

MAP 410



User Manual

MAP 410 Manual Addendum

Your MAP 410 receiver has been pre-loaded with the following DEMO regions:

MapSend Marine

- ♦ New York
- ♦ Annapolis
- ♦ Miami
- ♦ Seattle

MapSend Land

- ♦ Chicago
- ♦ Los Angeles

These areas have been installed as a sample of the additional detail available from the Magellan MapSend™ Marine and Land CD-ROMs. The MapSend Marine CD-ROM contains C-MAPNT *Compact* marine chart which displays such detail as spot soundings, contour lines, nav aids and more. The MapSend Land CD-ROM provides additional detail including major roads, nautical nav aids and destination Points of Interest such as golf courses and campgrounds.

Each of these CD-ROMs are available from your Magellan dealer or you can order directly from Magellan by calling (800) 669-4477.

You may turn OFF these DEMO regions by performing the following steps:

1. While in the MAP screen
2. Press MENU
3. Select MAP SETUP
4. Press ENTER
5. Select UPLOADED DATA and press ENTER
6. Select OFF



When the DEMO regions are turned on, some road detail in these regions may be hidden.

Turning OFF uploaded data will erase all routes contained in your receiver's memory.

Ajout au guide de l'utilisateur du MAP 410

Votre récepteur MAP 410 contient des informations géographiques sur les régions suivantes en guise de démonstration:

MapSend Marine (Marin)

- ♦ New York
- ♦ Annapolis
- ♦ Miami
- ♦ Seattle

MapSend Land (Terrestre)

- ♦ Chicago
- ♦ Los Angeles

Ces zones ont été inscrites en mémoire à des fins de démonstration des informations topographiques additionnelles disponibles sur le cédérom Magellan MapSend™ Marine and Land (Marin et terrestre). Le cédérom MapSend Marine contient des cartes C-MAPNT *Compact* marines si détaillées qu'il est possible d'obtenir les contours marins, les aides à la navigation et des autres. Le cédérom MapSend Land contient des informations additionnelles incluant les routes principales, les aides à la navigation et des lieux d'intérêts tels que terrains de golf et des terrains de camping.

Ces cédéroms sont disponibles chez votre détaillant Magellan. Il est également possible de les commander en appelant Magellan au numéro sans frais suivant: (800) 669-4477.

Il est possible en suivant ces opérations, de mettre hors fonction les zones de démonstration.

1. À partir du tableau des cartes
2. Appuyez sur Menu
3. Sélectionnez MAP SETUP (Menu de configuration)
4. Appuyez sur ENTER
5. Sélectionnez UPLOADED DATA et appuyez sur ENTER
6. Sélectionnez OFF



Lorsque les zones de démonstration sont en fonction, certains détails des routes peuvent être cachés.

La mise hors fonction des données téléchargées entraîne l'effacement des itinéraires en mémoire

Warnings

USE GOOD JUDGEMENT

This product is an excellent navigation aid, but does not replace the need for careful orienteering and good judgement. Never rely solely on one device for navigating.

USE CARE

The Global Positioning System (GPS) is operated by the U.S. Government, which is solely responsible for the accuracy and maintenance of GPS.

The accuracy of position fixes can be affected by the periodic adjustments to GPS satellites made by the U.S. Government and is subject to change in accordance with the Department of Defense civil GPS user policy and the Federal Radionavigation Plan.

USE CAUTION

Accuracy can also be affected by poor satellite geometry. When the accuracy warnings appear on the screen, use the data with extreme caution.

USE PROPER ACCESSORIES

Use only Magellan cables and antennas; the use of non-Magellan cables and antennas may severely degrade performance or damage the receiver, and will void the warranty.

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INTRODUCTION

Congratulations on your purchase of the MAP 410. Since introducing the world's first commercial, hand-held GPS receiver, Magellan has led the way with innovative GPS products to meet a wide range of positioning and navigation needs.

The MAP 410 is a portable, cartographic GPS receiver with a high-resolution display that represents your location and all of your surroundings. The powerful 12-channel receiver is compact and lightweight for easy use while making your way outdoors. You'll be able to navigate to destinations all over the world using the MAP 410's internal map with waypoints, nav aids and points of interest. Now getting to your favorite destination can be done with the press of a few buttons.

Designed with both the Outdoor and Marine enthusiasts in mind, the MAP 410 is ideal for hiking, mapping your favorite fishing hole, marking trails or charting courses over land or water. To help you get started using you MAP 410, read the Getting Started and Basic Operation sections of this manual. These two sections will have you recording waypoints and navigating in no time at all. The remainder of this manual gives you detailed information about all the features and functions available in your MAP 410.

Packing List

Before you begin using your new unit, make sure that all the items listed on the MAP 410 box are included. If any of the items are missing or damaged, contact Magellan customer service immediately at (800) 707-9971.

Optional accessories are available from your local MAP 410 dealer. See the Accessories section of this manual for a list of available accessories.

Conventions Used In This Manual

The reference section of this manual is designed to assist you in the use of your MAP 410. Each topic in the reference section includes a brief description of the chosen activity, keystroke diagrams representing the keys to press and sample screens showing how the function is performed. In the reference section you will be given instructions to follow. **Bolded** words indicate the key or keys to be pressed; *italics* indicate the name of the screen to be viewed; and, ALL CAPS indicate a menu item to be selected.

Also in the reference section are alerts to inform you of some cautions or notes that will assist you in using your MAP 410.



The crossing guard with a stop sign indicates the information enclosed is very important and should be read before moving on.



The notepad icon denotes information that can help you use or understand your receiver. While this information is not required to perform the activity, it may provide you with a better understanding of the activity or shortcuts you can use.

GETTING STARTED

This section shows you how to begin using your MAP 410 for the first time. After a brief discussion of the receiver, the following areas will be covered:

- Battery Installation
- First time usage, initializing the receiver
- Operation

Receiver Description

The MAP 410 is a portable, cartographic GPS receiver with a high-resolution display that represents your location and all of your surroundings. The powerful 12-channel receiver is compact and lightweight for easy use while making your way outdoors. You'll be able to navigate to destinations all over the world using the MAP 410's internal map with waypoints, nav aids and points of interest. Your receiver also stores up to 500 waypoints that are used to navigate. Using four AA batteries, the MAP 410 will operate continuously for up to 12 hours and the internal lithium backup battery will keep the receiver's memory active for up to 10 years.

Receiver Accuracy

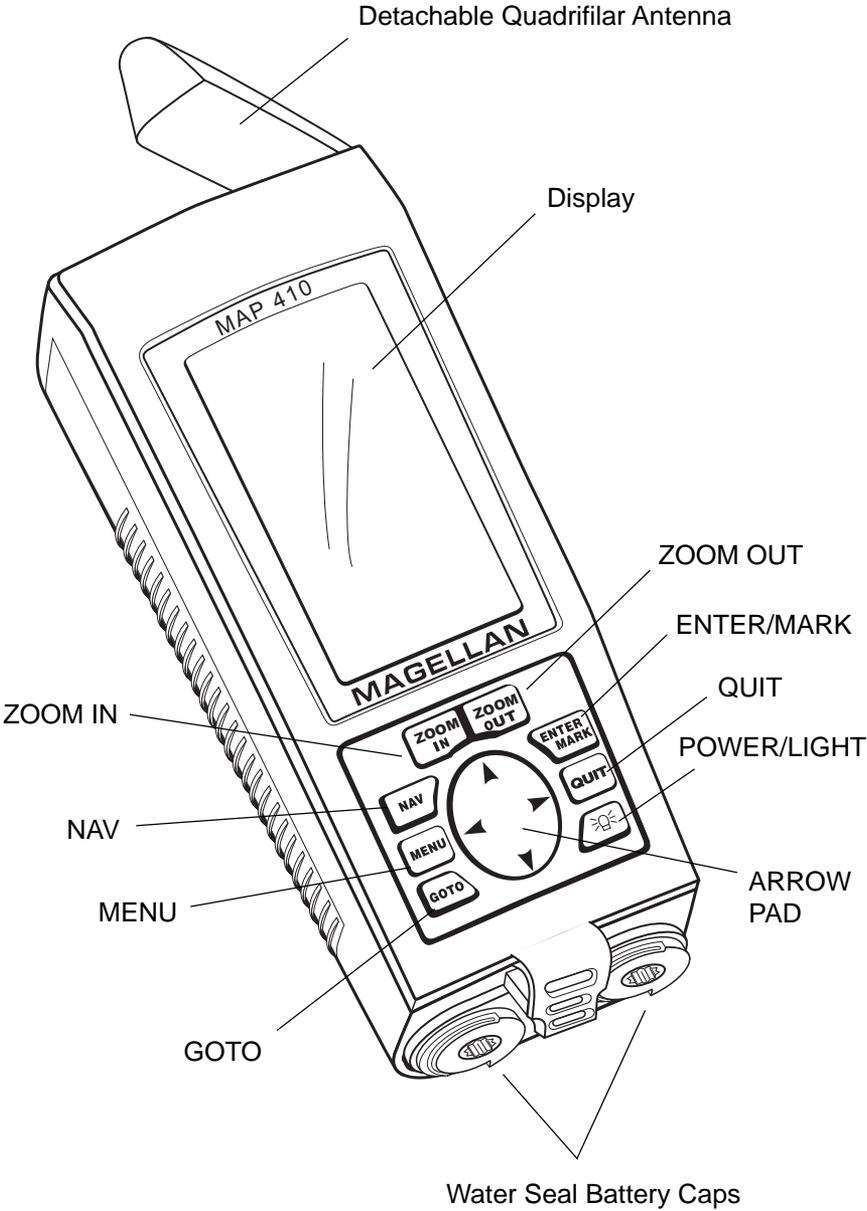
The satellite constellation that provides the GPS information your receiver uses is maintained by the Department of Defense (DoD). GPS positioning, for general use, provides 25 meter RMS accuracy or better. Since the signals generated by these satellites are publicly accessible, the DoD has introduced errors into the satellite signals for security reasons. These errors are referred to as Selective Availability (SA).

At present, your GPS position will be accurate within 100 meters RMS horizontally and 150 meters RMS vertically. Due to the errors introduced by SA, it is possible to get readings outside of these value at times.

ALTIMETER/PRESSURE SENSOR

Your MAP 410 has a built-in barometric pressure sensor to give you more accurate altitude readings. The altimeter does not need any calibration or activation, this function is automatic. The MAP 410 uses the combination of a pressure sensor and GPS elevation to give altitude readings of about +/- 200 feet.

MAP 410 GPS Receiver



Keypad Description



Power/Light - When the unit is OFF, pressing this key turns the unit ON. If the unit is ON, pressing this key for less than one second turns the light ON and offers two levels of brightness adjustable with consecutive presses of this key. Pressing and holding this key for more than one second causes the receiver to go into a 5-second power down sequence. During the power down sequence, pressing this key again will immediately turn the receiver OFF.



Enter/Mark - Pressing this key for less than one second executes an Enter while pressing this key for more than one second begins the procedure for marking a user waypoint.



Quit - Cancels the operation of the last key pressed and scrolls backward through the NAV screens.



8-Way Arrows - Scrolls through screens, menus and enters alphanumeric information. Up/Down Arrows scroll through the alphanumeric characters. Right/Left Arrows page through menus and pans in eight directions when on the MAP screen.



NAV - Accesses and scrolls through the Navigation screens.



MENU - Accesses functions specific to the current display, as well as other general functions.



GOTO - Allows selection of a destination for a single-leg route from a list of waypoints. This key also accesses the Man Over Board function.



ZOOM IN - Allows you to zoom in on the Map screens.

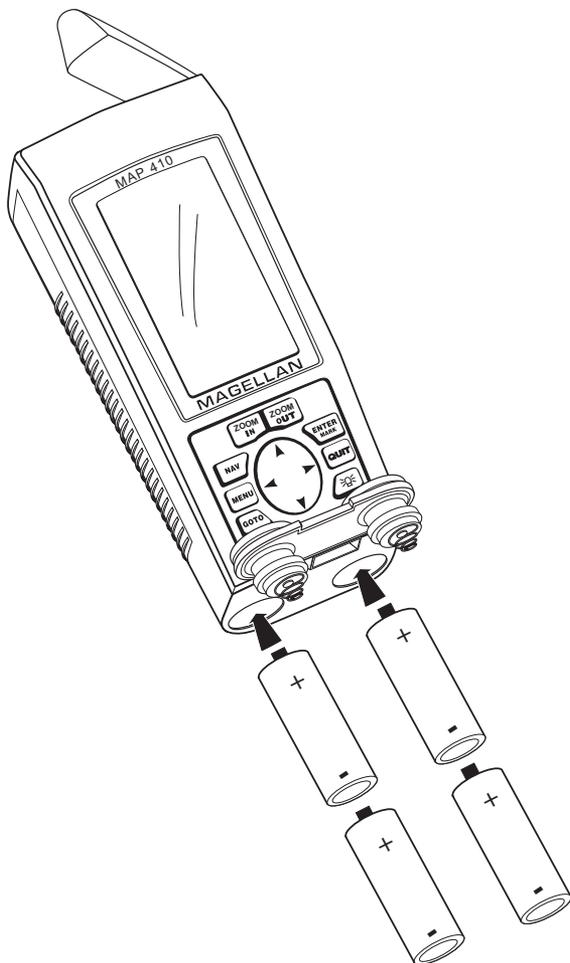


ZOOM OUT - Allows you to zoom out on the Map screens.

Battery Installation

The MAP 410 uses four AA alkaline batteries that are installed from the bottom of the receiver. Use the rings to unscrew the water seal battery caps. Insert the batteries into the battery tubes, with the positive end first, two batteries in each side, and screw the battery caps until securely closed.

Although it is recommended that four AA batteries be used, in case of an emergency the receiver will operate with only two batteries if both are inserted into one of the battery tubes.



If the batteries are left out of the receiver for more than 30 minutes, your receiver may need to be reinitialized.

Using Your MAP 410

The constellation of 24 GPS satellites circling the globe is in constant motion. Before your receiver can tell you where you are, it needs to know where the satellites are relative to itself. It does this with the use of an internal almanac, where it has stored in memory a general location for each of the satellites. The almanac tells the receiver which satellites are in view, based on the time, date and location of the receiver.

Until the MAP 410 is initialized, it may not know its location, time or date, therefore, it does not have a reference point to select which satellites to use. Inputting the initial position, time and date is called initializing your receiver, which will save you time. Initializing enables the receiver to begin tracking satellites, and calculating your position, much faster.

Proper Handling - Signal Reception

Because your MAP 410 receives information it needs from satellites orbiting the earth, the antenna needs to be raised with a relatively unobstructed view of the sky.

Clear View of the Sky. Your receiver needs a clear view of the sky, allowing it to choose from all the satellites currently available. If the view of the sky is poor, (large cliffs or buildings, heavy foliage or other obstructions) the satellite signals can be blocked and the MAP 410 may take longer to compute a position fix.



Holding the Receiver. Your MAP 410 is designed to fit comfortably in your hand. Hold the receiver in the palm of your hand with the antenna pointing towards the sky.

Turning the Receiver “ON” & “OFF”

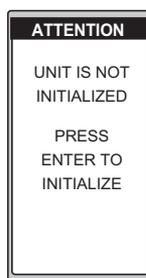
To turn your MAP 410 “ON”, press the **POWER/LIGHT** key and then press the **ENTER** key when prompted. If the **ENTER** key is not pressed within 10 seconds of being prompted, the receiver will turn “OFF”. Wait for the unit to scroll through the start-up screens.

To turn the unit “OFF”, press and hold the same **POWER/LIGHT** key. This will start a shutdown sequence that counts down the seconds until the receiver actually turns “OFF”. To immediately turn the receiver “OFF”, release and press the **POWER/LIGHT** key again. To cancel the shutdown sequence, press any other key.

First Time Use - Initializing the Receiver

Turn your receiver ON by pressing the **POWER/LIGHT** key and the **ENTER** key, when prompted. Since this is the first time you have used your receiver, a screen will be displayed prompting you to initialize your receiver. Press the **ENTER** key.

If you don't see this screen upon start-up, then your receiver was previously initialized. To reinitialize, press the **MENU** key, highlight **SETUP** and press **ENTER**.



Arrow icons displayed in the lower right hand corner of a screen indicate which arrow keys are active for that screen.

INPUT LOCATION INFORMATION

When the **REGION** screen appears, shown at right, complete the following steps:

Use **UP/DOWN ARROW KEYS** to highlight the region where you are located.



Use **UP/DOWN ARROW KEYS** to highlight country, province or state where you are located.



The Elevation screen appears.

Use the **ARROW** keys to enter your present elevation.



If this is not the first time you have used your receiver, or if it is the first time but your receiver has already begun acquiring satellite signals, time and date may have already been received from a satellite and you will not be prompted for time and date.

SETTING LOCAL TIME AND DATE

Use the following steps to set your local time and the date:

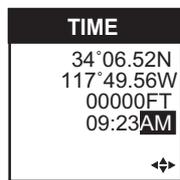
From the **TIME** field on the Elevation screen.

Use the **ARROW** keys to enter the local time and toggle between AM and PM.



From the **DATE** field on the Elevation screen.

Use the **ARROW** keys to input the date.



Your MAP 410 will not automatically change due to daylight savings. You will have to reset the time using **SETUP** as explained in the *Customizing* section.

SELECTING PRIMARY USAGE

You can choose what mode your receiver is operating in, either MARINE or LAND. The default setting is MARINE.

During Initialization
at the Preference
screen.

Use the ARROW keys
to toggle between
MARINE and LAND.



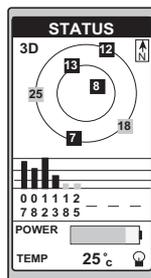
The following chart shows the terminology that your MAP 410 uses while in land or marine mode. **For purposes of this manual, it will be assumed that the receiver is in the marine mode.**

Terminology	Land	Marine
Speed	SPD	SOG
Bearing	BRG	BRG
Distance	DST	DST
Heading	HDG	COG
Velocity Made Good	VMG	VMG
Course To Steer	CTS	CTS
Estimated Time of Arrival	ETA	ETA
Time To Go	TTG	ETE
Cross Track Error	XTE	XTE
Recorded Position	Landmark (LMK)	Waypoint (WPT)
Units of Measure	MILES/MPH or KM/KPH	NM/KNOTS

TAKING A POSITION FIX

Once you have chosen the primary usage for your receiver, the *STATUS* screen will be displayed. At this point, you should go outside in an area where you can get a clear view of the sky. The MAP 410 will begin receiving data from the satellites in view and will display the progress on the *STATUS* screen.

Once your receiver has computed a position fix, the *MAP* screen will be displayed. If the *MAP* screen has been turned off then the *POSITION* screen will be displayed.

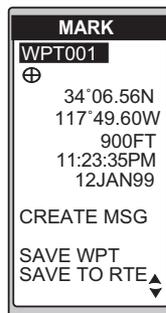


SAVING A WAYPOINT

Once your receiver has computed your current position fix, you may save this position as a waypoint. Use the following keystrokes:

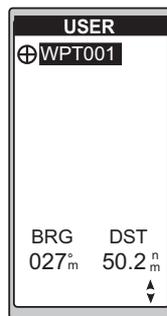


For further information on saving your position with a user-generated name or a receiver-generated name, refer to the *Basic Operations* section of this manual.



CREATING A GOTO ROUTE TO YOUR SAVED WAYPOINT

Once this fixed position has been saved in your receiver, travel to another location away from the saved position to create a route back to the saved waypoint. Use the following keystrokes:



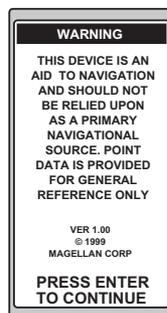
You will be returned to the screen you had been previously viewing.

BASIC OPERATION

This section explains the various functions of your MAP 410 and is organized in order of usage and are accompanied by screen representations and keystroke diagrams.

Power Up Sequence

Your receiver is powered on by pressing the **POWER/LIGHT** key and then the **ENTER** key within 15 seconds after the *WARNING* screen is displayed. On power up, the MAP 410 will display the *MAGELLAN LOGO/START UP* screen, the *WARNING/COPYRIGHT* screen and then you will press **ENTER** to switch to the *STATUS* screen. The receiver begins searching the sky for satellites and begins the process of computing a position fix.



NAV Screens

There are nine *NAV* (navigation) screens which provide you with necessary information you will need to use the MAP 410 as a navigational tool. The screens are: *SAT STATUS*, *POSITION*, *NAV1*, *COMPASS*, *NAV2*, *MAP*, *ROAD*, *SPEED* and *TIME*.

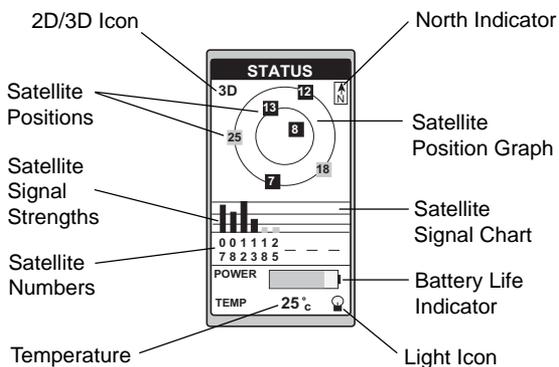
NAV screens are viewed by pressing the **NAV** key from any screen. You can scroll through the *NAV* screens by repeatedly pressing the **NAV** key. You can also scroll through the screens in the opposite direction with the **QUIT** key.

All screens, except the *SAT STATUS* and *POSITION* screens, can be disabled by turning them OFF in the *NAV SCREENS* section of *Setup*.

THE SAT STATUS SCREEN

The *SAT STATUS* screen will be the first screen displayed, after the *COPYRIGHT* screen, once the unit is turned on. This screen shows you the general well-being of your MAP 410 by showing you satellite status, signal strengths, battery life and temperature.

The satellite positions are displayed in the Satellite Position Graph with the satellite signal strengths on the Satellite Signal Chart.



On the Satellite Position Graph and the Satellite Signal Chart, satellites displayed in gray have weak signal strengths while satellites in black have strong signal strengths. On the Satellite Signal Chart, satellites still receiving information will display an empty bar.

The bottom of the *SAT STATUS* screen displays remaining battery power and ambient temperature of the receiver. Power shown is the estimated battery life when the receiver is operating on battery power.

Once the receiver has computed a position fix, the *SAT STATUS* screen will be replaced by the *POSITION* screen.

Changing Temp Units and Calibration in the STATUS SCREEN

You have two options for customizing the *SAT STATUS* screen; *TEMP UNITS* and *TEMP CALIB*.

Selecting Temp Units:

From the Sat Status screen.

MENU

Use UP/DOWN ARROW KEYS to highlight *TEMP UNITS*.

ENTER MARK

Use UP/DOWN ARROW KEYS to highlight *FAHRENHEIT* or *CELSIUS*.

ENTER MARK



Setting Temperature Calibration

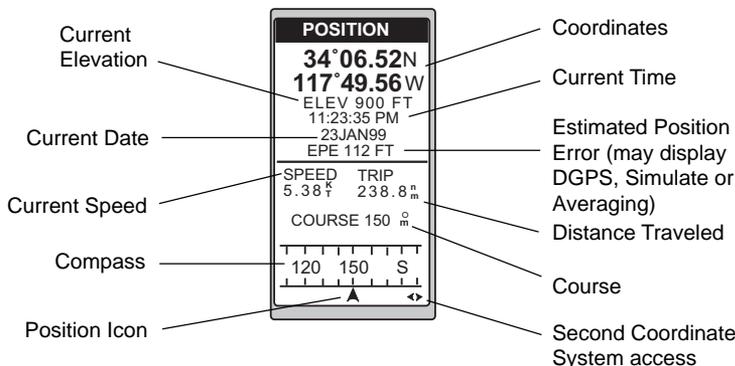
With your MAP 410 you have the ability to calibrate the temperature which creates an offset from the factory settings to accommodate the environment that you are in.

At any point in the above steps you may press the **QUIT** key, or highlight **RESET DFLT** and press **ENTER**, to exit out of the *TEMP CALIB* screen.



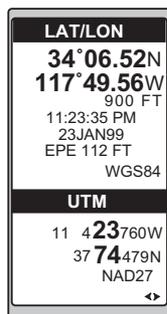
THE POSITION SCREEN

The POSITION screen displays the coordinates of your last computed position and basic navigation data. You also have the option of viewing your present position using another coordinate system.



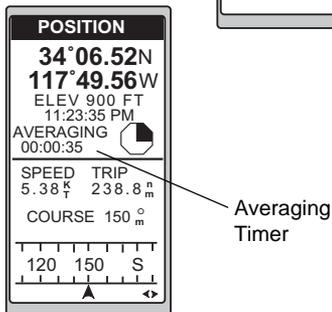
Viewing Secondary Coordinate System from the POSITION Screen

From the POSITION screen, press the LEFT/RIGHT ARROWS and the lower half of the screen changes to display your present position in secondary coordinate system. The datums that were selected under SETUP for each coordinate system are also displayed.



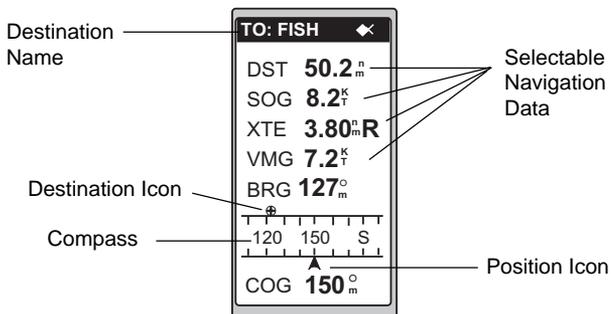
Averaging in the POSITION Screen

When navigating, your MAP 410 takes position fixes. However, when you are stationary, at zero speed, the receiver begins averaging mode. When averaging, the receiver continuously takes fixes and combines them to create an average, giving you a more accurate position fix. Once you begin moving, position averaging ends and the receiver begins displaying instantaneous position fixes while you navigate.



THE NAV 1 SCREEN

The NAV 1 screen displays your destination along with four selectable navigation measurements and a graphical compass.

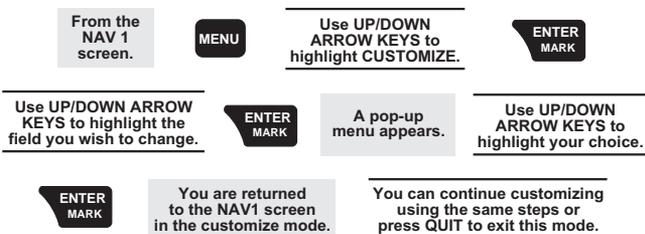


The NAV 1 screen displays a numerical reading at 30° increments with the characters N (0°), S (180°), E (90°) and W (270°). Course is shown numerically and represented by the Position Icon at the bottom of the screen. Above the compass, bearing will be displayed with the icon of the destination waypoint. When the bearing to your destination cannot be displayed within the confines of the displayed compass, an arrow will be displayed either on the right or left to indicate the steering direction.

Ideally, when you are navigating, the Position Icon and the Destination Icon should line up, one above the other.

Customizing the NAV 1 Screen

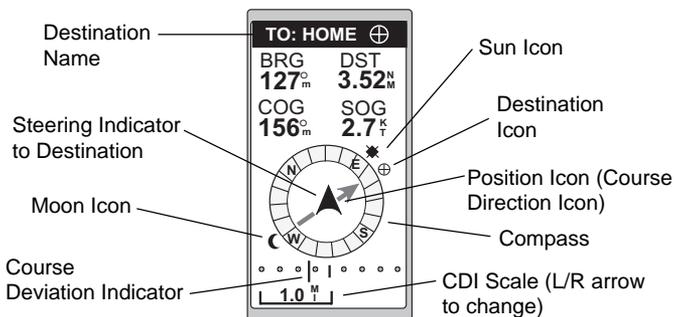
You can change the four navigational fields. You can choose from BRG, DST, SOG, COG, VMG, CTS, ETA, ETE, XTE, TRN, ALT, TME, TMP and Blank.



CUSTOMIZE	
BRG	027 ^m
DST	50.2 ^{nm}
SOG	8.2 ^{kT}
COG	056 ^o _m
VMG	7.2 ^{kT}
CTS	028 ^o _m
ETA	01:09P
ETE	02H24M
XTE	L.2 ^{nm}
TRN	L26 ^o
ALT	83 ^F _T
TME	01:09P
TMP	25 ^o _C
BLANK	

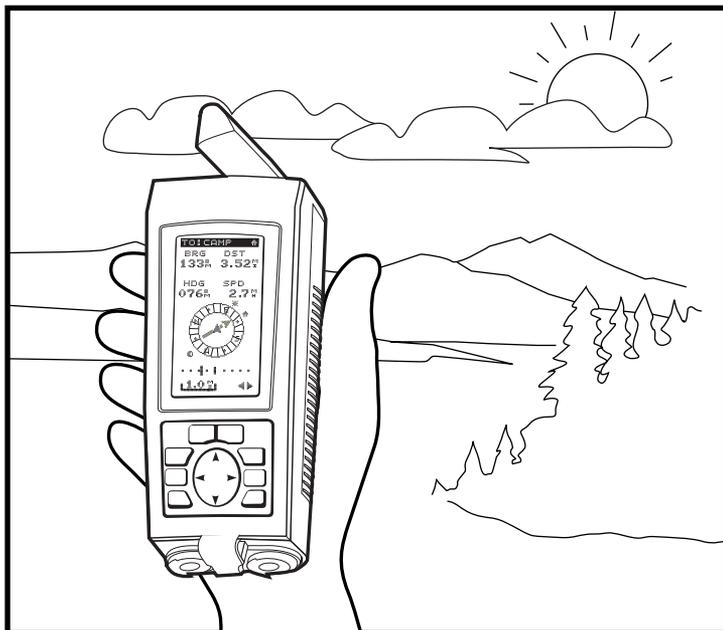
THE COMPASS SCREEN

As well as displaying four customizable navigation fields, the *COMPASS* screen provides a pointer compass and Course Deviation Indicator (CDI) to help you reach your destination.



The Course Direction icon displays your course over ground while the Steering Indicator displays the bearing of the destination relative to the course over ground. When the arrows are pointed in the same direction, you are on course. The CDI indicates your distance left or right of the course line.

The NorthFinder™ feature displays the position of the sun and moon icons, when above the horizon, which allows you to determine the direction of north and your destination. The destination icon shows the general direction in which you should be travelling.



Align the sun on the *COMPASS* screen with the sun in the sky, as shown. When aligned, the Steering Indicator will point you in the direction you should be travelling in order to reach your destination.

Customizing the Compass Screen

With your MAP 410 you have the ability to change the four navigational fields. You can choose from the following options: BRG, DST, SOG, COG, VMG, CTS, TMP and Blank. Use the following keystrokes to customize this screen:

From the Compass screen. **MENU**

Use UP/DOWN ARROW KEYS to highlight the field you wish to change. **ENTER MARK**

A pop-up menu appears. **ENTER MARK**

You are returned to the Compass screen in the customize mode. **ENTER MARK**

Use UP/DOWN ARROW KEYS to highlight CUSTOMIZE. **ENTER MARK**

Use UP/DOWN ARROW KEYS to highlight your choice. **ENTER MARK**

You can continue customizing using the same steps or press QUIT to exit this mode.

CUSTOMIZE

BRG	027° _m
DST	50.2 _{nm}
SOG	8.2 _{kt}
COG	056° _m
VMG	7.2 _{kt}
CTS	028° _m
TMP	36°C
BLANK	

THE NAV 2 SCREEN

The NAV 2 screen displays four customizable information fields. It is designed to help you see the screen when your receiver is mounted at a distance from you.

TO: CAMP ⊕

BRG	14.2° _M
COG	171° _M
SOG	11.2 _{KT}
DST	50.2 _{NM}

Customizing the NAV 2 Screen

You can change the four navigational fields. You can choose from BRG, DST, SOG, COG, VMG, CTS, ETA, ETE, XTE, TRN, ALT, TME, TMP and Blank.

From the NAV 2 screen. **MENU**

Use UP/DOWN ARROW KEYS to highlight the field you wish to change. **ENTER MARK**

A pop-up menu appears. **ENTER MARK**

You are returned to the NAV2 screen in the customize mode. **ENTER MARK**

Use UP/DOWN ARROW KEYS to highlight CUSTOMIZE. **ENTER MARK**

Use UP/DOWN ARROW KEYS to highlight your choice. **ENTER MARK**

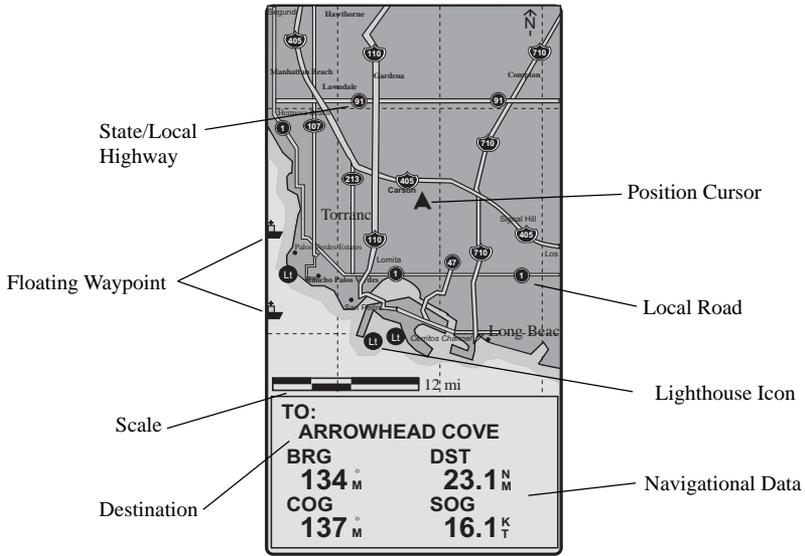
You can continue customizing using the same steps or press QUIT to exit this mode.

CUSTOMIZE

BRG	027° _m
DST	50.2 _{nm}
SOG	8.2 _{kt}
COG	056° _m
VMG	7.2 _{kt}
CTS	028° _m
ETA	01:09P
ETE	02H24M
XTE	L.2 _{nm}
TRN	L26°
ALT	83° _T
TME	01:09P
TMP	25°C
BLANK	

THE MAP SCREEN

This screen depicts your last computed position plotted against a cartographic background. As you move with your receiver, the position icon will update to reflect the direction and distance that you have moved.



This screen was enlarged for ease of reading. For a list of cartographic objects, please refer to the Cartography Legend.

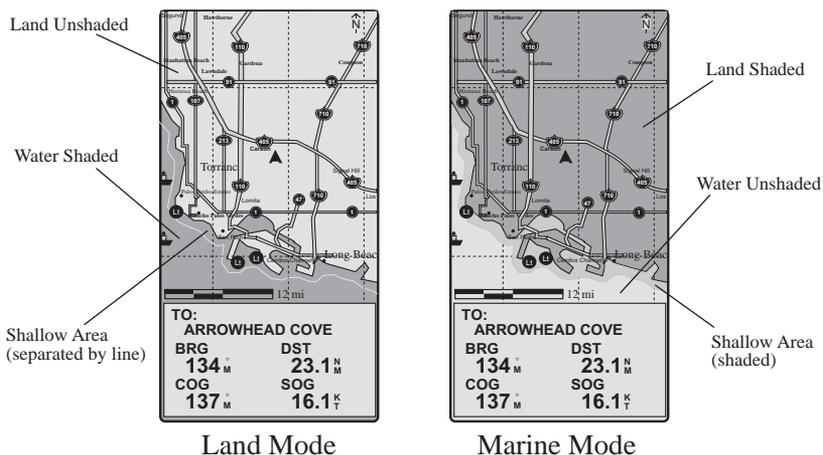
Cartography Legend

The following table outlines cartographic objects used on the *MAP* screen of your MAP 410.

 Major City (pop. >500K & Capitals)	 Railroad Tracks	 Interstate Highway
 Large City (pop. 100K to 500K)		 Federal Highway
 Medium City (pop. 20K to 100K)	 State/Country Border	 State/Local Highway
 Small City (pop. <20K)		

Cartographic Shading

For ease of viewing, the cartographic shading on the *MAP* screen in your MAP 410 is controlled by the setting you choose as your primary usage during the initialization process, Marine or Land. When your receiver is operating in Marine mode, the land is represented by gray shading while the water is clear to aid in viewing waypoints and other cartographic objects. Also, when operating in the Marine mode, more shallow areas of the water will be represented by light shading so that you can decipher depths when making your way in your watercraft. Conversely, when your receiver is operating in the Land mode, the water is represented by gray shading while the land is clear. The shallow areas of water are outlined with a white line to distinguish them from the deeper areas. Examples are shown below.



MAP Setup

The MAP setup function allows you to select the MAP orientation, Course projection and Cartographic settings. Use the following keystrokes to access the *MAP SETUP* screen:

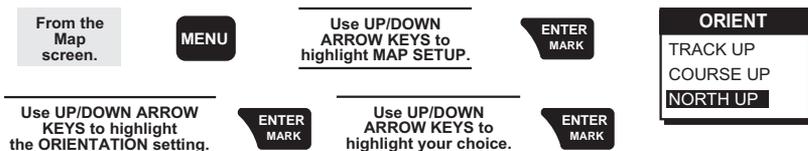


To exit *MAP* setup, press the **QUIT** key.

MAP SETUP	
ORIENTATION	NRORUP
COURSE PROJ	OFF
LAT/LON GRID	ON
MAP TEXT	ON
MAJOR CITIES	300
LARGE CITIES	200
MEDIUM CITIES	50
SMALL CITIES	8
MAJOR HWY	120
STATE/LOCAL HWY	80
LOCAL ROADS	50
RAILROADS	OFF
UPLOADED DATA	OFF

MAP Screen Orientation

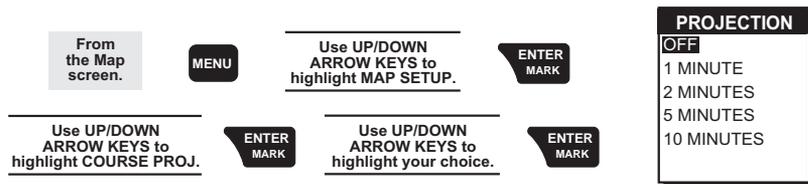
The *MAP* screen has three types of orientation to choose from; North up, Course up and Track up. North up has north located at the top of the screen, Course up has the destination of the current leg at the top of the screen and Track up has the direction you are moving at the top of the screen.



The default setting is North up.

Course Projection

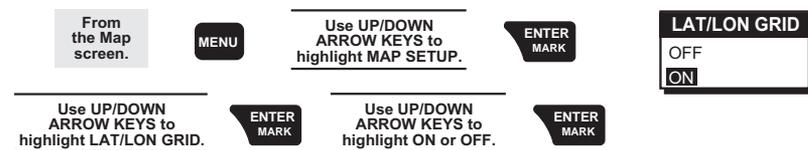
You may want to know where you will be after a specified period of time based on your current speed and heading. You can do this by setting your receiver to one of the following: OFF, 1 MINUTE, 2 MINUTES, 5 MINUTES or 10 MINUTES.



A solid black line will appear starting from your position to the projected position. The default setting is OFF.

LAT/LON Grid

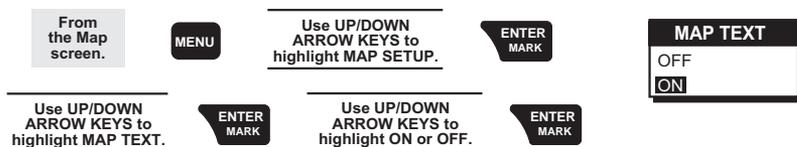
With your MAP 410 you have the option of displaying or not displaying grid lines on the *MAP* screen. If the primary navigation mode is UTM then UTM grid lines will be displayed or if Lat/Lon is the primary navigation mode then Lat/Lon grid lines will be displayed. Grid lines are displayed as gray dotted lines.



The default setting is ON.

Map Text

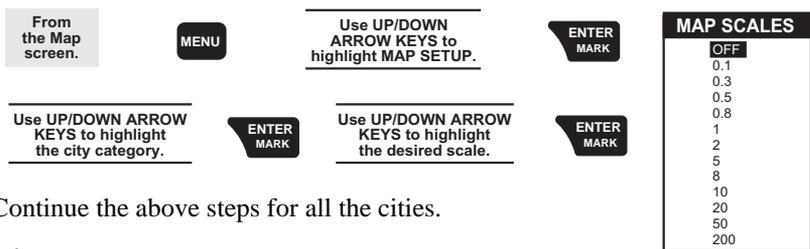
At times you may want to view the screen with less text showing to give a better view of landmarks or waypoints. You do this by turning the Map Text off using the following keystrokes.



Turning the text off will not turn off your waypoints or landmarks, you do that on the second page of the *MAP SETUP* screen. The default setting is ON.

Cities

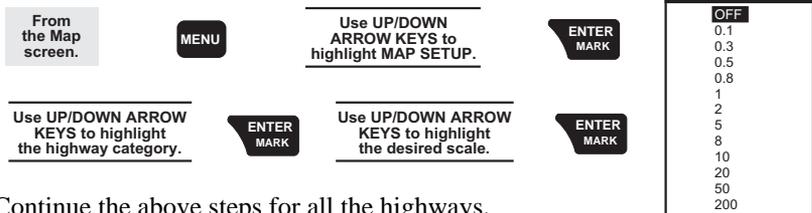
This function allows you to decide if, and at what scale, the different categories of cities will be displayed on the *MAP* screen. This includes the four categories of cities listed on the *MAP SETUP* screen; MAJOR CITIES, LARGE CITIES, MEDIUM CITIES and SMALL CITIES. Each category is controlled individually.



Continue the above steps for all the cities.

Highways

This function allows you to decide if, and at what scale, the different categories of highways will be displayed on the *MAP* screen. This includes the three categories of highways listed on the *MAP SETUP* screen; MAJOR HWY, STATE/LOCAL HWY and LOCAL ROAD. Each category is controlled individually.



Continue the above steps for all the highways.

Railroads

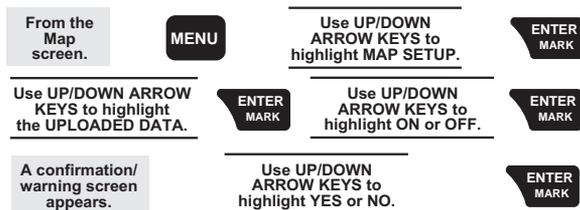
This function allows you to decide if, and at what scale, railroads will be displayed on the *MAP* screen.



MAP SCALES	
OFF	
0.1	
0.3	
0.5	
0.8	
1	
2	
5	
8	
10	
20	
50	
200	

Enabling/Disabling Uploaded Data

This function allows you to turn data that is uploaded into your receiver either ON or OFF.



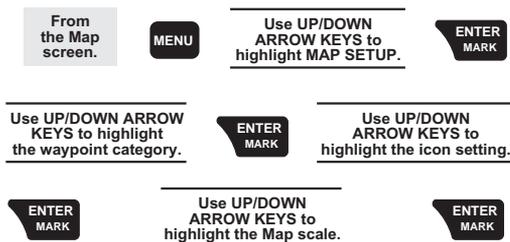
MAP SETUP	
ORIENTATION	NORUP
COURSE PROJ	OFF
LAT/LON GRID	ON
MAP TEXT	ON
MAJOR CITIES	300
LARGE CITIES	200
MEDIUM CITIES	50
SMALL CITIES	8
MAJOR HWY	120
STATE/LOCAL HWY	80
LOCAL ROADS	50
RAILROADS	OFF
UPLOADED DATA	OFF



Turning OFF uploaded data will erase all routes contained in your receiver's memory.

Waypoints

This function allows you to decide if, and at what scale, waypoints will be displayed on the *MAP* screen. You will have the options of OFF, **ICONS ONLY** or **ICONS/NAMES** plus the choice of what scale you want them to be displayed on the *MAP* screen.



USER	
OFF	
ICONS ONLY	
ICONS/NAMES	

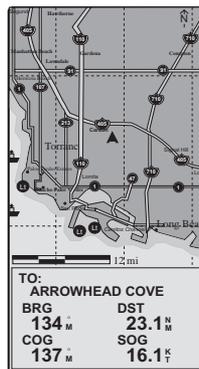
MAP SCALES	
0.1	
0.2	
0.3	
0.5	
0.8	
1	
2	
5	
8	
10	
20	
50	
200	

Continue with these steps until all of the settings are complete. The default setting for Waypoints is **ICONS/NAMES** and a scale of 2 miles.

Data Window

On the bottom of the *MAP* screen a data window is shown that contains the name of the destination waypoint for the current leg of the active route as well as the bearing (BRG) and distance (DST) to the destination waypoint of the current leg. Also displayed are the course over ground (COG) and speed over ground (SOG). The cartography scale is displayed above the window.

↑
N
|
If the receiver's orientation is set to Track up or Course up, the North arrow will appear in the upper right hand corner which points in the direction of north.



When the receiver is first turned on and the map screen accessed for the first time, the map will center on the current or last position computed and the scale will be the last used map scale.

Setting Hide/Show Data

This function allows you to hide or show the Data Window on the *MAP* screen. When the Data Window is displayed the option on the menu will be HIDE DATA and when the Data Window is hidden the option will be SHOW DATA. Use the following keystrokes to hide or show the Data Window:



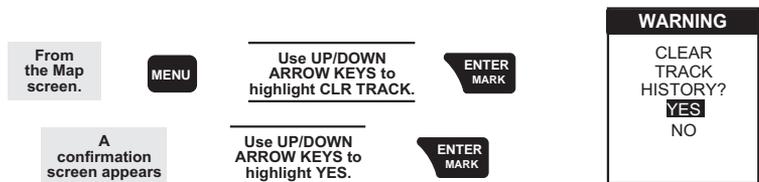
Track History

This function allows you to select the track history interval or turn it off. Using TRACK HISTORY records where you have been by automatically storing locations, as “dropping bread crumbs”, from your starting point as you travel. This is useful when you want to return to your starting point. The default setting is AUTO which, depending on your speed and bearing, automatically leaves “bread crumbs” displaying your track. The AUTO setting makes use of the SmartTrack feature which stops leaving “bread crumbs” when your speed is zero, leaves a lot of “bread crumbs” when you are making a turn and leaves fewer “bread crumbs” when you are traveling in a straight line. This keeps your track looking more like the actual path you traveled instead of jagged lines. Your track history will be displayed on the map using a black dotted line.



Clear Track

You have the ability to clear the track history from your *MAP* screen, thus freeing up space to view other navigational data.



Routes

Routes will be displayed on the *MAP* screen as a black line for each leg, separated by the icons representing the waypoints that make up the legs of the route.

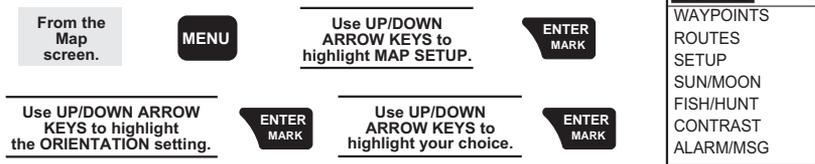
MAP Scale

The map scale appears at the lower left hand corner of *MAP* screen unless the Data Window is displayed. When the Data Window is displayed, the map scale will appear above the window. The map scale represents the distance on the map scaled to half the width of the screen. The map scale bar is shaded as shown to display the 1/2 and 1/4 scale distances. The map scale distance appears to the right of the scale.



Map Find

This allows you to find a waypoint anywhere on the *MAP* screen by using a few keystrokes and scrolling through the list of waypoints. Use the following keystrokes to find a specific waypoint:



After completing the above steps you will be returned to the *MAP* screen with the cursor over the waypoint that was just selected.

Panning Around the MAP

While in the *MAP* screen you can use the 8-way **ARROW KEYS** to pan around the screen. This allows you to scan the *MAP* to see what your surroundings are or where a specific waypoint is located in relation to your current position. While panning, the cursor will be displayed as an icon representing crosshairs.



Pressing the **QUIT** key will center the *MAP* screen on your present position and hide the crosshairs.

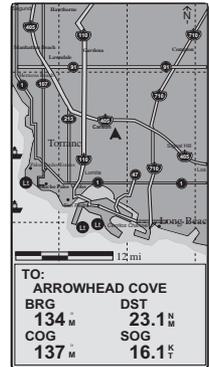


When panning around the *MAP* screen, the screen orientation will lock into its current setting, as was designated in **SETUP**, and will unlock by pressing the **QUIT** key or exiting and returning back to the *MAP* screen.

Accessing WPTs from the MAP

When the cursor is placed over the icon of a waypoint, the name, bearing, distance and position of that waypoint are displayed. You also have the ability to obtain information regarding that waypoint above and beyond what is displayed on the screen. While over a waypoint icon, press the **MENU** key and highlight **WPT INFO** and press **ENTER**. The **WPT INFO** screen is now displayed showing further information about this waypoint.

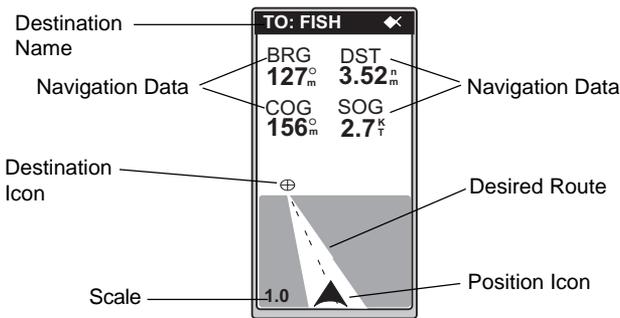
If the cursor is placed over a cartographic object for more than one second, a window appears identifying the object. Pressing the **QUIT** key will hide the window.



THE ROAD SCREEN

The **ROAD** screen displays four customizable navigation fields, at the top of the screen, as well as a display to show your position on the desired route.

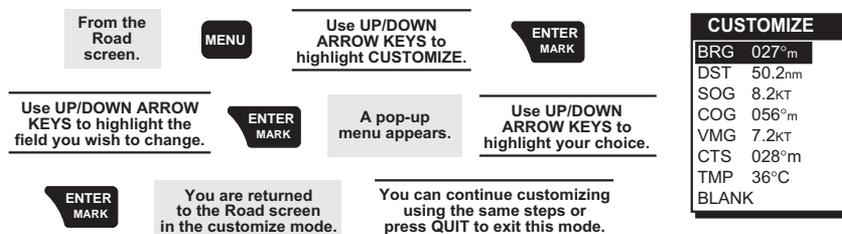
At the top of the screen, the destination name is displayed along with navigation data fields. The pictorial road screen shows your position in



relation to your desired route, as well as your cross track error. The road shows the direction in which you should be travelling to reach your destination; when the destination icon is straight ahead, you are on course. If you are off course, such that the destination icon is off the screen, an arrow icon will appear to point you in the direction to get back on course.

Customizing the ROAD Screen

You can change the four navigational fields. You can choose from BRG, DST, SOG, COG, VMG, CTS, TMP and Blank.

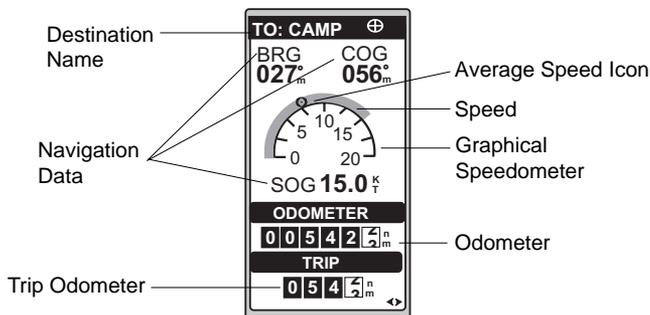


Changing the Scale

You have the ability to change the scale on the ROAD screen. To increase the scale, press the **ZOOM OUT** key and to decrease the scale, press the **ZOOM IN** key.

THE SPEED SCREEN

While using the SPEED screen, you can view the graphical speedometer, odometer and trip odometer as well as the numerical bearing, course over ground and speed over ground.



The top of the screen displays the destination name, bearing and course. The Graphical Speedometer is shown with a Circumference Bar that moves clockwise around the Speedometer to indicate instantaneous speed. The scale for the Speedometer is adjustable by using the **RIGHT/LEFT ARROWS**, as well as the **ZOOM IN** and **ZOOM OUT** keys, to increase or decrease the scales. The Average speed is represented by the icon on the Speedometer and can be customized.

Resetting the Odometer

To reset the odometer use the following keystrokes:

From the
Speed
screen.

MENU

Use UP/DOWN
ARROW KEYS to
highlight ODOM RESET.

**ENTER
MARK**

A pop-up
confirmation
window appears.

Use UP/DOWN
ARROW KEYS to
highlight YES or NO.

**ENTER
MARK**



Resetting the Trip Odometer

Use the following keystrokes to reset your MAP 410's trip odometer:

From the
Speed
screen.

MENU

Use UP/DOWN
ARROW KEYS to
highlight TRIP RESET.

**ENTER
MARK**

A pop-up
confirmation
window appears.

Use UP/DOWN
ARROW KEYS to
highlight YES or NO.

**ENTER
MARK**



Setting the Speed Average

You may want to reset the Speed Average field in your receiver. You can choose from TRIP, 5, 30 seconds, 1, 5 minutes or 1 hour. The TRIP option is the average over the whole trip. The default is 30 seconds.

From the
Speed
screen.

MENU

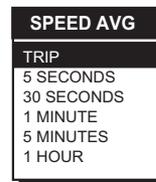
Use UP/DOWN
ARROW KEYS to
highlight SPEED AVG.

**ENTER
MARK**

A pop-up
window
appears.

Use UP/DOWN ARROW KEYS
to highlight TRIP, 5 SECONDS, 30
SECONDS, 1 MINUTE, 5 MINUTES or 1 HOUR.

**ENTER
MARK**



THE TIME SCREEN

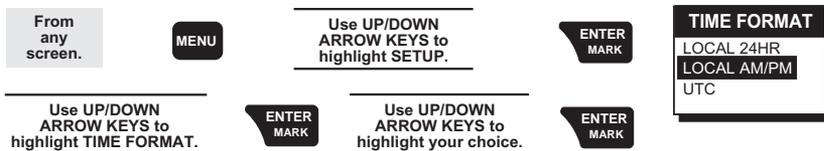
The *TIME* screen displays the current time, estimated time enroute (ETE), time of arrival and elapsed time in regards to the route you are navigating in. The first data field can be customized to correct the current time and to select the time format.



The *TIME* screen defaults to OFF. To view this screen you will need to turn it ON. See *Enabling/Disabling NAV Screens* section for further details.

Selecting TIME Format

You may need to correct the current time or change the time format. Your choices for time format are LOCAL 24HR, LOCAL AM/PM and UTC.



The term waypoint is used when your receiver is in the Marine mode and the term landmark is used in the Land mode.

NAV SCREEN DEFAULTS

The following chart identifies what the default states are for the nine (9) NAV screens displayed in your MAP 410. With the exception of the *POSITION* screen and *SAT STATUS* screen, you can turn the NAV screens off using the procedures found in the *Enabling/Disabling the NAV Screens* section of this manual.

NAV Screen	Default ON or OFF
SAT STATUS	ON
POSITION	ON
NAV1	OFF
COMPASS	ON
NAV2	ON
MAP	ON
ROAD	OFF
SPEED	OFF
TIME	OFF

Working with Waypoints (WPTs)

Waypoints and landmarks are positions that are saved in your receiver's memory and used to create routes. For purposes of this manual, the term waypoint is used since the default setting of your MAP 410 is marine. This section tells you how to create, save, edit, delete, project, sort and find waypoints. You can store up to 500 waypoints which are used to create routes for navigation.

THE WAYPOINT MENU

The *Waypoint Menu* lists the available categories of waypoints that you can choose from when navigating using your MAP 410.

WAYPOINTS
USER
AIRPORTS
RAIL STOPS
WATER PORTS
SIGHT SEEING
HISTORIC
MUSEUMS
PARKS/GARDEN
AMUSEMENT
GOLF COURSES
SPORTS ARENAS

SELECTING A WAYPOINT CATEGORY

Your MAP 410 allows you to find and retrieve information on all waypoints stored in memory. You also have the ability to create, edit and delete waypoints you have stored in your receiver. There are two categories of waypoints; User and Non-User. Following are descriptions of both these categories as well as a chart that shows the functions of each.

WPT Types	Available Functions
User	<ul style="list-style-type: none">• Create• Edit• Delete• Project• Sort
Non-User	<ul style="list-style-type: none">• Find• Project• Sort

User Waypoints

User waypoints are locations that you save in your receiver's memory, including their coordinates and an icon you associate with them. These waypoints are editable by you and can be deleted when no longer needed.

Non-User Waypoints

Non-User waypoints are waypoints that are uploaded into your receiver that display destinations of interest, including their coordinates and their name. Non-User waypoints are not editable and are permanently stored in your receiver's memory and cannot be deleted unless written over by waypoints downloaded from the MapSend™ CD (see the *Accessories Appendix* for further details).

SAVING A WAYPOINT (USER ONLY)

Waypoints are used to create routes and GOTOs. You have two options when naming waypoints. You can create waypoints with either a receiver-created name or with a name you create yourself.

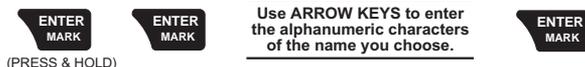
Saving Your Position Fix with a Receiver-Generated Name

From anywhere in the receiver, you can save (MARK) your position with a receiver created name. This is the fastest way to save your position.

To save a waypoint with a receiver-created name, **press and hold MARK and press and hold MARK again**. The waypoint will be saved with a receiver-generated name beginning with WPT001, WPT002 and so on.

Saving Your Position Fix with a User-Created name

Use the following keystrokes to save your current position with a name you choose.



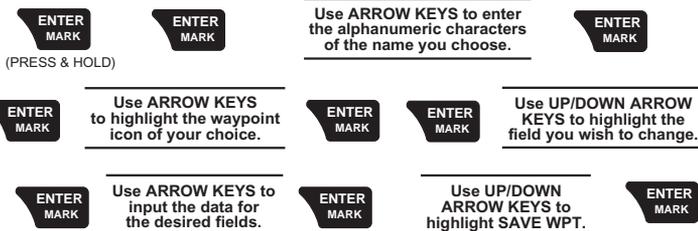
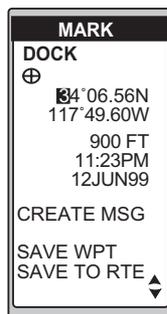
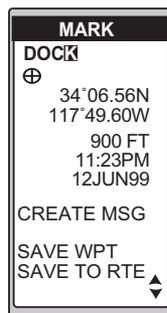
Use ARROW KEYS to enter the alphanumeric characters of the name you choose.



Use UP/DOWN ARROWS to highlight SAVE WPT.

CREATING A WAYPOINT (USER ONLY)

This allows you to create a waypoint at a position where you are not currently located.

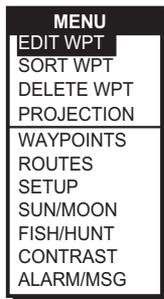
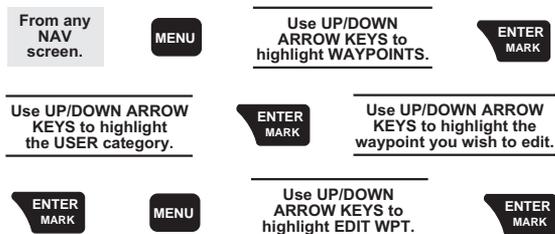


EDITING A WAYPOINT (USER ONLY)

This sections deals with the following options: editing a waypoint name, editing the waypoint icon, editing coordinates, editing elevation and editing a message.

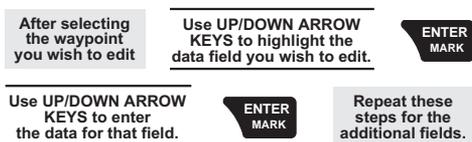
Selecting a Waypoint to Edit (User Only)

Use the following steps to select the waypoint you wish to edit:



Editing Waypoint Fields (User Only)

Use the following steps to edit the fields of the selected waypoint:



Creating/Editing/Deleting a Message in a Waypoint (User Only)

To create a message in a waypoint, follow the instructions on selecting a waypoint and then complete the following steps:



To edit a message, follow the instructions on selecting a waypoint and then complete the following steps:



To delete a message, follow the instructions on selecting a waypoint and then complete the following steps:



Saving Changes to the Selected Waypoint (User Only)

To save your changes, follow the instructions on selecting a waypoint and then complete the following steps:

Use UP/DOWN
ARROW KEYS to
highlight SAVE EDITS.

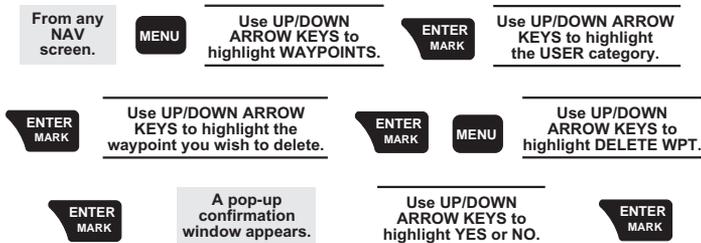


EDIT WPT	
CAMP	⊕
34°06.56N	117°49.60W
900 FT	11:23:35PM
	12JUN99
CREATE MSG	
SAVE EDITS ▾	

DELETING A WAYPOINT (USER ONLY)

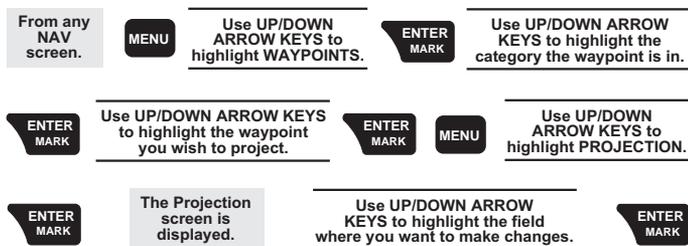
You may find that you have too many saved waypoints that you no longer use. In this case, you can delete these unnecessary waypoints. **Once these waypoints are deleted, you cannot undo this process or retrieve these deleted waypoints.**

DELETE	
DELETE WPT023?	
YES	
NO	



PROJECTING A WAYPOINT (USER & NON-USER)

This function allows you to create a waypoint at a certain distance and direction from an existing waypoint or from your current position.



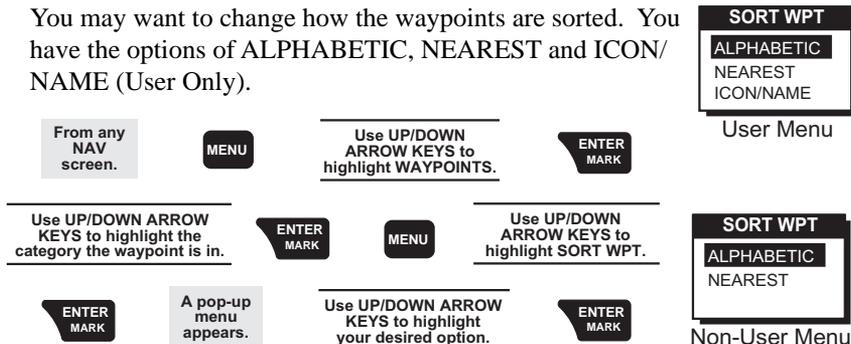
PROJECTION	
FROM	WPT003
G.C. BRG/DST	BRG 000 ^M
	DST 000 ^M
LAT/LON	34°08.56N
	117°50.60W
UTM	11 423760W
	3774479N ▾

In the G.C. (Great Circle) BRG/DST field, you can input the bearing and distance into the data fields in order to compute the projection. You can also input information into the coordinate fields.

Once you have the necessary information in the data fields and the receiver has projected the position, you can save the position by pressing **MARK**.

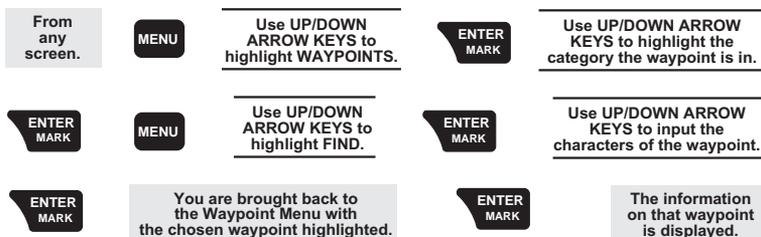
SORTING A WAYPOINT (USER & NON-USER)

You may want to change how the waypoints are sorted. You have the options of ALPHABETIC, NEAREST and ICON/NAME (User Only).



FINDING A WAYPOINT (NON-USER ONLY)

To find a particular waypoint use the following steps:

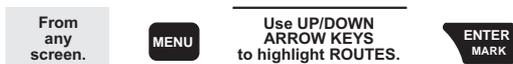


Working with Routes

A route is a planned course of travel defined by a series of waypoints stored in the receiver's memory. These waypoints are connected to form the segments or "legs" of the route. Waypoints that are saved in the receiver's memory can also be inserted into a route. There are 5 different types of routes; GOTO, BACKTRACK, MOB, MULTI-LEG and TRACK ROUTE. The MAP 410 holds 20 routes with 30 fully-reversible legs. The route function allows you to activate, create, view/edit or delete any one of the 20 routes.

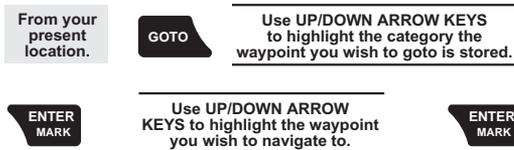
THE ROUTE MENU

The *Route* menu lists all current routes that are saved in your receiver's memory. Use the following keystrokes to access the *Route* menu:



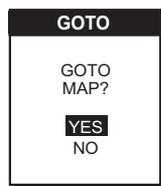
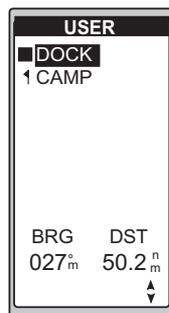
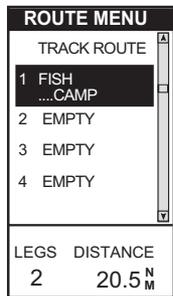
Creating a GOTO Route

A GOTO is a route which guides you from your current position to any waypoint in the receiver's memory. As an example, you can save a waypoint at your home.



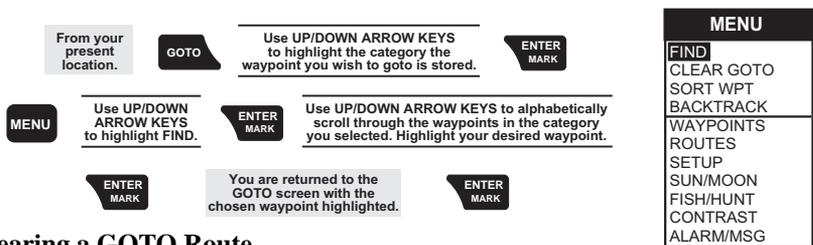
Creating a GOTO Route from the Map Screen

This function allows you to create a GOTO route directly from the MAP screen by placing the cursor over a position and pressing the **GOTO** key. You can place the cursor over a particular waypoint or destination of interest or over a position on the screen that is unmarked. When you set a GOTO to an unmarked location, your receiver marks that position and gives it a temporary waypoint name called "MAP". You will then start navigating towards "MAP". When you set a GOTO to a destination of interest or waypoint, a confirmation screen appears confirming your desire to navigate to that position, which is already named and doesn't need the "MAP" designation. Highlight YES and press the **ENTER** key and you will begin navigating towards that position.



Using FIND in a GOTO Route

When creating a GOTO route, you may need to find the waypoint you wish to navigate towards. Using the FIND function allows you to quickly find the desired waypoint. This option is not available for User waypoints.



Clearing a GOTO Route

The CLEAR GOTO function allows you to delete an active GOTO route.

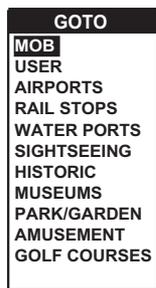


CREATING A MAN OVER BOARD (MOB) ROUTE

Another type of route is Man Over Board (MOB). The MOB route is useful when you want to instantly create a route.



When you press **ENTER**, your receiver will store the position and set a GOTO route to it. MOB waypoints are titled MOB001, MOB002, etc. If an MOB already exists, the receiver will give you the option of replacing the MOB.



Clearing a MOB

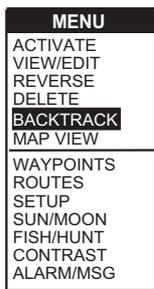
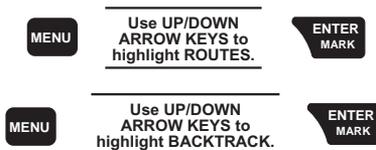
The CLEAR MOB function allows you to delete an active MOB route.

Clearing a MOB route does not delete the MOB waypoint from the receiver's memory. You will have to delete this waypoint from the waypoint list.



CREATING A *BACKTRACK ROUTE*

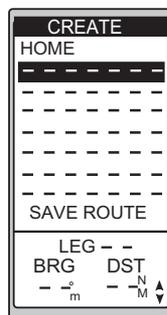
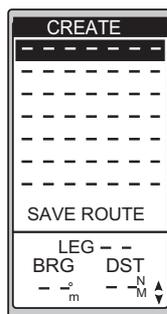
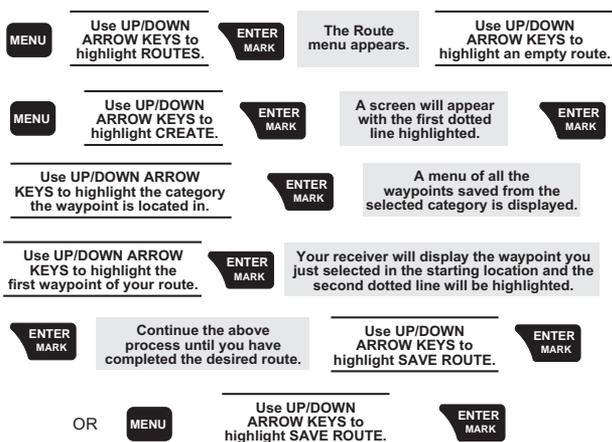
Backtrack creates a route that starts from the last point recorded in track history, using the “bread crumbs” saved, to the first point recorded for track history. By following this route, you “retrace your steps” back to the starting point.



A route will be created and given a name in the format of BXXPxx. XX is the BACKTRACK number and xx is the waypoint number ranging from 01 to 31. For example, your first backtrack will read B01P01. The backtrack waypoints will be listed in the menu just as other waypoints. BACKTRACK routes can be deleted like other routes but the waypoints in the route will not be deleted.

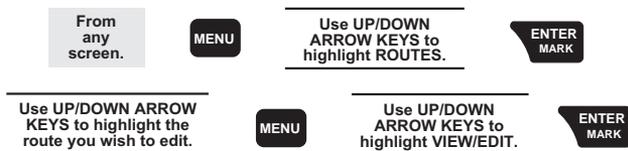
CREATING A *MULTI-LEG ROUTE*

You may want to create a route with your saved waypoints. For example, if you want to create a route from your home, to a campsite and then to a great fishing spot, you can create a route that would take you to each place.



VIEWING/EDITING A ROUTE

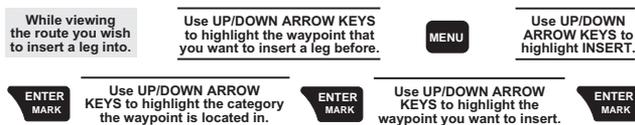
You have the ability to view/edit routes that you have created using waypoints stored in your receiver's memory. To view or edit a route, complete the following steps:



MENU
ACTIVATE
VIEW/EDIT
REVERSE
DELETE
BACKTRACK
MAP VIEW
WAYPOINTS
ROUTES
SETUP
SUN/MOON
FISH/HUNT
CONTRAST
ALARM/MSG

INSERTING A LEG

With the route you have created, from your home to a campsite, you can insert a leg in the route. For example, on your way to the campsite, you find a stream that you want to stop at on your way back. You can add the waypoint for the stream to your route.

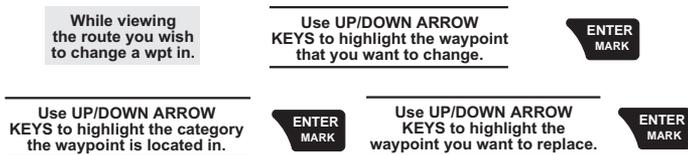


VIEW/EDIT
HOME
CAMP

SAVE ROUTE
LEG --
BRG DST
30°m 10 N A
M y

CHANGING A WAYPOINT IN A ROUTE

Using your home to campsite route, you may decide that you want to go to the fishing spot on the way to the campsite and not stop at the stream. You can replace the waypoint representing the stream with the fishing spot.



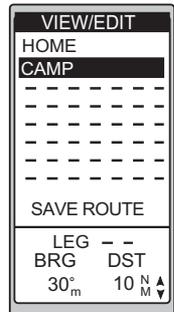
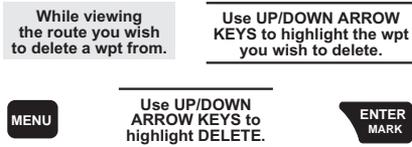
ADDING A WAYPOINT AT THE END OF A ROUTE

You may be navigating using the home to campsite route and find a great picnic spot. You want to add this to the end of your route.



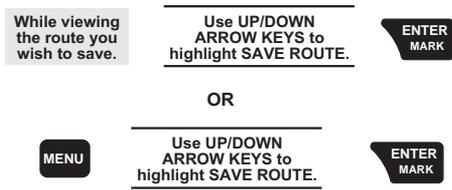
DELETING A WAYPOINT IN A ROUTE

On your next trip while navigating from the home to campsite route, you find the campsite has been closed. You may want to delete the campsite leg from your route.



SAVING A ROUTE

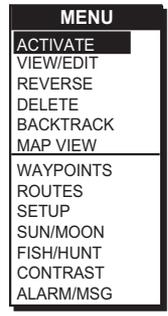
Once you have made changes to your route, you will need to save those changes.



ACTIVATING/DEACTIVATING A ROUTE

While navigating in your route from home to campsite, you may decide you want to activate (turn on) the home to campsite route and begin navigating.

To activate:



While navigating in your route from home to campsite, you may decide you want to deactivate (turn off) the route and return to it later.

To deactivate:



REVERSING A ROUTE

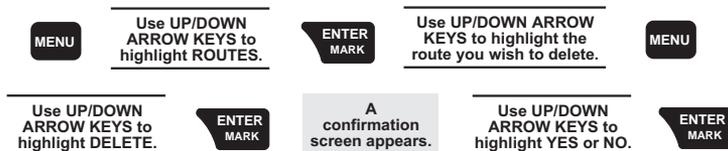
Once you have reached the end of your route, you can reverse the route to return home. For example, Camp...Fish, goes from point A to B to C to D, reversed would read from D to C to B to A and the title would read Fish...Camp.



ROUTE MENU	
TRACK ROUTE	
1	FISH ...CAMP
2	EMPTY
3	EMPTY
4	EMPTY
LEGS DISTANCE	
2	20.5 ^N M

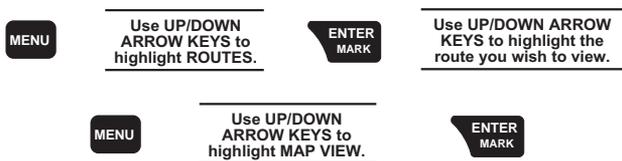
DELETING A ROUTE

After your last trip using your home to campsite route, you decide you no longer want to visit those sites. You can delete the route from your receiver.



USING MAP VIEW IN A ROUTE

While navigating in your route, you can view the entire route in a small screen overview with the use of Map View.



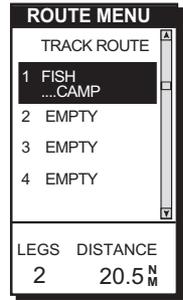
MENU
ACTIVATE
VIEW/EDIT
REVERSE
DELETE
BACKTRACK
MAP VIEW
WAYPOINTS
ROUTES
SETUP
SUN/MOON
FISH/HUNT
CONTRAST
ALARM/MSG



If your route is larger than the maximum allowable zoom scale, the route will not be displayed on the *MAP* screen.

WORKING WITH TRACKROUTE

By activating the TrackRoute at the top of the ROUTE MENU, you can navigate the track history stored in your receiver's memory. This turns the Track History logging off to keep from overwriting track points in memory. The top of the navigation screens will indicate TO: LEGXXXX where XXXX is between 0 to 1200. As you navigate with the receiver and pass individual track points, the legs will switch and countdown until you reach LEG 0 which is your final destination.



You navigate from the first created track point to the last track point.

Deactivate. When TrackRoute is turned off, Track History logging begins. The track points will be overwritten once the receiver records new position fixes.

Reverse. This reverses the TrackRoute or the track in Track History.

Delete. This erases the track points in Track History.

Backtrack. This activates BACKTRACK Route by saving the Track History as a 30 leg route and activating it.



If there are some track points that are very close to each other, the receiver may appear to skip one of these legs.

AUXILIARY FUNCTIONS

Working with Sun/Moon and Fish/Hunt

The Sun/Moon function displays solar and lunar calculations and the Fish/Hunt function displays times for excellent and good Fishing/Hunting. The default will be the current position unless the function is accessed from a waypoint menu or waypoint information screen.

Working with Sun/Moon:

From any NAV screen. **MENU**

Use UP/DOWN ARROW KEYS to highlight SUN/MOON. **ENTER MARK**

You can change the location (AT) and/or the date (ON) for this calculation. **ENTER MARK**

Use UP/DOWN ARROW KEYS to highlight the location (AT) field. **ENTER MARK**

Use UP/DOWN ARROW KEYS to highlight the date (ON) field. **ENTER MARK**

A list of your saved waypoints appears. **ENTER MARK**

Use UP/DOWN ARROW KEYS to highlight the desired category. **ENTER MARK**

Use UP/DOWN ARROW KEYS to highlight the desired waypoint. **ENTER MARK**

Use UP/DOWN ARROW KEYS to highlight the date (ON) field. **ENTER MARK**

Use ARROW KEYS to enter the date. **ENTER MARK**

SUN/MOON
 AT: POS
 ON: 23MAR98
RISE/SET
 SUN ☀️
 RISE 06:55AM
 SET 05:08PM
 MOON 🌙
 RISE 07:32PM
 SET 01:49AM
 PHASE

Working with Fish/Hunt:

You can switch between the Sun/Moon and Fish/Hunt data screens using the **LEFT/RIGHT ARROWS**. Also, you will be able to edit the AT and ON fields that you previously changed.

SUN/MOON
 AT: POS
 ON: 23MAR98
FISH/HUNT
 EXCELLENT
 FROM 06:15AM
 TO 07:45 AM
 FROM 10:24PM
 TO 11:58PM
 GOOD
 FROM 04:12PM
 TO 07:40PM
 FROM 06:37AM
 TO 10:05AM

Alarms/Messages

ACCESSING THE ALARM/MESSAGE MENU

While navigating, you may decide to set an alarm in your MAP 410. Your receiver has five types of alarms: Anchor alarm, which will notify you when your anchored boat has drifted; Arrival alarm, which will notify you when you are within the arrival circle of your destination; XTE alarm, which will notify you when you have gone off course; Proximity alarm which will notify you when you are within the proximity of any waypoints you have chosen; and GPS alarm which alerts you when your MAP 410 is receiving poor GPS signals.



ANCHOR ALARM

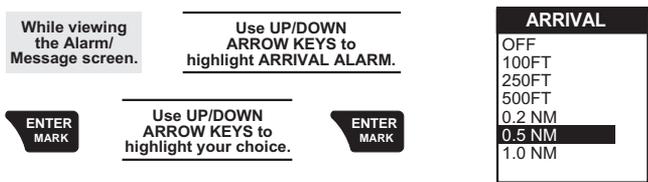
The Anchor alarm will notify that you have moved from the set position. For example, while boating, you can set your Anchor alarm. Once anchored, if your boat begins to drift from the set position, a pop-up window will appear to notify that you are moving.



The beeper will sound when the GPS position is at a distance greater than the distance you have chosen. The alarm will sound until you turn it off or the condition is corrected. The default setting is OFF.

ARRIVAL ALARM

The Arrival alarm will notify you when you are within the arrival circle of the destination waypoint.





Due to government imposed Selective Availability, the alarm settings under 100 meters, may be in error unless you are using DGPS. Do not rely on these settings for precise navigation.

GPS ALARM

At times, the GPS signals your MAP 410 receives are of poor quality and affect the accuracy of your receiver. This alarm alerts you when your receiver is receiving poor signals and it can be turned ON or OFF. The default setting is OFF.

While viewing the Alarm/Message screen.

Use UP/DOWN ARROW KEYS to highlight GPS ALARM.

GPS ALARM
OFF
ON

ENTER MARK

Use UP/DOWN ARROW KEYS to highlight your choice.

ENTER MARK

VIEWING THE ALARM/MSG MENU

MENU

Use UP/DOWN ARROW KEYS to highlight ALARM/MSG.

ENTER MARK

MENU

MENU
DEFAULTS
CLEAR MSG
WAYPOINTS
ROUTES
SETUP
SUN/MOON
FISH/HUNT
CONTRAST
ALARM/MSG

RE-SETTING ALARM DEFAULTS

After changing many of the alarm settings, you may want to restore the alarm default settings.

While viewing the Alarm/Message screen.

MENU

Use UP/DOWN ARROW KEYS to highlight DEFAULTS.

ENTER MARK

A pop-up confirmation menu appears.

Use UP/DOWN ARROW KEYS to highlight YES.

ENTER MARK

DEFAULTS
RESTORE DEFAULT SETTINGS?
YES
NO

CLEARING ALARM MESSAGES

The message buffer may become cluttered with information. You can use the CLR MSG to delete the messages.

While viewing the Alarm/Message screen.

MENU

Use UP/DOWN ARROW KEYS to highlight CLEAR MSG.

ENTER MARK

A pop-up confirmation menu appears.

Use UP/DOWN ARROW KEYS to highlight YES.

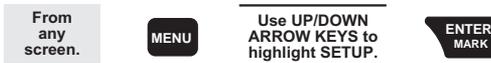
ENTER MARK

CLR MSG
CLEAR ALL MESSAGES?
YES
NO

CUSTOMIZING YOUR MAP 410

Setup

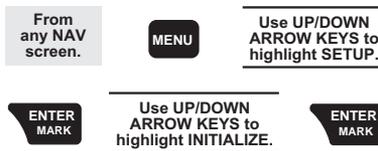
Setup allows you to initialize the receiver and set system parameters to your preference.



MENU
COORD SYS
MAP DATUM
ELEV MODE
PROJECTION
TRIP RESET
WAYPOINTS
ROUTES
SETUP
SUN/MOON
FISH/HUNT
CONTRAST
ALARM/MSG

Initialization

By initializing your receiver, you establish the initial position for the receiver. This will enable the receiver to search the sky for available satellites. You will need to reinitialize if you have travelled more than 300 miles while the receiver is turned off.

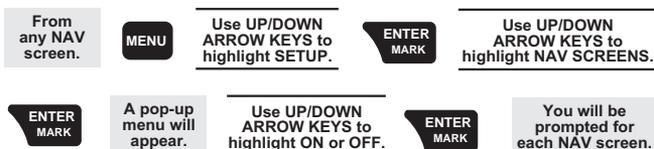


SETUP
INITIALIZE
NAV SCREENS
COORD SYSTEM
MAP DATUM
ELEV MODE
TIME FORMAT
NAV UNITS
TEMP UNITS
NORTH REF
LIGHT TIMER
BEEPER
PERSONALIZE
CLEAR MEMORY
NMEA
BAUD RATE
SIMULATE

Refer to the Getting Started section for more details.

Enabling/Disabling the NAV Screens

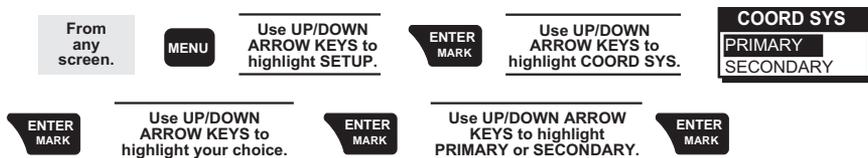
You may find that you do not use one, or more, of the nine NAV screens provided in the receiver. You have the option to disable NAV screens, except for the *SAT STATUS* and *POSITION* screens.



NAV 1
OFF
ON

Coordinate System

A Coordinate System is provided for you. This option allows you to select primary and secondary coordinates used for entering and viewing position information. The most common is LAT/LON. You can choose from LAT/LON, TD, UTM, OSGB, IRISH, SWISS, SWEDISH, FINNISH, FRENCH, GERMAN, MGRS and USER GRID. The default primary coordinate system will be Lat/Lon in Degrees/Minutes and the default secondary coordinate system will be UTM.



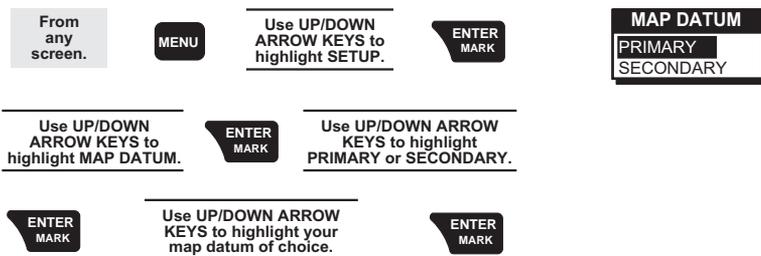
If a format is required for the coordinate system you have chosen, a pop-up menu will be displayed. Highlight your selection and press **ENTER**.



You would generally want the receiver to use position coordinates in the same map datum that is used by your maps. For example, the Irish Grid uses the Irish datum, Finnish Grid uses the KKK datum, Swedish Grid uses the RT 90 datum and the Swiss Grid uses the Swiss datum.

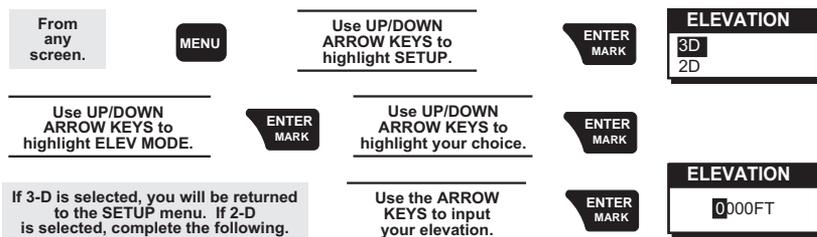
Map Datum

You can change the datum the receiver uses to compute position coordinates. You will want your receiver's datum to match the datum on the map or chart you are using. Use the map "legend" to determine the datum required for the map or chart. If you are not using a map or chart or are unsure which datum to use, select WGS84 (the default setting).



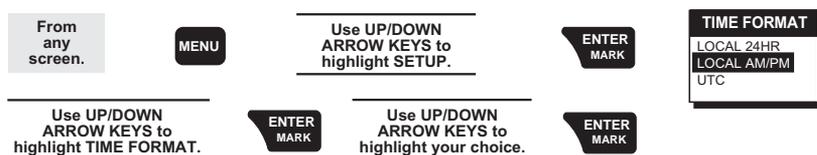
Elevation Mode

You have the option of changing your elevation mode to 2D (2-Dimensional) or 3D (3-Dimensional). You may find 2D useful if you know the elevation of your position and the elevation will not change. For example, if you are at sea level, you could use 2D because you know that your elevation is zero. The default setting is 3D.



Time Format

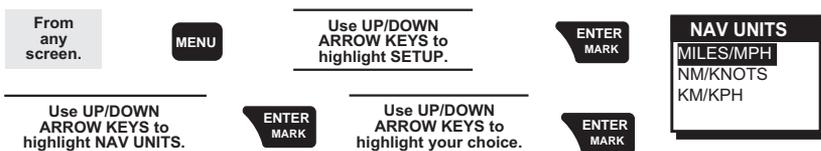
You have the option of changing the format in which the time is given. Your choices are LOCAL 24HR, LOCAL AM/PM and UTC.



If UTC is selected, the receiver will return to Setup. If LOCAL 24HR or LOCAL AM/PM are selected, a pop-up menu will be displayed prompting you to input the correct time. Use the ARROWS to input the time and press ENTER.

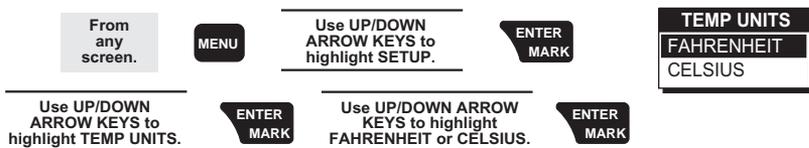
Nav Units

You can choose the units of measure used by your receiver. NAV UNITS gives you the options of MILES/MPH, NM/KNOTS and KM/KPH. Default setting is MILES/MPH for land use in the United States and KM/KPH for land use outside the United States. Default setting is NM/KNOTS for marine use.



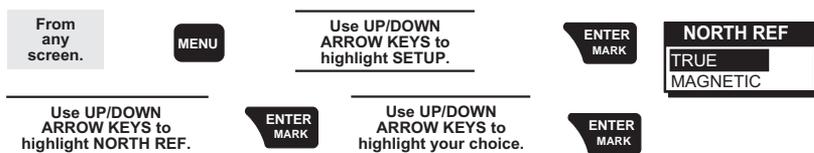
Temperature Units

You have the ability to choose between FAHRENHEIT and CELSIUS when setting the temperature units in your MAP 410.



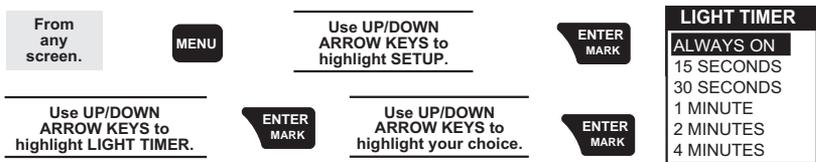
North Reference

The MAP 410 uses *magnetic north* as a default reference for all navigation computations. You can change this to *true north* (good, if you are using a map) or back to *magnetic north* (default, good to use if you are using a compass) under SETUP. The default setting is MAGNETIC.



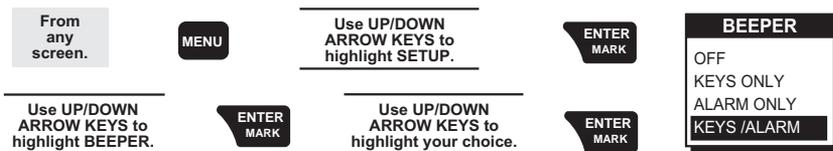
Light Timer

The light timer is a power saving function that automatically turns the light off. Once the light has been turned off by the timer, it can be turned on with the next key press. For example, suppose you select the timer setting for 30 seconds. If you press the light key to turn the light on, it will remain lit for 30 seconds and then shut off automatically, as you had selected. With the next key press, the light will turn on again for 30 seconds. This process will continue until you press the light key again to turn the light off or turn the receiver off. With the Light Timer function, you can choose the setting for the light timer. You can choose from ALWAYS ON, 15 and 30 seconds, 1, 2 and 4 minutes.



Beeper

You can select the options for when the beeper will sound. Your choices are OFF, KEYS ONLY, ALARM ONLY and KEYS/ALARM. The default setting is KEYS/ALARM.



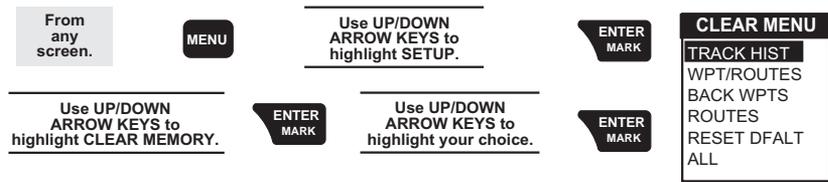
Personalize

With the personalize function, you have the option of inputting your name into the MAP 410 receiver.



Clearing Memory

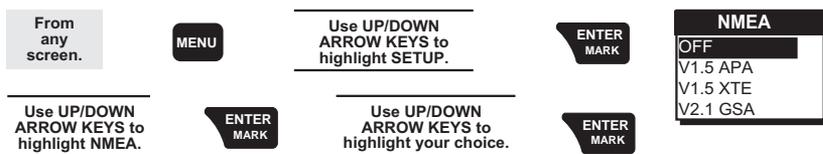
The Clear Memory function allows you to delete track history, backtrack waypoints, waypoints and routes as well as reset defaults to the factory defaults. There is also an option to delete everything in the receiver's memory. Use caution when accessing the Clear Memory function. **Once you have deleted, you cannot undo the process or retrieve this deleted data.**



If you select clear all memory, the receiver will clear all waypoints and routes, restore the default settings and then power itself off. Non-User waypoints will remain in your receiver's memory.

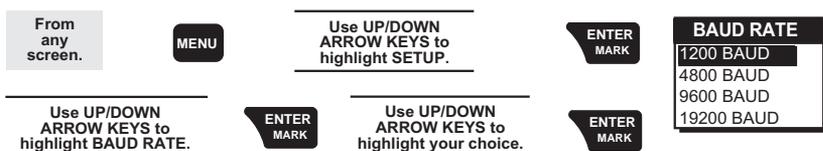
NMEA Setup

Your MAP 410 receiver can be set to output GPS data to interface with your personal computer. You can select from OFF, V1.5 APA, V1.5 XTE and V2.1 GSA. The default setting is OFF.



Setting Baud Rate

Connection to external devices requires that the baud rate of the data being sent or received by your MAP 410 be matched to the baud rate of the external device. Your choices are 1200, 4800, 9600 and 19200 baud. The default setting is 4800.



TROUBLESHOOTING

Receiver will not turn on:

1. Check to see if batteries are installed correctly.
2. Replace with four new AA alkaline batteries.

Takes more than 10 minutes to get a position fix:

1. Make sure that the antenna is pointing up, has a clear view of the sky and is a reasonable distance away from your body.
2. Check Sat Status to see where the satellites are and if the receiver is acquiring data.
3. If the receiver still does not get a position fix within 10 minutes, you may wish to repeat the initialization procedure.

Elevation jumps up and down:

1. Errors induced by the Department of Defense called Selective Availability (SA) can cause the elevation values to fluctuate.

Battery life seems shorter than it should be:

1. Make sure that you are using four AA alkaline batteries.
2. Shorter life span of the batteries can be due to excessive use of the backlight. **Turn the backlight off when not needed.**

Position coordinates on your receiver do not match the location on your map.

1. Make sure that your receiver is set up to use the same datum as your map. The map datum is generally shown in the map legend. See Map Datum under *Auxiliary Functions* for instructions on selecting the map datum in your receiver.
2. Check your LAT/LON format. Make sure that the format selected in COORDINATE SYSTEM (DEG/MIN/SEC or DEG/MIN.MM) is in the same format as the map you are using.

Commonly Asked Questions

Does the receiver adjust itself for daylight savings time?

No. You need to reset the time for changes in your area. (see *Changing Time Display*).

Will my receiver function correctly in the year 2000?

Yes. Even though the last two digits of the year are displayed, the full year designator is stored in memory.

Why won't the receiver accept the coordinates I am inputting?

The most common cause is that you are trying to enter coordinates that are in degrees/minutes while your receiver is set to degrees/minutes/seconds. Because the last two digits in degrees/minutes is in hundredths (00-99) and degrees/minutes/seconds can be no higher than 59 (00-59), inputting a number higher than 59 while in deg/min/sec results in an error and the receiver does not accept the entry.

Can I use NiCad batteries in my MAP 410?

Yes. However, the battery life of your MAP 410 will be diminished as well as the possibility of an incorrect reading on the battery life gauge with the use of NiCad batteries.

Can I attach my MAP 410 to external power?

Yes. However, this requires the optional external power cable available from your dealer or Magellan Corporation. See the Accessories section of this manual for more information.

You say my receiver should work for 12 hours on four batteries, mine doesn't last that long?

There can be two reasons. The first, and most common, reason is that you have the display backlight on. The light increases the drain on the batteries causing the decrease in battery life. The second reason is that you are using NiCad batteries. As mentioned before, while your MAP 410 will operate on NiCad batteries, the battery life is diminished.

Contacting Magellan

If after using the troubleshooting section, you are still unable to solve your operation problems, please call Magellan's Technical Service at (800) 707-9971 or via e-mail at support@mgl.com.

Representatives are available Monday through Friday from 7 AM to 5 PM, PST. Faxes can be sent to Customer Service at (909) 394-7070.

If necessary, you can also return your unit to Magellan for repair (Please call for assistance first). If possible, please notify us before shipping the unit by Parcel Post or UPS, and include a description of the problem, your name, address and a copy of your sales receipt. If your return shipping address is different, please let us know.

Please return the enclosed registration card in order to have your information on file.

With all correspondence, please state the model of your receiver and if calling, please have your unit with you.

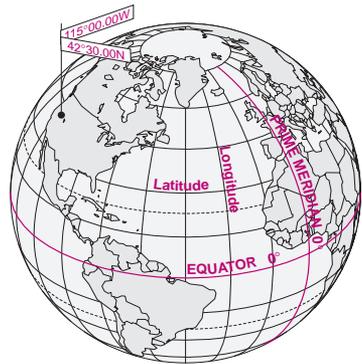
Packages should be sent to:

Magellan Corporation
960 Overland Court
San Dimas, CA 91773
ATTN: Warranty/Repair

COORDINATE SYSTEMS

Positions are locations that are described in a unique way so that one location cannot be confused with another. This is done by using a coordinate system to describe locations. Your Magellan receiver has the ability to use any one of 12 different coordinates systems; LAT/LON (latitude and longitude), UTM (Universal Transverse Mercator), OSGB, Irish Grid, Finnish, German, French, MGRS, User Grid, Swiss Grid, TD or Swedish Grid. The one you select (in SETUP) will be determined by the maps and charts you use; you would generally want the receiver to display position coordinates in the same system that is used by your maps.

LAT/LON Coordinate System. LAT/LON is the most commonly used coordinate system today. It projects lines of latitude (parallels) and lines of longitude (meridians) onto the earth's surface. Lines of latitude are the equator and the horizontal lines that are parallel to it. Lines of longitude are the vertical lines that are perpendicular to the equator and pass through the poles. A position is described as being the intersection of a line of latitude and a line of longitude.



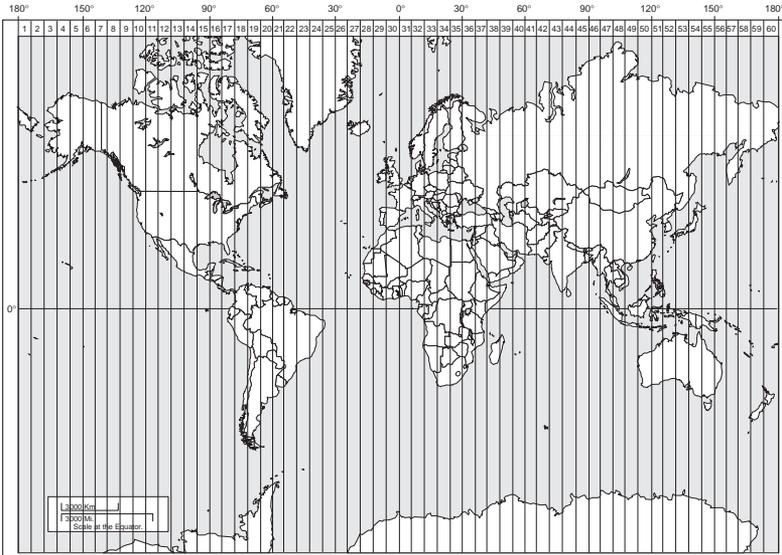
Specifically, a position is up to 90° north or south of the equator (up to the poles, which are 90°N and 90°S; the equator is 0° latitude), and up to 180° east or west of the Prime Meridian, which is 0° longitude. (The Prime Meridian passes through Greenwich, England.) Parts of a degree are minutes; there are 60 minutes (written as 60') to a degree. Minutes can also be divided into smaller units. Fractions of a minute can be expressed as decimals or as seconds. (There are 60 seconds to one minute, written as 60"). So a LAT/LON position coordinate can be expressed in two ways, which your Magellan GPS receiver displays as 25°47.50 or 25°47'30.

UTM Coordinate System. Another commonly used coordinate system is UTM (Universal Transverse Mercator), which is generally found on land-based maps and quad sheets that are produced by government map providers. On land, you may find that UTM coordinates are easier to use than LAT/LON.

UTM coordinates are easy to use, but since the model it is based on is somewhat abstract, this section is a very simplified introduction to UTM.

Instead of projecting an imaginary grid of intersecting lines onto the globe, UTM projects sections of the globe onto a flat surface. Each of these sections is called a “zone.” There are 60 zones to cover the entire earth between 84°N and 80°S (polar areas are not described by UTM). Each zone is 6° wide as projected from the earth’s center.

A UTM position is described by three elements; the zone it is in, the easting, and the northing. Eastings and northings measure how far into a zone a position is in meters. Eastings are an east/west measurement, and correspond roughly to longitude. Northings are a north/south measurement, and correspond to latitude.



NOTE: The area described by the UTM coordinate system extends to 84°N and to 80°S.

This chart shows the position of Magellan described in both LAT/LON and UTM coordinates.

LAT/LON		UTM
DEG/MIN.MM	DEG/MIN/SEC	
34°06.58N	34°06'35"N	11 4 23 818 E
117°49.56W	117°49'34"W	37 74 624 N

Time Delay Grids (TD). These are lines of position (LOPs) that are determined by the difference in length of time required to receive the Loran-C signals. Loran is a radio navigation aid and TD coordinates are clearly marked on nautical charts. Our marine GPS units can display position coordinates in TDs by converting from position fixes calculated in LAT/LON. (No measurements are being made using Loran signals).

Each Loran chain consists of one master station (designated as M) and two or more secondary stations (W, X, Y and Z). The user determines which two secondary stations will provide the most accurate position based on the angle of intersection of the LOPs.

When TD is selected in SETUP (under COORD SYS) you will be asked to input the following:

1. The GRI (also called the chain) that you will be navigating in.
2. The two secondary stations that will provide you with the best angle of LOP intersections. If you have used Loran in the past, you should simply enter the values you used before.

Other Coordinate Systems. OSGB coordinates are similar to UTM's, but describe only Great Britain. They must be used with the GBR36 datum. This coordinate system cannot be used in any other part of the world. The MAP 410 automatically selects the GBR36 datum when the OSGB coordinate system is selected in Setup. (While OSGB coordinates must be used with the GBR36 datum, the GBR36 datum can be used with LAT/LON coordinates; just be sure the map you are using uses both LAT/LON and GBR36.)



If you select OSGB in the COORD SYS portion of the SETUP MENU, be sure to change the map datum back to the one you will be using (WGS84 is the default) when changing to another coordinate system.

NMEA DATA MESSAGES

Your GPS receiver can be set to output GPS data in the NMEA 0183 version 1.5 or version 2.1 format to interface with other marine devices or equipment.

NMEA DATA MESSAGES. NMEA data is output at 4800 baud, 8, N, 1, checksum off. These settings are acceptable to most equipment and software applications. The baud rate can also be set to 1200, 9600 or 19200.

There are several NMEA output message sets, each with a slightly different application. Check documentation for your external equipment to choose the appropriate message set.

SET	OUTPUT/USAGE
V1.5.APA	BWC, APA, GLL, VTG Remote displays, version 1.5 marine autopilots
V1.5 XTE	XTE, BWC, GLL, VTG Version 1.5 Marine autopilots
V2.1 GSA	GSA, GSV, GLL, GGA, RMB, RMC, APB, and autopilots. Vers. 2.1 NMEA recommended navigation data, satellite data and autopilots.

NMEA Message Definitions

APA	Autopilot cross track error, direction to steer, status of GPS, route status, destination waypoint name, and bearing from origin to destination (old format).
APB	Revised autopilot message contains all of the above plus: heading to steer toward destination, bearing from the present position to the destination (magnetic or true).
BWC	Range and bearing to a waypoint.
GGA	GPS position, time, fix quality, number of satellites used, HDOP (Horizontal Dilution of Precision), differential reference information, and age.
GLL	GPS-derived latitude, longitude, and time of fix.
GSA	GPS receiver operating mode, satellites used in the navigation solution reported by the \$--GGA sentence and DOP (Dilution of Precision) values.
GSV	Number of satellites in view, satellite numbers, elevation, azimuth, and SNR value.
RMB	Data status, cross track error, direction to steer, origin, destination landmark, landmark location, bearing to destination, and velocity toward the destination.
RMC	Time, latitude, longitude, speed, heading, and date.
VTG	Track (magnetic and true) and groundspeed (knots and KPH).

NMEA OUTPUT DATA FORMAT - VERSION 1.5

APA Autopilot Format A

1 2 3 4 5 6 7 8 9 10
APA,A,A,X.XX,L,N,A,A,XXX.,M,CCC

1 OR'ed Blink and SNR (A = valid, V = invalid)
2 Cycle Lock (A = valid, V = invalid)
3-5 Cross Track, Sense (L = steer left, R = steer Right), N.Mi. Units
6-7 Arrival Circle, Arrival Perpendicular (crossing of the line which is perpendicular to the course line and which passes through the destination waypoint.
8-9 Bearing dest. WPT. from origin WPT., Magnetic
10 Dest WPT. identifier

BWC To Selected Waypoint, Great Circle

1 2 3 4 5 6 7 8 9 10 11 12
BWC,XXXXXXXX,XXXX.XX,N,XXXXX.XX,W,XXX.,T,XXX.,M,XXX.X,N,CCCC

1 UTC of Bearing
2-3 Lat, N or S of waypoint
4-5 Long, E or W of waypoint
6-7 Bearing, True
8-9 Bearing, Magnetic
10-11 Distance, naut. miles
12 Waypoint identifier

GLL Geographic Position — Latitude/Longitude

1 2 3 4 5 6
GLL,1111.11,a,yyyyy.yy,a,hhmmss.ss,A*hh

1-2 Latitude, N/S
2-3 Longitude, E/W
4 UTC of position
6 Status A = Data valid

VTG Actual Track and Ground Speed (SPD)
 1 2 3 4 5 6 7 8
 VTG,XXX.,T,XXX.,M,XX.X,N,XX.X,K
 1-2 Track degrees, True
 3-4 Track degrees, Magnetic
 5-6 Speed, knots
 7-8 Speed, kilometers/hour

XTE Cross Track Error
 1 2 3 4 5
 XTE, A,A,X.XX, L,N
 1 Or'ed value Blink and SNR (A=Valid, V=Invalid)
 2 Cycle Lock, (A=Valid, V=Invalid)
 3 Cross Track Error
 4 Steer Left of Right (L = Left, R = Right)
 5 Units (N.Mi.)

NMEA 0183 VERSION 2.1

APB Autopilot Sentence "B"
 1 2 3 4 5 6 7 8 9 10 11 12 13 14
 APB,A,A,x.x,a,N,A,A,x.x,a,c-c,x.x,a,x.x,a*hh
 1 Status: A = Data valid
 V = Loran-C Blink or SNR warning
 V = general warning flag for other
 navigation systems when a
 reliable fix is not available.
 2 Status: V = Loran-C cycle lock warning flag
 A = OK or not used
 3 Magnitude of XTE
 4 Direction to steer (L, R)
 5 XTE units, nautical miles
 6 Status: A = arrival circle entered
 7 Status: A = perpendicular passed at waypoint
 8-9 Bearing origin to destination, M/T
 10 Destination waypoint ID
 11-12 Bearing, present position to destination, Magnetic or True
 13-14 Heading to steer to destination waypoint, Magnetic or True

GGA Global Positioning System Fix Data

1 2 3 4 5 6 7 8 9 10 11
GGA,hhmmss.ss,1111.11,a,yyyyy.yy,a,x,xx,x.x,x.x,M,x.x,
12 13 14
M,x.x,xxxx*hh

1 UTC of Position

2-3 Latitude - N/S

4-5 Longitude - E/W

6 GPS Quality Indicator

0 = fix not available or invalid

1 = GPS SPS Mode, Fix valid

2 = Differential GPS, SPS Mode, fix valid

3 = GPS PPS Mode, fix valid

7 Number of satellites in use (00-12, may be different from the number in view)

8 Horizontal dilution of precision

9 Antenna altitude above/below mean sea level

10 Units of antenna altitude, meters

11 Geoidal separation - difference between the WGS-84 earth ellipsoid and mean sea level (geoid), "-" = mean sea level below ellipsoid

12 Units of geoidal separation, meters.

13 Age of Differential GPS data - Time in seconds since last SC104 Type 1 or 9 update, null field when DGPS is not used

14 Differential reference station ID, 0000-1023

GLL Geographic Position — Latitude/Longitude

1 2 3 4 5 6
GLL,1111.11,a,yyyyy.yy,a,hhmmss.ss,A*hh

1-2 Latitude, N/S

2-3 Longitude, E/W

4 UTC of position

6 Status A = Data valid

V = Data not valid

GSA GPS DOP and Active Satellites

GPS receiver operating mode, satellites used in the navigation solution reported by the \$--GGA sentence, and DOP values.

```
1 2 3                               4 5 6 7
GSA,a,x,xx,xx,xx,xx,xx,xx,xx,xx,xx,xx,xx,x.x,x.x,x.x*hh<CR><LF>,
1 Mode: M=Manual, forced to operate in 2D or 3D mode,
      A=Automatic, allowed to automatically switch 2D/3D
2 Mode: 1= Fix not available, 2=2D, 3=3D
3-4 PRN numbers of satellites used in solution (null for unused
    fields)
5 PDOP
6 HDOP
7 VDOP
```

GSV GPS Satellites in View

Number of satellites (SV) in view, PRN numbers, elevation, azimuth and SNR value. Four satellites maximum per transmission, additional satellite data sent in second or their message. Total number of messages being transmitted and the number of messages being transmitted is indicated in the first two fields.

```
1 2 3 4 5 6 7                               8 9 10 11
GSV,x,x,xx,xx,xx,xxx,xx.....xx,xx,xxx,xx*hh<CR><LF>
1 Total number of messages, 1 to 3
2 Message number, 1 to 3
3 Total number of satellites in view
4 Satellite PRN number
5 Elevation, degrees, 90° maximum
6 Azimuth, degrees True, 000 to 359
7 SNR (C/No) 00-99 dB, null when not tracking
8-9 2nd-3rd SV
10-11 4th SV
```

Notes: 1) Satellite information may require the transmission of multiple messages. The first field specifies the total number of messages, minimum value 1. The second field identifies the order of this message (message number), minimum value 1.

2) A variable number of "PRN-Elevation-Azimuth-SNR" sets are allowed up to a maximum of four sets per message. Null fields are not required for unused sets when less than four sets are transmitted.

RMB Generic Navigation Information (immediately follows RMC)

```
1 2 3 4 5 6 7 8 9 10 11 12 13 14
RMB,A,X.XX,a,c--c,c--c,1111.11,a,yyyyy.yy,a,x.x,x.x,x.x,A *hh
1 Data Status (A = valid, V = invalid)
2-3 XTE, naut. miles and direction to steer (L or R) [If XTE
exceeds 9.99 NM, display 9.99 in field 2.]
4 Origin waypoint ID
5 Destination waypoint ID
6-7 Destination Waypoint Latitude (N or S)
8-9 Destination Waypoint Longitude (E or W)
10 Range naut. miles, present fix to destination waypoint
Great Circle. [If range exceeds 999.9 nm, display 999.9.]
11 Bearing, True, Great Circle, Present fix to dest. waypoint
12 Closing velocity to destination, knots
13 Arrival (OR'ed arrival circle and crossing of line which is
perpendicular to the course line and which passes through the
destination waypoint.)
14 CHECKSUM (Mandatory in this sentence.)
```

RMC Transit Specific (to be followed by RMB)

```
1 2 3 4 5 6 7 8 9 10
RMC,hhmmss.ss,A,1111.11,a,yyyyy.yy,a,x.x,x.x,xxxxxx,x.x,a *hh
1 Time, UTC of position fix
2 Status (A = valid, V = Navigation receiver warning)
3-4 Latitude at UTC time, N or S
5-6 Longitude at UTC time, E or W
7 Speed over ground, knots
8 Course over ground, degrees
9 Date (DDMMYY)
10 Magnetic variation, degrees
11 Magnetic variation, sense (E or W)
12 CHECKSUM (Mandatory in this sentence)
```

The formats listed are NMEA formats and Magellan receivers may not output all of the information listed for a particular format.

A complete copy of the NMEA specifications can be obtained from:

NMEA, PO Box 3435 New Bern, NC 28564-3435

AVAILABLE DATUMS

Datum	Full Name	Datum	Full Name
WGS84	World Geodetic System	INDIA	Indian (India, Nepal)
NAD27	North America 1927	IRAN	Iran
NAD83	North American 1983	IRELA	Ireland 1965
ADIND	Adinda	KAUAI	Kauai
ALASK	Alaska	KERTA	Kertau 1948
ARC50	Arc 1950	KKJ	KKJ (Finland)
ARC60	Arc 1960	LIBER	Liberia 1964
ASTRO	Camp Area Astro	LUZON	Luzon
AUS66	Australian Geodetic 1966	MASSA	Massawa
AUS84	Australian Geodetic 1984	MAUI	Mau
BOGOT	Bogota Observatory	MERCH	Merchich
BUKIT	Bukit Rimpah	MINNA	Minna
CAMPO	Campo Inchauspe	MONTJ	
CANAD	Canada	NAHRW	Nahrwan, Saudi Arabia
CAPE	Cape	OAHU	Oahu
CARTH	Carthage	OEGYP	Old Egypton
CENAM	Central America	OHAWA	Old Hawaiian
CHATH	Chatham 1971	OMAN	Oman
CHUAA	Chau Astro	PITCA	Pitcairn Astro 1967
CORRE	Corrego Alegre	QATAR	Qatar National
CYPRU	Cyprus	QORNO	Qornoq
DJAKA	Djakarta (Batavia)	RT90	RT90 (Sweden)
EGYPT	Egypt	SAM56	Provisional So. Am. 1956
EUROP	European 1950 (All of Europe)	SAM69	South American 1969
EUR50	European 1950 (W. Europe)	SCHWA	Schwarzeck
EUR79	European 1979	SICIL	Sicily
GANDA	Gandajika Base	SIERR	
GEO49	Geodetic Datum 1949	SWISS	
GHANA		TANAN	Tananarive Observatory 1925
GRB36	Ordinance Survey of GB, 1936	THAI	Indian (Thailand, Vietnam)
GUAM	Guam	TIMBA	Timbalai
GUNSG	G. Segara	TOKYO	Tokyo
GUNSR		USER DEFINED	
HAWAI	Hawaii	VOIRO	
HERAT	Herat North	WGS72	World Geodetic System 1972
HJORS	Hjorsey 1955	YACAR	Yacare
HUTZU	Hu-tzu-shan	ZANDE	Zanderij

SPECIFICATIONS

CHARACTERISTICS

Performance

Receiver: 12-channel technology, tracks up to 12 satellites to compute and update information with detachable quadrifilar antenna.

Acquisition times (under optional conditions)

Warm: Approximately 15 seconds

Cold: Approximately 1 minute

Update Rate: 1 second continuous

Accuracy

Position: 49 feet (15 meters) RMS (with Selective Availability turned off)

Velocity: 0.1 knot RMS steady state (with Selective Availability turned off)

Limits

Speed: 951 mph

Altitude: 17,500 meters

Physical

Size: 6.88" x 2.5" x 1.1" [h] x [w] x [d]

Weight: 12 ounces (340.2 grams) with 4 AA batteries installed

Display: 2.75" x 1.5" [h] x [w]

Housing: Weatherproof construction, wraparound rubber armor

Temp. Range

Operating: 14°F to 140°F to (-10°C to 60°C)

Storage: -40°F to 167°F (-40°C to 75°C)

Power

Source: 4 AA alkaline batteries or 9-35 VDC with optional power cable

Battery Life: Up to 12 hours continuous operation

ACCESSORIES

Accessories for your MAP 410 are available from your Magellan dealer or you can order directly from Magellan using the order card supplied with your receiver or call Magellan at (800) 669-4477.

Swivel Mounting Bracket: Mounts the receiver on a dashboard or other surface, allowing for hands-free operation.

Vehicle Mounting Bracket: Mounts the receiver on the windshield, allowing for hands-free operation.

Nylon Carrying Case: The carrying case protects your receiver from the elements and allows you to carry your receiver on your belt.

Power/Data Cable: Allows you to connect your receiver to external power and data.

PC Interface Cable: Connects your receiver to your PC for data transfer.

PC Interface Cable with Cigarette Lighter Adapter: Connects your receiver to your PC for data transfer and to a cigarette lighter for external power.

External Power Cable with Cigarette Lighter Adapter: Allows you to connect the receiver to a cigarette lighter for external power.

MapSend™ CD-ROM: PC software program that transfers C-MAP NT Compact marine charts between your GPS receiver and a PC (PC cable not included).

Instructional Video: A video in VHS format that provides you with instructions on how to use and operate your receiver.

Detachable Remote Antenna Kit: This kit contains all necessary hardware to attach your receiver to an external antenna for use when the receiver will be indoors while boating or driving.

Low Profile External Antenna: This antenna connects to your receiver when the receiver's antenna has been removed.

Magellan GPS Topo-Guide: Easily pinpoint your position on UTM Maps. Includes topo map symbols, abbreviations, GPS landmark log and THE CARD in: 1:24, 000/1:25, 000/1:63, 360 UTM Scales.

Differential Beacon Receiver (DBR-3): Connects to your receiver to receive differential corrections for 5-10 meter accuracy.

GLOSSARY

Active Leg	The segment of a route currently being travelled.
Altitude	The current elevation above sea level.
BRG	Bearing. The compass direction from your position to a destination, measured to the nearest degree.
CDI	Course Deviation Indicator. A graphical representation of your position relative to your planned course, giving you an indication of how far left or right of the planned course you are and how to get to the destination.
COG	Course Over Ground. The direction the receiver is moving. COG can be reported in true or magnetic north values.
Coordinates	A unique numeric or alphanumeric description of the position.
CTS	Course to Steer. The direction you should be travelling in order to return to the course while proceeding towards the destination. It is a “compromise” course bearing that projects from your current position to a point on the course line mid-way between a point perpendicular to your position and the current leg destination waypoint.
Datum	Refers to the theoretical mathematical model of the earth’s sea level surface. Map makers may use a different model to chart their maps, so position coordinates will differ from one datum to another. The datum for the map you are using can be found in the legend of the map.
Default	The value or setting automatically chosen by the unit unless otherwise directed. Can be changed in Setup.

DST	Distance. Distance from position to destination.
ETA	Estimated Time of Arrival. The estimated time of day the leg's destination waypoint will be reached.
ETE	Estimated Time Enroute. The estimated time remaining to reach the next waypoint in a route.
HDG	Heading. The direction you are facing, defined as an angle from North.
Latitude	The angular distance north or south of the equator measured by lines encircling the earth parallel to the equator from 0° to 90°.
LAT/LON	Coordinate system using latitude and longitude coordinates to define a position on the earth.
Leg (Route)	A segment of a route that has a starting (FROM) waypoint and a destination (TO) waypoint. A route may consist of 1 or more legs. A route that is from waypoint A to waypoint B to waypoint C to waypoint D has three legs with the first being from waypoint A to waypoint B.
LMK	Landmark. A location saved in the unit's memory which is obtained by entering data, editing data, calculating data or saving a current position. Used to create routes. Same as a waypoint.
Longitude	The angular distance east or west of the prime meridian (Greenwich Meridian) as measured by lines perpendicular to the parallels and converging at the poles from 0° to 180°.
Magnetic North	The direction relative to a magnetic compass.
NMEA	National Marine Electronics Association. A professional organization that defines and maintains the standard serial format used by marine electronic navigation equipment and computer interfaces.

OSGB	A coordinate system describing only Great Britain, similar to UTMs. Used with GRB36 datum.
Position fix	Position coordinates as computed by the MAP 410.
SOG	Speed Over Ground. The speed at which the receiver is moving.
TMP	Temperature.
True North	The direction to North Pole from an observer's position. The north direction on any geographical meridian.
TTG	Time To Go. The measurement of how long it will take you to arrive at your destination. TTG is based on how fast you are moving towards the destination and the distance remaining.
UTC	Universal Time Coordinated. Formerly referred to as Greenwich Mean Time (GMT).
UTM	Universal Transverse Mercator metric grid system used on most large and intermediate scale land topographic charts and maps.
VMG	Velocity Made Good. The component of the velocity that is in the direction of the destination.
WPT	Waypoint. A location saved in the receiver's memory which is obtained by entering data, editing data, calculating data or saving a current position. Used to create routes.
XTE	Cross Track Error. The perpendicular distance between the present position and the course line. Given as a distance, right or left, of course when facing the destination.

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- XTE. *See* Cross Track Error (XTE)

Magellan Corporation

Limited Warranty

All Magellan GPS receivers are navigational aids and are not intended to replace other methods of navigation. Purchaser is advised to perform careful position charting and use good judgement. **Read the User Manual carefully before using this product.**

1. MAGELLAN CORPORATION WARRANTY

Magellan Corporation warrants their GPS receiver and accessories to be free of defects in material and workmanship for a period of one year from the date of original purchase. **This warranty applies only to the original purchaser of this product.**

In the event of a defect, Magellan Corporation will, at its option, repair or replace the product with no charge to the purchaser for parts or labor. The repaired or replaced product will be warranted for ninety (90) days from the date of return shipment, or for the balance of the original warranty, whichever is longer.

2. PURCHASER'S REMEDY

Purchaser's Exclusive Remedy under this written warranty or any implied warranty shall be limited to the repair or replacement, at Magellan Corporation's option, of any defective part of the receiver or accessories which are covered by this warranty. Repairs under this warranty shall only be made at an authorized Magellan Service Center.

3. PURCHASER'S DUTIES

To obtain warranty service, the purchaser must return the receiver or accessories postpaid, with proof of the date of original purchase and purchaser's return address to **Magellan Authorized Service Centers.**

Magellan Corporation will not be responsible for any losses or damage to the product incurred while the product is in transit or is being shipped for repair. Insurance is recommended.

4. LIMITATION OF IMPLIED WARRANTIES

Except as set forth in item 1 above, all other expressed or implied warranties, including those of fitness for any particular purpose and merchantability, are hereby disclaimed.

Some states do not allow limitations on warranties, so the above limitation may not apply to you.

5. EXCLUSIONS

This warranty does not cover the following:

- Installation
- Batteries
- Finishes
- Defects resulting from installation
- Any damage due to accident, resulting from inaccurate satellite transmissions. Inaccurate transmissions can occur due to changes in the position, health, or geometry of a satellite.

- Any damage due to shipping, misuse, negligence or tampering, or improper use.
- Servicing performed or attempted by anyone other than an authorized Magellan Service Center representative.
- Modifications to the receiver which may be required due to any change in the Global Positioning System (GPS). [Note: All Magellan GPS receivers use GPS to obtain position, velocity, and time information. GPS is operated by the U.S. Government, which is solely responsible for its accuracy and maintenance. Certain conditions can cause inaccuracies which could require modifications to the receiver. Examples of such conditions include but are not limited to changes in the GPS transmission. Such modifications are **not** covered by this warranty.]

Opening of this product by anyone other than an Authorized Magellan Service Center representative will void this warranty.

6. EXCLUSION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES

Magellan Corporation shall not be liable to purchaser or any other person for any incidental, special, indirect, or consequential damages whatsoever, including but not limited to lost profits, damages resulting from delay or loss of use, loss of or damages arising out of the use or inability to use this product, or breach of this warranty even though caused by negligence or other fault. In no event will Magellan Corporation be responsible for such damages, even if Magellan Corporation has been advised of the possibility of such damages.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

7. MERGER

This written warranty is the complete, final, and exclusive agreement between Magellan Corporation and the purchaser with respect to the quality of performance of all the goods and any and all warranties and representations. **This warranty sets forth all of Magellan Corporation's responsibilities regarding this product.**

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

8. FOR PURCHASERS OUTSIDE OF THE UNITED STATES

This warranty gives you specific rights. You may have other rights which vary from province to province and certain limitations contained in this limited warranty may not apply to you.

If you purchased this product outside of the United States, this limited warranty is governed by the laws of the State of California and shall benefit Magellan Corporation, its successors, and assigns.

For further information concerning this limited warranty, please call or write:

Magellan Corporation
960 Overland Court
San Dimas, California, 91773
Phone: (909) 394-5000 FAX: (909) 394-7050



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