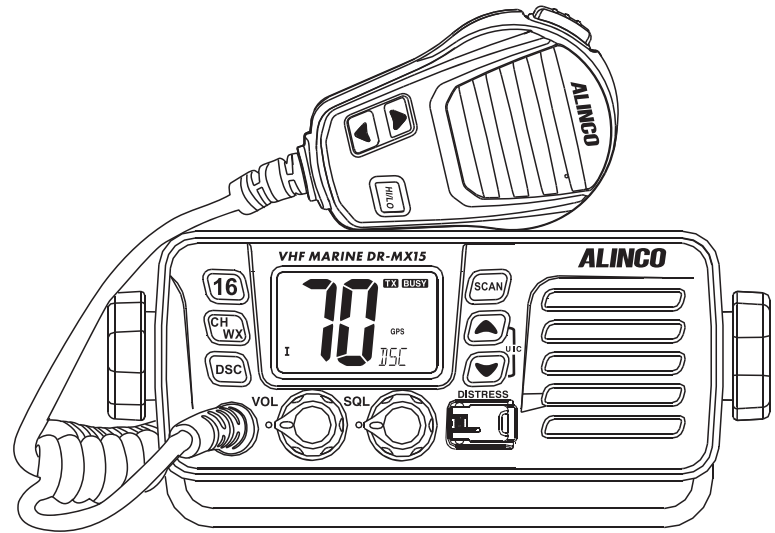


VHF Marine Transceiver

DR-MX15

Instruction Manual

Thank you for purchasing your new Alinco transceiver. Please read this manual carefully before using the product to ensure full performance, and keep this manual for future reference as it contains information on after-sales services. In case addendum or errata sheets are included with this product, please read those materials and keep them together with this instruction manual for future reference.



About VHF Marine channels

This marine radio can operate on all international, USA and Canadian VHF marine channels. Be mindful to operating channels according to the location of your vessel. Use of incorrect channels, useless transmissions and harmful interferences on marine channels may be subject to penalty and/or fine by local authority. Weather channels and alert functions are usable where N.O.A.A. weather radio signals are receivable.

Please read this manual completely from the first page to the last, to learn all the functions the product offers. It is important to note that some of the operations may be explained in relation to information in previous chapters. By reading just one part of the manual, you may risk not understanding the complete explanation of the function.

Before transmitting

There are many radio stations operating in proximity to the frequency ranges this product covers. Be careful not to cause interference when transmitting around such radio stations.

■ Electromagnetic Interference/Compatibility

During transmissions, your radio generates RF energy that can possibly cause interference with other devices or systems. To avoid such interference, turn off the radio in areas where signs are posted to do so.

■ DISTRESS CALL PROCEDURE (GPS, MMSI registration and preprogramming required.)

1. Open the red key cover, press and hold [DISTRESS] key for 5 seconds. The channel changes to CH70, Beep sounds 5 times and transmits a distress call.
2. Wait for an acknowledgment (ACK) on Channel 70. It automatically retries the call until ACK signal is received.
 - After the ACK is received, the channel changes to CH16 automatically.
3. Press [PTT] and call MAYDAY 3 times, name of your vessel and nature of distress and request of assistance.

Features

- **Ultra compact, Output power selectable 25W/1W**
- **Waterproof IPX7**
- **Dual-watch/Tri-watch Function**
- **DSC built-in**
- **Various scan modes, Key lock**
- **Weather Alert Function**
- **Bright LCD and easy-to-operate backlit**
- **Position Indication on display (Optional GPS receiver required)**

■ Emergency Calling Procedure on CH16




If your DR-MX15 is not equipped with GPS receiver (without DSC setting) and in case your vessel requires assistance, contact other vessels and the appropriate Coast Guard by sending a distress call on Channel 16.




Set the 16CH and:

1. Call "MAYDAY" 3 times.
2. "THIS IS (name of your vessel)"
3. Your call sign or other identification of the vessel if any.
4. "LOCATED AT (your position)"
5. The nature of the distress and assistance required.
6. Any other information which might facilitate the rescue.



WARNING

To prevent any hazard during operation of Alinco's radio product, in this manual and on the product you may find symbols shown below. Please read and understand the meanings of these symbols before starting to use the product.

 Danger	This symbol is intended to alert the user to an immediate danger that may cause loss of life and property if the user disregards the warning.
 Alert	This symbol is intended to alert the user to a possible hazard that may cause loss of life and property if the user disregards the warning.
 Caution	This symbol is intended to alert the user a possible hazard that may cause loss of property or injure the user if the warning is disregarded.









	Alert symbol. An explanation is given.
	Warning symbol. An explanation is given.
	Instruction symbol. An explanation is given.

■ Environment and condition of use

-  The manufacturer declines any responsibilities against loss of life and/or property by missing contacts due to failure of this product.
-  A license may be required to operate this device. Please consult with your dealer about radio laws and regulations before purchase.

ALERT

■ Environment and condition of use

-  DO NOT use or place the radio in direct sunlight or in areas with temperatures range of below -20°C or above +55°C. Be mindful to keep the radio warm in extremely cold place as low temperature may temporary cause the drop of voltage to batteries.
-  Do not use this product in close proximity to other electronics devices, especially medical ones. It may cause interference to those devices.
-  Keep the radio out of the reach of children.
-  In case a liquid leaks from the product, do not touch it. It may damage your skin. Rinse with plenty of cold water if the liquid contacted your skin.
-  Never operate this product in facilities where radio products are prohibited for use such as aboard aircraft, in airports, within or near the operating area of business wireless stations or their relay stations.
-  Do not use multiple radios in very close proximity. It may cause interference and/or damage to the product(s).
-  The manufacturer declines any responsibilities against loss of life and property due to a failure of this product when used with or as a part of a device made by third parties.
-  Use of third party accessory may result in damage to this product. It will void our warranty for repair.

WARNING

Handling this product

- ⚠ Be sure to reduce the audio output level before operating. Excessive audio may damage hearing.
- 🚫 Do not open the unit without permission or instruction from the manufacturer. Unauthorized modification or repair may result in electric shock, fire and/or malfunction.
- 🚫 Do not touch the heatsink as it may become very hot during/after the operation that may risk burn your skin.

■ About power-supply: (Coast station)

- ⚠ Use only appropriate, reliable and certified power supply of correct voltage and capacity. (13.8VDC, 10A class recommended)
- 🚫 Do not connect cables in reverse polarity. It may result in electric shock, fire and/or malfunction.
- 🚫 Do not plug multiple devices including the power-supply into a single wall outlet. It may result in overheating and/or fire.
- 🚫 Do not handle a power-supply with a wet hand. It may result in electric shock.
- ⚠ Securely plug the power-supply to the wall outlet. Insecure installation may result in short-circuit, electronic shock and/or fire.
- 🚫 Do not plug the power-supply into the wall outlet if the contacts are dirty and/or dusty. Shortcircuiting and/or overheating may result in fire, electric shock and/or damage to the product.
- 🚫 Do not modify or remove fuse-assembly from the DC-cable. It may result in fire, electric shock and/or damage to the product.

- ⚠ For your safety, turn off then remove all related AC-lines to the product and its accessories including the antenna if a thunderstorm is likely.

■ In case of emergency

In case of the following situation(s), please turn off the product, switch off the source of power, then remove or unplug the power-cord. Please contact your local dealer of this product for service and assistance. Do not use the product until the trouble is resolved. Do not try to troubleshoot the problem by yourself. Unauthorized repair voids warranty of product and ingress protection.

- When a strange sound, smoke and or strange odor comes out of the product.
- When the product is dropped or the case is broken or cracked.
- When a liquid penetrated inside.
- When a power-cord (including DC-cables, AC-cables and adapters) is damaged.

■ Maintenance

- 🚫 Do not open the unit and its accessories. Please consult with your local dealer of this product for service and assistance.
- ⚠ Use slightly wet clean cloth to wipe off dirt and salt condensation from the surface after every use. Never use high-pressure running water, thinner or benzene for cleaning. Those substances may cause damages to product. IPX7 grade is NOT a perfect waterproof.

WARNING

⚠ CAUTION

■ Environment and condition of use

- 🚫 Do not use the product in proximity to a audio products such as TV, radio and stereo. It may cause interference or receive interference.
- 🚫 DO NOT submerge the radio when dropped to hard floor. It may risk possible damage to the case and water-protection shields to cause leak inside. The components inside of radio are NOT water-proof.
- 🚫 Do not install in an unstable position. It may result in electric shock, fire and/or malfunction when/if the product falls to the ground.
- 🚫 Do not install the product in proximity to a source of heat and humidity such as a heater or a stove. Avoid placing the unit in direct sunlight.

■ About radio

- 🚫 Do not connect devices other than specified ones to the jacks and ports on the product. It may result in damage to the devices.
- ⚠ Turn off and remove the power-source (AC cable, DC cable, battery, cigar-cable, charger adapter etc) from the product when the product is not in use for extended period of time or in case of maintenance.

■ About power-supply (Coast station)

- ⚠ Always turn off the power supply when connecting or disconnecting the cables.
- ⚠ When using an external antenna, make sure that the antenna ground is not common with the ground of the power supply.
- 🚫 Do not put magnetic cards like credit card, magnetic key etc. on/around the radio. It may risk deleting data from the cards.

■ Radio Operator Warning

This radio generates RF electromagnetic energy while transmitting.

- DO NOT operate the radio without a proper antenna attached, as this may damage the radio and may also cause you to exceed RF exposure limits.
- Never touch the antenna while transmitting. It may cause an electric shock. The radio is transmitting when the "TX" icon appears on the LCD. You can cause the radio to transmit by pressing the "PTT" key on the microphone.
- The RF-exposure limit distance between the antenna and a crew may differ depending on type and position of the antenna, output power and the location of crews (inside/outside of the vessel). At any case no one should stay extremely close to the antenna while transmitting.



Check with your local waste officials for details on recycling or proper disposal of the electronics product, battery-packs and accessories in your area.

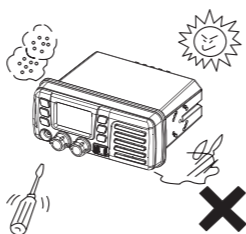


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Before Operating the Radio

Attention

- Do not remove the case or touch the interior components. Tampering can cause equipment trouble.
- Do not use or keep the radio where it is exposed to direct sunlight, dusty places, or near sources of heat.
- When transmitting for long periods of time at high power, the radio might overheat. This product is NOT a 100% duty transmitter.
- This radio has temperature and overvoltage protection circuits built-in.
 - When overheated, the output power automatically decreases to 1W until it cools down.
 - When connected to wrong DC power source, it won't turn on.



The radio has no protection against lightning

The user is responsible for providing adequate protection if he/she uses the device and installs the antenna outside. Be aware that any outdoor antenna creates a direct path for lightning current (more than 10kA) to the radio. This path exists whether the device is turned ON or OFF.

At any case Alinco declines any responsibility against any damages caused by lightning and other disasters.

Priorities

- Read all rules and regulations pertaining to priorities and keep an up-to-date copy handy. Safety and distress calls take priority over all others.
- You must monitor Channel 16 when you are not operating on another channel.
- False or fraudulent distress signals are prohibited and punishable by law.

Privacy

- Information overheard but not intended for you cannot lawfully be used in any way.
- Indecent or profane language is prohibited.

Operation's License

A licence is required to operate this VHF marine radio except in case of making a distress call. However, non-licensed crews may operate when a licensed operator starts, supervises, ends the call and makes necessary log entries. Keep a copy of your government rules and regulations aboard.

Station License

SHIP STATION LICENSE is also required before using this VHF marine radio. It is illegal to operate a ship station without the license. Inquire through your dealer or the appropriate government agency for information.

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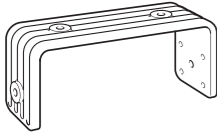
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1 Supplied Accessories

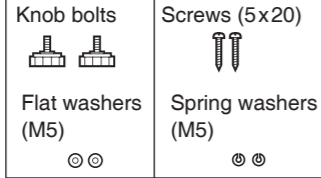
■ SUPPLIED ACCESSORIES

Carefully unpack to make sure the following items are found in the package in addition to this manual:

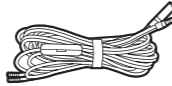
Mounting bracket



For mounting bracket



DC power cable (ADUA98)



Microphone hanger and screws (3x16)



1 ■ REQUIRED OPTIONAL ACCESSORIES

An optional external speaker, GPS receiver*, VHF marine antenna with relative cable / base and a DC converter (commonly available 24VDC to 13.8VDC converter which 10A-class is recommended) may be required to properly operate. Please consult your ship / radio dealers for details of installations.

* NMEA0183 ver.2.0 or 3.01 (RMC, GGA, GNS, GLL) compatible

IMPORTANT

■ About MMSI number to operate optional DSC features.

Coast Guards use DSC to monitor distress calls, initiate communications, and reports urgent maritime information. All vessels operating on the high seas require a MMSI number to participate in the Global Maritime Distress and Safety System. To use Distress related functions in this product, besides GPS receiver, MMSI number of your vessel is required. Please consult your dealer for how to apply for MMSI in your country. Note that MMSI is not assigned to the radio, but to the vessel.

2 Initial Installation

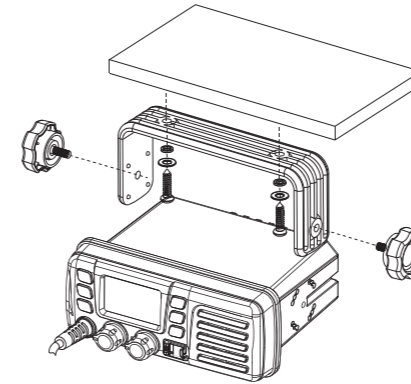
■ MOBILE INSTALLATION

✘ USING THE SUPPLIED MOUNTING BRACKET

The radio may be installed in any position in your vessel, where the controls and microphone are easily accessible and it does not interfere with the safe operation of the vessel. Keep the radio and microphone at least 1 meter away from the magnetic navigation compass. Be sure to check the visibility of the display as LCD can't be seen well due to its viewing angle.

Mount the transceiver securely with the 2 supplied screws (5x20) to a surface which is more than 10 mm thick and can support more than 5kg. Mount the radio so that the front panel at 90° to your line of sight when operating it.

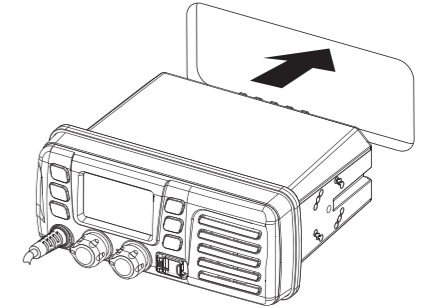
Use a cushion such as rubber or spongy sheet between the radio and mounting surface to reduce vibration.



✘ EMBEDDED MOUNTING

1. Cut a hole into the instrument panel (or wherever you plan to mount the transceiver).
2. Slide the radio through the holes as shown below.

Dimensions are shown in P.4.

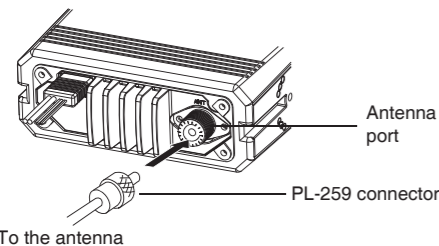


NOTE

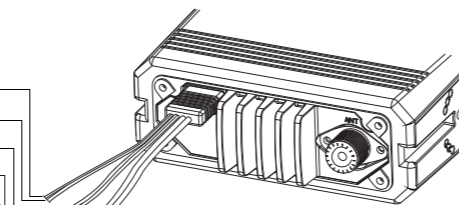
The heatsink located on the rear panel may become hot while/ after using the transceiver. Be mindful to take enough space around the heatsink for effective heat radiation and avoiding heat damages to the structure around.

ANTENNA CONNECTION

Please connect an antenna before transmitting. Use appropriate VHF marine-radio antenna and connect to the ANT (antenna) port. The coax cable must be 50Ω. Please consult with your dealer for antenna and necessary hardware.

**CONNECTIONS**

Yellow: NMEA IN (+)
Green: NMEA IN (-)
Blue: Speaker (+)
Gray: Speaker (-)
Black: GND (-)
Red: DC13.8V (+)

**GPS RECEIVER LEAD**

Connect the yellow lead "NMEA IN(+)" and green lead "NMEA IN(-)" to a GPS receiver for position indication.

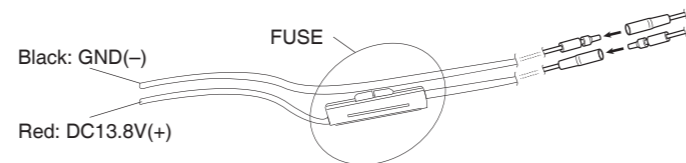
- An NMEA0183 ver.2.0 or 3.01 (sentence formatters RMC, GNS, GLL) compatible GPS receiver is required.

EXTERNAL SPEAKER LEAD

Connect the blue lead "Speaker(+)" and gray lead "Speaker(-)" to an external speaker. An external speaker with output 5W, impedance 4Ω is recommended to connect.

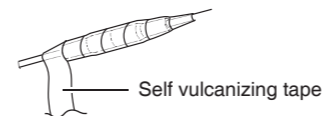
DC POWER CONNECTOR

Connect the supplied DC power cable from this connector to an external 13.8V DC power source. NEVER connect to 24VDC direct.



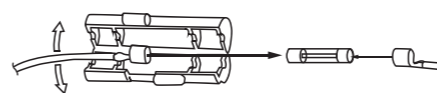
IMPORTANT: Transmitting without first connecting an antenna or other matched load may damage the transceiver. Always connect the antenna to the transceiver before transmitting. All fixed stations should be equipped with a lightning arrester to reduce the risk of fire, electric shock, and damages.

After connecting the DC power cable, GPS receiver lead and external speaker lead, cover the connector and leads with an adhesive tape as below, to prevent water seeping into the transceiver.

**FUSE REPLACEMENT**

If a fuse blows, remove the DC cable, fix the cause of trouble and replace it with a spare. Consult your radio / ship dealer if it continues to blow.

- Please power off before replacing the fuse, the required fuse is DC10A/250V.

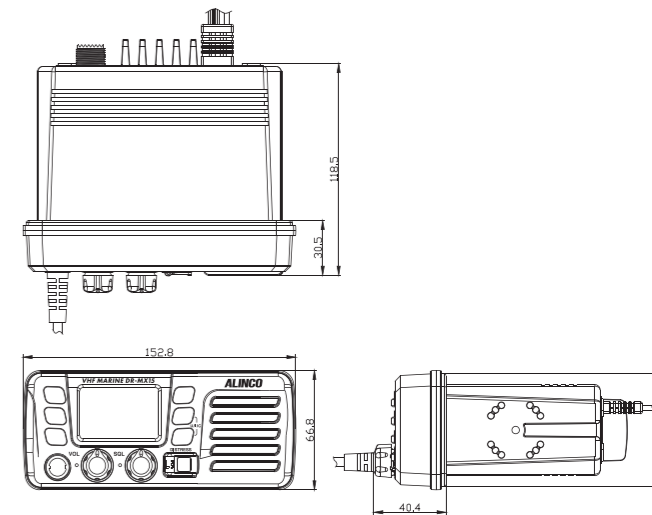


NOTE

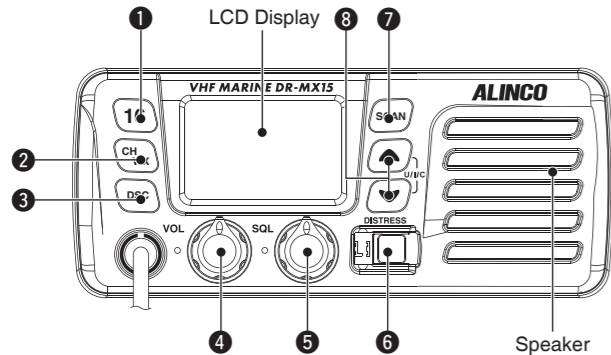
Avoid using the high-power marine radio when the ship battery is not sufficiently charged. Transmitting high power consumes current and risks battery discharge. Transmitting high-power drains nearly 5.5A.

DIMENSIONS

Unit: mm



FRONT PANEL



5



NOTE

- In this manual, “Press” means you press the key securely once and release immediately. Pressing too long may activate different functions.
- Explanations herein may be abbreviated and details are explained in following chapters.

1 Channel 16 / Call Channel Key [16]

Press to select Channel 16.

Press and hold for 1 sec. to select call channel.

- “CALL” appears when the call channel is selected.

This key is also used for Set mode operation and channel name programming.

2 Channel / Weather Channel Key

Press to select regular marine or weather channels.

This key is also used to operate Dual and Tri-watch functions.

3 DSC / Position Key

Press to enter DSC menu.

Press and hold for 1 sec. to show the current position from a GPS receiver. (Optional GPS receiver required)

4 Power / Volume Control [VOL]

Rotate to turn the power ON and OFF and adjust the audio level.

5 Squelch Control [SQL]

Rotate to set the squelch level.

6 Distress Key [DISTRESS]

Press and hold for 5 sec. to transmit a Distress call.

7 Scan Key [SCAN]

This key is also used for TAG (favorite) channel setting.

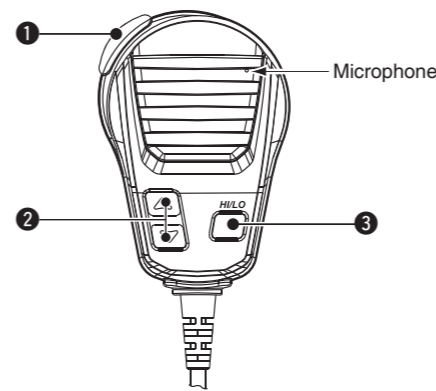
8 [▲][▼] / [U/I/C]

Select the operating channels, set mode settings, etc.

While Pressing and holding [SCAN], Press [▲] or [▼] to adjust the brightness of the LCD and key backlight.

Select one of three channel groups in sequence when both keys are pressed.

MICROPHONE



1 Press-To-Talk key [PTT]

Press and hold to transmit; release to receive.

2 UP/DOWN KEYS [▲]/[▼]

Press either key to change the operating channel, Set mode settings, etc. There are other triangle keys on the radio so these keys are referred to as UP/DOWN keys hereafter.

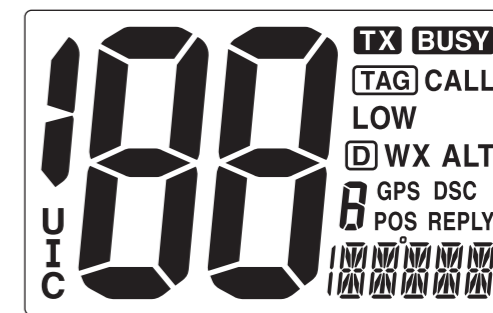
Select OFF for the FAVORITE CH menu in the SET mode to operate all channels. The default is ON, and only TAG channels can be selected by pressing UP/DOWN keys.

3 TRANSMIT POWER KEY [HI/LO]

Press to select high and low output power.


- Some marine channels are fixed to low power only due to international regulations. Turn on with [HI/LO] key pressed to lock UP/DOWN keys.



DISPLAY AND ICONS



Icon	Description
TX	Appears while transmitting.
BUSY	Appears when receiving a signal or when the squelch opens.
TAG	Appears when a TAG channel is selected.
CALL	Appears when the call channel is selected.
LOW	Appears when low power is selected.

6

Icon	Description
WX ALT	<ul style="list-style-type: none"> “WX” appears when a weather channel is selected. “WX ALT” appears when the weather alert function is in use; blinks when an alert tone is received.
D	Appears when a duplex channel is selected.
GPS	<ul style="list-style-type: none"> Appears while valid position data is received. Blinks when invalid position data is received. Disappears when no GPS receiver is connected.
DSC	Appears while operating DSC.
POS REPLY	Appears while operating Position functions.
	<ul style="list-style-type: none"> Alphanumeric channel information appears if programmed. “LOW BATTERY” scrolls when the DC voltage is close to the lower limit of normal operations. “SC” blinks during priority scan; “SCAN” blinks during normal scan. “DW” blinks during Dualwatch; “TW” blinks during Tri-watch.

Icon	Description
	<ul style="list-style-type: none"> Indicates the selected operating channel number. (Refer to channel list) In set mode, indicate the menu and parameters.
	Indicates whether U.S.A. “U”, International “I” or Canadian “C” channel group is in use.

POWER ON / OFF

- Rotate [VOL] clockwise to turn power on;
- Rotate [VOL] counter-clockwise to turn power off.

RECEIVING AND TRANSMITTING

TRANSMITTING

- Press [HI/LO] on the microphone to select the output power if necessary.
 - “LOW” appears when low power is selected.
 - Choose low power for short range communication, choose high power for longer distance communication.
 - Some channels are for low power only. See appendix for channel restrictions.
- Press and hold [PTT] to transmit, then speak into the microphone.
 - “TX” is displayed while transmitting.
 - Channel 70 cannot be used for transmission other than DSC.
- Release [PTT] to receive.



NOTE

Activate Time out timer (TOT) in SET mode to prohibit a continuous transmission exceeding 5 minutes. After being time-out, it automatically returns to receive and prohibits transmission for 10 seconds as a TOT penalty.

RECEIVING

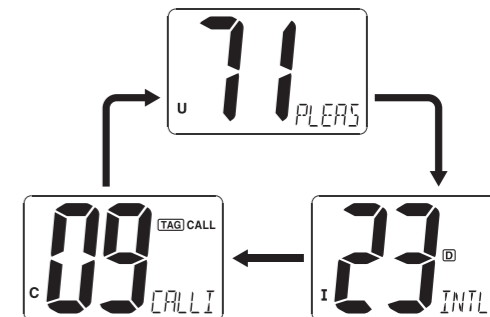
- Set the audio and squelch levels.
- Rotate [SQL] fully counterclockwise in advance.
- Rotate [VOL] to adjust the audio output level.
- Rotate [SQL] clockwise until the noise disappears.

- “When receiving a signal, “BUSY” appears and audio is emitted from the speaker.

CHANNEL GROUP SELECTION

This radio is pre-programmed with 59 U.S.A., 59 international and 63 Canadian channels, Select channel group according to the int'l rules to operate properly.

- Press [CH/WX] to select a marine channel.
 - If a weather channel appears, Press [CH/WX] again.
- Press [U/I/C] (both [▲] and [▼]) keys to change the channel group.
 - U.S.A., International and Canadian channel groups can be selected in sequence. Observe the display for U.I and C icons.
- Press [▲] or [▼] to select a channel.
 - “D” appears for duplex channels.



CHANNEL SELECTION

✘ CHANNEL 16 : IMPORTANT

Channel 16 is the distress and safety channel. It is used for establishing initial contact with a station and for emergency communication. Channel 16 is monitored during both Dual-watch and Tri-watch. While in standby, you must monitor Channel 16.

1. Press **[16]** to select Channel 16.
2. Press **[CH/WX]** to return to the condition before selecting Channel 16, or Press **[▲]** or **[▼]** to select operating channel.



When TAG (favorite) channels are set, you may use UP/DOWN keys on the microphone to select a channel.

✘ CHANNEL 9 (CALL CHANNEL)

Each marine channel group has a separate call channel for pleasure use. The call channel is monitored during Tri-watch. This function can be used also as a memory channel to store your favorite channel in each channel group for quick recall.

Press **[16]** for 1 second to select the call channel of the selected channel group. CALL and call channel number appears on the display. Default setting is CH9.

- Press **[CH/WX]** to return to the previous channel, or use **[▲]/[▼]** keys on the radio to change the channel to operate. There are oth-

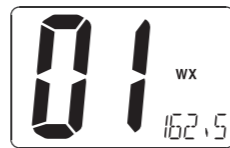
er **[▲]/[▼]** keys on the microphone, so these keys are referred to as **[U/I/C]** keys or **[U/I/C]** (either one) hereafter.



✘ WEATHER CHANNELS

10 weather channels are preprogrammed. While monitoring or scanning WX channels, automatically detects a weather alert tone. When Alert function is activated in the Set mode, WX ALT icon appears on the display and it blinks when an alert tone is being received.

1. Press **[CH/WX]** to select the weather channel group. "WX" is displayed.
- "WX ALT" is displayed when the Weather alert function is activated in the Set mode.
2. Press **[▲]/[▼]** to select a channel to monitor.
3. Press **[CH/WX]** again to switch to the marine channels.
- The radio does not transmit on WX channels, and alarm beep sounds when PTT is pressed.



When weather alert is OFF.



When weather alert is ON.



Weather channel related functions are usable only where the NOAA weather station signals are available.

CALL CHANNEL PROGRAMMING

You may replace a default CH9 to the channel of your preference.

1 CALL channel is available to all 3 marine channel groups for a quick access to your favorite channel.

1. Press both **[U/I/C]** keys several times to select the desired channel group (U.S.A., International or Canada) to program the CALL channel.
2. Press **[16]** for 1 second to display the call channel in the selected group.
3. Press **[16]** again for 3 seconds until beep is gone and the channel starts blinking.



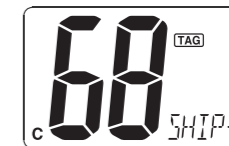
4. Press **[U/I/C]** to select a channel to be stored.
5. Press **[16]** to set, or press **[CH/WX]** to cancel.



CHANNEL NAME

Memory channels can be labeled alphanumerically. Up to 10 combinations of Capital letters, small letters except f, j, k, p, s, v, x, z, numbers 0 to 9, some symbols (=+ - . /) and space can be used. In case the character exceeds 6, the display scrolls.

1. Select the desired channel.
- Cancel Dualwatch, Tri-watch or scan in advance.
2. While Pressing **[CH/WX]**, Press **[16]** to edit the channel name.
- A cursor and the first character start blinking alternately.

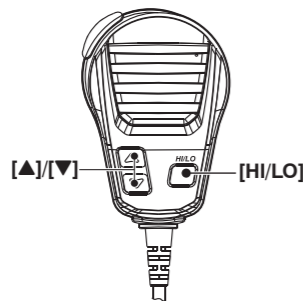


3. Press **[▲]** or **[▼]** to select the desired character.
- Press **[16]** or **[CH/WX]** to move the cursor forward or backward respectively.
4. Repeat step 3 to complete the programming.
5. Press **[DSC]** to set.
- Press **[SCAN]** to cancel.
- The cursor and the character stop blinking.

UP / DOWN KEY LOCK

Turn the power ON with [HI/LO] key pressed to key lock, repeat to unlock.

This is to avoid misoperation of UP/DOWN keys. PTT and HI/LO keys can't be locked.



BRIGHTNESS OF THE DISPLAY

Change the brightness of the display to suit your preference.

Pressing and holding [SCAN], press [▲]/[▼].

- [▼] to decrease, [▲] to increase.

3 levels and OFF are selectable. Release keys to set.

SCAN

Use this function to search signals without key operation. Priority scan and Channel scan are available. When the Weather alert function is activated, the selected weather channel is monitored during the scan.

- Select the scan type in the SET mode (P.27) after reading this chapter.

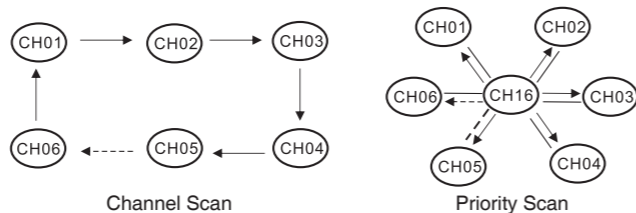
Channel Scan:

Searches all TAG channels. TAG setting is necessary in advance to use this function. See the next chapter for setting.

Priority Scan:

Searches all tag channels while monitoring CH16. A small 16 is displayed on the right bottom corner of the display when Priority scan is selected.

- When a signal is detected on Channel 16, scan stops until the signal is gone.
- When a signal is received on channels other than 16, the scan mode becomes like a Dualwatch. (P.12)



SETTING TAG CHANNELS

The channels to be scanned must be set as TAG channels. Channels that are not tagged are excluded from scanning. TAG channels can be assigned to each marine channel groups separately.

1. Select desired group by pressing [U/I/C] keys together.
2. Select desired channel to be a TAG.
3. Press and hold [SCAN] for a second until TAG is displayed to set.
 - Repeat 3 to delete TAG setting.

You may set or delete ALL TAG channels at once.

While pressing [HI/LO] on the microphone, press and hold [SCAN] for 3 seconds until a beep stops. Observe that TAG appears or disappears on the display. Operate as above 2 and 3 to edit to suit your preference.

SCAN OPERATION

Refer to P.27 in the Set mode and select either Priority or Channel scan and its resume condition in advance, and select the channel group to be scanned by [U/I/C] pressed together.

1. Set TAG channels as explained in previous chapter.
2. Be sure that the squelch is set at proper level without noise.
3. Press [SCAN] to start. SC blinks and channel numbers automatically change.
4. When a signal is received, it stops and resumes scanning in accordance with the selected resume condition in the SET mode.
5. Press [U/I/C] to momentarily stop scanning, hold either [U/I/C] to go backward or forward, or resume scanning manually.

- SC16 blinks on the display when a signal is received on Channel 16 during Priority scan.
6. Press [SCAN] again to stop scanning.

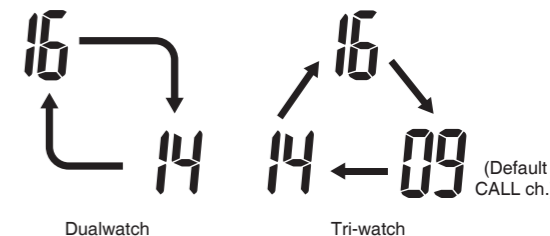
DUALWATCH AND TRIWATCH

This is a convenient way to monitor your operating channel and important channels simultaneously.

Dualwatch monitors CH16 and your operating channel alternately. In case 2 signals are received at the same time, CH 16 has priority. When a signal is received, stays monitoring it until gone. Press PTT key within 3 seconds after that to reply on the same channel, or leave it for more than 3 seconds to return to Dualwatch. Press PTT to transmit on your operating channel at any time except CH16 operating condition.

Triwatch monitors CH16, CALL and your operating channel alternately. In case signals are received at the same time, CH 16 has the first priority followed by CALL. When a signal is received, stays monitoring it until gone. Press PTT key within 3 seconds after that to reply on the same channel, or leave it for more than 3 seconds to return to Triwatch. Press

PTT to transmit on your operating channel at any time except CH16 or CALL operating conditions.



Operation:

1. Select Dualwatch or Triwatch in the SET mode.
2. Select the desired operating channel.
3. Press and hold [CH/WX] for 1 second to start Dualwatch or Triwatch.
 - "DW" blinks while Dualwatch, "TW" blinks while Triwatch.
 - A beep sounds when a signal is received on Channel 16.
4. To cancel Dualwatch or Triwatch, Press [CH/WX].



Dualwatch



Triwatch



NOTE 16 and CALL are not displayed in large characters on the screen during Dual and Triwatch monitoring.

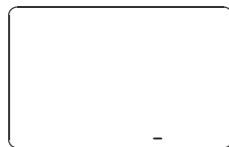
IMPORTANT NOTICE

MMSI and DSC related programming are explained in this section. GPS receiver is required and programming is necessary before start operating. Please consult your dealer for proper programming if you are not familiar with these functions.

MMSI CODE PROGRAMMING

IMPORTANT: The 9-digit MMSI (Maritime Mobile Service Identity: DSC self ID) code is programmable only twice, and not available when the MMSI code has been preprogrammed by your dealer already.

1. Rotate **[VOL]** to turn OFF. While pressing and holding **[DSC]**, rotate **[VOL]** to turn ON.
2. Release **[DSC]**. A blinking cursor appears on the display.



3. Use **[U/I/C]** keys to enter the 9-digit MMSI code.
 - Press **[16]** or **[CH/WX]** to move the cursor forward or backward.
4. After being completed, press **[DSC]** to set and exit from MMSI programming.

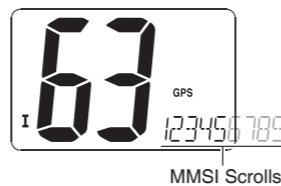
TO DISPLAY YOUR MMSI CODE

To display your MMSI (DSC self ID) code:

5. Press **[DSC]** to enter DSC mode. Press **[U/I/C]** keys to select MMSI displaying.



6. Press **[DSC]**, 9-digit MMSI (DSC self ID) code scrolls on the right bottom of the display.



7. Press **[DSC]** to complete.

DSC ADDRESS ID

DSC (Digital Selective Calling) is used for calling specific vessels. Up to 30 DSC address IDs can be stored with up to 5 digit alphanumeric name labels. Follow this procedure to set both INDIVIDUAL and GROUP IDs.

PROGRAMMING DSC ADDRESS ID

To make Individual calls (to call an individual vessel), you need to store their DSC address ID (9-digit MMSI code) in advance.

To program DCS Address ID:

1. Press **[DSC]** to enter DSC mode.
2. Press **[U/I/C]** keys to select "ADDRESS" and press **[DSC]**.



3. Press **[U/I/C]** to select "ADD" and Press **[DSC]**.

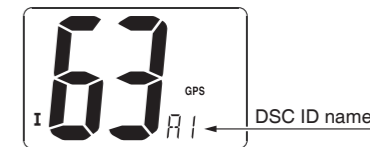


4. Press **[U/I/C]** to enter 9-digit address ID (MMSI ID of a specific vessel).
 - Press **[16]** or **[CH/WX]** to move the cursor forward or backward.
 - Press **[SCAN]** to cancel and exit the setting mode.

After 9-digit code is correctly entered, press **[DSC]**.



5. A cursor appears. Enter the the desired DSC ID name up to 5 alphanumeric characters.
 - Use **[U/I/C]** keys to select characters.
 - Press **[16]** or **[CH/WX]** to move the cursor forward or backward.



After characters are correctly entered, press **[DSC]** to complete, or press **[SCAN]** to cancel and exit the DSC mode.

PROGRAMMING GROUP ID

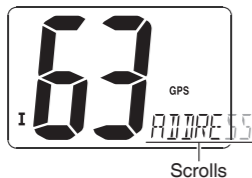
Programming procedures are the same as programming DSC address ID.

Group address ID is NOT MMSI codes of vessels, but are ANY 9-digit codes starting with zero "0". When you input 1st digit '0' followed by other 8 digits (e.g.012345678), the ID is automatically registered as a group ID and a group ID name will be listed in the group call list.

To make Group calls (all vessels in a group), all members in the group should store the same Group ID address in advance.

✘ TO DELETE DSC ADDRESS ID / GROUP ID

1. Press **[DSC]** to enter DSC mode.
2. Press **[U/I/C]** keys to select either "ADDRESS" and Press **[DSC]**.



3. Press **[U/I/C]** to select "DEL" and Press **[DSC]**.

- When address ID are no being programmed, "NO ID" appears on the display. To exit DSC mode, press **[U/I/C]** or **[16]** to monitor CH16.



4. Use **[U/I/C]** keys to select the desired ID to delete and Press **[DSC]**. "READY" is displayed .



5. Press **[DSC]** to delete the address ID and exit the DSC mode.

■ DISTRESS CALL

IMPORTANT: A Distress call should be transmitted only in case the vessel or crew(s) aboard is in danger and immediate rescue is necessary. FALSE/ ABUSE Distress call will be subject to penalty and fine.

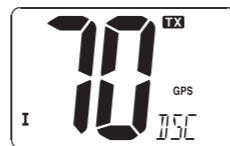
To operate DISTRESS CALL operation, GPS receiver installation and MMSI programming is necessary in advance. Be sure that DISTRESS CALL is not being received from other vessels.

Transmit a distress call is not necessary to active on DSC WATCH but for receiving a distress call DSC WATCH must be activated in advance (refer to No.5 at P.27).

✘ TO TRANSMIT A DISTRESS CALL

Before using this function, be sure your MMSI code is set (refer to P.13).

1. Open the red cover and press **[DISTRESS]** key for 5 seconds. Beep sounds 5 times and transmits the Distress call on CH70.



- TX icon is displayed while transmitting. DCS REPEAT scrolls afterwards.
- It transmits the call every 3-4 minutes until the acknowledgment call is received. Beep sounds 5 times before retransmitting.



Scrolls

2. Remains monitoring on CH70 for an acknowledgment (ACK) call.

- Repeat 1 to retransmit a distress call.
- Press any key other than **[DISTRESS]** to stop repeat calling and move to CH16.
- The distress alert contains "Undesignated distress" and latest GPS position data (held for 23.5 hrs or until turned OFF the radio).

✘ TO RECEIVE A DISTRESS CALL ACKNOWLEDGEMENT

1. Emergency alarm sounds continually until any key is being pressed to stop alarm.
2. Move to CH16 automatically and "RCV DISTRESS ACK" scrolls on the display.

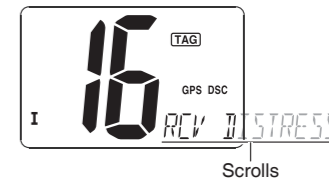


Scrolls

3. Communicate with the acknowledging station on CH16 asking for assistance.

✘ TO RECEIVE DISTRESS CALLS FROM OTHER STATIONS

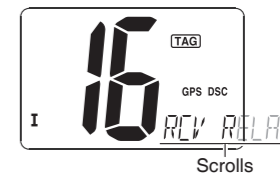
While monitoring CH70 and a Distress call is received, same event takes place as explained above, and displays scrolling "RCV DISTRESS". Press any key to stop alarm and remain monitoring CH16, as other stations may request your assistance.



Scrolls

✘ TO RECEIVE DISTRESS RELAY CALLS FROM OTHER STATIONS

While monitoring CH70 and a Distress relay call is received, same event takes place as explained in previous, and displays scrolling "RCV RELAY". Press any key to stop alarm and remain monitoring CH16, as other stations may request your assistance.



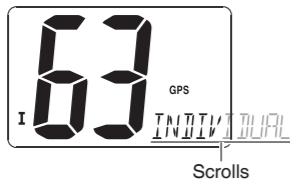
Scrolls

INDIVIDUAL DSC CALLING

This function is used to transmit DSC signals to a specific vessel only. It requires preprogramming of DSC address IDs of other vessels and DSC WATCH must be activated in the SET mode in advance.

TO TRANSMIT AN INDIVIDUAL CALL

1. Press **[DSC]** to enter the DSC mode. "INDIVIDUAL" is displayed.

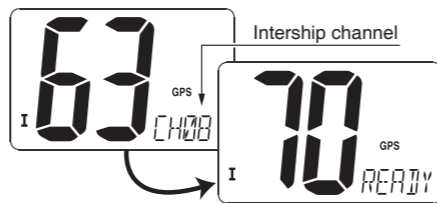


2. Press **[DSC]** to select a desired preprogrammed individual address by pressing **[U/I/C]** keys. The DSC ID name is shown on the right bottom of the display. Press **[DSC]** to set. If there is no DSC address ID is stored it shows "NO ID".



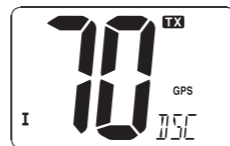
3. Press **[U/I/C]** keys to select a desired INTERSHIP channel (channel that both your and specific vessel will use for communication later one received "Able to comply" acknowledgement from them) and press **[DSC]** to set. Intership channel is displayed on the right bottom, and sorted in recommended order.

4. Press **[DSC]**. Channel 70 is automatically selected and displays "READY".

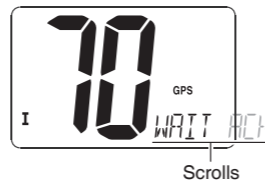


5. Press **[DSC]** to transmit the individual call.

- A beep sounds and TX icon is displayed while transmitting.
- If CH70 is busy, it holds and waits until CH70 is clear.



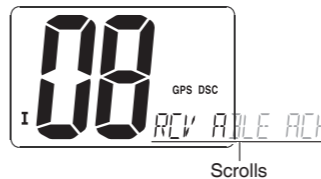
6. It stays monitoring CH70 until an acknowledgement (ACK) is received. "WAIT ACK" scrolls on the display.



7. When the "Able to comply" acknowledgement (ACK) signal is received (this is sent by your desired specific vessel), the channel moves to the intership channel selected in previous 3 and an interrupted beep twice sounds repeatedly. Press any key to stop the beep. "RCV UNABLE ACK" scrolls on the display.

Press any key to ignore the call. Or press PTT to communicate to the station that replied in the intership channel.

- In case "Unable to comply" ACK is received (this is sent by your desired specific vessel), radio automatically selects the original channel of operation before DSC mode and an interrupted beep twice sounds repeatedly. Press any key to stop the beep "RCV ABLE ACK" scrolls on the display respectively.



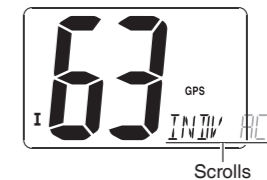
TO TRANSMIT AN INDIVIDUAL CALL ACKNOWLEDGEMENT

When you are called individually, you can send back an ACK signal either "able to comply" or "unable to comply".

1. Press **[DSC]** to enter DSC mode.

2. Press **[U/I/C]** keys to select "INDV ACK" and press **[DSC]**.

- "INDV ACK" is displayed after an Individual Call is received.
- "INDV ACK" turns off after another call is received after the INDV call.
- The Individual acknowledgement is transmitted to the latest INDV call only.



3. Press **[U/I/C]** keys to select either "ABLE" or "UNABL".



4. Press **[DSC]** to enter selected Individual call ACK mode. "READY" is displayed.

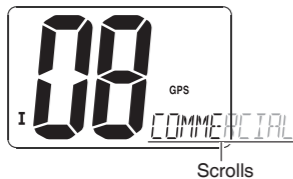


5. Press **[DSC]** to transmit the ACK signal to the selected station.



6. When "ABLE" is selected, after the Individual ACK signal is being

sent, the display turns automatically to the intership channel specified by your calling station.



7. When "UNABL" is selected, display moves to previous channel before receiving the call.

✕ TO RECEIVE AN INDIVIDUAL CALL

While monitoring Channel 70 through DSC WATCH function and an individual call for you is received:

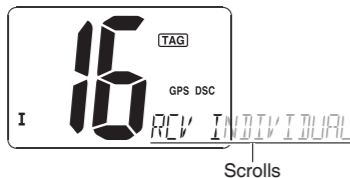
1. The alarm or beeps sound depending on the category of the call.
 - Alarm sounds in case of DISTRESS or URGENCY.
 - Beep sounds for others.

DSC and scrolling "RCV INDIVIDUAL" are displayed.

2. Press any key to stop the alarm or beeps.



DSC and scrolling "RCV INDIVIDUAL" disappears when any key is pressed or power off the radio.



3. Press any key other than [DSC] to ignore the call. To reply on the call.

Press [DSC], at right bottom of display appears "ABLE", then press [DSC] a beep sounds and radio sends the "Able to comply" ACK via CH70 (CH70 is automatically selected). The display moves to the intership channel specified by calling station. Press PTT to communicate to the station that called in the intership channel.

■ GROUP DSC CALLING

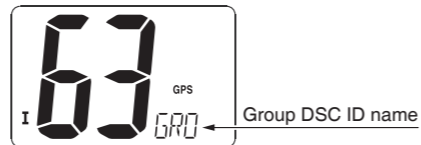
This function is used to transmit DSC signals to all vessels in a specific group. All members in the group should store the same Group ID address, and DSC WATCH must be enabled in the SET mode in advance.

✕ TO TRANSMIT A GROUP CALL

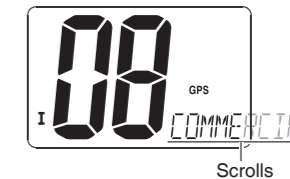
1. Press [DSC] to enter the DSC mode.
2. Use [U/I/C] keys to select "GROUP". Press [DSC].



3. Select a desired preprogrammed group address by pressing [U/I/C] keys. The group DSC ID name is shown on the right bottom of the display. Press [DSC] to set. If there is no group DSC address ID is stored it shows "NO ID".



7. The display moves to the intership channel after the group call is made. Communicate to the responding station by pressing PTT.



✕ TO RECEIVE A GROUP CALL

While monitoring Channel 70 through DSC WATCH function and a group call for you is received:

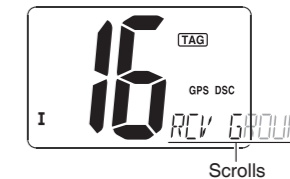
1. The alarm or beeps sound depending on the category of the call.
 - Alarm sounds in case of DISTRESS or URGENCY.
 - Beep sounds for others.

DSC and scrolling "RCV GROUP" are displayed.

2. Press any key to stop the alarm or beeps.



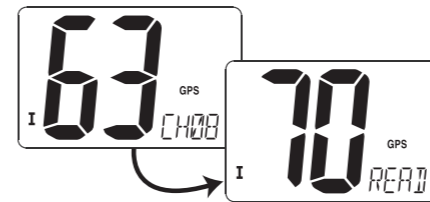
DSC and scrolling "RCV GROUP" disappears when any key is pressed or power off the radio.



3. Press [DSC] to reply on the intership channel specified by calling station, or press any key other than [DSC] to ignore the call.

4. Press [U/I/C] keys to select a desired INTERSHIP channel and Press [DSC]. Intership channels are displayed on the right bottom, and sorted in recommended order.

5. Press [DSC]. Channel 70 is automatically selected and displays "READY".



6. Press [DSC] to transmit the group call.

- A beep sounds and TX icon is displayed while transmitting.
- If CH70 is busy, it holds and waits until CH70 is clear.
- Only Routine category is available.

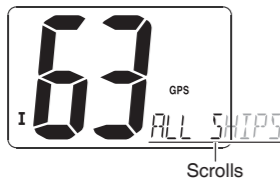


■ ALL SHIPS CALLING

Large vessels monitors CH70. This function is used to transmit DSC signals to all stations. DSC WATCH must be activated in the SET mode in advance.

✘ TO TRANSMIT AN ALL SHIP CALL

1. Press **[DSC]** to enter the DSC mode.
2. Use **[U/I/C]** keys to select "ALL SHIP".



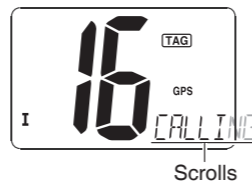
3. Press **[DSC]**. Channel 70 is automatically selected and displays "READY".



4. Press **[DSC]** to transmit the All Ships call.



5. The display changes to CH16 automatically and CALLING scrolls after the signal has been sent.



✘ TO RECEIVE AN ALL SHIP CALL

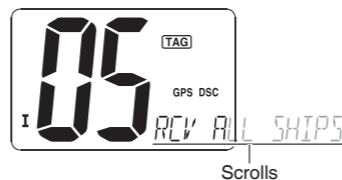
When an ALL Ship Call is being received while monitoring CH 70 through DSC WATCH function:

1. The alarm or beeps sound depending on the category of the call.
 - Alarm sounds in case of DISTRESS or URGENCY.
 - Beep sounds for others.

DSC and scrolling "RCV ALL SHIPS" are displayed.

2. Press any key to stop the alarm or beeps.

NOTE DSC and scrolling "RCV ALL SHIPS" disappears when any key is pressed or power off the radio.

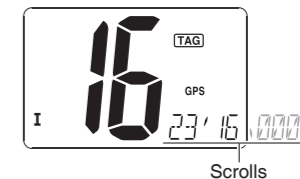


■ POSITION INDICATION

A compatible GPS receiver must be installed in advance to use this function. (NMEA0183 ver. 2.0 or 3.01 RMC,GGA, GNS, GLL)

Press **[DSC]** for a second to display the current position.

- The Latitude and Longitude information is displayed on the bottom right corner. "NO POSITION" is displayed when the GPS receiver is not in use.
- The priority of sentence formats is in order of RMC, GGA, GNS and GLL.
- GPS icon blinks when GPS data is invalid.



3. Press **[DSC]** the display changes to CH16 automatically and monitor the message, or press any key other than **[DSC]** to ignore the call.

✘ TO RECEIVE A GEOGRAPHICAL AREA CALL

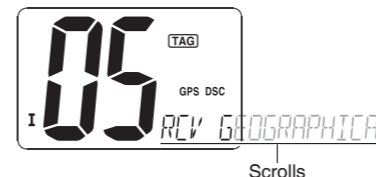
When a Geographical Area Call (where your vessel is located at) is being received while monitoring CH 70:

1. The alarm or beeps sound depending on the category of the call.
 - Alarm sounds in case of DISTRESS or URGENCY.
 - Beep sounds for others.

DSC and scrolling "RCV GEOGRAPHICAL" are displayed.

2. Press any key to stop the alarm or beeps.
3. Press **[DSC]** to move to the channel specified by the calling station and monitor the message or communicate. Press any key other than **[DSC]** to ignore the call.

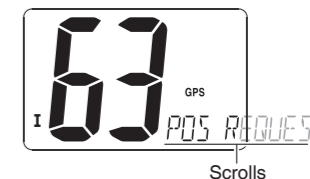
NOTE If your GPS receiver connected to the radio is not properly functioning, you may receive ALL geographical calls regardless of your location.



✘ TO TRANSMIT POSITION REQUEST CALL

Position Request call is used to inquire the current position of specific ships.

1. Press **[DSC]** to enter DSC mode.
2. Press **[U/I/C]** keys to select "POS REQUEST". Press **[DSC]**.



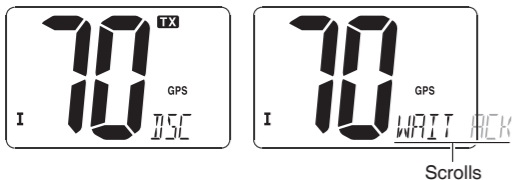
3. Press **[U/I/C]** keys to select an individual address to make the call. Preprogramming of addresses are required in advance just like other DSC calling functions.



4. Press **[DSC]** to display CH70 and "READY".



5. Press **[DSC]** to make a Position Request call. A beep sounds, TX is displayed while transmitting and WAIT ACK is displayed when completing the call.

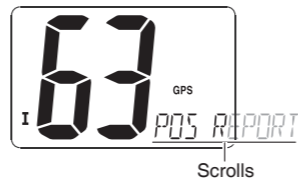


6. Press any key to return to regular operation, or wait until the ACK signal is being received.

✘ TO TRANSMIT POSITION REPORT CALL

Position Report call is used to acknowledge your current position to a specific vessel.

1. Press **[DSC]** to enter DSC mode.
2. Press **[U/I/C]** keys to select "POS REPORT". Press **[DSC]**.



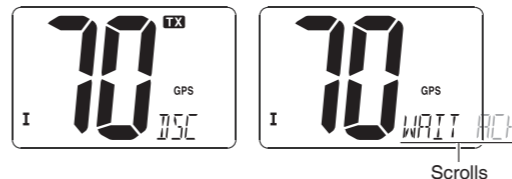
3. Press **[U/I/C]** keys to select an individual address to make the call. Preprogramming of addresses are required in advance just like other DSC calling functions.



4. Press **[DSC]** to display CH70 and "READY".



5. Press **[DSC]** to make a Position Report call. A beep sounds, TX is displayed while transmitting and WAIT ACK is displayed when completing the call.

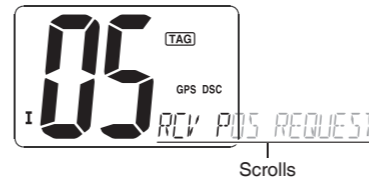


6. Press any key to return to regular operation, or wait until the ACK signal is being received.

✘ TO RECEIVE A POSITION REQUEST CALL

When a Position Request call is being received while monitoring CH 70 :

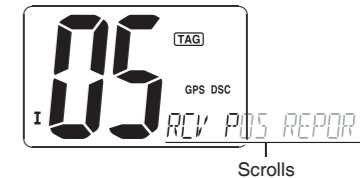
1. A beep sounds, DSC and scrolling "RCV POS REQUEST" are displayed.
2. Press any key to stop the beep.
3. Press **[DSC]** to reply to the call or press any key to ignore the call.



✘ TO RECEIVE A POSITION REPORT CALL

When a Position Report call is being received while monitoring CH 70:

1. A beep sounds, DSC and scrolling "RCV POS REPORT" are displayed.
2. Press any key to stop the beep.
3. Press **[DSC]** to reply to the call or press any key to ignore the call.



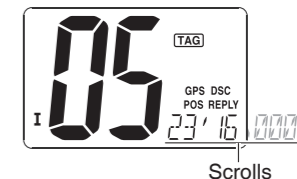
✘ TO RECEIVE A POSITION REQUEST REPLY CALL

When a Position Reply call is being received while monitoring CH 70:

1. DSC and scrolling "POS REPLY" are displayed.
2. Press any key to stop the beep.

The position from the called station is displayed in order of latitude and longitude.

- Select AUTO ACK in the setmode to automatically reply to this call.

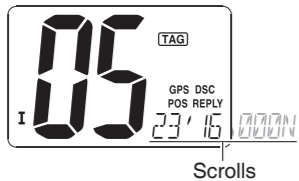


✘ TO RECEIVE A POSITION REPORT REPLY CALL

Same event takes place as above.

The position of your vessel is displayed in order of latitude and longitude.

- Select AUTO ACK in the setmode to automatically reply to this call.



■ SET MODE

Set mode is used to customize functions to suit your operating conditions and needs. Following features (Menu) are available in the set mode.

✘ SET MODE OPERATION

1. Turn OFF the power.
2. Turn on the power with [16] pressed to enter Set mode.
3. Release [16] when "SCAN" is displayed.
4. Press [16] to select menu.
5. Press [U/I/C] to select the desired parameter. Repeat until all menu are set to suit your preference and needs.
6. Turn OFF, then turn ON again to set and operate.

No.	Display	Function	Option	Default
1	SCAN	Scan type	n- (normal scan) / p- (priority scan)	n- (normal scan)
2	TIMER	Scan resume timer	OFF / ON	OFF
3	WX ALERT	Weather alert	OFF / ON	OFF
4	DUAL	Dual/Tri-watch	d-(Dualwatch) / t- (Tri-watch)	d-(Dualwatch)
5	DSC WATCH	DSC watch	OFF / ON	OFF
6	BEEP	Beep tone	OFF / ON	ON
7	AUTO ACK	Auto acknowledgement	OFF / ON	OFF
8	FAVORITE CH	Favorite channel	OFF / ON	ON
9	TOT	Time out timer	OFF / ON	OFF

■ MENU

① Scan Type

There are 2 scan types: Normal scan and Priority scan.

- Normal scan searches all TAG channels in the selected channel group.
- Priority scan searches all TAG channels in sequence while monitoring Channel 16.

② Scan Resume Timer

The scan resume timer determines the resume condition of the scan.

OFF: The scan pauses and monitors until the signal is gone.

ON: The scan pauses 5 seconds and resume scanning except that the receiving signal is on CH16.

③ Weather Alert

NOAA broadcast stations transmit a weather alert tone to notify the important weather information. Select ON to detect such alert and “**WX ALT**” icon blinks until the radio is operated.

The last weather channel monitored is always checked during stand-by or while scanning.

- “**WX ALT**” is displayed instead of “**WX**” when this function is activated.

④ Dual / Tri-watch

Select DUAL or TRIWATCH function according to your preference.

⑤ DSC Watch

PLEASE SELECT ON to operate DSC features properly.

DSC watch monitors Channel 70 while you are receiving another channel.

If a distress signal is received on Channel 70, the radio monitors Channel 16 and 70 alternately until the distress signal is gone. If a

signal is received on another channel, DSC watch pauses until the signal disappears. This function may not be available for some channel groups due to dealer programming.

⑥ Beep Tone

Select OFF to mute the beep that sounds when you operate keys. This parameter won't affect alert beeps.

⑦ Automatic Acknowledgement

Select ON to reply Position Request call and Position Report call automatically in DSC operations.

⑧ Favorite Channel

Select OFF to use [▲]/[▼] keys on the microphone to select all channels.

Default is ON, and [▲]/[▼] keys select only TAG setting channels.

⑨ Time-out timer

Select ON to use a TOT. After 5 minutes elapsed, TOT cuts off the transmission and prohibits transmission for 10 seconds as a time-out penalty. This is to prevent useless long calls and unintentional transmission by mistake.

■ TROUBLESHOOTING

Following troubles are typical and you may check the radio, accessories and connections by yourself to fix troubles before consulting your radio dealer.

Trouble	Possible Cause	Solutions
Can't turn on.	1. DC cable has troubles. 2. The voltage exceeds 17V or below 9V.	1. Check DC cable connection, polarity and fuse. 2. Use proper power source of 13.8V
Unable to connect with GPS.	1. Hardware related 2. GPS format related	1. Check GPS setting and cable connections. 2. GPS format should be NMEA0183-2.0
Can't scan	TAG setting is incorrect.	Set TAG channels.
Can't transmit	Receive-only channel	Weather CH and CH70 can't transmit.
Can't transmit high power	1. Lowpower-only CH is selected. 2. Low power output is selected.	1. Choose other channels. 2. Set High power.
Can't talk on the same channel.	A duplex channel is selected.	Observe a small A on the right of the CH number. Select the same channel (i.e. 65 and 65A)
No beep	Beep off	Select ON in SET mode.
Can't transmit a distress call.	Programming is incorrect.	Program the IDs correctly.
No sound from the speaker.	1. Squelch level too high. 2. Audio level too low.	1. Rotate [SQL] knob to adjust the squelch level. 2. Rotate [VOL] knob to adjust the volume.

Please consult your dealer for technical assistance and details of programming.

General Specification	
Frequency coverage	TX: 156.025-157.425 MHz RX: 156.050 -163.275 MHz
Mode	FM (16K0G3E) DSC (16K0G2B)
Frequency stability	± 10ppm
Operating temperature range	-20°C ~ +60°C
Dimensions (W×H×D)	153mm×67mm×152mm
Weight (main unit)	742g (with microphone)

Transmitting Specification	
Output power	25W / 1W
Max. frequency deviation	±5.0 kHz
Spurious emissions	≥70dB
Adjacent channel power	≥70dB
Audio harmonic distortion	≤10%
Current drain	≤5.5A (H)
	≤1.5A (L)

Specifications and functions are subject to change at any time without notice and obligations.

Alinco declines any typographical errors found in this manual.

Receiving Specification

Sensitivity	≤0.2uV
Squelch sensitivity	≤0.2uV
Adjacent channel selectivity	≥70dB
Spurious response rejection ratio	≥70dB
Intermodulation rejection ratio	≥70dB
Max. current drain	≤1.5A
Audio output power (External speaker)	≥4.5W (10%)
Output impedance	4Ω

CHANNEL LIST

*1Low power only. *2Momentary high power. *3DSC operation.

Channel number					Frequency(MHz)					Channel number					Frequency(MHz)				
USA	INT	CAN	Transmit	Receive	USA	INT	CAN	Transmit	Receive	USA	INT	CAN	Transmit	Receive	USA	INT	CAN	Transmit	Receive
	01	01	156.050	160.650		21	21	157.050	161.650	68	68	68	156.425	156.425	86A			157.325	157.325
01A			156.050	156.050	21A		21A	157.050	157.050	69	69	69	156.475	156.475	87	87	87	157.375	161.975
	02	02	156.100	160.700			21b	Only receiver	161.650	70 ³	70 ³	70 ³	156.525	156.525	87A			157.375	157.375
	03	03	156.150	160.750		22		157.100	161.700	71	71	71	156.575	156.575	88	88	88	157.425	162.025
03A			156.150	156.150	22A		22A	157.100	157.100	72	72	72	156.625	156.625	88A			157.425	157.425
	04		156.200	160.800		23	23	157.150	161.750	73	73	73	156.675	156.675					
		04A	156.200	156.200	23A			157.150	157.150	74	74	74	156.725	156.725					
	05		156.250	160.850	24	24	24	157.200	161.800	75 ¹	75 ¹	75 ¹	156.775	156.775					
05A		05A	156.250	156.250	25	25	25	157.250	161.850	76 ¹	76 ¹	76 ¹	156.825	156.825					
06	06	06	156.300	156.300			25b	Only receiver	161.850	77 ¹	77	77 ¹	156.875	156.875					
	07		156.350	160.950	26	26	26	157.300	161.900		78		156.925	161.525					
07A		07A	156.350	156.350	27	27	27	157.350	161.950	78A		78A	156.925	156.925					
08	08	08	156.400	156.400	28	28	28	157.400	162.000		79		156.975	161.575					
09	09	09	156.450	156.450			28b	Only receiver	162.000	79A		79A	156.975	156.975					
10	10	10	156.500	156.500		60	60	156.025	160.625		80		157.025	161.625					
11	11	11	156.550	156.550		61		156.075	160.675	80A		80A	157.025	157.025					
12	12	12	156.600	156.600	61A		61A	156.075	156.075		81		157.075	161.675					
13 ²	13	13 ¹	156.650	156.650		62		156.125	160.725	81A		81A	157.075	157.075					
14	14	14	156.700	156.700			62A	156.125	156.125		82		157.125	161.725					
15 ²	15 ¹	15 ¹	156.750	156.750		63		156.175	160.775	82A		82A	157.125	157.125					
16	16	16	156.800	156.800	63A			156.175	156.175		83	83	157.175	161.775					
17 ¹	17	17 ¹	156.850	156.850		64	64	156.225	160.825	83A		83A	157.175	157.175					
	18		156.900	161.500	64A		64A	156.225	156.225			83b	Only receiver	161.775					
18A		18A	156.900	156.900		65		156.275	160.875	84	84	84	157.225	161.825					
	19		156.950	161.550	65A	65A	65A	156.275	156.275	84A			157.225	157.225					
19A		19A	156.950	156.950		66		156.325	160.925	85	85	85	157.275	161.875					
20	20	20 ¹	157.000	161.600	66A	66A	66A ¹	156.325	156.325	85A			157.275	157.275					
20A			157.000	157.000	67 ²	67	67	156.375	156.375	86	86	86	157.325	161.925					

WX channel	Frequency(MHz)	
	Transmit	Receive
1	Only receiver	162.550
2	Only receiver	162.400
3	Only receiver	162.475
4	Only receiver	162.425
5	Only receiver	162.450
6	Only receiver	162.500
7	Only receiver	162.525
8	Only receiver	161.650
9	Only receiver	161.775
10	Only receiver	163.275

■ IPX7 WATER PROOF

7: No water penetration / Submerge the device for 30 minutes at a depth of 1 meter from the fresh water's surface.

The IPX7 designation provides for limited fresh water proofing of the radio, per specified above. This compatibility is factory guaranteed for a period of one year provided all specified conditions of use are respected, any accessories connected must be specified genuine Alinco accessories and the device has not been disassembled by the consumer. The device is designed to remain operational when used in rain, severe weather or in accidental cases of dropping it in wet place when used in extreme conditions. Warranty will not cover devices that are damaged due to negligence or misuse of the product. A periodical, professional maintenance is recommended when the ingress protection is very important to you.

In case of accidental drop to the water, pick it up immediately, dry with a clean cloth and never connect to power source and antenna until they are completely dry.

Dropping it in deep water may cause damage due to water pressure and the warranty is void.

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