

icom INSTRUCTIONS

VHF MOBILE TRANSCEIVER

IC-F5020 Series

UHF MOBILE TRANSCEIVER

IC-F6020 Series

Thank you for choosing this Icom product.
READ ALL INSTRUCTIONS carefully and completely before using this product.

SAVE THIS INSTRUCTIONS — This instruction manual contains important operating instructions for the following models:

- VHF MOBILE TRANSCEIVERS
IC-F5021, IC-F5022, IC-F5023, IC-F5026, IC-F5023H, IC-F5026H, and IC-F5028H
- UHF MOBILE TRANSCEIVERS
IC-F6021, IC-F6022, IC-F6023, IC-F6023H, and IC-F6028H

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Icom Inc.

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SAFETY TRAINING INFORMATION



WARNING

Your Icom radio generates RF electromagnetic energy during transmit mode. This radio is designed for and classified as “Occupational Use Only”, meaning it must be used only during the course of employment by individuals aware of the hazards, and the ways to minimize such hazards. This radio is NOT intended for use by the “General Population” in an uncontrolled environment.

- For compliance with FCC and Industry Canada RF Exposure Requirements, the transmitter antenna installation shall comply with the following three conditions:
 1. The transmitter antenna gain shall not exceed 0 dBi.
 2. IC-F5021/IC-F5023H:
The antenna is required to be located outside of a vehicle and kept at a distance of 57 centimeters or more between the transmitting antenna of this device and any persons during operation.
For small vehicle as worst case, the antenna shall be located on the roof top at any place on the centre line along the vehicle in order to achieve 57 centimeters separation distance. In order to ensure this distance is met, the installation of the antenna must be mounted at least 57 centimeters away from the nearest edge of the vehicle in order to protect against exposure to bystanders.
 2. IC-F6021:
The antenna is required to be located outside of a vehicle and kept at a distance of 41 centimeters or more between the transmitting antenna of this device and any persons during operation.
For small vehicle as worst case, the antenna shall be located on the roof top at any place on the centre line along the vehicle in order to achieve 41 centimeters separation distance. In order to ensure this distance is met, the installation of the antenna must be mounted at least 41 centimeters away from the nearest edge of the vehicle in order to protect against exposure to bystanders.
 3. IC-F5021/IC-F5023H:
Transmit only when people outside the vehicle are at least the recommended minimum distance of 136 centimeters away from the properly installed antenna. This separation distance will ensure that there is sufficient distance from a properly installed externally-mounted antenna to satisfy the RF exposure requirements in the applicable RF exposure compliance standards.
 3. IC-F6021:
Transmit only when people outside the vehicle are at least the recommended minimum distance of 117 centimeters away from the properly installed antenna. This separation distance will ensure that there is sufficient distance from a properly installed externally-mounted antenna to satisfy the RF exposure requirements in the applicable RF exposure compliance standards.

IMPORTANT

This instruction sheet includes some functions that are usable only when they are preset by your dealer. The transceiver may have other functions and operations that are not described in this instruction sheet. Ask your dealer for preset function 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.

ANTENNA

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

FUSE REPLACEMENT

Fuses are installed in the supplied DC power cable*. If a fuse blows, track down the source of the problem, repair it, and then replace the damaged fuse with a new rated one.
*Depending on version, only 1 fuse holder may be attached.
① Fuse rating: 10 A (for 1 fuse holder)/20 A (for 2 fuse holders)

NOTE: Use only specified fuses.

CLEANING

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

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 such as a 24 V battery. 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.

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

CAUTION: **DO NOT** allow children to touch the transceiver. Place the transceiver in a secure place to avoid inadvertent use by unauthorized persons.

CAUTION: **DO NOT** expose the transceiver to rain, snow or any liquids.

CAUTION: **DO NOT** use the non-specified microphone. Other microphones have different pin assignments and may damage the transceiver.

CAUTION: **DO NOT** use or place the transceiver in areas with temperatures below –25°C (–13°F) or above +55°C (+131°F) for the European version, or –30°C (–22°F) or above +60°C (+140°C) for other versions, or in areas subject to direct sunlight, such as the dashboard.

CAUTION: **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.

CAUTION: **DO NOT** place the transceiver in excessively dusty environments.

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

CAUTION: **DO NOT** use harsh solvents such as benzene or alcohol when cleaning, as they will damage the transceiver surfaces.

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

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.

ABOUT CE AND DOC

CE Hereby, Icom Inc. declares that the versions of IC-F5022 and IC-F6022 which have the “CE” symbol on the product, comply with the essential requirements of the Radio Equipment Directive, 2014/53/EU, and the restriction of the use of certain hazardous substances in electrical and electronic equipment Directive, 2011/65/EU. The full text of the EU declaration of conformity is available at the following internet address:
http://www.icom.co.jp/world/support

About E-marking: Detailed installation notes for Icom mobile transceivers to be fitted into vehicles are available. Please contact your Icom dealer or distributor.

DISPOSAL

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

FREQUENCY RANGE AND OUTPUT POWER

Model	Version	Frequency Range	Output Power
VHF Mobile Transceiver IC-F5022, IC-F5023 IC-F5026	EXP-01 EXP-02 EXP-03 EUR-11	136–174 MHz	25 W
	RUS-11	146–174 MHz	
	USA-01 CHN-01 EXP-12	136–174 MHz	
VHF Mobile Transceiver IC-F5021, IC-F5023H, IC-F5026H, IC-F5028H	RUS-12	146–174 MHz	50 W
	EXP-01 EUR-11 EXP-02 AUS-01	400–470 MHz	
UHF Mobile Transceiver IC-F6022, IC-F6023	EXP-01 EUR-11 EXP-02 AUS-01	450–520 MHz	25 W
	USA-01 EXP-03 CHN-01	400–470 MHz	
	USA-02 EXP-04	450–512 MHz	
UHF Mobile Transceiver IC-F6021, IC-F6023H IC-F6028H	USA-01 EXP-03 CHN-01	400–470 MHz	45 W
	USA-02 EXP-04	450–512 MHz	

- Channel spacing (Except IC-F5021):
12.5 kHz/20 kHz*/25 kHz*²
- *1 Only European version
- *² Except USA versions
- Channel spacing for IC-F5021:
15 kHz

INFORMATION SUR LA FORMATION À LA SÉCURITÉ



AVERTISSEMENT

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

• Afin de satisfaire aux exigences de la FCC et d'Industrie Canada en matière d'exposition aux RF, il est nécessaire que l'antenne soit installée conformément aux trois conditions suivantes:

1. Le gain de l'antenne du radio émetteur ne doit pas dépasser 0 dBi.
2. IC-F5021/IC-F5023H:
Il faut que l'antenne émettrice de cet appareil soit placée à l'extérieur d'un véhicule et tenue éloignée d'au moins 57 centimètres de toute personne pendant le fonctionnement. Dans le pire des cas, pour un petit véhicule, l'antenne doit être placée sur le toit, n'importe où dans l'axe central du véhicule, afin de respecter une distance de 57 cm du bord le plus rapproché du véhicule et ainsi éviter que les personnes présentes soient exposées.
2. IC-F6021:
Il faut que l'antenne émettrice de cet appareil soit placée à l'extérieur d'un véhicule et tenue éloignée d'au moins 41 centimètres de toute personne pendant le fonctionnement. Dans le pire des cas, pour un petit véhicule, l'antenne doit être placée sur le toit, n'importe où dans l'axe central du véhicule, afin de respecter une distance de 41 cm du bord le plus rapproché du véhicule et ainsi éviter que les personnes présentes soient exposées.
3. IC-F5021/IC-F5023H:
Émettre uniquement lorsque les personnes à l'extérieur du véhicule se trouvent à au moins la distance minimale recommandée de 136 cm de l'antenne correctement installée. Cette distance de sécurité assurera que les personnes soient placées suffisamment loin d'une antenne correctement fixée à l'extérieur pour satisfaire aux exigences en matière d'exposition aux RF, en ve tu des normes de conformité applicables.
3. IC-F6021
Émettre uniquement lorsque les personnes à l'extérieur du véhicule se trouvent à au moins la distance minimale recommandée de 117 cm de l'antenne correctement installée. Cette distance de sécurité assurera que les personnes soient placées suffisamment loin d'une antenne correctement fixée à l'extérieur pour satisfaire aux exigences en matière d'exposition aux RF, en ve tu des normes de conformité applicables.



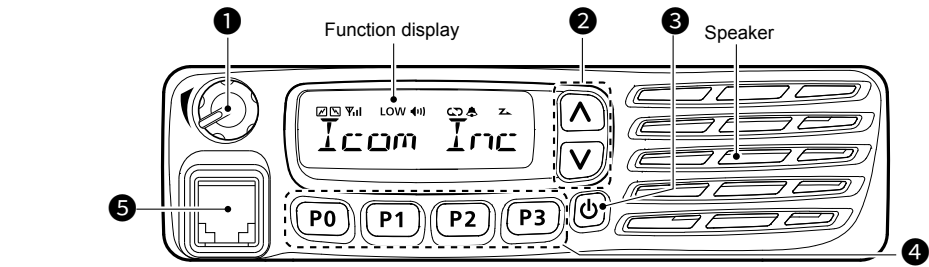
MISE EN GARDE

Afin de vous assurer que votre exposition à une énergie électromagnétique de RF se situe dans les limites permises par la FCC pour une utilisation grand public, veuillez en tout temps respecter les directives suivantes:

- **NE PAS** faire fonctionner la radio sans qu'une antenne appropriée y soit fixée, car ceci risque d'endommager la radio et causer une exposition supérieure aux limites établies par la FCC. L'antenne appropriée est celle qui est fournie avec cette radio par le fabricant ou une antenne spécialement autorisée par le fabricant pour être utilisée avec cette radio.
- **NE PAS** émettre pendant plus de 50% du temps total d'utilisation de l'appareil (« 50% du facteur d'utilisation »). Émettre pendant plus de 50% du temps total d'utilisation peut causer une exposition aux RF supérieure aux limites établies par la FCC et d'IC. La radio est en train d'émettre lorsque le témoin du mode de transmission s'affiche sur l'écran ACL. La radio émettra si vous appuyez sur le bouton du microphone.
- **Interférence électromagnétique et compatibilité**
En mode de transmission, votre radio Icom produit de l'énergie de RF qui peut provoquer des interférences avec d'autres appareils ou systèmes. Pour éviter de telles interférences, mettez la radio hors tension dans les secteurs où une signalisation l'exige. **NE PAS** faire fonctionner l'émetteur dans des secteurs sensibles au rayonnement électromagnétique tels que les hôpitaux, les aéronefs et les sites de dynamitage.

PANEL DESCRIPTION

NOTE: Different functions may have been assigned to the keys by your dealer, except for the Power key.



- 1 AF VOLUME CONTROL KNOB [VOL]**
Rotate the knob to adjust the audio output level.
① Minimum audio level is preset.

2 UP/DOWN KEYS [CH Up]/[CH Down]
Push to select an operating channel.
① The desired function can be assigned by your dealer.

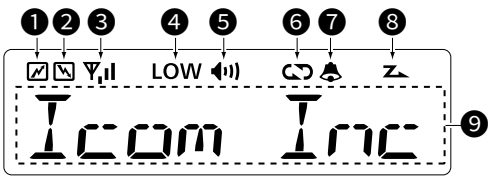
3 POWER KEY [P]
Push to turn the transceiver ON or OFF.
① The following optional functions are available at power ON:
• Automatic scan start
• Password prompt
• Set mode

4 DEALER-PROGRAMMABLE KEYS
Required functions can be independently programmed by your dealer.

5 MICROPHONE CONNECTOR
Connect the supplied or optional microphone.
- CAUTION: DO NOT** connect non-specified microphones. The pin assignments may be different and may damage the transceiver.

- ◇ **Microphone**
The supplied or optional microphone has a PTT switch and a hanger hook.
- ① The following functions are available when the microphone is ON or OFF hook (depending on the preprogramming):
- Automatic scan starts when you put it ON hook.
 - Scan is cancelled when you take it OFF hook.
 - Scan is paused when you take it OFF hook.
 - Automatically selects the Priority channel when you take it OFF hook.
 - Sets to the Inaudible mode (mute state) when you put it ON hook.
 - Sets to the Audible mode (unmute state) when you take it OFF hook.

FUNCTION DISPLAY



- 1 TRANSMIT ICON**
Displayed while transmitting a signal.

2 BUSY ICON
Displayed while the channel is busy (receiving).

3 SIGNAL STRENGTH ICON
Displays the relative receive signal strength level.
Weak ← Receive Signal level ⇒ Strong

4 LOW POWER ICON
Displayed when low output power is selected.
- 5 AUDIBLE ICON**

 - Displayed when the channel is in the Audible (unmuted) mode.
 - Displayed when a matching signal is received.

6 SCRAMBLER ICON
Displayed when the Voice Scrambler function is ON.

7 BELL ICON
Displayed or blinks when a matching signal is received, depending on the presetting.

8 SCAN ICON

 - Blinks during a scan.
 - Displayed when a scan channel is selected.

9 ALPHANUMERIC DISPLAY
Displays an operating channel number, channel name, User Set mode contents, DTMF code, etc.

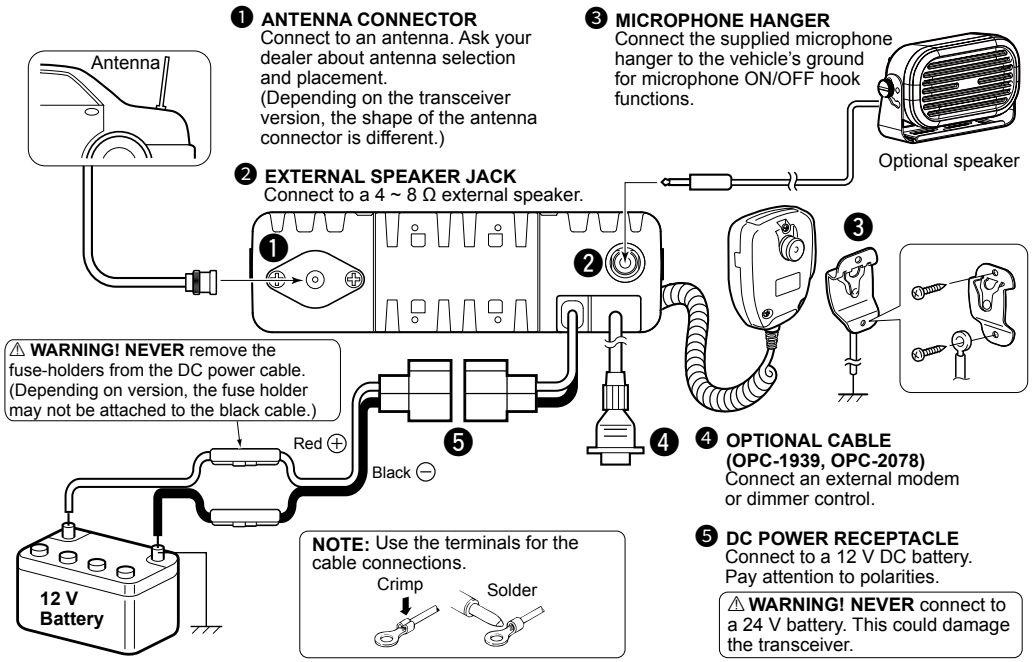
BASIC OPERATION

- ◇ **Turning ON the transceiver**
1. Push [P] to turn ON the transceiver.
 2. If the transceiver is preset for a start up password, enter the digit codes as directed by your dealer.
① The keys shown below can be used for password entry. 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 | 1 | 2 | 3 | 4 |
| | 5 | 6 | 7 | 8 | 9 |
- NOTE: If the "PASSWORD" indication is still displayed after inputting 4 digits, the input code number may be incorrect. Turn OFF the transceiver and re-enter your password.

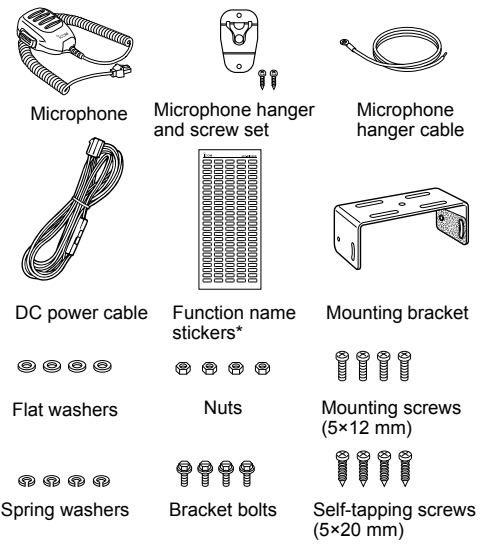
- ◇ **Selecting a channel**
- There are several methods to select channels, and they may differ, depending on the presetting.
- NON-ZONE TYPE:**
To select the desired operating channel:
• Push [CH Up] or [CH Down].
• Push one of [MR-CH 1] ~ [MR-CH 4].
- ZONE TYPE:**
To select the desired operating channel:
Push [Zone], then push [CH Up] or [CH Down].
- AUTOMATIC SCAN TYPE:**
Channel setting is not necessary for this type. When turning ON the power, the transceiver automatically starts scanning. Scanning stops when a signal is detected.

- ◇ **Receiving and transmitting**
- Receiving:**
1. Push [CH Up] or [CH Down] to select a channel.
 2. 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 preset period of time, when a matching RX code signal is received.
- Transmitting:**
1. Wait for the channel to become clear to avoid interference.
① The channel is busy when the busy icon is displayed.
 2. Take the microphone OFF from the hook.
 - The Audible mode is selected.
 - A priority channel may be automatically selected.
 3. Holding down [PTT] to transmit.
 4. Release [PTT] to receive.
- IMPORTANT:** To maximize the readability of your signal
1. Pause briefly after pushing [PTT].
 2. Hold the microphone 5 to 10 cm from your mouth, then speak into the microphone at your normal voice level.

REAR PANEL CONNECTION



SUPPLIED ACCESSORIES



- * Used for labelling the programmable function keys according to their assinged functions.
- NOTE: Some accessories are not supplied, or the shape is different, depending on the transceiver version.

OPTIONS

- **OPC-1939, OPC-2078** ACC CABLE
Enables you to connect to an external terminal.
OPC-1939: D-sub 15-pin, an external level converter (user supplied) is required.
OPC-2078: D-sub 25-pin, built-in level converter
- **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)
- **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
- **SM-26** DESKTOP MICROPHONE
- **SP-10, SP-30, SP-35, SP-35L** EXTERNAL SPEAKER
Input impedance: 4 Ω
SP-10: Rated input: 3 W, Maximum input: 5 W
SP-30: Rated input: 20 W, Maximum input: 30 W
SP-35, SP-35L: Rated input: 5 W, Maximum input: 7 W
- **UT-108R** DTMF DECODER UNIT
Provides pager and code squelch capabilities.
- **UT-109R/UT-110R** SCRAMBLER UNITS
Non-rolling type (UT-109R) and Rolling type (UT-110R) voice scrambler unit provides higher communication security.