



INSTRUCTION MANUAL

VHF MARINE TRANSCEIVERS

IC-M220 IC-M220G



Icom Inc.

Thank you for choosing this Icom product. This product is designed and built with Icom's state of the art technology and craftsmanship. With proper care, this product should provide you with years of trouble-free operation.

■ IMPORTANT

READ ALL INSTRUCTIONS carefully and completely before using the transceiver.

SAVE THIS INSTRUCTION MANUAL — This instruction manual contains important operating instructions for the IC-M220, IC-M220G.

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	If disregarded, inconvenience only. 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

- Flexible installation with a compact body
- Easy user interface
The transceiver is equipped with a screen for easy readability and easy-to-use user interface.
- Dualwatch and Tri-watch functions
Convenient functions that enable you to monitor the Distress channel (Ch 16) while receiving on another channel (Dualwatch), or while receiving on another channel, and the Call channel (Tri-watch).
- Built-in Class D DSC function
The transceiver has the DSC functions for distress alert transmission and reception, as well as the general DSC calls such as Individual calls, All ships calls, Group calls, and so on.
- Built-in GPS receiver (For only the IC-M220G)

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■ IN CASE OF EMERGENCY

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

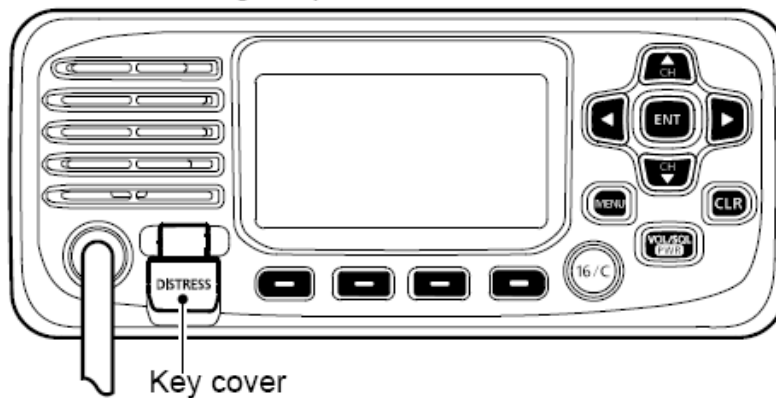
◇ USING CHANNEL 16

1. Push [16/C] to switch to Channel 16.
2. While holding down [PTT], give the appropriate information as follows:

- **“MAYDAY MAYDAY MAYDAY.”**
- **“THIS IS []”** (name of vessel).
- Say your call sign or other indication of the vessel (AND your 9 digit DSC ID, if you have one).
- **“LOCATED AT []”** (your position).
- State the nature of the distress and assistance required.
- Give any other information which might facilitate the rescue.

◇ USING DIGITAL SELECTIVE CALLING

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



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

■ RADIO OPERATION WARNING



WARNING

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

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

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

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

Determining MPE Radius

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

■ AVERTISSEMENT POUR LES OPÉRATEURS 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 9dBi 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 TIEN COMPTE D'UN SYSTÈME INSTALLÉ SUR UN NAVIRE UTILISANT LA PUISSANCE MAXIMALE DE LA RADIO ET DES ANTENNES DONT LE GAIN MAXIMAL EST DE 9dBi.

Determining MPE Radius

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

■ FCC INFORMATION

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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

■ INFORMATION FCC

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

L'utilisation de cet appareil dans une zone résidentielle peut provoquer un brouillage préjudiciable, auquel cas l'utilisateur sera tenu de corriger la situation à ses frais.

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

■ 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 below. Make sure the chosen location is clean and dry before applying the sticker.



■ PRECAUTIONS

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

⚠ **WARNING! NEVER** connect the transceiver to a power source of more than 16 V DC such as a 24 V battery. This connection could cause a fire or damage the transceiver.

⚠ **WARNING! NEVER** reverse the DC power cable polarity. This could cause a fire or damage the equipment.

⚠ **WARNING! NEVER** cut the DC power cable between the DC power connector on the transceiver's rear panel and the fuse holder. If an incorrect connection is made after cutting, the transceiver may be damaged.

⚠ **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.

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

CAUTION: DO NOT place or leave the transceiver in areas with temperatures below $-20^{\circ}\text{C} \sim +60^{\circ}\text{C}$ ($-4^{\circ}\text{F} \sim +140^{\circ}\text{F}$), or in areas subject to direct sunlight, such as a dashboard.

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's rear panel will become hot when transmitting continuously for long periods of time.

BE CAREFUL! The transceiver meets IPX7 requirements for waterproof protection*. However, once the transceiver or microphone has been dropped, or the waterproof seal is cracked or damaged, waterproof protection cannot be guaranteed because of possible damage to the case or the waterproof seal.

* Except for the DC power connector, NMEA In/Out leads and AF Out leads.

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

NOTE: Place the transceiver in a secure place to avoid inadvertent use by unauthorized persons.

■ PRÉCAUTIONS

⚠ **AVERTISSEMENT ! NE JAMAIS** relier l'émetteur-récepteur à une prise CA. Cela pourrait provoquer un choc électrique ou un incendie.

⚠ **AVERTISSEMENT ! NE JAMAIS** brancher l'émetteur-récepteur sur une source d'alimentation supérieure à 16 V CC, comme une batterie de 24 V. Cela pourrait endommager l'émetteur-récepteur.

⚠ **AVERTISSEMENT ! NE JAMAIS** inverser la polarité du câble d'alimentation CC lors de la connexion à une source d'alimentation. Cela pourrait endommager l'émetteur-récepteur.

⚠ **AVERTISSEMENT ! NE JAMAIS** couper le câble d'alimentation CC entre la prise CC à l'arrière de l'émetteur-récepteur et le porte-fusible. L'émetteur-récepteur peut être endommagé par la suite en cas de connexion inappropriée.

⚠ **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.

⚠ **AVERTISSEMENT ! NE JAMAIS** installer l'émetteur-récepteur à un emplacement où il pourrait gêner le fonctionnement normal du navire ou provoquer des blessures corporelles.

⚠ **MISE EN GARDE : NE PAS** utiliser ou placer l'émetteur-récepteur dans des zones où la température est inférieure à -20° ou supérieure à $+60^{\circ}$ ou dans des zones soumises au rayonnement solaire direct, telles le tableau de bord.

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

MISE EN GARDE : La face arrière de la VHF chauffe en cas d'utilisation continue sur une longue durée.

MISE EN GARDE : L'émetteur-récepteur est étanche conformément à la norme IPX7*. L'étanchéité ne peut plus être garantie après une chute de l'appareil en raison des risques de fissures du boîtier, de dégradation du joint d'étanchéité, etc.

*Les connecteurs sur le panneau arrière ne sont pas étanche IPX7.

REMARQUE: INSTALLER la VHF et le microphone à au moins 1 m du compas de route du navire.

REMARQUE: Placer l'émetteur-récepteur hors de portée des enfants pour éviter toute utilisation inopinée.

Si la face avant est exposée à de l'eau de mer, **ASSUREZ-VOUS DE LE NETTOYER ENTIÈREMENT AVEC DE L'EAU DOUCE** lorsque la protection étanche sur le panneau avant fonctionne. Dans le cas contraire, les touches et le commutateur risquent de ne plus fonctionner en raison de la cristallisation du sel.

■ RECOMMENDATION

CLEAN THE TRANSCEIVER AND MICROPHONE THOROUGHLY WITH FRESH WATER after exposure to saltwater, and dry it before operating. Otherwise, the transceiver's keys, switches and controllers may become unusable, due to salt crystallization.

NOTE: If the transceiver's waterproof protection appears defective, carefully clean it with a soft, wet (fresh water) cloth, then, dry it before operating. The transceiver may lose its waterproof protection if the case or microphone is cracked or broken, the microphone connector is not screwed in completely, 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 an words or letters on them are described with the characters “[]”.

Example: [MENU], [CLR]

The Software Keys are described with the words or letters on a dark background such as **ENT** or **DISTRESS**. 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 [▲].
Enter	Push [ENT], ENT .
Go to the next tree level	Push [ENT], ENT , or [▶].
Go back to the previous tree level	Push [CLR], BACK , or [◀].
Cancel	Push [CLR].
Exit	Push [MENU] or EXIT .

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◇ 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

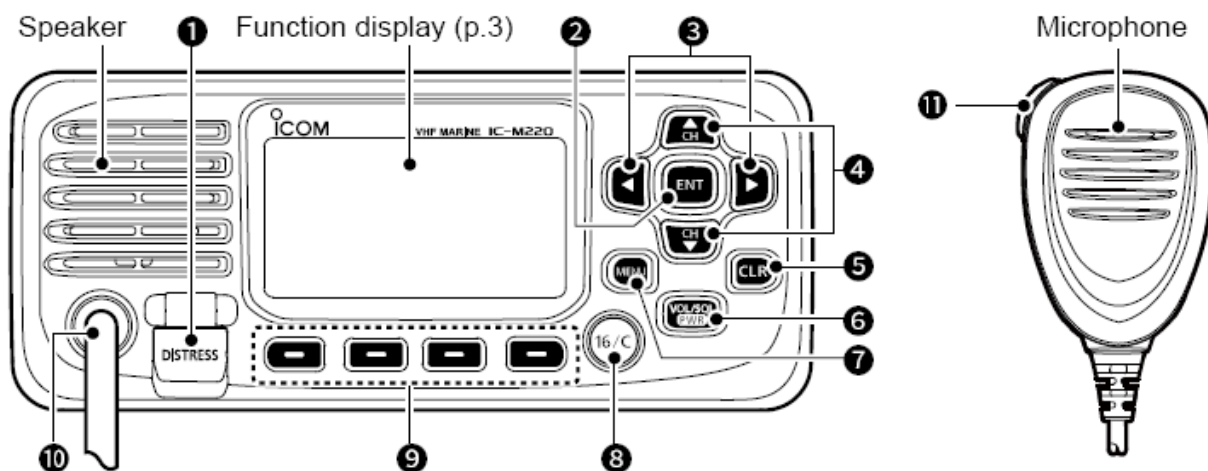
A Restricted Radiotelephone Operator Permit is the license most often held by small vessel radio operators when a radio is not required for safety purposes.

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.

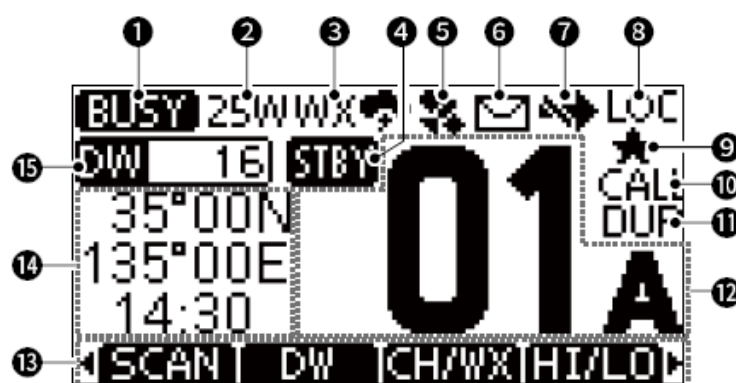
■ Front panel



- 1 DISTRESS KEY [DISTRESS]**
Hold down for 3 seconds to transmit a Distress call.
- 2 ENTER KEY [ENT]**
Push to set the entered data, selected item, and so on.
- 3 LEFT/RIGHT KEYS [◀]/[▶]**
- Push to scroll the Software Key functions. (pp. 4 ~ 5)
 - Push to select a character or number in the entry mode. (pp. 6, 11, 15~16)
- 4 UP/DOWN KEYS [▲]/[▼]**
- Push to select an operating channel, Menu items, Menu settings, and so on. (pp. 7)
 - Push to select a character or number in the entry mode. (pp. 11, 15~16)
- 5 CLEAR KEY [CLR]**
Push to cancel the entered data, or to return to the previous screen.
- 6 POWER/VOLUME/SQUELCH KEY [PWR/VOL/SQL]**
- Hold down for 1 second to turn the transceiver ON or OFF.
 - Push once to display the volume level setting screen. (p. 9)
 - Push twice to display the squelch level setting screen. (p. 9)
- 7 MENU KEY [MENU]**
Push to display or close the Menu screen.

- 8 CHANNEL 16/CALL CHANNEL KEY [16/C]**
- Push to select Channel 16. (p. 7)
 - Hold down for 1 second to select the Call channel. (p. 7)
- 9 SOFTWARE KEYS (pp.4 ~ 5)**
Scroll the key functions pushing [◀] or [▶], then push either of the 4 software keys to select the function displayed at the bottom of the display.
- 10 MICROPHONE CONNECTOR**
- CAUTION:** Be sure that the microphone connector is tightened completely (rotate clockwise) to maintain the transceiver's waterproof protection.
- 11 PTT SWITCH [PTT] (p. 10)**
Hold down to transmit, release to receive.

■ Function Display



- 1 STATUS INDICATOR** (p. 10)
 - TX: Displayed while transmitting.
 - BUSY: Displayed while receiving, or the squelch is open.
- 2 POWER INDICATOR** (p. 5)
 - 25W: High power
 - 1W: Low power
- 3 CHANNEL GROUP INDICATOR** (pp.7~8)

Displays the selected channel group, INT (International), USA, CAN (Canada), WX (Weather channel).

 - ① The selectable channels differ, depending on the version or presetting.
 - ① When the WX-Alert is set to ON, "☁" is displayed. (For only the USA version)
- 4 STATUS INDICATOR**
 - STBY: Standby mode.
 - RT: Displayed when the channel is changed while receiving or transmitting a signal.
- 5 GPS ICON**
 - Displayed when valid GPS position data is received.
 - Blinks while no position data is received.
- 6 MAIL ICON** (p. 33)
 - Displayed when there is an unread DSC message.
 - Blinks until one of the called messages is read.
- 7 CHANNEL SWITCH ICON** (p. 36)

Displayed when the "CH Auto SW" is set to "Ignore after 10 sec." or "Manual."
- 8 LOCAL INDICATOR**

Displayed when the RF Attenuation is ON. (For only the USA version)
- 9 FAVORITE CHANNEL** (p. 13)

Displayed when a Favorite channel is selected.
- 10 CALL CHANNEL** (p. 10)

Displayed when a Call channel is selected.
- 11 DUPLEX CHANNEL**

Displayed when a Duplex channel is selected.
- 12 OPERATING CHANNEL NUMBER** (pp. 7, 11)

Displays the selected operating channel number.

 - ① "A" or "B" is displayed when a simplex channel is selected.
- 13 SOFTWARE KEYS FUNCTION DISPLAY** (p. 4 ~ 5)

The functions of each key are displayed. See "Software keys" on the next page for details.

(☞Continued on the next page)