

# 550, 560, and 570 Operations Manual

531716-2\_A



**500 series™**

# Thank You!

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To contact our Customer Resource Center, call **1-800-633-1468** or visit our web site at **[www.humminbird.com](http://www.humminbird.com)**.

***WARNING!*** This device should not be used as a navigational aid to prevent collision, grounding, boat damage, or personal injury. When the boat is moving, water depth may change too quickly to allow time for you to react. Always operate the boat at very slow speeds if you suspect shallow water or submerged objects.

***WARNING!*** Disassembly and repair of this electronic unit should only be performed by authorized service personnel. Any modification of the serial number or attempt to repair the original equipment or accessories by unauthorized individuals will void the warranty.

***WARNING!*** This product contains chemicals known to the State of California to cause cancer and/or reproductive harm.

***WARNING!*** Do not travel at high speed with the unit cover installed. Remove the unit cover before traveling at speeds above 20 mph.

***NOTE:*** Some features discussed in this manual require a separate purchase, and some features are only available on international models. Every effort has been made to clearly identify those features. Please read the manual carefully in order to understand the full capabilities of your model.

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# Table of Contents

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<b>Power On the Unit</b>	<b>1</b>
<b>How Sonar Works</b>	<b>2</b>
Single Beam Sonar .....	4
DualBeam Sonar .....	5
<b>What's On the Sonar Display</b>	<b>6</b>
Understanding the Sonar Display .....	8
Real Time Sonar (RTS™) Window .....	9
Instant Image Update .....	9
SwitchFire™ .....	9
Bottom Presentation .....	10
<b>Views</b>	<b>12</b>
Sonar View .....	14
Sonar Zoom View .....	15
Big Digits View .....	16
<b>What's on the 500 Series™ Control Head</b>	<b>17</b>
<b>Key Functions</b>	<b>18</b>
POWER/LIGHT Key .....	18
VIEW Key .....	19
MENU Key .....	19
4-WAY Cursor Control Key .....	19
EXIT Key .....	20
<b>The Menu System</b>	<b>21</b>
<b>Start-Up Options Menu</b>	<b>22</b>
Normal .....	22
Simulator .....	23
System Status .....	23
Self Test .....	24
Accessory Test.....	24

# Table of Contents

---

<b>X-Press™ Menu</b>	<b>25</b>
<b>Main Menu</b>	<b>26</b>
Quick Tips for the Main Menu .....	27
Note for all Menu Settings .....	27
User Mode (Normal or Advanced) .....	28
<b>Sonar X-Press™ Menu (Sonar views only)</b>	<b>29</b>
Sensitivity .....	30
Upper Range ( <i>Advanced: Sonar and Big Digits views only</i> ) .....	31
Lower Range .....	31
Chart Speed .....	32
Bottom View .....	32
Zoom Level ( <i>Sonar Zoom view only</i> ) .....	32
<b>Alarms Menu Tab</b>	<b>33</b>
Depth Alarm .....	34
Fish ID Alarm.....	34
Low Battery Alarm .....	34
Temp. Alarm .....	35
Alarm Tone .....	35
<b>Sonar Menu Tab</b>	<b>36</b>
Surface Clutter .....	37
SwitchFire™ .....	37
Fish ID+™ .....	38
Fish ID Sensitivity .....	39
Real Time Sonar (RTS™) Window .....	39
Zoom Width .....	39
Depth Lines ( <i>Advanced</i> ) .....	40
Noise Filter ( <i>Advanced</i> ) .....	40
Max Depth ( <i>Advanced</i> ) .....	41
Water Type ( <i>Advanced</i> ) .....	41

# Table of Contents

---

<b>Setup Menu Tab</b>	<b>42</b>
Units - Depth .....	43
Units - Temp <i>(International only)</i> .....	43
Units - Distance <i>(with Temp/Speed only)</i> .....	43
Units - Speed <i>(with Temp/Speed only)</i> .....	43
User Mode .....	44
Language <i>(International only)</i> .....	44
Triplog Reset <i>(with Temp/Speed only)</i> .....	44
Restore Defaults .....	44
Select Views <i>(Advanced)</i> .....	45
Select Readouts <i>(Advanced, Sonar View only)</i> .....	45
Depth Offset <i>(Advanced)</i> .....	46
Temp. Offset <i>(Advanced)</i> .....	46
Speed Calibration <i>(Advanced, with Temp/Speed only)</i> .....	47
Demonstration .....	47
<b>Troubleshooting</b>	<b>48</b>
Fishfinder Doesn't Power Up .....	48
Fishfinder System Defaults to Simulator with a Transducer Attached .....	48
Display Problems .....	49
Finding the Cause of Noise .....	50
<b>500 Series™ Fishfinder Accessories</b>	<b>51</b>
<b>Specifications</b>	<b>52</b>
<b>Glossary</b>	<b>53</b>
<b>Contact Humminbird®</b>	<b>58</b>

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# Table of Contents

---

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**NOTE:** Entries in this Table of Contents which list (with Temp/Speed only) require the purchase of separate accessories. You can visit our web site at [www.humminbird.com](http://www.humminbird.com) to order these accessories online or contact our Customer Resource Center at 1-800-633-1468.

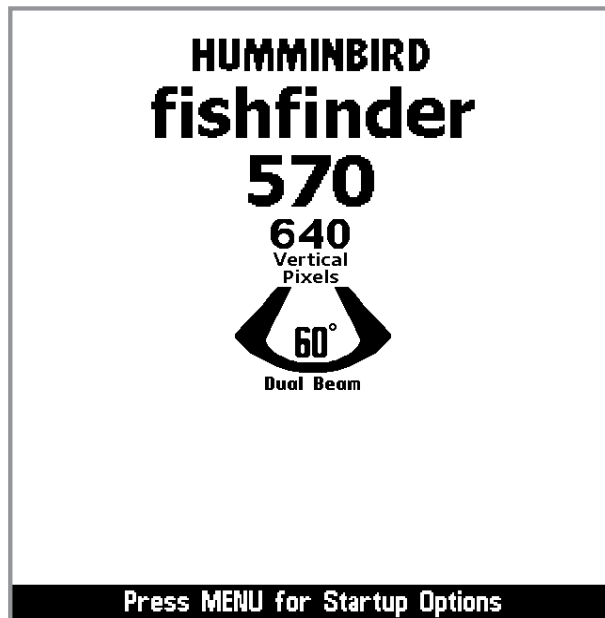
**NOTE:** Some features discussed in this manual require a separate purchase, and some features are only available on international models. Every effort has been made to clearly identify those features. Please read the manual carefully in order to understand the full capabilities of your model.


# Power On the Unit

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Follow the instructions below to power on your Humminbird® control head.

570 Title Screen



1. Press the  POWER/LIGHT key.
2. When the Title screen is displayed, press the MENU key to access the Start-Up Options Menu.
3. Use the 4-WAY Cursor Control key to select Normal (if there is a transducer attached to the control head) or Simulator (if there isn't a transducer attached to the control head).

*NOTE: See **Start-Up Options Menu** for more information.*

- If a functioning transducer is connected, Normal operation will be selected automatically at power up, and your Fishfinder can be used on the water.
- If a transducer is not connected and you wait too long to select a Start-Up Option, the system will default to whichever menu is already highlighted.
- In Simulator you can learn how to use your control head and save settings in advance for later use.



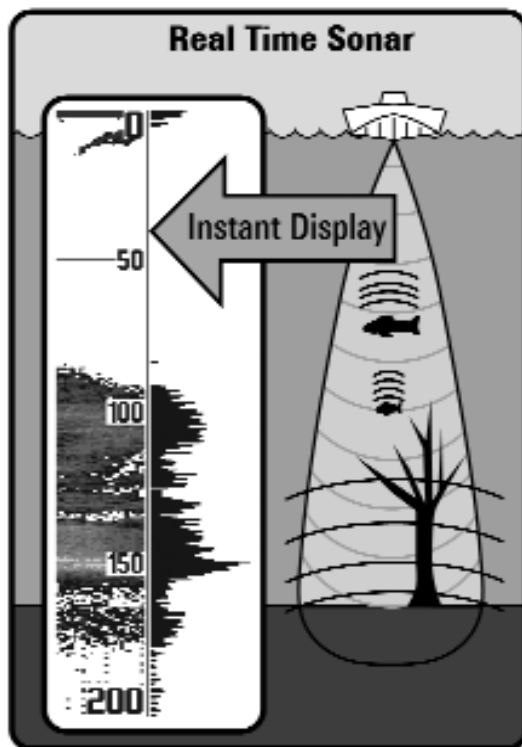
## How Sonar Works

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Sonar technology is based on sound waves. The 500 Series™ Fishfinder uses sonar to locate and define structure, bottom contour and composition, as well as depth directly below the transducer.

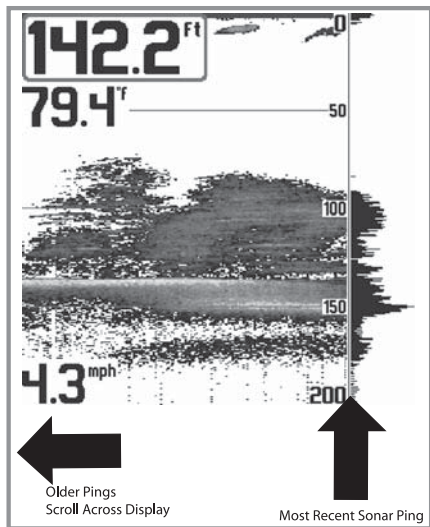
Your 500 Series™ Fishfinder sends a sound wave signal and determines distance by measuring the time between the transmission of the sound wave and when the sound wave is reflected off of an object; it then uses the reflected signal to interpret location, size, and composition of an object.

Sonar is very fast. A sound wave can travel from the surface to a depth of 240 ft (70 m) and back again in less than 1/4 of a second. It is unlikely that your boat can “outrun” this sonar signal.

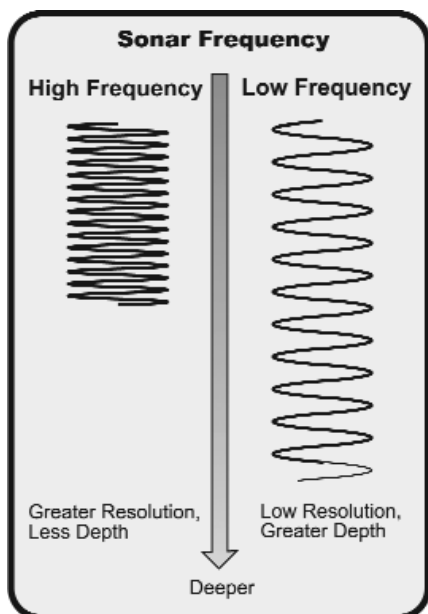


SONAR is an acronym for SOund and NAVigation Ranging. Sonar uses precision sound pulses or “pings” which are emitted into the water in a teardrop-shaped beam.

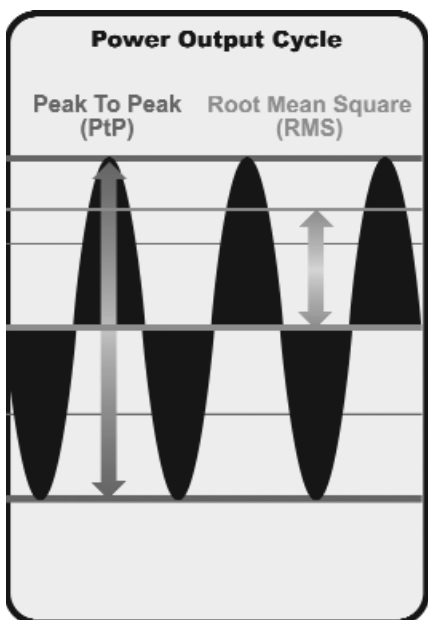
The sound pulses “echo” back from objects in the water such as the bottom, fish, and other submerged objects. The returned echoes are displayed on the LCD screen. Each time a new echo is received, the old echoes are moved across the LCD, creating a scrolling effect.



When all the echoes are viewed side by side, an easy to interpret “graph” of the bottom, fish, and structure appears.



The sound pulses are transmitted at various frequencies depending on the application. Very high frequencies (455 kHz) are used for greatest definition but the operating depth is limited. High frequencies (200 kHz) are commonly used on consumer sonar and provide a good balance between depth performance and resolution. Low frequencies (83 kHz) are typically used to achieve greater depth capability.



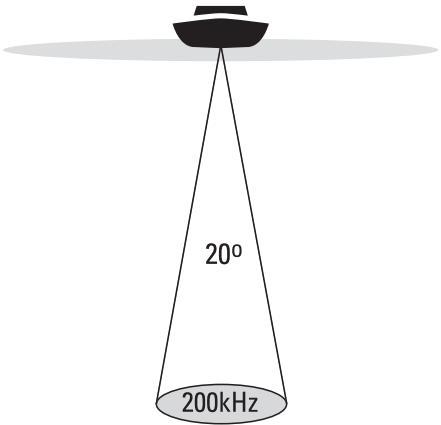
The power output is the amount of energy generated by the sonar transmitter. It is commonly measured using two methods:

- Root Mean Square (RMS) measures power output over the entire transmit cycle.
- Peak to Peak measures power output at the highest points.

The benefits of increased power output are the ability to detect smaller targets at greater distances, ability to overcome noise, better high speed performance and enhanced depth capability.

## Single Beam Sonar

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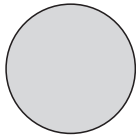


The 550 Fishfinder and 560 Fishfinder use a 200 kHz single beam sonar system with a 20° area of coverage. Depth capability is affected by such factors as boat speed, wave action, bottom hardness, water conditions, and transducer installation.

▲ 20 Degree Total Coverage

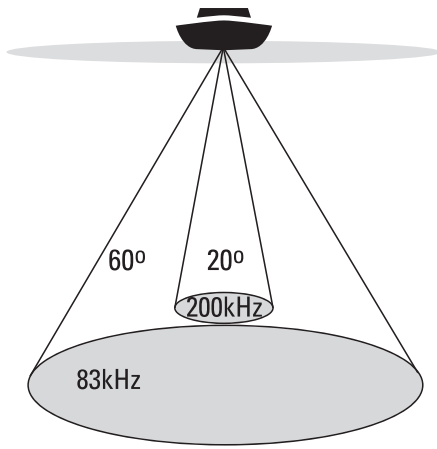
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▼ Bottom Coverage =  $1/3 \times \text{Depth}$



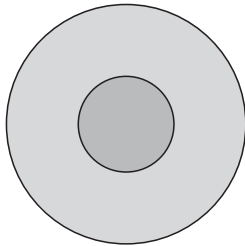
## DualBeam Sonar

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▲ 60 Degree Total Coverage

▼ Bottom Coverage = 1 x Depth



The 570 Fishfinder uses a 200/83 kHz DualBeam sonar system with a wide (60°) area of coverage. DualBeam sonar is optimized to show the greatest bottom definition using a narrow (20°) beam yet can still indicate fish found in the wide (60°) beam when the Fish ID+™ feature is turned on. DualBeam is ideal for a wide range of conditions - from shallow to very deep water in both fresh and salt water. Depth capability is affected by such factors as boat speed, wave action, bottom hardness, water conditions, and transducer installation.

# What's On the Sonar Display

The 500 Series™ Fishfinder can display a variety of useful information about

**Depth** - Water depth; can be set to alarm when the water becomes too shallow.

**Temperature** - Water surface temperature.

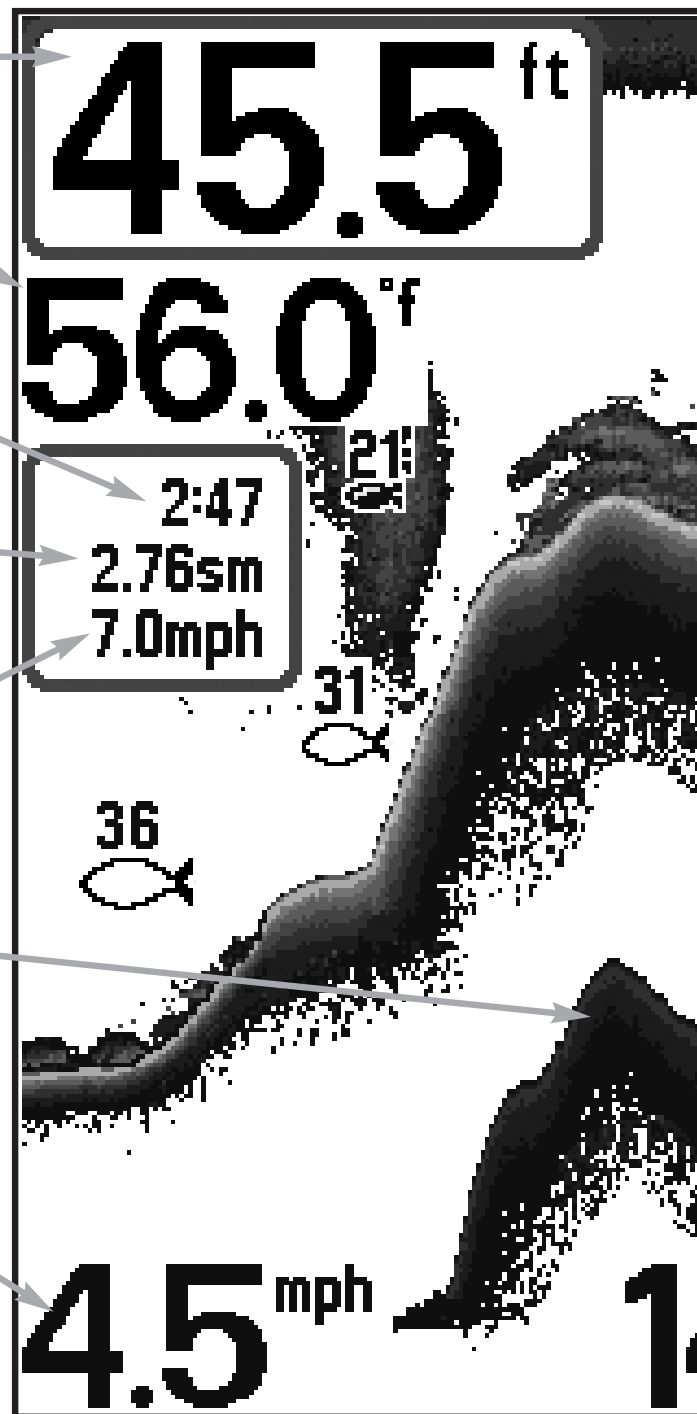
**Timer** - Elapsed time with Temp/Speed Accessory.

**Distance** - Distance traveled with Temp/Speed Accessory.

**Average Speed** - Average speed reading with Temp/Speed Accessory.

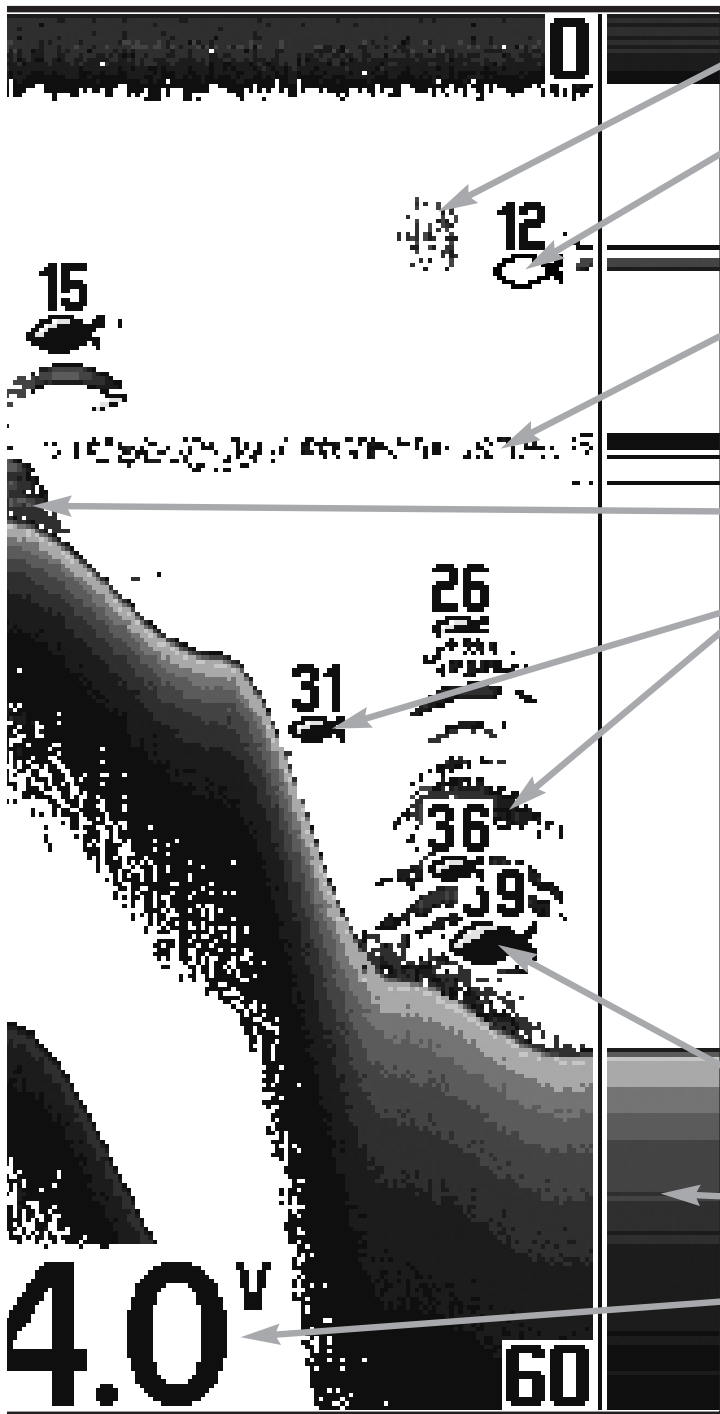
**Second Sonar Return** - When the sonar signal bounces between the bottom and the surface of the water and back again. Use the appearance of the second return to determine bottom hardness. Hard bottoms will show a strong second return, while soft bottoms will show a very weak one or none at all.

**Speed** - If a Temp/Speed accessory is attached, the Fishfinder can display the speed of the boat and can keep a Triplog of nautical or statute miles traveled.



**NOTE:** Entries in this view that list (with Temp/Speed) are available if the accessory is connected

the area under your boat, including the following items:



**Bait Ball**

**Hollow Fish Symbol** (83kHz, Wide Beam)

**Thermoclines** - Layers of water with different temperatures that appear at different depths and different times of the year. A thermocline typically appears as a continuous band of gray levels moving across the display at the same depth.

**Structure** - Where fish may be hiding.

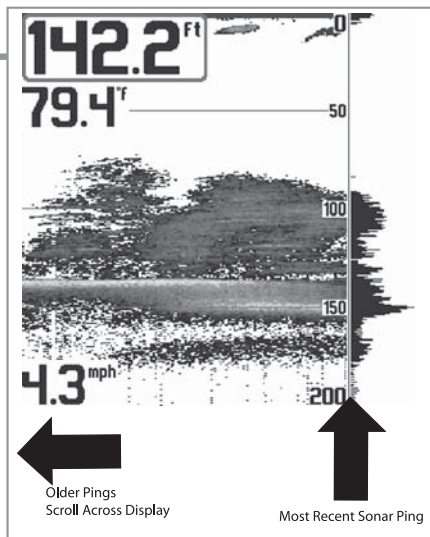
**Fish** - The Fishfinder displays fish as arches and/or fish icons, and can be set to alarm when a fish of a certain size is detected. When a target is detected, a Fish ID+™ symbol appears on the display with the depth displayed above it. The size of the symbol indicates the intensity of the sonar return. The unit will clearly show schools of Bait Fish as "clouds" of different shapes and sizes, depending on the number of fish and boat speed.

**Shaded Fish Symbol** (200 kHz, Narrow Beam)

**RTS (Real Time Sonar) Window™**

**Battery Voltage** - The voltage of the boat's battery; can be set to alarm if the voltage falls below a certain point.

to the 500 Series™ Fishfinder.



## Understanding the Sonar Display

It is important to understand the significance of the display. The display does not show a literal 3-dimensional representation of what is under the water. Each vertical band of data received by the control head and plotted on the display represents something that was detected by a sonar return at a particular time. As both the boat and the targets (fish) may be moving, the returns are only showing a particular segment of time when objects were detected, not exactly where those objects are in relation to other objects shown on the display.

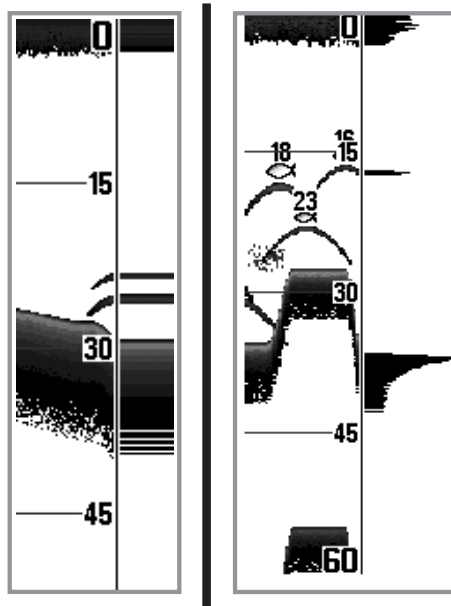
The returned sonar echoes are displayed on the screen. As a new echo is received, the historical data scrolls left across the view.

## Real Time Sonar (RTS™) Window

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A **Real Time Sonar (RTS™) Window** appears on the right side of the display in the Sonar View only. The RTS Window™ updates at the fastest rate possible for depth conditions and shows only the returns from the bottom, structure, and fish that are within the transducer beam. The RTS Window™ plots the depth and intensity of a sonar return (see *Sonar Menu Tab: RTS Window™*).

The **Narrow RTS Window™** indicates the sonar intensity through the use of grayscale. The grayscale used matches the Bottom View grayscale setting (Inverse, StructureID®, WhiteLine™, Bottom Black) . The depth of the sonar return is indicated by the vertical placement of the return on the display depth scale.



The **Wide RTS Window™** indicates the sonar intensity through the use of a bar graph. The length of the plotted return indicates whether the return is weak or strong. The depth of the sonar return is indicated by the vertical placement of the return on the display depth scale. The Wide RTS Window™ does not use grayscale.

## SwitchFire™

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**SwitchFire™** controls how the sonar returns are displayed in the Sonar Views. SwitchFire™ settings are available in the Sonar Menu Tab.

To see the maximum sonar information available within the transducer beam so more fish arches and better jig tracking are shown, choose Max Mode.

To see less clutter and more fish size accuracy interpreted from the transducer beam, choose Clear Mode. See *Sonar Menu Tab: SwitchFire™* for more information.

## Instant Image Update

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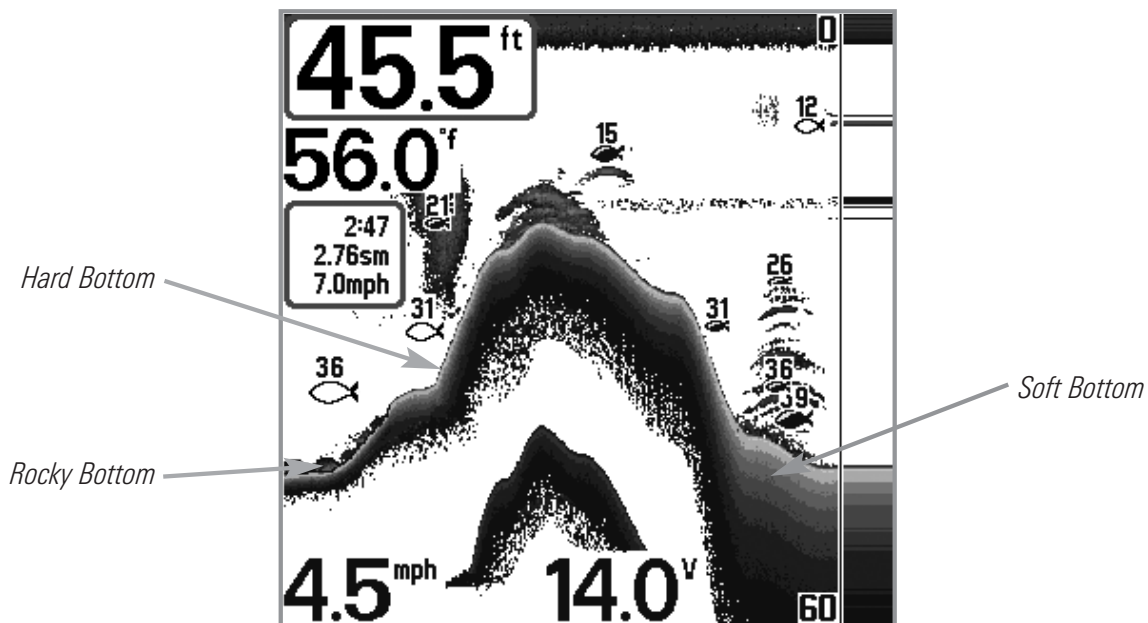
**Instant Image Update** - You can change a variety of sonar menu settings (such as Sensitivity or Upper Range), and the adjustments will be shown instantly on the screen.



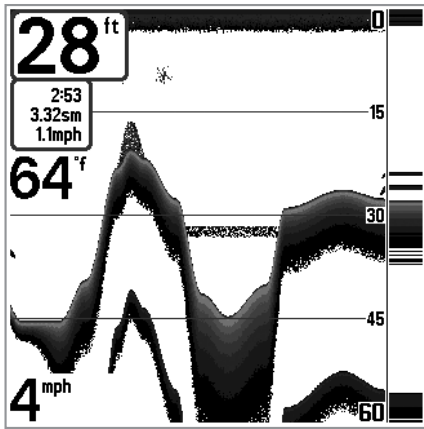
## Bottom Presentation

As the boat moves, the unit charts the changes in depth on the display to create a profile of the **Bottom Contour**. The type of bottom can be determined from the return charted on the display. A **Hard Bottom** such as compacted sediment or flat rock appears as a thinner line across the display. A **Soft Bottom** such as mud or sand appears as a thicker line across the display. **Rocky Bottoms** have a broken, random appearance.

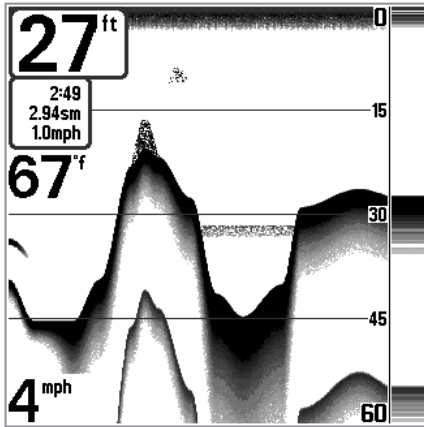
Bottom Contour Profile with RTS Window™



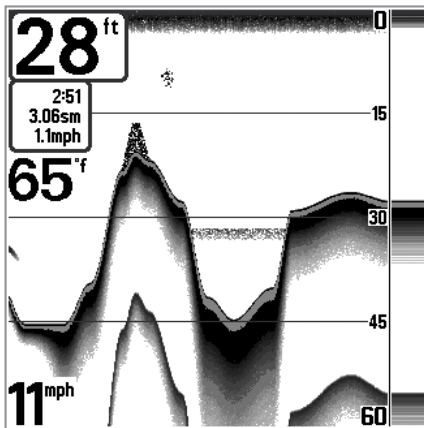
The sonar returns from the bottom, structure, and fish can be represented as **Inverse**, **Structure ID®**, **WhiteLine™**, or **Black** (Bottom Black). See *Sonar X-Press Menu: Bottom View* to set the Bottom View.



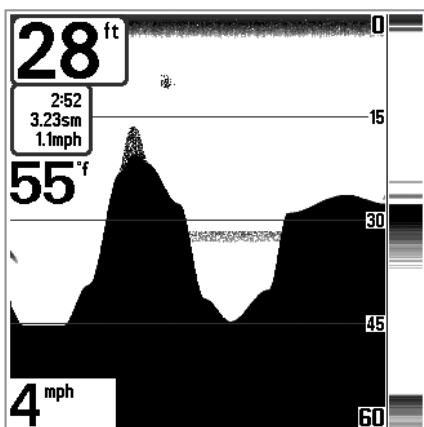
**Inverse** is a method where weak returns are shown with dark pixels and strong returns with lighter pixels. This has the benefit of ensuring that weak signals will be clearly visible on the display.



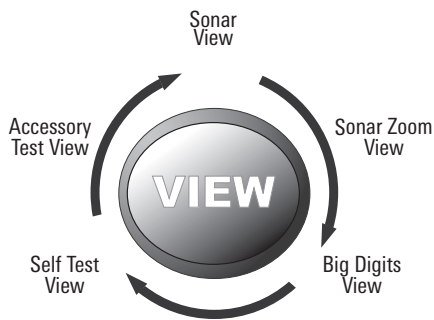
**Structure ID®** represents weak returns as light pixels and strong returns as dark pixels. This has the benefit of ensuring that strong returns will be clearly visible on the display.



**WhiteLine™** highlights the strongest sonar returns in white resulting in a distinctive outline. This has the benefit of clearly defining the bottom on the display.



**Black (Bottom Black)** displays all pixels below the bottom contour as black, regardless of signal strength. This has the benefit of providing a high contrast between the bottom and other sonar returns on the display.



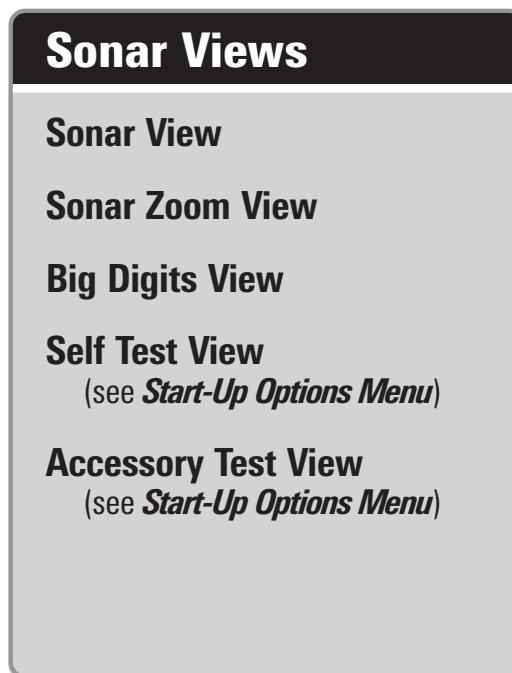
## Views

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The sonar information from your Fishfinder is displayed on the screen in a variety of easy-to-read views. There are many views available on your Fishfinder. When you press the VIEW key, the display cycles through the available views on your screen. When you press the EXIT key, the display cycles through the available views in reverse order.

When you first power up the control head, *Sonar View* will be the default view. You can display and hide any view to suit your fishing preferences.

***NOTE:** When you change any menu settings that affect the sonar, the view will update immediately. You don't have to exit the menu to apply the change to the screen.*



Details about each view are available on the following pages.

### To customize your view rotation:

You can choose which views are hidden or visible in your view rotation.

1. Press the MENU key twice to access the tabbed Main Menu, then press the RIGHT Cursor key until the Setup tab is selected.
2. Press the DOWN Cursor key to highlight Select Views, and press the RIGHT Cursor key to access the Select Views submenu.
3. Press the UP or DOWN Cursor keys to select a View.
4. Press the LEFT or RIGHT Cursor keys to change the status of the view from Hidden to Visible or vice versa.

***NOTE:** If the Select Views option does not appear under the Setup tab, change the User Mode to Advanced.*

### To change the Digital Readouts:

Each view displays digital readout information (such as speed or time), which varies with the view selected and the accessory attached. The digital readouts on the Sonar View can be customized. See *Setup Menu Tab: Select Readouts* for more information.

1. Press the MENU key twice to access the tabbed Main Menu, then press the RIGHT Cursor key until the Setup tab is selected.
2. Press the DOWN Cursor key to highlight Select Readouts, and press the RIGHT Cursor key to access the Select Readouts submenu.

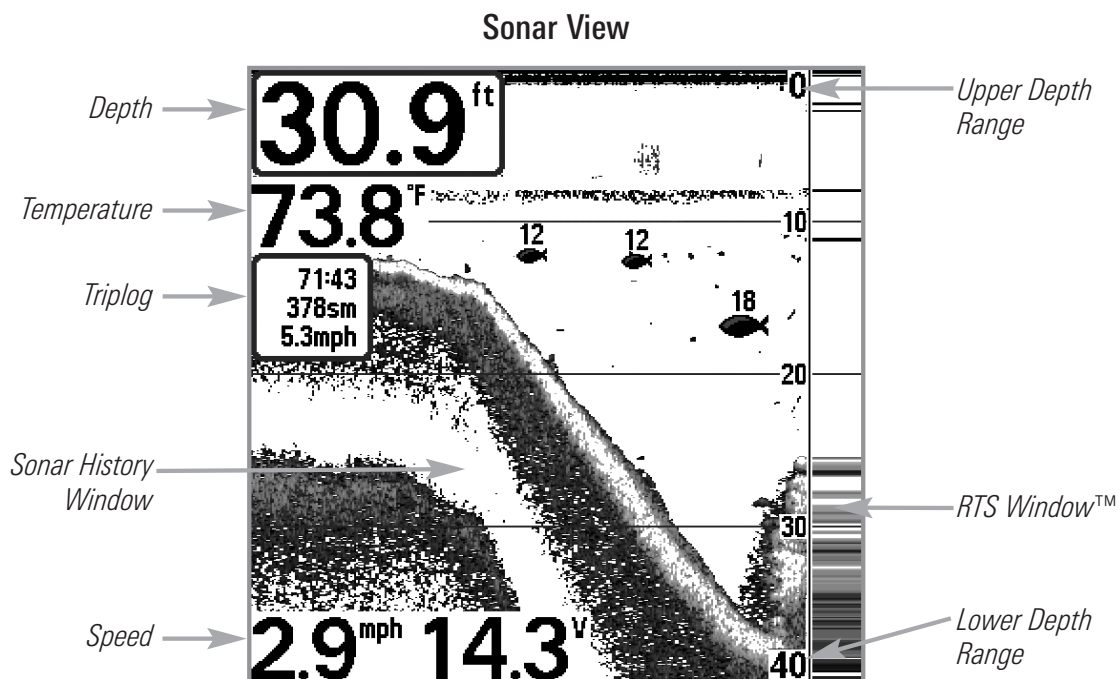
***NOTE:** If the Select Readouts option does not appear under the Setup tab, change the User Mode to Advanced.*

3. Press the UP or DOWN Cursor keys to select a Readout position, then press the RIGHT or LEFT Cursor keys to choose what will be displayed in that position. To hide the data window, select Off.

## Sonar View

**Sonar View** presents a historical log of sonar returns. The most recent sonar returns are charted on the right side of the display. As new information is received, the historical information scrolls left across the display.

- **Upper and Lower Depth Range numbers** indicate the distance from the surface of the water to a depth range sufficient to show the bottom.
- **Depth** is automatically selected to keep the bottom visible on the display, although you can adjust it manually as well (see *Sonar X-Press™ Menu*).
- **Digital Readouts** shown on the display will change based on the Select Readouts settings or the optional-purchase accessories attached (see *Setup Menu Tab: Select Readouts*).

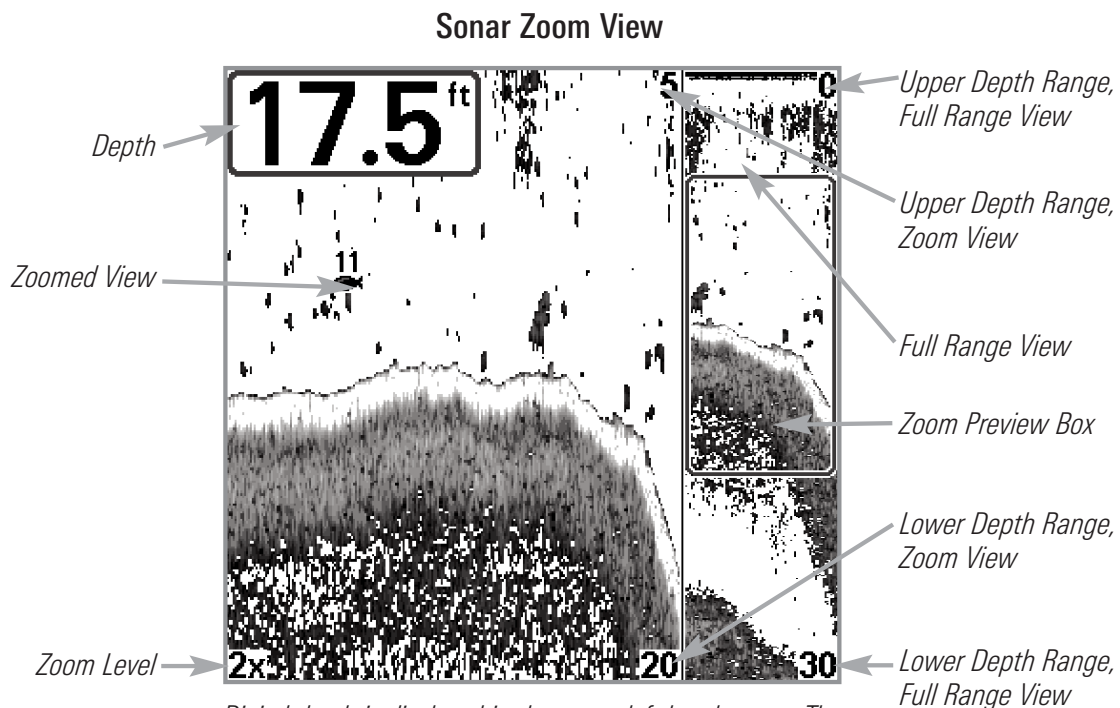


**NOTE:** If the Depth number is flashing, it means that the unit is having trouble locating the bottom. This usually happens if the water is too deep, the transducer is out of the water, the boat is moving too fast, or for any other reason that the unit can't accurately receive continuous data.

## Sonar Zoom View

**Sonar Zoom View** provides a magnified view of the bottom and structure. The Sonar Zoom View makes it easier to see separate sonar returns that would usually be displayed close together, such as those caused by fish suspended close to the bottom or within structure.

- The **Zoom Level**, or magnification, is displayed in the lower left corner of the display. Press the MENU key once to access the Sonar X-Press™ Menu and use Zoom Level to adjust the zoom settings.
- The **Zoomed View** is displayed on the left side of the screen. As the depth changes, the zoomed view updates automatically.
- The **Full Range View** is displayed on the right side of the screen. The Full Range View includes the Zoom Preview Box, which shows where the zoomed view is in relation to the full range view.
- The **Upper and Lower Depth Range numbers** indicate the high and low range of the water which is being viewed.



*Digital depth is displayed in the upper left hand corner. The digital readouts in the Sonar Zoom View cannot be customized; therefore, information such as water temperature and voltage are unavailable in the Sonar Zoom View.*

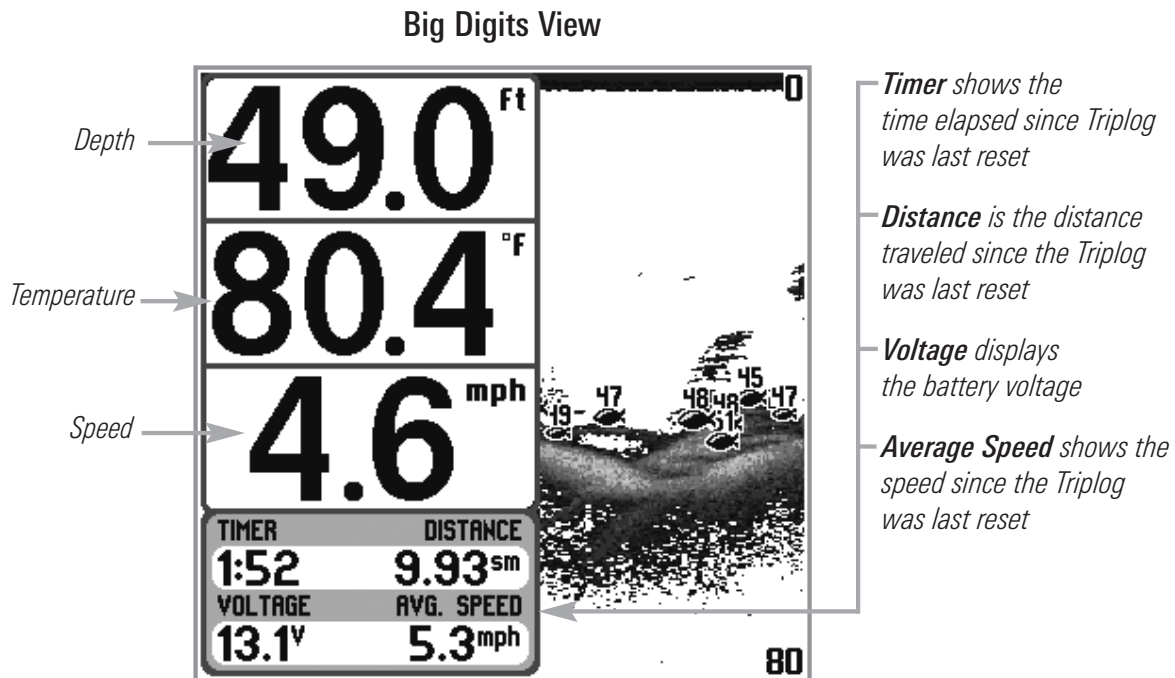
# Big Digits View

Big Digits View provides digital data in a large, easy-to-see format.

- **Digital Readouts:** Depth is always displayed. Readouts for temperature, speed, and Triplog information are displayed automatically if the appropriate accessory is connected to the Fishfinder.

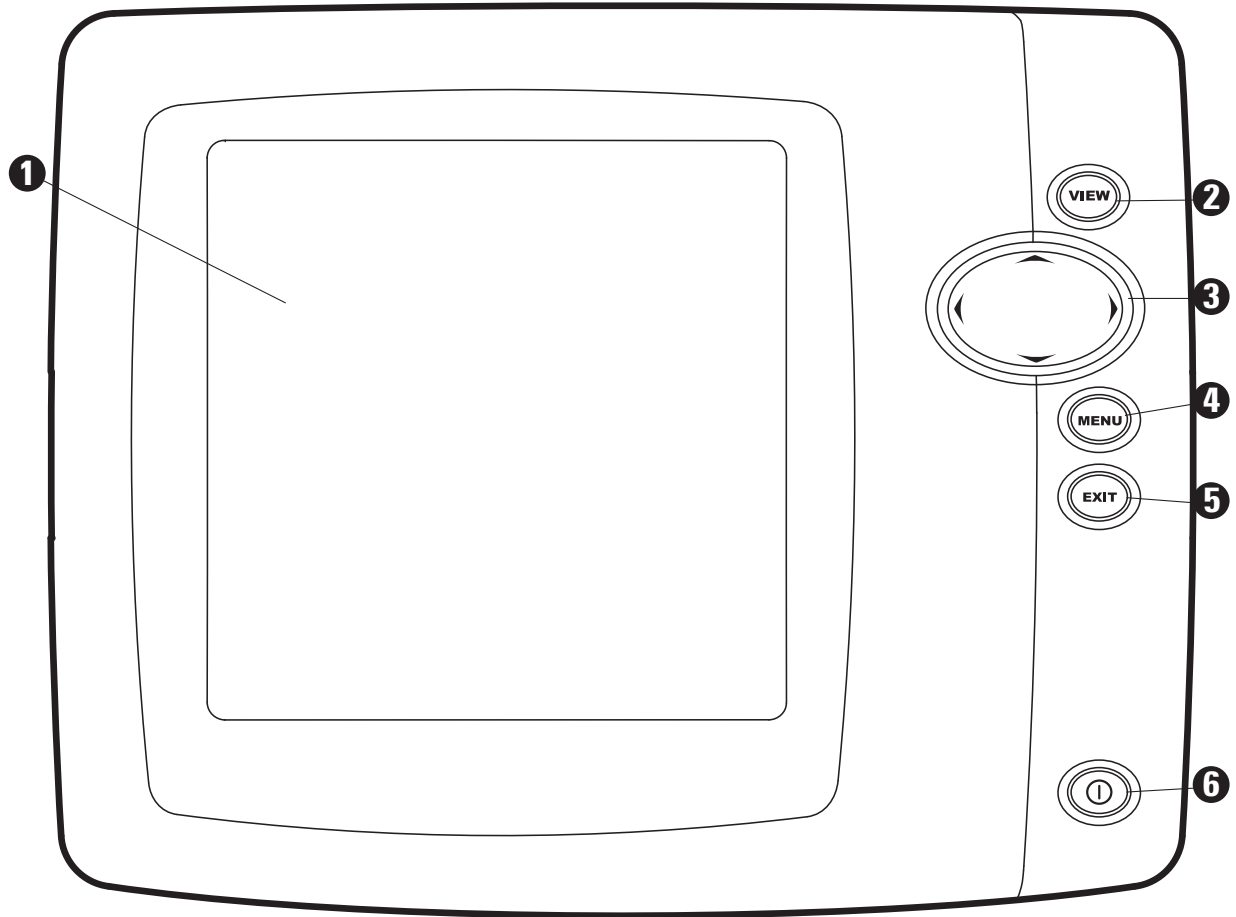
*NOTE: The digital readouts in the Big Digits View cannot be customized.*

- The **Triplog** shows distance traveled, average speed, and time elapsed since the Triplog was last reset.



# What's on the 500 Series™ Control Head

Your 500 Series™ Fishfinder interface is easy to use. A combination of keys and special features allows you to control what you see on the display. Refer to the following illustration, and see *Key Functions* for more information.



- 1** Screen
- 2** VIEW key
- 3** 4-WAY Cursor Control key  
(LEFT, RIGHT, UP, or DOWN Cursor keys)

- MENU key **4**
- EXIT key **5**
- POWER/LIGHT key **6**



## Key Functions

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Your Fishfinder user interface consists of a set of easy-to-use keys that work with various on-screen views and menus to give you flexibility and control over your fishing experience.



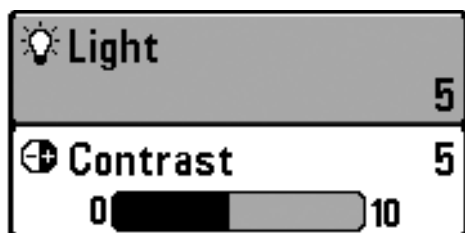
### POWER/LIGHT Key

---

The POWER/LIGHT key is used to power the Fishfinder on and off. You can also use the POWER/LIGHT key to adjust the backlight and contrast of the display.

**Power On the control head:** Press the POWER/LIGHT key to power on the unit. When the Title screen is displayed, press the MENU key to access the Start-Up Options Menu.

**Power Off the control head:** Press and hold the POWER/LIGHT key for 3 seconds. A message will appear to indicate how many seconds there are until shutdown occurs. To ensure that shutdown occurs properly and any menu settings will be saved, your Fishfinder should always be turned off using the POWER/LIGHT key.



### Adjust the Backlight or the Display Contrast:

Press the POWER/LIGHT key to access the Light and Contrast submenu. Use the 4-WAY Cursor Control key to select Light or Contrast, and then use the LEFT or RIGHT Cursor key to change the settings. Press EXIT to exit the Light and Contrast submenu.

***NOTE:** Your 500 Series™ Fishfinder will start up with the backlight on and will automatically turn it off to conserve power.*



## VIEW Key

---

The VIEW key is used to cycle through all available views. Press the VIEW key to advance to the next view. Repeatedly pressing VIEW cycles through all views available. Views can be hidden to optimize the system to your fishing requirements (see *Views* or *Setup Menu: Select Views*).

*NOTE: Press the EXIT key to cycle through the views in reverse order.*

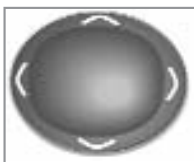


## MENU Key

---

The MENU key is used to access the menu system. See *The Menu System* for more information.

- **Start-Up Options Menu:** Press the MENU key during the power up sequence to view the Start-Up Options menu.
- **X-Press™ Menu:** Press the MENU key once in any view to access the X-Press™ Menu, which provides frequently-used menu settings that correspond with the current view.
- **Main Menu:** Press the MENU key twice in any view to access the Main Menu, which is organized under tabbed headings to help you find a specific menu item quickly.



## 4-WAY Cursor Control Key

*(LEFT, RIGHT, UP, or DOWN Cursor keys)*

---

Use the 4-WAY Cursor Control key to navigate the Menu System.

- **Menu Selection:** Press the DOWN or UP Cursor keys to highlight a menu option, then press the RIGHT or LEFT Cursor keys to change a menu setting. The changes will be activated and saved immediately.



## EXIT Key

---

The EXIT key has multiple functions, which depend on the situation:

- **If an alarm is sounding**, press the EXIT key to cancel the alarm.
- **If a menu tab is selected**, press the EXIT key to exit the menu mode and return to the view.
- **If a menu is active**, press the EXIT key to return to the previous level in the menu system.
- **From any view**, press the EXIT key to cycle through the available views in reverse order.

# The Menu System

---

The Menu System is divided into easy-to-use menu modules as follows:

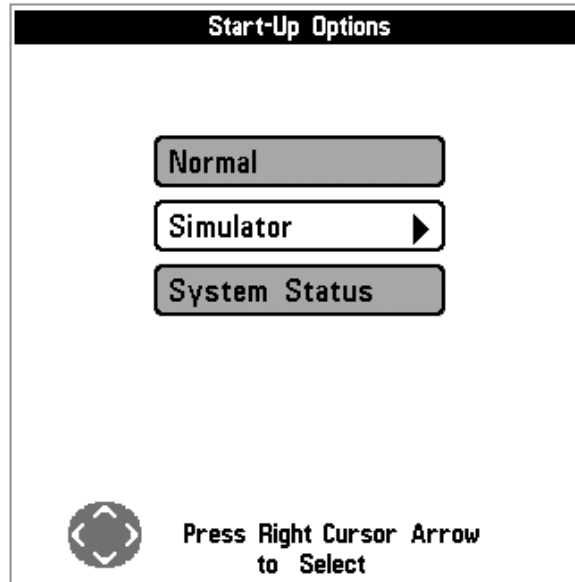
- **Start-Up Options Menu:** Press the MENU key during the power on sequence to view the Start-Up Options Menu. From the Start-Up Options Menu, you can choose the following Fishfinder Modes: Normal, Simulator, and System Status.
- **X-Press™ Menu:** The X-Press™ Menu provides a shortcut to the most frequently-used settings, and the options on the X-Press™ Menu correspond with the current view.
- **Main Menu:** The Main Menu is a standard set of menu settings which are organized under the following tabbed headings: Alarms, Sonar, and Setup.

***NOTE:** The X-Press™ Menu(s) and the Main Menu options can also be expanded or simplified by setting the User Mode to Advanced or Normal (see **Main Menu: User Mode**).*

## Start-Up Options Menu

---

Press the MENU key during the power on sequence to view the Start-Up Options Menu, and select one of the modes described on the following pages. Also, see *Power on the Unit* for additional information.



### Normal

---

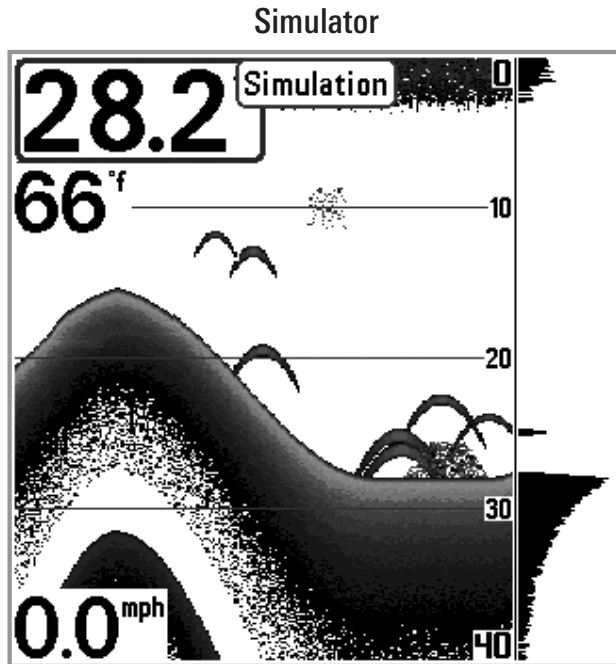
Use **Normal** for on-the-water operation with a transducer connected. If a functioning transducer is connected, Normal operation will be selected automatically at power up, and your Fishfinder can be used on the water.

To exit Normal operation, power off your Fishfinder.

## Simulator

---

Use **Simulator** to learn how to use your Fishfinder before taking your boat on the water. The Simulator is a very powerful tool that provides a randomly-updated display which simulates on the water operation.



We recommend going through this manual while using the Simulator, since all of the menu function and affect the display in the same way as they would in Normal operation. Any menu changes you make will be saved for later use.

***NOTE:** It is important to select Simulator manually from the Start-Up Options Menu as opposed to letting the Fishfinder enter Simulator automatically (as it will if a transducer is not connected and you do nothing during power up).*

A message will appear often on the display to indicate Simulator mode.

To exit Simulator, power off your Fishfinder.

## System Status

---

Use **System Status** to view system connections and to conduct a unit self-test.

After you select System Status from the Start-Up Options Menu, press the VIEW key to display the following options:

- Self Test
- Accessory Test

To exit System Status, power off your Fishfinder.

**Self Test** displays results from the internal diagnostic self test, including unit serial number, Printed Circuit Board (PCB) serial number, software revision, total hours of operation, and the input voltage.

Self Test Screen

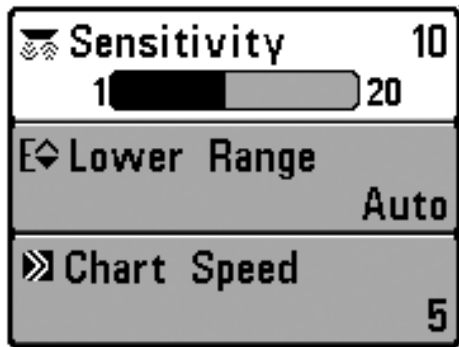
SYSTEM STATUS	
Self Test	
PASSED	
S/N	MODEL
-1-1-001	570
SOFTWARE VERSION	
4.141	
VOLTAGE	TOTAL TIME
14.1 <sup>v</sup>	74 <sup>hrs</sup>
PCB S/N	
-1-0001-001	
Press VIEW for Next Screen	

**Accessory Test** lists the accessories connected to the system.

System Status Accessory Test Screen

SYSTEM STATUS	
ACCESSORY TEST	
Aux. Temperature	UNCONNECTED
Speed	UNCONNECTED
Temperature	CONNECTED

***NOTE:** The speed accessory will be detected only if the paddlewheel has moved since your Fishfinder was powered up.*



X-Press™ Menu

## X-Press™ Menu

The X-Press™ Menu provides a shortcut to your most frequently-used settings. The options provided on the X-Press™ Menu correspond with the current view. For example, if you are in a Sonar View and press the MENU key once, the Sonar X-Press™ Menu will display.

### To use an X-Press™ Menu:

1. In any view, press the MENU key once.
2. Press the UP or DOWN Cursor keys to highlight an X-Press™ Menu option, then use the RIGHT or LEFT Cursor keys to change the menu setting.

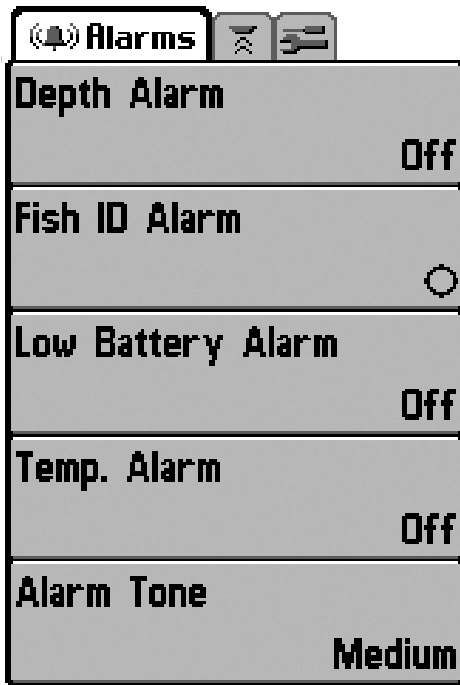
***NOTE:** The X-Press™ Menu will collapse temporarily and the screen will update if it is affected by your menu setting change, which allows you to see the effects of your change immediately.*

3. Reactivate the X-Press™ Menu by pressing the UP or DOWN Cursor keys.

**Total Screen Update** - When you change any menu settings that affect the current view, the view will update immediately (i.e. you don't have to exit the menu to apply the change to the screen).

Menu options can be simplified or expanded by setting the User Mode to Normal or Advanced. See **Main Menu: User Mode** for details.





## Main Menu

The Main Menu provides the standard set of menu options, including the settings that are changed less frequently. The Main Menu is organized under the following tabs to help you find a specific menu item quickly: Alarms, Sonar, and Setup.

*NOTE: Menu options can be expanded or simplified by setting the User Mode to Advanced or Normal. See [Main Menu: User Mode](#) for details.*

Main Menu (Normal User Mode)

### To use the Main Menu:

1. In any view, press the MENU key twice.
2. Press the RIGHT or LEFT Cursor keys to highlight a menu tab.
3. Press the DOWN or UP Cursor keys to select a specific menu option under that tab.
4. Press the RIGHT or LEFT Cursor keys again to change a menu setting.
  - A down arrow at the bottom of a menu means that you can scroll to additional menu options using the DOWN Cursor key.
  - A right or left arrow on a menu option means that you can use the RIGHT or LEFT Cursor keys to make changes or to see more information.
  - Press the EXIT key to move quickly to the top of the tab.

**Total Screen Update** - When you change any menu settings that affect the current view, the view will update immediately (i.e. you don't have to exit the menu to apply the change to the screen).

## Quick Tips for the Main Menu

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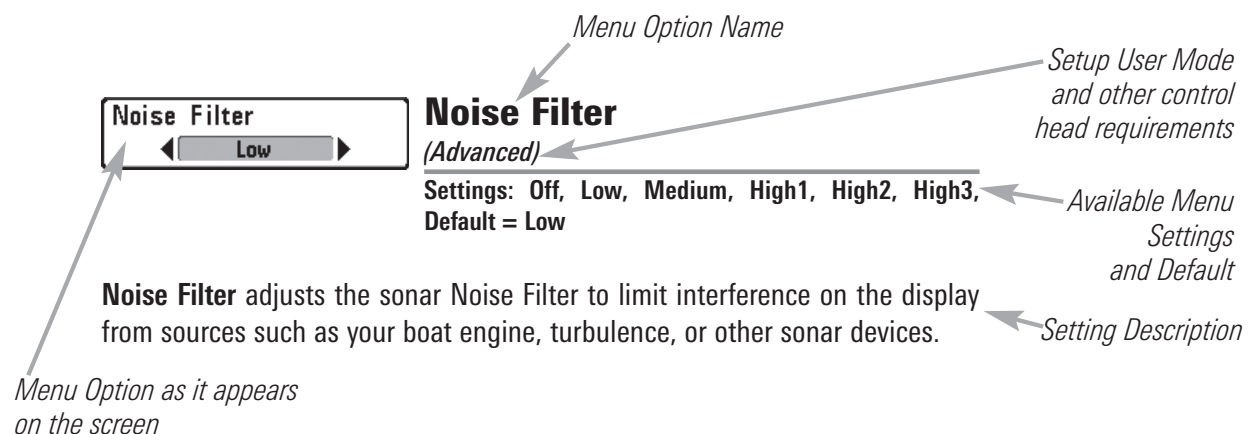
- **From any menu option on a menu tab**, press the EXIT key to jump directly to the top of the tab.
- **From the bottom of a menu tab**, press the DOWN Cursor key to jump directly to the top of the tab.
- **From the top of a menu tab**, press the LEFT or RIGHT Cursor keys to scroll to the next tab. You can also jump to the beginning or end of the tab rotation by repeatedly pressing the RIGHT or LEFT Cursor keys.
- If there is a **down arrow at the bottom of a menu tab**, press the DOWN Cursor key to scroll to additional menu options.
- If there is a **right or left arrow on a menu option**, press the RIGHT or LEFT Cursor keys to make setting changes or see more information.
- If you press MENU or EXIT to leave the Main Menu and then **return to the Main Menu at a later time**, the menu will open to the same tab as the last time the Main Menu was displayed.

## Note for all Menu Settings

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The settings in all menus are adjusted in the same way. Simply use the 4-WAY Cursor Control key to highlight a menu option, and then change the settings or activate the option (see *Main Menu* or *X-Press™ Menu*).

Below is an example of how the menu options are described in this manual. Each description shows the menu option appearance, the available settings, and the specific control head settings required (i.e. advanced user mode, international only, view, navigation, or accessory).



## User Mode (Normal or Advanced)

Menu options can be simplified or expanded by setting your Fishfinder User Mode to Normal or Advanced.

**Normal Mode** is the default setting when you first power on your 500 Series™ Fishfinder. Normal mode is provided for users who want greater simplicity and fewer menu choices.

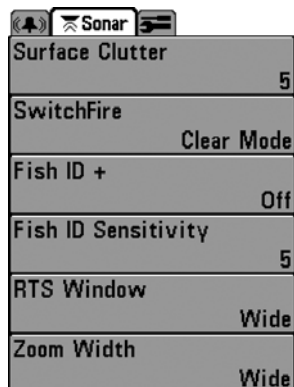
**Advanced Mode** is provided for users who want the highest level of control over the Fishfinder. Several menu settings are added to the Main Menu when the User Mode is changed to Advanced.

### To change the User Mode setting:

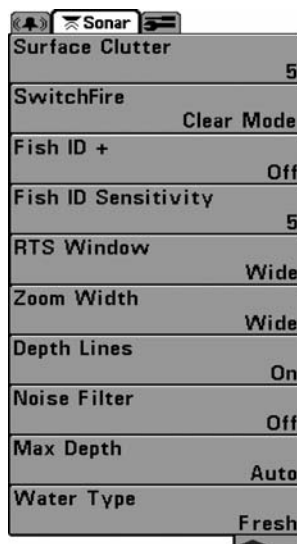
1. Press the MENU key twice to access the Main Menu.
2. Press the RIGHT Cursor key until the Setup tab is selected.
3. Press the DOWN Cursor key to highlight User Mode on the Setup main menu.
4. Press the LEFT or RIGHT Cursor keys to change the User Mode setting. (Normal, Advanced, Default = Normal)

***NOTE:** Any changes made while in Advanced Mode will remain in effect after you switch back to Normal Mode.*







*For example, the Select Readouts menu option is available when the User Mode is set to Advanced. If you change the Select Readouts settings while operating in Advanced User mode, the Select Readouts you choose will continue to display on the screen even if you switch back to Normal User Mode.*



Sonar Tab, Normal Mode



Sonar Tab, Advanced Mode

 Sensitivity	16
 Upper Range	0ft
 Lower Range	48ft
 Chart Speed	7
 Bottom View	Structure ID
 Zoom Level	2x

Sonar X-Press™ Menu

## Sonar X-Press™ Menu

*(Sonar Views only)*

The **Sonar X-Press™ Menu** provides a shortcut to your most frequently-used settings. Press the MENU key once while in any of the Sonar Views to access the Sonar X-Press™ Menu.

*NOTE: Menu options can be expanded or simplified by setting the Fishfinder User Mode to Advanced or Normal. See **Main Menu: User Mode** for details.*

 Sensitivity 10  
1  20

## Sensitivity

Settings: Low = 1, High = 20, Default = 10

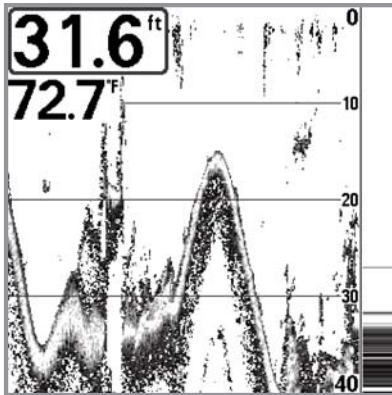
**Sensitivity** controls how much detail is shown on the display and will adjust the sensitivity of all sonar frequencies.

When operating in very clear water or greater depths, increase the sensitivity to see weaker returns that may be of interest. If the sensitivity is adjusted too high, the display may become too cluttered.

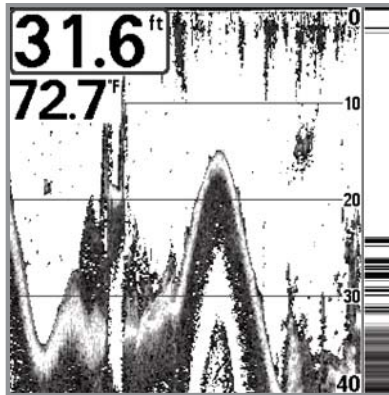
Decrease the sensitivity to eliminate the clutter from the display that is sometimes present in murky or muddy water. If Sensitivity is adjusted too low, the display may not show many sonar returns that could be fish.

***NOTE:** The Sensitivity setting is a global setting and will adjust the sensitivity of all sonar frequencies.*

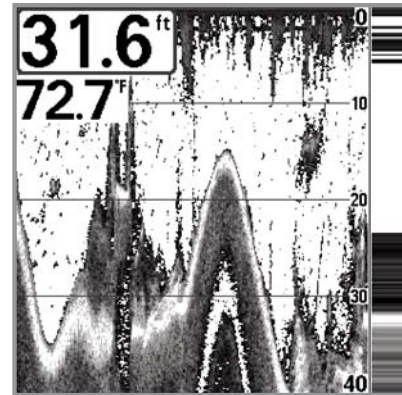
Sensitivity at Low



Sensitivity at Medium



Sensitivity at High





## Upper Range

*(Advanced: Sonar and Big Digits Views only)*

**Settings: 0 to 790 ft or 0 to 257 m [International Models only], Default = 0**

**Upper Range** sets the shallowest depth range that will be displayed on the Sonar and Big Digits Views. Upper Range is often used with Lower Range.

For example, if you are only interested in the area between 20 and 50 feet deep, you should set the Upper Depth Range to 20 and the Lower Depth Range to 50. The Sonar View will then show the 30 foot area between 20 and 50 and will not show the surface or the bottom (assuming the bottom is deeper than 50 feet). Greater detail will be shown for the area between 20 and 50 feet.

***NOTE:** A minimum distance of 10 feet will be maintained between the Upper and Lower Range regardless of the manual settings entered.*



## Lower Range

**Settings: AUTO, 10 to 800 ft, 3 to 260 m [International Models only], Default = AUTO**

**Lower Range** sets the deepest depth range that will be displayed by the unit.

**Auto:** The Lower Range will be adjusted by the unit to follow the bottom automatically. Auto is the default setting.

**Manual:** You can adjust the Lower Range to lock the unit on a particular depth. "M" will be displayed in the lower right corner of the screen to indicate the unit is in Manual mode. Adjust the Upper and Lower Range together to view a specific depth range, especially when looking for fish or bottom structure.

For example, if you are fishing in 60 feet of water but are only interested in the first 30 feet (surface to a depth of 30 feet), you should set the Lower Depth Range limit to 30. The display will show the 0 to 30 foot range, which allows you to see a more detailed view than you would see if the display went all the way to the bottom.

***NOTE:** A minimum distance of 10 feet will be maintained between the Upper and Lower Range regardless of the manual settings entered.*



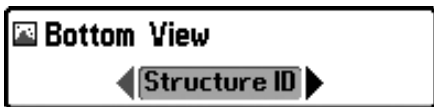
## Chart Speed

---

Settings: 1-9, Ultra, where 1 = Slow, 9 = Fast, Ultra = Fastest, Default = 5

**Chart Speed** determines the speed at which the sonar information moves across the display, and consequently the amount of detail shown.

A **faster speed** shows more information and is preferred by most anglers; however, the sonar information moves across the display quickly. A **slower speed** keeps the information on the display longer, but the bottom and fish details become compressed and may be difficult to interpret. Regardless of the Chart Speed setting, the RTS Window™ will update at the maximum rate possible for the depth conditions.

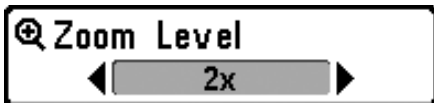


## Bottom View

---

Settings: Inverse, Structure ID®, WhiteLine™, Bottom Black, Default = Inverse

**Bottom View** selects the method used to represent bottom and structure on the display. See *What's on the Sonar Display: Bottom Presentation* for more information.



## Zoom Level

---

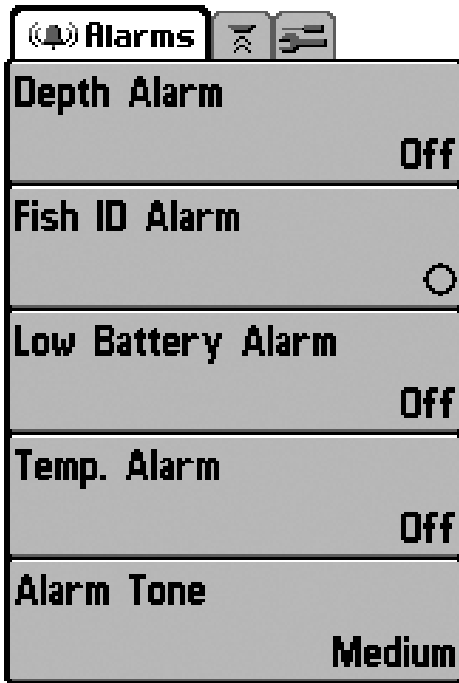
(Sonar Zoom View only)

Settings: 2x, 4x, 6x, 8x, Default = 2x

**Zoom Level** sets the magnification level for the Sonar Zoom View. Use Zoom to see more detail in the bottom sonar returns that might be displayed close together, such as those caused by fish suspended close to the bottom or within structure.

Zoom Level is only available on the X-Press™ Menu from the Sonar Zoom View. The Zoom Preview Box shows the section of the bottom that will be magnified.

*NOTE: The Zoom Preview Box tracks the bottom and cannot be moved.*



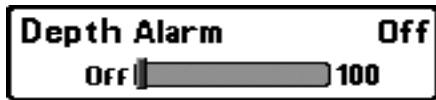
Alarms Menu

## Alarms Menu Tab

From any view, press the MENU key twice to access the Main Menu. The Alarms tab will be the default selection.

*NOTE: When an alarm is triggered, you can silence it by pressing any key. The alarm will be silenced, and will not be triggered again until a new instance of the alarm condition is detected.*





## Depth Alarm

Settings: OFF, 1 to 100 feet, or 0.5 to 30 meters [International Models only], Default = OFF

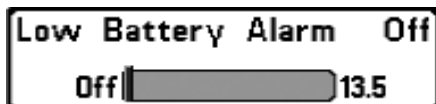
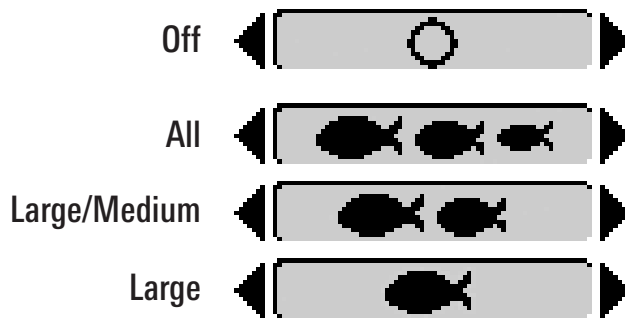
**Depth Alarm** sounds when the depth becomes equal to or less than the menu setting.



## Fish ID Alarm

Settings: Off, All, Large/Medium, Large, Default = Off

**Fish ID Alarm** sounds when the Fishfinder detects fish that correspond to the alarm setting. Fish ID Alarm will only sound if Fish ID+™ is on. For example, if you've set the Fish ID Alarm to sound for Large fish only, the Fish ID alarm will sound when a large-sized fish is detected.

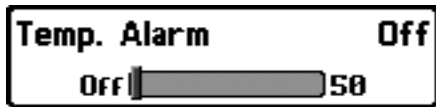


## Low Battery Alarm

Settings: Off, 8.5V - 13.5V, Default = Off

**Low Battery Alarm** sounds when the input battery voltage is equal to or less than the menu setting. The battery alarm will only sound for the battery that is connected to the Fishfinder. The Low Battery Alarm should be set to warn you when the battery voltage drops below the safety margin that you have determined.

For example, if you are running a trolling motor (battery operated), you would want to set the Low Battery Alarm to sound before the battery voltage drops too low for it to be used to start your main, gasoline-powered engine.



## Temp. Alarm

---

Settings: Off, 33-120 [Fahrenheit], 0-50 [Celsius],  
Default = Off

**Temp. Alarm** sounds when the water temperature detected by the Fishfinder reaches the Temp. Alarm setting, which is either set in degrees Fahrenheit or Celsius [International Models only].

For example, if the Temp. Alarm is set to 58 degrees Fahrenheit, and the water temperature falls from 60 degrees to 58 degrees, the Temp. Alarm will sound. Similarly, if the water temperature rises from 56 degrees to 58 degrees, the Temp. Alarm will also sound.

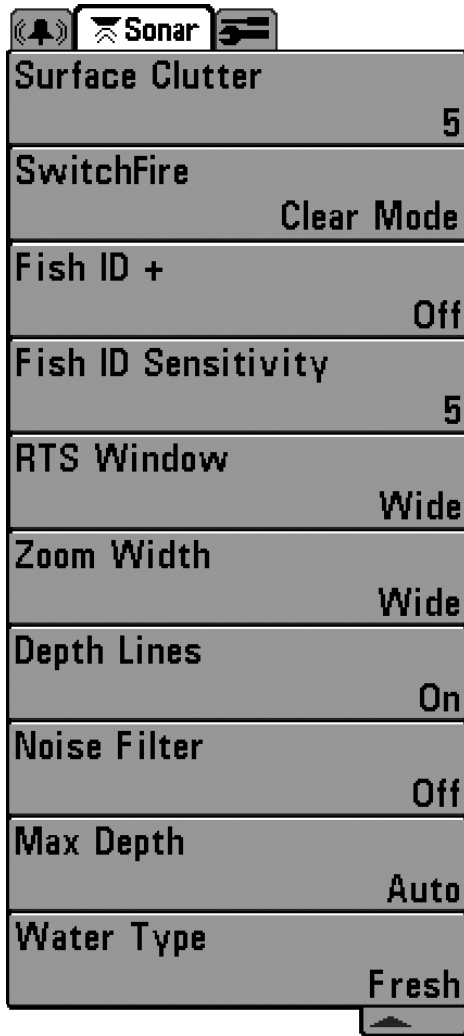


## Alarm Tone

---

Settings: High, Medium, Low, Default = Medium

**Alarm Tone** selects the pitch of the alarm sound. A brief tone will be produced as you adjust the Alarm Tone so that you can select the tone that you can hear best.



Sonar Menu

## Sonar Menu Tab

Press the MENU key twice to access the Main Menu and then press the RIGHT Cursor key until the Sonar tab is selected.

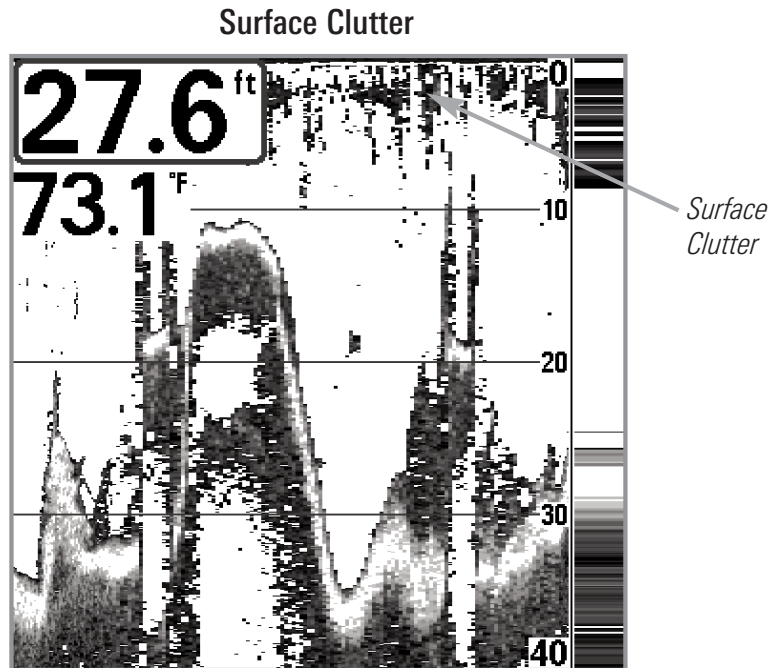
*NOTE: Menu options can be expanded or simplified by setting the User Mode to Advanced or Normal. See Main Menu: User Mode for details.*

Surface Clutter 5  
1  10

## Surface Clutter

Settings: Low = 1 to High = 10, Default = 5

**Surface Clutter** adjusts the filter that removes surface clutter noise caused by algae and aeration. The lower the setting, the less surface clutter will be displayed.



SwitchFire  
◀ Clear Mode ▶

## SwitchFire™

Settings: Clear Mode, Max Mode; Default = Clear Mode

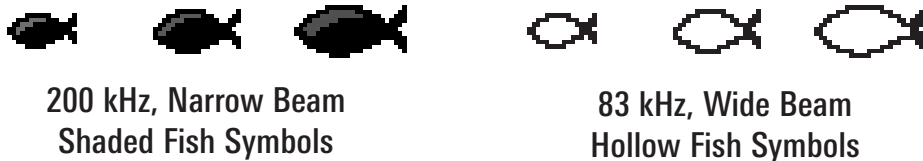
**SwitchFire™** controls how the sonar returns are displayed in the Sonar Views.

Choose **Max Mode** to see only raw sonar returns on the display. When Max Mode is selected, you will see the maximum sonar information available within the transducer beam, so more fish arches and better jig tracking are shown.

Choose **Clear Mode** to see less clutter and more fish size accuracy on the display. When Clear Mode is selected, the clutter is filtered, and sonar returns are interpreted to provide more details about the objects within the transducer beam, regardless of their location. In other words, a large arch on the display means a large fish has been detected.

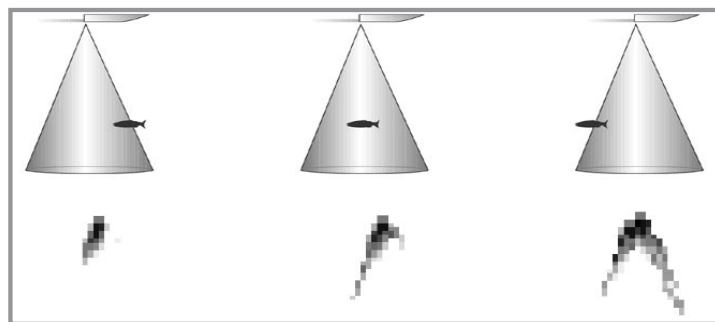
**Fish ID+™** uses advanced signal processing to interpret sonar returns and will display a Fish Symbol when very selective requirements are met. When a fish is detected, a fish icon and its depth are displayed above the return that has been classified as being a fish. Three different fish size icons represent the intensity of the sonar return and provide an indicator of relative fish size.

**DualBeam** sonar models represent targets detected in the 200 kHz narrow beam as Shaded Fish Symbols and targets detected in the 83 kHz wide beam as Hollow Fish Symbols.



**When Fish ID+™ is turned off**, the Fishfinder shows only the raw sonar returns on the display. These returns will often result in “arches” forming on the display, indicating potential targets. Due to the transducer beam angle, the distance to a fish decreases as the fish moves into the beam, and then increases as it moves out again, creating a Fish Arch when this distance change is shown on the display. Boat speed, chart speed, and the position of the fish within the sonar beam greatly affect the shape of the arch.

Transducer Cone and Fish Arches



**Fish ID Sensitivity** 5  
 1  10

## Fish ID Sensitivity

Settings: Low = 1, High = 10, Default = 5

**Fish ID Sensitivity** adjusts the threshold of the Fish ID+™ detection algorithms. Selecting a higher setting allows weaker returns to be displayed as fish. This is useful for identifying smaller fish species or baitfish. Selecting a lower setting displays fewer fish from weak sonar returns. This is helpful when seeking larger species of fish.

Fish ID Sensitivity is used in conjunction with Fish ID+™. Fish ID+™ must be On for Fish ID Sensitivity to affect the ability of the Fishfinder to identify sonar returns as fish.

**RTS Window**  
 ◀ Narrow ▶

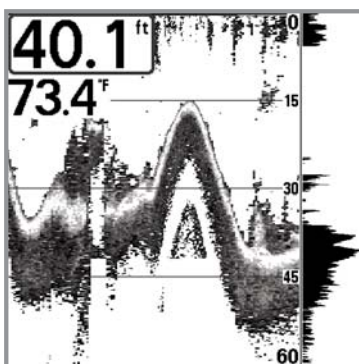
## Real Time Sonar (RTS™) Window

Settings: Wide, Narrow, Off, Default = Narrow

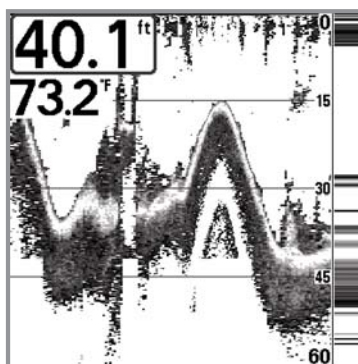
**RTS Window™** sets the RTS Window™ to either Wide or Narrow, or turns it off in the Sonar View. The RTS Window™ always updates at the fastest rate possible and only displays returns that are within the transducer beam. See *What's on the Sonar Display* for more information.

*NOTE: The Wide RTS Window™ does not use grayscale.*

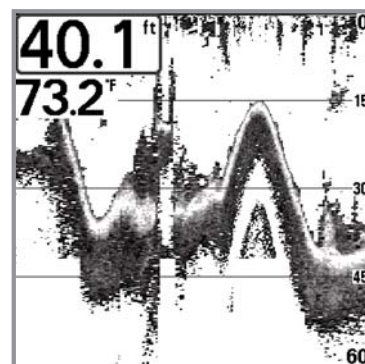
RTS Window™ (Wide)



RTS Window™ (Narrow)



RTS Window™ (Off)



**Zoom Width**  
 ◀ Wide ▶

## Zoom Width

Settings: Narrow, Medium, Wide, Default = Wide

**Zoom Width** adjusts the width of the zoomed view on the Sonar Zoom View, which is on the left side of the display. See *Views: Sonar Zoom View* for more information.

## Depth Lines

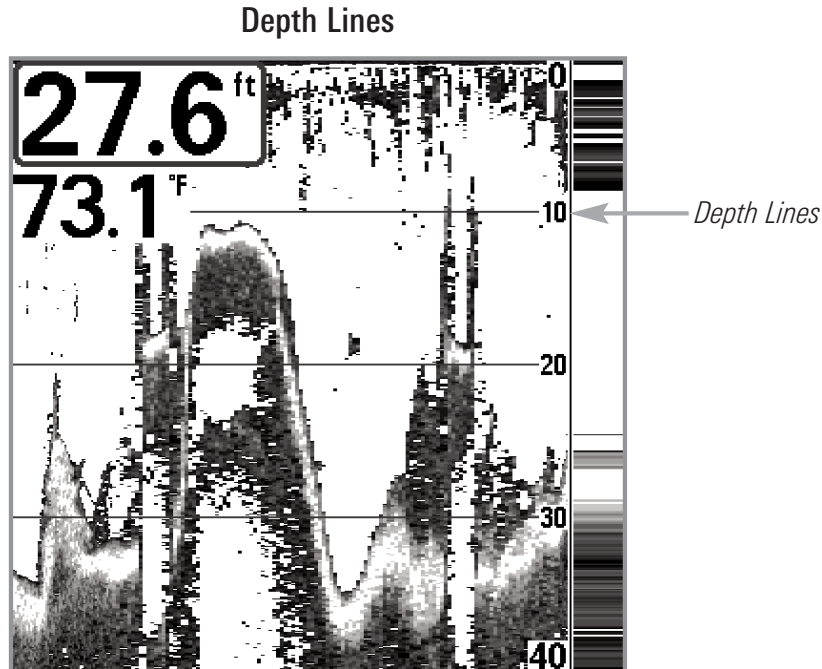
On

## Depth Lines

(Advanced)

Settings: Off, On, Default = On

**Depth Lines** divide the display into four equal sections which are separated by three horizontal depth lines. The depth of each line is displayed along the depth scale. You can turn Depth Lines On or Off.



## Noise Filter

Low

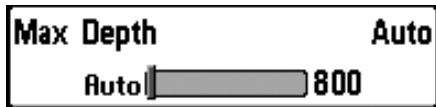
## Noise Filter

(Advanced)

Settings: Off, Low, Medium, High1, High2, High3, Default = Low

**Noise Filter** adjusts the sonar Noise Filter to limit interference on the display from sources such as your boat engine, turbulence, or other sonar devices.

The Off setting removes all filtering. Low, Medium, and High1, High2, High3 settings add progressive filtering of the sonar returns. High1, High2, and High3 are useful when there is excessive trolling motor noise, but in some deep water situations, the High settings may actually hinder your unit's ability to find the bottom.



## Max Depth

*(Advanced)*

Settings: AUTO, 10 to 800 ft, 3 to 260 m [International Models only], Default = AUTO

**Max Depth** controls the maximum depth of operation. When Max Depth is set to Auto, the Fishfinder will acquire bottom readings as needed (within the capacity of the unit). When Max Depth is set to match your fishing maximum depth, your Fishfinder will not attempt to acquire sonar data below that depth, so more detail will be shown on the screen.

*NOTE: If the bottom is deeper than the Max Depth setting, the digital depth readout will flash, indicating that the Fishfinder cannot locate the bottom.*



## Water Type

*(Advanced)*

Settings: Fresh, Salt (shallow), Salt (deep), Default = Fresh

**Water Type** configures your unit for operation in fresh or salt water. In salt water, you can also choose the shallow or deep setting.

Water Type affects the accuracy of deep water depth readings. In salt water, what would be considered a large fish might be 2 to 10 times bigger than a large fish in fresh water (depending on the type of fish you are seeking). The salt water setting allows for a greater range in fish size adjustment to account for this difference.





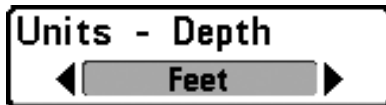
Setup Menu Tab

## Setup Menu Tab

From any view, press the MENU key twice to access the tabbed Main Menu, then press the RIGHT Cursor key until the Setup tab is selected.

*NOTE: Menu options will vary depending on which accessories are attached to the unit.*

*NOTE: Menu options can be expanded or simplified by setting the User Mode to Advanced or Normal. See Main Menu: User Mode for details.*

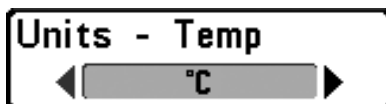


## Units - Depth

---

Settings: Domestic Models: Feet, Fathoms; International Models: Meters; Default = Feet/Meters

**Units - Depth** selects the units of measure for all depth-related readouts.



## Units - Temp

---

*(International only)*

Settings: Celsius, Fahrenheit; Default = Celsius

**Units - Temp** selects the units of measure for all temperature-related readouts. *International Models only.*



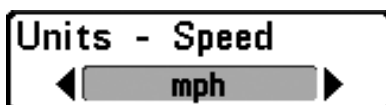
## Units - Distance

---

*(with Temp/Speed only)*

Settings: Domestic Models: Statute Miles, Nautical Miles, Default = Statute Miles; International Models: Meters/Kilometers, Meters/Nautical Miles, Feet/Statute Miles, Feet/Nautical Miles, Default = Meters/Kilometers

**Units - Distance** selects the units of measure for all distance-related readouts, and will appear in the menu if a Temp/Speed Accessory is connected and the paddlewheel has moved at least once.



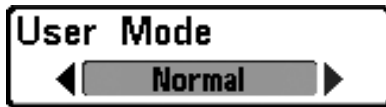
## Units - Speed

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*(with Temp/Speed only)*

Settings: Domestic Models: mph, kts; International Models: kph; Default = mph/kph

**Units - Speed** selects the units of measure for speed-related readouts, and will appear in the menu if a Temp/Speed Accessory is connected and the paddlewheel has moved at least once.

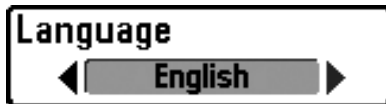


## User Mode

Settings: Normal, Advanced, Default = Normal

---

**User Mode** sets the menu system to Normal or Advanced. When set to Normal (default setting), the basic set of menu options are shown in the menu system. When set to Advanced, additional menu options are added to the menu system. See *Main Menu: User Mode* for details.



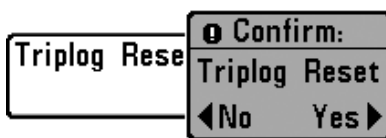
## Language

(*International only*)

Settings: Various, Default = English

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**Language** selects the display language for menus. *International Models only.*



## Triplog Reset

(*with Temp/Speed only*)

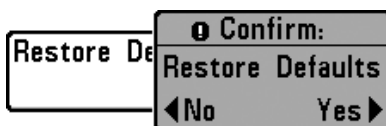
Settings: Follow screen instructions to activate.

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**Triplog Reset** resets the Triplog to zero, and will appear in the menu if a Temp/Speed Accessory is connected and the paddlewheel has moved at least once.

The Triplog provides the following information: timer for elapsed time, distance traveled since last reset, and average speed.

*NOTE: See Views to find out how to display Triplog information on the screen.*



## Restore Defaults

Settings: Follow screen instructions to activate.

---

**Use this menu choice with caution!**

**Restore Defaults** resets ALL menu settings to their factory defaults.

Select Views	
SELF TEST	Hidden
Accessory Test	Hidden
Sonar View	Visible
Sonar Zoom View	Visible
Big Digits View	Visible

## Select Views

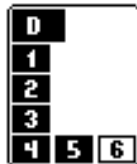
*(Advanced)*

Settings: Visible, Hidden, Default = Visible

**Select Views** allows you to set the available views to either hidden or visible in the view rotation. The view will be removed from the view rotation if it is set to Hidden and will be displayed in the view rotation if it is set to Visible.

*NOTE: See Views for more information.*

Select Readouts	
Readout 1 Temperature	
Readout 2	Off
Readout 3	Off
Readout 4 Speed	
Readout 5 Time+Date	
Readout 6	Off



*The readout position on the screen is shown in the Select Readouts Window.*

Select Readouts

## Select Readouts

*(Advanced, Sonar View only)*

Settings: Various, Default = Off

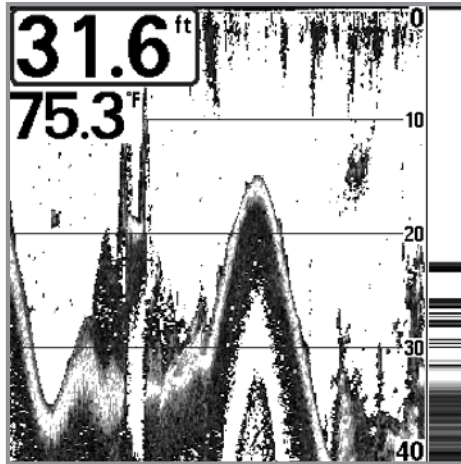
**Select Readouts** sets the information to display in each of the 6 fixed-position data windows arranged around the left and bottom edges of the Sonar View screen. To leave the data window blank, select Off. See *Views* to change the Select Readouts.

Data windows can display readouts from supported accessories such as Temp/Speed. Each data window can be empty or contain one of the following information categories:

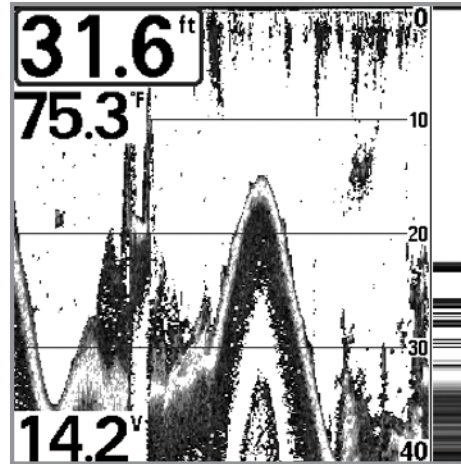
- Speed
- Temperature
- Triplog
- Voltage

*NOTE: The availability of the digital readout information corresponds with the view selected and the accessory attached.*

Default Sonar View



Sonar View with Select Readouts



## Depth Offset

*(Advanced)*

Settings: -10.0 to +10.0 ft or -3 to 3 m [International Models only], Default = 0

**Depth Offset** will adjust the digital depth readout to indicate depth from the waterline or boat's keel. Enter a positive vertical measurement from the transducer to the waterline to read the depth from the waterline. Enter a negative vertical measurement from the transducer to keel to read the depth from the keel.



## Temp. Offset

*(Advanced)*

Settings: -10.0 to +10.0 degrees, Default = 0

**Temp. Offset** will adjust the temperature readout by the amount entered.



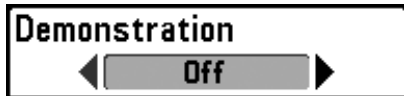
## Speed Calibration

*(Advanced, with Temp/Speed only)*

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Settings: -20% to +20%, Default = 0%

**Speed Calibration** will adjust the speed readout by the percentage entered, and will appear in the menu if a Temp/Speed Accessory is connected and the paddlewheel has moved at least once.



## Demonstration

Settings: Off, Visible, Default = Visible

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**Demonstration** controls whether the Demonstration Mode is visible or off. The Demonstration Mode appears on the screen if you don't press any keys during the warning screen at power up. Menu settings cannot be saved in Demonstration (see *Power on the Unit* and *Start-Up Options Menu*).

## **Troubleshooting**

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Before contacting the Humminbird® Customer Resource Center, please read the following section. Taking the time to review these troubleshooting guidelines may allow you to solve a performance problem yourself, and therefore avoid sending your unit back for repair.

### **Fishfinder Doesn't Power Up**

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If your Fishfinder doesn't power up, use the Installation Guide that also comes with it for specific confirmation details, making sure that:

- The power cable is properly connected to the Fishfinder control head.
- The power cable is wired correctly, with red to positive battery terminal and black to negative terminal or ground.
- The fuse is operational.
- The battery voltage of the power connector is at least 10 Volts.

Correct any known problems, including removing corrosion from the battery terminals or wiring, or actually replacing the battery if necessary.

### **Fishfinder Defaults to Simulator with a Transducer Attached**

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A connected and functioning transducer will cause the newly-started Fishfinder to go into Normal operating mode automatically. If, when you power up the Fishfinder, it goes into Simulator mode automatically, even though a transducer is already connected, this means that the control head is not detecting the transducer. Perform the following troubleshooting tasks:

- Using the Installation Guide that also comes with your Fishfinder, check to make sure that the transducer cable is securely connected to the Fishfinder. Reconnect if necessary, and power up the Fishfinder again to see if this fixes the problem.
- Replace the non-functioning transducer with a known good transducer if available and power up the control head again.
- Check the transducer cable. Replace the transducer if the cable is damaged or corroded.

## Display Problems

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There are several main conditions or sources of possible interference that may cause problems with the quality of the information displayed on the control head. Look in the following table for some symptoms of display problems and possible solutions:

Problem	Possible Cause
<b>The control head loses power at high speeds.</b>	If the power output of your boat's engine is unregulated, the control head may be protecting itself using its over-voltage protection feature. Make sure the input voltage does not exceed 20 Volts.
<b>When the boat moves at higher speeds, the bottom disappears or suddenly weakens, or the display contains gaps.</b>	<p>The transducer position may need to be adjusted. A mix of air and water flowing around the transducer (cavitation) may be interfering with the interpretation of sonar data. See your Installation Guide for suggestions on adjusting the transducer position.</p> <p>Electrical noise from the boat's engine may be interfering with sonar reception. See <i>Finding the Cause of Noise</i> for more information.</p>
<b>There are no fish detected, even when you know they are in the water under the boat, or sonar readings seem weak or faulty.</b>	<p>Sonar readings may be affected if the transducer is not positioned correctly (i.e. mounted at an angle, not straight down), or there is some kind of mechanical interference, either because it is mounted inside a hull that is too thick for proper sonar transmission, the bond between the transducer and the hull is not airtight, or because the transducer is dirty. Check with your Installation Guide for guidance on re-positioning the transducer, and make sure the transducer is clean.</p> <p>Low battery voltage may be affecting the power of signal transmission.</p> <p>Electrical noise from the boat's engine may be interfering with sonar reception. See <i>Finding the Cause of Noise</i> for more information.</p>



## Finding the Cause of Noise

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Electrical noise usually affects the display with many black dots at high speeds, and high sensitivity readings. One or more of the following sources can cause noise or interference:

Possible Source of Noise	Isolation
<b>Other electronic devices</b>	Turn off any nearby electronic devices to see if the problem goes away, then turn them on one at a time to see if the noise re-appears.
<b>The boat's engine</b>	To determine whether the boat's engine is the source of the noise, increase the RPMs while the boat is in neutral and stationary to see if the noise increases proportionately; if noise appears when you rev the engine, the problem could be the spark plugs, alternator, or tachometer wiring. Replace the spark plugs with resistor plugs, install an alternator filter, or route the control head power and transducer cables away from the engine wiring.
<b>Cavitation from the boat's propeller</b>	Turbulence created by the propeller can cause noise; make sure the transducer is mounted at least 15" (38 cm) from the propeller, and that the water flows smoothly over the face of the transducer at all times.

## 500 Series™ Fishfinder Accessories

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Accessories customize the Humminbird® Fishfinder to your needs and enable you to stay on the edge of new technology. When an accessory is connected to the Humminbird® Fishfinder, additional menus and readouts are added automatically to the Main Menu System. Accessories available today that are supported by your Humminbird® include:

**Temperature/Speed:** Simply plugs into the Humminbird® control head and provides real time speed and temperature readouts, as well as a valuable Triplog function.

***NOTE:** If an external Temperature/Speed (TS-W) or Temperature (TG-W) accessory is connected AND a transducer with temperature built in is connected at the same time, the TS-W or TG-W accessory will override the temperature built into the transducer.*

Be sure to check out our web site [www.humminbird.com](http://www.humminbird.com) for additional new and exciting accessories to grow your Humminbird® Fishfinder!

***NOTE:** Each accessory requires a separate purchase. You can visit our web site at [www.humminbird.com](http://www.humminbird.com) or contact our Customer Resource Center at 1-800-633-1468 for additional details.*

# Specifications

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Depth Capability . . . . .	800 ft (243 m)
Power Output . . . . .	<b>FF550:</b> 200 Watts (RMS), 1600 Watts (Peak to Peak) <b>FF560, FF570:</b> 250 Watts (RMS), 2000 Watts (Peak to Peak)
Operating Frequency . . . . .	<b>FF550, FF560:</b> 200 kHz (Single Beam) <b>FF570:</b> 200 kHz and 83 kHz (DualBeam)
Area of Coverage . . . . .	<b>FF550, FF560 Single Beam:</b> 20° @ -10 dB in 200 kHz <b>FF570 DualBeam:</b> 60° @ -10 dB in 83 kHz 20° @ -10 dB in 200 kHz
Target Separation . . . . .	2 1/2 Inches (63.5 mm)
Power Requirement . . . . .	10-20 VDC
LCD Matrix . . . . .	<b>FF550:</b> 240 V x 240 H <b>FF560:</b> 320 V x 320 H <b>FF570:</b> 640 V x 320 H
Transducer . . . . .	XNT 9 20 T
Transducer Cable Length . . . . .	20 ft (6 m)
Current Draw . . . . .	300 mA
IPX Rating . . . . .	IP67 Waterproof/Submersible @ 1 m for 30 minutes and dust tight

*NOTE: Humminbird® verifies maximum stated depth in saltwater conditions, but actual depth performance may vary due to transducer installation, water type, thermal layers, bottom composition and slope.*

*NOTE: Product specifications and features are subject to change without notice.*

# Glossary

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## Sonar Terms:

**Beam (Sonar Beam)** The wide, cone-shaped projection of sound waves formed as sound travels underwater. See *Cone Angle*.

**Bottom Contour** The profile of the bottom graphed to the display as the depth changes.

**Bottom Hardness** The density (or composition) of the bottom. Varying levels of hardness can be determined by interpreting the “thickness” of the main sonar return. Hard returns appear thin and black, softer returns appear thicker and less black. It is important to note that a sonar return from a sloping bottom can have the appearance of a softer bottom.

**Cavitation** The effect of air bubbles created as the propeller rotates and the boat moves through the water.

**Cone Angle** The angular measurement of the sonar beam at a specific dB down point (i.e. -10 dB). See *dB Down Point*.

**Dead Zone** The area of the sonar beam that receives the sonar signal after the main bottom return. Fish and other objects close to the bottom that fall within the dead zone will probably not be visible in the sonar beam. Precision sonar beams, such as the Humminbird® 20° beam, have a smaller dead zone than wider sonar beams.

**Decibel** The measurement for sound pressure level, or “intensity” of the sonar return. See *dB Down Point*.

**dB Down Point** The standard decibel level at which the sonar cone angle is measured, and is written as “@ -10 dB” or “@ -3 dB”. Measurements at smaller down points (bigger negative numbers) indicate that the less intensive sonar signals are being used for the measurement.

**Display, FSTN (Film Super-Twist Nematic)** FSTN is a monochrome display technology characterized by black, high-contrast pixels. All monochrome fixed mount Humminbird® products use FSTN technology.

**Frequency** A measure of the number of sound wave cycles per second of a sound impulse transmitted underwater. A typical frequency for fishfinders is 200 kHz, which offers a good balance of performance under many conditions. Lower frequencies, such as 50 kHz, are capable of penetrating to greater depths, but with less resolution. Higher frequencies, such as 455 kHz, offer greater resolution, but are limited in depth performance. Humminbird® uses a variety of frequencies that are optimized for specific applications.

**Grayscale** The use of varying shades of gray to represent the strength of the sonar signal on the display. Traditionally, the strongest sonar signals are represented in black, and progressively weaker signals are represented in progressively lighter shades of gray.

**Noise** The unintentional, external sound waves that interfere with the optimal operation of sonar. Noise appears as random “dots” on the display and is caused by a variety of sources. Many Humminbird® products have a Noise Filter menu setting that allows the user to clear the screen of noise that is difficult to eliminate (also, see *Troubleshooting*).

**Pixels** The “picture elements”, or small square blocks, that make up the image on the LCD. Measured as a vertical by horizontal number (i.e. 640V x 320H), this key specification typically indicates the quality of resolution. In fishfinders, the total resolution (vertical multiplied by horizontal) is often less important than the “Vertical Pixel” resolution because a greater number of vertical pixels provide finer resolution of targets detected by sonar. Sonar information on the horizontal axis can vary greatly, depending on boat speed and the Chart Speed setting.

**Power Output** The amount of sound energy emitted into the water by the transducer’s transmitter. Power output is measured using either RMS (Root Mean Square) or P-T-P (Peak-to-Peak) measurement systems. Either method is acceptable, but it is important when comparing power outputs, to make sure that the same measurement system is being used for both outputs, because P-T-P numbers are 8 times higher than RMS numbers. Greater power output allows the sonar signal to penetrate through weeds and thermoclines, reach deeper depths and operate more effectively in noisy environments, such as when the boat is running at high speed.

**Pulse Width (Pulse Length)** The length of time that a sonar sound burst is transmitted into the water. Shorter pulse widths provide better target separation, but cannot travel to great depths. Longer pulse widths provide better depth penetration, but result in poorer target separation. Humminbird® varies pulse width based on depth to optimize both target separation and depth performance. See *Target Separation*.

**Second Return** Describes the appearance of a second sonar return below the primary sonar return (bottom contour) at exactly twice the true depth. The second return is caused by the same sonar energy bouncing off the bottom once, rebounding to the water surface and then traveling back down to the bottom to be reflected again. Second returns are more common in shallow water and over hard bottoms; it is possible to see a third sonar return under some circumstances. The second return provides useful information to help determine bottom hardness, as areas with harder bottoms will generally create a second return. The second return can be used as a guide to set Sensitivity when in shallower water.

**SONAR (SOund and NAvigation Ranging)** Sonar technology uses precision sound bursts transmitted underwater to determine the distance and other attributes of objects in the water. Distance can be determined because the speed of sound in water is constant, and the time for the signal to return is measured. Sound also travels very quickly underwater, making sonar a responsive, cost-effective tool. Sonar is the basic technology behind all recreational and commercial fishfinding and depthfinding devices.

**Sonar Update Rate** The number of times per second that the transducer's transmitter/receiver sends and receives sonar signals. A very fast sonar update rate collects more information and provides a more detailed image of the bottom, fish, and structure. Many Humminbird® units operate at up to 40 times per second when in single frequency operation. Due to the limitation of the speed of sound in water, the update rate begins to slow as depth increases to deeper than 50 feet. In very shallow water (less than 10 feet), however, update rates as much as 60 times per second can be achieved.

**Speed** The rate at which the boat moves through the water. Boat speed can be measured as Speed Over Ground or Speed Through Water. Speed Over Ground is provided by GPS, and is the measurement of the boats progress across a given distance. Speed Through Water is provided by a speed paddlewheel, and is the measurement of the flow past the boat, which may vary depending on current speed and direction. Speed Through Water is most critical for anglers using downriggers, as it impacts the running depth of the down riggers. Speed Over Ground is optimal for navigation, as accurate destination times can be derived from this measurement. Humminbird® products allow for input and display of both sources.

**Structure** A general term for objects on the bottom that present a discontinuity and are a likely attractor for fish. This includes bottom contour features (drop-offs, humps, and holes), standing structure (stumps, timbers, brush piles), and a wide range of other potential objects (sunken boats, reefs).

**Surface Clutter** A phenomenon where sonar returns are reflected off of tiny objects near the surface of the water, including algae and even air bubbles. Typically, saltwater environments have significantly greater surface clutter than freshwater due to continuous wind and wave action that causes aeration at the surface.

**Target Separation** The measurement of minimum distance that a fishfinder needs to be able to recognize two very close objects as two distinct targets (i.e. two fish hanging very close, or a fish hanging very close to structure). Humminbird® fishfinders provide a very good 2 1/2 inches of target separation in shallower than 100 feet of depth. Target separation decreases as depth increases due to the need for longer Pulse Width to achieve greater depth. See *Pulse Width*.

**Thermoclines** Water layer(s) of distinctly different temperatures that create a sonar reflection due to the density of the differing water temperatures. Typically a thermocline will appear as a continuous band across the display at some distance above the bottom contour. Thermoclines are of interest to anglers because fish will suspend above or below the thermocline as they seek the optimum temperature and oxygen levels.

**Time Variable Gain (TVG)** A processing step applied to the sonar return to “normalize” the data so that objects of equal size (i.e. fish) appear to be the same size, even if they are separated by a good distance.

**Transducer** The transducer is part of the sonar system, which mounts on the boat and is in contact with the water, that converts the electrical energy from the transmitter into sound energy, and that forms the sonar beam in turn. Internally, the transducer consists of one or more piezo electric disks that expand by very minute amounts to create the sound wave. This element also works in reverse, converting the returned sound energy back into an electrical signal that the receiver interprets. See *SONAR*.

**Zoom** A feature that focuses on a smaller area of the bottom to provide enhanced resolution. With enhanced resolution, the angler can more easily see fish hanging in structure or multiple fish hanging close together.

**Zoom, Bottom Lock** Bottom Lock Zoom is a feature that focuses on a smaller area just above the bottom to provide enhanced resolution. Unlike regular zoom, it continuously graphs the bottom at a constant point on the display regardless of changes in depth. This “flattens” out the bottom contour, but is effective at showing fish on or near the bottom, and is preferred by many saltwater anglers.

# Notes

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## Contact Humminbird®

Contact the Humminbird® Customer Resource Center  
in any of the following ways:

By Telephone:

(Monday - Friday 8:00 a.m. to 4:30 p.m. Central Standard Time):

**1-800-633-1468**

By e-mail:

(typically we respond to your e-mail within three business days):

**[cservice@johnsonoutdoors.com](mailto:cservice@johnsonoutdoors.com)**

For direct shipping, our address is:

**Humminbird**

Service Department

678 Humminbird Lane

Eufaula, AL 36027 USA

