LOWRANCE

Link-5 VHF
User Guide

ENGLISH

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Important safety information **Please read carefully before installation and use.**	
DANGER	This is the safety alert symbol. It is used to alert you to potential personal injury hazards, Obey all safety messages that follow this symbol to avoid possible injury or death.
⚠ **WARNING**	WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury
⚠ **CAUTION**	CAUTION indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.
CAUTION	CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Section 1 General Information

1-1 Features

Congratulations on your purchase of this Lowrance Link-5 marine band VHF radio. Your Link-5 provides the following useful features:

- Prominent channel display
- Adjustable contrast settings for the LCD
- Adjustable keypad backlighting for easy night-time use
- Waterproof and submersible to comply with JIS-7
- GPS latitude and longitude (LL) and time display (when connected to a GPS)
- Choice of High or Low (25 W or 1 W) transmission power
- 6 key handset mic with built-in speaker
- Powerful 4 W external audio output
- Access to all currently-available marine VHF channel banks (USA, Canada, International) including weather channels where available (model dependant)
- Special CH16/9 key for quick access to the priority (international distress) channel
- Special 3CH key to select your three favourite channels
- Dedicated Wx (Weather) key
- PSCAN (similar to dual watch) facility
- DSC (Digital Select Calling) capability that meets Global DSC Class D Standards
- Separate CH70 receiver included built in
- DISTRESS call button to automatically transmit the MMSI and position until an acknowledgement is received
- Easy access to a buddy list of up to 20 favourite people
- MMSI storage for three favourite groups
- Group Call and All Ships Call facility
- LL position polling information
- Weather alert facility where available (US models)
- ATIS facility for inland waterways (EU models)
- With DSC Auto-Switch disable and DSC Test function

1-2 Customizing your Lowrance VHF Radio

You can customize the radio to suit your individual preferences. Some preferences can be set directly through the keys as explained in this Section. Other preferences are set up through the built-in menus and these are explained in the other Sections.

You can check the software version of the radio and the User MMSI each time the radio is turned on, the screen will display the software version and the USER MMSI if one is programmed into the radio.

1-3 How to Display and Navigate Menus

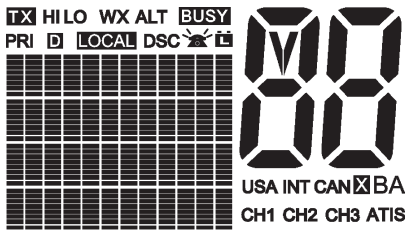
1. Press MENU (or CALL). Note that only four menu items can be displayed at any one time on the screen.
2. Some line items may show an ▲ or ▼ indicator. This means there is more information available to show. Scroll (rotate the Rotary knob, or use + / - keys on the hand mic) to scroll up and down the menu until the cursor is positioned at the desired option. Press ENT (press the Push To Select) to display that option.
3. Make any entries or changes as explained in the following section.
4. Press ENT to confirm changes. Otherwise, press EXIT to keep the original entry.
5. Press EXIT to backup one screen (this key is equivalent to an ESC function on a PC)

1-4 How to Enter Alphanumeric Data

If your radio does not have the optional alphanumeric microphone, you can Rotate the Rotary knob, or use + / - keys on the microphone key to enter alphanumeric data.

- Press - to count through numbers, or hold down to scroll rapidly to the desired number.
- Press + to step through the alphabet, or hold down to scroll rapidly to the desired character.
- If you make an error, press - until < is displayed, then press ENT to backup and correct the entry.

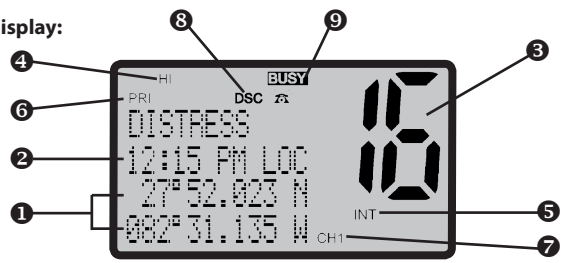
1-5 LCD Symbols and Meanings



This simulation shows the locations of all the following information symbols:

Symbol	Meaning
TX	Transmitting.
HI LO	Transmission power. High (HI) 25W or Low (LO) 1W.
WX	Weather channel.
WX ALT	Weather Alert. Alarm beeps will sound (US models only).
BUSY	Receiver busy with an incoming signal.
PRI	Priority channel is selected.
D	Duplex operation. Otherwise, blank for Simplex operation.
LOCAL	Local calling is selected. Otherwise, blank for distance calling.
DSC	DSC capability is available.
	Incoming DSC call.
	Low Battery warning (activates at 10.5 V).
	Channel selected.
USA INT CAN	Selected channel bank for VHF radio operations and regulations.
X	DSC Auto channel switch function is disabled (OFF) (see section 4-8)
B A	Channel suffix, if applicable.
CH1 CH2 CH3	Shows which of the 3 favourite channels, if any, are selected. Otherwise blank.
ATIS	EU models only - must be enabled when in European inland waterways.

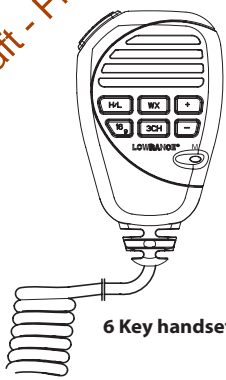
A typical display:



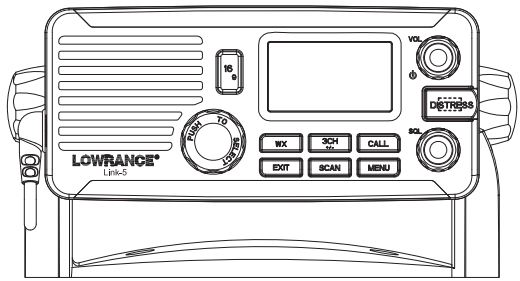
The **latitude and longitude** ❶ of the vessel and the **local time** ❷ are shown.
A transmission on **Channel 16** ❸ is being made at **high power** ❹
The **International channel bank** ❺ is loaded.
Channel 16 is set as the **Priority channel** ❻. It is also set as **favourite channel 1** ❼.
DSC functionality ❽ is enabled.
There is an **incoming DSC call** ❽ so the **receiver is busy** ❾.

1-6 Basic Operation and Key Functions

All possible keys and their functions are listed here. Note that some of the keys may not be available depending on your Lowrance VHF radio model.



6 Key handset mic



Link-5 base station radio

Key	Function
VOL/PWR	**Volume and Power.** Turn clockwise to power on. Continue to turn until a comfortable volume is reached. VOL/PWR will also adjust the settings of an external speaker, if connected.
SQL	**Squelch or Threshold Level.** Sets the threshold level for the minimum receiver signal. Turn fully counterclockwise until random noise is heard, then turn slowly clockwise until the random noise disappears. Make another 1/4 turn clockwise for best reception in open sea conditions. In areas of high noise (eg. close to large cities) reception may improve if sensitivity is reduced. Either turn SQL slowly clockwise or use the LOCAL setting. See section 2.3.
16 / 9	**Priority Channel.** Also on the handset mic. Press to cancel all other modes and to tune into the priority channel. Press again to return to your original channel. The default Priority Channel is CH16. **For US models:** To make Channel 09 the priority channel, hold down 16/9 until a beep sounds and 09 is displayed.
WX	**Weather Channel.** **For US models:** In USA and Canadian waters, press to hear the most recently selected weather station. The WX symbol is displayed on the LCD. Rotate the dial or + / - on the handset mic to change to a different weather channel. Press WX again to return to the most recent channel. If the weather alert mode (ALT) is ON and an alert tone of 1050Hz is broadcast from the weather station, it is picked up automatically and the alarm sounds. Press any key to hear the weather alert voice message.

For all other models: The Wx key can be programmed to a weather channel of your choice. Select a channel you wish to use as your weather channel, then press and hold the Wx key for a few seconds. The radio will beep to confirm your choice. You now have quick access to your favourite channel by pressing the Wx key.

H/L

Transmission Power.
(Located on the handset mic). High (HI) 25W or Low (LO) 1W. Press to toggle between high or low transmission power for the entire channel bank. The HI or LO selection is shown on the LCD.

Some channels allow only low power transmissions. Error beeps will sound if the power transmission setting is incorrect.

Some channels allow only low power transmissions initially, but can be changed to high power by holding down H/L and PTT at the same time. See Appendix C for a complete listing of channel charts.

3CH

Three Favourite Channels.
Also on the handset mic. Press to toggle between your favourite channels. The CH1, CH2, or CH3 symbol appears on the LCD to show which favourite channel is selected.

To scan only one of your favourite channels, press 3CH then immediately press and release SCAN. If you want to scan all three favourite channels, press 3CH then immediately press and hold SCAN.

To add a favourite channel for the first time, select that channel then hold 3CH to store it in the CH1 location. Repeat the procedure to store two more favourite channels in the CH2 and CH3 locations respectively.

If you try and add another favourite channel it will overwrite the existing CH3. CH1 and CH2 remain unless you delete them.

To delete a favourite channel, select that channel then hold down 3CH until the CH1, CH2 or CH3 symbol disappears off the LCD.

SCAN

Scan.
Press to scan between your current channel and the priority channel in **DUAL** or **TRI WATCH** mode. The weather channel is also scanned if the USA channel bank is selected and the weather alert mode (ALT) is ON.

Hold down SCAN to enter **ALL SCAN** mode where the priority channel is checked every 1.5 seconds.

When a signal is received, scanning stops at that channel and **BUSY** appears on the screen. If the signal ceases for more than 5 seconds, the scan restarts.

Press ENT to temporarily skip over (lock out) an "always busy" channel when in ALL SCAN mode and resume the scan. If a channel is skipped, the word 'SKIP ON' will momentarily replace the channel name shown on the LCD to designate a skipped channel. The channel name will then have ' *' appended to the end of the channel name. Note that it is not possible to skip over the priority channel.

To cancel a skipped channel, select the channel while in normal mode (non-scan mode) then press the ENT key - 'SKIP OFF' will be displayed momentarily and the channel will be restored. Alternatively, you can re-power the radio.

Press SCAN to stop at the current channel.

Press EXIT to cancel scan mode and return to normal operation.

PUSH TO SELECT **Enter (ENT).**
Use ENT when navigating menus, to confirm entries and edits.

EXIT **Escape (ESC).**
Use EXIT when navigating menus, to clear incorrect entries, to exit from a menu without saving changes, and to back up to the previous screen.

CALL **DSC Call Menu.**
Press to enter the DSC Call Menu and make DSC calls. See Section 6.

MENU **Radio and DSC Setup Menu.**
Press to enter the DSC Setup Menu and to customize your radio. See Section 2-5.

DISTRESS **Send a DSC Distress Call.**
DSC must be active and an MMSI must be programmed. See Section 6.

PTT **Press To Talk.**
(Located on the handset mic). Press PTT to transmit at any time on an allowable channel. This automatically exits you from menu mode and stops scanning. You must release PTT to receive a signal.

If PTT sticks, a built-in timer will automatically shut down a transmission after five minutes and sound an error tone.

Rotary knob **Channel Select.**
Turn to select a channel. The current channel is shown on the LCD in BIG digits and an A or B designator suffix (if applicable) in small letters below the channel number. (See appendix C for a listing of channel frequencies).

Push to activate the **ENT** function.

You can also use the rotary knob for alphanumeric entry. Turn to step through alphanumeric characters one at a time then push to confirm each selection. If you make an error, select the < character then push to backup.

+ / - **Channel Select.**
(Located on the handset mic). The current channel is shown on the screen in BIG digits with an appropriate designator suffix A or B in small letters below the channel number.

Press + or - to step through the available channels one at a time, or hold down to scroll rapidly through all the available channels. See Appendix C for a listing of channel charts.

Alphanumeric Entry.
This key can also be used for menu selection and for alphanumeric entry. Press + or - to scroll the cursor up or down menu options when navigating menus.

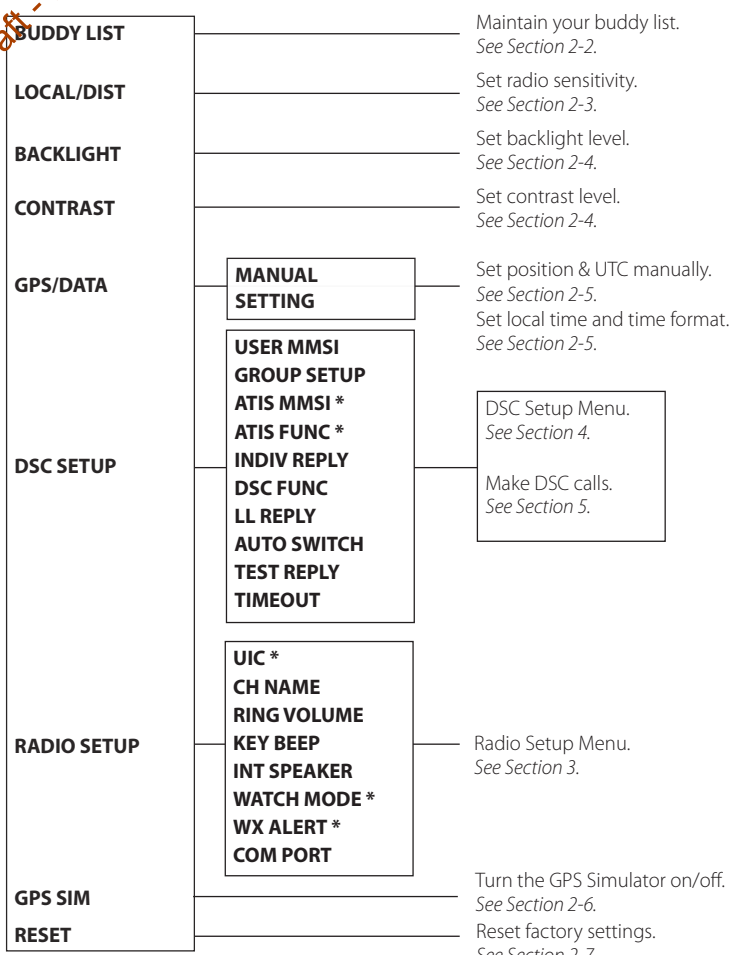
When editing an item containing only numbers, press **-** to count through the numbers or hold down to scroll rapidly.

To enter a character, press **+** to step through the alphabet or hold down to scroll rapidly.

Section 2 The Radio Menu (MENU)

2-1 Radio Menu Options (Menu)

The following options are available through MENU key:



** Model dependant*

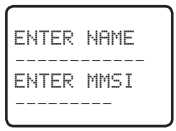
Sections 1-3 and 1-4 explain how to navigate around the menu and enter, save and change data.

2-2 Maintain Your Buddy List (BUDDY LIST)

Use the Buddy List to store the names and associated MMSI's of 20 favourite people. Names are stored in the order of entry, with the most recent entry shown first.

The following sections show how to add, edit, and delete entries on your BUDDY LIST. Section 5 explains how to call a buddy.

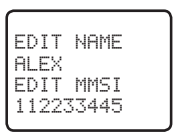
2-2-1 Add an Entry



1. Select BUDDY LIST. The cursor is at MANUAL NEW. Press ENT.
2. Enter the buddy name, one character at a time (this may be alphanumeric) then press ENT repeatedly until the cursor moves to the MMSI entry line.
3. Enter the MMSI associated with that buddy name (this must be numeric) then press ENT. If the MMSI is for a Coast Station, enter the 7 digits then press ENT twice.
4. The new buddy name and MMSI are displayed. Press ENT to store the new entry, which is displayed at the top of your buddy list.

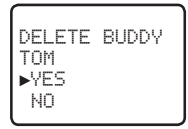
Note: When the BUDDY LIST is full (20 entries), you can make a new entry and the buddy at the end of the list is automatically erased.

2-2-2 Edit an Entry



1. Select BUDDY LIST. Press ENT to display the list of entries.
2. Scroll down (if required) to the entry and press ENT.
3. Select EDIT. The cursor is at the first character of the name.
4. Edit the buddy name or, to edit only the MMSI, press ENT repeatedly until the cursor moves to the MMSI line.
5. When you are finished, press ENT (repeatedly if necessary) to display the next screen.
6. Press ENT to store the changes. The buddy list is displayed again. If more changes are required, repeat Steps 2 through 6. Otherwise, press EXIT to cancel.

2-2-3 Delete an Entry



1. Select BUDDY LIST. Press ENT to display the list of entries.
2. Scroll down (if required) to the entry you want to delete and press ENT.
3. Select DELETE then select YES.
4. The entry is deleted immediately and the buddy list is displayed again.

2-3 Local or Distance Sensitivity (LOCAL/DIST)

Use LOCAL/DIST to improve the sensitivity of the receiver either locally (LOCAL) or over distances (DIST).

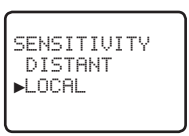
LOCAL is not recommended for use in open sea conditions. It is designed for use in areas of high radio noise; for example, close to cities.

See also SQL (Squelch Control) in Section 1.6.

2-3-1 Set DISTANT Sensitivity

1. Select LOCAL/DIST then select DIST.
2. Press ENT to activate the DIST setting. This disables local sensitivity and the menu is displayed again.

2-3-2 Set LOCAL Sensitivity



1. Select LOCAL/DIST then scroll to LOCAL.
2. Press ENT to activate the LOCAL setting. This disables distance sensitivity and the menu is displayed again.

LOCAL is displayed on the LCD as a reminder that local sensitivity is selected.

2-4 Backlighting (BACKLIGHT) and Contrast (CONTRAST)

Use BACKLIGHT to set the backlight levels for the LCD, keypad and microphone keypad to a comfortable level.

Use CONTRAST to set the contrast level for the LCD.

2-4-1 Set the Backlighting Level

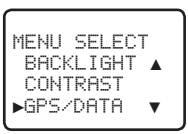
1. Select BACKLIGHT.
2. Select a comfortable backlight level using + or - to change the setting.
3. Press ENT to enable the setting and return to the menu.

Note: The DISTRESS key backlighting cannot be switched off.

2.4.2 Set the Contrast Level

1. Select CONTRAST.
2. Select a comfortable contrast level using + or - to change the setting.
3. Press ENT to enable the setting and return to the menu.

2-5 GPS Data and Time (GPS/DATA)



If the boat has an operational GPS navigation receiver, the VHF radio automatically detects and updates the vessel position and the local time.

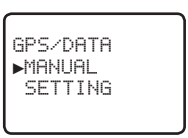
However, if the GPS navigation receiver is disconnected or absent, you can specify the vessel position and the local time manually, using the GPS/DATA option.

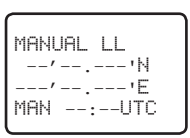
This information is important because it will be used if a DSC distress call is transmitted.

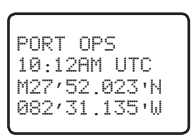
You can also select GPS Alert and GPS Simulator options.

2-5-1 Manually Enter Position and UTC Time (MANUAL)

Note that this function is available only if an operational GPS receiver is not connected.





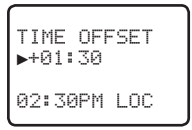


1. Select GPS/DATA, then MANUAL.
2. Enter the latitude, then the longitude, then the UTC.
3. Press ENT when all the information is correct.

   The vessel's latitude and longitude are shown on the screen, with the UTC time. The prefix M indicates a manual entry. The manual entries are cancelled if a real GPS position is received.

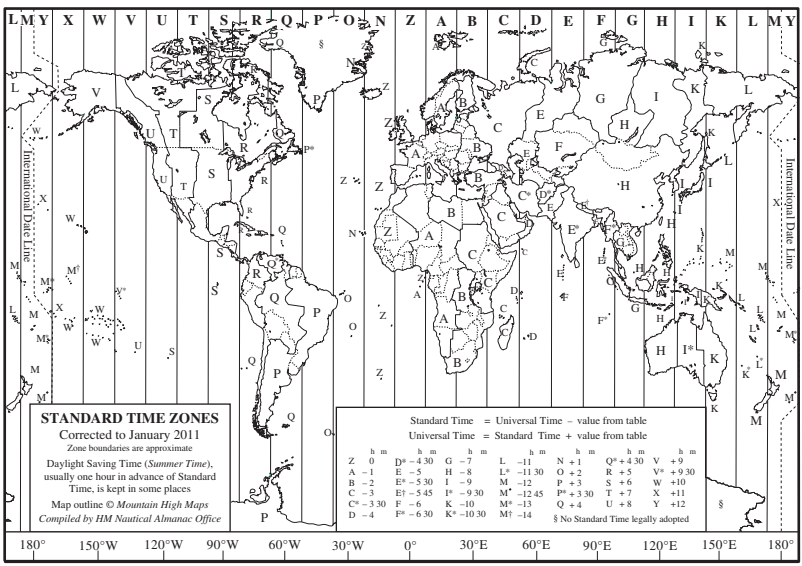
2-5-2 Local Time (TIME OFFSET)

The local time can be set by entering the time offset between UTC and local time as follows.



1. Select GPS/DATA, then SETTING.
2. Select TIME OFFSET to enter the difference between UTC and local time. Half hour increments can be used with a maximum offset of ±13 hours.

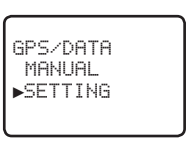
   In this example, a difference of +1.5 hours has been entered and the local time is displayed with the suffix LOC.

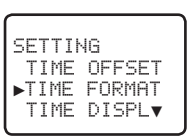


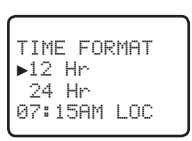
WORLD MAP OF TIME ZONES

2-5-3 Time Format Options (TIME FORMAT)

Time can be shown in 12 or 24 hour format.







1. Select GPS/DATA, then SETTING.
2. Select TIME FORMAT.
3. Select 12 Hr or 24 Hr as desired. In this example, 12 hour format has been selected and so the LCD shows the AM or PM suffix.

2-5-4 Time Display Options (TIME DISPLAY)

If you have entered the time manually as described in the previous sections, the time is always shown on the screen with the prefix M.

However, if the vessel position is being updated through a GPS navigation receiver, you can switch the time display on the screen ON or OFF as follows:

1. Select GPS/DATA, then SETTING.
2. Select TIME DISPLAY.
3. Select ON (on) or OFF (off) as desired. In this example, OFF has been selected and so the screen no longer shows the time.

If the time display is set ON, course and speed data are not displayed on the LCD *(see section 2-5-6)*.

2-5-5 Position Display Options (LL display)

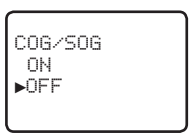
If you have entered the vessel position manually as described in the previous section, the vessel position is always shown on the screen with the suffix M.

However, if the time is being updated through a GPS navigation receiver, you can switch the vessel position display on the screen on or off as follows:

1. Select GPS/DATA, then SETTING.
2. Select LL DISPLAY.
3. Select ON (on) or OFF (off) as desired. In this example, OFF has been selected and the screen no longer shows the vessel position.

2-5-6 Course & Speed Display Options (COG/SOG)

Use this option to display course over ground (COG) and speed over ground (SOG) data on the screen.



1. Select GPS/DATA, then SETTING.
2. Select COG/SOG.
3. Select ON (on) or OFF (off) as desired. In this example, ON has been selected and so the screen shows the bearing and speed.

If COG/SOG is set ON (on), the time is not displayed on the screen (see section 2-5-4).

2-5-7 GPS Alert Options (ALERT)

The GPS alert is usually set to ON (on) so that if the GPS navigation receiver is disconnected, the alarm sounds.

1. Select GPS/DATA, then SETTING.
2. Select GPS ALERT.
3. Select ON (on) or OFF (off) as desired.

2-6 GPS Simulator (SIMULATOR)

The GPS Simulator is set to OFF whenever the radio is switched ON, or whenever real GPS data is available through the COM port. However, if you want to test it, turn it on.

1. Select GPS SIM, then select ON (on) or OFF (off) as desired.

   Whenever the GPS Simulator is turned ON (on), simulated Speed Over Ground (SOG), Course Over Ground (COG), and LL position appear on the screen. This data is updated automatically during the simulation.

Important: It is not possible to send a DSC transmission when in Simulator mode.

2-7 Reset to Factory Defaults (RESET)

Use this setting to return every setting to the factory defaults except all MMSI settings, entries in your buddy list and any edited channel names.

1. Select RESET. The radio asks for confirmation.
2. Select YES to reset the radio and return to the menu.

Section 3 Radio Setup Menu (RADIO SETUP)

3-1 Radio Setup Menu (RADIO SETUP)

The following options are available through MENU key:

UIC *	Channel band. *See Section 3-2.*
CH NAME	Edit or delete channel names. *See Section 3-3.*
RING VOLUME	Set the volume level of the incoming call notification beeps. *See section 3-4.*
KEY BEEP	Set the volume level of the beeps. *See section 3-4.*
INT SPEAKER	Switch ON/OFF (on/off) the radio's internal speakers. *See section 3-5.*
WATCH MODE *	Selects Priority Channel operation with Dual or Tri watch scanning. *See section 3-6.*
WX ALERT *	Selects if the WX Alert scanning mode is ON (on) or OFF (off). *See section 3-7.*
COM PORT	Select NMEA protocol for communications between the VHF radio and any other instruments. *See section 3-8.*

** Model dependant*

Sections 1-3 and 1-4 explain how to navigate around the menu and enter, save and change data.

3-2 Channel (UIC)

Note: UIC may not be available on all models.

Toggle between USA, International or Canadian channel banks. The selected channel bank is displayed on the LCD along with the last used channel. All the channel charts are shown in Appendix C.

3-3 Channel Names (CH NAME)

The channel charts are listed in Appendix C with their default name tags. CH NAME gives you the option to edit or delete the channel name tags displayed on the screen.

1. Select RADIO SETUP, then CH NAME.
2. Use + or - to step through the channels with their name tags until you see the channel name tag you want to change, then press ENT. In this example, the channel name TELEPHONE associated with channel 01 is being changed to PHONE1.
3. Select EDIT and press ENT to edit the existing name tag. Input the new name over the existing name. It can be a maximum of 12 characters.

   To delete the channel name, select DELETE and press ENT.
4. Press ENT (repeatedly if necessary) to display the YES/NO confirmation.
5. Press ENT to confirm the new channel name tag or the deletion, then press EXIT to return to the menu.

3-4 RING & BEEP Volume (RING VOLUME) and (KEY BEEP)

Set the volume level of the incoming signal beeps (RING VOLUME) and/or the error and warning beeps (KEY BEEP) to HIGH (high) or LOW (low) as follows:

1. Select RADIO SETUP, then RING VOLUME or BEEP VOLUME as appropriate.
2. Select a HIGH or LOW volume. (It is possible to turn the beeps off completely by selecting KEY BEEP then OFF.)
3. Press ENT to enable the new volume setting and return to the menu.

3-5 Internal Speaker Connections (INT SPEAKER)

Switch the radio's internal speaker ON (on) or OFF (off). The external speaker is always ON (on) if a speaker is plugged into the external speaker jack.

1. Select RADIO SETUP, then INT SPEAKER.
2. Select ON (on) or OFF (off) then press ENT to enable the setting and return to the menu.

3-6 Set the Priority Channel (WATCH MODE)

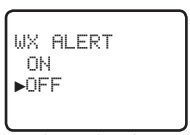
For EU models, watch mode is similar to a dual watch, scanning between the priority channel CH16 and the working channel. If you have US model and are operating on USA or Canadian channel banks, you can set the priority channel to cover both CH16 and CH09 as well as the working channel, as follows:

1. Select RADIO SETUP, then WATCH MODE.
2. Select ONLY 16CH for dual watch mode, or 16CH+9CH for tri watch mode.

3-7 Weather Alert (Wx ALERT)

US models ONLY

The NOAA provides several weather forecast channels on USA and Canadian channel banks. If severe weather such as storms or hurricanes are forecast, the NOAA broadcasts a weather alert on 1050 Hz. You can set up the radio to pick up weather alerts, as follows:

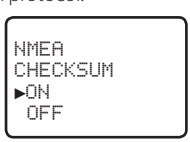


1. Select RADIO SETUP, then WX ALERT.
2. Select ON (on) or OFF (off) then press ENT to enable the setting and return to the menu.

When a weather alert is broadcast, the alarm will sound. Press any key to hear the weather alert voice message.

3-8 NMEA protocol (COM PORT)

This radio uses NMEA 0183 protocol to receive GPS data from a compatible GPS unit. The COM Port must be configured correctly before use. The radio can be added to a group of instruments using NMEA protocol.



1. Select RADIO SETUP, then COM PORT.
2. Select CHECKSUM ON (on) or OFF (off) then press ENT to enable the setting and return to the menu.

CHECKSUM ON is the default setting.

The COM Port uses 4800 baud rate and can receive the following GPS data sentence: RMC, GGA, GLL, GNS. Additionally, this radio will output the following NMEA DSC data: DSC (for DSC call), DSE (for enhanced position).

Section 4 DSC Setup Menu (DSC SETUP)

⚠ WARNING

A valid USER MMSI must be entered into this radio before these DSC functions can be used. See below for instructions on how to Enter Your USER MMSI (USER MMSI).

4-1 DSC Setup - Menu Options

The following options are available through MENU key:

USER MMSI	Enter or view your user MMSI. *See section 4-2.* (If you do not have a user MMSI, see Appendix D.)
GROUP SETUP	Enter or change the name and/or details of a group. *See section 4-3.*
ATIS MMSI *	Enter, change or view your ATIS MMSI. *See section 4-5.*
ATIS FUNC *	Enable/disable the ATIS function. *See section 4-5-3.*
INDIV REPLY	Choose an automatic or manual response to calls. *See section 4-4.*
DSC FUNC	Turn the DSC operation ON/OFF (on/off). *See section 4-6.*
LL REPLY	Select the type of response to an LL polling request. *See section 4-7.*
AUTO SWITCH	Enable/disable automatic channel switching with DSC message *See section 4-8.*
TEST REPLY	Choose an automatic or manual response to DSC test call. *See section 4-9.*
TIMEOUT	Set the inactivity timer for Automated and Non-Automated items. *See section 4-10.*

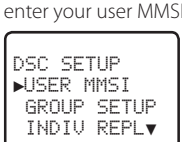
** Model dependant*

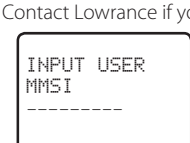
4-2 Enter or View Your USER MMSI (USER MMSI)

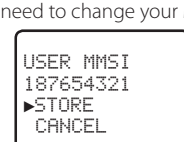
You must enter your user MMSI before you can access the DSC functions. This is a ***once-only operation***.

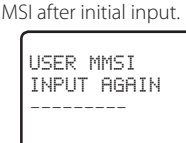
4-2-1 Enter your MMSI

You can display and read your user MMSI at any time, but you get only one opportunity to enter your user MMSI. Contact Lowrance if you need to change your MMSI after initial input.









1. Select DSC SETUP, then USER MMSI.
2. If this is the **first time** that you are entering your user MMSI, a dashed line appears.

   Enter your user MMSI along the dashed line using the rotary knob as described in Section 1-4. Press ENT to confirm each correct entry and to move to the next digit. If you make an error, press - until < appears, then press ENT to backup and correct the entry.
3. Press ENT to store your user MMSI.
4. You may need to enter your user MMSI again as a password check, then press ENT to permanently store the user MMSI and return to the menu.

4-2-2 View your MMSI

You can view your stored user MMSI at anytime by selecting MMSI/GPS in the CALL menu.

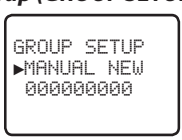
Alternatively, the user MMSI is displayed each time the radio is turned on.

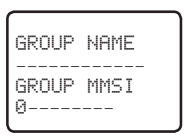
If a user MMSI is not programmed into the radio, the radio will display a warning and sound an audible alarm at startup warning you that all DSC functions are disabled (model dependant).

4-3 Maintain Your Groups (GROUP SETUP)

Use GROUP SETUP to create, edit, or delete 1, 2, or 3 groups of frequently called people stored in alphanumeric order. A group MMSI always starts with 0.

4-3-1 Create a Group (GROUP SETUP)





1. Select DSC SETUP, then GROUP SETUP.
2. If this is the **first time** that you are entering a group name, a line of nine zeros appears. Otherwise, any existing group names are displayed. Press ENT to display the input screen.
3. Enter the group name along the dashed line. It can be alphanumeric. Press ENT to confirm each correct entry and to move to the next digit. When you have finished, press ENT repeatedly until the cursor moves to the MMSI line.

   If you make an error, press - until < appears, then press ENT to backup and correct the entry.
4. Enter the group MMSI. Note that the first number is always 0. Press ENT.
5. The group name and group MMSI are shown in a confirmation screen. Press ENT to store the details and return to the GROUP SETUP screen.

4-3-2 Edit Group Name Details

1. Select DSC SETUP, then GROUP SETUP. The existing group names are displayed. Press + or - to scroll to the incorrect entry then press ENT.
2. Press ENT to edit. The group name details are displayed, with the cursor at the first character of the name.
3. Edit the buddy name or, to edit only the MMSI, press ENT repeatedly until the cursor moves to the MMSI line.
4. When you are finished, press ENT (repeatedly if necessary) to display the next screen.
5. Press ENT to store the changes and return to the GROUP SETUP screen.

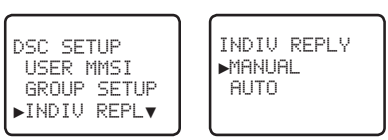
4-3-3 Delete a Group

1. Select DSC SETUP, then GROUP SETUP. The existing group names are displayed.
2. Press + or - to scroll to the incorrect entry then press ENT.
3. Select DELETE and press ENT. The radio asks for confirmation.
4. Press ENT to delete the group and return to the GROUP SETUP screen.

4-4 Response to Individual Calls (INDIV REPLY)

You can respond to incoming individual calls with an automatic response or with a manual response. Note - this does not apply for Routine Calls.

- An AUTOmatic response sends an acknowledgement and then sets the request link channel, ready for a conversation after 10 seconds of receiving the call. USA default.
- A manual response asks if you want to acknowledge the call, and then asks if you want to converse with the caller. This is the default setting for EU models.



1. Select DSC SETUP, then INDIV REPLY.
2. Select AUTO for an automatic response, or MANUAL for a manual response.
3. Press ENT to confirm your choice and return to the menu.

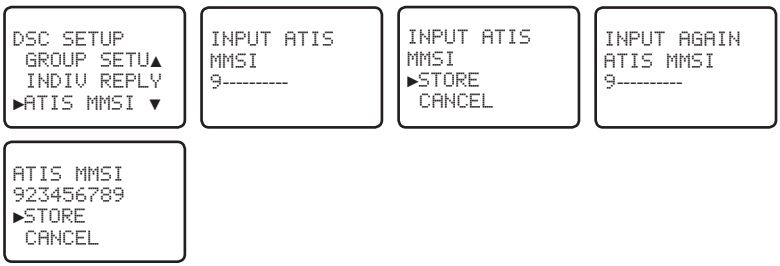
4-5 ATIS MMSI & ATIS Functionality

EU models ONLY

ATIS is only available in certain EU models. You must enter your ATIS MMSI to access ATIS functionality. ATSI must be used if you are navigating inland waterways within Europe. An ATIS MMSI is different to your DSC MMSI.

ATIS sends a digital message each time that you release the PTT key. Inland waterways rules require 1 W Tx power on Channels 06, 08, 10, 11, 12, 13, 14, 15, 17, 71, 72, 74 and 77.

4-5-1 Enter or Edit YOUR ATIS MMSI



Note: An ATIS MMSI always starts with the number 9.

1. To enter or edit your ATIS MMSI:
2. Select DSC SETUP, then ATIS MMSI.
3. If this is the first time that you are entering your ATIS MMSI, a dashed line appears. Enter your ATIS MMSI along the dashed line using the rotary knob as described in Section 1-4. The first number is always 9. Press ENT to confirm each correct entry and to move to the next digit.

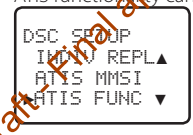
   If you make an error, press - until < appears, the press ENT to backup and correct the entry. If you are editing an existing ATIS MMSI, this will be displayed. Make the required changes.
4. Press ENT to store your user ATIS MMSI.
5. You may need to enter your ATIS MMSI again as a password check, then press ENT to permanently store the ATIS MMSI and return to the menu.

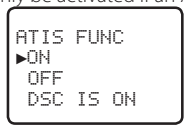
4-5-2 View your ATIS MMSI

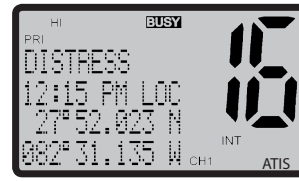
You can view your stored ATIS MMSI at anytime by selecting ATIS MMSI in the main menu, DSC SETUP.

4-5-3 Enable ATIS Functionality (ATIS FUNC)

ATIS functionality can only be activated if an ATIS MMSI has been entered. See 4-5-1.







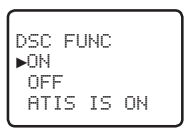
1. Select DSC SETUP, then ATIS FUNC.

Note: It is not possible to have both ATIS ON (on) and DSC ON (on) simultaneously. If you want to activate ATIS, you must first switch DSC off. A note on the LCD will remind you if DSC is already ON.

2. Select ON to enable the ATIS functionality - DSC must be turned off first. The **ATIS** annunciator appears on the screen.

4-6 DSC functionality options (DSC FUNC)

DSC functionality can be disabled but this is not recommended unless you are going to turn ATIS on.



1. Select DSC SETUP, then DSC FUNC.

Note: It is not possible to have both ATIS ON (on) and DSC ON (on) simultaneously. If you want to activate DSC, you must first switch ATIS off. A note on the LCD will remind you if ATIS is already ON.

2. Select ON to enable the DSC functionality - ATIS (if applicable) must be turned off first. The **DSC** annunciator appears on the screen.

There are two annunciators on the screen to show you the current mode: if the DSC annunciator is shown, DSC is operational, if the ATIS annunciator is shown, ATIS is operational.

4-7 Response Type to LL Polling Calls (LL REPLY)

You can set the radio to respond to an LL polling request in one of three ways:

AUTO automatically replies to any incoming LL polling requests from any of your buddies.

MANUAL choose to manually reply to any incoming buddy polling requests.

OFF ignores all incoming buddy LL polling requests.

1. Select DSC SETUP, then LL REPLY.
2. Select your response and press ENT to confirm and return to the menu.

4-8 Automatic Channel switching (AUTO SWITCH)

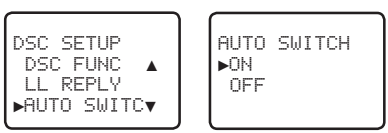
When a DSC call is received, it may include a request to change to a specific channel for subsequent communications. If a channel switch request is included, your options are:

- allow the radio to switch to the requested channel immediately by pressing the ENT button, or
- do nothing to allow the radio to automatically switch to the requested channel after a delay of 10 seconds, or
- cancel the automatic switch and remain on the current channel by pressing the EXIT button.

However, automatic switching to a subsequent communications channel on receipt of a DSC call might in some cases disrupt important ongoing communications if the working channel changes without the operator knowing.

You can prevent the radio from automatically switching from the current working channel by setting the AUTO SWITCH feature to OFF.

If the AUTO SWITCH feature is set to OFF, an **X** will be displayed on the LCD to remind you that this feature is set to off. Additionally, the text "AUTO SW OFF" will be included in an All Ships or Group call replacing the text "AUTO CHxx"



1. Select DSC SETUP, then AUTO SWITCH.
2. Select ON (on) to enable automatic channel switching.
3. Select OFF (off) to disable automatic channel switching.

4-9 DSC Test Reply (TEST REPLY)

You can respond to incoming DSC TEST calls with an automatic response or with a manual response.

MANUAL manual responce is required, press ENT to confirm or press EXIT to cancel.

AUTO automatically replies after a 10 second delay with an ACK to any incoming DSC TEST call.

4-10 Set the inactivity timer (TIMEOUT)

You can set the inactivity timer with the following options:

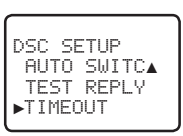
AUTOMATED you can set the inactivity timer to automatically timeout after a period of inactivity for the following two categories: NON-DISTRESS or DISTRESS
Timeout options are:
DISTRESS: NO TIMEOUT; 5 MINS; 10 MINS (default is NO TIMEOUT)
NON-DISTR: NO TIMEOUT; 10 MINS; 15 MINS (default is 15 MINS)

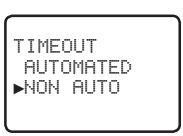
NON AUTO you can set the inactivity timer to exit any non-automated procedure activity. Timeout options are:
NO TIMEOUT; 10 MINS; 15 MINS (default is 10 MINS)

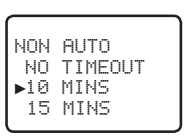
Note: If NO TIMEOUT is selected, then you must press the EXIT key to exit the procedure.

Example: to set a 10 minute TIMEOUT for non-automated functions:

1. Select TIMEOUT, then select NON AUTO
2. Select desired timeout period: NO TIMEOUT, 10 MINS or 15 MINS







In this example, 10 MINS has been selected, meaning the radio will exit any non-automated procedure after a period of 10 minutes of non-activity.

Section 5 Sending and Receiving DSC Calls

⚠ WARNING

Valid USER MMSI must be entered into this radio before these DSC functions can be used. See 4-2 Enter Your USER MMSI (USER MMSI).

5-1 What is DSC?

DSC (Digital Selective Calling) is a semi-automated method of establishing VHF, MF, and HF radio calls. It has been designated as an international standard by the IMO (International Maritime Organization) and is part of the GMDSS (Global Maritime Distress and Safety System).

Currently, you are required to monitor the VHF Distress Channel 16, but DSC will eventually replace listening watches on distress frequencies and will be used to broadcast routine and urgent maritime safety information.

DSC enables you to send and receive calls from any vessel or coast station that is equipped with DSC functionality, and within geographic range. Calls can be categorised as distress, urgency, safety, or routine, and DSC selects a working channel automatically.

5-2 Sending DSC calls

Press CALL to show the types of DSC call that can be made.

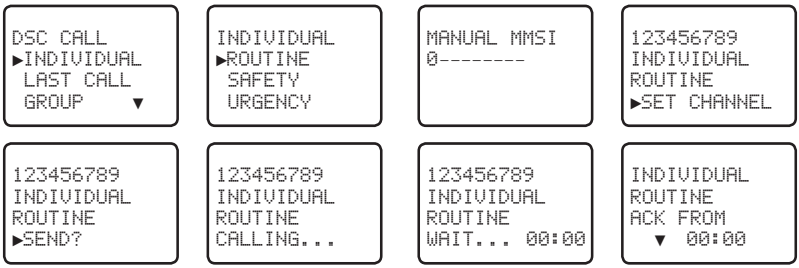
The following options are available through CALL key:

INDIVIDUAL	Make a individual call or acknowledgement to a new caller or a buddy. *See Section 5-2-1, 5-2-2, and 5-2-3.*
LAST CALL	Show the details of the most recent incoming call. *See Section 5-2-4.*
GROUP	Make a call to one of your three groups. *See Section 5-2-5.*
ALL SHIPS	Make an All Ships call. *See Section 5-2-6.*
CALL LOG	Show the details of the 20 most recent incoming calls. *See Section 5-2-7.*
DISTR LOG	Show the details of the 10 most recent distress calls. *See Section 5-2-8.*
SENT CALL	Show the details of the 20 most recent sent calls. *See Section 5-2-9.*
LL REQUEST	Request the LL position of a buddy. *See Section 5-2-10.*
DSC TEST	Make a DSC TEST call. *See Section 5-2-11.*
MMSI/GPS	Show the programmed MMSI and GPS information *See Section 5-2-12.*

Note that only three DSC call types can be shown at any one time on the screen.

Press + or - to scroll up and down the DSC call types until the cursor is positioned at the desired option. Then press ENT. The DSC call types are:

5-2-1 Make a Routine Call (INDIVIDUAL)



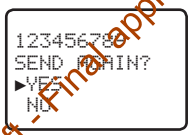
You can call any other person that has another DSC equipped radio.

1. Press CALL to enter DSC mode, then select INDIVIDUAL. This allows you to call another person.
2. Press ENT, the arrow is pointing to <ROUTINE>. However, you can select one of the following call priorities: ROUTINE, SAFETY, URGENCY.

   To make a Routine call, press ENT to select MANUAL NEW to call a person that is not in your buddy list, otherwise select the name of your buddy. Press ENT.

   If you selected MANUAL NEW, you need to enter the user MMSI and then press ENT. Note: If the MMSI is for a Coast Station, enter the 7 digits then press ENT twice.
3. Select the working channel and press ENT. (Note: Duplex channels cannot usually be called and are automatically eliminated from the suggested call list. If the call is to a Coast Station (MMSI begins with 00), the radio will recognize this and specify the correct channel to talk on.)
4. The radio summarizes the call details and asks for confirmation to send the call (SEND?). Press ENT to send the call. The radio goes to CH70 and the **TX** annunciator is displayed on the screen while the DSC call is being sent.
5. The radio then waits for an acknowledgement and displays the elapsed time since the call was sent.
6. If the call is acknowledged (ACK), press PTT to talk. If there is no reply, retry making the call. See Section 5-2-2.

5-2-2 Retrying a Routine Call



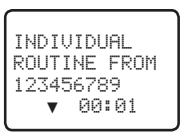
1. If there is no reply to your call after 30 seconds (UNABLE TO ACKNOWLEDGE) the radio asks if you want to retry the call (SEND AGAIN?).
2. Select YES and press ENT to retry the call.

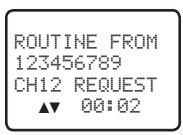
The radio will repeat this cycle twice. If the call still cannot be placed, the radio returns to normal operation.

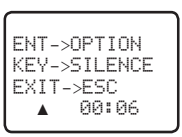
5-2-3 Acknowledgement of an Individual Incoming Call (INDIV)

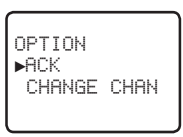
When an incoming call is received, the alarm sounds for 2 minutes and INDIVIDUAL is displayed.

1. Push +/- or 3CH or SCAN or H/L button or rotate the CH knob to stop the alarm
2. Push +/- button or rotate the CH knob to scroll any further information about the call









3. Press ENT for options on how you want to respond to the call. Options are:

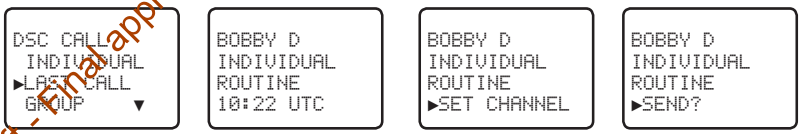
ACK to acknowledge the call

CHANGE CHAN to acknowledge and request a channel change

UNABLE ACK* respond to the call with unable to use the requested channel (* Note: this option is not available with ROUTINE calls)

4. Or press EXIT to return to standby.

5-2-4 Recall the Most Recent Incoming Call (LAST CALL)



This facility is useful and used frequently.

1. Press CALL to enter DSC mode. LAST CALL is automatically selected. Press ENT to display the contact details of the most recent incoming call.
2. Press ENT to recall the caller. Select the working channel and press ENT. (Note: Duplex channels cannot usually be called and are automatically eliminated from the suggested call list. If the call is to a Coast Station (MMSI begins with 00), the radio will recognize this and specify the correct channel to talk on.)
3. The radio summarizes the call details and asks for confirmation to send the call (SEND?). Press ENT to send the call, and continue as explained in Section 5-2-1.

5-2-5 Call a Group (GROUP)

1. Press CALL to enter DSC mode, then select GROUP. The radio displays the names of your groups you setup in section 4-3.
2. Select the group that you want to call (the Group MMSI must be set before making the call). Then set the channel and continue as explained in Section 5-2-1.

5-2-6 Call All Ships (ALL SHIPS)

1. Press CALL to enter DSC mode, then select ALL SHIPS.
2. Select one of the following call priorities:

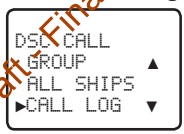
SAFETY to send safety information to all other vessels in range

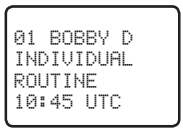
URGENCY for use when a serious situation or problem arises that could lead to a distress situation

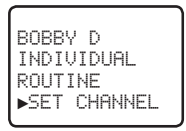
3. Set the working channel.

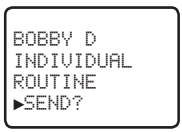
4. The radio then asks for confirmation of the ALL SHIPS call. Press ENT to send the call. Continue as explained in Section 5-2-1.

5-2-7 Call using the Call Log (CALL LOG)









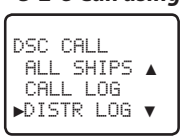
The Call Log contains the contact details for the 20 most recent incoming calls, so that you call any of them again quickly.

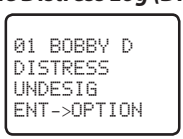
1. Press CALL to enter DSC mode, then select CALL LOG. Scroll down to the desired contact details.

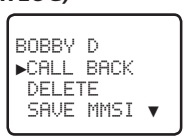
The radio displays the contact details for the most recent incoming call as the first entry (01) in the call log. In the example, the contact details for the most recent call are displayed. Press ENT to advance to next screen.

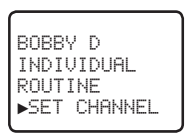
2. Again press ENT to confirm the call back, then set the working channel and press ENT to send the call. Continue as explained in Section 5-2-1.

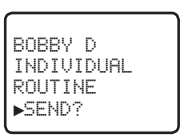
5-2-8 Call using the Distress Log (DISTR LOG)











The Distress Log contains the Distress Log data for the last 20 relayed Distress Calls so that you can call any of them quickly. Always try to make voice contact on CH16 first, as follows:

1. Press CALL to enter DSC mode, then select DISTR LOG.

2. The most recent Distress Call received is the first entry (01) in the Distress Log. Select the entry that you want to call and press ENT to select OPTION to select one of the following options on how you want to respond to the call:

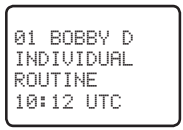
CALL BACK to call the station press ENT, then set the channel and continue as explained in Section 5-2-1.

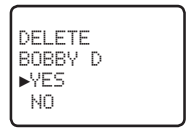
DELETE to delete the entry from the call log

SAVE MMSI to save the MMSI. You will be asked to add a name of the contact.

INFO to display more information about the station, such as the location and name or MMSI of the vessel in Distress and the nature of the emergency (if specified).

5-2-9 Call using the Sent Call Log (SENT CALL)





The Call Log contains the contact details for the 20 most recent sent calls, so that you review details of the call.

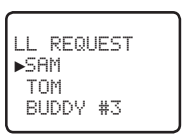
1. Press CALL to enter DSC mode, then select SENT LOG. Scroll down to the desired sent call details.
2. The radio displays the details for the most recent sent call as the first entry (01) in the call log. In the example, the contact details for the most recent call are displayed. Press ENT to advance to next screen.
3. You now have three options:

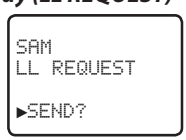
CALL BACK to CALL the contact.

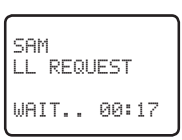
DELETE to delete the entry from the call log, select YES to confirm.

SAVE MMSI to save the MMSI. You will be asked to add a name for the contact.

5-2-10 Request the LL Position of a Buddy (LL REQUEST)







1. Press CALL to enter DSC mode, then select LL REQUEST.
2. Select the buddy whose LL position you want to request then press ENT to send the request. (See Section 5-3-5 for the acknowledgement.)
3. The working channel name is displayed while the radio waits for an acknowledgement from your buddy. If there is no reply after 30 seconds the radio asks if you want to retry. Continue as explained in Section 5-2-2.

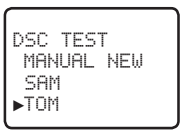
5-2-11 Make a DSC test call (DSC TEST)

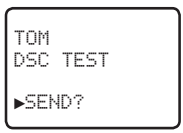
You can test your radio's DSC operation by sending a DSC TEST CALL to a Buddy or other station equipped with a DSC radio.

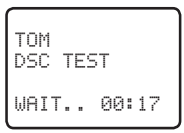
Note: You should not use a routine DSC call to test your radio and you should minimize the use of the safety channel for test purposes.

5-2-11-1 Send a DSC TEST call

1. Select DSC CALL then DSC TEST.
2. Select the buddy you want to call from your buddy list, or Select MANUAL NEW then enter the MMSI of the individual you want to call.
3. Press ENT to accept the selection.
4. Press ENT again to SEND the call. Channel 70 is selected automatically and the **TX** symbol is shown on the LCD while the call is being sent.







5. The radio waits for an acknowledgement (WAITING ACK). If the call is acknowledged (DSC TEST ACK), notification is displayed.
6. If there is no reply after 30 seconds, the radio asks you if you want to retry.

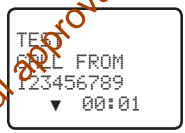
5-2-11-2 Receiving an incoming DSC TEST call reply (DSC TEST ACK)

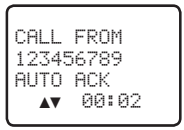
1. When you receive notification of a DSC TEST reply, press any key to cancel the alert.
2. If the radio recognizes the user MMSI as one of your buddies, the buddy's name is displayed in place of the user MMSI.
3. Scroll to view further information (if available), or press EXIT to cancel.

5-2-11-3 Acknowledging an incoming DSC TEST call

The radio sounds a friendly two-tone alert when it detects an incoming DSC TEST call.

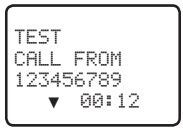
1. If the radio recognizes the MMSI as one of your buddies, your buddy's name is displayed in place of the MMSI.
2. The radio will automatically acknowledge the call if TEST REPLY is set to AUTO *(See section 4-9)* and after a TIMEOUT period set for AUTO REPLY. *(See section 4-10)*
3. Scroll to view further information (if available), or press EXIT to cancel.

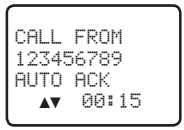




Note: These additional information screens are available by rotating the CH knob.

4. If TEST REPLY is set to MANUAL, a manual responce is required, press ENT to confirm or press EXIT to cancel. *(see Section 4-9)*





Note: These additional information screens are available by rotating the CH knob.

5-3 Receiving DSC Calls

Several types of DSC calls can be received from vessels within range at various priority levels:

DISTRESS	See Section 6.
ALL SHIPS	Urgency, Safety, Routine or Distress priority (see Section 5-3-1)
INDIVIDUAL	Urgency, Safety, Routine or Distress priority (see Section 5-3-2)
GROUP	Routine priority only (see Section 5-3-3)
GEOGRAPHIC	Routine priority only (see Section 5-3-4)
POLLED POSITION	Routine or Safety priority (see Section 5-3-5)
DSC TEST CALL	DSC Test Call (see Section 5-2-11)

In addition to the audible alert, the telephone icon will flash on the screen.

5-3-1 Receiving an All Ships Call (ALL SHIPS)

1. When you receive notification of an ALL SHIP call, press any key to cancel the alert. The priority level and the user MMSI are displayed on the screen. If the radio recognises the user MMSI as one of your buddies, the buddy's name is displayed in place of the user MMSI.

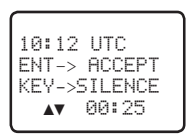
   Press ENT to switch to the designated channel immediately or press EXIT to return to the current working channel.

Note: The radio will automatically switch to the designated channel after 10 seconds if no key is pressed and AUTO SWITCH = ON *(see Section 4-8)*:

Note: These additional information screens are available by rotating the CH knob.

However, If AUTO SWITCH =OFF, then AUTO SW OFF will be displayed and manual channel change is required:

Note: These additional information screens are available by rotating the CH knob.

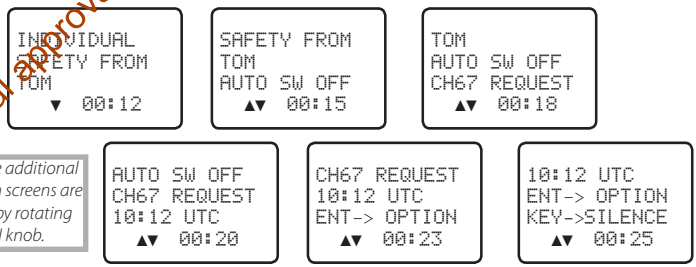


3. No acknowledgement is needed. Press PTT to initiate voice contact.

4. The call data is stored in the Call Log *(see Section 5-2-7)*.

5-3-2 Receiving an Individual Call (INDIV)

1. When you receive notification of an INDIV call, press any key to cancel the alert. INDIV calls are almost always Routine priority. If the radio recognises the user MMSI as one of your buddies, the buddy's name is displayed in place of the user MMSI.



Note: These additional information screens are available by rotating the CH knob.

2. Press ENT for options on how you want to respond to the call.
   Options are:

ACK respond to the call with requested channel

CHANGE CHAN respond to the call with but request a different channel

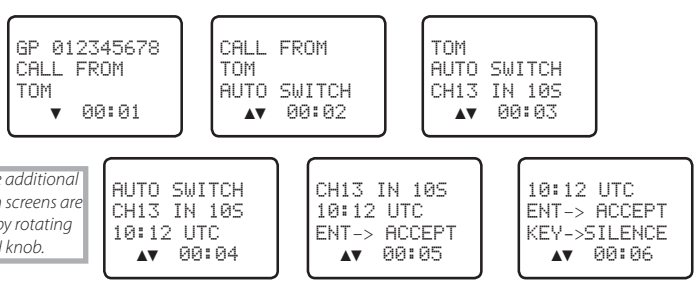
UNABLE ACK* respond to the call with unable to use the requested channel
(* Note: this option is not available with ROUTINE calls)

3. Or press EXIT to return to standby.
4. The call data is stored in the Call Log (see Section 5-2-7).

5-3-3 Receiving a Group Call (GROUP)

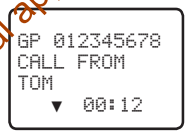
1. When you receive notification of a GROUP call, press any key to cancel the alert. The priority level is always routine and the group is identified on the screen. The group will be one of the three groups of frequently called people that you set up earlier *(see Section 4-3)*.
2. Press ENT to switch to the designated channel immediately or press EXIT to return to the current working channel.

Note: The radio will automatically switch to the designated channel after 10 seconds if no key is pressed and AUTO SWITCH = ON *(see Section 4-8)*:



Note: These additional information screens are available by rotating the CH knob.

However, If AUTO SWITCH =OFF, then AUTO SW OFF will be displayed and manual channel change is required:



Note: These additional information screens are available by rotating the CH knob.

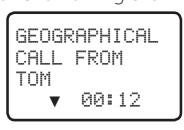
3. The call data is stored in the Call Log *(see Section 5-2-7)*.

5-3-4 Receiving a Geographic Call (GEOGRAPH)

A geographic call is received by vessels within a specific geographic boundary area.

1. When you receive notification of an GEOGRAPH call, press any key to cancel the alert. If the radio recognises the user MMSI as one of your buddies, the buddy's name is displayed in place of the user MMSI.

2. Press ENT to switch to the designated channel immediately or press EXIT to return to the current working channel.

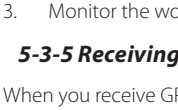


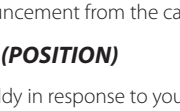
Note: These additional information screens are available by rotating the CH knob.

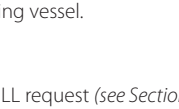
3. Monitor the working channel for an announcement from the calling vessel.

5-3-5 Receiving a Polled Position Call (POSITION)

When you receive GPS position data from a buddy in response to your LL request *(see Section 5-2-9)*, you are recommended to make a written note of the position, especially if it is a good fishing position. If enhanced LL position information is available from your buddy, this is shown on the screen until the screen display changes.







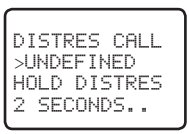
Section 6 Distress Calls

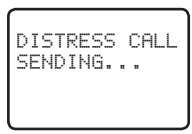
⚠ WARNING

A valid USER MMSI must be entered into this radio before these DSC functions can be used. See section 4-2 Enter Your USER MMSI (USER MMSI).

6-1 Sending a Distress Call

1. Open the red cover labelled DISTRESS to expose the red Distress key.
2. **TO SEND AN IMMEDIATE DISTRESS CALL** (Undesignated):
   HOLD DOWN the DISTRESS key for about 3 seconds, until you see the distress call sending message (DISTRESS CALL SENDING) on the screen.
   The whole display starts to flash and beep loudly.





Or, if time is available, specify the nature of the distress

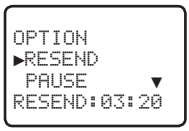
3. TO SEND A DISTRESS CALL with Distress type:
4. Press and release the DISTRESS key to display the following categories. Use the CH knob to scroll to the category that describes your situation:

UNDESIGNATED	(Undesignated)
FIRE	(Fire)
FLOODING	(Flooding)
COLLISION	(Collision)
GROUNDING	(Grounding)
LISTING	(Listing)
SINKING	(Sinking)
ADRIFT	(Adrift)
ABANDONING	(Abandoning)
PIRACY	(Piracy)
OVER BOARD	(Over Board)

5. Hold down the DISTRESS key for about 3 seconds, until you see the distress call sending message (DISTRESS CALL SENDING) on the screen. The whole display starts to flash and beep loudly.

6. After the Distress Call is sent, the radio waits for an acknowledgment.

7. The Distress Call is automatically re-sent every 3.5 to 4.5 minutes until a distress acknowledgement is received or press ENT to select OPTIONS:

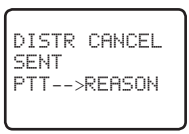


Options are:

RESEND to resend the Distress call immediately.

PAUSE to PAUSE the RESEND countdown timer. Press Exit to continue.

CANCEL to CANCEL the Distress Call and transmit a DISTRESS CANCEL call. Use the PTT microphone to report your situation:

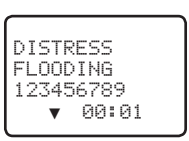


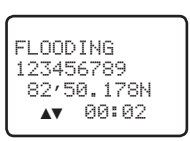
8. After a DISTRESS ACK is received, rotate the CH knob to silence the alarm, then use the PTT microphone to report your situation.

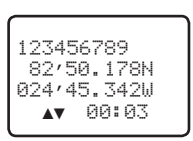
9. The following information (if available) is contained in the DIstress Call:
   - Nature Of Distress (if available)
   - Position information. The latest GPS or manual input position is held for 23.5 hours, or until the power is turned OFF.

6-2 Receiving a Distress Call (DISTRESS!)

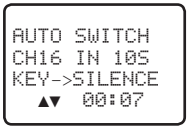
1. An alert sounds when a distress call (DISTRESS!) is received. Press any key to cancel the alert. You do not need to send an acknowledgement.

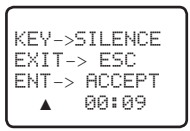






Note: These additional information screens are available by rotating the CH knob.





2. The radio will automatically select CH16 after 10 seconds if no user intervention, or press ENT to change to CH16 immediately.

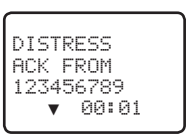
   Details of the distress call are shown on the screen. Details include the user MMSI and nature of the emergency (if specified), also the time and the location (if specified). If the location and time are not specified, these are replaced with sequences of 9s and 8s respectively.

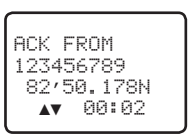
3. Press PTT to establish voice contact.

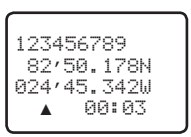
   This radio is capable of receiving enhanced LL position data if the radio transmitting the Distress Call is sending this. This provides the position of the distressed vessel to within 20 m (60 ft).

6-3 Distress Acknowledgement (DISTRESS ACK) or Relay

An alert sounds when a Distress Relay (DISTRESS RELAY) is received. Press any key to cancel the alert.







Try to make voice contact with the calling vessel. Maintain a listening watch on CH16 and standby to lend assistance

For a Distress Acknowledgement (DISTRESS ACK) sent from the Search and Rescue (SAR) authorities of your country, your radio automatically cancels Distress Mode transmissions and CH16 appears. Press PTT to establish voice contact with the Search and Rescue (SAR) authority.

The Search and Rescue (SAR) authorities of your country are the only instance allowed to send a Distress Acknowledgement (DISTRESS ACK).

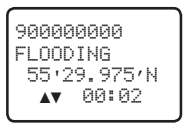
6-4 Acknowledgement of an Distress Relay Individual (INDIV DISTR)

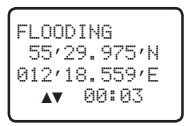
US models ONLY

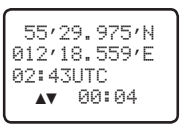
When an incoming Individual Distress Relay call is received, the alarm sounds and INDIV DISTR RELAY is displayed.

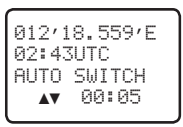
1. Push +/- or 3CH or SCAN or H/L button or rotate the CH knob to stop the alarm
2. Push +/- button or rotate the CH knob to scroll any further information about the call
3. Press ENT to ACK the call.
4. Or press EXIT to return to standby.

The call data is stored in the Call Log (see Section 5-2-7).









Note: These additional information screens are available by rotating the CH knob.

Section 7 Installation

This Lowrance radio is designed to generate a digital maritime distress call to facilitate search and rescue. To be effective as a safety device, this radio must be used only within the geographic range of a shore-based VHF marine Channel 70 distress and safety watch system. The geographic range may vary but under normal conditions is approximately 20 nautical miles.

Installation Options

There are two ways to install the radio. You can choose:

- *A deck or overhead mounted gimbal installation*. The reversible mounting gimbal is fixed to a suitable site and the radio is placed into it. The radio can be removed for storage and the viewing angle can be adjusted.
- A *recessed installation*. The radio is recessed into a cavity cut into a bulkhead. The radio fixture is permanent and the viewing angle cannot be adjusted.

Location Requirements

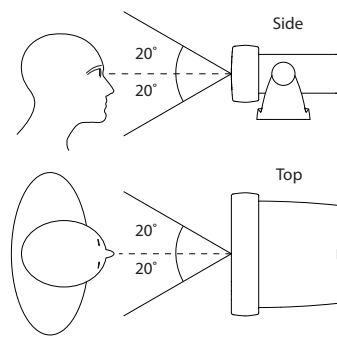
Please check these **before** doing any cutting or drilling.

Whichever installation method you choose, ensure that the chosen location:

- Is at least 3' (1 m) from the antenna
- Allows easy connection to (at least) a 10 Amp fused 13.6 V DC electrical source and the antenna
- Is at least 1.5' (45 cm) from the compass to avoid creating magnetic deviation of the compass during radio operation
- Has a suitable space close by for installing the microphone bulkhead mount
- Provides easy access to the controls on the front panel
- Provides reasonable access to the wiring at the back of the radio
- Provides enough room to fix the DSC warning label

The VHF has a large LCD screen with an optimum viewing angle of approx. +/-20 deg. Ensure the chosen location provides a suitable view of the display. Ideally, the user should be directly in front of the display or no more than +/-20 deg from the front of the display.

Note: If unsure, temporarily power up the radio and check for a suitable location.



Checklist

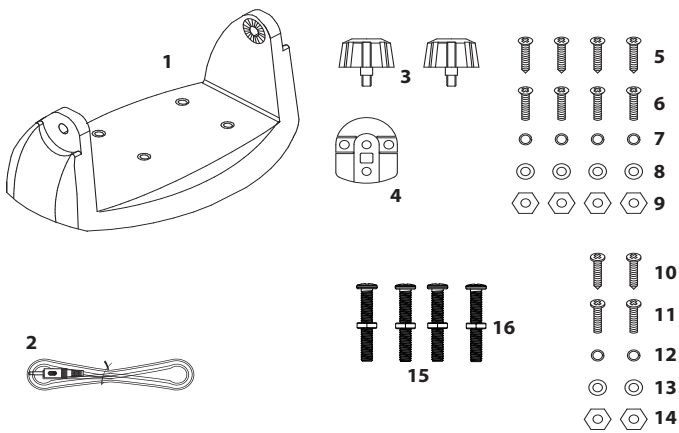
The following items should be supplied in the box. Check before starting the installation and contact your dealer if an item is missing.

Note: An antenna is **not** provided. Consult your Lowrance dealer for advice if necessary.

1. Mounting gimbal for the VHF radio
2. GPS connection cable
3. Two mounting knobs
4. Microphone bulkhead mount
5. Four countersunk self-tapping screws for the mounting gimbal
6. Four flat screws for the mounting gimbal
7. Four spring washers for the mounting gimbal
8. Four plain washers for the mounting gimbal
9. Four nuts for the mounting gimbal
10. Two self-tapping screws for the microphone bulkhead mount
11. Two flat screws for the microphone bulkhead mount
12. Two spring washers for the microphone bulkhead mount
13. Two plain washers for the microphone bulkhead mount
14. Two nuts for the microphone bulkhead mount
15. Four M5x32 screws for recessed installation
16. Four nuts for the recessed installation

Not pictured:

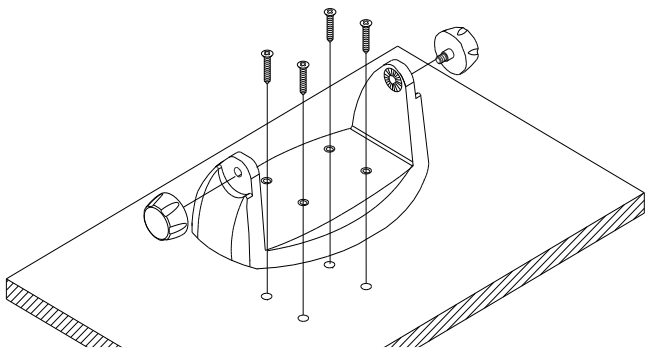
- Installation template
- Warranty card
- DSC Warning label sticker
- This Operation and Installation manual
- One 7 Amp spare fuse in case of accidental reverse of battery polarity
- Base unit and microphone



Gimbal Installation

1. Hold the mounting gimbal at the chosen location and use a soft pencil to mark the screw hole positions onto the mounting surface.
2. If you can't reach behind the mounting surface to attach the nuts, use the self-tapping screws instead of the flat screws shown in the picture. If you're drilling into fibreglass, use a drill bit smaller than 3/16" (5mm) to drill the pilot holes.

   Otherwise, drill the four screw holes where marked, using a 3/16" (5 mm) drill bit. Drill completely through the mounting surface.
3. Use a Philips screwdriver and the set of four flat screws, spring washers, plain washers, and nuts to attach the mounting gimbal to the location site.
4. Slide the radio into the mounting gimbal.
5. Insert the two mounting knobs through the holes and tighten them sufficiently to hold the radio at the desired viewing angle.



Change the Viewing Angle

The viewing angle on the gimbal mount has a 20º tilt range. To change the current viewing angle on the gimbal mount:

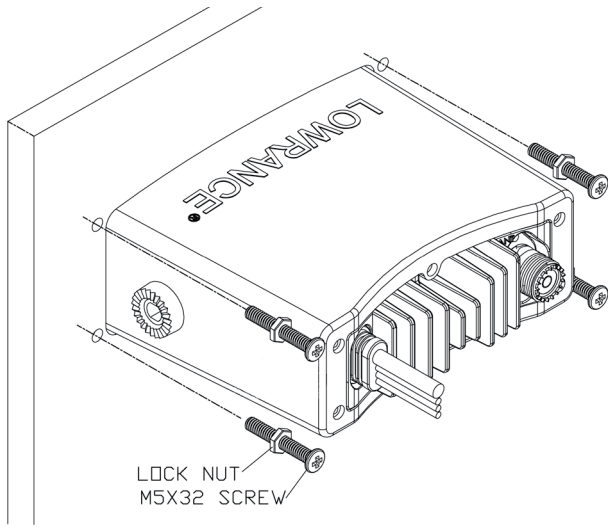
1. Support the radio, then cautiously loosen the mounting knobs until the radio can be moved.
2. Re-position the radio then tighten the mounting knobs again.

Recessed Installation

1. Tape the installation template onto the chosen location site.
2. Cut out the area marked by the solid dark line. (The dashed line indicates the total area

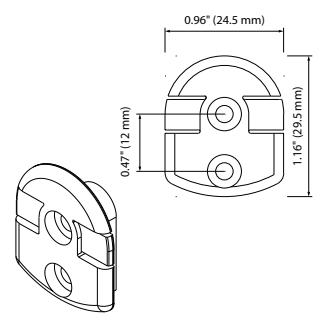
that will be covered by the radio fascia after installation.) Drill the 4 mounting holes.

3. Remove the installation template and slide the radio into the cavity.
4. Screw each M5x32 screw through the screw hole in the mounting bracket, then attach the stopper. If your bulkhead exceeds 0.51" (13 mm), the stopper can be discarded if necessary.
5. Tighten the M5x32 screws until the radio is held firmly against the rear of the bulkhead.



Install the Microphone Bulkhead Mount

1. Hold the microphone bulkhead mount at the chosen location and use a soft pencil to mark the screw hole positions on the mounting surface. *Ensure that the microphone curly cable will comfortably reach this location BEFORE you drill.*
2. Drill the two pilot screw holes where marked.
3. Use a short length Philips screwdriver and the set of two flat screws, spring washers, plain washers, and nuts to secure the microphone bulkhead mount at the location site.
4. Hang the microphone on its mount.



Fix the DSC label

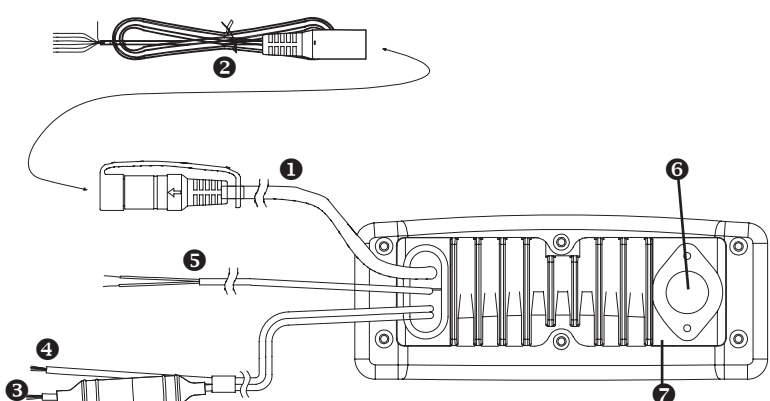
⚠ CAUTION

A DSC warning label is supplied with US versions of this radio.
To comply with FCC regulations, this warning label must be affixed in a location that is clearly visible from the operating controls of this radio.
Make sure that the chosen location is clean and dry before applying this label.

Connect the Radio Cables

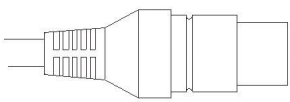
The connectors are on the rear of the base unit, as follows:

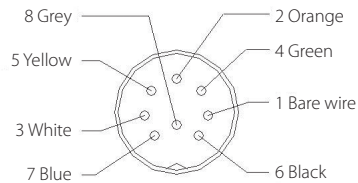
1. **GPS/COM connector.** For connection to GPS device via NMEA (If you're not using this, be sure to put the protective cap securely over the connector to protect it from moisture and dust).
2. **GPS/COM cable.** For above connector. See the following table for wiring and color codes.
3. **Red Power wire.** Connect this to the Positive (+) battery terminal. Check that a 7 Amp fuse is installed on this power cable close to the battery.
4. **Black Power wire.** Connect this to the Negative (-) battery terminal.
5. **External Speaker connector.** Connect to an external speaker BEFORE powering on the radio. Use a 4 Ohm 4 Watt external speaker.
   White wire to speaker (+). Bare wire to speaker (-)
   NOTE: Ensure wires are electrically insulated if not used.
6. **ANT.** A radio antenna is not supplied. A suitable radio antenna must be mounted and connected before operating this radio. Consult your dealer for advice if necessary.
7. **GND.** A ground connection is not usually required.



Wiring for GPS/COM connector

Pin	Wire	Function	Notes
1	Red	*No connection*	*(Not used)*
2	Orange	NMEA OUT (+)	(To GPS)
3	White	Program/clone	*(Not used)*
4	Green	NMEA IN (-)	(From GPS)
5	Yellow	NMEA IN (+)	(From GPS)
6	Black	NMEA OUT (-)	(Ground)
7	Blue	*No connection*	*(Not used)*
8	Grey	*No connection*	*(Not used)*





Set Up the Radio

⚠ CAUTION

You can't make any DSC transmissions until you've obtained a user MMSI and entered it into your radio.

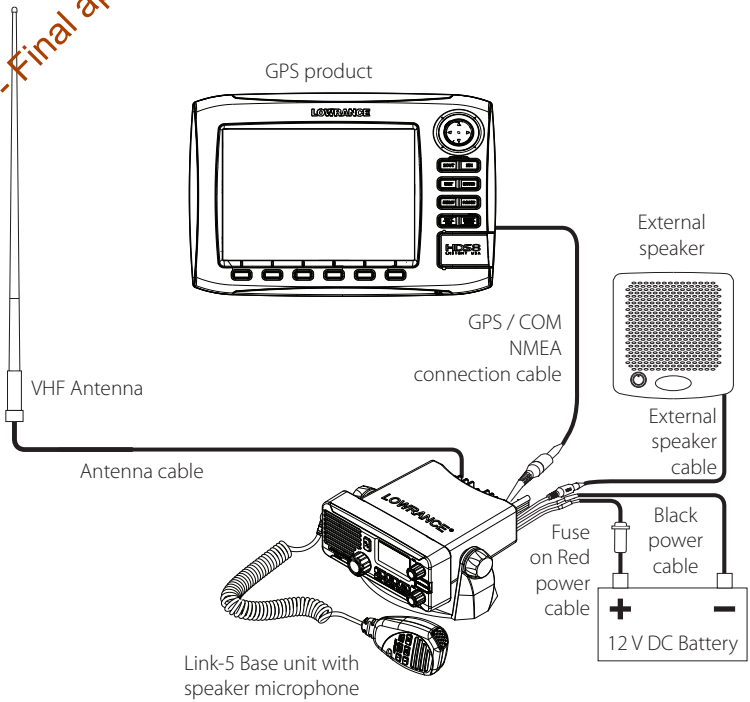
The user MMSI is a unique nine digit number, similar to a personal telephone number. It is used on marine transceivers that are capable of using DSC (Digital Select Calling).

If you don't have a user MMSI contact the appropriate authorities in your country. If you're unsure who to contact, consult your Lowrance dealer.

- A Group MMSI begins with 0 followed by 8 numeric digits (0xxxxxxxx)
- A Coast Station MMSI begins with 00 followed by 7 numeric digits. You just need to add the 7 digits and the radio will add the beginning 00 for you

Enter Your User MMSI

See section 4-2 Enter Your USER MMSI (USER MMSI).



Appendix A - Technical Specifications

LOWRANCE Link-5

GENERAL

Power Supply:	13.6V DC.
Current drain - Transmit	5 A at 25 W Tx / 1.5A at 1W Tx
Receive	Less than 250 mA in standby
Usable channels:	International, USA, Canada, Weather (country specific)
Mode:	16K0G3E (FM) / 16K0G2B (DSC)

PHYSICAL

LCD display (viewing):	46 x 26 mm (1.8 x 1.0"), matrix FSTN
Contrast control:	Yes
Dimming control:	Yes
Antenna connector:	SO-239 (50 ohm)
Temperature Range:	-20ºC to +55ºC (5ºF to 130ºF)
Waterproof:	JIS-7
Dimensions:	161(W) x 75(H) x 147(D) mm - without bracket
Weight:	1.29 kg (2.8 lbs) - without microphone
Frequency stability:	+/- 10 ppm
Frequency control:	PLL
GPS/NMEA input:	Yes
Comm. port:	4800 baud NMEA 0183
DSC:	Yes, CLASS-D (Global - separate CH70 receiver built in)
GPS/NMEA input:	Yes
GPS data sentences can be received:	RMC, GGA, GLL, GNS
NMEA output:	Yes
NMEA output sentences:	DSC (for DSC call), DSE (for enhanced position).

FEATURES

Flush Mount kit	Yes
Local/Distant control:	Yes
Position polling:	Yes

Group Call:	Yes
Call logs:	Yes - 20 individual and 10 distress
DSC mode:	Class D (Global) with dual receiver (individual CH70)
Standards:	ITU-R M.493-12 (US models), EN 300-338-3 (EU models)
Channel Naming:	Yes
DW watch:	Yes
Favourite channel scan:	Yes
All scan:	Yes
User programmable MMSI:	Yes
MMSI and NAME directory:	Yes - 20 numbers & group

TRANSMITTER

Frequency:	156.025 - 157.425 MHz
Output power:	25 W / 1 W selectable
Transmitter protection:	Open / short circuit of antenna
Max Frequency deviation:	+/- 5 kHz
Spurious & harmonics:	better than 0.25 µ W
Modulation distortion:	Less than 4%@ 1 kHz for a +/-3 kHz deviation

RECEIVER

Frequency:	156.025 - 163.275 MHz
12dB SINAD sensitivity:	0.25 uV (distant) / 0.8 uV (local)
20db SINAD sensitivity:	0.35 uV
Adjacent CH selectivity:	more than 70 db
Spurious response:	more than 70 db
Intermodulation Rejection ratio:	more than 68 db
Residual Noise level:	more than -40 db unsquelched
Audio output power:	2 W (with 8 ohm at 10% distortion)
	4 W with 4 ohm external speaker
Compass safe distance:	0.5 m (1.5')

Specifications are subject to change without notice.

Appendix B - Troubleshooting

1. The transceiver will not power up.

A fuse may have blown OR there is no voltage getting to the transceiver.

a. Check the power cable for cuts, breaks, or squashed sections.

b. After checking the wiring, replace the 7 Amp fuse (1 spare fuse is supplied).

c. Check the battery voltage. This must be greater than 10.5 V.

2. The transceiver blows the fuse when the power is switched on.

The power wires may have been reversed.

a. Check that the red wire is connected to the positive battery terminal, and the black wire is connected to the negative battery terminal.

3. The speaker makes popping or whining noises when the engine is running.

Electrical noise may be interfering with the transceiver.

a. Re-route the power cables away from the engine.

b. Add a noise suppressor to the power cable.

c. Use resistive spark plug wires and/or use an alternator whine filter.

4. No sound from the external speaker.

a. Check that the external speaker cable is physically connected.

b. Check the soldering of the external speaker cable.

5. Transmissions are always on low power, even when high (HI) power is selected.

The antenna may be faulty.

a. Test the transceiver with a different antenna.

b. Have the antenna checked out.

6. Battery symbol is displayed.

The power supply is too low or too high.

a. Check the battery voltage. This should be at least 10.5 V ± 0.5 V DC.

b. Check the alternator on the vessel.

7. No position information is displayed.

The GPS cable may faulty or the GPS setting may be incorrect.

a. Check that the GPS cable is physically connected.

b. Check the polarity of the GPS cable.

c. Check the baud rate setting of the GPS if applicable. The baud rate setting should be 4800 and parity should be set to NONE.

Appendix C - US & ROW VHF Marine Channel Charts

The following channel charts are provided for reference only and may not be correct for all regions. It is the operators responsibility to ensure correct channels and frequencies are used for local regulations.

C-1 International Channel Chart

CH	TX (MHz)	RX (MHz)	MODE	TRAFFIC TYPE	SHIP TO SHIP	SHIP TO SHORE	NAME TAG	REMARK
01	***156.050***	***160.650***	***D***	Public Correspondence	No	Yes	TELEPHONE	
02	***156.100***	***160.700***	***D***	Public Correspondence	No	Yes	TELEPHONE	
03	***156.150***	***160.750***	***D***	Public Correspondence	No	Yes	TELEPHONE	
04	***156.200***	***160.800***	***D***	Port Operations	No	Yes	PORT OPS	
05	***156.250***	***160.850***	***D***	Port Operations	No	Yes	PORT OPS/VTS	
06	156.300	156.300	S	Inter-ship Safety	Yes	No	SAFETY	
07	***156.350***	***160.950***	***D***	Port Operations	No	Yes	PORT OPS	
08	156.400	156.400	S	Commercial (inter-ship only)	Yes	No	COMMERCIAL	
09	156.450	156.450	S	Inter-ship	Yes	Yes	CALLING	
10	156.500	156.500	S	Commercial	Yes	Yes	COMMERCIAL	
11	156.550	156.550	S	Port Operations	Yes	Yes	VTS	
12	156.600	156.600	S	Port Operations	Yes	Yes	PORT OPS/VTS	
13	156.650	156.650	S	Inter-ship Navigation Safety (bridge-to bridge)	Yes	No	BRIDGE COM	
14	156.700	156.700	S	Port Operations	Yes	Yes	PORT OPS/VTS	
15	156.750	156.750	S	Port Operations	Yes	Yes	PORT OPS	① 1W only
16	**156.800**	**156.800**	**S**	International Distress, Safety, and Calling	Yes	Yes	DISTRESS	
17	156.850	156.850	S	State Controlled	Yes	Yes	SAR	① 1W only
18	***156.900***	***161.500***	***D***	Port Operations	No	Yes	PORT OPS	
19	***156.950***	***161.550***	***D***	Ship to Shore	No	Yes	SHIP-SHORE	
20	***157.000***	***161.600***	***D***	Port Operations	No	Yes	PORT OPS	
21	***157.050***	***161.650***	***D***	Port Operations	No	Yes	PORT OPS	
22	***157.100***	***161.700***	***D***	Port Operations	No	Yes	PORT OPS	
23	***157.150***	***161.750***	***D***	Public Correspondence	No	Yes	TELEPHONE	
24	***157.200***	***161.800***	***D***	Public Correspondence	No	Yes	TELEPHONE	
25	***157.250***	***161.850***	***D***	Public Correspondence	No	Yes	TELEPHONE	
26	***157.300***	***161.900***	***D***	Public Correspondence	No	Yes	TELEPHONE	
27	***157.350***	***161.950***	***D***	Public Correspondence	No	Yes	TELEPHONE	
28	***157.400***	***162.000***	***D***	Public Correspondence	No	Yes	TELEPHONE	
60	***156.025***	***160.625***	***D***	Public Correspondence	No	Yes	TELEPHONE	
61	***156.075***	***160.675***	***D***	Port Operations	No	Yes	PORT OPS	

62	***156.125***	***160.725***	***D***	Port Operations	No	Yes	PORT OPS	
63	***156.175***	***160.775***	***D***	Port Operations	No	Yes	PORT OPS	
64	***156.225***	***160.825***	***D***	Public Correspondence	No	Yes	TELEPHONE	
65	***156.275***	***160.875***	***D***	Port Operations	No	Yes	PORT OPS	
66	***156.325***	***160.925***	***D***	Port Operations	No	Yes	PORT OPS	
67	156.375	156.375	S	Commercial, bridge-to-bridge	Yes	No	BRIDGE COM	
68	156.425	156.425	S	Inter-ship	Yes	No	SHIP-SHIP	
69	156.475	156.475	S	Port Operations	Yes	Yes	PORT OPS	
70	156.525	156.525	-	Digital Selective Calling - DSC	------	------	DSC	②
71	156.575	156.575	S	Port Operations	Yes	Yes	PORT OPS	
72	156.625	156.625	S	Inter-ship	Yes	No	SHIP-SHIP	
73	156.675	156.675	S	Port Operations	Yes	Yes	PORT OPS	
74	156.725	156.725	S	Port Operations	Yes	Yes	PORT OPS	
77	156.875	156.875	S	Ship to Shore	Yes	No	SHIP-SHORE	
78	***156.925***	***161.525***	***D***	Ship to Shore	No	Yes	SHIP-SHORE	
79	***156.975***	***161.575***	***D***	Port Operations	No	Yes	PORT OPS	
80	***157.025***	***161.625***	***D***	Port Operations	No	Yes	PORT OPS	
81	***157.075***	***161.675***	***D***	Public Correspondence	No	Yes	TELEPHONE	
82	***157.125***	***161.725***	***D***	Public Correspondence	No	Yes	TELEPHONE	
83	***157.175***	***161.775***	***D***	Public Correspondence	No	Yes	TELEPHONE	
84	***157.225***	***161.825***	***D***	Public Correspondence	No	Yes	TELEPHONE	
85	***157.275***	***161.875***	***D***	Public Correspondence	No	Yes	TELEPHONE	
86	***157.325***	***161.925***	***D***	Public Correspondence	No	Yes	TELEPHONE	
87	***157.375***	***161.975***	***D***	Public Correspondence	No	Yes	TELEPHONE	
88	***157.425***	***162.025***	***D***	Public Correspondence	No	Yes	TELEPHONE	

Special Notes on International Channel Usage

①. LOW POWER (1W) only.

②. Channel 70 is designated for use exclusively for Digital Selective Calling (DSC), such as Distress, Safety, and Ship Calls. No voice communication is allowed on CH70. This channel is only available on DSC enabled radios.

Note:

- The INTERNATIONAL channel bank is not legal for use in U.S. or Canada waters.
- Select the INTERNATIONAL channel bank for use in Australia, New Zealand and other Asia Pacific regions, and all other regions where otherwise not specified.

KEY: S = Simplex operating channel; D = Duplex operating channel.

C-2 USA Channel Chart

CH	TX (MHz)	RX (MHz)	MODE	TRAFFIC TYPE	SHIP TO SHIP	SHIP TO SHORE	NAME TAG	REMARK
01A	156.050	156.050	S	Port Operations, Selected VTS Areas	Yes	Yes	PORT OPS/VTS	
03A	156.150	156.150	S	US Government, Coast Guard	Yes	Yes	UNAUTHORIZED	④
05A	156.250	156.250	S	Port Operations, Selected VTS Areas	Yes	Yes	PORT OPS/VTS	
06	156.300	156.300	S	Inter-ship Safety	Yes	No	SAFETY	
07A	156.350	156.350	S	Commercial	Yes	Yes	COMMERCIAL	
08	156.400	156.400	S	Commercial (inter-ship only)	Yes	No	COMMERCIAL	
09	156.450	156.450	S	Recreational Calling Channel	Yes	Yes	CALLING	
10	156.500	156.500	S	Commercial	Yes	Yes	COMMERCIAL	
11	156.550	156.550	S	Commercial, VTS in Selected Areas	Yes	Yes	VTS	
12	156.600	156.600	S	Port Operations, Selected VTS Areas	Yes	Yes	PORT OPS/VTS	
13	156.650	156.650	S	Inter-ship Navigation Safety (bridge-to bridge), 1W with Power-up	Yes	No	BRIDGE COM	③ 1W
14	156.700	156.700	S	Port Operations, Selected VTS Areas	Yes	Yes	PORT OPS/VTS	
15	---	156.750	S	Environmental	------	------	ENVIRONMEN-TAL	② RX only
16	156.800	156.800	S	International Distress, Safety, and Calling	Yes	Yes	DISTRESS	
17	156.850	156.850	S	State Controlled	Yes	Yes	SAR	① 1W only
18A	156.900	156.900	S	Commercial	Yes	Yes	COMMERCIAL	
19A	156.950	156.950	S	Commercial	Yes	Yes	COMMERCIAL	
20	***157.000***	***161.600***	***D***	Port Operations, Canadian Coast Guard	No	Yes	PORT OPS	
20A	157.000	157.000	S	Port Operations	Yes	Yes	PORT OPS	
21A	157.050	157.050	S	U.S. Government, Canadian Coast Guard	Yes	Yes	UNAUTHORIZED	④
22A	157.100	157.100	S	Coast Guard Liaison	Yes	Yes	COAST GUARD	
23A	157.150	157.150	S	U.S. Government, Coast Guard	Yes	Yes	UNAUTHORIZED	④
24	***157.200***	***161.800***	***D***	Public Correspondence, Marine operator	No	Yes	TELEPHONE	
25	***157.250***	***161.850***	***D***	Public Correspondence, Marine operator	No	Yes	TELEPHONE	
26	***157.300***	***161.900***	***D***	Public Correspondence, Marine operator	No	Yes	TELEPHONE	
27	***157.350***	***161.950***	***D***	Public Correspondence, Marine operator	No	Yes	TELEPHONE	
28	***157.400***	***162.000***	***D***	Public Correspondence, Marine operator	No	Yes	TELEPHONE	
61A	156.075	156.075	S	U.S. Government, Canadian Coast Guard	Yes	Yes	UNAUTHORIZED	④
63A	156.175	156.175	S	Port Operations, VTS in Selected Areas	Yes	Yes	PORT OPS/VTS	
64A	156.225	156.225	S	U.S. Government, Canadian Commercial Fishing	Yes	Yes	UNAUTHORIZED	④
65A	156.275	156.275	S	Port Operations	Yes	Yes	PORT OPS	
66A	156.325	156.325	S	Port Operations	Yes	Yes	PORT OPS	
67	156.375	156.375	S	Commercial, bridge-to-bridge, 1W with Power-up	Yes	No	BRIDGE COM	③ 1W

68	156.425	156.425	S	Boat Operations, Recreational	Yes	No	SHIP - SHIP	
69	156.475	156.475	S	Boat Operations, Recreational	Yes	Yes	PLEASURE	
70	156.525	156.525		Digital Selective Calling - DSC	------	------	DSC	⑥
71	156.575	156.575	S	Boat Operations, Recreational	Yes	Yes	PLEASURE	
72	156.625	156.625	S	Boat Operations, Recreational	Yes	No	SHIP - SHIP	
73	156.675	156.675	S	Port Operations	Yes	Yes	PORT OPS	
74	156.725	156.725	S	Port Operations	Yes	Yes	PORT OPS	
77	156.875	156.875	S	Port Operations	Yes	Yes	PORT OPS	① 1W only
78A	156.925	156.925	S	Boat Operations, Recreational	Yes	No	SHIP - SHIP	
79A	156.975	156.975	S	Commercial	Yes	Yes	COMMERCIAL	
80A	157.025	157.025	S	Commercial	Yes	Yes	COMMERCIAL	
81A	157.075	157.075	S	U.S. Government, Environmental Protection Agency Operations	Yes	Yes	UNAUTHORIZED	④
82A	157.125	157.125	S	U.S. Government, Canadian Coast Guard	Yes	Yes	UNAUTHORIZED	④
83A	157.175	157.175	S	U.S. Government, Canadian Coast Guard	Yes	Yes	UNAUTHORIZED	④
84	***157.225***	***161.825***	***D***	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
84A	157.225	157.225	S	Public Correspondence, Marine Operator				
85	***157.275***	***161.875***	***D***	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
85A	157.275	157.275	S	Public Correspondence, Marine Operator				
86	***157.325***	***161.925***	***D***	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
86A	157.325	157.325	S	Public Correspondence, Marine Operator				
87	***157.375***	***161.975***	***D***	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
87A	157.375	157.375	S	Public Correspondence, Marine Operator				
88	***157.425***	***162.025***	***D***	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
88A	157.425	157.425	S	Commercial, Inter-ship Only	Yes	No	COMMERCIAL	

Special Notes on USA Channel Usage

①. LOW POWER (1 W) only.

②. Receive Only.

③. LOW POWER (1 W) initially. Override to HIGH POWER by holding down H/L key before transmitting. Used normally in bridge-to-bridge communications.

④. Lightly shaded simplex channels 03A, 21A, 23A, 61A, 64A, 81A, 82A, and 83A cannot be lawfully used in U.S. waters unless special authorization is obtained from the U.S. Coast Guard. Not for use by the general public.

⑤. The letter "A" illuminated by the channel number indicates the USA channel is simplex.

This same channel is always duplex when selecting International. There is no "A" reference for International channels. The letter "B" is only used for some Canadian "Receive only" channels.

⑥. Channel 70 is designated for use exclusively for Digital Selective Calling (DSC), such as Distress, Safety, and Ship Calls. No voice communication is allowed on CH70. This channel is only available on DSC enabled radios.

KEY: S = Simplex operating channel; D = Duplex operating channel.

C-3 CANADA Channel Chart

CH	TX (MHz)	RX (MHz)	MODE	TRAFFIC TYPE	SHIP TO SHIP	SHIP TO SHORE	NAME TAG	REMARK
01	***156.050***	***160.650***	***D***	Public Correspondence	No	Yes	TELEPHONE	
02	***156.100***	***160.700***	***D***	Public Correspondence	No	Yes	TELEPHONE	
03	***156.150***	***160.750***	***D***	Public Correspondence	No	Yes	TELEPHONE	
04A	156.200	156.200	S	Canadian Coast Guard, SAR	Yes	Yes	CANADIAN CG	
05A	156.250	156.250	S	Port Operations, VTS in Selected Areas	Yes	Yes	PORT OPS/VTS	
06	156.300	156.300	S	Inter-ship Safety	Yes	No	SAFETY	
07A	156.350	156.350	S	Commercial	Yes	Yes	COMMERCIAL	
08	156.400	156.400	S	Commercial (inter-ship only)	Yes	No	COMMERCIAL	
09	156.450	156.450	S	Recreational Calling Channel	Yes	Yes	CALLING	
10	156.500	156.500	S	Commercial	Yes	Yes	COMMERCIAL	
11	156.550	156.550	S	Commercial, VTS in Selected Areas	Yes	Yes	VTS	
12	156.600	156.600	S	Port Operations, VTS in Selected Areas	Yes	Yes	PORT OPS/VTS	
13	156.650	156.650	S	Inter-ship Navigation Safety (bridge-to bridge) 1W with power-up	Yes	No	BRIDGE COM	③ 1W
14	156.700	156.700	S	Port Operations, VTS in Selected Areas	Yes	Yes	PORT OPS/VTS	
15	156.750	156.750	S	Commercial	Yes	Yes	COMMERCIAL	① 1W only
16	156.800	156.800	S	International Distress, Safety, and Calling	Yes	Yes	DISTRESS	
17	156.850	156.850	S	State Controlled	Yes	Yes	SAR	① 1W only
18A	156.900	156.900	S	Commercial	Yes	Yes	COMMERCIAL	
19A	156.950	156.950	S	Canadian Coast Guard	Yes	Yes	CANADIAN CG	
20	***157.000***	***161.600***	***D***	Canadian Coast Guard	No	Yes	CANADIAN CG	① 1W only
21	***157.050***	***161.650***	***D***	Port Operations	No	Yes	PORT OPS	
21A	157.050	157.050	S	U.S. Government, Canadian Coast Guard	Yes	Yes	UNAUTHORIZED	
21B	---	161.650	S	Port Operations	------	------	PORT OPS	RX only
22A	157.100	157.100	S	Canadian Coast Guard Liaison	Yes	Yes	CANADIAN CG	
23	***157.150***	***161.750***	***D***	Public Correspondence	No	Yes	TELEPHONE	
24	***157.200***	***161.800***	***D***	Public Correspondence	No	Yes	TELEPHONE	
25	***157.250***	***161.850***	***D***	Public Correspondence	No	Yes	TELEPHONE	
25B	---	161.850	S	Public Correspondence	------	------	TELEPHONE	RX only
26	***157.300***	***161.900***	***D***	Public Correspondence	No	Yes	TELEPHONE	
27	***157.350***	***161.950***	***D***	Public Correspondence	No	Yes	TELEPHONE	
28	***157.400***	***162.000***	***D***	Public Correspondence	No	Yes	TELEPHONE	
28B	---	162.000	S	Public Correspondence	------	------	TELEPHONE	RX only
60	***156.025***	***160.625***	***D***	Public Correspondence	No	Yes	TELEPHONE	
61A	156.075	156.075	S	U.S. Government, Canadian Coast Guard	Yes	Yes	UNAUTHORIZED	④

62A	156.125	156.125	S	Canadian Coast Guard	Yes	Yes	CANADIAN CG	
64	***156.225***	***160.825***	***D***	Public Correspondence, Duplex	No	Yes	TELEPHONE	
64A	156.225	156.225	S	U.S. Government, Canadian Commercial Fishing	Yes	Yes	UNAUTHORIZED	④
65A	156.275	156.275	S	Port Operations	Yes	Yes	PORT OPS	
66A	156.325	156.325	S	Port Operations	Yes	Yes	PORT OPS	① 1W only
67	156.375	156.375	S	Commercial, SAR	Yes	No	COMMERCIAL	
68	156.425	156.425	S	Boat Operations, Recreational	Yes	No	SHIP - SHIP	
69	156.475	156.475	S	Commercial Fishing Only	Yes	Yes	COMMERCIAL	
70	156.525	156.525	S	Digital Selective Calling - DSC	------	------	DSC	⑥
71	156.575	156.575	S	Boat Operations, Recreational	Yes	Yes	PLEASURE	
72	156.625	156.625	S	Inter-ship	Yes	No	SHIP - SHIP	
73	156.675	156.675	S	Commercial Fishing Only	Yes	Yes	COMMERCIAL	
74	156.725	156.725	S	Commercial Fishing Only	Yes	Yes	COMMERCIAL	
77	156.875	156.875	S	Port Operations	Yes	Yes	PORT OPS	① 1W only
78A	156.925	156.925	S	Boat Operations, Recreational	Yes	No	SHIP - SHIP	
79A	156.975	156.975	S	Commercial	Yes	Yes	COMMERCIAL	
80A	157.025	157.025	S	Commercial	Yes	Yes	COMMERCIAL	
81A	157.075	157.075	S	U.S. Government Operations	Yes	Yes	UNAUTHORIZED	④
82A	157.125	157.125	S	U.S. Government, Canadian Coast Guard	Yes	Yes	UNAUTHORIZED	④
83	***157.175***	***161.775***	***D***	Canadian Coast Guard	Yes	Yes	CANADIAN CG	
83A	157.175	157.175	S	U.S. Government, Canadian Coast Guard	Yes	Yes	UNAUTHORIZED	④
83B	---	161.775	S	Canadian Coast Guard, RX Only	------	------	CANADIAN CG	
84	***157.225***	***161.825***	***D***	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
85	***157.275***	***161.875***	***D***	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
86	***157.325***	***161.925***	***D***	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
87	***157.375***	***161.975***	***D***	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	
88	***157.425***	***162.025***	***D***	Public Correspondence, Marine Operator	No	Yes	TELEPHONE	

Special Notes on Canada Channel Usage

①. LOW POWER (1 W) only.

②. Receive Only.

③. LOW POWER (1 W) initially. Override to HIGH POWER by holding down H/L key before transmitting. Used normally in bridge-to-bridge communications.

④. Lightly shaded simplex channels 21A, 23A, 61A, 64A, 81A, 82A, and 83A cannot be lawfully used in Canada waters unless special authorization is obtained from the Canadian Coast Guard. Not for use by the general public.

⑤. The letter "A" illuminated by the channel number indicates the Canada channel is simplex. The same channel is always duplex when selecting International. There is no "A" reference for International channels. The letter "B" is only used for some Canadian "Receive only" channels.

⑥. Channel 70 is designated for use exclusively for Digital Selective Calling (DSC), such as Distress, Safety, and Ship Calls. No voice communication is allowed on CH70. This channel is only available on DSC enabled radios.

Note: The CANADA mode is not legal to use in U.S. waters.

KEY: S = Simplex operating channel; D = Duplex operating channel.

C-4 US & Canada WEATHER Channels

CH	RX (MHz)	TRAFFIC TYPE	NAME	REMARK
WX01	162.550	NOAA Weather Channel	NOAA WX	RX only
WX02	162.400	NOAA Weather Channel	NOAA WX	RX only
WX03	162.475	NOAA Weather Channel	NOAA WX	RX only
WX04	162.425	NOAA Weather Channel	NOAA WX	RX only
WX05	162.450	NOAA Weather Channel	NOAA WX	RX only
WX06	162.500	NOAA Weather Channel	NOAA WX	RX only
WX07	162.525	NOAA Weather Channel	NOAA WX	RX only
WX08	161.650	CANADIAN Weather Channel	CANADA WX	RX only
WX09	161.775	CANADIAN Weather Channel	CANADA WX	RX only
WX10	163.275	NOAA Weather Channel	NOAA WX	RX only

Appendix D - EU VHF Marine Channel Charts

The following channel charts are provided for reference only and may not be correct for all regions. It is the operators responsibility to ensure correct channels and frequencies are used for local regulations. For specific channel information for your country, please refer to local authorities.

D-1 EU International Channel Chart

CH	TX (MHz)	RX (MHz)	MODE	TRAFFIC TYPE	SHIP TO SHIP	SHIP TO SHORE	NAME TAG	REMARK
01	***156.050***	***160.650***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
02	***156.100***	***160.700***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
03	***156.150***	***160.750***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
04	***156.200***	***160.800***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
05	***156.250***	***160.850***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
06	156.300	156.300	S	Inter-ship Safety	Yes	No	SAFETY	
07	***156.350***	***160.950***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
08	156.400	156.400	S	Commercial (inter-ship only)	Yes	No	SHIP-SHIP	
09	156.450	156.450	S	Inter-ship	Yes	Yes	SHIP-SHIP	
10	156.500	156.500	S	Inter-ship	Yes	Yes	SHIP-SHIP	
11	156.550	156.550	S	Port Operations	Yes	Yes	PORT OPS	
12	156.600	156.600	S	Port Operations	Yes	Yes	PORT OPS	
13	156.650	156.650	S	Inter-ship Navigation Safety (bridge-to bridge)	Yes	No	SAFETY COM	
14	156.700	156.700	S	Port Operations	Yes	Yes	PORT OPS	
15	156.750	156.750	S	Inter-ship	Yes	Yes	PORT OPS	① 1W only
16	**156.800**	**156.800**	**S**	International Distress, Safety, and Calling	Yes	Yes	DISTRESS	
17	156.850	156.850	S	Inter-ship	Yes	Yes	PORT OPS	① 1W only
18	***156.900***	***161.500***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
19	***156.950***	***161.550***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
20	***157.000***	***161.600***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
21	***157.050***	***161.650***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
22	***157.100***	***161.700***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
23	***157.150***	***161.750***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
24	***157.200***	***161.800***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
25	***157.250***	***161.850***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
26	***157.300***	***161.900***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
27	***157.350***	***161.950***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
28	***157.400***	***162.000***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
60	***156.025***	***160.625***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
61	***156.075***	***160.675***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	

62	***156.125***	***160.725***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
63	***156.175***	***160.775***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
64	***156.225***	***160.825***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
65	***156.275***	***160.875***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
66	***156.325***	***160.925***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
67	156.375	156.375	S	Commercial, bridge-to-bridge	Yes	No	SHIP-SHIP	
68	156.425	156.425	S	Port Operations	Yes	No	PORT OPS	
69	156.475	156.475	S	Inter-ship	Yes	Yes	SHIP-SHIP	
70	156.525	156.525	-	Digital Selective Calling - DSC	------	------	DSC	②
71	156.575	156.575	S	Port Operations	Yes	Yes	PORT OPS	
72	156.625	156.625	S	Inter-ship	Yes	No	SHIP-SHIP	
73	156.675	156.675	S	Inter-ship	Yes	Yes	SHIP-SHIP	
74	156.725	156.725	S	Port Operations	Yes	Yes	PORT OPS	
75	156.775	156.775	S	Port Operations	Yes	Yes	PORT OPS	① 1W only
76	156.825	156.825	S	Port Operations	Yes	Yes	PORT OPS	① 1W only
77	156.875	156.875	S	Inter-ship	Yes	No	SHIP-SHIP	
78	***156.925***	***161.525***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
79	***156.975***	***161.575***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
80	***157.025***	***161.625***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
81	***157.075***	***161.675***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
82	***157.125***	***161.725***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
83	***157.175***	***161.775***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
84	***157.225***	***161.825***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
85	***157.275***	***161.875***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
86	***157.325***	***161.925***	***D***	Public Correspondence, Port Op	No	Yes	PHONE-PORTOP	
87	157.375	157.375	S	Port Operations	No	Yes	PORT OPS	③
88	157.425	157.425	S	Port Operations	No	Yes	PORT OPS	③

Special Notes on EU International Channel Usage

①. LOW POWER (1W) only.

②. Channel 70 is designated for use exclusively for Digital Selective Calling (DSC), such as Distress, Safety, and Ship Calls. No voice communication is allowed on CH70. This channel is only available on DSC enabled radios.

③. Maybe Duplex in some regions

KEY: S = Simplex operating channel; D = Duplex operating channel.

D-2 Inland Waterways Country Specific table - ATIS ON

For specific channel information for your country, please refer to local authorities.

CH	SPECIFIC FOOT-NOTES	TRANSMITTING FREQUENCY (MHZ)		SHIP-TO-SHIP	SHIP-TO PORT	NAUTICAL INFORMATION
		SHIP	LAND			
60	a)	156.025	160.625			x
01	a)	156.05	160.65			x
61	a)	156.075	160.675			x
02	a)	156.1	160.7			x
62	a)	156.125	160.725			x
03	a)	156.15	160.75			x
63	a)	156.175	160.775			x
04	a)	156.2	160.8			x
64	a)	156.225	160.825			x
05	a)	156.25	160.85			x
65	a)	156.275	160.875			x
06	a) b)	156.3	156.3	x		
66	a)	156.325	160.925			x
07	a)	156.35	160.95			x
67	a) c)	156.375	156.375			x
08	a) q)	156.4	156.4	x		
68	a)	156.425	156.425			x
09	a) b) c)	156.45	156.45			x
69	a)	156.475	156.475			x
10	e)	156.5	156.5	x		
70	a)	156.525	156.525	Digital selective calling for distress, safety and calling		
11		156.55	156.55		x	
71		156.575	156.575		x	
12		156.6	156.6		x	
72	a) r)	156.625	156.625	x		
13	f)	156.65	156.65	x		
73	f) g)	156.675	156.675			x
14	q)	156.7	156.7		x	
74	a)	156.725	156.725		x	
15	h)	156.75	156.75			x
75	o)	156.775	156.775		x	
16	i)	156.8	156.8			x
76	j) d) o)	156.825	156.825			x
17	h)	156.85	156.85			x

77	a) k)	156.875	156.875	x		
18		156.9	161.5			x
78		156.925	161.525			x
19		156.95	161.55			x
79	a)	156.975	161.575			x
20		157	161.6			x
80		157.025	161.625			x
21	a)	157.05	161.65			x
81	a)	157.075	161.675			x
22		157.1	161.7			x
82	l) m)	157.125	161.725			x
23	m)	157.15	161.75			x
83	a) m)	157.175	161.775			x
24	m)	157.2	161.8			x
84	m)	157.225	161.825			x
25	m)	157.25	161.85			x
85	a) m)	157.275	161.875			x
26	m)	157.3	161.9			x
86	a) m)	157.325	161.925			x
27	m)	157.35	161.95			x
87	a) d)	157.375	157.375			x
28	m)	157.4	162			x
88	a) p)	157.425	157.425			x
AIS 1	a) n)	161.975	161.975			
AIS 2	a) n)	162.025	162.025			

General remarks to Country Specific table:

1 The channels for service categories ship-to-ship and nautical information may also be used for vessel traffic -systems by traffic centres.

2 In some countries, frequencies certain channels are used for an other service category or other radio services. These countries are Austria, Bulgaria, Croatia, the Federal Republic of Yugoslavia, Hungary, Moldova, Romania, the Russian Federation, the Slovak Republic, the Czech Republic (with exemption of channels 08, 09, 72, 74 and 86), Ukraine and the Federal Republic of Yugoslavia. The Administrations concerned should make any possible attempt to make these frequencies channels as soon as possible available for the radiotelephone service on Inland Waterways and/or the required service category.

Explanation of specific footnotes in Country Specific table:

a. In the countries mentioned under remark 2, it is strictly prohibited to use this channel.

b. This channel is not allowed to be used between Rhine km 150 and km 350.

c. In the Netherlands, this channel is used by for its on-scene communications during safety operations on the North Sea, IJsselmeer, Waddenzee, Ooster- and Westerschelde.

d. This channel may also be used for piloting, mooring, tugging and for other nautical purposes.

e. This channel is the first ship-to-ship channel, unless the competent authority has designated an other channel. In the countries mentioned under remark 2, it is allowed that the output power is set to a value between 6 and 25 W until 1 January 2005.

f. In the countries mentioned under remark 2, this channel is used for service category ship-to-port authorities.

g. In the Netherlands, this channel is used by its national coastguard for communications during oil pollution operations on the North Sea and for safety messages for the North Sea, Waddenzee, IJsselmeer, Ooster- and Westerschelde.

h. This channel may be used only for service category on-board communications.

i. This channel may be used only for communications between seagoing vessels and participating land stations in case of distress and safety communications within the maritime sea-areas. In the countries mentioned under remark 2, this channel may be used only for distress, safety and calling.

j. The output power shall be reduced automatically to a value between 0.5 and 1 W.

k. This channel may be used for communications with a social character.

l. In the Netherlands and Belgium, this channel may be used for transmitting messages concerning bunkering and victualling. The output power has to be reduced manually to a value between 0.5 and 1 W.

m. This channel may also be used for public correspondence.

n. This channel will be used for an automatic ship identification and surveillance system (AIS) capable of providing worldwide operating on seas and Inland Waterways.

o. The availability of this channel is on a voluntary basis. All existing equipment shall be capable to of operating on this channel within a ten-year period after the entry into force of this Arrangement.

p. After permission of the competent authority, this channel may be used only for special events on a temporary basis.

q. In the Czech Republic this channel is used for service category nautical information.

r. In the Czech Republic this channel is used for service category ship-to-port authorities.

D-3 Special Channels [2]

CH	SEND (MHz)	RECEIVE (MHz)	TRAFFIC TYPE	SHIP TO SHIP	SHIP TO SHORE	NAME TAG
00 [1]	156.000	156.000	UK Coast Guard Users	Yes	Yes	UK COAST GRD
M1	157.425	157.850	UK Marina Channel M1	Yes	Yes	UK MARINA
M2	161.425	161.425	UK Marina Channel M2	Yes	Yes	UK MARINA
31	157.550	162.150	INT'L, Duplex (Holland)	No	Yes	NL MARINA
96H	162.425	162.425	INT'L (Belgium)	No	Yes	BEL G MARINA
L1	155.500	155.500	INT'L (Skandinavia)	Yes	No	LEISURE 1
L2	155.525	155.525	INT'L (Skandinavia)	Yes	No	LEISURE 2
L3	155.650	155.650	INT'L (Skandinavia– not in Denmark)	Yes	No	LEISURE3
F1	155.625	155.625	INT'L (Skandinavia)	Yes	No	FISHING 1
F2	155.775	155.775	INT'L (Skandinavia)	Yes	No	FISHING 2
F3	155.825	155.825	INT'L (Skandinavia) call back	Yes	No	FISHING 3
AIS1	161.975	161.975	AIS1	-----	-----	-----
AIS2	162.025	162.025	AIS2	-----	-----	-----

Note:

1. Lightly Shaded Simplex channel CH00 is only available in the UK to Coast Guard users with written authorization.
2. The special channels above maybe fitted to your radio. These are only licensed for use in the country indicated. No attempt should be made to use them in any other country.

Countries of Intended use in the EU:

AT - Austria	HU - Hungary	PL - Poland
BE - Belgium	IS - Iceland	PT - Portugal
BG - Bulgaria	IE - Ireland	RO - Romania
CY - Cyprus	IT - Italy	SK - Slovakia
CZ - Czech Republic	LI - Liechtenstein	SI - Slovenia
DK - Denmark	LV - Latvia	ES - Spain
EE - Estonia	LT - Lithuania	SE - Sweden
FI - Finland	LU - Luxembourg	CH - Switzerland
FR - France	MT - Malta	TR - Turkey
DE - Germany	NL - Netherlands	UK - United Kingdom
GR - Greece	NO - Norway	

Appendix E - MMSI, FCC and License Information

You must obtain a user MMSI (Marine Mobile Service Identity) and enter it into your radio before you can use the DSC functions. Contact the appropriate authorities in your country. If you are unsure who to contact, consult your Lowrance dealer.

The user MMSI is a unique nine digit number, similar to a personal telephone number. It is used on marine transceivers that are capable of using DSC (Digital Select Calling).

Depending upon your location, you may need a radio station license for this radio. You may also need an individual operator's license.

Lowrance recommends that you check the requirements of your national radio communications authorities before operating DSC functions.

To enable the DSC functions in this radio:

- Enter your valid MMSI: MENU > DSC SETUP > USER MMSI
- Ensure DSC is turned ON: MENU > DSC SETUP > DSC FUNC

FCC Compliance

This device complies with Part 15 of the U.S. Federal Communications Commission (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. Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital 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 or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the factory customer service department for help.

FCC and IC RF Emissions Notice

This radio transceiver when transmitting emits Radio Frequency energy. The FCC and IC have developed guidelines for RF exposure safety. The antenna should be mounted in such a way that it maintains a separation distance as described in the table below from the user or bystanders when transmitting:

Separation distance:	Antenna system gain:
35 inches (89 cm)	3 dBi
25 inches (63 cm)	0 dBi

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