:
- Select **Menu**.
  - Select **Sensitivity Settings**.
  - Select **Gain**.
  - Select **Adjust**.
  - Select **Sonar, DownVision or Both**.
- The fishfinder gain setting can be accessed from the fishfinder menu. From the fishfinder application:
- Select **Menu**.
  - Select **Sensitivity Settings**.
  - Select **Gain**.
  - The Gain adjust dialog is displayed.
  - Adjust the gain control to the required setting, or Select **Auto**. A tick is displayed in the **Auto** box to signify automatic gain is enabled.

## Enabling and disabling on-screen gain controls

You can enable and disable the on-screen gain controls by following the steps below. On a touchscreen multifunction display, with the relevant application displayed:

- Select **Menu**.
- Select **Presentation**.
- Select **Gain Controls**.
- Selecting Gain Controls will switch between showing and hiding the on-screen control.

## Adjusting fishfinder gain manually using on-screen controls

- Touchscreen multifunction displays provide on-screen access to the gain controls.
- Select the **Auto** box to switch between Auto and Manual gain.
  - With **Auto** deselected, select and hold the **Slider** and move **Left** to decrease value or **Right** to increase value.
- Fishfinder color gain**
- Sonar uses different colors to determine signal strengths whilst DownVision uses monochrome shading. You can adjust the color gain to change the signal strength threshold. Sonar Color gain sets the lower limit for the strongest echo color. All echoes with a signal strength above this value are displayed in the strongest color. Those with a weaker value are divided equally between the remaining colors.
- Setting a low value produces a wide band for the weakest color, but a small signal band for the other colors.
  - Setting a high value gives a wide band for the strongest color, but a small signal band for the other colors.

