# *West Marine*

# **Owner's Manual**
## VHF470

Color: Black
Model VHF470B

Color: Gray
Model VHF470G

# MAKING A DISTRESS CALL

Lift the red cover. Press and hold the **DISTRESS** key for three seconds. Your radio transmits your ship's location every few minutes until you receive a response.



Lift the red cover and press the white DISTRESS button underneath.

## Making a Voice Distress Call

**Speak slowly - clearly - calmly.**
For future reference, write your ship's name & call sign here:

1. Make sure your radio is on.
2. Press the **16/P** key to switch to Channel 16 (156.8 MHz). (If the corner of the display does not show 16, press the **16/P** key again until it does.)
3. Press the **PUSH-TO-TALK** key and say: "*MAYDAY -- MAYDAY -- MAYDAY.*"
4. Say "*THIS IS {name of your ship (three times)} and call sign/ship registration number (once)."*
5. Repeat "*MAYDAY {name of your ship}"* once.
6. Tell where you are: (what navigational aids or landmarks are near, or read the latitude and longitude from your GPS).
7. State the nature of your distress (e.g. are you sinking, medical emergency, man overboard, on fire, adrift, etc. ).
8. State the type of assistance you need (medical, towing, pumps, etc.).
9. Give number of persons aboard and conditions of any injured persons.
10. Estimate present seaworthiness of your ship (e.g. how immediate is the danger due to flooding or fire or proximity to shore).
11. Briefly describe your ship, giving ship name (e.g. "Blue Duck is 32 foot cabin cruiser, white hull, blue deck house").
12. Say: "*I WILL BE LISTENING ON CHANNEL 16.*"
13. End message by saying "*THIS IS {name or call sign of your ship}, OVER."*
14. Release the **PUSH-TO-TALK** *key* and listen.

*NOTE: If you do not get an answer after 30 seconds, repeat your call, beginning at step 3, above.*

# Table of Contents

# INTRODUCTION

West Marine's VHF470 is a floating, hand-held class D DSC radio with an integrated GPS receiver. It is also Bluetooth capable so you can use West Marine's smartphone app (iOS and Android) to set up the radio and text message other VHF text message capable radios. You can enter other information such as DSC directory information and update the radio's firmware.

## FEATURES

Your radio provides the following key features:

- **Submersible design**. Complies with floating JIS8/IPX8 water-resistant standards, which means the radio can be submerged in 4.9 feet of water for up to 30 minutes without damage. The radio will only meet this rating if fully assembled and all rubber seals and bungs are well maintained and correctly fitted. This means that the speaker microphone bung is inserted, and the battery pack (or case) and antenna are attached and securely fastened.

*NOTE: After your radio is submerged in water, the sound might be distorted. This is because there is still water remaining in and around the speaker and microphone. Just shake the radio to clear excess water, and the sound should return to normal.*

*NOTE: If your radio is exposed to salt water, clean it thoroughly with fresh water and dry it before turning it on. The charger is not waterproof.*

- **Memory Scan mode.** Lets you save channels to memory and monitor them in quick succession.

- **High/LO power level select.** Lets you boost the transmitter power from 1W to 2.5 or 6W for added transmission distance.

- **Battery level display and low battery alert.**

- **Dual and Triple Watch operation**. These different watch modes let you monitor up to two Coast Guard Distress/Hailing channels and one weather channel along with one regular marine channel.

- All marine VHF channels for the U.S., Canada, and international waters

- **Emergency 16/09 Channel monitoring**. Set unit to scan one or both of these emergency channels regularly within normal scanning cycles.

- **Class D second receiver** is dedicated to monitoring the DSC watch channel 70 to ensure that no incoming messages are missed.

- **National Oceanic and Atmospheric Administration (NOAA) Weather Channel watch.** Sounds a warning tone when a hazard alert is issued.
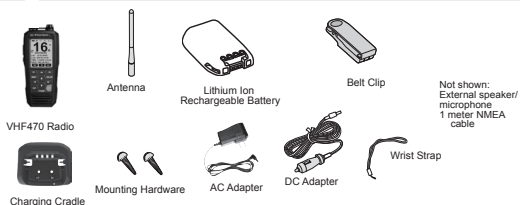
- **LCD and key backlight/Flashlight/SOS Strobe**. Pressing the Light/Lock key initiates various light options (see Page E-4).

- **Key Lock**. Locks keys to prevent accidentally changing channels or entering data.

- **Selectable Backlight Timer**. Lets you select the length of time the backlight will be on.

- **DSC**. Lets you call other ships or groups using their unique identification code. This radio complies with International Class D DSC standards for Handheld GPS/VHF marine transceivers.

- **GPS (Favorite Position mode).** Lets you save your current position as well as manually enter other positions.You can save positions into a directory to return to them as desired.

- **Bread Crumbs**. Tags specific GPS points along your route. You can set how far apart these points should be (seconds, minute, etc) through the menus.

- **Waypoints**. Create a list of coordinates and use that list to navigate to various destinations.

- **NMEA input/output**. Lets you connect to a chartplotter and, through menus, determine what NMEA data you want to receive.

- **10 weather channels** available for monitoring.

- **MOB** (Man Overboard). Lets you lock onto the current position when a Man Overboard situation occurs.

- **Compass Display.** Lets you determine the way you want the radio to display your course - by showing your course and direction or by showing location on an north-south-east-west display. Automatically auto-plots to a received DSC distress call.

## EXPLANATION OF TERMS

| Term | What it Means |
|------|---------------|
| DSC | Digital Selective Calling. A VHF radio standard for communicating among boats and sending automated distress calls. |
| FIPS | Federal Information Processing Standard. A set of location codes roughly equivalent to your county codes. |
| WX | Weather Radio |
| GPS | Global Positioning System |
| NMEA | National Marine Electronics Association. The organization that governs standards for electronic equipment used on boats. NMEA 0183 is the standard for serial data communication used by GPS. |
| MMSI | Maritime Mobile Service Identity number. A unique, nine-digit number that identifies you and your boat when making DSC calls. It is also used by the Coast Guard if you send an automated distress call. |

# WHAT'S INCLUDED

*NOTE: Some of the graphics in this manual may vary slightly from the actual product.*



Antenna
Lithium Ion Rechargeable Battery
Belt Clip
Not shown: External speaker/ microphone 1 meter NMEA cable
VHF470 Radio
Charging Cradle
Mounting Hardware
AC Adapter
DC Adapter
Wrist Strap

# PARTS OF THE VHF470

**Front view**



Ext. Speaker/ Mic jack
Microphone
DISTRESS
Function Keys
VOL/ SQ
16/P
Screen
Speaker
Antenna
LED
Power
Monitor
Push-to-Talk
Menu
Direction Arrows
CLR
Light/Lock
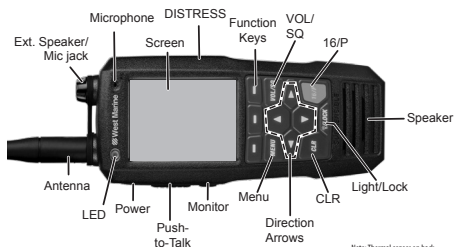
Note: Thermal sensor on back.

| Key | Press to… | Press and hold to… |
|---|---|---|
| POWER | N/A | Turn radio on and off. |
| Push-to-Talk | N/A | Transmit on a current TX power. |
| MON key | Quickly open and close squelch (single press/release). | Open Squelch. |
| Soft Function Keys (3) | Activate function assigned to that key. Function displays on screen above key. See page E-12. | NA |
| MENU KEY | Open the menus. | NA |
| ▲ ▼ ▶ ◀ | Move up, down, left, or right on a screen. | NA |

| Key | Press to… | Press and hold to… |
|---|---|---|
| CLR key | Returns to the IDLE screen. | NA |
| Light/LOCK key | - Press once to activate the LCD and key backlight.<br>- Press twice to activate LED steady on (Flashlight).<br>- Press three times to activate the SOS strobe light.<br>- Press a fourth time to turn the LED off. | Lock key input to prevent input errors. |
| 16/P key | Cycle through call channel, channel 16, channel 9, and back to the starting channel. | NA |
| VOL/SQ key | Press once: Adjust volume.<br>Press twice: Adjust squelch. | NA |
| DISTRESS key | Activate DISTRESS screen. | Send out default distress signal. |

**Back view**



Wrist strap slot

Battery latch

Battery charging contacts

Battery

Belt clip

**Charger**



Screw hole

Charging contacts

NMEA contacts

CHARGE LED

Screw holes
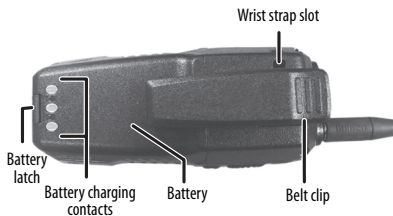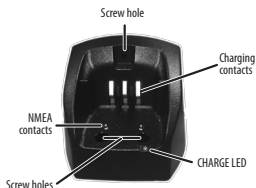
## READING THE IDLE SCREEN

The Idle screen shows different information depending on what you are doing. Not all icons display on every screen. This dummy Idle screen displays many of the possible icons. The table below shows possible icons and what they mean.
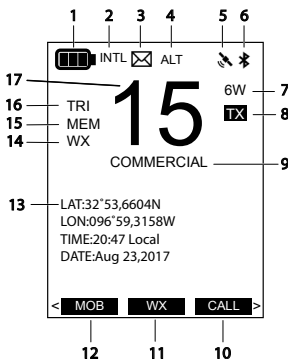


**Display icons and what they mean**

| Number | Icon | What it means |
|--------|------|---------------|
| 1 | 🔋 | Battery level |
| 2 | INT | Channel mode (USA, INTL, or CAN) |
| 3 | ✉ | Displays when mail is available. |
| 4 | ALT | Weather Alert |
| 5 | 📡 | Flashes when satellite acquired. Does not display if no satellite acquired. |
| 6 | 🔵 | Displays when Bluetooth is turned on. |
| 7 | 1W, 2.5W, or 6W | Power output. |
| 8 | TX or RX | Indicates Transmitting (TX) or Receiving (RX). |
| 9 | Various Text | Channel Name |
| 10 | Soft Key #3 | Name of soft key (see page E-12). |

| Number | Icon | What it means |
|--------|------|---------------|
| 11 | Soft Key #2 | Name of soft key (see page E-12). |
| 12 | Soft Key #1 | Name of soft key (see page E-12). |
| 13 | GPS Data | Latitude, Longitude, Time, and Date at current position. |
| 14 | WX | Displays when Weather mode active. |
| 15 | MEM | Displays when a channel is saved into memory. |
| 16 | TRI | Displays TRI (Triple) or DUAL (Dual) watch mode as set in Menus. |
| 17 | Channel Number | Current channel number. |

# HOW IT WORKS

The VHF470 uses a 3-part operating structure: Menus, Soft Keys, and a pop-up keyboard. These elements work with each other to quickly set up and operate your radio.

- Menus - Press the **MENU** key to access the menus (see page E-7).

- Soft Keys - The soft keys relate to the three keys on the bottom of the screen. Many of these keys can access functions that are set up through the menus (see page E-12).

- Pop-Up Keyboard - Some of the menus and soft keys require alphanumeric input. The radio brings up a keyboard for this. You can change the keyboard from alphanumeric characters to special characters.

## USING THE POP-UP KEYBOARD

When you need to enter text, a digital keyboard pops up. "Type" on this keyboard by using the ▲, ▼, ►, and ◄ keys on the radio's keypad to move a curser through the keyboard. Press **SELECT** to select that character and move to the next spot.

- The *ABC/abc* key switches between capital and lower case letters.

- Select the *@&?* key to switch to the special character keyboard. Select *ABC/abc* to switch back to an alphanumeric keyboard.

- After using the ▲, ▼, ►, and ◄ keys on the radio's keypad to select a letter, press *SELECT* to "type" the letter. The letter then displays on the screen.

- Select the ◄ and ►keys to move the curser backwards or forwards into the entry.

- Select *ENTER* to move the curser to the next line.

- Select *del* to delete the character to the left of the curser.

**TITLE**

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 |
| A | B | C | D | E | F | G | H | I | J |
| K | L | M | N | O | P | Q | R | S | T |
| U | V | W | X | Y | Z | abc | @&? |

◄ ► space del Enter

**BACK** **TEXT** **SELECT**

Switch between all capital letters and lower case letters

Switch to special character keyboard

Move curser to next line

Move curser to previous or next letter

Delete character to the left of the curser

Go to previous screen

Varies with screen type. Can be CONFIRM, NEXT, etc.

Select letter chosen
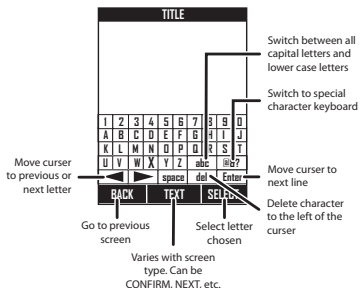
## MENUS

Various menus let you establish guidelines and parameters for sending and receiving calls. Menus also let you set your radio's characteristics such as brightness, Code selection, and contrast.

- DISTRESS MESSAGE (see page E-9 for details)

- GENERAL SETUP (see page E-9 for details)

- RADIO SETUP (see page E-10 for details)

- GPS (see page E-11 for details)

- WAYPOINT SETUP (see page E-11 for details)

- BLUETOOTH SETUP (see page E-11 for details)

- DSC SETUP (see page E-11 for details)

- ABOUT (see page E-12 for details)

- RESET (see page E-8for details)

Use the UP ( ▲ ) and DOWN ( ▼ ) keys to find a menu category. Press the *SELECT* soft key to select and go to that menu.
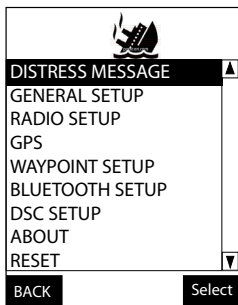
| MENU | DESCRIPTION | REF. PAGE |
|------|-------------|-----------|
| DISTRESS MESSAGE | Types of distress messages such as flooding, capsizing, and man overboard. | Page E-9 |
| GENERAL SETUP | Basic radio configuration such as backlight, key beep, and reset to factory defaults. | Page E-9 |
| RADIO SETUP | Basic radio configuration such as channel mode, priority channel, and scan type. | Page E-10 |
| GPS | Set up GPS configuration such as time offset, unit of measure, and direction. | Page E-11 |
| WAYPOINT SETUP | Establish Waypoint and route directories and routing information. | Page E-11 |
| BLUETOOTH SETUP | Turn Bluetooth on and off and provide a broadcast identifier (name) for your radio. | Page E-11 |
| DSC SETUP | Configure DSC calling and directories. | Page E-11 |
| ABOUT | Displays radio, GPS, and Bluetooth firmware version numbers. | Page E-12 |
| RESET (To Factory Defaults) | Reset the radio to factory defaults. All programming is lost, but not the MMSI number. | Page E-8 |

*DISTRESS MESSAGE* **Menu**

Select a distress message type to transmit when you use the DISTRESS key on the side of the radio. See page E-34 for information on how to send a distress message.

| MENU ITEM | DESCRIPTION |
|-----------|-------------|
| Undesignated | Send this type when you, your crew, and/or your ship are in clear danger and there is no time to search for a more inclusive designation to use. |
| Fire, Explosion | Send this type if there has been an explosion or a fire on the ship and you are in immediate danger. |
| Flooding | Send this type if your ship is taking on water and you are in immediate danger. |
| Collision | Send this type if your ship has collided with another ship or obstruction. |
| Grounding | Send this type if the ship has run aground. |
| Capsizing | Send this type if the ship is capsizing. |
| Sinking | Send this type if the ship is sinking. |
| Adrift | Send this type if the ship is adrift and unable to navigate on its own. |
| Abandoning Ship | Send this type if you and the crew must evacuate the ship. |
| Piracy | Send this type if your ship is under attack or unauthorized boarding. |
| Man Overbard | Use this type if someone has gone overboard and you are unable to assist/locate them. |

Distress messages are always transmitted on channel 70 at maximum RF power (6W).

*GENERAL SETUP* **Menu**

You can set up how your radio operates through the *GENERAL SETUP* menu.

| MENU ITEM | DESCRIPTION |
|-----------|-------------|
| Backlight | Set how bright the backlight is and how long the backlight stays on. Backlight level: Off, 1 - 5 (Default = 3). Backlight duration: Always on, 5 sec , 10 sec, 20 sec, or 30 sec. |
| Contrast | Set how dark the screen images are against the background. Contrast levels are 1 - 8 (Default = 4). (See page E-28.) |

| MENU ITEM | DESCRIPTION |
|---|---|
| Key Beep | With Key Beep turned on (default), the radio will beep every time you press a key. |
| SOS Strobe | The LED on the front of the radio acts as a strobe light. Set water activation and timeout duration here. |
| Inactivity Timer | Set how long the radio remains inactive before it times out. |
| Key Assignment | Reassign soft key functions to different keys. |
| Reset Radio to Factory | Return your radio to the factory defaults. You will lose all programming. |

*RADIO SETUP* **Menu**
Use the *RADIO SETUP* menu to fine tune how the radio will operate. For example, you can rename channels, set channel modes, etc.

| MENU ITEM | DESCRIPTION |
|---|---|
| Channel Mode | Set to USA, CAN (Canada), or INTL (International). (See page E-27.) |
| Weather Radio | Turn weather alerts on or off (see page E-27) and enter S.A.M.E codes (see page E-27). |
| Dual/Tri Watch | Turn Dual or Triple Watch on and off (see page E-18). |
| Priority Channel | Select a channel to be the priority channel when scanning. (See page E-16.) |
| 2nd Priority Channel | Select a channel to be the secondary priority channel when scanning. (See page E-16.) |
| Scan Type | Select a scanning type: Priority Scan or Memory Scan (see page E-16.) |
| Scan Pause Timer | Set how long scanning will pause when the *SCAN* soft key is pressed. |
| Channel Name | Rename a channel (see page E-42). |
| Noise Cancel | Select noise cancelling for received or transmitted signals. |

| MENU ITEM | DESCRIPTION |
|---|---|
| Receive Audio Pitch | Set audio pitch.<br>- Normal<br>- Mid Range<br>- Highs & Lows Boost<br>- Lows Boost<br>- Highs Boost |

*GPS* **Menu**

The GPS section on provides an overview of the GPS menu options and how they work. See page E-39.

*WAYPOINT SETUP* **Menu**

Waypoints (also called landmarks) mark specific points in traveling between two locations. They serve as al indicators. For example, once you reach a specific waypoint, you need to adjust your course to reach the next waypoint (and as you continue, your destination). See page E-17 for details on setting up waypoints.

| MENU ITEM | DESCRIPTION |
|---|---|
| Waypoint Directory | Displays a list of all available waypoints. |
| Current Position | Displays latitude, longitude, time, SOG, and COG. |
| Route Directory | Displays a list of routes stored in the directory. |
| Routing Method | Automatic or Manual |
| Route Display | Displays routes on a compass screen. |
| Arrival Alarm | Enter the distance at which you want the radio to alert you that you are close to the destination. |

*BLUETOOTH* **Menu**

Smart phones can discover your radio when you turn Bluetooth on with this menu. You can also change your radio's broadcast identifier (name).

*DSC SETUP* **Menu**

You can configure your DSC operation through this menu.

| MENU ITEM | DESCRIPTION |
|---|---|
| Enter Radio MMSI | Enter the radio's MMSI number to use DSC features. |
| Individual Directory | Add, edit, or delete individual directory entries. |

| MENU ITEM | DESCRIPTION |
|---|---|
| Group Directory | Set up a group with an Group MMSI. Send this GROUP MMSI number to other ships. Those ships are now part of the group you created. |
| Auto ACK | Automatically send an acknowledgement when you receive a test call. Options are *Individual ACK* or *Position ACK* request. You can set Auto/Manual for each option so when you get a call or a position request, the radio will kow how you want to respond. |
| Test Call ACK | Acknowledge receipt of a test call sent to you. |
| Individual Call Ring | Set the amount of time a call will ring before it times out. |
| Auto Channel Switch | Set whether or not he radio will automatically switch to channel 16 from your current channel when it receives a DSC call. |
| Auto MOB Set | Turn Auto MOB on and off. |
| Wait to POS Fix | Set how long the radio takes to acknowledge a POS fix. |
| Auto Polling Time | Set how long the radio takes between polling activities. |
| DSC Alarm Setup | Turn DSC alarms on and off. |

*ABOUT* **Menu**
This menu displays the current software version for the radio, GPS, and Bluetooth.

*RESET (To Factory Defaults)* **Menu**
Using this menu resets the unit to factory defaults, except for the MMSI number. Select *OK* to confirm the reset. Otherwise, select *Exit* to cancel.

## USING SOFT KEYS

**MENU** operations can set up the radio's configuration and databases. Soft keys use that information to perform quickly accessed procedures. For example, you can add ships to call (name and MMSI numbers) through **MENU**/*DSC SETUP/Individual Directory*. Then select *CALL/INDIVIDUAL CALL* through the soft keys and the ship you added through the menus displays.

Soft Key Order

| | | | |
|---|---|---|---|
| MOB | WX | CALL | Default; Scroll Right |
| HI/LO | TRI | MEM | Scroll Right |
| SCAN | COMP | NAV | Scroll Right |
| WPT | BT | SPKR | Scroll Right |

NOTE: After selecting WX soft key, it changes to CH to return to the last marine channel.
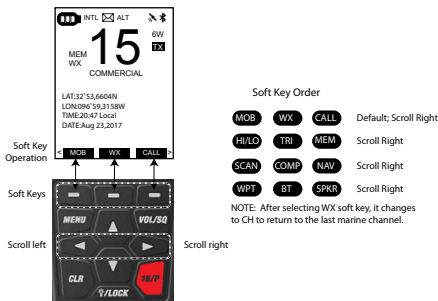
## MOB Soft Key

The Man Overboard (MOB) soft key does not require setup through the menus.

1. Press the *MOB* soft key and the screen automatically marks your current location as MOB. The MOB screen displays the latitude, longitude, time, BRG (Bearing to Destination), and DIST (Distance to Destination). The radio's GPS supplies this information automatically. The soft keys change to *BACK, DEL*, and *NAV*.
2. Select *BACK* to return to the previous mode and keep the current MOB information.
3. Select *DEL* to delete the current MOB information and return to the previous mode.
4. Select *NAV* to activate the COMPASS screen. Navigate to your destination

## WX Soft Key

Press the **WX** soft key to display the last WX channel accessed (WX changes to CH). The screen displays the latitude, longitude, and time. Press ▲ and ▼ to scroll through weather channels. Press CH to return to the last marine channel.

## CALL Soft Key

The *CALL* soft key opens a *CALL* menu. You can use this menu as a "shortcut" to making different kinds of calls. You can also send and receive position requests and view the DSC call logs.

Some call types use the information previously set up in the menus to configure the call parameters. For example, if you select *INDIVIDUAL CALL* through the *CALL* soft key, a list of ships that were set up through **MENU**/*DSC SETUP/Individual Directory* displays.

| Call Menu Option | Setup | Operation |
|---|---|---|
| Distress Message | None | Press the *CALL* soft key and select *DISTRESS MESSAGE*. |
| | | Scroll to distress message type and press *SELECT*. |
| Individual Call | Enter individual ships through **MENU**/*DSC SETUP/Individual Directory*. | Press the *CALL* soft key and select *INDIVIDUAL CALL*. |
| | | Scroll to the individual ship and press *SELECT*. |
| | | Press *SEND* on the *Individual Call* screen. |
| Group Call | Set up a Group name and MMSI number through **MENU**/*DSC SETUP/Group Directory*. | Press the *CALL* soft key and select *GROUP CALL*. |
| | Give this MMSI number to the ships included in the group. | Scroll to the group name and press *SELECT*. |
| | | Press *SEND* on the *GROUP Call* screen. |
| All Ships | None | Press the *CALL* soft key and select *ALL SHIPS*. |
| | | Select either *SAFETY* (hazards in the water) or *URGENCY* (people at risk). |
| Test Call | Enter individual ships through **MENU**/*DSC SETUP/Individual Directory*. | Press the *CALL* soft key and select *TEST CALL*. The list of the ships entered previously displays. |
| | | Select a ship and press *SELECT*. A *Transmitting To* message displays. |
| Position Request | Enter individual ships through **MENU**/*DSC SETUP/Individual Directory*. | Press the *CALL* soft key and select *POSITION REQUEST*. The list of the ships entered previously displays. |
| | | Select a ship and press *SELECT*. A *Position Request* screen displays. Press *SEND*. |

| Call Menu Option | Setup | Operation |
|---|---|---|
| Position Send | Enter individual ships through **MENU**/*DSC SETUP*/ *Individual Directory.* | Press the *CALL* soft key and select *POSITION REQUEST*. The list of the ships entered previously displays |
| | | Select a ship and press *SELECT*. A *Position Send* screen displays your current GPS location. Press *SEND*. |
| Auto Polling | Enter individual ships through **MENU**/*DSC SETUP*/ *Individual Directory.* Set the amount of time between polling requests through **MENU**/*DSC SETUP*/ *Auto Polling Time.* | Press the *CALL* soft key and select *Auto Polling/Activation/Selected ID*. The *Polling List* screen displays. Press *SELECT*. Contacts list displays. Press SELECT again. The Individual ships entered into three Individual Directory displays. Select a ship. Go back to the *Auto Polling* screen, select *Activation/Start*. |
| | | After you get an acknowledgement, scroll to *COMP* soft key. The ship's location should display on the *Compass* screen. |
| DSC Log | None | Press the *CALL* soft key and select *DSC LOG*. The *DSC CALL LOG* screen displays a list of options: *DISTRESS CALLS, RECEIVED CALLS,* and *DELETE CALL LOGS.* |
| | | Select a log and press *SELECT*. A Call Log displays the MMSI numbers of calls you've transmitted or received. Select an MMSI number and press *SELECT*. Information for that call displays. |
| | | If you select *DELETE LOGS*, the radio will delete the calls from that log. |

**HILO Soft Key**

Press the HILO soft key to change the transmission power from 1.5W to 6W to 2.5W. The transmission power icon displays. (See page E-5 for the transmission power icon LCD placement.)

*NOTE: If the maximum output for a specific channel is 1W only, the output power stays to 1W and the radio sounds an error tone.*

**TRI Soft Key**

This soft key displays as what is set in **MENU**/*RADIO SETUP/Dual/Tri Watch*. If that setting is TRI, then *TRI* displays. If the setting is DUAL, then *DUAL* displays. See page E-5 for the Dual/Triple icon LCD placement.

## SETUP

Go to **MENU**/*RADIO SETUP/Dual/Tri Watch*.  Select *DUAL* or *TRI*.

## OPERATION

Press *TRI* soft key. The screen scans the current channel and the priority channels set in the menus. The TRI icon displays on the LCD (see page E-5).

*NOTE: If DUAL is set in the menus, then the screen scans the current channel and just the Priority channel; it does not scan the 2nd Priority Channel.*

**MEM Soft Key**

Press the *MEM* soft key to save the current channel into memory. If the channel is already saved into memory, pressing this key will remove it from memory. (See page E-5 for the MEM icon LCD placement.)

**SCAN Soft Key**

The *SCAN* soft key lets you scan combinations of channels saved into memory and priority channels. Set priority/second priority channels and the channel type through menus.

## SETUP

1. Select **MENU**/*RADIO SETUP/Priority Channel*. Select a DSC channel for priority channel. (Default = 16.)
2. Select **MENU**/*RADIO SETUP/2nd Priority Channel*. Select another DSC channel for the 2nd Priority Channel. (Default = 9.)
3. Select **MENU**/*RADIO SETUP/Scan Type*. Options are *Priority* (scans both priority channels and channels saved to memory) or Memory (scans only channels saved in memory).

## OPERATION

1. Press *SCAN* soft key.
2. Radio scans channels according to Main menu setup.

**COMP Soft Key**

The *Compass* (COMP) soft key activates the compass screen. Press the *N-UP* soft key and the screen

orients to north. When you're in N-UP mode, the soft key changes to *C-UP* mode. Press the *C-UP* soft key and the compass orients to the course's next Waypoint or bread crumb, as shown by a black dot

## NAV Soft Key
Press this soft key to to select a previously stored route or waypoint as your destination.

## WPT Soft Key
Waypoints are location coordinates you've entered into the system. Press the *WAYPOINT* soft key to select waypoints to navigate to.

*NOTE: The radio shares memory space with ROUTE and can save up to 200 waypoints*

## SETUP
Search the internet for the location you want (use "coordinates" as part of the search term) and enter the coordinates through the **MENU**/*WAYPOINT SETUP/Edit* screen. For example, search for "Key West Naval Hospital coordinates."

### BT Soft Key
You can send a text message, review text messages, and turn Bluetooth on and off through this soft key.

### Sending Text Messages

*NOTE: You can send texts from your radio or from your mobile device using the West Marine app, available for Android and iOS.*

1. Press the *BT* soft key and select *TEXT MESSAGING*.A pop-up keyboard displays (*NEW MESSAGE*) with the *TO:* area highlighted.

```
           NEW MESSAGE
 TO: _



 1 2 3 4 5 6 7 8 9 0
 A B C D E F G H I J
 K L M N O P Q R S T
 U V W X Y Z abc @&?
 ◄   ►  space del Enter
   BACK   NEXT   SELECT
```

2. You can enter a stored MMSI number, a new MMSI number, or a stored name (stored names are linked to a directory entry).

*NOTE: The radio recognizes the first few letters entered and autofills the rest of the entry from the Individual or Group Directory.*

3.  Press the *NEXT* soft key and the curser moves to the message area with the letter "P" is highlighted.
4.  Enter your text message; press *NEXT,* and then *SEND.* Press *EXIT* to return to the previous mode.

### View Messaging

Select *VIEW MESSAGING* from the BT soft key menu. A list of MMSI numbers representing calls displays. Select a message and press *REPLY*.

### Bluetooth On/Off

Select *BLUETOOTH ON/OFF* from the BT soft key menu. Turn BT on or off (default).

### SPKR Soft Key

If you drop the radio in water, press the *SPKR* soft key to sound a loud tone. The vibrations from this tone help remove water from the speaker.

## OPERATION MODES

Your radio has three main operation modes: Normal, Scan, and Weather.

| Mode | What it does | Use it when you want to… | To turn it on/off |
|------|--------------|--------------------------|-------------------|
| Normal | Monitors a single marine channel and lets you talk on that channel. | Monitor a channel or talk to another radio. | From any mode, press **CLR**. The Idle screen displays. Select a different mode to turn Normal mode off. |
| Scan | - Monitors priority channels set in the Main menu.<br><br>- Monitors all the channels you save into memory. | - Monitor up to 2 additional channels in addition to the channels saved in memory.<br>- Check a small group of regularly-used channels for traffic. | Press *SCAN* soft key to start scanning. Press *SCAN* again to stop. |
| Weather | Monitors the selected NOAA weather channel. | Hear the current or forecasted weather. | Press **MENU**. Go to *RADIO SETUP/Weather Radio*. |

In addition to the three operation modes, your radio provides three different watch modes which you can activate during any operation mode. In the watch modes, the radio briefly checks for activity on a specific channel, then returns to its previous operation.

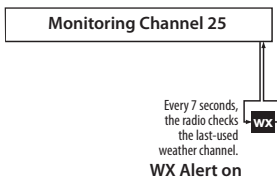| Watch mode | What it does | To turn it on/off |
|---|---|---|
| Weather Alert Watch | Checks the last-used weather channel for hazard alerts every few seconds. | From **MENU,** select *RADIO SETUP*. Go to *Weather Radio* and select *WX Alert* to turn on or off. |
| Dual Watch | Checks the priority channel for activity every few seconds. (Default priority channel = 16) | From **MENU,** select *RADIO SETUP*. Go to *DUAL/TRI Watch* and select *Dual* to turn Dual Watch on or *Triple* to turn Triple Watch on (and Dual Watch off). |
| Triple Watch | Checks the priority and second priority channels for activity every few seconds. (Priority channel default - 16; second priority channel default = 9) | From **MENU,** select *RADIO SETUP*. Go to *DUAL/TRI Watch* and select *Triple* to turn Triple Watch on or *Dual* to turn Dual Watch on (and Triple Watch off). |

*NOTE: Private ships must monitor channel 16. Whenever they are underway. Water-going ships should have either Triple Watch or Dual Watch on at all times.*

**Normal**

- To transmit, remove the radio from the charger, then press and hold **PUSH-TO-TALK**. Release the key when you are finished talking.

- For the best sound quality, hold the microphone about two inches from your mouth while you're talking.

- Press ▲ to move up one channel at a time. Press and hold the key to scroll quickly up the channels.

- Press ▼ to move down one channel at a time. Press and hold the key to scroll quickly down the channels.

- To change the transmit power, press the HILO soft key. The transmit power cycles through 1W, 2.5W, and 6W, then back to 1W again.

**Normal Mode with Weather Alert**

If you activate Weather Alert (**MENU**/*RADIO SETUP/WX Alert)* while operating in Normal mode, the radio checks the most recently used weather channel every seven seconds. If it detects a weather or other hazard alert, it will switch to that weather channel. (If you are actively transmitting, the radio waits until you finish your transmission before checking the weather channel.)

```
┌─────────────────────────────────────┐
│       Monitoring Channel 25         │
└─────────────────────────────────────┘
                              ▲
                              │
        Every 7 seconds,   ┌────┐
        the radio checks   │ wx │
        the last-used      └────┘
        weather channel.
          WX Alert on
```

## Normal Mode with Triple Watch or Dual Watch

If you activate Triple Watch while operating in Normal mode (**MENU**/*RADIO SETUP/Dual/Tri Watch/ Triple)*, the radio checks the priority and second priority channels every few seconds along with the current marine channel. With Dual Watch turned on, the radio only checks the priority channel and the current marine channel. The radio will not check either of the priority channels while you are actively transmitting; it waits until your transmission is finished and then checks the channels.

## Scan
There are two Scan modes - Priority and Memory.
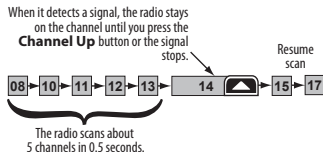
## Scan/Priority Mode

Priority mode scans through the channels saved into memory and then the priority channel [set in the Main menu (see page E-16)]. For example: Memory Channel 1 --> Priority Channel --> Memory Channel 2 --> Priority Channel --> etc.

## Scan/Priority Mode with Weather Alert On

If Weather Alert is turned on with Priority mode, the radio alternately scans through the channels saved into memory and the priority channel (Memory Channel 1 --> Priority Channel --> Memory Channel 2 --> Priority Channel --> Memory Channel N ) and then scans the most recently used Weather channel.

## Scan/Memory Mode

You can save any channel into memory and then use Scan mode/Memory Scan to monitor those channels from lowest to highest. If the radio detects a signal on a channel, it stays on that channel as long as the signal is received; when the signal stops, the radio continues scanning.

```
              When it detects a signal, the radio stays
              on the channel until you press the
              Channel Up button or the signal
                                      stops.          Resume
                                         ↘            scan
   ┌──┐  ┌──┐  ┌──┐  ┌──┐  ┌──┐      ┌────────┐    ┌──┐  ┌──┐
   │08│→│10│→│11│→│12│→│13│→     │  14  🔊 │ →  │15│→│17│
   └──┘  └──┘  └──┘  └──┘  └──┘      └────────┘    └──┘  └──┘
        ╰─────────────────╯
         The radio scans about
         5 channels in 0.5 seconds.
```
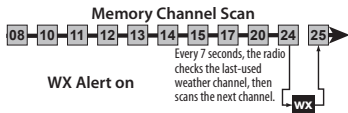
## Scan/Memory Mode with Weather Alert On

If Weather Alert is turned on with Memory mode, the radio scans through the channels saved into memory and then scans the most recently used Weather channel. (Memory Channel 1 --> Memory Channel 2 --> Memory Channel X, and then scans the most recently used Weather channel.

## Using the Radio in Scan Mode

- To activate Scan mode, set the radio to either *Priority Scan* or *Memory* in **MENU**/*RADIO SETUP/Scan Type*. If you select *Memory*, the radio scans channels saved in memory. If you select *Priority*, go to **MENU**/*RADIO SETUP* and set the priority channel. The radio scans this channel in addition to channels saved in memory.

- You must have at least two channels in memory to start a scan.

- You can transmit while scanning.

- To save a channel into memory, select the channel, then scroll to the *MEM* soft key. Press it to save that channel into memory. The *MEM* icon displays whenever you tune to that channel.

- To remove a channel from memory, set the radio to that channel, then press the *MEM* soft key again. The *MEM* icon no longer displays and that channel is no longer saved in memory.

- When the radio stays on a channel, press ▲ to leave that channel and resume scanning.

- To end the scan, press the *Scan* soft key again. The radio remains on the last scanned channel.

## Scan Mode with Weather Alert

When you activate Weather Alert (**MENU**/*RADIO SETUP/Weather Radio*) while in Scan mode, the radio checks the most recently-used weather channel every seven seconds and then returns to the current marine channel:

**Memory Channel Scan**

08 – 10 – 11 – 12 – 13 – 14 – 15 – 17 – 20 – 24  25 ▶

**WX Alert on**

Every 7 seconds, the radio checks the last-used weather channel, then scans the next channel.  WX

1. If the radio receives a weather alert while scanning, it beeps to alert you that there is an alert on a weather channel. Press any key to stop the alert.
2. A *Weather Alert Reception Confirmation* screen displays. Select **OK** to display a confirmation screen.
3. The next screen gives you the option of switching to the weather channel (**YES**) or returning to the marine channel (**NO**).

---

## Scan Mode with Triple Watch or Dual Watch

If you activate Triple Watch (**MENU**/R*ADIO SETUP/Dual/Tri Watch* menu or *TRI* soft key) while operating in Scan mode, the radio checks the priority and second priority channels (default = channels 16 and 9) every two seconds, then goes on to scan the next channel in memory. With Dual Watch turned on, the radio only checks the priority channel:

**Memory Channel Scan**



Every 2 seconds, the radio checks the priority and second priority channels, then scans the next channel.

Triple Watch on.
Default priority channels 16 & 9.
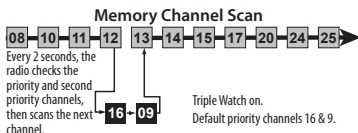
Press **MENU**/*RADIO SETUP/Dual/Tri Watch* menu or *TRI* soft key again to cancel Triple Watch mode.
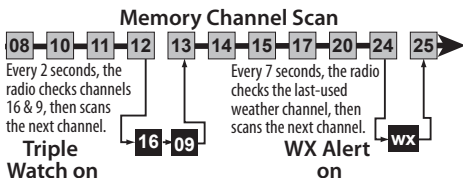
Select *DUAL* from **MENU**/*RADIO SETUP/Dual/Tri Watch* to set up Dual watch.

## Both Weather Alert and Triple/Dual Watch in Scan mode

You can activate Weather Alert Watch and Triple/Dual Watch at the same time. Press **MENU**/*RADIO SETUP/Dual/Tri Watch* or the *TRI* soft key to turn on the Triple/Dual watch; turn on WX Alert through **MENU**/*RADIO SETUP/Weather Radio*.

If DUAL watch is activated, the radio scans the priority channel, the current marine channel, and then the most recently used weather channel.

If TRIPLE watch is activated, the radio scans the priority channel, the second priority channel, the current marine channel, and then the most recently used weather channel.

**Memory Channel Scan**



Every 2 seconds, the radio checks channels 16 & 9, then scans the next channel.

**Triple Watch on**

Every 7 seconds, the radio checks the last-used weather channel, then scans the next channel.

**WX Alert on**

## Weather

The NOAA weather channels now cooperate with the FCC to alert you of other hazards besides weather (child abduction alerts, nuclear, biological, etc.). In Weather mode, the radio monitors one of the 10 NOAA weather channels. If a weather alert signal is received in Weather Alert mode, the radio sounds an alert tone.

*NOTE: You can also scan Weather channels into memory.*
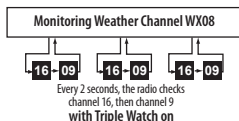
### Using the Radio in Weather Mode

- You cannot transmit while in Weather mode.

- To enter Weather mode, press the *WX* soft key (WX changes to CH).

- To turn off the radio's alert tone, press any key.

- To cancel Weather mode and return to the previous marine channel, press the *CH* soft key.

### Weather Mode with Weather Alert Watch

If you activate Weather Alert Watch through **MENU/**RADIO SETUP/Weather Radio/WX Alert* while operating in Weather mode, it operates as a type of "sleep mode." The radio stays on the weather channel and mutes the speaker. If the radio detects an alert, it sounds an alert tone and turns the speaker back on. This mode is very useful when you are anchoring for the night but want to keep informed of hazards.

### Weather Mode with Triple Watch or Dual Watch

If you activate Triple Watch (**MENU/**RADIO SETUP/Dual/Tri Watch* menu or the *TRI* soft key) while operating in Weather, the radio checks the priority and second priority channels, then the current marine channel, and then the most recently used weather channel.



**Monitoring Weather Channel WX08**

`16 - 09    16 - 09    16 - 09`

Every 2 seconds, the radio checks channel 16, then channel 9 with Triple Watch on

With Dual Watch activated (**MENU/**RADIO SETUP/Dual/Tri Watch* menu) while in Weather mode, the radio checks the priority channel, the current marine channel, and then the most recently used weather channel.

# SETTING UP THE HARDWARE

## ATTACHING THE ANTENNA

The antenna detaches from the radio for easy shipping or storage. To attach the antenna to your radio, screw it tightly onto the anchor post at the top of the radio.

## INSTALLING THE BATTERY

Your radio comes with a rechargeable Lithium Ion battery; for shipping safety, the battery is not installed at the factory.

1. Insert the hook on the battery into the notch at the top of the battery compartment.
2. Lower the battery until it rests flat in the compartment.

3. Bring the battery latch up and snap it into place.

# MOUNTING THE CHARGER

You can mount the charger on any flat surface.

1. Use the two holes at the base of the charger as a template to mark the drill holes.
2. Using a 1/8-inch (or 3 mm) drill bit, drill two holes 1/2 inch (13mm) deep.
3. Use the provided screws to attach the charger to the surface.

> NOTE: The charger must be mounted at least 2 feet (24 inches) from the compass to prevent magnetic interference with either device.

**Charging the Battery**
Your radio includes a charger and a rechargeable battery pack. You can recharge the battery pack in the charger by itself or installed in the radio. Being able to charge the battery pack by itself is especially useful if you purchase a second rechargeable battery; you can always have a charged battery available.

**Charging the Radio with Battery Pack Installed**

1. Insert the radio into the charger, making sure that it slots into the guide bars and the CHARGE LED on the charger turns red (charging).



2. The battery is fully charged when the LED turns green.

**Charging the Battery Pack Only**

1. Unlatch the battery from the radio case. Remove it.
2. Insert the battery into the charger, making sure that the battery slots into the guide bars and the CHARGE LED on the charger turns red (charging).

3. The battery is fully charged when the LED turns green.

   **Cautions:**

   - Use only the battery and charger supplied with this radio. Using a different charger or battery can damage the radio and create a risk of fire or shock.

   - The charger is not waterproof. If the charger falls into the water, unplug it before attempting to remove it from the water. After you remove the charger from the water, please contact Customer Service (see the back cover page for contact information).

   - Wipe off dirt or shake water from your radio before placing in the charger if your radio gets dirty or wet.

**Important notes on charging the battery**

- Charge the battery fully before using the radio.

- Don't use the charger when the ambient temperature is below 0° C (32° F) or above 45° C (113° F).

- If the radio is powered down, the battery can charge in about five hours. (If the radio is powered on, the battery takes longer to charge.)

# SETTING UP YOUR RADIO

## TURNING IT ON

Press the **POWER** key for at least two seconds until the West Marine splash screen displays. Release the **POWER** key. Press and hold it to turn the unit off.

## ENTERING THE USER MMSI

When you power up your radio for the first time, it displays *MMSI Not Entered* and then displays a Marine mode screen. User MMSI numbers are unique and cannot be entered more than once. See Page E-30 for general information about MMSI numbers and how to get your specific User MMSI number and enter it.

> *NOTE: Be sure you have the correct User MMSI number before entering it in the radio. The radio only allows you to enter the user MMSI once. If you need to re-enter the User MMSI number, contact customer service (1-800-BOATING).*

If you choose to not enter your specific MMSI number at initial start up, you can still use many of your radio's features. However, you cannot use DSC features.

## SETTING IT UP

Even though you can change your radio's settings at any time, you will probably want to establish initial settings when you turn it on for the first time. You can adjust some of these settings on an as-needed

basis, but some settings might only be set once and not need adjustment at all.

### Acquiring GPS Location
The West Marine VHF470 automatically acquires your current GPS location when it is turned on. Turn on the radio and point the antenna towards the sky. It will triangulate your location and save it.

*NOTE: Do not let anything obstruct the antenna, such as a metal cabin ceiling. If the radio displays an Unable to Aquire message, move to an unobstructed location for the antenna.*

### Changing the Volume
To change the speaker volume, press **VOL/SQ** to enter Volume Setting mode. Press ▲ to increase the volume or ▼ to decrease it (Volume levels = 0 - 15).

### Setting the Squelch Level
The West Marine VHF470 recognizes signals as transmissions if they exceed a signal strength threshold. Adjusting the squelch sets this threshold level. Increasing squelch requires a signal to be stronger to be seen as a transmission. If you set the squelch too high, you will risk not receiving transmissions that are lower than that threshold. Reducing the squelch allows weaker signals to be accepted. However, if you lower the squelch too much, you will hear white noise all the time.

The squelch feature reduces static on the speaker by filtering out any background channel noise. At the lowest squelch level, the speaker plays all signals, including any channel noise. Setting the squelch level higher filters out noise and lets only actual radio transmissions through.

While listening to a channel, press and hold **VOL/SQ** to enter Squelch Setting mode. Press ▲ to increase the volume or ▼ to decrease it (Squelch levels = 0 - 15). The following graphic shows squelch set high enough that only the strongest signals get through.
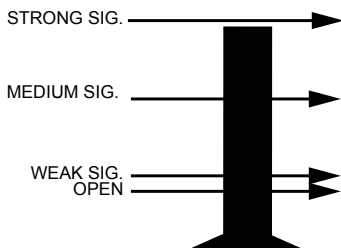


*NOTE: Setting the squelch level too high may prevent you from hearing weaker transmissions. If you are having difficulty hearing a transmission, try setting the squelch level lower.*

**Setting the UIC Channel Mode (USA/CAN/INTL)**

You can select marine channels for the USA, Canada, or International waters.

1. Press **MENU**, then select *RADIO SETUP/Channel Mode*. The *Channel Mode* menu displays.
2. Select *USA*, *CAN*, or *INTL* and press the *Select* soft key. The *RADIO SETUP* screen displays again.
3. Press **CLR** to return to the Idle screen.

**Setting Key Lock**

You can lock the keypad through pressing and holding the ☼**/LOCK** key. *KEYLOCK ON* displays if you press a key while keylock is on. Unlock it by pressing and holding the ☼**/LOCK** key again. *UNLOCK* displays.

> *NOTE: Key Lock does not affect* **PTT** *or the* **DISTRESS** *key. If DISTRESS is pressed,* **KEY LOCK** *turns off and KEYLOCK displays.*

**Setting WX Alert Mode**

1. Press **MENU**, then select *RADIO SETUP/Weather Radio*.
2. Select *WX Alert*. The *WX Alert* screen displays with the options to turn this alert on or off.
3. Select *ON*. The *Weather Radio* screen displays again.
4. Select *Back* to return to the *RADIO SETUP* screen.
5. Turn WX Alert off through these same menus.

**Setting FIPS Codes**

FIPS codes identify counties in the United States. FIPS codes allow you to receive only the Specific Area Message Encoding (S.A.M.E.) alert occurring in a specific area. You can enter a maximum of 30 FIPS codes.

> *NOTE: For USA FIPS codes by state, see http://www.nws.noaa.gov/mirs/public/prods/maps/cnty_fips_list.htm. For Canadian FIPS codes, see https://www.ec.gc.ca/meteo-weather/default.asp?lang=En&n=E5A4F19C-1.*

1. Press **MENU** then select *RADIO SETUP/Weather Radio/S.A.M.E FIPS Code*.
2. Select *Add*. The *Add FIPS Code* screen displays.
3. Enter the FIPS codes for your area (find them on the websites mentioned previously) and select *STORE*. The S.*A.M.E.FIPS Code* screen displays again.

Edit and delete FIPS codes in a similar manner.

**Adjusting the Backlight**

The backlight LCD function can be set to automatically dim after a set time.

1. Press **MENU** then select *General Setup/Backlight*. The *Backlight* menu displays.

---

2. Select *Backlight Level* and press ▲ or ▼ to adjust the brightness (Off, 1 - 5).
3. Select *Backlight Timeout* and press ▲ or ▼ to set the length of time the backlight stays on before turning off:

  • 5 sec

  • 10 sec

  • 20 sec

  • 30 sec

  • Always On

4. After selecting the Backlight Timeout, press *SELECT*. The *BACKLIGHT* screen displays again. Press **CLR** to return to the Idle screen.

### Adjust the LCD Contrast
This feature lets you adjust the LCD's contrast level.

1. Press **MENU** then select *General Setup/Contrast*. The *Contrast* screen displays.
2. Press ▲ or ▼ to select a contrast level (1 - 8, Default = 4) then press *SELECT*. The *GENERAL SETUP* screen displays again.
3. Press **CLR** to return to the Idle screen.

### Turning the Key Beep On and Off
Key beep is the tone that sounds when you press a key.

1. Press **MENU** then select *General Setup/Key Beep*. The *Key Beep* menu displays.
2. Select *On (Default)* or *Off*. The *GENERAL SETUP* screen displays again.
3. Press **CLR** to return to the Idle screen.

## OPERATING THE RADIO

### Making a Transmission
Select the channel you want to transmit on, then press and hold the **PUSH-TO-TALK** key. Begin talking. Release the **PUSH-TO-TALK** key when you're finished talking to let the other party respond.

• To prevent stuck microphone problems or situations where the **PUSH-TO-TALK** key is pushed accidentally, the radio limits your talk time to 5 minutes in a single transmission.

• For the best sound quality, hold the microphone about two inches away from your mouth.

### Changing the transmission level
In most situations, 1W transmission power is all you need. If you find yourself far away from other ships and have trouble getting a response, you may need to increase the transmission power.

To increase the transmission power in increments:

1. Select the channel you want to transmit on.
2. Press the *HILO* soft key.to change the TX output power from 1W to 6W to 2.5W, then back again to 1W.
3. *1W*, *6W*, or *2.5W* displays. The transmit power remains at the new setting on that channel until you change it again.

---

*NOTE: If you try to change transmission power output but the channel is only 1W, the radio sounds an error tone and stays at 1W.*

---

Some channels (for example, channels 13 and 67) limit the transmission power to 1W. When you tune to a limited-power channel, the radio automatically switches to 1W. ***Changing the Channel***

Press the ▲ or ▼ keys briefly to scroll through the channels one channel at a time. Press and hold the ▲ or ▼ keys to quickly scroll through the channels.

### Saving the Channel into Memory
1. When you are on a channel you want to save to memory, press▲ or ▼o scroll through the soft keys until you find the *MEM* soft key.
2. Press the *MEM* soft key. The channel you are on is saved to memory and the MEM icon displays
3. Press the *MEM* soft key when you are on a saved channel to delete that channel from memory.

### Using the LED Light
This feature turns on an LED light. If you press ☼/*LOCK* twice, the radio turns on the high-intensity LED strobe on your radio. The LED flashes "S O S" in international Morse Code.

---

*NOTE:  Your radio operates normally when the SOS strobe is activated.*

---

1. Press ☼/*LOCK* once. Turns LCD backlight on.
2. Press ☼/*LOCK* again (twice). The LED turns on like a flashlight.
3. Press ☼/*LOCK* again (three times). The LED blinks in a Morse code SOS pattern.
4. Press ☼/*LOCK* again (four times). The LED goes off.

# DIGITAL SELECTIVE CALLING FEATURES (DSC)

## WHAT IS DSC?

Digital Selective Calling (DSC) is a standard that allows you to call other ships using their unique identification code (the Maritime Mobile Service Identity or MMSI number), just like you would call a phone number. To call another station, just enter that station's MMSI number and choose the voice channel you want to talk on. The radio uses channel 70 to transmit your MMSI number to the other station along with the voice channel you requested. If the other station accepts your call, both radios automatically switch to the requested voice channel so you can talk to the other station.

DSC provides a system for automated distress calls. At the touch of a key, the radio can transmit your

MMSI number, the nature of your distress, and your current position based on data from your GPS receiver. The radio repeats the distress call every few minutes until it receives an acknowledgement.

The DSC standard dedicates a VHF channel—channel 70—to digital transmissions only. Since digital transmissions require less bandwidth voice transmissions, channel 70 avoids the problems of busy voice channels.

# MMSI NUMBERS

In order to use DSC features, you must be assigned an individual User MMSI number and program that number into your radio.

You can get more information on MMSI numbers at these resources:

• The dealer where you purchased the radio

• Recreational boaters can obtain an individual MMSI number from the Boat Owner's Association of the U.S. (http://www.boatus.com/mmsi/ or call 800-563-1536) or Sea Tow Services International (http://seatow.com/ boating_safety/mmsi.asp)

• Commercial boaters need a ship station license to get an MMSI number. For more information, visit the Federal Communications Commission (FCC) website at http://wireless.fcc.gov/marine/ fctsht14.html.

## Entering MMSI Numbers
When you turn your VHF470 on for the first time, you have the option of entering your MMSI number at that point. If you choose not to enter your MMSI number then, you will still be able to use your radio; however, you will not be able to use any DSC features.

## Entering Your User MMSI Number

*NOTE: Be sure you have the correct User MMSI number before entering it in the radio. The radio only allows you to enter the User MMSI once. If you need to re-enter the User MMSI number, contact customer service (1-800-BOATING) for assistance.*

1. Press **MENU** then select *DSC SETUP/Enter Radio MMSI*. The *Enter MMSI Number* screen displays.
2. Enter the MMSI number using the▲ and ▼ keys. Select *Next* to enter the MMSI number again to confirm.
3. Press *FINISH* to save the MMSI number. The radio displays the Idle screen.

# USING THE DIRECTORIES

The directories lets you store up to 80 individual MMSI numbers of other ships and 20 group MMSI numbers. From the directories, you can add, edit or delete MMSI numbers.

## Individual Directory

### Add

1. Press **MENU** then select *DSC SETUP/Individual Directory/Add*. The *Individual DIR* screen displays.
2. Select *NAME* and press *Select*.
3. A pop-up keyboard displays (see page E-6). Use the directional arrows to navigate through the keyboard. Press *SELECT* after each letter. When the name is complete, press *CONFIRM*. The *INDIVIDUAL DIR screen displays again*. Select *MMSI* and press *Select*.
4. Use ▲ or ▼ to enter the MMSI number. When the ninth digit is correct, press *SAVE*.
5. The radio displays the new MMSI number and name and asks you to confirm. To save this MMSI number and name, press *Select*. To cancel this MMSI number entry, press *Delete*.

### Edit

1. Press **MENU** then select *DSC SETUP/Individual Directory/EDIT*. The *Individual DIR* screen displays with a list of all the names entered into the directory.
2. Select a name and press *SELECT*.
3. The name and MMSI number display. Select which item you want to edit and press *SELECT*.
4. Either a popup keyboard displays to edit the name or the MMSI number displays. When you've finished editing, save your edits.

### Delete

1. Press **MENU** then select *DSC SETUP/Individual Directory/DELETE*. The *Individual DIR* screen displays a list of all the names entered into the directory.
2. Select a name and press *SELECT*.
3. The entry is deleted.

## Group Directory

### Add

Unlike the user MMSI number, you don't have to get a group MMSI number from a specific organization. The first digit of a group MMSI is fixed at "0;" otherwise, you can create a number yourself. (If you are part of a boating club, for example, your club's leadership may have a list of approved group MMSI numbers to use.) You can also change the group MMSI number as often as you want.

1. Press **MENU** then select *DSC SETUP/Group Directory/Add*. The *Group Dir* screen displays.
2. Select *ADD*.Enter the group name and the Group MMSI number. Group MMSI numbers always start with a 0, so that digit is already entered for you.
3. Press *Select*. The radio asks you to confirm.
4. To save this MMSI number, press *Select*. To cancel this MMSI number, press *Delete*.

**Edit**

1. Press **MENU** then select *DSC SETUP/Group Directory/EDIT*. The *Group DIR* screen displays with a list of all the groups entered into the directory.
2. Select a group and press *SELECT*.
3. The group's name and MMSI number display. Select which item you want to edit and press *SELECT*.
4. Either a popup keyboard displays to edit the group name or the MMSI number displays. When you've finished editing, save your edits.

**Delete**

1. Press **MENU** then select *DSC SETUP/Group Directory/DELETE*. The *Group DIR* screen displays a list of all the groups entered into the directory.
2. Select a group name and press *SELECT*.
3. The group entry is deleted.

## MAKING DSC CALLS

There are essentially four different types of DSC voice calls:

| Call type | What it does | When to use it |
|-----------|--------------|----------------|
| Distress | Alerts all ships that you need assistance and sends them your current position. | In an emergency only. |
| Individual | Calls a single station using the User MMSI. | When you want to talk to another station. |
| Group | Calls all the ships that have the same Group MMSI as yours. | Any time you want to talk with the whole group you are traveling with at the same time. |
| All Ships | Calls all ships within range of your radio. | Safety warnings (e.g., debris in the water) or any urgent situation. |

Suppose you are coordinating safety for a sailboat race. Before the race starts, you instruct all the racers to enter your group MMSI number into their radios. During the race:

• Throughout the race, you use group calling to update the racers on the time, race status, and any course corrections.

• A power boat full of spectators comes too close to the race path. You use individual calling to contact the power boat and advise them to stay clear of the race.

- You see a rowboat entering the area, but since it doesn't have a radio, you can't communicate with the rowboat. You use all ships calling to alert all the other ships in the area of the possible danger.

## Calling a single station (Individual Call)
To call a single station with DSC, follow these steps:

1. Scroll thorough soft keys to select *CALL* soft key. *CALL* menu displays.
2. The radio displays the ships listed in your Individual Directory (see page E-31). Select the ship you want to call and press *SELECT*.
3. The radio displays the ship you selected to transmit to and the transmission channel. Select *SEND*.
4. The radio displays the ship called and the elapsed time since the call was transmitted.
5. The radio automatically switches to channel 70 to transmit the call request.
   - When the other station accepts the call, both radios switch to the selected response channel for voice transmission.

   - If the other station did not respond on the channel you selected, you can select *RESEND* or *BACK*.



*All ships call*

*All ships call*

*Group call*

*Individual call*
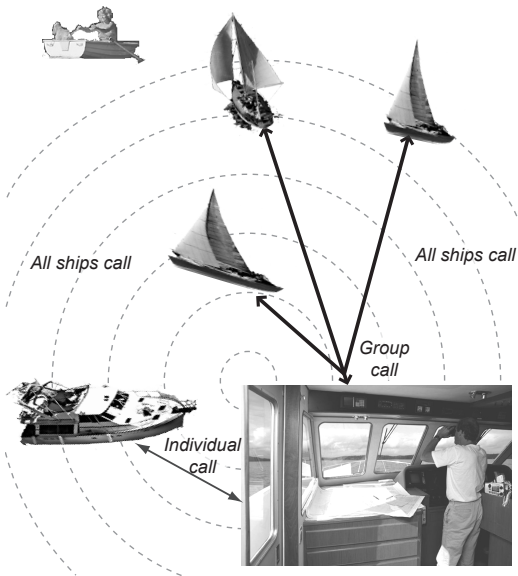
**Calling a particular group of ships (Group Call)**

Group calling calls all the ships that share your group MMSI. You must have a group MMSI programmed into the radio to make a group call, and the ships you are calling must have this same group MMSI programmed into their radios in the GROUP Directory (see page E-31).

1.  Scroll thorugh soft keys to select *CALL* soft key. *CALL* menu displays.
2.  Select *Group Call.*
3.  A list of groups displays (see page E-31 to create groups). Press ▲ or ▼ to scroll through the list and select the group to call.
4.  The next *Group Call* screen shows the group and what channel you're transmitting to. After selecting *SEND*, the radio switches to channel 70 to transmit the call request and the screen displays a random countdown clock as it waits for an acknowledgement.
5.  After the countdown clock ends, you can either resend the group call, ~~or~~ go back to the Idle screen, or let the radio generate another countdown clock.
6.  After the radio receives an acknowledgement, it automatically switches to the designated response channel.

**Calling all ships (All-Ships Call)**

All ships calling contacts all DSC radios within range of your ship. You should only use all ships calling in the event of a Safety warning (such as debris in the water) or to request assistance in an Urgency (any situation where your ship has a serious problem but is not yet in distress).

1.  Scroll thorugh soft keys to select *CALL* soft key. *CALL* menu displays.
2.  Select *ALL SHIPS*. The *ALL SHIPS CALL* screen displays, showing two options: *SAFETY* and *URGENCY*.
3.  Select either option and then enter the channel to transmit on. Select *SEND*.
4.  The next screen displays the type of ALL SHIPS CALL sent, the channel the call was sent on, and a random countdown clock.
5.  After the countdown clock ends, you can either resend the group call, go back to the Idle screen, or let the radio generate another countdown clock.
6.  After the radio receives an acknowledgement, it automatically switches to the designated response channel.

# MAKING AN AUTOMATIC DISTRESS CALL

After you have programmed your MMSI number, your radio can transmit an automated distress call on channel 16 at 6W with your current location and nature of the distress. The Distress Alert alarm sounds and the radio then monitors channel 16 for a response and repeats the distress call every few minutes until it receives an acknowledgement.

1.  If you have not already selected a distress message type (see page E-9), go to **MENU**/*DISTRESS MESSAGE*. Select the nature of the alert from the list. The screen returns to the Main menu.

| | | | |
|---|---|---|---|
| Undesignated | Sinking | Fire, Explosion | Man Overboard |
| Adrift | Flooding | Abandoning Ship | Capsizing |

| Collision | Piracy | Grounding |

2. Press and hold the **DISTRESS** key on the side of the radio for about 3 seconds. The Distress Alert alarm sounds and the radio acquires GPS location if needed. After 10 seconds, the radio transmits the distress call, starts a random countdown timer, and waits for an acknowledgement.

3. After the timer counts down, another random countdown timer begins unless you take action Pause, Cancel, or Manually Resend).

*NOTE: If no MMSI number has been programmed, the radio prompts you to enter your MMSI number.*

### Canceling an automatic distress call
While the radio is waiting for a response, it gives you the option of canceling the call. To cancel the distress call, press the *CANCEL* soft key. A confirmation screen displays; press the *YES* soft key.

### Resending an automatic distress call
Press the *RESEND* soft key.

### Receiving an automatic distress call acknowledgement
Once you receive an acknowledgement that the distress call was received, you must manually mute the acknowledgement alarm. Press the *MUTE* soft key.

### Receiving a distress call
When you receive a distress call, the Receiving DSC Distress Call alarm sounds. Press any key to silence the alarm.

*NOTE: This radio does not have the ability to acknowledge a distress call. Only the Coast Guard or an authorized Search and Rescue agency can acknowledge a DSC distress call.*

The soft keys change to *QUIT* (return to the Idle screen), *PAUSE*, and *INFO* (view longetude, latitude, and time sent information).

## DSC CALLS

### Individual DSC Call
If your radio receives an individual DSC call from another station, it sounds an incoming call alarm and displays the MMSI number of the station calling you.

Press any key to stop the alarm. The soft keys change to *QUIT* (return to the Idle screen), *PAUSE*, and *INFO* (view longetude, latitude, and time sent information).

1. After you silence the alarm and the soft keys change. press the *PAUSE/CONT* soft keys. The *INDIVIDUAL RECEIVE* screen displays.

2. This screen displays a channel option. Press the *ABLE* soft key to propose a different channel or *UNABLE* to send an Unable to Comply message and return to the Idle screen.

3. After pressing *ABLE*, the *SELECT CHANNEL* screen displays a list of available channels. Scroll to one and press *SELECT*.
4. The *INDIVIDUAL RECEIVE* screen displays. Press the *CONT* soft key.
5. The radio sends the *ABLE TO COMPLY* message and switches to the working channel.

## Group DSC Call

If your radio receives a group DSC call from another station, it sounds an incoming group call alarm and displays the name/MMSI number of the group calling you.

1. Press any key to stop the alarm.
2. The soft keys change to *QUIT* (return to the Idle screen), *PAUSE,* and *INFO* (view longetude, latitude, and time sent information). The radio also changes to the requested working channel.

## Answer a DSC Call

1. After you silence the alarm and the soft keys change. press the *PAUSE then CONT* soft keys. The *INDIVIDUAL RECEIVE* screen displays.
2. This screen displays a channel option. Press the *ABLE* soft key to propose a different channel or *UNABLE* to send an Unable to Comply message and return to the Idle screen.
3. After pressing *ABLE*, the *SELECT CHANNEL* screen displays a list of available channels. Scroll to one and press *SELECT*.
4. The *INDIVIDUAL RECEIVE* screen displays. Press the *CONT* soft key.
5. The radio sends the ABLE TO COMPLY message and switches to the working channel.

## DSC Call Logs

Your radio keeps track of the calls you send and receive. The DSC logs are useful if you have been off your ship or away from your radio and want to see who has tried to contact you. The radio displays the last 50 transmitted calls and the last 50 received calls that it received. If you have unread incoming DSC calls, the radio displays a Message icon. When you display all Distress and Other receiving logs, the message icon disappears.

1. Select the *CALL* soft key, then the *DSC LOG*. Three call logs display: *TRANSMITTED LOG*, *RECEIVED LOG*, and *DELETE LOG*.
2. Select *TRANSMITTED LOG* to see the last 50 transmitted calls transmitted by the radio. Select *RECEIVED LOG* to see the last 50 received calls received by the radio. Select *DELETE LOG* to delete entries in a specific log.
3. Calls are listed in the order they were received, with the newest call shown first. The display blinks if there are new calls you have not reviewed. The *Message* icon also displays.
4. Select the call you want to see the details of and use ▲ and ▼ to see all of the information for that call. The log displays different information depending on type of call received.

| DSC Call Type | Receive Log Information |
|---|---|
| Distress | MMSI (or name), position, time, nature code. |
| Distress Acknowledge | MMSI (or name), distress MMSI, position, time, nature code. |

| DSC Call Type | Receive Log Information |
|---|---|
| All Ships | MMSI (or name), category code, communication channel number. |
| Group | MMSI (or name), category code, communication channel number. |
| Individual | MMSI (or name), category code, communication channel number. |
| Individual Acknowledge | MMSI (or name), Completed/Unattended, category code, communication channel number. |
| Test | MMSI (or name), category code. |
| Test Acknowledge | MMSI (or name), category code. |
| Pos Reply | MMSI (or name), position, time, category code. |
| Pos Request | MMSI (or name), category code. |
| Pos Send | MMSI (or name), position, time, category code. |

5. From the log menu, select *Exit* to close the *RECEIVE LOG* and return to the previous mode.

**Making or Returning a Call**
1. From the *CALL* soft key, select *DSC LOG*.
2. Select either *TRANSMITTED LOG* or *RECEIVED LOG*. A list of calls displays.
3. Scroll up or down to select a call. The *VIEW LOG* displays the dall details.
4. Select *CALL* from the *VIEW LOG* soft keys.

## TEST CALLS

**Making Test Calls (Test)**
You can use the test call feature to make sure your radio is working and configured correctly. To avoid overloading coastal receiving stations, you should limit test calls to these stations to once a week.

Many coastal stations have specific frequencies and MMSI numbers you should use for making test calls. Before making a test call to a coastal station, be sure to check the Local Notice to Mariners (LNM), issued every week by the US Coast Guard. The LNMs for each region are available online at http://www.navcen.uscg.gov/?pageName=lnmMain.

1. Select *CALL* from the soft keys.The *CALL* screen displays.
2. Scroll to *TEST CALL* and press *SELECT*. The list of ships from the Individual Directory displays.
3. Select a ship. The next screen, *Test call*, displays the name of the ship you just selected; press *SEND*.
4. A *Waiting for ACK* message displays on the *Test call* screen.
5. If you do not receive an acknowledgement, either resend the transmission or select *BACK* to return to the Idle screen.

**Receiving Test Call Setup**

When another station sends you a test call, you can select options to answer the test call manually or have the radio answer automatically.

1. Press **MENU** to display the menu options.
2. Select *DSC SETUP/Test Call Ack* and press *SELECT*.
3. Press *Auto* for the radio to automatically send an acknowledgement when it receives a test call. Press *Manual* to answer the call manually.
4. The screen returns to the *DSC SETUP* menu.

# POSITION REQUEST AND REPLY

**Enabling Automatic Position Reply**

If you want the radio to automatically transmit your current position whenever it receives a position request, you can enable automatic position reply. Most boaters activate automatic position reply for safety reasons or because they subscribe to a marine towing service. Sometimes—for example, in some competitive situations--you may not want other ships to get your position without your manual confirmation.

1. Press **MENU** then select *DSC SETUP/Auto ACK*. The screen displays *Individual ACK* and *Position ACK options.*
2. Select either *Auto* or *Manual* for either option and then press *Select*.

**POS Request**

Any time you need to know where another ship currently is—to find your boating partners, to respond to a request for assistance, etc.—you can send a position request to their radio:

1. Select *CALL* soft key. The *CALL* screen displays.
2. Select *POSITION REQUEST*. The *POSITION REQUEST* screen displays the list of ships you entered into the Individual directory.
3. Select a ship and press SELECT. A Position Request screen displays for confirmation. Press SEND.
4. The radio sends out a position request to that ship and waits for acknowledgement.
5. If you do not receive an acknowledgement, select *BACK* to return to the Idle screen.

**Position Send**

If you are requesting assistance, using an all ships call to give a safety warning, or have received a Position Request, you can send your current position so other ships know where you are:

1. Press *CALL* soft key. The *CALL* screen displays.
2. Select *POSITION SEND*.
3. The radio displays the names listed in your directory; use ▲ or ▼ to choose the ship you want to contact and press *SELECT*. If you want to contact a station that is not in your directory, select *Manual*.
4. The radio prompts you to enter the MMSI number you want to call. Enter the MMSI number the same way you enter directory entries (see page 22). Enter all nine digits and press *SELECT*.

5. The radio displays the name and MMSI number of the station you are about to contact along with your current position information.Select *Send*. To cancel the transmission, select *Exit*.

6. The radio transmits your current position information to the other station.

## DISABLING AUTOMATIC CHANNEL SWITCHING

If you are involved in a bridge-to-bridge call, you may not want the radio to automatically switch channels when it receives a DSC call. In cases like this, you can disable automatic channel switching. If you receive an individual call, the radio will respond with an unattended code, just as if the radio were in Standby.

1. Press **MENU** and then select *DSC SETUP/Auto Channel Switch*.

2. The *Auto Channel Switch* screen displays, giving you the option to *Accept* DSC calls when they come in (default), *Ignore* DSC calls, or make a *Manual* decision for each incoming call. When you have selected an option, the radio returns to the *DSC SETUP* screen.

*NOTE: Use this feature with caution. Deactivating automatic switching and then forgetting it can make it hard for you to receive DSC calls.*

If you have unread incoming DSC calls, the radio displays a message icon. You can review who has called through the DSC logs. The radio displays the last 50 transmitted calls and the last 50 received calls (see page E-36).

# GPS FEATURES

## GPS OPERATION OVERVIEW

Your GPS system provides more than just your specific location. The *MOB* (Man Overboard) soft key (see page E-13) lets you immediately save your current position so rescuers can converge on that exact man overboard location. The *Favorites* menus let you create a directory of favorite places and their coordinates so you can easily return there. Using the GPS *SETUP* menus, you can determine power-saving options, measurement increments, and time settings.

The radio is factory-preset to search for your geographic location when it is turned on for the first time.

## GPS MENU

The GPS menu options are:

| MENU OPTION | DESCRIPTION |
|---|---|
| Current Position | Displays the following:<br>- Latitude<br>- Longetude<br>- Time<br>- Speed Over Ground (SOG)<br>- Course Over Ground (COG) |

| MENU OPTION | DESCRIPTION |
| --- | --- |
| GPS Signal Coverage | Displays latitude, longitude, and time as well as a map of active satellites within range. (Active satellites display as black dots; inactive satellites display as white dots.) |
| GPS Satellite Signal | Displays a list of satellite numbers and signal strength. |
| Battery Save | Select what percentage of your battery power should be saved.<br>- Auto (Default - the radio decides how to reserve power (for example, mimimize background tasks/checks)<br>- 40%<br>- 50%<br>- 70%<br>- 90% |
| Time Offset | Select length of time (in half-hour increments) to offset the time set on the radio. |
| Time Display | Area: Choose between local time or UTC (UCT/GMT)<br>Format: Choose 12-hour or 24-hour style |
| Daylight | Daylight Savings Time (DST): On/Off |
| Direction | Choose Course Up (oriented by your course direction) or North Up (oriented to compass north). |
| Location Accuracy | Location in degrees (DDD), minutes (mm), and seconds (ss). |
| D-GPS | D-GPS is a means of correcting GPS variances. Turn D-GPS off in the southern hemisphere. |
| Units of Measure | Set Speed (Knots, MPH, or KM/H), Distance (Nautical Mile, Staute Mile, or Kilometer), or Altitude (Feet or Meter) as the radio's unit of measure. |
| NMEA Output | Select the NMEA output (see page E-41). |
| Stationary Position | Turn stationary positioning on or off. |
| Bread Crumbs | Bread crumbs are GPS measurements recorded in specific intervals. These bread crumbs can help you "retrace" your trip from one spot to another. Select the length of time you want between bread crump measurements. |

# NMEA FEATURES

Your radio supports NMEA 0183 (version 4.10), a standard for data communication between marine instruments.

NMEA sentences contain different sets of data related to your ship. The VHF470 supports the following sentences:

| DATA | RMC | GLL | GGA | GSV | GSA |
|------|-----|-----|-----|-----|-----|
| UTC Time | 0 | 0 | 0 | X | X |
| Status (Valid/IInvalid) | 0 | 0 | 0 | X | X |
| Latitude/Longitude | 0 | 0 | 0 | X | X |
| Speed | 0 | X | X | X | X |
| Course | 0 | X | X | X | X |
| Date | 0 | X | X | X | X |

X = Data Not Provided
0 = Data Provided

## CHARTPLOTTER CONNECTION



Connect to Chartplotter

If you have difficulty getting your chartplotter to receive data from your radio, check the chartplotter's configuration. It should be set to the following parameters:

| | |
|---|---|
| Baud rate | 4800 bps |
| Data bits | 8 |
| Parity | None |
| Stop bits | 1 |
| Data amplitude | Over 3.0 V |
| Drive capability | Over 10 mA |

## NMEA OUTPUT

When the radio receives a DSC call (Distress, Position Reply, or Position Send), it outputs a DSC/DSE sentences from the NMEA output port in the following formats:

- $CDDSC,12,3081234000,,07,00,0354013946,0657,,,S,E*6D

- $CDDSE,1,1,A,3081234000,00,60875646*13

# ADDITIONAL FEATURES

## RENAMING CHANNELS

If you discover that a marine radio channel has a different common name in your local area, you can change the name of that channel to make it easier for you to use (see the channel lists beginning on page E-46 for the default channel names). To rename a channel, follow the steps below:

1. Press **MENU** and select *RADIO SETUP/Channel Name.* The screen displays the list of channels with their names.
2. Press ▲ or ▼ to select the channel you want to change and then press *RENAME.*
3. A popup keyboard displays. Enter a new name. When you have entered the name, select *FINISH.*
4. The channel list displays again with the new name.
5. When you are satisfied with the channel list, select **CLR** to return to the Idle screen.

## MARINE RADIO APP

West Marine's Marine Radio app lets you configure your VHF470 and send text messages from your mobile device. The app is available for iOS and Android. Go to the Apple App store, Google Play, or Amazon to download this free app.

## MAINTENANCE AND TROUBLESHOOTING

Due to its rugged design, your radio requires very little maintenance. However, it is a precision electronic instrument, so you should follow a few precautions:

- If the antenna has been damaged, do not transmit except in an emergency situation. Doing so may cause further radio damage.

- You are responsible for continued FCC technical compliance of your radio.

- Arrange for periodic performance checks with your West Marine dealer.

| Problem | Things to Try |
|---|---|
| The radio won't turn on. | - Verify that the battery is installed correctly.<br>- Charge the radio. |

| Problem | Things to Try |
|---|---|
| The power LED on the charger doesn't turn on. | - Don't use the charger when the ambient temperature is below 0° C (32° F) or above 45° C (113° F).<br>- Make sure the charging contacts on the radio and charger are clean.<br>- Replace the battery. |
| The radio won't transmit. | - Make sure you are not in Weather or Scan mode.<br>- Make sure you are not trying to transmit on a receive-only channel or transmit at the wrong power level for this channel (see the channel lists starting on page E-46.<br>- Check the battery power level; if it's low, charge the battery before trying to transmit.<br>- Make sure the duration of each transmission is less than 5 minutes.<br>- Try transmitting on a different channel. |
| I can't hear anything from the speaker. | - Adjust the squelch level; it is probably too high.<br>- Adjust the volume level; it is probably too low.<br>- If the radio has been exposed to water, there may be water on the speaker. Remove the water and allow the radio to dry out. |
| Noise comes out of the speaker all the time | Adjust the squelch level; it is probably too low. |
| I can transmit, but no one can hear me. | Check your UIC channel settings: does the area you are in use different channel assignments? |
| I'm not getting hazard alerts. | Make sure Weather Alert Watch is turned on. |
| The display flashes, and I don't know why. | The channel number on the display will flash if the radio is in a Watch mode or in Scan mode. Try turning off scanning, Weather Alert Watch, Triple Watch, or Dual Watch beginning on Page E-19. |
| Scan won't start. | Be sure you have channels saved into Favorites. |
| No beeps sound. | Key beep is set to OFF. Turn Key Beep on. |
| I cannot send DSC calls. | - Make sure the MMSI (DSC self ID) is entered.<br>- Turn ON the DSC Switch in the menus. |
| I cannot receive GPS position data. | Reposition the radio so that nothing blocks the antenna from the satellite signal. |
| Where can I find my radio's serial number? | The serial number is on a plate inside the battery compartment. |
| When I turn on the radio, I get a message that "positioning data is not acquired." | Be sure there are no obstructions between the radio's antenna and the sky. If you are inside the cabin, move outside. |

## SPECIFICATIONS

| General | |
|---|---|
| Channels | All US/International/Canada marine channels |
| | 10 Weather channels |
| Freq. Control | PLL |
| Freq. Tol. | Transmit: 1.5 PPM (at 77°F/25°C) |
| | Receive: 1.5 PPM (at 77°F/25°C) |
| Oper. Temp. | -4°F (-20°C) to +122°F(+50°C) |
| Antenna | Flexible Whip |
| Microphone | Built-in Electret type |
| Display | Liquid Crystal Display |
| Speaker | 16Ω 1.0 W |
| Power Source | Rechargeable Lithium Ion Battery 7.4V 1800 mAh |
| Size (without antenna, and belt clip) | 6.122 (H) x 2.562 (W) x 1.633 (D) inch 155.5 (H) x 65.1 (W) x 41.5 (D) mm |
| Size (with antenna and belt clip) | 11.791 (H) x 2.562 (W) x 2.173 (D) inch 299.5 (H) x 65.1 (W) x 55.2 (D) mm |
| Weight (without battery, antenna, and belt clip) | 6.673 oz (189.2g) |
| Weight (with battery, antenna, and belt clip) | 10.945 oz (310.3g) |
| Battery Weight | 3.135 oz (88.9g) |
| Antenna Weight | 0.686 oz (19.46g) |
| Belt Clip Weight | 0.449 oz (12.75g) |
| Transmitter | |
| Frequency Range | 156~158 MHz |
| Frequency Stability | ±2.5 PPM max |
| Power Output | 1W, 2.5W, and 6W |
| Spurious Emissions | -30 dBm @ HI; -30 dBm @ LO (nominal) |
| Current Drain | 1.5 A (6W) |
| Receiver | |
| Type | Double Conversion Super Heterodyne Phase Locked Loop system for Local Oscillator |
| Frequency Range | 156~164 MHz |

| Sensitivity | 0.24 μV for 12dB SINAD |
|---|---|
| Squelch Sensitivity | Threshold 0.2μV |
| Audio Frequency Response | +5.5 dB @ 500 Hz;  -6 dB @ 2000Hz |
| Adjacent Channel Selectivity | 73 dB @ ±25 kHz |
| Audio Output Power | ≥0.8 W @MAX VOLUME |
| Current Drain | Squelched: 90mA;   Max. Audio: 350mA |

## REFERENCE TABLES

*NOTE:  This radio does not support AIS channels.*

**Channel Descriptions and What They Mean**
The table below lists the display name or channel description used in the following tables and what each description means.

| Channel name/ description | Used for |
|---|---|
| DISTRESS SAFETY AND CALLING | primarily emergency messages and distress calls |
| INTERSHIP SAFETY | safety messages from one ship to another, or from a ship to Coast Guard aircraft |
| NON-COMMERCIAL (recreational or voluntary ships only) | messages about the needs of the ship, including fishing reports, rendezvous, scheduling repairs and berthing information |
| COMMERCIAL (working ships only) | messages about the needs of the ship or the business the ship is engaged in |
| PUBLIC CORRESPONDENCE/ MARINE OPERATOR | calls to the marine operator at a public coast station. Marine operators can connect you to the telephone network so you can make and receive calls. (There is usually a charge for this service.) |
| PORT OPERATIONS/VTS (ship traffic system) | messages about the movement and safety of ships in or near ports, locks or waterways. In certain major ports, some channels may be restricted to specific types of port operations messages. |
| NAVIGATIONAL/BRIDGE TO BRIDGE | messages about ship navigation, for example, passing or meeting other ships, maneuvering through locks, or navigating around drawbridges. Messages must be short! |

| Channel name/description | Used for |
|---|---|
| STATE CONTROL | messages about government regulation , boating activities, or assistance to ships; also used to talk to ships and coastal stations operated by state or local governments |
| DIGITAL SELECTIVE CALLING | DSC signals only (no voice communications allowed at any time) |

## MARINE RADIO CHANNEL CHART

| Ch No. | USA | INT | CAN | TX | RX | Channel Type/Name |
|---|---|---|---|---|---|---|
| 01 | | x | x | 156.050 | 160.650 | Public Correspondence (Marine Operator) |
| 01A* | x | | | 156.050 | 156.050 | Port Operation and Commercial [VTS (Vessel Traffic System)] in some areas. |
| 02 | | x | x | 156.100 | 160.700 | Public Correspondence (Marine Operator) |
| 03 | | x | x | 156.150 | 160.750 | Public Correspondence (Marine Operator) |
| 04 | | x | | 156.200 | 160.800 | Public Correspondence (Marine Operator) |
| 04A | | | x | 156.200 | 156.200 | Canadian Coast Guard: West Coast Commercial Fishing: East Coast |
| 05 | | x | | 156.250 | 160.850 | Public Correspondence (Marine Operator). Ship Movement, Port Operations |
| 05A | x | | x | 156.250 | 156.250 | Port Operations, Ship Movement, VTS in some areas |
| 06 | x | x | x | 156.300 | 156.300 | Inter-ship safety |
| 07 | | x | | 156.350 | 160.950 | Public Correspondence (Marine Operator) |
| 7A | x | | x | 156.350 | 156.350 | Commercial |
| 08 | x | x | x | 156.400 | 156.400 | Commercial (Inter-Ship Only) |

| Ch No. | USA | INT | CAN | TX | RX | Channel Type/Name |
|---|---|---|---|---|---|---|
| 09 | x | x | x | 156.450 | 156.450 | Boater Calling, Commercial and Non-Commercial |
| 10 | x | x | x | 156.500 | 156.500 | Commercial |
| 11 | x | x | x | 156.550 | 156.550 | Commercial, VTS in selected areas |
| 12 | x | x | x | 156.600 | 156.600 | Port Operations, VTS in selected areas |
| 13 | x | x | x | 156.650 | 156.650 | Intership Navigation Safety (Bridge-to-Bridge). Ships >20m length maintain a listening watch on this channel in US waters. |
| 14 | x | x | x | 156.700 | 156.700 | Port Operation, VTS in some areas |
| 15 | x | | | Inhibit | 156.750 | Environmental (Receive Only) |
| 15 | | x | x | 156.750 | 156.750 | Inter-ship, Port Operations, Commercial, Non-Commercial, Ship Movement (1 Watt Only) |
| 16 | x | x | x | 156.800 | 156.800 | Distress, Safety, Calling |
| 17 | x | x | x | 156.850 | 156.850 | State and Local Govt Maritime Control (1 Watt Only) |
| 18 | | x | | 156.900 | 161.500 | Port Operations, Ship Movement |
| 18A | x | | x | 156.900 | 156.900 | Commercial Canada: Towing West Coast |
| 19 | | x | | 156.950 | 161.550 | Commercial |
| 19A | x | | x | 156.950 | 156.950 | Commercial |
| 20 | x | x | x | 157.000 | 161.600 | Port Operations Canada: 1 Watt Only |
| 20A | x | | | 157.000 | 157.000 | Port Operation |
| 21 | | x | | 157.050 | 161.650 | Port Operations |
| 21A | x | | x | 157.050 | 157.050 | Coast Guard Only |
| 21B | | | x | INHIBIT | 161.650 | Canadian CG Continuous Marine Broadcast (CMB) Service |
| 22 | | x | | 157.100 | 161.700 | Port Operations, Ship Movement |

| Ch No. | USA | INT | CAN | TX | RX | Channel Type/Name |
|--------|-----|-----|-----|-----|-----|-------------------|
| 22A | x | | x | 157.100 | 157.100 | US and Canadian Coast Guard Liaison and Airtime Safety Information Broadcasts Announced on Channel 16 |
| 23 | | x | x | 157.150 | 161.750 | Public Correspondence (Marine Operator) |
| 23A | x | | | 157.150 | 157.150 | US Coast Guard Only |
| 23B | | | x | INHIBIT | 161.750 | Canadian CG Continuous Marine Broadcast (CMB Service |
| 24 | x | x | x | 157.200 | 161.800 | Public Correspondence (Marine Operator) |
| 25 | x | x | x | 157.250 | 161.850 | Public Correspondence (Marine Operator) |
| 25B | | | x | INHIBIT | 161.850 | Canadian CG Continuous Marine Broadcast (CMB) Service |
| 26 | x | x | x | 157.300 | 161.900 | Public Correspondence (Marine Operator) |
| 27 | x | x | x | 157.350 | 161.950 | Public Correspondence (Marine Operator) |
| 28 | x | x | x | 157.400 | 162.000 | Public Correspondence (Marine Operator) |
| 28B | | | x | INHIBIT | 162.000 | Canadian CG Continuous Marine Broadcast (CMB) Service |
| 60 | | x | x | 156.025 | 160.625 | Public Correspondence (Marine Operator) |
| 61 | | x | | 156.075 | 160.675 | Public Correspondence (Marine Operator) |
| 61A | | | x | 156.075 | 156.075 | Canadian Coast Guard: West Coast Commercial Fishing: East Coast |
| 62 | | x | | 156.125 | 160.725 | Public Correspondence (Marine Operator) |
| 62A | | | x | 156.125 | 156.125 | Canadian Coast Guard |
| 63 | | x | | 156.175 | 160.775 | Public Correspondence (Marine Operator) |

| Ch No. | USA | INT | CAN | TX | RX | Channel Type/Name |
|---|---|---|---|---|---|---|
| 63A | x | | x | 156.175 | 156.175 | VTS, Port Operations |
| 64 | | x | x | 156.225 | 160.825 | Public Correspondence (Marine Operator) |
| 64A | | | x | 156.225 | 156.225 | Canada: Commercial Fishing Only |
| 65 | | x | | 156.275 | 160.875 | Public Correspondence (Marine Operator) |
| 65A | x | | x | 156.275 | 156.275 | Port Operations Canada: Towing West Coast |
| 66 | | x | | 156.325 | 160.925 | Public Correspondence (Marine Operator) |
| 66A | x | | x | 156.325 | 156.325 | Port Operations Canada: 1 Watt Only |
| 67 | x | x | x | 156.375 | 156.375 | US: Commercial, Bridge-to-Bridge, VTS in some areas Canada: Search and Rescue, Commercial in some areas, Non-Commercial on West Coast |
| 68 | x | x | x | 156.425 | 156.425 | Non -Cmmercial |
| 69 | x | x | x | 156.475 | 156.475 | Non-Commercial Canada: Commercial East Coast. Non-Commercial West Coast |
| 70 | x | x | x | 156.525 | 156.525 | DSC (Digital Selective Calling) Only. No Voice Communications Allowed |
| 71 | x | x | x | 156.575 | 156.575 | US: Non-Commercial Canada: Ship Movement West Coast, Non-Commercial East Coast |
| 72 | x | x | x | 156.625 | 156.625 | Non-Commercial (Ship-to-Ship) |
| 73 | x | x | x | 156.675 | 156.675 | Port Operations |
| 74 | x | x | x | 156.725 | 156.725 | Port Operations |
| 75 | x | x | x | 156.775 | 156.775 | Port Operations (1 Watt Only) |
| 76 | x | x | x | 156.825 | 156.825 | Port Operations (1 Watt Only) |
| 77 | x | x | x | 156.875 | 156.875 | Port Operations (Ship-to-Ship) |
| 78 | | x | | 156.925 | 161.525 | Port Operations |

| Ch No. | USA | INT | CAN | TX | RX | Channel Type/Name |
|---|---|---|---|---|---|---|
| 78A | x | | x | 156.925 | 156.925 | Non-Commercial, Inter-Ship |
| 79 | | x | | 156.975 | 161.575 | Port Operations |
| 79A | x | | x | 156.9750 | 156.975 | Commercial, Inter-Ship |
| 80 | | x | | 157.025 | 161.625 | Port Operationsx |
| 80A | x | | x | 157.025 | 157.025 | Commercial, Inter-Ship |
| 81 | | x | | 157.075 | 161.675 | Port Operations |
| 81A | x | | x | 157.075 | 157.075 | Government, Canadian Coast Guard |
| 82 | | x | | 157.125 | 161.725 | Port Operations |
| 82A | x | | x | 157.125 | 157.125 | Government, Canadian Coast Guard |
| 83 | | x | | 157.175 | 161.775 | Port Operations |
| 83A | x | | x | 157.175 | 157.175 | Coast Guard |
| 83B | | | x | INHIBIT | 161.775 | Canadian CG Continuous Marine Broadcast (CMB) Service |
| 84 | x | x | x | 157.225 | 161.825 | Public Correspondence (Marine Operator) |
| 85 | x | x | x | 157.275 | 161.875 | Public Correspondence (Marine Operator) |
| 86 | x | x | x | 157.325 | 161.925 | Public Correspondence (Marine Operator) |
| 87 | x | x | x | 157.375 | 157.375 | Public Correspondence (Marine Operator) |
| 88 | x | x | x | 157.425 | 157.425 | Public Correspondence (Marine Operator) |
| 1019 | x | x | | 156.950 | 156.950 | Commercial |
| 1020 | x | x | | 157.000 | 157.000 | Port Operations |
| 1078 | x | x | | 156.925 | 156.925 | Non-Commercial, Inter-Ship |
| 1079 | x | x | | 156.975 | 156.975 | Commercial, Inter-Ship |
| 2019 | | x | | 161.550 | 161.550 | Commercial |
| 2020 | | x | | 161.600 | 161.600 | Port Operations |
| 2078 | | x | | 161.525 | 161.525 | Port Operations |
| 2079 | | x | | 161.575 | 161.575 | Port Operations |

# WEATHER CHANNELS AND FREQUENCIES (US, CAN, AND INTL)

| Ch No. | RX Freq | Name on display |
|--------|---------|-----------------|
| WX01 | 162.5500 | 162.550 MHz |
| WX02 | 162.4000 | 162.400 MHz |
| WX03 | 162.4750 | 162.475 MHz |
| WX04 | 162.4250 | 162.425 MHz |
| WX05 | 162.4500 | 162.450 MHz |
| WX06 | 162.5000 | 162.500 MHz |
| WX07 | 162.5250 | 162.525 MHz |
| WX08 | 161.6500 | 161.650 MHz |
| WX09 | 161.7750 | 161.775 MHz |
| WX10 | 163.2750 | 163.275 MHz |

# EMERGENCY ALERT (SAME) SYSTEM

### Types of Events

- A WARNING is an event that alone poses a significant threat to public safety and/or property, probability of occurrence and location is high, and the onset time is relatively short.

- A WATCH meets the classification of a warning, but either the onset time, probability of occurrance, or location is uncertain.

- An EMERGENCY is an event that, by itself, would not kill or injure or do property damage, but indirectly may cause other things to happen that result in a hazard. For example, a major power or telephone loss in a large city alone is not a direct hazard, but disruption to other critical services could create a variety of conditions that could directly threaten public safety.

- A STATEMENT is a message containing follow up information to a warning, watch, or emergency.

| Event | SAME Code | Type |
|-------|-----------|------|
| Blizzard Warning | BZW | Warning |
| Coastal Flood Watch | CFA | Watch |
| Coastal Flood Warning | CFW | Warning |
| Dust Storm Warning | DSW | Warning |

| Event | SAME Code | Type |
|-------|-----------|------|
| Flash Flood Watch | FFA | Watch |
| Flash Flood Warning | FFW | Warning |
| Flash Flood Statement | FFS | Statement |
| Flood Watch | FLA | Watch |
| Flood Warning | FLW | Warning |
| Flood Statement | FLS | Statement |
| High Wind Watch | HWA | Watch |
| High Wind Warning | HWW | Warning |
| Hurricane Watch | HUA | Watch |
| Hurricane Warning | HUW | Warning |
| Hurricane Statement | HLS | Statement |
| Severe Thunderstorm Watch | SVA | Watch |
| Severe Thunderstorm Warning | SVR | Warning |
| Severe Weather Statement | SVS | Statement |
| Special Marine Warning | SMW | Warning |
| Special Weather Statement | SPS | Statement |
| Tornado Watch | TOA | Watch |
| Tornado Warning | TOR | Warning |
| Tropical Storm Watch | TRA | Watch |
| Tropical Storm Warning | TRW | Warning |
| Tsunami Watch | TSA | Watch |
| Tsunami Warning | TSW | Warning |
| Winter Storm Watch | WSA | Watch |
| Winter Storm Warning | WSW | Warning |
| Avalanche Watch | AVA | Watch |
| Avalanche Warning | AVW | Warning |
| Child Abduction Emergency | CAE | Emergency |
| Civil Danger Warning | CDW | Warning |
| Civil Emergency Message | CEM | Emergency |

| Event | SAME Code | Type |
|---|---|---|
| Earthquake Warning | EQW | Warning |
| Evacuation Immediate | EVI | Warning |
| Fire Warning | FRW | Warning |
| Hazardous Materials Warning | HMW | Warning |
| Law Enforcement Warning | LEW | Warning |
| Local Area Emergency | LAE | Emergency |
| 911 Telephone Outage Emergency | TOE | Emergency |
| Nuclear Power Plant Warning | NUW | Warning |
| Radiological Hazard Warning | RHW | Warning |
| Shelter in Place Warning | SPW | Warning |
| Volcano Warning | VOW | Warning |
| Test Message | ADR | Test |
| Practice/Demo Warning | DMO | Test |
| Required Monthly Test | RMT | Test |
| Required Weekly Test | RWT | Test |

**No Response Event Code**

| | |
|---|---|
| TXB | Transmitter Backup On |
| TXF | Transmitter Carrier On |
| TXO | Transmitter Carrier On |
| TXP | Transmitter Primary On |

# REGULATIONS AND SAFETY WARNINGS

WARNING! Read this information before using the radio.

## MARITIME RADIO SERVICES OPERATION

**WARNING!** This transmitter will operate on channels/frequencies that have restricted use in the United States. The channel assignments include frequencies assigned for exclusive use of the U.S. Coast

Guard, use in Canada, and use in international waters. Operation on these frequencies without proper authorization is strictly forbidden. See page E-46 for tables of the available channels and their uses. If you are still not certain which channels to use, see the FCC maritime radio page at the FCC website (http://wireless.fcc.gov/marine/) or contact the FCC Call Center at 1-888-CALL-FCC. For individuals requiring a license, such as commercial users, you should obtain a license application from your nearest FCC field office (for US users) or Industry Canada (for Canadian users).

FCC/IC Maximun SAR Value (1g): Body:  3.083 W/kg,  Face: 3.037 W/kg. CE Maximun SAR Value (10g):  Body:   1.645 W/Kg, Face:  1.630 W/Kg

## BASIC RADIO GUIDELINES

You should familiarize yourself with the rules on marine radios and be aware of which rules apply to your ship. Complete guidelines for all ship and marine radio types can be found at the US Coast Guard website under the topic Radio Info for Boaters (the direct link is http://www.navcen.uscg.gov/?pageName=mtBoater. Here are a few guidelines that affect nearly all boaters.

- If you have a VHF radio on your ship, you must maintain a watch on channel 16 (156.800 MHz) whenever the radio is not being used to communicate. Starting in 2004, if a radio is carried, it must be on and set to channel 16 WHenever your ship is underway.

- If you hear a distress call, wait a few minutes to let a shore station or Coast Guard ship respond. If no other station has responded after 5 minutes, you must respond to the distress call.

- Do not make false mayday or distress calls as a prank or to test your radio. (This is essentially like making a false 9-1-1 call; you may be subject to fines.)

## FCC/INDUSTRY CANADA INFORMATION

Certification: FCC Part 80 or RSS-182

Output Power: 6W

Emission: 16K0F3E

Transmitter Frequency Range: 156.025-157.425 MHz

**FCC RF EXPOSURE INFORMATION**

In August 1996 the Federal Communications Commission (FCC) of the United States with its action in Report and Order FCC 96-326 adopted an updated safety standard for human exposure to radio frequency electromagnetic energy emitted by FCC regulated transmitters. Those guidelines are consistent with the safety standard previously set by both U.S. and international standards bodies. The design of the radio complies with the FCC guidelines and these international standards.

Never allow children to operate the radio without adult supervision and the knowledge of the following guidelines.

**WARNING**! It is up to the user to properly operate this radio transmitter to insure safe operation. Please adhere to the following:

- Use only the supplied or an approved antenna. Unauthorized antennas, modifications, or attachments could impair call quality, damage the radio, or violate FCC regulations.
- Do not use the radio with a damaged antenna. If a damaged antenna comes into contact with the skin, a minor burn may result. Please contact your local dealer for a replacement antenna.
- To maintain compliance with FCC RF exposure requirements, the radio must be used with a maximum duty cycle not exceeding 50% in a typical push-to-talk radio use time. DO NOT transmit for more than 50% of total radio use time.

**BODY-WORN OPERATION**
This device was tested for typical body-worn operations using the supplied belt-clip. To maintain compliance with FCC RF exposure requirements, body-worn operations are restricted to the supplied belt-clip. For hand-held operation, the radio should be held 1 inch from the user's face. The use of accessories that do not satisfy these requirements may not comply with FCC RF exposure requirements and should be avoided. For more information about RF exposure, please visit the FCC website at www.fcc.gov.

**LITHIUM ION BATTERY WARNING**
This equipment contains a rechargeable Lithium Ion battery. The rechargeable Lithium Ion battery contained in this equipment may explode if disposed of in a fire.

Do not short-circuit the battery.

Do not charge the rechargeable battery used in this equipment in any charger other than the one specified in the owner's manual. Using another charger may damage the battery or cause the battery to explode.

*NOTE: Li-Ion batteries must be recycled or disposed of properly.*

Avoid exposing the battery (whether attached to the radio or not) to direct sunlight, heated cars, or temperatures below -4°F (-20°C) or above +140°F (+60°C). Exposing the chemical contained within the battery pack to temperatures above +140°F (+60°C) may cause the battery to rupture, fail, or reduce performance.

In case of exposure to the cell contents, wash the affected area thoroughly, and seek medical attention.

**RBRC INFORMATION**
As part of our commitment to protect the environment and conserve natural resources, West Marine voluntarily participates in an RBRC® industry program to collect and recycle used Li-Ion batteries within the US.

Please call 1-800-8-BATTERY for information on Li-Ion battery recycling in your area.

(RBRC® is a registered trademark of the Rechargeable Battery Recycling Corporation.)

# COMPLIANCE

### FCC Part 15
The equipment has been tested and found to comply with the limits for a Class B device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.

- Increase the separation between the equipment and the receiver

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.

Changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment. Any change or modification must be approved in writing by West Marine.

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Tout changement ou modification non approuvé expressément par la partie responsable pourrait annuler le droit à l'utilisateur de faire fonctionner cet équipement. Tout changement ou modification doit être approuvé par écrit par West Marine.

Avis de conformité à la FCC : Ce dispositif a été testé et s'avère conforme à l'article 15 des règlements de la Commission fédérale des communications (FCC). Ce dispositif est soumis aux conditions suivantes: 1) Ce dispositif ne doit pas causer d'interférences nuisibles et; 2) Il doit pouvoir supporter les parasites qu'il reçoit, incluant les parasites pouvant nuire à son fonctionnement.

Controlled using condition:
Only be operated by well-trained or qualified person.

### IC
This device complies with Industry Canada's license-exempt RSSs. Operation is subject to the following two conditions:

(1) this device may not cause interference, and

(2) this device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme aux normes CNR d'Industrie Canada destinés aux appareils radio exempts de licence. Son fonctionnement est soumis aux deux conditions suivantes :

1) Cet appareil ne doit pas causer d'interférences nuisibles et;

2) Il doit pouvoir accepter les interférences, incluant celles pouvant nuire à son fonctionnement normal.

## LEAD WARNING

The cords on this product and/or accessories contain lead, a chemical known to the State of California to cause birth defects or other reproductive harm. Wash hands after handling. West Marine works to reduce lead content in our PVC coated cords in our products and accessories.

## ANTENNA SELECTION AND INSTALLATION

Your VHF490 has been designed to accommodate all of the popular marine VHF antennas. However, the selection and the installation of the antenna is the responsibility of the user or installer.

The FCC has determined that excessive radiation poses a health risk to people near radio transmitting antennas. Therefore, the antenna used with this radio should be installed using the following guidelines to ensure a suitable distance between the antenna and persons close by.

- Small whip antennas (3 dB) or smaller should be installed keeping at least a two foot separation distance between the radiating element and people.

- Medium antennas (6 dB) should be installed keeping at least a three foot separation distance.

- Larger antennas (9 dB) should be installed keeping at least a four foot separation distance.

- No person should touch the antenna or come into the separation distance when the radio is transmitting.

# THREE YEAR LIMITED WARRANTY

This Limited Warranty is void outside the United States of America and Canada.

**What Does This Limited Warranty Cover?**
West Marine warrants to the original retail purchaser of the West Marine product, where the purchase is made in the United States or Canada, that for thirty-six (36) months from date of original retail purchase said product will be free from defects in materials and craftsmanship with only the limitations or exclusions set out below.

**How Long Does This Limited Warranty Last?**

This limited warranty is valid for thirty-six (36) months from the date of the original retail purchase from West Marine within the United States (the "Limited Warranty Term").

The warranty period is not extended if we repair or replace a warranted product or any parts. West Marine reserves the right to change the availability of limited warranties, at its discretion, but any changes will not be retroactive and will only apply to subsequent purchases.

**What Does This Limited Warranty Not Cover?**
This limited warranty is invalid where and does not cover:

- Software.
- Commercial or industrial use or operation.
- Normal maintenance items or normal wear and tear.
- Problems resulting from fire or exposure to caustic liquids.
- The product was damaged, modified or altered.
- The product was used as part of any conversion kits, subassemblies, or any configurations not appropriate or contemplated for this product or its use.
- Damage or loss occurring during return shipment of the product to West Marine or its authorized service representative.
- The product was subject to improper service, repair, installation, storage, maintenance, alteration or application.
- Problems that result from accident, neglect, abuse, misuse or issues with electrical power,
- Problems caused by accessories, parts or components added to the product that are not appropriate for this product or its use.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE (OR JURISDICTION TO JURISDICTION). WEST MARINE'S RESPONSIBILITY FOR MALFUNCTIONS AND DEFECTS IN HARDWARE IS LIMITED TO REPAIR OR REPLACEMENT AS SET FORTH IN THIS WARRANTY STATEMENT. ALL EXPRESS AND IMPLIED WARRANTIES FOR THE PRODUCT, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES AND CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN TIME TO THE TERM OF THIS LIMITED WARRANTY (AS SPECIFIED ABOVE). NO WARRANTIES, WHETHER EXPRESS OR IMPLIED, WILL APPLY AFTER THE LIMITED WARRANTY PERIOD HAS EXPIRED. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

WE DO NOT ACCEPT LIABILITY BEYOND THE REMEDIES PROVIDED FOR IN THIS LIMITED WARRANTY OR FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT

LIMITATION, ANY LIABILITY FOR THIRD-PARTY CLAIMS AGAINST YOU FOR DAMAGES, FOR PRODUCTS NOT BEING AVAILABLE FOR USE, OR FOR LOST DATA OR LOST SOFTWARE. OUR LIABILITY WILL BE NO MORE THAN THE AMOUNT YOU PAID FOR THE PRODUCT THAT IS THE SUBJECT OF A CLAIM. THIS IS THE MAXIMUM AMOUNT FOR WHICH WE ARE RESPONSIBLE. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

**What Must I Do To Keep the Warranty in Effect?**
- You must keep your receipt or other appropriate documentation as proof of the date of sale and purchase.
- You must keep your serial number or order number for the product. This is found on the product itself or on your receipt.
- You must not do any of the things that will make the warranty invalid as provided for in this warranty statement.
- You must use, install, maintain and operate the product in accordance with published specifications and the user's manual.

**What Do I Do If I Need Warranty Service?**
- Before the warranty expires, please call us at 1-800-BOATING (1-800-262-8464). Please also have your serial number or order number available.
- When you contact us, we will issue a Return Material Authorization Number for you to include with your return. We will also provide you the address of where to ship the product.
- You must return the product to us in its original or equivalent packaging, prepay shipping charges, and insure the shipment or accept the risk if the product is lost or damaged in shipment.

**What Will West Marine Do?**
During the Limited Warranty Term, if the product you return to us proves to be defective in materials or workmanship and not for the reasons which would otherwise disqualify it (as explained here), then we will:

- At West Marine's option, we will repair the product or, if we are unable to repair it, we will replace it with a comparable product that is new or refurbished;
- Or, as an alternative, at West Marine's option, we will refund you the original purchase price;
- If we repair or replace the product, we will return the repaired or replacement product to you; and

- Pay to ship the repaired or replacement product to you if you use an address in the United States (excluding Puerto Rico and U.S. possessions and territories). Otherwise, we will ship the product to you freight collect.
- If we determine that the problem is not covered under this warranty, we will notify you of this when we return your product to you to the address you provide us in the United States (excluding Puerto Rico and U.S. possessions and territories).
- We use new and refurbished parts made by various manufacturers in performing warranty repairs and in building replacement parts and systems. Refurbished parts and systems are parts or systems that have been returned to West Marine, some of which were never used by a customer. Replacement parts and systems are covered for the remaining time left in the Limited Warranty Term for the product you bought (whatever time remains in the twelve months since purchase). West Marine owns all parts removed from repaired products.

**Maintenance is the Owner's Responsibility**
Cleaning, polishing, lubricating, replacing filters, tuning, replacing worn parts, using your purchased product according to the user's manual, and regularly maintaining your purchased product is your responsibility.

**What if I purchased a Plus Protection Plan?**
Service will be provided to you under the terms of the Plus Protection Plan Contract. Please refer to that contract for details on how to obtain service.

**How State Law Relates to the Warranty.**
This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

43000-1851 Rev:12/13

**NOTES**

# westmarine.com

West Marine Products, Inc.
Watsonville, CA