ICOM

MARINE/LTE HYBRID
TRANSCEIVER

IP−M60

Icom Inc.

Thank you for choosing this Icom product. This product was 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.

■ Important

READ ALL INSTRUCTIONS carefully and completely before using the transceiver.

SAVE THIS INSTRUCTION MANUAL— This instruction manual contains important operating instructions for the IP-M60.
For advanced operating instructions, see the Advanced manual for details.
The Advanced manual is available at the following internet address:
https://www.icomjapan.com/support/

This instruction manual includes some functions that are usable only when they are preset by your dealer. Ask your dealer for details.

■ Features

● Five operating modes to select depending on the situation
  - **Cellular mode**
    Makes a call with other IP transceivers using a cellular network
  - **Marine mode**
    Makes a call with other VHF marine transceivers
  - **Cellular + Marine mode**
    Simultaneous transmission and reception on a cellular network and a VHF marine channel
  - **Relay mode***
    Transfers the received audio to the other mode
    * The Relay mode may be prohibited in some countries.
● Independent PTT buttons (Main/Sub) for cellular and VHF marine mode
● Wireless operation with built-in Bluetooth function
● IP67* dust-tight and waterproof protection
  * 1 m depth of water for 30 minutes
● The European version can select the EUR, UK, NLD, and FRG channels.

■ Explicit definitions

WORD	DEFINITION
⚠ **DANGER!**	Personal death, serious injury or an explosion may occur.
⚠ **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.

■ In case of emergency

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

1. Push [FUNC] to display the function.
   • The Function screen is displayed.
2. Push [FUNC] to display "Mode Select," if another function is displayed.
   ⓘ You may need to push [FUNC] several times, depending on a presetting.
3. Rotate the Rotary Selector or push [▲] or [▼] to select the Marine mode, and then push [CH/Call History].
   • The Marine mode is selected and then returns to the Standby screen.
4. Push [16/Address] to switch to Channel 16.
5. While holding down [Main PTT], give the appropriate information as follows:

● "MAYDAY MAYDAY MAYDAY."
● "THIS IS ⬚⬚⬚⬚⬚⬚⬚⬚" (name of vessel).
● Say your call sign or other indication of the vessel.
● "LOCATED AT ⬚⬚⬚⬚⬚⬚⬚" (your position).
● State the nature of the distress and assistance required.
● Give any other information which might facilitate the rescue.

■ Recommendation

CLEAN THE TRANSCEIVER THOROUGHLY IN A BOWL OF FRESH WATER after exposure to saltwater, and dry it before operating. Otherwise, the transceiver's keys and switches may become unusable, due to salt crystallization.

NOTE: If the transceiver's waterproof protection appears defective, carefully clean it with a soft, damp (fresh water) cloth, then dry it before operating. The transceiver may lose its waterproof protection if the case, jack cover, or battery is cracked or broken, or the transceiver has been dropped. Contact your Icom distributor or your dealer for advice.

■ FCC information

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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

◇ FCC SDoC

FCC Compliance Statement
This device complies with part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

Responsible Party
Company Name: Icom America Inc.
Address:　　　 12421 Willows Road NE, Kirkland, WA 98034

U.S. Contact Information
　800-USA-ICOM (800-872-4266)
　Monday – Friday 7 AM to 5 PM PST

■ For Canada

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s).
Operation is subject to the following two conditions:
1.　This device may not cause interference.
2.　This device must accept any interference, including interference that may cause undesired operation of the device.

■ Disposal

The crossed-out wheeled-bin symbol on your product, literature, or packaging reminds you that in the European Union, all electrical and electronic products, batteries, and accumulators (rechargeable batteries) must be taken to designated collection locations at the end of their working life. Do not dispose of these products as unsorted municipal waste. Dispose of them according to the laws in your area.

■ About CE and DOC

C E Hereby, Icom Inc. declares that the versions of IP-M60 which have the "CE" symbol on the product, comply with the essential requirements of the Radio Equipment Directive, 2014/53/EU, and the restriction of the use of certain hazardous substances in electrical and electronic equipment Directive, 2011/65/EU. The full text of the EU declaration of conformity is available at the following internet address: https://www.icomjapan.com/support/

■ About UKCA DOC

To obtain the UKCA Declaration of Conformity, please contact Icom UK Limited by email at info@icomuk.co.uk or alternatively call + 44(0) 1227 741741.

■ Bluetooth® interference

Bluetooth uses the 2.4 GHz band. When using the transceiver in the 2.4 GHz band near a Bluetooth device, interference may occur. This may cause a decrease in communication speed, and an unstable connection.
In such case, use the transceiver away from the Bluetooth device communication area, or stop using the Bluetooth device.

■ Certification

Refer to "Certification" in the Set mode for certifications acquired with the transceiver.

1. Turn OFF the transceiver, if it is turned ON.
2. While holding down [FUNC], rotate [PWR/VOL] to turn ON the transceiver.
   • The Set Mode is displayed.
   ① Release [FUNC] when "SET MODE" is displayed.
3. Rotate the Rotary Selector or push [▲] or [▼] to select "Certification," and then push [FUNC].
   • The certification is displayed.
   ① Push [FUNC] or [16/Address] to scroll the certification.
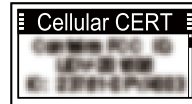
Icom is not responsible for the destruction, damage to, or performance of any Icom or non-Icom equipment, if the malfunction is because of:
• Force majeure, including, but not limited to, fires, earthquakes, storms, floods, lightning, other natural disasters, disturbances, riots, war, or radioactive contamination.
• The use of Icom transceivers with any equipment that is not manufactured or approved by Icom.

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The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by Icom Inc. is under license.
All other products or brands are registered trademarks or trademarks of their respective holders.

■ Precautions

⚠ **DANGER! NEVER** operate the transceiver near unshielded electrical blasting caps or in an explosive atmosphere. This could cause an explosion and death.

⚠ **WARNING! NEVER** use or charge Icom battery packs with non-Icom transceivers or non-Icom chargers. Only Icom battery packs are tested and approved for use with Icom transceivers or charged with Icom chargers. Using third-party or counterfeit battery packs or chargers may cause smoke, fire, or cause the battery to burst.

⚠ **WARNING! NEVER** hold the transceiver so that the antenna is very close to, or touching exposed parts of the body, especially the face or eyes, while transmitting. If the antenna is close to you, transmit with low power.

⚠ **WARNING! NEVER** operate the transceiver with a headset or other audio accessories at high volume levels. The continuous high volume operation may cause a ringing in your ears. If you experience the ringing, reduce the volume level or discontinue use.

⚠ **WARNING! NEVER** operate the transceiver while driving a vehicle. Safe driving requires your full attention— anything less could result in an accident.

CAUTION: DO NOT short the terminals of the battery pack. Shorting may occur if the terminals touch metal objects such as a key, so be careful when placing the battery packs (or the transceiver) in bags, and so on. Carry them so that shorting cannot occur with metal objects. Shorting may damage not only the battery pack, but also the transceiver.

CAUTION: DO NOT use harsh solvents such as Benzine or alcohol when cleaning. This could damage the equipment surfaces. If the surface becomes dusty or dirty, wipe it clean with a soft, dry cloth.

CAUTION: DO NOT place or leave the transceiver in excessively dusty environments. This could damage the transceiver.

NEVER place the transceiver in an insecure place to avoid inadvertent use by unauthorized persons.

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

BE CAREFUL! The transceiver meets IP67* requirements for dust-tight and waterproof protection. However, once the transceiver has been dropped and cracked, or the waterproof seal is cracked or damaged, dust-tight and waterproof protection cannot be guaranteed.
* Only when the battery pack, antenna, and connector cover or the optional speaker microphone are attached.

Information:
In this instruction manual, the transceiver version names are described as shown below.

U.S.A.:	USA
Europe:	EUR, General
German:	FRG
Netherlands:	NLD
U.K.:	UK
Australia:	AUS

■ Safety training information

WARNING Your Icom radio generates RF electromagnetic energy while transmitting. This radio is designed for and classified as for "Occupational Use Only." This means it must be used only during the course of employment by individuals aware of the hazards, and the ways to minimize such hazards. This radio is NOT intended for use by the "General Population" in an uncontrolled environment. This radio has been tested and complies with the FCC and IC RF exposure limits for "Occupational Use Only." In addition, your Icom radio complies with the following Standards and Guidelines with regard to RF energy and electromagnetic energy levels and evaluation of such levels for exposure to humans:

• FCC KDB Publication 447498 D03, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.
• American National Standards Institute (C95.1-2019), IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz.
• American National Standards Institute (C95.3-2021), IEEE Recommended Practice for Measurements and Computations of Electric, Magnetic, and Electromagnetic Fields with Respect to Human Exposure to Such Fields, 0 Hz to 300 GHz.
• The antennas, batteries, belt clips, speaker-microphone, and other accessories that are listed on page 30 are authorized for use with this product. Use of accessories other than those specified may result in RF exposure levels exceeding the FCC and IC requirements for wireless RF exposure.
• Health Canada Safety Code 6 - Limits of Human Exposure to Electromagnetic Energy in the Frequency Range from 3 kHz to 300 GHz.

CAUTION To ensure that your expose to RF electromagnetic energy is within the FCC and IC allowable limits for occupational use, always adhere to the following guidelines:

• **DO NOT** operate the radio without a proper antenna attached, as this may damage the radio and may also cause you to exceed FCC and IC RF exposure limits. A proper antenna is the antenna supplied with this radio by the manufacturer or an antenna specifically authorized by the manufacturer for use with this radio.
• **DO NOT** transmit for more than 50% of the total radio use time ("50% duty cycle"). Transmitting more than 50% of the time can cause FCC and IC RF exposure compliance requirements to be exceeded. The radio is transmitting when status indicator lights red. You can cause the radio to transmit by pushing the "PTT" switch.
• **ALWAYS** keep the antenna at least 2.5 cm (1 inch) away from the body when transmitting, and only use the Icom belt-clips listed on page 30 when attaching the radio to your belt, or other place, to ensure FCC and IC RF exposure compliance requirements are not exceeded.
The information listed above provides the user with the information needed to make him or her aware of RF exposure, and what to do to assure that this radio operates within the FCC and IC RF exposure limits of this radio.
• **Electromagnetic Interference/Compatibility** During transmissions, your Icom radio generates RF energy that can possibly cause interference with other devices or systems. To avoid such interference, turn off the radio in areas where signs are posted to do so. **DO NOT** operate the transmitter in areas that are sensitive to electromagnetic radiation such as hospitals, aircraft, and blasting sites.
• **Occupational/Controlled Use** The radio transmitter is used in situations in which persons are exposed as a consequence of their employment, provided those persons are fully aware of the potential for exposure and can exercise control over their exposure.

■ Table of contents

1 OPERATING RULES

The operating rules described below are for the Marine mode.

◇ 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 calls are prohibited under 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.

A current copy of the applicable government rules and regulations is only required to be on hand for vessels in which a radio telephone is compulsory. However, even if you are not required to have these on hand it is your responsibility to be thoroughly acquainted with all pertinent rules and regulations.

NOTE: Even though the IP-M60 is capable of operation on VHF marine channels 1021, 1023, 1081, 1082, and 1083, according to FCC regulations these simplex channels cannot be lawfully used by the general population in the USA waters.

■ Supplied accessories
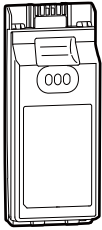
Battery pack   Belt clip   Connector cover   Flexible antenna
                                         and screw
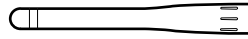
NOTE: Some accessories may not be supplied, or the shape may be different, depending on the transceiver version.

■ Attaching accessories

◇ Antenna

Connect the supplied antenna to the antenna connector.

CAUTION:
• **DO NOT** carry the transceiver by holding only the antenna.
• **DO NOT** connect an antenna other than the supplied.
• **DO NOT** transmit without an antenna.
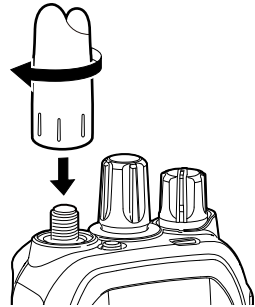
◇ Belt clip

To attach:
1. Remove the battery pack from the transceiver, if it is attached.
2. Slide the belt clip in the direction of the arrow until the belt clip is locked and makes a 'click' sound.
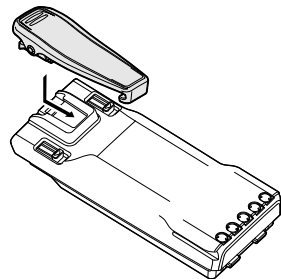
To detach:
1. Remove the battery pack from the transceiver, if it is attached.
2. Lift the tab up (❶), and slide the belt clip in the direction of the arrow (❷).

❶
❷ ←
Tab
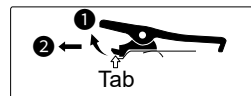
BE CAREFUL! DO NOT break your fingernail.

2 ACCESSORIES

◇ **Battery pack**

CAUTION:
• **DO NOT** attach or detach the battery pack when the transceiver is wet or soiled.
  This may result in water or dust getting into the transceiver, or the battery pack may damage.
• Keep the battery pack terminals clean. It's a good idea to occasionally clean them.

To attach:
1. Slide the battery pack in the direction of the arrow (❶).
2. Push the battery pack until the battery sliding locks make a 'click' sound (❷).
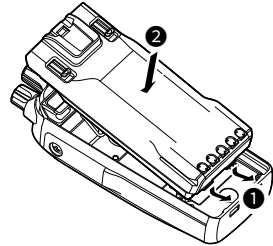
To detach:
1. Pull both battery sliding locks in the direction of the arrow (❶).
2. Lift up to detach the battery pack (❷).

Battery sliding locks

■ **Front, top, and side panels**

◇ **Cellular mode**

2

3

q Antenna connector (p. 2)

w Rotary Selector

e [PWR/VOL]

r [FUNC]

Status indicator

Multi connector

Speaker

Microphone

Function display

t **[CLR/Lock]**
• Push to return to the Standby screen.
• Hold down for 1 second to turn the Key Lock function ON or OFF. (p. 11)
➲ [Main PTT], [Sub PTT], [PWR/VOL], and [Emer] are usable even while the Key Lock function is ON.

y **[▲]/[▼]**
Push to select a channel or scroll the screen.

u **[CH/Call History]**
• Push to display the Call history.
• Push this key several times to switch between the Call history types, Transmitted call, Received call, Sent message, Received message, Recording log, and Phone call log.
• Hold down for 1 second to playback a selected Recording log.
➲ See the Advanced manual for details.

i **[16/Address]**
• Selects a preset address.
• Push to toggle the Address Book between the call types.
➲ See the Advanced manual for details.

o **[Sub PTT]/[Side 1]/[Side 2]**
Functions may be assigned, depending on a presetting.
You can also assign functions in the Detailed Set mode.
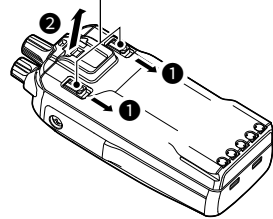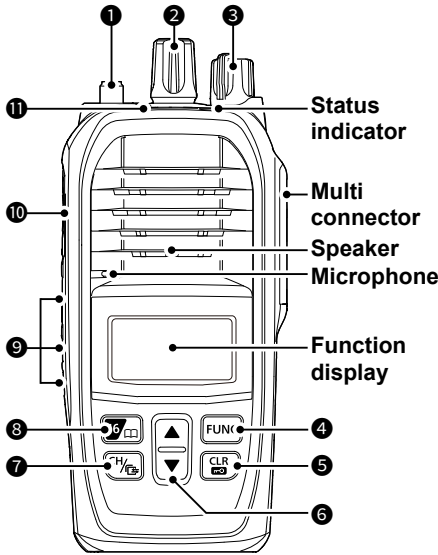See the Advanced manual for details.

[Sub PTT]
[Side 1]
[Side 2]

!0 **[Main PTT]**
Hold down to transmit, release to receive.

!1 **[Emer]**
Hold down until "Emergency" is displayed to send an Emergency call.
See the Advanced manual for details.

q **Antenna connector (p. 2)**
Connects the supplied antenna.

w **Rotary Selector**
Rotate to select a channel or scroll the screen.

e **[PWR/VOL]**
• Rotate to turn the transceiver ON or OFF.
• Rotate to adjust the audio output level.

r **[FUNC]**
• Push to display the Function screen.
• In the Function screen, push several times to select functions such as Operating mode selection, Talkgroup Selection, and so on.
See the Advanced manual for details.
➲ Selectable functions may differ, depending on a Set mode setting.

3 PANEL DESCRIPTION
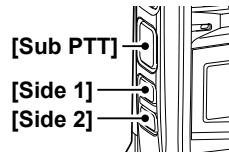
■ Front, top, and side panels

◇ **Marine mode**
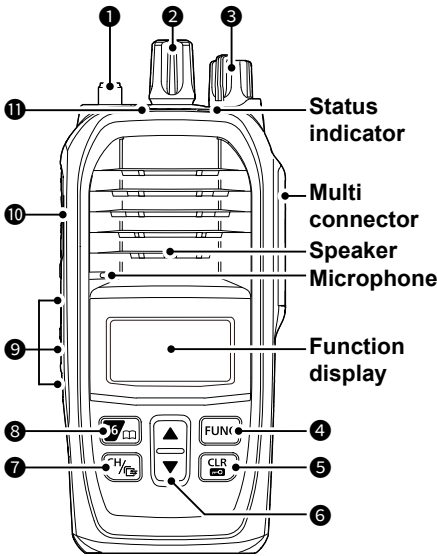
❶ **Antenna connector (p. 2)**
Connects the supplied antenna.

❷ **Rotary Selector**
Rotate to select a channel or scroll the screen.

❸ **[PWR/VOL]**
• Rotate to turn the transceiver ON or OFF.
• Rotate to adjust the audio output level.

❹ **[FUNC]**
• Push to display the Function screen.
• In the Function screen, push several times to select functions such as Operating selection, Channel group selection, and so on.
  ⓘ Selectable functions may differ, depending on a Set mode setting.

❺ **[CLR/Lock]**
• Push to return to the Standby screen.
• Hold down for 1 second to turn the Key Lock function ON or OFF. (p. 11)
  ⓘ [Main PTT], [Sub PTT], [PWR/VOL], and the Monitor function are usable even while the Key Lock function is ON.

❻ **[▲]/[▼]**
Push to select a channel or scroll the screen.

❼ **[CH/Call History]**
• Push to switch between a regular channel and the Weather channel. (p. 14)
• Hold down for 1 second to set the output power high or low.
  ⓘ Some channels are set to only low power.

❽ **[16/Address]**
• Push to select Channel 16. (p. 13)
• Hold down for 1 second to select the Call channel. (p. 13)

❾ **[Sub PTT]/[Side 1]/[Side 2]**
Functions may be assigned, depending on a presetting.
You can also assign functions in the Set mode.
See page 27 for assignable function details.
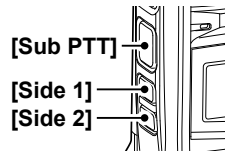
❿ **[Main PTT]**
Hold down to transmit, release to receive.

⓫ **[Emer]**
This key cannot be used in the Marine mode.

3

◇ Status indicator

Cellular mode
• Lights red: Transmitting.
• Lights green: Receiving.
• Lights yellow: Receiving and transmitting in the Full-Duplex mode.

Marine mode
• Lights red: Transmitting.
• Lights green: Receiving or the squelch is open.

◇ Multi-connector

Connect an optional speaker microphone or headset.

> **CAUTION: DO NOT** use the transceiver without the connector cover or optional equipment attached.
> The transceiver meets IP67 requirements for dust-tight and waterproof protection only when the connector cover or the optional speaker microphone is attached. See page 30 for the usable speaker microphones.
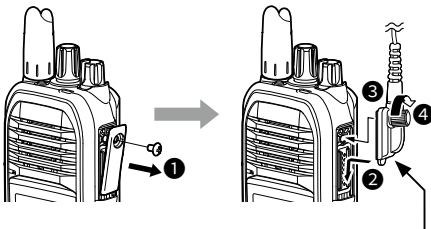
> **CAUTION:** Firmly attach to the Multi connector, but do not overtighten. A loose connection will allow water intrusion into the connector. Over-tightening the connection can damage the transceiver.

■ Function display

◇ Cellular mode

Indicator	Description
⁴ᴳ📶	Displays the signal strength level by 3 bars. ⓘ A connected network type (4G or 3G) is displayed at the top left.
⁴ᴳ📶	• Blinks when the transceiver location is out of the service area or cannot receive a control signal. • Displayed if the transceiver has not been authenticated. ⓘ A connected network type (4G or 3G) is displayed at the top left.
🔭	All/Group Call
🏘	Talkgroup Call*
👤	Individual Call
☎	Phone Call*
🔔	• Displayed when the Pocket Beep function is ON. • Blinks when a call is received. It blinks until the transceiver returns to the Standby mode after a received signal disappears.
ℙ	Displayed when the P-Bell function is ON.
𝔼	Displayed when the Emergency Call function is ON.
📼	• Displayed when the Record function is ON. • Blinks while recording audio.
F	Blinks when the transceiver downloading a new firmware.

* May be usable, depending on a presetting.

3 PANEL DESCRIPTION

■ Function display

◇ **Marine mode**

```
 *                10:00 ▥
INT
        16 *
      CALLING
```

Indicator	Description
Low	Displayed when low output power is selected. ⓘ Blinks when the transceiver temperature becomes high.
INT/ USA/ CAN/ ATIS/ WX	Displays the current channel group. ⓘ The selectable channel group differs, depending on the transceiver version.
WX ⌖	Displayed when the WX Alert is ON. ⓘ The function may not be usable, depending on the transceiver version.
DUP	Displayed when a Duplex channel is selected.
SCAN	Displayed while scanning.
DUAL/ TRI	"DUAL" or "TRI" and the watched channel number are displayed while using the Dualwatch or Tri-Watch function.
CALL	Displayed when a Call channel is selected.
★	Displayed when a Favorite channel is selected.

◇ **Cellular/Marine mode**

Indicator	Description
✳	Displayed when Bluetooth is activated.
▣	Displayed when a Bluetooth device is connected.
⌐○	Displayed when the Key Lock function is ON.
VOX	Displayed when the VOX function is ON.
▥	Displays the remaining battery charge. ▥ : Full ▯ : Mid ▯ : Charging required ▢ : Battery exhausted
A	Displayed when the transceiver is in the Adaptive PTT mode. ⓘ See the Advanced manual for details about the Adaptive PTT mode.

■ Battery caution

Misuse of Li-ion batteries may result in the following hazards: smoke, fire, or the battery may rupture. Misuse can also cause damage to the battery or degradation of battery performance.

⚠ **DANGER! NEVER** place battery packs near a fire. Fire or heat may cause them to rupture or explode. Dispose of used battery packs in accordance with local regulations.

⚠ **DANGER! NEVER** let fluid from inside the battery get in your eyes. This can cause blindness. Rinse your eyes with clean water without rubbing them, and immediately get medical treatment from an eye doctor.

⚠ **DANGER! NEVER** solder the battery terminals, or **NEVER** modify the battery pack. This may cause heat generation, and the battery may burst, emit smoke, or catch fire.

⚠ **DANGER! NEVER** place or leave battery packs in areas with temperatures above 60°C (140°F). High temperature buildup in the battery cells, such as could occur near fires or stoves, inside a sun-heated vehicle, or in direct sunlight for long periods of time may cause the battery cells to rupture or catch fire. Excessive temperatures may also degrade the battery pack's performance or shorten the battery cell's life.

⚠ **DANGER! NEVER** strike or otherwise impact the battery pack. Do not use the battery pack if it has been severely impacted or dropped, or if the pack has been subjected to heavy pressure. Battery pack damage may not be visible on the outside of the case. Even if the surface of the battery does not show cracks or any other damage, the cells inside the battery may rupture or catch fire.

⚠ **WARNING! NEVER** use deteriorated battery packs. They could cause a fire.

⚠ **WARNING! NEVER** put the battery pack in a microwave oven, high-pressure container, or in an induction heating cooker. This could cause a fire, overheating, or cause the battery cells to rupture.

⚠ **WARNING! NEVER** let fluid from inside the battery cells come in contact with your body. If it does, immediately wash with clean water.

CAUTION: DO NOT continue to use the battery pack if it emits an abnormal odor, heats up, or is discolored or deformed. If any of these conditions occur, contact your Icom dealer or distributor.

CAUTION: DO NOT expose the battery pack to rain, snow, saltwater, or any other liquids. Do not charge or use a wet pack. If the pack gets wet, be sure to wipe it with a clean dry cloth before using.

CAUTION: DO NOT use the battery pack out of the specified temperature range for the transceiver –20°C ~ +60°C (–4°F ~ +140°F), and the battery itself –20°C ~ +60°C (–4°F ~ +140°F). Using the battery out of its specified temperature range will reduce its performance and battery cell's life. Please note that the specified temperature range of the battery may exceed that of the transceiver. In such cases, the transceiver may not work properly because it is out of its operating temperature range.

4   BATTERY CHARGING

■ Battery caution

CAUTION: DO NOT leave the pack fully charged, completely discharged, or in an excessive temperature environment (above 60°C, 140°F) for an extended period of time. If the battery pack must be left unused for a long time, it must be detached from the transceiver after discharging. You may use the battery pack until the remaining capacity is about half, then keep it safely in a cool and dry place at the following temperature range:
• Within a month
  –20°C ~ +50°C (–4°F ~ +122°F)
• Within three months
  –20°C ~ +40°C (–4°F ~ +104°F)
• Within a year
  –20°C ~ +20°C (–4°F ~ +68°F)

BE SURE to replace the battery pack with a new one approximately five years after manufacturing, even if it still holds a charge. The material inside the battery cells will become weak after a period of time, even with little use.
The estimated number of times you can charge the pack is between 300 and 500. Even when the pack appears to be fully charged, the operating time of the transceiver may become short when:
• Approximately 5 years have passed since the pack was manufactured.
• The pack has been repeatedly charged.

The battery cells may deteriorate and swell due to their characteristics if used in an environment and conditions such as: frequently charged, recharged immediately after full charge, used or saved in a hot place, or charged by methods other than the instructions. If the battery pack swells, it has reached the end of its life due to deterioration. Replace it with a brand new one.

■ **Charging caution**

⚠ **DANGER! NEVER** charge the transceiver during a lightning storm. It may result in an electric shock, cause a fire or damage the transceiver. Always disconnect the power adapter before a storm.

⚠ **WARNING! NEVER** charge or leave the battery in the battery charger beyond the specified time for charging. If the battery is not completely charged by the specified time, stop charging and remove the battery from the battery charger. Continuing to charge the battery beyond the specified time limit may cause a fire, overheating, or the battery may rupture.

⚠ **WARNING!** Occasionally observe the battery pack condition while charging. If any abnormal condition occurs, discontinue using the battery pack.

CAUTION: DO NOT charge the battery pack in areas with extremely high temperatures, such as near fires or stoves, inside a sun-heated vehicle, or in direct sunlight. In such environments, the safety/protection circuit in the battery will activate, causing the battery to stop charging.

CAUTION: DO NOT insert the transceiver (battery attached to the transceiver) into the charger if it is wet or soiled. This could corrode the battery charger terminals or damage the charger. The charger is not waterproof.

CAUTION: DO NOT charge the battery pack outside of the specified temperature range: 15°C ~ 40°C (59°F to 104°F). Otherwise, the charging time will be longer, but the battery will not reach a full charge. While charging, at a point after the temperature goes out of the specified range, the charging will automatically stop.

■ Battery charger

◇ Using the BC-227 DESKTOP CHARGER

Charging time: Approximately 4.4 hours for the BP-303.

NOTE: Before using the transceiver for the first time, the battery pack must be fully charged for optimum life and operation. To avoid damage to the transceiver, turn OFF the transceiver before charging. Otherwise:
• The battery will not be charged correctly.
• The battery life may be shortened.

Turn OFF

Battery pack

Transceiver +
Battery pack

Tabs

To an AC outlet

Guide rail

NOTE: Be sure the tabs on the battery pack are correctly aligned with the guide rails inside the battery charger.

BC-227
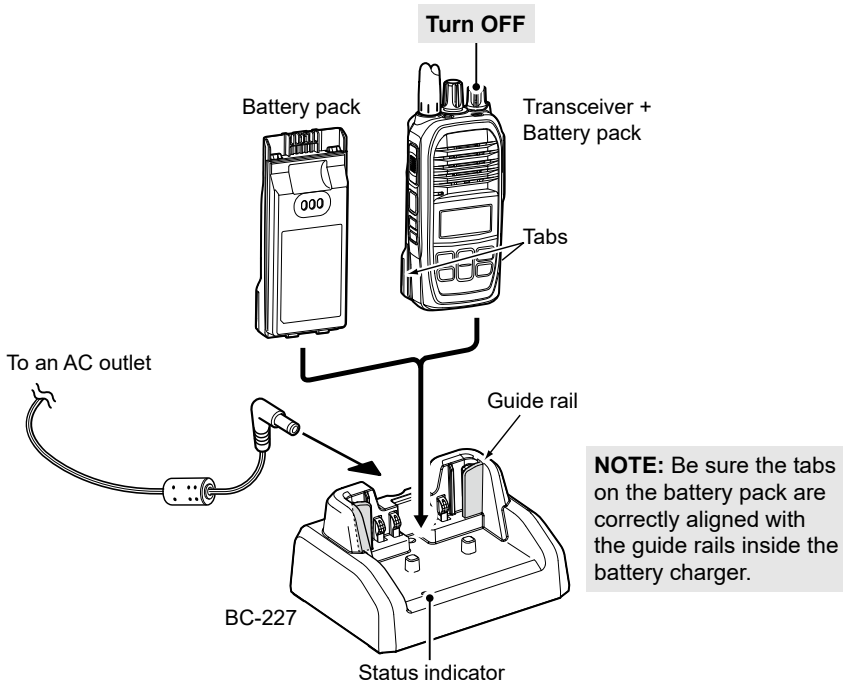
Status indicator

Status indicator

Light color	Status
Orange	Charging.
Green	Charging is completed.
Blinks orange and green	Charging failed. It may have some problems.

NOTE:
• **DO NOT** transmit while charging. If you need to transmit, remove the transceiver from the charger, and then turn ON the transceiver.
• If the battery pack does not properly charge, remove the transceiver from the charger and insert the transceiver into the charger again.

10

5 **BASIC OPERATIONS**

■ Turning ON the transceiver

NOTE: Before using the transceiver for the first time, the battery pack must be fully charged for optimum life and operation. To avoid damage to the transceiver, turn OFF the transceiver before charging.

● Rotate [PWR/VOL] clockwise to the 12 o'clock position to turn ON the transceiver.
  ⓛ The dial is made tight for dust and water resistance.
  ⓛ To turn OFF the transceiver, rotate [PWR/VOL] counter-clockwise until it makes a "click" sound.
  ⓛ An opening text may be displayed, depending on a presetting.
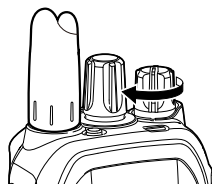
■ Adjusting the volume level

● Rotate [PWR/VOL] to adjust the volume level.
  ⓛ The volume level adjustment screen is displayed while adjusting.
  ⓛ Push [CLR/Lock] to return to the Standby screen.
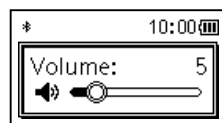
■ Using the Key Lock function

You can use the Key Lock function to prevent accidental channel changes and unnecessary function access, depending on a presetting.
Keys and functions except the following are electronically locked: [Main PTT], [Sub PTT], [PWR/VOL], [Emer], and the Monitor function.

● Hold down [CLR/Lock] for 1 second to turn the Key Lock function ON or OFF.
  ⓛ " " is displayed while the function is ON.

■ Function screen

In the Function screen, you can select the functions by pushing [FUNC].
ⓛ Selectable functions may differ, depending on the transceiver version.
ⓛ The following keys can be used in the Function screen, depending on the operating mode.
  Cellular mode: [Main PTT] and [CLR/Lock]
  Marine mode: [Main PTT], [16/Address], [CLR/Lock], and [Sub PTT] that assigned "Marine PTT"
Routes to the Function screens:
Routes to the Function screens are in the following manner.

Instruction example: [FUNC] > **Mode Select**

5

■ AquaQuake Water Draining function

Water in the speaker grill may muffle the sound coming from the speaker.
The AquaQuake Water Draining function removes water from the speaker grill by vibrating the speaker.
ⓘ Confirm that "AquaQuake" is assigned to [Sub PTT], [Side 1], or [Side 2]. You can assign functions in the Set mode. (p. 27)

NOTE: When an external speaker microphone is connected, the AquaQuake Water Draining function cannot be used.

1. Hold down the key that is assigned to "AquaQuake."
   • A low frequency vibration drains the water, regardless of the volume level setting.
   • The volume level adjustment screen is displayed while holding down the key.
   ⓘ This function is activated for a maximum of 10 seconds, even if you continue to hold down the key.
2. Release the key to turn OFF the function.
   • The volume level returns to the original level.
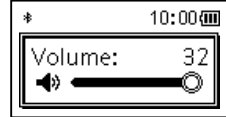
■ Selecting the operating mode

You can select the operating mode, as shown below. See the page shown below for instructions on each operation mode.

Cellular mode: Section 7 (p. 20)
Makes a call with IP transceivers using a cellular network.
• This mode can be used when the transceiver is within the range of the cellular network.
• Two types of communication, the Full Duplex mode and the Simplex mode, can be used.
ⓘ See the Advanced manual for the advanced operations.

Marine mode: Section 6 (p. 13)
Makes a call with VHF marine transceivers.
This mode is used for maritime communication.

Cellular + Marine mode: See the Advanced manual
You can use the Cellular mode and Marine mode at the same time.
In the Cellular + Marine mode, simultaneous transmission and reception on IP transceivers and VHF marine transceivers is possible.

NOTE: The Relay mode relays received VHF marine audio to the cellular transceiver group, while transferring the cellular radio conversations to the VHF marine transceivers. Ask your dealer about the mode details.

1. Open the "Mode Select" screen.

   [FUNC] > **Mode Select**

2. Rotate the Rotary Selector or push [▲] or [▼] to select the operating mode, and then push [CH/Call History].
   • The operating mode is selected, and then returns to the Standby screen.
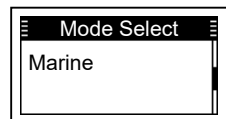
■ **Selecting a channel**

◇ **Regular channel**

You can select a channel by pushing [▲] or [▼] or rotating the Rotary Selector.

◇ **Channel 16**

Channel 16 is the distress and safety channel. It is used to establish the initial contact with a station and for emergency communications. Channel 16 is monitored during both Dualwatch and Tri-Watch. While in the Standby mode, you must monitor Channel 16.
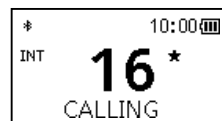
● Push [16/Address] to select Channel 16.
  ⓘ To return to the previously selected channel, push [CH/Call History].

◇ **Call channel**

Each channel group has separate leisure-use Call channels. The Call channel is monitored during Tri-Watch. The Call channels can be selected and used to store your most often used channel in each channel group, for quick recall.
ⓘ You can change the Call channel in the Set mode. (p. 27)

● Hold down [16/Address] for 1 second to select the Call channel.
  • The Call Channel number and "CALL" are displayed.
  ⓘ To return to the previously selected channel, push [CH/Call History].

◇ **Selecting a channel group**

Channel groups are preset into your transceiver. You can select the channel group between USA, International, Canadian, and ATIS, depending on the transceiver version.

1. Open the "Channel Group," screen.

   [FUNC] > **Channel Group**

2. Push [▲] or [▼] to select a channel group.
   • The channel group is selected.
   ⓘ Push [CH/Call History] to return to the Standby screen. The selected channel group's icon is displayed on the Standby screen.

Version	Preset channel group			
	USA	INT	CAN	ATIS
USA	✓	✓	✓	
UK	✓	✓		
EUR		✓		
FRG		✓		✓
NLD		✓		✓
AUS	✓	✓		

■ **Weather channels and Weather alert**

(For only the USA and AUS versions)

The USA and AUS version transceivers have 10 preset Weather channels.
The transceivers are capable* of monitoring broadcasts from the National Oceanographic and Atmospheric Administration (NOAA). The transceiver automatically detects a Weather Alert tone on the selected Weather channel, or while scanning.
* When used within range of the broadcasts.

◇ **Selecting a Weather channel**

1. Push [CH/Call History].
   • "WX" is displayed on the operating screen instead of the channel group.
2. Rotate the Rotary Selector or push [▲] or [▼] to select a Weather channel.
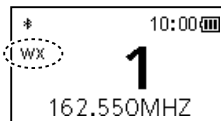
The Weather channel list

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

◇ **Setting the Weather alert**

To receive the Weather alert, set "WX Alert" to "ON."
1. Turn OFF the transceiver, if it is turned ON.
2. While holding down [FUNC], rotate [PWR/VOL] to turn ON the transceiver.
   • The Set mode is displayed.
   ① Release [FUNC] when "SET" is displayed.
3. Rotate the Rotary Selector or push [▲] or [▼] to select the item group "Marine," and then push [FUNC].
4. Push [FUNC] or [16/Address] several times to select "WX Alert."
5. Rotate the Rotary Selector or push [▲] or [▼] to select "ON."
6. Push [CLR/Lock] to exit "WX Alert."
   ① Push [CLR/Lock] again to exit the Set mode and return to the Standby screen.
   • "⌾" is displayed next to the Weather Channel icon.

① "WX ⌾" blinks until you push a key after detecting an alert.
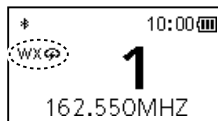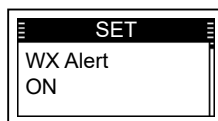
■ Adjusting the squelch level

Squelch enables the audio to be heard only while receiving a signal that is stronger than the set level. A higher level blocks weak signals, so that you can receive only stronger signals. A lower level enables you to hear weak signals.
ⓘ Confirm that the "Show SQL Level Selection" in the Set mode is ON. (p. 26)

1. Open the "SQL Level" screen.

    [FUNC] > **SQL Level**

    ⓘ When "SQL Level" is assigned to [Sub PTT], [Side 1], or [Side 2], you can display the "SQL Level" screen by pushing or holding down the assigned key. (p. 27)
2. Rotate the Rotary Selector or push [▲] or [▼] to adjust the squelch level.
    ⓘ If no key is pushed for 15 seconds, the Adjustment screen automatically closes.
3. Push [CLR/Lock] to exit the SQL Level Selection screen and return to the Standby screen.

```
┌─────────────────┐
│     SQL Level    │
├─────────────────┤
│ 2               ▓│
│                  │
└─────────────────┘
```
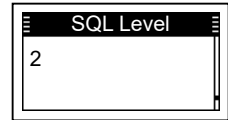
■ Setting the Call channel

By default, a Call channel is set in each channel group.
You can set your most often-used channel as your Call channel in each channel group for quick recall.

1. Turn OFF the transceiver, if it is turned ON.
2. While holding down [FUNC], rotate [PWR/VOL] to turn ON the transceiver.
    • The Set mode is displayed.
    ⓘ Release [FUNC] when "SET" is displayed.
3. Rotate the Rotary Selector or push [▲] or [▼] to select the item group "Marine," and then push [FUNC].
4. Push [FUNC] or [16/Address] several times to select "Call Channel (USA/INT/CAN)."
    ⓘ Select the channel group you want to set.
5. Rotate the Rotary Selector or push [▲] or [▼] to select the channel.
6. Push [CLR/Lock] to exit "Call Channel (USA/INT/CAN)."
    ⓘ Push [CLR/Lock] again to exit the Set mode and return to the Standby screen.

```
┌─────────────────┐
│        SET       │
├─────────────────┤
│ Call Channel (INT)│
│ 20               │
└─────────────────┘
```
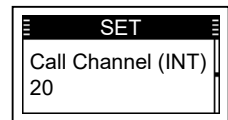
■ ATIS code (For only the NLD and FRG versions)

The Automatic Transmitter Identification System (ATIS) ID consists of 10 digits.
When the ATIS ID is registered in the transceiver, the ATIS code is transmitted after transmission. Ask your dealer for details.

■ Receiving and transmitting

CAUTION: DO NOT transmit without an antenna.

1. Rotate the Rotary Selector or push [▲] or [▼] to select the channel to call on.
    ⓘ The Status indicator lights green while receiving a signal.
2. Hold down [Main PTT] and speak into the microphone at your normal voice level.
    • The Status indicator lights red while holding down [Main PTT].
    ⓘ When "Marine PTT" is assigned to [Sub PTT], you can also start the transmission by holding down [Sub PTT].
    ⓘ You can change the output power by holding down [CH/Call History] for 1 second, even while transmitting.
3. Release [Main PTT] to receive.
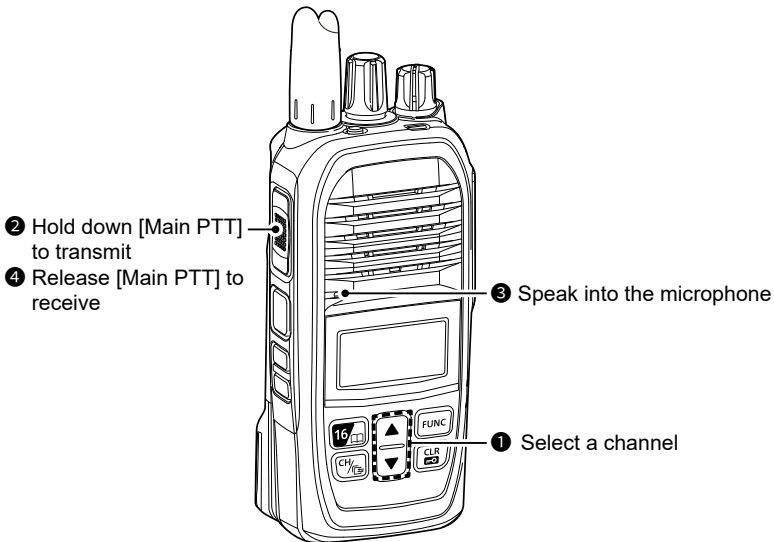
❷ Hold down [Main PTT] to transmit
❹ Release [Main PTT] to receive

❸ Speak into the microphone

❶ Select a channel

TIP: To maximize the readability of your transmitted signal, pause for a second after pushing [Main PTT] and hold the microphone 5 to 10 cm (2 to 4 inches) from your mouth, and then speak at your normal voice level.

NOTE:
• The Time-out Timer function cuts off transmission after 5 minutes of continuous transmission to prevent prolonged transmission.
  10 seconds before transmission is cut off, a beep sounds, and "TOT" blinks to indicate that the transmission will be cut off. After the cut-off, "TIME OUT" is displayed for 10 seconds, and you cannot transmit until it disappears.
• The Noise Cancel function reduces random noise components in the transmission signal. See the Advanced manual for details.

■ Scan operation

◇ Scan types

You can find ongoing communication by scanning the Favorite channels.
The scan is for all transceiver versions except the NLD version.

Before starting a scan:
• Set the channels that you want to scan as Favorite channels. (p. 18)
  ⓘ Only the Favorite channels are scanned.
• Set the scan type to "Priority Scan" or "Normal Scan" on the Set mode. (p. 26)

Normal scan
Sequentially searches through all Favorite channels. Channel 16 is not scanned unless it is set as a Favorite channel.
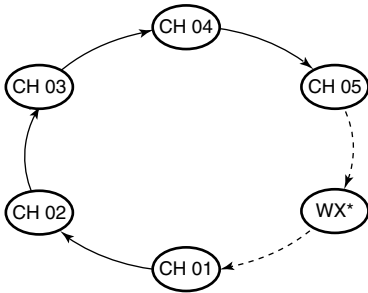
* For only the USA and AUS versions. When the Weather Alert function is ON, the previously selected Weather channel is also scanned.

Priority scan
Sequentially searches through all Favorite channels, while also periodically checking Channel 16.
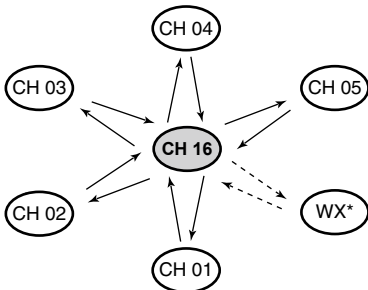
* For only the USA and AUS versions. When the Weather Alert function is ON, the previously selected Weather channel is also scanned.

When a signal is received:
On Channel 16:   The scan pauses until the signal disappears.
On a channel other than Channel 16: The scan switches to Dualwatch until the signal disappears.

◇ Setting Favorite channels

You can quickly recall often-used channels by setting them as Favorite channels.
You can set Favorite channels in each channel group.
By default, some channels are preset as Favorite channels. The preset channels may
differ, depending on the transceiver version.
① Confirm that the "Show Favorite Selection" in the Set mode is ON. (p. 26)

Setting from the Function screen
1.   Select a channel group on the "Channel Group" screen.

     [FUNC] > **Channel Group**

2.   Rotate the Rotary Selector or push [▲] or [▼] to select the channel.
3.   Open the "Favorite" screen.

     [FUNC] > **Favorite**

4.   Rotate the Rotary Selector or push [▲] or [▼] to select "ON."
     • The selected channel is set as a Favorite channel, and "★" is displayed.
     ① To cancel the setting, select "OFF."
     ① Push [CLR/Lock] to return to the Standby screen.

Setting from the Scan key
① Confirm that "FAV ON/OFF" is assigned to [Sub PTT], [Side 1], or [Side 2]. You can assign
  the function in the Set mode. (p. 27)
1.   Select a channel group on the Channel Group screen.
2.   Rotate the Rotary Selector or push [▲] or [▼] to select the channel.
3.   Push or hold down the key that is assigned to "FAV ON/OFF."
     • The selected channel is set as a Favorite channel, and "★" is displayed.
     ① To cancel the setting, push or hold down the key again.

TIP: You can set all channels as Favorite channels, clear all settings, or reset to the
defaults. (p. 27)

◇ Starting a scan (Except the NLD version)

Example: Starting a Normal scan.
① Confirm that "Scan" is assigned to [Sub PTT], [Side 1], or [Side 2].
  You can assign the function in the Set mode. (p. 27)

1.   Select the channel group to scan on the "Channel Group"
     screen, if another group is selected.

     [FUNC] > **Channel Group**

2.   Push or hold down the key that is assigned to "Scan."
     • The scan starts.
     • "SCAN" is displayed during a Normal scan, and
       "SCAN" and "16" are displayed during a Priority scan.
     ① When a signal is received, the scan pauses until it
       disappears, or resumes after 5 seconds, depending on the
       Scan Timer setting.
     ① A beep sounds and "16" blinks when a signal is received
       during a Priority scan.
3.   To stop the scan, push or hold down the key again or push
     [CLR/Lock].

TIP: To properly receive signals, be sure to adjust the squelch to a
suitable level.

■ **Dualwatch/Tri-Watch**

◇ Description

Dualwatch and Tri-Watch are convenient for periodically checking Channel 16 while operating on another channel.
Dualwatch and Tri-Watch are for all transceiver versions except the NLD version.

Dualwatch
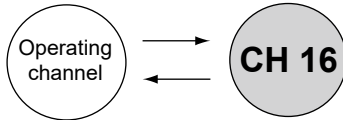
Periodically checks Channel 16 while operating on another channel.
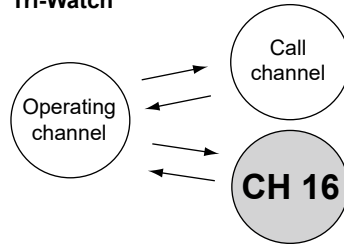
Tri-Watch

Periodically checks Channel 16 and the Call channel while operating on another channel.

When a signal is received:
On Channel 16:   Dualwatch/Tri-Watch pauses on Channel 16 until the signal disappears.
On the Call channel: Tri-Watch switches to Dualwatch until the signal on the Call channel disappears.

◇ Operation

ⓘ Confirm that "Dualwatch" or "Tri-Watch" is assigned to [Sub PTT], [Side 1], or [Side 2]. You can assign the functions in the Set mode. (p. 27)

1. Push or hold down the key that is assigned to "Dualwatch" or "Tri-Watch."
   • Dualwatch or Tri-Watch starts.
   • "DUAL" and "16" are displayed for Dualwatch, and "TRI" and "16" are displayed for Tri-Watch.
   ⓘ Two beeps sound and "16" blinks when a signal is received on the operating channel or Channel 16.
   ⓘ Two beeps sound, "16" blinks, and the Call Channel number and "CALL" are displayed when a signal is received on the Call channel during Tri-Watch.
   The transceiver periodically checks Channel 16 while receiving on the Call channel.
2. To cancel Dualwatch or Tri-Watch, push or hold down the key again or push [CLR/Lock].

NOTE: LTE operation requires SIM insertion. Contact your dealer for details.

■ Selecting a call-to party

1. Push [16/Address] to display the Address book.
   ⓘ The Address book is displayed.
2. Push [16/Address] several times to switch the call type.
   ⓘ The selectable call type may differ, depending on a presetting.
3. Rotate the Rotary Selector or push [▲] or [▼] to select a call-to party.

■ Receiving and transmitting

Receiving:
● When a call is received, the Status indicator lights green.

Transmitting:
● While holding down [Main PTT], speak at your normal voice level.
   ⓘ The Status indicator lights red while [Main PTT] is pushed.

Talk while receiving a call:
● While receiving a call, push [Main PTT] to talk in the Full-Duplex mode* like a telephone call.
   ⓘ In the Full-Duplex mode, the Status indicator lights yellow.
   * Usability depends on a presetting. Ask your dealer for details.

TIP: To maximize the readability of your transmitted signal, pause for a second after pushing [Main PTT] and hold the microphone 5 to 10 cm (2 to 4 inches) from your mouth, and then speak at your normal voice level.

About the call type:
• All call: Transmit to all of the transceivers that belong to the network.
• Group call: Transmit to the transceivers that belong to the same group.
• Talkgroup call: Transmit to the transceivers that belong to the same Talkgroup.
• Individual call: Transmit to an individual transceiver.
• Telephone call: Transmit to an IP phone (Transmittable, depending on a presetting).

NOTE:
• The Time-out Timer function cuts off transmission after 5 minutes of continuous transmission to prevent prolonged transmission.
  A beep sounds 10 seconds before the TOT function cuts off the transmission.
  After the cut-off, you cannot transmit for 60 seconds.
• The Noise Cancel function reduces random noise components in the transmit signal. See the Advanced manual for details.

6

7

8 **SET MODE**

■ **Using a Set mode**

You can use a Set mode to set infrequently changed values or function settings.
The transceiver has 2 types of Set modes, as shown below.
ⓘ You cannot transmit or receive while the transceiver is in a Set mode.

◇ **Basic Set mode**

1. Turn OFF the transceiver, if it is turned ON.
2. While holding down [FUNC], rotate [PWR/VOL] to turn ON
   the transceiver.
   • The Set mode is displayed.
   ⓘ Release [FUNC] when "SET" is displayed.
3. Rotate the Rotary Selector or push [▲] or [▼] to select an
   item group "Common," "Cellular," "Marine," or "Cellular +
   Marine," and then push [FUNC].
   ⓘ Select "Certification" and then push [FUNC] to display
     certification information.

```
          SET
SET MODE
Common
```

◇ **Detailed Set mode**

1. Turn OFF the transceiver, if it is turned ON.
2. While holding down [FUNC] and [16/Address], rotate [PWR/
   VOL] to turn ON the transceiver.
   • The Detailed Set mode is displayed.
   ⓘ Release [FUNC] and [16/Address] when "SET (Detail)" is
     displayed.
3. Rotate the Rotary Selector or push [▲] or [▼] to select an
   item group "Common," "Cellular," "Marine," or "Cellular +
   Marine," and then push [FUNC].

```
       SET(Detail)
SET MODE
Common
```
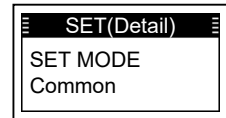
◇ **Using the Set mode**

Example: Disabling the key touch beep.
1. Turn OFF the transceiver, if it is turned ON.
2. While holding down [FUNC] and [16/Address], rotate [PWR/
   VOL] to turn ON the transceiver.
   • The Detailed Set mode is displayed.
   ⓘ Release [FUNC] and [16/Address] when "SET (Detail)" is
     displayed.
3. Rotate the Rotary Selector or push [▲] or [▼] to select an
   item group "Common," and then push [FUNC].
4. Push [FUNC] or [16/Address] several times to select
   "Key-Touch Beep."
5. Rotate the Rotary Selector or push [▲] or [▼] to select "OFF."
6. Push [CLR/Lock] to exit "Key-Touch Beep."
   ⓘ Push [CLR/Lock] again to exit the Set mode, and return to
     the Standby screen.

```
       SET(Detail)
Key-Touch Beep
OFF
```
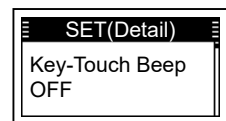
■ **Set mode items**

- ⓘ Items or default values may differ, depending on the transceiver's version or presettings.
  Ask your dealer for details.
- ⓘ The shaded items are also displayed in the Basic Set mode.

Common
RX Notify Vol.
Notify Vol.
Key-Touch Beep
Key-Touch Beep Vol.
Key-Touch Beep Linked
Internal Mic Gain
External Mic Gain
VOX
VOX Threshold
VOX Delay
Noise Canceller
PTT Lock
Operate Inhibit
AF Min Level
AF Max Level
Backlight
Brightness
Contrast
Bluetooth
BT Auto Connect
BT Sync Vol.
BT Connect Type
BT PTT & Mic Switch
BT AF Output
BT Mic Gain
BT Echo Canceller
BT E-Cancel Gain
BT E-Cancel Delay
BT Noise Cancel
BT Power Save
BT One Touch PTT
Show BT One Touch PTT
BT PTT Beep
Search BT Device
Delete BT Device

Init BT Unit
BT Unit Version
RESET

Cellular

See the Advanced manual
for details.

Marine
WX Alert*1
Priority scan*2
Scan Timer*2
Auto Scan*2
Dual/Tri-Watch*2
Monitor Switch Action
Show SQL Level Selection
Show Favorite Selection
Channel Display (INT/USA/CAN/ATIS)
Call Channel (INT/USA/CAN/ATIS)
Sub PTT Push
Sub PTT Hold
Side1 Push
Side1 Hold
Side2 Push
Side2 Hold
Model*3
Favorite Channel (INT/USA/CAN/ATIS)

*1 For only the USA and AUS
versions.
*2 Except for the NLD version.
*3 For only the European
version.

Cellular + Marine

See the Advanced manual
for details.

8

8 SET MODE

■ Set mode items

◇ Common

RX Notify Vol.

Sets the call or message received notification volume between 0 and 32.

Notify Vol.

Sets the Notification Beep level between 0 and 32.

Key-Touch Beep

Selects whether or not to enable the Keytouch beep.

Key-Touch Beep Vol.

Sets the beep level when a transceiver's key is pushed between 0 and 32.
ⓘ Displayed only when "ON" is selected in the "Key-Touch Beep" item.

Key-Touch Beep Linked

Selects whether or not to link the Key Touch Beep level to the transceiver's setting.
ⓘ Displayed only when "ON" is selected in the "Key-Touch Beep" item.

Internal Mic Gain

Sets the internal microphone sensitivity between –12 dB and 12 dB (in 4 dB steps).
ⓘ Higher values make the microphone more sensitive to your voice.

External Mic Gain

Sets the external microphone sensitivity between –12 dB and 12 dB (in 4 dB steps).
ⓘ Higher values make the microphone more sensitive to your voice.

VOX

Selects whether or not to use the VOX function.
The function automatically switches between receiving and transmitting by detecting your voice.
OFF:　　　　Turns OFF the function.
Bluetooth Mic:Uses the function with a Bluetooth microphone.
Earphone Mic/Headset:
　　　　　　Uses the function with an earphone microphone or headset.

VOX Threshold

Sets the VOX gain level between 1 to 10.
ⓘ Lower values make the VOX function more sensitive to your voice.
ⓘ Displayed only when "Bluetooth Mic," or "Earphone Mic/Headset" is selected in the "VOX" item.

VOX Delay

Sets the period of time between 0.5 to 3.0 (in 0.5 steps) seconds that the transceiver continues transmitting after the user stops speaking, and then the VOX switches to receive.
ⓘ If you set the time too short, a pause in a conversation may be regarded as the end of the conversation, and the transceiver will start receiving, even as the conversation continues.
ⓘ Displayed only when "Bluetooth Mic," or "Earphone Mic/Headset" is selected in the "VOX" item.

Noise Canceller

Selects whether or not to enable the Noise Cancelling function.

PTT Lock

Selects whether or not to enable the PTT function.
The function inhibits transmission by the internal PTT.

Operate Inhibit

Selects whether or not to inhibit the operation except using [PWR/VOL].

AF Min Level

Set the minimum audio output level between 0 and 32.

AF Max Level

Sets the maximum audio output level between 0 and 32.

Backlight

Selects a Backlight option.
OFF: Turns OFF the backlight.
ON: The backlight turns ON all the time.
Auto: When pushing any key except [Main PTT] and [Sub PTT], the backlight automatically turns ON for 5 seconds.

Brightness

Selects a Backlight brightness level of the display and keypad between "Light" and "Dark."

Contrast

Sets the screen contrast between 1 and 16.

Bluetooth

Selects whether or not to enable the Bluetooth function.
ⓘ See the Advanced manual for details.

BT Auto Connect*

Selects whether or not to automatically connect a Bluetooth device.

BT Sync Vol.*

Selects whether or not to synchronize the Bluetooth headset's volume level with the transceiver's volume level.
ⓘ When "ON" is selected, the Bluetooth headset volume can be set by rotating [PWR/VOL].

BT Connect Type*

Selects the Synchronous Connection-Oriented (SCO) link connection type of a Bluetooth headset.
When "Auto Disconnect" is selected, the SCO link is automatically disconnected after 2 seconds.
ⓘ The SCO link is a Bluetooth link for voice communication.
Always Connect: The SCO link is always connected. Normally, this option is recommended.
Auto Disconnect: The SCO link is connected when transmitting, receiving, or sounding a beep, but the link is automatically disconnected after two seconds.
ⓘ This setting is valid only when a Bluetooth device other than a VS-3 is used.
ⓘ When this item is set to "Auto Disconnect," the VOX function is not usable.

BT PTT & Mic Switch*

Enables the user to select which microphone to use.
Auto: Transmits the audio from the device whose [PTT] is pushed.
Bluetooth Mic: Transmits the audio from the Bluetooth headset's microphone, whichever [PTT] is pushed.
Radio Mic: Transmits the audio from the transceiver's microphone, whichever [PTT] is pushed.
ⓘ When this item is set to "Auto," transmits the audio from the device whose [PTT] is pushed.

* Displayed only when "ON" is selected in the "Bluetooth" item.

8   SET MODE

■ Set mode items
◇ Common

BT AF Output*

Selects the AF Output device when a Bluetooth headset is connected.
BT Only: Sets the Bluetooth headset as the AF Output device.
BT & SP: Sets the Bluetooth headset and the transceiver's speaker as the AF Output devices.

BT Mic Gain*

Sets the Bluetooth microphone sensitivity between –12 dB and 12 dB (in 4 dB steps).
ⓘ Higher values make the microphone more sensitive to your voice.

BT Echo Canceller*

Selects whether or not to enable the Bluetooth headset's Echo Canceller.

BT E-Cancel Gain*

Sets the Echo Canceller input gain for a Bluetooth headset between –40 dB and 40 dB (in 1 dB steps).

BT E-Cancel Delay*

Sets the Echo Canceller delay for a Bluetooth headset between 0 milliseconds and 160 milliseconds (in 1 millisecond steps).

BT Noise Cancel*

Selects whether or not to enable the Bluetooth headset's Noise Canceller.

BT Power Save*

Selects whether or not to enable the Bluetooth headset's Power Save function.
ⓘ When "ON" is selected, the Power Save function automatically activates after 2 minutes of no communication.

BT One Touch PTT*

Selects whether or not to enable the One-Touch PTT function while a Bluetooth headset is connected.
The function toggles receiving and transmitting by momentarily pushing [PTT] on a Bluetooth headset.
ⓘ Push [PTT] to talk, and push again to return to receive.
ⓘ When "ON" is selected, you do not have to hold down [PTT] while you are talking.

Show BT One Touch PTT*

Selects whether or not to display the "BT One Touch PTT" item by pushing [FUNC] on the standby screen.

BT PTT Beep*

Selects whether or not to sound a beep when the [PTT] on the Bluetooth headset is pushed.

Search BT Device*

Searches for Bluetooth devices.
ⓘ Push [CH/Call History] to start searching.

Delete BT Device*

Deletes paired devices.

Init BT Unit*

Initializes the built-in Bluetooth unit and pairing list.
ⓘ Select "Clear," and then push [CH/Call History] to delete.

BT Unit Version

Displays the built-in Bluetooth unit version.

RESET

Resets the transceiver to its defaults, except for the Marine mode settings.
ⓘ Select "YES," and then push [CH/Call History] to reset.
ⓘ The transceiver automatically restarts.

* Displayed only when "ON" is selected in the "Bluetooth" item.

◊ Marine

WX Alert

(For only the USA and AUS versions)
A NOAA broadcast station transmits a
Weather Alert tone before any important
weather information.
ON: The previously selected (last used)
     Weather channel is checked while
     scanning.
OFF: The Weather Alert tone is not detected.

Priority scan

(Except for the NLD version)
Selects whether or not to use Priority scan.
The default setting differs, depending on
the transceiver version.
ⓘ When "OFF" is selected, a Normal scan
   will be performed.
ON: Sequentially scans all Favorite
     channels, while periodically checking
     Channel 16.
OFF: Scans all Favorite channels in the
     selected channel group.

Scan Timer

(Except for the NLD version)
Selects whether or not to use the scan
timer to pause, or to resume after 5
seconds, when a signal is detected.

ON: When a signal is detected on a
     channel, the scan pauses for 5
     seconds, and then resumes. If
     the signal disappears in less than
     5 seconds, the scan immediately
     resumes.
OFF: When a signal is detected on a
     channel, the scan pauses until the
     signal disappears, and then resumes.

Auto Scan

(Except for the NLD version)
Turns the Automatic Scan function ON or
OFF.
ON: The scan automatically starts
       when no signal is received, or no
       operations are carried out for 30
       seconds.
OFF: The function is OFF.

Dual/Tri-Watch

(Except for the NLD version)
Selects Dualwatch or Tri-Watch.
Dualwatch: Periodically checks Channel
           16 while operating on another
           channel.
Tri-Watch: Periodically checks Channel
           16 and the Call channel while
           operating on another channel.

Monitor Switch Action

Holding down the key that [Monitor] is
assigned for 1 second turns ON the
monitor function and opens the squelch.
Selects whether the squelch closes when
you release the key, or when you push any
key.
Push: The squelch stays open while
       holding down the assigned key.
Hold: The squelch stays open until you
       push any key.

Show SQL Level Selection

Selects whether or not the SQL level
selection screen can be selected by
pushing [FUNC] several times in the
Marine mode, Cellular + Marine mode, and
Relay mode.

Show Favorite Selection

Selects whether or not the Favorite screen
can be selected by pushing [FUNC]
several times in the Marine mode and
Cellular + Marine mode.

Channel Display (INT/USA/CAN/ATIS)

Selects the number of digits to display the
channel number.
ⓘ This setting may not be usable, depending
   on the transceiver version or presetting.

3 digits: The channel number is displayed
           in 3 digits, such as "01A."
4 digits: The channel number is displayed
           in 4 digits, such as "1001."

8

8 SET MODE

■ Set mode items
◇ Marine

Call Channel (INT/USA/CAN/ATIS)

Sets your Call channel. The default setting may differ, depending on the transceiver version.
ⓘ This setting may not be usable, depending on the transceiver version or presetting.
● Rotate the Rotary Selector or push [▲] or [▼] to select the channel.

Sub PTT Push/Sub PTT Hold/Side1 Push/Side1 Hold/Side2 Push/Side2 Hold

Assigns a function when each key is pushed or held down.

Assignable function	Description
Marine PTT*1	Starts the transmission.
Monitor*2	You can hear weak signals on the frequency while holding down the assigned key.
FAV Up	Selects only channels set as Favorite channels in order.
FAV ON/OFF	Sets or releases the selected channel as a Favorite channel.
SQL Level	Sets the SQL levels. ⓘ In the SQL Level Selection screen, push [FUNC] to display another item on the Function screen, or push [CLR/Lock] to return to the Standby screen.
Scan	Starts or stops a scan.
Dualwatch/ Tri-Watch	Starts or stops Dualwatch or Tri-Watch.
AquaQuake*2	Turns the AquaQuake Water Draining function ON while holding down the assigned key.

*1 Assignable to only "Sub PTT Hold."
When this item is assigned to "Sub PTT Hold," "Sub PTT Push" is not displayed.
*2 Assignable to only "Sub PTT Hold," "Side1 Hold," and "Side2 Hold."

Model

(For only the European version)
Selects the country where you operate the transceiver.
ⓘ To set this item, select the country, and then push [CH/Call History].
The transceiver will automatically restart, and then the transceiver version will be changed.

Favorite Channel (INT/USA/CAN/ATIS)

Sets all channels as Favorite channels, clear all settings, or reset to default. By default, some channels are preset. The Favorite channels differ, depending on the transceiver version.
Set All Channels: Sets all channels as Favorite channels.
Clear All Channels: Clears all Favorite channels.
Set Default: Resets Favorite channels to the default.
ⓘ To set this item, select the option, and then push [CH/Call History].
ⓘ This setting may not be usable, depending on the transceiver version or presetting.

9

■ Specifications

ⓘ Measurements made without an antenna.
ⓘ See the Advanced manual for details about 4G (LTE)/3G (W-CDMA) and Bluetooth specifications.
ⓘ All stated specifications are subject to change without notice or obligation.

General		USA	EUR	AUS
Frequency coverage	TX	156.025 MHz ~ 157.425 MHz	156.000 MHz ~ 161.450 MHz	156.025 MHz ~ 157.425 MHz
	RX	156.050 MHz ~ 163.275 MHz	156.000 MHz ~ 163.425 MHz	156.300 MHz ~ 162.000 MHz
Type of emission		16K0G3E		
Antenna impedance		50 Ω nominal		
Input impedance (MIC)		2.2 kΩ		
Output impedance (audio)	External	8 Ω		
	Internal			
Operating temperature range		–20°C ~ +60°C, –4ºF ~ +140ºF	–15°C ~ +55°C, 5ºF ~ +131ºF	–10°C ~ +55°C, 14ºF ~ +131ºF
Power supply voltage		7.4 V DC nominal (Negative ground)		
Current drain (approximate)	Receive stand-by	0.3 A		
	Receive Maximum audio	0.52 A (Internal speaker)		
	Transmit High (5 W)	1.6 A		
Dimensions (projections not included)		53.7 (W) × 121.7 (H) × 36.6 (D) mm (with BP-303) 2.1 (W) × 4.8 (H) × 1.4 (D) in		
Weight (approximate)		320 g, 11.3 oz (with BP-303)		

Transmitter	USA	EUR	AUS
Rated output power	5 W or 1 W		
SAR 10g	–	1.96 W/kg	–
Modulation	Variable reactance frequency modulation		
Maximum frequency deviation	±5 kHz		
Frequency error	±10 ppm	±1.5 kHz	±10 ppm
Spurious emissions	–68 dBc (typical)	Less than 0.25 µW	0.25 µW (typical)
Adjacent channel power	More than 70 dB		
Audio harmonic distortion (at 60% Deviation)	Less than 10%		
Residual modulation	More than 40 dB		
Audio frequency response	+1 dB ~ –3 dB of 6 dB octave from 300 Hz ~ 3000 Hz		

9 SPECIFICATIONS AND OPTIONS

■ Specifications

Receiver		USA	EUR	AUS
Sensitivity (typical)		0.25 μV at 12 dB SINAD	–3 dBμ emf at 20 dB SINAD	
Squelch sensitivity (threshold, typical)		0.25 μV	–3 dBμ emf	
Audio output power (at 10% distortion into an 8 Ω load at 1 kHz)	Internal speaker	1.5 W typical		
	External speaker	1.0 W typical		
	HM-222H	1.5 W typical		
Adjacent channel selectivity		70 dB (typical)	More than 70 dB	More than 65 dB
Spurious response		70 dB (typical)	More than 70 dB	More than 65 dB
Intermodulation		70 dB (typical)	More than 68 dB	More than 65 dB
Hum and noise		More than 40 dB		
Audio frequency response		+1 dB ~ –3 dB of –6 dB octave from 300 Hz ~ 3000 Hz		

■ Options

Some options may not be available in some countries. Ask your dealer for details.

◇ Battery pack

- **BP-303** Li-ion BATTERY PACK
  Voltage: 7.2 V
  Capacity: 3200 mAh (minimum),
              3350 mAh (typical)
  Battery life: Approximately 24 hours*
              (Cellular mode)
              Approximately 13 hours*
              (Marine mode)
  * Calculated under the following conditions:
    - Bluetooth and Backlight are OFF
    - TX : RX : standby = 5 : 5 : 90
    The operating time may be shorter,
    depending on:
    - The operating conditions, such as
      Bluetooth, GPS, operating mode, and
      so on.
    - The distance from the cellular station
      or the signal strength.

◇ Charger

- **BC-227** DESKTOP CHARGER
  +BC-123S AC ADAPTER
  Charging time: Approximately 4.4 hours
- **BC-226** DESKTOP CHARGER
  +BC-228 AC ADAPTER
  You can connect up to 6 BC-226 together.
  Charging time: Approximately 4.2 hours
  ⓘ A power adapter may be supplied,
    depending on the charger's version.
- **BC-214N** MULTI CHARGER
  +AD-132N CHARGER ADAPTER
  +BC-157S AC ADAPTER
  To rapidly charge up to 6 battery packs.

◇ Others

- **FA-S59V** FLEXIBLE ANTENNA
- **MB-136, MB-133** BELT CLIP
- **MB-96F, MB-96FL, MB-96N** BELT HANGER
- **LC-195** CARRYING CASE
- **VS-3** Bluetooth® HEADSET
  The Bluetooth headset with a [PTT]
  switch.
- **VS-5MC*** PTT SWITCH CABLE
  +HS-94, HS-95, HS-97 HEADSET
  VS-5MC: Used to connect a headset to a
          transceiver.
  HS-94: Ear-hook type
  HS-95: Neck-arm type
  HS-97: Throat microphone
  *Non-waterproof
- **HM-184H, HM-222H** SPEAKER
  MICROPHONE
  HM-184H: Meets IP67 dust-tight and
          waterproof protection.
  HM-222H: Meets IP68 dust-tight and
          waterproof protection, high
          audio output type.
- **HM-238MC** TIEPIN TYPE MICROPHONE
  With a [Sub PTT] switch.
- **EH-15B** EARPHONE,
  SP-26 TUBE EARPHONE,
  SP-28 EAR HOOK TYPE EARPHONE
  For use with the HM-238MC.
- **SP-27** TUBE EARPHONE,
  SP-29 EAR HOOK TYPE EARPHONE,
  SP-40 EARPHONE
  For use with the HM-222H.

9

10 VHF MARINE CHANNEL LIST

■ For the USA and AUS versions

NOTE: When the "Channel Display" is set to "3 digits" in the Channel Display setting, the channel number is displayed in 3 digits. See page 26 for details. (For example: "1001 is displayed as "01A.")

Channel Number			Frequency (MHz)	
USA	INT	CAN	Transmit	Receive
	01	01	156.050	160.650
1001	1001*3		156.050	156.050
	02	02	156.100	160.700
	03	03	156.150	160.750
	04		156.200	160.800
		1004	156.200	156.200
	05		156.250	160.850
1005	1005*3	1005	156.250	156.250
06	06	06	156.300	156.300
	07		156.350	160.950
1007	1007*3	1007	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*1	13	13*1	156.650	156.650
14	14	14	156.700	156.700
15*2	15*4	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
1018	1018*3	1018	156.900	156.900
	19		156.950	161.550
1019	1019	1019	156.950	156.950
	2019		RX only	161.550
20	20	20*1	157.000	161.600
1020	1020		157.000	157.000
	2020		RX only	161.600
	21		157.050	161.650
1021	1021*3	1021	157.050	157.050
		2021	RX only	161.650
	22		157.100	161.700
1022	1022*3	1022	157.100	157.100
	23	23	157.150	161.750
1023	1023*3		157.150	157.150
		2023	RX only	161.750
24	24*5	24	157.200	161.800
25	25*5	25	157.250	161.850
		2025	RX only	161.850
26	26*5	26	157.300	161.900
27	27	27	157.350	161.950
	1027*3		157.350	157.350
28	28	28	157.400	162.000
	1028*3		157.400	157.400
		2028	RX only	162.000
	60	60	156.025	160.625

Channel Number			Frequency (MHz)	
USA	INT	CAN	Transmit	Receive
	61		156.075	160.675
		1061	156.075	156.075
	62		156.125	160.725
		1062	156.125	156.125
	63		156.175	160.775
1063	1063*3	1063	156.175	156.175
	64	64	156.225	160.825
		1064	156.225	156.225
	65		156.275	160.875
1065	1065*3	1065*1	156.275	156.275
	66		156.325	160.925
1066	1066*3	1066*1	156.325	156.325
67*1	67	67	156.375	156.375
68	68	68	156.425	156.425
69	69	69	156.475	156.475
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
	75*4	75*1	156.775	156.775
	76*4	76*1	156.825	156.825
77*1	77	77*1	156.875	156.875
	78		156.925	161.525
1078	1078	1078	156.925	156.925
	2078		RX only	161.525
	79		156.975	161.575
1079	1079	1079	156.975	156.975
	2079		RX only	161.575
	80		157.025	161.625
1080	1080*3	1080	157.025	157.025
	81		157.075	161.675
1081	1081*3	1081	157.075	157.075
	82		157.125	161.725
1082	1082*3	1082	157.125	157.125
	83		157.175	161.775
1083	1083*3	1083	157.175	157.175
		2083	RX only	161.775
84	84*5	84	157.225	161.825
85	85*5	85	157.275	161.875
86	86*5	86	157.325	161.925
87	87	87	157.375	157.375
88	88	88	157.425	157.425

*1 Low power only.

*2 RX only.

*3 For only the USA version.

*4 Low power only (Except for the AUS version).

*5 For only the AUS version.

ⓘ See page 14 for details on the WX channel.

NOTE: Simplex channels, 1021, 1023, 1081, 1082, and 1083 **CANNOT** be lawfully used by the general public in the USA waters.

■ For the EUR versions

NOTE: When the "Channel Display" is set to "3 digits" in the Radio setting, the channel number is displayed in 3 digits. See page 26 for details. (For example: "1001" is displayed as "01A.")

◇ International channels

CH	Frequency(MHz) Transmit	Receive	CH	Frequency(MHz) Transmit	Receive	CH	Frequency(MHz) Transmit	Receive	CH	Frequency(MHz) Transmit	Receive
01	156.050	160.650	16	156.800	156.800	1037*4	157.850	157.850	75*1	156.775	156.775
02	156.100	160.700	17*1	156.850	156.850	60	156.025	160.625	76*1	156.825	156.825
03	156.150	160.750	18	156.900	161.500	61	156.075	160.675	77	156.875	156.875
04	156.200	160.800	19	156.950	161.550	62	156.125	160.725	78	156.925	161.525
05	156.250	160.850	1019*2	156.950	156.950	63	156.175	160.775	1078*2	156.925	156.925
06	156.300	156.300	2019*2	RX Only	161.550	64	156.225	160.825	2078*2	RX Only	161.525
07	156.350	160.950	20	157.000	161.600	65	156.275	160.875	79	156.975	161.575
08	156.400	156.400	1020*2	157.000	157.000	66	156.325	160.925	1079*2	156.975	156.975
09	156.450	156.450	2020*2	RX Only	161.600	67	156.375	156.375	2079*2	RX Only	161.575
10	156.500	156.500	21	157.050	161.650	68	156.425	156.425	80	157.025	161.625
11	156.550	156.550	22	157.100	161.700	69	156.475	156.475	81	157.075	161.675
12	156.600	156.600	23	157.150	161.750	71	156.575	156.575	82	157.125	161.725
13	156.650	156.650	1027	157.350	157.350	72	156.625	156.625	83	157.175	161.775
14	156.700	156.700	1028	157.400	157.400	73	156.675	156.675	87	157.375	157.375
15*1	156.750	156.750	31*1,3	157.550	162.150	74	156.725	156.725	88	157.425	157.425
									P4*5	161.425	161.425

*1 Low power only.
*2 Except for the NLD version.
*3 For only the NLD version.
*4 For only the NLD and UK versions (UK Marina Channel: M1=1037 (157.850 MHz) for the UK version), and low power only for the NLD version.
*5 UK Marina Channel: M2=P4 (161.425 MHz) for the UK version only.

◇ USA channels (for only the UK version)

CH	Frequency (MHz) Transmit	Receive	CH	Frequency (MHz) Transmit	Receive	CH	Frequency (MHz) Transmit	Receive	CH	Frequency (MHz) Transmit	Receive
1001	156.050	156.050	17*	156.850	156.850	1037	157.850	157.850	1079	156.975	156.975
1005	156.250	156.250	1018	156.900	156.900	1063	156.175	156.175	1080	157.025	157.025
06	156.300	156.300	1019	156.950	156.950	1065	156.275	156.275	1081	157.075	157.075
1007	156.350	156.350	20	157.000	161.600	1066	156.325	156.325	1082	157.125	157.125
08	156.400	156.400	1020	157.000	157.000	67*	156.375	156.375	1083	157.175	157.175
09	156.450	156.450	1021	157.050	157.050	68	156.425	156.425	84	157.225	161.825
10	156.500	156.500	1022	157.100	157.100	69	156.475	156.475	85	157.275	161.875
11	156.550	156.550	1023	157.150	157.150	71	156.575	156.575	86	157.325	161.925
12	156.600	156.600	24	157.200	161.800	72	156.625	156.625	87	157.375	157.375
13*	156.650	156.650	25	157.250	161.850	73	156.675	156.675	88	157.425	157.425
14	156.700	156.700	26	157.300	161.900	74	156.725	156.725	P4	161.425	161.425
15	RX only	156.750	27	157.350	161.950	77*	156.875	156.875			
16	156.800	156.800	28	157.400	162.000	1078	156.925	156.925			

* Low power only
ⓘ 1037 and P4 channels are UK Marina Channels: M1=1037, M2=P4.

NOTE: Simplex channels, 1021, 1023, 1081, 1082, and 1083 **CANNOT** be lawfully used by the general public in the USA waters.

11 TROUBLESHOOTING

The transceiver does not turn ON.
● The battery is exhausted or over discharged.
  → Recharge the battery pack. (p. 10)
● The battery pack is not correctly attached.
  → Correctly reattach the battery pack. (p. 3)
● The battery pack's over-discharge protection circuitry is activated.
  → Remove the battery pack from the transceiver, then charge it for a while.
  → Attach the battery pack to the transceiver again, then turn ON the transceiver.
● Loose connection of the battery pack.
  → Clean the battery pack terminals.

No sound comes from the speaker, earphone, or headset.
● The squelch level is set too high.
  → Set the squelch level to the threshold point. (p. 15)
● The volume level is set too low.
  → Set the volume level to a suitable level. (p. 11)
● The internal speaker has been exposed to water.
  → Use the AquaQuake Water Draining function to remove water from the speaker grill.
    (p. 12)
● Loose earphone plug connection.
  → Firmly insert the plug.

No beep sounds.
● The Key-Touch Beep function is OFF.
  → Turn ON the Key-Touch Beep function. (p. 23)
● The Key-Touch Beep Volume level is set too low.
  → Set the volume to a suitable level in the Set mode. (p. 23)

"Key lock" is displayed when you push any keys.
● The keypad is locked.
  → Hold down [CLR/Lock] for 1 second to unlock the keypad. (p. 11)

You cannot transmit, or cannot select high power.
● Some channels are set for low power or receive only by regulations.
  → Change channels. (p. 13)
● The output power is set to low.
  → Select high power. (p. 5)
● The battery is exhausted.
  → Recharge the battery pack. (p. 10)

The scan does not start.
● More than 2 favorite channels are not set.
  → Set the Favorite channels. (p. 18)

The charging indicator blinks orange, or alternately blinks orange and green.
● The battery pack is not properly inserted.
  → Properly insert the battery pack. (p. 3)
● Charging the battery pack outside of the chargeable temperature range.
  → Charge the battery pack in the chargeable temperature range (15˚C ~ 40˚C (59˚F ~ 104˚F)).
● Loose connection of charging transceiver.
  → Clean the charger terminals.
● The transceiver power is ON while charging.
  → Turn OFF the power while charging. (p. 11)

The charging indicator is OFF even when the battery pack is inserted into the charger.
● The battery pack is not properly inserted.
  → Properly insert the battery pack. (p. 3)

11

INDEX

MEMO

How the World Communicates