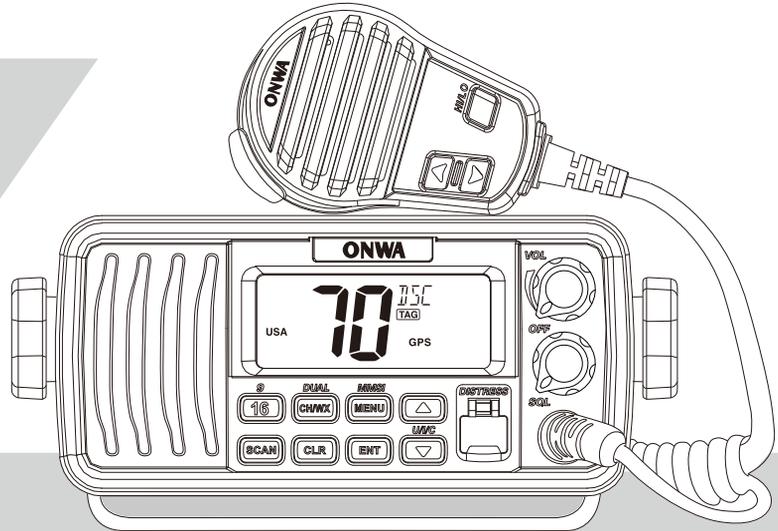# ONWA®

VHF/DSC MARINE TRANSCEIVER

INSTRUCTION MANUAL

◉ Independent DSC Dedicated Receiver
◉ IPX7 Waterproof Construction
  (1m Depth of Water for 30 Minutes)

KV-290

TO USER:

Thank you for purchasing this Class B DSC VHF marine transceiver. You will find the professional and human oriented design of the transceiver during use. Please read all instructions carefully and completely before using the transceiver.

This transceiver adopts advanced waterproof technology and has excellent waterproof performance.

PRECAUTIONS

- Never use the distress call when your ship or personnel is not in an emergency.
- Do not use or place the transceiver in hot, humid and dusty areas.
- The working voltage for the transceiver is 13.8V DC. If the power supply is 24V DC, please use a power converter (24V convert to 13.8V), or the transceiver won't work.
- Never directly connect to 220V AC power supply, this will ruin the transceiver. If an abnormal odor or smoke is detected coming from the transceiver, turn off the power immediately.
- Do not transmit before connecting the antenna, it will ruin the transceiver.
- **It is normal that the heating panel becomes hot** after certain time of use.

CONTENTS

■ Supplied Accessories

The following accessories are supplied:

ITEM	QUANTITY
DC Power Cable	1
Spare Fuse	1
Mounting Bracket	1
Mounting Screw Package	1
Instruction Manual	1

■ Transceiver Mounting

◆ Using the Supplied Mounting Bracket

The universal mounting bracket supplied with your transceiver allows overhead or dashboard mounting.

1. Fix the mounting bracket to overhead or dashboard with the supplied screws and mount the transceiver to the mounting bracket with the knob bolts.

2. Adjust the transceiver so that the face of the transceiver is at 90°to your line of sight when operating it and tighten the knob bolts so that the transceiver is securely mounted.

   Notice: You may use a spongy cushion between the transceiver and mounting bracket to reduce the vibration.
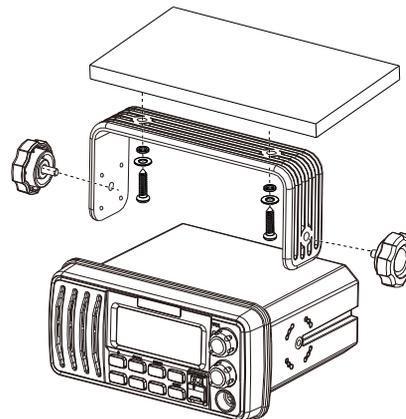
◆ Embedded Mounting

1. Cut a hole into the instrument panel (or wherever you plan to mount the transceiver).
2. Slide the transceiver through the hole as shown below.
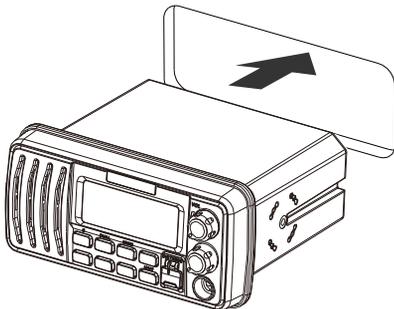
3. Attach the clamps on both sides of the transceiver with 2 supplied bolts.
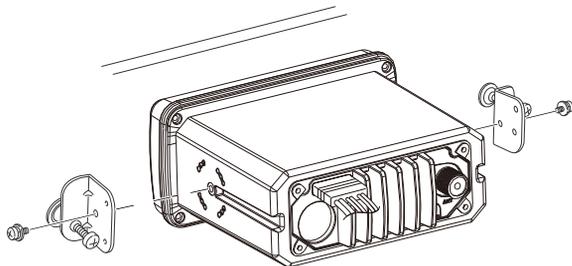
4. Tighten the end bolts on the clamps so that the clamps press firmly against the inside of the instrument control panel.

Bolt
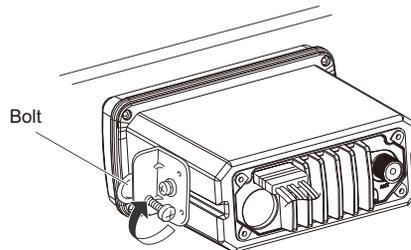
■ Antenna Connection

Please connect an antenna before transmitting. Select the antenna with the corresponding frequency and install on the ANT antenna base. Use the antenna and coaxial feeder with the same natural impedance 50Ω. Notice: Do not transmit before connecting the antenna, it will ruin the transceiver.

Antenna Connector

Coaxial Feeder Connector

To Antenna
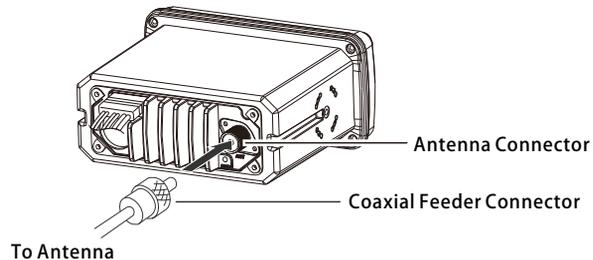
■ Installation of Connecting Cables
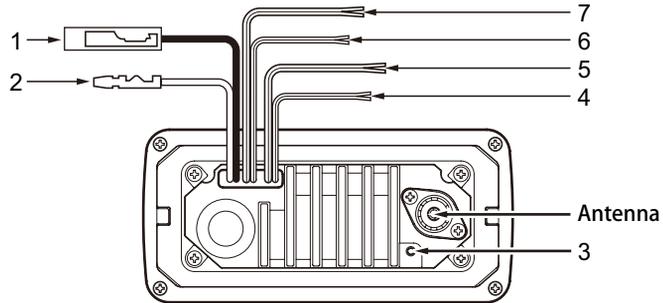
When connecting the external speaker, GPS, DC power supply, computer and navigation device by the rear panel cable end, cover the connectors and cables with rubber vulcanzing tape as below, to prevent water seeping into the transceiver.

Vulcanzing Tape

◆ DC Power Connector (1-Black, 2-Red)

Red - Positive(+), Black - Negative(-).The output voltage of the connected DC power supply must be 13.8V. Do not connect the transceiver to the 24V storage battery. If the current supplied to the transceiver is insufficient, the display may darken during transmission or the transmitting output power may drop significantly.

◆ Fuse Replacement

One fuse is installed in the supplied DC power cable. If a fuse blows or the transceiver stops functioning, track down the source of the problem first, then replace the damaged fuse with a new, rated one.
Notice: Please power off transceiver before replacing the fuse, the required fuse is DC15A.
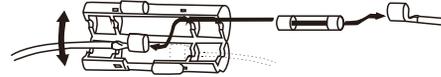
◆ Ground Terminal (3- Screw Hole)

Connect this terminal to a vessel ground to prevent electrical shocks and interference from other equipment occurring. Use a PH M3×6 mm screw (not supplied).

◆ NMEA In/Out Lead

Through the rear panel cable, this transceiver can connect GPS input signals from GPS receivers, and can also output GPS signals to other devices.

- **Connect a PC or navigation equipment (4-White):**

  Used to output position data received from other ships to a computer or navigation device.
  Transceiver output signal conforms to NMEA0183 version 3.01 sentence formatters DSC, DSE compatible .

- **Connect a GPS receiver (5-Red):**

  Used for ship position indication.
  A NMEA0183 ver. 2.0 or 3.01 (sentence formatters RMC, GGA, GNS, GLL) compatible GPS receiver is required.

◆ Clone Lead (6-Blue)

Connect a cloning cable.

◆ External Speaker Lead (7-Yellow)

Connect an external speaker.

■ Dimensions
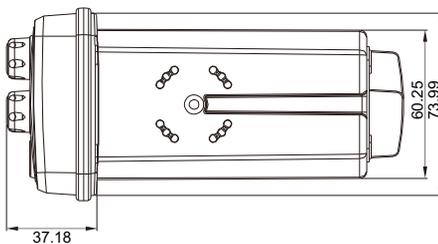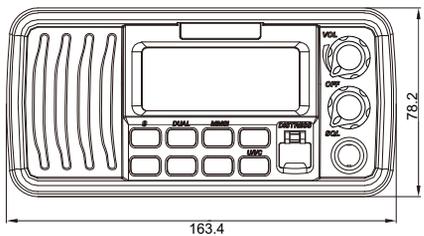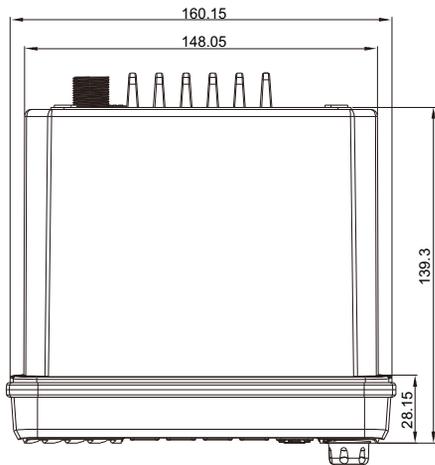
■ Front Panel
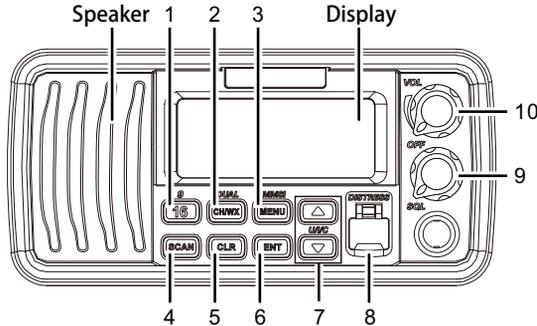
1. **Channel 16 / Call Channel Key [16]**

→ Press to select Channel 16.

→ Press and hold for 1 second to select Call channel (Default Channel 9).

→ "CALL" appears when the Call channel is selected, then press and hold this key for 3 seconds to enter call channel programming mode.

→ Simultaneously press and hold [CH/WX] and [16] Key to enter channel comment programming mode.

→ While in the channel comment programming mode, press to move the cursor backward.

→ While pressing and holding this key, power on the transceiver to enter set mode.

2. **Channel/ Weather Channel/ Watch Key [CH/WX] (DUAL)**

→ Press to select regular channel or weather channel.

→ Press and hold this key for 1 second to start Dual-watch or Tri-watch.

→ Press to stop Dual-watch or Tri-watch when either is activated.

→ While in channel comment programming mode, press this key to move the cursor forward.

3. **DSC Menu Key [MENU] (MMSI)**

→ Press to enter the DSC menu.

→ Press and hold this key for one second to display the MMSI code on the channel comment display.

4. **Scan/ TAG Key [SCAN] (TAG)**

→ Press to start/ stop normal scan or priority scan.

→ Press and hold this key for 1 second to set or clear the current channel as a TAG (scanned) channel.

The favorite channels can be set by the TAG channel setting.

→ Press and hold [HI/LO] key on MIC and [SCAN] for 3 seconds to clear all TAG channels in the selected channel group.

5. **Clear Key [CLR]**

Press to clear setting, or exit DSC menu.

6. **Enter Key [ENT]**

Press to set the DSC menu, a channel comment, etc.

7. **[▲][▼]/[U/I/C]**

→ Press to select operating channel, Set mode setting, DSC menu items etc.

→ While pressing and holding [SCAN] key, press [▲] or [▼] to adjust the brightness of the LCD and key backlight.

→ Press both keys to sequentially select the USA, International or Canadian channel groups.

→ While pressing and holding both keys, power on to activate vibration draining function.

8. **Distress Key [DISTRESS]**

   Press and hold this key for 3 seconds to transmit a Distress call.

9. **Squelch Knob [SQL]**

   Rotate to set the squelch level.

10. **Power/Volume Knob [VOL]**

    Rotate to power ON/OFF the transceiver and adjust the volume.

■ Microphone
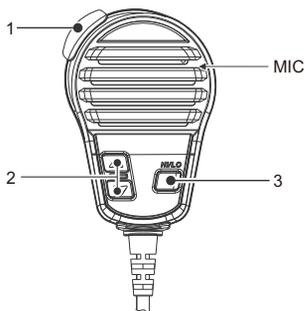
1. **PTT Switch [PTT]**

   Press and hold to transmit; Release to receive.

2. **Channel Up/Down Keys [▲][▼]**

   → Press to select operating channel, Set mode setting etc.

   → When the favorite channel function is activated, press [▲][▼] key to select the favorite channels in the selected channel group in sequence.

3. **Transmit Power Key [HI/LO]**

   → Press to select high or low output power.

   Some channels are set to low power only.

   → While pressing and holding [HI/LO] key, power on to turn the microphone keypad lock function ON/OFF.

■ Function Display
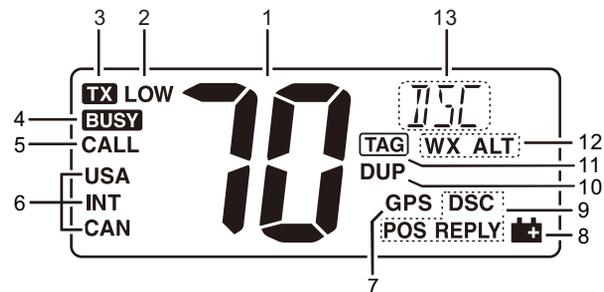
1. **Channel Number Readout**

   → Indicates the selected operating channel number. (Refer to Channel List).

   → In the Set mode, display the selected option.

2. **Low Power Icon**

   Appears when low power is selected.

3. **Transmit Icon**

   Appears when transmitting.

4. **Busy Icon**

   Appears when receiving a signal or when the squelch opens.

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5. **Call Channel Icon**

   Appears when the Call channel is selected.

6. **Channel Group Icon**

   Indicates whether U.S.A. "USA", International "INT" or Canadian "CAN" channel group is selected.

7. **GPS Icon**
   → Appears while valid position data is received.
   → Disappears when no GPS receiver is connected.

8. **Low Battery Icon**

   Appears when the battery voltage drops to approximately 10.8V or below.

9. **DSC Icon**
   → "DSC"appears when a DSC call is received.
   → "POS REPLY" appears when a Position Reply call or a Position Report Reply call is received.

10. **Duplex Icon**

    Appears when a duplex channel is selected.

11. **TAG Channel Icon**

    Appears when a TAG channel is selected.

12. **Weather Channel Icon**
    → "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.

13. **Channel Comment Display**
    → Channel comment appears if programmed.
    → "SC" blinks during priority scan; "SCAN" blinks during normal scan.
    → "DW" blinks during Dual-watch; "TW" blinks during Tri-watch.

■ Power ON/OFF

1. Rotate [VOL] clockwise to power on.
2. Rotate [VOL] counter-clockwise to power off.

■ Transmitting and Receiving

◆ Transmitting

1. Press [HI/LO] key 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 with low power only.
2. Press and hold [PTT] key to transmit, then speak into the microphone.
   - " **TX** "appears.
   - CH70 is for DSC transmitting only.
3. Release [PTT] to receive.
   Notice: Do not transmit before connecting the antenna, this will ruin the transceiver.
   If the TOT function is enabled by the PC programming software, the transmission time-limited protection function prohibits continuous transmission for a long time.

◆ Receiving

1. Rotate [VOL] knob to adjust the volume.
2. Rotate [SQL] clockwise until the noise just disappears.
   - When receiving a signal, **BUSY** "appears and audio is heard from the speaker.

■ Channel Group Selection

The transceiver is pre-programmed with 57 USA, 57 International and 61 Canadian channels. These channel groups may be specified for the operating area.

1. Press [CH/WX] to select a regular channel.
   - If a weather channel appears, press [CH/WX] again.
2. Press [U/I/C] (both [▲] and [▼]) to change the channel group.
   - USA, International and Canadian channel groups can be selected in sequence.
3. Press [▲] or [▼] to select a channel.
   - "**DUP**" appears for duplex channels.
   - " *A* " appears when a simplex channel is selected.
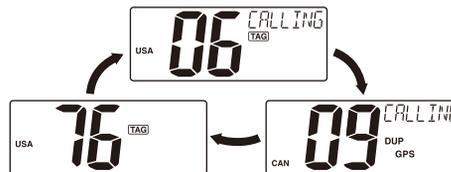
■ Channel Selection

◆ Channel 16

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

1. Press [16] to select Channel 16.
2. Press [CH/WX] to return to the previous display, press [▲] or [▼] to select operating channel.

Convenient Operation:
When the favorite channel function is turned ON, press [▲] or [▼] to select the favorite channels in sequence in the selected channel group.
● The Favorite channels are set by the TAG channel setting.

◆ **Channel 9 (Call Channel)**

Each regular channel group has a separate leisure-use Call channel (Default Channel 9). The call channel is monitored during Tri-watch.
1. Press and hold [16](9) for 1 second to select the Call channel of the selected channel group. "CALL" and Call channel number appear.
2. Press [CH/WX] to return to the previous display, press [▲] or [▼] to select operating channel.

◆ **Weather Channels**

The transceiver has 10 weather channels.
The transceiver can automatically detect a weather alert tone on the selected weather channel while receiving on a regular channel or while scanning.
1. Press [CH/WX] to select between weather channel and regualr channel.
● "**WX**" appears when a weather channel is selected.
● "**WX ALT**" appears when the Weather Alert function is in use.
2. Press [▲] or [▼] to select a channel.

Weather Alert Function OFF   Weather Alert Function ON
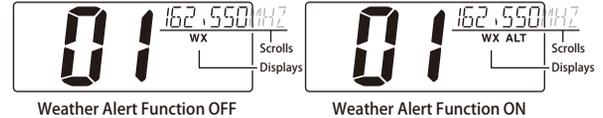
■ **Call Channel Programming**

Call channel is used to select Channel 9 (default), however, you can program the Call channel with your most offer-used channel in each channel group for quick recall.
1. Press [U/I/C] (both [▲] and [▼]) one or more times to select the desired channel group (U.S.A., International or Canadian) to be programmed.
2. Press and hold [16](9) for 1 second to select the Call channel of the selected channel group.
● "CALL" and the Call channel number appear.
3. Press and hold [16](9) again for 3 seconds (until a long beep changes to two short beeps) to enter Call channel programming mode.
● Channel number starts blinking.

4. Press [▲] or [▼] to select a desired channel.
5. Press [16](9) to program the displayed channel as the Call channel.
● Press [CLR] to cancel and exit.
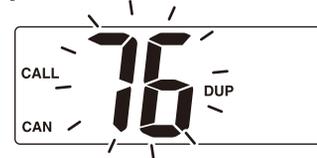
■ Channel Comment

Memory channels can be labeled with a unique alphanumeric ID of up to 10 characters.
When the comment is more than 7 characters long, screen scroll displays.
Capital letters, small letters (except f, j, k, p, s, v, x, z), 0 to 9, some symbols (= * + - . /) and space can be used.

1. Select the desired channel.
   ● Cancel Dual-watch, Tri-watch or scan in advance.
2. While pressing and holding [CH/WX], press [16] to program the channel comment.
   ● 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 input all characters.
5. Press [ENT] to input and set the comment.
   ● Press [CLR] to cancel and exit the programming mode.
   ● The cursor and the character stop blinking.

■ Display Backlight

The LCD display and keys can be backlit for better visibility under low light conditions.

※ While pressing and holding [SCAN], press [▲] or [▼] to adjust the brightness of the LCD and key backlight.
   ● The backlight is selectable in 3 levels and OFF.

■ Vibration Water Draining Function

Vibration helps drain water away from the speaker housing (water that might otherwise muffle the sound coming from the speaker). The transceiver makes a vibrating noise when this function is being used.

1. While pressing and holding [▲] and [▼], rotate [VOL] and power ON to activate the Vibration Water Draining function.
   ● "VIB WATER" appears.
2. A low beep tone sounds while [▲] or [▼] keys are held to drain water, regardless of [VOL] control setting.
   ● The transceiver never accepts any key operations while the Vibration function is activated.

Scrolls
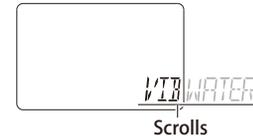
■ Microphone Lock Function

The microphone lock function electrically locks [▲] and [▼] keys on the supplied microphone. This prevents accidental channel changes and function access.
While pressing and holding [HI/LO] on the microphone, power ON to toggle the microphone lock function ON or OFF.

[▲]/[▼]   [HI/LO]
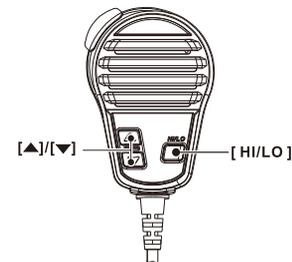
■ Scan Types

The transceiver has normal scan and priority scan. (Refer to set mode operation).
When the weather alert function is turned ON, the previously selected (last used) weather channel is also scanned.
Set the TAG channels (scanned channels) before scanning. Clear the TAG channels which inconveniently stop scanning.
Normal Scan: Normal scan searches through all TAG channels in sequence. Channel 16 is not checked unless Channel 16 is set as a TAG channel.
Priority Scan: Priority scan searches though all TAG channels in sequence while monitoring Channel 16.

Normal Scan

Priority Scan
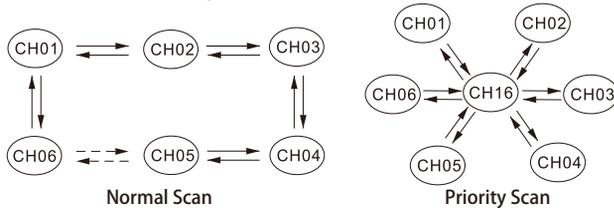
■ Setting TAG Channels

For more efficient scanning, you can add desired channels as TAG channels or clear the TAG for unwanted channels.
Channels that are not tagged will be skipped during scanning.

◆ Setting/Clearing a Single Tagged Channel

1. Press [U/I/C] (both[▲]and[▼])to select the desired channel group.

2. Press [▲] or [▼] to select the desired channel to be set as a TAG channel.
3. Press and hold [SCAN] for 1 second to set the displayed channel as a TAG channel.
   ● "TAG" appears.
4. To cancel the TAG channel setting, press and hold [SCAN] for 1 second again.
   ● "TAG" disappears.

◆ Setting/Clearing All Tagged Channels

1. While pressing and holding [HI/LO] on the microphone, press [SCAN] for 3 seconds to clear all TAG channels in the selected channel group.
2. Repeat above procedure to set all TAG channels.

■ Starting a Scan

Set scan resume timer in the Set mode.

1. Press [SCAN] to start normal scan or priority scan.
   ● "SCAN" blinks during normal scan; "SCAN" blinks and "16" appears during priority scan.
   ● Channel 16 is monitored during priority scan. "16" blinks when a signal is received on Channel 16.
   ● Press [▲] or [▼] to change the scanning direction.
   ● A beep tone sounds and "SC 16" blinks on channel comment display when a signal is received on Channel 16 during priority scan.
2. To stop the scan, press [SCAN].

■ Description

The transceiver has Dualwatch and Tri-watch.
Dualwatch monitors Channel 16 while you are receiving on another channel.
Tri-watch monitors Channel 16 and the Call channel while receiving on another channel.

Dualwatch

Call Channel
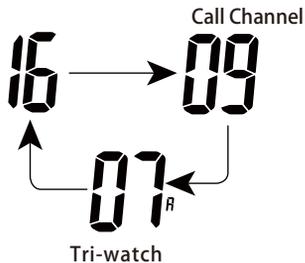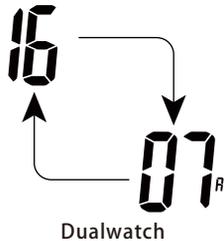
Tri-watch

■ Operation

1. Press and hold [CH/WX] for 1 second to start Dualwatch or Tri-watch.
   - "DW" blinks during Dualwatch; "TW" blinks during Tri-watch.
   - A beep tone sounds and "16" blinks when a signal is received on Channel 16.
2. Press [CH/WX] again to cancel Dualwatch or Tri-watch.

■ MMSI Code

The 9-digit MMSI (Maritime Mobile Service Identity: DSC self ID) code can be programmed at power ON.
Notice: This code programming can be performed only twice. After the code programming, it can be changed only by your dealer or distributor.

◆ MMSI Code Programming

The MMSI code can be programmed by PC software and also manually set on this transceiver.
1. Rotate [VOL] to power OFF.
2. While pressing and holding [▲], power ON to enter MMSI code programming mode.
3. After the display appears, release [▲].
4. Press [MENU] to enter the DSC menu.
5. Press [▲] or [▼] to select "MMSI", then press [ENT], a cursor starts blinking.

6. Press [▲] or [▼] to select the specified MMSI code.
   ● Press [CH/WX] or [16] to move the cursor forward or backward.
7. After programming the 9-digit MMSI code, press [ENT], "CONFIRMATION" scrolls in the channel comment display.
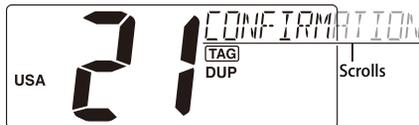
8. Press [ENT], then input the same MMSI code as step 6 for the confirmation.
9. Press [ENT] to set the code.
   ● Press [CLR] to cancel and exit the programming mode, if desired.
   ● If a different code is input, "INCORRECT" appears. In that case, press [ENT] to repeat steps 6 to 8 again.

◆ MMSI Code Checking

The 9-digit MMSI (DSC self ID) code can be checked.
While in the stand-by mode, press and hold [MENU](MMSI) for 1 second to display the 9-digit MMSI (DSC self ID) code.
   ● The MMSI code is displayed and scrolls in the channel comment display.
   ● When no MMSI code is programmed, "NO MMSI" appears and prompt tone sounds.

■ DSC Address ID

◆ Programming Address ID

A total of 100 9-digit DSC address IDs can be programmed and named with up to 10 characters.
1. Press [MENU] to enter the DSC menu.
2. Press [▲] or [▼] to select "ADDRESS", then press [ENT].

3. Press [▲] or [▼] to select "ADD INDV ID", then press [ENT].

Scrolls

4. Press [▲] or [▼] to input 9-digit individual ID, then press [ENT].
   • Press [CH/WX] or [16] to move the cursor forward or backward.
   • Press [CLR] to cancel and exit the programming mode.

5. Press [▲] or [▼] to input a 10-character ID name.
   • Press [CH/WX] or [16] to move the cursor forward or backward.
   • Press [CLR] to cancel and exit the programming mode.
6. Press [ENT] to save setting and return to normal operation.

◆ Deleting Address ID

1. Press [MENU] to enter the DSC menu.
2. Press [▲] or [▼] to select "ADDRESS", then press [ENT].

3. Press [▲] or [▼] to select "DEL INDV ID", then press [ENT].
   • When no address ID is programmed, "NO ID" is displayed.

Scrolls

4. Press [▲] or [▼] to select a desired ID name for deleting, then press [ENT], "READY" appears.
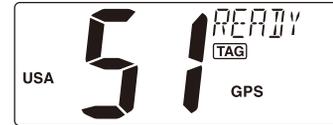
5. Press [ENT] to delete the selected address ID and return to normal operation.

◆ Programming Group ID

1. Press [MENU] to enter the DSC menu.
2. Press [▲] or [▼] to select "ADDRESS", then press [ENT].

3. Press [▲] or [▼] to select "ADD GROUP ID", then press [ENT].

Scrolls

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4. Press [▲] or [▼] to input a 9-digit ID number, then press [ENT].
- Press [CH/WX] or [16] to move the cursor forward or backward.
- Press [CLR] to cancel and exit the programming mode.

Notice: The first one digit is specified '0' for Group ID. The first two digits are '0' for Coast station ID.

5. Press [▲] or [▼] to input a 10-character ID name.
- Press [CH/WX] or [16] to move the cursor forward or backward.
- Press [CLR] to cancel and exit the programming mode.
6. Press [ENT] to save setting and return to normal operation.

◆ **Deleting Group ID**

1. Press [MENU] to enter the DSC menu.
2. Press [▲] or [▼] to select "ADDRESS", then press [ENT].

3. Press [▲] or [▼] to select "DEL GROUP ID", then press [ENT].
- When no group ID is programmed, "NO ID" is displayed.
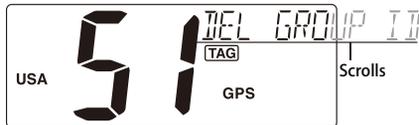
Scrolls

4. Press [▲] or [▼] to select a desired ID name for deleting, then press [ENT], "READY" appears.
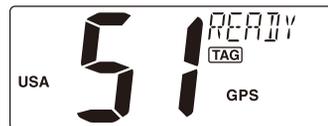
5. Press [ENT] to delete the selected group ID and return to normal operation.

◆ **Auto Switch Function**

By regulation, after receiving a Distress call, the transceiver basically switches the operating channel to Channel 16. However, when this setting is set to "OFF," the function enables the transceiver to remain on the operating channel even after receiving a Distress call.
1. Press [MENU] to enter the DSC menu.
2. Press [▲] or [▼] to select "AUTO SW", then press [ENT].

3. Press [▲] or [▼] to select the Auto Switch "ON" or "OFF"(Default "ON").
- Press [CLR] to cancel and exit the setting.

ON: The transceiver automatically switches the operating channel to Channel 16 after receiving a Distress call.
OFF: The transceiver remains on the operating channel even after receiving a Distress call.
4. Press [ENT] to save setting and return to normal operation.

1. Press [MENU] to enter the DSC menu.
2. Press [▲] or [▼] to select "OFFSET TIME", then press [ENT].

3. Press [▲] or [▼] to set the offset time from the UTC (Universal Time Coordinated) time.
   - Press [CH/WX] or [16] to move the cursor forward or backward.
   - Press [CLR] to cancel and exit the setting.

4. Press [ENT] to program and then to exit the programming mode.
Notice: The local time indication is not available when the GPS receiver (sentence formatter RMC) is connected, the transceiver's display indicates UTC time only.

■ GPS Positioning

◆ Position Indication

When a GPS receiver is connected, the transceiver displays the current position data with update once per second.
A NMEA0183 ver. 2.0 or 3.01 (sentence formatters RMC, GGA, GNS, GLL) compatible GPS receiver is required.
Latitude, Longitude and UTC time data scroll in sequence in the channel comment display.
"NO POSITION" and "NO TIME" scroll when no GPS is connected.

- When the GPS receiver is compatible with several sentence formatters, the order of input precedence is RMC, GGA, GNS and GLL.

◆ Programming Position and Time

A Distress call should include the ship's position and time data. If no GPS is connected, your position and UTC (Universal Time Coordinated) time should be input manually. They are included automatically when a GPS receiver is connected (NMEA0183 ver. 2.0 or 3.01).
"??" may blink instead of position and time indications when the GPS data is invalid, or has not been manually updated after 4 hours.
1. Press [MENU] to enter the DSC menu.
2. Press [▲] or [▼] to select "POSITION INPUT", then press [ENT].

3. Press [▲] or [▼] to input your latitude data, then press [ENT] to set your longitude data.
   - Press [CH/WX] or [16] to move the cursor forward or backward.
   - Press [▲] or [▼] to edit N(North Latitude) or S(South Latitude) when the cursor is on the 'N' or 'S' position;
   - Press [▲] or [▼] to edit W(West Longitude) or E(East Longitude) when the cursor is on the 'W' or 'E' position.
   - Press [CLR] to cancel and exit the setting.

◆ Auto Tune Timer

This is the amount of time after receiving a Distress call before the transceiver switches to Channel 16.
1. Press [MENU] to enter the DSC menu.
2. Press [▲] or [▼] to select "AUTO TUNE", then press [ENT].

3. Press [▲] or [▼] to set the Auto Tune Timer period to between 10-600 seconds or turn OFF, default 30 seconds.
   ● Press [CLR] to cancel and exit the setting.

   ● **OFF:** Turn OFF the Auto Tune Timer.
   ● **10-600 Seconds:** After receiving a Distress call, the transceiver remains on the operating channel for the programmed time period between 10 and 600 seconds, and then automatically switches to Channel 16.
   ※ Within the programmed timer period, the following action can be taken:
   ● When the [ENT] key is pressed, immediately switches to Channel 16.
   ● When the [CLR] key is pressed, the Auto tune timer is cancelled and the transceiver remains on the operating channel.
4. Press [ENT] to save setting and return to normal operation.
   The action of the transceiver may differ, depending on the combination of the Auto Switch function and the Auto Tune Timer settings.

		Auto Tune Timer	
		OFF	ON (10-600 Seconds)
Auto Switch	ON	The transceiver automatically switches to Channel 16.	The transceiver remains on the operating channel for the programmed time period, and then automatically switches to Channel 16. Within the programmed timer period, the following action can be taken: • When the [ENT] key is pressed, immediately switches to Channel 16. • When the [CLR] key is pressed, remains on the operating channel since the Auto Tuner timer is cancelled.
	OFF	The transceiver remains on the operating channel. "AUTO SW OFF" scrolls in the channel comment display.	

◆ Automatic Acknowledgement

This item sets the automatic acknowledgement function ON or OFF.
When a position request or polling request call is received, transceiver automatically transmits a position reply or polling reply call.
1. Press [MENU] to enter the DSC menu.
2. Press [▲] or [▼] to select "AUTO ACK", then press [ENT].

3. Press [▲] or [▼] to select the Automatic Acknowledgement function"ON" or "OFF".

4. Press [ENT] to save setting.
   ● Press [CLR] to cancel and exit the setting.

◆ Offset Time

This item sets the offset time from the UTC (Universal Time Coordinated) time.

USA *51* TAG

4. After setting the longitude data, press [ENT] to set the current UTC time using [▲] or [▼].
- Press [CH/WX] or [16] to move the cursor forward or backward.
- Press [CLR] to cancel and exit the setting.

USA *51* TAG

5. Press [ENT] to program and return to normal operation.

■ Distress Call

A Distress call should be transmitted whenever if the ship or a person is in distress and requires immediate assistance.

Attention: NEVER use the Distress call when your ship or a persion is not in an emergency. A Distress call can be used only when immediate help is needed.

◆ Simple Call

1. While lifting up the key cover, press and hold [DISTRESS] for 3 seconds to transmit the Distress call.
- Emergency channel (Channel 70) is automatically selected and the Distress call is transmitted.
- While pressing and holding [DISTRESS], the key backlighting blinks.

USA *70* DISTRESS TAG GPS Scrolls

2. After transmitting the Distress call, the transceiver waits for an acknowledgment call.
- The Distress call is automatically transmitted every 3.5 to 4.5 minutes.
- "DSC REPEAT" scrolls in the channel comment display on Channel 16.

USA *16* DSC REPEAT TAG GPS Scrolls

3. After receiving the acknowledgment, "RCV DISTRESS ACK" scrolls in the channel comment display, reply using the microphone.

USA *16* RCV DISTRESS ACK TAG GPS Scrolls

4. Press and hold [DISTRESS] for 3 seconds to transmit a renewed Distress call, if desired.
5. Press any key other than the [DISTRESS] key to exit the Repeat Call status.
   ※ A distress alert contains;
   - Kinds of distress: Undesignated distress

◆ Regular Call

The nature of the distress should be included in the Distress call.
1. Press [MENU] to enter the DSC menu.
2. Press [▲] or [▼] to select "DISTRESS", then press [ENT].

3. Press [▲] or [▼] to select the nature of the distress, then press [ENT].
   - 'UNDESIGNATED', 'EXPLOSION', 'FLOODING', 'COLLISION', 'GROUNDING', 'CAPSIZING', 'SINKING', 'ADRIFT (Disable adrift)', 'ABANDONING (Abandoning ship)', 'PIRACY (Piracy attack)', and 'MOB (Man overboard)' are available.

Notice: When a GPS receiver is connected, steps 4 and 5 (Current position/time programming) do not appear. Go to step 6.
4. Press [▲] or [▼] to set your latitude data, then press [ENT] to set your longitude data.
   - Press [CH/WX] or [16] to move the cursor forward or backward.
   - Press [▲] or [▼] to edit N(North Latitude) or S(South Latitude) when the cursor is on the 'N' or 'S' position;
   - Press [▲] or [▼] to edit W(West Longitude) or E(East Longitude) when the cursor is on the 'W' or 'E' position.
   - Press [CLR] to cancel and exit the setting.

5. After setting the longitude data, press [ENT] to set the current UTC time using [▲] or [▼], then press [ENT]
   - Press [CH/WX] or [16] to move the cursor forward or backward.
   - Press [CLR] to cancel and exit the setting.

6. Press and hold [DISTRESS] for 3 seconds to transmit the Distress call.
   - While pressing and holding [DISTRESS], the key backlighting blinks.
   - Emergency channel (Channel 70) is automatically selected and the Distress call is transmitted.
   - Press [CLR] to cancel and exit the state.

7. After transmitting the Distress call, the transceiver waits for an acknowledgment call.
   - The Distress call is automatically transmitted every 3.5 to 4.5 minutes.
   - "DSC REPEAT" scrolls in the channel comment display on Channel 16.

DSC REPEAT

USA · TAG · GPS · Scrolls

8. After receiving the acknowledgment, "RCV DISTRESS ACK" scrolls in the channel comment display, reply using the microphone.

RCV DISTRESS ACK

USA · TAG · GPS · Scrolls

9. Press and hold [DISTRESS] for 3 seconds to transmit a renewed Distress call, if desired.
10. Press any key other than the [DISTRESS] key to exit the Repeat Call status.
   ※ A distress alert contains;
   ● Kinds of distress: Undesignated distress.

◆ Receiving DSC Calls

When a Distress call is received:
1. The emergency alarm sounds. Press any key to stop the alarm.
2. "DSC" appears and "RCV DISTRESS" scrolls in the channel comment display, then Channel 16 is automatically selected.
3. Continue monitoring Channel 16 as a coast station may require assistance.

RCV DISTRESS

USA · TAG · GPS DSC · Scrolls · Displays

◆ Receiving a Distress Acknowledgement

When a Distress acknowledgement to other ship is received:
1. The emergency alarm sounds. Press any key to stop the alarm.
2. "DSC" appears and "RCV DISTRESS ACK" scrolls in the channel comment display, then Channel 16 is automatically selected.

RCV DISTRESS

USA · TAG · GPS DSC · Scrolls · Displays

◆ Receiving a Distress Relay Call

When a Distress Relay is received:
1. The emergency alarm sounds. Press any key to stop the alarm.
2. "DSC" appears and "RCV RELAY" scrolls in the channel comment display, then Channel 16 is automatically selected.

RCV RELAY

USA · TAG · GPS DSC · Scrolls · Displays

◆ Receiving a Distress Relay Acknowledgement

When a Distress Relay acknowledgement is received:
1. The emergency alarm sounds. Press any key to stop the alarm.
2. "DSC" appears and "RCV RELAY ACK" scrolls in the channel comment display, then Channel 16 is automatically selected.

RCV RELAY ACK

USA · TAG · GPS DSC · Scrolls · Displays

■ Individual Call

The Individual call function allows you to transmit a DSC signal to a specific ship or a Coast station.

◆ Transmitting an Individual Call

1. Press [MENU] to enter the DSC menu.
2. Press [▲] or [▼] to select "INDIVIDUAL", then press [ENT].

3. Press [▲] or [▼] to select a desired pre-programmed Individual address or "MANUAL INPUT", then press [ENT].
   - The ID code for the individual call should be set in advance.
   - When "MANUAL INPUT" is selected, press [▲] or [▼] to set the 9-digit MMSI ID code for the individual you wish to call.
   - While manual inputting, press [CH/WX] or [16] to move the cursor forward or backward. Press [CLR] to cancel and exit the setting.

4. Press [▲] or [▼] to select a desired communication channel, then press [ENT].
   - Communication channels are already preset into the transceiver in preferred order.
   - After pressing [ENT], Channel 70 is automatically selected and "READY" appears in the channel comment display.
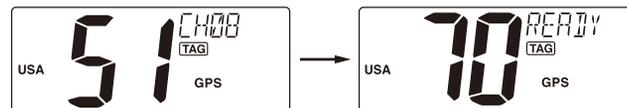
5. Press [ENT] to transmit the Individual call. If Channel 70 is busy, the transceiver stands by until the channel becomes clear.

6. Stands by on the operated channel until an cacknowledgement call is received, "WAITING FOR ACK" scrolls in the channel comment display.
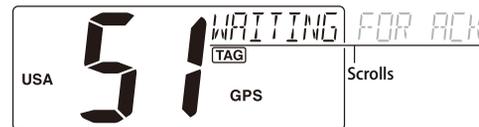
7. When the acknowledgement is received, beeps sound, "DSC" appears and "RCV ABLE ACK" or "RCV UNABLE ACK" scrolls in the channel comment display with beeps.

8. When "Able to comply" is received, press and hold [PTT] to communicate with the responding ship.

◆ Transmitting an Individual Acknowledgement

When receiving an Individual call, you can transmit an acknowledgement ('Able to comply' or 'Unable to comply') by using the on screen prompts (Quick ACK). Also, you can send an acknowledgement through the menu system (Manual ACK).

Quick ACK:

After an individual call is received, press [CLR] to stop the beeps, then press [ENT]. (Go to Step 4 below).

Manual ACK:

1. Press [MENU] to enter the DSC menu.
2. Press [▲] or [▼] to select "INDV ACK", then press [ENT].
   - ● "INDV ACK" appears after receiving an individual call.

3. Press [▲] or [▼] to select a desired individual address or ID code, then press [ENT].
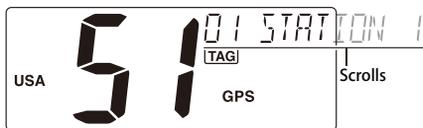
4. Press [▲] or [▼] to select the acknowledgement "ABLE" or "UNABLE", then press [ENT].
   - ● "UNABLE" selected for "No Reason Given".
   - ● After pressing [ENT], Channel 70 is automatically selected and "READY" appears in the channel comment display.

5. Press [ENT] to transmit the ackonledgement call.

6. After the individual acknowledgement call has been transmitted, the specified channel (specified by the calling station) is automatically selected when "ABLE" is selected. When "UNABLE" is selected, the display returns to the previous screen (before entering the DSC menu).

◆ Receiving an Individual Call

When an individual call is received:
1. The emergency alarm or beeps sound depending on the received category, press [CLR] to stop the alarm or beeps.
2. "DSC" appears and "RCV INDIVIDUAL" scrolls in the channel comment display.
3. Press [ENT] to reply the call and select the specified communication channel; Press [CLR] to ignore the call.

■ Group Call

The Group Call function allows you to transmit a DSC signal to a specific group only.

◆ Transmitting a Group Call

1. Press [MENU] to enter the DSC menu.
2. Press [▲] or [▼] to select "GROUP", then press [ENT].

3. Press [▲] or [▼] to select a desired pre-programmed Group address or "MANUAL INPUT", then press [ENT].
   - The ID code for the group call should be set in advance.
   - When "MANUAL INPUT" is selected, press [▲] or [▼] to set the 8-digit MMSI ID code for the group you wish to call.
   - While manual inputting, press [CH/WX] or [16] to move the cursor forward or backward. Press [CLR] to cancel and exit the setting. Press [ENT] to go to the next step.
   - The first one digit is specified '0' for a Group ID. The first two digits are '0' for any Coast station ID.

4. Press [▲] or [▼] to select a desired communication channel, then press [ENT].
   - Communication channels are already preset into the transceiver in recommending order.
   - After pressing [ENT], Channel 70 is automatically selected and "READY" appears in the channel comment display.
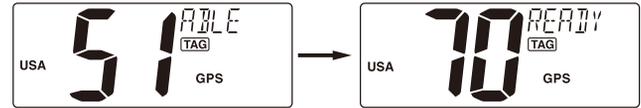
5. Press [ENT] to transmit the Group call. If Channel 70 is busy, the transceiver stands by until the channel becomes clear.

6. After the Group call has been transmitted, the specified channel is automatically selected.

7. Press and hold [PTT] to communicate with the specified group ships.

◆ Receiving a Group Call

When a Group call is received:
1. The emergency alarm or beeps sound depending on the received category, press [CLR] to stop the alarm or beeps.
2. "DSC" appears and "RCV GROUP" scrolls in the channel comment display.
3. Press [ENT] to reply the call and select the specified communication channel; Press [CLR] to ignore the call.

■ All Ships Call

Large ships use Channel 70 as their 'listening channel'. When you want to announce a message to these ships within range, use the 'All Ships Call' function.

◆ Transmitting an All Ships Call

1. Press [MENU] to enter the DSC menu.
2. Press [▲] or [▼] to select "ALL SHIPS", then press [ENT].
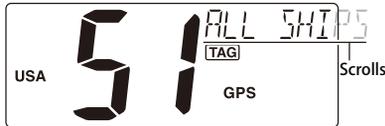
3. Press [▲] or [▼] to select the desired category, then press [ENT].

4. Press [▲] or [▼] to select a desired ITU channel, then press [ENT], Channel 70 is automatically selected and "READY" appears in the channel comment display.
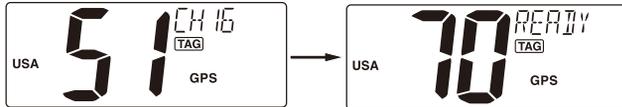
5. Press [ENT] to transmit the All Ships call.

6. After the All Ships call has been transmitted, the specified channel is automatically selected.

◆ Receiving an All Ships Call

When an All Ships call is received:
1. The emergency alarm or beeps sound depending on the received category, press [CLR] to stop the alarm or beeps.
2. "DSC" appears and "RCV ALL SHIPS" scrolls in the channel comment display.
3. Press [ENT] to monitor Channel 16 for an announcement from the calling vessel, press [CLR] to ignore the call.

■ Geographical Area Call

Calls to all ship stations in a certain sea area.

◆ Receiving a Geographical Area Call

When a Geographical Area call (for the area you are in) is received:
1. The emergency alarm or beeps sound depending on the received category, press [CLR] to stop the alarm or beeps.
2. "DSC" appears and "RCV GEOGRAPHICAL" scrolls in the channel comment display.
3. Press [ENT] to select the channel specified by the calling station for voice communication; Press [CLR] to ignore the call.
4. Monitor the selected channel for an announcement from the calling station.

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51 RCV GEOGRAPHICAL

USA · TAG · GPS DSC — Scrolls / Displays

Notice: When no GPS receiver is connected or if there is a problem with the connected receiver, all Geographical Area calls are received, regardless of your position.

■ Position Request Call

◆ Transmitting a Position Request Call

Transmit a Position Request call when you want to know a specified ship's current position.

1. Press [MENU] to enter the DSC menu.
2. Press [▲] or [▼] to select "POS REQUEST", then press [ENT].
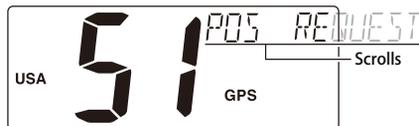
51 POS REQUEST

USA · GPS — Scrolls

3. Press [▲] or [▼] to select a desired pre-programmed individual address or "MANUAL INPUT", then press [ENT].
   ● The ID code for the individual should be set in advance.
   ● When "MANUAL INPUT" is selected, press [▲] or [▼] to set the 9-digit MMSI ID code for the individual you wish to call.

51 MANUAL INPUT

USA · TAG · GPS — Scrolls

4. Channel 70 is automatically selected and "READY" appears in the channel comment display.

70 READY

USA · TAG · GPS

5. Press [ENT] to transmit the Position Request call. If Channel 70 is busy, the transceiver stands by until the channel becomes clear.

70 DSC

TX · USA · TAG · GPS

6. After te Position Request call has been transmitted, return to normal operation.

51 29°35.588N

USA · TAG · GPS — Scrolls

◆ Receiving a Position Request Call

When a Position Request call is received:
1. "DSC" appears and "RCV POS REQUEST" scrolls in the channel comment display.
2. The beeps sound. Press [CLR] to stop the beeps.
3. Press [ENT] to reply the call, or press [CLR] to ignore the call.

51 RCV POS REQUEST

USA · TAG · GPS DSC — Scrolls / Displays

◆ Transmitting a Position Reply Call

Transmit a Position Reply call when a Position Request call is received.
1. Press [MENU] to enter the DSC menu.
2. Press [▲] or [▼] to select "POS REPLY", then press [ENT].

3. Press [▲] or [▼] to select a desired pre-programmed individual address, then press [ENT].
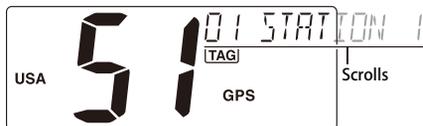
4. The position information appears. Press [▲] or [▼] to input the position data (Latitude and Longitude) directly, then press [ENT].
5. Press [▲] or [▼] to edit the current UTC time directly, then press [ENT]. Channel 70 is automatically selected and "READY" appears in the channel comment display.

6. Press [ENT] to transmit the Position Reply call, then return to normal operation (before entering the DSC menu).

◆ Receiving a Position Reply Call

When a Position Reply call is received:
1. "DSC" and "POS REPLY" appear in the display.
   ● The Latitude and Longitude from the called station are scrolled in the channel comment display.
   ● "NO POSITION" scrolls in the channel comment display when no position information is received.
2. The beeps sound. Press [CLR] to stop the beeps.
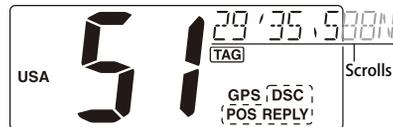
■ Position Report Call

◆ Transmitting a Position Report Call

Transmit a Position Report call when you want to inform other ships of your location.
1. Press [MENU] to enter the DSC menu.
2. Press [▲] or [▼] to select "POS REPORT", then press [ENT].
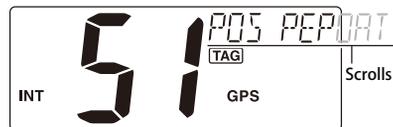
3. Press [▲] or [▼] to select a desired pre-programmed individual address or "MANUAL INPUT", then press [ENT].
   ● The ID code for the individual should be set in advance.
   ● When "MANUAL INPUT" is selected, press [▲] or [▼] to set the 9-digit MMSI ID code for the individual you wish to call.
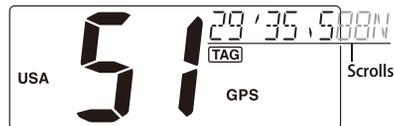
USA 51 MANUAL INPUT TAG GPS —Scrolls
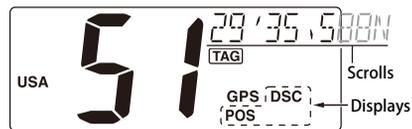
4. The position information appears. Press [▲] or [▼] to input the position data (Latitude and Longitude) directly, then press [ENT].
5. Channel 70 is automatically selected and "READY" appears in the channel comment display.

USA 70 READY TAG GPS

6. Press [ENT] to transmit the Position Report call. If Channel 70 is busy, the transceiver stands by until the channel becomes clear.

TX USA 70 DSC TAG GPS

7. After te Position Report call has been transmitted, return to normal operation.

◆ **Receiving a Position Report Call**

When a Position Report call is received:
1. "DSC" and "POS" appear.
   ● Latitude and Longitude scrolls in the channel comment display.
   ● "NO POSITION" scrolls in the channel comment display when no position information is received.
2. The beeps sound. Press [CLR] to stop the beeps.

USA 51 29°35.5ØØN TAG GPS DSC POS —Scrolls —Displays

■ Polling Call

◆ **Transmitting a Polling Request Call**

Transmit a Polling Request call when you want to know a specific ship is in the communication area or not.
1. Press [MENU] to enter the DSC menu.
2. Press [▲] or [▼] to select "POLL REQUEST", then press [ENT].
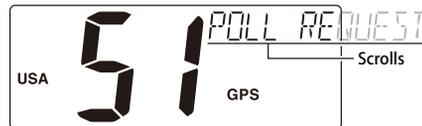
USA 51 POLL REQUEST GPS —Scrolls

3. Press [▲] or [▼] to select a desired pre-programmed individual address or "MANUAL INPUT", then press [ENT].
   ● The ID code for the individual should be set in advance.
   ● When "MANUAL INPUT" is selected, press [▲] or [▼] to set the 9-digit MMSI ID code for the individual you wish to call.

USA 51 MANUAL INPUT TAG GPS —Scrolls

4. Channel 70 is automatically selected and "READY" appears in the channel comment display.

5. Press [ENT] to transmit the Polling Request call. If Channel 70 is busy, the transceiver stands by until the channel becomes clear.

6. After te Position Report call has been transmitted, return to normal operation.

◆ **Receiving a Polling Request Call**

When a Polling Request call is received:
1. "DSC" appears and "RCV POLL REQUEST" scrolls in the channel comment display.
2. The beeps sound. Press [CLR] to stop the beeps.
3. Press [ENT] to reply the call, or press [CLR] to ignore the call.


◆ **Transmitting a Polling Reply Call**

Transmit a Polling Reply call when a Polling Request call is received.
1. Press [MENU] to enter the DSC menu.
2. Press [▲] or [▼] to select "POLL REPLY", then press [ENT].
   ● "POLL REPLY" appears after receiving a Polling Request call.

3. Press [▲] or [▼] to select a desired individual address, then press [ENT].
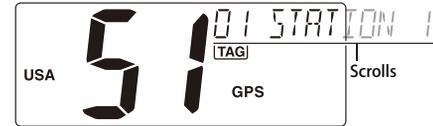
4. Channel 70 is automatically selected and "READY" appears in the channel comment display.

5. Press [ENT] to transmit the Polling Reply call, then return to normal operation.

◆ **Receiving a Polling Reply Call**

When a Polling Reply call is received:
1. "DSC" appears and "RCV POLL REPLY" scrolls in the channel comment display.
2. The beeps sound. Press [CLR] to stop the beeps.

RCV POS REQUEST

USA 51 TAG
GPS DSC
Scrolls
Displays

■ Test Call

Testing on the dedicated DSC distress and safety calling channels should be avoided as much as possible by using other methods. When testing on the distress/safety channel is unavoidable, it should be indicated that these are test transmissions. Normally the test call would require no further communications between the two stations involved.

◆ Transmitting a Test Call

1. Press [MENU] to enter the DSC menu.
2. Press [▲] or [▼] to select "TEST CALL", then press [ENT].

TEST CALL

USA 51 TAG
GPS
Scrolls

3. Press [▲] or [▼] to select a desired pre-programmed individual address or "MANUAL INPUT", then press [ENT].
   ● The ID code for the individual should be set in advance.
   ● When "MANUAL INPUT" is selected, press [▲] or [▼] to set the 9-digit MMSI ID code for the individual you wish to call.

MANUAL INPUT

USA 51 TAG
GPS
Scrolls

4. Channel 70 is automatically selected and "READY" appears in the channel comment display.

READY

USA 70 TAG
GPS

5. Press [ENT] to transmit the test call. If Channel 70 is busy, the transceiver stands by until the channel becomes clear.

TX DSC
USA 70 TAG
GPS

6. After te test call has been transmitted, return to normal operation.

◆ Receiving a Test Call

When a Test call is received:
1. "DSC" appears and "RCV TEST CALL" scrolls in the channel comment display.
2. The beeps sound. Press [CLR] to stop the beeps.
3. Press [ENT] to reply the call, or press [CLR] to ignore the call.

RCV TEST CALL

USA 51 TAG
GPS DSC
Scrolls
Displays

◆ Transmitting a Test Ack Call

Transmit a Test Acknowledgement call when a Test call is received.
1. Press [MENU] to enter the DSC menu.
2. Press [▲] or [▼] to select "TEST ACK", then press [ENT].
   ● "TEST ACK" appears after receiving a Test call.

3. Press [▲] or [▼] to select a desired pre-programmed individual address, then press [ENT].
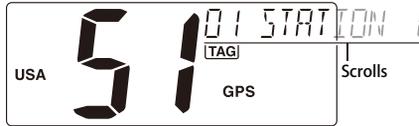
4. Channel 70 is automatically selected and "READY" appears in the channel comment display.

5. Press [ENT] to transmit the Test Ack call, then return to normal operation.

◆ **Receiving a Test Ack Call**

When a Test Acknowledgement call is received:
1. "DSC" appears and "RCV TEST ACK" scrolls in the channel comment display.
2. The beeps sound. Press [CLR] to stop the beeps.
3. Press [ENT] to reply the call, or press [CLR] to ignore the call.

■ **Received Messages**

The transceiver automatically stores up to 20 distress messages and 20 other messages. The messages can be used as an assistance to the logbook.

◆ **Distress Message**

1. Press [MENU] to enter the DSC menu.
2. Press [▲] or [▼] to select "DSC LOG", then press [ENT].

3. Press [▲] or [▼] to select "DISTRESS", then press [ENT].
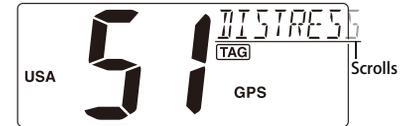
4. Press [▲] or [▼] to select a desired message, then press [ENT].
   ● " ♒ " appears when the unread messages is selected.
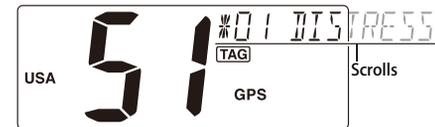
5. The message information scrolls.

    The stored message has various information.

- Press [CLR] to return to the channel comment display.

◆ Other Messages

1. Press [MENU] to enter the DSC menu.
2. Press [▲] or [▼] to select "DSC LOG", then press [ENT].

3. Press [▲] or [▼] to select "OTHER", then press [ENT].

4. Press [▲] or [▼] to select a desired message, then press [ENT].

- " ※ " appears when the unread messages is selected.
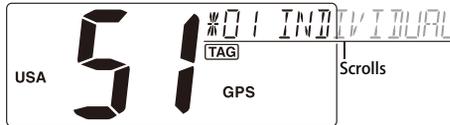
5. The message information scrolls.

- The stored message has various information.
- Press [CLR] to return to the channel comment display.
- Press and hold [CLR] for 1 second to delete the displayed message and return to the DSC menu.

◆ Set ATIS ID

1. Press [MENU] to enter DSC menu;
2. Press [▲] /[▼] to select menu item"ATIS ID", then press [ENT] to enter ATIS ID code setting mode, a cursor blinks;

- If ATIS ID code set already，the current ATIS ID is displayed and can be re-set.

3. Press [▲]/[▼] to edit the first digit of ATIS ID code, then press [CH/WX] to confirm and next digit entering. Pls. repeatedly operate to set 10 digits.

- Press [CH/WX] or [16] to move the cursor forward or backward, respectively.

4. Press [ENT] to confirm, press [CLR] to cancel.

◆ ATIS ON/OFF

1. Press [MENU] to enter DSC menu;
2. Press [▲]/[▼] to select the menu item "ATIS SW", then press [ENT];

3. Press [▲]/[▼] to set ATIS ON or OFF;

4. Press [ENT] to confirm, press [CLR] to cancel.

■ Set Mode Operation

Set mode is used to change the settings of the transceiver's functions: Scan Type, Scan Resume Tmer, Weather Alert, Dual/Tri-watch, Operation Beep, LCD Backlight, LCD Contrast, AF Level Adjustment, Favorite Channel and Remote ID.

Set mode operation method is as follows:

1. Power OFF.
2. While pressing and holding [16], power on to enter the Set mode.
3. When "SCAN" appears, release [16].
4. Press [16] to select a desired item.
5. Press [▲] or [▼] to select the desired setting of the item.
6. Power OFF, then power ON again to exit the Set mode.

No.	Display	Setting Item	Setting Parameter Options	Default Setting
1	SCAN	Scan Type	⊓⁻ (Normal Scan)/ P⁻ (PriorityScan)	⊓⁻ (Normal Scan)
2	TIMER	Scan Resume Tmer	ₒF (OFF)/ ₒⁿ (ON)	ₒF (OFF)
3	WX ALERT	Weather Alert	ₒF (OFF)/ ₒⁿ (ON)	ₒF (OFF)
4	DUAL	Dual/Tri-watch	d⁻ (Dualwatch)/ t⁻ (Tri-watch)	d⁻ (Dualwatch)
5	BEEP	Operation Beep	ₒF (OFF)/ ₒⁿ (ON)	ₒⁿ (ON)
6	BACK LIGHT	LCD Backlight	Level 1~4/ ₒF (OFF)	Level 4
7	CONTRAST	LCD Contrast	Level 1~4/ ₒF (OFF)	Level 3

No.	Display	Setting Item	Setting Parameter Options	Default Setting
8	AF ADJ	AF Level Adjustment	2/5/8/10 Seconds/OFF	2 Seconds
9	FAVORITE CH	Favorite Channel	ₒF (OFF)/ ₒⁿ (ON)	ₒⁿ (ON)
10	REMOTE ID	Remote ID	01~69	14

■ Set Mode Items

◆ Scan Type

The transceiver has two 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.

◆ Scan Resume Tmer

The scan resume timer can be selected as OFF or ON. When OFF is selected, the scan pauses until the signal disappears. When ON is selected, the scan pauses 5 seconds and resumes even if a signal has been received on any other channel than Channel 16.

◆ Weather Alert

A NOAA broadcast station transmits a weather alert tone before important weather information. When the Weather Alert function is ON, the transceiver detects the alert, then the "WX ALT" icon blinks until the transceiver is operated. The previously selected (used) weather channel is checked any time during standby or while scanning.

● "WX ALT" appears instead of "WX" indication when the function is set ON.

◆ **Dual/Tri-watch**

This item can be selected as Dualwatch or Tri-watch.

◆ **Operation Beep**

You can select silent operation by turning OFF the beep tones, or you can have confirmation beeps sound at the push of a key by turning ON the beep tones.

◆ **LCD Backlight**

The LCD backlight brightness can be adjusted from 1 (dark) to 4 (bright), or OFF.
The LCD backlight is also adjustable by pressing and holding [SCAN] and pressing [▲] or [▼].

◆ **LCD Contrast**

The LCD contrast can be adjustable in 4 levels. 1 is the lowest contrast, and 4 is the highest contrast.

◆ **AF Level Adjustment**

When power ON, a beep is emitted to adjust the audio frequency level via [VOL].
Select the time period for the beep to 2, 5, 8, 10 seconds or OFF.

◆ **Favorite Channel**

Set the Favorite channel function ON or OFF.
The favorite channels are set by the TAG channel setting.
When the function is ON, press[▲] or [▼] on the microphone to sequentially select the favorite channels in the selected channel group.
"FAVORITE" scrolls in the channel comment display.

◆ **Remote ID**

Set a Remote ID number between 01 and 69.
The format of the remote ID code conforms to the NMEA statement format and is sent to the external dedicated device along with the native MMSI code.

■ VHF MARINE RADIO CHANNEL LIST
USA - USA Channel Group , INT - International Channel Group , CAN - Canadian Channel Group

Channel Number			Frequency (MHz)		Channel Number			Frequency (MHz)		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	160.050		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	RX Only	161.650	70*3	70*3	70*3	RX Only	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	RX Only	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	RX Only	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	**Weather Channel**		Frequency (MHz)		
13*2	13	13*1	156.650	156.650		62		156.125	160.725	81A		81A	157.075	157.075				Transmit	Receive
14	14	14	156.700	156.700			62A	156.125	156.125		82		157.125	161.725	1			RX Only	162.550
15*2	15*1	15*1	156.750	156.750		63		156.175	160.775	82A		82A	157.125	157.125	2			RX Only	162.400
16	16	16	156.800	156.800	63A			156.175	156.175		83	83	157.175	161.775	3			RX Only	162.475
17*1	17	17*1	156.850	156.850		64	64	156.225	160.825	83A		83A	157.175	157.175	4			RX Only	162.425
	18		156.900	161.500	64A		64A	156.225	156.225			83b	RX Only	161.775	5			RX Only	162.450
18A		18A	156.900	156.900		65		156.275	160.875	84	84	84	157.225	161.825	6			RX Only	162.500
	19		156.950	161.550	65A	65A	65A	156.275	156.275	84A			157.225	157.225	7			RX Only	162.525
19A		19A	156.950	156.950		66		156.325	160.925	85	85	85	157.275	161.875	8			RX Only	161.650
20	20	20*1	157.000	161.600	66A	66A	66A*1	156.325	156.325	85A			157.275	157.275	9			RX Only	161.775
20A			157.000	157.000	67*2	67	67	156.375	156.375	86	86	86	157.325	161.925	10			RX Only	163.275

*1 Low Power Only.   *2 Momentary High Power.   *3 DSC Operation Only.

■ SPECIFICATIONS

General	
Frequency Range	TX:156.025-157.425MHz
	RX:156.050-163.275MHz
Modulation	FM(16K0G3E),DSC(16K0G2B)
Frequency Stability	±10ppm
Operating Voltage	DC13.8V(±15%)
Operating Temperature	-20℃~+60℃
Antenna Impedance	50Ω
Dimensions (W×D×H)	165mm×163mm×77mm
Weight	920g(Hand MIC Included)

Transmitter	
Output Power	25W\1W
Max. Frequency Deviation	±5kHz
Spurious Emissions	≤ -70dB(H)
	≤ -56dB(L)
Adjacent Channel Power	≥70dB
Audio Harmonic Distortion	≤10%
Current Consumption	≤ 5.5A (H)
	≤ 1.5A (L)
Input Impedance	2kΩ(MIC

Receiver	
Receive Sensitivity	≤0.2μV
Squelch Sensitivity	≤0.2μV
Adjacent Channel Selectivity	≥70dB
Spurious Response Rejection Ratio	≥70dB
Intermodulation Rejection Ratio	≥70dB
Max. Receive Current	≤1.5A
Audio Output Power	≤ 4.5W(10%)
GPS Signal Format	NMEA0183-2.0or3.01
Output Impedance	4Ω (Speaker)

■ TROUBLESHOOTING

The problems described in the following table are some common operating faults. These types of errors are generally caused by improper connections, incorrect operation settings, or operational errors due to incomplete programming. These problems are usually not caused by circuit failures. Before you suspect that the transceiver has malfunctioned, please refer to these tables and relevant parts of this manual.

Problem	Possible Cause	Solution	REF.
The transceiver does not turn ON.	1. The power cable is not connected well. 2. The power cable fuse is broken. 3. Operating voltage is more than 17V or less than 9V.	1. Check the power cable is connected correctly: red (+); black (-). 2. Find the cause of the blown fuse, replace the new fuse with 15A current. 3. Adjust the power supply to 13.8V.	3
Unable to connect with GPS.	1. Connection error. 2. External GPS format is different.	1. Check the connection is correct. 2. External GPS format should be NMEA 0183-2.0 or 3.01.	3
Unable to scan.	No TAG channel set.	Set the channel you want to scan as TAG channel.	11
Unable to transmit.	Work on Weather Channel or Channel 70.	Exit the weather channel or channel 70.	5、9
Can't select high power.	Some channels can only be transmitted at low power.	Select other channels.	6、8
Can't communicate on same channel.	1. The channel is duplex (DUP). 2. Working in a self-set channel group.	1. Select channel. 2. Set the channel frequency to the same.	6、8
No beep.	Beep tones are turned OFF.	Turn the beep tone ON in the Set mode.	33
Distress call cannot be transmitted.	MMSI (DSC self ID) code is not programmed.	While pressing and holding [MENU], power on to enter MMSI set mode.	13
No sound from the speaker.	1. Squelch level is too high. 2. The volume is too low. 3. Speaker grill water penetration.	1. Rotate [SQL] to adjust squelch level. 2. Rotate [VOL] to adjust volume. 3.Activate Vibration function to drain water away from speaker.	8、10

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