GMR 20/40

Marine Radar

Owner's Manual

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Introduction

About This Manual

Congratulations, and thank you for choosing Garmin's GMR 20/40 Marine Radar. The addition of the GMR 20/40 Marine Radar to your Garmin Marine Network, enhances the capability of your system by adding graphical radar data to your Garmin Marine Network.

This manual covers the features and operation of the GMR 20/40 Marine Radar when viewed on the Garmin Marine Network Chartplotters. To get the most out of your new radar, take time to read this manual and learn the operating procedures for your unit in detail.

Introduction: The introduction contains information about this manual and the Table of Contents.

Main Pages: The Main Pages contain information on the setup and operation of the GMR 20/40.

Appendix: The Appendix contains information such as specifications, and license requirements. You can also find warranty and FCC information in the Appendix.

Index: Use the Index as a key word search to help you find information more quickly.

Terminology used Throughout this Manual

- This manual refers to the radome hardware as the "scanner," "Radar," or "GMR 20/40." These terms can be used interchangeably.
- This manual uses the term "chartplotter" when referring to a Garmin GPSMAP 3000 series Multi Function Display.
- This manual uses the term "Radar Page." The Radar page is a dedicated page on the Garmin chartplotter showing radar information. Radar information can be displayed as a split screen on any of the chartplotter main pages.
- This manual uses the term "highlight" when referring to the on-screen cursor. To highlight something, use the Arrow Keypad on the chartplotter to move the cursor to the desired item. The on-screen cursor is represented by changing the color of the highlighted box to yellow.

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GMR 20/40 Operation

Radar Overview

The Garmin GMR 20/40 Radar Scanner transmits a narrow beam of microwave energy in a rotating 360° pattern. When the transmitted energy contacts a target, some of that energy is reflected and returned to the scanner. The scanner collects the returned energy for processing and display. The GMR 20/40 is operated and adjusted using the controls on your Gamin chartplotter. Radar data is presented on a dedicated Radar page, or as an overlay on the Map page. All radar controls are accessible on both pages.

The Radar Page

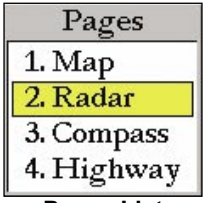
With the GMR 20/40 Radar properly installed, at power up, the Garmin chartplotter should detect the GMR 20/40 as a new network connection.

Note: *A software update may be needed for the GMR 20/40 to function properly. If the message "Incompatible Software Version" is displayed when the chartplotter is powered on, the software in the chartplotter needs to be updated. A software update card is provided with the GMR 20/40.*

When the new radar is detected, the chartplotter automatically adds a dedicated Radar page to the page list. If the Radar page is not available, press and hold the **ADJ/MENU** key until the Main Menu is displayed. Using the **ARROW KEYPAD**, highlight the **System** tab, and select **Radar** from the Services list at the bottom of the page.

To Select the Radar page for display:

1. Press the **PAGE** key to display the Pages list.
2. Using the **ARROW KEYPAD,** select **Radar**.
3. Press the **ENTER** key.



Pages List

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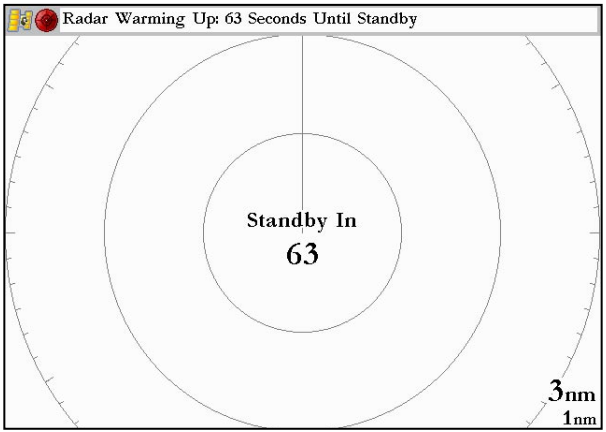
In the Status Bar at the top of the Radar page, the message “Radar Warming Up” is displayed with a countdown to Standby Mode. The countdown to Standby Mode is also displayed in the middle of the radar display. When the countdown reaches zero, the message “Hold FCTN to transmit” is displayed.



As a safety feature, the scanner enters Standby Mode after it is warmed up. This provides the operator an opportunity to verify that the area around the scanner is clear before beginning radar transmission. It is important to remember that the microwave energy transmitted by the scanner can potentially be dangerous.

Caution: *The GMR 20/40 Radar transmits microwave energy that has the potential to be harmful to humans and animals. Before beginning radar transmission, verify that the area around the scanner is clear. The GMR 20/40 transmits a beam approximately 12° above and below a line extending horizontally from the center of the scanner. Avoid looking directly at the scanner as the eyes are the most susceptible part of the body.*

When the area surrounding the scanner is clear, press and hold the **FCTN** key. The message “Do you want to begin radar transmission?” is displayed. Select **Yes**, then press the **ENTER** key. Before transmission begins, the message “Spinning Up” is displayed while the radar antenna reaches nominal rotation speed. When the message disappears, the radar begins painting an image.

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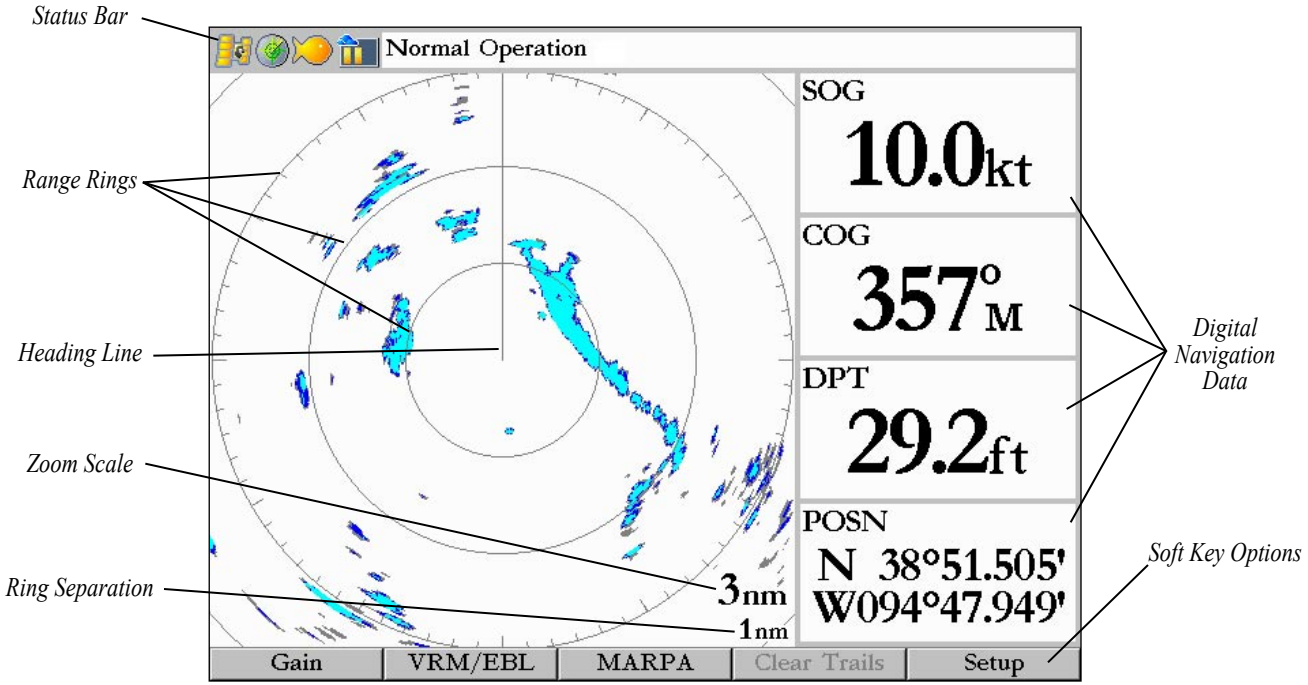
Radar Page Layout

This section describes the features of the Radar page and how its features are displayed. By default, the Radar page displays a Status Bar along the top, user configurable Digital Navigation Data down the right side, a Heading Line, and Range Rings. Soft Key options that allow the user to quickly access functions and change settings may be displayed along the bottom of the page.



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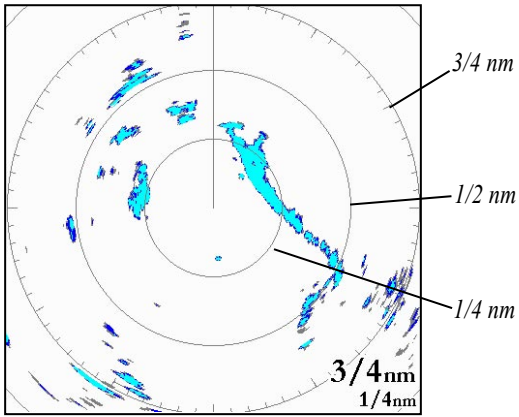
Range Rings

The Range Rings are used as an aid to quickly determine distance to a target. In the lower right corner of the display are two scales. The upper scale is the current zoom scale. This scale is changed using the **RANGE** keys. The Zoom Scale is represented by the Range Ring with tick marks around the circumference. The tick marks are arrange with a minor tick marks every five degrees and major tick marks at thirty-degree increments. These tick marks can aid in quickly determining the azimuth to a target. The lower scale represents the distance between the Range Rings.

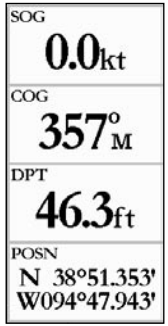


Heading Line

The Heading Line is shown from your current position along the path of your current heading.

Digital Navigation Data

By default, the Radar page shows one column of digital navigation data with four data fields. The Radar page can be configured to show two columns of data with up to seven data fields each. Each data field can be configured to show a variety of data.



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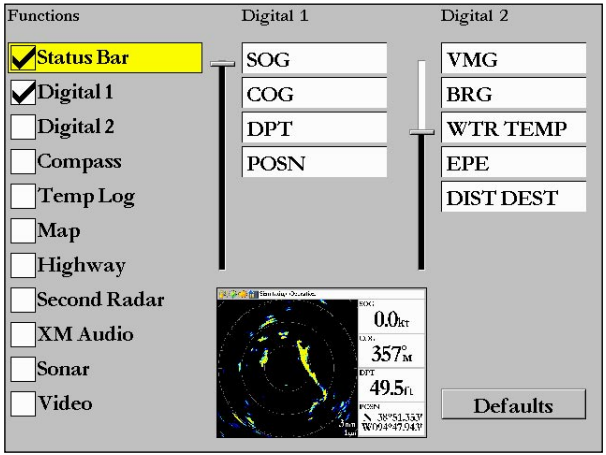
The Radar Configuration Page

The Radar Configuration page is used to change the look of the Radar page. Please refer to the GPSMAP 3000 series Owner's Manual for information on "Configuring the Main Pages."

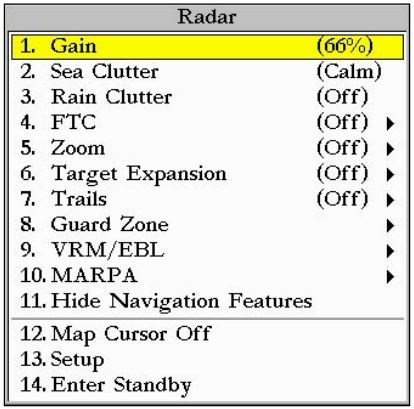
To display the Radar Configuration page:
Press and hold the **DATA\CONFIG** key.



Radar Configuration Page

The Radar Adjustment Menu

The Radar Adjustment Menu is a numbered list of options that allow direct access to the settings and features most commonly used on the Radar Page. There are several adjustment options available: Gain, Sea Clutter, Rain Clutter, FTC, Zoom, Target Expansion, Trails, Guard Zone, VRM/EBL, MARPA, and Hide/Show Navigation Features. All adjustments are made using the Arrow Keypad, or Data Entry Keys.



Radar Adjustment Menu

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To change a Radar Adjustment Menu setting:

1. Press the **ADJ** key to display the Adjustment Menu.
2. Using the **ARROW KEYPAD** or **DATA ENTRY** keys, select an option. If using the **ARROW KEYPAD** to highlight an option, press the **ENTER** key to display the adjustment for that selection.
3. Using the **ARROW KEYPAD,** make the desired change, then press the **ENTER** key to accept the change.

Gain

Selecting **Gain,** displays the Gain Adjustment Slider. When **Auto** is selected, the Scanner Gain is automatically adjusted to provide optimal performance.

To change the Gain setting:

1, Using the **ARROW KEYPAD,** move the slider up or down.
2. Press the **ENTER** key to accept the change.

To return the Gain setting to Auto, move the slider to the **Auto** position, or press the **Auto** Soft Key.

Sea Clutter

Sea Clutter is screen clutter caused by choppy sea conditions. Adjusting the Sea Clutter setting can help eliminate the screen clutter. Selecting **Sea Clutter** displays the Sea Clutter Adjustment Slider. The slider has three preset positions: Calm, Moderate, and Rough.

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To change the Sea Clutter setting:

1. Using the **ARROW KEYPAD,** move the slider to a preset or other position.
2. Press the **ENTER** key to accept the change.

The preset positions can also be selected using the Soft Key options.

Rain Clutter

Rain Clutter is screen clutter caused by rain. Adjusting the Rain Clutter setting can help remove screen clutter caused by rain at close ranges. Selecting **Rain Clutter** displays the Rain Clutter Adjustment Slider.

To change the Rain Clutter setting:

1. Using the **ARROW KEYPAD,** move the slider to the desired setting.
2. Press the **ENTER** key to accept the change.

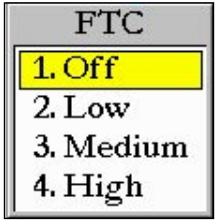
FTC (Fast Time Constant)

Adjusting the Fast Time Constant can help eliminate distant screen clutter caused by rain. The Fast Time Constant has four presets: Off, Low, Medium, and High.

To change the FTC setting:

1. Using the **ARROW KEYPAD,** highlight the desired setting.
2. Press the **ENTER** key to accept the change.

The FTC settings can also be selected using the Soft Key options.



FTC Menu

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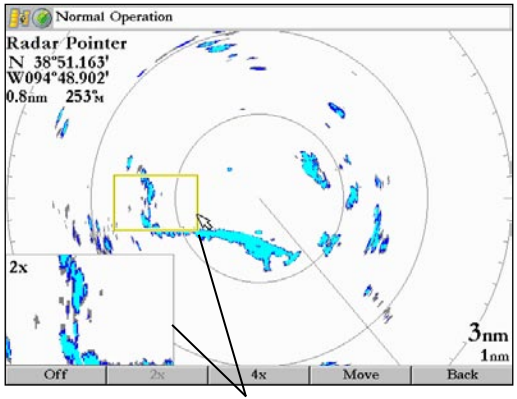
Zoom

When a Zoom level is selected, a box showing a zoomed portion of the screen is displayed. When **Move** is selected, the **ARROW KEYPAD** can be used to move the box around the screen. The Zoom setting has four presets: Off, 2x, 4x, and Move.

To change the Zoom setting:

1. Using the **ARROW KEYPAD,** highlight the desired setting.
2. Press the **ENTER** key to accept the change.

The Zoom settings can also be selected using the Soft Key options



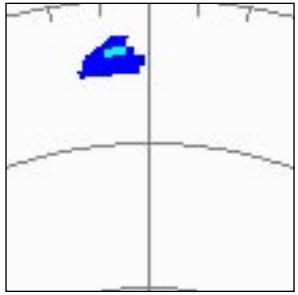
Zoom Areas

Target Expansion

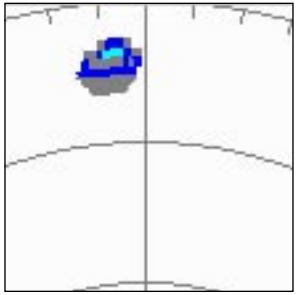
Target Expansion increases the size of a target. Target Expansion has two settings, On and Off. The Target Expansion setting has no effect at range settings of 4 nm or greater.

To turn Target Expansion On/Off:

1. Using the **ARROW KEYPAD,** highlight the desired setting.
2. Press the **ENTER** key to accept the change.



Target Expansion - Off



Target Expansion - On

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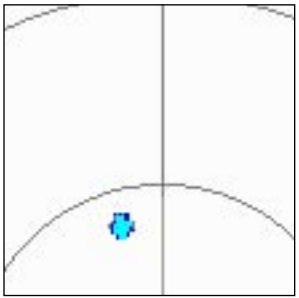
Trails

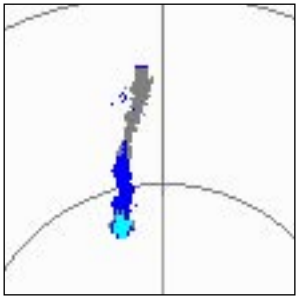
Trails are history trails that show movement of a target. When Trails is On, all returns on the display leave a history trail. The Trails setting determines the length of the trail. The Trails setting has four presets: Off, Short, Medium, and Long.

To change the Trails setting:

1. Using the **ARROW KEYPAD,** highlight the desired setting.
2. Press the **ENTER** key to accept the change.



Trails - Off



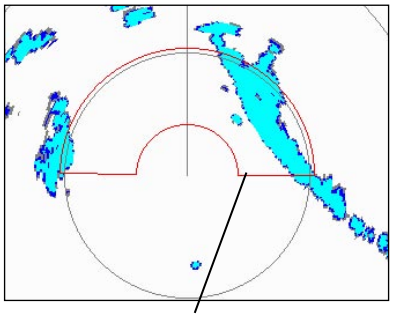
Trails - On (medium)

To clear the Trails, select **Clear Trails** on the Adjustment Menu or press the **Clear Trails** Soft Key.

Guard Zone

A Guard Zone is a user defined area of protection. If a target enters the defined Guard Zone, an alarm is sounded. Two Guard Zones can be defined at any given time.

The Guard Zone Menu has two areas, “Guard Zone 1” and “Guard Zone 2.” Each area has two settings, a setting to Show/Hide the Guard Zone, and Adjust.



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To Define a Guard Zone:

1. Using the **ARROW KEYPAD,** highlight **Show Guard Zone 1/2** and press the **ENTER** key.
2. Using the **ARROW KEYPAD,** highlight **Adjust** and press the **ENTER** key.
3. Using the **ARROW KEYPAD,** define the desired area on the Radar page.
4. Press the **ENTER** key to accept the change.

With a Guard Zone selected on the Radar page, Soft Key options may be available.

VRM/EBL

The VRM (Variable Range Marker) and EBL (Electronic Bearing Line) tools measure range and bearing to a target. The center point of the VRM can be moved, allowing measurement from one target to another. Two V/E tools can be activated at the same time.

The VRM/EBL Menu has two areas, "VRM/EBL 1" and "VRM/EBL 2." Each area has two settings, a setting to Show/Hide the VRM/EBL and Adjust.

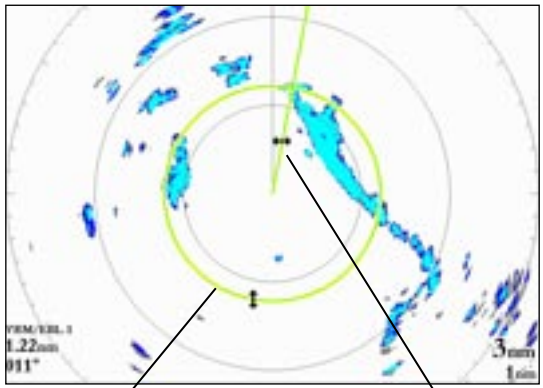
To activate VRM/EBL 1 or 2:

Using the **ARROW KEYPAD**, highlight Show **VRM/EBL 1/2** and press the **ENTER** key.

The diameter of the VRM and the angle of the EBL are adjustable.

To adjust the VRM/EBL:

1. Using the **ARROW KEYPAD**, highlight **Adjust** and press the **ENTER** key.
2. Press the **ARROW KEYPAD** right/left to rotate the Electronic Bearing Line around the center point of the VRM.
3. Press the **ARROW KEYPAD** up/down to increase/decrease the size of the Variable Range Marker.
4. Press the **ENTER** key to accept the changes.



Variable Range Marker (VRM)

Electronic Bearing Line (EBL)

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To move the center location of the VRM:

1. Using the **ARROW KEYPAD,** highlight **Move** and press the **ENTER** key.
2. Using the **ARROW KEYPAD,** move the center point of the VRM to the desired location.
3. Press the **ENTER** key to set the new location.

To use the VRM/EBL, expand the diameter of the VRM so that the outer edge touches the target. Rotate the EBL until it intersects the VRM at the target location. The measured range and bearing are displayed in the lower left corner of the screen.

MARPA

The **M**ini **A**utomatic **R**adar **P**lotting **A**id or MARPA function is used to aid in collision avoidance. MARPA can track up to ten designated targets. Detailed information including Bearing, Range, Course, Speed, Closest Point of Approach, and Time to Closest Point of Approach for each target is displayed in the MARPA list.

Note: *The MARPA function requires the use of a heading sensor. The heading sensor must output the NMEA sentence HDM or HDG at format 0183, v2.30 or higher.*

MARPA relies on a Heading Sensor to provide accurate own vessel heading information. Accurate heading data enhances MARPA's performance. Each target being tracked by MARPA is represented by a symbol. The symbols indicate the current state of the target.

Acquiring Target

Target is Safe

Target is Dangerous

Lost Target

For each target, a number and Vector Line is displayed with the symbol. The number is the MARPA List ID Number. The Vector Line is a visual reference of the target's course and speed.

To designate a MARPA target:

1. Using the **ARROW KEYPAD**, highlight **Acquire Target** and press the **ENTER** key.
2. On the Radar page, using the **ARROW KEYPAD**, move the pointer to the desired target and press the **ENTER** key.

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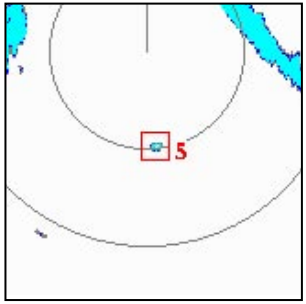
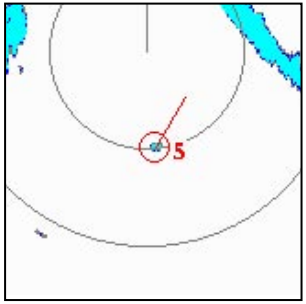
While a target is being designated, a box is placed around the target. When MARPA begins tracking the target, the box is replaced with the appropriate symbol.



Acquiring Target



Tracking Target

To display the MARPA List:

Using the **ARROW KEYPAD**, highlight **MARPA List** and press the **ENTER** key.

ID	Bearing	Range	Course	Speed	CPA	TCPA
0	176°	1.0nm	285°	0.6kt	0.9nm	00:32:43
1	262°	1.3nm	128°	1.1kt	1.0nm	00:49:36
2	210°	2.2nm	011°	0.6kt	0.8nm	03:47:01
3	023°	1.0nm	330°	0.7kt	0.8nm	Passed
4	042°	0.8nm	194°	2.3kt	0.4nm	00:18:47
--	---°	---nm	---°	---kt	---nm	--:--:--
--	---°	---nm	---°	---kt	---nm	--:--:--
--	---°	---nm	---°	---kt	---nm	--:--:--
--	---°	---nm	---°	---kt	---nm	--:--:--
--	---°	---nm	---°	---kt	---nm	--:--:--

MARPA List

MARPA Setup

The MARPA Setup Menu contains settings for Vector Length, Target History, Own Vessel Safe Zone, Tine To Safe Zone, Safe Ring Zone, and Velocity Reference.

To display the MARPA Setup Menu:

Using the **ARROW KEYPAD**, highlight **MARPA Setup** and press the **ENTER** key.

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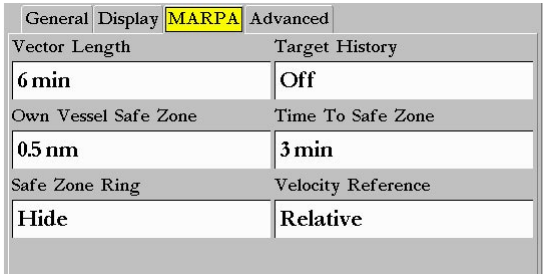

MARPA Setup Menu

To change a MARPA field option:

1. Using the **ARROW KEYPAD**, highlight the desired field and press the **ENTER** key to activate the field selections.
2. Using the **ARROW KEYPAD**, highlight the desired selection.
3. Press the **ENTER** key to accept the change.

Vector Length—predicts the target's approximate position at a set time interval. This setting determines the length of the Vector Line, based on the time interval setting and the target's speed. The time interval settings range from .05 minutes to 60 minutes.

Target History—is a trail showing a targets movement. Target History can be turned On or Off.

Own Vessel Safe Zone—is a circular area defined by a range setting that is centered on your own vessel. If a target enters the defined area an alarm is sounded. The Safe Zone can be set to a distance between .01 and 2 nautical miles.

Time To Safe Zone—sounds an alarm if MARPA determines that a target will intersect the Own Vessel Safe Zone within the defined time interval. The time interval settings range from 3 to 24 minutes.

Safe Zone Ring—displays a ring on the Radar page depicting the Own Vessel Safe Zone.

Velocity Reference—has two settings, Absolute and Relative. This setting determines how speed and direction are displayed on the MARPA List. Relative calculates target speed and direction relative to your own. Absolute displays the target's actual speed.

Hide/Show Navigation Features

This setting hides or shows navigation features such as Waypoints, a Bearing Line and a Course Line on the Radar page. See page 16 for more information on selecting the Navigation Features.

Additional Adjustment Menu Items

There are three additional items available on the Adjustment Menu: Map Cursor On/Off, Setup, and Enter Standby/Begin Transmitting.

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Map Cursor On/Off

The Map Cursor On/Off setting turns the Map Page Cursor On or Off when operating in Split Screen Mode or when using two MFDs.

To turn the Map Cursor On/Off:

Using the **ARROW KEYPAD**, highlight **Map Cursor On/Off** and press the **ENTER** key.

Setup

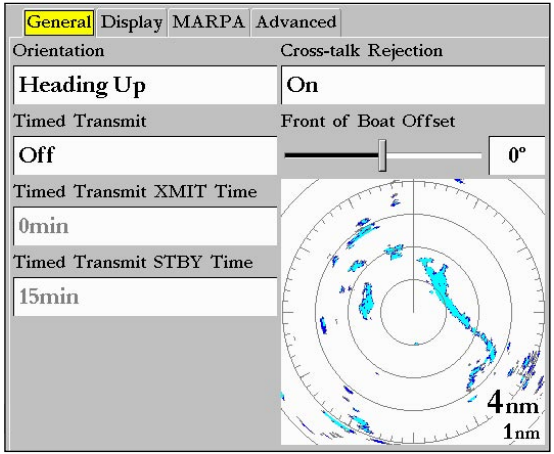
Selecting **Setup** displays the Radar Setup Menu. The Radar Setup Menu contains four sub-tabs: General, Display, MARPA, and Advanced.

The General Tab

The General tab contains settings for Orientation, Cross-talk Rejection, Front of Boat Offset, Timed Transmit, Timed Transmit XMIT Time, and Timed Transmit STBY Time.

To change a Setup field option:

1. Using the **ARROW KEYPAD**, highlight the desired field and press the **ENTER** key to activate the field selections.
2. Using the **ARROW KEYPAD**, highlight the desired selection.
3. Press the **ENTER** key to accept the change.



The General Tab

Orientation—configures the Radar page to display in one of three Modes: Heading Up, North Up, or Course Up.

Cross-talk Rejection—radar cross-talk may occur when two or more radar equipped vessels are operating in proximity to one another. Cross-talk rejection automatically filters out the cross-talk interference.

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Front of Boat Offset—this setting is used to correct for any alignment error that may have occurred during installation of the scanner. The scanner is directional. For optimal performance it needs to be pointed directly ahead of the boat. To verify that the scanner is properly aligned, point the bow of the boat directly at a stationary object such as a buoy. Check the radar screen to verify that the object is shown directly ahead of the boat. If it is not, highlight the slider and move it left or right using the **ARROW KEYPAD** until the object is displayed directly in front of the boat. When you are satisfied with the alignment, press the **ENTER** key to accept the change.

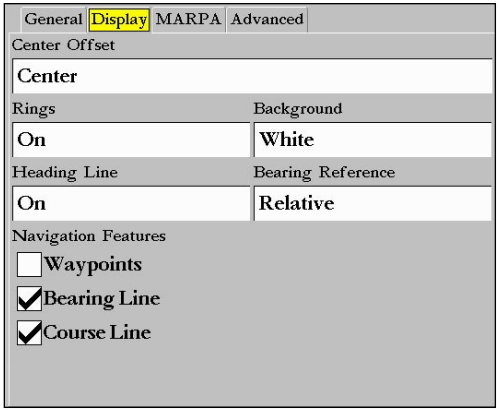
Timed Transmit—is used to save power, likely while at anchor. When Timed Transmit is **On**, the radar refers to the settings in Timed Transmit XMIT Time and Timed Transmit STBY Time. If **Off** is selected, the Timed Transmit XMIT Time and Timed Transmit STBY Time fields are inactive.

Timed Transmit XMIT Time—this setting determines a time interval in minutes the radar transmits. For example, if set to 01min, the radar transmits for a period of one minute before referring to the Timed Transmit STBY Time.

Timed Transmit STBY Time—this setting determines a time interval in minutes that the radar is in stands by. For example, if set to 10min, the radar stands by for a period of ten minutes before referring to the Timed Transmit XMIT Time. When the radar is standing by, the scanner does not rotate or transmit; however power is still applied to the Magnetron, eliminating the need for a warm-up cycle.

The Display Tab

The Display tab contains settings for: Center Offset, Rings, Background color, Heading Line, Bearing Reference, and Navigation Features.



The Display Tab

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Center Offset—has three settings: Center, Look Ahead, and Auto Shift. Center places your current location in the center of the display. Look Ahead shifts your current location toward the bottom of the display, allowing you to view an area farther ahead. Auto Shift adjusts your location on the display according to the current speed.

Rings—is used to turn the radar Range Rings On or Off.

Background—is used to select a background color for the Radar page. The options are Black, Blue, and White.

Heading Line—is used to turn the Heading Line On or Off.

Bearing Reference—has two settings, Absolute and Relative. Relative calculates the bearing relative to own vessel heading. Absolute calculates the bearing referring to North.

Navigation Features—there are three selectable Navigation Features: Waypoints, Bearing Line, and Course Line. When selected, that feature is displayed on the Radar page.

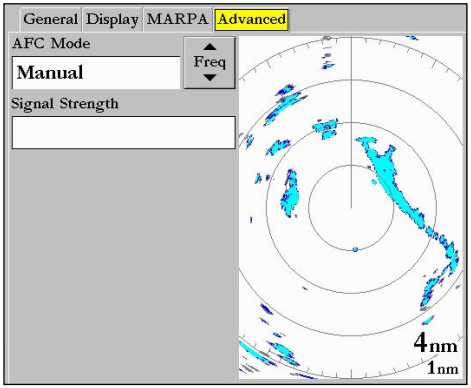
- **Waypoints**—displays user waypoints on the Radar page.
- **Bearing Line**—when selected displays a Bearing Line on the Radar page. The Bearing Line is displayed as a line from your current position to the active destination waypoint, similar to a traditional lollipop.
- **Course Line**—when selected displays a Course Line from your starting point to the active destination waypoint, similar to navigation on a map.

The MARPA Tab

See MARPA Setup on page 12.

The Advanced Tab

AFC Mode—has two settings, Auto, and Manual. In Auto Mode the scanner frequency is automatically adjusted for optimal performance and is recommended.



The Advanced Tab

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To select an AFC Mode:

1. Using the **ARROW KEYPAD**, highlight the AFC Mode field and press the **ENTER** key.
2. Using the **ARROW KEYPAD**, highlight the desired selection and press the **ENTER** key.

To manually adjust the scanner frequency:

1. Using the **ARROW KEYPAD**, highlight the **Freq** button and press the **ENTER** key.
2. Using the **ARROW KEYPAD**, adjust the scanner frequency up or down to achieve the desired effect.
3. Press the **ENTER** key to accept the frequency change.

***Note:** The Signal Strength bar graph is damped and may be slow when responding to frequency tuning changes.*

Enter Standby/Begin Transmitting

Selecting **Enter Standby** places the Scanner into Standby Mode While in Standby Mode, the Scanner does not transmit, but power remains applied to the Magnetron.

If the scanner is in Standby Mode, **Begin Transmitting** is enabled. Selecting **Begin Transmitting** removes the scanner from Standby Mode and after "Spinning Up" the scanner begins transmitting.

To select Enter Standby or Begin Transmitting:

Using the **ARROW KEYPAD**, highlight the **Enter Standby** or **Begin Transmitting** and press the **ENTER** key.

Map Page Radar Overlay

Radar information can be displayed as an overlay on the Map page. With radar information overlaid on the map, many of the radar options are available by pressing the **ADJ** key.

It is important to note that changing the "Range" of the map does not change the scanner range. When the Map page is zoomed in or out, the radar overlay is scaled to fit.

To overlay Radar Data on the Map page:

1. Press the **ADJ** key.
2. Using the **ARROW KEYPAD,** highlight **Show Radar** and press the **ENTER** key.

To hide the Radar Overlay:

1. Press the **ADJ** key.
2. Using the **ARROW KEYPAD,** highlight **Radar Options** and press the **ENTER** key.
3. Using the **ARROW KEYPAD**, highlight **Hide Radar** and press the **ENTER** key.

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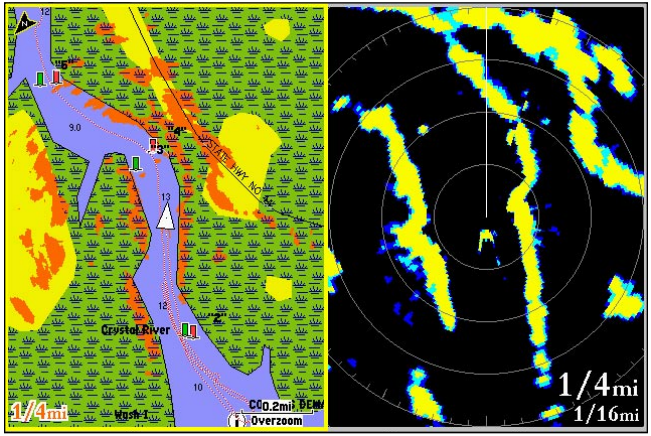
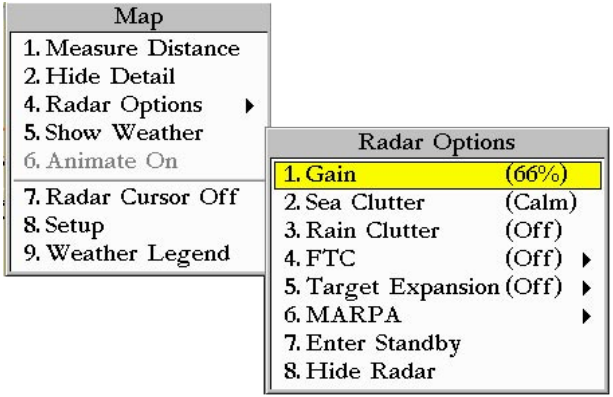


Map page with radar overlay **Radar page**



Map page Radar Options

There are several Radar Options available on the Map page. These options do affect operation of the radar and the Radar page.

To display the Radar Options:

1. Press the **ADJ** key.
2. Using the **ARROW KEYPAD,** highlight **Radar Options** and press the **ENTER** key.

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APPENDIX

European License Requirements

Austria	I		Luxembourg	I
Belgium	G		The Netherlands	I
Czech Republic	I		Poland	G
Denmark	G		Portugal	G
Estonia	*		Slovakia	*
Finland	I		Slovenia	G
France	G		Spain	*
Germany	G		Sweden	G
Greece	G		United Kingdom	I
Hungary	*		Cyprus	G
Ireland	*		Malta	*
Italy	G		Iceland	G
Latvia	I		Norway	I
Lithuania	G		Switzerland	I

I—Requires an individual license for operation.

G—can be operated under a general license or license exemption.

* This product may require licensing in your country of use. Please refer to the national radio or telecommunications office or ministry.

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Specifications

Unit Dimensions: 28” (710 mm) D x 8” (205 mm) H.

Radar Scanner Weight: Unit 26 lbs; cable 8.35 lbs.

Range Scales (Range Rings): GMR 40 — 1/8 nm (1/32 nm) to 36 nm (9 nm) GMR 20 — 1/8 nm (1/32 nm) to 24 nm (6 nm).

Power Output: GMR 20: 2 kW / GMR 40: 4kW.

Power Input Source: 10-35 v D.C. 28W.

Operating Temperature Range: -25°C to 70°C, and a relative humidity up to 95% at 35°C.

Beamwidth: Horizontal beamwidth of 3.6° nominal / Vertical beamwidth of 25° nominal.

Range: GMR 20: 24 nm / GMR 40: 36 nm.

Wind Velocity: Wind speed up to 100 Kts.

Antenna RPMs: 24 rpm.

Range Ring Accuracy: +/- 1 meter.

Bearing Accuracy: 1°

Minimum Range: 35 meters

Range Discrimination: 30 meters

Sensitivity and Tune Controls: Gain, Sea Clutter, Rain Clutter, Frequency Tune.

Radar/Chart Synchronization: Overlay Mode. Split overlay with standard radar presentation.

Off Center Function: Look ahead, Auto Shift, and Manual.

RF Transmit Frequency: 9410 ± 30 MHz

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FCC Compliance

The GMR 20/40 complies with Part 80 of the FCC rules. It has received a grant of equipment authorization, issued under the authority of the FCC.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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Software License Agreement

BY USING THE GMR 20/40, YOU AGREE TO BE BOUND BY THE TERMS AND CONDITIONS OF THE FOLLOWING SOFTWARE LICENSE AGREEMENT. PLEASE READ THIS AGREEMENT CAREFULLY.

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To obtain warranty service, contact your local Garmin authorized dealer. Or call Garmin Product Support at one of the numbers shown below, for shipping instructions and an RMA tracking number. The unit should be securely packed with the tracking number clearly written on the outside of the package. The unit should then be sent, freight charges prepaid, to any Garmin warranty service station. A copy of the original sales receipt is required as the proof of purchase for warranty repairs.

Products sold through online auctions are not eligible for rebates or other special offers from Garmin. Online auction confirmations are not accepted for warranty verification. To obtain warranty service, an original or copy of the sales receipt from the original retailer is required. Garmin will not replace missing components from any package purchased through an online auction.

Note: *The GMR 20/40 does not contain any user-serviceable parts. Repairs should only be made by an authorized Garmin service center. Unauthorized repairs or modifications could result in permanent damage to the equipment, and void your warranty.*

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Fax 886/2.2642.9099

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Warning and Cautions

CAUTION: Use the GMR 20/40 at your own risk. To reduce the risk of unsafe operation, carefully review and understand all aspects of this Owner's Manual, and thoroughly practice operation using the simulator Mode prior to actual use. When in actual use, carefully compare indications from the GMR 20/40 to all available navigation sources, including the information from other NAVAIDs, visual sightings, charts, etc. For safety, always resolve any discrepancies before continuing navigation.

CAUTION: IT IS THE USER'S RESPONSIBILITY TO USE THIS PRODUCT PRUDENTLY. THIS PRODUCT IS INTENDED TO BE USED ONLY AS A NAVIGATIONAL AID AND MUST NOT BE USED FOR ANY PURPOSE REQUIRING PRECISE MEASUREMENT OF DIRECTION, DISTANCE, LOCATION, OR TOPOGRAPHY.

WARNING: This product, its packaging, and its components contain chemicals known to the State of California to cause cancer, birth defects, or reproductive harm. This Notice is being provided in accordance with California's Proposition 65. If you have any questions or would like additional information, please refer to our web site at http://www.garmin.com/prop65.

WARNING: The radar scanner transmits electromagnetic energy. Ensure that the scanner has been installed according to the recommendations given in this guide, and that all personnel are clear of the scanner, before switching to transmit Mode.

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