Contact Humminbird

Your Humminbird accessory is designed for trouble-free operation and is backed by a one-year warranty. If you have any questions, contact our

Humminbird Customer Resource Center:

By Telephone
(Monday - Friday 8:00 a.m. to 4:30 p.m. Central Standard Time):
334-687-0503

By e-mail
(typically we respond to your e-mail within three business days):
custserv@techsonic.com

For direct shipping, our address is:
Techsonic Industries, Inc.
Service Department
108 Maple Lane
Eufaula, AL 36027 USA

HUMMINBIRD®

Matrix™
FISHING SYSTEM

Handheld GPS Connection Kit
Accessory Manual

531223-1_A

The Power of GPS

Congratulations! Now that you have purchased the Humminbird Handheld GPS Connection Kit, you can connect your handheld GPS receiver (additional purchase required) to your Matrix to access the advanced FishingGPS™, trackplotter and navigation capabilities built into your Matrix Fishing System. Use the NMEA output of your handheld GPS receiver as an affordable solution for big screen, easy-to-use trackplotting and fishfinding simultaneously. You'll enjoy the power of GPS to help you find those elusive fishing spots and guide you home! The following GPS functionality is currently supported by the Matrix when it is connected to the handheld GPS receiver:

- View current position
- View current track (breadcrumb trail)
- View precision speed and heading from your GPS receiver
- Save tracks and waypoints
- Create a route and navigate from one waypoint to the next.

How GPS Works

Your Matrix uses GPS (from a separate GPS receiver) and sonar capability to determine your position, display it on a map, and provide detailed underwater information. The Global Positioning System (GPS) is a satellite navigation system designed and maintained by the U.S. Department of Defense. GPS was originally intended for military use; however, civilians may also take advantage of its highly accurate position capabilities, typically within +/- 10 meters, depending on your handheld receiver. This means that 95% of the time, the GPS receiver will read a location within 10 meters of your actual position. Some GPS receivers can also use information from DGPS (the Differential Global Positioning System), WAAS (the Wide Area Augmentation System), EGNOS (the European Geostationary Navigation Overlay Service), or MSAS (the MTSAT Satellite Augmentation System) to further improve the accuracy of their position readings.

GPS uses a constellation of 24 satellites that continually send radio signals to the earth. Your position is determined by receiving signals from four or more satellites and measuring the distance from the satellites to determine your present position.

Handheld GPS Connection Kit*

The Humminbird Handheld GPS Connection Kit includes the following items, and provides 12 VDC output (used by many handheld GPS units):

- 3' (1 meter) cable for NMEA data connection
- AS-YC ("Y") cable for multiple accessory attachment
- Handheld GPS Connection Kit Accessory Manual.

This accessory requires an additional NMEA data cable (made by the manufacturer of the handheld GPS receiver) to complete the connection to the handheld GPS receiver.

Future Features

Visit **www.humminbird.com** to download new software that will enhance your Matrix Fishing System's GPS functionality as it becomes available.

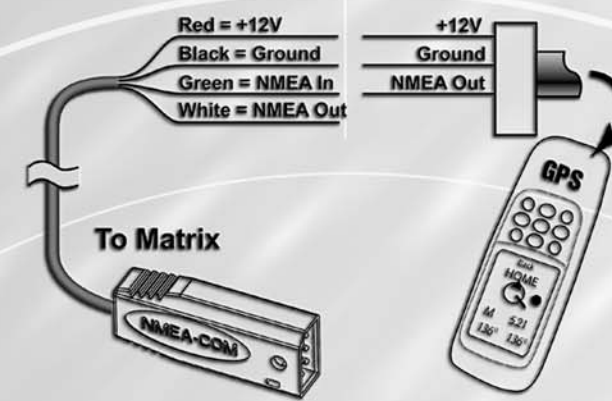## Connecting a Handheld GPS Receiver to the Matrix

Here's how to access GPS functionality using your Handheld GPS Connection Kit:

Attach any NMEA-output handheld GPS receiver to your Matrix Control Head COM connector via the NMEA cable included with the connector kit.

"Y" Cable

1.

2. Direct
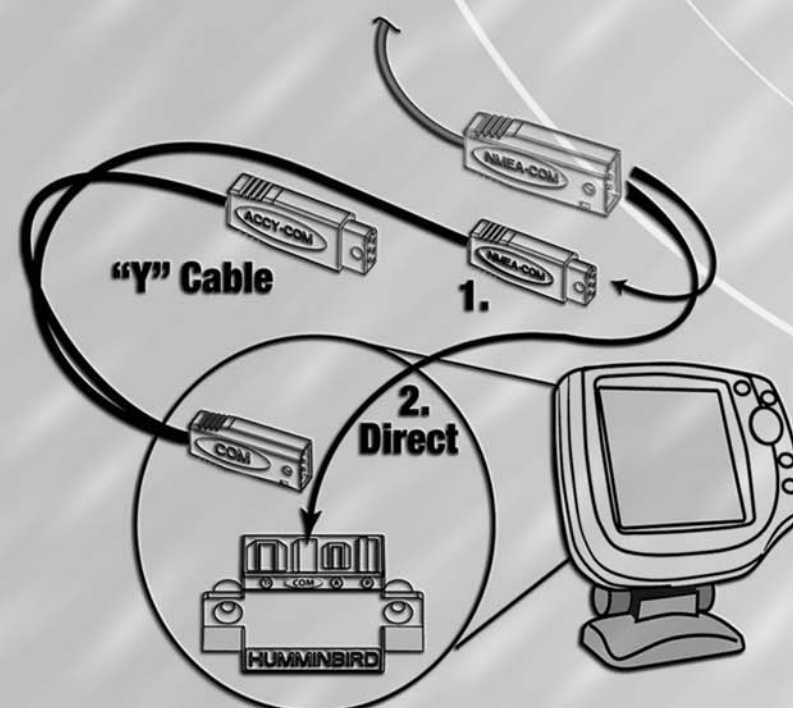
The pinouts of this cable are as follows:

- Red Wire, +12V
- Black Wire, Ground
- Green Wire, NMEA In
- White Wire, NMEA Out.

Red = +12V
Black = Ground
Green = NMEA In
White = NMEA Out

+12V
Ground
NMEA Out

To Matrix

NMEA-COM

GPS

Caution! Please use caution before connecting the red +12V wire to your handheld GPS receiver, and consult your handheld GPS receiver manufacturer's user manual before connecting power and ground, as some handheld GPS receivers have a different voltage input than 12V.

1. Connect the NMEA In (Green wire) of the cable to the NMEA Out of your Handheld GPS Receiver.

Note: The white NMEA Out wire is provided for other uses, such as connecting to an autopilot, but it is not needed to connect to a handheld GPS receiver.

2. If you are already using other Matrix accessories plugged into the COM connector, you will also need to use the AS-YC ("Y") cable included in your Handheld GPS Connector Kit so that you can use both the accessories and your handheld GPS receiver at the same time.

3. Power up the Matrix Fishfinder (see your Matrix Operation Manual for details).

Note: The Matrix Fishing System accepts NMEA 0183 version 2.20 input at 4800 baud and listens for the NMEA sentences RMC and GGA to determine current position, heading, speed, time and date. In addition, the GSA and GSV sentences are used to monitor GPS satellite location and usage.

4. If the NMEA output of your handheld GPS receiver can be configured, make sure that NMEA output is enabled, that the baud rate is set to 4800, and that at least the RMC and GGA sentences are enabled. (See the manufacturer's operation manual for your handheld GPS receiver.)

5. When the Matrix detects the NMEA input from the handheld GPS receiver, the Combo, Track and Bird's Eye Views will be added automatically to the VIEW key function. A Navigation menu tab and the Navigation X-Press menu will also be added automatically to the Menu system.

Views

VIEW
Sonar Views
Combo View
Track View
Bird's Eye View
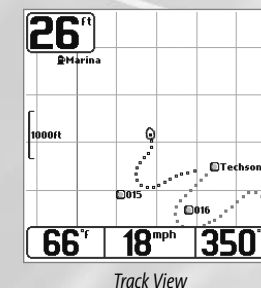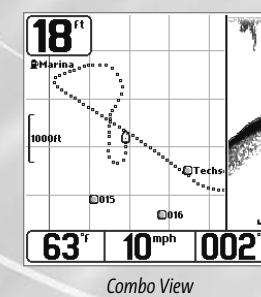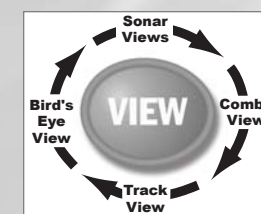
When the VIEW key is pressed, the Matrix display cycles through the available views, including the navigation views added when a handheld GPS receiver is connected. As with any Matrix view, the navigation views can be hidden or displayed as part of the view rotation using Select View from the Advanced Setup Menu. See your Matrix Operation Manual for details. The navigation views are:

- Combo View
- Track View
- Bird's Eye View.

Combo View - This view is displayed as a split screen, with Track View on the left and Sonar View on the right side of the screen.

Track View - This view shows the current track (also known as the position history or breadcrumb trail) showing where the boat has been, along with saved tracks, waypoints, and the current route (when navigating).

View Orientation - Both Track and Combo views allow you to choose the orientation of the view.

Combo View

Track View
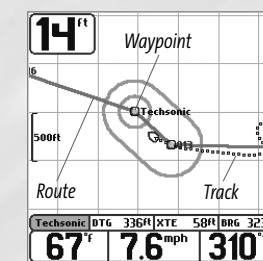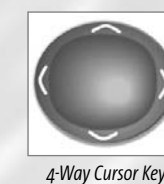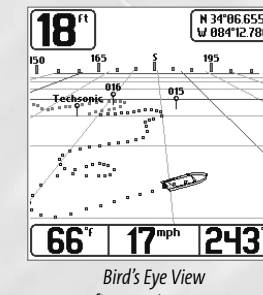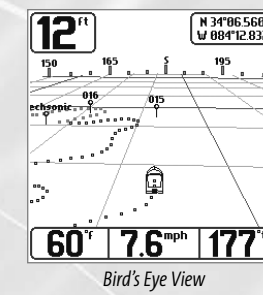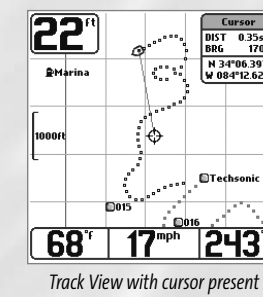
When **North-Up orientation** is selected, True North is shown at the top of the display. In other words, objects located to the north of the boat are drawn above the boat.

When **Course-Up orientation** is selected, the direction of motion of the boat is shown at the top of the display. In other words, objects ahead of the boat are drawn above the boat.

In both orientations, the view pans automatically, so that the boat is always centered on the display. When the boat is stationary, it is drawn as a circle. When the boat is in motion, it takes on a boat shape, pointed in the direction of motion (always Up in the Course-Up orientation).

In the **Combo** or **Track** views, pressing the 4-way Cursor key pans the view, so that you can follow the track to a location currently off the screen.

A bull's eye cursor is drawn at the center of the screen and is linked to the boat by a gray line, even if the boat is off the screen. At the same time, a cursor information box is displayed in the upper right corner, which shows the distance and bearing from the boat to the cursor position, along with the latitude/longitude coordinates of the cursor.

Pressing the EXIT key removes the cursor from the screen.

Bird's Eye View - This view shows a 3-D, perspective view of the track from a point above and behind the boat (the eye point). As the boat turns, the eye point moves to follow the boat.

When you press the 4-Way Cursor key in the **Bird's Eye View**, the position of the eye point will shift. This allows you to move and turn the eye point so that you can look off to the sides, or even behind the boat. Pressing the Right or Left arrow keys on the 4-Way Cursor key turns the eye point right or left, while pressing the Up arrow key moves the eye point forward, and pressing the Down arrow key moves the eye point backward.

Pressing the EXIT key moves the eye point back to its original position.

Track View with cursor present

Bird's Eye View

Bird's Eye View after pressing cursor

4-Way Cursor Key

EXIT

EXIT Key

Waypoints, Routes and Tracks

Waypoints are stored positions that allow you to mark areas of interest or navigation points. Your Matrix can store up to 750 waypoints.

Routes link two or more waypoints together to create a path for navigation, and are used in trip planning. You can link individual waypoints together via menus or select them on-screen to create a route. The Matrix enters Navigation Mode when there is a route; cancelling navigation means that the route is discarded.

Waypoint
Route
Track

Tracks consist of detailed position history, and are displayed as a breadcrumb trail of trackpoints. The Current Track shows the position history since the unit was powered up. You can clear the Current Track or save it at any time. Your Matrix can store up to 10 saved tracks, each containing 700 trackpoints.

A route represents your intended navigation and shows the shortest path from each waypoint to the next. The current track represents your actual path so far. As you travel a route, staying on the route line is the most efficient way to get to your destination.
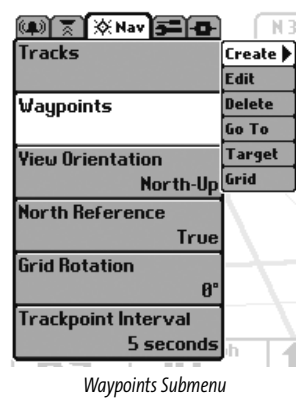
Save, Edit, or Delete a Waypoint

Save your current position as a waypoint: On any view, press the MENU key to display the X-Press menu. Select Mark and press the RIGHT Cursor key to save the current position of the boat as a waypoint.

Save the cursor position as a waypoint: On the Combo or Track view, use the Cursor key to designate the position you want to save as a waypoint. Then press the MENU key to display the Navigation X-Press menu, choose Mark, then press the RIGHT Cursor key to save the marked position as a waypoint.

Note: When you save a waypoint by either of these methods, a numerical waypoint name is automatically assigned. You can edit the waypoint information later to give it a different name and select an icon to represent it (see Edit a Waypoint).

Display the Waypoints Submenu: From any view, press the MENU key twice to display the Main Menu System, then use the RIGHT Cursor key to select the Navigation tab. Select Waypoints and press the RIGHT Cursor key to display the Waypoints submenu.

Program a specific position as a waypoint: To create a waypoint that is NOT your current position, from the Waypoints submenu, select the Create option and press the RIGHT Cursor key. Use the Cursor keys to program a waypoint name, latitude, longitude, and icon before selecting Save.

Waypoints Submenu

To edit a waypoint: From the Waypoints submenu, select Edit and press the RIGHT Cursor key to display a list of saved waypoints. Select the waypoint you want to edit by pressing the RIGHT Cursor key. Use the RIGHT and LEFT Cursor keys to move from field to field, and the UP and DOWN Cursor keys to changes values once you are in a field. In the Waypoint Name, Latitude and Longitude fields, the UP and DOWN Cursor keys change the letter or number. All upper and lower case letters are available, as well as digits 0-9 and some punctuation characters. In the Waypoint Icon field, the UP and DOWN Cursor keys change the icon used to represent the waypoint on the **Combo** and **Track** Views. You can exit these fields with the LEFT and RIGHT Cursor keys or by pressing the EXIT key. Select Save and press the RIGHT Cursor key to save your changes.

To make it easier to select a waypoint, select Sort By and press the RIGHT or LEFT Cursor keys to select a sort order:

- Name shows the waypoints alphabetically
- Time shows the most recently-created waypoint first
- Distance shows the closest waypoint first.

To delete a waypoint: From the Waypoints submenu, select Delete and press the RIGHT Cursor key to display a list of waypoints. Select the waypoint you want to delete, then press the RIGHT Cursor key. You will be asked to confirm deletion before the waypoint is actually deleted.

Navigate to a Waypoint or Position

Navigate to the cursor position: From the **Combo** or **Track** view, use the Cursor key to select a position or waypoint to which you want to navigate. Press the MENU key once to display the Navigation X-Press menu. Select Go To and press the RIGHT Cursor key. Navigation will begin immediately.

Navigate to a specified waypoint: From the Navigation X-Press menu, select Go To and press the RIGHT Cursor key. Then choose the waypoint to which you would like to navigate from the waypoint list and press the RIGHT Cursor key to select it.

From any view, you can also navigate to a waypoint using Go To from the Navigation Main menu.

Note: By repeating the previous instructions, you can add more waypoints to create a longer route.

Skipping a waypoint: From the Navigation X-Press menu, select Skip Next Waypoint and press the RIGHT Cursor key. If there is not another waypoint to skip to, navigation will be cancelled.

Cancel navigation: From the Navigation X-Press menu, select Cancel Navigation and press the RIGHT Cursor key. Canceling navigation removes the route and any waypoints created using the Go To cursor operation.

Save or Clear a Current Track

Save the current track: From the Navigation X-Press menu, select Save Current Track and press the RIGHT Cursor key. The track will remain on the display, but will change from black to gray.

Note: When you save a track, a name is automatically assigned. The track name consists of a date/time stamp, but can be re-named later (see Edit a Saved Track).

Clear the current track: From the Navigation X-Press menu, select Clear Current Track and press the RIGHT Cursor key. The track will be removed from the display and discarded.

### Edit, Delete or Hide Saved Tracks

Display the Tracks Submenu: From any view, press the MENU key twice to display the Main Menu System, then use the RIGHT Cursor key to select the Navigation tab. Select Tracks and press the RIGHT Cursor key to display the Tracks submenu.
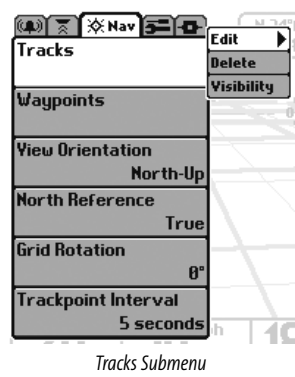
Edit a saved track: From the Tracks submenu, select Edit and press the RIGHT Cursor key to display the list of saved tracks. Select the track you want to edit and press the RIGHT Cursor key. When the Edit Track dialog box appears, use the Cursor keys to move between fields. In the Track Name field, the UP and DOWN Cursor keys change the letter or number. All upper and lower case letters are available, as well as digits 0-9 and some punctuation characters. You can exit the Track Name field with the LEFT and RIGHT Cursor keys or by pressing the EXIT key. Select Save and press the RIGHT Cursor key to save your changes.

Tracks Submenu

Delete a saved track: From the Tracks submenu, select Delete and press the RIGHT Cursor key to display the list of saved tracks. Select the track you want to delete and press the RIGHT Cursor key. You will be asked to confirm deletion before the track is actually deleted.

Hide or display a saved track: From the Tracks submenu, select Visibility and press the RIGHT Cursor key to display the list of saved tracks. Select the track you want to hide or display and use the Cursor keys to select Hidden or Visible. Press the EXIT key to return to the Tracks submenu.
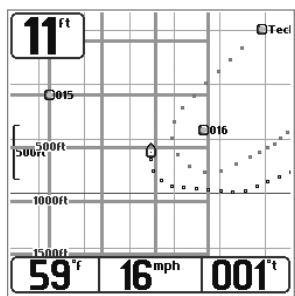
Add a Waypoint Target or Trolling Grid
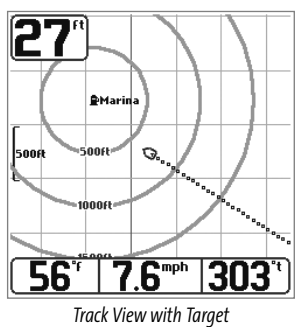
Track View with Target

Add or Remove a Waypoint Target: From the Waypoints submenu, select Target and press the RIGHT Cursor key. A target consisting of concentric circles centered on the selected waypoint will appear on all of the navigation views; the target shows various distance ranges from the targeted waypoint. To remove the target, choose Remove Target from the Navigation X-Press menu.

Add or Remove a Trolling Grid: From the Waypoints submenu, select Grid and press the RIGHT Cursor key to add the grid to the selected waypoint. The trolling grid will appear on all of the navigation views, and can be used as a guide when trolling around a waypoint. The grid can be rotated to any desired heading using Grid Rotation from the Navigation Main menu. To remove the trolling grid, choose Remove Grid from the Navigation X-Press menu.

Track View with Grid

Note: Only one waypoint can have either a target or a grid at one time. If you apply a target or a grid to a new waypoint, the original waypoint will lose its target or grid.

MENUS

When the MENU key is pressed once, the X-Press menu appears for the view currently being displayed. In any of the navigation views that are added when a handheld GPS receiver is connected, the Navigation X-Press menu will be displayed when the MENU key is pressed once. When the MENU key is pressed a second time, the tabbed main menu system is displayed, with a Navigation Menu Tab added to allow access to the navigation functions. Additional navigation alarms are added to the Alarm tab, and additional advanced navigation menu items are also added to the Setup Menu Tab.

Navigation X-Press Menu

Navigation Settings - X-Press Menu

The following menu items appear when the MENU key is pressed while in any of the navigation views:

Zoom - allows you to change the scale of the view to appear closer or farther away.

Mark - allows you to mark the position of a waypoint, either at the current boat location, or, if the Cursor is active, at the current Cursor location.

Go To - if the Cursor is active in a navigation view, choosing Go To creates a waypoint and starts navigation towards that waypoint; if the Cursor is not active, choosing Go To displays the list of waypoints, so that you can select the waypoint towards which you want to navigate.

Clear Current Track - allows you to clear the current track being displayed and start a new track at the present position.

Save Current Track - allows you to save the current track being displayed.

Skip Next Waypoint - removes the next waypoint from the current route. This menu choice will only appear when you are currently navigating a route.

Cancel Navigation - discards the current route and exits Navigation Mode. This menu choice will only appear when you are currently navigating a route.

Remove Target - removes the waypoint target from all navigation views. This menu choice will only appear when a target has already been applied to a waypoint.

Remove Grid - removes the trolling grid from all navigation views. This menu choice will only appear when a grid has already been applied to a waypoint.

Navigation Settings - Main Menu Navigation Tab

The following menu items appear under the Navigation menu tab in the Main Menu System:

Tracks - allows you to view the Tracks submenu. See Navigation Main Menu - Tracks Submenu.

Waypoints - allows you to view the Waypoints submenu. See Navigation Main Menu - Waypoints Submenu.

View Orientation - allows you to select whether the **Combo** and **Track** Views should be drawn North-Up or Course-Up. (North-Up, Course-Up, default is North-Up)

Navigation Menu Tab

Note: The View Orientation setting does not apply to the Bird's Eye View.

North Reference - allows you to have bearings displayed with one of two orientations: True North or Magnetic North. (True North, Magnetic North, default is True North)

Grid Rotation - allows you to set the orientation of the trolling grid in degrees, where a setting of 0° displays a standard North, South, East, West alignment. The Grid Rotation setting will be applied to all navigation views whenever the grid is turned on. (0° to 89°, in increments of 1°, default is 0°)

Trackpoint Interval - allows you to select the time period between trackpoints. The current track contains up to 700 trackpoints, so if the time period is longer, the track will extend back further in time, but be less detailed. (1 second, 5 seconds, 10 seconds, or 15 seconds, default is 10 seconds)

Navigation Main Menu - Tracks Submenu

Edit - allows you to select a previously-saved track and edit its name.

Delete - allows you to delete a track from a list of previously-saved tracks.

Visibility - allows you to display or hide each saved track.

Navigation Main Menu - Waypoints Submenu

Create - allows you to create a new waypoint and edit it immediately. The current boat position will be used as the default, but you can set the coordinates to any valid position with latitudes between S 79°and N 79°.

Edit - allows you to choose from a list of previously-saved waypoints, then edit the Name, Position (Latitude and Longitude) and select the Icon that will be used to represent the waypoint in the **Combo** and **Track** Views.

Delete - allows you to delete a waypoint from the list of saved waypoints.

Go To - allows you to select a waypoint and start navigation toward that waypoint, or add that waypoint to the end of the current route.

Target - allows you to apply a target to a waypoint selected from the list of waypoints.

Grid - allows you to apply a trolling grid to a waypoint selected from the list of waypoints.

Alarm Settings - Main Menu Alarm Tab

Additional, navigation-specific menu choices appear under the Alarms menu tab in the Main Menu System when a functioning GPS receiver is attached to the Matrix unit.

Note: When an alarm is triggered, you can silence it by pressing any key. Once you silence an Off Course or Drift alarm, it will not sound again as long as the boat remains outside the set alarm limits. These alarms will turn off automatically if the boat moves back inside the limit.

Alarm Menu Showing Navigation Alarms

Off Course Alarm - allows you to set how far the boat is allowed to move off course before the Off Course Alarm will sound. This also changes the display size of the Off Course Alarm limits that surround two waypoints on a route. (Off, 30 to 3000 feet in increments of 30, 10 to 1000 meters* in increments of 10).

Off Course Limits
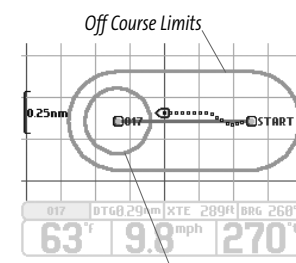
Arrival Alarm Circle

Arrival Alarm - allows you to set how close the boat must be to the destination waypoint before the Arrival Alarm will sound. This also changes the display size of the Arrival Alarm circle that surrounds the destination waypoint. (Off, 30 to 3000 feet in increments of 30, 10 to 1000 meters* in increments of 10).
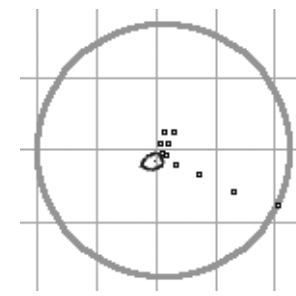
Drift Alarm - allows you to set the size of a perimeter around the boat's anchored position; if the anchored boat drifts outside of that perimeter, the Drift Alarm will sound. This setting also changes the display size of the Drift Alarm perimeter that surrounds the boat's current position. (Off, 30 to 3000 feet in increments of 30, 10 to 1000 meters* in increments of 10).

Drift Alarm Perimeter

*Note: Metric units available on International units only.
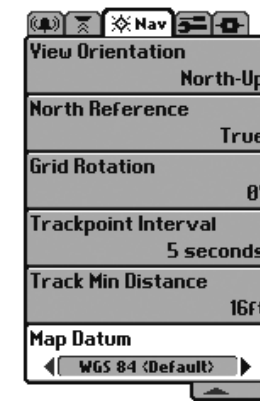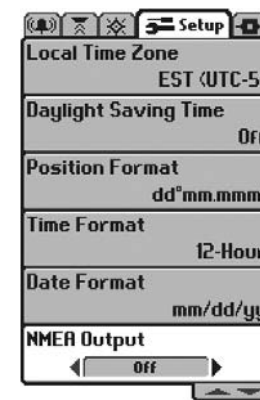
Navigation Menu - Advanced User Mode

The following menu choices appear under the Navigation menu tab in the Main Menu System when the User Mode is set to Advanced:

Track Min Distance - allows you to set a minimum distance of travel before a trackpoint is added to the track. (1 to 300 feet or 1 to 100 meters*, in increments of 1, default is 16 feet, or 5 meters*, and units are determined by the current Units-Distance setting)

Navigation Menu - Advanced Mode

Note: During slow travel or drift, setting both Trackpoint Interval and Track Min Distance to small values will allow you to increase the track resolution.

*Note: Metric units available on International units only.

Map Datum - allows you to change the map coordinate system used.

Setup Menu - Advanced User Mode

The following menu choices appear under the Setup menu tab in the Main Menu System when the User Mode is set to Advanced:

Local Time Zone - allows you to select your time zone in reference to the time reported by the handheld GPS receiver when Time + Date is selected as a Digital Readout on the Sonar View (see Select Readouts in your Matrix Operation Manual). (Default is EST - Eastern Standard Time)

Setup Menu - Advanced Mode

Daylight Savings Time - allows you to adjust the time display to account for local Daylight Savings Time. Selecting On adds one hour to the time display adjusted for your local time zone. Selecting Off leaves the time display as adjusted for your local time zone. (On, Off, default is Off)

Position Format - allows you to select the format of the latitude and longitude position display. (dd.ddddd°, dd°mm.mmm', or dd°mm'ss", default is dd°mm.mmm')

Setup Menu - Advanced User Mode - International Units Only

The following menu choices only appear under the Setup menu tab in the Main Menu System of International Units when the User Mode is set to Advanced:

Time Format - allows you to select a 12 hour or 24 hour format for the time of day displayed when Time + Date is selected as a Digital Readout on the Sonar View (see Select Readouts in your Matrix Operation Manual). (12 hour, 24 hour, default is 12 hour)

Date Format - allows you to select the format for the date display when Time + Date is selected as a Digital Readout on the Sonar View (see Select Readouts in your Matrix Operation Manual). (mm/dd/yy, dd.mm.yy or yy.mm.dd, default is mm/dd/yy)