ICOM

MDC 1200
Compatible

INSTRUCTION MANUAL

VHF MOBILE TRANSCEIVERS
IC-F5020
Series

UHF MOBILE TRANSCEIVERS
IC-F6020
Series

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-F5021, IC-F5023, IC-F5023H, IC-F5026, IC-F5026H, IC-F5028H** VHF MOBILE TRANSCEIVERS and the **IC-F6021, IC-F6023, IC-F6023H, IC-F6028H** UHF MOBILE TRANSCEIVERS.

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.

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.

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

PRECAUTIONS

⚠️**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 souce and antenna before a storm.

⚠️**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 could cause a fire or damage the transceiver.

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

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

CAUTION: NEVER allow children to touch the transceiver.

CAUTION: NEVER expose the transceiver to rain, snow or any liquids.

DO NOT operate or place the transceiver in areas with temperatures below −30°C (−22°F) or above +60°C (+140°F), or in areas subject to direct sunlight, such as the dashboard.

DO NOT operate the transceiver without running the vehicle's engine. The vehicle's battery will quickly run out when the transceiver transmits while the vehicle's engine is OFF.

DO NOT place the transceiver in excessively dusty environments.

DO NOT place the transceiver against walls. This will obstruct heat dissipation.

DO NOT use harsh solvents such as benzine or alcohol when cleaning, as they will damage the transceiver surfaces.

BE CAREFUL! The transceiver will become hot when operating continuously for long periods.

USE the specified microphone only. Other microphones have different pin assignments and may damage the transceiver.
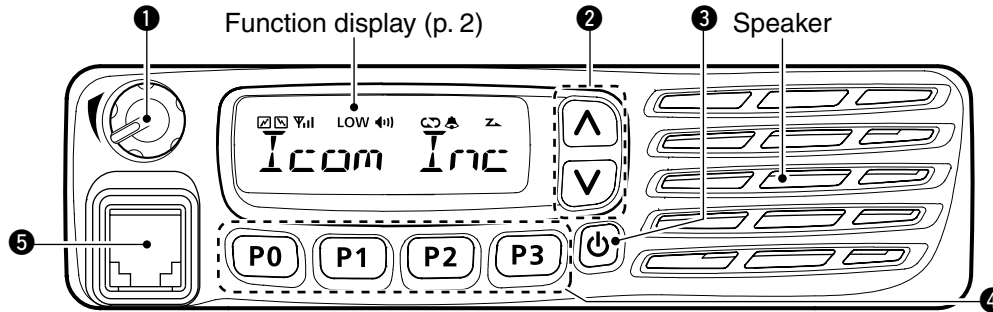
Icom is not responsible for the destruction or damage to the Icom transceiver, if the malfunction is because of:
• Force majeure, including, but not limited to, fires, earthquakes, storms, floods, lightnings, or other natural disasters, disturbances, riots, war, or radioactive contamination.
• The use of Icom transceiver with any equipment that is not manufactured or approved by Icom.

TABLE OF CONTENTS

■ Front panel

① Function display (p. 2)   ② ③ Speaker

⚠️ Wil LOW 🔊   🔄🔔 Z↓

Icom Inc

P0 P1 P2 P3 ⏻

⑤ ④

① **AF VOLUME CONTROL KNOB [VOL]**

Rotate the knob to adjust the desired audio output level.
• Minimum audio level is pre-set. (p. 11)

② **UP/DOWN KEYS [CH Up]/[CH Down]**

Push to select an operating channel, and so on.
* The desired function can be assigned by your dealer. (p. 3)

③ **POWER KEY [⏻]**

Push to turn the transceiver ON or OFF.
• The following functions can be used at power ON as options:
  - Automatic scan start
  - Password prompt
  - Set mode

④ **DEALER-PROGRAMMABLE KEYS**

Desired functions can be programmed independently by
your dealer. (p. 3)

⑤ **MICROPHONE CONNECTOR**

Connect the supplied or optional microphone.

⚠️ **NEVER** connect non-specified microphones. The pin
assignments may be different and the transceiver may
be damaged.

◇ **MICROPHONE**

The supplied or optional microphone has a PTT switch and a
hanger hook.
• The following functions can be used when the microphone is on or
  off hook (depending on the setting):
  - Automatic scan starts when it is on hook.
  - Scan is cancelled when it is off hook.
  - Scan is paused when it is off hook.
  - Automatic priority channel can be selected when it is off hook.
  - Sets to 'Inaudible' condition (mute condition) when it is on hook.
  - Sets to 'Audible' condition (unmute condition) when it is off hook.

■ **Function display**
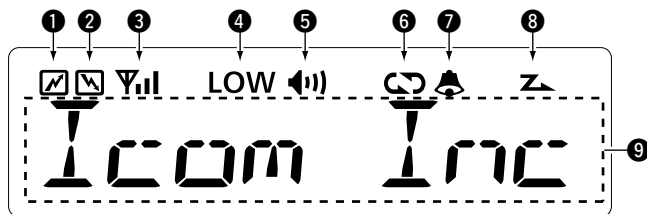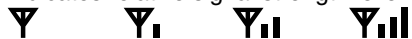

❶ TRANSMIT INDICATOR
Displayed while transmitting.

❷ BUSY INDICATOR
Displayed while the channel is busy.

❸ SIGNAL STRENGTH INDICATOR
Indicates relative signal strength level.

Weak ⇐ Receive Signal level ⇒ Strong

❹ LOW POWER INDICATOR
Displayed when low output power is selected.

❺ AUDIBLE INDICATOR
➥ Displayed when the channel is in the 'Audible' (unmute) condition.
➥ Displayed when the specific 2/5-Tone/MDC* code is received.

❻ SCRAMBLER INDICATOR
Displayed when the voice scrambler function is activated.

❼ BELL INDICATOR
Displayed/blinks when the specific 2/5-Tone/MDC* code is received, according to the pre-programming.

❽ SCAN INDICATOR
Blinks during scan.

❾ ALPHANUMERIC DISPLAY
Displays an operating channel number, channel name, Set mode contents, DTMF code, and so on.

* MDC operation only (p. 13)

1

■ Programmable function keys

The following functions can be assigned to **[UP]**, **[DOWN]**, **[P0]**, **[P1]**, **[P2]** and **[P3]** programmable function keys.
Consult your Icom dealer or system operator for details concerning your transceivers programming.

CH UP AND DOWN KEYS
➡ Push to select an operating channel.
➡ Push to select a transmit code channel after pushing [TX Code CH Select].
➡ Push to select a DTMF channel after pushing [DTMF Autodial].
➡ Push to select a scan group after holding down [Scan A Start/Stop]/[Scan B Start/Stop] for 1 second.

ZONE KEY
Push this key, then select the desired zone using [CH Up]/[CH Down].

What is "zone"?— Selected channels are assigned to a zone according to how they are to be used in a group. For example, 'Staff A' and 'Staff B' are assigned into a "Business" zone, and 'John' and 'Cindy' are assigned into a "Private" zone.

SCAN A START/STOP KEY
➡ Push to start and cancel scanning operation.
  • When Power ON Scan function is activated, push to pause the scanning operation. And the paused scan resumes after the specified period of time has passed.
➡ Hold down this key for 1 second to open the scan list, then push [CH Up] or [CH Down] to select the desired list.

SCAN B START/STOP KEY
➡ Push to start and cancel scanning operation.
  The scan restarts after the specified period of time has passed when the scan (started with this key) is cancelled except by this key operation.
➡ Hold down this key for 1 second to open the scan list, then push [CH Up] or [CH Down] to select the desired list.

1 PANEL DESCRIPTION

SCAN ADD/DEL (TAG) KEY
➥ Push to add a channel to, or delete it from the current scan list.
  • When a channel is added to the current scan list, the display shows "SCAN ON." When a channel is deleted from the current scan list, the display shows "SCAN OFF." After showing "SCAN ON" or "SCAN OFF," the display shows the current scan list text.
➥ You can add a channel to, or delete it from the scan list after selecting the list.
  1. Hold down for 1 second to display the current scan list, and then push [CH Up] or [CH Down] to select a desired list.
  2. Push this key to add a channel to, or delete it from the selected list.
    • When a channel is added to the selected scan list, the display shows "SCAN ON." When a channel is deleted from the selected scan list, the display shows "SCAN OFF."
  3. Hold down this key for 1 second to exit the scan list selection mode.
➥ Push this key while a scan is paused on a channel, except for primary or secondary channel, and then the channel is deleted from the scan list.
  • Depending on the setting, the deleted channel is added to the scan list again after the scan is cancelled. (Nuisance Delete function)

PRIO A/B KEYS
➥ Push to select Priority A or Priority B channel.
➥ Hold down [Prio A (Rewrite)] or [Prio B (Rewrite)] for 1 second to rewrite the operating channel as the Priority A or Priority B channel.

MR-CH 1/2/3/4 KEYS
Push to select the memory channel 1 to 4 directly.

MONI (AUDI) KEY
➥ Push to mute and release the CTCSS (DTCS) or 2-Tone squelch mute. Open any squelch/deactivate any mute while holding down this key. (LMR operation only)
➥ Activates one of (or two of) the following functions on each channel independently: (PMR operation only)
  • Hold down to unmute the channel (audio is emitted; 'Audible' condition).
  • Push to mute the channel (sets to 'Inaudible' only).
  • Push after the communication is finished to send a 'reset code'. (5-Tone operation only)

  NOTE: The un-mute condition ('Audible' condition) may automatically return to the mute condition ('Inaudible' condition) after a specified period depending on programming.

LOCK KEY
Hold down to electronically lock all programmable keys except the following:
[Moni(Audi)], [Lock], [Call] (incl. Call A and Call B), [Emergency], [Surveillance], [Siren], [Lone Worker] and [OPT 1/2/3].

LONE WORKER KEY
Push to turn the Lone Worker function ON or OFF.
• If the Lone Worker function is activated, the Emergency function is automatically turned ON after a specified period of time has passed with no operation is performed.

HIGH/LOW KEY

Push to select the transmit output power temporarily or permanently, depending on the presetting.
• Ask your dealer for the output power level for each selection.

C.TONE CH ENT KEY

Push to enter the continuous tone channel selection mode. Then, push [CH Up]/[CH Down] to change the tone frequency/code setting. The selected channel remains set as the continuous tone channel until another channel is designated as such.

TALK AROUND KEY

Push to turn the talk around function ON or OFF.
• The talk around function equalizes the transmit frequency to the receive frequency for transceiver-to-transceiver communication.

WIDE/NARROW KEY

Push to toggle the IF bandwidth between wide, mid* and narrow.
• The wide passband width can be selected from 20.0 or 25.0 kHz using the CS-F3020/F5010/F5020 CLONING SOFTWARE. (PMR operation only) Ask your dealer for details.
*Depending on the presetting, the mid width cannot be selected. Ask your dealer for details.

DTMF AUTODIAL KEY

➥ Push to enter the DTMF channel selection mode. And then select the desired DTMF channel using [CH Up]/[CH Down].
➥ After selecting the DTMF channel, push again to transmit the selected DTMF code.

RE-DIAL KEY

Push to transmit the last-transmitted DTMF code.
• TX memories are cleared after turning OFF the transceiver.

CALL KEYS

Push to transmit a 2/5-Tone ID code.
• Call transmission is necessary before calling another station depending on your signalling system.
• [Call A] and/or [Call B] may can be selected when your system employs selective 'Individual/Group' calls. Ask your dealer which call is assigned to each key.

EMERGENCY KEY

Hold down this for specified period of time to transmit an emergency call.
• The emergency call transmits with beeps; the display does not change.
• The transceiver can transmit an emergency call without the beep sounding and LCD indication change depending on the presetting. Ask your dealer for details.
• If you want to cancel the emergency call, hold down the key again before transmitting the call.
• The emergency call is transmitted one time only or repeatedly until receiving a control code, depending on the presetting.

SURVEILLANCE KEY

Push to turn the surveillance function ON or OFF.
When this function is turned ON, the beep is not heard and the LCD backlight does not light when a signal is received or a key is pushed, and so on.

1 PANEL DESCRIPTION

SIREN
Push to emit a siren sound.

TX CODE ENTER KEY (PMR operation only)
Push to enter the TX code edit mode directly.
Then set the desired digit using [CH Up]/[CH Down]. (p. 10)

TX CODE CHANNEL SELECT KEY
➡ Push to enter the TX code channel selection mode. Then set the desired channel using [CH Up]/[CH Down]. (p. 9)
➡ While in the TX code channel selection mode, hold down this key for 1 second to enter the TX code edit mode. Then set the desired digit using [CH Up]/[CH Down]. (p. 10)

TX CODE CHANNEL UP/DOWN KEYS
Push to select a TX code channel directly.

ID-MR SELECT KEY (PMR operation only)
➡ Recalls detected ID codes.
  • Push this key, then select the ID code using [CH Up]/[CH Down].
  • Up to 5 ID's are memorized.
➡ Hold down this key for 1 second to erase the selected ID's.

SCRAMBLER KEY
➡ Push to turn the voice scrambler function ON or OFF.

USER SET MODE KEY
➡ Hold down for 1 second to enter the User Set mode.
  • During the User Set mode, push this key to select an item*, and change the value or condition using [CH Up]/[CH Down].
    *Selectable items may differ depending on the presetting.
➡ Hold down this key for 1 second again to exit the User Set mode.

OPT 1/2/3 OUT KEYS
Push to control the output signal level from the optional unit connector.

OPT 1/2/3 MOMENTARY KEYS
Control the output signal level from the optional unit connector while holding down this key.

Ext. CH Sel Mode KEY
Push to turn the Ext. CH Select function ON or OFF.
When the function is turned ON, memory channels can be selected only with an external input operation.
When the function is turned OFF, memory channels can be selected with [CH Up] or [CH Down] operation, and cannot be selected with external input operation.
• This function can be used when the external unit, such as a dimmer control connected to the transceiver with an optional cable, OPC-1939. (p. 14)
• Ask your dealer for details of external input operation.

■ Turning ON the transceiver

① Push **[ ]** to turn ON the transceiver.
② If the transceiver is programmed for a start up password, input the digit codes as directed by your dealer.
  • The keys as shown below can be used for password input:
    The transceiver detects numbers in the same block as identical. Therefore "01234" and "56789" are the same.

KEY	P0	P1	P2	P3	V
NUMBER	0 5	1 6	2 7	3 8	4 9

③ When the "PASSWORD" indication does not clear after inputting 4 digits, the input code number may be incorrect. Turn OFF the transceiver and start over in this case.

■ Channel selection

Several types of channels can be selected. Methods may differ depending on your system set up.

NON-ZONE TYPE:
Push [CH Up] or [CH Down] to select the desired operating channel, in sequence, or, push one of [MR-CH 1] to [MR-CH 4] keys to directly select a channel.

ZONE TYPE:
Push [Zone], then push [CH Up] or [CH Down] to select the desired zone.

AUTOMATIC SCAN TYPE:
Channel setting is not necessary for this type. When turning ON the transceiver, the transceiver automatically starts scanning. Scanning stops when a call is received.

■ Call procedure

When your system employs tone signaling (excluding CTCSS and DTCS), a call procedure may be necessary prior to voice transmission. The tone signalling employed may be a selective calling system which allows you to call specific station(s) only and prevents unwanted stations from contacting you.

① Select the desired TX code channel, 2/5-Tone code according to your System Operator's instructions.
  • This may not be necessary depending on programming.
  • Refer to pages 9–10 for selection.
② Push [Call] (assigned to one of the dealer programmable keys).
③ After transmitting, the remainder of your communication can be carried out in the normal fashion.

Selective calling   *Non-selective calling*
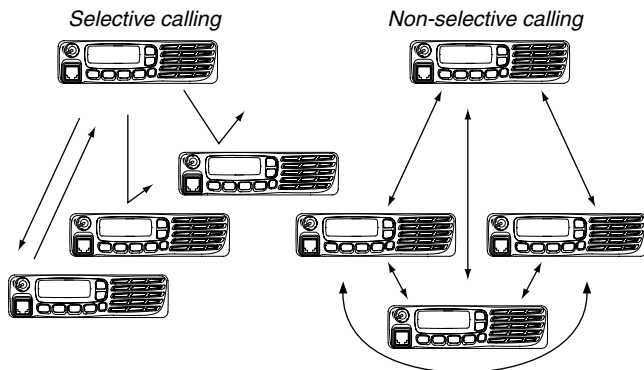
■ Receiving and transmitting

Receiving:
① Hold down **[⏻]** for 1 second to turn ON the transceiver.
② Push [CH Up] or [CH Down] to select a channel, in sequence.
③ When receiving a call, rotate [VOL] to adjust the audio output level to a comfortable listening level.

NOTE: Depending on the presetting, the transceiver automatically transmits the microphone audio for the specified period of time* when a matched RX code signal is received.
• HM-148G or HM-152 HAND MICROPHONE is required.
* Depending on the presetting. Ask your dealer for details.

Transmitting:
Wait for the channel to become clear to avoid interference.
① Take the microphone off hook.
  • The 'audible' condition is selected.
  • A priority channel may be selected automatically.
② Wait for the channel to become clear.
  • The channel is busy when BUSY indicator is displayed on the LCD.
③ While holding down [PTT], speak into the microphone at your normal voice level.
④ Release [PTT] to return to receive.

IMPORTANT: To maximize the readability of your signal;
1. Pause briefly after pushing [PTT].
2. Hold the microphone 5 to 10 cm (2 to 4 inches) from your mouth, then speak into the microphone at a normal voice level.

2

◇ Transmitting notes
•Transmit inhibit function
The transceiver has several inhibit functions which restrict transmission under the following conditions:
- The channel is in mute condition ('Inaudible' condition; "◀))" (Audible indicator) is not displayed.)
- The channel is busy.
- Un-matched (or matched) CTCSS is received. (Depending on the presetting)
- The selected channel is a 'receive only' channel.

•Time-out timer
After continuous transmission for the pre-programmed period of time, the time-out timer is activated, causing the transceiver to stop transmitting.

•Penalty timer
Once the time-out timer is activated, transmission is further inhibited for a period determined by the penalty timer.

•PTTID call
The transceiver sends the ID code (5-Tone, DTMF or digital ANI) automatically when [PTT] is pushed (beginning of the transmission) and/or released (end of transmission) depending on the setting.
PTTID can be also used with the MDC 1200 signaling system. (p. 13)

◇ TX code channel selection
If the transceiver has [TX Code CH Select] assigned to it, the indication can be toggled between the operating channel number (or name) and TX code channel number (or name). When the TX code channel number (or name) is displayed, [CH Up] or [CH Down] selects the TX code channel.

USING [TX CODE CH SELECT] KEY:
① Push [TX Code CH Select]— a TX code channel number (or name) is displayed.
② Push [CH Up] or [CH Down] to select the desired TX code channel.
③ After selecting, push [TX Code CH Select] to set.
  • Return to the stand-by mode.
④ Push [Call] to transmit the selected TX code.

USING [TX CODE CH UP]/[TX CODE CH DOWN] KEY:
If the transceiver has a [TX Code CH Up] or [TX Code CH Down] key assignment, the programmed TX code channel can be selected directly when pushed.

◊ TX code number edit (PMR operation only)

If the transceiver has [TX Code CH Select] or [TX Code Enter] assigned to it, TX code contents can be edited within the allowable digits.

USING [TX CODE CH SELECT] KEY:

① Push [TX Code CH Select] to enter the TX code channel selection mode.
 • Select the desired operating channel before entering the TX code channel selection mode if necessary.
② Push [TX Code CH Select] for 1 second to enter the TX code edit mode.
 • The digit to be edited blinks.
③ Push [TX Code CH Select] to select the desired digit to be edited.
④ Push [CH Up] or [CH Down] to select the desired digit.
⑤ Push [TX Code CH Select] to set. The digit to the right will blink automatically.
⑥ Repeat ④ and ⑤ to edit all allowable digits.
⑦ After editing, push [TX Code CH Select] to set.
 • Return to the stand-by mode.
⑧ Push [Call] to transmit.

USING [TX CODE ENTER] KEY:

① Push [TX Code Enter] to enter the TX code edit mode.
 • The digit to be edited blinks.
② Push [TX Code Enter] to select the desired digit to be edited.
③ Push [CH Up] or [CH Down] to select the desired digit.
④ Push [TX Code Enter] to set. The digit to the right will blink automatically.
⑤ Repeat ③ and ④ to edit all allowable digits.
⑥ After editing, push [TX Code Enter] to set.
 • Return to the stand-by mode.
⑦ Push [Call] to transmit.

◊ DTMF transmission

If the transceiver has [DTMF Autodial] assigned to it, the automatic DTMF transmission function can be used. Up to 8 DTMF channels can be selected.

① Push [DTMF Autodial]— a DTMF channel is displayed.
② Push [CH Up] or [CH Down] to select the desired DTMF channel.
③ Push [DTMF Autodial] to transmit the DTMF code.

■ User Set mode

If the transceiver has [User Set Mode] assigned to it, you can "customize" the transceiver operation to suit your preferences and operating style.

Entering the User Set mode:
① Hold down [User Set Mode] for 1 second to enter the User Set mode.
② Push [P0] to select the appropriate item.
　　Then push [P2] or [P3] to set the desired value or option.
　　• In the User Set mode, the selectable items are preset by your dealer. The presetable items are **Backlight**, **Beep**, **Beep Level, SQL Level**, **AF Min Level**, **Mic Gain**, **Horn**, **Battery Voltage**, **Signal Moni** and **Lone Worker**.
③ Hold down [User Set Mode] for 1 second again to exit the User Set mode.

■ Scrambler function

The voice scrambler function provides private communication between stations.
The optional Rolling or Non-rolling type can be selected.

① Push [Scrambler] to turn the scrambler function ON.
　　• "ᏗᎧ" (Scrambler indicator) is displayed.
② Push [Scrambler] again to turn the scrambler function OFF.
　　• "ᏗᎧ" disappears.

■ Emergency transmission

The emergency call can be performed using [Emergency]. (p. 5) When [Emergency] is pushed for the specified period of time, the DTMF or 5-Tone emergency signal is transmitted once or repeatedly on the emergency channel depending on the channel. However, when no emergency channel is specified, the signal is transmitted on the previously selected channel.

If you want to cancel the emergency call, hold down the key again before transmitting the call.

You can also make an emergency call with the MDC 1200 signaling system. (p. 13)

■ Stun function

When the specified ID, set as a stun ID or kill ID, is received, the stun function is activated.

When the stun ID is received, the transceiver becomes unusable. Entering of the password (p. 7) or receiving a specified ID, set as a revive ID, is necessary to operate the transceiver again in this case.

When the kill ID is received, the transceiver switches to the cloning required condition. Cloning the transceiver is necessary to operate the transceiver again in this case.

Stun function can be also used with the MDC 1200 signaling system. (p. 13)

■ Priority A channel selection

When one of the following operations is performed, the transceiver selects the Priority A channel automatically.

• Turning ON the transceiver
  The Priority A channel is selected each time the transceiver is turned ON.
• Off hook.
  The Priority A channel is selected when the microphone is taken off its hanger.

■ MDC 1200 system operation

The MDC 1200 signaling system enhances your transceiver's capabilities. It allows PTT ID*, Emergency signaling, and receiving Radio Check. Also, the dispatcher can stun and revive transceivers on the system.

An additional feature of MDC 1200 system found in Icom transceivers is called aliasing. Each transceiver on the system has a unique ID number. Aliasing allows the substitution of an alphanumeric name for this ID number. For transmit, you can use this alias to select a transceiver to call. For receive, the alias of the calling station is displayed instead of the ID.

*When [PTT] is pushed and/or released, the transceiver transmits your own station ID.

◇ Receiving an Emergency Call

① When an emergency call is received;
  • Beeps sound.
  • The calling station ID (or alias) and "EMG EMG" are displayed alternately.

② Turn OFF the transceiver, change the channel, push [PTT] to reply to the call, and so on, to stop the beep and display indication.
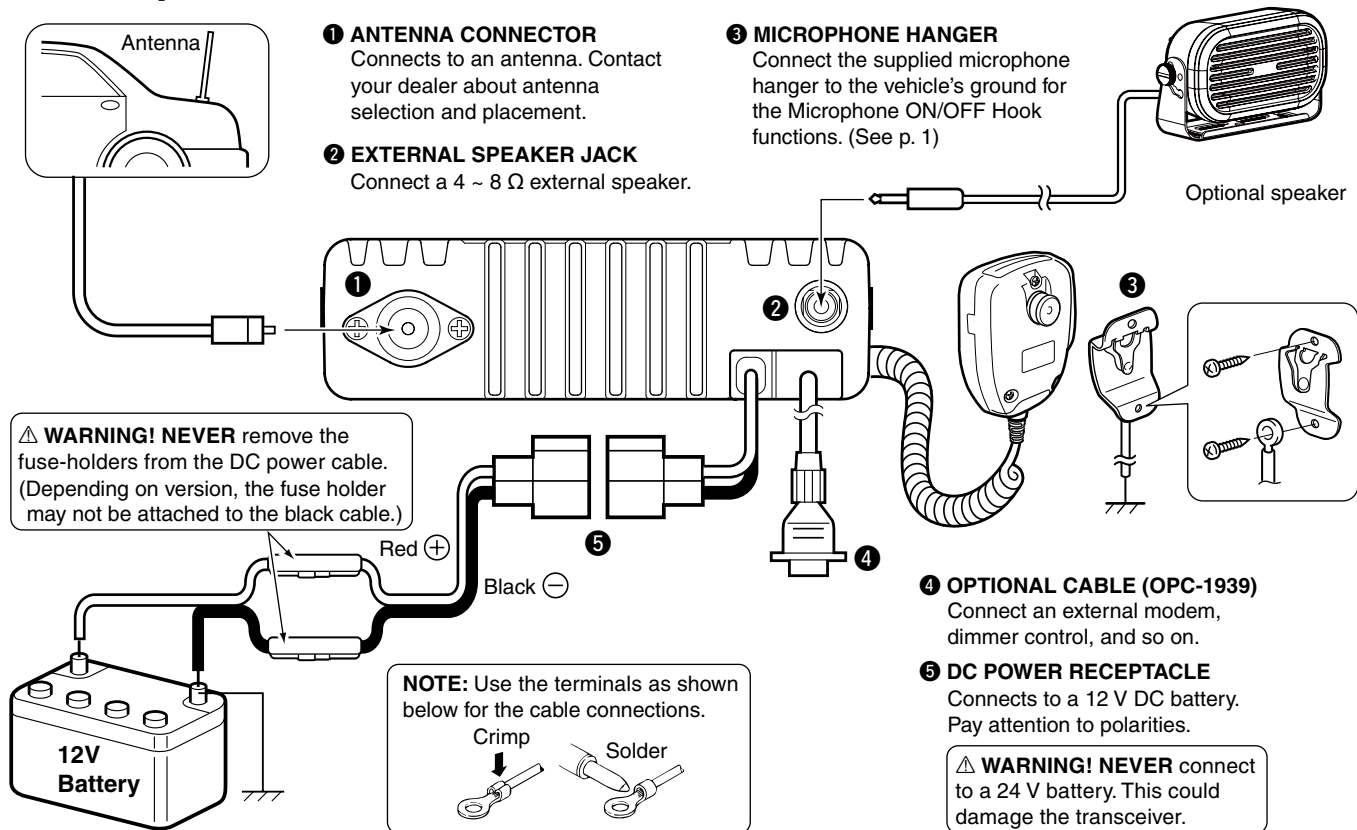
◇ Transmitting an Emergency Call

The MDC 1200 system Emergency feature can be accessed using the [Emergency] key (p. 5). The transceiver will send an Emergency MDC 1200 system command once or repeatedly for a programmed number of times until it receives the acknowledgement signal.

The emergency call can be transmitted without a beep emission, and the LCD indication change depends on how emergency is programmed. Ask your dealer for details.
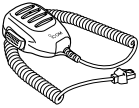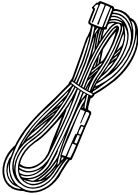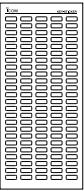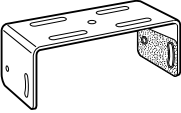
◇ Receiving a Stun and Revive

The dispatcher can send MDC 1200 system signals that will stun or revive your transceiver. If a Stun command is received that matches your station ID, the transceiver will display "SORRY" (default) and you can not receive or transmit. When a Revive command is received that matches your station ID, normal operation is restored.

3 CONNECTION AND MAINTENANCE

■ Rear panel connection

Antenna

❶ ANTENNA CONNECTOR
Connects to an antenna. Contact your dealer about antenna selection and placement.

❷ EXTERNAL SPEAKER JACK
Connect a 4 ~ 8 Ω external speaker.

❸ MICROPHONE HANGER
Connect the supplied microphone hanger to the vehicle's ground for the Microphone ON/OFF Hook functions. (See p. 1)

Optional speaker

⚠ **WARNING! NEVER** remove the fuse-holders from the DC power cable. (Depending on version, the fuse holder may not be attached to the black cable.)

Red ⊕

Black ⊖

12V Battery

NOTE: Use the terminals as shown below for the cable connections.

Crimp

Solder

❹ OPTIONAL CABLE (OPC-1939)
Connect an external modem, dimmer control, and so on.

❺ DC POWER RECEPTACLE
Connects to a 12 V DC battery. Pay attention to polarities.

⚠ **WARNING! NEVER** connect to a 24 V battery. This could damage the transceiver.

14

■ **Supplied Accessories**

Microphone	Microphone hanger and screw set	Microphone hanger cable
DC power cable	Function name stickers*	Mounting bracket
Flat washers	Nuts	Mounting screws (M5×12)
Spring washers	Bracket bolts	Self-tapping screws (M5×20)

*Used for labelling the programmable function keys according to their assinged functions.

■ **Mounting the transceiver**

The universal mounting bracket supplied with your transceiver allows overhead mounting.
• Mount the transceiver securely with the 4 supplied screws to a thick surface which can support more than 1.5 kg (3.3 lb).
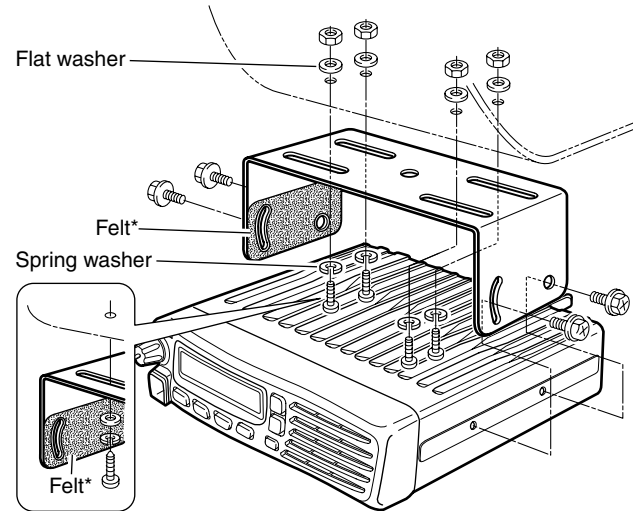
Flat washer
Felt*
Spring washer
Felt*
When using self-tapping screws
*Felts reduce the vibration effects.

■ Antenna

A key element in the performance of any communication systems is an antenna. Contact your dealer for more information regarding antennas and how to install them.

■ Fuse replacement

A fuse is installed in each fuse holder of the supplied DC power cable*. If a fuse blows or the transceiver stops functioning, track down the source of the problem if possible, and then replace the damaged fuse with a new rated one.
*Depending on version, only 1 fuse holder may be attached.
❑ Fuse rating: 10 A (for 1 fuse holder)/20 A (for 2 fuse holders)
  USE the applicable fuse only.
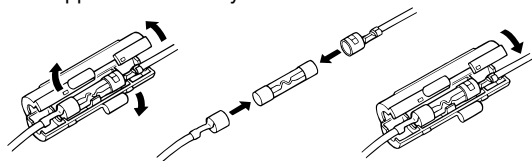
■ Cleaning

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 may damage the transceiver surfaces.

■ Options

• **OPC-1132A/OPC-347** DC POWER CABLE
  2 fuse holders are attached. **USE** the 20 A fuse only.
  OPC-1132A: 3 m (9.8 ft)
  OPC-347:   7 m (23 ft)

• **OPC-1939** ACC CABLE
  Allows you to connect to an external terminal.

• **HM-152/HM-152T/HM-148G/HM-148T** HAND MICROPHONE
  HM-152:   Hand microphone
  HM-152T: DTMF microphone
  HM-148G: Self ground heavy duty microphone
  HM-148T: Self ground heavy duty DTMF microphone
             The 10-keypad of this microphone can be used for the DTMF code transmission only.

• **SM-26** DESKTOP MICROPHONE

• **SP-10/SP-35/SP-35L** EXTERNAL SPEAKERS
  Input impedance   : 4 Ω
  Maximum input power : 5 W (SP-10)/7 W (SP-35/SP-35L)
  SP-10   : For all-round mobile operation.
  SP-35/SP-35L   : Compact and easy-to-install.

• **UT-108R** DTMF DECODER UNIT
  Provides pager and code squelch capabilities.

• **UT-109R/UT-110R** SCRAMBLER UNITS
  Non-rolling type (UT-109R)/Rolling type (UT-110R) voice scrambler unit provides higher communication security.

Count on us!

A6730-1EX-5
Printed in Japan
© 2009–2019 Icom Inc.   Apr. 2019

Icom Inc.
1-1-32 Kamiminami, Hirano-ku, Osaka 547-0003, Japan