INSTRUCTION MANUAL

VHF MARINE TRANSCEIVER

IC-M430
IC-M430E

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

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-M430/IC-M430E.

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

■ Explicit definitions

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

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.

■ Features

- Fixed mount Class D DSC marine VHF transceiver
- NMEA 2000 and NMEA 0183-HS connectivity
- Slimmer body and sleek design
- Wide viewing angle color TFT LCD
- 3 Display Color Modes (Light mode, Dark mode, and Night mode)
- White light backlit keys for increased visibility in low-light and dark conditions
- Integrated GNSS receiver and antenna
- Clear, Loud audio

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

Europe:	EUR, General
Germany:	FRG
Netherlands:	NLD
U.K.:	UK

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NMEA 2000 and NMEA 0183 are trademarks of the National Maritime Electronics Association, Inc.
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.

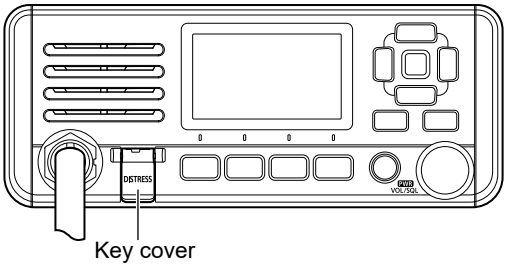
◇ Using Channel 16

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 you hear the 3 short beeps and a long beep.



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

■ Radio operation warning

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

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

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

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

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

■ Avertissement pour les opérations radio

Icom exige que l'opérateur radio se conforme aux exigences de la FCC en matière d'exposition aux radiofréquences. Une antenne omnidirectionnelle dont le gain ne dépasse pas 9 dBi doit être fixée à une distance minimale de 5 mètres (mesurée depuis le point le plus bas de l'antenne) verticalement au-dessus du pont principal et de tout le personnel qui peut s'y trouver. Il s'agit de la distance de sécurité minimale prévue pour satisfaire aux exigences de conformité en matière d'exposition aux RF. Cette distance de 5 mètres est établie en fonction de l'exposition maximale admissible sécuritaire de 3 mètres établie par la FCC, à laquelle on ajoute la hauteur d'un adulte (2 mètres); cette distance convient pour tous les navires.

Dans le cas des embarcations sans structure convenable, l'antenne doit être fixée de façon à maintenir une distance minimale de 1 mètre verticalement entre cette antenne (mesurée depuis son point le plus bas) et la tête de toute personne présente; toutes les personnes présentes doivent se tenir à l'extérieur d'un rayon d'exposition maximale admissible de 3 mètres.

Ne pas émettre à l'aide de la radio et de l'antenne lorsque des personnes se trouvent à l'intérieur du rayon d'exposition maximale admissible de cette antenne, à moins que ces personnes (comme le conducteur ou l'opérateur radio) ne soient protégées du champ de l'antenne par un écran métallique relié à la masse. Le rayon d'exposition maximale admissible équivaut à la distance minimale que cette personne doit maintenir entre elle et l'axe de l'antenne pour éviter une exposition aux RF supérieure au niveau d'exposition maximale admissible fixé par la FCC.

LE NON-RESPECT DE CES LIMITES PEUT CAUSER, POUR LES PERSONNES SITUÉES DANS LE RAYON D'EXPOSITION MAXIMALE ADMISSIBLE, UNE ABSORPTION DE RAYONNEMENT DE RF SUPÉRIEURE À L'EXPOSITION MAXIMALE ADMISSIBLE FIXÉE PAR LA FCC.
L'OPÉRATEUR RADIO EST RESPONSABLE D'ASSURER QUE LES LIMITES D'EXPOSITION MAXIMALE ADMISSIBLE SOIENT RESPECTÉES EN TOUT TEMPS PENDANT LA TRANSMISSION RADIO. L'OPÉRATEUR RADIO DOIT S'ASSURER QU'AUCUNE PERSONNE PRÉSENTE NE SE SITUE À L'INTÉRIEUR DU RAYON D'EXPOSITION MAXIMALE ADMISSIBLE.

Établir le rayon d'exposition maximale admissible
ON ESTIME QUE LE RAYON D'EXPOSITION MAXIMALE ADMISSIBLE EST D'ENVIRON 3 M, TEL QUE STIPULÉ DANS LE BULLETIN OET 65 DE LA FCC. CETTE DISTANCE ESTIMÉE TIENT COMPTE D'UN SYSTÈME INSTALLÉ SUR UN NAVIRE UTILISANT LA PUISSANCE MAXIMALE DE LA RADIO ET DES ANTENNES DONT LE GAIN MAXIMAL EST DE 9 dBi.

■ FCC information

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

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

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

Supplier's Declaration of Conformity
This device complies with part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference.

- **Model Name:** IC-M430

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

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

■ Information FCC

Cet équipement a été testé et reconnu conforme aux limites fixées pour un appareil numérique de classe B, conformément à la partie 15 de la réglementation FCC.
Ces limites ont été fixées afin d'assurer une protection raisonnable contre les interférences nocives dans une installation résidentielle. 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. Toutefois, il n'y a aucune garantie que les interférences ne se produiront pas dans une installation particulière. Si cet équipement crée des interférences perturbant la réception de la radio ou de la télévision, comme cela peut être déterminé en éteignant et en allumant l'équipement, l'utilisateur est invité à essayer de corriger l'interférence en prenant une ou plusieurs des mesures ci-après :

- Réorienter ou changer de place l'antenne de réception.
- Éloigner l'équipement et le récepteur.
- Connecter l'équipement sur une prise sur un autre circuit que celui sur lequel le récepteur est connecté.
- Faire appel au revendeur ou à un technicien radio/TV expérimenté.

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.

Déclaration de conformité du fournisseur
Cet appareil respecte les conditions établies au paragraphe 15 des règles de la FCC. Son utilisation est assujettie à la condition de ne pas provoquer des interférences nuisibles.

- **Nom du modèle :** IC-M430

- **Partie responsable**
Nom de la société : Icom America Inc.
Adresse : 12421 Willows Road NE, Kirkland, WA 98034

- **Coordonnées pour les États-Unis**
800-USA-ICOM (800-872-4266)
Du lundi au vendredi,
de 7 h à 17 h, heure du Pacifique

■ Note

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

■ Precautions

⚠ **WARNING! NEVER** apply AC power to the [DC/AF/DATA] connector on the transceiver rear panel. This could cause a fire or damage the transceiver.

⚠ **WARNING! NEVER** apply more than 16 V DC to the [DC/AF/DATA] connector on the transceiver rear panel. This could cause a fire or damage the transceiver.

⚠ **WARNING! NEVER** remove the fuse holder on the DC power cable. Excessive current caused by a short could cause a fire or damage the transceiver.

⚠ **WARNING! NEVER** let metal, wire or other objects contact the inside of the transceiver, or make incorrect contact with connectors on the rear panel. This could cause an electric shock or damage the transceiver.

⚠ **WARNING! NEVER** operate the equipment if you notice an abnormal odor, sound, or smoke. Immediately turn OFF the power and/or remove the DC power cable. Contact your Icom dealer or distributor for advice.

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

⚠ **WARNING! NEVER** operate the transceiver during a lightning storm. It may result in an electric shock, cause a fire, or damage the transceiver. Always disconnect the power source and antenna before a storm.

CAUTION: DO NOT reverse the DC power cable polarity. This could damage the transceiver.

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

CAUTION: DO NOT modify the transceiver. The specifications may change and then the transceiver may not comply with the requirements of required regulations. The transceiver warranty does not cover any problems caused by unauthorized modification.

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.

BE CAREFUL! The transceiver may become hot after continuously transmitting for long periods of time.

BE CAREFUL! The transceiver meets IPX7 requirements for waterproof protection. However, once the transceiver has been dropped, or the waterproof seal is cracked or damaged, waterproof protection cannot be guaranteed.

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

NOTE: Install the transceiver and microphone more than 1 meter from the vessel's magnetic navigation compass.

■ Précautions

⚠ **AVERTISSEMENT ! NE JAMAIS** raccorder la prise [DC/AF/DATA] sur le panneau arrière de l'émetteur-récepteur à une source de courant alternatif. Cela pourrait causer un incendie ou endommager l'émetteur-récepteur.

⚠ **AVERTISSEMENT ! NE JAMAIS** raccorder plus de 16 V CC à la prise [DC/AF/DATA] sur le panneau arrière de l'émetteur-récepteur. Cela pourrait causer un incendie ou endommager l'émetteur-récepteur.

⚠ **AVERTISSEMENT ! NE JAMAIS** retirer le porte-fusible du câble d'alimentation CC. Un courant excessif provoqué par un court-circuit pourrait causer un incendie ou endommager l'émetteur-récepteur.

⚠ **AVERTISSEMENT ! NE JAMAIS** laisser du métal, du fil ou d'autres objets entrer en contact avec l'intérieur de l'émetteur-récepteur ou raccorder incorrectement les connecteurs sur le panneau arrière. Cela pourrait causer un choc électrique ou endommager l'émetteur-récepteur.

⚠ **AVERTISSEMENT ! NE JAMAIS** faire fonctionner l'équipement si vous détectez une odeur, un bruit ou une fumée anormaux. Mettre immédiatement l'appareil hors tension et/ou et débrancher le câble d'alimentation CC. Contactez votre revendeur ou distributeur Icom pour obtenir des conseils.

⚠ **AVERTISSEMENT ! NE JAMAIS** placer l'émetteur-récepteur à un endroit pouvant gêner le fonctionnement normal du navire, ou à un endroit où il pourrait causer des blessures corporelles.

⚠ **AVERTISSEMENT ! NE JAMAIS** utiliser l'émetteur-récepteur durant un orage. Cela risquerait de provoquer un choc électrique, un incendie ou d'endommager l'émetteur-récepteur. Toujours débrancher la source d'alimentation et l'antenne avant une tempête.

MISE EN GARDE : NE PAS inverser la polarité du câble d'alimentation CC. Cela pourrait endommager l'émetteur-récepteur.

MISE EN GARDE : NE PAS utiliser ou laisser l'émetteur-récepteur dans un environnement excessivement poussiéreux. Cela pourrait l'endommager.

MISE EN GARDE : NE PAS modifier l'émetteur-récepteur. Les caractéristiques peuvent s'en trouver modifiées et compromettre en conséquence la compatibilité de l'émetteur-récepteur aux exigences de la législation en vigueur. La garantie de l'émetteur-récepteur ne couvre pas les problèmes consécutifs à une modification non autorisée.

MISE EN GARDE : NE PAS utiliser de solvants agressifs tels que du Benzène ou de l'alcool lors du nettoyage. Cela risque d'endommager les surfaces de l'équipement. Si la surface est poussiéreuse ou sale, nettoyez-la avec un tissu doux et sec.

FAITES ATTENTION ! : L'émetteur-récepteur peut devenir chaud après une transmission en continu pendant une longue période de temps.

FAITES ATTENTION ! L'émetteur-récepteur répond aux exigences de la norme IPX7 en matière de protection étanche. Cependant, une fois que l'émetteur-récepteur est tombé, ou que le joint d'étanchéité est fissuré ou endommagé, la protection étanche ne peut pas être garantie.

REMARQUE : NE PAS utiliser ou laisser l'émetteur-récepteur dans des zones avec des températures inférieures à –20 °C (–4 °F) ou supérieures à +60 °C (+140 °F), ou dans des zones directement exposées aux rayons du soleil, comme le tableau de bord pour les opérations mobiles.

REMARQUE : Installer l'émetteur-récepteur et le microphone à au moins 1 m du compas de route du navire.

■ Installation note

Installation:
The installation of this equipment should be made in such a manner as to respect the EC recommended electromagnetic field exposure limits. (1999/519/EC)
The maximum RF power available from this device is 25 watts. The antenna should be installed as high as possible for maximum efficiency and the installation height should be at least 1.76 meters above any accessible position. In the case where an antenna cannot be installed at a reasonable height, then the transmitter should neither be continuously operated for long periods if any person is within a distance of 1.76 meters of the antenna, nor operated at all if any person is touching the antenna.
It is recommended that antenna of a maximum gain of 3 dB is used. If higher gain antenna is required then please contact your Icom distributor for revised installation recommendations.

Operation:
The exposure to RF electromagnetic field is only applicable when this device is transmitting. This exposure is naturally reduced due to the nature of alternating periods of receiving and transmitting. Keep your transmissions to the minimum necessary.

■ Disposal

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

■ About CE and DOC

Hereby, Icom Inc. declares that the versions of IC-M430E which have the “CE” symbol on the product, comply with the essential requirements of the Radio Equipment Directive, 2014/53/EU, and the restriction of the use of certain hazardous substances in electrical and electronic equipment Directive, 2011/65/EU. The full text of the EU declaration of conformity is available at the following internet address:
https://www.icomjapan.com/support/

■ About UKCA DOC

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

For European versions:
The following caution is printed on the labels of the transceiver.

⚠ **CAUTION**
AVOID TOUCHING REAR PANEL DURING PROLONGED USE.

This is because the transceiver’s rear panel will become hot when continuously transmitting for long periods of time.

■ Recommendation

CLEAN THE TRANSCEIVER AND MICROPHONE 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 or microphone is cracked or broken, or the transceiver has been dropped. Contact your Icom distributor or your dealer for advice.

■ Key icon description

The keys are described in this manual as follows:

The keys that have words or letters on them are described with the characters "[ ]."
Example: [MENU], [CLEAR]

The Software Keys are described with the icon such as Finish or DTRS. The function of the keys are shown at the bottom of the display. Push the key below the desired function.

You can use the following keys on the Menu screen.

FUNCTION	ACTION
Select	Push [▼] or [▲], or rotate the dial.
Enter	Push [ENT].
Go to the next tree level	Push [ENT] or [▶].
Go back to the previous tree level	Push [CLEAR] or [◀].
Cancel	Push [CLEAR] or Cancel.
Exit	Push [MENU] or Home.

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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.

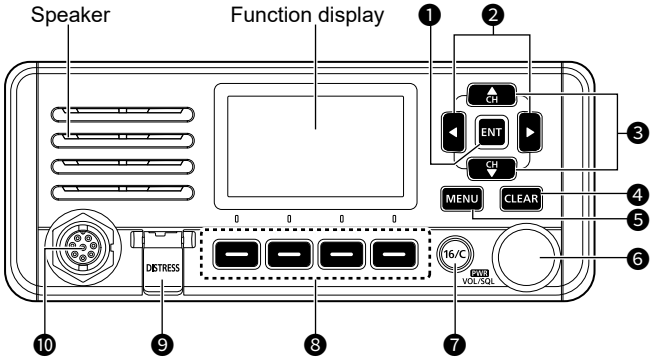
However, non-licensed individuals may talk over a transceiver if a licensed operator starts, supervises, ends the call and makes the necessary log entries.

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.

For the UK version:

NOTE: Even though the IC-M430E is capable of operation on VHF marine channels 1021, 1023, 1081, 1082 and 1083, according to FCC regulations these simplex channels cannot be lawfully used by the general population in the USA waters.

■ Front panel



❶ **ENTER KEY [ENT]**
- Push to set the entered data, selected item, and so on.
- In the Main screen, hold down for 1 second to quickly change the display mode (Day mode or Night mode).

❷ **LEFT/RIGHT KEYS [◄]/[►]**
- Push to scroll the Software Key functions. (pp. 16 ~ 17)
- Push to select a character or number in the entry mode. (pp. 18, 24, 29 ~ 30)

❸ **UP/DOWN KEYS [▲]/[▼]**
- Push to select an operating channel, Menu items, Menu settings, and so on. (p. 20)
- Push to select a character or number in the entry mode. (pp. 24, 29 ~ 30)

❹ **CLEAR KEY [CLEAR]**
Push to cancel the entered data or to return to the previous screen.

❺ **MENU KEY [MENU]**
Push to open or close the Menu screen.

❻ **VOLUME/SQUELCH/POWER DIAL [VOL/SQL]/[PWR]** (p. 22)
- Hold down for 1 second to turn the transceiver ON or OFF.
- Push to open the “Volume,” “SQL,” or the “Channel” popup screen.
- Rotate to select the Menu item, Menu setting, and so on.
- Rotate to adjust the volume level, depending on the Key Assignment setting in “Configuration.” (p. 63)

❼ **CHANNEL 16/CALL CHANNEL KEY [16/C]**
- Push to select Channel 16. (p. 20)
- Hold down for 1 second to select the Call channel. (p. 20)

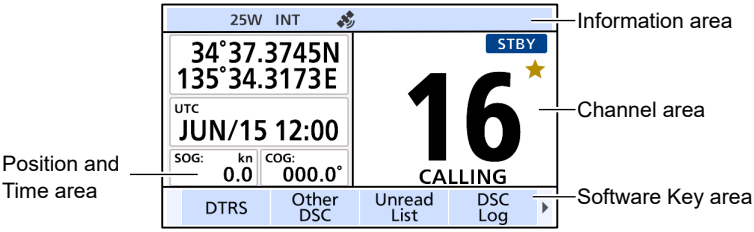
❽ **SOFTWARE KEYS** (pp. 16 ~ 17)
Scroll the key functions pushing [◄] or [►], and then push either of the 4 Software Keys to select the function displayed at the bottom of the display.

❾ **DISTRESS KEY [DISTRESS]**
Hold down for 3 seconds to transmit a Distress call. (p. 31)

❿ **MICROPHONE CONNECTOR**
Connect the supplied speaker microphone.

NOTE:
- When a microphone is not connected to the front panel, attach the supplied lock cap. The lock cap is attached to the microphone connector on the rear panel by default.
- **DO NOT** connect microphones to both the front and rear panels. Otherwise, ambient noise picked up by the other microphone will be mixed into your transmit audio.

■ Function Display



◇ Position and Time area

Position area
The current position is displayed when valid GNSS data is received, or you manually enter your position.

No Position

Displayed when valid GNSS data is not received or your position has not been manually entered.

?

Blinks every 2 seconds instead of your position when:
- The GNSS position is invalid.
- 4 hours have passed since you manually entered your position.

ⓘAfter 23.5 hours have passed, “No Position” will be displayed.

Time area
The current time is displayed when valid GNSS data is received, or you manually enter the time.

No Time

Displayed when valid GNSS data is not received or the time has not been manually entered.

Local

Displayed when the offset time is set.

Manual

Displayed when the time was manually entered.

UTC

Displayed when the RMC, GGA, GLL, or GNS sentences are received from the built-in GNSS receiver, an external NMEA 0183, or external NMEA 2000 sentence source.

?

Blinks every 2 seconds instead of the time when:
- The GNSS current time is invalid.
- 4 hours have passed since you manually entered the time.

ⓘAfter 23.5 hours have passed, “No Time” will be displayed.

Position and Time area also display your vessel’s SOG (Speed Over Ground) and COG (Course Over Ground).
ⓘSOG or COG may not be displayed, depending on the NMEA 0183 or the NMEA 2000 data.

◇ Information area

The following indicators are displayed in the Information area.

BUSY (RX indicator)

Displayed when receiving a signal or when the squelch is open.

TX (TX indicator)

Displayed while transmitting.

25W, 1W

25W: Displayed when high power is selected.
1W: Displayed when low power is selected.

USA, INT, CAN, WX, DSC, ATIS

Displays the selected channel group, INT (International), USA, CAN (Canada), WX (Weather channel), ATIS, or DSC.
ⓘWhen the WX Alert is set to ON, "" is displayed. (For only the USA version)

(GNSS indicator)

- Displayed when the transceiver receives valid position and time data.
- Blinks when invalid GNSS data is being received.

(Horn indicator)

Displayed when the Auto Foghorn function is activated. (p. 57)

(Low Battery indicator)

Displayed when the battery voltage is low.

(Unread DSC message indicator)

- Displayed when there are unread DSC messages.
- Blinks when a DSC message is received.

(CH Auto Switch indicator)

Displayed when the "CH Auto Switch" in DSC Settings is set to an option except "Accept after 10 sec."

◇ Channel area

The selected operating channel number, channel name, and the following indicators are displayed in the Channel area.

(Favorite indicator)

Displayed when a Favorite channel is selected.

CALL

Displayed when the Call channel is selected by holding down [16/C] for 1 second.

DUP

Displayed when a Duplex channel is selected.

STBY

Displayed while in the 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 after making or receiving a DSC call.
ⓘIf the transceiver is in the Multiple-Task mode, the number of DSC tasks is displayed by the indicator.

RX (RX Hailer indicator)

Displayed when the RX Hailer function is set to ON. (p. 59)

SCAN 16

Displayed during a Priority scan*. (p. 26)

SCAN

Displayed during a Normal scan*. (p. 26)

DW 16

Displayed during Dualwatch. (p. 28)

TW 16

Displayed during Tri-Watch*. (p. 28)

LOC

(For only the USA version)
Displayed when the Attenuator function is turned ON. (p. 17)

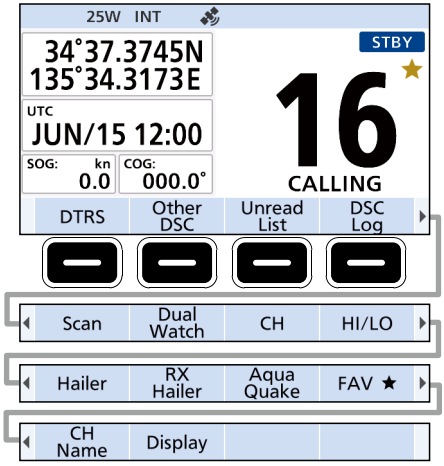
* Except for NLD version.

■ 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

Push [◀] or [▶] to slide through the selectable functions that are assigned to the Software Keys.
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.
When the MMSI code is not set, the Software Keys for the DSC function are not displayed.

◇ Software Key functions

Compose Distress [DTRS] (p. 32)

Push to open the "Compose Distress" screen to select the nature of distress, and then 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.

Other DSC (p. 35)

Push to compose an Individual call, All Ships call, Group call or a Test call, and so on.

Unread List

Push to enter the Unread List.
ⓘ Displayed only when "Single" is selected in the DSC procedure menu. (p. 54)

Task List (p. 51)

(For only the USA version)
Push to enter the Task List.
ⓘ Displayed only when "Multiple" is selected in the DSC procedure menu. (p. 54)

Scan (p. 26)

(Except for the NLD version)
Push to start or stop a Normal or Priority scan.

DualWatch/Tri-Watch (p. 28)

Push to start or stop the Dualwatch or Tri-Watch.
ⓘThe NLD version does not support the Tri-Watch.

Channel/Weather channel [CH/WX] (p. 21)

Push to select regular channels or Weather channels.
ⓘThe Weather channel is for only the USA version. [CH] is displayed for other versions.
ⓘWhile the Call channel or Channel 16 is displayed, push this key to return to the regular channel mode.

DSC Log (p. 50)

Push to open the received call log or distress message log.

High/Low [HI/LO] (p. 17)

Push to set the output power level to high or low.

ⓘSome channels are permanently set to "Low."

Hailer (p. 59)

Push to open the Hailer screen.

ⓘTo use this function, the external hailer speaker must be connected to the transceiver.

RX Hailer (p. 59)

Push to turn the RX Hailer function ON or OFF.

ⓘTo use this function, the external hailer speaker must be connected to the transceiver.

LO/DX (p. 66)

(For only the USA version)
Push to turn the Attenuator function ON or OFF.

ⓘThe "LOC" icon is displayed when the Attenuator function is ON.

AquaQuake (p. 24)

Hold down to turn ON the AquaQuake function to clear water from the speaker grill.

Favorite [FAV ★] (p. 27)

Push to set or clear the displayed channel as a Favorite channel.

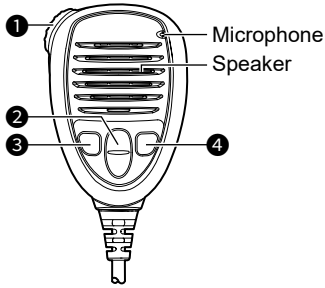
Channel Name [CH Name] (p. 24)

Push to edit the name of the displayed channel.

Display (p. 22)

Push to open the "Display" popup screen. On the Display popup screen, you can set the backlight level, the display mode and the display style.

■ Speaker Microphone



❶ **PTT SWITCH [PTT] (p. 23)**
Hold down to transmit, release to receive.

❷ **UP/DOWN KEYS [▲]/[▼] (p. 27)**
Push to select the Favorite channels, change scanning direction or manually resume a scan.

ⓘWhen the "FAV on MIC" item is set to "OFF," you can select all channels. (p. 66)

❸ **TRANSMIT POWER KEY [H/L]**
- Push to set the power level to high or low.
  ⓘSome channels are permanently set to "Low."
- You can turn the Microphone Lock function ON or OFF by turning the transceiver ON while holding down this key. (p. 25)

❹ **CHANNEL 16/CALL CHANNEL KEY [16/C] (p. 20)**
- Push to select Channel 16.
- Hold down for 1 second to select the Call channel.
  ⓘThe "CALL" icon is displayed.

For only the European version:
When you turn ON the transceiver, “Model” screen is displayed depending on the setting. Select the country where you operate the transceiver.

■ Entering the MMSI code

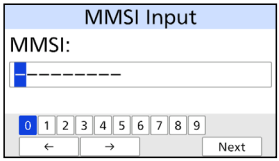
MMSI (Maritime Mobile Service Identity) is the 9-digit number assigned to your vessel or coast station by your country’s relevant authority, which is necessary for using DSC (Digital Selective Calling) and distress alerts.

You can only enter the MMSI code when turning ON the transceiver for the first time.

This initial code can be entered only once.
If your MMSI code has already been entered, doing the steps below is not necessary.

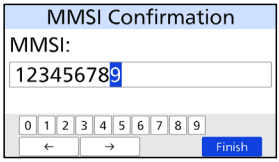
1. Hold down [PWR] to turn ON the transceiver.
   - Three short beeps are heard, and “Push [ENT] to Register your MMSI” is displayed.
2. Push [ENT] to start entering the MMSI code.
   - The “MMSI Input” screen is displayed.

   ⓘPush [CLEAR] twice to skip the entry.
   If you skip the entry, you cannot make a DSC call. To enter the code after skipping, turn OFF the transceiver, 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 “→” on the screen or rotate the dial to move the cursor.

4. Repeat step 3 to enter all 9 digits.
5. Select Next and push [ENT] to set the entered code.
   - The “MMSI Confirmation” screen is displayed.



6. Enter your MMSI code again to confirm.
7. Select Finish to set the entered code.
   - When your MMSI code is successfully entered, “MMSI registered successfully.” is briefly displayed, and then enters the Main screen.

   ⓘYou can check your MMSI code in “Radio Info” on the Menu screen.

■ Entering the ATIS ID (For the NLD and FRG versions)

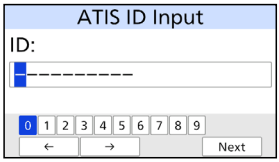
The Automatic Transmitter Identification System (ATIS) ID consists of 10 digits. You can enter the ID in the “ATIS ID Input” item on the Menu screen.

This ID entering can be done only once.
If your ATIS ID has already been entered, doing the steps below is not necessary.

1. Open the “ATIS ID Input” screen.

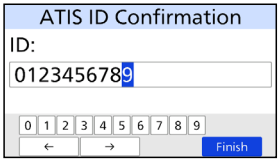
   [MENU] > Settings > Configuration > **ATIS ID Input**

2. Enter your ATIS ID.



> **TIP:**
> • Select a number using [◀] and [▶].
> • Push [ENT] to enter the selected number.
> • Select “←” or “→” on the screen, or rotate the dial to move the cursor.

3. Repeat step 2 to enter all 10 digits.
4. Select **Next** to set the entered ID.
   • The “ATIS ID Confirmation” screen is displayed.
5. Enter your ATIS ID again to confirm.



6. Select **Finish** to set the entered ID.
   • When your ATIS ID is successfully entered, the screen displays “ATIS ID registered successfully.,” and then returns to the Menu screen.
   ⓘYou can check the ATIS ID in “Radio Info” on the Menu screen.

■ Selecting a channel

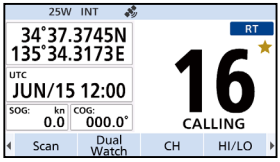
◇ Regular Channel

You can select a channel by pushing [▲] or [▼].
ⓘYou can also push the dial three times to open the “Channel” popup screen.

◇ Channel 16

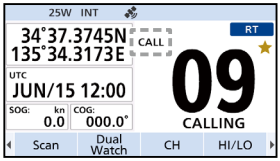
Channel 16 is the distress and safety channel. It is used to establish the initial contact with a station, and for emergency communications. Channel 16 is monitored during both Dualwatch and Tri-Watch. While in the standby mode, you must monitor Channel 16.

- Push [16/C] to select Channel 16.
  ⓘTo return to the previously selected channel, push [◀] or [▶] to display CH/WX or CH, and then push the Software Key below CH/WX or CH.



◇ Call channel

Each Channel Group has separate leisure-use Call channels. The Call channel is scanned during Tri-Watch. The Call channels can be selected and used to store your most often used channels in each Channel Group, for quick recall. See page 23 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 [◀] or [▶] to display CH/WX or CH, and then push the Software Key below CH/WX or CH.

◇ Selecting a Channel Group

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

1. Open the “Channel Group” screen.

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

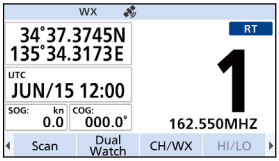
2. Push [▲] or [▼] to select a Channel Group, and then push [ENT].
3. Push [MENU] to exit the Menu screen.
4. The selected Channel Group’s icon is displayed on the Main screen.

Version	Preset Channel Group				
	USA	INT	CAN	DSC	ATIS
USA	✓	✓	✓		
UK	✓	✓			
European		✓			
NLD		✓			✓
FRG		✓		✓	✓

■ Weather channels and Weather Alert (For only the USA version)

The USA version transceiver has 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 Main screen instead of the Channel Group.

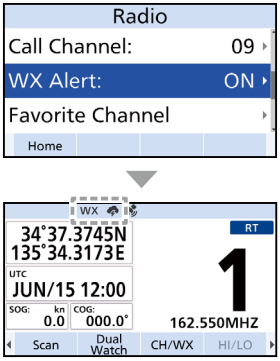
2. Push [▲] or [▼] to select a Weather channel.

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 a weather alert, set the WX Alert to "ON with Scan," or "ON."



1. Open the "Weather Alert" screen.

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

2. Select "ON with Scan," or "ON."
   - "⛈" is displayed next to the weather channel icon.

ⓘ"!! WX alert !!" is displayed until you push a key after detecting an alert.
ⓘ"WX ⛈" blinks until you change the channel after detecting an alert.

■ Adjusting the volume/squelch/display

◇ Adjusting the volume level

1. Push [VOL/SQL] once to open the “Volume” popup screen.
   ⓘYou can rotate the dial in the Main screen to adjust the volume level.
2. Push [◀] or [▶] to adjust the audio volume level.

◇ 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 to open the “SQL” popup screen.
2. Push [◀] or [▶] to adjust the squelch level.

◇ Adjusting the display

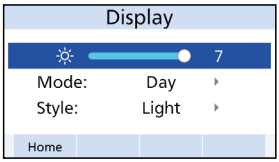
The Function display and keys can be backlit for better visibility under low light conditions. Also you can set the display mode and the display style to the following options.

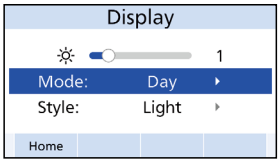
- Mode
  Day: For the daytime operation. The screen items are in full color.
  Night: For the nighttime operation. The screen items are in black and red.
- Style (For the Day mode)
  Light: The screen items are in full color.
  Dark: The screen items are in black and white.

1. Open the “Display” screen.

   [MENU] > Settings > Configuration > **Display**

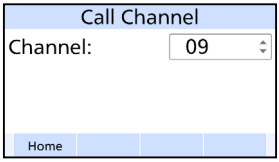
   ⓘYou can also push Display to open the “Display” popup screen.
2. Push [◀] or [▶] to adjust the backlight level.
   ⓘThe backlight level is adjustable in 7 levels and “OFF.” “OFF” is selectable only for the Day mode.
3. Push [▼], and then push [◀] or [▶] to select the Mode between “Day” and “Night.”
   ⓘIf you select the Day mode, push [▼], and then push [◀] or [▶] to select the Style between “Light” and “Dark.”
4. Push [ENT] to return to the previous screen.





■ 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.

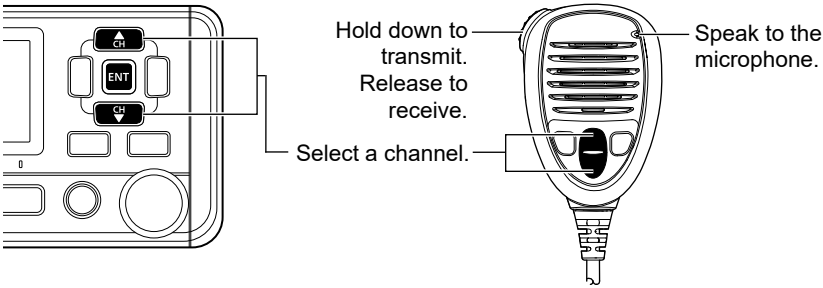
   [MENU] > Settings > Radio > **Call Channel**
2. Push [▲] or [▼] to select the channel.
3. Push [ENT] to set the selected channel as the Call channel.
4. Push [MENU] to exit the Menu screen.

■ Receiving and transmitting

CAUTION: DO NOT transmit without an antenna.

1. Push [▲] or [▼] to select a channel to call on.
   - The channel number and name are briefly displayed.

   ⓘ 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.



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

NOTE: The Time-out Timer function cuts OFF transmission after 5 minutes of continuously transmitting, to prevent prolonged transmission.

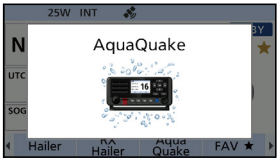
■ AquaQuake Water Draining function

Water in the speaker grill may muffle the sound coming from the internal speaker. The AquaQuake Water Draining function removes water from the speaker grill by vibrating the speaker cone.

ⓘYou cannot use this function when the “Internal” is set to “OFF.” (p. 64)
([MENU] > Settings > Configuration > Speaker > **Internal**)

1. Push [◀] or [▶] to display AquaQuake.
2. Hold down AquaQuake to turn ON the function.
   - A low frequency vibration drains 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 AquaQuake.
3. Release the key to turn OFF the function.



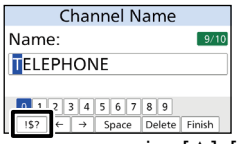
■ Editing a channel name

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 display CH Name.

   ⓘYou cannot edit a channel name during Dualwatch, Tri-Watch, or a scan.
3. Push CH Name.
   - The “Channel Name” screen is opened.
4. Edit the channel name.
5. Select Finish, and then push [ENT] to save the edited name and return to the Main screen.

TIP:
- Select ABC or 123 to enter numbers and letters, and !$? to enter symbols.

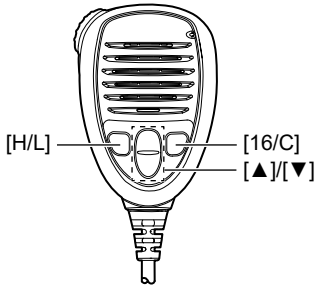


- Select a number, character, or space using [▲], [▼], [◀], and [▶].
- Push [ENT] to enter the selected number or character.
- Select “←” or “→” on the screen to move the cursor, or to select the entered character.

■ Microphone Lock function

The Lock function electronically locks all keys on the microphone except [PTT] to prevent accidental channel changes or function access.

1. Hold down [PWR] for 1 second to turn OFF the transceiver.
2. While holding down [H/L] on the microphone, hold down [PWR] for 1 second to turn the Lock function ON or OFF.



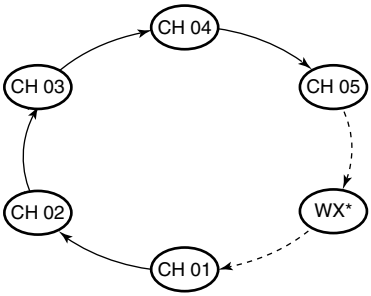
■ Scan types

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

Before starting a scan:
- Set the channels that you want to scan as Favorite channels. (p. 27)
  ⓘOnly the Favorite channels are scanned.
- Set the scan type to “Priority Scan” or “Normal Scan” on the “Radio” screen. (p. 65)

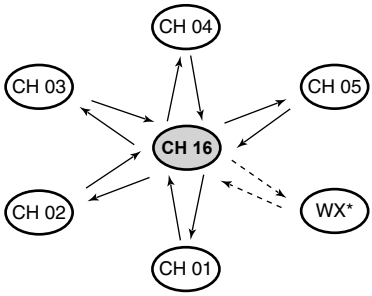
[MENU] > Settings > Radio > **Scan Type**

Normal Scan:
Sequentially searches through all Favorite channels. Channel 16 is not scanned unless it is set as a Favorite channel.



* For the USA version, when the Weather Alert function is ON, the previously selected Weather channel is also scanned.

Priority Scan:
Sequentially searches through all Favorite channels, while also periodically checking Channel 16.



* For the USA version, 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 becomes 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. 20)

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

2. Push [▲] or [▼] to select the channel.
3. Push [◀] or [▶] to display FAV★.
4. Push FAV★.
   - The selected channel is set as a Favorite channel, and "★" is displayed.

   ⓘTo cancel the settings, push FAV★ again.

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

■ Starting a scan

Example: Starting a Normal Scan.

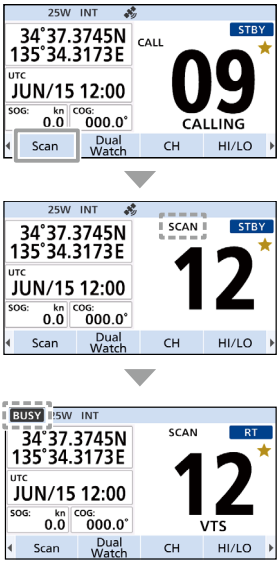
1. Select a Channel Group on the Menu screen. (p. 20)

   [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.

   ⓘWhen a signal is received, the scan pauses until it disappears, or resumes after 5 seconds, depending on the Scan Timer setting in "Radio." (p. 65)

   ⓘ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.

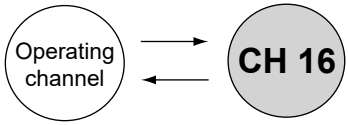


TIP: To properly receive signals, be sure to adjust the squelch to a suitable level.

■ Description

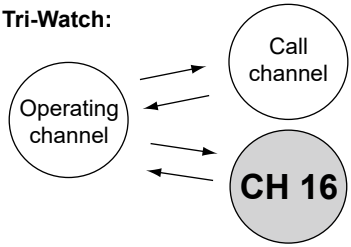
Dualwatch and Tri-Watch are convenient for periodically checking Channel 16 while you are operating on another channel.
ⓘThe NLD version does not support the Tri-Watch.

Dualwatch:



Periodically checks Channel 16 while operating on another channel.

Tri-Watch:



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

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.

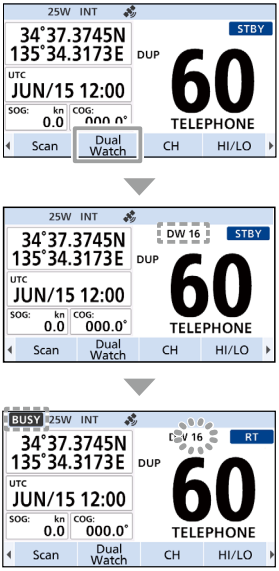
■ Operation

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 Dual Watch or Tri Watch.
4. Push Dual Watch or Tri Watch.
   - Dualwatch or Tri-Watch starts.
   - "DW 16" is displayed for Dualwatch, or "TW 16" is displayed for Tri-Watch.

   ⓘ"BUSY" is displayed when a signal is received.
   ⓘA beep tone sounds, and "16" starts to blink when a signal is received on Channel 16.
5. To cancel Dualwatch or Tri-Watch, push Dual Watch or Tri Watch 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, up to 10 characters.

1. Open the “Individual ID” or “Group ID” screen.

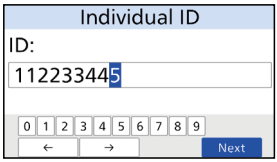
   [MENU] > Settings > DSC > **Individual ID**

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

   • “No ID” is displayed if no ID is entered.

2. Push Add.
   • The ID entry screen is displayed.

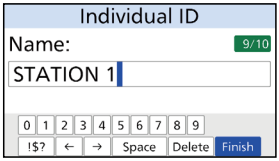
3. Enter an Individual or Group ID.



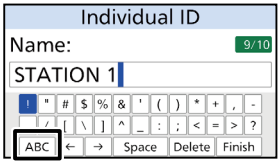
TIP:
• Select a number using [◀] and [▶].
• Push [ENT] to set the selected number.
• Select “←” or “→” on the screen to move the cursor.

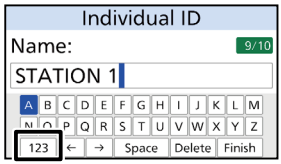
NOTE:
• For a Group ID, the first digit is fixed as “0.”
• For any coast station ID, the first 2 digits are fixed as “0.”

4. Push Next to start entering the ID’s name.



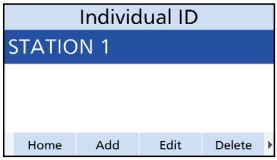
TIP:
• Select ABC or 123 to enter numbers and letters, and !$? to enter symbols.





• Select a number, character, or space using [▲], [▼], [◀], and [▶].
• Push [ENT] to enter the selected number or character.
• Select “←” or “→” on the screen to move the cursor, or to select the entered character.

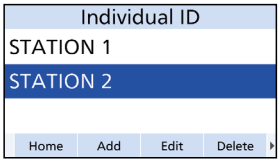
5. After entering, select Finish, and then push [ENT] to save, and return to the previous screen.
   • The entered name is displayed.



■ DSC address ID

◇ Deleting an entered ID

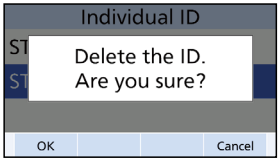
Example: Deleting an Individual ID: STATION 2



1. Open the “Individual ID” screen.

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

2. Select “STATION 2,” and then push Delete.
   - “Delete the ID. Are you sure?” is displayed.
3. Push OK to delete.
   ⓘPush Cancel to cancel the deletion.
   - The selected ID is deleted, and then returns to the previous screen.

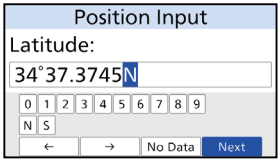


TIP: You can edit an ID and its name by pushing Edit in step 2.

■ Entering the position and time

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

NOTE:
- The manual entry is disabled while valid GNSS data is received.
- The manually entered position and time are valid only for 23.5 hours, or until turning OFF the transceiver.

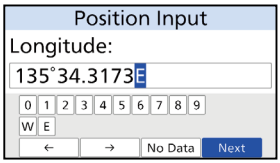


1. Open the “Position Input” screen.

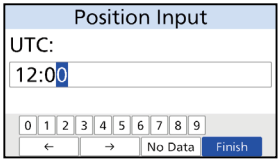
   [MENU] > Settings > DSC > **Position Input**

2. Enter the latitude.

   TIP:
   - Select a number or a compass direction using [▲], [▼], [◀], and [▶].
   - Select “←” or “→” on the screen to move the cursor.
   - Select Next, and then push [ENT] to save the selected number.



3. Enter the longitude and the UTC time.
   ⓘSee the TIP in step 2 to enter.



4. After entering, select Finish, and then push [ENT] to save, and return to the previous screen.
   - The “DSC” screen is displayed.

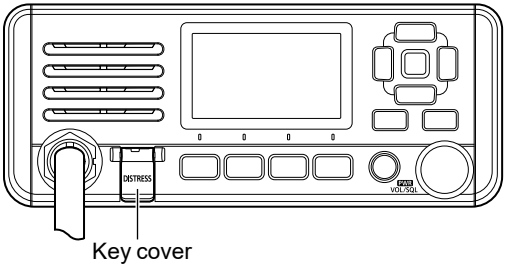
■ Sending DSC calls (Distress)

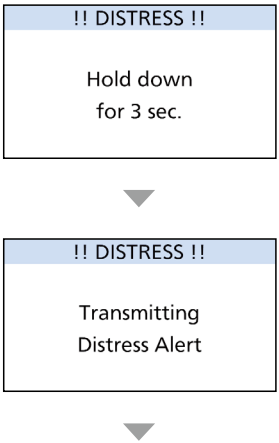
A Distress call should be sent if, in the opinion of the captain, the ship or a person is in distress and requires immediate assistance.

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.

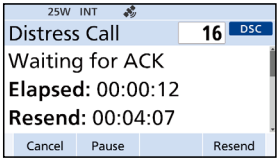
◇ Simple call

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.
   - The backlight blinks.

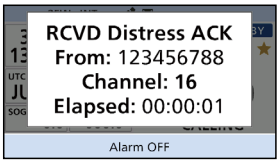




3. After sending, wait for an Acknowledgment call.
   - "Waiting for ACK" is displayed.
   - The Distress call is automatically sent every 3.5 to 4.5 minutes, until an Acknowledgment is received, or a Distress Cancel call is sent.



4. When you receive an Acknowledgment, an alarm sounds. Push [Alarm OFF] to turn OFF the alarm.
   - Channel 16 is automatically selected.
5. Push [Close Window].
6. Hold down [PTT], and then explain your situation.
7. After you have finished your conversation, push [Home].
   - "Terminate the procedure. Are you sure?" is displayed.
8. Push [OK] to return to the Main screen.

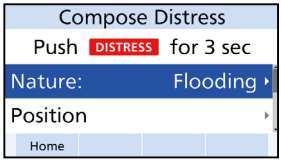


TIP: A default Distress alert contains:
- Nature of distress: Undesignated distress
- Position information: The latest GNSS, or manually input position, that is held for 23.5 hours, or until you turn OFF the transceiver.

■ Sending DSC calls (Distress)

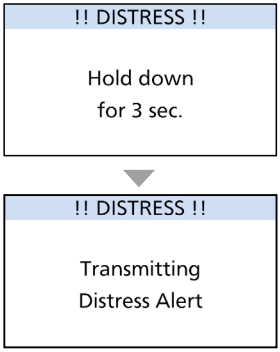
◇ Regular call

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



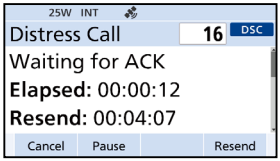
1. Push DTRS.
   - The "Compose Distress" screen is displayed.
2. Push [ENT] to enter the Nature selection mode.
3. Select the nature of the Distress, and then push [ENT]. (Example: Flooding)
   - The setting is saved and returns to the "Compose Distress" screen.

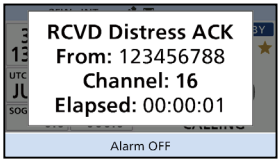
   ⓘIf no valid GNSS data is being received, select "Position," and then enter the latitude, longitude, and UTC. See "Entering the position and time" on page 30 for details.
4. While lifting up the key cover, hold down [DISTRESS] (the red button) for 3 seconds until you hear 3 short countdown beeps and a long beep.
   - 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. 33)





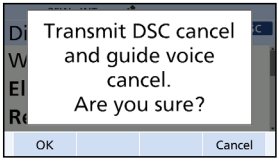
6. When you receive an Acknowledgment, an alarm sounds. Push Alarm OFF to turn OFF the alarm.
   - Channel 16 is automatically selected.
7. Push Close Window.
8. Hold down [PTT] to communicate.
9. After you have finished your conversation, push Home.
   - "Terminate the procedure. Are you sure?" is displayed.
10. Push OK to return to the Main screen.

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

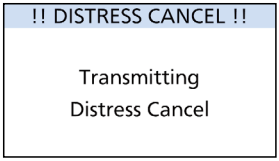
◇ Distress Cancel call

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 Acknowledgment. Be sure to report the purpose of the cancellation.

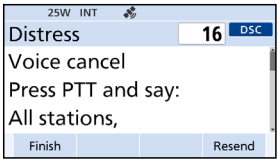
1. While waiting for an Acknowledgment, push Cancel.
   • The screen on the right is displayed.



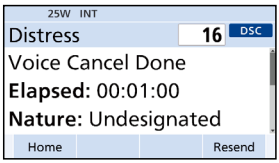
2. Push OK.
   • The Distress Cancel call is sent.
   • Channel 16 is automatically selected.



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 on the right is displayed.
5. Push Home to finish the Distress Cancel call.
   • "Terminate the procedure. Are you sure?" is displayed.
6. Push OK to return to the Main screen.



◇ Distress call Software Key description

While waiting for an Acknowledgment:

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.

After receiving an Acknowledgment:

Home : Closes the Distress operation, and returns to the Main screen.

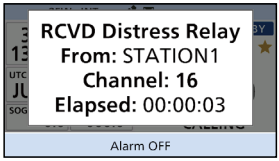
History : Displays the "Distress History."

■ Sending DSC calls (Distress)

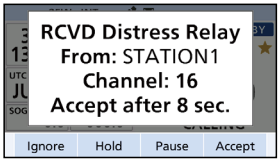
◇ Sending a Distress Relay acknowledgment

You can send the Distress Relay acknowledgment only when a Distress Relay call is received.

1. When a Distress Relay call is received:
   - An alarm sounds.
   - The screen on the right is displayed.
2. Push Alarm OFF to turn OFF the alarm.

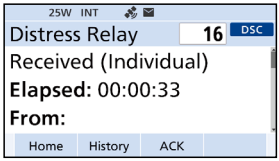


3. Push Accept.
   - The received information is displayed.

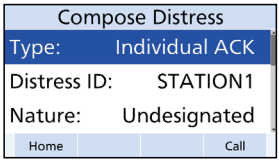


4. Push ACK.
   - The call contents screen is displayed.

   ⓘPush [▼] or [▲] to view the call contents.



5. Push Call to send the Distress Relay acknowledgment.
   - “Transmitting Distress Relay ACK” is displayed.



6. Hold down [PTT] to communicate.
7. After you have finished your conversation, push Home.
   - “Terminate the procedure. Are you sure?” is displayed.
8. Push OK to return to the Main screen.

■ 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. 54)

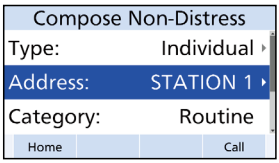
◇ Sending an Individual call

An Individual call enables you to send a DSC signal to only a specific station. You can communicate after receiving the Acknowledgment “Able to Comply.”

1. Push [Other DSC].
   - The “Compose Non-Distress” screen is displayed.

   ⓘYou can also display the “Compose Non-Distress” screen by selecting the “Other DSC” item on the Menu screen.
2. Select “Type,” and then push [ENT].
3. Select “Individual,” and then push [ENT].
   - Returns to the “Compose Non-Distress” 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 Non-Distress” screen.

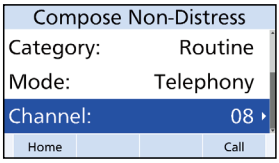
   ⓘYou can also select “Manual Input” to manually enter the target station ID.

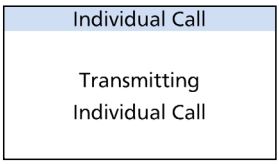


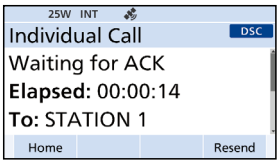
6. Select “Channel,” and then push [ENT].
7. Select a channel to assign, and then push [ENT].

   ⓘ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.



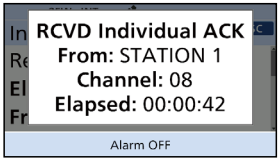




(Continued on the next page)

■ Sending DSC calls (other)

◇ Sending an Individual call



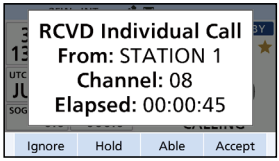
9. When you receive an Acknowledgment “Able to Comply”:
   - An alarm sounds.
   - The screen on the right is displayed.
10. Push **Alarm OFF** to turn OFF the alarm.
    - The channel assigned in step 7 is automatically selected.

    ⓘIf the called station cannot use the channel that you assigned, a different channel is selected by the other station.
11. Push **Close Window**.
12. Hold down [PTT] to communicate.

> **TIP:** If you received an Acknowledgment “Unable to Comply”:
> 1. Push **Alarm OFF** to turn OFF the alarm, and then push **Close Window**.
> - The Acknowledge information is displayed.
> 2. Push **Home**, and then **OK** to return to the Main screen.

◇ Sending an Individual Acknowledgment

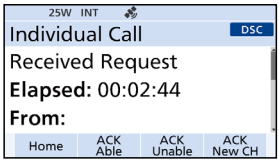
When you have received an Individual call, send an Acknowledgment to the calling station. When the Auto Ack is set to “Manual,” you can select an appropriate acknowledgment type.



1. While an Individual call is being received, push **Alarm OFF** to turn OFF the alarm.
   - The received call’s information is displayed.
2. Push **Accept**.
   - The Acknowledgment category screen is displayed.

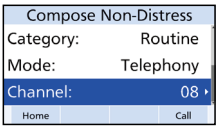
   ⓘIf you want to send an Acknowledgment “Able to Comply” right away, push **Able**.

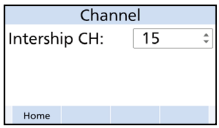
   ⓘIf you cannot communicate, and want to return to the Main screen, push **Ignore**.



3. Push **ACK Able**, **ACK Unable**, or **ACK New CH** to select the Acknowledgment type.

ACK Able: (Able to Comply)	Sends an Acknowledgment without any changes.
ACK Unable: (Unable to Comply)	Sends an Acknowledgment but cannot communicate.
ACK New CH: (Propose New CH)	Sends an Acknowledgment. You can specify the Voice Communication channel. (Example: Channel 15)





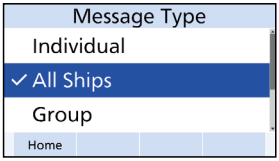
4. Push **Call** to send the Acknowledgment.
5. Push **Home**, and then **OK** to return to the Main screen.

◇ Sending an All Ships call

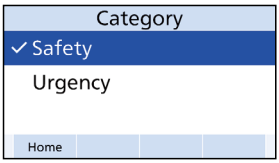
All Ships that have a DSC transceiver use Channel 70 as their listening channel. When you want to announce a message to these ships, if they are within range, use the All Ships call.

1. Push [Other DSC].
   - The “Compose Non-Distress” screen is displayed.

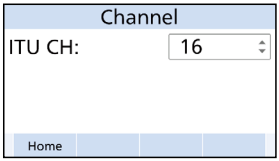
   ⓘYou can also display the “Compose Non-Distress” screen by selecting the “Other DSC” item on the Menu screen.
2. Select “Type,” and then push [ENT].
   - The “Message Type” screen is displayed.
3. Select “All Ships,” and then push [ENT].



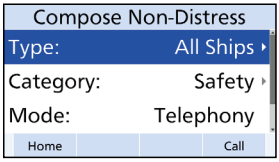
   - Returns to the “Compose Non-Distress” screen.
4. Select “Category,” and then push [ENT].
   - The “Category” screen is displayed.
5. Select a category of the call, and the push [ENT].



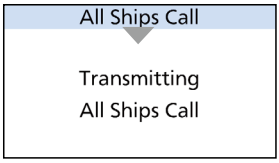
   - Returns to the “Compose Non-Distress” screen.
6. Select “Channel,” and then push [ENT].
7. Select the channel to assign, and then push [ENT].



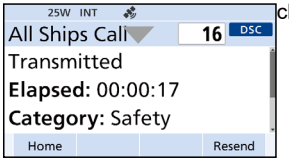
   ⓘThe assigned channels are preset by default.
8. Push [Call] to send the All Ships call.



   - “Transmitting All Ships 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.
10. Push [Home], and then [OK] to return to the Main screen.

■ Sending DSC calls (other)

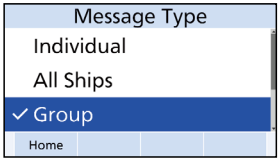
◇ Sending a Group call

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. 29)

1. Push [Other DSC].
   - The “Compose Non-Distress” screen is displayed.

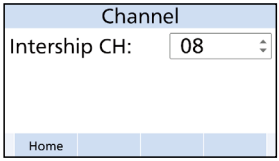
   ⓘYou can also display the “Compose Non-Distress” screen by selecting the “Other DSC” item on the Menu screen.
2. Select “Type,” and then push [ENT].
   - The “Message Type” screen is displayed.
3. Select “Group,” and then push [ENT].
   - The Group call is selected, and returns to the “Compose Non-Distress” 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].

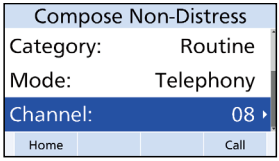
   ⓘYou can also select “Manual Input” to manually enter the target group.
6. Select “Channel,” and then push [ENT].
7. Select the channel to assign, and then push [ENT].

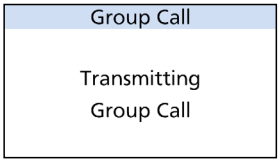
   ⓘThe assigned channels are preset by default.

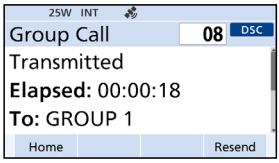


8. Push [Call] to send the Group call.
   - “Transmitting Group Call” is displayed, and then the assigned channel is automatically selected.

   ⓘIf Channel 70 is busy, the transceiver stands by until the channel becomes clear.
9. Hold down [PTT] to communicate.
10. Push [Home], and then [OK] to return to the Main screen.





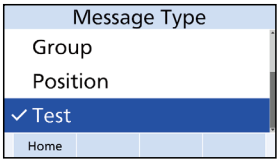


◇ Sending a Test call

You should avoid testing 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 2 stations involved.

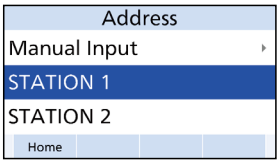
1. Push [Other DSC].
   - The "Compose Non-Distress" screen is displayed.

   ⓘYou can also display the "Compose Non-Distress" screen by selecting the "Other DSC" item on the Menu screen.
2. Select "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 Non-Distress" screen.
4. Select "Address," and then push [ENT].
   - The "Address" screen is displayed.



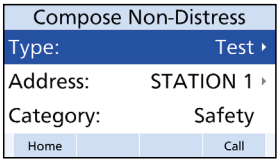
5. Select a station to send the Test call to.

   ⓘYou can also select "Manual Input" to manually enter the calling station.

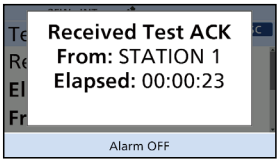


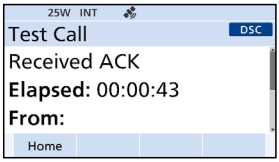
6. Push [Call] to send the Test call.

   ⓘIf Channel 70 is busy, the transceiver stands by until the channel becomes clear.



7. When you receive an Acknowledgment:
   - An alarm sounds.
   - The screen on the right is displayed.
8. Push [Alarm OFF] to turn OFF the alarm.
   - The Acknowledgment information is displayed.
9. Push [Close Window].
   - The received call's information is displayed.
   - The call is saved in the DSC Log.
10. Push [Home] to return to the Main screen.
    - "Terminate the procedure. Are you sure?" is displayed.
11. Push [OK] to return to the Main screen.
    - Returns to the Main screen.





TIP: See page 48 to send a Test Acknowledgment.

■ Sending DSC calls (other)

◇ Sending a Position Request call or Polling Request call* (*For only the USA version)

You can send a Position Request call or a Polling 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.
- Send a Polling Request call when you want to know whether a specific ship is in the communication area, or not.

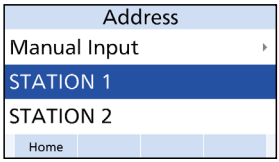
Example: Sending a Position Request call

1. Push [Other DSC].
   - The "Compose Non-Distress" screen is displayed.

   ⓘYou can also display the "Compose Non-Distress" screen by selecting the "Other DSC" item on the Menu screen.
2. Select "Type," and then push [ENT].
3. Select "Position," and then push [ENT].

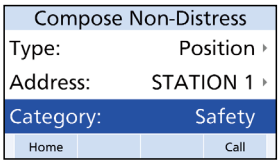
   ⓘWhen you send a Polling Request call, select "Polling."
   - The message type is selected, and returns to the "Compose Non-Distress" screen.
4. Select "Address," and then push [ENT].
5. Select a target to send a Position Request call to, and then push [ENT].

   ⓘYou can also select "Manual Input" to manually enter the target ID.

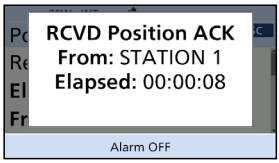


6. Push [Call] to send the Position Request call.
   - Position Request call is sent, and then "Waiting for ACK" is displayed.

   ⓘIf Channel 70 is busy, the transceiver stands by until the channel becomes clear.



7. When you receive a Position Acknowledgement:
   - An alarm sounds.
   - The screen on the right is displayed.
8. Push [Alarm OFF] to turn OFF the alarm.

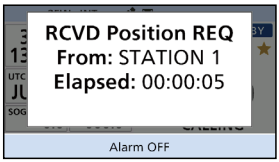


9. Push [Close Window].
   - The received information is displayed.
10. Push [▲] or [▼] to scroll the screen, and then check the target's position.
11. Push [Home], and then [OK] to return to the Main screen.

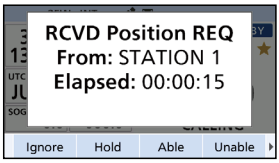
◇ Sending a Position ACK call

Send a Position ACK call when a Position Request call is received.
If the Auto ACK function is set to “Auto,” the Acknowledgment is automatically sent to the calling station. (p. 53)

1. While a Position Request is being received, push Alarm OFF to turn OFF the alarm.
   • The received call’s information is displayed.



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



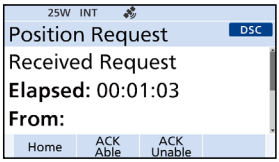
Ignore: Ignores the call and returns to the Main screen.
• The call is saved in the DSC Log.
• “✉” blinks continuously until you display the call message.

Hold: Holds the RX call task, and returns to the Main screen.

Able (Able to Comply): Sends Acknowledgment “Able to Comply” right away.
• The call is saved in the DSC Log.
• Displays the Acknowledgment information, and then returns to the Main screen by pushing Home, and then OK.

Unable (Unable to Comply): Sends an Acknowledgment “Unable to Comply.”
• The call is saved in the DSC Log.
• Displays the Acknowledgment information, and then returns to the Main screen by pushing Home, and then OK.

Accept: Accepts the call.
• Displays the received call’s information.
• The call is saved in the DSC Log.
Push ACK Able or ACK Unable, then push Call to send the Position ACK call.



Home: Closes the call, and then returns to the Main screen.

ACK Able (Able to Comply): Sends an acknowledgment with position and time data.

ACK Unable (Unable to Comply): Sends an acknowledgment with no position and time data.

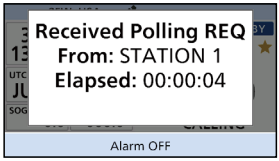
• Push Home, and then OK to return to the Main screen.

■ Sending DSC calls (other)

◇ **Sending a Polling ACK call** (For only the USA version)

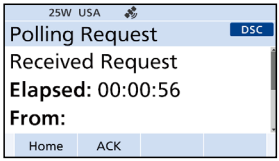
Send a Polling ACK call when a Polling Request call is received.
ⓘIf the Auto ACK function is set to “Auto,” the transceiver automatically sends the call.

1. While a Polling Request call is being received, push Alarm OFF to turn OFF the alarm.



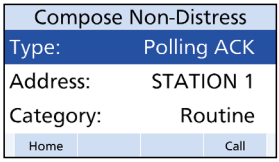
2. Push Accept.
   • Enters the DSC Task mode.

3. Push ACK.
   • The “Compose Non-Distress” screen is displayed.



4. Push Call to send the Polling ACK.
   • “Transmitting Polling ACK” is displayed.

5. Push Home, and then push OK to return to the Main screen.



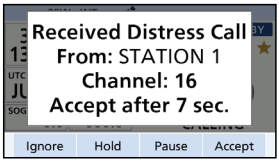
■ Receiving DSC calls (Distress)

The transceiver receives Distress calls, Distress Acknowledgments, 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 Acknowledgment is received differ slightly 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.
- The screen on the right is displayed.

1. Push Alarm OFF to turn OFF the alarm.
2. Push the Software Key below for the intended operation.

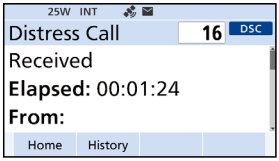


Ignore: Returns to the Main screen.
The call is saved in the DSC Log.
"✉" blinks continuously until you display the call message.

Hold: Holds the RX call task, and returns to the Main screen.

Pause: Pause is not displayed if the "CH Auto Switch" item is set to "Manual." (p. 53)
Pauses the countdown until the assigned channel is automatically selected.
Select Resume to resume the countdown.
The call is saved in the DSC Log.

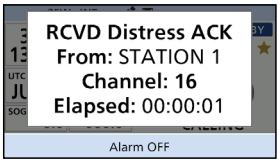
Accept: Accepts the call. Channel 16 is automatically selected. Monitor Channel 16 as a coast station may require assistance. After Channel 16 is selected, select your next operation by pushing the Software Key below the following options.
Home: Returns to the Main screen.
History: Displays the "Distress History" screen.



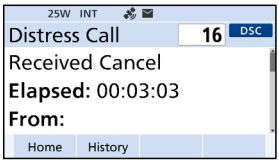
TIP: See page 31 when a Distress acknowledgment is received.

When a Distress Cancel call is received:

1. Push Alarm OFF to turn OFF the alarm.
   - The received information is displayed.



2. Push Accept.
   - The received information is displayed.
3. Push Home, and then push OK to return to the Main screen.



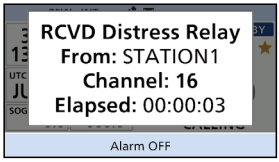
■ Sending DSC calls (other)

◇ Receiving a Distress Relay call

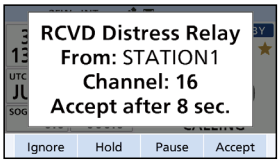
When a Distress Relay call is received:

- An alarm sounds.
- The following screen is displayed and the backlight blinks.
- "✉" blinks.

1. Push Alarm OFF to turn OFF the alarm.



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

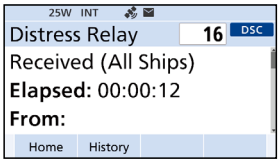


Ignore: Returns to the Main screen.
The call is saved in the DSC Log.
"✉" blinks continuously until you display the call message.

Hold: Holds the RX call task, and returns to the Main screen.

Pause: Pause is not displayed if the "CH Auto Switch" item is set to "Manual." (p. 53)
Pauses the countdown until the assigned channel is automatically selected.
Select Resume to resume the countdown.
The call is saved in the DSC Log.

Accept: Accepts the call. 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.



Home: Returns to the Main screen.

History: Displays the "Distress History" screen.

■ Receiving DSC calls (other)

The transceiver receives the following types of DSC calls.

- Individual calls (p. 45)
- Individual Acknowledgment (p. 36)
- Group call / All Ships calls (p. 46)
- Position Request calls (p. 47)
- Polling Request calls (p. 42)
- Test calls (p. 48)
- Test Acknowledgment / Polling ACK calls / Position ACK calls (p. 49)

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

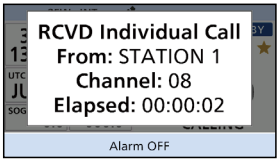
By default, the Auto ACK function automatically sends an Acknowledgment to the calling station. ([MENU] > Settings > DSC > **Auto ACK** (p. 53))
If Auto ACK is set to “Manual,” you can manually send an Acknowledgment for each call as described in this section.

◇ Receiving an Individual call

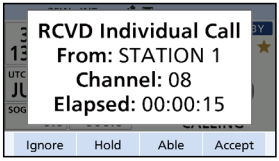
When an Individual call is received:

- An alarm sounds.
- The screen on the right is displayed.

1. Push Alarm OFF to turn OFF the alarm.



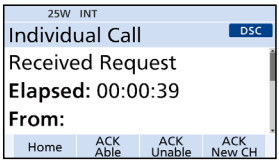
2. Push the Software Key below for the next operation.



Ignore: Ignores the call and returns to the Main screen.
- The call is saved in the DSC Log.
- “✉” blinks continuously until you display the call message.

Hold: Holds the RX call task, and returns to the Main screen.

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



Accept: Accepts the call.
- The call is saved in the DSC Log.
- The received call’s information is displayed.
- Push the Software Key to select the Acknowledgment option.

Home:	Push to delete the task and return to the Main screen.
ACK Able: (Able to Comply)	Sends an Acknowledgment without any changes.
ACK Unable: (Unable to Comply)	Sends an Acknowledgment but cannot communicate.
ACK New CH: (Propose New CH)	Able to communicate but proposes another channel. Specify the channel by pushing [▲] or [▼].

■ Sending DSC calls (other)

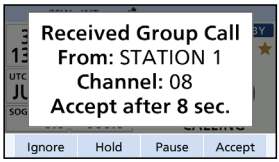
◇ Receiving a Group call or All Ships call

(Example: when a Group call is received)

When a Group call is received:
• An alarm sounds.
• “Received Group Call” is displayed.

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

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.

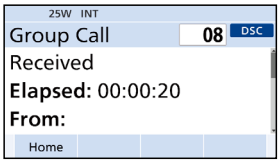


Ignore: Ignores the call and returns to the Main screen.
• The call is saved in the DSC Log.
• “✉” blinks continuously until you display the call message.

Hold: Holds the RX call task, and returns to the Main screen.

Pause: Pauses the countdown until the assigned channel is automatically selected.
• Select Resume 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.” (p. 53)

Accept: Accepts the call.
• The assigned channel is selected.
• The call is saved in the DSC Log.
Push Home and then push OK to return to the Main screen.

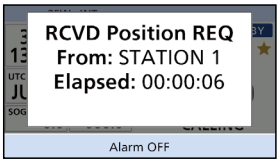


◇ Receiving a Position Request call

(May not be used, depending on the presetting)

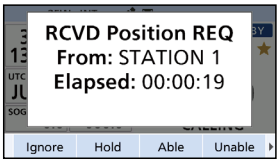
NOTE: Even if the Auto ACK function is set to “Manual” while waiting to receive a distress acknowledgment or after receiving a distress acknowledgment, the Position ACK is automatically sent to the calling station.

When a Position Request call is received:
• An alarm sounds.
• The screen on the right is displayed.



1. Push Alarm OFF to turn OFF the alarm.

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



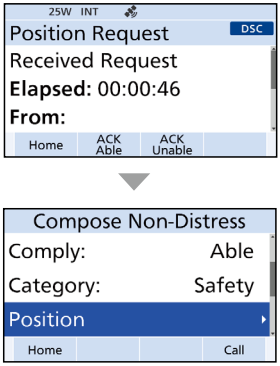
Ignore: Ignores the call and returns to the Main screen.
• The call is saved in the DSC Log.
• “✉” blinks continuously until you display the call message.

Hold: Holds the RX call task, and returns to the Main screen.

Able (Able to Comply): Sends Acknowledgment “Able to Comply” right away.

Unable (Unable to Comply): Sends an Acknowledgment “Unable to Comply.”
• The call is saved in the DSC Log.
• Displays the Acknowledgment information.
Push Home and then push OK to return to the Main screen.

Accept: Accepts the call.
• Displays the received call’s information.
• The call is saved in the DSC Log.
Push ACK Able or ACK Unable, then push Call to send the Position ACK call. (p. 41)



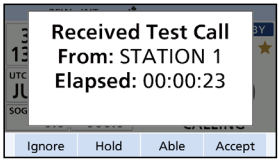
■ Sending DSC calls (other)

◇ Receiving a Test call

When a Test call is received:
• An alarm sounds.
• The screen on the right is displayed.

1. Push Alarm OFF to turn OFF the alarm.

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

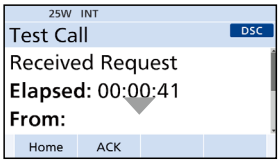


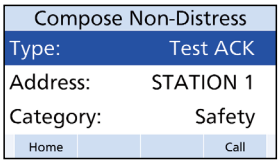
Ignore: Ignores the call and returns to the Main screen.
• The call is saved in the DSC Log.
• "✉" blinks continuously until you display the call message.

Hold: Holds the RX call task, and returns to the Main screen.

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

Accept: Accepts the call.
• Displays the received call's information.
• The call is saved in the DSC Log.
• The received call's information is displayed.
Push ACK, and then push Call to send a Test Acknowledgment.
Push Resend to resend.

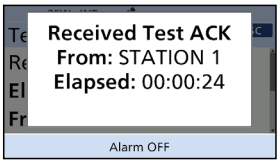




◇ Receiving a Test acknowledgment, Position ACK call or Polling ACK call* (*For only the USA version)

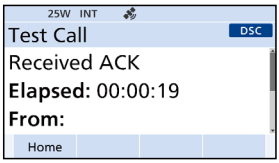
Example: Receiving a Test acknowledgement

When a Test call is received:
- An alarm sounds.
- The following screen is displayed and the backlight blinks.
- "✉" blinks.



1. Push Alarm OFF to turn OFF the alarm.

2. Push Close Window.
   - The received information is displayed.
3. Push Home.
   - "Terminate the procedure. Are you sure?" is displayed.
4. Push OK to return to the Main screen.



■ DSC Log

◇ Received DSC Log

The transceiver saves up to 30 received Distress call messages and 50 received “Others” call messages in your DSC Log.
On the Main 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.

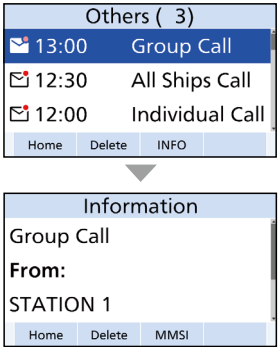
   [MENU] > **DSC Log**

2. Select “Received Call Log,” and then push [ENT].
   • The “Received Call Log” 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 Call Log” screen by pushing DSC Log on the Main screen.

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

   INFO: Displays 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 30 DSC transmitted calls in your DSC Log.

1. Open the “DSC Log” screen.

   [MENU] > **DSC Log**

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

   INFO: Displays the detailed information.
   Delete: Deletes the selected call log.
   MMSI: Saves the MMSI as an Individual ID or a Group ID.

■ Multiple-task mode

(For only the USA version, depending on the presetting)
If the Multiple-task function is enabled, the transceiver can hold up to 7 tasks. You can do more than 2 DSC tasks simultaneously by switching between the tasks. To use the Multiple-task mode, select “Multiple” in the “Procedure” on the Menu screen. (p. 54)

[MENU] > Settings > DSC > **Procedure**

When the Multiple-task mode is activated, Task List is displayed on the Main screen.

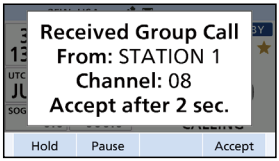
NOTE: The Task mode has an Inactivity Timer function. After a certain period of time has passed without any operation on a task, the transceiver automatically deletes a task and returns to the Main screen.
When an Inactivity Timer is set, an alarm sounds and a countdown message is displayed for 10 seconds before a certain period of time passes.

◇ Holding a DSC task

In the Multiple-task mode, you can hold or activate the DSC task as follows.

Example: When a Group call is received:

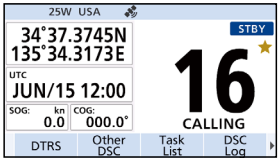
1. Push Alarm OFF to turn OFF the alarm.
   - The received call’s information is displayed.
2. Push Hold.
   - The received Group call task is held in the task list and returns to the Main screen.



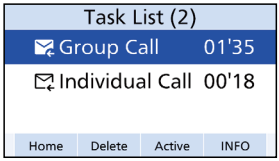
■ Multiple-task mode

◇ Activating the held DSC task

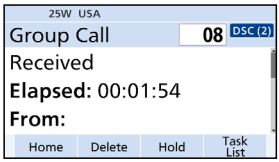
1. Push Task List to display the task list.
   - The task list is displayed.



2. Select the task that you want to activate.



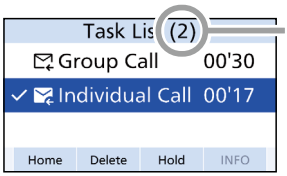
3. Push Active to activate the task.
   - The activated task information is displayed.



4. Push [PTT] to communicate.
5. After finishing the communication, push Delete to delete the task.

◇ Task list

You can display the task list screen by pushing Task List.
The number of tasks is displayed at the top of the screen.



The number of tasks

On the “Task List” screen, the following Software Keys are displayed.

Home: Holds the task and returns to the Main screen.
Delete: Finishes the selected task.
Active: Activates the selected task.
Hold: Holds the selected task.
INFO: Displays the task information.

■ 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 30 for details.

Individual ID

See “Entering an Individual ID” on page 29 for details.

Group ID

See “Entering a Group ID” on page 29 for details.

Auto ACK

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

- **Individual ACK**
  - Auto (Able): Automatically sends “Able to Comply.”
  - Auto (Unable): Automatically sends “Unable to Comply.”
  - Manual: Manually sends an Acknowledgment.
- **Position ACK**
  - Auto (Able): Automatically sends “Able to Comply.”
  - Manual: Manually sends an Acknowledgment.
- **Polling ACK**
  - Auto: Automatically sends an Acknowledgment.
  - Manual: Manually sends an Acknowledgment.
- **Test ACK**
  - Auto: Automatically sends an Acknowledgment.
  - Manual: Manually sends an Acknowledgment.

CH Auto Switch

Select whether or not to automatically switch to channel 16 or the specified channel, or ignore the call.

Accept after 10 sec.:
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 in the DSC call.

Ignore after 10 sec.:
After receiving a DSC call, if you do not push the Software Key below **Accept** in 10 seconds, the transceiver ignores the call, and then remains on the current operating channel.

Manual:
After receiving a DSC call, you can select whether or not to accept the received DSC call.

NOTE: In the Multiple-task mode, “Ignore” changes to “Hold after 10 sec.”

DSC Data Output

When receiving a DSC call from the station that is selected in this setting, the transceiver outputs the DSC data to the NMEA output port.

ⓘYou can send Distress calls despite of this setting.

- All Stations: From any station.
- Stations List: From the stations that have an Individual ID or Group ID on the Menu screen.
- OFF: Does not output any DSC data to an external device.

■ DSC Settings

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 30 minutes after turning ON the transceiver.
  - The received position data has not been updated for 10 minutes.
  - The position data has not been updated for 4 hours.
  - The position data has not been updated for 23.5 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.

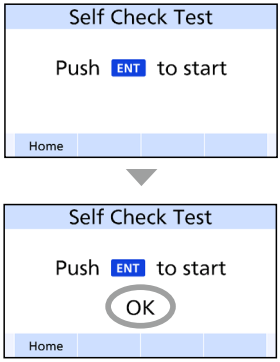
CH 70 SQL Level

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

Self Check Test

The Self-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.
ⓘWhen the sending and receiving DSC signals match, “OK” is displayed.



Procedure

(For only the USA version)
You can select the type of task for the transceiver, depending on the presetting.

Single: Handles only 1 task at the same time.
Multiple: Handles up to 7 tasks at the same time.

■ Making an Individual call to an AIS target

You can transmit an Individual call to a selected AIS target, without entering the target’s MMSI code. In this case, the call type is automatically set to Routine.

◇ Using an AIS transponder

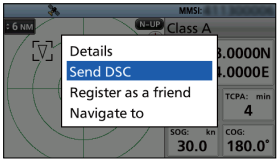
When the optional MA-510TR CLASS B AIS TRANSPONDER is connected to the transceiver, you can transmit an Individual call to a selected AIS target and the voice channel on the transponder.
ⓘSee page 72 for connecting instructions.

NOTE: To ensure correct operation of the DSC function, make sure you correctly set the CH70 SQL Level. (p. 54)

ⓘSee the next page for the operation.

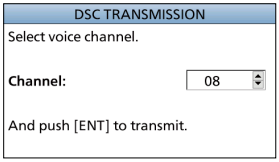
Transponder operation:

1. Select an AIS target on the plotter display, Target, Danger, or Friends list screen.
   ⓘSee the MA-510TR INSTRUCTION MANUAL for details.
2. Push [ENT] to display the Menu window.
   • The Menu window is displayed.
3. Select “Send DSC,” and then push [ENT].
   • The “DSC TRANSMISSION” screen is displayed.



4. Push [▲] or [▼] to select a voice channel.
   • Voice channels are already preset into the transponder in the recommended order.

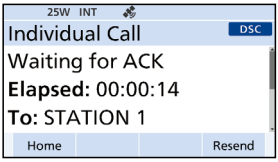
   NOTE: When a base station is selected in step 1, a voice channel will be specified by the base station. Therefore you cannot change the channel. The transponder will display “Voice Channel is specified by the Base station,” in that case.



5. Push [ENT] to make the Individual DSC call.
   • “Transmitting individual call” is displayed.
   ⓘIf Channel 70 is busy, the transceiver stands by until the channel becomes clear.
6. After making the Individual DSC call, “DSC transmission completed.” is displayed.
   • If the transceiver cannot make the call, “DSC transmission failed.” is displayed.

Transceiver operation:

7. When the acknowledgment is received, an alarm sounds.
   ● If the acknowledgment ‘Able to Comply’ is received, push Alarm OFF to stop the alarm, and then select the voice channel specified in step 4.
   • A different voice channel will be selected if the station you called cannot use the channel.
   • To reply, push [PTT] and speak at your normal voice level.
   • You can check the MMSI code or the name, if entered, of the AIS target on the display.
   ● If the acknowledgment ‘Unable to Comply’ is received, push Alarm OFF to stop the alarm, then the Acknowledge information is displayed.
8. After the communication is finished, push Home to return to the normal operating mode.



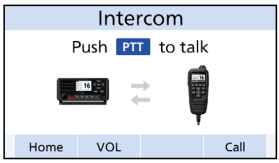
■ Using the Intercom

The optional Intercom function enables you to communicate between the deck and the cabin. The optional HM-195 COMMANDMICIV™ is required for Intercom operation.
ⓘConnect the HM-195 as described on page 75.

NOTE: While using the Intercom function,
- Transmit is disabled.
- The received call audio is muted.

1. Open the “Intercom” screen.

   [MENU] > **Intercom**

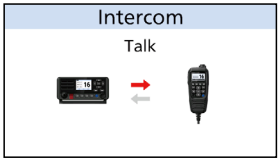


2. Hold down Call to sound the intercom beeps.
   - The transceiver and the command microphone sound beeps while holding down Call.
   - “Call” is displayed.

3. After releasing Call, hold down [PTT] and speak into the microphone at your normal voice level.
   - “Talk” is displayed.

   ⓘTo adjust the transceiver’s volume level, push VOL to open the “Intercom Volume Setting” popup screen.

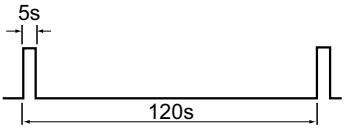
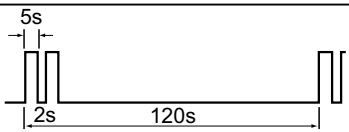
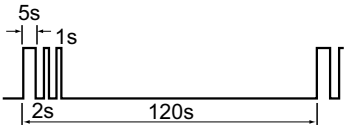
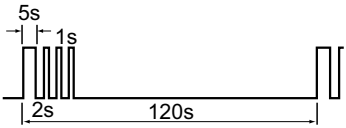
   ⓘTo adjust the command microphone’s intercom volume level, rotate the dial on the command microphone.
4. After releasing [PTT], you can hear the response through the speaker.
5. Push [CLEAR] to return to the previous screen.



■ Using the Horn function

◇ Automatic Foghorn function

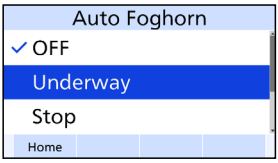
The Automatic Foghorn function repeatedly sounds a horn until the function is turned OFF.
The foghorn outputs from the hailer speaker. To use this function, the hailer speaker must be connected to the transceiver.
ⓘConnect a hailer speaker as described on page 71.

TYPE	PATTERN		USAGE
Underway	One 5-second blast every 120 seconds.		Motor vessel underway and making way.
Stop	Two 5-second blasts (separated by 2 seconds) every 120 seconds.		Motor vessel underway but stopped (not making way).
Sail	One 5-second blast followed by two 1-second blasts (each separated by 2 seconds) every 120 seconds.		Sailing vessel underway, fishing vessel (underway or anchored), vessel not under command, a vessel restricted in her ability to maneuver (underway or at anchor), or a vessel towing or pushing another ahead.
Tow	One 5-second blast followed by three 1-second blasts (each separated by 2 seconds) every 120 seconds.		Vessel under tow (manned).

1. Open the “Auto Foghorn” screen.

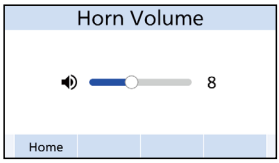
   [MENU] > Horn > **Auto Foghorn**

2. Select the foghorn pattern, and then push [ENT] to return to the previous screen.
   • The “ ” icon is displayed.
   ⓘTo turn OFF the Automatic Foghorn function, select “OFF” in the “Auto Foghorn” menu.



■ Using the Horn function

◇ Horn Volume function



1. Open the “Horn Volume” screen.

   [MENU] > Horn > **Horn Volume**

2. Push [◀] or [▶] to adjust the foghorn level.

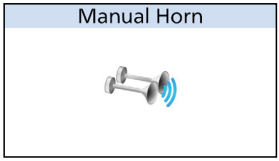
◇ Manual Horn function

1. Open the “Manual Horn” screen.

   [MENU] > Horn > **Manual Horn**

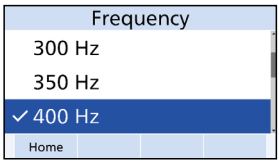
2. Hold down Horn to sound a horn.
   - While holding down Horn, the horn sounds, and the screen shown on the right is displayed.

   ⓘTo adjust the horn volume level, push VOL to open the “Horn Volume Setting” popup screen.



NOTE: While in the Horn mode, the transmit and receive functions are disabled.

◇ Frequency setting



1. Open the “Frequency” screen.

   [MENU] > Horn > **Frequency**

2. Select the foghorn’s audio frequency.

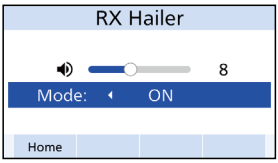
   ⓘAvailable frequency range is 200 Hz to 700 Hz in 50 Hz steps.

■ Using the RX Hailer

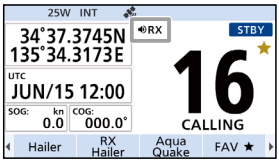
The RX Hailer function enables you to hear the received audio on the deck or bridge through a hailer speaker.
To use this function, the external hailer speaker must be connected to the transceiver.
ⓘConnect an external hailer speaker as described on page 71.

1. Open the “RX Hailer” screen.

   [MENU] > Settings > Configuration > **RX Hailer**



2. Push [◀] or [▶] to adjust the volume level.
3. Push [▼], and then push [◀] or [▶] to turn the RX Hailer function ON or OFF.
4. Push [ENT] to return to the previous screen.
   - The “RX”icon is displayed when the RX Hailer function is ON.



ⓘYou can also push RX Hailer to turn the RX Hailer function ON or OFF.

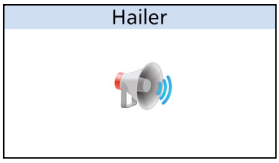
■ Using the Hailer

You can talk without leaving the bridge by using the Hailer function.
To use this function, the external hailer speaker must be connected to the transceiver.
ⓘConnect an external hailer speaker as described on page 71.

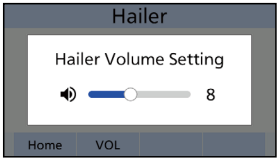
1. Open the “Hailer” screen.

   [MENU] > **Hailer**

   ⓘYou can also push Hailer to open the “Hailer” screen.



2. Hold down [PTT] and speak at your normal voice level.
   - While holding down [PTT], the screen shown on the right is displayed.
   ⓘPush VOL to open the “Hailer Volume Setting“ popup screen.



NOTE: While in the hailer mode, the transmit and receive functions are disabled.

■ Command microphone operation

You can connect the optional HM-195 COMMAND MICROPHONE to the transceiver.

◇ Main screen

◇ Command microphone Lock function

Hold down [CLEAR] for 1 second to set the Lock function ON or OFF.
The Lock function electronically locks some keys on the command microphone to prevent accidental channel changes or function access.

ⓘYou can use the [PTT], [DISTRESS], [PWR], and the dial* when the Lock function is ON.
* Only when you assign “Volume” in “Configuration.” (p. 63)

◇ The Software Key names

Some Software Key names in the transceiver and the command microphone are different.

Example:

Transceiver	Command microphone
DSC Log	LOG
Dual Watch	DW
Tri Watch	TW
RX Hailer	RX
AquaQuake	AQUA
FAV ★	★
CH Name	NAME
Display	BKLT

◇ Command microphone Menu screen items

These items are displayed only on the Command microphone screen. Use the command microphone keys to make the settings.

Backlight

[MENU] > Settings > Configuration > **Backlight**

Adjust the backlight level of the Command microphone’s display in 7 levels and “OFF.”

Display Contrast

[MENU] > Settings > Configuration > **Display Contrast**

Adjust the contrast of the Command microphone’s display in 8 steps.

COMMANDMIC Speaker

[MENU] > Settings > Configuration > **COMMANDMIC SP**

Select the speaker to use when the Command microphone is connected to the transceiver.
Internal Speaker: Outputs audio from a Command microphone’s speaker.
External Speaker: Outputs audio from an external speaker connected to a Command microphone.

NOTE: Regardless of this setting, audio is output from the transceiver and the supplied microphone, depending on the “Speaker” settings. (p. 64)

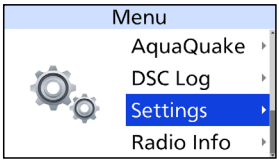
■ Using the Menu screen

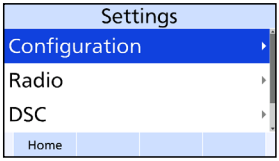
The Menu screen is used to set items, select options, and so on for the transceiver's functions.

◇ Menu screen operation

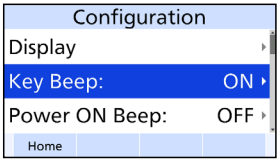
Example: Setting the key beep to "OFF."

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 "Configuration," and then push [ENT].
   • The "Configuration" screen is displayed.

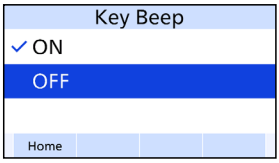




4. Push [▲] or [▼] to select "Key Beep," and then push [ENT].
   • The "Key Beep" screen is displayed.



5. Push [▲] or [▼] to select "OFF," and then push [ENT].
   • "OFF" is set and the transceiver returns to the previous screen.



TIP:
• To exit the Menu screen, push [MENU].
• To return to the previous screen, push [◀] or [CLEAR].

■ Using the Menu screen

◇ Menu screen items

The Menu screen contains the following items. See the referred pages for each item.
The displayed menu items may differ, depending on the transceiver version or presetting.

Item	Reference
Distress	
Nature	p. 32
Position	
LAT	p. 30
LON	
UTC	
Other DSC	
Type	p. 35
Address	
Category	
Mode	
Channel	
Unread List/Task List*1	p. 52
Hailer	p. 59
Horn	
Manual Horn	p. 58
Auto Foghorn	p. 57
Horn Volume	p. 58
Frequency	p. 58
Intercom	p. 56
GNSS Info	p. 63
AquaQuake	p. 24
DSC Log	
Received Call Log	p. 50
Transmitted Call Log	p. 50
Settings	
Configuration	
Display	p. 63
Power Save	p. 63
Key Beep	p. 63
Power ON Beep	p. 63
VSWR Beep	p. 63
Key Assignment	p. 63
UTC Offset	p. 63
Inactivity Timer	p. 64
GNSS	p. 64
Speaker	p. 64
RX Hailer	p. 64

Item	Reference
Settings	
Configuration	
Noise Cancel	p. 64
PWR SW from MIC	p. 65
Model*2	p. 65
ATIS ID Input*3	p. 19
MMSI Clear	p. 65
Radio	
Scan Type*4	p. 65
Scan Timer*4	p. 65
Dual/Tri-Watch*4	p. 65
Channel Group*5	p. 65
Call Channel	p. 66
WX Alert*1	p. 66
Favorite Channel	p. 66
FAV on MIC	p. 66
Channel Display	p. 66
LO/DX*1	p. 66
DSC	
Position Input	p. 53
Individual ID	p. 53
Group ID	p. 53
Auto ACK	p. 53
CH Auto Switch	p. 53
DSC Data Output	p. 53
Alarm Status	p. 54
CH 70 SQL Level	p. 54
Self Check Test	p. 54
Procedure*1	p. 54
NMEA	
NMEA0183	p. 66
NMEA2000	p. 67
Radio Info	p. 68

*1 For only the USA version
*2 For only the EUR version
*3 For the NLD and FRG versions
*4 Except for the NLD version
*5 Except for the EUR version

■ Menu items description

◇ GNSS Info

Displays your position, date, time, Speed Over Ground (SOG), Course Over Ground (COG), and RAIM* information.
* Only when the built-in GNSS receiver is used.

◇ Settings

• **Configuration**

[MENU] > Settings > **Configuration**

Display

Adjust the display settings.
ⓘSee page 22 for details.

Power Save

Set the timer to activate the Power Save function.
After the set period with no signal and no operation made, the transceiver's function display and the backlight are turned OFF.
ⓘThe distress key is still backlit even when the function is ON.

Key Beep

Select whether or not to sound a beep when a key is pushed.
ON: A beep sounds when a key is pushed.
OFF: No beep sounds, for silent operation.

Power ON Beep

Select whether or not to sound a beep when the transceiver is turned ON.
ON: The transceiver sounds a beep.
OFF: The transceiver does not sound a beep.

VSWR Beep

Select whether or not to sound a beep when a high VSWR is detected.
ON: A beep sounds when a popup screen is displayed.
OFF: No beep sounds when a popup screen is displayed.

Key Assignment

● **Soft Keys**

Soft Key 1 ~ 16:
You can change which Software Key functions to display, and their order. You can assign up to 16 Software Keys at a time.
ⓘ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.

Set Default:
Sets the Software Key function order to the default settings.
ⓘThe default settings may differ, depending on the transceiver version or presetting.

● **Dial**

↻ / Push x1, Push x2 ~ x4:
You can assign the audio volume (Volume), squelch (SQL), channel selection (Channel), and the display (Display) settings to any one of 4 sequential positions on the dial.

Set Default:
Sets the dial assignment to the default settings.
ⓘThe default settings may differ, depending on 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).

■ Menu items description

◇ Settings

Inactivity Timer

The transceiver automatically returns to the Main 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.

GNSS

Select a satellite to be used for GNSS (Global Navigation Satellite System) to pinpoint the geographic location of your transceiver anywhere in the world.

- **GPS**
  The GPS (Global Positioning System) is permanently set to ON.
- **GLONASS**
  Select whether or not to use the data from the GLONASS (GLObal'naya NAvigatsionnaya Sputnikovaya Sistema) satellites.
- **SBAS**
  Turn the SBAS (Satellite Based Augmentation System) function ON or OFF. When turning ON this function, the GNSS position accuracy can be improved.
- **Galileo**
  Select whether or not to use the data from the Galileo.

Speaker

Select the speaker to use.

Internal:	The audio is heard from the internal speaker.
Speaker MIC:	The audio is heard from the microphone's speaker.
External:	The audio is heard from the external speaker.

RX Hailer

Set the RX Hailer function.
ⓘSee page 59 for details.

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.
Middle:	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.

  - **Radio**
    Set the reduction level of the Noise Cancel function.
- **TX**

ON:	Reduces random noise components in the transmitted signal to approximately one third.
OFF:	The Noise Cancel function is OFF.

  - **Microphone**
    Select whether or not to use the Noise Cancel function for the transmit signal.
  - **COMMANDMIC**
    Select whether or not to use the Noise Cancel function for the transmit signal when using the optional HM-195 COMMAND MICROPHONE.

PWR SW from MIC

Select whether or not to turn OFF the transceiver at the same time that you turn OFF the command microphone.

ⓘThe optional command microphone is required to use this function.

- **All Units**
  When you turn OFF the command microphone, the transceiver is turned OFF at the same time.
- **Own Unit**
  The transceiver is not turned OFF even if you turn OFF the command microphone.

Model

(For only the EUR version)
Select the country where you operate the transceiver.

ⓘAfter selecting the country, “The transceiver settings are reset and restart. Are you sure?” is displayed. Push OK to set.

MMSI Clear

For users who need to clear the MMSI code entered into the transceiver.

ⓘSee page 82 for details.

- **Request Code**
  You can check the Request code for changing the MMSI code.
- **Activate Code Input**
  You can enter the activation code for the reset operation.

• Radio

[MENU] > Settings > **Radio**

Scan Type

(Except for the NLD version)
Select the scan type. The default setting differs, depending on the transceiver version.

ⓘSee page 26 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

(Except for the NLD version)
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

(Except for the NLD version)
Select Dualwatch or Tri-Watch.

ⓘSee page 28 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

(Except for the EUR version)
Select a suitable channel group for your operating area. Select USA, INT, or CAN, depending on the transceiver version.

ⓘSee page 20 for details.

■ Menu items description

◇ Settings

Call Channel

Change your Call channel. The default setting may differ, depending on the transceiver version.
ⓘSee page 23 for details.

WX Alert

For the USA version, an NOAA broadcast station transmits a Weather Alert tone before any important weather information.
ⓘSee page 21 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.

Favorite Channel

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 27 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.

FAV on MIC

Turn the FAV on MIC function ON or OFF.
ON: Pushing [▲] or [▼] on the supplied microphone scrolls up and down through only the Favorite channels.
OFF: Pushing [▲] or [▼] on the supplied microphone scrolls up and down through all channels.

Channel Display

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 “10A.”
4 digits: The channel number is displayed in 4 digits, such as “1010.”

LO/DX

(For only the USA version)
Push to turn the Attenuator function ON or OFF.
Local: The Attenuator function is ON.
Distance: The Attenuator function is OFF.

• **NMEA**

[MENU] > Settings > **NMEA**

NMEA0183

Select the data transfer speed between 4800 bps or 38400 bps for each port to receive data from external devices.

NMEA2000

NMEA 2000 is a communication standard used to connect various marine devices and display units in the vessel.
The transceiver can easily connect to a NMEA 2000 network with its plug-and-play functionality, and display the information provided from the devices on the network.
Select the sensors in NMEA 2000 network which sends data to the transceiver.

ⓘSee the table on the right for the compatible PGN list.

1. Open the “NMEA2000” screen.
2. Select the type of data from the menu screen and push [ENT].
3. The transceiver starts searching the devices connected to NMEA 2000 network.
   ⓘPush Stop Search to stop searching devices and display the device list.
4. The list of connected devices is displayed.
5. Select the device to send the data to the transceiver, and push [ENT].
   - Device name: The selected device is used.
   - Auto: The first device that sends the data to the transceiver or the device that sends a higher priority data is used.
   - Not used: No NMEA 2000 device is used.

   ⓘPush INFO to display the details of the device.
   ⓘIf another device sends a higher priority data to the transceiver after selecting “Auto,” the device to be used will switch to that one.
   ⓘIn the “Auto” item, the last connected device information is not saved.
   ⓘIf the transceiver is connected to both NMEA 0183 and NMEA 2000 devices, the NMEA 2000 device has priority. Select “Not Used” if you want to use NMEA 0183 devices.

Compatible PGN list:

Receive	
059392	ISO Acknowledgment
059904	ISO Request
060160	ISO Transport Protocol, Data Transfer
060416	ISO Transport Protocol, Connection Management
060928	ISO Address Claim
065240	ISO Commanded Address
126208	NMEA
126996	Product Information
129026	COG (Course Over Ground) and SOG (Speed Over Ground) - Rapid Update
129029	GNSS (Global Navigation Satellite System) Position Data

Transmit	
059392	ISO Acknowledgment
059904	ISO Request
060416	ISO Transport Protocol, Connection Management
060928	ISO Address Claim
126208	NMEA
126464	PGN List
126993	Heartbeat
126996	Product Information
126998	Configuration Information
129026	COG (course over ground) and SOG (speed over ground) - Rapid Update
129029	GNSS (Global Navigation Satellite System) Position Data
129539	GNSS DOPs
129540	GNSS Sats in View
129545	GNSS RAIM Output
129799	Radio Frequency/Mode/Power
129808	DSC Call Information

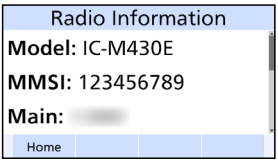
■ Menu items description

◇ Radio Info

[MENU] > **Radio Info**

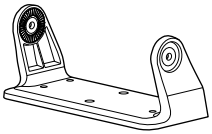
Displays the Model name, your MMSI code, and so on. The displayed information may differ, depending on the transceiver version.

Example:

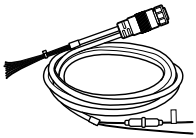


■ Supplied accessories

Mounting bracket



DC power cable



For mounting bracket

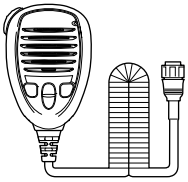
Knob bolts

Flat washers (M5)

Screws
(5 × 20 mm)

Spring washers (M5)

Microphone



Microphone hanger
and screws (3 × 16 mm)

For panel mounting

Nut plates

Screws
(5 × 35 mm)

Screws
(4 × 45 mm)

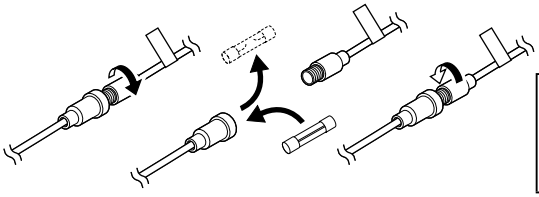
Flush mount gasket
(For only the EUR version)

Warning sticker
(For only the USA version)

NOTE: Some accessories may not be supplied, or the shape may be different, depending on the transceiver version.

■ Fuse replacement

One fuse is installed in the supplied DC power cable. If the fuse blows, or the transceiver stops functioning, track down the source of the problem, repair it, and replace the damaged fuse with a new one of the proper rating.



Fuse Coding explanation

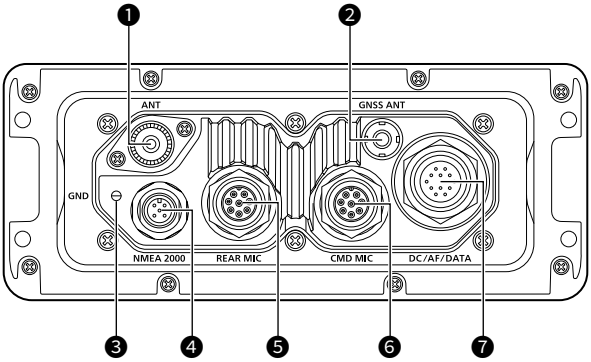
Fuse Coding:	F 250 V 10 A
Fuse Voltage Rating:	250 Volts
Fuse Current Rating:	10 Amperes

■ Cleaning

If the transceiver becomes dusty or dirty, wipe it clean with a soft cloth.

DO NOT use harsh solvents such as Benzine or alcohol, as they will damage the transceiver's surfaces.

■ Connections



❶ ANTENNA CONNECTOR [ANT]
Connect to a marine VHF antenna with a PL-259 connector.
A key element in the performance of any communication system is the antenna. Ask your dealer about antennas and the best place to mount them.

CAUTION: DO NOT transmit without an antenna.

❷ GNSS ANTENNA CONNECTOR [GNSS ANT]
Connect to an optional GNSS antenna.

NOTE:
- The GNSS sentences input from this connector take precedence over the sentences input from the built-in GNSS receiver.
- **BE SURE** the GNSS antenna is positioned where it has a clear view to receive signals from satellites, and fixed using the double-sided adhesive pad supplied with the antenna.

❸ GROUND TERMINAL [GND]
Connect to a vessel ground to prevent electrical shocks and interference from other equipment occurring.
Use a self tapping screw (3 × 6 mm: user supplied).

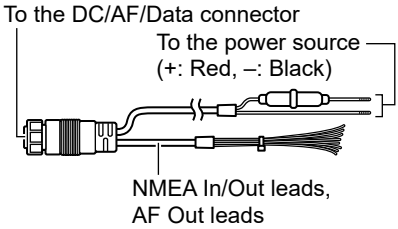
❹ NMEA 2000 CONNECTOR [NMEA 2000]
Connect to an NMEA 2000 network.

❺ MICROPHONE CONNECTOR [REAR MIC]
Connect the supplied or optional microphone.
* Not usable when the microphone is connected to the connector on the front panel.

❻ COMMAND MICROPHONE CONNECTOR [CMD MIC]
Connect an optional command microphone.

❼ DC/AF/DATA CONNECTOR [DC/AF/DATA]

Connect the supplied DC power cable.



AF OUT LEADS

Connect an external speaker or a hailer speaker.

Blue:	External Speaker (+)
Black:	External Speaker (–)
Orange:	Hailer Speaker (+)
Gray:	Hailer Speaker (–)

CAUTION: After connecting the DC power cable, NMEA In/Out leads, or AF Out leads, cover the connector and leads with a vulcanizing tape, as shown below, to prevent water from seeping into the connection.

NMEA IN/OUT LEADS

Yellow: Listener A (Data-H), Data In (+)
Green: Listener B (Data-L), Data In (–)
Connect the NMEA output lines of a GNSS receiver for position data.

- NMEA 0183 (ver. 2.0 or later) sentence format RMC, GGA, GNS, or GLL and VTG compatible GNSS receiver is required. Ask your dealer about suitable GNSS receivers.
- The GNSS sentences input from this connector are given priority to the sentences input from the built-in GNSS receiver.

White: Talker A (Data-H), Data Out (+)
Brown: Talker B (Data-L), Data Out (–)
Connect the NMEA 0183 input lines of navigation equipment, to receive position data from other ships.

- An NMEA 0183 (ver. 2.0 or later) sentence format DSC or DSE compatible navigation equipment is required.
- The built-in GNSS receiver outputs RMC and GBS format sentences.

■ Connecting to the MA-510TR

Connect the transceiver to the MA-510TR CLASS B AIS TRANSPONDER using the accessory cable. After connecting, an Individual DSC call can be made to the AIS target using the transponder without entering the target's MMSI code. (p. 29)

ⓘSee the MA-510TR instruction manual for the connecting instructions.

- Connect each lead to the appropriate lead as follows.
  - Listener A (Data-H) (Yellow): To NMEA OUT (+)
  - Listener B (Data-L) (Green): To NMEA OUT (–)
  - Talker A (Data-H) (White): To NMEA IN (+)
  - Talker B (Data-L) (Brown): To NMEA IN (–)

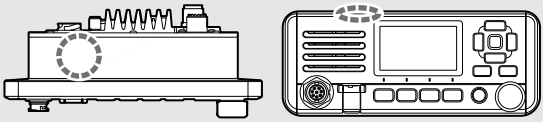
■ Mounting the transceiver

◇ Using the supplied mounting bracket

You can mount the transceiver on a dashboard using the universal mounting bracket supplied with your transceiver.

CAUTION: KEEP the transceiver and microphone at least 1 meter (3.3 ft) away from the vessel's magnetic navigation compass.

NOTE: The built-in GNSS antenna is located, as shown below.
Be sure that the transceiver is positioned where the transceiver has a clear view to receive signals from satellites.

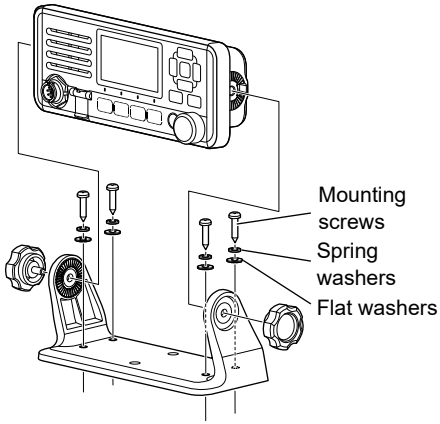


1. Mount the bracket securely to a surface that is more than 10 mm thick and can support more than 5 kg using the 4 supplied screws (5 × 20 mm).

   NOTE: When mounting the transceiver on a board, fix the bracket to the board using the user supplied bolts and nuts, as shown on the right.

2. Attach the transceiver to the bracket so that the face of the transceiver is at 90° to your line of sight when operating it.
   ⓘAdjust the function display angle to be easy-to-read.

Mounting Example:

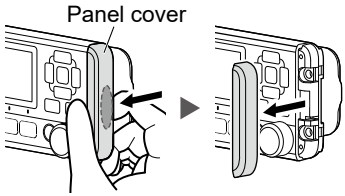


◇ Panel Mounting

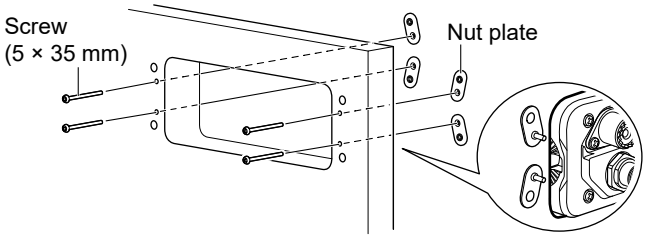
You can mount the transceiver to a flat surface (Less than 25 mm thick).

NOTE:
- Install the transceiver and/or microphone more than 1 meter from the vessel's magnetic navigation compass.
- If you mount the transceiver to a surface more than 25 mm thick, use the MBF-9 (option). See page 74 for details.

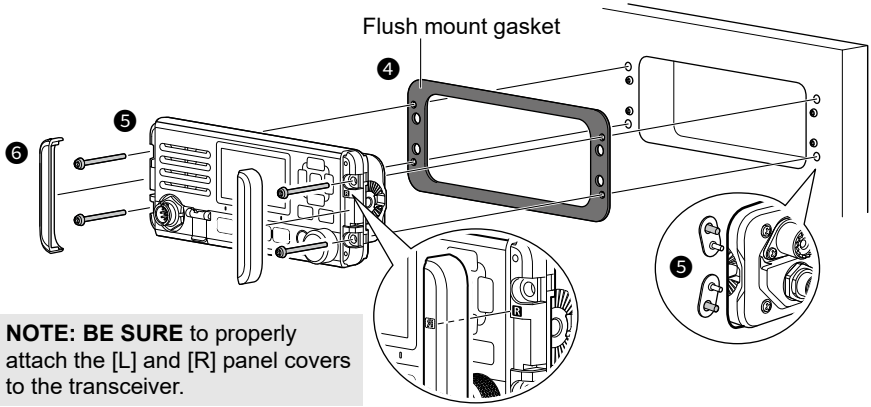
1. Remove the [L] and [R] panel covers from the front panel of the transceiver.
   ⓘBe careful not to break your fingernail.
   ⓘIf you cannot remove the panel covers with your fingers, use a durable tool with a narrow tip, such as a flat-blade screwdriver.



2. Using the template in this manual, carefully cut a hole in the instrument panel, or wherever you plan to mount the transceiver.
3. Attach the 4 screws (5 × 35 mm) and 4 nut plates to the instrument panel, as shown below.



4. Place the flush mount gasket between the transceiver and the instrument panel to prevent water ingress, and slide the transceiver through the hole.
5. Attach the transceiver to the instrument panel with 4 screws (4 × 45 mm), and then tighten with 4 nut plates, as shown below.
6. Attach the panel covers to the transceiver's front panel.



NOTE: BE SURE to properly attach the [L] and [R] panel covers to the transceiver.

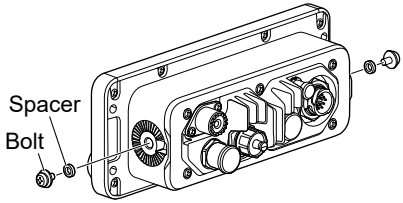
■ Mounting the transceiver

◇ MBF-9 installation

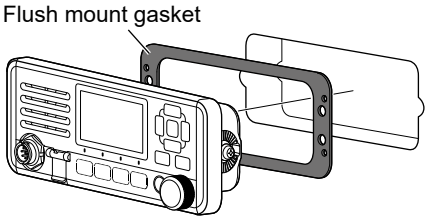
The optional flush mount kit is for mounting the transceiver to a flat surface (Less than 35 mm thick), such as an instrument panel.

NOTE: Install the transceiver and/or microphone more than 1 meter from the vessel's magnetic navigation compass.

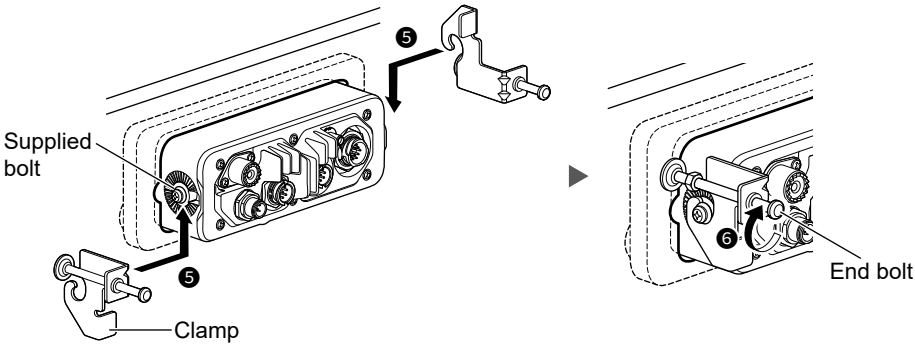
1. Attach the 2 bolts (5 × 8 mm) and 2 spacers supplied with the MBF-9 to both sides of the transceiver.



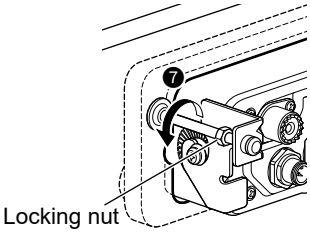
2. Using the template in this manual, carefully cut a hole in the instrument panel, or wherever you plan to mount the transceiver.
3. Place the flush mount gasket between the transceiver and the instrument panel to prevent water ingress, and slide the transceiver through the hole, as shown on the right.



4. Fully loosen the locking nut attached to the clamp.
5. Insert the clamps between the supplied bolts and the instrument control panel, and then tighten the supplied bolts so that the clamps firmly press against the inside of the instrument control panel. (Torque: 2 N•m)
   ⓘMake sure that the clamps align parallel to the transceiver body.
6. Tighten the end bolts on the clamps (rotate clockwise).



7. Tighten the locking nuts (rotate counterclockwise) so that the transceiver is securely mounted in position, as shown on the right. (Torque: 2 N•m)



8. Connect the antenna and power cable, and then return the instrument control panel to its original place.

■ Microphone installation

When you use the supplied or optional HM-205RB SPEAKER MICROPHONE, the optional 6.1 meters long OPC-1000 EXTENSION CABLE can be connected between the transceiver and the HM-205RB to operate from even longer distances.

You can also install the extension cable's connector as a built-in plug on a cabinet or wall.

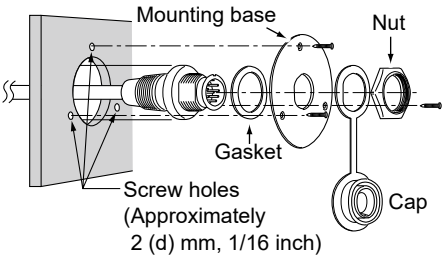
For the optional HM-195 COMMAND MICROPHONE, you can install the connection cable's connector on the wall in the same way.
ⓘWhen using the OPC-1541 EXTENSION CABLE to the OPC-1540, connect the OPC-1541 between the OPC-1540 and the transceiver.

NOTE: The firmware of the command microphone may be updated when you connect them to the transceiver.

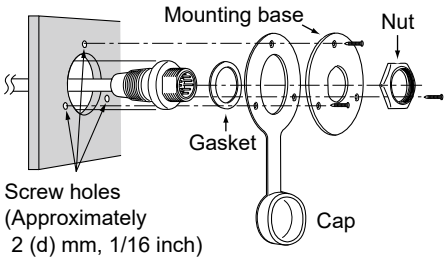
◇ Installation

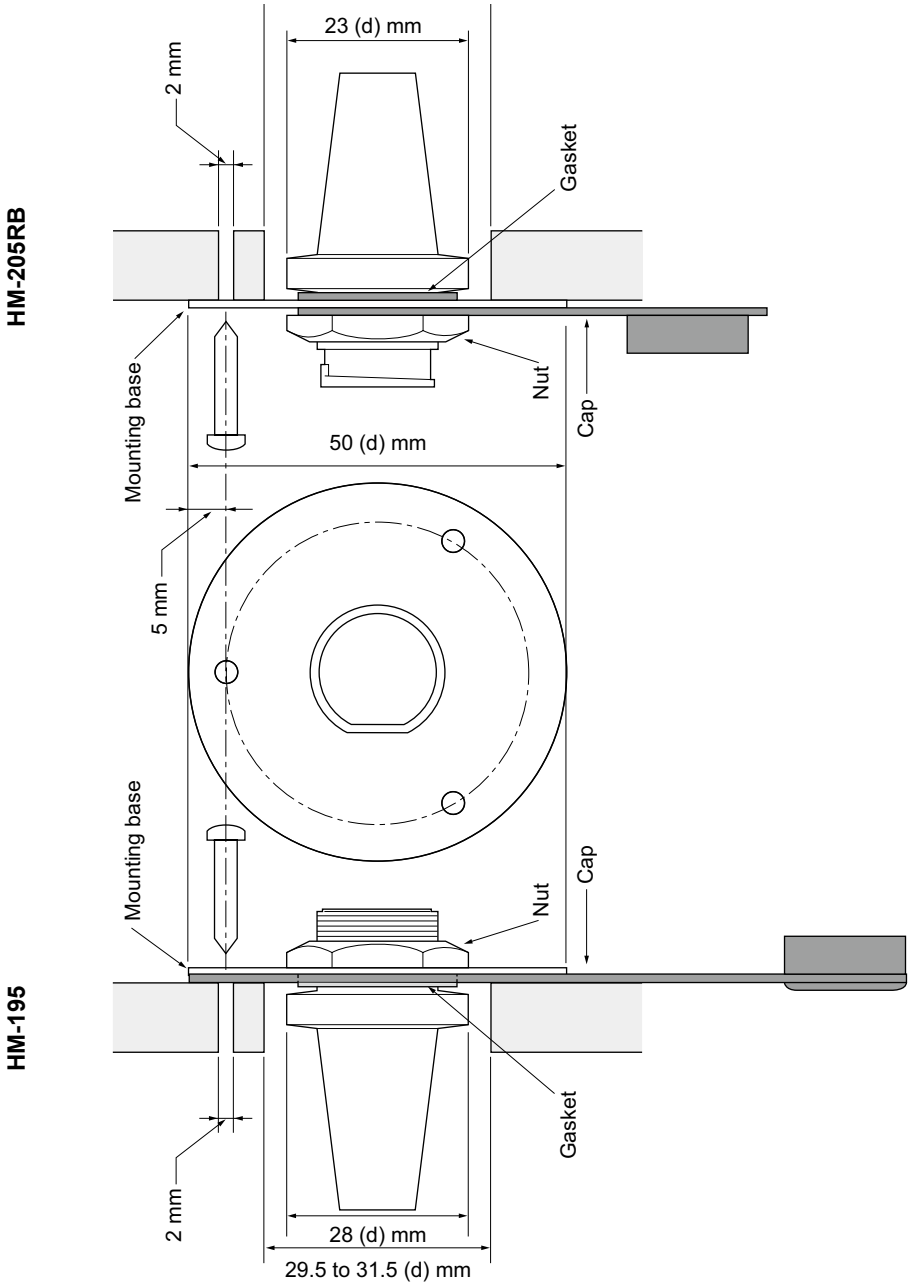
1. Insert the connection cable connector into the command microphone jack, and tighten the nut.
2. To use the cable connector as a wall socket, install it as shown below.
3. Using the mounting base as a template, carefully mark the holes where the cable and 3 screws will be fastened.
4. Drill holes at these marks.
5. Install the mounting base using the supplied screws, as shown below.

HM-205RB:



HM-195:




HM-205RB
HM-195
2 mm
23 (d) mm
Gasket
Mounting base
Nut
Cap
50 (d) mm
5 mm
Mounting base
Nut
Cap
Gasket
2 mm
28 (d) mm
29.5 to 31.5 (d) mm

■ Specifications

◇ General

• Frequency coverage:		
TX	IC-M430	156.025 ~ 157.425 MHz
	IC-M430E	156.025 ~ 161.425 MHz
RX	IC-M430	156.050 ~ 163.275 MHz
	IC-M430E	156.050 ~ 162.000 MHz
WX CH (IC-M430)		161.650 ~ 163.275 MHz
DSC (CH 70)		156.525 MHz
• Mode:		16K0G3E (FM), 16K0G2B (DSC)
• Operating temperature range:		–20°C ~ +60°C, –4ºF ~ +140ºF
• Current drain (at 13.8 V):		TX high (25 W) 5.0 A maximum
		RX Maximum audio (at 4 Ω Load)
		Less than 1.6 A (no external speakers)
		Less than 2.0 A (with HM-195)
		Less than 4.0 A (with external speaker)
		Less than 7.0 A (with external speaker, RX hailer speaker, and HM-195 external speaker)
• Power supply requirement:		Negative ground
	IC-M430	13.8 V DC (11.7 ~ 15.9 V DC)
	IC-M430E	12.0 V DC (10.8V ~ 15.6V DC)
• Antenna impedance:		50 Ω nominal
• Dimensions (approximate, projections not included):		202 (W) × 82 (H) × 52.6 (D) mm 8.0 (W) × 3.2 (H) × 2.1 (D) in
• Weight (approximate):		640 g, 1.4 lb (Not including microphone)

◇ Transmitter

• Output power:		25 W or 1 W
• Modulation system:		Variable reactance frequency modulation
• Maximum frequency deviation:		±5 kHz
• Frequency tolerance (IC-M430):		Less than ±0.5 kHz
• Spurious emissions:	IC-M430	Less than –70 dBc (High Power) Less than –56 dBc (Low Power)
	IC-M430E	Less than 0.25 µW
• Adjacent channel power:		More than 70 dB
• Audio harmonic distortion:		Less than 10 % (at 60% Deviation)
• Residual modulation:		More than 40 dB
• Audio frequency response:		+1 dB ~ –3 dB of 6 dB octave from 300 Hz ~ 3000 Hz

◇ Receiver

• Receive system:		Double conversion superheterodyne
• Sensitivity:		
FM	IC-M430	–13 dBµ (typical) at 12 dB SINAD
	IC-M430E	–5 dBµ emf (typical) at 20dB SINAD
DSC (CH 70)		–5 dBµ emf (typical) (1% BER)
• Squelch sensitivity:	IC-M430	Less than –7 dBµ
	IC-M430E	Less than –2 dBµ emf
• Intermodulation rejection ratio:		
FM	IC-M430	More than 70 dB
	IC-M430E	More than 68 dB
DSC (CH 70)		More than 68 dBµ emf (1% BER)

■ Specifications

◇ Receiver

• Spurious response:	
FM	More than 70 dB
DSC (CH 70)	More than 73 dBμ emf (1% BER)
• Adjacent channel selectivity:	
FM	More than 70 dB
DSC (CH 70)	More than 73 dBμ emf (1% BER)
• Audio output power:	More than 10 W (at 10% distortion into a 4 Ω external speaker)
• Hum and noise:	More than 40 dB
• Audio frequency response:	+1 dB ~ –3 dB of –6 dB octave from 300 Hz ~ 3000 Hz

◇ Built-in GNSS

• Channel:	Acquisition, tracking	Maximum 24 CH
	Calculation	Maximum 12 CH
• Differential satellites:	WAAS, EGNOS, MSAS, GAGAN	
• Corresponding GNSS:	GPS, GLONASS, SBAS, Galileo	
• Receiving frequency:	GPS, SBAS, Galileo	1575.42 MHz
	GLONASS	1602.00 MHz

◇ Hailer

• Audio output power (at 13.8 V):	25 W typical (at 30% distortion into a 4 Ω)

◇ RX Hailer

• Audio output power (at 13.8 V):	16 W typical (at 10% distortion into a 4 Ω)

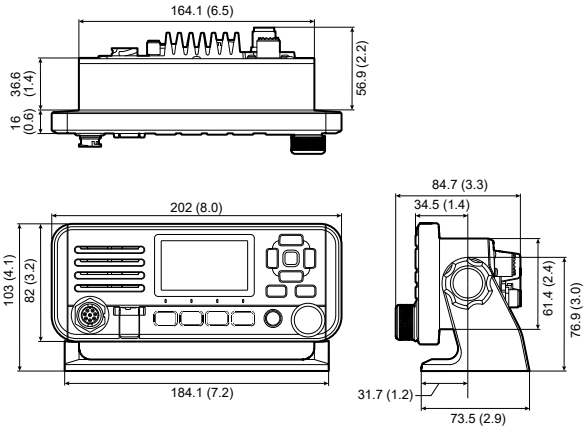
◇ NMEA 2000

• Load Equivalency Number:	1

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

■ Dimensions

Unit: mm (inch)



■ Options

NOTE: When an optional product with a lower IP rating than the transceiver is attached, the transceiver meets the lower IP rating of the optional product.

- **HM-195GB/HM-195GW** COMMANDMICIV™
  External microphone-type controller. Provides optional intercom operation 6.1 meters (20 feet) microphone cable and mounting base included.
  HM-195GB: Black
  HM-195GW: White

- **HM-205RB** SPEAKER MICROPHONE
  Equipped with [▲]/[▼] (channel up/down), [H/L], [16/C] and [PTT] keys, a speaker and microphone.

- **OPC-1541** MICROPHONE EXTENSION CABLE
  6.1 meters (20 feet) microphone extension cable for the optional HM-195.
  Up to two OPC-1541 can be connected. Usable length is 18 meters (60 feet) maximum.

- **OPC-1000** MICROPHONE EXTENSION CABLE
  6.1 meters (20 feet) microphone extension cable for the HM-205RB.

- **OPC-2522L/OPC-2523L** CONVERSION CABLE
  L-type conversion cable for a speaker microphone or a command microphone.
  OPC-2522L: For the HM-205RB
  OPC-2523L: For the HM-195GB or the HM-195GW

- **SP-37** HORN SPEAKER
  The external horn speaker. Connect with the AF Out leads for the external speaker.
  ⓘTo use the Hailer function or the Horn function, connect to the transceiver.
  ⓘSP-37 has not been tested and Icom does not guarantee its waterproofness.

- **UX-241** GNSS ANTENNA
  To receive GNSS signals.
  Cable length: Approximately 5.0 m, 16.4 feet

- **MBZ-3** FRONT PANEL COVER
  Attach to protect from sunlight. See page 80 for details.

- **MBF-9** FLUSH MOUNT KIT
  To mount the transceiver to a panel.

- **MBA-18** MOUNTING GASKET
  To mount the transceiver to a panel.

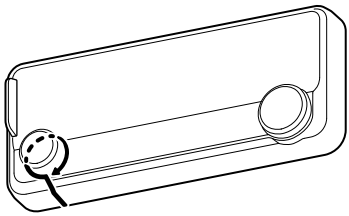
■ Options

◇ Using the MBZ-3

Attach the optional front panel cover to protect the transceiver from sunlight. You can use the MBZ-3 while the HM-205RB SPEAKER MICROPHONE is connected to the front panel.

To use the MBZ-3 with the HM-205RB connected:

1. Cut off a part of the MBZ-3 above the notch, as shown on the right.
   ⓘMake the microphone's cable slot, and remove the left projection, by carefully tearing the MBZ-3 material along the notched line by hand.
2. Attach the MBZ-3 by passing the microphone's cable through the cut.



■ Troubleshooting

The transceiver does not turn ON.

- There is a bad connection to the power supply.
  → Check the connection to the transceiver and power supply. (p. 71)
- The fuse is blown.
  → Repair the problem, and then replace the fuse. (p. 69)

Little or no sound comes from the speaker.

- The squelch level is set too high.
  → Set the squelch to the threshold point. (p. 22)
- The volume level is set too low.
  → Set the volume level to a suitable level. (p. 22)

You cannot transmit with high power.

- Some channels are set for low power or receive only by regulations.
  → Change channels. (p. 20)
- The output power is set to low.
  → Push HI/LO to select high power. (p.17)

Scan does not start.

- More than 2 favorite channels are not set.
  → Set at least 2 favorite channels. (p.27)

No beep sounds.

- The Key Beep function is OFF.
  → Turn ON the function. (p. 63)

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. 29)

“?” blinks instead of the position and time.

- Four hours have passed since you manually entered the position.
- The GNSS position is invalid.
  → Enter the position and time. (p. 30)

“No Position” and “No Time” are displayed instead of the position and time.

- The GNSS signal is not correctly received.
  → Check the GNSS antenna connection and position. (p. 70)
  → Check the cable connection to NMEA In/Out leads. (p. 71)
  → Check the transceiver is located where the built-in GNSS has a clear view to receive signal from satellites. (p. 72)
- The position and time have not been manually entered.
  → Enter the position and time. (p. 30)

Sensitivity is too low, and only strong signals can be heard.

- The antenna is defective or the coaxial cable connector is shorted or cut.
  → Repair the problem and then reconnect to the antenna connector. (p.70)

Communication cannot be established.

- The antenna is defective or the coaxial cable connector is shorted or cut.
  → Repair the problem and then reconnect to the antenna connector. (p.70)

The transceiver is locked up, and does not respond.

- A software error has occurred.
  → Turn OFF the transceiver, and then turn it ON again.

The transceiver does not work.

- The transceiver’s Phase Lock Loop is unlocked.
  → Contact your dealer.

■ Changing the MMSI code

This is only for users who need to clear the MMSI code entered into the transceiver for any reason, such as incorrectly entering the MMSI code.
If you do not yet have an MMSI code, please contact the relevant authority in your country to obtain one.
ⓘRefer to page 18 on how to enter an MMSI code.

◇ Requesting the Activation code

Contact Icom by e-mail with the following information.
(E-mail address: MMSI-reset-request@icom.co.jp)
ⓘThis e-mail address is only for requesting an Activation code, not for requesting an MMSI code. Icom cannot issue MMSI codes.

Required information:

- Model name
- Request code (16-digit number)

ⓘSee below how to check the Request code on your transceiver.

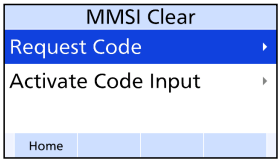
Checking your Request code:

You can check the Request code on your transceiver's menu screen.

1. Open the "MMSI Clear" screen.

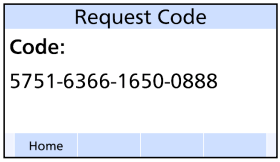
   [MENU] > Settings > Configuration > **MMSI Clear**

   ⓘThe "MMSI Clear" menu is displayed only when the MMSI code or the ATIS ID has been set.



2. Select "Request Code," and then push [ENT].
   - A 16-digit of Request code is displayed.

   ⓘThe code on the right is only an example.



◇ Reprogramming the MMSI code

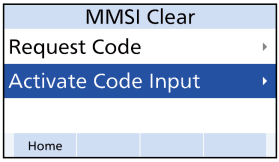
After Icom accepts your request, you will be sent an Activation code for the reset operation. Enter the Activation code to your transceiver and reset the MMSI code.

CAUTION:
- The Activation code can be used only once.
- For transceivers programmed with ATIS, the reset operation clears both the MMSI code and the ATIS ID.

1. Open the “MMSI Clear” screen.

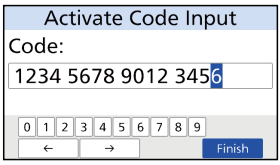
   [MENU] > Settings > Configuration > **MMSI Clear**

2. Select “Activate Code Input,” and then push [ENT].



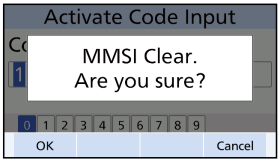
3. Enter the 16-digit of Activation code.
   ⓘThe code on the right is only an example.

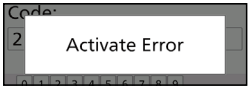
   TIP:
   - Select a number using [◀] and [▶].
   - Push [ENT] to enter the selected number.
   - Select “←” or “→” on the screen or rotate the dial to move the cursor.



4. Select Finish to set the entered code.
   - When the Activation code is successfully entered, the screen on the right is displayed.

   ⓘIf the entered code is not correct, an error message is displayed, and then returns to the input screen. Enter the correct Activation code.





5. Push OK to clear the MMSI code and ATIS ID.
   - The transceiver restarts.

TIP: See pages 18 and 19 for how to enter your new MMSI code and ATIS ID.

13 CHANNEL LIST

■ For IC-M430

NOTE: When the “Channel Display” is set to “3 digits” in the Radio setting, the channel number is displayed in 3 digits. See page 66 for details. (For example: “1010” is displayed as “10A.”)

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*3	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

*1 Low power only
*2 RX only
*3 Momentary High Power

Channel Number			Frequency (MHz)	
USA	INT	CAN	Transmit	Receive
	1028		157.400	157.400
		2028	RX only	162.000
	60	60	156.025	160.625
	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*3	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
*3 Momentary High Power

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

ⓘSee page 21 for details on the WX channel.

■ For IC-M430E

NOTE: When the “Channel Display” is set to “3 digits” in the Radio setting, the channel number is displayed in 3 digits. See page 66 for details. (For example: “1010” is displayed as “10A.”)

◇ International channels

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

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

◇ USA channels (for only the UK version)

CH	Frequency (MHz)		CH	Frequency (MHz)		CH	Frequency (MHz)		CH	Frequency (MHz)	
	Transmit	Receive		Transmit	Receive		Transmit	Receive		Transmit	Receive
1001	156.050	156.050	17*2	156.850	156.850	1037	157.850	157.850	1079	156.975	156.975
1005	156.250	156.250	1018	156.900	156.900	1063	156.175	156.175	1080	157.025	157.025
06	156.300	156.300	1019	156.950	156.950	1065	156.275	156.275	1081	157.075	157.075
1007	156.350	156.350	20	157.000	161.600	1066	156.325	156.325	1082	157.125	157.125
08	156.400	156.400	1020	157.000	157.000	67*1	156.375	156.375	1083	157.175	157.175
09	156.450	156.450	1021	157.050	157.050	68	156.425	156.425	84	157.225	161.825
10	156.500	156.500	1022	157.100	157.100	69	156.475	156.475	85	157.275	161.875
11	156.550	156.550	1023	157.150	157.150	71	156.575	156.575	86	157.325	161.925
12	156.600	156.600	24	157.200	161.800	72	156.625	156.625	87	157.375	157.375
13*1	156.650	156.650	25	157.250	161.850	73	156.675	156.675	88	157.425	157.425
14	156.700	156.700	26	157.300	161.900	74	156.725	156.725	P4	161.425	161.425
15	RX only	156.750	27	157.350	161.950	77*2	156.875	156.875			
16	156.800	156.800	28	157.400	162.000	1078	156.925	156.925			

*1 Momentary High Power *2 Low power only
ⓘ 1037 and P4 channels are UK Marina Channels: M1=1037, M2=P4.

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

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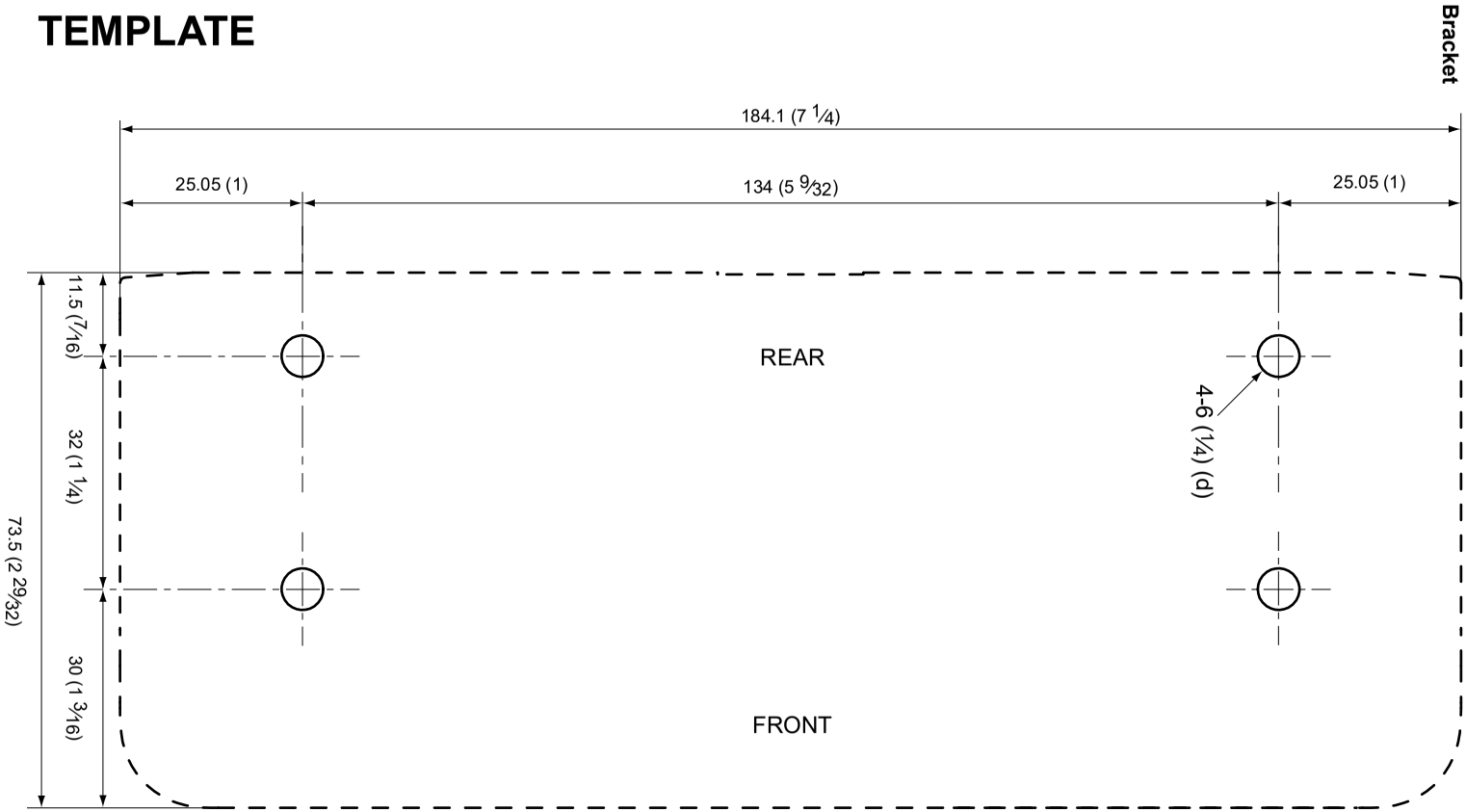
TEMPLATE



Unit: mm (inch)

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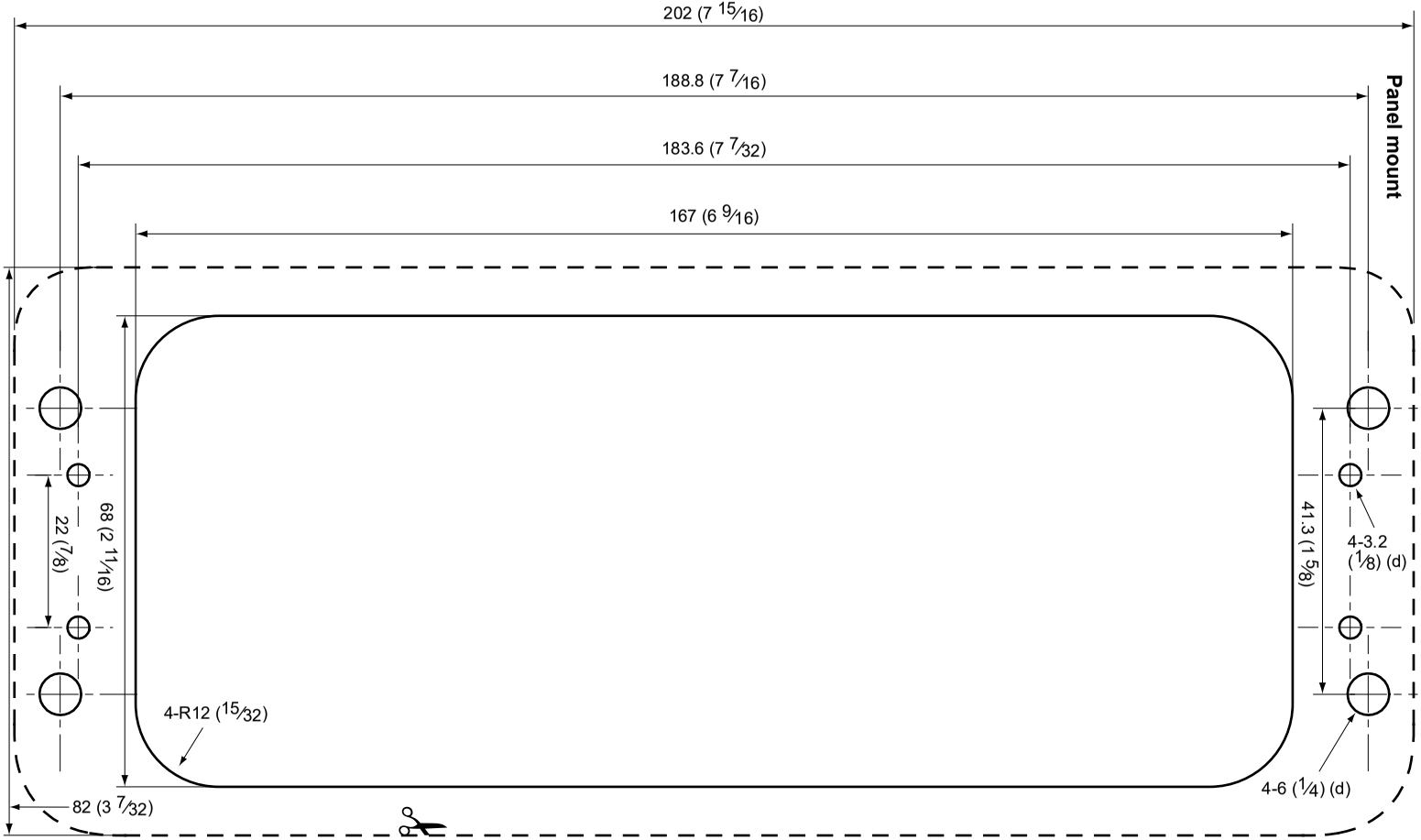

Unit: mm (inch)

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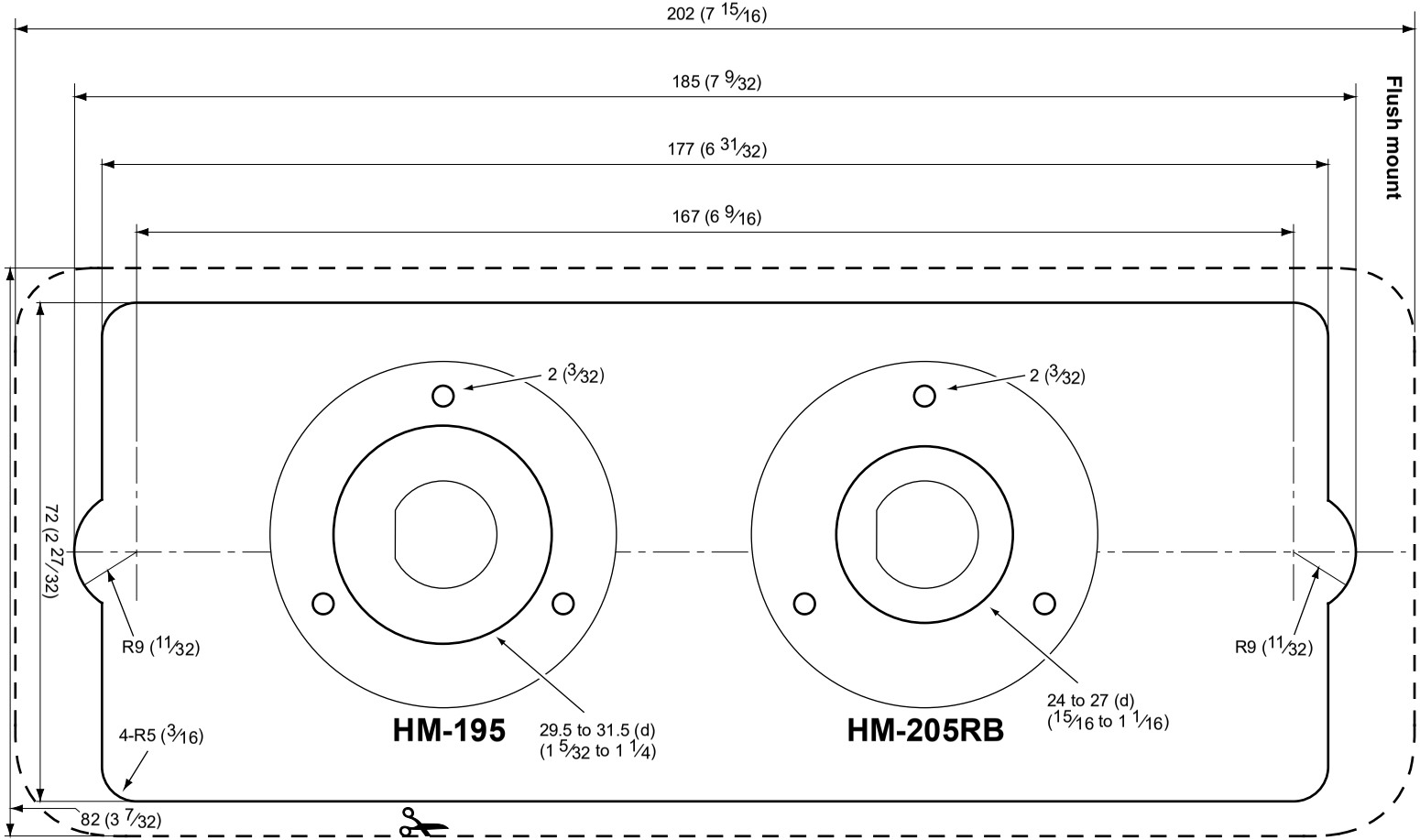

Unit: mm (inch)

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