

Radio Ocean 4500

25/1 Watt VHF/FM
Marine Radio



OPERATOR WARNING

Radio Ocean requires the radio operator to meet the requirements for Radio Frequency Exposure. Unauthorized changes or modifications to this equipment may void compliance with ETSI Rules. Any changes or modification must be approved in writing by Radio Ocean Corp.

This equipment has been tested and licensed to comply with the limits for Class D Digital Marine Devices. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment can generate or radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications and human body. Never transmit before you make sure the antenna is properly located.

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EQUIPMENT DESCRIPTION

1.1 INTRODUCTION

Congratulations on your purchase of Radio Ocean's Radio Ocean 4500 marine radio. Radio Ocean 4500 is a VHF DSC Base Station Radio with output power of 25/1 watt. It should be powered by a 13.8VDC power supply.

The radio can support DSC (Digital Selective Calling) operation with specially designed DSC unit, which meets the standard of ITU-R, M493-9. When being connected with GPS, it will display the position of the vehicle where it locates (longitude and latitude). Compact wire handset makes you operate your equipment more conveniently.

Other features of the radio includes:

- Access to all available U.S. and International channels (currently allocated).
- Allows 10 memory channels for quick recall and memory scan.
- Provides as many as 20 user programmable names with MMSI, 10 distress calls and 20 individual calls for DSC communications.
- Rotary volume control with power on/off, rotary channel selector and rotary squelch adjustable knob give you more convenient operation of the radio.
- Outstanding performance of waterproof complying with Japanese Industry Standard level 7.
- 25 watts high output power allows you make contact with others in a long distance of marine communication; and 1 watt low power for short distance.
- Separate **16** button, for quick selection of the emergency call on CH16.
- Adjustable brightness of backlit for good visibility of the large LCD in various circumstance.
- External interface easy to connect to GPS and external speaker.
- Mounting gimbal for firm and reliable location of your base station in different conditions.

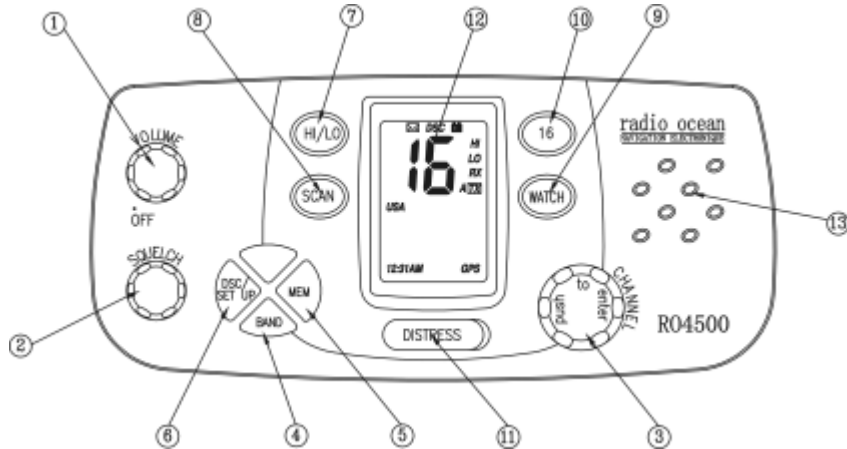
1.2 ETSI INFORMATION

ESTI (European Communications Standard Institute) has stipulated the specific requirement (EN 301 025) on the marine radio with DSC feature.

CONTROLS AND LCD DISPLAY

2.1 CONTROLS AND CONNECTIONS

2.1.1 BASE STATION (PANEL)



Volume and On/Off Knob: 0-270° rotary control. Power off at Zero Degree.

Squelch 0-270° rotary control.

Channel/Select Rotary encoder (no stop) with momentary push.

In VHF (USA, INT) and MEM mode, the default operation selects channels in the active band. With the knob is rotated the channel is displayed on the LCD Display.

In DSC Mode and Set-Up (in Channel 70 Selected), the default rotary operation selects (using an arrow ">") from menu items on screen, and the momentary push action enters the

selected item. See DSC Operation for detailed description.

Band:

Press and release **BAND** button to enter normal VHF Mode (USA and INT bands). Successive press and release toggles between USA and INT band. When pressed, the current band selection is indicated on the LCD by text. When returning to VHF mode from either DSC or MEM mode, the selected band is the last active band used (either USA or INT). This setting is stored in NVM (non-volatile memory).

Memory:

Press and release for less than 1 second to select Memory Mode. "MEMORY" characters appear on the display indicating Mode of operation. While in memory mode, channel knob selects from memory channels programmed into the radio.

When radio is in normal VHF (USA or INT) Mode, press and hold **MEM** button for 1 second or greater to remember current channel and band as a memory channel. Channels are remembered in sequence entered. When a memory channel is stored, the key **MEM** for 1 second or greater will remove the channel from memory.

DSC:

Press and release to select DSC Mode. Channel 70 is automatically selected, and the Send Call Menu appears on the display. See DSC Operation for complete description of DSC function.

Hi/Low:

Press and release **HI/LO** to toggle between 25 Watt power output and 1 watt output. "HI" or "LO" icon appears on LCD display to indicate the setting.

When radio is tuned to channels restricted to low power output, pressing **HI/LO** key overrides the low power setting ONLY if permissible in FCC guidelines.

HI/LOW functions in the normal VHF (USA, INT) Mode or MEM Mode. In DSC mode **HI/LO** key has no function and will produce an error tone when being pressed.

Scan: Pressing and releasing **SCAN** button (for less than 1 second) to activate scanning. Scan mode is Priority type (Scan 1,16,2,16,3,16...). A text appears on the display to indicate the Scan Function is active. When the scan function is active, press and release **SCAN** button to deactivate scan function.

When radio is in Memory Mode, memory channels are scanned. When in normal VHF (USA, INT) Mode, channels in the selected band are scanned. When in DSC Mode, scan has no function and an error tone is produced.

Dual Watch: Press and release **WATCH** button (for less than 1 second) to activate dual watch function. Characters appear on the display to indicate the watch function. When dual watch is active, press **WATCH** button to deactivate.

Dual Watch monitors the working channel, channel 16.

16: Press and release **16** button to quickly access to the channel 16.

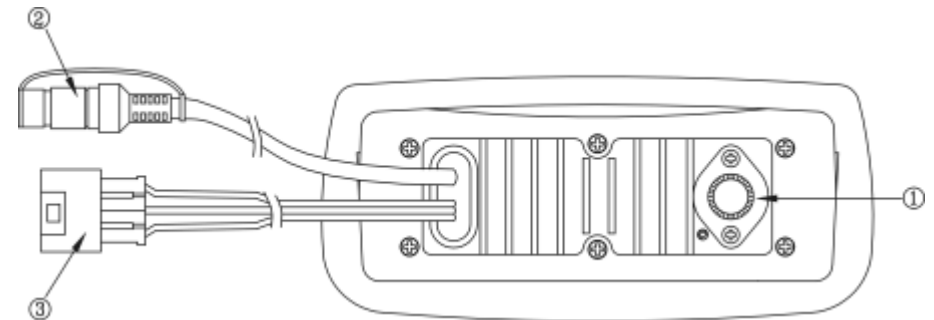
11 Distress: Press and release the **DISTRESS** button to send a DSC Distress call. MMSI and Nature of Distress are included in the signal. Position and time are included in the broadcast if appropriate NMEA data is available. See DSC Operation for details of sending the call.

The Distress Function does not operate unless a user's MMSI has been entered.

12 LCD: Large LCD (1"×1.5") with viewable area of 4×12 dot matrix, makes it easy to be read.

13 Built-in Speaker: Guarantees a clear ring and voice communication.

2.1.2 BASE STATION (REAR)

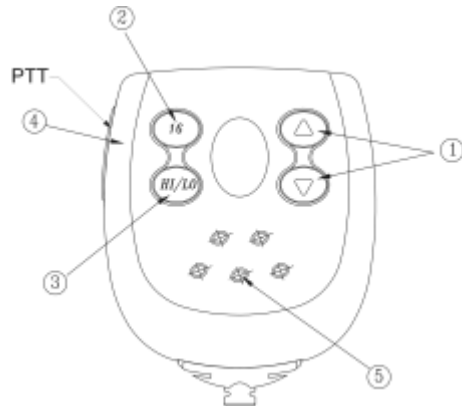


1 Antenna Jack: Connects a suitable antenna to your marine VHF radio to get a satisfying communication.

2 GPS Connector: Connects the radio to a GPS receiver to acquire the position and time information of your vessel.

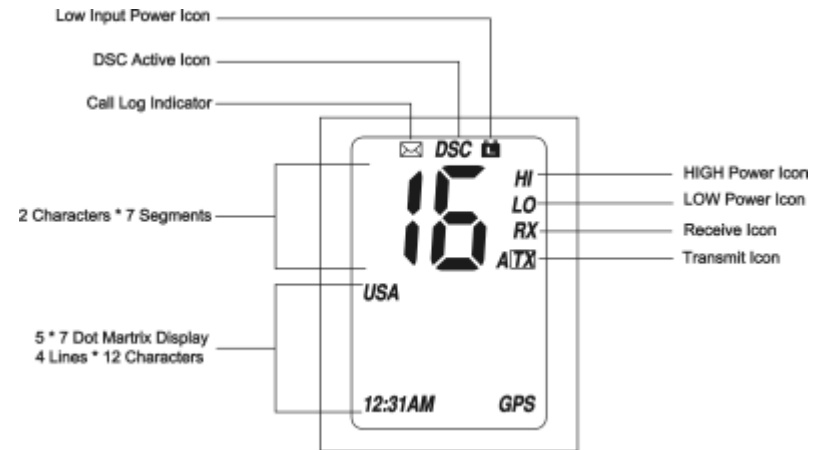
- 3 Power Source/External Speaker Connection Cable:
Connects the radio to a 13.8 VDC power source.
If need, you can also use this cable to connect an external speaker.

2.1.3 HANDSET



- 1 Channel Up/Channel Down: 2 Keys, press and release to change channel.
- 2 16: Press and release **16** button to quickly access to channel 16.
- 3 Hi/Low: Press and release **HI/LO** button to toggle between 25 Watt power output and 1 watt output. "HI" or "LO" icon appears on LCD display to indicate the setting.
- 4 PTT: Push to enable VHF communication through the 25/1-Watt transmitter.
- 5 Internal Microphone: Well receive your voice information and ensure a reliable communication.

2.2 LIQUID CRYSTAL DISPLAY

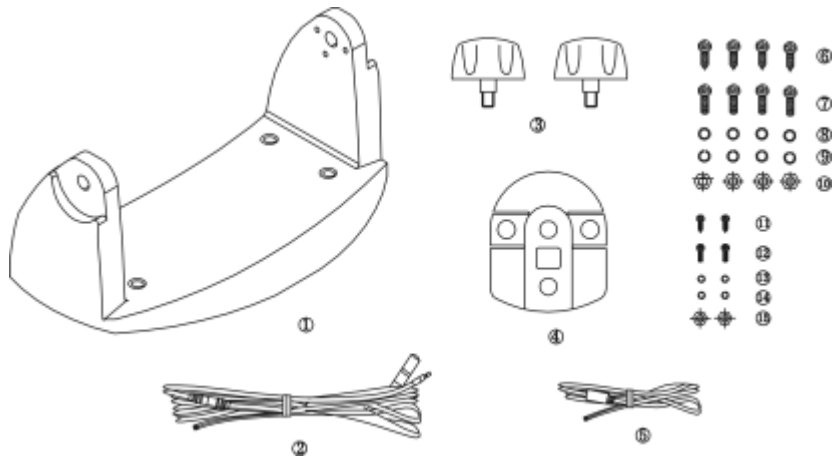


INSTALLATION

3.1 SUPPLIED ACCESSORIES

Manufacturer supplies you the following accessories as soon as you purchase this RO4500 marine radio:

- 1 Mounting Gimbal (1 set)
- 2 Power Supply Cable and External Speaker Connection Cable (1 set)
- 3 Mounting Knob (2 pcs)
- 4 Wall Hanger (1 pcs)
- 5 GPS Connection Cable (1 set)
- 6 Self-tapping Screw for Fixing Mounting Gimbal (4 pcs)
- 7 Flat Screw for Fixing Mounting Gimbal (4 pcs)
- 8 Plain Washer (4 pcs)
- 9 Spring Washer (4 pcs)
- 10 Nut (4 pcs)
- 11 Self-tapping Screw for Fixing Wall Hanger (2 pcs)
- 12 Flat Screw for Fixing Wall Hanger (2 pcs)
- 13 Plain Washer (2 pcs)
- 14 Spring Washer (2 pcs)
- 15 Nut (2 pcs)



3.2 LOCATION

To more conveniently and efficiently use your marine radio, find a mounting location that:

- Is far enough from any compass like devices to avoid any interference caused by the speaker magnet in your radio during their operation;
- Provides accessibility to the front panel controls;
- Allows connection to a power supply and an antenna;
- Has free space nearby for installation of a handset hanger;
- Where the antenna can be mounted at least 3 feet from radio.

3.3 CONNECTIONS

POWER SUPPLY

You radio should be powered by a 13.8VDC power supply. Red cable is for positive pole and the thicker black one is for negative pole.

EXTERNAL SPEAKER

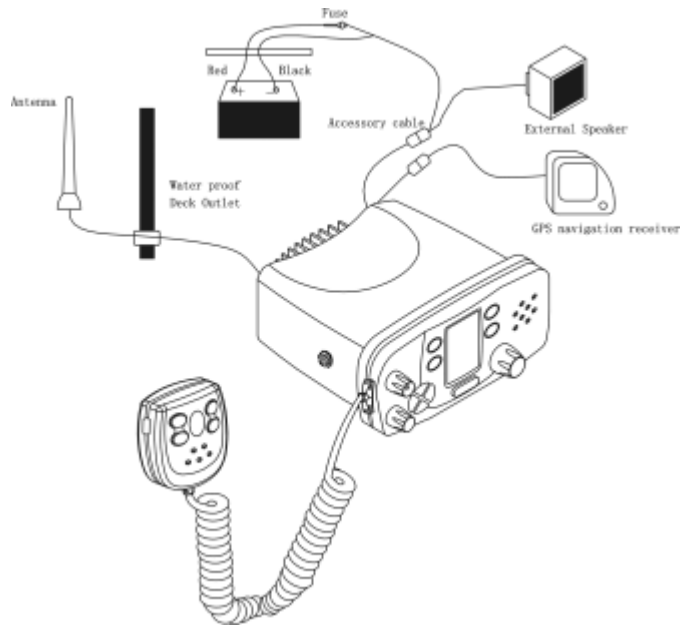
If need, you can connect your radio to an external speaker with the supplied connection cable. White cable is for positive pole and the thinner black one is for negative pole.

GPS EQUIPMENT

When your Radio Ocean 4500 is connected to a GPS equipment, it can obtain the information of both its current location (longitude and latitude) and the local GMT. ("+" yellow, "-" green)

ANTENNA

A very important part for the performance of any communication system is a suitable antenna. Consult your dealer about antennas and ask them to help best mount to your radio.



3.4 MOUNTING THE RADIO

To mount the radio on your vessel:

1. Find a appropriate location defined in section 3.2;
2. Place the mounting bracket on the location surface, use a pencil to mark the location of four holes where the fixing screws is to go into;

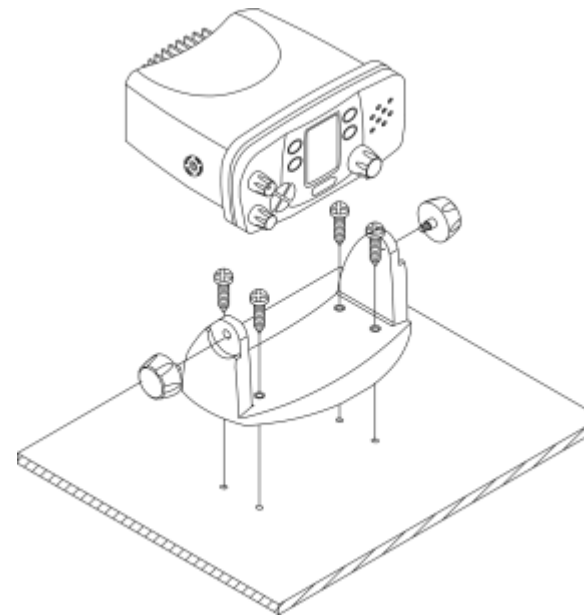
⊗ **Caution: Be careful to not drill through the mounting surface.**

3. Remove the bracket, drill four holes smaller than the screw diameter, then re-place the mounting bracket on the surface aligning the drilled holes;
4. Insert the four fixing screws and secure the bracket to mounting surface using the supplied bolts, spring washers, plain washers and nuts;

⊗ **Caution: if you can not reach behind the mounting surface to attach the nut on the bolts, use the supplied self-tapping screws to fasten the bracket.**

5. Insert the four fixing screws and fasten them with a Philip screw driver with attention not to screw too tightly;
6. Mount the base station onto the bracket with notice of the matching of the protuberances on the both inner side of the bracket and the pits on the two sides of the base station (the selectable pits on the sides of the radio allow you adjust the direction of the radio face to satisfy your easy-to-read-and-use, 15° for each rotation and totally 45° tolerance);
7. Attach the supplied mounting knobs from the two sides of the bracket to fixing the base station securely.

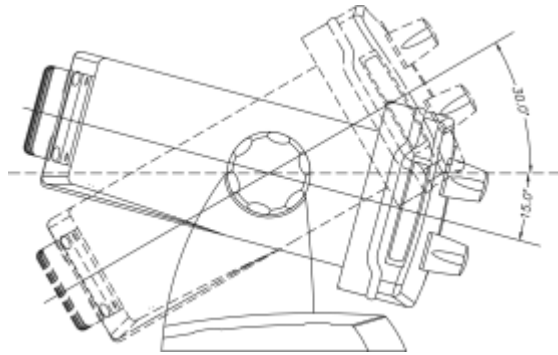
⊗ **Caution: KEEP the radio and handset at least 1 meter away from any magnetic devices such as compass on your vessel.**



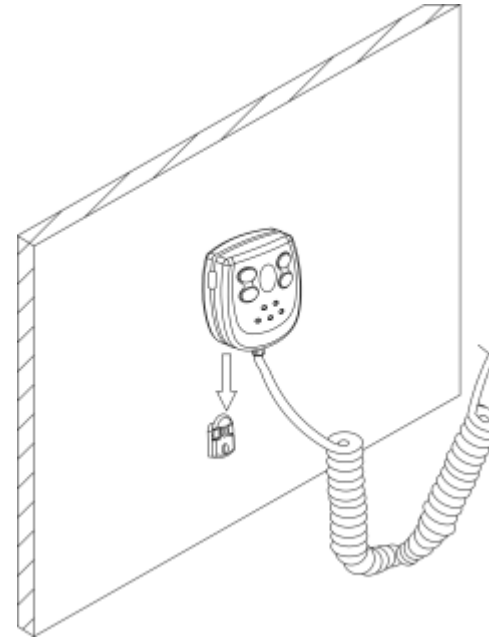
The supplied universal mounting bracket allows you mount your base station from overhead or on dashboard with a big scope of angle as many as 45°.

To change the angle after installation:

1. Loosen the mounting knob at the sides of gimbal first.
2. Then adjust the base station to an appropriate direction with matching of the protuberances on the inner sides of gimbal and pits on the outer sides of base station.
3. Tighten the knob to secure.



Find a mounting location near the base station to mount the wall hanger for handset. The distance between the base station and the wall hanger should be less than the length of the handset cable.



3.5 MOUNTING THE HANDSET

BASIC OPERATION

After the radio has been installed, make sure of the power supply and antenna being properly connected. Rotate the **VOLUME/POWER** knob clockwise to turn on the radio and select a comfortable volume level. Turn the **SQUELCH** knob clockwise until the background noise disappears.

4.1 CHANNEL SELECTION

USA and INT Channels

There are altogether 55 USA and 55 International channels listed in the channel list section. These channel groups may be specified for the operating area. To select the desired channel:

1. Press **BAND** button to enter the VHF mode;
2. In VHF (USA, INT) mode, rotate **CHANNEL/SELECT** knob to select channel in the active band. With the knob being rotated, the channel is displayed on the LCD display;
3. Press **BAND** button to change to another VHF band, either USA or INT, then also rotate **CHANNEL/SELECT** knob to select channel in this band.



☺ **Note:** On base station, slightly rotate the **CHANNEL/SELECT** knob for one level, the channel will advance or return backward for one channel, accompanied by a beep sound. You can also press **UP** or **DOWN** button to get the desired channel; if you want to quick skim channels, just press and hold down the **UP** or **DOWN** button.

☺ **Note:** USA and INT channels can be selected in sequence.

Memory Channels

You can store as many as 10 channels, either USA or INT channels, as memory channels.

1. Press and release **MEM** button for less than 1 second to enter Memory Mode. "MEMORY" characters appear on the display indicating the current mode of operation.
2. Rotate the **CHANNEL/SELECT** knob to select from memory channels programmed into the radio.

Channel 16

Channel 16 is the distress and safety channel. It is used for establishing initial contact with another station and for emergency communications. Channel 16 is monitored during dual watch. While standing by, monitoring channel 16 is a must.

Key **16** gives you a quick access to the channel 16.

4.2 TRANSMISSION AND RECEPTION

⚠ **CAUTION:** Transmitting without an antenna may damage the radio.

1. Press the **PTT** (Push-To-Talk) button on the handset, the TX indicator on LCD is displayed.
2. Speak clearly in a normal voice into the microphone.
3. When the transmission is finished, release the **PTT** button.

4.3 MODES DESCRIPTION

Band: Press and release **BAND** button to enter normal VHF Mode (USA and INT bands). Successive press and release toggles between USA and INT band. When pressed, the current band selection is indicated on the LCD by text. When returning to VHF mode from either DSC or MEM mode, the selected band is the last active band used (either USA or INT). This setting is stored in NVM (non-volatile memory).

Memory: Press and release **MEM** button for less than 1 second to select Memory Mode. "MEMORY" characters appear on the display indicating the mode of operation.

While in memory mode, channel knob selects from memory channels programmed into the radio.

When radio is in normal VHF (USA or INT) Mode, press and hold **MEM** button for 1 second or greater to remember current channel and band as a memory channel. Channels are remembered in sequence entered. When a memory channel is stored, the key **MEM** for 1 second or greater will remove the channel from memory.

DSC: Press and release to select DSC Mode. Channel 70 is automatically selected, and the Send Call Menu appears on the display. See DSC Operation for complete description of DSC function.

Distress: Open the protection cover, then press and release the **DISTRESS** button to enter distress Mode. Channel 70 is automatically selected with high power, and the Send Call Menu appears on the display. See Distress Operation for complete description of distress function.

4.4 FUNCTION DESCRIPTION

High/Low: Press and release **HI/LO** to toggle between 25 Watt power output and 1 watt power. "HI" or "LO" icon appears on LCD display to indicate the setting.

When radio is tuned to channels restricted to low power output, pressing **HI/LO** key overrides the low power setting ONLY if permissible in FCC guidelines.

High/Low functions in the normal VHF (USA, INT) Mode or MEM Mode. In DSC mode **HI/LO** key has no function and will produce an error tone when being pressed.

Scan: Pressing and releasing **SCAN** button (for less than 1 second) to activate scanning. Scan mode is Priority type (Scan 1,16,2,16,3,16...). A text appears on the display to indicate the Scan Function is active. When the scan function is active, press and release **SCAN** button to deactivate scan function.

When radio is in Memory Mode, memory channels are scanned. When in normal VHF (USA, INT) Mode, channels in the selected band are scanned. When in DSC Mode, scan has no function and an error tone is produced.

Dual Watch: Press and release **WATCH** button (for less than 1 second) to activate dual watch function. Characters appear on the display to indicate the watch function. When dual watch is active, press **WATCH** button to deactivate.

Dual Watch monitors the working channel and channel 16.

4.5 POSITION INDICATION

Your transceiver can display the position of the vessel's (longitude and latitude) as well as time and date information, if connected to a GPS receiver.



DIGITAL SELECTION

5.1 INTRODUCTION

5.1.1 DIGITAL SELECTIVE CALLING (DSC)

Digital Selective Calling is a semi-automated method of establishing a radio call, it has been designated by the International Maritime Organization (IMO) as an international standard for establishing VHF, MF and HF radio calls. It had also been designated part of the Global Maritime Distress and Safety System (GMDSS). It is planned that DSC will eventually replace aural watches on distress frequencies and will be used to announce routine and urgent maritime safety information broadcasts. This new service will also allow mariners to initiate or receive distress, urgency, safety and routine calls to or from another vessel equipped with a DSC transceiver.

5.1.2 MARINE MOBILE SERVICE IDENTITY (MMSI)

An MMSI is a nine digit number used on Marine Transceiver capable of using Digital Selective Calling (DSC). This number is used like a telephone number to selectively call other vessels. Refer to section 6.11 (USER MMSI ENTRY).

5.2 DSC MENU NAVIGATION

Once in DSC mode, the **Channel/Select** key is used to select items within the DSC Send Call menu. Rotating the **Channel/Select** knob selects successive items within the DSC Menu (and subsequent sub-menus). When the Menu list contains more items than will fit on the LCD, the list scrolls to reveal additional items. Pressing the **Channel/Select** knob enters (or acts) the selected function. At any time while in DSC Mode, pressing and releasing the **DSC** key returns the screen to the DSC Send Call menu and aborts the current operation. Pressing any other mode key (**BAND, MEM**) while in the DSC Mode aborts the DSC function (except a Distress Call) and changes to the Mode of operation accordingly.

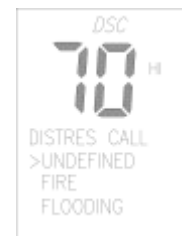
5.3 SENDING A DSC CALL

5.3.1 DISTRESS CALL

5.3.1.1 Sending a Distress Call

Distress calls are initiated with the following procedure:

1. Open the Distress cover.
2. Press the **DISTRESS** key.
The Text area of the display reconfigures to show the Nature of Distress menu.



- ☺ **Note: Only having a MMSI code of your radio, can you initiate a DSC transmission. To enter the MMSI code, see 6.11.**

3. Rotate the **Channel/Select** knob to select the Nature of Distress by using ">" arrow.
The default selection is "UNDEFINED".
4. Press the **DISTRESS** key for more than 5 seconds to send the Distress call.
*Once the call is sent, the radio will be always waiting until a Distress acknowledgement is received. Only the **16** button may exit or press the **DISTRESS** key to resend again.*
During the distress call sequence, the Distress Cancellation menu is present in the Text Area of the Display. See step 5.3.1.2 to cancel.
During the distress call sequence, the radio simultaneously watches Channel 70 for a DSC Acknowledgement and Channel 16. When the distress call is acknowledged, the display returns to normal VHF operation on Channel 16, with High power selected.

5.3.1.2 Sending a Call to Cancel a Transmitted Distress Call

1. From the Distress Cancellation Menu, cancel the Distress Call by pressing the **Channel/Select** key.
The text area of the display reconfigures to have the user confirm the distress cancellation.

2. Select "YES" and push **Channel/Select** to transmit a call to cancel the transmitted distress call. Select "NO" and press **Channel/Select** button to abort cancellation.
Once cancellation has been confirmed, the radio returns to normal VHF operation on channel 16 with high power selected.

5.3.2 ALL SHIPS CALL

5.3.2.1 Send an All Ships Call

All Ships calls are initiated with the following procedure.

- ☺ **Note: Pressing the DSC key at any time aborts the current function and selects the Send Call Main Menu.**

1. Press **DSC** key.
The Send Call Menu appears in the text area of the display.



2. Rotate the **Channel/Select** knob to select "ALL SHIPS". Press the **Channel/Select** knob to enter.
The Send Call Menu reconfigures to display the Call Type selection menu.



3. Rotate the **Channel/Select** knob to select the call type, either: URGENCY, or SAFETY. Push the **Channel/Select** knob to enter the selected call type.
If the call type is Urgent or Safety, the talk channel is automatically set to Channel 16, and the Text Area of the display reconfigures to show the confirmation screen.
4. From the confirmation screen, press **Channel/Select** to send the call.
Once the call is sent, the Text area of the display momentarily shows the Calling All Ships message. The radio returns to normal VHF operation on the designed channel.
If channel 70 is busy, or an error occurs, after the prescribed number of automatic broadcast attempts the Text Area of the display reconfigures to show the Try Again Confirmation menu. See 5.3.2.2.

5.3.2.2 Re-sending an All Ships Call

1. From the Try Again Confirmation menu, select "YES" and push the **Channel/Select** button to send again. Or, select "NO" and push the **Channel/Select** key to cancel and return to normal VHF operation.

5.3.3 GROUP CALL

5.3.3.1 Send a GROUP Call

All Ships calls are initiated with the following procedure.

- ☺ **Note: Pressing the DSC key at any time aborts the current function and selects the Send Call Main Menu.**

1. Press **DSC** key.
The Send Call Menu appears in the text area of the display.
2. Rotate the **Channel/Select** knob to select "GROUP". Press the **Channel/Select** knob to enter.
The Send Call Menu reconfigures to display the Call Type selection menu. The default call type is ROUTINE.
3. Press the **Channel/Select** knob to send a GROUP CALL.

5.3.2.2 Re-sending a GROUP Call

1. From the Try Again Confirmation menu, select "YES" and push the **Channel/Select** button to send again. Or, select "NO" and push the **Channel/Select** key to cancel and return to normal VHF operation.

5.3.3 INDIVIDUAL CALL

5.3.3.1 Sending an Individual Call (MMSI not in Buddy List)

Individual calls are initiated with the following procedure.

- ☺ **Note: Pressing the DSC key at any time aborts the current function and selects the Send Call Main Menu.**
1. Press **DSC** key.
The Send Call Menu appears in the text area of the display.
 2. Rotate the **Channel/Select** knob to select "INDIVIDUAL". Push the **Channel/Select** knob to enter.
The Send Call Menu reconfigures to display the Enter MMSI selection menu.
 3. On the MMSI Enter screen, rotate the **Channel/Select** knob to change the individual digits in the MMSI number. Once each digit is set, press the **Channel/Select** knob to enter the digit and advance to the next. At the end the MMSI number, the Text Area of the display reconfigures to show the Call Type menu.
The characters available in the digit string are 0-9 and "<" (back arrow). Selecting the "<" and pushing the Channel/Select knob selects the previous character in the MMSI for editing.
 4. The default call type is ROUTINE. Push the **Channel/Select** knob to enter the call type.
If the call type selected is ROUTINE, the text area of the display reconfigures to permit entry of the Talk Channel.
 5. If ROUTINE call is selected, rotate the **Channel/Select** knob to select the talk channel. Push the **Channel/Select** knob to enter the channel and proceed to the Enter MMSI screen. Otherwise, go to step 5.



6. From the Confirmation Screen, push the **Channel/Select** knob to send the call.
*The Text Area displays the CALLING {MMSI} message while the call is made.
If the call is acknowledged, the text area momentarily displays the {MMSI} ACKNOWLEDGED message and the radio tunes the Talk Channel and returns to normal VHF operation.
If the call is NOT acknowledged, the Try Again Confirmation menu is displayed. See 5.3.3.1.1.
If the call is acknowledged with "UNABLE TO ACKNOWLEDGED", the Talk Channel is automatically tuned and the radio returns to normal VHF operation.*

5.3.3.1.1 Re-sending an Individual Call

1. From the Try Again Confirmation menu, select "YES" and push the **Channel/Select** key to send again. Or, select "NO" and press the **Channel/Select** key to cancel and return to normal VHF operation.

5.3.3.2 Sending an Individual Call (MMSI stored in Buddy List)

Individual calls to MMSI's in the Buddy List are initiated with the following procedures. The Buddy List is appended to the Send Call Main Menu. Pressing the **DSC** key at any time aborts the current function and selects the Send Call Main Menu.

1. Press the **DSC** key.
The Send Call Menu appears in the text area of the display.
2. Rotate the **Channel/Select** knob to select the desired name within the Buddy List. Push the **Channel/Select** knob to confirm.

The Send Call Menu reconfigures to display the Talk Channel selection screen.

The Call Type is defaulted as ROUTINE.

3. Rotate the **Channel/Select** knob to select the talk channel. Press the **Channel/Select** knob to enter the channel.

The Text Area displays the CALLING {Name} message while the call is made.

If the call is acknowledged, the text area momentarily displays the {Name} ACKNOWLEDGED message and the radio tunes to the Talk Channel and returns to normal VHF operation.

If the call is NOT acknowledged, the Try Again Confirmation menu is displayed. See 5.3.3.2.1.

If the call is acknowledged with unable to comply, the text area will display "UNABLE TO ACKNOWLEDGED" and pressing **Channel/Select** key may re-send.

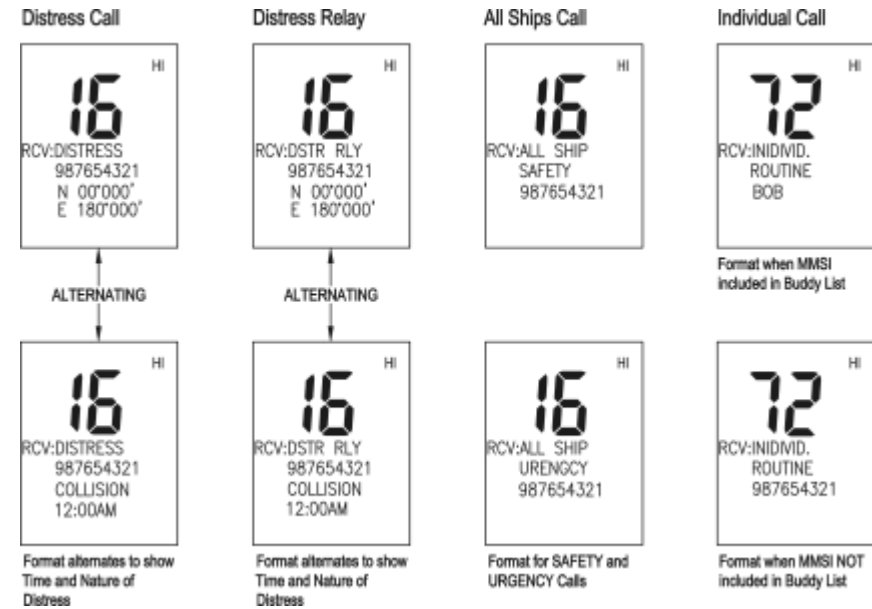
5.3.3.2.1 Re-sending an Individual Call

1. From the Try Again Confirmation menu, select "YES" and push the **Channel/Select** key to send again. Or, select "NO" and press the **Channel/Select** key to cancel.

5.4 RECEIVING A DSC CALL

When a DSC call is received and DSC is Active, the Base Station automatically responds based on the type of call. When the Radio is in DSC Standby, the automatic functions are disabled, and the calls are stored in the Call Log. The icon "✉" is displayed on the LCD top line.

The information displayed on the LCD varies depending upon the call type. See chart below.



5.4.1 DISTRESS CALL

When a distress call is received, the Base Station automatically tunes to channel 16, and the Distress Alarm Tone sounds. Pressing any key disables the alarm.

When position data is included within the signal, it is displayed in the Text Area of the LCD. When no position data is included within the signal, the message "X--, - - Y--, --" is displayed in the Text Area of the LCD.

5.4.2 DISTRESS RELAY CALL

When a Distress Relay Call is received, the Base Station automatically tunes to Channel 16, and the Distress Alarm Tone sounds. Pressing any key disables the alarm.

When position data is included within the signal, it is displayed in the Text Area of the LCD.

5.4.3 ALL SHIPS CALL

When an All Ships Call is received, the Base Station automatically tunes to the Channel 16, and the Emergency Alarm Tone Sounds. Press any key to disable the alarm.

5.4.4 INDIVIDUAL CALL

When an Individual call is received and the radio is set for DSC Active, the Base Station automatically tunes to the channel designated in the DSC signal, and the Call Alarm Tone Sounds. Press any key to disable the alarm.

The MMSI contained within the signal is displayed on the Text Area of the display. If the MMSI correlates to an MMSI stored in the Buddy List, the corresponding name is displayed in place of the MMSI.

When an Individual call is received and the radio is set for DSC Standby, the Base Station stores the DSC signal data in the Call Log. The radio is not automatically tuned to the designated channel.

SET-UP MENU

6.1 DESCRIPTION

A series of set up selections are available in a special mode accessed at start-up. To enter SET UP operation, press and hold **DSC** key for greater than 1 second at any time to abort the current function. The Text area displays the Set-Up Menu list.

6.1.1 SET-UP MENU NAVIGATION

Items within the Set-Up Menu list are selected by rotating the **Channel/Select** knob. To confirm a selected item for adjustment, push the **Channel/Select** knob. The display reconfigures allowing the item to be adjusted with **Channel/Select** knob. When the desired setting is achieved, press the **Channel/Select** knob to enter the setting, and move back to the Main Menu list. Set Up operation is exited by turning the unit off. All changes are remembered in EEPROM.

During Set-Up operation, no other radio features are available. TX and RX are disabled.

6.1.2 SET UP FUNCTIONS AND RANGE OF ADJUSTMENT

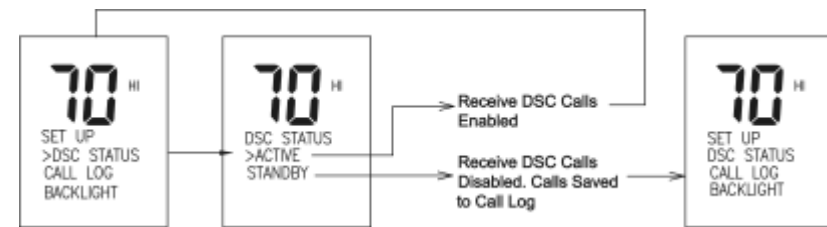
Items in the SET-UP Menu are as follows and appear in this sequence.

DSC Mode	selects either "ACTIVE" or "STANDBY". When set to "ACTIVE", the radio acknowledges incoming DSC calls and tunes to the appropriate frequency; when set to "STANDBY", the radio does not acknowledge incoming DSC calls, and logs them in CALL LOG.
Call Log	Provides access calls stored when the DSC Mode is set to "STANDBY".
Backlight	Selects the display backlight setting either HIGH, LOW or OFF setting. Note the display backlight is always on, unless set to OFF with this function.
Buddy List	Selects the Buddy List Entry routine to enter Names and MMSI's for frequently called DSC stations.

Position	Selects the Buddy List Entry routine to enter longitude and latitude.
Time	Selects the Buddy List Entry routine to enter the time.
Contrast	Selects display contrast setting: 1-4 levels.
Key Beep	Selects key beep volume, either HIGH or LOW.
Time Offset	Selects Time offset to correct UTM to local time. Setting range is -13 to +13. (New Zealand Daylight Savings Time requires a 13 hours offset.)
User MMSI	Selects the User MMSI Entry routine to enter the radio's user name and MMSI.
Reset	Select options to reset radio to factory settings. Select "SETTINGS" to return all user settings (Not User MMSI and Buddy List) to factory settings. Select Buddy List to Erase individual selections within the Buddy List.

6.2 DSC MODE ADJUSTMENT

1. Press and hold the **DSC** key to display the Set Up menu.
2. Push the **Channel/Select** knob to display the DSC Mode Adjustment menu.
3. Select "STANDBY" and push the **Channel/Select** knob to enter Standby as the current setting and return to the Set Up Main Menu. Select "ACTIVE" and press the **Channel/Select** knob to enter ACTIVE as the current setting and return to the Set Up Main Menu.

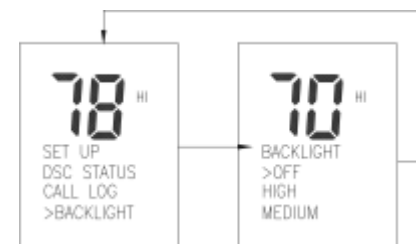


6.3 CALL LOG OPERATION

1. Press and hold the **DSC** key.
2. Rotate the **Channel/Select** knob to select "CALL LOG". Press the **Channel/Select** knob to display the Call Log.
3. Distress Call and Individual Call will be logged into CALL LOG. Maximum amount of logs for "DISTRESS CALL" is ten, while the one for "INDIVIDUAL" is twenty.
4. The Individual Call log sub-menu provides "CALL BACK" or "DELETE" selection item, while for Distress Call there is only "DELETE" selection.

6.4 BACKLIGHT ADJUSTMENT

1. Press and hold **DSC** key.
2. Rotate the **Channel/Select** knob to select "BACKLIGHT". Press the **Channel/Select** knob to display the Backlight Adjustment menu.
3. Rotate the **Channel/Select** knob to adjust the setting. Press the **Channel/Select** knob to permanently enter the setting and return to the Set-Up Menu.



6.5 BUDDY LIST ENTRY

Press and hold **DSC** key to display the Set Up menu.

Rotate the **Channel/Select** knob to select Buddy List. Press the **Channel/Select** knob to select Buddy List for enter.

The display reconfigures to show the Buddy List entry screen.

Rotate the **Channel/Select** knob to select the first character (A-Z, 1-9, Space and Back Arrow "<") for the name. When the desired character is shown, push the **Channel/Select** knob to enter, and subsequently activate the next character for adjustment. Enter each character (up to 12) for the name using this procedure. When the last digit is entered, the activation advances to the first MMSI digit.

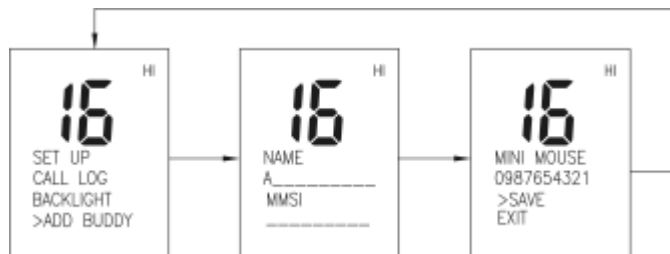
*The characters available in the digit string are 0-9, A-Z and "<" (back arrow). Selecting the "<" and pressing the **Channel/Select** knob selects the previous character in the MMSI for editing.*

If two spaces are entered in sequence, the activation advances to the MMSI field; or if the last one of the 12 characters is entered, the activation advances to the MMSI field.

Enter the MMSI using the **Channel/Select** knob to select and enter the digits (0-9) for the MMSI. Once the last digit of MMSI is entered, the display advances to the confirmation menu.

*The characters available in the digit string are 0-9 AND "<" (back arrow). Selecting the "<" and pushing the **Channel/Select** knob selects the previous character in the MMSI for editing.*

From the Confirmation Menu, rotate the channel-selecting knob to select "SAVE" (default selection) and press **Channel/Select** to permanently save the Name and MMSI. Select "EXIT" and press **Channel/Select** knob to discard the information and return to the Set-Up Main Menu.



6.6 DELETE BUDDY LIST

Follow this procedure to delete entries from the Buddy List.

1. Press and hold **DSC** key to display the Set Up Main Menu.
2. Rotate the **Channel/Select** knob to select "RESET". Press the **Channel/Select** knob to enter "RESET" for adjustment.

The display reconfigures to show the Reset Menu entry screen.

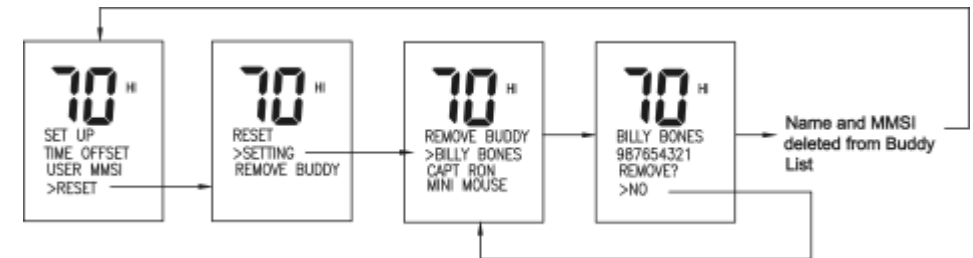
1. Rotate the **Channel/Select** knob to select "BUDDY LIST". Press the **Channel/Select** knob to enter.

The display reconfigures to show the Buddy List.

2. From the Buddy List, rotate **Channel/Select** knob to select the name to remove. Press **Channel/Select** to enter.

The Confirmation Menu appears.

3. From the Confirmation Menu, select "YES" and push **Channel/Select** to delete the name and return to the Set-Up Main Menu. Select "NO" to abort operation and return to the Set-Up Main Menu.



6.7 POSITION

1. Press and hold **DSC** key to display the Set Up menu.
2. Rotate the **Channel/Select** knob to select "POSITION". Press the **Channel/Select** knob to display the position menu.
3. Rotate the **Channel/Select** knob to select the first character (N. S.). When the desired character is shown, press the **Channel/Select** knob to enter and subsequently activate the digit string (0 – 9) and press the **Channel/Select** knob to select the digit. When the desired digit is shown, push the **Channel/Select** knob to enter.
4. When the last digit of latitude and the longitude is entered, return to the set-up menu.

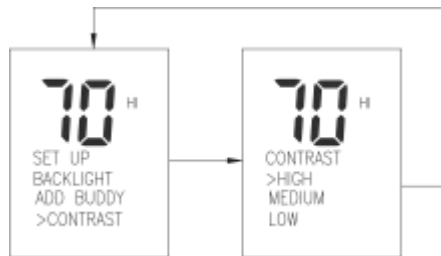
☺ **Note:** The function is valid only when your radio has been connected to a GPS receiver.

6.8 TIME

1. Press and hold **DSC** key to display the Set Up menu.
2. Rotate the **Channel/Select** knob to select "TIME".
3. Push the **Channel/Select** knob to enter into TIME adjustment, when last digits are entered, return to the set-up menu.

6.9 CONTRAST ADJUSTMENT

1. Press and hold **DSC** key to display the Set Up menu.
2. Rotate the **Channel/Select** knob to select "CONTRAST".
3. When the display reconfigures, rotate the **Channel/Select** knob to adjust the setting. Push the **Channel/Select** knob to permanently enter the setting and return to the Set-Up Menu.

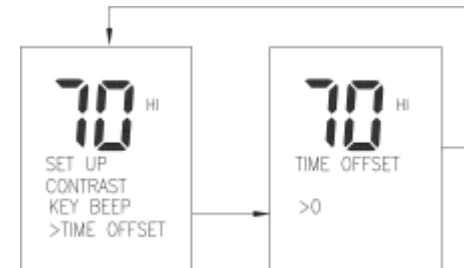


6.10 KEY BEEP ADJUSTMENT

1. Press and hold **DSC** key to display the Set Up menu.
2. Rotate the **Channel/Select** knob to select "KEY BEEP". Press the **Channel/Select** knob to select Key Beep for adjustment.
3. When the display reconfigures, rotate the **Channel/Select** knob to adjust the setting. Push the **Channel/Select** knob to permanently enter the setting and return to the Set-Up Menu.

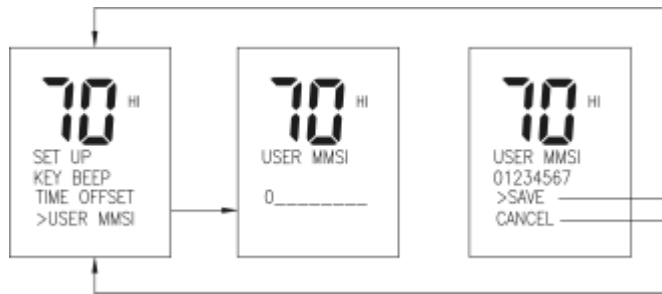
6.11 TIME OFFSET ADJUSTMENT

1. Press and hold **DSC** key to display the Set Up menu.
2. Rotate the **Channel/Select** knob to select "TIME OFFSET".
3. Press the **Channel/Select** knob to select Time Offset for adjustment. When the display reconfigures, rotate the **Channel/Select** knob to adjust the setting (-13 to +13 hours). Push the **Channel/Select** knob to permanently enter the setting and return to the Set-Up Menu.



6.12 USER MMSI ENTRY

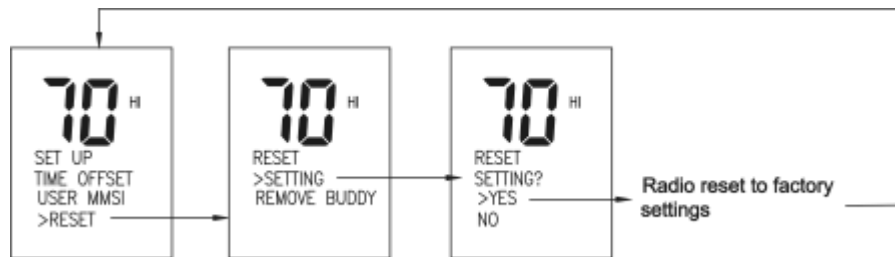
1. Press and hold **DSC** key to display the Set Up menu.
2. Rotate the **Channel/Select** knob to select "USER MMSI". Press the **Channel/Select** knob to select User MMSI for adjustment.
3. The display reconfigures to show the User MMSI entry screen.
4. Rotate the **Channel/Select** knob to select the first character (1-9, or Space or Back Arrow "<") for the MMSI. When the desired digit is shown, press the **Channel/Select** knob to enter, and subsequently select the next character for adjustment. Enter each character for the name using this procedure. When the last digit is entered, the confirmation screen appears.
5. The characters available in the digit string are 0-9 and "<" (back arrow). Selecting the "<" and pressing the **Channel/Select** knob selects the previous character in the MMSI for editing.
6. From the Confirmation Menu, Rotate the **Channel/select** knob to select "SAVE" (default selection) and press **Channel/Select** to permanently save the MMSI. Select "CANCEL" and press **Channel/Select** knob to discard the information and return to the Set-Up Main Menu.



6.13 RESET OPERATION

Follow this procedure to reset User Settings.

1. Press and hold **DSC** key to display the Set Up Main Menu.
2. Rotate the **Channel/Select** knob to select "RESET". Press the **Channel/Select** knob to select "RESET" for adjustment.
The display reconfigures to show the Reset Menu Entry screen.
3. Rotate the **Channel/Select** knob to select "USER SETTINGS". Press the **Channel/Select** knob to enter.
The display reconfigures to show the Confirmation Menu.
4. From the Confirmation Menu, select "YES" and press **Channel/Select** to reset the category, and return to the Set-Up Main Menu. Select "NO" to abort function and return to the Set-Up Main Menu.
All features are returned to factory settings, except User MMSI and Buddy List.



MAINTENANCE

Your Radio Ocean 4500 is a marine radio of water proof who can meet the requirement of JIS level 4, gives you a good reliability when using in marine circumstance.

The equipment is designed to be maintenance free. To keep your radio in good working condition:

- Never unscrew the equipment, either the base station or handset, for in such case, the water proof performance will be greatly damaged.
- If the radio becomes dirty and dusty, wipe it clean with a moisture cloth, but pay attention to never using such solvents as benzene or alcohol, for they may damage the radio surfaces.
- Once your equipment do not work properly, never allow an unqualified person to tamper with internal adjustments. Please contact the local dealer for help.

TROUBLE SHOOTING

Item	Symptom	Cause/Remedy
1	Unit can not be powered on.	<ul style="list-style-type: none"> ● Check the connection to the base station. ● Check the volume control.
2	No sound comes from the speaker	<ul style="list-style-type: none"> ● Set [VOL] to a suitable level. ● Set squelch to the threshold point.
3	Transmitting is impossible, or high power can not be selected.	<ul style="list-style-type: none"> ● Check to see if the PTT switch is defective. ● Check to see if the microphone or MIC jack is defective. ● Some channels are for low power or receive only, change to another channel. ● Push H/L to select high power.
4	Low receiver sensitivity.	<ul style="list-style-type: none"> ● Check to see if the antenna being bad connected. ● Check the connection between coaxial cable and base station.

SPECIFICATION

TX Frequency.....	156.050 ~ 157.425 MHz
RX Frequency.....	156.025 ~162.025 MHz
Channels.....	54 USA Channels 54 INT Channels 10 Memory Channels
Modulation type.....	FM
Antenna impedance.....	50 Ohm
Microphone.....	condenser type
Power supply.....	13.8V DC
Sensitivity at 12dB Sinad.....	0.5μV
Adjacent Channel Rejection.....	70dB
Audio output power.....	2W @ 8 Ohm
Audio Distortion	10%
RF Output Power.....	High: 25W/Low: 1W
Harmonic Emissions.....	High: 80dB/Low: 60dB
Dimensions (HWT).....	71×161×147mm
Weight (without batteries).....	1300g

CHANNEL LIST

USA					INT				
CH	Frequency (MHz)				CH	Frequency (MHz)			
	TX	RX	Mode	Remark		TX	RX	Mode	Remark
01A	156.050	156.050	S		01	156.050	160.650	D	
02A	156.100	156.100	S		02	156.100	160.700	D	
03A	156.150	156.150	S		03	156.150	160.750	D	
04A	156.200	156.200	S		04	156.200	160.800	D	
05A	156.250	156.250	S		05	156.250	160.850	D	
06	156.300	156.300	S		06	156.300	156.300	S	
07A	156.350	156.350	S		07	156.350	160.950	D	
08	156.400	156.400	S		08	156.400	156.400	S	
09	156.450	156.450	S		09	156.450	156.450	S	
10	156.500	156.500	S		10	156.500	156.500	S	
11	156.550	156.550	S		11	156.550	156.550	S	
12	156.600	156.600	S		12	156.600	156.600	S	
13	156.650	156.650	S		13	156.650	156.650	S	
14	156.700	156.700	S		14	156.700	156.700	S	
15	156.750	156.750	S	*	15	156.750	156.750	S	*
16	156.800	156.800	S		16	156.800	156.800	S	
17	156.850	156.850	S	*	17	156.850	156.850	S	*
18A	156.900	156.900	S		18	156.900	161.500	D	
19A	156.950	156.950	S		19	156.950	161.550	D	
20	157.000	161.600	D		20	157.000	161.600	D	
21	157.050	161.650	D		21	157.050	161.650	D	
22	157.100	161.700	D		22	157.100	161.700	D	
23	157.150	161.750	D		23	157.150	161.750	D	
24	157.200	161.800	D		24	157.200	161.800	D	
25	157.250	161.850	D		25	157.250	161.850	D	
26	157.300	161.900	D		26	157.300	161.900	D	
27	157.350	161.950	D		27	157.350	161.950	D	
28	157.400	162.000	D		28	157.400	162.000	D	

60A	156.025	156.025	S		60	156.025	160.625	D	
61A	156.075	156.075	S		61	156.075	160.675	D	
62A	156.125	156.125	S		62	156.125	160.725	D	
63A	156.175	156.175	S		63	156.175	160.775	D	
64A	156.225	156.225	S		64	156.225	160.825	D	
65A	156.275	156.275	S		65	156.275	160.875	D	
66A	156.325	156.325	S		66	156.325	160.925	D	
67	156.375	156.375	S		67	156.375	156.375	S	
68	156.425	156.425	S		68	156.425	156.425	S	
69	156.475	156.475	S		69	156.475	156.475	S	
70	156.525	156.525	S		70	156.525	156.525	S	
71	156.575	156.575	S		71	156.575	156.575	S	
72	156.625	156.625	S		72	156.625	156.625	S	
73	156.675	156.675	S		73	156.675	156.675	S	
74	156.725	156.725	S		74	156.725	156.725	S	
75									
76									
77	156.875	156.875	S		77	156.875	156.875	S	
78A	156.925	156.925	S		78	156.925	161.525	D	
79A	156.975	156.975	S		79	156.975	161.575	D	
80A	157.025	157.025	S		80	157.025	161.625	D	
81A	157.075	157.075	S		81	157.075	161.675	D	
82A	157.125	157.125	S		82	157.125	161.725	D	
83A	157.175	157.175	S		83	157.175	161.775	D	
84	157.225	161.825	D		84	157.225	161.825	D	
85	157.275	161.875	D		85	157.275	161.875	D	
86	157.325	161.925	D		86	157.325	161.925	D	
87	157.375	161.975	D		87	157.375	161.975	D	
88A	157.425	157.425	S		88	157.425	162.025	D	
						<i>55/13D/42S</i>			<i>55/35D/20S</i>

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