




6.23.2 How to manually acquire a target

You can manually acquire a target from both the radar display and the radar display overlay.

1. Tap the target to acquire to show the pop-up menu.
2. Tap [Acquire].

After you acquire a target, the radar marks the target with a broken square and a vector appears within 30 s. The vector indicates the direction of the target. Within 90 s after you acquire the target, the first tracking step is finished and the target is tracked continuously. At this point, the broken square changes to a solid circle.

| ARPA Symbol | Meaning |
|--|---|
|  | At acquisition of the target. |
|  | 30 s after the acquisition, the plotting symbol changes to a small circle, which indicates steady-state tracking. A vector appears to show the direction of the target. |
|  | A lost target is indicated by a diamond symbol, created from two equal triangles. |

Note 1: For successful acquisition, the target must be within 0.05 to 16 NM from your ship and not hidden in sea or rain clutter.

Note 2: When the capacity for manual acquisition is reached, you cannot acquire more targets. Cancel tracking of non-threatening targets to acquire additional targets manually.

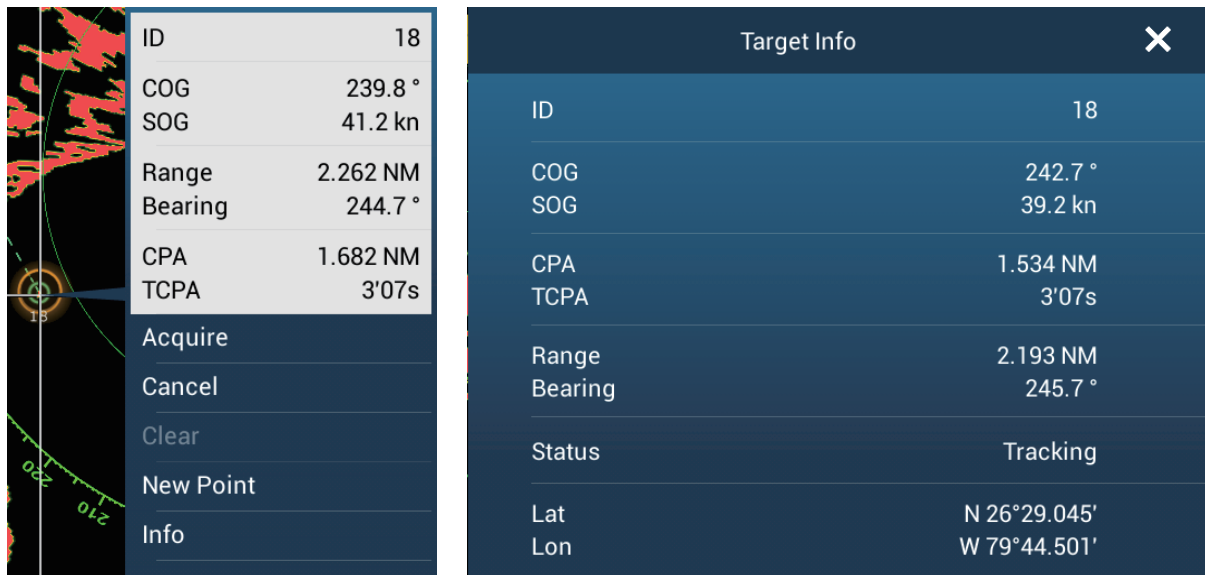
6.23.3 How to automatically acquire a target

Any target that enters the ARPA acquisition area is acquired and tracked automatically. When a target enters the area, the buzzer sounds.

1. Create a guard zone referring to section 6.13.
2. Tap a line on the guard zone to show the pop-up menu. Turn on [Auto Acquire]. The dotted lines for the guard zone turn into solid lines.

6.23.4 How to display target data

You can find the bearing, range, etc. of an ARPA target. Tap the ARPA target to get its information. For detailed information, tap the ARPA target to display the pop-up menu then tap [Info]. The detailed information display can also be shown by selecting the simple information display.



Simple information

Detailed information

6.23.5 How to stop tracking targets

You can stop tracking ARPA targets separately or all together.

Individual target

1. Tap the ARPA target to display the pop-up menu.
2. Tap [Cancel] to delete the target from the screen.

All targets

1. Tap the screen to show the pop-up menu then tap [Targets].
2. Tap [Cancel All] to delete all targets from the screen.

6.23.6 How to clear a lost target

An ARPA target not detected in five scans becomes a lost target. You can clear lost targets separately or all together.

Individual lost target

1. Tap the lost target to display the pop-up menu.
2. Tap [Clear] to delete the lost target from the screen.

All lost targets

1. Tap the screen to show the pop-up menu then tap [Targets].
2. Tap [Clear Lost] to delete all lost targets from the screen.

6.23.7 CPA/TCPA alarm

This alarm helps you keep your ship away from collision by warning of targets on a collision course. The ARPA continuously monitors the predicted range at the Closest Point of Approach (CPA) and predicted time to CPA (TCPA) of each tracked target. When the predicted CPA or TCPA is less than their set values, the alarm sounds and the message "CPA/TCPA Alarm" appears and flashes at the top of the screen.

Make sure that the gain, sea and rain controls are correctly adjusted before you use this alarm.

CPA/TCPA alarm ranges must be set correctly according to the size, tonnage, speed, turning performance and other characteristics of your ship.

How to set the CPA/TCPA alarm

1. Open the home screen, then tap [Settings] - [Targets].
2. Turn on [CPA/TCPA Alarm].
3. Tap [CPA Alarm Value] or [TCPA Alarm Value] to display the software keyboard.
4. Set the value, then tap ✓ to confirm.
5. Tap the close button to finish.

How to acknowledge the CPA/TCPA alarm

The CPA/TCPA alarm sounds when the CPA and TCPA of an ARPA target are within the CPA/TCPA alarm range. The alarm indication "CPA/TCPA Alarm" appears and flashes at the top of the screen. To acknowledge the alarm and stop the audio alarm and flashing of the indication, tap the indication "CPA/TCPA Alarm" (see paragraph 2.11.7). (The ARPA vector must be displayed at least 30 seconds to calculate CPA and TCPA.)

How to deactivate the CPA/TCPA alarm

1. Open the home screen, then tap [Settings] - [Targets].
2. Turn off [CPA/TCPA Alarm].
3. Tap the close button to finish.

This page is intentionally left blank.

7. FISH FINDER (SOUNDER)

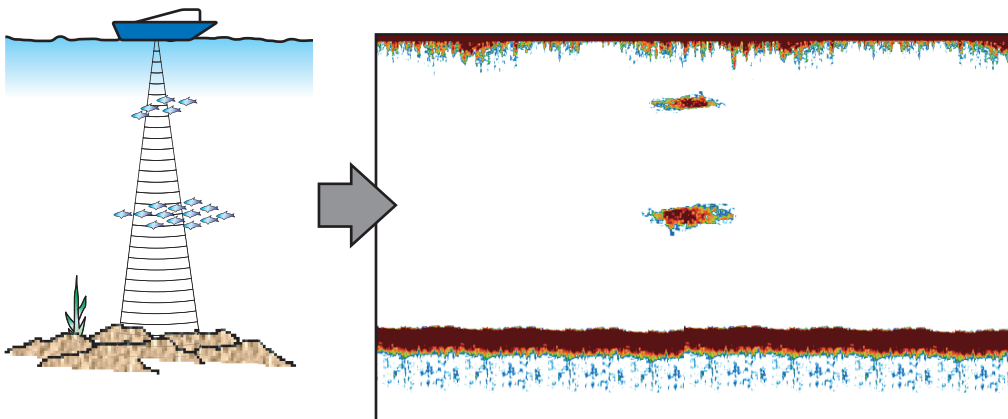
This chapter describes the functions of the built-in fish finder.

7.1 How the Fish Finder Operates

The fish finder calculates the distance between its transducer and underwater objects like fish, lake bottom or seabed. The results are shown in different colors or shades of gray according to echo strength.

The ultrasonic waves transmitted through water move at a constant speed of approximately 4800 feet (1500 meters) per second. When a sound wave "hits" an underwater object like fish or sea bottom, part of the sound wave is reflected toward the source. To find the depth to an object, the fish finder calculates the time difference between the transmission of a sound wave and the time the reflected sound wave is received.

The picture displayed by the fish finder contains a series of vertical scan lines. Each line is a "picture" of the objects under the boat. The series of pictures are put side-by-side across the screen to show the contours of the bottom and echoes from fish. The amount of history of objects that have moved under the boat can be less than a minute to more than one minute depending on the picture advance speed.



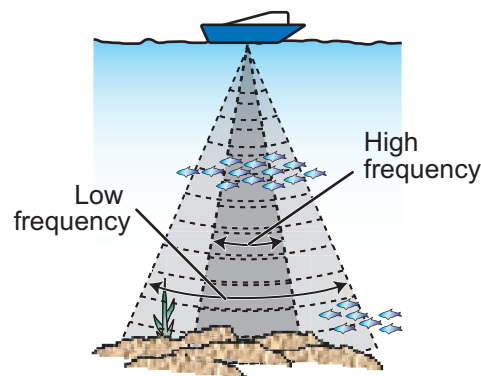
7.2 How to Select a Display

Your fish finder has six display modes. These modes are single frequency, dual frequency, bottom zoom, bottom lock, A-scope, and bottom discrimination.

7.2.1 Single frequency display

The single frequency display shows either the low-frequency or high-frequency picture on all the screen. Select a frequency according to your purpose.

- A low frequency gives a wide detection area. Use the low frequency for general search and to find bottom conditions.
- A high frequency gives better resolution. Use the high frequency to inspect a school of fish.



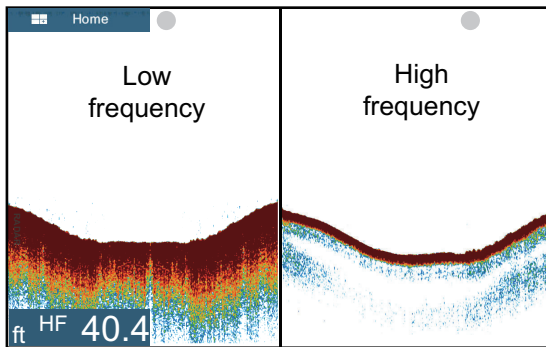
Detection area

How to select a single frequency display

1. Tap the screen to show the pop-up menu.
2. Tap [Mode].
3. Turn on [Single Freq.].
4. Tap [Frequency].
5. Turn on [HF] (high frequency) or [LF] (low frequency).

7.2.2 Dual frequency display

The dual frequency display provides both low and high frequency pictures. Use the dual frequency display to compare the same picture with two different sounding frequencies.



| Freq. (kHz) | Beamwidth | Resolution | Detection range | Bottom tail |
|-------------|-----------|------------|-----------------|-------------|
| Low | Wide | Low | Deep | Long |
| High | Narrow | High | Shallow | Short |

How to select the dual frequency display

Tap the screen to show the pop-up menu. Tap [Mode], [Dual Freq.].

How to reverse the display pictures between low and high frequencies

In the default setting, the low frequency picture is on the left, and the high frequency picture is on the right. To reverse the pictures between low and high frequencies, tap the screen to show the pop-up menu, then tap [Frequency] and [LF]. The picture for the frequency option ([HF] or [LF]) selected here is displayed on the right.

7.2.3 Zoom displays

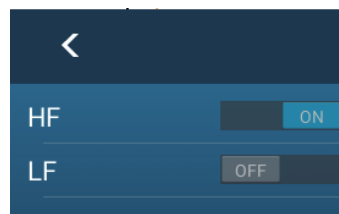
Zoom mode expands selected area of the single frequency picture. Two modes are available: bottom lock and bottom zoom.

How to activate a zoom display

Tap the screen to open the pop-up menu. Tap [Mode], then turn [Bottom Lock] or [Bottom Zoom] on or off.

To quit the zoom display and go to the single frequency display, tap [Mode], [Single Freq.] on the pop-up menu.

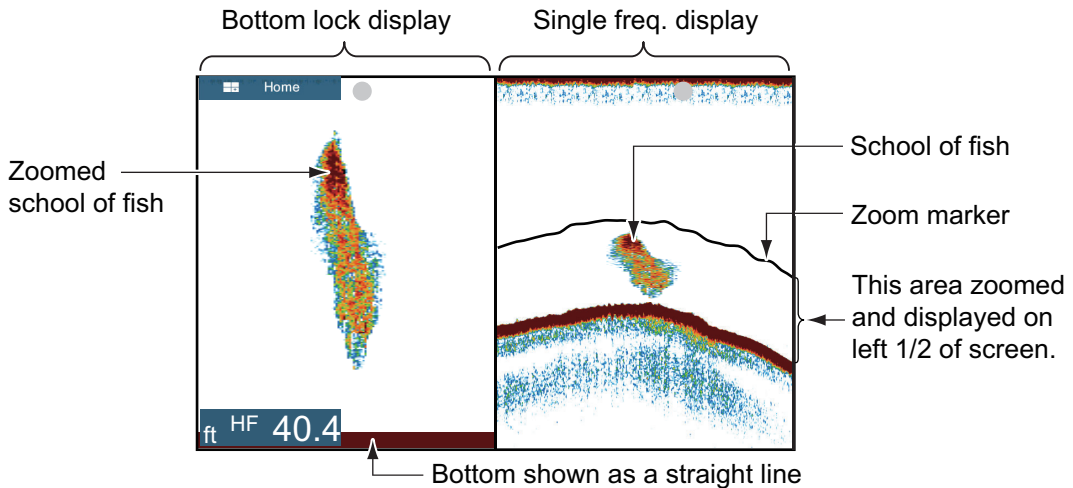
You can switch the frequency for the zoom displays from the pop-up menu. Tap the screen, then tap [Frequency] and [HF] or [LF].



7. FISH FINDER (SOUNDER)

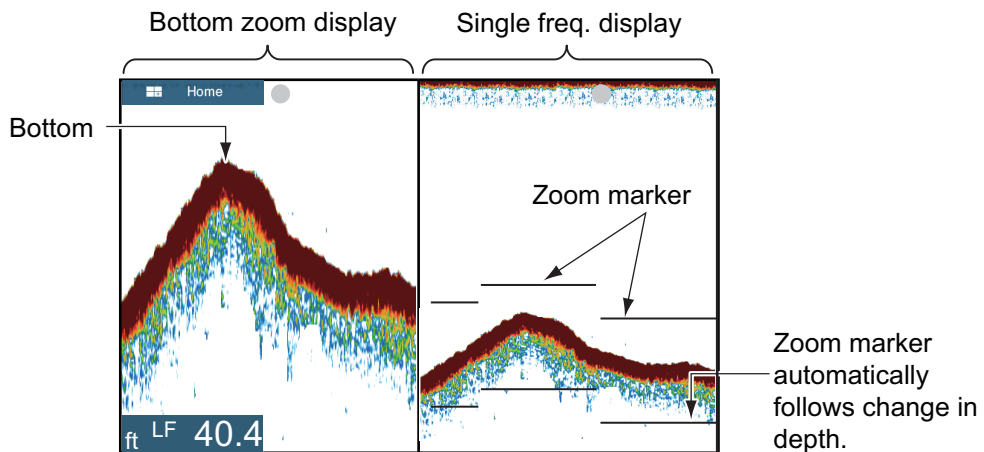
Bottom lock display

The bottom lock display provides a compressed normal picture on the right half and a 7 to 400 feet (2 to 120 meter) wide layer in contact with the bottom is expanded on the left half. This display helps you separate the fish near the bottom from the bottom echo. You can select the bottom lock range with [Bottom Lock Range Span] in the [Settings] - [Sounder] menu.



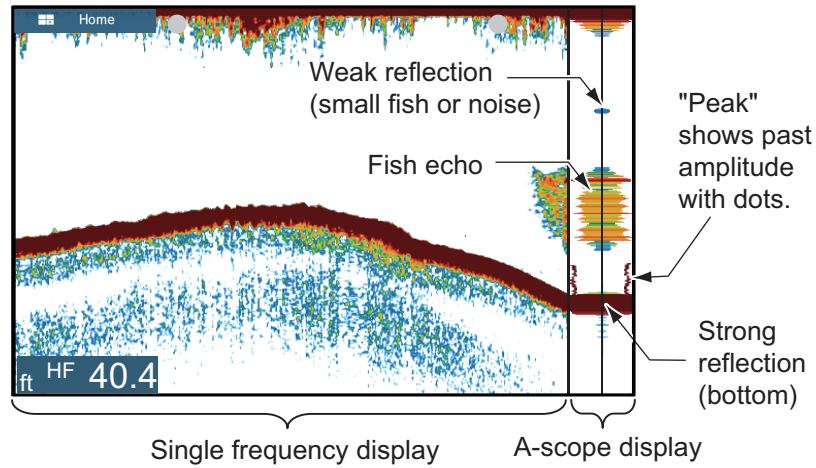
Bottom zoom display

The bottom zoom display expands the bottom and the fish near the bottom according to the zoom range selected on [Zoom Range Span] in the [Settings] - [Sounder] menu. This display helps you find the density of the bottom. A short echo tail normally indicates a soft bottom (sand bottom, etc.). A long echo tail indicates a hard bottom.



7.2.4 A-scope display (display only)

The A-scope display appears at the right of the screen and is available in any fish finder mode. This display shows the echoes at each transmission with the amplitudes and tone in balance with their intensities. This display helps you identify possible fish species and bottom structure.



How to show or hide the A-scope display

Tap the screen to show the pop-up menu, then turn [A-Scope] on or off.

A-scope peak hold

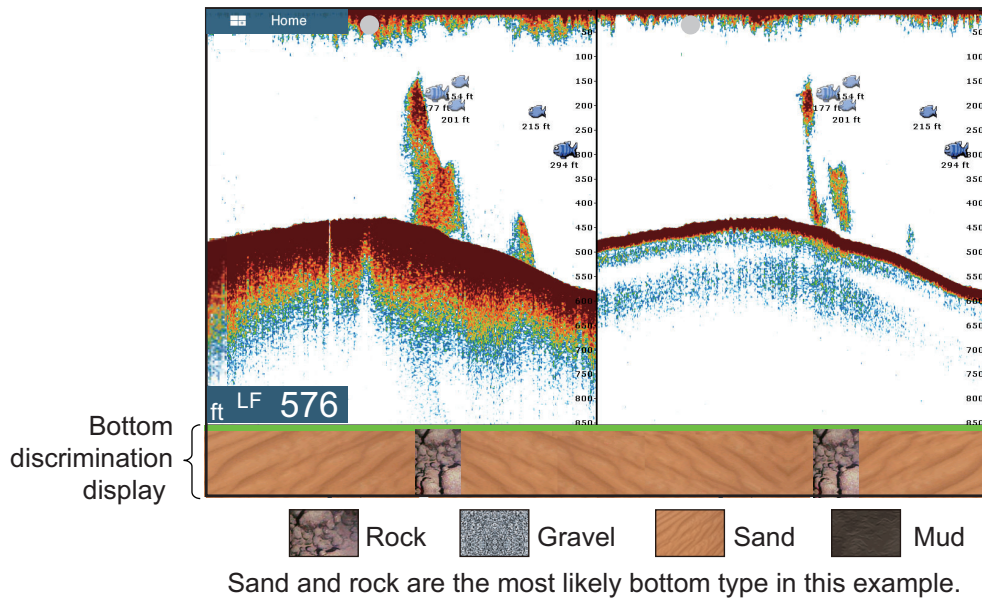
You can show the "normal" A-scope display plus the peak-hold amplitude picture for the last five seconds in dots.

1. Open the home screen, then tap [Settings] - [Sounder].
2. Turn on [A-Scope Peak Hold].
3. Tap the close button to finish.

7.2.5 Bottom discrimination display

The bottom discrimination display, which requires a bottom discrimination capable transducer or Bottom Discrimination Sounder BBDS1 or Network Fish Finder DFF1-UHD, identifies probable bottom composition. The display is available in all screen divisions, single or dual frequency mode, and occupies the bottom 1/6 of the screen in the full screen display.

Use this feature with ship speed 10 knots or less and depths between 5 and 100 m.



How to active or deactivate the bottom discrimination display

1. Open the home screen, then tap [Settings] - [Sounder].
2. Tap [Fish Finder Source].
3. Tap [TZTL] (internal sounder), [BBDS1] or [DFF1-UHD] as applicable.
4. Tap the close button to finish.
5. To activate or deactivate the bottom discrimination display, turn [Bottom] on or off from the pop-up menu.

7.3 Automatic Fish Finder Operation

Your fish finder can be adjusted automatically to let you do other tasks.

7.3.1 How the automatic fish finder operates

The automatic fish finder function automatically adjusts the gain, clutter, TVG, echo offset and range. The main features of the automatic mode are as shown below.

- Gain adjusts the sensitivity of the receiver to show the bottom echo in reddish-brown (default color arrangement).
- Clutter automatically reduces low-level noise like plankton.
- The TVG function is automatically adjusted.
- The echo offset balances the gain on high and low frequencies.
- Range is adjusted automatically to show the bottom echo.

7.3.2 How to select an automatic fish finder mode

There are two types of automatic fish finder modes: [Auto Fishing] and [Auto Cruising]. [Auto Fishing] searches for schools of fish, and [Auto Cruising] tracks the bottom. [Auto Cruising] uses a higher clutter removal setting than [Auto Fishing]. Do not use [Auto Cruising] when your purpose is to find fish, because the clutter removal circuit can erase weak echoes.

To select an automatic fish finder mode, tap the screen to open the pop-up menu, tap [Adjust] then tap [Auto Fishing] or [Auto Cruising]

7.4 Manual Fish Finder Operation

Use the manual operation to see schools of fish and the bottom echo with a fixed gain setting. The gain, range and range shift functions let you select the depth you can see on the screen.

7.4.1 How to select the manual mode

Tap the screen to open the pop-up menu. tap [Adjust] then tap [Manual].

7.4.2 How to select the display range

Manual range setting

Pinch the fish finder screen or use the slider bar.

How to turn on or off the auto range

The range can be selected automatically or manually. tap the screen to open the pop-up menu, then turn [Auto Range] on or off.

7. FISH FINDER (SOUNDER)

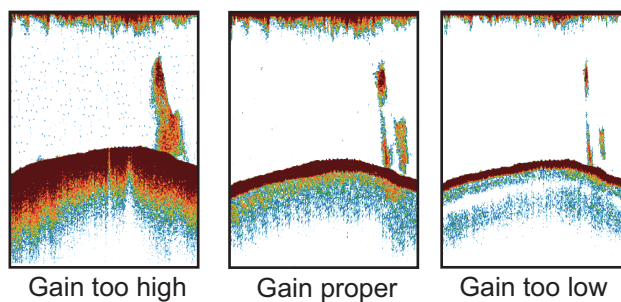
7.4.3 How to shift the range

The basic range and range shift functions let you select the depth you can see on the screen. This function is not available when [Auto Range] is active.

1. Open the home screen, then tap [Settings] - [Sounder].
2. Tap [Range Shift] to open the software keyboard.
3. Set the range then tap ✓ to confirm.
4. Tap the close button to finish.

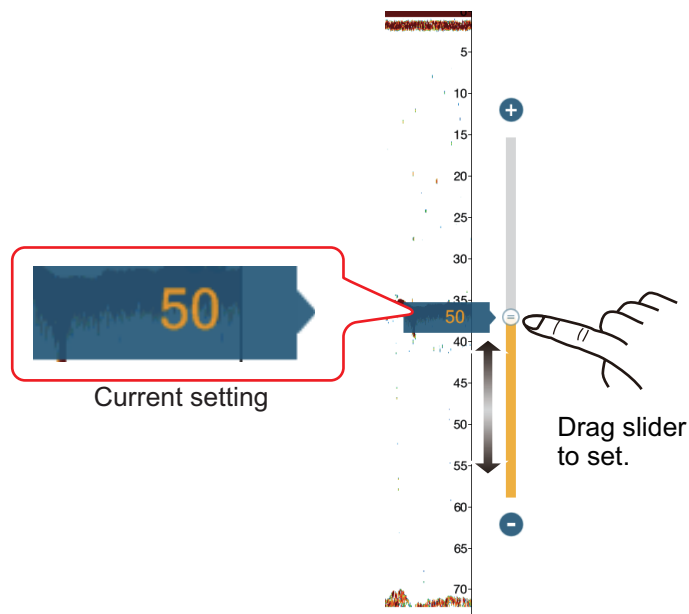
7.4.4 How to adjust the gain

The gain controls how echoes of different strengths are displayed. Set the gain to show a slight amount of noise on the screen. Increase the gain for greater depths and lower the gain for shallow waters.



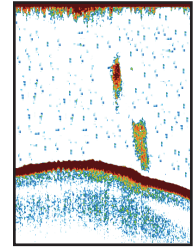
Note: This function is not available in the auto mode.

1. Tap the screen to open the pop-up menu, then tap [Adjust].
2. Tap [HF Gain] or [LF Gain].
3. Drag the slider to set the gain, as shown in the figure below.



7.4.5 How to reduce the clutter

Low intensity “spots” of noise appear over most of the screen like in the illustration shown below. These spots are caused by sediment in the water or noise. You can reduce this type of noise.

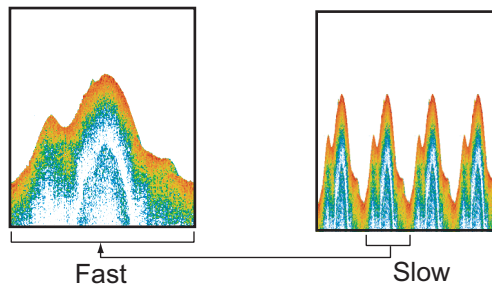


Note: This function is not available in the auto mode.


1. Open the home screen, then tap [Settings] - [Sounder].
2. Drag the slider at [Clutter] to set the level. The larger the setting value, the greater the degree of reduction.
3. Tap the close button to finish.

7.5 Picture Advance Speed

The picture advance speed controls how quickly the vertical scan lines move across the screen. A fast advance speed expands the size of a school of fish horizontally on the screen. A slow advance speed shortens the school of fish. Use a fast advance speed to see the hard bottom. Use a slow advance speed to see the smooth bottom.

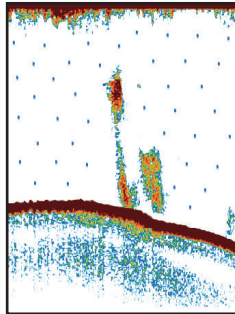


1. Open the home screen, then tap [Settings] - [Sounder].
2. Tap [Picture Advance].
3. Tap a picture advance speed. The options in the window indicate the number of scan lines made per transmission. For example, [1/2] creates one scan line per two transmissions. [1/16] is the slowest advance speed and [4/1] is the fastest speed. [Stop] stops picture advance, and is useful for taking a photo or screenshot of the screen.
4. Tap the close button to finish.

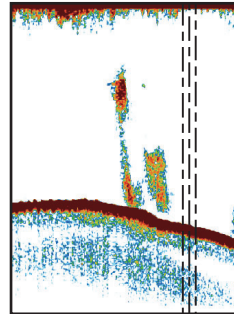
| |
|---|
|  CAUTION |
| <p>The picture is not refreshed when picture advancement is stopped.</p> <p>Maneuvering the vessel in this state in shallow waters may ground the vessel.</p> |

7.6 How to Reduce Interference

Interference from other fish finders and electrical equipment appears on the screen as shown in the illustration. When these types of interference appear on the screen, use the interference rejector to reduce the interference. Turn off the interference rejector when there is no interference, so that you do not erase weak echoes.



Interference from other sounder



Interference from electrical equipment

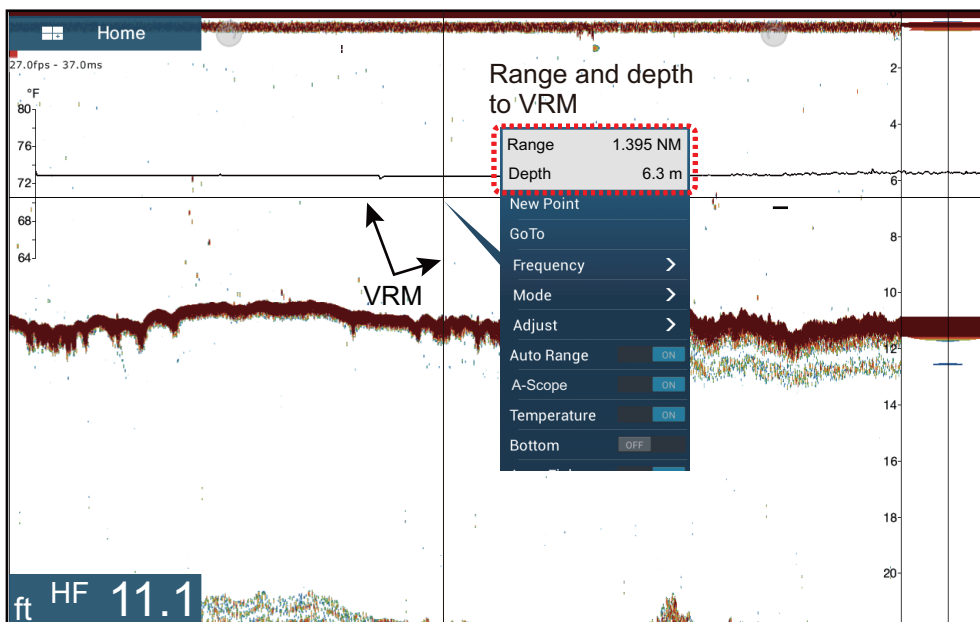
1. Open the home screen, then tap [Settings] - [Sounder].
2. Turn on [Interference Rejection].
3. Tap [Low], [Medium], [High] or [Auto]. [High] provides the greatest interference rejection. [Auto] automatically selects suitable interference setting.
4. Tap the close button to finish.

To deactivate the interference rejection, tap [Off] at step 3.

7.7 How to Measure Range, Depth to an Object

You can measure the range and depth to an object with the VRM. For example, you can measure how many minutes ago an echo appeared.

Tap an object to display the VRM. Read the range and depth in the pop-up menu.



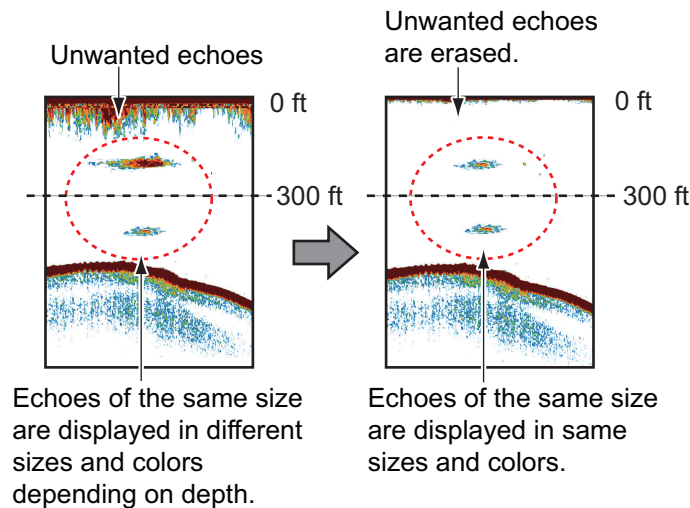
7.8 Echo History Display

You can view past echoes which are off the screen. Swipe the screen to the right to display past echoes. To return to the active display, tap [Cancel Hist.] at the top right-hand corner of the screen.

7.9 How to Balance Echo Strength

A school of fish at a depth deeper than a school of equal strength in shallow water appears in weaker colors. This condition is caused by the attenuation of the ultrasonic wave. To display the schools of fish in the same colors, use the TVG. The TVG automatically increases the gain with depth so that echoes of the same strength and different depths are shown in the same colors. In the illustration shown below, for example, the TVG is set for 300 ft and the TVG level is adjusted. Unnecessary echoes at a distance less than 300 ft are deleted and echoes at depths greater than 300 ft are not adjusted.

Note: This function is not available in the auto mode.



1. Open the home screen, then tap [Settings] - [Sounder].
2. Drag the slider in [TVG HF] (high frequency) or [TVG LF] (low frequency) to set the level. Raise the TVG to increase the gain difference between near and far distances.
3. Tap the close button to finish.

7.10 Fish Finder Alarms

Two types of fish alarms release audio and visual alarms to tell you that echoes from fish are in the area you selected. These alarms are [Fish Alarm] and [Fish Alarm for Bottom Lock].

The [Fish Alarm] function tells you when an echo above some strength (selectable) is within the alarm range you specify.

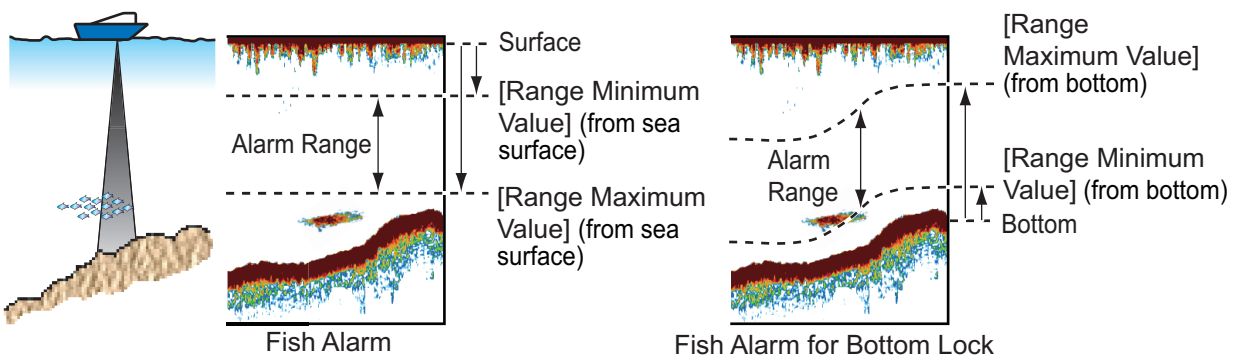
The [Fish Alarm for Bottom Lock] function tells you when fish are within some distance from the bottom. The bottom lock display must be active to use this alarm.

7.10.1 How to set an alarm

1. Open the home screen, then tap [Settings] - [Sounder]. Scroll the menu to show the fish finder alarms section.
2. **Fish alarm:** Tap [Range Minimum Value] or [Range Maximum Value] below [Fish Alarm] to display the software keyboard.
Bottom lock fish alarm: Tap [Range Minimum Value] or [Range Maximum Value] below [Fish Alarm for Bottom Lock] to display the software keyboard.



3. Set the start depth in [Range Minimum Value], the end depth in [Range Maximum Value].



4. Tap the close button to finish.

7.10.2 How to activate or deactivate an alarm

Fish alarm

1. Open the home screen, then tap [Settings] - [Sounder].
2. Turn [Fish Alarm] on or off.

The fish alarm can also be activated or deactivated with [Fish Alarm] on the pop-up menu.

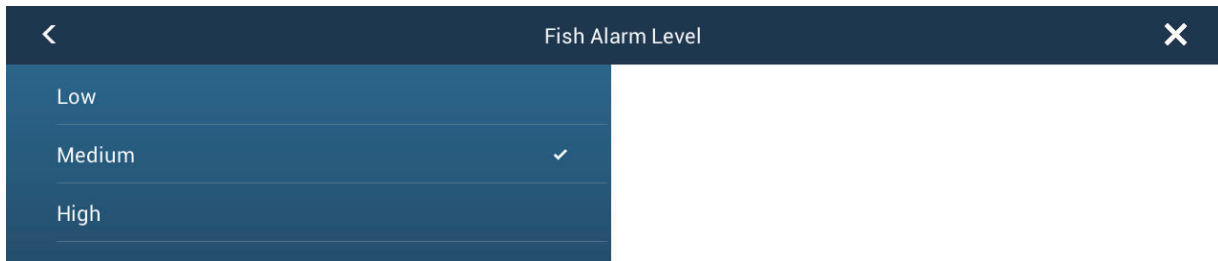
Bottom lock fish alarm

Open the home screen, then tap [Settings] - [Sounder]. Turn [Fish Alarm for Bottom Lock] on or off.

7.10.3 Alarm sensitivity

You can select the echo strength that releases the fish alarms.

1. Open the home screen, then tap [Settings] - [Sounder].
2. Tap [Fish Alarm Level].



3. Tap which echo strength releases the fish and bottom lock alarms.
 - [Low]:** Light-blue or stronger echoes
 - [Medium]:** Yellow or stronger echoes
 - [High]:** Red and reddish-brown echoes
4. Tap the close button to finish.

7.11 ACCU-FISH™

The ACCU-FISH™ feature, which requires an ACCU-FISH™ capable transducer or Bottom Discrimination Sounder BBDS1 or Network Fish Finder DFF1-UHD, identifies probable bottom composition estimates the length of each fish and shows a fish symbol and depth value or fish length.

Usage guidelines

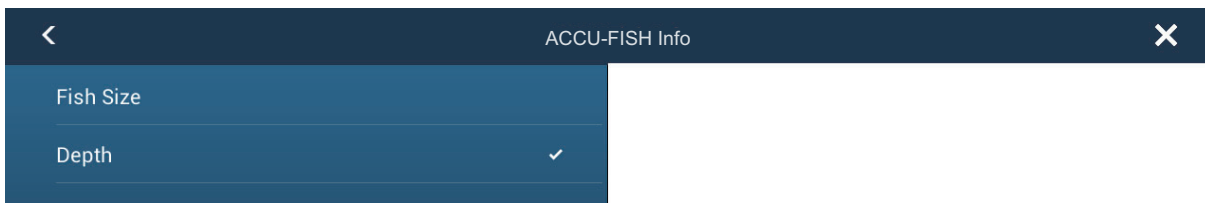
- The information given by this feature is intended for reference only.
- ACCU-FISH™ uses both low and high frequency echoes for the measurements regardless of the frequency mode in use.
- The intensity of an echo depends on fish species. If the indicated length is different from the true length, you can apply an offset in the [Sounder] - [ACCU-FISH Size Correction] menu of the menu.
- 50 kHz and 200 kHz beams are transmitted alternately without reference to the current display mode.

7. FISH FINDER (SOUNDER)

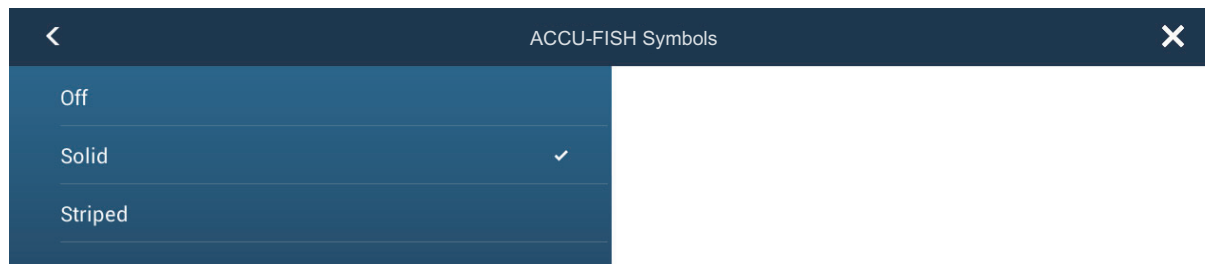
- Use this feature with ship speed of 10 knots or less and depth between 5 and 100 m.
- The signal attenuation on the inside-hull transducer is different between 50 kHz and 200 kHz. This attenuation causes some fish to get ignored and the fish length indicated can be shorter than the true length.
- Echoes from a school of fish can be in more than one layer, which can cause wrong length indication.
- The fish symbol indication is not shown when the bottom echo does not appear on the screen.

7.11.1 How to set ACCU-FISH™

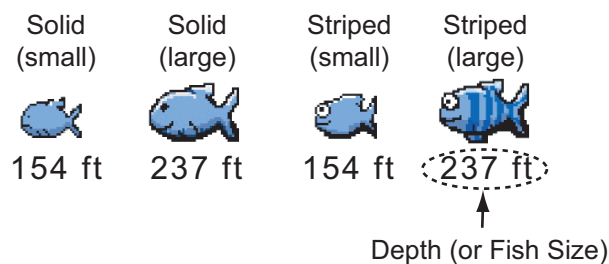
1. Open the home screen, then tap [Settings] - [Sounder].
2. Tap [ACCU-FISH Info].







3. Tap [Fish Size] or [Depth].
4. Tap [ACCU-FISH Symbols].



5. Tap [Solid], [Striped] or [Off] (turn off fish symbol).



| Fish size | Solid | Striped |
|--|---|---|
| Large fish symbol (more than 51 cm (20.08 inch)) |  |  |
| Small fish symbol (10 to 50 cm (3.9. to 19.69 inch)) |  |  |

6. Tap the close button to finish.

7.11.2 Fish size correction

The fish size shown on the screen can be different from the true size. If the size is wrong, add an offset to the measured value to get a more accurate indication on the screen.

1. Open the home screen, then tap [Settings] - [Sounder].
2. Drag the slider at [ACCU-FISH Size Correction] to set correction percentage (setting range: -80% to 100%).

| Setting | Revised size |
|---------|--------------|
| +100 | Two times |
| +50 | 1.5 times |
| -50 | 1/2 |
| -65 | 1/3 |
| -75 | 1/4 |
| -80 | 1/5 |

3. Tap the close button to finish.

7.11.3 How to turn the fish symbol indication on or off

Tap the screen to open the pop-up menu. Turn [ACCU-FISH] on or off. Fish symbols and their depth values or fish lengths appear on the screen. If you selected [Off] at step 5 in paragraph 7.11.1, the fish symbols are hidden and only the depth values or fish lengths appear.

7.11.4 How to display the fish information

Tap a fish symbol (only in the ACCU-FISH™ mode) to display the information (size, depth, bearing and range) about the fish.

| | |
|-----------|---------|
| Fish Size | 14 in |
| Depth | 123 ft |
| Bearing | 355.5 ° |
| Range | 587 yd |
| New Point | |
| Goto | |

