ICOM

INSTRUCTION MANUAL

VHF MARINE TRANSCEIVER
IC-M94D

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 IC-M94D.

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

■ Features

- Intuitive user interface
- 6 W RF output, 1.5 W loud audio
- Basic AIS (Automatic Identification System) receiver functions

■ 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	If disregarded, inconvenience only. No risk of personal injury, fire or electric shock.

■ Définitions explicites

TERME	DÉFINITION
⚠**DANGER !**	Risque d'accident mortel, de blessures corporelles graves ou d'explosion.
⚠**AVERTISSEMENT!**	Risque de blessures corporelles, d'incendie ou de choc électrique.
MISE EN GARDE	Risque de dégât matériel.
REMARQUE	Inconvénient seulement, en cas de nonrespect. Absence de risque de blessures corporelles, d'incendie ou de choc électrique.

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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All other products or brands are registered trademarks or trademarks of their respective holders.

■ In case of emergency

If your vessel requires assistance, contact other vessels and the Coast Guard by sending a distress call on Channel 16, or, transmit your Distress call using Digital Selective Calling (DSC) on Channel 70.

◇ USING CHANNEL 16

1. Push [16/C] to switch to Channel 16.
2. While holding down [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
  (AND your 9 digit DSC ID, if you have one).
- "LOCATED AT _____" (your position).
- State the nature of the distress and assistance required.
- Give any other information which might facilitate the rescue.

◇ USING DIGITAL SELECTIVE CALLING

1. Lift up the key cover, hold down [DISTRESS] for 3 seconds until the 3 short beeps and then one long beep sound.

Key cover
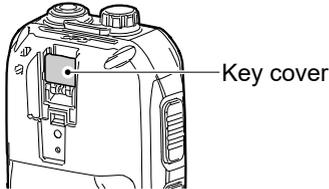
2. Wait for an acknowledgment from another station.
3. After the acknowledgement is received, Channel 16 is automatically selected.
4. Hold down [PTT], then transmit the appropriate information as listed above.

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

■ 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.

⚠ **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.

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.

NOTE: DO NOT place or leave the transceiver in direct sunlight or in areas outside of the specified temperature range: –20°C (–4˚F) ~ +60°C (+140˚F)

Keep the transceiver in a secure place to prevent use by unauthorized persons.

BE CAREFUL! The transceiver meets IPX7 requirements for waterproof protection. However, once the transceiver has been dropped, waterproof protection cannot be guaranteed due to the fact that the transceiver may be cracked, or the waterproof seal damaged, and so on.
* Only when the supplied battery cover and jack cover are attached.

Information:
In this instruction manual, the transceiver version names are described as shown below.
U.S.A.: USA   Export: EXP

■ Précautions

⚠ **DANGER ! NE JAMAIS** utiliser l'émetteur-récepteur à proximité de détonateurs électriques non blindés ou dans une atmosphère explosive. Cela pourrait causer une explosion mortelle.

⚠ **AVERTISSEMENT !** N'utilisez **JAMAIS** et ne rechargez **JAMAIS** des blocsbatteries Icom avec des émetteurs-récepteurs non-Icom ou des chargeurs non-Icom. Seuls les blocsbatteries Icom sont testés et homologués pour être utilisés avec des émetteurs-récepteurs Icom ou pour être rechargés avec des chargeurs Icom. L'utilisation de blocsbatteries ou de chargeurs tiers ou de contrefaçon peut être à l'origine de fumées, d'incendie ou peut faire éclater la batterie.

⚠ **AVERTISSEMENT ! NE JAMAIS** l'émetteur-récepteur de sorte que l'antenne soit très proche des parties exposées du corps, en particulier du visage ou des yeux, et ne les touche pas pendant la transmission.

⚠ **AVERTISSEMENT !** N'utilisez **JAMAIS** l'émetteur-récepteur avec un casque ou d'autres accessoires audio à des niveaux de volume élevés. Le fonctionnement continu à volume élevé peut provoquer une sonnerie dans vos oreilles. Si vous ressentez la sonnerie, réduisez le volume ou cessez d'utiliser.

MISE EN GARDE : NE PAS court-circuiter les bornes de la batterie. Un court-circuit peut se produire si les bornes touchent des objets métalliques tels qu'une clé. Soyez donc prudent lorsque vous placez les batteries (ou l'émetteur-récepteur) dans des sacs, etc. Transportez-les de manière à ce qu'il n'y ait pas de court-circuit avec des objets métalliques. Un court-circuit peut endommager non seulement la batterie, mais également l'émetteur-récepteur.

MISE EN GARDE : NE PAS utiliser de dissolvants agressifs tels que du Benzène ou de l'alcool lors du nettoyage, car ils endommageraient les surfaces de l'émetteur-récepteur. Si l'émetteur-récepteur est poussiéreux ou sale, nettoyez-le avec un tissu doux et sec.

MISE EN GARDE : NE PAS placer l'émetteur-récepteur dans des environnements excessivement poussiéreux. Cela pourrait endommager l'émetteur-récepteur.

REMARQUE : NE PAS placer ou laisser l'émetteur-récepteur en plein soleil ou dans un environnement soumis à des températures inférieures à –20°C (–4˚F) ou supérieures à +60°C (+140˚F).

Placez l'émetteur-récepteur dans un lien sûr pour éviter toute utilisation par des personnes non autorisées.

MISE EN GARDE : Cet émetteur-récepteur répond aux exigences de la norme IPX7 en matière de protection étanche. Cependant, en cas de chute de l'émetteur-récepteur, la protection étanche ne peuvent plus être garanties, car le boitier risque d'être fissuré ou le joint d'étanchéité endommagé, etc.
* Uniquement lorsque le couvercle de la batterie et le cache-prise sont fixés.

■ 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 Radio Frequency Electromagnetic Fields, 0 Hz to 300 GHz.
• American National Standards Institute (C95.3-2002), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields– RF and Microwave.
• The accessories listed on page 70 are authorized for use with this product. Use of accessories other than those specifi ed 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 "TX" is displayed on the function display. 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 70 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.

■ Infomation en matiére de sécurité

AVERTISSEMENT

Votre radio Icom produit une énergie électromagnétique de radiofréquences (RF), en mode de transmission. Cette radio est conçue pour un «usage professionnel seulement» et classée comme tel, ce qui signifie qu'elle doit être utilisée uniquement dans le cadre d'un travail par des personnes conscientes des dangers et des mesures visant à minimiser ces dangers. Elle N'EST PAS conçue pour une «utilisation grand public », dans un environnement non contrôlé. Cet appareil a été évalué et jugé conforme, aux limites d'exposition aux RF de la FCC et d'IC, 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:

• Publication 447498 D03 de la FCC KDB, «Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields».
• Norme de l'American National Standards Institute (ANSI): IEEE C95.1-2019 sur les niveaux de sécurité compatibles avec l'exposition humaine aux champs électromagnétiques de radiofréquences (0 Hz à 300 GHz).
• Norme de l'ANSI: IEEE C95.3-2002 sur la méthode d'évaluation recommandée du champ magnétique potentiellement dangereux des radiofréquences et des micro-ondes.
• Les accessoires illustrés à la p. 70 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 et d'IC en matière d'exposition aux RF sans fil.
• Le Code de sécurité 6 de Santé Canada - Les limites d'exposition humaine à l'énergie électromagnétique dans la gamme de fréquences de 3 kHz à 300 GHz.

MISE EN GARDE

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 "TX" 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. 70, 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.

Usage professionnel/contrôlé
Ce radio émetteur est utilisé dans des cas où des personnes sont exposées en raison de leur travail, pourvu qu'elles soient conscientes du risque d'expositionet qu'elles puissent exercer un contrôle sur cette exposition.

■ 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.

■ Information FCC

Cet équipement a été testé et reconnu conforme aux limites fixées pour un appareil numérique de classe A, conformément au point 15 de la réglementation FCC. Ces limites sont définies de façon à fournir une protection raisonnable contre le brouillage préjudiciable lorsque cet appareil est utilisé dans un environnement commercial. Cet équipement génère, utilise et peut émettre un rayonnement de fréquence radio. S'il n'a pas été installé conformément aux instructions, il peut par ailleurs créer des interférences perturbant les communications radio.
L'utilisation de cet appareil dans une zone résidentielle peut provoquer un brouillage préjudiciable, auquel cas l'utilisateur sera tenu de corriger la situation à ses frais.

MISE EN GARDE: Tout changement ou modification, non expressément approuvé par Icom Inc., peut annuler l'autorisation de l'utilisateur à utiliser cet appareil conformément à la réglementation FCC.

■ Table of contents

1 OPERATING RULES

◇ 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.
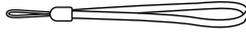
NOTE: Even though the IC-M94D is capable of operation on VHF marine channels 1021, 1023, 1081, 1082, and 1083, according to FCC regulations these simplex channels cannot be lawfully used by the general population in USA waters.

■ Supplied accessories

Antenna   Handstrap   Belt clip
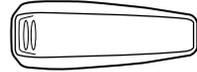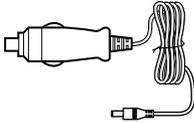
Cigarette lighter cable   Battery pack   Power adapter
(For Desktop charger)   Desktop charger
(With 2 screws)
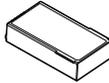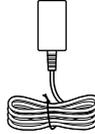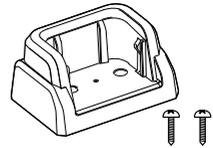
NOTE: Some accessories may not be supplied, or the shape may be different, depending on the transceiver version.

■ 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 those listed in this instruction manual.
• **DO NOT** transmit without an antenna.
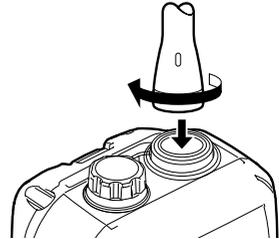
◇ Belt clip

To attach:
Slide the belt clip in the direction of the arrow until the belt clip is locked and makes a 'click' sound.

To detach:
Lift the tab up (❶), and slide the belt clip in the direction of the arrow (❷).

BE CAREFUL! DO NOT break your fingernail.

Belt clip
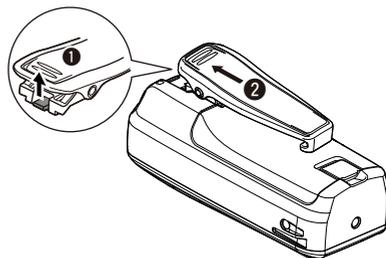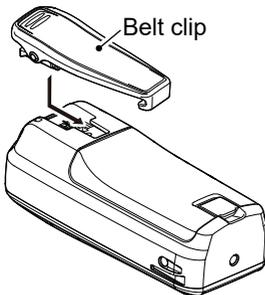
2 ACCESSORIES

◇ Battery pack

To insert:
1. Push the sliding lock (❶).
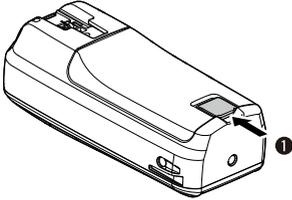
2. Open the battery cover (❶), and insert the battery pack into the transceiver so it fits flat (❷).
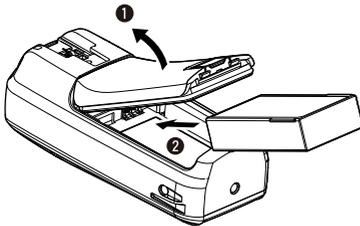
3. Securely attach the battery cover.

To remove:
Push the sliding lock, and then lift the battery cover to remove it. Then remove the battery pack.

CAUTION:
- **NEVER** remove the battery cover when the transceiver is wet or soiled. This may result in water or dust getting into the transceiver/battery pack, and may result in the transceiver being damaged.
- When attaching or removing the battery cover, make sure the rubber seal is correctly set in the groove of the cover. If the seal is not correctly in the groove, it may be damaged when attaching the battery cover. If the seal is damaged, waterproof protection is not guaranteed.
- When attaching the battery cover, make sure dust or other material does not adhere to the rubber seal. If dust or other material is on the seal when attaching the battery cover, waterproof protection may not be guaranteed.

Be sure that the rubber seal is correctly seated in the groove, and there is no dust or other material on it.
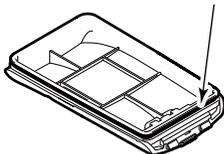
Correct position

Incorrect position

Rubber seal

Groove

Battery cover

Battery cover

■ **Front panel**

Display
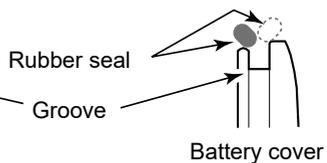
Speaker
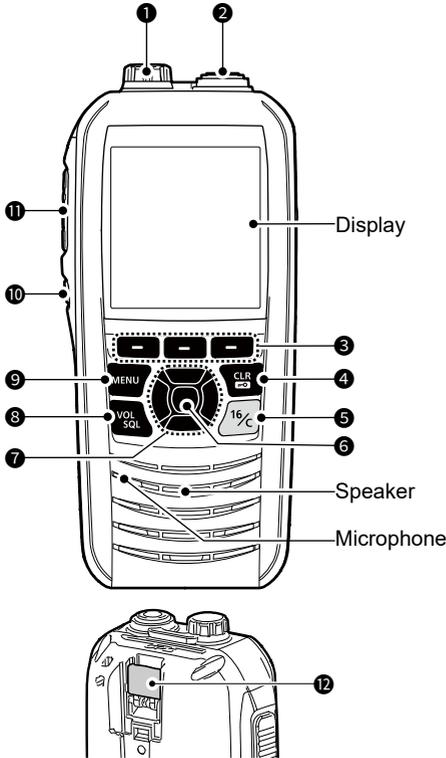
Microphone

❶ **SPEAKER MICROPHONE JACK**
(p. 71)
Connects the optional external speaker microphone.

> **NOTE:** Attach the jack cover when the optional speaker microphone is not used. Otherwise, water will get into the transceiver.

❷ **ANTENNA CONNECTOR** (p. 2)
Connects the supplied antenna.

❸ **SOFTWARE KEYS** (p. 6)
Scroll the key functions by pushing [◄] or [►], and then push either of the 3 software keys to select the function displayed at the bottom of the display.

❹ **CLEAR/LOCK KEY [CLR/ O]**
  • Push to cancel the entered data, or to return to the previous screen.
  • Hold down for 1 second to turn the Key Lock function ON or OFF.
    (p. 17)

❺ **CHANNEL 16 KEY [16/C]**
  • Push to select Channel 16. (p. 13)
  • Hold down for 1 second to select the Call channel. (p. 13)

❻ **ENTER KEY**
  Push to set the entered data, selected item, and so on.

❼ **UP/DOWN/LEFT/RIGHT KEYS [▲]/[▼]/[◄]/[►]**
  • Push [▲] or [▼] to select the operating channel, Menu items, Menu settings, and so on.
  • Push [◄] or [►] to scroll the Software key functions. (p. 6)
  • Push to select a character or number in the entry mode.

❽ **VOLUME/SQUELCH/MONITOR KEY [VOL/SQL]/[MONI]**
  • Push once to display the volume level setting screen. (p. 15)
  • Push twice to display the squelch level setting screen. (p. 15)
  • Hold down for 1 second to turn ON the Monitor function. (p. 17)

❾ **MENU KEY**
  Push to display or close the Menu screen.

❿ **POWER KEY [ ]**
  Hold down for 1 second to turn the transceiver ON or OFF.

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

⓬ **DISTRESS KEY [DISTRESS]**
  Hold down for 3 seconds to transmit a Distress call.

3 PANEL DESCRIPTION

■ **Function display**
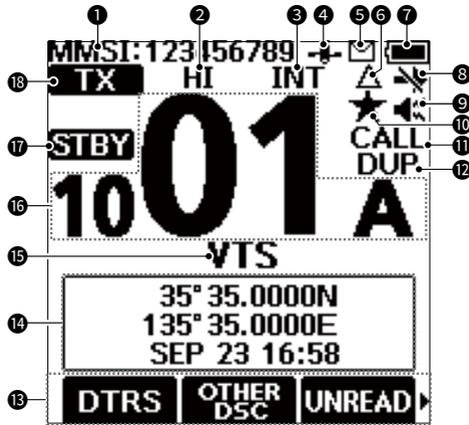
❶ **MMSI CODE** (p. 11)
Displays your MMSI code.

❷ **POWER INDICATOR** (p. 7)
• "HI": Displayed when high power is selected.
• "LOW": Displayed when low power is selected.

❸ **CHANNEL GROUP INDICATOR**
Displays the current channel group, INT (International), USA, CAN (Canada), WX (Weather channel).
ⓘ The selectable channels may differ, depending on the version or presetting.
ⓘ When the WX Alert is set to ON, "✦" is displayed.

❹ **GPS ICON**
• Displayed when valid GPS position data is received.
• Blinks while no position data is received.

❺ **MAIL ICON** (p. 40)
• Displayed when there is an unread DSC message.
• Blinks until one of the called messages is read.

❻ **CPA/TCPA ICON**
Displayed when there is a target in the CPA/TCPA alarm area. (p. 52)

❼ **BATTERY INDICATOR**
Displays the battery's remaining power.
▪ ▨ : Full
▪ ▨ : Mid
▪ ▨ : Charging required
▪ ▨ : Battery exhausted

❽ **DSC SWITCH ICON** (p. 42)
• Displayed when the "CH Auto Switch" is set to "Ignore (TEMP)" or "Manual (TEMP)"
• Blinks when the "DSC Switch" is OFF.

❾ **LOUD/MUTE INDICATOR** (p. 15)
• Displays ◀̈ when the audio volume level is set to "Loud."
• Displays ◀ when the audio volume level is set to "Mute."

❿ **FAVORITE CHANNEL ICON** (p. 20)
Displayed when a Favorite channel is selected.

⓫ **CALL CHANNEL ICON** (p. 13)
Displayed when a Call channel is selected.

⓬ **DUPLEX CHANNEL ICON**
Displayed when a Duplex channel is selected.

⓭ **SOFTWARE KEY FUNCTION DISPLAY** (p. 6)
The functions of each keys are displayed.
ⓘ ⟲ Key Locked is displayed while the Lock function is ON.

3

⑭ **POSITION/TIME DISPLAYS**
Displays the current position and time when valid GPS data is received, or when manually entered.
Received GPS data:
• "No Position No Time" is displayed if no GPS data is received for 2 minutes after turning ON the transceiver, and then a warning message is displayed.
• "??" blinks if no GPS data is received for 30 seconds after receiving valid GPS data, and then "??" and a warning message are displayed alternately after 10 minutes.
• A warning message is displayed if no GPS data is received for 4 hours after receiving valid GPS data.
ⓘ "Local" is displayed when the UTC Offset time is set. (p. 65)
Manually entered GPS data:
• A manually entered GPS data is valid for 4 hours, and then a warning message is displayed.
ⓘ "Manual" is displayed.

⑮ **CHANNEL NAME**
• The channel name is displayed, if entered. (p. 18)
• "SCAN" or "SCAN 16":
Displayed while scanning. (p. 20)
• "DUAL 16" or "TRI 16":
Displayed while using the Dualwatch or Tri-watch function. (p. 21)

⑯ **OPERATING CHANNEL NUMBER**
(p. 13)
Displays the selected operating channel number.

⑰ **STATUS INDICATOR**
• STBY: Standby mode.
• RT: Displayed while in the Radio Telephone (RT) mode.
ⓘ Returns to the Standby mode if no operation occurs during the preset period of time.
• DSC: Displayed while in the DSC mode.

⑱ **STATUS INDICATOR** (p. 16)
• TX: Displayed while transmitting.
• MONI: Displayed while the Monitor function is activated.
• BUSY: Displayed while receiving, or the squelch is open.

■ Software Keys

Various often-used functions are assigned to the Software Keys for easy access. The functions' icons are displayed above the Software Keys, as shown below.

◇ Selecting a Software Key function

1. Push [◄] or [►] to slide through the selectable functions that are assigned to the Software Keys.
2. Push the Software Key under the function's icon to select the function.
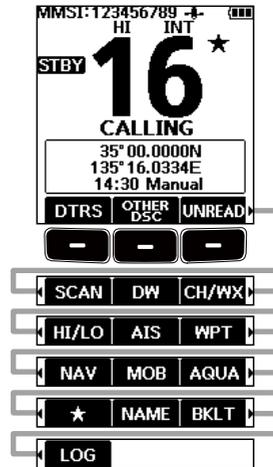
NOTE: The displayed icons or their order may differ, depending on the transceiver version or the presetting. Ask your dealer for presetting details.

3 PANEL DESCRIPTION

◇ **Software Key functions**

Key	Function	Reference
DTRS Compose Distress	Push to display the "Compose Distress" screen to select the nature of distress, then push the [DISTRESS] (red key) to make a call. *NEVER MAKE A DISTRESS CALL IF YOUR SHIP OR A PERSON IS NOT IN AN EMERGENCY. A DISTRESS CALL SHOULD BE MADE ONLY WHEN IMMEDIATE HELP IS NEEDED.*	p. 25
OTHER DSC Compose Other	Push to compose an Individual call, Group call, Test call, and so on.	p. 28
UNREAD Unread List	When the transceiver has unread DSC calls, push to display the "Unread List" screen.	p. 41
SCAN Scan	Push to start or stop a Normal or Priority scan.	p. 20
DW / **TW** Dualwatch/Tri-watch	Push to start or stop Dualwatch or Tri-watch.	p. 21
CH/WX Channel/ Weather channel	Push to select regular channels or Weather channels. ⓘ While the Call channel or Channel 16 is displayed, push this key to return to the regular channel mode.	p. 14
HI/LO High/Low	Push to set the output power to high or low. ⓘ Some channels are set to only low power.	p. 5
AIS AIS	Push to display the AIS plotter screen.	p. 45
WPT Waypoint	Push to save your position information to the transceiver.	p. 55
NAV / **STOP NAV** Navigation/ Stop navigation	Push to start navigation. While navigating, push to stop navigation.	p. 59
MOB / **STOP MOB** Man Overboard/ Stop Man Overboard	Push to start the Man Overboard (MOB) mode. While in the Man Overboard mode, push to stop the Man Overboard mode.	p. 58
AQUA AquaQuake	Hold down to turn ON the AquaQuake function to clear water from the speaker grill.	p. 18
★ Favorite channel	Push to select a Favorite channel. Hold down for 1 second to set the selected channel as a Favorite channel or clear it as a Favorite channel.	p. 20
NAME Channel Name	Push to edit the name of the displayed channel.	p. 18
BKLT Backlight	Push to display the backlight brightness adjustment screen. ⓘ While in the adjustment mode, push [▲]/[▼][◄]/[►] to adjust the brightness of the display and keys' backlight to between 1 and 7, or OFF.	p. 65
LOG DSC Log	Push to display the received call log or distress message log.	p. 40

■ 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** incinerate used battery packs. Internal battery gas may cause an explosion.

⚠ **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.

⚠ **DANGER! NEVER** leave the battery pack in places 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** 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** 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** 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 go to a doctor.

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

⚠ **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** use deteriorated battery packs. They could cause a fire.

CAUTION: DO NOT use the battery pack out of the specified temperature range, –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.

CAUTION: DO NOT leave the battery pack fully charged, completely discharged, or in an excessive temperature environment (above 50°C, 122°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)

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 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.

3

4

4 BATTERY CHARGING

■ Battery caution

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.

■ **Charging caution**

⚠ **DANGER! 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 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 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.

NOTE: DO NOT charge the battery pack outside of the specified temperature range: 15˚C ~ 40˚C (59˚F ~ 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.

CAUTION: DO NOT use the power adapter unless the power outlet is easily accessible and near the unit. Remove it from the power outlet when not in use.

■ Battery charger

NOTE: The transceiver **MUST** be turned OFF while charging. Otherwise:
- The battery will not be charged correctly.
- The battery life may be shortened.

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

Tabs

Guide rail
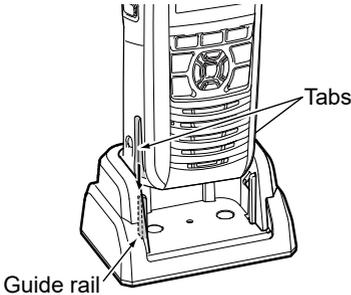
◇ Mounting the Battery charger

Supplied screws
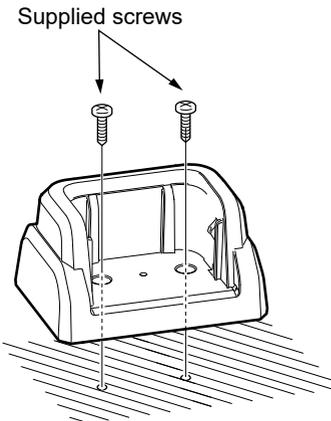
◇ Supplied battery charger

Charging time:
Approximately 4 hours for the BP-306

Turn OFF

CP-26* (for a 12 V cigarette lighter socket) can be used instead of the power adapter*.

Power adapter*
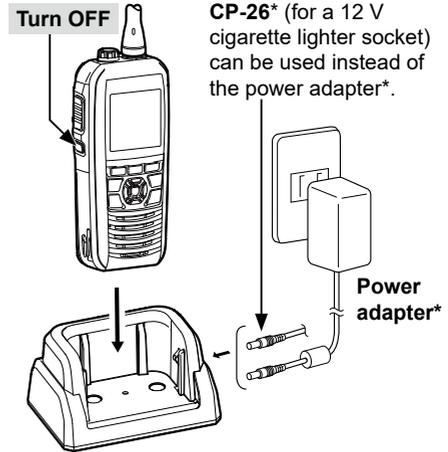
Battery charger

* May not be supplied, or the shape may be different, depending on the transceiver version.

ⓘ "Charging" is displayed and bars of the battery icon scroll while charging.

ⓘ "Full Charge" is displayed when the battery has been fully charged, and then disappears after 10 seconds.

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.
  ⓘ If error is detected, "Charging Error" is displayed.

5 PREPARATION

■ Entering the MMSI code

The Maritime Mobile Service Identity (MMSI: DSC self ID) code consists of 9 digits. You can only enter the code when turning ON the transceiver for the first time.

This initial code entry can be done only once.
After entering, it can be changed only by your dealer or distributor. If your MMSI code has already been entered, this entry is not necessary.

1. Hold down [⏻] to turn ON the transceiver.
   • Three short beeps sound, and "Push [ENT] to register your MMSI" is displayed.
2. Push [ENT] to start entering the MMSI code.
   • The "MMSI Input" screen is displayed.
   ⓘ To skip the entry, push [CLR] twice.
      If you skip the entry, you cannot make a DSC call. To enter the code after skipping, turn OFF the power, and then turn it ON again.
3. Enter the MMSI code.

   TIP:
   • Select a number using [◄] and [►].
   • Push [ENT] to enter the selected number.
   • Select "←" or "→," to move the cursor.
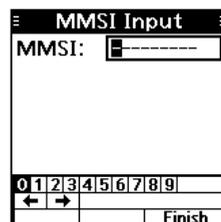
4. Repeat step 3 to enter all 9 digits.
5. Select "Finish," and then push [ENT] to set the entered code.
   • The "Confirmation" screen is displayed.
6. Enter your MMSI code again to confirm.
   • When a different code is entered from the "MMSI Input" screen, "MMSI does not match." is displayed. Enter a code again in step 2.
7. Select "Finish," and then push [ENT] to set the entered code.
   • When your MMSI code is successfully entered, "MMSI registered successfully." is briefly displayed, and then enters the operating screen.
   ➀ Your MMSI code is also displayed on the operating screen.

6 **BASIC OPERATIONS**
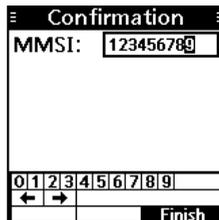
■ Selecting a channel

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.

◇ Regular Channel

You can select a channel by pushing [▲] or [▼].

◇ 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/C] to select Channel 16.
  ⓘ To return to the previously selected channel, push **CH/WX**.

◇ 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.
ⓘ See page 15 for details on setting the Call channel.

● Hold down [16/C] 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/WX**.

◇ Selecting a Channel Group

Channel Groups are preset into your transceiver. You can select the Channel Group between USA, International, and Canadian, depending on the transceiver version.

[MENU] > Settings > Radio > **Channel Group**

1. Push [MENU].
   • The Menu screen is displayed.
2. Push [▲] or [▼] to select "Settings," and then push [ENT].
   • The "Settings" screen is displayed.
3. Push [▲] or [▼] to select "Radio," and then push [ENT].
   • The "Radio" screen is displayed.
4. Push [▲] or [▼] to select "Channel Group," and then push [ENT].
   • The "Channel Group" screen is displayed.
5. Push [▲] or [▼] to select the Channel Group, and then push [ENT].
   • The transceiver returns to the previous screen.
   ⓘ The selected Channel Group's icon is displayed on the operating screen.

■ Weather channels and Weather Alert

The USA and Export 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/WX.
    • "WX" is displayed on the operating screen instead of the Channel Group.
2. Push [▲] or [▼] to select a Weather channel.
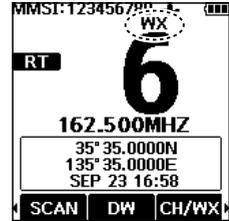
The Weather channel list

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 the WX Alert to "ON with Scan" or "ON."

[MENU] > Settings > Radio > **WX Alert**

1. Push [MENU].
2. Push [▲] or [▼] to select "Settings," and then push [ENT].
    • The "Settings" screen is displayed.
3. Push [▲] or [▼] to select "Radio," and then push [ENT].
    • The "Radio" screen is displayed.
4. Select "WX Alert," and then push [ENT].
    • The "WX Alert" screen is displayed.
5. Select "ON with Scan" or "ON."
    • "📢" is displayed next to the weather channel icon.
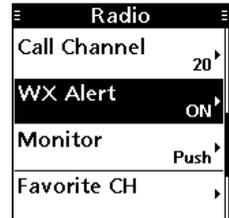
ⓘ "WX📢" blinks until you push a key after detecting an alert.

14
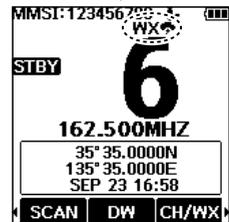
■ Adjusting the volume level

1. Push [VOL/SQL].
   • The volume level adjustment screen is displayed.
2. Push [▲], [▼], [◄], or [►] to adjust the audio volume level.
   ⓘ You can also push **MUTE** to select OFF, or **LOUD** to set the maximum volume level.
   ⓘ If no key is pushed for 5 seconds, the screen automatically closes.
3. Push [ENT] to set.

■ 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.

1. Push [VOL/SQL] twice.
   • The squelch level adjustment screen is displayed.
2. Push [▲], [▼], [◄], or [►] to adjust the squelch level.
   ⓘ If no key is pushed for 5 seconds, the adjustment screen automatically closes.
3. Push [ENT] to set.
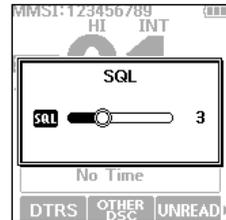
■ Setting the Call channel

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. Open the "Call Channel" screen.

   [MENU] > Settings > Radio > **Call Channel**

2. Push [▲] or [▼] to select the channel.
3. Push [ENT] to set the selected channel as the Call channel.
   • The transceiver returns to the previous screen.
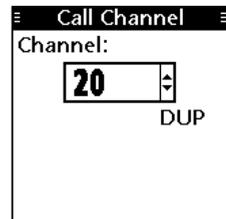
■ Receiving and transmitting

CAUTION: DO NOT transmit without an antenna.

1. Push [▲] or [▼] to select the channel to call on.
    ⓘ **BUSY** is displayed while receiving a signal.
2. Hold down [PTT] and speak into the microphone at your normal voice level.
    • **TX** is displayed while transmitting.
3. Release [PTT] to receive.

❷ Hold down [PTT] to transmit
❸ Release [PTT] to receive

❶ Select a channel

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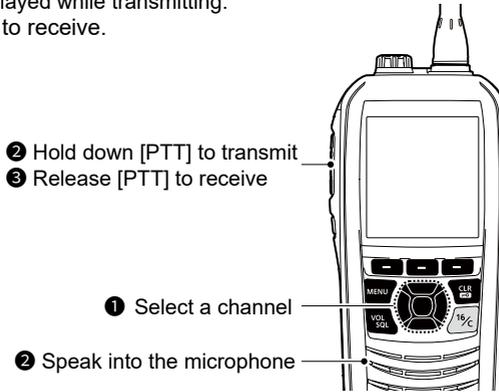
TIP: To maximize the readability of your transmitted signal, pause for a second after pushing [PTT] and hold the microphone 5 to 10 cm (2 to 4 inches) from your mouth, and then speak at your normal voice level.

NOTE:
• To conserve battery power, the Power Save function automatically turns ON when no signal is received for 5 seconds.
• When the temperature is extremely high, the battery protection function automatically sets transceiver power to Low, and disables High power selection.
• Except for the Export version, the Time-out Timer function cuts OFF transmission after 5 minutes of continuously transmitting, 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 it is 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 transmit and/or received signal. See page 65 for details.

6   BASIC OPERATIONS

■ **Lock function**

The Lock function electronically locks all keys except for [⏻], [PTT], and [DISTRESS].
This function enables you to prevent accidentally changing the channel, or accessing the functions.

● Hold down [CLR ↤] for 1 second to turn the Lock function ON or OFF.
  • **⟿ Key Locked** is displayed on the bottom of the display while the Lock function is ON.

■ **Monitor function**

The Monitor function temporarily cancels the Squelch function to check for weak signals.

1. Hold down [VOL/SQL] to turn ON the Monitor function.
    ⓘ The Monitor function is ON while [VOL/SQL] is held down.
    • Two beeps sound, and **MONI** is displayed.
    • If there is a weak signal, you can hear the signal and noise.
2. Release to turn OFF.

TIP: You can change the Monitor function settings. See page 67 for details.

■ 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.

CAUTION: DO NOT use the AquaQuake Water Draining function when an external speaker microphone is connected.

1. Push [◄] or [►] to select **AQUA**.
2. Hold down **AQUA** to turn ON the function.
   • A low frequency vibration beep sounds to drain the water, regardless of the volume level setting.
   ⓘ This function is activated for a maximum of 10 seconds, even if you continue to hold down **AQUA**.
3. Release the key to turn OFF the function.

TIP: You can also use the function by selecting the "AquaQuake" item on the Menu screen.

   [MENU] > **AquaQuake**

■ Editing a channel name

You can edit the name of each operating channel and weather channel, using numbers, uppercase letters, symbols, and a space. This enables easy recognition of the channels or stations. All VHF marine channels are set with default names.

1. Push [▲] or [▼] to select the channel to edit.
2. Push [◄] or [►] to select **NAME**.
   ⓘ You cannot edit a channel name during Dualwatch, Tri-watch, or a Scan.
3. Push **NAME**.
   • The "Channel Name" screen is displayed.
4. Edit the channel name.
5. Select "Finish," and then push [ENT] to save the edited name and return to the operating screen.

TIP:
• Select [? $!] to enter symbols, and select [A1] to enter numbers and letters.

• Select characters or space using [▲]/[▼]/[◄]/[►].
• Push [ENT] to enter the selected character.
• Select "←" or "→" on the screen to move the cursor.

7 SCAN OPERATION

■ Scan types

You can find ongoing communication by scanning the Favorite channels.

Before starting a scan:
• Set the channels that you want to scan as Favorite channels. (p. 20)
  ⓘ Only the Favorite channels are scanned.
• Set the scan type to "Priority Scan" or "Normal Scan" on the Set mode setting. (p. 66)

   [MENU] > Settings > Radio > **Scan Type**

Normal Scan
Sequentially searches through all Favorite channels. Channel 16 is not scanned unless it is set as a Favorite channel.
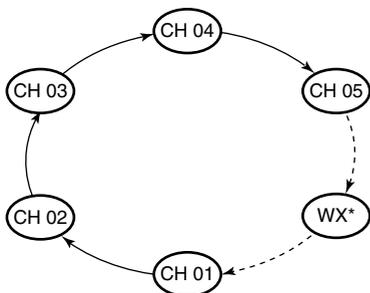
* When the Weather Alert function is ON, the previously selected Weather channel is also scanned.

Priority Scan
Sequentially searches through all Favorite channels, while also periodically checking Channel 16.
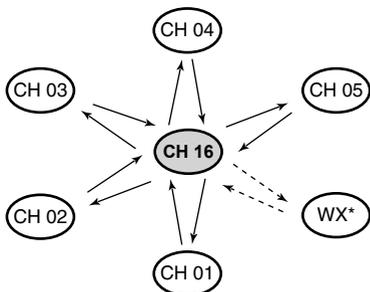
* When the Weather Alert function is ON, the previously selected Weather channel is also scanned.

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.

1. Select a Channel Group on the Menu screen. (p. 66)

   [MENU] > Settings > Radio > **Channel Group**

2. Push [▲] or [▼] to select the channel.
3. Push [◄] or [►] to display ★ .
4. Hold down ★ for 1 second.
   • The selected channel is set as a Favorite channel, and "★" is displayed.
   ① To cancel the setting, hold down ★ again for 1 second.

TIP: You can set all channels as Favorite channels, clear all settings, or reset to the default. By default, some channels are preset as Favorite channels. The preset channels may differ, depending on the transceiver version.

7

■ Starting a scan

Example: Starting a Normal Scan.

1. Select a Channel Group on the Menu screen. (p. 66)

   [MENU] > Settings > Radio > **Channel Group**

2. Push [◄] or [►] to display SCAN .
3. Push SCAN .
   • The scan starts.
   • "SCAN" is displayed during a Normal Scan, and "SCAN 16" is displayed during a Priority Scan.
   • "SCAN" and "BUSY" are displayed when a signal is received.
   ① When a signal is received, the scan pauses until it disappears, or resumes after 5 seconds, depending on the Scan Timer setting in "Radio."
   ① A beep sounds and "16" blinks when a signal is received on Channel 16 during a Priority scan.
4. To stop the scan, push SCAN .

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

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8 DUALWATCH/TRI-WATCH
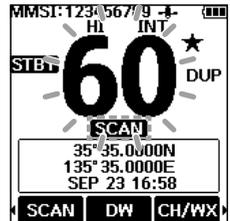
■ Description

Dualwatch and Tri-watch are convenient to periodically check Channel 16 while you are operating on another channel.

Dualwatch
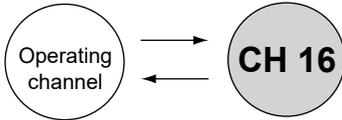
Operating channel → **CH 16** ←

Periodically checks Channel 16 while operating on another channel.

Tri-watch

Operating channel ⇄ Call channel

Operating channel ⇄ **CH 16**
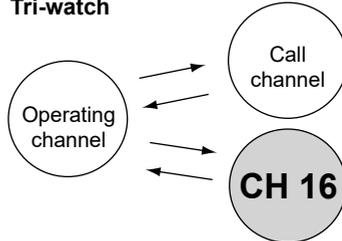
Periodically checks Channel 16 and the Call channel while operating on another channel.

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

1. Select Dualwatch or Tri-watch on the Menu screen.

   [MENU] > Settings > Radio > **Dual/Tri-Watch**

2. Push [▲] or [▼] to select a channel.
3. Push [◄] or [►] to display **DW** (Dualwatch) or **TW** (Tri-watch).
4. Push **DW** or **TW**.
   • Dualwatch or Tri-watch starts.
   • "**DUAL 16**" is displayed for Dualwatch, and "**TRI 16**" is displayed for Tri-watch.
   ⓘ "**BUSY**" is displayed when a signal is received.
   ⓘ Two beeps sound and "16" blinks when a signal is received on Channel 16.
5. To cancel Dualwatch or Tri-watch, push **DW** or **TW** again.

■ DSC address ID

◇ Entering an Individual or Group ID

You can enter a total of 75 Individual IDs and 25 Group IDs, and assign names to them of up to 10 characters.

1. Open the "Individual ID" or "Group ID" screen.

   [MENU] > Settings > DSC > **Individual ID**

   [MENU] > Settings > DSC > **Group ID**

   • "No ID" is displayed if no ID is entered.
2. Push ADD .
   • The ID entry screen is displayed.
3. Enter an Individual or Group ID.

   TIP:
   • Select a number using [◀]/[▶].
   • Push [ENT] to set the selected number.
   • Select "←" or "→" on the screen to move the cursor.

   NOTE:
   • For a Group ID, the first digit is fixed as "0."
   • For any coast station ID, the first two digits are fixed as "0."

4. Select "Next," and then push [ENT] to start entering the name.
5. Enter the ID's name.

   TIP:
   • Select [? $!] to enter symbols, and select [A1] to enter numbers and letters.

   • Select characters or space using [▲]/[▼]/[◀]/[▶].
   • Push [ENT] to enter the selected character.
   • Select "←" or "→" on the screen to move the cursor.

6. After entering, select "Finish," and then push [ENT], and return to the previous screen.
   • The entered name is displayed.

9 DSC OPERATION

◇ Deleting an entered ID

(Example: Deleting an Individual ID: STATION 2)

1. Open the "Individual ID" screen.

   [MENU] > Settings > DSC > **Individual ID**

2. Select "STATION 2."

3. Push **DELETE**.
   • "Delete the ID. Are you sure?" is displayed.
4. Push **OK** to delete.
   ⓘ Push **CANCEL** to cancel the deletion.
   • The selected ID is deleted, and then returns to the previous screen.

TIP: You can edit an ID and its name by pushing **EDIT** in step 3.

■ Entering the position and time

A Distress call should include the vessel's position, date, and time. If no GPS data is received, manually enter the position and Universal Time Coordinated (UTC) time.

NOTE:
• The manual entry is disabled while valid GPS data is received.
• The manually entered position and time is valid only for 4 hours, or until turning OFF the transceiver.

1. Open the "Position Input" screen.

   [MENU] > Settings > DSC > **Position Input**

2. Enter the latitude.

   TIP:
   • Select a number or a compass direction using [▲]/[▼]/[◄]/[►].
   • Push [ENT] to enter the selected number.
   • Select "←" or "→" on the screen to move the cursor.
   • Select "Next," and then push [ENT] to change the entry between latitude, longitude, and UTC.
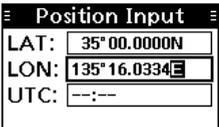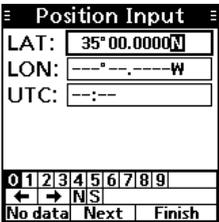
3. Enter the longitude and the UTC time.
   ⓘ See the TIP in step 2 to enter.
4. Select "Finish," and then push [ENT] to set the entered position and time.
   • The transceiver returns to the previous screen.
   ⓘ The entered position and time are displayed on the operating screen.
   ⓘ "Manual" is displayed next to the time display.
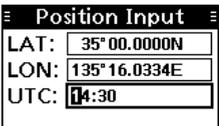
■ Sending DSC calls (Distress)

A Distress call should be sent if, in the opinion of the captain, the ship or a person is in distress and requires immediate assistance.

NEVER MAKE A DISTRESS CALL IF YOUR SHIP OR A PERSON IS NOT IN AN EMERGENCY. A DISTRESS CALL SHOULD BE MADE ONLY WHEN IMMEDIATE HELP IS NEEDED.

◇ Simple call

1. Confirm that no Distress call is being received.
2. While lifting up the key cover, hold down [DISTRESS] for 3 seconds until you hear 3 short countdown beeps and a long beep sound.
   • The backlight blinks.

   Key cover
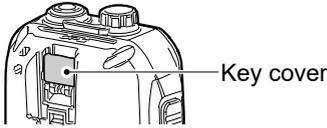
3. After sending, wait for an Acknowledgment call.
   • "Waiting for ACK" is displayed.
   • The Distress call is automatically sent every 3.5 to 4.5 minutes, until an Acknowledgement is received, or a Distress Cancel call is sent.
4. When you receive an Acknowledgment, an alarm sounds. Push ALARM OFF to turn OFF the alarm.
   • Channel 16 is automatically selected.
5. Hold down [PTT], and then explain your situation.
6. After you have finished your conversation, push STBY to return to the operating screen.
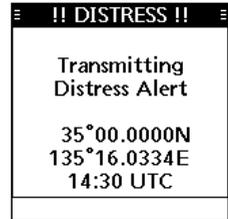
TIP: A default Distress alert contains:
• Nature of distress: Undesignated distress
• Position information: The latest GPS, or manually input position, that is held for 4 hours, or until you turn OFF the transceiver.

NOTE on Distress calls (Simple calls and Regular calls):
If no valid position data is received when sending a Distress call, the transceiver waits for 15 seconds until position data is received, and then the Distress call is sent. If no position is received during this 15 seconds, the position data in the transceiver memory is automatically sent. However, if there is no position data in the memory, the Distress call is sent without position data.

9

!! DISTRESS !!

Hold down
for 3 sec.

Undesignated

!! DISTRESS !!

Transmitting
Distress Alert

35°00.0000N
135°16.0334E
14:30 UTC

!! DISTRESS !!
Waiting for ACK
Next TX after
4 min. 5 sec.

CANCEL RESEND PAUSE

MMSI:123456789
HI   INT
DSC
RCVD Distress ACK
From: STATION 1
CH 16
Elapsed: 00:00:03
Elapsed: 00:00:03
From: STATION 1
ALARM OFF

9 DSC OPERATION

◇ Regular call

Select the nature of the Distress call to include in the Regular Distress call.

1. Push DTRS .
   • The "Compose Distress" screen is displayed.
2. Push [ENT] to enter the Nature Selection mode.
3. Select the nature of the Distress, and then push [ENT]. (Example: Flooding)
   • The setting is saved and returns to the previous screen.
   ⓘ If no valid GPS data is being received, select "Position," and then enter the latitude, longitude, and UTC. See "Entering the position and time" on page 23 for details.
4. While lifting up the key cover, hold down [DISTRESS] for 3 seconds until you hear 3 short countdown beeps and a long beep sound.
   • The backlight blinks.
5. After sending, wait for an Acknowledgment.
   • "Waiting for ACK" is displayed.
   ⓘ The Distress call is automatically sent every 3.5 to 4.5 minutes, until an Acknowledgment is received, or a Distress Cancel call is sent. (p. 26)
6. When you receive an Acknowledgment, an alarm sounds. Push ALARM OFF to turn OFF the alarm.
   • Channel 16 is automatically selected.
7. Hold down [PTT] to communicate.

TIP: You can also send a Regular call by selecting the "Compose Distress" item on the Menu screen.

   [MENU] > **Comporse Distress**

Compose Distress
Push DISTRESS for 3sec
Nature   Flooding
Latitude   35°00.0000N
Longitude   135°16.0334E
EXIT

!! DISTRESS !!

Hold down
for 3 sec.

Flooding

!! DISTRESS !!

Transmitting
Distress Alert

35°00.0000N
135°16.0334E
14:30 UTC

!! DISTRESS !!
Waiting for ACK
Next TX after
3 min. 55 sec.

CANCEL RESEND PAUSE ▶

MMSI:123456789
HI   INT
DSC
RCVD Distress ACK
From: STATION 1
CH 16
Elapsed: 00:00:03
Elapsed: 00:00:03
From: STATION 1
ALARM OFF

NOTE:
After sending a Distress call without position data
• While waiting for an Acknowledgement, if valid position data is received, the transceiver will automatically send a Distress call again.
• Even after exiting the DSC mode, if valid position data is received within 20 minutes after receiving a Distress Acknowledgement, the transceiver will automatically send a Distress call again.

◇ Distress Cancel call

If you have accidentally made a Distress call, or made an incorrect Distress call, send a Distress Cancel call to cancel the call as soon as possible while waiting for an Acknowledgement. Be sure to report the purpose of the cancellation.

1. While waiting for an Acknowledgement, push CANCEL.
   • The screen to the right is displayed.
2. Push CONT.
   • The Distress Cancel call is sent.
   • Channel 16 is automatically selected.
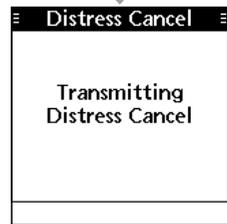
3. Hold down [PTT] to report the purpose of the cancellation.
   ⓘ You can display the wording of the cancellation by pushing [▼].

4. After communicating, push FINISH.
   • The screen to the right is displayed.
5. Push STBY to finish the Distress Cancel call.
   • Returns to the operating screen.

9

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9 DSC OPERATION
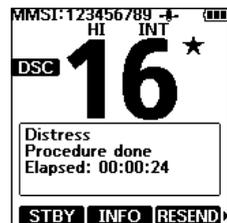
◇ Distress call Software Key description

While waiting for an Acknowledgement:

`CANCEL`: Cancels the Distress call and enables you to send a Cancel call.

`RESEND`: Enables you to resend the Distress call by holding down [DISTRESS] again.

`PAUSE`: Pauses the countdown to resend the next Distress call.

`INFO`: Displays the information of the Distress call that you have sent.

After receiving an Acknowledgement:

`STBY`: Closes the Distress operation, and returns to the operating screen.

`INFO`: Displays the information of the received Distress Acknowledgement.

`HIST`: Displays the "Distress History."

`HI/LO`: Changes the output power.

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■ Sending DSC calls (other)

NOTE: To ensure proper DSC operation, be sure to correctly adjust the "CH 70 SQL Level" item on the Menu screen. (p. 43)

◇ Sending an Individual call

An Individual call enables you to send a DSC signal to only a specific station. You can communicate after receiving the Acknowledgement "Able to comply."

1. Push [OTHER DSC].
   • The "Compose Other" screen is displayed.
   ⓘ You can also display the "Compose Other" screen by selecting the "Compose Other" item on the Menu screen.
2. Select "Message Type," and then push [ENT].
3. Select "Individual," and then push [ENT].
   • Returns to the "Compose Other" screen.
4. Select "Address," and then push [ENT].
5. Select the station to send an Individual call to, and then push [ENT].
   • Returns to the "Compose Other" screen.
   ⓘ You can also select "Manual Input" to manually enter the target station ID.
6. Select "Channel," and then push [ENT].
7. Select a channel to assign, and then push [ENT].
   ⓘ The assigned channels are preset by default.
8. Push [CALL] to send the Individual call.
   • "Transmitting Individual Call" is displayed, and then "Waiting for ACK" is displayed.
   ⓘ If Channel 70 is busy, the transceiver stands by until the channel becomes clear.
9. When you receive an Acknowledgement "Able to comply":
   • An alarm sounds.
   • The screen to the right is displayed.
10. Push [ALARM OFF] to turn OFF the alarm.
    • The channel assigned in step 7 is automatically selected.
    ⓘ If the called station cannot use the channel that you assigned, a different channel is selected by the other station.
11. Hold down [PTT] to communicate.

TIP: If you received an Acknowledgement "Unable to comply":
1. Push [ALARM OFF] to turn OFF the alarm.
   • The Acknowledge information is displayed.
2. Push [STBY], and then [OK] to return to the operating screen.

9

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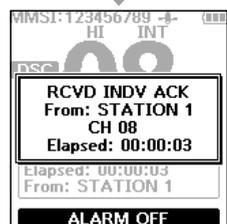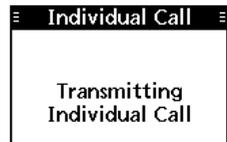
9 DSC OPERATION

◇ Sending an Individual Acknowledgement

When you have received an Individual call (p. 36), send an Acknowledgement to the calling station. When the Auto Ack is set to "Manual," you can select an appropriate acknowledgement type.

1. While an Individual call is being received, push **ALARM OFF** to turn OFF the alarm.
2. Push **ACCEPT**.
   • The received call's information is displayed.
   ⓘ If you cannot communicate, and want to return to the operating screen, push **IGNORE**.
   ⓘ If you want to hold the RX call task, and return to the Main screen, push **HOLD**.
   ⓘ If you want to send an Acknowledgement "Able to comply" right away, push **ABLE**.
3. Push **ACK**.
   • The "Compose Other" screen is displayed.
4. Select the Acknowledgement type in the "Comply" item.

   Able Comply: Sends an Acknowledgement without any changes.

   Unable Comply: Sends an Acknowledgement but cannot communicate.

   New Channel: Able to communicate but proposes another channel. Specify the channel by pushing [▲] or [▼] in the "Channel" item. (Example: Channel 69)
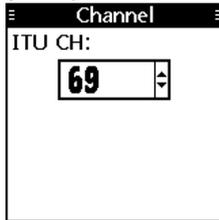
5. Push **CALL** to send the Acknowledgement.

◇ Sending a Group call

A Group call enables you to send a DSC call to only a specific group.

ⓘ You can send a Group call to a pre-entered group address, or manually enter the address before sending. (p. 22)

1. Push OTHER DSC.
   • The "Compose Other" screen is displayed.
   ⓘ You can also display the "Compose Other" screen by selecting the "Compose Other" item on the Menu screen.
2. Select "Message Type," and then push [ENT].
   • The "Message Type" screen is displayed.
3. Select "Group," and then push [ENT].
   • The Group call is selected, and returns to the "Compose Other" screen.
4. Select "Address," and then push [ENT].
   • The "Address" screen is displayed.
5. Select the group to send a Group call, and then push [ENT].
   ⓘ You can also select "Manual Input" to manually enter the target group.
6. Select "Channel," and then push [ENT].
7. Select the channel to assign, and then push [ENT].
   ⓘ The assigned channels are preset by default.
8. Push CALL to send the Group call.
   • "Transmitting Group Call" is displayed, and then the assigned channel is automatically selected.
   ⓘ If Channel 70 is busy, the transceiver stands by until the channel becomes clear.
9. Hold down [PTT] to communicate.

Message Type
√ Individual
Group
Position
Test

Channel
Intership CH:
08

Compose Other
Address   GROUP1 ▸
Category   Routine
Mode   Telephony
Channel   08 ▸
EXIT   CALL

Group Call

Transmitting
Group Call

MMSI:123456789
HI INT
DSC **08**
Group Call
Transmitted
Elapsed: 00:00:08
To: GROUP1
STBY | INFO | RESEND ▸
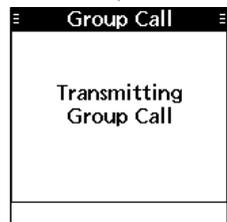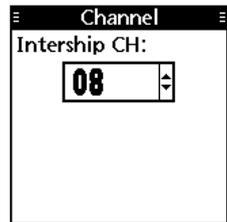
9 DSC OPERATION

◇ Sending a Test call

You should avoid sending test calls on the exclusive DSC Distress channels and safety calling channels. When you cannot avoid testing on a Distress or safety channel, you should indicate that these are test calls.

Normally the Test call would require no further communications between the two stations involved.

1. Push **OTHER DSC**.
   - The "Compose Other" screen is displayed.
   - ⓘ You can also display the "Compose Other" screen by selecting the "Compose Other" item on the Menu screen.
2. Select "Message Type," and then push [ENT].
   - The "Message Type" screen is displayed.
3. Select "Test," and then push [ENT].
   - The Test call is selected, and returns to the "Compose Other" screen.
4. Select "Address," and then push [ENT].
   - The "Address" screen is displayed.

5. Select a station to send the Test call to.
   - ⓘ You can also select "Manual Input" to manually enter the calling station.
6. Push **CALL** to send the Test call.
   - ⓘ If Channel 70 is busy, the transceiver stands by until the channel becomes clear.
7. When you receive an Acknowledgement:
   - An alarm sounds.
   - The screen to the right is displayed.
8. Push **ALARM OFF** to turn OFF the alarm.
   - The Acknowledgement information is displayed.
9. Push **CLOSE WINDOW**.
   - The received call's information is displayed.
   - The call is saved in the DSC Log.
10. Push **STBY**, and then push **OK** to return to the operating screen.

Message Type
✓ Individual
Group
Position
Test

Address
Manual Input   ▶
STATION 1
STATION 2

Compose Other
Message Type   Test▶
Address   STATION 1▶
Category   Safety
EXIT   CALL

Information
Test Call
Received ACK
RCVD Test ACK
From: STATION 1
Elapsed: 00:00:05
Safety
12:37
ALARM OFF

Information
Test Call
Received ACK
Elapsed: 00:00:17
From:
STATION 1
Safety
12:37
STBY

◇ Sending a Test Acknowledgement

By default, when you receive a Test call, the Auto ACK function automatically sends an Acknowledgement to the calling station (p. 42). If the function is set to "Manual," do the following steps to send an Acknowledgement.

1. After a Test call is being received, push ALARM OFF to turn OFF the alarm.
2. Push ACCEPT.
   • The received call's information is displayed.

3. Push ACK .
   • The "Test ACK" confirmation screen is displayed.

4. Push CALL to send the Acknowledgement.
   • "Transmitting Test ACK" is displayed.
5. Push STBY, and then push OK to return to the operating screen.

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9 DSC OPERATION

◇ Sending a Position Request call

You can send a Position Request call to a station, depending on the presetting.
Send a Position Request call when you want to know a specific ship's current position.

1. Push OTHER DSC .
   • The "Compose Other" screen is displayed.
   ⓘ You can also display the "Compose Other" screen by selecting the "Compose Other" item on the Menu screen.
2. Select "Message Type," and then push [ENT].
   • The "Message Type" screen is displayed.
3. Select "Position," and then push [ENT].
   • The message type is selected, and returns to the "Compose Other" screen.
4. Select "Address," and then push [ENT].
   • The "Address" screen is displayed.

5. Select a target to send a Position Request call to, and then push [ENT].
   ⓘ You can also select "Manual Input" to manually enter the target ID.
6. Push CALL to send the Position Request call.
   • Position Request call is sent, and then "Waiting for ACK" is displayed.
   ⓘ If Channel 70 is busy, the transceiver stands by until the channel becomes clear.
7. When you receive a Position Reply:
   • An alarm sounds.
   • The screen to the right is displayed.
8. Push ALARM OFF to turn OFF the alarm.
9. Push CLOSE WINDOW.
   • The received information is displayed.
10. Push [▲] or [▼] to scroll the screen, and then check the target's position.
11. Push STBY, and then push OK to return to the operating screen.
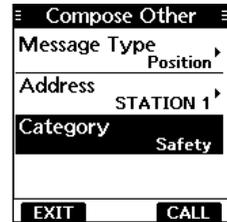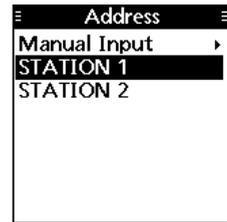
◇ Sending a Position Reply call

Send a Position Reply call when a Position Request call is received.
If the Auto ACK function is set to "Auto," the Acknowledgement is automatically sent to the calling station. (p. 42)

1. While a Position Request call is being received, push
   ALARM OFF to turn OFF the alarm.
2. Push **ACCEPT**.
   • The received call's information is displayed.

3. Push **ACK**.
   • The "Compose Other" screen is displayed.

4. Select the Acknowledgement type in the "Comply" item.

   Able Comply: Sends an Acknowledgement without any changes.
   Unable Comply: Sends an Acknowledgement but cannot send position data.

   ⓛ If no valid GPS position is received, you can manually enter the position and time in "Latitude," "Longitude," and "UTC" item on this screen. See "Entering the position and time" on page 23 for details.
5. Push **CALL** to send the Position Reply call.
6. Push **STBY**, and then push **OK** to return to the operating screen.

9 DSC OPERATION

■ Receiving DSC calls (Distress)

The transceiver receives Distress calls, Distress Acknowledgements, and Distress Cancel calls. When you receive a call, an emergency alarm sounds.

> **NOTE:** The screens that are displayed when a Distress call or an Acknowledgement is received slightly differ from one another. The following steps are described using an example of receiving a Distress call.

When a Distress call is received:
• The emergency alarm sounds until you turn it OFF.
• "RCVD Distress" is displayed.

1. Push **ALARM OFF** to turn OFF the alarm.

2. Push the Software Key below for the intended operation.

    IGNORE: Ignores the call and returns to the operating
    (Ignore) screen.
               • The call is saved in the DSC Log.
               • "✉" blinks continuously until you display the
                call message.

    HOLD: Puts the received call on hold, and returns to
    (Hold) the operating screen.
             ⓘ You can check the DSC calls that are on hold
                in the Unread List. (p. 41)

    PAUSE: Pauses the countdown until the assigned
    (Pause) channel is automatically selected.
             • Push **RESUME COUNTDOWN** to resume the
                countdown.
             • The call is saved in the DSC Log.
             ⓘ **PAUSE** is not displayed if the "CH Auto Switch"
                item is set to "Manual (TEMP)." (p. 42)

    ACCEPT: Accepts the call.
    (Accept) • Channel 16 is automatically selected.
             • Monitor Channel 16 as a coast station may
               require assistance.
             • After Channel 16 is selected, select your next
               operation by pushing the Software Key below
               the following options.
             STBY: Closes the Distress operation, and
                     returns to the operating screen.
             INFO: Displays the information of the received
                     Distress Acknowledgement.
             HIST: Displays the "Distress History."
             HI/LO: Changes the output power.

■ Receiving DSC calls (other)

The transceiver receives the following types of DSC calls.
- Individual calls
- Individual Acknowledgements (p. 29)
- Group calls (p. 37)
- All Ships calls (p. 37)
- Position Request calls (p. 38)
- Test calls (p. 39)
- Test Acknowledgements (p. 32)

ⓛ The receivable call types may differ, depending on the transceiver version or presetting.

By default, the Auto ACK function automatically sends an Acknowledgement to the calling station. ([MENU] > Settings > DSC > **Auto ACK** (p. 42))
If Auto ACK is set to "Manual," you can manually send an Acknowledgement for each call as described in this section.

◇ Receiving an Individual call

When an Individual call is received:
- An alarm sounds.
- "RCVD INDV Call" is displayed.

1. Push **ALARM OFF** to turn OFF the alarm.
2. Push the Software Key below for your next operation.

    IGNORE: Ignores the call and returns to the operating
    (Ignore) screen.
    - The call is saved in the DSC Log.
    - "🖂" blinks continuously until you display the call message.

    HOLD: Puts the received call on hold, and returns
    (Hold) to the operating screen.
    ⓛ You can check the DSC calls that are on hold in the Unread List. (p. 41)

    ABLE: Sends an Individual Acknowledgement right
    (Able away.
    Comply) • Automatically switches to the assigned channel.
    - After sending, push **RESEND** to resend.
    - The call is saved in the DSC Log.

    ACCEPT: Accepts the call.
    (Accept) • The call is saved in the DSC Log.
    - Displays the received call's information.
    - Push the Software Key to select the Acknowledgement option in the "Comply" item.

        Able Comply: Sends an Acknowledgement without any changes.
        Unable Comply: Sends an Acknowledgement but cannot communicate.
        New Channel: Able to communicate but proposes another channel.
                       Specify the channel by pushing [▲] or [▼] in the "Channel" item.

36
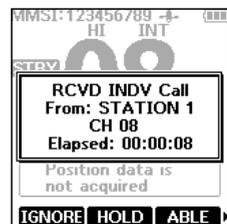
9 DSC OPERATION

◇ Receiving a Group call or All Ships call

When a Group call is received:
• An alarm sounds.
• "RCVD Group Call" is displayed.

When an All Ships call is received:
• An alarm sounds.
• "RCVD All Ships Call" is displayed.

(Example: when a
Group call is received)

1. Push **ALARM OFF** to turn OFF the alarm.
   • The channel that is assigned by the caller is automatically selected after 10 seconds by default.

2. Push the Software Key below for your next operation.

   IGNORE: Ignores the call and returns to the operating
   (Ignore) screen.
   • The call is saved in the DSC Log.
   • "✉" blinks continuously until you display the call message.

   HOLD: Puts the received call on hold, and returns
   (Hold) to the operating screen.
   ⓘ You can check the DSC calls that are on hold in the Unread List. (p. 41)

   PAUSE: Pauses the countdown until the assigned
   (Pause) channel is automatically selected.
   • Push **RESUME COUNTDOWN** to resume the countdown.
   • The call is saved in the DSC Log.
   ⓘ **PAUSE** is not displayed if the "CH Auto Switch" item is set to "Manual (TEMP)." (p. 42)

   ACCEPT: Accepts the call.
   (Accept) • The assigned channel is selected.
   • The call is saved in the DSC Log.
   STBY: Closes the call, and then returns to the operating screen.
   INFO: Displays the received call's information.

◇ Receiving a Position Request call

NOTE: If the Auto ACK function is set to "Auto," the Position Reply is automatically sent to the calling station. (p. 42)
However, even if the Auto ACK function is set to "Manual," after receiving a Distress Acknowledgement, or while in the Distress Cancel call procedure, the Position Reply is automatically sent to the calling station.

When a Position Request call is received:
• An alarm sounds.
• "RCVD POS Request" is displayed.

1.   Push **ALARM OFF** to turn OFF the alarm.

2.   Push the Software Key below for the intended operation.

ABLE :   Sends an Acknowledgement "Able comply"
(Able   right away.
Comply)   • The call is saved in the DSC Log.

UNABLE :   Sends an Acknowledgement "Unable Comply."
(Unable   • The call is saved in the DSC Log.
Comply)   • Displays the Acknowledgement information,
                    and then returns to the operating screen by
                    pushing **EXIT** .

ACCEPT :   Accepts the call.
(Accept)   • Displays the received call's information.
                    • The call is saved in the DSC Log.
                    • Push **ACK** , then push **CALL** to send the
                      Position Reply call. (p. 33)

IGNORE :   Ignores the call and returns to the operating
(Ignore)   screen.
                    • The call is saved in the DSC Log.
                    • "✉" blinks continuously until you display the
                      call message.

HOLD :   Puts the received call on hold, and returns to
(Hold)   the operating screen.
                    ⓘ You can check the DSC calls that are on hold
                        in the Unread List. (p. 41)

9

MMSI:123456789
HI   INT
STBY
RCVD POS Request
From: STATION 1
Elapsed: 00:00:08
No Position
No Time
ALARM OFF

MMSI:123456789
HI   INT
STBY
RCVD POS Request
From: STATION 1
Elapsed: 00:00:26
No Position
No Time
ABLE UNABLE ACCEPT▶

Information
Position Call
Received REQ
Elapsed: 00:00:38
From:
STATION 1
Safety
12:37
STBY   ACK

Compose Other
Message Type
             Position Reply
Address
             STATION 1
Comply
             Able Comply ▶
Category
             Safety
EXIT   CALL

9 DSC OPERATION

◇ Receiving a Test call

NOTE: If the Auto ACK function is set to "Auto," the Test Acknowledgement call is automatically sent to the calling station when the call is received. (p. 42)
If the function is set to "Manual," the following screens are displayed.

When a Test call is received:
• An alarm sounds.
• "RCVD Test Call" is displayed.

1. Push **ALARM OFF** to turn OFF the alarm.

2. Push the Software Key below for your next operation.

 IGNORE: Ignores the call and returns to the operating
 (Ignore) screen.
     • The call is saved in the DSC Log.
     • "✉" blinks continuously until you display the
      call message.

 HOLD: Puts the received call on hold, and returns to the
 (Hold) operating screen.
     ⓘ You can check the DSC calls that are on hold in
       the Unread List. (p. 41)

 ABLE: Sends a Test Acknowledgement "Able Comply."
 (Able • The call is saved in the DSC Log.
 Comply)

 ACCEPT: Accepts the call.
 (Accept) • Displays the received call's information.
     • The call is saved in the DSC Log.
     • Push **ACK**, and then push **CALL** to send a
      Test Acknowledgement. (p. 32)
     • Push **RESEND** to resend.
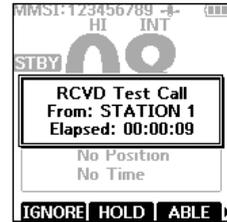
■ DSC Log

◇ Received DSC Log

The transceiver saves up to 50 received Distress call messages and 50 received "Others" call messages in your DSC Log.
On the operating screen, "☑" is displayed when there is an unread call message.
The icon blinks when there is a new received call message.

1. Open the "DSC Log" screen.

    [MENU] > **DSC Log**

2. Select "Received," and then push [ENT].
   • The "Received" screen is displayed.
3. Select "Distress" or "Others," and then push [ENT].
   ⓘ "Distress" displays the received Distress call log, and "Others" displays the received DSC call log.

TIP: You can also display the "Received" screen by pushing LOG on the operating screen.

4. Select a log, and then push [ENT] to display the detailed information.

   DELETE : Deletes the selected call log.
   MMSI : Saves the MMSI as an Individual ID.

◇ Transmitted DSC Log

The transceiver saves up to 50 DSC transmitted calls in your DSC Log.
1. Open the "DSC Log" screen.

    [MENU] > **DSC Log**

2. Select "Transmitted," and then push [ENT].
   • The "Transmitted" screen is displayed.
3. Select a log, and then push [ENT] to display the detailed information.

   DELETE : Deletes the selected call log.
   MMSI : Saves the MMSI as an Individual ID or a Group ID.

9

9 DSC OPERATION

■ **Unread List**

If the transceiver has unread DSC calls, you can check them in the "Unread List" screen.

1. Push UNREAD.
   • The "Unread List" screen is displayed.
2. Select a DSC call.
3. Push the Software Key below for your next operation.

   DELETE: Deletes the selected DSC call.
   (Delete)

   ACTIVE: Displays the received call's information.
   (Active)

   INFO: Displays the details on selected DSC call.
   (Information)

```
┌─────────────────────────┐
│ ☰   Unread List (2)   ☰ │
├─────────────────────────┤
│ Distress                │
│                   00'11 │
│ Individual Call         │
│                   00'51 │
│                         │
│                         │
│                         │
│ DELETE ACTIVE  INFO     │
└─────────────────────────┘
```

TIP: You can also check unread DSC calls by selecting the "Unread List" item on the Menu screen.

   [MENU] > **Unread List**

■ **DSC settings**

On the "DSC" screen, you can make settings of the DSC call related items.

[MENU] > Settings > **DSC**

Position Input

See "Entering the position and time" on page 23 for details.

Individual ID

See "Entering an Individual or Group ID" on page 22 for details.

Group ID

See "Entering an Individual or Group ID" on page 22 for details.

Auto ACK

The Auto ACK function automatically sends an Acknowledgement when an appropriate Request is received.

● **Individual ACK**
Auto (Able): Automatically sends "Able Comply."
Auto (Unable): Automatically sends "Unable Comply."
Manual: Manually sends an Acknowledgement.

● **Position ACK**
Auto (Able): Automatically sends "Able Comply."
Manual: Manually sends an Acknowledgement.

● **Polling ACK**
Auto: Automatically sends an Acknowledgement.
Manual: Manually sends an Acknowledgement.

● **Test ACK**
Auto: Automatically sends an Acknowledgement.
Manual: Manually sends an Acknowledgement.

CH Auto Switch

Select whether or not to automatically switch to channel 16 or the specified channel, or ignore the call.
ⓘ The function is automatically set to "Accept" when the transceiver is turned OFF.
Accept: After receiving a DSC call, the transceiver remains on the operating channel for 10 seconds. After that, the transceiver automatically switches to the channel that is specified on the DSC call.
Ignore (TEMP): After receiving a DSC call, if you do not push **ACCEPT** in 10 seconds, the transceiver ignores the call, and then remains on the current operating channel.
Manual (TEMP): After receiving a DSC call, you can select whether or not to accept the received DSC call.

DSC Switch

Select whether or not to receive and send DSC calls.
ⓘ You can send Distress calls despite of this setting.
ON: Receives and sends DSC calls.
OFF (TEMP): Does not receive or send DSC calls until you turn OFF the transceiver.
OFF: Does not receive or send DSC calls.

9

9   DSC OPERATION

■ DSC settings

MOB Auto Set

● **MOB Key**
For 30 seconds after entering the MOB waypoint, this function automatically sets the Nature of Distress as "Man Overboard."
ON (30 sec): The Nature of Distress is automatically set to "Man Overboard" for 30 seconds after entering the MOB waypoint.
OFF: The function is OFF.

● **Water Detection**
For 30 seconds after the transceiver has detected water, this function automatically sets the Nature of Distress as "Man Overboard."
ON (30 sec): The Nature of Distress is automatically set to "Man Overboard" for 30 seconds after the transceiver has detected water.
OFF: The function is OFF.

Alarm Status

Sets the alarm ON or OFF when receiving each type of DSC call.
● **Safety**
● **Routine**
● **Warning**
Sets the alarm for when:
• No MMSI code is entered.
• The position data has not been received for 2 minutes after turning ON the transceiver.
• The received position data has not been updated for 10 minutes.
• The received position data has not been updated for 4 hours.
• The manually entered position data has not been updated for 4 hours.
● **Self-Terminate**
An alarm sounds when duplicate Distress calls are received.
● **Discrete**
An alarm sounds when a lower priority call is received while receiving a high priority call.

CH 70 SQL Level

Sets the Squelch level for Channel 70 to 1 ~ 10 or Open.

DST at PW OFF

This function enables you to send Distress calls even while the transceiver is OFF.
Valid: You can send Distress calls by holding down [DISTRESS], even while the transceiver is OFF.
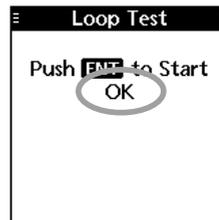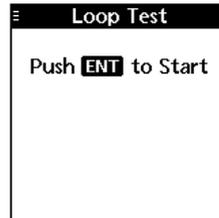Invalid: You cannot send Distress calls while the transceiver is OFF.

Loop Test

The Loop Test sends DSC signals to the receiving AF circuit to compare the sending and receiving signals at the AF level.

Push [ENT] to start the Self-Test.
➀ When the sending and receiving DSC signals match, "OK" is displayed.

NOTE: If "NG" is displayed, either or both the sending and receiving DSC circuits have a problem. In that case, you will have to send the transceiver to your dealer for repair.

■ About AIS

The Automatic Identification System (AIS) is primarily used for collision-risk management and navigation safety. It may automatically transmit and receive vessel information, such as the vessel name, MMSI code, vessel type, position data, speed, course, destination, and more, depending on the class. Information is exchanged among vessels and/or base stations on the VHF maritime mobile band. The information helps to identify other nearby vessels or stations by displaying the received data on a plotter or a radar screen.
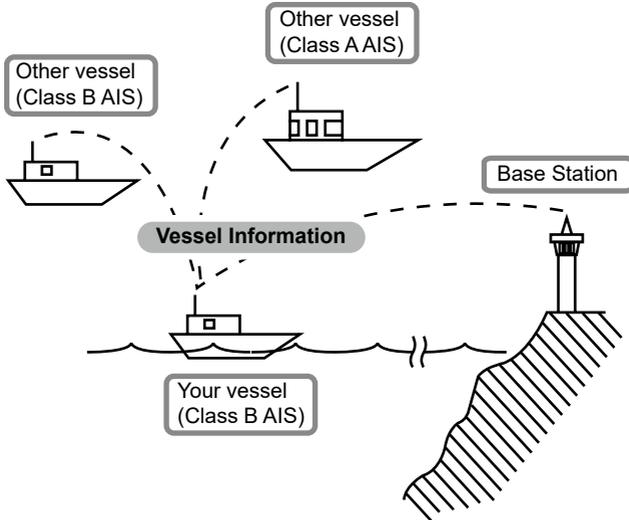
■ AIS classes

There are 7 types of AIS stations, vessels, base stations, Search and Rescue (SAR), Aids to Navigation (AtoN), Search and Rescue Transmitter (AIS-SART), Man OverBoard (MOB), and Emergency Position Indicating Radio Beacon-AIS (EPIRB-AIS).

There are 2 classes of AIS units that are installed on vessels, Class A and Class B.

Under the Safety Of Life At Sea (SOLAS) convention, all SOLAS vessels are required to install a Class A AIS transponder:

A Class B AIS transponder is designed to be interoperability with Class A units, but not to impact the Class A network.
Many commercial vessels, and some leisure craft, not classified as requiring a Class A unit, choose to install a Class B unit to avoid accidents at sea.
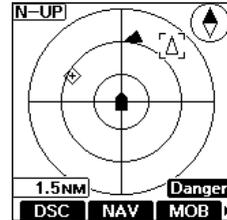
10 AIS RECEIVER

NOTE: For the AIS receiver operation, the transceiver must be receiving valid GPS signals, or your position must be entered. (p. 23)

■ Using the plotter screen

In the plotter screen, the display range and the icons of the AIS target, waypoint for navigation and MOB are displayed. You can change the display range and type, depending on your operating style.

1. Push **AIS** .
   • The plotter screen is displayed.
2. Push the Software Key below for your next operation.

DSC :
(DSC)
Displays the "Compose Other" screen to send an Individual call. (p. 28)
① Displayed only when a target is selected.
① May not be displayed, depending on the selected target.

NAV :
(Navigation)
Starts navigation to the selected target. (p. 59)

MOB :
(MOB)
Starts the MOB mode. (p. 58)

RNG :
(Range)
Selects the display range. (p. 46)

TGT▲ :
(Target ▲)
Selects the farthest target from your vessel.

TGT▼ :
(Target ▼)
Selects the closest target to your vessel.

DETAIL :
(Detail)
Displays the details on the selected target. (p. 50)
① Displayed only when the target is selected.

LIST :
(List)
Selects the list screen that you want to display. (p. 47)

**NOTE:** An alarm sounds when an AIS target is closer than the CPA (Closest Point of Approach) and TCPA (Time to CPA) settings, and so on, depending on the presetting. To stop the alarm buzzer, push any key.
① If the popup screen is displayed, push any key again to turn it OFF.

TIP: You can display the plotter screen by selecting the "Plotter" item on the Menu screen.

[MENU] > AIS > **Plotter**

◇ Plotter screen
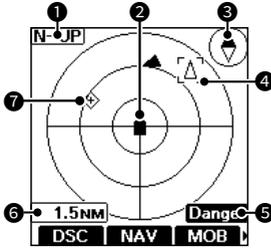
❶ DISPLAY TYPE
Displays the selected display type. You can select the display type in "North/Course Up" on the Menu screen. (p. 52)

[MENU] > Settings > AIS > **North/Course Up**

ⓘ When "N-UP" is displayed, the top of the plotter screen represents North.
ⓘ When "C-UP" is displayed, the top of the plotter screen represents the direction your vessel is heading.

❷ YOUR VESSEL ICON
Displayed in the center of the screen.
ⓘ When "N-UP" is displayed, the vessel icon automatically points in the direction your vessel is heading, in 22.5 degree steps.
ⓘ When "C-UP" is displayed, the vessel icon constantly points to the top of the plotter screen.
ⓘ When your vessel moves less than 2 knots, ● is displayed.

❸ COMPASS
Displays the bearing information.

❹ TARGET BOX
Displays the selected AIS target.
ⓘ When a target box is displayed, push [ENT] to display the details on of the selected AIS target.

❺ DISPLAY FILTER INDICATOR
Displayed when the type of AIS targets on the plotter screen are filtered. (p. 52)

[MENU] > Settings > AIS > **Target Display**

Indicator	Description
Danger	Only Danger targets are displayed. (p. 48)
Friends	Only Friend targets are displayed. (p. 48)
No indicator	All targets are displayed.

❻ DISPLAY RANGE
• Displays the selected display range.
• Push **RNG** to select a display range (0.125, 0.25, 0.5, 0.75, 1.5, 3, 6, 12 NM (nautical miles)).

❼ TARGET ICON
Targets whose AIS signal are received are displayed with icons. The icon may differ, depending on the target type or its status.

| Icon	Description
△	AIS target: Vessel, Search and Rescue (SAR) vessel ⓘ The tip of the target triangle automatically points in the direction it's heading.
▲	AIS target: Vessel (Friend)
⊗	AIS target: AIS-SART, AIS-MOB, EPIRB-AIS
◄	AIS target: Search and Rescue (SAR) aircraft
◈	AIS target: Aids to Navigation (AtoN), Aids to Navigation (AtoN) virtual
⌂	AIS target: Base station
▮	Waypoint ⓘ Displayed only during navigation.
✖	MOB

ⓘ A vessel is regarded as a "Lost target," and a black line displays on the target icon after a specified period of time has passed since the vessel last transmitted data (p. 61). The Lost target icon disappears from the plotter screen when the preset period of time has passed after the vessel was regarded as a "Lost target." Ask your dealer for details.

10 AIS RECEIVER

■ **Using the AIS list screen**

There are 3 types of AIS lists, Target, Danger, and Friends.

1. Push [MENU].
   • The Menu screen is displayed.
2. Push [▲] or [▼] to select "AIS," and then push [ENT].
   • The "AIS" screen is displayed.
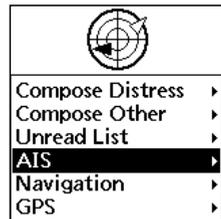
3. Push [▲] or [▼] to select a list, and then push [ENT].
   • The list screen is displayed.

4. Push [▲] or [▼] to select an AIS target.
5. Push the Software Key below for your next operation.

DSC: (DSC)	Displays the "Compose Other" screen to send an Individual call. (p. 28)	
	ⓘ Displayed only when a target is selected.	
	ⓘ May not be displayed, depending on the selected target.	
NAV: (Navigation)	Starts navigation to the selected target. (p. 59)	
★: (Friend)	Sets the selected target as a Friend. (p. 49)	
	ⓘ Displayed only in the Target List or Danger List.	
DETAIL: (Detail)	Displays the details on the selected target. (p. 50)	
	ⓘ Displayed only when the target is selected.	
PLOT: (Plotter)	Displays the selected target on the plotter screen. (p. 45)	
SORT: (Sort)	Sorts the Danger target data by CPA or TCPA.	
	ⓘ Displayed only in the Danger List.	

NOTE: An alarm sounds when an AIS target is closer than the CPA and TCPA settings, and so on, depending on the presetting. To stop the alarm buzzer, push any key.
ⓘ If the popup screen is displayed, push any key again to turn it OFF.

◇ Target/Friends List screen

The Target List screen displays the AIS targets of up to 200 targets that the transceiver detects.

The Friends List screen displays the AIS targets of up to 100 targets that you set as a Friend, and that the transceiver detects. (p. 49)

The AIS target data is sorted by the distance from your vessel, and the closest target is located at the top of the list.

❶ **THE NUMBER OF TARGETS**
Displays the number of AIS targets that the transceiver detects.

❷ **TARGET INFORMATION**
Displays the following AIS target information.
- MMSI code or name
- Range (RNG) from your vessel to the target (unit: NM)
- Bearing (BRG) from your vessel to the target (unit: degree)

◇ Danger List screen

The Danger List screen displays any Danger target whose CPA (Closest Point of Approach) distance and TCPA (Time to CPA) time are less than the set values. You can set the values in "CPA" and "TCPA" on the Menu screen. (p. 53)

[MENU] > Settings > AIS > CPA/TCPA > **CPA or TCPA**

ⓘ The transceiver can display up to 200 targets.

❶ **THE NUMBER OF TARGETS**
Displays the number of AIS targets that the transceiver detects.

❷ **DANGER TARGET INFORMATION**
Displays the following AIS target information.
- MMSI code or name
- CPA: Closest Point of Approach (unit: NM)
- TCPA: Time to CPA (unit: minute)

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10 AIS RECEIVER

■ **Setting a Friend**

You can set up to 100 AIS targets as a Friend in the Friends List.
An alarm sounds when a Friend is detected, depending on the setting. (p. 54)

◇ **Entering an ID**

There are 3 ways of setting a Friend, using the Friends List, selecting in the AIS list, or selecting on the plotter screen.

Using the Friends List:
1. Open the "Friends List" screen.

    [MENU] > Settings > AIS > Friends >
    Friends List

    • "No ID" is displayed when there is no Friend.
2. Push **ADD** to start the ID entry.
3. Enter an ID.

    > **TIP:**
    > • Select a number using [◄] and [►].
    > • Push [ENT] to enter the selected number.
    > • Select "←" or "→," to move the cursor.

4. Select "Finish," and then push [ENT] to enter the ID.

Selecting in the AIS list:
1. Open an AIS list screen.

    [MENU] > AIS >
    Target List or Danger List

2. Push [▲] or [▼] to select an AIS target.
3. Push **★**.
    • ★ is displayed on the details screen.
    ⓛ A beep sounds and a popup screen is displayed when the memory is full.

Selecting on the plotter screen:
1. Push **AIS**.
    • The plotter screen is displayed.
2. Push **TGT▲** or **TGT▼** to select an AIS target.
    • A target box is displayed around the selected target. (p. 46)
3. Push **DETAIL** to display the details screen.
    • The "Details" screen is displayed.
4. Push **★**.
    • "Register as a friend" is displayed.
    • 🛆 is displayed on the plotter screen.
    • ★ is displayed on the details screen.

◇ **Editing an ID**

1. Open the "Friends List" screen.

    [MENU] > Settings > AIS > Friends >
    Friends List

2. Push [▲] or [▼] to select an ID.
3. Push **EDIT**.
    ⓛ See step 3 in "Using the Friends List," as described to the left.

◇ **Deleting an ID**

1. Open the "Friends List" screen.

    [MENU] > Settings > AIS > Friends >
    Friends List

2. Push [▲] or [▼] to select an ID.
3. Push **DELETE**.
    • "Delete the ID. Are you sure?" is displayed.
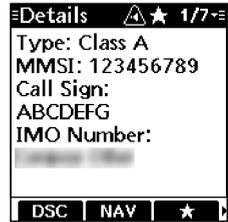4. Push **OK**.

■ About the details screen

The details screen displays the information about the selected AIS target. The contents may differ, depending on the selected target.

ⓘ When a Danger target is selected, ⚠ is displayed. (p. 48)

ⓘ When a Friend target is selected, ★ is displayed. (p. 48)

● Push the Software Key below for your next operation.

DSC : Displays the "Compose Other" screen to send an
(DSC)   Individual call. (p. 28)
    ⓘ May not be displayed, depending on the selected target.

NAV : Starts navigation to the selected target. (p. 59)
(NAV)

★ : Sets the selected target as a Friend. (p. 49)
(Friend) ⓘ A beep sounds and a popup screen is displayed
    when the memory is full.

MMSI : Displays the Individual ID entry screen. (p. 11)
(MMSI)   ⓘ A beep sounds and a popup screen is displayed when
    the memory is full, or the ID has been already added.

PLOT : Displays the selected target on the plotter screen.
(Plotter) (p. 45)

```
≡Details    ⚠★ 1/7≡
Type: Class A
MMSI: 123456789
Call Sign:
ABCDEFG
IMO Number:
▮▮▮▮▮ ▮▮▮

  DSC │ NAV │  ★   ▶
```

◇ Contents list

NOTE: The contents may differ, depending on the received data.

Class A and SAR vessel
AIS class
MMSI code
Name
Country name
Call Sign
IMO Number
Vendor ID
CPA (Closest Point of Approach)
TCPA (Time to CPA)
LAT (Latitude)
LON (Longitude)
SOG (Speed Over Ground)
COG (Course Over Ground)
HDG (Heading)
PA (Position Accuracy (H: High, L: Low))
Range
Bearing
ROT (Rate Of Turn)
Bow to antenna length
Stern to antenna length
Port side to antenna length

Starboard side to antenna length
Length
Beam
Draught
Type of ship
Navigation Status
Destination
ETA (Estimated time of arrival)
Elapsed time

Class B
AIS class
MMSI code
Name
Country name
Call Sign
Vendor ID
CPA (Closest Point of Approach)
TCPA (Time to CPA)
LAT (Latitude)
LON (Longitude)
SOG (Speed Over Ground)

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◇ Contents list

Class B
COG (Course Over Ground)
HDG (Heading)
PA (Position Accuracy (H: High, L: Low))
Range
Bearing
Bow to antenna length
Stern to antenna length
Port side to antenna length
Starboard side to antenna length
Length
Beam
Type of ship
Elapsed time

AIS-SART, AIS-MOB, and EPIRB-AIS
AIS class
MMSI code
CPA (Closest Point of Approach)
TCPA (Time to CPA)
LAT (Latitude)
LON (Longitude)
SOG (Speed Over Ground)
COG (Course Over Ground)
HDG (Heading)
PA (Position Accuracy (H: High, L: Low))
Range
Bearing
ROT (Rate Of Turn)
Elapsed time

Base station
AIS class
MMSI code
Vendor ID
LAT (Latitude)
LON (Longitude)
PA (Position Accuracy (H: High, L: Low))
Range
Bearing
Elapsed time

SAR aircraft
AIS class
MMSI code
Name
Country name
Call Sign
Vendor ID
LAT (Latitude)
LON (Longitude)
SOG (Speed Over Ground)
COG (Course Over Ground)
ALT (Altitude)
PA (Position Accuracy (H: High, L: Low))
Range
Bearing
Length
Width
Elapsed time

AtoN and AtoN virtual
AIS class
MMSI code
Name
CPA (Closest Point of Approach)
TCPA (Time to CPA)
LAT (Latitude)
LON (Longitude)
PA (Position Accuracy (H: High, L: Low))
Position indicator (ON POSN: ON Position, OFF POSN: OFF Position)
Range
Bearing
Bow to antenna length
Stern to antenna length
Port side to antenna length
Starboard side to antenna length
Length
Beam
Type of AtoN
Elapsed time

■ **AIS settings**

AIS settings can be customized in "AIS" on the Menu screen.

[MENU] > Settings > **AIS**

North/Course up

You can select the display type for the AIS plotter screen.

North Up: The top of the plotter screen represents North.

Course Up: The top of the plotter screen represents the direction of your vessel's course over ground.

Target Display

You can select whether or not to limit the AIS targets that are displayed on the plotter screen. You can easily see the plotter screen.

ⓘ The indicator is displayed on the plotter screen. (p. 46)

All Targets: All targets are displayed.

Danger Only: Only Danger targets are displayed.

Friends Only: Only Friend targets are displayed.

CPA/TCPA

● **Indicator**
You can select whether or not to display the CPA/TCPA icon on the operating screen when there is an AIS target in the CPA/TCPA alarm area.

ON: The icon is displayed when there is an AIS target in the CPA/TCPA alarm area.

OFF: The icon is not displayed.

● **Alarm**
You can select whether or not to turn the following alarm functions ON or OFF.

ON: The alarm function is ON. An alarm sounds, and a popup screen is displayed.
   ⓘ The alarm may not sound, depending on the "Audible Alarm" setting.

OFF: The alarm function is OFF.

• **Approach**
The alarm function for when a vessel's CPA is closer, and TCPA is less than the set value.

• **Lost**
The alarm function for when a danger target is regarded as a "Lost target." (p. 61)

● **Audible Alarm**
You can select whether or not to sound the following alarms.

ON: The alarm sounds.

OFF: The alarm does not sound.

• **Approach**
The alarm function for when a vessel's CPA is closer, and TCPA is less than the set value.

• **Lost**
The alarm function for when a danger target is regarded as a "Lost target." (p. 61)

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10 AIS RECEIVER

■ AIS settings

CPA/TCPA

● **CPA**
Set a CPA (Closest Point of Approach) value to between 0.1 and 6.0 NM (in 0.1 NM steps) for the alarm function.

● **TCPA**
Set a TCPA (Time to CPA) value to between 1 and 60 minutes (in 1 minute steps) for the alarm function.

● **Slow Warn**
The GPS receiver calculated COG data of a vessel that is at anchor or drifting is unreliable, and therefore the CPA and TCPA data may not be calculated correctly. If a vessel is anchored in your alarm zone, the unreliable data can cause the collision alarm to sound many times, even if there is no real danger. To prevent this, when the anchored vessel's SOG is less than this set value, the Slow Warn function assumes that vessel's COG is fixed towards your vessel and an alarm will sound.

• **Function**
Turn the Slow Warn function ON or OFF.
ON: The Slow Warn function is turned ON.
OFF: The Slow Warn function is turned OFF.

• **Speed**
Set a speed for the Slow Warn function to between 0.1 and 4.9 kn (in 0.1 kn steps).

> **NOTE:** If other vessels at anchor or drifting come into your alarm zone, the Slow Warn alarm will sound again. Only if the previous vessel disappears from the Danger List (p. 48), and then re-enters the list, can a new Slow warn or regular alarm sound, depending on the vessel's SOG, or CPA and TCPA. The Slow Warn function operates in the same way if your vessel is at anchor and other vessels enter your alarm zone.

● **ID Blocking**
The transceiver blocks AIS transponders that are entered into the ID Blocking list. Enter your vessel's transponder ID or other vessel's transponder IDs if necessary to prevent the transceiver from detecting them as dangerous targets.
ⓘ You can enter up to 10 MMSI codes.

• **Entering an ID**
1. Open the "ID Blocking" screen.
   [MENU] > Settings > AIS > CPA/TCPA > **ID Blocking**
   • The blocked AIS transponder's ID is displayed.
   • "No ID" is displayed if there is no blocked AIS transponder.
2. Push **ADD** to start the ID entry.
3. Enter an ID.
   > **TIP:**
   > • Select a number using [◄] and [►].
   > • Push [ENT] to enter the selected number.
   > • Select "←" or "→," to move the cursor.
4. Select "Finish," and then push [ENT] to enter the ID.

• **Editing an ID**
1. Open the "ID Blocking" screen.
   [MENU] > Settings > AIS > CPA/TCPA > **ID Blocking**
2. Push [▲] or [▼] to select an ID.
3. Push **EDIT**.
   • See step 3 in "Entering an ID," as described above.
4. Push **OK**.

• **Deleting an ID**
1. Open the "ID Blocking" screen.
   [MENU] > Settings > AIS > CPA/TCPA > **ID Blocking**
2. Push [▲] or [▼] to select an ID.
3. Push **DELETE**.
   • "Delete the ID. Are you sure?" is displayed.
4. Push **OK**.

Friends

● **Friends List**
Displays all Friend targets that you have entered.
ⓘ "No ID" is displayed when there is no Friend target.
ⓘ See page 49 for setting a Friend.

● **Friends Alarm**
• **Function**
You can select whether or not to turn the following alarm function ON or OFF when a vessel that is entered into the Friends List is detected.
ON: The alarm function is ON. An alarm sounds, and a popup screen is displayed when a vessel that is entered into the Friends list is detected, regardless of the set range.
ON (in range): The alarm function is ON when a vessel that is entered into the Friends list is detected in the set range.
OFF: The alarm function is OFF.

• **Audible Alarm**
You can select whether or not to sound the Friends alarm.

ON: The alarm sounds.
OFF: The alarm does not sound.

• **Range**
Set the range to between 0.1 and 6.0 NM (in 0.1 NM steps) for the alarm function.

AIS Power Save

You can select whether or not to turn the AIS Power Save function ON or OFF.
ON: The transceiver receives only AIS information and DSC calls while in the plotter screen, the AIS List screen, or the details screen.
OFF: Turns OFF the function.

MOB Support

● **Function**
You can select whether or not to turn the MOB Support function ON or OFF.
ⓘ This function is activated only when:
• Your current position data is valid.
• The AIS target is within the set range.
ON: When water is detected, the closest AIS target is automatically selected on the Target list screen to immediately transmit an Individual DSC call.
OFF: Turns OFF the function.

● **Range**
Set the area range to between 0.1 and 6.0 NM (in 0.1 NM steps) for the function.

Power Support

● **Function**
You can select whether or not to turn the Power Support function ON or OFF.
ⓘ The output power level may be set to only low power, depending on the channel or setting.
ON: When an Individual DSC call is transmitted to the selected AIS target, the output power level may automatically change during transmission, depending on the distance between the target and your position. Low power is set while the target is in the set range, and high power is set when the target is out of the set range.
ⓘ You can also change the output power level by pushing **HI/LO**.
OFF: Turns OFF the function.

● **Range**
Set the area range to between 0.1 and 6.0 NM (in 0.1 NM steps) for the function.

11 OTHER FUNCTIONS

NOTE: For the other functions operation, the transceiver must be receiving valid GPS signals, or your position must be entered. (p. 23)

■ Waypoint

Waypoints are GPS position data points of places you want to go to, the position of your own vessel, or of a vessel you received a DSC call from. You can enter up to 50 Waypoints with names of up to 15 characters. You can enter your current position information, or add one as a destination or landmarks you often go to, as information for easy access.

◇ Using the Waypoint list screen

The transceiver saves up to 50 waypoints in the Waypoint list.

1. Open the "Waypoint" screen.

    [MENU] > Navigation > **Waypoint**

2. Push [▲] or [▼] to select a waypoint.

Waypoint (3)		
Name	RNG	BRG
WPT01	1.3	320
WPT02	1.3	040
WPT03	2.1	022
ADD	EDIT	DELETE ▶

3. Push the Software Key below for your next operation.

    ADD: Enters a waypoint. (p. 56)
    (Add)

    EDIT: Edits the selected waypoint. (p. 57)
    (Edit)

    DELETE: Deletes the selected waypoint. (p. 57)
    (Delete)

    DETAIL: Displays the details on the selected waypoint.
    (Detail)   ① You can also edit or delete the waypoint, or start navigation to the waypoint on the details screen.

    NAV: Starts navigation to the selected waypoint.
    (Navigation) (p. 57)

    SORT: Sorts the waypoints by Name or Range.
    (Sort)

Details
Name:
WPT01
LAT: 34°37.3878N
LON: 135°34.2921E
Range: 0.2 NM
Bearing: 000.0°
EDIT DELETE NAV

The details screen

◇ Entering a waypoint

Position information that you want to memorize can be added as a waypoint.

TIP: You can also add your current position as a waypoint by pushing **WPT** .

1. Open the "Waypoint" screen.

   [MENU] > Navigation > **Waypoint**

2. Push **ADD** to add a waypoint.
   • The "Waypoint" screen is displayed.
   ⓘ If the waypoint memory is full, a popup screen is displayed.
3. Enter a name.
   ⓘ The "WPTXX" is entered as default. The 2 digits number is
     entered instead of "XX."

   TIP:
   • Select [? $!] to enter symbols, and select [A1] to enter
     numbers and letters.
   • Select characters or space using [▲]/[▼]/[◄]/[►].
   • Push [ENT] to enter the selected character.
   • Select "←" or "→" on the screen to move the cursor.

4. Repeat step 3 to enter the name of up to 15 characters.
5. Select "Next," and then push [ENT] to enter the latitude.
6. Enter the latitude.
   ⓘ When GPS data is received or your position is entered, your
     current position information is automatically displayed.

   TIP:
   • Select a number using [◄]/[►].
   • Push [ENT] to set the selected number.
   • Select "←" or "→" on the screen to move the cursor.

7. Select "Next," and then push [ENT] to enter the longitude.
8. Enter a longitude.
   ⓘ See the TIP in step 6 to enter.
   ⓘ When GPS data is received or your position is entered, your
     current position information is automatically displayed.
     (p. 23)

9. Select "Finish," and then push [ENT] to save the name,
   latitude, and longitude.
   • The waypoint is saved, and the transceiver returns to the
     previous screen.
   ⓘ You can set the waypoint when all items are correctly
     entered.
   ⓘ If you enter no name, or latitude or longitude that is out of
     range, a beep sounds and a popup screen is displayed.
     Push any key to return the previous screen.

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11 OTHER FUNCTIONS

◇ Editing a waypoint

A waypoint's name, latitude, longitude data can be edited.
ⓘ You cannot edit the waypoint that is being used for navigation.

1. Open the "Waypoint" screen.

    [MENU] > Navigation > **Waypoint**

2. Push [▲] or [▼] to select a waypoint.
    ⓘ Push SORT to sort the waypoints by Name or Range.
3. Push EDIT.
    ⓘ See steps 3 ~ 9 in "Entering a waypoint" on page 56.

◇ Deleting a waypoint

A waypoint can be deleted from the Waypoint list.
ⓘ You cannot delete the waypoint that is being used for navigation.

1. Open the "Waypoint" screen.

    [MENU] > Navigation > **Waypoint**

2. Push [▲] or [▼] to select a waypoint.
    ⓘ Push SORT to sort the waypoints by Name or Range.
3. Push DELETE.
    • "Are you sure?" is displayed.
4. Push OK.
    • The selected waypoint is deleted, and the transceiver returns to the previous screen.

◇ Navigating to a waypoint

The transceiver assists you to navigate to a selected waypoint in the Waypoint list.
ⓘ See "Navigation" on page 59 for details.

1. Open the "Waypoint" screen.

    [MENU] > Navigation > **Waypoint**

2. Push [▲] or [▼] to select a waypoint.
    ⓘ Push SORT to sort the waypoints by Name or Range.
3. Push NAV.
    • "Start navigation. Are you sure?" is displayed.
4. Push OK.
    • The plotter screen is displayed, and the transceiver starts to navigate.

    • ▣ is displayed on the plotter screen.

    ⓘ See step 4 in "Using NAV" on page 59.

TIP: You can also start navigation in the details on the waypoint.
1. Repeat steps 1 ~ 2.
2. Push DETAIL, [ENT], or [▶].
    • The "Details" screen is displayed.
3. Repeat steps 3 ~4.

■ MOB (Man Overboard)

You can enter a Man OverBoard (MOB) waypoint into the transceiver with its GPS position data, as soon as a person has fallen into the water and needs to be rescued. This enables you to reach the MOB position even in the dark, or when you have lost visual contact.
You can select a AIS target during the MOB mode.

NOTE: If the transceiver is turned OFF during the MOB mode, the transceiver continues the MOB mode.

◇ Starting MOB

1. Push **MOB** to start the MOB mode.
   • Three beeps sound.
   • The plotter screen is displayed, and 🆖 is displayed in your current position on the plotter screen.
   ① The "MOB Auto Set" is "ON (30 sec)," the nature of Distress is set to "Man Overboard." (p. 25)
2. Push the Software Key below for your next operation.

   DSC : Displays the "Compose Other" screen to send
   (DSC)   an Individual call. (p. 28)
              ① Displayed only when a target is selected.

   STOP : Stops the MOB mode.
   (Stop)

   RNG : Selects the display range. (p. 46)
   (Range)

   TGT▲ : Selects the farthest target from your vessel.
   (Target ▲)

   TGT▼ : Selects the closest target to your vessel.
   (Target ▼)

   DETAIL : Displays the details on the selected target. (p. 50)
   (Detail)   ① Displayed only when the target is selected.
                  ① Push **PLOT** to the return the plotter screen.

   LIST : Selects the list screen that you want to display. (p. 47)
   (List)

TIP: You can also start the MOB mode when:
   • Push **MOB** during navigation. (p. 59)
   • Select the "Start MOB" item on the Menu screen.
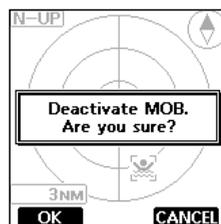   [MENU] > Navigation > **Start MOB**

◇ Stopping MOB

1. Push **STOP/MOB** or **STOP** to stop the MOB mode, depending on the screen.
   • "Deactivate MOB. Are you sure?" is displayed.
2. Push [OK].
   • 🆖 disappears, and the transceiver returns to the previous screen.

TIP: You can also stop the MOB mode by selecting the "Stop MOB" item on the Menu screen.
   [MENU] > Navigation > **Stop MOB**

■ Navigation

The transceiver assists you to navigate to a selected destination from your current position.
You can select a AIS target during navigation.
ⓘ The function cannot work while in the MOB mode.

NOTE: IC-M94D's Navigation function is a supplemental aid to navigation only, and is not intended to be a substitute for primary Navigation equipment.

◇ Starting navigation

There are 3 ways of setting a destination, using **NAV**, selecting in the AIS list, and selecting in the Waypoint list.

NOTE:
• A popup screen is displayed when the vessel arrives at or near the destination. To stop the function, push any key.
  ⓘ When the Audible Alarm function is set to "ON," an alarm also sounds. (p. 60)
• If the transceiver is turned OFF during navigation, the transceiver continues navigation.

Using NAV :

1. Push **NAV** .
   • The "Waypoint" screen is displayed.
2. Push [▲] or [▼] to select a waypoint.
   ⓘ Push **SORT** to sort the waypoints by Name or Range.
3. Push **START** or [ENT] to start navigation.
   • The plotter screen is displayed, and the transceiver starts to navigate.
   • ▐ is displayed on the plotter screen.
4. Push the Software Key below for your next operation.

DSC : (DSC)	Displays the "Compose Other" screen to send an Individual call. (p. 28) ⓘ Displayed only when a target is selected.
STOP : (Stop)	Stops navigation. (p. 60)
MOB : (MOB)	Starts the MOB mode. (p. 58) ⓘ The transceiver automatically exits the Navigation mode.
RNG : (Range)	Selects the display range. (p. 46)
TGT▲ : (Target ▲)	Selects the farthest target from your vessel.
TGT▼ : (Target ▼)	Selects the closest target to your vessel.
DETAIL : (Detail)	Displays the details on the selected target. (p. 50) ⓘ Displayed only when the target is selected. ⓘ Push **PLOT** to the return the plotter screen.
LIST : (List)	Selects the list screen that you want to display. (p. 47)

Selecting in the AIS list:

1. Open the list screen.

   [MENU] > AIS > **Target/Danger/Friend list**

2. Push [▲] or [▼] to select an AIS target.
3. Push **NAV**.
   • "Start navigation. Are you sure?" is displayed.
4. Push **OK** to start navigation.
   • The plotter screen is displayed, and the transceiver starts to navigate.
   • 🏴 is displayed on the plotter screen.
5. Push the Software Key for your next operation.

   ⓘ See step 4 in "Using **NAV**" on page 59.

TIP: You can also start navigation in the details on the AIS target.
1. Repeat steps 1 ~ 2.
2. Push **DETAIL**, [ENT], or [▶].
   • The "Details" screen is displayed.
3. Repeat steps 3 ~4.

Selecting in the Waypoint list:
See "Navigating to a waypoint" on page 57 for details.

◇ Stopping navigation

1. Push the Software Key below to stop navigation, depending on the screen.

   STOP NAV: On the operating screen.

   STOP: On the plotter screen. (p. 45)

   NAV: On the Target/Danger/Friends/Waypoint list or details screen. (pp. 47, 55)

   • "Stop navigation. Are you sure?" is displayed.
2. Push **OK**.
   • The transceiver stops to navigate, and then returns to the previous screen.

◇ Navigation settings

Navigation settings can be customized in "Navigation" on the Menu screen.

   [MENU] > Settings > **Navigation**

Arrival Alarm

● **Audible Alarm**
You can select whether or not to sound an Arrival alarm when the vessel arrives at or near the destination.
ON: The alarm sounds.
OFF: The alarm does not sound.

● **Range**
Set the range to between 0.1 and 6.0 NM (in 0.1 NM steps) for the alarm function.

11 OTHER FUNCTIONS

■ **Lost target**

A vessel is regarded as a "Lost target" after a specified period of time has passed since the vessel last transmitted data, as described below.
The "Lost target" icon disappears from the plotter screen when the preset period of time has passed after the vessel was regarded as a "Lost target." Ask your dealer for details.

The criteria to become a Lost target
• **Class A/B**

	Vessel type	Lost target maximum interval Class A	Lost target maximum interval Class B *1	
			CS *2	SO*3
1	Class A: Vessel is at anchor, moored and not moving faster than 3 knots Class B: Vessel is not moving faster than 2 knots	1080 seconds	1080 seconds	
2	Vessel is at anchor, moored and moving faster than 3 knots	60 seconds	N/A	
3	Class A: Vessel is moving between 0 and 14 knots Class B: Vessel is moving between 2 and 14 knots	60 seconds	N/A	180 seconds
4	Class A: Vessel is moving between 0 and 14 knots while changing course Class B: Vessel is moving between 2 and 14 knots while changing course	60 seconds	N/A	
5	Vessel is moving between 14 and 23 knots	36 seconds	N/A	90 seconds
6	Vessel is moving between 14 and 23 knots while changing course	36 seconds	N/A	
7	Vessel is moving faster than 23 knots	30 seconds	N/A	30 seconds
8	Vessel is moving faster than 23 knots while changing course	30 seconds	N/A	
9	Vessel is moving faster than 2 knots	N/A	180 seconds	N/A

*1 AIS Class B does not provide information about the navigational status, anchored or moored.
*2 CS: Carrier-sense, *3 SO: Self organized

• **Others**

Category	Lost target maximum interval
SAR aircraft, SAR vessel	60 seconds
AtoN, AtoN virtual, AIS-SART, AIS-MOB, EPIRB-AIS	1080 seconds
Base station	60 seconds

■ GPS

TIP: Use the transceiver outdoors so the receiver has a clear view to receive GPS signals from the satellites.

◇ Status screen

The GPS "Status" screen displays the quantity, signal power, and position of the GPS satellites in the sky view. The screen also displays the direction, elevation angle, satellite numbers, and their received signal strength.
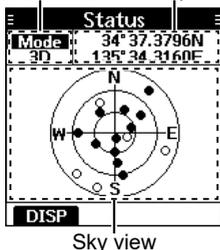
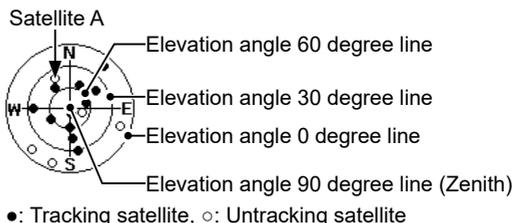1. Open the "Status" screen.

    [MENU] > GPS > **Status**

2. Push **DISP** to display the GPS status in the sky view or on the satellite signal strength status screen.

Sky view description:

GPS mode*   Your position

Sky view

* "2D" is displayed while tracking 3 or less satellites. "3D" is displayed while tracking more than 4 or more satellites.

Satellite A

Elevation angle 60 degree line

Elevation angle 30 degree line

Elevation angle 0 degree line

Elevation angle 90 degree line (Zenith)

●: Tracking satellite, ○: Untracking satellite

Satellite signal strength status description:

ⓘ Push [▲] or [▼] to scroll through all the satellite numbers.
ⓘ A blank bar is displayed for the untracking satellite.

Satellite signal strength level

Satellite number

◇ Information screen

The "Information" screen displays your position, date, time, Speed Over Ground (SOG), and Course Over Ground (COG).

● Open the "Information" screen.

    [MENU] > GPS > **Information**

12 MENU SCREEN

■ Using the Menu screen

The Menu screen is used to set items, select options, and so on for the transceiver's functions.

◊ Menu screen operation

Example: Setting the channel group to "INT."

1. Push [MENU].
   • The Menu screen is displayed.
2. Push [▲] or [▼] to select "Settings," and then push [ENT].
   • The "Settings" screen is displayed.
   ⓘ Holding down [▲] or [▼] sequentially scrolls up or down through the Menu screen.

3. Push [▲] or [▼] to select "Radio," and then push [ENT].
   • The "Radio" screen is displayed.

4. Push [▲] or [▼] to select "Channel Group," and then push [ENT].
   • The "Channel Group" screen is displayed.

5. Push [▲] or [▼] to select "INT," and then push [ENT].
   • "INT" is set and the transceiver returns to the previous screen.
   ⓘ To exit the Menu screen, push [MENU].
   ⓘ To return to the previous screen, push [CLR].
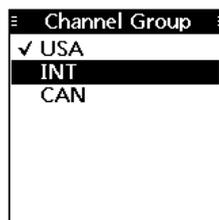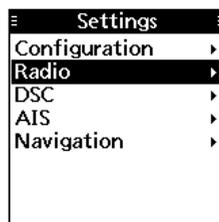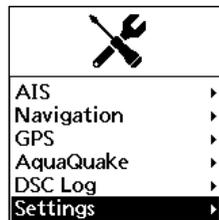
■ **Menu screen items**

The Menu screen is constructed in a tree structure.
See the referred pages for each item.
The displayed menu items may differ, depending on the presetting.

Menu	Item	Reference
Compose Distress	Nature	p. 24
	Latitude	p. 23
	Longitude	
	UTC	
Compose Other	Message Type	p. 28
	Address	
	Category	
	Mode	
	Latitude*	p. 34
	Longitude*	
	UTC*	
	Channel	p. 28
Unread List	–	p. 41
AIS	Plotter	p. 45
	Target List	p. 47
	Danger List	
	Friends List	
Navigation	Waypoint	p. 55
	Stop Navigation	p. 60
	Start MOB/Stop MOB	p. 58
GPS	Status	p. 62
	Information	
AquaQuake	–	p. 18
DSC Log	Received	p. 40
	Transmitted	
Settings	Configuration	p. 65
	Radio	p. 66
	DSC	p. 42
	AIS	p. 52
	Navigation	p. 60
Radio Info	–	p. 67

*Displayed only when a Position Request call is received.

12 MENU SCREEN

■ Menu items description

◇ Configuration

Backlight

Customize the display backlight settings.
● **Level**
Set the backlight brightness level to between 1 and 7, or OFF.
● **Continue Type**
Set the backlight darkness level for when the Auto Backlight is working.
OFF: The Backlight is OFF even if the Auto Backlight is working.
Dim: The backlight dims when the Auto Backlight is working.

Display Contrast

You can adjust the display contrast level between 1 (lowest) and 8 (highest).

Key Beep

You can select whether or not to sound a beep when a key is pushed.
ON: Sounds a beep when a key is pushed.
OFF: No beep sounds, for silent operation.

Key Assignment

● **Softkey 1~18**
You can change which Software Key functions to display, and their order. You can assign up to 18 Software Keys at a time.
ⓘ You cannot change "DTRS," "OTHER DSC," and "UNREAD" Software Keys to other Software Key functions.
ⓘ The usable Software Key functions and their order may differ, depending on the transceiver version or presetting.
ⓘ Some Software Keys may not be usable, depending on other item settings. ("X" is displayed at the right of the unusable key name.)
● **Set Default**
Sets the Software Key function order as default.
ⓘ The default setting may differ, depending on the transceiver version or presetting.

UTC Offset

Set the offset time between Universal Time Coordinated (UTC) and your local time to between –14:00 and +14:00 (in 1 minute steps).

Inactivity Timer

The transceiver automatically returns to the operation screen if you push no key for the set period of time for each mode.

● **Not DSC Related**
Setting for when a screen that is not related to DSC is displayed.
● **DSC Related**
Setting for when a screen that is related to DSC is displayed.
● **Distress Related**
Setting for when a screen that is related to a Distress call is displayed.
● **RT Related**
Setting for when the transceiver is in the Radio Telephone mode.

Noise Cancel

The Noise Cancel function reduces random noise components in the received or transmitted signal. Set the function for both receiving and transmitting.
● **RX**
OFF: The Noise Cancel function is OFF.
Low: Reduces random noise components in the received signal to approximately one half.
Mid: Reduces random noise components in the received signal to approximately one third.
High: Reduces random noise components in the received signal to approximately one tenth.
● **TX**
Auto: Automatically reduces random noise components in the transmitted signal, if it is detected.
ON: Reduces random noise components in the transmitted signal to approximately one third.
OFF: The Noise Cancel function is OFF.

Float'n Flash

The Float'n Flash function detects that the transceiver has come in contact with water. When the function turns ON, the backlight starts to blink to make it easy to find the transceiver, even in the dark.

● **Function**
  ON: The Float'n Flash function is ON.
  OFF: The Float'n Flash function is OFF.
● **Auto OFF**
  After taking the transceiver out of the water, the backlight keeps blinking for this set period of time. Set the time to between 0 and 30 seconds (in 10 second steps).
● **Cycle**
  The backlight repeatedly turns ON or OFF in the set time cycle. Set the cycle to 0.5, 1, 2, or 4 seconds.
● **Alarm**
  Select whether or not to sound an alarm while the backlight blinks when the Float'n Flash function is turned ON.
  ON: An alarm sounds while the backlight blinks.
  OFF: No alarm sounds, even when the Float'n Flash function is set to ON.

Power Save

Turns the Power Save function ON or OFF.
ON: Reduces current drain by deactivating the receiver circuit of the transceiver at specified intervals.
OFF: The function is OFF.

Low BATT Alarm

Selects whether or not an alarm sounds when the battery is low. A beep sounds every time the battery indication is lower than a displayed value. The beep interval changes, as shown below, according to the number of bars displayed.

Option	Beep interval		
	▭	▭▮	▭▮▮
OFF	This function is OFF.		
1		–	–
2	Every 30 seconds	Every minute	
3			Every 2 minutes

◇ Radio

Scan Type

Selects the scan type. The default setting differs, depending on the transceiver version.
ⓘ See page 19 for details.

Normal Scan: Scans all Favorite channels in the selected channel group.
Priority Scan: Sequentially scans all Favorite channels, while periodically checking Channel 16.

Scan Timer

You can 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.

Dual/Tri-watch

Select Dualwatch or Tri-watch.
ⓘ See page 21 for details.

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.

Channel Group

Select the suitable channel group for your operating area. Select USA, INT, or CAN, depending on the transceiver version.
ⓘ See page 13 for details.

12 MENU SCREEN

◇ Radio

Call Channel

You can change your Call channel. The default setting may differ, depending on the transceiver version.
ⓘ See page 15 for details.

WX Alert

For the USA version, an NOAA broadcast station transmits a Weather Alert tone before any important weather information.
ⓘ See page 14 for details.

ON with Scan:
 The preset Weather channels are sequentially checked while scanning.
ON: The previously selected (last used) Weather channel is checked while scanning.
OFF: The Weather Alert tone is not detected.

Monitor

Hold down [VOL/SQL] for 1 second to turn ON the Monitor function. The squelch opens.
You can select whether the squelch closes when you release [VOL/SQL], or when you push any key.
Push: The squelch stays open while holding down [VOL/SQL].
Hold: The squelch stays open until you push any key.

Favorite CH

You can set 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.
ⓘ See page 20 for details.

Set All Channels: Sets all channels as Favorite channels.
Clear All Channels: Clears all Favorite channels.
Set Default: Resets Favorite channels to the default.

RT Indicator

Select whether or not to display the Radio Telephone indicator (RT) while in the RT mode. This indicates that while RT is displayed, you can make a voice communication except for a DSC call.
ⓘ When "ON" is selected, "STBY" is displayed while in the standby mode, and "DSC" is displayed while in the DSC mode.
ON: The RT indicator is displayed.
OFF: The RT indicator is not displayed.

Channel Display

You can select 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."

◇ Radio Info

[MENU] > **Radio Info**

You can check your transceiver's software version and GPS module version on the "Radio Info" screen.

■ Specifications

ⓘ All stated specifications are subject to change without notice or obligation.
ⓘ Measurements made without an antenna.

General		
Frequency coverage	TX	156.025 MHz ~ 157.425 MHz
	RX	156.050 MHz ~ 163.275 MHz
	DSC	156.525 MHz
	AIS	162.025 MHz
Type of emission		16K0G3E,16K0G2B,16K0GXW(GMSK)
Antenna impedance		50 Ω nominal
Input impedance (MIC)		2 kΩ
Output impedance (audio)	External	8 Ω
	Internal	
Intermediate frequency	MAIN	1st: 30.15 MHz, 2nd: 450 kHz
	DSC	1st: 46.35 MHz, 2nd: 450 kHz
	AIS	1st: 40.85 MHz, 2nd: 450 kHz
Operating temperature range		–20°C ~ +60°C, –4ºF ~ +140ºF
Power supply voltage		Negative ground: 7.2 V DC nominal
Current drain (at 7.2 V DC) (approximate)	Receive Maximum audio	External speaker: 0.35 A Internal speaker: 0.7 A
	Transmit	6 W: 1.5 A 1 W: 0.7 A
Dimensions (projections not included)		60.9 (W) × 145.8 (H) × 43.8 (D) mm 2.4 (W) × 5.7 (H) × 1.7 (D) in
Weight (approximate)		357 g, 12.6 oz (including battery pack, antenna, and belt clip)

Transmitter	
Rated output power	6 W or 1 W
Modulation	Variable reactance frequency modulation
Maximum frequency deviation	±5 kHz
Frequency error	±10 ppm
Spurious emissions (typical)	–68 dBc
Adjacent channel power	70 dB
Audio harmonic distortion (at 60% Deviation)	10%
Residual modulation	40 dB
Audio frequency response	+1 dB ~ –3 dB of 6 dB octave from 300 Hz ~ 3000 Hz

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13 SPECIFICATIONS AND OPTIONS

■ Specifications

Receiver		
Sensitivity (typical)		0.25 µV (12 dB SINAD)
Squelch sensitivity (threshold, typical)		0.25 µV
Audio output power (at 10% distortion)	External (into 8 Ω)	0.35 W (typical)
	Internal (into 8 Ω)	1.5 W (typical)
Adjacent channel selectivity (typical)		70 dB
Spurious response (typical)		70 dB
Intermodulation (typical)		70 dB
Hum and noise		40 dB
Audio frequency response		+1 dB ~ –3 dB of –6 dB octave from 300 Hz ~ 3000 Hz

Receiver (DSC)	
Sensitivity (typical)	–3 dBµ emf (1% BER)
Adjacent channel selectivity	73 dBµ emf (1% BER)
Spurious response	73 dBµ emf (1% BER)
Intermodulation	68 dBµ emf (1% BER)

Receiver (AIS)	
Sensitivity	–107 dBm (20% PER)

GNSS Receiver		
Receiver frequency	GPS	1575.42 MHz
	GLONASS	1598.0625 MHz ~ 1605.375 MHz

■ Options

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

◇ Battery pack

• **BP-306** LI-ION BATTERY PACK
  Voltage: 7.2 V
  Capacity: 2280 mAh (minimum),
                   2400 mAh (typical)
  Battery life: Approximately 10 hours*
  * When the Power Save function is ON,
     and the operating periods are calculated
   under the following conditions:
     TX : RX : standby = 5 : 5 : 90

◇ Charger

• **BC-251** DESKTOP CHARGER
  +BC-123S/BC-242 AC ADAPTER
  To rapidly charge a battery pack.

◇ Others

• **FA-SC59V** ANTENNA
• **MB-133** BELT CLIP
• **MB-96F/MB-96FL** LEATHER BELT HANGER
• **HM-165/HM-228** SPEAKER MICROPHONE
  Full sized waterproof speaker
  microphone including alligator type clip to
  attach to your shirt or collar, and so on.
• **CP-25H/CP-26** CIGARETTE LIGHTER CABLE
  For charging with the BC-251 DESKTOP
  CHARGER through a 12 V cigarette lighter
  socket.

  NOTE: The CP-25H is equipped with
  a 1 A fuse, and the CP-26 is equipped
  with a 1.5 A fuse. If the fuse blows,
  repair the problem, then replace it with
  a new rated fuse. **DO NOT** use fuses
  with amp ratings other than the ratings
  written below.

Fuse
CP-25H: (1 A/250 V)

Fuse
CP-26:   (1.5 A/250 V)

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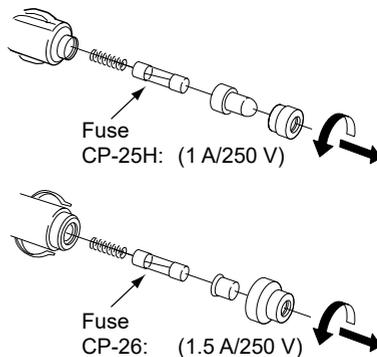
■ **Using the HM-165**

Alligator type clip
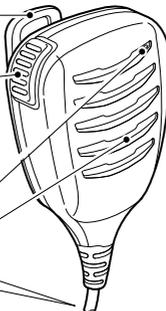To attach the speaker microphone
to your shirt or collar.

PTT switch
Push to transmit.
Release to receive.

Microphone

Speaker

Turn OFF the transceiver
when connecting the HM-165.

NOTE:
• **NEVER** immerse the connector in water. If the connector becomes wet, **BE SURE** to dry it before attaching to the transceiver.
• The microphone element is located at the top of the speaker microphone, as shown in the illustration above. To maximize the readability of your transmitted audio, hold the microphone approximately 5 ~ 10 cm (2 ~ 4 inches) from your mouth, and then speak at your normal voice level.
• If the audio sound becomes muffled, remove any water that may be inside the speaker grill and/or microphone hole.
• The DSC alarms sound from the transceiver, even while the speaker microphone is attached.

◇ **Attaching the HM-165**

1. Turn OFF the power.
2. Insert the speaker microphone connector into the connector and securely screw it, as shown below.

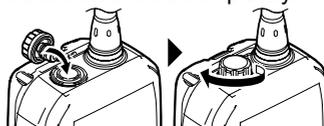ⓘ Be careful not to cross-thread the connection.

CAUTION: Attach the speaker microphone connector securely to prevent accidental loss, or water intrusion into the connector.
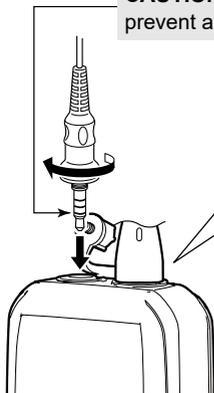
Detaching: Rotate the jack cover counter-clockwise, and then detach it.
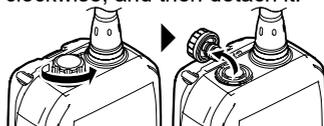
Attaching: Attach the jack cover, and then rotate it clockwise completely.

NOTE: KEEP the jack cover attached when the speaker microphone is not used. If the cover is not attached, water will get into the transceiver. Moreover, the terminals (pins) will become rusty, or the transceiver will function abnormally if the connector gets wet.

NOTE: When the "Channel Display" is set to "3 digits" in the Radio setting, the channel number is displayed in 3 digits. See page 67 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		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	1005	156.250	156.250
06	06	06	156.300	156.300
	07		156.350	160.950
1007	1007	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*1	15*1	156.750	156.750
16	16	16	156.800	156.800
17*1	17	17*1	156.850	156.850
	18		156.900	161.500
1018	1018	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	1021	157.050	157.050
		2021	RX only	161.650
	22		157.100	161.700
1022	1022	1022	157.100	157.100
	23	23	157.150	161.750
1023	1023		157.150	157.150
		2023	RX only	161.750
24		24	157.200	161.800
25		25	157.250	161.850
		2025	RX only	161.850
26		26	157.300	161.900
27	27	27	157.350	161.950
	1027		157.350	157.350
28	28	28	157.400	162.000
	1028		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	1063	156.175	156.175
	64	64	156.225	160.825
		1064	156.225	156.225
	65		156.275	160.875
1065	1065	1065*1	156.275	156.275
	66		156.325	160.925
1066	1066	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*1	75*1	156.775	156.775
	76*1	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	1080	157.025	157.025
	81		157.075	161.675
1081	1081	1081	157.075	157.075
	82		157.125	161.725
1082	1082	1082	157.125	157.125
	83		157.175	161.775
1083	1083	1083	157.175	157.175
		2083	RX only	161.775
84		84	157.225	161.825
85		85	157.275	161.875
86		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.

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

15 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)

Little or no sound comes from the speaker.
- Squelch level is set too high.
  → Adjust the squelch level. (p. 15)
- Volume level is set too low.
  → Adjust the volume level.
- The speaker has been exposed to water.
  → Use the AquaQuake Water Draining function to remove water from the speaker grill. (p. 18)

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.
  → Push HI/LO to select high power. (p. 7)
- The battery is exhausted.
  → Recharge the battery pack.
- The battery is overcharged.
  → Confirm that the battery voltage is correct.

Scan does not start.
- More than 2 favorite channels are not set.
  → Set the Favorite channels. (p. 20)

No beep sounds.
- The Key Beep function is OFF.
  → Turn ON the Key Beep function. (p. 65)

The keypad does not work.
- The keypad is locked.
  → Hold down [CLR ↩] for 1 second to lock or unlock the keypad. (p. 17)

Individual or Group ID cannot be set.
● The entered ID code is incorrect. The first digit must be set to between '1' and '9' for an Individual ID.
→ Enter a correct ID code. (p. 22)

"??" blinks instead of the position and time.
● 4 hours have passed since you manually entered the position.
● The GPS position is invalid.
→ Enter the position and time. (p. 23)

"No Position No Time" are displayed instead of the position and time.
● The built-in GPS antenna is obstructed, which interrupts the GPS signals from the satellites.
→ Use the transceiver in a place where nothing interrupts the satellite signal.
● The position and time have not been manually entered.
→ Enter the position and time. (p. 23)

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INDEX

MEMO

Count on us!