HUMMINBIRD®

Matrix 25 FISHING SYSTEM

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.

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Thank you for choosing Humminbird®. America's #1 name in fishfinders. Humminbird has built its reputation by designing and manufacturing top-quality, thoroughly reliable marine equipment. Your Humminbird is designed for trouble-free use in even the harshest marine environment. In the unlikely event that your Humminbird does require repairs, we offer an exclusive Service Policy - free of charge during the first year after purchase, and available at a reasonable rate after the one-year period. For complete details, see the separate warranty card included with your unit. We encourage you to read this operation manual carefully in order to get full benefit from all the features and applications of your Humminbird product.

Contact our Customer Resource Center at either 1-334-687-0503 or www.humminbird.com.

How Sonar Works

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

Your Matrix unit 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 ¼ of a second. It is unlikely that your boat can "outrun" this sonar signal.

DualBeamPLUS™ Sonar

Your Matrix 25 uses a dual frequency 200/83 kHz DualBeamPLUS sonar system with a wide (60°) area of coverage. DualBeamPLUS is optimized to show the greatest bottom definition with a narrow (20°) beam, and the fish and structure location with a wide (60°) beam. DualBeamPLUS 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. All sonar units typically read to deeper depths in fresh water than in salt water. Your Matrix transducer also comes with a temperature sensor included!

Powering Up the Unit

Turn on the Matrix unit by momentarily pressing the POWER key. A startup screen is then displayed until the Matrix unit begins sonar operation. While the startup screen is displayed, you may press the MENU key for the other options listed below. If no key is pressed, the Matrix will begin Normal or Simulator operation, depending on the presence or absence of a transducer. The following operating states are available:

- **Normal** – Use for on the water operation with transducer connected.
- **Simulator** – Use to learn the features and functions of the Matrix unit. Simulates on the water operation.
- **System Status** – Use to view system connections and conduct a unit self-test.
- **PC Connect** – Use when upgrading Matrix internal software with a PC and PC Connect cable.

The Matrix unit uses advanced transducer detection methods to determine if a transducer is connected. If the transducer is not connected or is damaged, the unit will select the Simulator state automatically at startup. If a functioning transducer is connected, the unit will select the Normal operating state automatically and the unit can be used on the water.

Note: When operating in Simulator state with a transducer connected, Menu setting changes are saved to memory. If a transducer is not connected, changes will not be saved and Menu settings will revert to factory defaults every few minutes.

Sonar Views

Barometer and Temp/Speed accessories are optional. Additional purchase required.

Sonar View presents a historical log of the stored sonar returns. The most recent sonar returns are charted on the right side of the window; as new information is received, the older information is moved across the display. A Digital Depth Readout is displayed in the upper left corner. A scale with Upper and Lower Depth Range readouts appears along the right edge of the Sonar View. The scale indicates the distance from the surface of the water to a depth range sufficient to show the bottom. Depth Range is automatically selected to keep the bottom visible on screen, although it can be manually-adjusted by the user as well (see Sonar Settings - X-Press™ Menu). Up to five additional Digital Readouts display information from optional-purchase accessories such as Water Temperature, Trolling Speed, WeatherSense™ Barometric Pressure and more. These information boxes can be customized to show only the information desired (see Advanced User Mode - Select Readouts).

Temp/Speed Accessory is optional.

A **Real Time Sonar (RTS)** window appears on the right side of the display. The RTS Window always 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. In the RTS Window, sonar returns are shown in shades of gray. The most intense returns are shown as a solid black band that indicates the bottom. The thickness of the bottom band indicates bottom type. Hard bottoms appear thinner and mostly black; softer bottoms are thicker and may appear with many gray tones. Above the bottom band, less intense sonar returns shown as varying shades of gray indicate the sonar returns from fish or structure. The RTS Window can be turned on or off (see Sonar Settings - Main Menu Sonar Tab).

As the boat moves, the Matrix unit charts the changes in depth on the display to create a profile of the Bottom Contour. The default presentation highlights the bottom profile with a Structure ID® feature and gray tones. From the appearance of the gray tones in the bottom contour, the type of bottom can be determined. A **Hard Bottom** such as compacted sediment or flat rock appears as a thinner dark line across the display. A **Soft Bottom** such as mud or sand appears as a thicker line that contains a transition from darker to lighter grays. **Rocky Bottoms** have a broken, random appearance. In shallower water, a **Second Sonar Return** may appear as a bottom contour below the main bottom at twice the depth. The second return occurs when the sonar signal bounces between the bottom and the surface of the water and back again. Experienced anglers 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. The Matrix unit is capable of revealing layers of water with different temperatures called **thermoclines**. Thermoclines appear at different depths and different times of the year. A thermocline typically appears as a continuous band of many gray levels moving across the display at the same depth.

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 graphed on the display. Boat speed, chart speed, and the position of the fish within the sonar beam greatly affect the shape of the arch. For optimum fish arching, it is important to mount the transducer so that it is pointing straight down. The Matrix unit has an advanced Selective Fish ID+™ option that analyzes the sonar return to determine if the sonar return may contain a fish (see Sonar Settings - Main Menu Sonar Tab). When a target is detected, a Fish ID+™ symbol appears on the display with the depth. The size of the symbol indicates the intensity of the sonar return. Targets detected in the narrow beam directly under the boat appear as Shaded Fish Symbols. Targets detected in the wide beam around the boat appear as Hollow Fish Symbols. The Matrix unit will clearly show schools of Bait Fish as "clouds" of different shapes and sizes, depending on the number of fish and boat speed.

Temp/Speed Accessory is optional.

83kHz Sonar Zoom View shown with Structure ID® on

Sonar Zoom View increases the display resolution to separate sonar returns that are very close together, such as those caused by fish suspended close to the bottom or within structure. In Zoom View, the display is split to show a full range view on the right and the zoomed view on the left. As the depth changes, the zoomed view updates automatically to display a magnified image of the bottom. The Zoom Preview Box shows where the zoomed view is in relation to the full range view. The Zoom Level, or magnification, is displayed in the lower left corner and can be changed to suit conditions (see Sonar Settings - X-Press Menu). Upper and Lower Zoom Depth Range numbers indicate the depth of the water which is being viewed.

Big Digits View provides digital data in a large, easy-to-see format. Depth is always displayed. Readouts for temperature, speed and Triplog information are displayed if the appropriate accessory is connected to the system. The Triplog shows distance traveled, average speed, and time elapsed since the Triplog was last reset (see System Settings - Main Menu Setup Tab).

Big Digits View shown with Bottom View set to WhiteLine

Sonar Settings - X-Press™ Menu

The X-Press menu represents the settings most frequently-used to optimize the sonar performance of the Matrix unit. Press the MENU key once while in any of the Sonar Views, including Big Digits, to access the following X-Press menu settings quickly:

Sensitivity provides advanced control over the sonar receiver. The Matrix unit optimizes Sensitivity based on depth and water conditions automatically; however, you also may change it manually to match your preferences or water conditions. Increasing the sensitivity shows more sonar returns from small bait fish and suspended debris in the water; however, the display may become too cluttered in some water conditions. When operating in very clear water or greater depths, increased sensitivity shows fainter returns that may be of interest. Decreasing the sensitivity eliminates 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.

Beam Select - Selects the sonar beam used in the Sonar Views. When 200 kHz is selected, the sonar returns and Fish ID+ from the 200 kHz beam are displayed providing greater bottom detail (typically from 2 feet to 800 feet) at any boat speed. Using 83 kHz, the sonar returns and Fish ID+ from the 83 kHz beam are displayed, providing greater depth capability and showing more targets in its wider beam. The 83 kHz beam is not recommended for use when the boat is traveling at greater than trolling speeds. When Both is selected, the unit blends the sonar information from both beams together on the display to provide the best sonar image and Fish ID+.

Lower Range adjusts the lower depth range to a specific depth for the Sonar and Big Digits Views. Automatic is the default setting. Selecting a specific setting locks the depth range into manual mode. Advanced anglers use both Upper and Lower Range together to view a specific depth range manually when looking for fish or bottom structure. The Upper Range menu choice is available when User Mode is set to Advanced (see Advanced User Mode). **M** will be displayed when you start manually adjusting the Lower Range to indicate that you're in Manual mode.

Chart Speed determines the speed at which the bottom information moves across the display, and consequently the amount of detail shown. A faster speed shows more information in the Sonar View and is preferred by most anglers; however, the bottom moves across the display quickly. The highest setting is an ultrafast mode that provides the highest chart speed possible by slowing down other system functions. A slower speed keeps the information on the display longer, but the bottom and fish detail becomes 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. Adjust Chart Speed to your personal preference.

Zoom Level sets the magnification level for the Sonar Zoom View.

Sonar Settings – Main Menu Sonar Tab

Less frequently-adjusted menus are grouped into the Main Menu System. Press the MENU key twice to access the Main Menu System.

Fish ID+™ uses advanced signal processing to interpret sonar returns and display a Fish Symbol when very selective requirements are met. A number above the fish icon indicates the depth of the fish. Three different fish size icons show the intensity of the sonar return, and provide an indicator of relative fish size. When Fish ID+ is turned off, the Matrix shows only the unprocessed sonar returns on the display. These returns will often result in "arches" forming on the display, indicating potential targets.

Fish Sensitivity adjusts the thresholds of the fish detection algorithms, thus enhancing your unit's ability to identify sonar returns as fish icons. Selecting a higher setting allows fainter returns to be displayed as fish icons and will increase the number of fish icons that appear on the display. This is useful for identifying smaller fish species or baitfish. Selecting a lower setting displays fewer fish icons from faint sonar returns. This is helpful when seeking larger species of fish.

Bottom View selects the method to display bottom and structure on the display. **Structure ID®** presents the graphical representation of the bottom and structure sonar returns using only grayscale to indicate the signal strength. **WhiteLine®** highlights the strongest sonar returns from the bottom to make a distinctive outline of the bottom contour, structure and fish. **Bottom Black** displays all pixels below the bottom contour as black, regardless of signal strength.

RTS Window turns the RTS window on or off in the Sonar View.

Alarm Settings - Main Menu Alarm Tab

Various audible alarms can be triggered in the Matrix unit based on these menu settings. When an alarm is triggered, it can be silenced by pressing the EXIT key.

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

Fish Alarm sounds when the Fish ID+ feature displays fish symbols that correspond to the menu setting.

Low Battery Alarm sounds when the input battery voltage is equal to or less than the menu setting.

Alarm Tone selects the pitch of the alarm sound to improve audibility. As the menu is adjusted a brief tone will be produced so that you can select the tone that you can hear best.

System Settings - Main Menu Setup Tab

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

Units - Temp selects the units of measure for all temperature-related readouts. This menu is only visible if temperature is available. *International Models Only.*

Units - Distance selects the units of measure for all distance-related readouts. *With Temp/Speed Accessory Only.*

Units - Speed selects the units of measure for all speed-related readouts. *With Temp/Speed Accessory Only.*

User Mode displays additional Advanced Menus within the menu system when set to Advanced. When set to Normal (default setting,) only the basic menu options are shown. See Advanced User Mode section.

Triplog Reset resets the Triplog to zero. *With Temp/Speed Accessory Only.*

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

Restore Defaults resets ALL menu settings to their factory defaults. Use this menu with caution!

Advanced User Mode

Preset menu modes are available to suit your personal Angler Profile - whether you're a Normal User or Advanced User. These Angler Profile Presets™ provide an Advanced Mode for users who desire the highest level of control over the product, and Normal Mode for users who desire the greatest simplicity and fewest choices.

Choose User Mode from the Setup Tab and change the selection to Advanced to access advanced features. A range of additional options will be displayed in the menu system. Any changes made under the Advanced mode will remain in effect if the unit is returned to Normal mode.

Sonar X-Press Menu - Advanced User Mode

Upper Range	Adjusts the Upper Depth Range to a specific depth for the Sonar and Big Digits Views. (0 to 1190 feet, Default: 0)
83 kHz Sensitivity	Adjusts the sensitivity applied to the 83kHz beam to be higher or lower than the overall sensitivity setting. (-10 to +10, Default=0)

Sonar Menu - Advanced User Mode

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. (Low=1, High=10, Default=Low)
Noise Filter	Adjusts the sonar Noise Filter to limit interference from sources such as your boat engine, turbulence, or other sonar devices for best display performance. (Off, Low, Medium, High, Default=Low) *Note: The Off setting removes all filtering; Low, Medium and High settings add progressive filtering of the sonar returns. In some deep water situations, the High setting may actually hinder your unit's ability to find the bottom.*
Water Type	Configures unit for type of water conditions. (Salt, Fresh, Default=Fresh) *Note: 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. Also, make sure that the Water Type is set accurately, especially in salt water, as this can affect the accuracy of deep water depth readings.*
Max Depth	Adjusts the maximum depth of unit operation. (Auto, Auto to 1200 feet, Default=Auto) *Note: The performance of your unit can be tuned to the maximum depth you will be fishing in by setting this menu choice. When a maximum depth is set, the unit will not attempt to acquire sonar data below that depth, thus increasing overall performance. When the Max Depth is set to Auto, the unit will acquire bottom readings as needed (within the capacity of the unit).*

System Setup Menu - Advanced User Mode

Select Views	Access submenus to hide or show individual views available on the Matrix unit. This includes new views added when new accessories are connected.
Select Readouts	Accesses submenus to hide or show individual digital readouts on the Sonar View. This includes readouts from supported accessories.
Depth Offset	Adjusts digital depth readout to indicate depth from waterline or keel. Enter a positive vertical measurement (+1, +2, +3 feet) from the transducer to waterline to read the depth from the waterline. Enter a negative vertical measurement (-1, -2, -3 feet) from the transducer to keel to read the depth from the keel. (-10 feet to +10 feet, Default=0)
Temperature Offset	Adjusts temperature readout by entered amount to match other gauges. (-10 to +10, Default=0)
Speed Calibration	Adjusts speed readout by entered percentage to match other gauges. (-20% to +20%, Default=0)
NMEA Output	Enables or disables NMEA 0183 depth sentence. (On, Off, Default=Off)

Using System Status

When System Status is selected on the Start-Up menu, the Matrix displays a series of three views to provide information about the unit.

Self Test displays results from internal diagnostic self test, including unit serial number, software revision, total hours of operation and the input voltage from the power source.

Accessory Test lists the accessories connected to the system. Note that the speed accessory is only detected when the paddlewheel is moving.

Sonar Test displays unprocessed sonar returns on the display to confirm sonar is operational.

Exit System Status mode by powering the unit off.

Using PC Connect

When PC Connect is selected from the Startup Menu, the Matrix unit enters a communication mode and waits for a connection with a PC. Complete instructions are included with the PC Connect accessory (AS-PC). Exit PC Connect mode by powering the unit off.

Depth Capability	1200 ft (400 m)	Target Separation	2¹/2 Inches (63.5 mm)
Power Output	500 Watts (RMS)	Power Requirement	10-20 VDC
	4000 Watts (Peak to Peak)	LCD Matrix	240 V x 240 H
Operating Frequency	200 kHz and 83 kHz	Transducer (Standard Model)	XHS-9-20-T
Area of Coverage	60° @ -10 dB in 83 kHz	Transducer (Plus Model)	XHS-9-20
	20° @ -10 dB in 200 kHz	Transducer Cable Length	20 ft (6 m)

Product specifications and features are subject to change without notice.

Power/Light

Momentarily press **POWER** to turn the unit on. While the unit is on, momentarily press **POWER** to access Light and Contrast menus. Press and hold **POWER** for 3 seconds to turn the unit off.
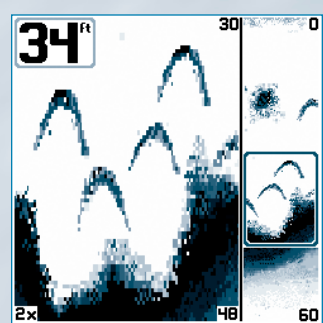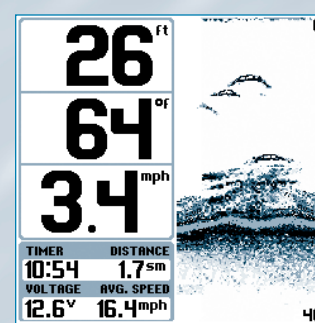
View

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 System Setup Menu - Advanced User Mode on the other side of this manual).
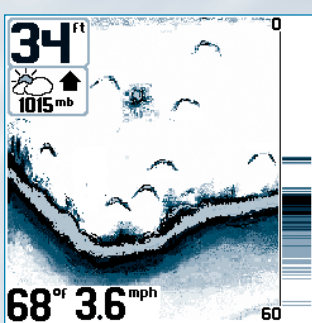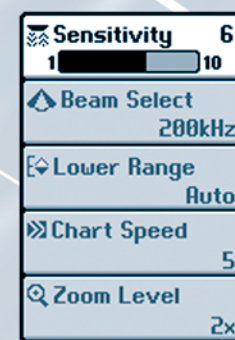
Sonar View

Zoom View

Big Digits View

X-Press™ Menus

Press the **MENU** key once for the X-Press™ Menu. The X-Press menu allows you to access the settings that you change frequently without having to navigate through a menu system. Only the X-Press menu items associated with the current view are displayed.

4-Way Menu Control

Use **UP** or **DOWN** to select a menu item. Use **LEFT** or **RIGHT** to make a menu choice.
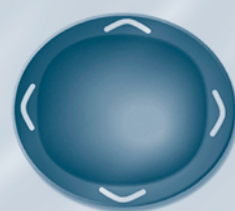
Note: Menu choices are implemented and saved immediately - no further action is required.

Main Menu System

Press the **MENU** key twice for the Main Menu System. The menu system is organized under tab headings to help you find a specific menu item quickly. In the main Menu, first use the 4-Way Menu Control **LEFT** or **RIGHT** key to select a tab; then use the **UP** or **DOWN** key to select the menu item. The menu system is expandable; when you attach a supported accessory to the Matrix system, the Matrix menus may change to display new choices for those accessories that require menu access.

Note: Instruction guides included with the accessory will detail accessory-specific features and functions.

Exit

The **EXIT** key has multiple functions, depending on the situation:

- If an alarm is sounding, pressing **EXIT** will cancel the alarm.

- If a menu tab is selected, pressing **EXIT** will exit the menu mode and return to the view.

- If a menu is active, pressing **EXIT** will return to the previous level in the menu system.

- If a cursor is active on the display, pressing **EXIT** will clear the cursor from the display.

Tilt and Swivel Mount

Your Matrix unit will tilt up to 90° and swivel up to 360° to accommodate your viewing preferences.

Quick Disconnect Mounting System

Press the button located to the rear of your Matrix unit to release the lock and remove the head unit from the base.

X-Press™ Menu

Sensitivity	Adjusts the sonar Sensitivity (Low = 1, High = 10, Default=6)
Beam Select	Selects the sonar beam used in the Sonar View. (Narrow 200 kHz, Wide 83 kHz, Both, Default=200kHz)
Lower Range	Adjusts the Lower Depth Range (Auto, 10 to 1200 feet, Default=Auto)
Chart Speed	Adjusts the speed of the display movement (1 to 5 or Ultra, where 1=Slow, 5=Fast, Ultra=Fastest, Default=5)
Zoom Level	Adjusts the zoom magnification for Zoom View (2x, 4x, 6x, 8x, Default=2x)

Note: The following additional menu items are available when Advanced User Mode is enabled: Upper Range and 83kHz Sensitivity. See Advanced User Mode section.

Sonar Main Menu

Fish ID+™	Activates Fish ID+ target identification and fish symbols (On, Off, Default=Off)
Fish Sensitivity	Adjusts the fish detection sensitivity (Low = 1, High = 10, Default=5)
Bottom View	Selects style of bottom presentation for Sonar Views (Structure ID®, WhiteLine®, Bottom Black, Default=Structure ID®)
RTS® Window	Activates the Real Time Sonar Window on Sonar Views (On/Off, Default=On)

Note: The following additional menu items are available when Advanced User Mode is enabled: Surface Clutter, Noise Filter, Water Type and Max Depth. See Advanced User Mode section.

Alarm Main Menu

Depth Alarm	Sets the Depth Alarm point (Off, 1 to 100 feet, Default=Off)
Fish Alarm	Sets the Fish Alarm size (Default: Off; Off, All, Large/Med, Large)
Low Battery Alarm	Sets the Low Battery Alarm point (Off, 8.5 to 17.5 Volts, Default=Off)
Alarm Tone	Sets the pitch of the alarms (Low, Medium, High, Default=Medium)

System Setup Main Menu

Units - Depth	Selects the unit of measure for depth (Feet, Meters*, Fathoms, Default=Feet)
Units - Temperature*	Selects the unit of measure for temperature (Fahrenheit/Celsius, Default=Celsius)
Units - Distance**	Selects the unit of measure for distance (sm, nm, km*, Default=sm)
Units - Speed**	Selects the unit of measure for speed (mph, kts, kph*, Default=mph)
User Mode	Selects the user mode menus (Normal, Advanced)
Triplog Reset**	Resets the Triplog to zero
Language*	Selects the menu display language (Default: English)
Restore Defaults	Restores all settings to the Factory Defaults

*Note: The following additional menu items are available when Advanced User Mode is enabled: Select Views, Select Readouts, Depth Offset, Temperature Offset, Speed Calibration** and NMEA Output. See Advanced User Mode section.*

*Note: Menu item available on International models only.
**Note: Menu item available with Temp/Speed Accessory only.

Matrix Fishing System Advanced Accessories

Your Matrix unit represents a revolutionary Fishing System that grows in capability with the addition of one or more accessories. Accessories customize the Matrix Fishing System to your needs and enable you to stay on the edge of new technology and to catch more fish. When an accessory is connected to the system, additional menus, readouts and views are added automatically to your Matrix menu system. Note that some accessories may require additional software to be loaded into the Matrix product. Accessories available today that are supported by your Matrix include:

Temperature/Speed: simply plugs into the Matrix unit and provides real time speed and temperature readouts, as well 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 which is built in to the transducer.

WeatherSense™ Fishing Condition Monitor: simply plugs in to the Matrix unit and provides barometric pressure readout and trend data. Professional fishermen know that barometric pressure impacts fish behavior and they modify their tactics based on it. Now you can have access to barometric pressure data in real time, right on the boat.

GPS Connection Cable: adds GPS capability to the Matrix unit by connecting a handheld or other NMEA* GPS-compatible device. GPS capability instantly turns your Matrix into a Combo-Trackplotter to show position, breadcrumb trail and waypoints on the big, easy-to-read screen, all with big, easy-to-use buttons that handhelds do not offer. In addition, you can store up to 750 waypoints and 10 tracks inside the Matrix unit!

PC Connect Cable: links the Matrix unit to a PC to access product software updates and new features from www.humminbird.com. This accessory requires the MSWindows-compatible HumminbirdPC™ software from our Website to communicate with the Matrix unit. If you have upgraded to GPS, you can easily enter, annotate and exchange fishing spots with friends and download them into your Matrix unit using this cable.

Be sure to check out our website www.humminbird.com for additional new and exciting accessories to grow your Matrix Fishing System!

*NMEA 0183 is a National Marine Electronics Association standard for data communication.