ICOM

SURVIVAL CRAFT 2-WAY RADIO
IC-GM1600

Icom Inc.

SAFETY TRAINING INFORMATION

WARNING

Your Icom radio generates RF electromagnetic energy during transmit mode.

This radio has been evaluated for compliance at the distance of 2.5 cm with the FCC 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 OET Bulletin 65 Edition 97-01 Supplement C, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.

• American National Standards Institute (C95.1-1992), IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

• American National Standards Institute (C95.3-1992), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields– RF and Microwave.

• The following accessories are authorized for use with this product. Use of accessories other than those specified may result in RF exposure levels exceeding the FCC requirements for wireless RF exposure.; Belt Clip (MB-86, MB-103Y), Rechargeable Li-ion Battery Pack (BP-252) and Lithium Battery Pack (BP-234).

CAUTION

To ensure that your expose to RF electromagnetic energy is within the FCC 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 exceed FCC 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 total radio use time ("50% duty cycle"). Transmitting more than 50% of the time can cause FCC RF exposure compliance requirements to be exceeded. The radio is transmitting when the "TX indicator" light is red. You can cause the radio to transmit by pressing 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 which are listed on page 23 when attaching the radio to your belt, etc., to ensure FCC RF exposure compliance requirements are not exceeded. To provide the recipients of your transmission the best sound quality, hold the radio in an almost vertical position at least 5 cm (2 inches) from your mouth, the microphone is located next to the speaker, so you should "talk into the speaker".

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 FCC RF exposure limits.

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.

INFORMATION EN MATIÈRE DE SÉCURITÉ

AVERTISSEMENT

Votre radio Icom produit une énergie électromagnétique de radiofréquences (RF), en mode de transmission. Elle est conçue pour une «utilisation grand public», dans un environnement non contrôlé. Cet appareil a été évalué et jugé conforme, à 2,5 cm, aux limites d'exposition aux RF de la FCC, pour une «utilisation grand public». En outre, votre radio Icom satisfait les normes et directives qui suivent en matière de niveaux d'énergie et d'énergie électromagnétique de RF et d'évaluation de tels niveaux en ce qui concerne l'exposition humaine :

• Supplément C, édition 01-01, du Bulletin OET de la FCC, «Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields».

• Norme de l'American National Standards Institute (ANSI) : IEEE C95.1-1992 sur les niveaux de sécurité compatibles avec l'exposition humaine aux champs électromagnétiques de radiofréquences (3 kHz à 300 GHz).

• Norme de l'ANSI : IEEE C95.3-1992 sur la méthode d'évaluation recommandée du champ magnétique potentiellement dangereux des radiofréquences et des micro-ondes.

• Les accessoires qui suivent sont approuvés pour une utilisation avec ce produit. L'utilisation d'accessoires autres que ceux précisés peut entraîner des niveaux d'exposition aux RF supérieures aux limites établies par la FCC en matière d'exposition aux RF sans fil; attache pour ceinture (MB-86, MP-103Y), bloc-piles rechargeable au lithium-ion (BP-252).

MISE EN GARDE

CAUTION
Afin de vous assurer que votre exposition à une énergie électromagnétique de RF se situe dans les limites permises par la FCC pour une utilisation grand public, veuillez en tout temps respecter les directives suivantes :

• **NE PAS** faire fonctionner la radio sans qu'une antenne appropriée y soit fixée, car ceci risque d'endommager la radio et causer une exposition supérieure aux limites établies par la FCC. L'antenne appropriée est celle qui est fournie avec cette radio par le fabricant ou une antenne spécialement autorisée par le fabricant pour être utilisée avec cette radio.

• **NE PAS** émettre pendant plus de 50% du temps total d'utilisation de l'appareil («50% du facteur d'utilisation»). Émettre pendant plus de 50% du temps total d'utilisation peut causer une exposition aux RF supérieure aux limites établies par la FCC. La radio est en train d'émettre lorsque le témoin du mode de transmission s'affiche sur l'écran ACL. La radio émettra si vous appuyez sur le bouton du microphone.

• **TOUJOURS** tenir l'antenne éloignée d'au moins 2,5 cm de votre corps au moment d'émettre et utiliser uniquement l'attache pour ceinture Icom illustrée à la p. 23, lorsque vous attachez la radio à votre ceinture, ou à autre chose, de façon à vous assurer de ne pas provoquer une exposition aux RF supérieure aux limites fixées par la FCC. Pour offrir à vos interlocuteurs la meilleure qualité de transmission possible, tenez l'antenne à au moins 5 cm de votre bouche et légèrement de côté.

Les renseignements ci-dessus fournissent à l'utilisateur toute l'information nécessaire sur l'exposition aux RF et sur ce qu'il faut faire pour assurer que cette radio fonctionne en respectant les limites d'exposition aux RF établies par la FCC.

Interférence électromagnétique et compatibilité

En mode de transmission, votre radio Icom produit de l'énergie de RF qui peut provoquer des interférences avec d'autres appareils ou systèmes. Pour éviter de telles interférences, mettez la radio hors tension dans les secteurs où une signalisation l'exige. **NE PAS** faire fonctionner l'émetteur dans des secteurs sensibles au rayonnement électromagnétique tels que les hôpitaux, les aéronefs et les sites de dynamitage.

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, switches, and controllers may become unusable, due to salt crystallization, and/or the charging terminals of the battery pack may corrode.

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 cap, or connector cover is cracked or broken, or the transceiver has been dropped. Contact your Icom distributor or your dealer for advice.

PREFACE

Thank you for choosing this Icom product. The IC-GM1600 SURVIVAL CRAFT 2-WAY RADIO is 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 IC-GM1600.

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.

EXPLICIT DEFINITIONS

WORD	DEFINITION
⚠WARNING	Personal injury, fire hazard or electric shock may occur.
CAUTION	Equipment damage may occur.
NOTE	If disregarded, inconvenience only. No risk of personal injury, fire or electric shock.

PRECAUTION

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

⚠️**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. The transceiver will perform best if the microphone is 5 to 10 cm (2 to 4 inches) away from the lips and the transceiver is vertical.

⚠️**WARNING! NEVER** connect the transceiver to a power source other than the BP-252 or BP-234. This could cause a fire or damage the transceiver.

CAUTION: DO NOT place or leave the transceiver in direct sunlight or in places with temperatures below –20°C (–4°F) or above +60°C (+140°F) for U.S.A. version;.–20°C (–4°F) or above +55°C (+131°F) for General version.

CAUTION: DO NOT attach the battery unless the flexible antenna, battery pack and jack cover are securely attached to the transceiver. Confirm that the antenna and battery pack are dry before attaching. Exposing the inside of the transceiver to dust or water can cause serious damage to the transceiver.

PLACE the transceiver in a secure place to avoid inadvertent use by unauthorized persons.

KEEP the transceiver and microphone at least 0.9 m (3 feet) away from the vessel's magnetic navigation compass.

NOTE:
- According to IMO resolution MSC. 149 (77) (adopted on 3 June 2003), the following regulation has been executed.
- "The equipment should have provisions for its attachment to the clothing of the user and also be provided with a wrist or neckstrap. For safety reasons, the strap should include a suitable weak link to prevent the bearer from being ensnared."
- Instead of the handstrap, a neckstrap is supplied with the equipment on or after 1st July, 2005.

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FCC INFORMATION

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and receiver.
• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
• Consult the dealer or an experienced radio/TV technician for help.

TABLE OF CONTENTS

◇ **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
When your craft is equipped with a VHF FM transceiver, 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. This license includes 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 near the transceiver or be 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.
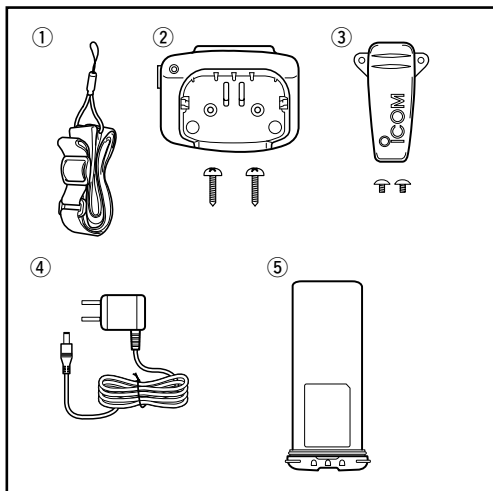
2 SUPPLIED ACCESSORIES AND ATTACHMENTS

■ Supplied accessories

The following accessories are supplied: Qty.
① Neckstrap. 1
② Battery charger 1
③ Belt clip 1
④ Power adapter* 1
⑤ Li-ion battery pack 1

*May not be supplied, or a different type may be supplied, depend-
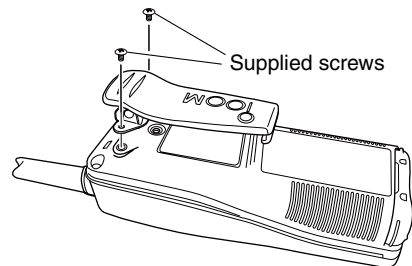 ing on the transceiver version.

■ Attachments

◇ Neckstrap
Pass the neckstrap through the loop on the top of the transceiver as illustrated at right.
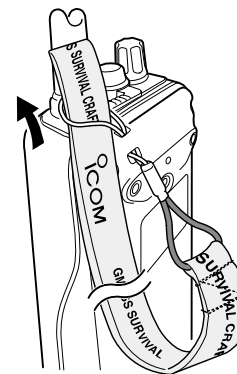
◇ Belt clip
Attach the belt clip to the transceiver as shown below.

Supplied screws

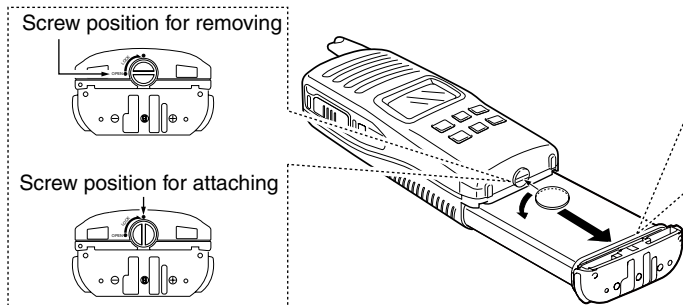### ◇ Battery pack

To remove the battery pack:
Turn the lock screw counterclockwise, then pull the battery pack in the direction of the arrow as shown below.

To attach the battery pack:
Insert the battery pack into the IC-GM1600 completely, then turn the lock screw clockwise.
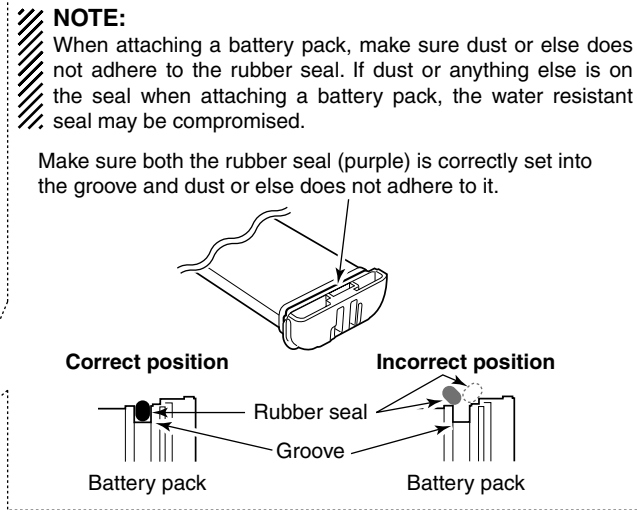
NEVER remove or insert the battery pack when the transceiver is wet or soiled. This may result in water or dust getting into the transceiver and battery pack, and may result in them being damaged.

NOTE: When the lock screw does not easily turn (feels tight), check to ensure the battery pack is correctly inserted to the transceiver. **DO NOT** strike or otherwise impact the battery, as this may damage the battery pack or the transceiver.

BE CAREFUL!: The latch is tightly locked, so use caution when releasing it. **DO NOT** use your fingernail. Use the edge of a coin or screwdriver tip to carefully release it.
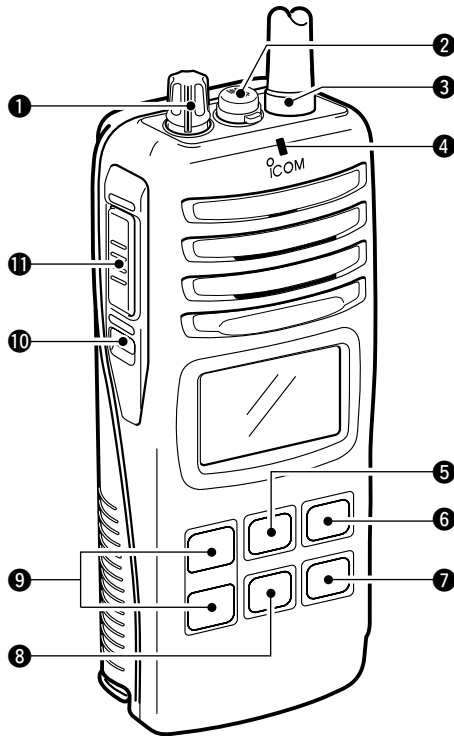
CAUTION!:
When attaching or removing a battery pack, make sure the rubber seal is set in the groove of the battery pack correctly. If the seal is not neatly in the groove it may be damaged when attaching the battery pack.
If the seal is damaged, waterproofing is not guaranteed.

NOTE:
When attaching a battery pack, make sure dust or else does not adhere to the rubber seal. If dust or anything else is on the seal when attaching a battery pack, the water resistant seal may be compromised.

Make sure both the rubber seal (purple) is correctly set into the groove and dust or else does not adhere to it.

Correct position   **Incorrect position**

Rubber seal
Groove

Battery pack   Battery pack

Screw position for removing

Screw position for attaching

3 PANEL DESCRIPTION

■ Front, top and side panels

q VOLUME CONTROL [VOL]
Turns power ON and adjusts the audio level.

w MICROPHONE CONNECTOR [MIC/SP]
Connects an optional external microphone.
NOTE: Attach the jack cover when the optional speaker microphone is not used. Otherwise, water may get into the transceiver.

e ANTENNA
Fixed type.

r TRANSMIT/RECEIVE INDICATOR
Lights green while receiving a signal or when the squelch is open. Lights red while transmitting.

t CALL CHANNEL KEY [CALL]
➥ Push to select the Call channel. (p. 7)
   • Channel 9* is factory default.
     *Channel 16 is set as factory default by version.
➥ Hold down for 3 seconds to enter the call channel programming mode. (p. 9)

y CHANNEL KEY [CH]
Push to return the previous condition when the distress channel or call channel is selected. (p. 7)

u TRANSMIT POWER/LOCK KEY [Hi/Lo• ⌐o]
➥ Push to select high or low power. (p. 8)
➥ Hold down for 1 second to turn the lock function ON or OFF. (p. 10)

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⓼ **CHANNEL 16 KEY [16]**
Push to select Channel 16. (p. 7)

⓽ **CHANNEL UP/DOWN KEYS [▲]/[▼]**
➥ Selects an operating channel. (pgs. 7, 8)
➥ Selects an item in the SET mode. (p. 11)
➥ In the SET mode, while holding down [SQL], push to select an option for the item. (p. 11)
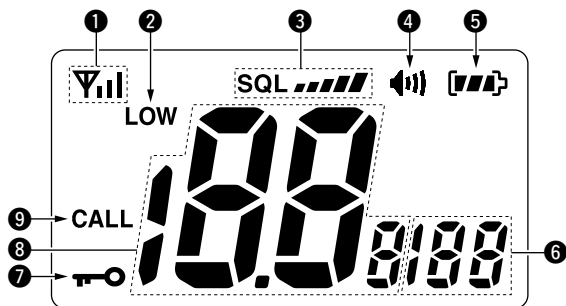
⓾ **SQUELCH SWITCH [SQL•MONI]**
➥ Push this switch, then adjust the squelch level with [▲]/[▼]. (p. 9)
➥ Hold down to manually opens the squelch for monitoring the channel. (p. 10)
➥ Holding down this switch, turn ON the transceiver power to enter the SET mode. (p. 11)

⓫ **PTT SWITCH [PTT]**
Hold down to transmit, release to receive.

3 PANEL DESCRIPTION

■ **Function display**

❶ SIGNAL STRENGTH INDICATOR (pgs. 10, 14)
Displays the relative signal strength while receiving signals.

❷ TRANSMIT POWER INDICATOR (p. 8)
➥ "LOW" appears when low TX power is selected.
➥ No indication for high TX power.

❸ SQUELCH LEVEL INDICATOR (p. 9)
Displays the squelch level.

❹ MONITOR INDICATOR (p. 10)
Appears while the monitor function is activated.

❺ BATTERY INDICATOR
Displays the battery's remaining power.

・**Using rechargeable battery pack**

Indication	[▮▮▮▷	[▮▮ ▷	[▮ ▷	[▷
Battery level	Full	Mid	Charging required	Battery exhausted

[▮▮▷ blinks when the battery is overcharged.

・**Using BP-234 battery pack**

Indication	[▮▮▮▷	[▮▮ ▷	[▮ ▷	[▷
Battery level	Full	Mid	Battery replacement is required	Battery exhausted

❻ SET MODE ITEM READOUT
Displays the SET mode items while in the SET mode. (p. 11)

❼ LOCK INDICATOR
Appears while the Lock function is activated. (p. 10)

❽ CHANNEL NUMBER READOUT
➥ Indicates the selected operating channel number.
➥ In the SET mode, indicates the selected item or option.

❾ CALL CHANNEL INDICATOR
Appears when the call channel is selected. (p. 7)

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■ Channel selection

◇ 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. While in the standby mode, you must monitor Channel 16.

① Push [16] to select Channel 16.
② Push [CH] to return to the previous channel, before you selected Channel 16, or push [▲]/[▼] to select the operating channel.
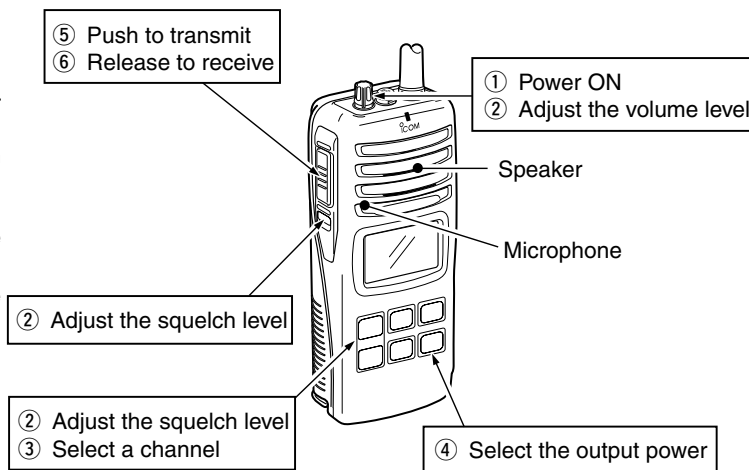
Push CALL

◇ Call channel
The Call channels can be re-entered (p. 9) and may be used to store your most often used channels for quick recall.

① Push [CALL] to select the Call channel.
  • "CALL" and the Call channel number appear.
  • Call channel can be re-entered. See "Call channel entry" on page 9 for details.
② Push [CH] to return to the previous channel, before you selected the call channel, or push [▲]/[▼] to select the operating channel.

Push 16

■ Receiving and transmitting

① Rotate [VOL] clockwise to turn ON the transceiver power.
② Adjust the volume and squelch level.
➥ Push [SQL•MONI], and push [▼] to open the squelch.
➥ Push [SQL•MONI] to stop the "SQL" indicator blinking, then rotate [VOL] to adjust the volume level.
➥ Push [SQL•MONI], and push [▲]/[▼] to adjust the squelch level.
③ Push [▲]/[▼] to select the channel to call.
  - When a signal is received, the [TRANSMIT/RECEIVE] indicator lights green and the audio is emitted from the speaker.
  - Further adjustment of [VOL] may be necessary at this point.
④ Push [Hi/Lo•🔒▬🔓] to select the output power if necessary.
  - "LOW" appears when low power is selected. (No indication for high power)
  - Choose low power to conserve the battery power, choose high power for longer distance communications.
  - Some channels are limited to low power.
⑤ Hold down [PTT] to transmit and speak into the microphone at a normal voice level.
  - The [TRANSMIT/RECEIVE] indicator lights red while transmitting.
⑥ Release [PTT] to receive.

IMPORTANT: To maximize the readability of your transmitted signal, pause for a second after pushing [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: To conserve battery power, the Power Save function automatically turns ON when no signal is received for 5 seconds.

⑤ Push to transmit
⑥ Release to receive

① Power ON
② Adjust the volume level

Speaker

Microphone

② Adjust the squelch level

② Adjust the squelch level
③ Select a channel

④ Select the output power

■ Call channel entry

The Call channel switch is used to select Channel 9* by default, however, you can set your most often-used channel for a quick recall.
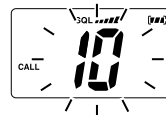
*The channel number differs depending on version.

① Push [CALL] to select the Call channel.
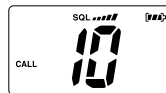 • "CALL" and call channel number is diplayed.

② Hold down [CALL] again for 3 seconds (until a long beep changes to 2 short beeps), to enter the Call channel entry mode.
  • Call channel number to be programmed flashes.

③ Push [▲]/[▼] to select the channel.

④ Push [CALL] to set the displayed channel as the Call channel.
  • The call channel number stops flashing.

■ 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, which enables you to receive only stronger signals. A lower level enables you to hear weak signals.

① Push [SQL•MONI], then push [▲]/[▼] to adjust the squelch level.
  - "SQL" indicator starts blinking.
  - Adjust the level between 1 and 10, or "OP" (open).
    10 is tight squelch, 1 is loose squelch level.
② Push [SQL•MONI] again to return to the normal mode.
  - When no switch is pushed for 5 seconds, the transceiver returns to the normal mode.

Blinks during the squelch level adjutment.

Push [SQL]

Indicates the squelch level.
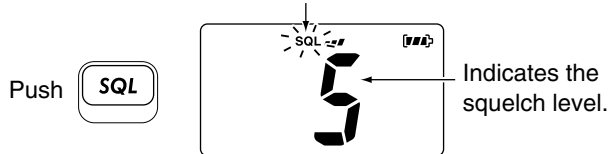
■ Lock function

The Lock function electronically locks all keys (except for [PTT], [SQL•MONI] and [Hi/Lo• ⚿]). This function prevents you from accidentally changing the channel, or accessing the functions.

➥ Push [Hi/Lo• ⚿] for 1 sec. to turn the lock function ON and OFF.

Push **Hi/Lo**

for 1 sec.

Appears while the lock function is used.
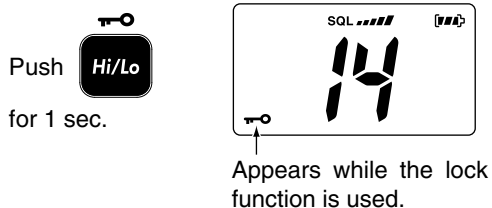
■ Signal strength indicator

The received signal strength level is displayed by number of bars, as shown below. Set the signal strength indicator to ON in the SET mode (p. 14).

• Only the antenna mark appears when no signal, or a very weak signal, is received.

Indication	📶	📶	📶	📶
Signal strength	Strong	Middle	Weak	No signal or very weak

■ Monitor function

The Monitor function temporarily cancels the Squelch function to check for weak signals. See page 12 for details of the monitor switch action.

➥ Hold down [SQL•MONI] to turn ON the Monitor function.
• The Monitor function is ON while [SQL•MONI] is held down.
• " 🔊 " appears and audio is emitted.

■ Backlight function

This function is convenient for the nighttime operation. The backlight brightness can be adjusted in the SET mode. (p. 12)
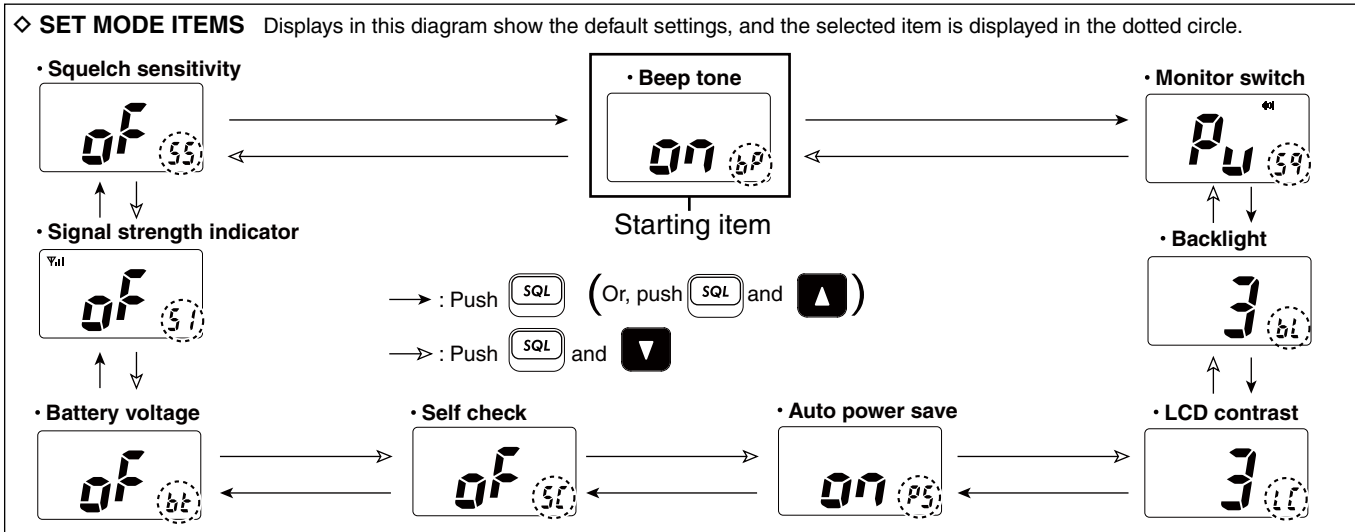
➥ Push any key except for [PTT] to turn the backlight ON.
• " ⚿ " appears and audio is emitted. The backlight is automatically turned OFF after 5 seconds of inactivity.

■ SET mode settings

The SET mode is used to change 11 transceiver functions: Beep Tone function, monitor switch action, Backlight function, LCD contrast selection, Auto Power Save function, Self Check function, battery voltage indicator, signal strength indicator and Squelch Sensitivity function.

◇ SET mode operation

① Turn OFF the transceiver power.
② While holding down [SQL•MONI], turn On the power to enter the SET mode.
   • "bp" (Beep tone function setting) appears.
③ Push [SQL•MONI], or [SQL•MONI] and [▲]/[▼], to select the desired item.
④ Push [▲]/[▼] to select the desired option of the item.
⑤ Push [16] to exit the SET mode.

◇ SET MODE ITEMS Displays in this diagram show the default settings, and the selected item is displayed in the dotted circle.

■ SET mode items

◇ Beep tone function "bP"

You can select silent operation by turning the beep tones OFF, or you can have 2 types of confirmation beeps sound at the push of a key. When "ON" is selected, a fixed beep (Pi) sounds, and when "US" is selected, the preset beeps (Example: do, re, mi) sound.
• Beep tone synchronizes with the volume level.
• The beeps sound during call channel programming even if this function is turned OFF.

Beep tone ON (default)　　Push　　Beep tone OFF
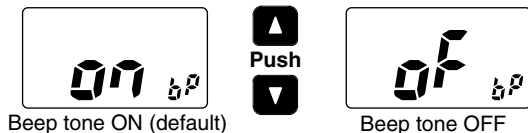
◇ Monitor switch action "Sq"

The monitor switch action temporarily cancels the squelch function. This switch action contains PUSH (Pu) or HOLD (Ho) settings as shown below.
• PU (PUSH): After holding down [SQL•MONI] for 1 second, the squelch opens and emits audio. The squelch is opened while holding down [SQL•MONI]. (default)
• HO (HOLD): After holding down [SQL•MONI] for 1 second, the squelch opens and emits audio even if [SQL•MONI] is released. To close the squelch, push any switch.

PUSH setting (default)　　Push　　HOLD setting
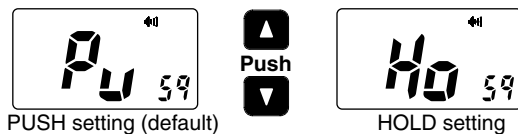
◇ Backlight function "bL"

This function is convenient for nighttime operation. The backlight brightness can be adjusted between OFF, 1 (dark)–3 (bright).
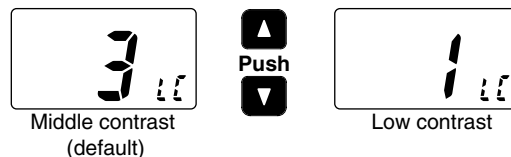• The automatic backlight turns ON the backlight when any switch except [PTT] is pushed.
• The backlight is automatically turned OFF after 5 seconds of inactivity.

Backlighting ON (default)　　Push　　Backlighting OFF
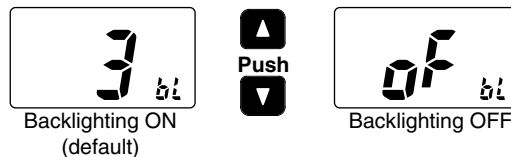
◇ LCD contrast selection "LC"

The contrast of the LCD can be adjusted in 4 levels.
• 1 (bright)–4 (dark)

Middle contrast (default)　　Push　　Low contrast

◇ **Auto power save function** "PS"

The Auto Power Save function reduces the battery drain by deactivating the receiver circuit for preset intervals.

• ON : The Power Save function is turned ON. The function will be activated when no signal is received, and no operation is performed for 5 seconds

• OFF: The Power Save function is turned OFF.

Power save ON
(default)

Push

Power save OFF
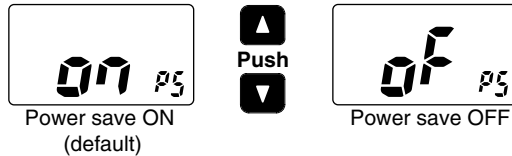
◇ **Self check function** "SC"

The Self Check function checks various transceiver status by itself, and informs you if a problem is found. The self checking automatically and quickly runs through its diagnostic steps each time the transceiver is turned ON. After that, the radio switches to normal operation mode.

• Temperature : Outside of −35°C to +80°C, −31°F to +173°F (approximately)

• Connected battery voltage

Self check OFF (default)

Push

Self check ON
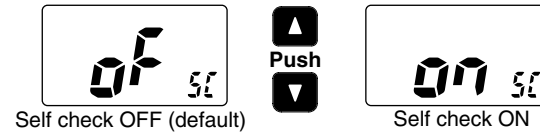
When the error messages as shown below are displayed, see the troubleshooting for advice. (p. 21)

Temperature error   Battery voltage error
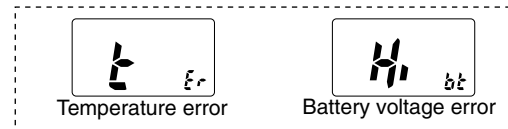
5 SET MODE

◇ Battery voltage indicator "bt"

Select whether or not to display the voltage of the battery on the LCD at power ON.

• The voltage of the battery pack is displayed for 2 seconds after power is turned ON.

Battery voltage indicator OFF (default)

Push ▲▼

Battery voltage indicator ON

◇ Signal strength indicator "SI"

The signal strength indicator displays the relative received signal strength like an "S-meter." This function is convenient to visually check the signal strength.

• The strength is displayed in 4 steps.
• The antenna mark and 3 bars appear when a strong signal is received.
• The antenna mark only appears when receiving no signal when the signal strength indicator is ON.
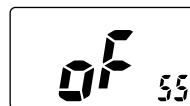
Signal strength indicator OFF (default)

Push ▲▼

Signal strength indicator ON

◇ Squelch sensitivity function "SS"

When this function is turned ON, blocking against the noise is improved. Therefore the squelch is not easily affected by noise.

Squelch sensitivity OFF (default)

Push ▲▼

Squelch sensitivity ON

SET MODE LIST

Function	Indication	Setting
Beep Tone function	"bP"	OFF/ON*/US
Monitor switch action	"Sq"	PUSH*/HOLD
Backlight function	"bL"	OFF/1/2/3*
LCD contrast selection	"LC"	1/2/3*/4
Auto Power Save function	"PS"	OFF/ON*
Self Check function	"SC"	OFF*/ON
Battery voltage indicator	"bt"	OFF*/ON
Signal strength indicator	"SI"	OFF*/ON
Squelch sensitivity	"SS"	OFF*/ON

*default setting

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The optional BP-234 battery pack is a non-rechargeable, Lithium battery pack for operation in a survival craft. The following precaution must be observed.

• **NEVER** dispose of the BP-234 battery pack in a fire. This could result in an explosion.

• **DO NOT** short-circuit the BP-234 battery pack. Metal contact (such as a paper clip, another battery, and so on.) across the battery contacts can result in a sustained high rate discharge, which could damage the battery, void the warranty and create a burn or a fire hazard.

• **NEVER** expose of the BP-234 battery pack to excessive heat of 60°C (+140°F) or above. This could result in electrolyte leakage, possibly causing an explosion or fire.

• **NEVER** attempt to recharge the BP-234. Lithium batteries may explode or cause a fire in such cases.

• **DO NOT** disassemble the BP-234 battery pack. The BP-234 battery pack contains no user serviceable parts. Internal battery gas can cause throat irritation. Also, exposed lithium may generate heat and ignite.

• **DO NOT** apply excessive pressure to the battery. This may result in electrolyte leakage, possibly causing an explosion.
• The storage life of the BP-234 is about 5 years. Once the expiration date on the battery pack passes, a new battery pack **must** be purchased.
• For safety reasons, once the BP-234 is used, a spare one should be purchased. The original battery pack can be continued to be used for regular communications; save the spare one for emergency situations.
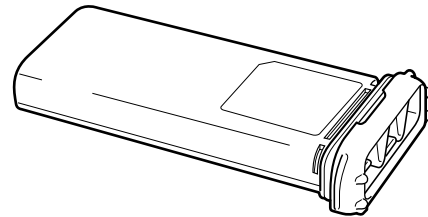
BP-234 Lithium battery pack

IMPORTANT!
• This battery pack is for **EMERGENCY USE ONLY**.
• Usable temperature range is within –20°C to +55°C (–4°F to +131°F).
• Stored temperature range is within –30°C to +35°C (–22°F to +95°F).
• Once this bag's seal is broken, a new emergency battery pack must be used for EMERGENCY use.

BATTERY CHARGING (FOR ONLY ON-BOARD USE)

■ Battery charging

Prior to using the transceiver for the first time, the battery pack must be fully charged for optimum life and operation.

⚠ **CAUTION:** To avoid damage to the transceiver, turn the power OFF while charging.

• Recommended temperature range for charging:
  10°C to 40°C (50°F to 104°F)
• Use the specified chargers (BC-173). **NEVER** use another manufacturer's charger.
• Use the supplied power adapter for the BC-173. **NEVER** use another manufacturer's adapters.

Turn the transceiver OFF when charging an attached battery pack. Otherwise, the battery pack may not fully charged or may not properly charge.

■ Battery cautions

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's performance.

⚠**DANGER! NEVER** strike or otherwise impact the battery. Do not use the battery if it has been severely impacted or dropped, or if the battery has been subjected to heavy pressure. Battery 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.

⚠**DANGER! NEVER** expose the battery to rain, snow, seawater, or any other liquids. Do not charge or use a wet battery. If the battery gets wet, be sure to wipe it dry before using.

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

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

⚠**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** use the battery with a transceiver for which it is not specified. Never use a battery with any other equipment, or for any purpose that is not specified in this instruction manual.

⚠**DANGER! NEVER** let fluid from inside the battery get in your eyes. If it does, blindness can result. Rinse your eyes with clean water, without rubbing them, and immediately go to a doctor.

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

⚠**WARNING! NEVER** use the battery 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.

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

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

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

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7 BATTERY CHARGING (FOR ONLY ON-BOARD USE)

◇ **Charging caution**

⚠**WARNING! NEVER** 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.

⚠**WARNING! 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 specific time for charging. If the battery is not completely charged by the specific time, stop charging and remove the battery from the battery charger. Continuing to charge the battery beyond the specific 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.
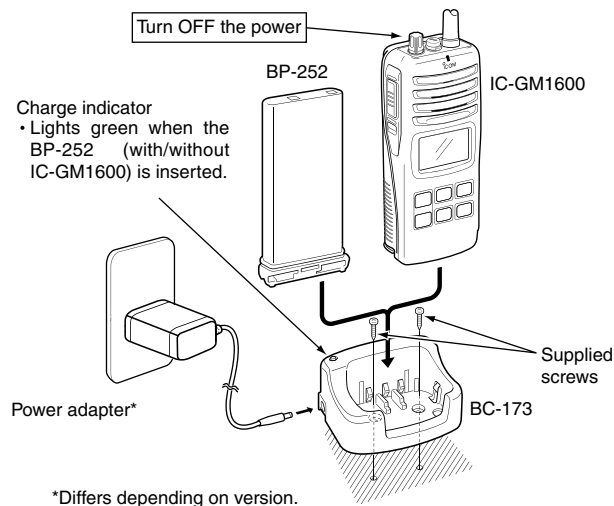
⚠**WARNING! NEVER** insert the transceiver (battery attached to the transceiver) into the charger if it is wet or soiled. This could corrode the battery charger terminals or damage the charger. The charger is not waterproof.

CAUTION: DO NOT charge the battery outside of the specific temperature range: 10˚C to 40˚C (50°F to 104°F). Icom recommends charging the battery at 20˚C. The battery may heat up or rupture if charged out of the specific temperature range. Additionally, battery performance or battery life may be reduced.

◇ **Charging connections**

① Attach the BC-173 to a flat surface, such as a desk.
② Connect the power adapter.
③ Insert the battery pack with/without the transceiver into the charger.
  • The charge indicator lights green.
④ Charge the battery pack for approximately 10 hours, depending on the remaining power.

NOTE The battery charger, BC-173, has a charging timer. The timer stops the charging process after approximately 14 hours.
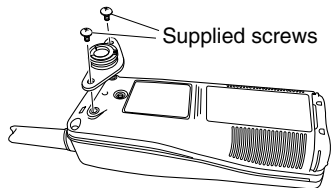
Turn OFF the power

BP-252

IC-GM1600

Charge indicator
• Lights green when the BP-252 (with/without IC-GM1600) is inserted.

Supplied screws

Power adapter*

BC-173

*Differs depending on version.

■ MB-86 contents

Qty.
Belt clip 1
Base clip 1
Supplied screws 2
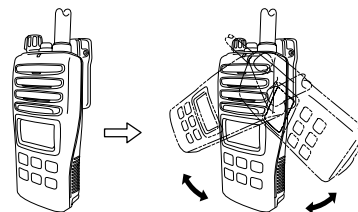
■ Attachment

① Screw the base clip to the back of the transceiver, using the two supplied screws.

Supplied screws

② Clip the belt clip over your belt and insert the transceiver.
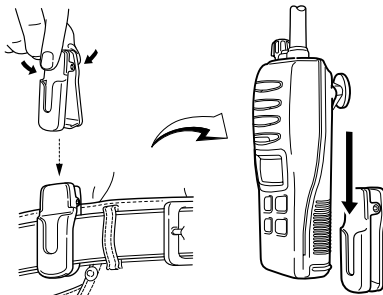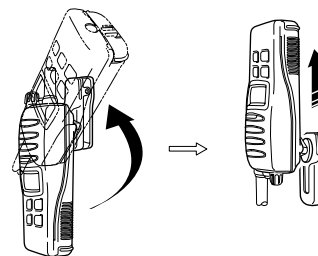

③ Once the transceiver is locked in place, it swivels.

■ Detachment

➥ Turn the transceiver upside down in the direction of the arrow, and pull it out of the belt clip.

⚠ **CAUTION!**
HOLD THE TRANSCEIVER TIGHTLY, WHEN HANGING OR DETACHING THE TRANSCEIVER FROM THE BELT CLIP.
Otherwise the transceiver may not be attached to the belt clip or swivelled properly attached to the belt clip and may not swivel properly. The transceiver could then be accidentally dropped and scratched or damaged .

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9 CHANNEL LIST FOR SURVIVAL OPERATION

Channel number	TX/RX	Channel number	TX/RX	Channel number	TX/RX
06	156.300 MHz	08	156.400 MHz	09	156.450 MHz
10	156.500 MHz	11	156.550 MHz	12	156.600 MHz
13	156.650 MHz	14	156.700 MHz	15*	156.750 MHz
16	156.800 MHz	17*	156.850 MHz	67	156.375 MHz
68	156.425 MHz	69	156.475 MHz	71	156.575 MHz
72	156.625 MHz	73	156.675 MHz	74	156.725 MHz
77	156.875 MHz				

*U.S.A. version is low power only

PROBLEM	POSSIBLE CAUSE	SOLUTION	REF.
The transceiver does not turn ON.	• The battery is exhausted.	• Change to a new battery pack (Survival). • Recharge the battery pack (On-board).	p. 15 pp. 16 ~ 18
	• The Battery pack is not correctly attached.	• Correctly attach the battery pack.	p. 3
No sound from the speaker.	• Squelch level is set too high. • Volume level is set too low. • The speaker has been exposed to water. • Water has entered to the [MIC/SP] connector.	• Set the squelch to the threshold point. • Set the volume to a suitable level. • Remove the water from the speaker. • Dry the [MIC/SP] connector.	p. 9 p. 8 — —
You cannot transmit, or select high power.	• Some channels are limited to low power, or for only receive. • The battery is exhausted.	• Change channels. • Change to a new battery pack (Survival). • Recharge the battery pack (On-board).	pp. 8, 20 p. 15 pp. 16 ~ 18
	• The output power is set to low.	• Push [Hi/Lo• 🔒] to select high power.	p. 8
The displayed channel cannot be changed.	• Lock function is activated.	• Push [Hi/Lo• 🔒] for 1 second to cancel the function.	p. 10
No beeps sound.	• Beep tone is set to OFF.	• Set the beep tone to ON (Fix Beep/User Beep) in the SET mode.	p. 12
Self check error. (Temperature)	• The temperature is outside of −35°C to +80°C, −31°F to +173°F (approximately).	• Leave the transceiver at room temperature for a while. Turn the power ON to check if the internal temperature has returned to normal.	—
Self check error. (Battery voltage)	• The connected battery pack's voltage is more than 11 V.	• Verify that the battery voltage is correct.	—

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11 SPECIFICATIONS

◇ GENERAL

- Frequency coverage (TX/RX): 156.300–156.875 MHz
- Mode: 16K0G3E
- Channel spacing: 25 kHz
- Power supply requirement: Battery packs (BP-234 or BP-252)
- Current drain (approximately): TX High (2 W)   1.0 A
  - at 7.5 V DC [USA] TX Low (1 W)   700 mA
  - at 7.2 V DC [GEN] Maximum audio   200 mA
- Usable temperature range:
  - [USA] –20°C to +60°C, –4°F to +140°F
  - [GEN] –20°C to +55°C, –4°F to +131°F
- Antenna impedance: 50 Ω
- Dimensions: 65(W) × 145(H) × 44(D) mm,
  - (projections not included) 2.6(W) × 5.7(H) × 1.7(D) inch
- Weight (with BP-234): Approximately 385 g (13.6 oz)

◇ TRANSMITTER

- Output power: 2 W (Hi) and 1 W (Low)
  - at 7.5 V DC [USA]
  - at 7.2 V DC [GEN]
- Modulation system: Variable reactance frequency modulation
- Frequency error:
  - [USA] ±5.0 ppm
    - (–20°C to +60°C, –4°F to +140°F)
  - [GEN] ±1.5 kHz
    - (–20°C to +55°C, –4°F to +131°F)
- Microphone impedance: 2 kΩ
- Max. frequency deviation: ±5.0 kHz
- Adjacent channel power: 70 dB
- Audio harmonics distortion: 10% at 60% deviation
- FM hum and noise: 40 dB
- Spurious emissions:
  - [USA] –70 dBc typical
  - [GEN] 0.25 µW (30 MHz to 1 GHz)
    - 1 µW (1–2 GHz)

◇ RECEIVER

- Receive system: Double-conversion superheterodyne
- Sensitivity:
  - [USA] (at 12 dB SINAD) 0.25 µV typical
  - [GEN] (at 20 dB SINAD) –2 dBµ EMF typical
- Squelch sensitivity (at threshold):
  - [USA] 0.35 µV typical
  - [GEN] –6 dBµ EMF typical
- Intermodulation rejection ratio:
  - [USA] 70 dB
  - [GEN] 68 dB
- Spurious response rejection ratio: 70 dB
- Adjacent channel selectivity: 70 dB
- Hum and noise: 40 dB
- Audio output power:
  - [USA] 0.35 W typical at 10% distortion into an 8 Ω load.
  - [GEN] 0.2 W at 10% distortion into an 8 Ω load.

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

◇ BATTERY PACKS

<FOR SURVIVAL CRAFT USE>
• **BP-234** LITHIUM BATTERY PACK
  Voltage: 9.0 V
  Capacity: 3300 mAh (typical)
<FOR ON-BOARD USE>
• **BP-252** Li-ion BATTERY PACK
  Voltage: 7.2 V
  Capacity: 1000 mAh (minimum) / 1050 mAh (typical)

◇ BELT CLIPS

• **MB-103Y** BELT CLIP
  The same as supplied with the transceiver.
• **MB-86** SWIVEL BELT CLIP
  Belt clip for swivel type.
• **MB-96F/96N** BELT HANGER
  ➡MB-96F: Attaches with the supplied belt clip (Not swivel type).
  ➡MB-96N: Belt hanger for swivel type.

◇ CHARGERS <FOR ON-BOARD USE ONLY>

• **BC-173** DESKTOP CHARGER **+ BC-147SA/SE*** AC ADAPTER
  Used for regular charging of battery pack. The same as supplied with
  the transceiver. Charging time: approximately 10 hours (BP-252).
*The supplied power adapter differs, depending on the transceiver
 version.

Count on us!

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