

GARMIN®



GHC™ 50

Owner's Manual

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Garmin Corporation

M/N: E3545

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Introduction

WARNING

See the *Important Safety and Product Information* guide in the product box for product warnings and other important information.

You are responsible for the safe and prudent operation of your vessel. The autopilot is a tool that enhances your capability to operate your boat. It does not relieve you of the responsibility of safely operating your boat. Avoid navigational hazards and never leave the helm unattended.

Learn to operate the autopilot on calm and hazard-free open water.

Use caution when operating the autopilot near hazards in the water, such as docks, pilings, and other boats.

The autopilot system continuously adjusts the steering of your boat to maintain a constant heading. In addition to the basic heading-hold functionality, the system allows manual steering and several modes of automatic-steering functions and patterns.

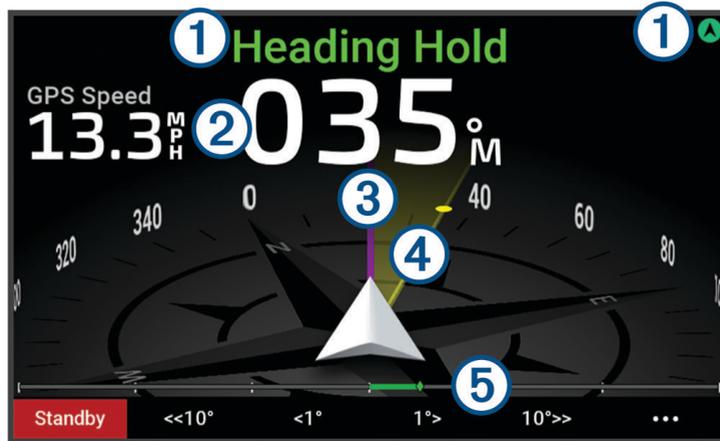
You can operate the autopilot system using the helm control device. Using the helm control, you engage and steer, set up, and customize the autopilot system.

For information about installing the helm control or other components of the autopilot system, see the installation instructions provided with the helm control and the autopilot system.

Basic Autopilot Operation

Heading Screen

The heading screen displays the status of the autopilot.



Autopilot status information and icon.

① Standby and  appear in gray when the autopilot is in standby mode.

Heading Hold and  appear in green when the autopilot is engaged.

② Numeric heading information.

Shows the actual heading when the autopilot is in standby mode.
Shows the intended heading when the autopilot is engaged.

③ Actual heading (when the autopilot is engaged).

The magenta line shows the actual heading on the compass rose.

④ Intended heading (when the autopilot is engaged).

The yellow line is shown when using the helm control to adjust the heading. The autopilot steers the vessel until the actual heading aligns with the intended heading.

⑤ Rudder position indicator.

NOTE: This functionality is available only when a rudder sensor is connected

Standby Mode

CAUTION

The autopilot does not steer the boat in standby mode. You are responsible for controlling the helm when the autopilot is in standby mode.

In standby mode, you can engage the autopilot and adjust settings.

Standby and  at the top of the heading screen appear in gray when the autopilot is in standby mode.

Engaging the Autopilot

When you engage the autopilot, the autopilot takes control of the helm and steers the boat to maintain your heading.

From the heading screen in standby mode, select **Engage**.

Heading Hold and  at the top of the heading screen appear in green when the autopilot is engaged. Your actual and intended heading information shows in the center of the heading screen.

NOTE: When installed on a sailboat, you can engage either the standard heading hold or engage a wind hold when a compatible wind sensor is connected to the same NMEA 2000® network ([Wind Hold, page 6](#)).

Disengaging the Autopilot

When you disengage the autopilot, the autopilot stops controlling the helm and you must steer the boat to maintain your heading.

From the heading screen, while in heading hold, select **Standby**.

Standby and  at the top of the heading screen appear in gray when the autopilot is in standby mode.

CAUTION

The autopilot does not steer the boat while it is in standby mode. You are responsible for controlling the helm when the autopilot is in standby mode.

Heading Hold

You can engage the autopilot heading hold function to maintain your current heading without steering the helm or the rudder.

Heading Adjustment

When the autopilot is engaged, you can adjust the heading using the keys on the helm control or using the helm if your autopilot is equipped with Shadow Drive™ technology.

Adjusting the Heading Using the Helm Control Device

Before you can steer your boat using the helm control device, you must engage the autopilot.

- Select <1° or 1°> to adjust the heading in 1° increments.

NOTE: Holding <1° or 1°> initiates rudder steering (power planing hull or power displacement hull boats only).

NOTE: You can adjust the settings to change step- and rudder-steering behavior.

- Select <<10° or 10°>> to adjust the heading in 10° increments.

NOTE: You can adjust the settings so that the step turn size is smaller or larger than 10°.

Adjusting the Heading Using the Helm

NOTE: You must enable the Shadow Drive feature before you can adjust the heading using the helm while the autopilot is engaged .

With the autopilot engaged, manually steer the boat using the helm.

Shadow Drive and  at the top of the heading screen appear in yellow, and you have full steering control using the helm.

When you release the helm and maintain a specific heading for a few seconds, the autopilot resumes a heading hold at the new heading.

Powerboat Autopilot Operation

Steering Patterns

WARNING

You are responsible for the safe operation of your boat. Do not begin a pattern until you are certain the water is clear of obstacles.

The autopilot can steer the boat in preset patterns for fishing, and it can perform other specialty maneuvers such as U-turns and Williamson turns.

Where noted, some pattern steering is based on GPS, and cannot be used without a GPS antenna or device connected to the same NMEA 2000 network as the helm control.

Following the U-Turn Pattern

You can use the u-turn pattern to turn the boat around 180 degrees and maintain the new heading.

- 1 From the autopilot screen, select **••• > Pattern Steering > U-Turn**.
- 2 Select **Engage Port** or **Engage Starboard**.

Setting Up and Following the Circles Pattern

You can use the circles pattern to steer the boat in a continuous circle, in a specified direction, and at a specified time interval.

- 1 From the autopilot screen, select **••• > Pattern Steering > Circles**.
- 2 If necessary, select **Time**, and select a time for the autopilot to steer one complete circle.
- 3 Select **Engage Port** or **Engage Starboard**.

Setting Up and Following the Zigzag Pattern

You can use the zigzag pattern to steer the boat from port to starboard and back, over a specified time and angle, across your present heading.

- 1 From the autopilot screen, select **••• > Pattern Steering > Zigzag**.
- 2 If necessary, select **Amplitude**, and select a degree.
- 3 If necessary, select **Period**, and select a length of time.
- 4 Select **Engage Zigzag**.

Following the Williamson Turn Pattern

You can use the Williamson turn pattern to steer the boat around with the intent of running alongside the location where the Williamson turn pattern was initiated. The Williamson turn pattern can be used in man overboard situations.

- 1 From the autopilot screen, select **••• > Pattern Steering > Williamson Turn**.
- 2 Select **Engage Port** or **Engage Starboard**.

Following an Orbit Pattern

Before you can use this steering pattern, the helm control must be connected to the same NMEA 2000 network as a compatible Garmin® chartplotter and a GPS source.

You can use the orbit pattern to steer the boat in a continuous circle around the active waypoint. The size of the circle is defined by your distance from the active waypoint when you begin the orbit pattern.

See the owner's manual for your Garmin chartplotter for more information about setting and using waypoints.

- 1 From the autopilot screen, select **••• > Pattern Steering > Orbit**.
- 2 Select **Engage Port** or **Engage Starboard**.

Setting Up and Following the Cloverleaf Pattern

Before you can use this steering pattern, the helm control must be connected to the same NMEA 2000 network as a compatible Garmin chartplotter and a GPS source.

You can use the cloverleaf pattern to steer the boat to repeatedly pass over an active waypoint. When you begin the cloverleaf pattern, the autopilot drives the boat toward the active waypoint and begins the cloverleaf pattern. You can adjust the distance between the waypoint and the location where the autopilot turns the boat for another pass over the waypoint. The default setting turns the boat at a range of 1000 ft. (300 m) from the active waypoint.

See the owner's manual for your Garmin chartplotter for more information about setting and using waypoints.

- 1 From the autopilot screen, select **••• > Pattern Steering > Cloverleaf**.
- 2 If necessary, select **Length**, and select a distance.
- 3 Select **Engage Port** or **Engage Starboard**.

Setting Up and Following a Search Pattern

Before you can use this steering pattern, the helm control must be connected to the same NMEA 2000 network as a compatible Garmin chartplotter and a GPS source.

You can use the search pattern to steer the boat in increasingly larger circles outward from the active waypoint, forming a spiral pattern. When you begin the search pattern, the autopilot drives the boat to the active waypoint and begins the pattern.

See the owner's manual for your Garmin chartplotter for more information about setting and using waypoints.

You can adjust the distance between each circle in the spiral. The default distance between circles is 50 ft. (20 m).

- 1 From the autopilot screen, select **••• > Pattern Steering > Search**.
- 2 If necessary, select **Search Spacing**, and select a distance.
- 3 Select **Engage Port** or **Engage Starboard**.

Cancelling a Steering Pattern

- Physically steer the boat.
NOTE: Shadow Drive feature must be enabled to cancel a steering pattern by physically steering the boat.
- Select **Standby**.

Sailboat Autopilot Operation

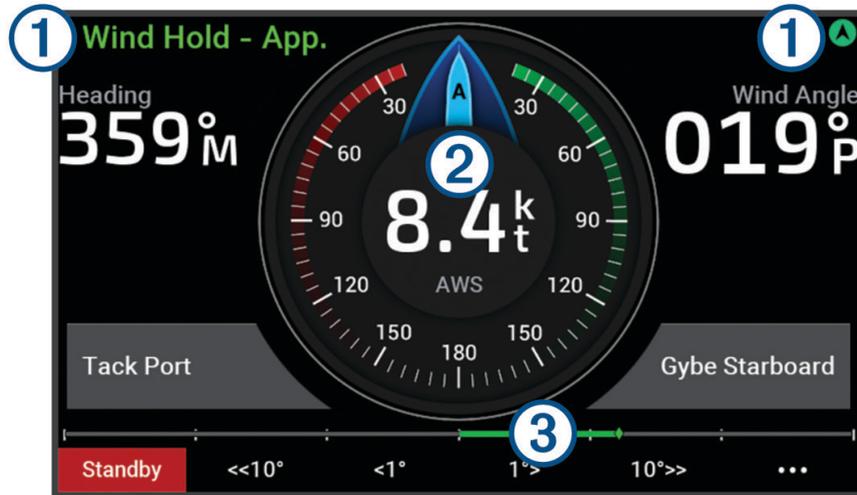
CAUTION

When engaged, the autopilot controls only the rudder. You and your crew remain responsible for the sails while the autopilot is engaged.

In addition to heading hold, you can use the autopilot to maintain a wind hold. You can also use the autopilot to control the rudder while tacking and gybing.

Wind Hold

You can set the autopilot to maintain a specific bearing relative to the apparent or true wind angle. You must connect a compatible wind sensor the same NMEA 2000 network as the autopilot system to perform a wind hold or wind-based steering maneuvers.



Autopilot status information and icon.

- 1 Standby and  appear in gray when the autopilot is in standby mode. Wind Hold and  appear in green when the autopilot is engaged in wind hold.
- 2 Wind gauge
Shows the true wind speed (TWS) or apparent wind speed (AWS).
- 3 Rudder position indicator.
NOTE: This functionality is available only when a rudder sensor is connected

Engaging Wind Hold

Before you can engage wind hold, you must connect a NMEA 2000 wind sensor to the autopilot.

- 1 When the autopilot is in standby mode, select **•••**.
- 2 Select an option:
 - To engage an apparent wind hold, select **Engage App. Wind Hold**.
 - To engage a true wind hold, select **Engage True Wind Hold**.

TIP: You can quickly engage the last type of wind hold used by selecting  from standby mode.

Changing the Wind Hold Type

With the wind hold engaged, select **•••** > **Wind Hold Type**.

The wind hold type changes from Apparent to True, or vice versa.

Engaging Wind Hold from Heading Hold

Before you can engage wind hold, you must connect a NMEA 2000 wind sensor to the autopilot.

- 1 With heading hold engaged, select **•••**.
- 2 Select an option:
 - To change from heading hold to apparent wind hold, select **Engage App. Wind Hold**.
 - To change from heading hold to true wind hold, select **Engage True Wind Hold**.

Adjusting the Wind Hold Angle

You can adjust the wind hold angle on the autopilot when wind hold is engaged.

- To adjust the wind hold angle in increments of 1°, select <1° or 1°>. **NOTE:** Holding <1° or 1°> for a few seconds automatically transitions the autopilot from Wind Hold to Heading Hold and initiates rudder steering (*Heading Hold*, page 3).
- To adjust the wind hold angle in increments of 10°, select <<10° or 10°>>. **NOTE:** You can adjust the settings so that the step turn size is smaller or larger than 10°.

Tack and Gybe

You can set the autopilot to perform a tack or gybe while heading hold or wind hold is engaged.

Tacking and Gybing from Heading Hold

- 1 Engage a heading hold (*Engaging the Autopilot*, page 3).
- 2 Select ●●●.
- 3 Select an option.
The autopilot steers your boat through a tack or gybe.

Tacking and Gybing from Wind Hold

Before you can engage wind hold, you must have a wind sensor installed.

- 1 Engage wind hold (*Engaging Wind Hold*, page 6).
- 2 Select ●●●.
- 3 Select an option.
TIP: You can begin a tack or gybe maneuver directly from wind hold by using the dedicated on-screen buttons.
The autopilot steers your boat through a tack or gybe, and information about the progress of the tack or gybe appears on the screen.

Setting a Tack Delay

The tack delay allows you to delay steering a tack after you initiate the maneuver.

- 1 From the autopilot screen, select ●●● > **Autopilot Setup** > **Sailing Setup** > **Tack Delay**.
- 2 Select the length of the delay.
- 3 If necessary, select **Done**.

Enabling the Gybe Inhibitor

NOTE: The gybe inhibitor does not prevent you from manually performing a gybe using the helm or step steering.

The gybe inhibitor prevents the autopilot from performing a gybe.

- 1 From the autopilot screen, select ●●● > **Autopilot Setup** > **Sailing Setup** > **Gybe Inhibitor**.
- 2 Select **Enabled**.

Adjusting the Heading Tack Angle

By default, the heading angle when performing a tack maneuver is 45 degrees. You can adjust this angle.

- 1 From the autopilot screen, select ●●● > **Autopilot Setup** > **Sailing Setup** > **Hdg. Tack Ang.**
- 2 Adjust the angle.
- 3 If necessary, select **Done**.

Adjusting the Autopilot Response

The Response setting allows you to adjust the autopilot responsiveness for varying sea and wind conditions. For advanced autopilot configuration, see the configuration guide included with your autopilot system.

1 From the autopilot screen, select **••• > Response**.

2 Adjust the rudder response.

If you want the rudder to be more responsive and move more quickly, increase the value. If the rudder is too responsive and moving too quickly, decrease the value.

Autopilot Settings and Configuration

The autopilot system should be commissioned by a professional at the time of installation, and further configuration is not necessary.

You can adjust certain preferences and settings on the helm control device if needed.

Autopilot Configuration

NOTICE

To avoid damage to your boat, the autopilot system should be installed and configured by a qualified marine installer. Specific knowledge of marine steering and electrical systems is required for proper installation and configuration.

The autopilot system must be configured to work properly with your boat. You can configure the autopilot using a chartplotter on the same NMEA 2000 network as the autopilot. For configuration instructions, go to support.garmin.com, and download the configuration guide for your specific autopilot model.

Adjusting the Step Steering Increment

1 From the autopilot screen, select **••• > Autopilot Setup > Step Turn Size**.

2 Select an increment.

Selecting the Preferred Heading Source

NOTICE

For best results, use the autopilot CCU internal compass for the heading source. Using a third-party GPS compass can cause the data to be delivered erratically and may result in excessive delays. The autopilot needs timely information, and therefore cannot often use third-party GPS compass data for GPS location or speed. If a third-party GPS compass is used, the autopilot will likely report loss of navigation data and speed source periodically.

If you have more than one heading source on the network, you can select a your preferred source. The source could be a compatible GPS compass or a magnetic heading sensor.

1 From the autopilot screen, select **••• > Autopilot Setup > Preferred Sources**

2 Select a source.

If the selected heading source is unavailable, the autopilot screen does not display any data.

Disabling the Shadow Drive Feature

NOTE: The Shadow Drive feature is not available on all autopilot models.

1 From the autopilot screen, select **••• > Autopilot Setup > Shadow Drive Setup**.

2 Select **Shadow Drive** to disable the Shadow Drive feature.

The Shadow Drive feature is disabled. You can repeat these steps to enable the feature again.

NOTICE

If the Shadow Drive sensor is disabled, steering the boat manually will not disengage the autopilot system. You must use the helm control or connected chartplotter to disengage the autopilot system.

Adjusting the Sensitivity of the Shadow Drive Feature

You can adjust the sensitivity of the Shadow Drive feature to change how much manual helm activity it takes to disengage the autopilot. A higher sensitivity setting will disengage the autopilot with less manual movement of the helm.

NOTE: The Shadow Drive feature is not available on all autopilot models.

- 1 From the autopilot screen, select **••• > Autopilot Setup > Shadow Drive > Sensitivity**.
- 2 Adjust the sensitivity higher or lower.

Reactor™ Autopilot Remote Control

WARNING

You are responsible for the safe and prudent operation of your vessel. The autopilot is a tool that enhances your capability to operate your boat. It does not relieve you of the responsibility of safely operating your boat. Avoid navigational hazards and never leave the helm unattended.

You can wirelessly connect a Reactor autopilot remote control to the chartplotter to control the compatible Reactor autopilot system.

For more information about using the remote, see the Reactor autopilot remote control instructions at garmin.com

Pairing a Reactor Autopilot Remote Control

- 1 On the helm control, select **••• > Global Settings > Communications > Wireless Devices > Wireless Remotes > Autopilot Remote**.
- 2 If necessary, select **Enable**.
- 3 Select **New Connection**.
- 4 On the remote control, select  **> Pair with MFD**.
The helm control beeps and shows a confirmation message.
- 5 On the helm control, select **Yes** to complete the pairing process.

Changing the Functions of the Reactor Autopilot Remote Control Action Keys

You can change the patterns or actions assigned to the Reactor autopilot remote control action keys.

- 1 Select **••• > Global Settings > Communications > Wireless Devices > Wireless Remotes > Autopilot Remote > Button Actions**.
- 2 Select an action key to change.
- 3 Select a pattern or action to assign to the action key.

Enabling the Autopilot Controls on a Garmin Watch

You can control the Garmin autopilot with a compatible Garmin watch. Go to garmin.com for a list of compatible Garmin watches.

NOTE: Smart notifications are not available on your watch when the autopilot remote control is enabled.

- 1 Select **••• > Global Settings > Communications > Wireless Devices > Connect IQ™ Apps > Autopilot Control > Enable > New Connection**.
- 2 Follow the on-screen instructions.

Customizing the Autopilot Button Actions

Before you can set the autopilot button actions, you must install and configure a compatible Garmin autopilot. You can select up to three autopilot actions for your Garmin watch to perform.

NOTE: Available autopilot actions depend on the autopilot installed.

- 1 On the chartplotter, select **Communications > Wireless Devices > Connect IQ™ Apps > Autopilot Control > Button Actions**.
- 2 Select a button.
- 3 Select an action.

Viewing Autopilot Diagnostics

You can view a diagnostics report of the autopilot system to help with configuration and troubleshooting.

- 1 From the autopilot screen, select **••• > Autopilot Setup > Diagnostics**.
- 2 Select **<** and **>** to view the diagnostics pages.

TIP: You can select Save to Card to save the diagnostic information to a memory card in a connected chartplotter or card reader.

Device Settings and Preferences

You can adjust settings and preferences specific to this helm control device, such as sounds and units of measure.

System Settings

Select **••• > Global Settings > System**.

Sounds and Display: Adjusts the display settings and the audio settings (if available).

GPS: Provides information about the GPS satellites and settings.

System Information: Provides information about the devices on the network and the software version.

Auto Power Up: Controls which devices turn on automatically when power is applied.

Auto Power Off: Automatically turns off the system after it has been asleep for the selected length of time.

Simulator: Turns the simulator on or off and allows you to set the time, date, speed, and simulated location.

Sounds and Display Settings

Select **••• > Global Settings > System > Sounds and Display**.

Beeper: Turns on and off the tone that sounds for alarms and selections.

Backlight: Sets the backlight brightness.

Backlight Sync: Synchronizes the backlight brightness of other chartplotters and instruments in the station.

Color Mode: Sets the device to display day or night colors. You can select the Auto option to allow the device to set day or night colors automatically based on the time of day.

Startup Image: Sets the image that appears when you turn on the device.

GPS Settings

NOTE: GPS settings and info are available only when the helm control device is connected to a GPS antenna or a device with GPS capability.

Select **••• > Global Settings > System > GPS.**

Skyview: Shows the relative position of GPS satellites in the sky.

GLONASS: Turns on or off GLONASS data (Russia satellite system). When the system is used in situations with poor sky visibility, GLONASS data can be used in combination with GPS to provide more accurate position information.

WAAS/EGNOS: Turns on or off WAAS data (in North America) or EGNOS data (in Europe), which can provide more-accurate GPS position information. When using WAAS or EGNOS data, the device may take longer to acquire satellites.

Galileo: Turns on or off Galileo data (European Union satellite system). When the system is used in situations with poor sky visibility, Galileo data can be used in combination with GPS to provide more accurate position information.

Speed Filter: Averages the speed of your vessel over a short period of time for smoother speed values.

Source: Allows you to select the preferred source for GPS data.

Viewing System Software Information

You can view the software version and the unit ID number. You may need this information to update the system software or for troubleshooting purposes.

Select **••• > Global Settings > System > System Information > Software Information.**

Viewing the Event Log

The event log shows a list of system events.

Select **••• > Global Settings > System > System Information > Event Log.**

Viewing E-label Regulatory and Compliance Information

The label for this device is provided electronically. The e-label may provide regulatory information, such as identification numbers provided by the FCC or regional compliance markings, as well as applicable product and licensing information. Not available on all models.

- 1 Select **••• > Global Settings.**
- 2 Select **System.**
- 3 Select **Regulatory Information.**

Preferences Settings

Select **••• > Global Settings > Preferences.**

Units: Sets units of measure.

Language: Sets the on-screen text language.

Filters: Smooths out the values shown in the data fields, which can decrease the noise or show longer term trends. Increasing the filter setting increases the smoothing and decreasing it reduces the smoothing. A filter setting of 0 will disable the filter and the value shown will be the raw value from the source. You can also synchronize these settings across all devices that enable the Sync Filters setting.

Keyboard Layout: Arranges the keys on the on-screen keyboard.

Screenshot Capture: Allows the device to save images of the screen.

Communications Settings

NMEA 2000 Settings

Select **•••** > **Global Settings** > **Communications** > **NMEA 2000 Setup**.

Device List: Displays the devices connected to the network and allows you to set options for some transducers connected using the NMEA 2000 network.

Label Devices: Changes the labels for available connected devices.

Naming Devices and Sensors on the Network

You can name devices and sensors connected to the Garmin Marine Network and the NMEA 2000 network.

- 1 Select **•••** > **Global Settings** > **Communications**.
- 2 Select **Marine Network** or **NMEA 2000 Setup** > **Device List**.
- 3 Select a device from the list on the left.
- 4 Select **Change Name**.
- 5 Enter the name, and select **Done**.

Wi-Fi Network

Setting Up the Wi-Fi Network

This device can host a Wi-Fi network to which you can connect wireless devices. The first time you access the wireless network settings, you are prompted to set up the network.

NOTE: You do not have the option to set up a Wi-Fi network if the helm control device is connected to the same Garmin Marine Network as a chartplotter that has Wi-Fi capabilities. On a Garmin Marine Network, a chartplotter must host the Wi-Fi network.

- 1 Select **•••** > **Global Settings** > **Communications** > **Wi-Fi Network** > **Wi-Fi** > **On** > **OK**.
- 2 If necessary, enter a name for this wireless network.
- 3 Enter a password.
You will need this password to access the wireless network from a wireless device. The password is case-sensitive.

Connecting a Wireless Device to the Helm Control

Before you can connect a wireless device to the helm control wireless network, you must configure the wireless network on the helm control ([Setting Up the Wi-Fi Network, page 12](#)).

You can connect multiple wireless devices to the helm control to share data.

- 1 From the wireless device, turn on Wi-Fi technology, and search for wireless networks.
- 2 Select the name of your helm control wireless network ([Setting Up the Wi-Fi Network, page 12](#)).
- 3 Enter the wireless network password.

Changing the Wireless Channel

You can change the wireless channel if you have trouble finding or connecting to a device, or if you experience interference.

- 1 Select **•••** > **Global Settings** > **Communications** > **Wi-Fi Network** > **Advanced** > **Channel**.
- 2 Enter a new channel.

You do not need to change the wireless channel of devices connected to this network.

Garmin Marine Network

The Garmin Marine Network allows you to share data from Garmin peripheral devices with chartplotters quickly and easily. You can connect a device to the Garmin Marine Network to receive data from and share data with other devices and chartplotters that are compatible with the Garmin Marine Network.

Select **•••** > **Global Settings** > **Communications** > **Marine Network**.

Setting Alarms

CAUTION

The Beeper setting must be turned on to make alarms audible (*Sounds and Display Settings*, page 10). Failure to set audible alarms could lead to injury or property damage.

System Alarms

Select **••• > Global Settings > Alarms > System**.

Unit Voltage: Sets an alarm to sound when the battery reaches a specified low voltage.

GPS Accuracy: Sets an alarm to sound when the GPS location accuracy falls outside the user-defined value.

NMEA 2000 Alarms

Select **••• > Global Settings > Alarms > Network**.

NMEA 2000 Alerts: Enables and disables alerts regarding the NMEA 2000 network and connected devices.

Software Update

You may need to update the device software when you install the device or add an accessory to the device.

The software update requires either a Garmin memory card reader accessory or another Garmin chartplotter connected over the Garmin Marine Network.

Go to garmin.com/support/software/marine.html for more information.

