



INSTRUCTION MANUAL

VHF MARINE TRANSCEIVER IC-M400BB

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.



COMMANDMIC™ (HM-195)
may not be supplied, depending
on the transceiver version.

FOREWORD

Thank you for purchasing this Icom product. The IC-M400BB VHF MARINE TRANSCEIVER 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.

We appreciate you making the IC-M400BB your radio of choice, and hope you agree with Icom's philosophy of "technology first." Many hours of research and development went into the design of your IC-M400BB.

◇ **FEATURES**

- *Built-in DSC meets ITU Class D requirement*
- *Rugged waterproof construction*
- *COMMANDMICIV™ (HM-195) supplied**
- *Easy to make an individual DSC calls using the optional MA-500TR Class B AIS Transponder*

* May not be supplied, depending on the transceiver version. In that case, purchase separately.

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-M400BB.

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.

CLEAN THE TRANSCEIVER AND MICROPHONE THOROUGHLY WITH FRESH WATER after exposure to water including salt, otherwise, the keys and switch may become inoperable due to salt crystallization.

IN CASE OF EMERGENCY

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

USING CHANNEL 16

DISTRESS CALL PROCEDURE

1. "MAYDAY MAYDAY MAYDAY."
2. "THIS IS" (name of vessel).
3. Say your call sign or other description of the vessel (AND 9 digit DSC ID if you have one).
4. "LOCATED AT" (your position).
5. State the nature of the distress and assistance required.
6. Give any other information which might facilitate the rescue.

Or, transmit your Distress call using digital selective calling on Channel 70.

USING DIGITAL SELECTIVE CALLING (Ch 70)

DISTRESS CALL PROCEDURE

1. While lifting up the key cover, hold down [DISTRESS] for 3 seconds until you hear 3 short beeps and then one long beep.
2. Wait for an acknowledgment on Channel 70 from a coast station.
 - After the acknowledgement is received, Channel 16 is automatically selected.
3. Hold down [PTT], then transmit the appropriate information as listed above.

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 1.4 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 1.4 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 are used. If higher gain antenna are 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.

RADIO OPERATOR 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



AVERTISSEMENT

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.

FCC INFORMATION

• **FOR CLASS A UNINTENTIONAL RADIATORS:**

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.

NOTE

A WARNING STICKER is supplied with the U.S.A. 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.

COUNTRY CODE LIST

• **ISO 3166-1**

	Country	Codes		Country	Codes
1	Austria	AT	18	Liechtenstein	LI
2	Belgium	BE	19	Lithuania	LT
3	Bulgaria	BG	20	Luxembourg	LU
4	Croatia	HR	21	Malta	MT
5	Czech Republic	CZ	22	Netherlands	NL
6	Cyprus	CY	23	Norway	NO
7	Denmark	DK	24	Poland	PL
8	Estonia	EE	25	Portugal	PT
9	Finland	FI	26	Romania	RO
10	France	FR	27	Slovakia	SK
11	Germany	DE	28	Slovenia	SI
12	Greece	GR	29	Spain	ES
13	Hungary	HU	30	Sweden	SE
14	Iceland	IS	31	Switzerland	CH
15	Ireland	IE	32	Turkey	TR
16	Italy	IT	33	United Kingdom	GB
17	Latvia	LV			

PRECAUTIONS

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

⚠ WARNING! NEVER connect the transceiver to a power source of more than 16 V DC or use reverse polarity. This will ruin the transceiver.

⚠ WARNING! NEVER cut the DC power cable between the DC plug at the back of the transceiver and fuse holder. If an incorrect connection is made after cutting, the transceiver may be damaged.

CAUTION: NEVER place the transceiver where normal operation of the vessel may be hindered or where it could cause bodily injury.

KEEP the transceiver and microphone at least 1 m away from the vessel's magnetic navigation compass.

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

DO NOT use harsh solvents such as benzine or alcohol to clean the transceiver, as they will damage the transceiver's surfaces. If the transceiver becomes dusty or dirty, wipe it clean with a soft, dry cloth.

DO NOT disassemble or modify the transceiver for any reason.

BE CAREFUL! The transceiver rear panel will become hot when operating continuously for long periods of time.

Place the transceiver in a secure place to avoid inadvertent use by children.

BE CAREFUL! The transceiver and the supplied or optional HM-195 COMMANDMICIV™ meet IPX7 requirements for waterproof protection. However, once the transceiver has been dropped, waterproof protection cannot be guaranteed because of possible damage to the transceiver's case or the waterproof seal.

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

For U.S.A. only

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

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◇ Priorities

- Read all rules and regulations pertaining to call 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 may require a current radio station license before using the transceiver. It is unlawful to operate a ship station which is not licensed, but required to be.

If required, contact 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.

If required, the Restricted Radiotelephone Operator Permit must be posted or kept with the operator. If required, only a licensed radio operator may operate a transceiver.

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

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

NOTE: Even though the transceiver is capable of operation on VHF marine channels 3, 21, 23, 61, 64, 81, 82 and 83, according to FCC regulations these simplex channels cannot be lawfully used by the general population in USA waters.

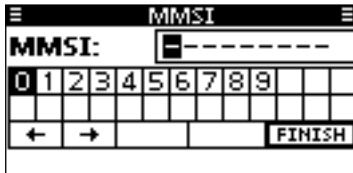
■ MMSI code programming

The 9 digit MMSI (Maritime Mobile Service Identity: DSC self ID) code can be programmed at power ON.

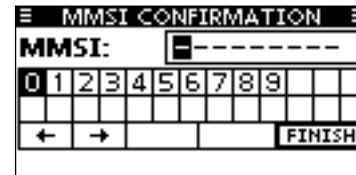
The code is programmed by using the HM-195.

This initial code setting can be performed only once. After being set, it can be changed by only your dealer or distributor. If your MMSI code has already been programmed, this programming is not necessary.

- ① Hold down [PWR](Dial) to turn ON the power.
 - Three short beeps sound, and “NO DSC MMSI” is displayed.
- ② Push [ENT] to start the MMSI code programming.
 - Push [CLEAR] twice to cancel the programming, and go to the normal operating screen. In this case, the transceiver cannot make a DSC call. To program the MMSI code, turn OFF the power, then turn it ON again.
- ③ Enter your MMSI code in the following manner:
 - Select a desired number using Dial, or [▲]/[▼]/[◀]/[▶].
 - Push [ENT] or Dial to set it.
 - To move the cursor, select either arrow, “←” or “→,” then push [ENT] or Dial.



- ④ Repeat step ③ to enter all 9 digits.
- ⑤ After entering the 9 digit code, “FINISH” is automatically selected, and then push [ENT] or Dial to set it.
- ⑥ The “MMSI CONFIRMATION” screen is displayed.



- ⑦ Enter your MMSI code again for confirmation.
 - Enter in the same manner as steps ③ through ⑤.
- ⑧ When your MMSI code programming is successfully completed, the screen as shown below is briefly displayed.
 - After that, the normal operating screen is displayed.



The programmed MMSI code can be checked in the MENU screen.

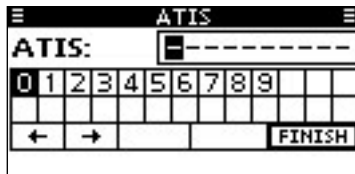
NOTE: Depending on the transceiver version, the ATIS code programming may be required after programming the MMSI code. See the next page for details.

■ ATIS code programming (For Dutch version transceivers)

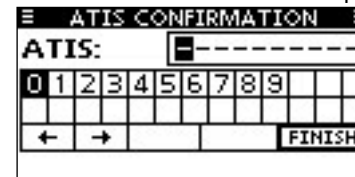
The 10 digit ATIS (Automatic Transmitter Identification System) code can be programmed at power ON. The code is programmed by using the HM-195.

This initial code setting can be performed only once. After being set, it can be changed by only your dealer or distributor. If your ATIS code has already been programmed, this programming is not necessary.

- ① After programming the MMSI code, "Push [ENT] to Register Your ATIS" is displayed.
- ② Push [ENT] to start the ATIS code programming.
 - Push [CLEAR] twice to cancel the programming, and go to the normal operating mode. In this case, the ATIS function is disabled. To program the ATIS code, turn OFF the power, then turn it ON again.
- ③ Enter your ATIS code in the following manner:
 - Select a desired number using Dial, or [▲]/[▼]/[◀]/[▶].
 - Push [ENT] or Dial to set it.
 - To move the cursor, select either arrow, "←" or "→," then push [ENT] or Dial.



- ④ Repeat step ③ to enter all 10 digits.
- ⑤ After entering the 10 digit code, "FINISH" is automatically selected, and then push [ENT] or Dial to set it.
- ⑥ The "ATIS CONFIRMATION" screen is displayed.



- ⑦ Enter your ATIS code again for confirmation.
 - Enter in the same manner as steps ③ through ⑤.
- ⑧ When your ATIS code programming is successfully completed, the screen shown below is briefly displayed.
 - After that, the normal operating screen is displayed.



The programmed ATIS code can be checked in the MENU screen.

■ Making an Individual call using an AIS transponder

When the optional MA-500TR CLASS B AIS TRANSPONDER is connected to your transceiver, an individual DSC call can be transmitted to a selected AIS target, without needing to enter the target's MMSI code. In this case, the call type is automatically set to Routine.

See page 7 for connecting instructions.

/// To ensure correct operation of the DSC function, make sure you correctly set the CH70 SQL LEVEL. See (25) of the HM-195 instruction manual.

Step 1: Transponder's operation

- ① Select a desired AIS target on the plotter, target list or danger list display.
 - You can also go to the next step whenever the detail screen of the AIS target is displayed.
 - Make sure the transceiver is in the normal operating mode. Otherwise, you cannot make an individual DSC call using the transponder.
- ② Push [DSC] to display the voice channel selection screen, and then push [▲] or [▼] to select a desired voice channel*.
 - Voice channels are already preset into the transponder in recommended order.

*When a coast station is selected in step ①, a voice channel will be specified by the coast station, therefore you cannot change the channel. The transponder will display "Voice Channel is specified by the Base station," in this case.

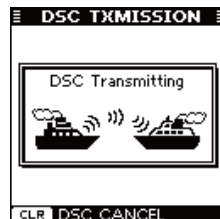


Transponder's display



Microphone's display

- ③ Push [DSC] to transmit an individual DSC call to the AIS target.
 - If Channel 70 is busy, the transceiver stands by until the channel becomes clear.
 - If the transceiver cannot make the call, the transponder will display "DSC Transmission FAILED."



Transponder's display

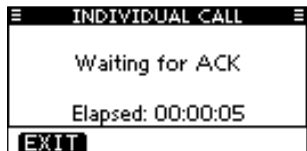


Microphone's display

- ④ After making the individual DSC call, the transponder will display “DSC Transmission COMPLETED”
- Push [CLEAR] to return to the screen displayed before you entered the voice channel selection screen in step ②.
 - The transceiver stands by on Channel 70 until an acknowledgement is received.



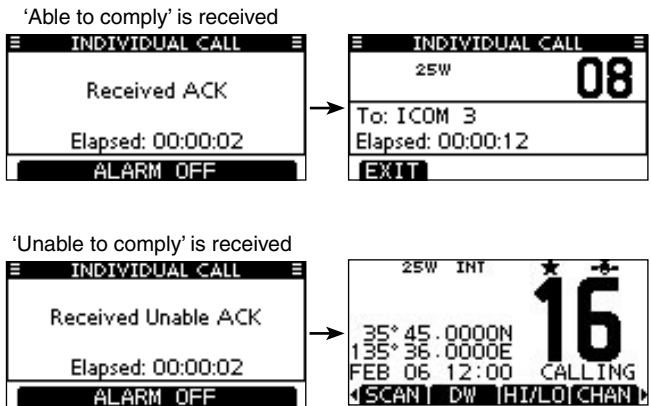
Transponder's display



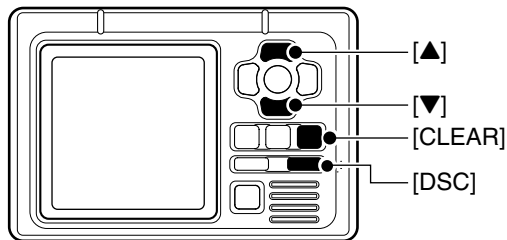
Microphone's display

Step 2: Transceiver's operation

- ⑤ When the acknowledgement is received, beeps sound.
- ➔ If the acknowledgement 'Able to comply' is received, push [ALARM OFF] to stop the beeps, and then select the intership channel specified in step ②.
 - A different intership channel will be selected if the station you called cannot use the channel.
 - To reply, push [PTT] and speak at a normal voice level.
 - You can check the MMSI code or the name, if programmed, of the AIS target on the display.
 - ➔ If the acknowledgement 'Unable to comply' is received, push [ALARM OFF] to stop the beeps, and then return to the operating channel before you entered the MENU screen.

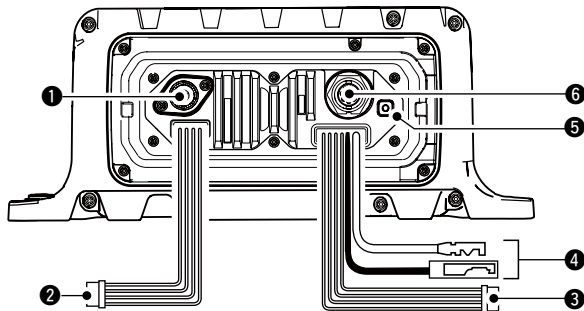


- ⑥ After the communication is finished, push [EXIT] to return to the normal operating mode.



TRANSPONDER

■ Connections



❶ ANTENNA CONNECTOR

Connects to a marine VHF antenna cable's PL-259 connector.

CAUTION: Transmitting without an antenna may damage the transceiver.

❷ NMEA IN/OUT LEADS

Brown: Talker B (Data-L)

Connects to an NMEA In Negative line of a PC or NMEA0183 ver. 3.01 sentence format DSC, DSE compatible navigation equipment, to receive position data from other ships.

White: Talker A (Data-H)

Connects to an NMEA In Positive line of a PC or NMEA0183 ver. 3.01 sentence format DSC, DSE compatible navigation equipment, to receive position data from other ships.

Green: Listener B (Data-L)

Connects to an NMEA Out Negative line of a GPS receiver for position data.

- A NMEA0183 ver. 2.0 or 3.01 RMC, GGA, GNS, GLL and VTG sentence format compatible GPS receiver is required. Ask your dealer about suitable GPS receivers.

Yellow: Listener A (Data-H)

Connects to an NMEA Out Positive line of a GPS receiver for position data.

- A NMEA0183 ver. 2.0 or 3.01 RMC, GGA, GNS, GLL and VTG sentence format compatible GPS receiver is required. Ask your dealer about suitable GPS receivers.

❸ AF OUT LEADS

Orange: Public Address Speaker (+)

Gray: Public Address Speaker (-)

Connects to a PA speaker.

- PA output power: More than 10 W at 10% distortion with a 4 Ω load

Blue: Data line

Black: Data line

Used only for maintenance purpose.

NOTE for NMEA In/Out and AF Out leads:

The connectors are attached to keep the leads together. Before connecting to a piece of equipment, you should cut the leads to remove the connector.

4 DC POWER CONNECTOR

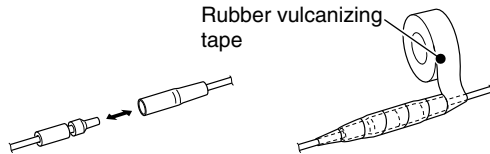
Connects to a 13.8 V DC power source.

MAKE SURE the DC power cable polarity is correct.

Red : Positive ⊕ terminal

Black : Negative ⊖ terminal

CAUTION: After connecting the DC power cable, NMEA leads, external speaker leads and PA speaker leads, cover the connector and leads with an adhesive tape, as shown below, to prevent water seeping into the connection.



◇ Connect to the MA-500TR

Connect the transceiver to the high-density D-Sub 15-pin connector of the MA-500TR using the OPC-2014* cable. After connecting, an Individual DSC call can be made to the AIS target using the transponder, without entering the target's MMSI code.

* The OPC-2014 is supplied with the MA-500TR

5 GROUND TERMINAL

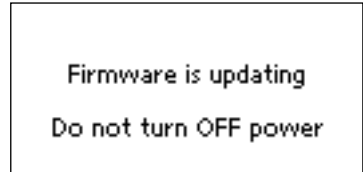
Connects to a vessel ground to prevent electrical shocks and interference from other equipment occurring. Use a PH M3 × 6 screw (not supplied).

6 COMMAND MICROPHONE JACK

Connects to the HM-195.

NOTE: For those who purchased the IC-M400BB and HM-195 separately.

When connecting the HM-195 for the first time, a firmware update (if needed) will automatically start, and the monitor displays the message shown to the right. The update will take a maximum of 2 minutes.



DO NOT turn OFF the transceiver, or disconnect the microphone until the update is completed.

- **Listener A (Data-H) lead (Yellow):**
Connects to lead 3 of the OPC-2014.
- **Listener B (Data-L) lead (Green):**
Connects to lead 2 of the OPC-2014.
- **Talker A (Data-H) lead (White):**
Connects to lead 5 of the OPC-2014.
- **Talker B (Data-L) lead (Brown):**
Connects to lead 4 of the OPC-2014.

4 CONNECTIONS AND MAINTENANCE

■ Supplied accessories

DC power cable
(OPC-891A)



Flat washers (M5)



Spring washers (M5)

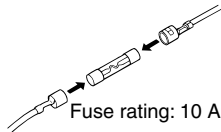
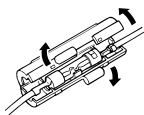


Screws (5x20 mm)

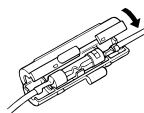


■ Fuse replacement

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 rating: 10 A



■ Cleaning

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

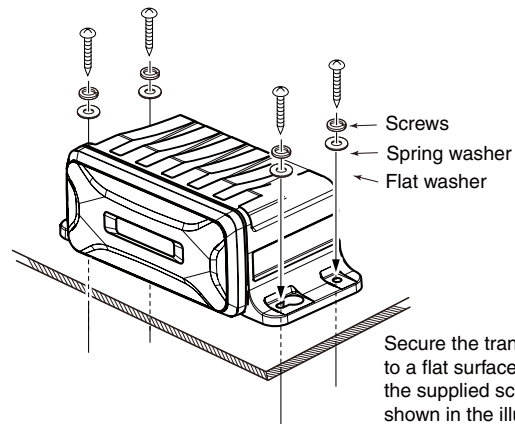


DO NOT use harsh solvents such as benzene or alcohol, as they will damage transceiver surfaces.

■ Mounting the transceiver

Using the supplied template on the leaflet, mount the IC-M400BB securely to a surface which is more than 10 mm thick and can support more than 5 kg using the 4 supplied screws (5 × 20 mm), as illustrated below.

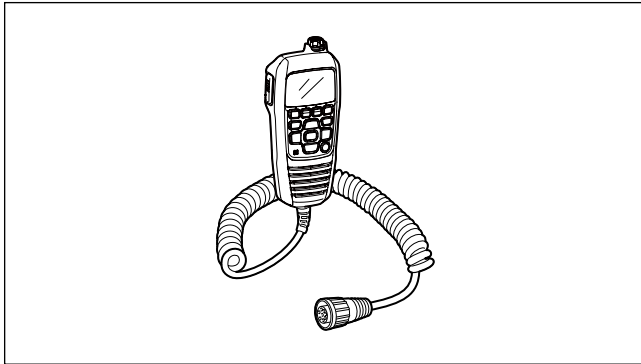
KEEP the transceiver and microphone at least 1 meter away from the vessel's magnetic navigation compass.



■ Antenna

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.

■ Microphone installation



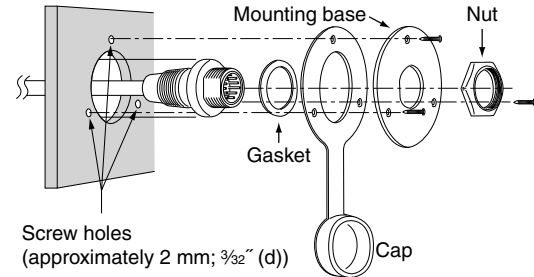
The HM-195 should be connected to the transceiver using the supplied OPC-1540 connection cable. The cable is used to operate from a longer distance. The cable connector can also be installed as a built-in plug on a cabinet or wall.

To operate from even longer distances, the optional 6 meter long OPC-1541 extension cable can be used between the transceiver and the OPC-1540. Up to two OPC-1541 can be added.

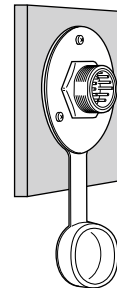
◆ Installation

- ① Insert the OPC-1540 cable connector into the command microphone jack, and tighten the nut.
- ② To use the cable connector as a wall socket, install it as described to the right.

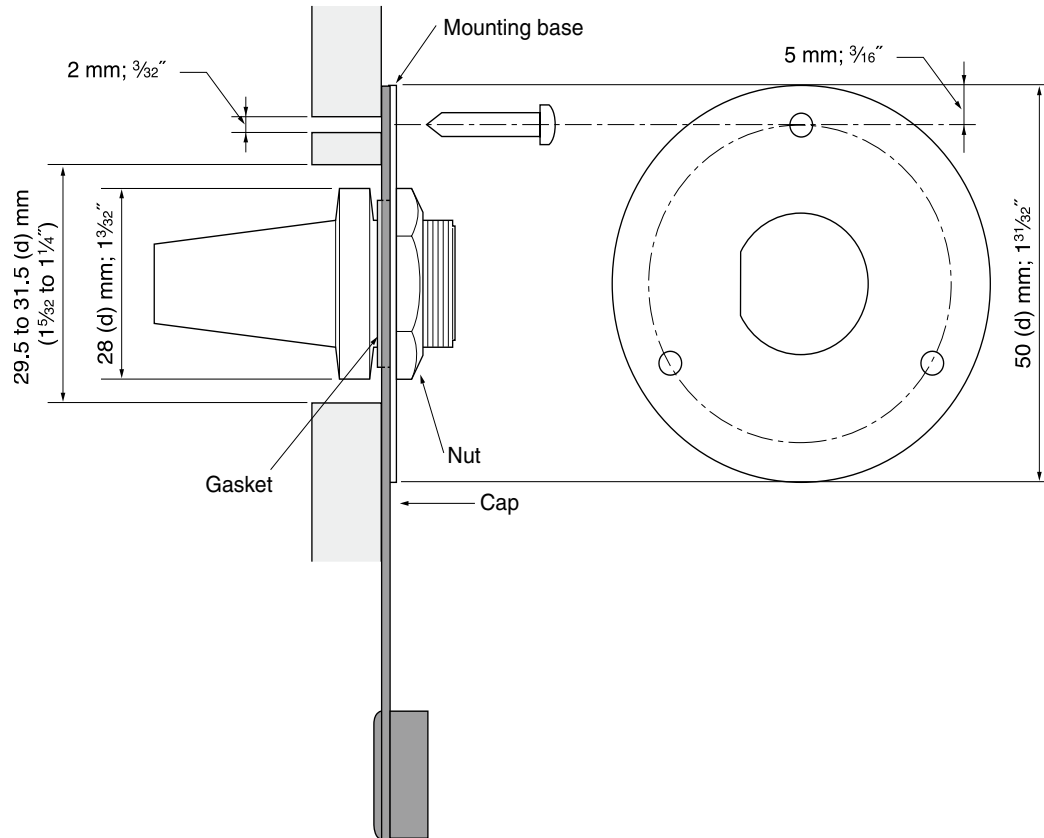
- ③ Using the mounting base as a template, carefully mark the holes where the cable and three screws will be fastened.
- ④ Drill holes at these marks.
- ⑤ Install the mounting base using the supplied screws, as shown below.



- ⑥ The completed installation should look like this.



4 CONNECTIONS AND MAINTENANCE



■ Specifications

◇ General

- Frequency coverage
 - European versions : Tx 156.000–161.450 MHz
Rx 156.000–163.425 MHz
 - USA versions : Tx 156.025–157.425 MHz
Rx 156.050–163.275 MHz
- Mode : FM (16K0G3E),
DSC (16K0G2B)
- Channel spacing : 25 kHz
- Operating temp. range : –20°C to +60°C ; –4°F to +140°F
- Current drain (at 13.8 V) : TX high 5.5 A maximum
Max. audio 3.5 A maximum
- Power supply requirement : 13.8 V DC nominal
(negative ground)
- Frequency stability : ±1.5 kHz (–20°C to +60°C)
- Antenna impedance : 50 Ω nominal
- Dimensions (approximately)
(Projections not included) : 216(W) × 79(H) × 125(D) mm
; 8.5(W) × 3.1(H) × 4.9(D) inches
- Weight (approximately) : 830 g ; 29 oz

◇ Transmitter

- Output power : 25 W/1 W
- Modulation system : Variable reactance frequency
modulation
- Max. frequency deviation : ±5.0 kHz

- Spurious emissions
 - European versions : Less than 0.25 μW
 - USA versions : Less than –70 dBc (High)
Less than –56 dBc (Low)

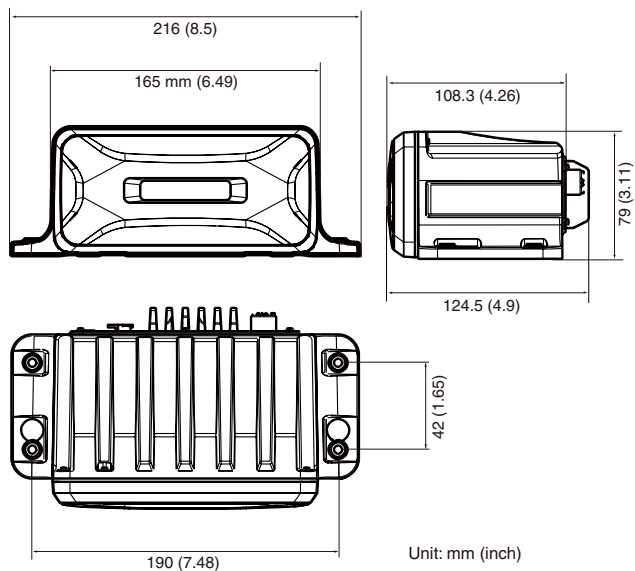
◇ Receiver

- Receive system : Double conversion
superheterodyne
- Sensitivity
 - European versions
(20 dB SINAD) : –5 dBμ emf (typical)
 - USA versions
(12 dB SINAD) : –13 dBμ (typical)
- Squelch sensitivity
 - European versions : Less than –2 dBμ emf
 - USA versions : Less than –10 dBμ
- Intermodulation rejection ratio
 - European versions : More than 68 dB
 - USA versions : More than 70 dB
- Spurious response rejection ratio : More than 70 dB
- Adjacent channel selectivity : More than 70 dB
- Audio output power : More than 10 W at 10% distortion
with a 4 Ω load (RX SP)
: More than 2 W at 10% distortion
with a 4 Ω load (HM-195)

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

5 SPECIFICATIONS AND OPTIONS

◇ Dimensions



■ Options

- **HM-195 COMMANDMICIV™**
External microphone-type controller. 6 m (20 ft) microphone cable included. Black and white colors are available.
- **OPC-1541 MICROPHONE EXTENSION CABLE**
6 m (20 feet) microphone extension cable for the HM-195 COMMANDMICIV™. Up to two OPC-1541 can be connected. Maximum usable length is 18 m (60 ft).
- **MA-500TR CLASS B AIS TRANSPONDER**
To transmit individual DSC calls to selected AIS targets.

Approved Icom optional equipment is designed for optimal performance when used with an Icom transceiver. Icom is not responsible for the destruction or damage to an Icom transceiver in the event the Icom transceiver is used with equipment that is not manufactured or approved by Icom.

• International channels

CH	Frequency (MHz)		CH	Frequency (MHz)		CH	Frequency (MHz)		CH	Frequency (MHz)		CH	Frequency (MHz)		CH	Frequency (MHz)	
	Transmit	Receive		Transmit	Receive		Transmit	Receive		Transmit	Receive		Transmit	Receive		Transmit	Receive
01	156.050	160.650	11	156.550	156.550	21	157.050	161.650	61	156.075	160.675	71	156.575	156.575	81	157.075	161.675
02	156.100	160.700	12	156.600	156.600	22	157.100	161.700	62	156.125	160.725	72	156.625	156.625	82	157.125	161.725
03	156.150	160.750	13	156.650	156.650	23	157.150	161.750	63	156.175	160.775	73	156.675	156.675	83	157.175	161.775
04	156.200	160.800	14	156.700	156.700	24	157.200	161.800	64	156.225	160.825	74	156.725	156.725	84	157.225	161.825
05	156.250	160.850	15 ^{*2}	156.750	156.750	25	157.250	161.850	65	156.275	160.875	75 ^{*4}	156.775	156.775	85	157.275	161.875
06	156.300	156.300	16	156.800	156.800	26	157.300	161.900	66	156.325	160.925	76 ^{*4}	156.825	156.825	86	157.325	161.925
07	156.350	160.950	17 ^{*2}	156.850	156.850	27	157.350	161.950	67	156.375	156.375	77	156.875	156.875	87	157.375	157.375
08	156.400	156.400	18	156.900	161.500	28	157.400	162.000	68	156.425	156.425	78	156.925	161.525	88	157.425	157.425
09	156.450	156.450	19	156.950	161.550	37A ^{*3}	157.850	157.850	69	156.475	156.475	79	156.975	161.575	P4 ^{*3}	161.425	161.425
10	156.500	156.500	20	157.000	161.600	60	156.025	160.625	70 ^{*1}	156.525	156.525	80	157.025	161.625			

*1 DSC operation only.

*2 Channels 15 and 17 may also be used for on-board communications, provided the effective radiated power does not exceed 1 W, and are subject to the national regulations of the administration concerned when these channels are used in its territorial waters.

*3 UK Marina Channels: M1=37A (157.850 MHz), M2=P4 (161.425 MHz) for U.K. version only

*4 The output power of channels 75 and 76 are limited to low power (1 W) only. The use of these channels should be restricted to navigation-related communications only and all precautions should be taken to avoid harmful interference to channel 16, for example by means geographical separation.

6 CHANNEL LIST

• USA channels

Channel number			Frequency (MHz)	
USA	INT	CAN	Transmit	Receive
	01	01	156.050	160.650
01A			156.050	156.050
	02	02	156.100	160.700
	03	03	156.150	160.750
03A			156.150	156.150
	04		156.200	160.800
		04A	156.200	156.200
	05		156.250	160.850
05A		05A	156.250	156.250
06	06	06	156.300	156.300
	07		156.350	160.950
07A		07A	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*2	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
18A		18A	156.900	156.900
	19		156.950	161.550
19A		19A	156.950	156.950
20	20	20*1	157.000	161.600
20A			157.000	157.000

Channel number			Frequency (MHz)	
USA	INT	CAN	Transmit	Receive
	21	21	157.050	161.650
21A		21A	157.050	157.050
		21b	Rx only	161.650
	22		157.100	161.700
22A		22A	157.100	157.100
	23	23	157.150	161.750
23A			157.150	157.150
24	24	24	157.200	161.800
25	25	25	157.250	161.850
		25b	Rx only	161.850
26	26	26	157.300	161.900
27	27	27	157.350	161.950
28	28	28	157.400	162.000
		28b	Rx only	162.000
	60	60	156.025	160.625
	61		156.075	160.675
61A		61A	156.075	156.075
	62		156.125	160.725
		62A	156.125	156.125
	63		156.175	160.775
63A			156.175	156.175
	64	64	156.225	160.825
64A		64A	156.225	156.225
	65		156.275	160.875
65A	65A	65A	156.275	156.275
	66		156.325	160.925
66A	66A	66A*1	156.325	156.325
67*2	67	67	156.375	156.375

Channel number			Frequency (MHz)	
USA	INT	CAN	Transmit	Receive
69	69	69	156.475	156.425
68	68	68	156.425	156.475
70*3	70*3	70*3	156.525	156.525
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	75*1	156.775	156.775
76*1	76*1	76*1	156.825	156.825
77*1	77	77*1	156.875	156.875
	78		156.925	161.525
78A		78A	156.925	156.925
	79		156.975	161.575
79A		79A	156.975	156.975
	80		157.025	161.625
80A		80A	157.025	157.025
	81		157.075	161.675
81A		81A	157.075	157.075
	82		157.125	161.725
82A		82A	157.125	157.125
	83	83	157.175	161.775
83A		83A	157.175	157.175
		83b	Rx only	161.775
84	84	84	157.225	161.825
84A			157.225	157.225
85	85	85	157.275	161.875
85A			157.275	157.275
86	86	86	157.325	161.925

Channel number			Frequency (MHz)	
USA	INT	CAN	Transmit	Receive
86A			157.325	157.325
87	87	87	157.375	161.975
87A			157.375	157.375
88	88	88	157.425	162.025
88A			157.425	157.425

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

*1 Low power only. *2 Momentary high power. *3 DSC operation only.

NOTE: Simplex channels, 3, 21, 23, 61, 64, 81, 82 and 83 **CANNOT** be lawfully used by the general public in U.S.A. waters.

PROBLEM	POSSIBLE CAUSE	SOLUTION	REF.
The transceiver does not turn ON.	<ul style="list-style-type: none"> • Bad connection to the power supply. 	<ul style="list-style-type: none"> • Check the connection to the transceiver and power supply. 	p. 6
Little or no sound comes from the speaker.	<ul style="list-style-type: none"> • Squelch level is set too high. • Volume level is set too low. • Speaker has been exposed to water. 	<ul style="list-style-type: none"> • Set the squelch to the threshold point. • Set the volume to a suitable level. • Remove the water with the AquaQuake function. 	11 * 10 * 9 *
Transmitting is impossible, or high power cannot be selected.	<ul style="list-style-type: none"> • Some channels are programmed for low power or receive only by regulations. • The output power is set to low. 	<ul style="list-style-type: none"> • Change channels. • Push [HI/LO] to select high power. 	5 *, pp. 13, 14 6 *
Scan does not start.	<ul style="list-style-type: none"> • Favorite channels are not programmed. 	<ul style="list-style-type: none"> • Set the desired channels as Favorite channels. 	13 *
No beep sounds.	<ul style="list-style-type: none"> • Beep tones are turned OFF. 	<ul style="list-style-type: none"> • Turn the beep tones ON in the CONFIGURATION menu. 	30 *
Distress calls cannot be transmitted.	<ul style="list-style-type: none"> • MMSI (DSC self ID) code is not programmed. 	<ul style="list-style-type: none"> • Program the MMSI (DSC self ID) code. 	p. 2

* Refer to the HM-195 COMMANDMATIC™ instruction manual.

Count on us!

< Intended Country of Use >											
<input type="checkbox"/>	AT	<input type="checkbox"/>	BE	<input type="checkbox"/>	CY	<input type="checkbox"/>	CZ	<input type="checkbox"/>	DK	<input type="checkbox"/>	EE
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Icom Inc.
1-1-32 Kamiminami, Hirano-ku, Osaka 547-0003, Japan