# ICOM®

VHF MARINE TRANSCEIVER
# IC-M402A
(REMOTE-CONTROL MIC COMPATIBLE)

VHF MARINE TRANSCEIVER
# IC-M402SA

## Icom Inc.

# FOREWORD

Thank you for purchasing this Icom product. The IC-M402A/M402SA VHF MARINE TRANSCEIVERS are designed and built with Icom's state of the art technology and craftsmanship. With proper care, this product should provide you with years of trouble-free operation.

We want to take a couple of moments of your time to thank you for making the IC-M402A/M402SA your radio of choice, and hope you agree with Icom's philosophy of "technology first." Many hours of research and development went into the design of your IC-M402A/M402SA.

## ◇ *FEATURES*

❍ *Large 2-digit Ch with scrolling channel comment*

❍ *Easy to hear speaker*

❍ *Built-in DSC meets RTCM SC101 requirement*

❍ *Rugged waterproof construction*

❍ *Optional COMMANDMIC$^{TM}$ (IC-M402A only)*

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# IMPORTANT

**READ ALL INSTRUCTIONS** carefully and completely before using the transceiver.

**SAVE THIS INSTRUCTION MANUAL** — This instruction manual contains important operating instructions for the IC-M402A/M402SA.

# EXPLICIT DEFINITIONS

| WORD | DEFINITION |
|---|---|
| ⚠ WARNING! | Personal injury, fire hazard or electric shock may occur. |
| CAUTION | Equipment damage may occur. |
| NOTE | Recommended for optimum use. No risk of personal injury, fire or electric shock. |

**CLEAN THE TRANSCEIVER AND MICROPHONE THOROUGHLY WITH FRESH WATER** after exposure to water including salt water, otherwise, the keys and switches may become inoperable due to salt crystallization.

# IN CASE OF EMERGENCY

If your vessel requires assistance, contact other vessels and the Coast Guard by sending a distress call on Channel 16.

> ### USING CHANNEL 16
> ### DISTRESS CALL PROCEDURE
> 1. "MAYDAY MAYDAY MAYDAY."
> 2. "THIS IS ..............." (name of vessel)
> 3. Your call sign or other indication of the vessel (AND 9-digit DSC ID if you have one).
> 4. "LOCATED AT ..............." (your position)
> 5. The nature of the distress and assistance required.
> 6. Any other information which might facilitate the rescue.

Or, transmit your distress call using digital selective calling on Channel 70.

> ### USING DIGITAL SELECTIVE CALLING (Ch 70)
> ### DISTRESS CALL PROCEDURE
> 1. While lifting up the key cover, push and hold **[DISTRESS]** for 5 sec. until you hear 5 short beeps change to one long beep.
> 2. Wait for an acknowledgment on Channel 70 from a coast station.
>    • After the acknowledgment is received, Channel 16 is automatically selected.
> 3. Push and hold **[PTT]**, then transmit the appropriate information as listed above.

# NOTE

**A WARNING STICKER** is supplied with the transceiver.
To comply with FCC regulations, this sticker must be affixed in such a location as to be readily seen from the operating controls of the radio as in the diagram below. Make sure the chosen location is clean and dry before applying the sticker. (p. ?)

EXAMPLE

# RADIO OPERATOR WARNING

**WARNING**

Icom requires the radio operator to meet the FCC Requirements for Radio Frequency Exposure.An omnidirectional antenna with gain not greater than 9 dBi must be mounted a minimum of 5 meters (measured from the lowest point of the antenna) vertically above the main deck and all possible personnel. This is the minimum safe separation distance estimated to meet all RF exposure compliance requirements. This 5 meter distance is based on the FCC Safe Maximum Permissible Exposure (MPE) distance of 3 meters added to the height of an adult (2 meters) and is appropriate for all vessels.

For watercraft without suitable structures, the antenna must be mounted so as to maintain a minimum of 1 meter vertically between the antenna, (measured from the lowest point of the antenna), to the heads of all persons AND all persons must stay outside of the 3 meter MPE radius.

Do not transmit with radio and antenna when persons are within the MPE radius of the antenna, unless such persons (such as driver or radio operator) are shielded from antenna field by a grounded metallic barrier. The MPE Radius is the minimum distance from the antenna axis that person should maintain in order to avoid RF exposure higher than the allowable MPE level set by FCC.

**FAILURE TO OBSERVE THESE LIMITS MAY ALLOW THOSE WITHIN THE MPE RADIUS TO EXPERIENCE RF RADIATION ABSORPTION WHICH EXCEEDS THE FCC MAXIMUM PERMISSIBLE EXPOSURE (MPE) LIMIT.
IT IS THE RESPONSIBILITY OF THE RADIO OPERATOR TO ENSURE THAT THE MAXIMUM PERMISSIBLE EXPOSURE LIMITS ARE OBSERVED AT ALL TIMES DURING RADIO TRANSMISSION. THE RADIO OPERATOR IS TO ENSURE THAT NO BYSTANDERS COME WITHIN THE RADIUS OF THE MAXIMUM PERMISSIBLE EXPOSURE LIMITS.**

**Determining MPE Radius**
**THE MAXIMUM PERMISSIBLE EXPOSURE (MPE) RADIUS HAS BEEN ESTIMATED TO BE A RADIUS OF ABOUT 3M PER OET BULLETIN 65 OF THE FCC.
THIS ESTIMATE IS MADE ASSUMING THE MAXIMUM POWER OF THE RADIO AND ANTENNAS WITH A MAXIMUM GAIN OF 9dBi ARE USED FOR A SHIP MOUNTED SYSTEM.**

# TABLE OF CONTENTS

# PRECAUTION

$\triangle$**WARNING! NEVER** connect the transceiver to an AC outlet. This may pose a fire hazard or result in an electric shock.

**CAUTION:** Changes or modifications to this device, not expressly approved by Icom Inc., could void your authority to operate this device under FCC regulations.

**NEVER** connect the transceiver to a power source of more than 16 V DC or use reverse polarity. This will ruin the transceiver.

**NEVER** cut the DC power cable between the DC plug and fuse holder. If an incorrect connection is made after cutting, the transceiver may be damaged.

**NEVER** place the transceiver where normal operation of the vessel may be hindered or where it could cause bodily injury.

**KEEP** the transceiver at least 3.3 ft (1 m) away from the ship's navigation compass.

**DO NOT** use or place the transceiver in areas with temperatures below –4°F (–20°C) or above +140°F (+60°C) or, in areas subject to direct sunlight, such as the dashboard.

**AVOID** the use of chemical agents such as benzine or alcohol when cleaning, as they may damage the transceiver surfaces.

**BE CAREFUL!** The transceiver rear panel will become hot when operating continuously for long periods.
Place the transceiver in a secure place to avoid inadvertent use by children.

**BE CAREFUL!** The transceiver and optional HM-127*employ waterproof construction, which corresponds to JIS waterproof specification, Grade 7 (1 m/30 min.). However, once the transceiver or microphone has been dropped, waterproofing cannot be guaranteed due to the fact that the case may be cracked, or the waterproof seal damaged, etc.
*IC-M402A only

## ◇ 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.

## ◇ RADIO LICENSES
### (1) SHIP STATION LICENSE
You must have a current radio station license before using the transceiver. It is unlawful to operate a ship station which is not licensed.

Inquire through your dealer or the appropriate government agency for a Ship-Radiotelephone license application. This government-issued license states the call sign which is your craft's identification for radio purposes.

### (2) OPERATOR'S LICENSE
A Restricted Radiotelephone Operator Permit is the license most often held by small vessel radio operators when a radio is not required for safety purposes.

The Restricted Radiotelephone Operator Permit must be posted or kept with the operator. Only a licensed radio operator may operate a transceiver.

However, non-licensed individuals may talk over a transceiver if a licensed operator starts, supervises, ends the call and makes the necessary log entries.

Keep a copy of the current government rules and regulations handy.

### Radio license for boaters (U.S.A. only)
The Telecommunications Act of 1996 permits recreational boaters to have and use a VHF marine radio, EPIRB, and marine radar without having an FCC ship station license. Boaters traveling on international voyages, having an HF single sideband radiotelephone or marine satellite terminal, or required to carry a marine radio under any other regulation must still carry an FCC ship station license. For further information, see the FCC Ship Radio Stations Fact Sheet.

# 2 PANEL DESCRIPTION

## ■ Front panel

Speaker ① Function display ②

IC-M402A

⑧ ⑦ ⑥ ⑤ ④ ③
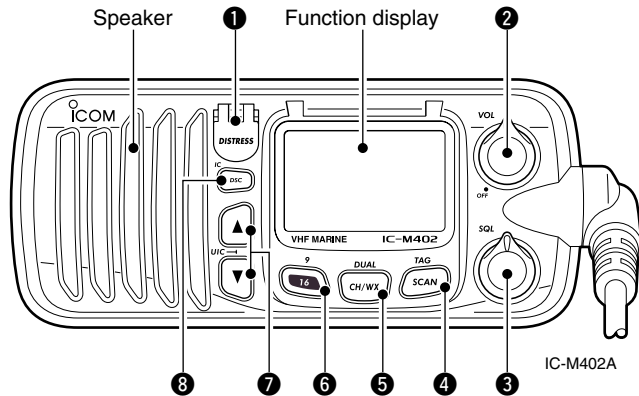
**① DISTRESS KEY [DISTRESS]**
Transmits Distress call when pushed for 5 sec. (p. ?)

**② POWER/VOLUME CONTROL [VOL]**
Turns power ON and OFF and adjusts the audio level. (p. 8)

**③ SQUELCH CONTROL [SQL]**
Sets the squelch threshold level. (p. 8)

**④ SCAN KEY [SCAN•TAG]**
➥ Starts and stops Normal or Priority scan.
➥ Sets or clears the displayed channel as a tag (scanned) channel when pushed for 1 sec.
➥ While pushing **[HI/LO]** on the microphone, push for 3 sec. to clear or set all tag channels in the selected channel group.

**⑤ CHANNEL/WEATHER CHANNEL KEY [CH/WX•DUAL]**
➥ Toggles between regular channels and weather channel when pushed momentarily. (p. 7)
➥ Starts Dualwatch or Tri-watch when pushed for 1 sec. (p. 11)
➥ Stops Dualwatch or Tri-watch when either is activated.

**⑥ CHANNEL 16/CALL CHANNEL KEY [16•9]**
➥ Selects Channel 16 when pushed. (p. 6)
➥ Selects call channel when pushed for 1 sec. (p. 6)
• "**CALL**" appears when call channel is selected.
➥ Push for 3 sec. to enter call channel programming condition when call channel is selected. (p. 9)
➥ While pushing **[CH/WX•DUAL]**, push to enter the channel comments programming condition. (p. 10)
➥ Enters Set mode when pushed while turning power ON. (p. 14)

**➐ CHANNEL UP/DOWN KEYS [▲]/[▼]•[U/I/C]**
➥ Selects the operating channels, Set mode settings, etc. (pgs. 6, 7, 14)
➥ While pushing **[SCAN•TAG]**, push **[▲]** or **[▼]** to adjust the brightness of the LCD and key backlight. (p. 10)
➥ Selects one of 3 regular channels in sequence when both keys are pushed. (p. 7)
  • International, U.S.A. and Canadian channels are available for regular channels.

**➑ DSC/INTERCOM KEY [DSC•IC]**
➥ Selects the DSC menu when pushed. (p. ?)
➥ Activates an optional intercom function when pushed for 1 sec. (p. ?, IC-M402A only)
➥ Shows current position and time from a GPS receiver, when pushed for 1 sec. (p. ?)

## ■ **Function display**
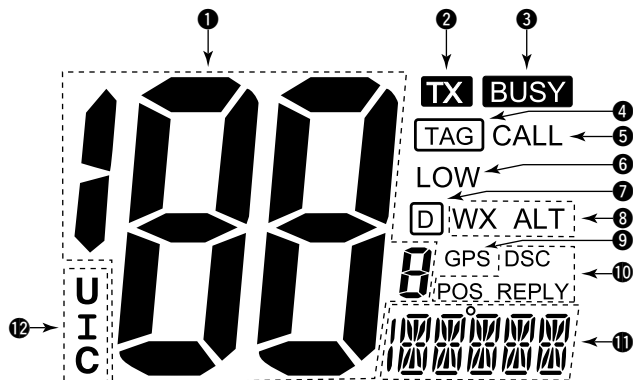


### ❶ CHANNEL NUMBER READOUT
➥ Indicates the selected operating channel number.
- "𝐴" appears when a simplex channel is selected. "𝑏" appears when a receive only channel for a Canadian channel group is selected. (p. 7)
➥ In Set mode, indicates the selected condition. (p. 14)

### ❷ TRANSMIT INDICATOR (p. 8)
Appears while transmitting.

### ❸ BUSY INDICATOR (p. 8)
Appears when receiving a signal or when the squelch opens.

### ❹ TAG CHANNEL INDICATOR (p. 13)
Appears when a tag channel is selected.

### ❺ CALL CHANNEL INDICATOR (p. 6)
Appears when the call channel is selected.

### ❻ LOW POWER INDICATOR (p. 8)
Appears when low power is selected.

### ❼ DUPLEX INDICATOR (p. 7)
Appears when a duplex channel is selected.

### ❽ WEATHER CHANNEL INDICATOR (pgs. 7, 15)
➥ "**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.

### ❾ GPS INDICATOR
➥ Appears while valid position data is received.
➥ Blinks when invalid position data is received.
➥ Disappears when no GPS receiver is connected.

### ❿ DSC INDICATOR
Indicates the DSC status.
➥ "**DSC**" appears when a DSC call is received. (p. ?)
➥ "**POS REPLY**" appears when a Position Request Reply call or Position Report Reply call is received. (p. ?)
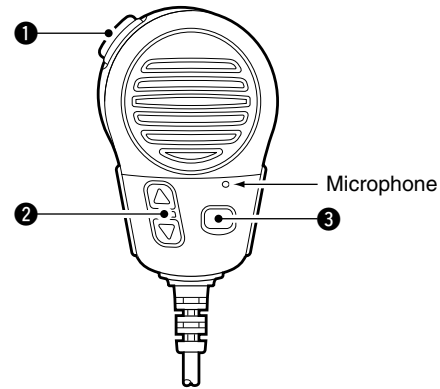
**2**

⑪ **CHANNEL COMMENT INDICATOR**
➥ Channel comment appears if programmed. (p. 10)
➥ "*LOW BATTERY*" scrolls when the battery voltage drops to approx. 10 V DC or below.
➥ "*DW*" blinks during Dualwatch; "*TW*" blinks during Tri-watch. (p. 11)

⑫ **CHANNEL GROUP INDICATOR** (p. 7)
Indicates whether a U.S.A. "**U**," International "**I**" or Canadian "**C**" channel is in use.

## ■ Microphone



Microphone

q **PTT SWITCH [PTT]**
Push and hold to transmit; release to receive. (p. 8)

w **CHANNEL UP/DOWN KEYS [▲]/[▼]**
Push either key to change the operating memory channel, Set mode settings, etc. (pgs. 6, 7, 14)

e **TRANSMIT POWER KEY [HI/LO]**
➥ Toggles power high and lower when pushed. (p. 8)
  • Some channels are set to low power only.
➥ While pushing **[HI/LO]**, turn power ON to toggle the microphone lock function ON and OFF. (p. 10)

# 3 BASIC OPERATION

## ■ Channel selection

### ◇ Channel 16

Channel 16 is the distress and safety channel. It is used for establishing initial contact with another station and for emergency communications. Channel 16 is monitored during both Dualwatch and Tri-watch. While standing by, you must monitor Channel 16.

➡ Push **[16•9]** momentarily to select Channel 16.
➡ Push **[CH/WX•DUAL]** to return to the condition before selecting Channel 16, or push **[▲]** or **[▼]** to select operating channel.

Push [16]
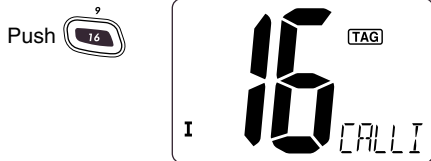
### ◇ Channel 9 (Call channel)

Each regular channel group has a separate leisure-use call channel. The call channel is monitored during Tri-watch. The call channels can be programmed (p. 9) and are used to store your most often used channels in each channel group for quick recall.

➡ Push **[16•9]** for 1 sec. to select the call channel of the selected channel group.
  • "**CALL**" and call channel number appear.
  • Each channel group may have an independent call channel after programming a call channel. (p. 9)
➡ Push **[CH/WX•DUAL]** to return to the condition before selecting call channel, or push **[▲]** or **[▼]** to select an operating channel.

Push [16]

for 1 sec.

## ◇ U.S.A.,Canadian and international channels

There are 57 U.S.A., 61 Canadian and 57 international channels. These channel groups may be specified for the operating area.

① Push **[CH/WX•DUAL]** to select a regular channel.
  • If a weather channel appears, push **[CH/WX•DUAL]** again.
② Push both **[▲]** and **[▼]** on the transceiver to change the channel group, if necessary.
  • U.S.A., International and Canadian channels can be selected in sequence.
③ Push **[▲]** or **[▼]** to select a channel.
  • "**DUP**" appears for duplex channels.
  • "ᴀ" appears when a simplex channel is selected. "ь" appears when a receive only channel for a Canadian channel group is selected.

Push [▲] and [▼]
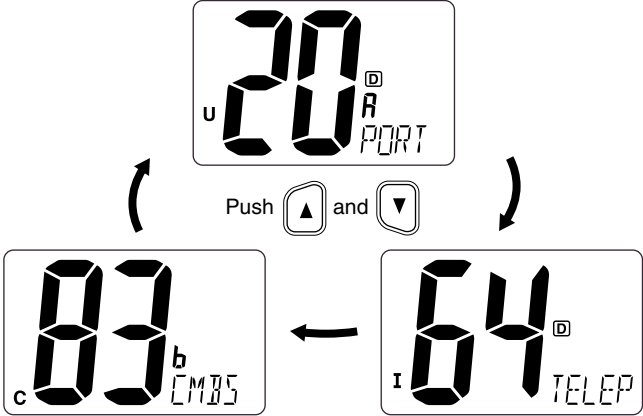
## ◇ Weather channels

There are 10 weather channels. These are used for monitoring broadcasts from NOAA (National Oceanographic and Atmospheric Administration.)
The transceiver can detect a weather alert tone on the selected weather channel while receiving the channel, during standby on a regular channel or while scanning. (p. 15)

① Push **[CH/WX•DUAL]** once or twice to select a weather channel.
  • "**WX**" appears when a weather channel is selected.
  • "**WX ALT**" appears when the Weather alert function is in use. (p. 15)

Push [CH/WX] once or twice

When Weather alert is OFF.     When Weather alert is ON.

② Push **[▲]** or **[▼]** to select a channel.

# ■ Receiving and transmitting

//**CAUTION:** Transmitting without an antenna may dam-
//age the transceiver.

① Rotate **[VOL]** to turn power ON.
② 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.
③ To change the channel group, push both **[▲]** and **[▼]** on
  the transceiver. (p. 7)
④ Push **[▲]** or **[▼]** to select the desired channel. (p. 6)
  • When receiving a signal, " BUSY " appears and audio is emitted
    from the speaker.
  • Further adjustment of **[VOL]** may be necessary.
⑤ Push **[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 communications, choose high
    power for longer distance communications.
  • Some channels are for low power only.
⑥ Push and hold **[PTT]** to transmit, then speak into the mi-
  crophone (∗).
  • " TX " appears.
  • Channel 70 cannot be used for transmission other than DSC.
⑦ Release **[PTT]** to receive.

//Simplex channels, 3, 21, 23, 61, 64, 81, 82 and 83 **CAN-
//NOT** be lawfully used by the general public in U.S.A. wa-
//ters.

//**IMPORTANT:** To maximize the readability of your trans-
//mitted signal, pause a few sec. after pushing **[PTT]**, hold
//the microphone 2 to 4 inches (5 to 10 cm) from your mouth
//and speak into the microphone (∗) at a normal voice level.
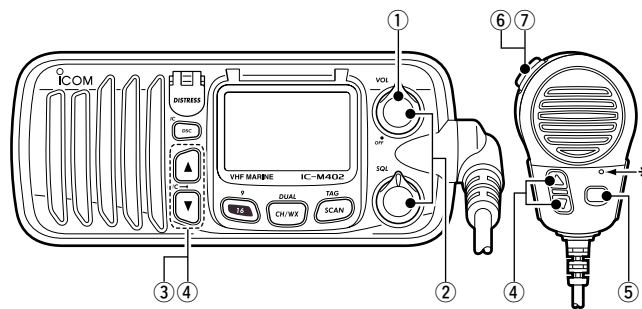


∗: Microphone

## ■ Call channel programming

Call channel is used to select Channel 9 (default), however, you can program the call channel with your most often-used channels in each channel group for quick recall.

① Push both **[▲]** and **[▼]** on the transceiver one or more times to select the desired channel group (U.S.A., International or Canada) to be programmed.

② Push **[16•9]** for 1 sec. to select the call channel of the selected channel group.
   • "**CALL**" and call channel number appear.

③ Push **[16•9]** again for 3 sec. (until a long beep changes to 2 short beeps) to enter call channel programming condition.
   • Channel number starts blinking.
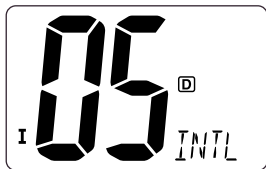
④ Push **[▲]** or **[▼]** to select the desired channel.
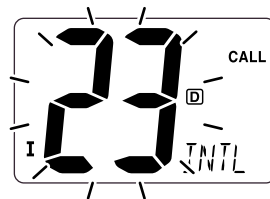
⑤ Push **[16•9]** to program the displayed channel as the call channel.
   • Push **[CH/WX•DUAL]** to cancel.
   • The channel number stops blinking.
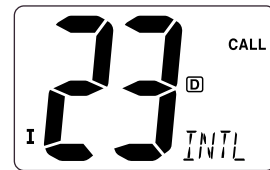
# 3 BASIC OPERATION

## ■ Channel comments

Memory channels can be labeled with alphanumeric comments of up to 10 characters each.
More than 6 characters comment scrolls automatically at the channel comment indicator after the channel selection.

Capital letters, small letters (except f, j, p, s, y, x, z), 0 to 9, some symbols (= ✱ + – . /) and space can be used.

① Select the desired channel.
   • Cancel Dualwatch, Tri-watch or Scan in advance.
② While pushing **[CH/WX•DUAL]**, push **[16•9]** to edit the channel comment.
   • A cursor and the first character start blinking alternately.
③ Select the desired character by pushing **[▲]** or **[▼]**.
   • Push **[SCAN•TAG]** or **[CH/WX•DUAL]** to move the cursor forward or backward, respectively.
④ Repeat step ③ to input all characters.
⑤ Push **[16•9]** to input and set the comment.
   • Push **[DSC•IC]** to cancel.
   • A cursor and the character stop blinking.
⑥ Repeat steps ① to ⑤ to program other channel comments, if desired.
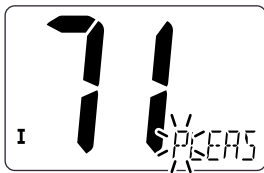
## ■ Microphone lock function

The microphone lock function electrically locks **[▲]/[▼]** and **[HI/LO]** keys on the supplied microphone. This prevents accidental channel changes and function access.
➥ While pushing **[HI/LO]** on the microphone, turn power ON to toggle the lock function ON and OFF.
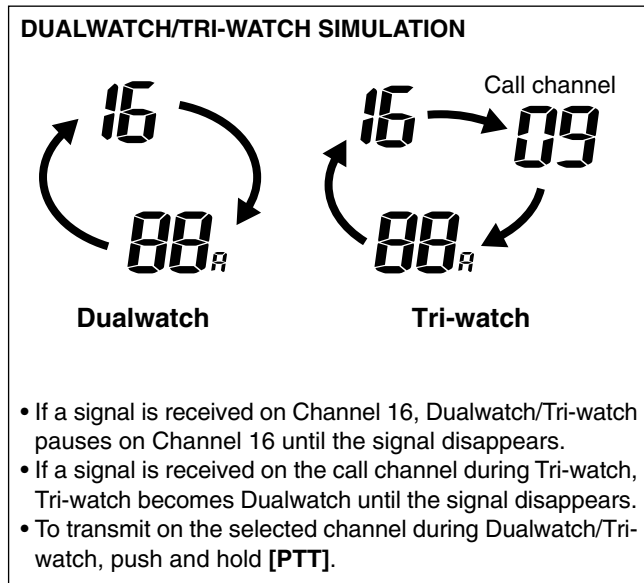
[▲]/[▼]           [HI/LO]
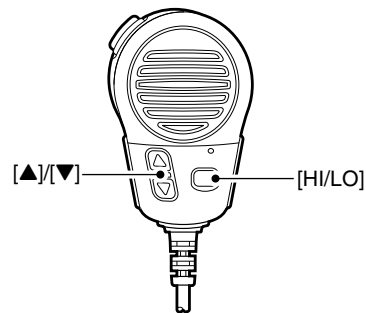
## ■ Display backlighting

The function display and keys can be backlit for better visibility under low light conditions.
➥ While pushing **[SCAN•TAG]**, push **[▲]** or **[▼]** to adjust the brightness of the LCD and key backlight.
   • The backlight is selectable in 3 levels and OFF.

## ■ Description

Dualwatch monitors Channel 16 while you are receiving another channel; Tri-watch monitors Channel 16 and the call channel while receiving another channel.

**DUALWATCH/TRI-WATCH SIMULATION**



Call channel

**Dualwatch**          **Tri-watch**

• If a signal is received on Channel 16, Dualwatch/Tri-watch pauses on Channel 16 until the signal disappears.
• If a signal is received on the call channel during Tri-watch, Tri-watch becomes Dualwatch until the signal disappears.
• To transmit on the selected channel during Dualwatch/Tri-watch, push and hold **[PTT]**.

## ■ Operation

① Select Dualwatch or Tri-watch in Set mode. (p. 15)
② Select the desired operating channel.
③ Push **[SCN•DUAL]** for 1 sec. to start Dualwatch or Tri-watch.
  • "𝐷𝑊" blinks during Dualwatch; "𝑇𝑊" blinks during Tri-watch.
  • A beep tone sounds when a signal is received on Channel 16.
④ To cancel Dualwatch/Tri-watch, push **[SCN•DUAL]** again.

**[Example]:** Operating Tri-watch on INT Channel 25

Push 
for 1 sec.



Tri-watch starts.

Signal is received on call channel.
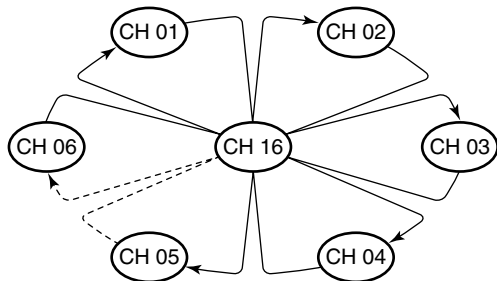
Signal is received on Channel 16 takes priority.

Tri-watch resumes after the signal disappears.

## ■ **Scan types**

Scanning is an efficient way to locate signals quickly over a wide frequency range. The transceiver has Priority scan and Normal scan.

When the Weather alert function is in use, the selected weather channel is checked while scanning. (p. 15)

Set the tag channels (scanned channel) before scanning. Clear the tag channels which inconveniently stop scanning, such as those for digital communication use.

〰 Choose Priority or Normal scan in Set mode. (p. 15)

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**PRIORITY SCAN**



Priority scan searches through all tag channels in sequence while monitoring Channel 16. When a signal is detected on Channel 16, scan pauses until the signal disappears; when a signal is detected on a channel other than Channel 16, scan becomes Dualwatch until the signal disappears.

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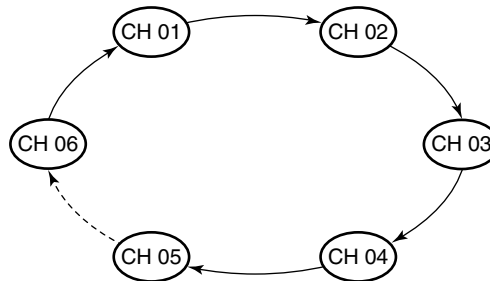
**NORMAL SCAN**



Normal scan, like Priority scan, searches through all tag channels in sequence. However, unlike priority scan, Channel 16 is not checked unless Channel 16 is set as a tag channel.

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## ■ Setting tag channels

For more efficient scanning, add desired channels as tag channels or clear the tag for unwanted channels.

Channels are not tagged will be skipped during scanning. Tag channels can be assigned to each channel group (USA, INT, CAN) independently.

① Select the desired channel group (USA, INT, CAN) by pushing both **[▲]** and **[▼]**.
② Select the desired channel to set as a tag channel.
③ Push **[SCAN•TAG]** for 1 sec. to be set the displayed channel as a tag channel.
  • " TAG " appears in the display.
④ To cancel the tag channel setting, push **[SCAN•TAG]** for 1 sec.
  • " TAG " disappears.

✔ **Clearing (or setting) all tagged channels**
While pushing **[HI/LO]** on the microphone, push **[SCAN•TAG]** for 3 sec. (until a long beep changes to 2 short beeps) to clear all tag channels in the channel group.
• Repeat above procedure to set all tag channels.

## ■ Starting a scan

Set scan type (Priority or Normal) and scan resume timer in advance, using Set mode. (p. 15)

① Set tag channels as described at left.
② Make sure the squelch is closed to start a scan.
③ Select the channel group (USA, CAN, INT) by pushing both **[▲]** and **[▼]** on the transceiver, if desired.
④ Push **[SCAN•TAG]** to start Priority or Normal scan.
  • " SC 16 " or " SCAN " appears at the channel comment indicator.
  • When a signal is detected, scan pauses until the signal disappears or resumes after pausing 5 sec. according to Set mode setting. (Channel 16 is still monitored during Priority scan.)
  • Push **[▲]** or **[▼]** to check the scanning tag channels, to change the scanning direction or resume the scan manually.
  • " 16 " blinks at the channel comment indicator and a beep tone sounds when a signal is received on Channel 16 during Priority scan.
⑤ To stop the scan, push **[SCAN•TAG]**.



**[Example]**: Starting a normal scan.  Scan starts.  When a signal is received.
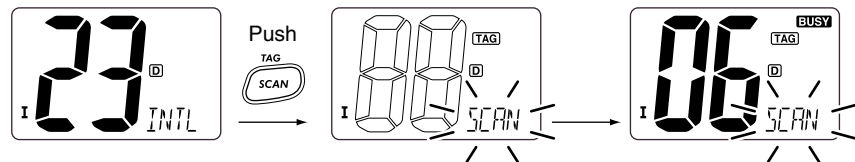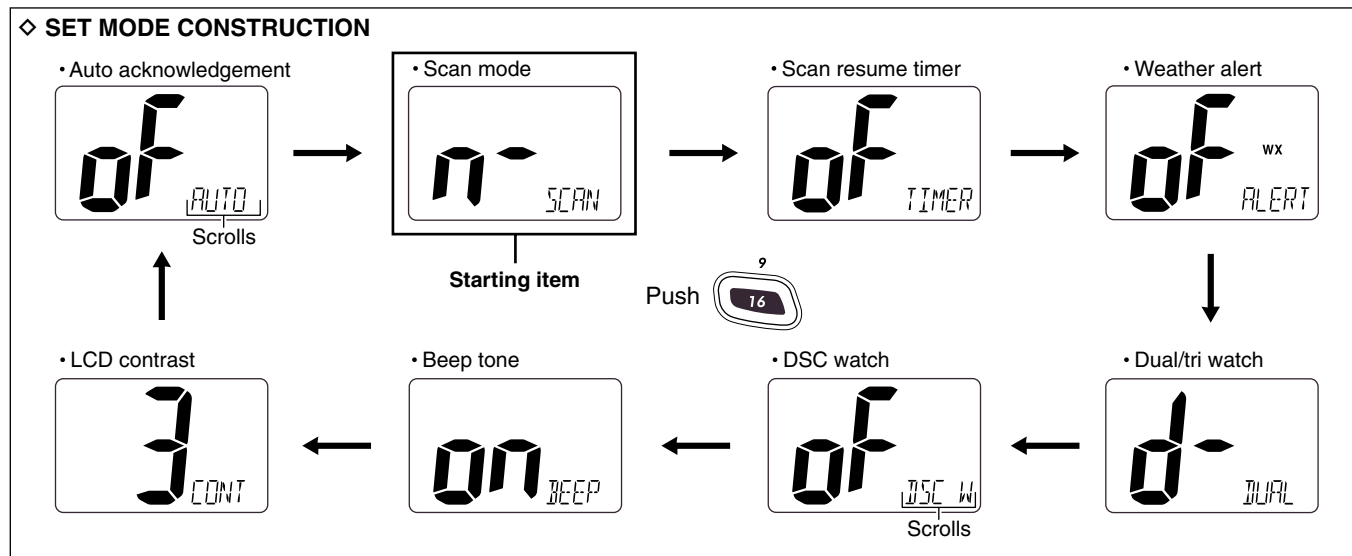
# 6 SET MODE

## ■ Set mode programming

Set mode is used to change the conditions of the transceiver's functions: scan type (Normal or Priority,) scan resume timer, Weather alert, Dual/Tri-watch, DSC watch, transceiver's beep tone, LCD contrast and Auto ACK.

✎ Available functions may differ depending on dealer setting.

### ◇ Set mode operation
① Turn power OFF.
② While pushing **[16•9]**, turn power ON to enter Set mode.
  • "𝘚𝘊𝘈𝘕" appears on channel comment indicator.
③ After the display appears, release **[16•9]**.
④ Push **[16•9]** to select the desired item, if necessary.
⑤ Push **[▲]** or **[▼]** to select the desired condition of the item.
⑥ Turn power OFF, then ON again to exit Set mode.

### ◇ SET MODE CONSTRUCTION



・Auto acknowledgement
Scrolls
・Scan mode
Starting item
Push
・Scan resume timer
・Weather alert
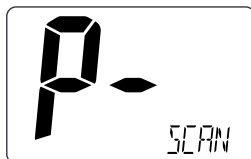・LCD contrast
・Beep tone
・DSC watch
Scrolls
・Dual/tri watch

# ■ SET mode items

## ◇ Scan type

The transceiver has 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.

Normal scan (default)

Priority scan

## ◇ Scan resume timer

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

Scan timer OFF (default)

Scan timer ON

## ◇ Weather alert

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

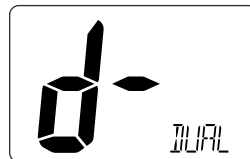• "**WX ALT**" appears instead of "**WX**" indication when the function is set ON.
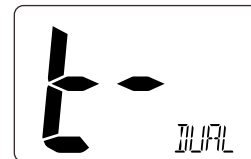
Weather alert OFF (default)

Weather alert ON

## ◇ Dual/Tri-watch

This item can be selected as Dualwatch or Tri-watch. (p. 11)

Dualwatch (default)

Tri-watch

# 6 SET MODE

## ◇ DSC watch

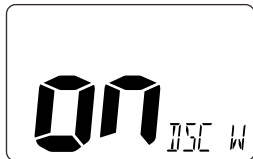DSC watch monitors Channel 70 while you are receiving another channel.

If a distress signal is received on Channel 70, the transceiver monitors Channel 16 and 70 alternately until the distress signal disappears. 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 depending on dealer setting.

• "𝐷𝑆𝐶 𝑊𝐴𝑇𝐶𝐻" scrolls at the channel comment indicator.

DSC watch OFF (default)　　　　　DSC watch ON

## ◇ Beep tone

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

Beep tone ON (default)　　　　　Beep tone OFF

## ◇ LCD contrast

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

LCD contrast level 3
(default)　　　　　　　LCD contrast level 1

## ◇ Automatic acknowledgement

This item sets the Automatic acknowledgement function ON or OFF.

When Position Request or Position Report call is received, transceiver automatically transmits Position Request Reply or Position Report Reply, respectively.

• "𝐴𝑈𝑇𝑂 𝐴𝐶𝐾" scrolls at the channel comment indicator.

Auto acknowledgement　　　　　Auto acknowledgement
OFF (default)　　　　　　　　　　ON

| PROBLEM | POSSIBLE CAUSE | SOLUTION | REF. |
|---|---|---|---|
| The transceiver does not turn ON. | • Bad connection to the power supply. | • Check the connection to the transceiver. | p. ? |
| No sound from speaker. | • Squelch level is too high.<br>• Volume level is too low.<br>• Speaker has been exposed to water. | • Set squelch to the threshold point.<br>• Set **[VOL]** to a suitable level.<br>• Drain water from the speaker. | p. 8<br>p. 8<br>— |
| Transmitting is impossible, or high power can not be selected. | • Some channels are for low power or receive only.<br>• The output power is set to low. | • Change channels.<br><br>• Push **[HI/LO]** on the microphone to select high power. | pgs. 6, 7, 18<br>p. 8 |
| Scan does not start. | • "TAG" channel is not programmed. | • Set the desired channels as "TAG" channels. | p. 13 |
| No beeps. | • Beep tones are turned OFF.<br>• The squelch is open. | • Turn the beep tone ON in Set mode.<br>• Set squelch to the threshold point. | p. 16<br>p. 8 |
| Distress call cannot be transmitted. | • MMSI (DSC self ID) code is not programmed. | • Program the MMSI (DSC self ID) code. | p. ? |

# CHANNEL LIST

| Channel number | | | Frequency (MHz) | |
|---|---|---|---|---|
| USA | INT | CAN | Transmit | Receive |
| | 01 | 01 | 156.050 | 160.650 |
| 01A | | | 156.050 | 156.050 |
| | 02 | 02 | 156.100 | 160.700 |
| | 03 | 03 | 156.150 | 160.750 |
| 03A | | | 156.150 | 156.150 |
| | 04 | | 156.200 | 160.800 |
| | | 04A | 156.200 | 156.200 |
| | 05 | | 156.250 | 160.850 |
| 05A | | 05A | 156.250 | 156.250 |
| 06 | 06 | 06 | 156.300 | 156.300 |
| | 07 | | 156.350 | 160.950 |
| 07A | | 07A | 156.350 | 156.350 |
| 08 | 08 | 08 | 156.400 | 156.400 |
| 09 | 09 | 09 | 156.450 | 156.450 |
| 10 | 10 | 10 | 156.500 | 156.500 |
| 11 | 11 | 11 | 156.550 | 156.550 |
| 12 | 12 | 12 | 156.600 | 156.600 |
| 13[*2] | 13 | 13[*1] | 156.650 | 156.650 |
| 14 | 14 | 14 | 156.700 | 156.700 |
| 15[*2] | 15[*1] | 15[*1] | 156.750 | 156.750 |
| 16 | 16 | 16 | 156.800 | 156.800 |
| 17[*1] | 17 | 17[*1] | 156.850 | 156.850 |
| | 18 | | 156.900 | 161.500 |
| 18A | | 18A | 156.900 | 156.900 |
| | 19 | | 156.950 | 161.550 |

| Channel number | | | Frequency (MHz) | |
|---|---|---|---|---|
| USA | INT | CAN | Transmit | Receive |
| 19A | | 19A | 156.950 | 156.950 |
| 20 | 20 | 20[*1] | 157.000 | 161.600 |
| 20A | | | 157.000 | 157.000 |
| | 21 | 21 | 157.050 | 161.650 |
| 21A | | 21A | 157.050 | 157.050 |
| | | 21b | Rx only | 161.650 |
| | 22 | | 157.100 | 161.700 |
| 22A | | 22A | 157.100 | 157.100 |
| | 23 | 23 | 157.150 | 161.750 |
| 23A | | | 157.150 | 157.150 |
| 24 | 24 | 24 | 157.200 | 161.800 |
| 25 | 25 | 25 | 157.250 | 161.850 |
| | | 25b | Rx only | 161.850 |
| 26 | 26 | 26 | 157.300 | 161.900 |
| 27 | 27 | 27 | 157.350 | 161.950 |
| 28 | 28 | 28 | 157.400 | 162.000 |
| | | 28b | Rx only | 162.000 |
| | 60 | 60 | 156.025 | 160.625 |
| | 61 | | 156.075 | 160.675 |
| 61A | | 61A | 156.075 | 156.075 |
| | 62 | | 156.125 | 160.725 |
| | | 62A | 156.125 | 156.125 |
| | 63 | | 156.175 | 160.775 |
| 63A | | | 156.175 | 156.175 |
| | 64 | 64 | 156.225 | 160.825 |

| Channel number | | | Frequency (MHz) | |
|---|---|---|---|---|
| USA | INT | CAN | Transmit | Receive |
| 64A | | 64A | 156.225 | 160.825 |
| | 65 | | 156.275 | 160.875 |
| 65A | 65A | 65A | 156.275 | 156.275 |
| | 66 | | 156.325 | 160.925 |
| 66A | 66A | 66A[*1] | 156.325 | 156.325 |
| 67[*2] | 67 | 67 | 156.375 | 156.375 |
| 68 | 68 | 68 | 156.425 | 156.425 |
| 69 | 69 | 69 | 156.475 | 156.475 |
| 70[*3] | 70[*3] | 70[*3] | 156.525 | 156.525 |
| 71 | 71 | 71 | 156.575 | 156.575 |
| 72 | 72 | 72 | 156.625 | 156.625 |
| 73 | 73 | 73 | 156.675 | 156.675 |
| 74 | 74 | 74 | 156.725 | 156.725 |
| 77[*1] | 77 | 77[*1] | 156.875 | 156.875 |
| | 78 | | 156.925 | 161.525 |
| 78A | | 78A | 156.925 | 156.925 |
| | 79 | | 156.975 | 161.575 |
| 79A | | 79A | 156.975 | 156.975 |
| | 80 | | 157.025 | 161.625 |
| 80A | | 80A | 157.025 | 157.025 |
| | 81 | | 157.075 | 161.675 |
| 81A | | 81A | 157.075 | 157.075 |
| | 82 | | 157.125 | 161.725 |
| 82A | | 82A | 157.125 | 157.125 |
| | 83 | 83 | 157.175 | 161.775 |

| Channel number | | | Frequency (MHz) | |
|---|---|---|---|---|
| USA | INT | CAN | Transmit | Receive |
| 83A | | 83A | 157.175 | 157.175 |
| | | 83b | Rx only | 161.775 |
| 84 | 84 | 84 | 157.225 | 161.825 |
| 84A | | | 157.225 | 157.225 |
| 85 | 85 | 85 | 157.275 | 161.875 |
| 85A | | | 157.275 | 157.275 |
| 86 | 86 | 86 | 157.325 | 161.925 |
| 86A | | | 157.325 | 157.325 |
| 87 | 87 | 87 | 157.375 | 161.975 |
| 87A | | | 157.375 | 157.375 |
| 88 | 88 | 88 | 157.425 | 162.025 |
| 88A | | | 157.425 | 157.425 |

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

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

**NOTE:** Simplex channels, 3, 21, 23, 61, 64, 81, 82 and 83 **CANNOT** be lawfully used by the general public in U.S.A. waters.

## ■ Specifications

### ◇ General

• Frequency coverage : 
  Transmit 156.025–157.425 MHz
  Receive 156.050–163.275 MHz
• Mode : FM (16K0G3E)
  DSC(16K0G2B)
• Channel spacing : 25 kHz
• Current drain (at 13.8 V) : TX high 5.5 A max.
  Max. audio 1.5 A max.
• Power supply requirement : 13.8 V DC
• Frequency stability : ±10 ppm
  (–20°C to +60°C; –4°F to +140°F)
• Dimensions : 153(W) × 67(H) × 141.6(D) mm
  (Projections not included) 6 $\frac{1}{32}$(W) × 2 $\frac{5}{8}$(H)× 5 $\frac{9}{16}$(D) in
• Weight : Approx. 900 g ; 2 lb

### ◇ Transmitter

• Output power : 25 W and 1 W
• Modulation system : Variable reactance frequency
  modulation
• Max. frequency deviation : ±5.0 kHz
• Spurious emissions : Less than –70 dB

### ◇ Receiver

• Receive system : Double conversion superheterodyne
• Sensitivity (12 dB SINAD) : 0.22μV (typical)
• Squelch sensitivity : 0.22μV
• Intermodulation rejection ratio : More than 70 dB
• Spurious response rejection ratio: More than 70 dB
• Adjacent channel selectivity : More than 70 dB
• Audio output power : 4.5W (typical) at 10% distortion
  with a 4 Ω load

**All stated specifications are subject to change without notice or obligation.**

## ■ Options

• **MB-69 FLUSH MOUNT KIT**
For mounting the transceiver to a panel.

• **SP-5 EXTERNAL SPEAKER**
A large, external speaker for superior audio output.

• **SP-10 EXTERNAL SPEAKER**
A compact, external speaker. Features easy installation.

• **HM-127\* REMOTE-CONTROL MICROPHONE**
External microphone-type controller. Provides optional inter-com operation. 6 m (20 feet) microphone cable and mount-ing base included. Black and white colours are available.
\*IC-M402A only

• **OPC-999\* MICROPHONE EXTENSION CABLE**
6 m (20 feet) microphone extension cable for optional HM-127. Up to 2 OPC-999 can be connected. (18 m; 60 feet max-imum)
\*IC-M402A only

**8**

**9**

**Count on us!**

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