GARMIN

# VHF 110/210 AIS Series

## Owner's Manual

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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.

## Radio Overview

**VHF 110**

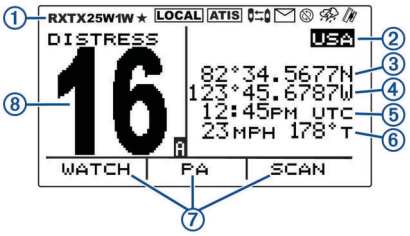
**VHF 210 AIS**

| Item | Key | Description |
|---|---|---|
| ① | DISTRESS | Lift the door and press to send a DSC distress call with a programmed MMSI number (*Entering Your MMSI Number*, page 4). |
| ② | VOL/SQ | Press the dial to switch between volume or squelch.<br>Rotate the dial to adjust the volume or squelch level. |
| ③ | ▬ | Select the key that corresponds to the on-screen item to select the item. |
| ④ | SELECT | On the home screen, rotate the dial to change the channel.<br>On the home screen, press the dial to toggle weather channels (*NOAA® Weather Broadcasts and Alerts*, page 4).<br>Rotate the dial to highlight an item in a list.<br>Press the dial to select an item. |
| | PWR<br>North America: 16/9<br>International: 16+ | Hold to turn the radio on and off.<br>Press to toggle between preset channels. |
| | DSC | Select to view a menu of DSC options. |
| | HI/LO | Select to change the transmission mode and power settings. |
| | CLEAR | Select to return to the previous menu option.<br>Select to cancel or mute an incoming DSC call. |
| | MENU | From the home screen, select to view configuration options.<br>From a menu, select to return to the home screen. |

## Handset Overview

| | | |
|---|---|---|
| ① | PTT | Hold to broadcast. |
| ② | ▲ or ▼ | Select to change the channel on the radio. |
| ③ | North America: 16/9<br>International: 16+ | Select to toggle between preset channels. |

## Home Screen




| | |
|---|---|
| ① | Current radio system status, settings, and alerts. |
| ② | Current International, Canadian, or USA frequency band |
| ③ | *Current latitude |
| ④ | *Current longitude |
| ⑤ | *Current time |
| ⑥ | **Current speed over ground (SOG) or course over ground (COG) |
| ⑦ | Soft-key functions change depending on your current activity |
| ⑧ | Current working channel |

*The current latitude, longitude, and time appear when the transceiver is connected to a GPS device. You can enter data manually when the transceiver is not connected to a GPS device.

** The current SOG and COG appear when the transceiver is connected to a GPS device, and the option is enabled in the menu (*Number Settings*, page 9).

### System Status Icons

| Icon | Status |
|---|---|
| RX | Receiving an incoming signal |
| TX | Transmitting |
| 25W | Transmitting at 25 W |
| 1W | Transmitting at 1 W |
| ★ | Saved channel |
| LOCAL | Local receiver mode, often used in areas with radio frequency interference (harbors) |
| ATIS | ATIS enabled |
| | Position tracking enabled |
| | Auto channel changing disabled |
| | Incoming or missed DSC call |

| Icon | Status |
|---|---|
| | Weather alert |
| | External GPS connected |

# Basic Operation

## Turning On and Off the Device

Hold **PWR**.

**TIP:** You can set the device to turn on automatically (*System Settings*, page 9).

## Adjusting the Radio Volume

1. Set the squelch level to **MIN** before you adjust the radio volume (optional).
2. Turn the **VOL/SQ** dial to increase or decrease the radio volume.

## Adjusting the Squelch Level

You can adjust the sensitivity level of the squelch to filter out background noise. When you increase the squelch level, you hear fewer weak background signals when you are receiving.

1. Press the **VOL/SQ** dial.

   SQUELCH appears on the screen.
2. Turn the **VOL/SQ** dial counter-clockwise until you hear audio.
3. Turn the **VOL/SQ** dial clockwise until there is no background noise.

## Selecting the Frequency Band

You can switch between the USA, International, or Canadian frequency bands (*Channel Lists*, page 10).

**NOTE:** Not all frequency bands are available on all device models.

1. Select **MENU** > **CHANNEL** > **FREQUENCY BAND**.
2. Select a frequency band.

## Selecting a Channel

You can select an International, Canadian, or USA channel (*Selecting the Frequency Band*, page 2).

Select an option:

- To select a channel on the device, turn the **SELECT** dial.
- To select a channel on the handset, select ▲ or ▼.

## Transmitting with the Radio or Handset

1. Select an appropriate channel.
2. Ensure the channel is clear.

   **NOTE:** You cannot obstruct the communications of other people due to Federal Communications Commission (FCC) and international guidelines.
3. Select **PTT** on the handset.

   TX appears at the top of the screen.
4. Speak into the handset.

   **NOTE:** Five minutes is the maximum time allowed for transmission. After five minutes of transmitting, PTT is disabled until you release PTT.
5. Release **PTT**.

## Bypassing the Low Transmission Power Setting

In the USA frequency band, transmissions on channels 13 and 67 are required to be low-power (1 W) by default, because they are intended for intership (bridge-to-bridge) communication. If other radios cannot receive these channels due to the low power setting, you can bypass the default restriction.

1. From USA channels 13 or 67, select **PTT**.
2. While transmitting, select **25W**.

## Scanning and Saving Channels

### Scanning All Channels

When you scan channels, the radio searches for channels that are broadcasting. When a channel is broadcasting, the radio pauses on that channel until the broadcast stops. After four seconds of inactivity on a channel, the radio resumes scanning.

**NOTE:** When you turn on ATIS (*Automatic Transmitter Identification System*, page 8), the radio does not scan or save channels.

1. Select **SCAN** > **ALL**.
2. Select an option:
   - To exclude the currently active channel from subsequent passes and resume scanning, select **SKIP**.
   - To scan channel 16 each time another channel is scanned, select **+CH16**.

     For example, the radio scans channel 21, channel 16, channel 22, channel 16, and so on.

     **+CH16** appears on the device screen.
   - To scan channel 16 in its usual order, select **-CH16**.

     For example, the radio scans channel 14, channel 15, channel 16, channel 17, and so on.
   - To end the scan, select **EXIT**.

     The radio stops scanning and tunes to the last used, active channel.

### Saving a Channel

You can save any channel except the weather (WX) channels. You can save an unlimited number of channels.

1. Select **SCAN**.
2. Turn the **SELECT** dial until you find a channel you want to save.
3. Select **SAV CH**.

   ★ appears above a saved channel.

### Removing a Saved Channel

1. Select **SCAN**.
2. Turn the **SELECT** dial until you find a saved channel.

   **NOTE:** A saved channel has ★ above it.
3. Select **SAV CH**.

### Scanning Saved Channels

You can scan only the channels you have saved. When a saved channel is broadcasting, the radio pauses on that channel until the broadcast stops. After four seconds of inactivity on a channel, the radio resumes scanning.

**NOTE:** When you turn on ATIS (*Automatic Transmitter Identification System*, page 8), the radio does not scan or save channels.

1. Select **SCAN** > **SAVED**.
2. Select an option:
   - To exclude the currently active channel from subsequent passes and resume scanning, select **SKIP**.
   - To scan channel 16 each time another saved channel is scanned, select **+CH16**.

     For example, the radio scans saved channel 21, channel 16, saved channel 25, channel 16, and so on.

     **+CH16** appears on the device screen.

- To stop scanning channel 16, select **-CH16**.

  For example, the radio scans saved channel 21, saved channel 25, and so on.
- To end the scan, select **EXIT**.

  The radio stops scanning and tunes to the last used active channel.

### Monitoring Multiple Channels

Before you can monitor multiple channels, you must turn off ATIS (*Automatic Transmitter Identification System*, page 8).

You can monitor priority channels and the currently selected channel for broadcasting activity. Channel 16 is the first-priority channel on your radio. Channel 9 is the default second-priority channel. You can program a different channel as your second-priority channel (*Selecting a Different Second-Priority Channel*, page 3).

Select **WATCH**.

#### *Monitoring Two Channels*

You can monitor your current channel and channel 16 at the same time.

Select **WATCH** > **DUAL**.

DUAL WATCH and the channels you are monitoring appear on the screen. For example, DUAL WATCH CH:, and 16 + 9.

#### *Monitoring Three Channels*

You can monitor your current channel, channel 16, and your second-priority channel at the same time.

Select **WATCH** > **TRI**.

TRI WATCH, your current channel, channel 16, and your second-priority channel appear on the screen. For example, TRI WATCH CH:, and 75 + 16 + 9.

## Selecting a Different Second-Priority Channel

You can select a channel other than channel 9 as your second-priority channel.

1. Select **MENU** > **CHANNEL** > **2ND PRIORITY**.
2. Select an option:
   - On the radio, turn the **SELECT** dial to the preferred channel.
   - On the handset, select ▲ or ▼ to find the preferred channel.
3. Select **OK**.

## Switching to Priority Channels

You can quickly switch between your current working channel and a priority channel. When you change to a priority channel, the transmit power is set to high (25 W) automatically, and when you change back to your current channel, the transmit-power setting is restored.

On North American models, you can quickly switch between channel 16, your second-priority channel, and your original channel using the 16/9 key.

On International models, you can quickly switch between channel 16 and your original channel using the 16+ key.

1. To switch from your current channel to channel 16, select **16/9** or **16+**.

   The transmit power changes to high (25 W) automatically. You can select **HI/LO** > **1W** to change the transmit power to low (1 W).
2. On North American models, select **16/9** to switch to your second-priority channel.
3. Select **16/9** or **16+** to return to your previous channel and transmit-power setting.

## Setting the Receiving Sensitivity

You can control the receiving sensitivity of the radio. When you have noise in high-traffic areas or areas with electromagnetic interference, such as near cell-phone towers, you can set the receiving sensitivity to LOC to decrease receiver sensitivity. In remote areas and on open water, you can set the receiving sensitivity to DIST to ensure that you use the maximum range of the receiver.

1. Select **HI/LO**.
2. Select an option:
   - Select **LOC** to enable local sensitivity.
   - Select **DIST** to enable distant sensitivity.

## Switching Between 1 W and 25 W Transmitting Modes

You can control the transmitting power of the radio. Low (1 W) is used for local transmissions, and high (25 W) is used for distance and distress transmissions.

When two signals broadcast on the same frequency, a VHF radio receives only the stronger of the two signals. You should transmit calls other than distress calls using the lowest power setting that allows you to communicate, to reduce the possibility that your transmissions interfere with the transmissions of others.

In the USA frequency band, transmissions on channels 13 and 67 must be low (1 W) by default. You can bypass the power setting temporarily during transmission (*Bypassing the Low Transmission Power Setting*, page 2).

In the International channel band, transmissions on channels 15 and 17 must be low (1 W), and the radio does not allow transmissions on these channels to be changed to high (25 W).

1. Select **HI/LO**.
2. Select **1W** or **25W**.

## Using the Hailer

Before you can use the hailer function, you must provide and install a hailer horn on your boat deck or tower (optional). For more information, see the *VHF 110/210 AIS Series Installation Instructions*.

The hailer allows you to make on-boat or ship-to-shore announcements, and allows two-way communications between connected radios. You can address the ship using the radio or handset, and sounds received through the horn can be heard through the radio speaker. For vessels with enclosed cabins, the hailer allows you to hear sounds from the deck.

**NOTE:** Hailer functionality is not available on all VHF radio models.

**NOTE:** When the radio is in hailer mode, it does not receive broadcasts from the currently active channel.

1. Select **PA** > **HAILER**.

   Sounds received through the horn are heard through the radio speaker.
2. Hold **PTT**.
3. Select an option:
   - To make an announcement, speak into the handset.
   - To adjust the volume of the hailer broadcast, turn the **SELECT** dial on the radio, or select ▲ or ▼ on the handset.
4. Release **PTT** to stop broadcasting and listen for broadcasts from other connected radios on the ship.

## Foghorn

**NOTE:** Foghorn functionality is not available on all VHF radio models.

Before you can use the foghorn, you must provide and install a hailer horn (optional) on the deck or tower of your boat. For more information, see the *VHF 110/210 AIS Series Installation Instructions*.

The foghorn is part of the public address system of your radio. You can sound the foghorn through a hailer horn or an external speaker. Your radio can sound the horn automatically using standard patterns, or you can sound the horn manually. When you manually operate the foghorn, sounds received through the horn can be heard through the radio speaker between soundings.

### Sounding the Foghorn Automatically

1. Select **PA** > **FOG** > **AUTO**.
2. Select a foghorn-type option.

   The radio alternates between sounding the pattern of tones or rings and receiving radio broadcasts.
3. Turn the **SELECT** dial to adjust the volume of the horn (optional).

### Sounding the Foghorn Manually

**NOTE:** When you sound the horn manually, the radio does not receive broadcasts between horn soundings.

1. Select **PA** > **FOG** > **MANUAL**.

   Sounds are received through the horn and heard through the radio speaker.
2. Hold **PTT**.

   **NOTE:** The horn stops sounding when you release PTT.
3. Turn the **SELECT** dial to adjust the volume of the horn (optional).

### Adjusting the Sound Frequency of the Foghorn

You can increase or decrease the sound frequency of the foghorn. The pitch of the tone rises with an increase in frequency, and falls with a decrease in frequency. The minimum setting is 200 Hz, and the maximum setting is 850 Hz. The default setting is 350 Hz. Regulations dictate the correct frequency of foghorns, which correlate with the size of your vessel.

1. Select **MENU** > **SYSTEM** > **FOG FREQUENCY**.
2. Turn the **SELECT** dial to adjust the frequency in 50 Hz increments.
3. Select **ACCEPT**.

## Entering Text

You may need to enter a name, a number, or other text on the radio.

1. From a number or text field, turn the **SELECT** dial to change the number, letter, or character.
2. Press the **SELECT** dial to accept the number, letter, or character and move to the next space in the sequence.
3. Repeat this process for each number, letter, or character.

   **NOTE:** You can select ⬅ to return to the previous entry in the sequence.
4. Select **ACCEPT**.

# NOAA® Weather Broadcasts and Alerts

**NOTE:** This feature is not available on all radio models.

NOAA weather broadcasts on the weather (WX) channels are available only in the USA and certain regions in Canada.

Compatible radio models are programmed with 10 WX channels to monitor weather broadcasts from the National Oceanic and Atmospheric Organization (NOAA). WX channels are listen-only channels that broadcast in a continuous loop and are updated regularly. NOAA broadcasting information is regional and relevant to your broadcast area.

## Tuning Weather Broadcasts

1. From the home screen, press the **SELECT** dial.

   WX appears on the screen.
2. Turn the **SELECT** dial to change the weather channel.

## Enabling and Disabling Weather Alerts

You can enable weather (WX) alerts to sound when you are using standard radio channels.

1. When tuning weather broadcasts, select **ALERT** to enable or disable weather alerts.

   ⛈ indicates that weather alerts are enabled.
2. Select **EXIT**.

   The radio returns to normal operation while continuing to monitor weather alerts.

# Digital Selective Calling

## Digital Selective Calling

**NOTE:** Before you can use DSC capabilities, you must enter a Mobile Marine Safety Identity (MMSI) number (*Entering Your MMSI Number*, page 4). An MMSI number identifies each DSC radio, like a telephone number.

Digital Selective Calling (DSC) is a key component of the Global Maritime Distress and Safety System (GMDSS). DSC enables VHF radios to place and receive digital calls directly with other vessels and shore stations, including the USA and Canadian Coast Guards. Your radio includes full Class-D DSC capabilities.

If you have a GPS device connected to the transceiver, your latitude, longitude, and the current time are transmitted when you send a distress call or other type of DSC call. If you enter your position information manually, your latitude, longitude, and time of entry are transmitted with the call. Transmitting your location automatically speeds help in an emergency situation.

Channel 70 is reserved exclusively for DSC calls, and your device uses a dedicated receiver to maintain a constant watch on Channel 70. You do not need to change the channel to make a DSC call. Your device changes to Channel 70 automatically to transmit a DSC call. Your radio sends the DSC data over Channel 70 in less than one second, and then tunes to an appropriate channel for voice communications.

✉ appears on the device screen when you have an incoming or missed DSC call.

**NOTE:** The device disables DSC automatically when you turn on ATIS (*Automatic Transmitter Identification System*, page 8).

## Entering Your MMSI Number

***NOTICE***

You can enter your MMSI number only once. If you must change your MMSI number after entering it, you must take your radio to your Garmin® dealer for reprogramming.

The Mobile Marine Safety Identity (MMSI) number is a nine-digit code that acts as a DSC self-identification number, and it is required to use the DSC capabilities of your radio. You can obtain an MMSI number from the telecommunications authority or ship registry for your country. In the USA, you can obtain an MMSI number from these sources:

- Federal Communications Commission (FCC): assignments are recognized internationally
- BoatU.S.®, Sea Tow®, or United States Power Squadrons®: assignments are for USA waters only.

1. Select **MENU** > **DSC** > **MY MMSI**.
2. Enter your MMSI number (*Entering Text*, page 4).
3. Select **ACCEPT**.

   The radio prompts you to confirm your identity.
4. Enter your MMSI number again, and select **ACCEPT**.

   If the MMSI numbers you entered do not match, a message appears.
5. If necessary, select **RETRY**, and enter the number again.

## Viewing Your MMSI Number

Select **MENU** > **DSC** > **MY MMSI**.

## Distress Calls

When you make a distress call, your call is transmitted to all DSC-capable radios within receiving range. Your current GPS position (latitude and longitude) and the current time are included in the transmission if you have a GPS device connected to your transceiver. If you manually entered your position information with the time, that data is transmitted with the call.

**NOTE:** You should familiarize yourself with the standard distress-call format and protocol to ensure your calls are clear and effective.

### Sending an Undesignated Distress Call

When you send an undesignated distress call, the nature of your emergency is not transmitted to the receiving stations. Sending an undesignated distress call is a faster procedure that can save you time during an emergency.

1. Lift the spring-loaded door, and hold **DISTRESS** for at least 3 seconds.

   The radio beeps and counts down the seconds. DISTRESS CALL COUNTING DOWN appears on the screen.

   The radio sounds an alarm, switches to channel 70, and transmits your call on high (25 W) power.
2. Press any key to silence the alarm sound.

   The radio tunes to channel 16 on high (25 W) power.
3. Select **PTT** on the handset or radio to relay your distress message.

   The radio waits for an acknowledgment (ACK) on channel 70 from a listening station.

### Sending a Designated Distress Call

When you send a designated distress call, the nature of your emergency is transmitted to the receiving stations.

1. Lift the spring-loaded door, and press **DISTRESS**.
2. Turn the **SELECT** dial, and select the type of distress call.

   **TIP:** You can select CLEAR to exit the screen without sending a distress call.
3. Hold **DISTRESS** for at least three seconds.

   The radio beeps and counts down the seconds. DISTRESS CALL COUNTING DOWN appears on the screen.

   The radio sounds an alarm, switches to channel 70, and transmits your call on high (25 W) power.
4. Press any key to silence the alarm sound.

   The radio tunes to channel 16 on high (25 W) power.
5. Select **PTT** on the handset or radio to relay your message.

   The radio waits for an acknowledgment (ACK) on channel 70 from a listening station.

### Waiting For and Receiving and Acknowledgment for a Distress Call

If the radio does not receive an acknowledgment for a distress call, the radio retransmits the distress call randomly between 3.5 to 4.5 minutes later, and continues to retransmit the distress call at random intervals until the radio receives an acknowledgment.

When the radio receives the acknowledgment, it beeping and DISTRSS ACK appears on the screen.

1. Press any key to turn off the beeping.
2. Select ⌄ to view additional information.

   **TIP:** If the MMSI of the station transmitting the acknowledgment signal is an entry in your directory, the name associated with the MMSI number appears on the screen. If the MMSI of the station is not in your directory, the MMSI number appears on the screen.
3. Select **ACCEPT**.

### Stopping Automatic Retransmission of Distress Calls

Select **CANCEL**.

The radio remains tuned to channel 16.

**NOTE:** Selecting CANCEL ends the automatic repetition of the call, but does not communicate to other stations that you no longer have an emergency. If you no longer have an emergency, you should revoke the distress call (*Revoking a Distress Call*, page 5).

### Revoking a Distress Call

You do not transmit a distress call until you hold DISTRESS for at least three seconds. If you inadvertently make a distress call, or are no longer in distress, you should cancel the call immediately by transmitting a voice message to all stations on channel 16.

1. Select **CANCEL** > **YES**, and wait until **DISTRESS CANCEL HAS BEEN SENT** appears on the screen.
2. Select **OK**.
3. Hold **PTT** on the handset, and transmit an appropriate voice message to cancel the distress call (*Distress Call Cancellation Script*, page 5).
4. Select an option:
   - Select **END** to complete the distress-call cancellation and return to normal radio operation.
   - Select **RESEND** to resend the distress-call cancellation and start the process again.

#### *Distress Call Cancellation Script*

When you revoke a DSC distress call (*Revoking a Distress Call*, page 5), you should transmit an appropriate cancellation message.

For example, "All stations, all stations, all stations, this is _____(vessel name), MMSI number ____, position ____(North or South), ____(West or East). Cancel my distress alert of ____(date and time). This is ____(vessel name), MMSI number _____. Out."

## Placing Calls

### Placing Individual Calls

1. Select **DSC** > **INDIVIDUAL**.
2. Select an option:
   - To enter the MMSI number manually, select **MANUAL**, enter the MMSI number, and select **ACCEPT**.
   - To select an entry from the directory, select **DIRECTORY**, and select an entry.
   - To select a recent call, select **RECENT CALLS**.
3. Select a channel (*Individual Call or Group Call Channels*, page 6).

   The radio transmits the request with your call.
4. Select **CALL**.

   The radio transmits the call on channel 70, and returns to the previous channel while listening for an acknowledgment on

channel 70. After an acknowledgment is received, the radio changes to the channel you selected for the call.

### Placing Group Calls

Before you can place a call to a group, you must enter the MMSI number of the group into the directory (*Adding a Group*, page 8).

You can contact a group of specific vessels, such as a sailing club or flotilla, by making a group call.

1. Select **DSC** > **GROUP** > **CALL**.
2. Select a saved group.
3. Select a channel (*Individual Call or Group Call Channels*, page 6).

   The radio transmits the channel request with your call.
4. Select **CALL**.

   The radio transmits the call on channel 70, then changes to the selected channel.

### Individual Call or Group Call Channels

When placing an individual or group call, you should select from designated DSC channels. The radio transmits this request with your call.

- USA: channels 6, 8, 9, 10, 13, 17, 67, 68, 69, 71, 72, 73, and 77.
- Canada and International: all USA channels, plus channel 15

DSC channels are limited to channels that are available in all frequency bands. You can select CUSTOM to select a channel that is not listed. If you select a custom channel, the station you are calling may not be able to comply with the specified channel. You should select a channel that is appropriate for communication.

### Placing All-Ships Calls

All-ships calls are transmitted to all stations within receiving distance of your radio. You can make two types of all-ships calls. Safety calls broadcast significant navigational or weather-related information. Urgency calls communicate situations about the safety of a vessel or person when danger is not imminent. The captain should discern whether a situation warrants a safety call or an urgency call.

1. Select **DSC** > **ALL SHIPS**.
2. Select **SAFETY** or **URGENCY**.
3. Select a channel (*Individual Call or Group Call Channels*, page 6).

   The radio transmits the channel request with your call.
4. Select **CALL**.

   The radio transmits the call on channel 70, then changes to the selected channel.

### Requesting a Vessel's Position

Position data received from stations that respond to position request calls is sent over the NMEA® network. You can track the vessels on your Garmin chartplotter.

1. Select **DSC** > **POS. REQUEST**.
2. Select an option:
   - To enter the MMSI number manually, select **MANUAL**, enter the MMSI number, and select **ACCEPT**.
   - To select an entry from the directory, select **DIRECTORY**, and select an entry.
3. Select **CALL**.

   The radio transmits the call on channel 70 and returns to the previous channel. WAITING FOR ACKNOWLEDGE appears on the screen.

## Receiving Calls

### Receiving Distress Calls and Distress Relay Calls

When receiving a distress call or a distress relay call, DISTRESS or DISTR RELAY, and information about the call, such as MMSI number and the nature of the distress, appear on the radio screen. A distress call is sent from a vessel in need of assistance, and a distress relay call is sent from either another vessel or a station on behalf of a vessel in need of assistance.

The radio sends data related to the call over the NMEA network based on how you configure MMSI filters (*Configuring DSC NMEA Transmissions*, page 9).

When a distress call is received, select an option:

- To view additional information about the distress call, select ⌄.
- To accept the distress call and switch to channel 16, select **OK**.
- To ignore the distress call and stay on the current channel, select **CANCEL**.

### Receiving All-Ships Urgency and Safety Calls

When you receive an all-ships urgency or safety call, ALL SHIPS appears on the screen, and URGENCY or SAFETY appears as the type of call. If the channel request is for an invalid channel, INVALID CH REQUEST appears on the screen.

When an urgency or safety call is received, select an option:

- To view additional information about the call, select ⌄.
- To accept the call and switch to channel 16, select **OK**.
- To ignore the call and stay on the current channel, select **CANCEL**.

### Receiving Individual Routine Calls

When you receive an individual routine call, INDIVIDUAL appears on the screen, and ROUTINE appears as the type of call. If the channel request is for an invalid channel, INVALID CH REQUEST appears on the screen.

When a call is received on a valid channel, select an option:

- To accept the call and switch to the requested channel, select **OK**.
- To ignore the call and stay on the current channel, select **CANCEL**.

### Receiving Position Requests

You can configure the radio to reply automatically to incoming position requests, prompt you to review and approve the incoming requests before replying, or ignore incoming requests (*Sending Position Replies Automatically*, page 8).

When you receive a position request with automatic position replies enabled, SENDING ACKNOWLEDGE appears on the screen, and the radio sends your position automatically. After the position successfully transmits, POSITION SENT appears on the screen.

When you receive a position request with automatic position replies disabled, POS. REQUEST appears on the screen.

When you receive a position request with automatic position replies disabled, select **OK**, and select an option:

- To reply to the position request with your current position, select **OK**.

  If GPS-position or manual-position data is available, the radio transmits your position to the other vessel.
- To ignore the position request, select **CANCEL**.

### Receiving Position Calls

When you receive a position call, POS. SEND and the position data appear on the screen.

Select **OK**.

The radio saves the position report in the call log.

### Receiving Group Calls

When you receive a group call, GROUP appears on the screen, and the radio prompts you to change to the requested channel. If the channel requested is invalid, INVALID CH REQUEST appears on the screen.

1. Select **OK**.
2. Turn the **SELECT** dial to select the requested channel.
3. Select **OK**.

## Position Tracking

When you enable position tracking, the radio uses interval-based position requests to track up to three vessels.

Your radio transmits received position data over the NMEA network, and you can track the vessels using your Garmin chartplotter (*Configuring DSC NMEA Transmissions*, page 9).

### Selecting Vessels and Activating Position Tracking

Before you can use position tracking, you must have at least one vessel saved in the directory (*Directory*, page 8).

1. Select **DSC** > **POS. TRACKING** > **ADD ENTRY**.
2. Select the vessels you want to track.

   You can track the position of up to three vessels at one time. If you select a fourth vessel, the radio sounds an error tone, and you must remove a vessel before you can add a new one.
3. Select **BEGIN TRACKING**.

   appears on the screen when the radio tracks vessels.

#### *Position-Tracking Polling Interval Sequence*

Regulations allow transmission of one position-request call every five minutes. When tracking more than one vessel, the radio alternates calling each vessel in the list at five-minute intervals. If a vessel does not respond to five consecutive position-request calls, the radio removes the vessel from the position-tracking list.

You can use this table to better understand how the time interval is applied to the vessels in the position-tracking list.

| Vessel | Time |
|---|---|
| Ship 1 | 0 minutes (immediately when starting position tracking) |
| Ship 2 | 5 minutes |
| Ship 3 | 10 minutes |
| Ship 1 | 15 minutes |
| Ship 2 | 20 minutes |
| Ship 3 | 25 minutes |

### Viewing and Deactivating Vessels on the Position Tracking List

You can deactivate vessels that you want to keep in the tracking list, but do not want to actively track.

1. Select **DSC** > **POS. TRACKING** > **VESSELS**.
2. Select a vessel.
3. Select **OFF**.

### Deleting a Vessel From the Position Tracking List

You can delete vessels from the tracking list that you don't plan to track in the future.

1. Select **DSC** > **POS. TRACKING** > **DELETE**.
2. Select a vessel.
3. Select **YES**.

## Call Log

When the radio receives a DSC call, it records the date and time, calling station, and type of call in the call log. The radio also records the latitude and longitude of the calling station if that data is transmitted with the call.

DSC calls are logged as distress, position, or other calls.

| Call Type | Call Log |
|---|---|
| Distress | Distress |
| Distress relay | Distress |
| Distress acknowledge | Distress |
| Position send | Position |
| Position request | Position |
| Group | Other |
| All Ships | Other |
| Individual | Other |

When you enter a calling station in your directory, the name of the station appears in the list of calls. If the calling station is not saved in your directory, the MMSI number appears in the list of calls. A symbol indicates the station type.

| Symbol | Meaning | MMSI Number Format |
|---|---|---|
| | Ship station | XXXXXXXXX |
| | Group call | 0XXXXXXXX |
| | Coastal station | 00XXXXXXX |

### Viewing the Calls in the Call Log

1. Select **DSC** > **CALL LOG**.
2. Select a call-log category.
3. Select a call.

   Information about the call appears on the screen.

### Placing a Call from a Call Log

Calls placed from the call log are placed as individual routine calls.

1. Select **DSC** > **CALL LOG**.
2. Select a call log type.
3. Select the MMSI number or the station name.
4. Select **CALL**.
5. Select a channel on which to transmit the call (*Channel Lists*, page 10).

   The radio transmits the channel request with your call.
6. Select **CALL**.

### Saving a Vessel or Station to the Directory from the Call Log

1. Select **DSC** > **CALL LOG**.
2. Select a call-log category.
3. Select the MMSI number you want to save.
4. Select **SAVE**.
5. Enter or edit the name for the saved vessel or station (optional) (*Entering Text*, page 4).

### Deleting a Call Log Entry

1. Select **DSC**.
2. Select a call-log category.
3. Select the MMSI number or station.
4. Select .
5. Select **DELETE**.

## Directory

You can store the MMSI numbers of vessels and stations, and assign names to them for quick access or for identification purposes.

### Viewing Saved Vessels and Stations in the Directory

1. Select **DSC** > **DIRECTORY** > **DIRECTORY**.
2. Select a saved vessel or station.

### Adding an Entry to the Directory

1. Select **DSC** > **DIRECTORY** > **ADD ENTRY**.
2. Enter the MMSI number (*Entering Text*, page 4).
3. Enter a name (optional).
4. Select **ACCEPT**.

### Editing an Entry in the Directory

1. Select **DSC** > **DIRECTORY** > **EDIT ENTRY**.
2. Select an entry.
3. Edit the MMSI number, the name, or both (*Entering Text*, page 4).
4. Select **ACCEPT**.

### Deleting an Entry from the Directory

1. Select **DSC** > **DIRECTORY** > **DELETE**.
2. Select an entry.
3. Select **YES**.

### Adding a Group

A DSC group is a collection of specific vessels, such as a sailing club or flotilla, that share a single group MMSI number.

1. Select **DSC** > **GROUP** > **ADD ENTRY**.
2. Enter the group MMSI number (*Entering Text*, page 4).
3. Enter a name for the group (optional).
4. Select **ACCEPT**.

### Editing a Group

1. Select **DSC** > **GROUP** > **EDIT ENTRY**.
2. Select a group.
3. Edit the group MMSI number, the name, or both (*Entering Text*, page 4).
4. Select **ACCEPT**.

### Deleting a Group

1. Select **DSC** > **GROUP** > **DELETE**.
2. Select a group.
3. Select **YES**.

## DSC Settings

### Manual Position Information

If you do not have a GPS device connected to your radio, you can manually enter your position and time of entry. The position data is transmitted with DSC calls. When you enter the position and time manually, MANUAL POS appears on the screen.

Manually entered position information must be updated regularly, and the radio displays two alerts to remind you to update the position data.

- When the position data you entered manually is more than four hours old, DATA IS OVER 4 HOURS OLD appears on the screen. The radio continues to transmit this position data, but you should update it before it becomes invalid.
- When the position data you entered manually is more than 23.5 hours old, it is considered invalid and DATA IS INVALID appears on the screen. The radio does not transmit invalid position data, and you should update it immediately.

#### *Entering Position Information Manually*

1. Select **MENU** > **SYSTEM** > **MANUAL GPS**.
2. Enter your current coordinates and the present time (*Entering Text*, page 4).
3. Select **ACCEPT**.

### Changing the Channel to 16 Automatically

By default, the radio changes to channel 16 automatically when receiving distress, distress relay, and all-ships urgency calls. In certain situations, when you must continually monitor a channel to maintain uninterrupted communication with another vessel, for example, you can disable this feature.

1. Select **MENU** > **DSC** > **AUTO CHANGE CH.**.
2. Select an option:
   - To set the radio to switch automatically to channel 16 when you receive a qualifying call, select **ON**.
   - To set the radio to prompt you to accept or decline a channel change when you receive a qualifying call, select **OFF**.

### Sending Position Replies Automatically

You can configure the radio to respond to incoming position requests automatically.

1. Select **MENU** > **DSC** > **POSITION REPLY**.
2. Select an option:
   - To send position information automatically to all position requests, select **AUTO**.
   - To send position information only when you review and approve the request, select **MANUAL**.

# Automatic Transmitter Identification System

Automatic Transmitter Identification System (ATIS) is a vessel identification system used on certain inland waterways in some European countries. See your Garmin dealer to program your VHF radio if you plan to use your radio on waterways that are within the bounds of the Regional Arrangement Concerning the Radiotelephone Service on Inland Waterways (the Basel Agreement). ATIS is prohibited outside the European inland waterways that are covered by the Basel Agreement.

When you enable ATIS, your radio sends a data signal identifying your station at the end of every transmission. Data identifying your position is not sent, but your position is calculated through the method of triangulation by coastal stations that receive your transmissions.

To enable ATIS, you must enter your ATIS identification number (*Entering Your ATIS Identification Number*, page 8), and turn on ATIS (*Turning On and Off ATIS*, page 9). See your Garmin dealer to determine your ATIS identification number and to learn about ATIS requirements for your region.

Your radio disables these functions when you enable ATIS.

- Digital Selective Calling (DSC)
- Monitor two or three channels (Dual watch and Tri watch)
- Scanning channels

International channels 6, 8, 10, 11, 12, 13, 14, 71, 72, 74, and 77 restrict transmitting to low-power (1 W) when you enable ATIS.

## Entering Your ATIS Identification Number

***NOTICE***

You can enter your ATIS identification number only once. If you must change your ATIS identification number after entering it, you must take your radio to your Garmin dealer for reprogramming.

1. Select **MENU** > **ATIS** > **MY ATIS ID**.
2. Enter your ATIS number (*Entering Text*, page 4).
3. Select **ACCEPT**.

   The radio prompts you to reenter your number.
4. Enter your ATIS number again, and select **ACCEPT**.

   If the ATIS numbers you entered do not match, a message appears.
5. If necessary, select **RETRY** and enter the number again.

### Turning On and Off ATIS

1. Select **MENU** > **ATIS** > **ATIS**.
2. Select **ON** or **OFF**.

   ATIS appears on the screen when ATIS is enabled.
3. Select **OK**.

### Viewing Your ATIS Identification Number

Select **MENU** > **ATIS** > **MY ATIS ID**.

## Automatic Identification System

The Automatic Identification System (AIS) is an automatic tracking system used on vessels and by vessel traffic services (VTS). It enables vessels and VTS to identify and locate vessels by electronically exchanging data with other nearby vessels and AIS base stations. When used with a compatible chartplotter or multifunction display (MFD), AIS can assist with collision avoidance.

**NOTE:** AIS is not available on all models.

### Turning On and Off AIS

1. Select **MENU** > **AIS**.
2. Select **ON** or **OFF**.
3. Select **OK**.

## NMEA 0183 and NMEA 2000®

When you connect the radio to a NMEA 0183 device or a NMEA 2000 network, you can transfer received DSC distress and position information to any compatible connected chartplotter (*NMEA*, page 16).

The radio can also receive GPS-position information from a NMEA 0183 device or a NMEA 2000 network. Received GPS-position information appears on the home screen and is transmitted with DSC calls. appears on the screen when GPS data is available, and flashes when GPS data is not present. When GPS data is not present, you must enter your position manually (*Manual Position Information*, page 8).

For more information on connecting the radio to a NMEA 0183 device or a NMEA 2000 network, see the *VHF 110/210 AIS Series Installation Instructions*.

### Additional Functionality with Other Garmin Devices

The radio has additional capabilities when you connect it to other Garmin devices, such as a chartplotter.

**NOTE:** You may need to upgrade your Garmin chartplotter software to use NMEA 0183 or NMEA 2000 features.

When you connect the radio to a Garmin chartplotter using either NMEA 0183 or NMEA 2000, your chartplotter keeps track of the current and previous positions of the contacts in the directory.

When you connect the radio to the same NMEA 2000 network as a Garmin chartplotter, you can use the chartplotter to set up an individual routine call.

When you connect the radio to the same NMEA 2000 network as a Garmin chartplotter, and you initiate a man-overboard distress call from the radio, the chartplotter prompts you to navigate to the man-overboard location. If you connect a Garmin autopilot system to the same NMEA 2000 network, the chartplotter prompts you to start a Williamson's turn to the man-overboard location.

### Communicating Over NMEA 0183 or NMEA 2000

**NOTE:** This feature is not available on all models.

You can select a connection either to a NMEA 0183 device or to a NMEA 2000 network. The radio can communicate over only one communication protocol at a time.

1. Select **MENU** > **COMMUNICATIONS** > **PROTOCOL**.
2. Select **NMEA0183** or **NMEA2000**.

### Configuring DSC NMEA Transmissions

You can filter the types of DSC-call data the radio sends to a connected NMEA 0183 device or over a NMEA 2000 network.

1. Select **MENU** > **COMMUNICATIONS** > **DSC OUTPUT**.
2. Select an option:
   - To send NMEA data when you receive a DSC call from any MMSI number, select **ALL VESSELS**, and proceed to the last step.
   - To disable sending NMEA data when you receive a DSC call, select **NO VESSELS**, and proceed to the last step.
   - To send NMEA data only when you receive a call from a vessel in your directory, select **SELECT VESSELS**, and proceed to the next step.

     **NOTE:** When you configure the radio for **SELECT VESSELS**, all received DSC-distress-call data is sent over NMEA, even if the vessel is not in your directory.
3. Select a vessel in your directory.
4. Select an option:
   - To send all DSC-call data from this vessel, select **ON**.
   - To send DSC-distress-call data only from this vessel, select **OFF**.
5. Repeat this process for each vessel in your directory.
6. Select **BACK** to save your changes and exit the menu.

## System Settings

Select **MENU** > **SYSTEM**.

**DISPLAY**: Sets the backlight and contrast levels.

**BEEPER**: Sets the volume or disables the beeper tone that sounds when you press a key or turn a dial.

**AUTO POWER-ON**: Sets the radio to turn on automatically when it receives power.

**LANGUAGE**: Sets the language for the radio.

### Number Settings

You can customize the numbers shown on the home screen of the radio.

Select **MENU** > **SYSTEM** > **NUMBERS**.

**LAT/LONG**: Shows or hides the latitude and longitude numbers from either a connected GPS device, or from manually entered position data.

**TIME**: Shows or hides the time received from a connected GPS device or entered manually.

**NOTE:** The time updates automatically only if you connect a GPS device. When you enter your time and position manually, the time shown does not update automatically. For

manually entered position and time data, the time of entry is always shown on the home screen, even if you hide the time with this setting.

**COG/SOG**: Shows or hides course-over-ground (COG) and speed-over-ground (SOG) information.

**NOTE:** You must connect a GPS device to show course-over-ground (COG) and speed-over-ground (SOG) information.

## Units Settings

You can set the unit of measure used for values shown on the radio.

Select **MENU** > **SYSTEM** > **UNITS**.

**SPEED**: Sets the unit of measure shown for speed-related fields, such as speed-over-ground.

**TIME > FORMAT**: Sets the time format.

**HEADING**: Sets the radio to show all heading calculations, such as Course Over Ground (COG), using true or magnetic north.

**NOTE:** If the radio is configured for NMEA 2000 communication, the heading unit is set to AUTO, and shows heading data based on the information provided over the network. This setting cannot be changed.

### Configuring the Time Offset

You can show the local time rather than Universal Coordinated Time (UTC). When you adjust for local time, LOC appears after the time on the home screen.

**NOTE:** When you make a DSC call, the time is sent in UTC format.

1. Select **MENU** > **SYSTEM** > **UNITS** > **TIME** > **OFFSET**.
2. Turn the **SELECT** dial to adjust the time offset from UTC.
3. Select **OK**.

## Selecting the Frequency Band

You can switch between the USA, International, or Canadian frequency bands (*Channel Lists*, page 10).

**NOTE:** Not all frequency bands are available on all device models.

1. Select **MENU** > **CHANNEL** > **FREQUENCY BAND**.
2. Select a frequency band.

## Changing a Channel Name

Channel names appear on the home screen using nine characters. If a channel name is longer than nine characters, the full name scrolls across the top of the screen, then switches to the short name. You can change the name of a channel to reflect a local meaning.

1. Select **MENU** > **CHANNEL** > **NAME**.
2. Turn the **SELECT** dial to select a channel, and select **OK**.
3. Change the name of the channel (*Entering Text*, page 4).
4. Select **ACCEPT**.

## Restoring Factory Settings

You can restore the radio to the default factory settings. When you restore the radio to factory settings, all system changes and customizations are lost. Restoring factory settings deletes the call logs, but retains group entries, directory entries, the MMSI number, and the ATIS ID.

1. Select **MENU** > **SYSTEM** > **SYSTEM INFO** > **RESET**.
2. Select **YES** to confirm the reset.

# Appendix

## Alarms and Messages

**BATTERY ALRM**: Sounds when the battery reaches a specified low or high voltage. Check the battery wiring.

**WX**: Sounds when you set a weather alarm and the radio detects an incoming weather alert (*NOAA® Weather Broadcasts and Alerts*, page 4). The radio tunes automatically to the weather channel that is broadcasting the alert.

**GPS ALARM**: Sounds first when GPS data from a NMEA network or position data entered manually is more than four hours old. Sounds again when GPS data from a NMEA network or position data entered manually is more than 23.5 hours old (*Manual Position Information*, page 8).

**POSITION TRACKING**: Appears after five consecutive failed attempts to request position information from a vessel (*Position Tracking*, page 7).

## Channel Lists

USA, Canadian, and International channel lists are provided for reference only. You are responsible for the correct use of channels according to local regulations.

### USA Channels

For the latest information on USA channels, go to the U.S. Coast Guard page (www.navcen.uscg.gov/?pageName=mtVhf) or the Federal Communications Commission's Marine VHF Radio Channels page (wireless.fcc.gov/services/index.htm?job=service_bandplan&id=ship_stations). The FCC page does not include frequency information, but has more complete information on the use of the channels.

**NOTE:** You should use channels listed as non-commercial. Use channel 16 to call other stations or to send distress alerts. Use channel 13 to contact a vessel when there is danger of collision. All vessels 20 m (65 ft.) or larger must guard channel 13 and channel 16 when operating within USA territorial waters. The FCC levies fines for improper use of channels 13 and 16.

| Channel number | Transmission MHz | Receiving MHz | User |
|---|---|---|---|
| 01A* | 156.050 | 156.050 | Port operations and commercial, VTS. Available in the New Orleans and lower Mississippi areas only. |
| 05A* | 156.250 | 156.250 | Port operations or VTS in the Houston, New Orleans, and Seattle areas only. |
| 06 | 156.300 | 156.300 | Intership safety |
| 07A* | 156.350 | 156.350 | Commercial |
| 08 | 156.400 | 156.400 | Commercial (Intership only) |
| 09 | 156.450 | 156.450 | Boater calling. Commercial and non-commercial. |
| 10 | 156.500 | 156.500 | Commercial |
| 11 | 156.550 | 156.550 | Commercial. VTS in selected areas. |
| 12 | 156.600 | 156.600 | Port operations. VTS in selected areas. |
| 13 | 156.650 | 156.650 | Intership navigation safety (bridge-to-bridge). Ships longer than 20 m (65 ft.) maintain a listening watch on this channel |
| 14 | 156.700 | 156.700 | Port operations. VTS in selected areas. |

| Channel number | Transmission MHz | Receiving MHz | User |
|---|---|---|---|
| 15 | - | 156.750 | Environmental (receive only). Used by Class C Emergency Position Indicating Radio Beacons (EPIRBs). |
| 16 | 156.800 | 156.800 | International distress, safety, and calling. Ships required to carry radio, USCG, and most coast stations maintain a listening watch on this channel. |
| 17 | 156.850 | 156.850 | State and local government maritime control |
| 18A* | 156.900 | 156.900 | Commercial |
| 19A* | 156.950 | 156.950 | Commercial |
| 20 | 157.000 | 161.600 | Port operations (duplex) |
| 20A* | 157.000 | 157.000 | Port operations |
| 21A* | 157.050 | 157.050 | USA Coast Guard only |
| 22A* | 157.100 | 157.100 | Coast Guard Liaison and Maritime Safety Information Broadcasts. Broadcasts are announced on channel 16. |
| 23A* | 157.150 | 157.150 | USA Coast Guard only. |
| 24 | 157.200 | 161.800 | Public correspondence (Marine Operator) |
| 25 | 157.250 | 161.850 | Public correspondence (Marine Operator) |
| 26 | 157.300 | 161.900 | Public correspondence (Marine Operator) |
| 27 | 157.350 | 161.950 | Public correspondence (Marine Operator) |
| 28 | 157.400 | 162.000 | Public correspondence (Marine Operator) |
| 63A* | 156.175 | 156.175 | Port operations and commercial, VTS. Available in the New Orleans and lower Mississippi areas only. |
| 65A* | 156.275 | 156.275 | Port operations |
| 66A* | 156.325 | 156.325 | Port operations |
| 67 | 156.375 | 156.375 | Commercial. Used for bridge-to-bridge communications in the lower Mississippi River. Intership only. |
| 68 | 156.425 | 156.425 | Non-commercial |
| 69 | 156.475 | 156.475 | Non-commercial |
| 70 | 156.525 | 156.525 | Digital Selective Calling (voice communications not allowed) |
| 71 | 156.575 | 156.575 | Non-commercial |
| 72 | 156.625 | 156.625 | Non-commercial (Intership only) |
| 73 | 156.675 | 156.675 | Port operations |
| 74 | 156.725 | 156.725 | Port operations |
| 77 | 156.875 | 156.875 | Port operations (Intership only) |
| 78A* | 156.925 | 156.925 | Non-commercial |
| 79A* | 156.975 | 156.975 | Commercial. non-commercial in the Great Lakes only. |
| 80A* | 157.025 | 157.025 | Commercial. non-commercial in the Great Lakes only. |
| 81A* | 157.075 | 157.075 | USA Government only. Environmental protection operations. |
| 82A* | 157.125 | 157.125 | USA Government only |
| 83A* | 157.175 | 157.175 | USA Government only |
| 84 | 157.225 | 161.825 | Public correspondence (Marine Operator) |
| 85 | 157.275 | 161.875 | Public correspondence (Marine Operator) |
| 86 | 157.325 | 161.925 | Public correspondence (Marine Operator) |
| 87 | 157.375 | 157.375 | Public correspondence (Marine Operator) |
| 88A* | 157.425 | 157.425 | Commercial (Intership only) |

*"A" indicates simplex use of the ship station transmit side of an international duplex channel, and that operations are different than international operations on that channel. "A" channels are used only in the USA and normally not recognized outside the USA.

## WX (Weather) Channels

| Channel | Frequency (MHz) |
|---|---|
| WX1 | 162.550 |
| WX2 | 162.400 |
| WX3 | 162.475 |
| WX4 | 162.425 |
| WX5 | 162.450 |
| WX6 | 162.500 |
| WX7 | 162.525 |

## Canadian Channels

| Channel number | Transmission MHz | Receiving MHz | Area of operation | User |
|---|---|---|---|---|
| 01 | 156.050 | 160.650 | PC[1] | Public correspondence |
| 02 | 156.100 | 160.700 | PC | Public correspondence |
| 03 | 156.150 | 160.750 | PC | Public correspondence |
| 04A | 156.200 | 156.200 | PC | Intership, ship/shore, and safety. Canadian Coast Guard search and rescue |
| 04A | 156.200 | 156.200 | EC[2] | Intership, ship/shore, and commercial. Commercial fishing only. |
| 05A | 156.250 | 156.250 | | Ship movement |
| 06 | 156.300 | 156.300 | All areas[3] | Intership, commercial, non-commercial, and safety. May be used for search and rescue communications between ships and aircraft. |

| Channel number | Transmission MHz | Receiving MHz | Area of operation | User |
|---|---|---|---|---|
| 07A | 156.350 | 156.350 | All areas | Intership, ship/shore, and commercial |
| 08 | 156.400 | 156.400 | WC[4], EC | Intership, commercial, and safety. Also assigned for operations in the Lake Winnepeg area. |
| 09 | 156.450 | 156.450 | AC[5] | Intership, ship/shore, commercial, non-commercial, and ship movement. May be usd to communicate with aircraft and helicopters in predominantly maritime support operations |
| 10 | 156.500 | 156.500 | AC, GL[6] | Intership, ship/shore, commercial, non-commercial, safety, and ship movement. May also be used for communications with aircraft engaged in coordinated search and rescue and antipollution operations. |
| 11 | 156.550 | 156.550 | PC, AC, GL | Intership, ship/shore, commercial, non-commercial, and ship movement. Also used for pilotage purposes. |
| 12 | 156.600 | 156.600 | WC, AC, GL | Intership, ship/shore, commercial, non-commercial, and ship movement. Port operations and pilot information and messages. |
| 13 | 156.650 | 156.650 | All areas | Intership, commercial, non-commercial, and ship movement. Exclusively for bridge-to-bridge navigational traffic. Limited to 1 W maximum power. |
| 14 | 156.700 | 156.700 | AC, GL | Intership, ship/shore, commercial, non-commercial, and ship movement. Port operations and pilot information and messages. |
| 15 | 156.750 | 156.750 | All areas | Intership, ship/shore, commercial, non-commercial, and ship movement. All operations limited to 1 W maximum power. May also be used for on-board communications. |
| 16 | 156.800 | 156.800 | All areas | International distress, safety, and calling |
| 17 | 156.850 | 156.850 | All areas | Intership, ship/shore, commercial, non-commercial, and ship movement. All operations limited to 1 W maximum power. May also be used for on-board communications. |
| 18A | 156.900 | 156.900 | All areas | Intership, ship/shore, and commercial. Towing on the Pacific Coast. |
| 19A | 156.950 | 156.950 | All areas | Intership and ship/shore. Canadian Coast Guard only. |
| 19A | 156.950 | 156.950 | PC | Intership and ship/shore, and various government departments |
| 20 | 157.000 | 161.600 | All areas | Ship/shore, safety, and ship movement. Port operations only with 1 W maximum power. |
| 21A | 157.050 | 157.050 | All areas | Intership and ship/shore. Canadian Coast Guard only. |
| 21B | - | 161.650 | All areas | Safety. Continuous Marine Broadcast (CMB) service |
| 22A | 157.100 | 157.100 | All areas | Intership, ship/shore, commercial, and non-commercial. For communications between Canadian Coast Guard and non-Canadian Coast Guard stations only |
| 23 | 157.150 | 161.750 | PC | Ship/shore and public correspondence. Also in the inland waters of British Columbia and the Yukon. |
| 24 | 157.200 | 161.800 | All areas | Ship/shore and public correspondence |
| 25 | 157.250 | 161.850 | PC | Ship/shore and public correspondence. Also assigned for operations in the Lake Winnipeg area. |
| 25B | - | 161.850 | AC | Safety. Continuous Marine Broadcast (CMB) service. |
| 26 | 157.300 | 161.900 | All areas | Ship/shore, safety, and public correspondence |
| 27 | 157.350 | 161.950 | AC, GL, PC | Ship/shore and public correspondence |

| Channel number | Transmission MHz | Receiving MHz | Area of operation | User |
|---|---|---|---|---|
| 28 | 157.400 | 162.000 | PC | Ship/shore, safety, and public correspondence |
| 28B | - | 162.000 | AC | Safety. Continuous Marine Broadcast (CMB) service. |
| 60 | 156.025 | 160.625 | PC | Ship/shore and public correspondence |
| 61A | 156.075 | 156.075 | PC | Intership and ship/shore. Canadian Coast Guard only. |
| 61A | 156.075 | 156.075 | EC | Intership, ship/shore, and commercial. Commercial fishing only. |
| 62A | 156.125 | 156.125 | PC | Intership and ship/shore. Canadian Coast Guard only. |
| 62A | 156.125 | 156.125 | EC | Intership, ship/shore, and commercial. Commercial fishing only. |
| 64 | 156.225 | 160.825 | PC | Ship/shore and public correspondence |
| 64A | 156.225 | 156.225 | EC | Intership, ship/shore, and commercial. Commercial fishing only. |
| 65A | 156.275 | 156.275 | | Intership, ship/shore, commercial, non-commercial, and safety. Search and rescue and antipollution operations on the Great Lakes. Towing on the Pacific Coast. Port operations only in the St. Lawrence River areas with 1 W maximum power. Pleasure craft in the inland waters of Alberta, Saskatchewan, and Manitoba (excluding Lake Winnipeg and the Red River). |
| 66A | 156.325 | 156.325 | | Interhip, ship/shore, commercial, non-commercial, safety, and ship movement. Port operations only in the St. Lawrence River/Great Lakes Areas with 1 W maximum power. |
| 67 | 156.375 | 156.375 | EC | Intership, ship/shore, and commercial. Commercial fishing only. |
| 67 | 156.375 | 156.375 | All areas except EC | Intership, ship/shore, commercial, non-commercial, and safety. May also be used for communications with aircraft engaged in coordinated search and rescue and antipollution operations. |
| 68 | 156.425 | 156.425 | All areas | Intership, ship/shore, and non-commercial. For marinas and yacht clubs. |
| 69 | 156.475 | 156.475 | All areas except EC | Intership, ship/shore, commercial, and non-commercial |
| 69 | 156.475 | 156.475 | EC | Intership, ship/shore, and commercial. Commercial fishing only. |
| 71 | 156.575 | 156.575 | PC | Intership, ship/shore, commercial, non-commercial, safety, and ship movement. |
| 71 | 156.575 | 156.575 | | Intership, ship/shore, and non-commercial. For marinas and yacht clubs on the East Coast and on Lake Winnipeg. |
| 72 | 156.625 | 156.625 | EC, PC | Intership, commercial, and non-commercial. May be used to communicate with aircraft and helicopters in predominantly maritime support operations. For marinas and yacht clubs on the East Coast and on Lake WInnipeg. |
| 73 | 156.675 | 156.675 | EC | Intership, ship/shore, and commercial. Commercial fishing only. |
| 73 | 156.675 | 156.675 | All areas except EC | Intership, ship/shore, commercial, non-commercial, and safety. May also be used for communications with aircraft engaged in coordinated search and rescue and antipollution operations. |
| 74 | 156.725 | 156.725 | EC, PC | Intership, ship/shore, commercial, non-commercial, and ship movement. |

| Channel number | Transmission MHz | Receiving MHz | Area of operation | User |
|---|---|---|---|---|
| 77 | 156.875 | 156.875 | | Interhip, ship/shore, safety, and ship movement. Pilotage on Pacific Coast. Port operations only in the St. Lawrence River/Great Lakes Areas with 1 W maximum power. |
| 78A | 156.925 | 156.925 | EC, PC | Intership, ship/shore, and commercial |
| 79A | 156.975 | 156.975 | EC, PC | Intership, ship/shore, and commercial |
| 80A | 157.025 | 157.025 | EC, PC | Intership, ship/shore, and commercial |
| 81A | 157.075 | 157.075 | | Intership and ship/shore. Canadian Coast Guard use only in the St. Lawrence River/Great Lakes Areas. |
| 81A | 157.075 | 157.075 | PC | Intership, ship/shore, and safety. Canadian Coast Guard antipollution |
| 82A | 157.125 | 157.125 | PC | Intership, ship/shore, and safety. Canadian Coast Guard use only. |
| 82A | 157.125 | 157.125 | | Intership and ship/shore. Canadian Coast Guard use only in the St. Lawrence River/Great Lakes Areas. |
| 83 | 157.175 | 161.775 | PC | Ship/shore and safety. Canadian Coast Guard use only. |
| 83A | 157.175 | 157.175 | EC | Intership and ship/shore. Canadian Coast Guard and other government agencies. |
| 83B | - | 161.775 | AC, GL | Safety. Continuous Marine Broadcast (CMB) Service. |
| 84 | 157.225 | 161.825 | PC | Ship/shore and public correspondence |
| 85 | 157.275 | 161.875 | AC, GL, NL[7] | Ship/shore and public correspondence |
| 86 | 157.325 | 161.925 | PC | Ship/shore and public correspondence |
| 87 | 157.375 | 161.975 | AC, GL, NL | Ship/shore and public correspondence |
| 88 | 157.425 | 161.025 | AC, GL, NL | Ship/shore and public correspondence |

[1]Pacific Coast

[2]East Coast: includes NL, AC, GL, and Eastern Arctic areas

[3]All areas: includes East Coast and West Coast areas

[4]West Coast: includes Pacific Coast, Western Arctic, and Athabasca-Mackenzie Watershed areas

[5]Atlantic Coast: includes Atlantic Coast, Gulf, and St. Lawrence River up to and including Montreal

[6]Great Lakes (including St. Lawrence above Montreal)

[7]Newfoundland and Labrador

## International Channels

| Channel number | Transmission MHz | Receiving MHz | User |
|---|---|---|---|
| 01 | 156.050 | 160.650 | Public correspondence, port operations, and ship movement |
| 02 | 156.100 | 160.700 | Public correspondence, port operations, and ship movement |
| 03 | 156.150 | 160.750 | Public correspondence, port operations, and ship movement |
| 04 | 156.200 | 160.800 | Public correspondence, port operations, and ship movement |
| 05 | 156.250 | 160.850 | Public correspondence, port operations, and ship movement |
| 06 | 156.300 | 156.300 | Intership |
| 07 | 156.350 | 160.950 | Public correspondence, port operations, and ship movement |
| 08 | 156.400 | 156.400 | Intership |
| 09 | 156.450 | 156.450 | Intership, port operations, and ship movement |
| 10 | 156.500 | 156.500 | Intership, port operations, and ship movement |
| 11 | 156.550 | 156.550 | Port operations and ship movement |
| 12 | 156.600 | 156.600 | Port operations and ship movement |
| 13 | 156.650 | 156.650 | Intership safety, port operations, and ship movement |
| 14 | 156.700 | 156.700 | Port operations and ship movement |
| 15 | 156.750 | 156.750 | Intership and onboard communications at 1 W only |
| 16 | 156.800 | 156.800 | Distress, safety, and calling |
| 17 | 156.850 | 156.850 | Intership and onboard communications at 1 W only |
| 18 | 156.900 | 161.500 | Public correspondence, port operations, and ship movement |
| 19 | 156.950 | 161.550 | Public correspondence, port operations, and ship movement |
| 20 | 157.000 | 161.600 | Public correspondence, port operations, and ship movement |
| 21 | 157.050 | 161.650 | Public correspondence, port operations, and ship movement |
| 22 | 157.100 | 161.700 | Public correspondence, port operations, and ship movement |
| 23 | 157.150 | 161.750 | Public correspondence, port operations, and ship movement |

| Channel number | Transmission MHz | Receiving MHz | User |
|---|---|---|---|
| 24 | 157.200 | 161.800 | Public correspondence, port operations, and ship movement |
| 25 | 157.250 | 161.850 | Public correspondence, port operations, and ship movement |
| 26 | 157.300 | 161.900 | Public correspondence, port operations, and ship movement |
| 27 | 157.350 | 161.950 | Public correspondence, port operations, and ship movement |
| 28 | 157.400 | 162.000 | Public correspondence, port operations, and ship movement |
| 60 | 156.025 | 160.625 | Public correspondence, port operations, and ship movement |
| 61 | 156.075 | 160.675 | Public correspondence, port operations, and ship movement |
| 62 | 156.125 | 160.725 | Public correspondence, port operations, and ship movement |
| 63 | 156.175 | 160.775 | Public correspondence, port operations, and ship movement |
| 64 | 156.225 | 160.825 | Public correspondence, port operations, and ship movement |
| 65 | 156.275 | 160.875 | Public correspondence, port operations, and ship movement |
| 66 | 156.325 | 160.925 | Public correspondence, port operations, and ship movement |
| 67 | 156.375 | 156.375 | Intership, port operations, and ship movement |
| 68 | 156.425 | 156.425 | Port operations and ship movement |
| 69 | 156.475 | 156.475 | Intership, port operations, and ship movement |
| 70 | | | Reserved for DSC |
| 71 | 156.575 | 156.575 | Port operations and ship movement |
| 72 | 156.625 | 156.625 | Intership |
| 73 | 156.675 | 156.675 | Intership |
| 74 | 156.725 | 156.725 | Port operations and ship movement |
| 75 | 156.775 | 156.775 | Port operations and ship movement |
| 76 | 156.825 | 156.825 | Port operations and ship movement |
| 77 | 156.875 | 156.875 | Intership |
| 78 | 156.925 | 161.525 | Public correspondence, port operations, and ship movement |
| 79 | 156.975 | 161.575 | Public correspondence, port operations, and ship movement |
| 80 | 157.025 | 161.625 | Public correspondence, port operations, and ship movement |
| 81 | 157.075 | 161.675 | Public correspondence, port operations, and ship movement |
| 82 | 157.125 | 161.725 | Public correspondence, port operations, and ship movement |
| 83 | 157.175 | 161.775 | Public correspondence, port operations, and ship movement |
| 84 | 157.225 | 161.825 | Public correspondence, port operations, and ship movement |
| 85 | 157.275 | 161.875 | Public correspondence, port operations, and ship movement |
| 86 | 157.325 | 161.925 | Public correspondence, port operations, and ship movement |
| 87 | 157.375 | 157.375 | Port operations and ship movement |
| 88 | 157.425 | 157.425 | Port operations and ship movement |

## Specifications

| Specification | Measurement |
|---|---|
| Dimensions (H x W x D) | VHF 110: 8.5 x 17 x 14.6 cm (3.35 x 6.7 x 5.75 in.)<br>VHF 210 AIS: 9.8 x 19.7 x 14.9 cm (3.86 x 7.76 x 5.78 in.) |
| Weight | VHF 110 (with microphone): 1.241 kg (43.77 oz.)<br>VHF 210 AIS (without microphone): 1.212 kg (42.75 oz.)<br>VHF 210 AIS microphone: 0.248 kg (8.75 oz.) |
| Temperature range | Operating: From -15° to 70°C (from 5° to 158°F)<br>Storage: From -20° to 70°C (from -4° to 158°F) |
| Compass-safe distance | VHF 110: 70 cm (27.6 in.)<br>VHF 210 AIS: 75 cm (29.5 in.) |
| Water rating* | IEC 605290 IPX7 |
| Antenna connector | S0-239 (50 Ω) |
| Operating voltage | 12.0 Vdc ⎓ |
| Current draw | Standby: 350 mA<br>Receive: 600 mA<br>Transmit: From 2.0 A to 6.0 A (from 1 W to 25 W) |
| Maximum antenna gain | 9 dBi |
| Antenna port impedance | 50 Ω |
| Audio output power | Internal speaker: 1 W (with 4 Ω at 10% distortion)<br>External speaker (optional): 4 W (4 Ω/max) |
| Hailer output power | 20 W at 4 Ω |
| External speaker impedance | 4 Ω |
| Hailer horn impedance | 4 Ω |

***NOTICE***

The device is water resistant to IEC Standard 60529 IPX7. It can withstand accidental immersion in 1 meter of water for 30 minutes. Prolonged submersion can cause damage to the device. After submersion, be certain to wipe dry and air dry the device before using or charging.

# NMEA

## NMEA 0183 IN Sentences Supported

| Sentence | Definition |
|---|---|
| GGA | Global positioning system fix data |
| GLL | Geographic position (latitude/longitude) |
| GNS | GNSS fix data |
| RMA | Recommended minimum specific Loran-C data |
| RMB | Recommended minimum navigation information |
| RMC | Recommended minimum specific GNSS data |

## NMEA 0183 OUT Sentences Supported

| Sentence | Definition |
|---|---|
| DSC | DSC information |
| DSE | Expanded DSC |

## NMEA 2000 PGN Information

| Receive | | Transmit | |
|---|---|---|---|
| 059392 | ISO acknowledgment | 059392 | ISO acknowledgment |
| 059904 | ISO request | 060928 | ISO address claim |
| 060928 | ISO address claim | 126208 | NMEA request/ command/ack |
| 126208 | NMEA request/ command/ack | 126464 | PGN list |
| 129026 | COG/SOG, rapid update | 126996 | Product information |
| 129029 | GNSS position data | 129799 | Radio frequency/mode/ power |
| | | 129808 | DSC call information |

| Transmit (AIS models only) | |
|---|---|
| 129038 | Class A position report |
| 129039 | Class B position report |
| 129040 | Class B extended position report |
| 129794 | AIS class A static and voyage related data |
| 129798 | AIS SAR aircraft position report |
| 129802 | AIS broadcast safety message |
| 129809 | AIS class B static data part A |
| 129810 | AIS class B static data part B |

# Contacting Garmin Product Support

- Go to www.garmin.com/support for in-country support information.
- In the USA, call 913-397-8200 or 1-800-800-1020.
- In the UK, call 0808 238 0000.
- In Europe, call +44 (0) 870 850 1241.

# Cleaning the Outer Casing

***NOTICE***

Avoid chemical cleaners and solvents that can damage plastic components.

1. Clean the outer casing of the device (not the screen) using a cloth dampened with a mild detergent solution.
2. Wipe the device dry.

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