

LOWRANCE®

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LHR-20



LHR-20/22

Operation Instructions

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IMPORTANT SAFETY INFORMATION

Please read carefully before installation and use.

	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 indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury
	CAUTION indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.
	CAUTION used without the safety alert symbol indicates a potentially hazardous situation which, if not avoided, may result in property damage.

Table of Contents

Introduction.....	4
Safety and Operational Information	5
Display	5
Function and Location of the Controls.....	6
Before Using Your Radio	7
1. Charging and Installing the Li-ion polymer battery pack.....	7
2. Installing the antenna	8
3. Installing the belt clip	9
Using Your Radio.....	9
1. Turning the power on/off	9
2. Adjusting squelch	10
3. Transmitting and receiving	10
4. Accessing the 16/9 priority channels	10
5. Selecting channels	10
6. Selecting high/low power.....	11
7. Locking the keypad	11
8. Adding channels to memory	11
9. Accessing channels saved to memory	12
10. Scanning.....	12
11. Using the WATCH modes.....	13
12. Selecting a WX (weather) channel	13
13. Weather Alert Operation	14
14. Selecting the U.S./International/Canadian band.....	14
15. Resetting the radio	14
Maintenance	14
Technical Specifications.....	15
Frequency Charts.....	16
FCC Compliance	23
Lowrance Warranty	24
How to Obtain Service.....	25

Introduction

Congratulations on your purchase of this Lowrance handheld marine band VHF radio. Designed for international operation, allows you to transmit and receive on all international channels in the VHF marine band, as assigned by the International Union (ITU). The LHR-20/22 is approved with commercial-grade standards to give you clear, reliable communication.

NOTE: According to WEEE regulations, the user should not dispose the product when damaged, but rather send it back to Lowrance for disposal. Refer to **How to Obtain Service** section for instructions to contact Lowrance.

This manual addresses both the LHR-20 and LHR-22 models. Both models function identically, only the LHR-22 has a CAMO pattern and additional AA Battery tray is supplied.

Your radio has the following features:

Channel 16/9 Priority Key

Provide quick access to emergency channel 16, the universal and most frequently-used marine channel, which is used for distress or safety communications. Pressing and holding the 16/9 channel key for 3 seconds allows quick and easy access to Channel 9. Channel 9 is an alternate frequency for distress or safety in some areas in the event Channel 16 is congested.

PLL (Phase Lock Loop) Controlled Circuitry

Provides accurate and stable channel selection.

Squelch Adjustment

Help eliminate noise between transmissions.

Key Lock

Let's you lock the keypad in order to prevent the controls from accidental pressing.

High/Low Power Selection

Let's you save power by selecting a suitable transmitting power for long or short distances.

Battery Level Indicator

Indicates the battery pack condition.

Signal Strength indicator

Displays the relative strength of the RX and TX signals.

Supplied Battery Charger

Allows you to conveniently recharge your radio battery pack.

Backlight LCD Display

Allows you to operate the radio in a darkened environment.

Memory Channels

Let's you store channels as memory channels.

WX/UIC Key

Allows you to select Weather Band, U.S. Channel Band, International Channel Band or Canadian Channel Band. This key is also used to select Weather Alert ON/OFF.

DW/TRI key

Allows you to Dual Watch your current working channel and CH16 or Tri Watch adding CH9 to the scan.

Camouflage pattern (LHR-22)

Safety and Operational Information

CAUTION

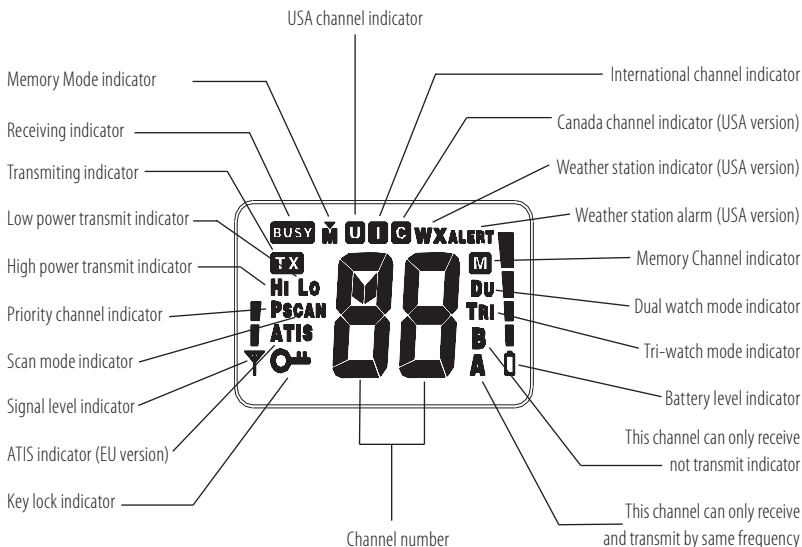
Your hand-held marine VHF radio contains a low power transmitter. When the Push-To-Talk (PTT) button is pushed, the radio will transmit a Radio Frequency (RF) signal.

WARNING

Never leave your radio in a closed car or trunk; the extremely high temperatures generated in hot weather can damage the electronics.

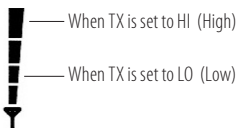
Display

Your radio comes with a multifunctional display.



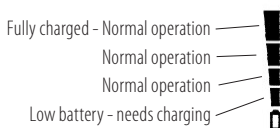
Signal Strength indicator

Displays the relative strength of the RX and TX signals.

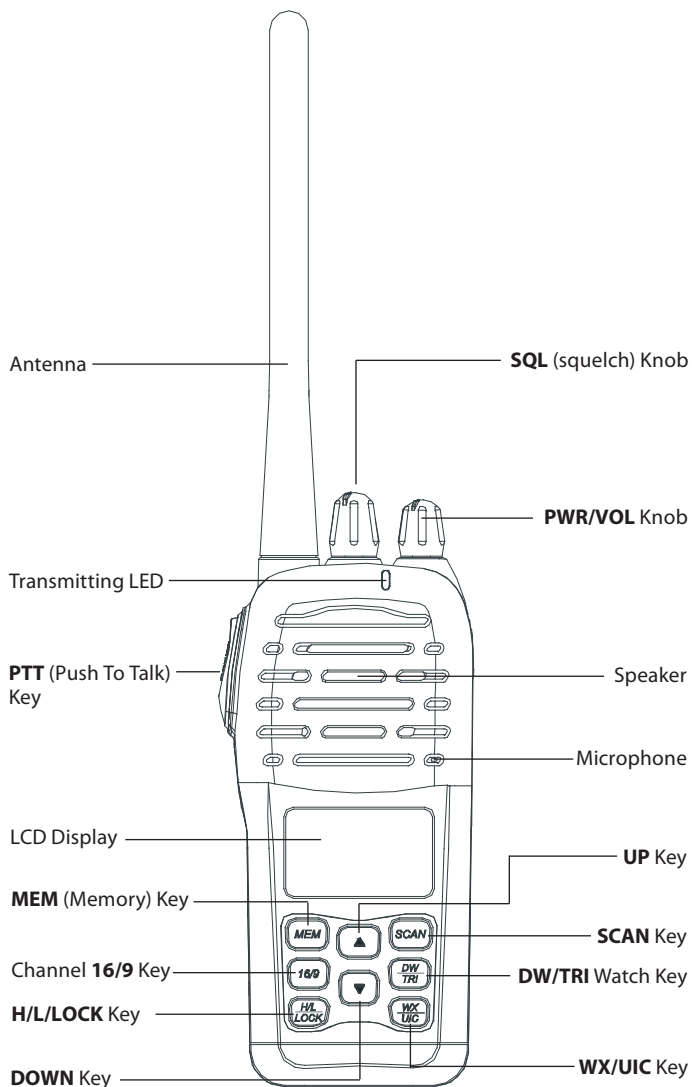


Battery Level indicator

Displays the remaining battery capacity.



Function and Location of the Controls



Before Using your Radio

Before using your radio, you should make the following preparations:

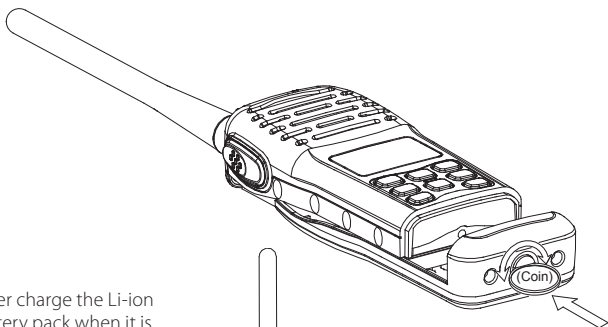
Carefully inspect the package contents for: the radio, battery pack, antenna, AC/DC wall adapter, cradle charger, wrist strap, belt clip, and this manual (including product warranty).

1. Fully charge the Li-ion polymer battery pack for a minimum 3.5 hours and install it onto the radio.
2. Install the antenna onto the radio.
3. Install the belt clip onto the radio.

1. Charging and Installing the Li-ion Polymer Battery Pack

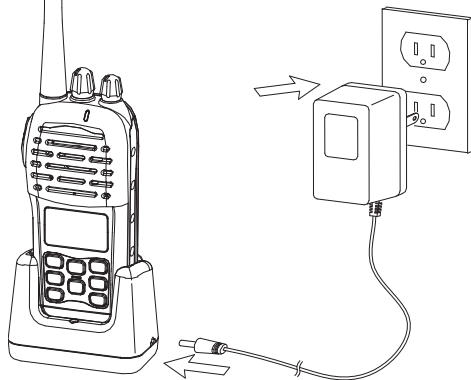
Install the Li-ion polymer battery pack onto the radio:

Use a coin or screwdriver rotate the screw lock clockwise to lock the battery pack onto the radio.



You can either charge the Li-ion polymer battery pack when it is attached to the radio or separated:

1. Insert the adapter plug into the cradle charger unit;
2. Connect the AC wall adapter into a standard wall jack;
3. Insert the battery pack or the radio with the battery tray attached into the cradle charger.

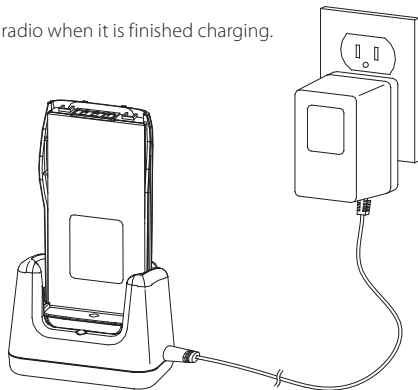


The cradle charger indicator LED on the front of the charging lights when it is receiving voltage from the AC adapter:

RED means the batteries are charging.

GREEN means the batteries are fully charged. You should charge the battery pack for about 3.5 hours.

Attach the battery pack to the radio when it is finished charging.



CAUTION

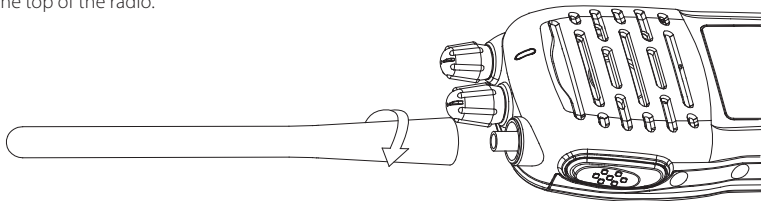
Remember to remove the radio after about 3-4 hours of charging time on the charger to maximize battery life. Overcharging batteries may result in damage to both the battery pack and radio.

2. Installing the Antenna

You will need to make sure that the flexible antenna is attached to the radio. Ensure the radio is turned OFF anytime that the antenna is not connected.

Installing the antenna:

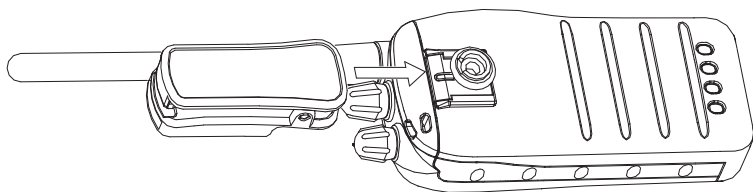
Rotate the antenna clockwise to fasten securely to the threaded connector on the top of the radio.



Note: Do not operate the radio or press PTT key without an antenna installed.

3. Installing the Belt Clip

The belt clip supplied with your radio allows you to attach the radio to your belt. To install the belt clip: slide the belt clip to the back of your radio, make sure that the fitting Groove is aligned.



Using Your Radio

You should familiarize yourself with the following operating procedures:

1. Turning the unit on/off.
2. Adjusting Squelch.
3. Transmitting and receiving.
4. Accessing the 16/9 priority channels.
5. Selecting channels.
6. Selecting high/low power.
7. Locking the keypad.
8. Adding channels to memory.
9. Scanning channels.
10. Accessing channels saved to memory.
11. Using the WATCH modes.
12. Selecting a WX (weather) channel.
13. Weather Alert operation.
14. Selecting U.S./International/Canadian Band
15. Resetting the radio

1. Turning the Power On/Off

Use **PWR/VOL** knob to turn on the radio, once on, adjust the volume as well.

To turn on the radio:

1. Rotate the **PWR/VOL** knob to turn the radio on or off. The knob will make a “click” sound when the radio is turned on. The last used channel will appear on the LCD display.
2. Once on, rotate the **PWR/VOL** knob further to adjust the volume.

2. Adjusting Squelch

Squelch is used to eliminate static and background noise between transmissions, and allows silent operation of the radio until a transmission is received. If Squelch is set too high, only the strongest transmissions can be heard, and if it is set too low, intermittent static and noise may be heard.

Squelch is controlled by **SQL** knob located on the top of the radio.

To set Squelch:

1. Turn **SQL** knob fully counter-clockwise. You will hear a lot of static noise.
2. Then turn **SQL** knob clockwise slowly until the static noise stops, this is the correct position for the **SQL** knob.

CAUTION

The user is advised to adjust the Squelch level depending on your movement and/or location. Setting Squelch too high can cause weak signals (including weak distress calls) to be missed.

3. Transmitting and Receiving

Use **PTT** (Push-To-Talk) key to transmit (speak) on the selected channel.

To transmit and receive:

1. Press and hold **PTT** key, then speak about 3 to 4" away from the microphone. The **"TX"** icon will appear on the LCD display while you are transmitting.
2. Release **PTT** key when finished speaking. The radio will change to listening mode.
3. For receiving, the **PWR/VOL** (volume) knob can be adjusted for the best listening audio output from the speaker.

NOTE: Before transmitting, make sure the selected channel is not busy and is not designated "receive only" (**"B"** icon showing) such as CH15. See the marine Channel charts for traffic type information at the back of this manual.

4. Accessing the 16/9 Priority Channels

The Channel **16/9** Priority key allows you to access the emergency Coastguard channel 16 quickly; pressing and holding this key also allows you to quickly access channel 9, which is an alternate emergency channel in some areas.

To access the 16/9 channels:

1. Press Channel **16/9** Priority key to access channel 16.
2. To access the alternate channel 9 which is available in some areas, press and hold the Channel **16/9** priority key for 3 seconds, then release.

5. Selecting Channels

Use  or  (**UP/DOWN**) key to scroll through the available channels.

For a list of channels and their frequencies, see marine Channel charts at the back of this manual.

To select a channel:

Use  or  (**UP/DOWN**) key to find a channel. Stop when you find the desired channel.

NOTE: Not all channel numbers are available in INT bands, see marine Channel charts at the back of this manual.

6. Selecting High/Low Power

You must press and release **H/L/LOCK** key to toggle the transmit power between high and low. Select high (High power transmit) for long-range communications, and select low (Low power transmit) for short-range communications to save battery power.

To change the transmit power:

Press **H/L/LOCK** key to toggle between High and Low transmit power. When the radio is operating at high power, the **"HI"** icon appears on the LCD display, and when operating at low power, the **"LO"** icon appears on the LCD display. The H/L setting is applied to all the channels in the channel bank. Anytime the priority CH 16 is selected, it will always be at HI power. For USA operation, CH 13 and 67 are always low power initially and will go to high if the H/L key is held down while transmitting.

7. Locking the Keypad

Use **H/L/LOCK** key to activate the Key Lock function in order to avoid accidental key press of the radio keypad.

To lock and unlock the keypad:

1. To lock the keypad, press and hold the **H/L/LOCK** key until the **"Key Lock"** icon appears on the LCD display.
2. To unlock the keypad, press and hold the **H/L/LOCK** key again until the **"Key Lock"** icon disappears from the LCD display.

NOTE: Once Key Lock is turned on, pressing the keys will have no effect except for the **PTT** key, which is not affected by Key Lock.

8. Adding/Deleting Channels to/from Memory

Your radio can store any channel (except WX channels). The stored channels are also the channels scanned in the Memory Scan mode.

To add channels to memory:

1. During normal operating mode, use  or  (**UP/DOWN**) keys to select the desired channel for saving.
2. Press and hold **MEM** key for 3 seconds. The **"M"** (Memory Channel) icon will appear, indicating that the current channel has been saved into memory. Any number of channels can be saved.

To delete channels from memory:

1. During normal operating mode, use  or  (**UP/DOWN**) keys to select the saved channel you wish to delete. The **"M"** (Memory Channel) icon appears.
2. Press and hold **MEM** key for 3 seconds. The **"M"** (Memory Channel) icon disappears, and the selected. The selected channel will be removed from the scan memory.

9. Accessing Channels Saved to Memory

Once channels have been saved, you can easily access them by pressing the **MEM** key. In Memory mode, only the channels saved in memory will be accessible using the Up or Down Channel keys.

To access saved channels:

1. Press the **MEM** key. The **"Memory Mode"** icon (the **"M"** with the inverted triangle above it) appears on the LCD along with **"M"** (Memory Channel) icon to indicate that you are in MEMORY mode.
2. Use the  or  (**UP/DOWN**) keys to scan through the saved channels.
3. Press the **MEM** key again to regain access to all channels.

10. Scanning

Your radio comes with three scan options:

Normal Scan: If there are no channels in memory, the default is Normal Scan. In Normal Scan mode, all channels in the channel bank set are scanned in sequence. After the last channel number has been scanned, the cycle repeats.

Normal scan will automatically check for transmission on the channel being scanned. If a signal is received, the scan stops on the channel and the **"SCAN"** icon (flashing) will appear on the LCD display. If the signal is lost for five seconds or more, the radio resumes scanning.

Memory Scan: In Memory Scan mode, only the channels that have been saved in memory are scanned in sequence. After the last saved channel number has been scanned, the cycle repeats.

Priority Scan: In Priority Scan mode, you can scan all channels while alternately scanning Channel 16 to make sure that you don't miss distress or emergency calls. The secondary priority Channel 09 can be scanned only if entered as a MEM channel or in TRI-WATCH mode.

To activate scan modes:

1. Press **SCAN** key once when no channels are stored in memory to activate the Normal scan function. The Scan icon will appear on the LCD display.
or...
2. Press **SCAN** key once when there is at least one channel in memory to activate the Memory Scan function. The **"M"** (Memory Channel) and **"SCAN"** icons will appear on the LCD display.
or...
3. Press and hold **SCAN** key for 3 seconds to enter Priority Scan mode. The Priority Scan **"P"** icon will appear on the LCD display just before the **"SCAN"** icon.
4. During any of the Scan modes, press the  or  (**UP/DOWN**) keys to change the scan direction. Up key to scan the channel upward, Down key to scan the channel downward.
5. Press and release **SCAN** key to terminate Scan mode.

NOTE: During Scan mode, the **WX/UIC**, **MEM**, and **DW/TRI** Watch keys will not function and will sound an error beep if pressed.

11. Using the WATCH Modes

This radio is equipped with two types of monitor modes: Dual Watch and Tri Watch.

Dual Watch monitors the current working channel and Channel 16 alternately.

To activate and terminate Dual Watch mode:

1. Press and release **DW/TRI** Watch key to activate the Dual Watch mode. The **"DU"** icon will appear on the LCD display.
2. Press and release **DW/TRI** Watch key again to terminate Dual Watch mode and return to the previous working channel.
or...
3. Press and hold **DW/TRI** Watch key for 3 seconds to terminate Dual Watch mode and enter into Tri Watch mode. The **"TRI"** icon will appear on the LCD display.

NOTE: During Dual Watch mode, **SCAN, MEM, WX/UIC**, and  or  (**UP/DOWN**) keys are inactive and will sound an error beep if pressed.

Tri Watch watches Channel 16, Channel 9 and the current working channels.

To activate and terminate Tri Watch mode:

1. Press and hold **DW/TRI** Watch key for 3 seconds to activate the Tri Watch mode. The **"TRI"** icon will appear on the LCD display.
2. Press and hold **DW/TRI** Watch key again for 3 seconds to terminate Tri Watch Mode and to return to the previous working channel.

or...

3. Press and release **DW/TRI** Watch key to terminate Tri Watch mode and enter into Dual Watch mode. The **"DU"** icon will appear on the LCD display.

NOTE: During Tri Watch mode, **SCAN, MEM, WX/UIC** and  or  (**UP/DOWN**) keys are inactive and will sound an error beep when pressed.

12. Selecting a WX (weather) channel

1. Press and release the **WX/UIC** key to enter Weather mode. The **"WX"** icon will appear on the LCD.
2. Press the **UP** or **DOWN** keys to select a WX channel - see marine Channel charts at the back of this manual.
3. Press and release the **WX/UIC** key again to return to normal operation.

NOTE: During Weather mode, the **PTT, H/L/LOCK, MEM** and **SCAN** keys are inactive and will sound error beep when pressed.

13. Weather Alert Operation

Your radio has the ability to watch the designated NOAA weather channel for storm alerts. To activate, select the Wx channel to monitor by short press the **WX/UIC** key and then **UP** or **DOWN**. Press and hold the **WX/UIC** key for 3 seconds. The **"WX ALERT"** icon appears. The radio now automatically watches for the NOAA weather warning broadcast.

14. Selecting U.S./International/Canadian Band

When operating in U.S. waters, your radio should be set for the U.S. band; when operating in Canadian waters, the radio should be set for the Canadian band; when operating in International waters, the radio should be set for the International band.

To select a band:

To select a band, press and hold the **WX/UIC** key for 3 seconds, then release. The LCD will display the **"U"**, **"I"** or **"C"** icon (for U.S., International, or Canadian). Continue to press and hold the **WX/UIC** key for 3 seconds, then release until the LCD shows the desired band.

15. Resetting the Radio

You can reset any radio settings back to the factory default settings. Resetting the radio will:

- Erase any channel(s) stored in memory.
- Return to USA channels, if another channel bank is currently selected at the time of reset.
- Return to international channels, if another mode is currently selected at the time of reset.
- Return power settings to their original state.

To reset the radio:

1. Turn the radio off by rotating **PWR/VOL** knob to the OFF position.
2. Simultaneously press and hold both **SCAN** and **WX/UIC** keys.

then...

3. Turn the radio on, continue to hold the **SCAN** and **WX/UIC** keys down for 3 seconds, then release both keys.

Maintenance

To keep your radio functioning properly, follow these simple maintenance rules:

- If your unit comes into contact with salt spray, simply wipe the affected surfaces with a soft cloth dampened in fresh water.
- When cleaning the LCD display protective lens, use a chamois and non-abrasive, mild cleaner.
- Do not use a chemical glass cleaner on the lens as chemicals in the solution may cause cracking in the lens.
- Take care when cleaning dirt or grease on the lens to avoid scratching the lens.
- Ensure the radio and battery are clean and dry after each use.

Technical Specifications

Channels	All U.S., Canadian and International Channels 10 NOAA Weather Channels
Channels Frequency Method	Phase Lock Loop
Frequency Range	TX 156.025~157.425 MHz RX 156.300~163.275 MHz
Antenna Impedance.....	50 Ohm
Power Supply	7.4 VDC
Operating Temperature	-20°C to +55°C
Dimensions	(With 7.4V Battery Pack) 136 x 58 x 30.5mm
Weight	(with out 7.4V Battery Pack) 230g
Battery Pack.....	1300mAh Li-ion
Battery Life:	>8 Hours (5-watt Power 5%: 5%: 90% ratio) >10 Hours (1-watt Power 5%: 5%: 90% ratio)
CAMO pattern (LHR-22 only)	REAL TREE ADVANTAGE MAX-4 HD

TRANSMITTER

Power Output	1 or 5 Watts (Selectable)
Modulation Type	FM
Hum and Noise Attenuation.....	40dB
Audio Distortion	5%
Spurious Suppression	0.25μW

RECEIVER

Sensitivity at 12dB SINAD.....	0.3μV
Squelch Sensitivity	Threshold -12dBμV(EMF)
Adjacent Channel Selection	65dB
Spurious Response Rejection.....	65dB
Intermodulation Rejection	65dB
Audio Power Output	250mW at 5% THD

NOTE: The above specifications are typical, and may vary between models. Specifications are subject to change without notice.

Frequency Charts

International Marine Channels

CH	TX (MHz)	RX (MHz)	MODE	TRAFFIC TYPE	SHIP TO SHIP	SHIP TO SHORE	REMARK
01	156.050	160.650	D	Public Correspondence	No	Yes	
02	156.100	160.700	D	Public Correspondence	No	Yes	
03	156.150	160.750	D	Public Correspondence	No	Yes	
04	156.200	160.800	D	Port Operations	No	Yes	
05	156.250	160.850	D	Port Operations, Selected VTS Areas	No	Yes	
06	156.300	156.300	S	Inter-ship Safety	Yes	No	
07	156.350	160.950	D	Port Operations	No	Yes	
08	156.400	156.400	S	Commercial (inter-ship only)	Yes	No	
09	156.450	156.450	S	Recreational Calling Channel	Yes	Yes	
10	156.500	156.500	S	Commercial	Yes	Yes	
11	156.550	156.550	S	Commercial, VTS in Selected Areas	Yes	Yes	
12	156.600	156.600	S	Port Operations, Selected VTS Areas	Yes	Yes	
13	156.650	156.650	S	Inter-ship Navigation Safety (bridge-to-bridge)	Yes	No	
14	156.700	156.700	S	Port Operations, Selected VTS Areas	Yes	Yes	
15	156.750	156.750	S	Port Operations	Yes	Yes	① 1W only
16	156.800	156.800	S	International Distress, Safety, and Calling	Yes	Yes	
17	156.850	156.850	S	State Controlled	Yes	Yes	① 1W only
18	156.900	161.500	D	Port Operations	No	Yes	
19	156.950	161.550	D	Commercial	No	Yes	
20	157.000	161.600	D	Port Operations	No	Yes	
21	157.050	161.650	D	Port Operations	No	Yes	
22	157.100	161.700	D	Port Operations	No	Yes	
23	157.150	161.750	D	Public Correspondence	No	Yes	
24	157.200	161.800	D	Public Correspondence	No	Yes	
25	157.250	161.850	D	Public Correspondence	No	Yes	
26	157.300	161.900	D	Public Correspondence	No	Yes	
27	157.350	161.950	D	Public Correspondence	No	Yes	
28	157.400	162.000	D	Public Correspondence	No	Yes	
60	156.025	160.625	D	Public Correspondence	No	Yes	
61	156.075	160.675	D	Port Operations	No	Yes	
62	156.125	160.725	D	Port Operations	No	Yes	
63	156.175	160.775	D	Port Operations	No	Yes	
64	156.225	160.825	D	Public Correspondence	No	Yes	
65	156.275	160.875	D	Port Operations	No	Yes	

66	156.325	160.925	D	Port Operations	No	Yes	
67	156.375	156.375	S	Commercial, bridge-to-bridge	Yes	No	
68	156.425	156.425	S	Boat Operations, Recreational	Yes	No	
69	156.475	156.475	S	Port Operations	Yes	Yes	
70	156.525	156.525		Digital Selective Calling - DSC	-----	-----	③
71	156.575	156.575	S	Port Operations	Yes	Yes	
72	156.625	156.625	S	Inter-ship	Yes	No	
73	156.675	156.675	S	Port Operations	Yes	Yes	
74	156.725	156.725	S	Port Operations	Yes	Yes	
75	156.775	156.775	S	Port Operations			① 1W
76	156.825	156.825	S	Port Operations			① 1W
77	156.875	156.875	S	Inter-ship	Yes	No	
78	156.925	161.525	D	Non-Commercial	No	Yes	
79	156.975	161.575	D	Commercial	No	Yes	
80	157.025	161.625	D	Commercial	No	Yes	
81	157.075	161.675	D	Port Operations	No	Yes	
82	157.125	161.725	D	Port Operations	No	Yes	
83	157.175	161.775	D	Public Correspondence	No	Yes	
84	157.225	161.825	D	Public Correspondence	No	Yes	
85	157.275	161.875	D	Public Correspondence	No	Yes	
86	157.325	161.925	D	Public Correspondence	No	Yes	
87	157.375	161.975	D	Public Correspondence	No	Yes	
88	157.425	162.025	D	Public Correspondence	No	Yes	

Special Notes on International Channel Usage

- ①. LOW POWER (1W) only.
- ②. LOW POWER (1W) initially. Override to HIGH POWER by holding down PTT, then holding down the H/L key. HI is indicated in the display. Used normally in bridge-to-bridge communications.
- ③. 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.
- ④. The INTERNATIONAL mode is not legal for use in U.S. or Canada waters.

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

USA Marine Channels

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

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

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 PTT, then holding down the H/L key. HI is indicated in the display. 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. Coastguard. 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.

Canadian Marine Channels

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

61A	156.075	156.075	S	U.S. Government, Canadian Coastguard	Yes	Yes	④
62A	156.125	156.125	S	Canadian Coastguard	Yes	Yes	
64	156.225	160.825	D	Public Correspondence, Duplex	No	Yes	
64A	156.225	156.225	S	U.S. Government, Canadian Commercial Fishing	Yes	Yes	④
65A	156.275	156.275	S	Port Operations	Yes	Yes	
66A	156.325	156.325	S	Port Operations	Yes	Yes	① 1W only
67	156.375	156.375	S	Commercial, SAR	Yes	No	
68	156.425	156.425	S	Boat Operations, Recreational	Yes	No	
69	156.475	156.475	S	Commercial Fishing Only	Yes	Yes	
70	156.525	156.525		Digital Selective Calling - DSC	-----	-----	⑥
71	156.575	156.575	S	Boat Operations, Recreational	Yes	Yes	
72	156.625	156.625	S	Inter-ship	Yes	No	
73	156.675	156.675	S	Commercial Fishing Only	Yes	Yes	
74	156.725	156.725	S	Commercial Fishing Only	Yes	Yes	
77	156.875	156.875	S	Port Operations	Yes	Yes	① 1W only
78A	156.925	156.925	S	Boat Operations, Recreational	Yes	No	
79A	156.975	156.975	S	Commercial	Yes	Yes	
80A	157.025	157.025	S	Commercial	Yes	Yes	
81A	157.075	157.075	S	U.S. Government Operations	Yes	Yes	④
82A	157.125	157.125	S	U.S. Government, Canadian Coastguard	Yes	Yes	④
83	157.175	161.775	D	Canadian Coastguard	Yes	Yes	
83A	157.175	157.175	S	U.S. Government, Canadian Coastguard	Yes	Yes	④
83B	---	161.775	S	Canadian Coastguard, RX Only	-----	-----	
84	157.225	161.825	D	Public Correspondence, Marine Operator	No	Yes	
85	157.275	161.875	D	Public Correspondence, Marine Operator	No	Yes	
86	157.325	161.925	D	Public Correspondence, Marine Operator	No	Yes	
87	157.375	161.975	D	Public Correspondence, Marine Operator	No	Yes	
88	157.425	162.025	D	Public Correspondence, Marine Operator	No	Yes	

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 PTT, then holding down the H/L key. HI is indicated in the display. 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 Coastguard. Not for use by the general public.

- ⑤. The letter "A" illuminated by the channel number indicates the Canada 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.
- ⑦. The CANADA mode is not legal to use in U.S. waters.

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

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

FCC Compliance

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.

Marine VHF Radio use on Land:

You should consider acquiring a special license, called a marine utility station license, to operate a hand-held marine radio from land -- a ship station license IS NOT sufficient. You may apply for this license by filing FCC Form 601 with the FCC. Refer to the FCC web site (<http://www.fcc.gov/>) for further details and qualifications.

We recommend you record your radio's serial number here. This number is on the radio rear panel, underneath the battery pack:

Serial Number: _____

Date Purchased: _____

NAVICO

FULL TWO-YEAR LOWRANCE VHF WARRANTY

"We," "our," or "us" refers to NAVICO, the manufacturer of this LOWRANCE VHF product. "You" or "your" refers to the first person who purchases this product as a consumer item for personal, family or household use.

We warrant this product against defects or malfunctions in materials and workmanship, and against failure to conform to this product's written specifications, all for two (2) years from the date of original purchase by you. Battery Packs and accessory items have a one (1) year warranty. WE MAKE NO OTHER EXPRESS WARRANTY OR REPRESENTATION OF ANY KIND WHATSOEVER CONCERNING THIS PRODUCT. Your remedies under this warranty will be available so long as you can show in a reasonable manner that any defect or malfunction in materials or workmanship, or any non-conformity with the product's written specifications, occurred within two years from the date of your original purchase, which must be substantiated by a dated sales receipt or sales slip. Any such defect, malfunction, or non-conformity which occurs within two years from your original purchase date will either be repaired without charge or be replaced with a new product identical or reasonably equivalent to this product, at our option, within a reasonable time after our receipt of the product. If such defect, malfunction, or non-conformity remains after a reasonable number of attempts to repair by us, you may elect to obtain without charge a replacement of the product or a refund for the product. THIS REPAIR, OR REPLACEMENT OR REFUND (AS JUST DESCRIBED) IS THE EXCLUSIVE REMEDY AVAILABLE TO YOU AGAINST US FOR ANY DEFECT, MALFUNCTION, OR NON-CONFORMITY CONCERNING THE PRODUCT OR FOR ANY LOSS OR DAMAGE RESULTING FROM ANY OTHER CAUSE WHATSOEVER. WE WILL NOT UNDER ANY CIRCUMSTANCES BE LIABLE TO ANYONE FOR ANY SPECIAL, CONSEQUENTIAL, INCIDENTAL, OR OTHER INDIRECT DAMAGE OF ANY KIND.

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

This warranty does NOT apply in the following circumstances: (1) when the product has been serviced or repaired by anyone other than us; (2) when the product has been connected, installed, combined, altered, adjusted, or handled in a manner other than according to the instructions furnished with the product; (3) when any serial number has been effaced, altered, or removed; or (4) when any defect, problem, loss, or damage has resulted from any accident, misuse, negligence, or carelessness, or from any failure to provide reasonable and necessary maintenance in accordance with the instructions of the owner's manual for the product.

We reserve the right to make changes or improvements in our products from time to time without incurring the obligation to install such improvements or changes on equipment or items previously manufactured.

This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.

REMINDER: You must retain the sales slip or sales receipt proving the date of your original purchase in case warranty service is ever required.

NAVICO
12000 E. SKELLY DRIVE, TULSA, OK 74128
(800) 324-1356

How to Obtain Service . . .

... in the USA:

We back your investment in quality products with quick, expert service and genuine Lowrance replacement parts. If you're in the United States and you have technical, return or repair questions, please contact the Factory Customer Service Department. Before any product can be returned, you must call customer service to determine if a return is necessary. Many times, customer service can resolve your problem over the phone without sending your product to the factory. To call us, use the following toll-free number:

800-324-1354

8 a.m. to 5 p.m. Central Standard Time, M-F

Lowrance Electronics may find it necessary to change or end our shipping policies, regulations, and special offers at any time. We reserve the right to do so without notice.

...in Canada:

If you're in Canada and you have technical, return or repair questions, please contact the Factory Customer Service Department. Before any product can be returned, you must call customer service to determine if a return is necessary. Many times, customer service can resolve your problem over the phone without sending your product to the factory. To call us, use the following toll-free number:

800-661-3983

905-629-1614 (not toll-free)

8 a.m. to 5 p.m. Eastern Standard Time, M-F

...outside Canada and the USA:

If you have technical, return or repair questions, contact the dealer in the country where you purchased your unit. To locate an Lowrance dealer near you, visit our web site or consult your telephone directory for listings.

www.lowrance.com

Accessory Ordering Information for all countries

To order Lowrance accessories such as power cables or transducers, please contact:

- 1) Your local marine dealer or consumer electronics store. Most quality dealers that handle marine electronic equipment or other consumer electronics should be able to assist you with these items.

To locate an Lowrance dealer near you visit our web site or consult your telephone directory for listings.

- 2) U.S. customers: LEI Extras Inc., PO Box 129, Catoosa, OK 74015-0129
Call 1-800-324-0045 or visit our web site www.lei-extras.com.
- 3) Canadian customers can write:
Lowrance/Eagle Canada, 919 Matheson Blvd. E. Mississauga, Ontario L4W2R7 or
fax 905-629-3118.

Shipping Information

If it becomes necessary to send a product for repair or replacement, you must first receive a return authorization number from Customer Service. Products shipped without a return authorization will not be accepted. When shipping, we recommend you do the following:

1. Please do not ship the knobs or mounting bracket with your unit.
2. If you are sending a check for repair, please place your check in an envelope and tape it to the unit.
3. For proper testing, include a brief note with the product describing the problem. Be sure to include your name, return shipping address and a day time telephone number. An e-mail address is optional but useful.
4. Pack the unit in a suitable size box with packing material to prevent any damage during shipping.
5. Write the Return Authorization (RA) number on the outside of the box underneath your return address.
6. For your security, you may want to insure the package through your shipping courier. Lowrance does not assume responsibility for goods lost or damaged in transit.

Notes:[illegible]

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