GARMIN.

GMR 21/41
marine radar

INTRODUCTION

About This Manual

Thank you for choosing Garmin's GMR 21/41 marine radar. The addition of the GMR 21/41 marine radar to your Garmin Marine Network, enhances the capability of your system by adding graphical radar data to your Garmin chartplotter.

This manual covers the features and operation of the GMR 21/41 marine radar when viewed on the Garmin 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.

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

The Main Pages contain information on the setup and operation of the GMR 21/41.

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

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 21/41." 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 Rocker key on the chartplotter to move the cursor to the desired item. The on-screen cursor is represented by a highlighted yellow box.

GMR 21/41 Operation

Radar Overview

The Garmin GMR 21/41 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 21/41 is operated and adjusted using controls on the 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 21/41 radar properly installed, at power up, the Garmin chartplotter should detect the GMR 21/41 as a new network connection.

⚠️ **NOTE:** A software update may be needed for the GMR 21/41 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 21/41.

When the new radar is detected, the chartplotter automatically adds a dedicated Radar Page to the pages list. If the Radar Page is not available, press and hold **ADJ/MENU** until the Main Menu is displayed. Use the **Rocker t**o 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 **PAGE** to display the Pages list.
> 2. Using the **Rocker,** select **Radar**.
> 3. Press **ENTER**.
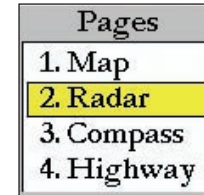
Pages List

When the scanner is powered on, the Status Bar at the top of the Radar Page, shows the message "Radar Warming Up" with a countdown to Standby Mode. The countdown is also displayed in the middle of the Radar Page. When the countdown reaches zero, the message changes to "Hold FCTN to transmit."
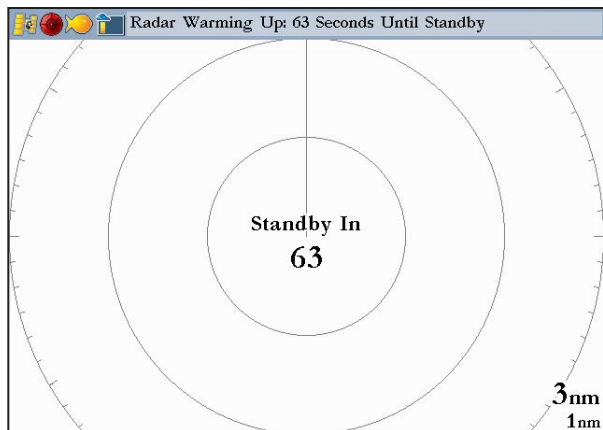
As a safety feature, the scanner enters standby mode after it warms up. This provides the operator an opportunity to verify that the area around the scanner is clear before beginning radar transmission. It is important to remember that the microwave energy transmitted by the scanner can potentially be dangerous.

> ⚠️ *CAUTION:* The GMR 21/41 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 21/41 transmits a beam approximately 12° above and below a line extending horizontally from the center of the scanner. Avoid looking directly at the scanner, the eyes are the most susceptible part of the body.

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

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 quick access to radar functions and setting changes are displayed along the bottom of the page.

Status bar

Range rings

Heading line

Zoom scale

Ring separation

Digital navigation data

Soft key options
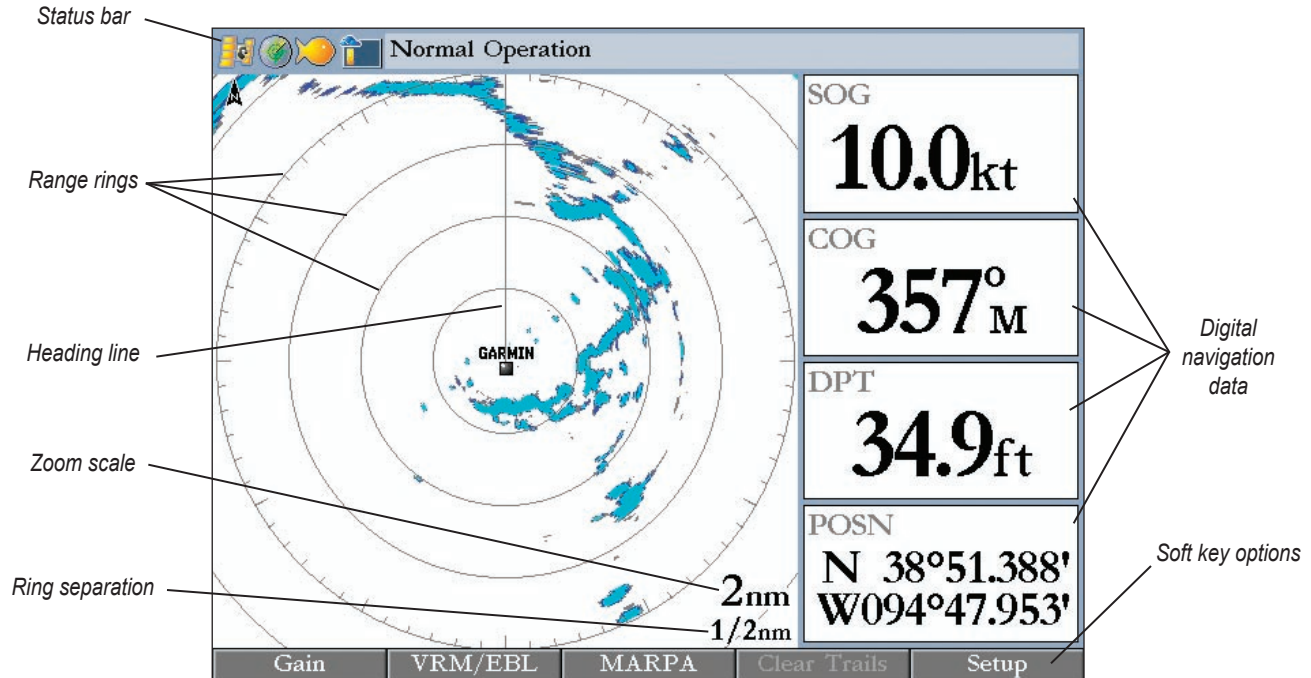
Range Rings

The Range Rings help to quickly determine the 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 arranged with major tick marks at thirty-degree increments and minor tick marks every five degrees. The tick marks can help in quickly determining the azimuth to a target. The lower scale represents the distance between the Range Rings.
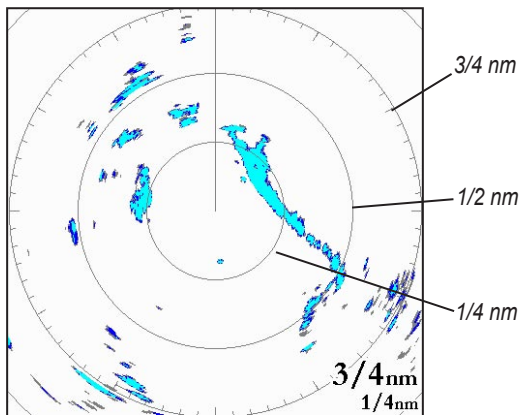
Heading Line

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.

3/4 nm

1/2 nm

1/4 nm

3/4 nm
1/4 nm

SOG
0.0 kt

COG
357° M

DPT
46.3 ft

POSN
N 38°51.353'
W094°47.943'

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 about "Configuring the Main Pages."

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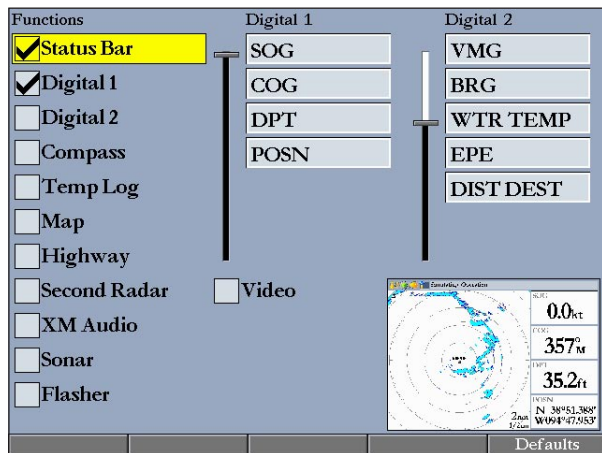
Radar Configuration Page

The Radar Adjustment Menu

The Radar Adjustment Menu is a numbered list of options that allows 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 Rocker, or Data Entry keys.
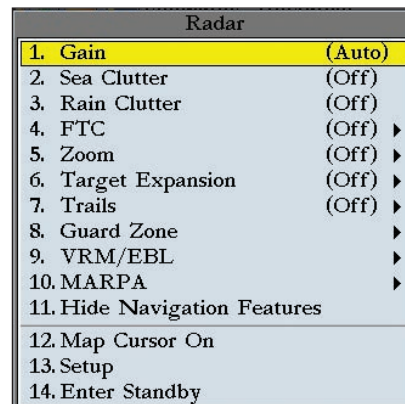
Radar Adjustment Menu

To change a Radar Adjustment Menu setting:

1. Press **ADJ/MENU** to display the Adjustment Menu.

2. Use the **Rocker** or **Data Entry** keys to select an option. Press **ENTER** to display the adjustment for that selection.

3. Use the **Rocker** to change the current setting. Press **ENTER** to accept the change.

Gain

Selecting **Gain** displays the Gain adjustment slider. When **Auto** is selected, the scanner's gain is automatically adjusted to provide optimal performance. Manually adjusting the gain increases or decreases the receiver's sensitivity. Increasing the gain may help to show a distant target, but may also increase screen clutter.
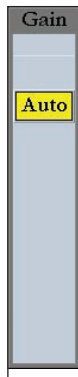
To change the Gain setting:

1. Use **the Rocker** to move the slider up or down.

2. Press **ENTER** 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

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

To change the Sea Clutter setting:

1. Use **the Rocker** to move the slider to a preset or other position.
2. Press **ENTER** to accept the change.

The preset positions can also be selected using the soft key options.

Rain Clutter

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. Use **the Rocker** to move the slider to the desired setting.
2. Press **ENTER** to accept the change.

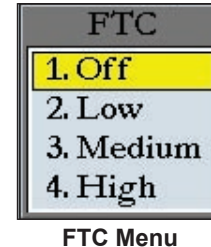## FTC (Fast Time Constant)

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. Use the **Rocker** to select a new setting.
2. Press **ENTER** to accept the change.

The FTC settings can also be selected using the soft key options.

FTC Menu

Zoom

When a Zoom level is selected, a window showing a zoomed portion of the screen appears and a selection box is shown. The selection box can be moved to see different areas. The Zoom setting has four presets: Off, 2x, 4x, and Move.

To change the Zoom setting:

1. Use **the Rocker** to select a new setting.
2. Press **ENTER** to accept the change.

The Zoom settings can also be selected using the soft key options

To move the selection box:

1. Use the **Rocker** to move the pointer and highlight the edge of the selection box.
2. Press **ENTER** to activate the Move function.
3. Use the **Rocker** to move the selection box to a new location.
4. Press **ENTER** to accept the move
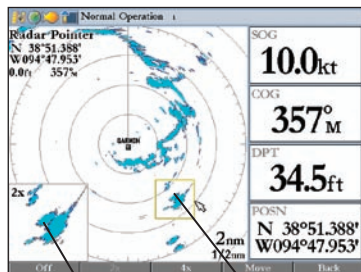
zoom view   selection box

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 or Off:

1. Use **the Rocker** to highlight On or Off.
2. Press **ENTER** to accept the change.
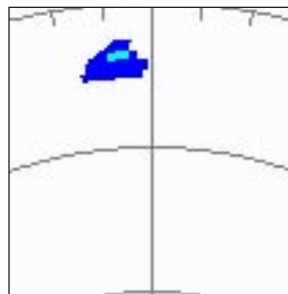
Target Expansion Off   **Target Expansion On**
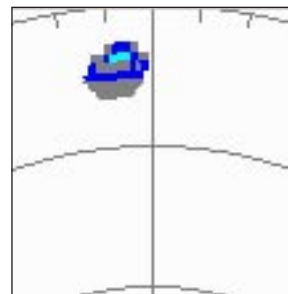
Trails

When the Trails function is on, all returns on the display leave a history trail. The Trails setting determines the length of the history trail. The Trails setting has four presets: **Off**, **Short**, **Medium**, and **Long**.

To change the Trails setting:

1. Use the **Rocker** to select a new setting.
2. Press **ENTER** to accept the change.
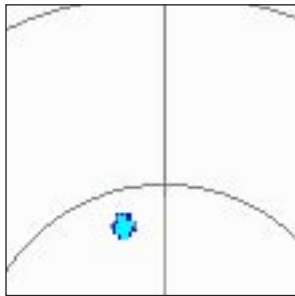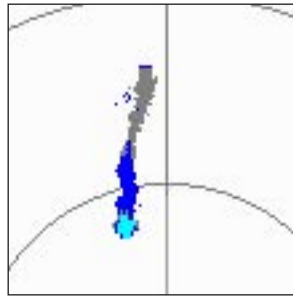
| Trails Off | Trails On (medium) |

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, **Show/Hide** and **Adjust**.
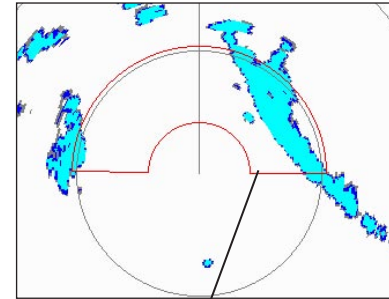
Guard Zone

continued

To Define a Guard Zone:

1. Use the **Rocker** to highlight **Show Guard Zone 1 or 2,** and press **ENTER**.

2. Use the **Rocker** to highlight **Adjust** and press **ENTER**.

3. Using the **Rocker,** define the area on the Radar Page.

4. Press **ENTER** 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 active at the same time.

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

To activate VRM/EBL 1 or 2:

Use the **Rocker** to highlight Show **VRM/EBL 1 or 2** and press **ENTER**.

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

To adjust the VRM/EBL:

1. Use the **Rocker** to highlight **Adjust** and press **ENTER**.

2. Press the **Rocker** right or left to rotate the Electronic Bearing Line around the center point of the VRM.

3. Press the **Rocker** up or down to increase or decrease the size of the Variable Range Marker.

4. Press **ENTER** to accept the changes.
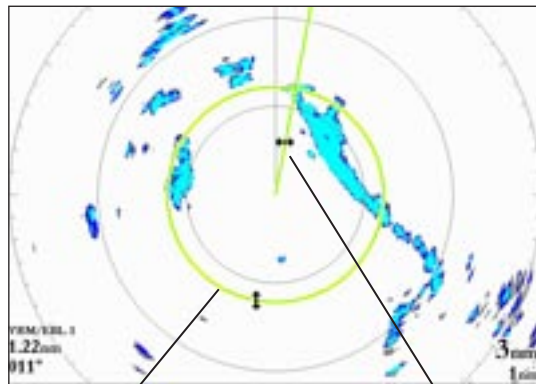
Variable Range Marker (VRM)   Electronic Bearing Line (EBL)

To move the center location of the VRM:
1. Use the **Rocker** to highlight **Move** and press **ENTER**.
2. Using the **Rocker,** move the center point of the VRM to the selected location.
3. Press **ENTER** 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 (MARPA) function helps with 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. The Gamin Marine Network has been tested using the KVH® 1000 heading sensor using 6 second dampening.

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. Use the **Rocker** to highlight **Acquire Target** and press **ENTER**.
2. On the Radar Page, using **Rocker**, move the pointer to the target, and press **ENTER**.

continued

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.
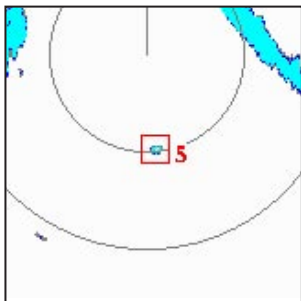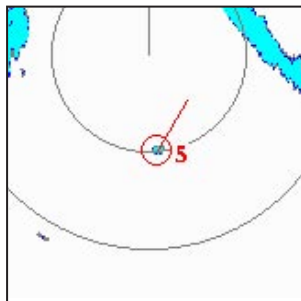
Acquiring Target   **Tracking Target**

To display the MARPA List:
Use the **Rocker t**o highlight **MARPA List** and press **ENTER**.

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:
Use the **Rocker t**o highlight **MARPA Setup,** and press **ENTER**.

MARPA Setup Menu

To change a MARPA field option:
1. Use the **Rocker** to highlight the desired field and press **ENTER** to activate the field selections.
2. Use the **Rocker** to highlight the desired selection.
3. Press **ENTER** 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.

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 chartplotters.

To turn the Map Cursor On or Off:
> Use the **Rocker** to highlight **Map Cursor On/Off** and press ENTE**R**.

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. Use the **Rocker** to highlight the field and press **ENTER** to show the field selections.
2. Use the **Rocker** to highlight the selection.
3. Press **ENTER** to accept the change.
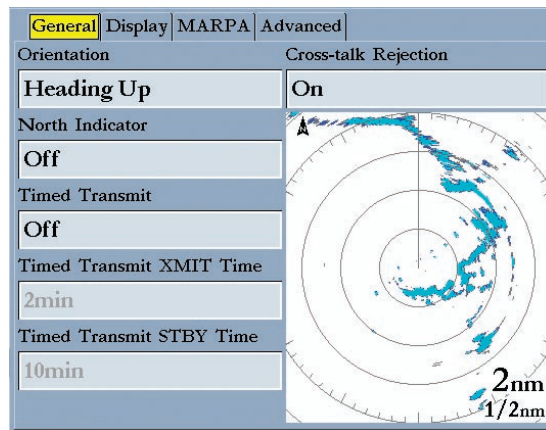
The General Tab

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.

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

Timed Transmit STBY Time—determines a time interval in minutes that the radar is in stands by. For example, if set to **10 min**, 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

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**—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**—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.
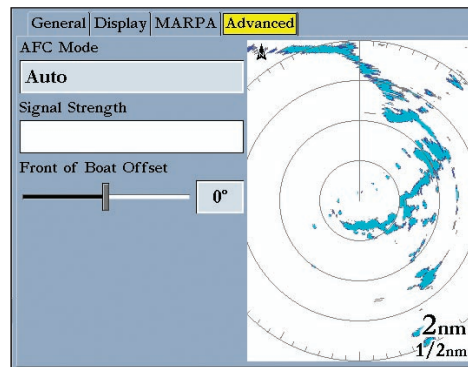
The Advanced Tab

To select an AFC mode:
1. Use the **Rocker** to highlight the AFC Mode field, and press **ENTER**.
2. Use the **Rocker** to highlight the selection, and press **ENTER**.

To manually adjust the scanner frequency:
1. Use the **Rocker** to highlight the **Freq** button, and press **ENTER**.
2. Using the **Rocker**, adjust the scanner frequency up or down to achieve the desired effect.
3. Press **ENTER** 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:
Use the **Rocker** to highlight the **Enter Standby** or **Begin Transmitting,** and press **ENTER**.

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/MENU** 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 **ADJ/MENU**.
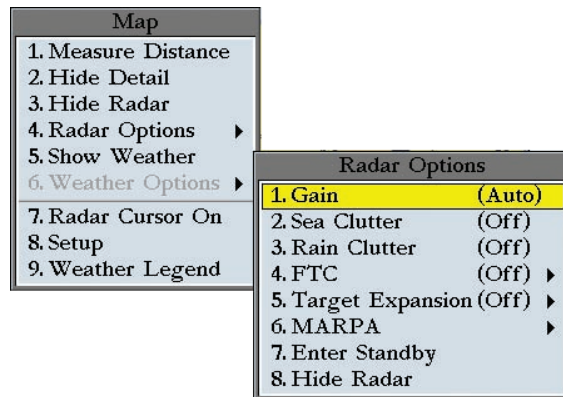2. Use the Rocker to highlight **Show Radar,** and press **ENTER**.

To hide the Radar Overlay:
1. Press **ADJ/MENU**.
2. Use the **Rocker** to highlight **Radar Options,** and press **ENTER**.
3. Use the **Rocker** to highlight **Hide Radar,** and press **ENTER**.
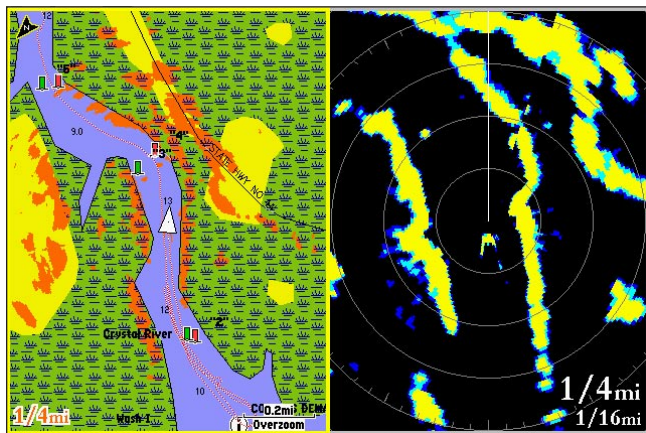
Map Page with Radar Overlay   Radar Page

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 **ADJ/MENU**.
2. Use the **Rocker** to highlight **Radar Options,** and press **ENTER**.

APPENDIX

European License Requirements

Country		Country	
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.

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 21: 2 kW, GMR 41: 4kW

Power Input Source: 10–35 VDC, 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

FCC Compliance

The GMR 21/41 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.

Declaration of Conformity

Hereby, Garmin declares that this GMR 21/41 Marine Radar product is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

To view the full Declaration of Conformity, see the Garmin Web site for your Garmin product: http://www.garmin.com/products/sp310/. Click Manuals and then select the Declaration of Conformity.

Software License Agreement

BY USING THE GMR 21/41, YOU AGREE TO BE BOUND BY THE TERMS AND CONDITIONS OF THE FOLLOWING SOFTWARE LICENSE AGREEMENT. PLEASE READ THIS AGREEMENT CAREFULLY.

Garmin grants you a limited license to use the software embedded in this device (the "Software") in binary executable form in the normal operation of the product. Title, ownership rights and intellectual property rights in and to the Software remain in Garmin.

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LIMITED WARRANTY

This Garmin product is warranted to be free from defects in materials or workmanship for one year from the date of purchase. Within this period, Garmin will at its sole option, repair or replace any components that fail in normal use. Such repairs or replacement will be made at no charge to the customer for parts or labor, provided that the customer shall be responsible for any transportation cost. This warranty does not cover failures due to abuse, misuse, accident or unauthorized alteration or repairs.

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

Garmin retains the exclusive right to repair or replace the unit or software or offer a full refund of the purchase price at its sole discretion. SUCH REMEDY SHALL BE YOUR SOLE AND EXCLUSIVE REMEDY FOR ANY BREACH OF WARRANTY.

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 21/41 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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⚠ Caution

Failure to avoid the following potentially hazardous situations may result in injury or property damage.

Use the GMR 21/41 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 21/41 to all available navigation sources, including the information from other NAVAIDs, visual sightings, charts, etc. For safety, always resolve any discrepancies before continuing navigation.

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

Failure to avoid the following potentially hazardous situations could result in an accident or collision resulting in death or serious injury.

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.

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.

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For the latest free software updates (excluding map data) throughout the life of your Garmin products, visit the Garmin Web site at www.garmin.com.

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