ICOM INSTRUCTIONS

VHF TRANSCEIVER
IC-F3161/IC-F3163
UHF TRANSCEIVER
IC-F4161/IC-F4163

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

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	DEFENITION
⚠ **DANGER!**	Personal death, serious injury or an explosion may occur.
⚠ **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.

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Osaka 547-0003, Japan
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Count on us!
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Printed in Japan

PRECAUTIONS

⚠ **DANGER! NEVER** short the terminals of the battery pack. Shorting may occur if the terminals touch metal objects such as a key, so be careful when placing the battery packs (or the transceiver) in bags, and so on. Carry them so that shorting cannot occur with metal objects. Shorting may damage not only the battery pack, but also the transceiver.

⚠ **DANGER! NEVER** use and charge Icom battery packs with non-Icom transceivers or non-Icom chargers. Only Icom battery packs are tested and approved for use with Icom transceivers or charged with Icom chargers. Using third-party or counterfeit battery packs or chargers may cause smoke, fire, or cause the battery to burst.

⚠ **WARNING! NEVER** hold the transceiver so that the antenna is very close to, or touching exposed parts of the body, especially the face or eyes, while transmitting. The transceiver will perform best if the microphone is 2 to 4 in. (5 to 10 cm) away from the lips and the transceiver is vertical.

⚠ **WARNING! NEVER** operate the transceiver with a headset or other audio accessories at high volume levels. The continuous high volume operation may cause a ringing in your ears. If you experience the ringing, reduce the volume level or discontinue use.

CAUTION: DO NOT operate the transceiver while driving a vehicle. Safe driving requires your full attention—anything less may result in an accident.

CAUTION: DO NOT attach the battery unless the flexible antenna, battery pack and jack cover are securely attached to the transceiver. Confirm that the antenna and battery pack are dry before attaching. Exposing the inside of the transceiver to dust or water can cause serious damage to the transceiver.

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

CAUTION: DO NOT place or leave the transceiver in direct sunlight or in areas with temperatures below +22°F (–30°C) or above 140°F (60°C).

DO NOT operate the transceiver near unshielded electrical blasting caps or in an explosive atmosphere.

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

DO NOT push [PTT] when you do not actually intend to transmit.

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

KEEP the transceiver away from the heavy rain, and Never immerse it in the water. The transceiver meets IP55* requirements for dust-protection and water jet resistance.

However, once the transceiver has been dropped, dust-protection and water jet resistance cannot be guaranteed due to the fact that the transceiver may be cracked, or the waterproof seal damaged, etc.

* Only when the supplied battery pack, flexible antenna and connector cover are attached.

◇ Battery caution

Misuse of Li-ion batteries may result in the following hazards: smoke, fire, or the battery cells may rupture. Misuse can also cause damage to the battery pack or degradation of the pack's performance.

⚠ **DANGER! NEVER** short the terminals of the battery pack. Shorting may occur if the terminals touch metal objects such as a key, so be careful when placing the packs (or the transceiver) in bags, and so on. Carry them so that shorting cannot occur. Shorting may damage not only the pack, but also the transceiver.

⚠ **DANGER! NEVER** leave the battery pack in places with temperatures above 60˚C (140˚F). High temperature buildup in the battery cells, such as could occur near fires or stoves, inside a sun heated vehicle, or in direct sunlight for long periods of time may cause the battery cells to rupture or catch fire. Excessive temperatures may also degrade battery pack's performance or shorten the battery cell's life.

⚠ **DANGER! NEVER** solder the battery cell's terminals, and NEVER modify the battery pack. This may cause heat generation, and the battery cells may burst, emit smoke or catch fire.

⚠ **DANGER! NEVER** expose the battery pack to rain, snow, seawater, or any other liquids. Do not charge or use a wet battery pack. If the pack gets wet, be sure to wipe it dry before using. The battery pack itself is not waterproof.

⚠ **DANGER! NEVER** strike or otherwise impact the battery pack. Do not use the pack if it has been severely impacted or dropped, or if it has been subjected to heavy pressure. Battery damage may not be visible on the outside of the case. Even if the surface of the pack does not show cracks or any other damage, the cells inside the pack may rupture or catch fire.

⚠ **DANGER! NEVER** place battery packs near a fire. Fire or heat may cause them to rupture or explode. Dispose of used packs in accordance with local regulations.

⚠ **DANGER! NEVER** use the battery pack with a transceiver for which it is not specified. Never use a pack with any other equipment, or for any purpose that is not specified in the transceiver's instruction manual.

⚠ **DANGER! NEVER** let fluid from inside the battery cells get in your eyes. If it does, blindness can result. Rinse your eyes with clean water, without rubbing them, and immediately go to a doctor.

⚠ **DANGER! NEVER** use and charge Icom battery packs with non-Icom transceivers or non-Icom chargers. Only Icom battery packs are tested and approved for use with Icom transceivers or charged with Icom chargers. Using third-party or counterfeit packs or chargers may cause smoke, fire, or cause the battery cells to burst.

⚠ **WARNING! NEVER** put the battery pack in a microwave oven, high-pressure container, or in an induction heating cooker. This could cause a fire, overheating, or cause the battery cells to rupture.

⚠ **WARNING! NEVER** use the battery pack if it emits an abnormal odor, heats up, or is discolored or deformed. If any of these conditions occur, contact your Icom dealer or distributor.

⚠ **WARNING! NEVER** use deteriorated battery packs. They could cause a fire.

⚠ **WARNING! NEVER** let fluid from inside the battery cells come in contact with your body. If it does, immediately wash with clean water.

CAUTION: DO NOT use the battery pack out of the specified temperature range for the transceiver (–30˚C to +60˚C; –22˚F to +140˚F) and the battery itself (–20˚C to +60˚C; –4˚F to +140˚F). Using the pack out of its specified temperature range will reduce its performance and the battery cell's life.

CAUTION: Shorter battery pack life could occur if the pack is left fully charged, completely discharged, or in an excessive temperature environment (above 50˚C; 122˚F) for an extended period of time. If the battery must be left unused for a long time, it must be detached from the transceiver after discharging. You may use the battery until the remaining capacity is about half, then keep it safely in a cool dry place in the following temperature range:

–20˚C to +50˚C (–4˚F to +122˚F) (within a month)
–20˚C to +40˚C (–4˚F to +104˚F) (within three months)
–20˚C to +20˚C (–4˚F to +68˚F) (within a year)

BE SURE to replace the battery pack with a new one approximately five years after manufacturing, even if it still holds a charge. The inside battery material will become weak after a period of time, even with little use. The estimated number of times you can charge the battery is between 300 and 500.

Even when the battery appears to be fully charged, the operating time of the transceiver may become short when:
- Approximately five years have passed since the pack was manufactured.
- The battery has been repeatedly charged.

◇ Charging caution

⚠ **DANGER! NEVER** charge the battery pack in areas with extremely high temperatures, such as near fires or stoves, inside a sun-heated vehicle, or in direct sunlight. In such environments, the safety/protection circuit in the pack will activate and stop charging.

⚠ **DANGER! NEVER** charge the transceiver during a lightning storm. It may result in an electric shock, cause a fire or damage the transceiver. Always disconnect the power adapter before a storm.

⚠ **WARNING! NEVER** charge or leave the battery pack in the battery charger beyond the specified time for charging. If the battery is not completely charged by the specified time, stop charging and remove it from the battery charger. Continuing to charge the pack beyond the specified time limit may cause a fire, overheating, or the battery cells may rupture.

⚠ **WARNING!** Occasionally observe the battery pack condition while charging. If any abnormal condition occurs, discontinue using the battery pack.

⚠ **WARNING! NEVER** insert the transceiver (with the battery pack attached) into the charger if it is wet or soiled. This could corrode the battery charger terminals or damage the charger. The charger is not waterproof.

CAUTION: NEVER charge the battery outside of the specified temperature range: BC-160 (0˚C to 40˚C; 32˚F to 104˚F). Icom recommends charging the battery at 20˚C (68˚F). The battery may heat up or rupture if charged out of the specified temperature range. Additionally, battery performance or battery life may be reduced.

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.

VOICE CODING TECHNOLOGY

The AMBE+2™ voice coding Technology embodied in this product is protected by intellectual property rights including patent rights, copyrights and trade secrets of Digital Voice Systems, Inc. This voice coding Technology is licensed solely for use within this Communications Equipment. The user of this Technology is explicitly prohibited from attempting to extract, remove, decompile, reverse engineer, or disassemble the Object Code, or in any other way convert the Object Code into a human-readable form. U.S. Patent Nos.
#8,595,002, #8,359,197, #8,315,860, #8,200,497, #7,970,606, #6,912,495 B2.

SAFETY TRAINING INFORMATION

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.This radio has been tested and complies with the FCC and IC RF exposure limits for "Occupational Use Only". In addition, your Icom radio complies with the following Standards and Guidelines with regard to RF energy and electromagnetic energy levels and evaluation of such levels for exposure to humans:

- FCC OET Bulletin 65 Edition 97-01 Supplement C, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.
- American National Standards Institute (C95.1-1992), IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.
- American National Standards Institute (C95.3-1992), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields– RF and Microwave.
- The following accessories are authorized for use with this product. Use of accessories other than those specified may result in RF exposure levels exceeding the FCC and IC requirements for wireless RF exposure.; Belt Clip (MB-93, MB-94, MB-96N and MB-96F), Rechargeable Li-ion Battery Pack (BP-230N/BP-232N/BP-232H), Alkalies Battery Case (BP-240) and Speaker-microphone (HM-131SC, HM-159SC, HM-169 and HM-170GP).

To ensure that your expose to RF electromagnetic energy is within the FCC and IC allowable limits for occupational use, always adhere to the following guidelines:

DO NOT operate the radio without a proper antenna attached, as this may damaged the radio and may also cause you to exceed FCC and IC RF exposure limits. A proper antenna is the antenna supplied with this radio by the manufacturer or antenna specifically authorized by the manufacturer for use with this radio.

DO NOT transmit for more than 50% of total radio use time ("50% duty cycle"). Transmitting more than 50% of the time can cause FCC and IC RF exposure compliance requirements to be exceeded. The radio is transmitting when the TX indicator lights red. You can cause the radio to transmit by pressing the "PTT" switch.

ALWAYS keep the antenna at least 2.5 cm (1 inch) away from the body when transmitting and only use the Icom belt-clips listed on page 28 when attaching the radio to your belt, etc., to ensure FCC and IC RF exposure compliance requirements are not exceeded. To provide the recipients of your transmission the best sound quality, hold the antenna at least 5 cm (2 inches) from your mouth, and slightly off to one side.

The information listed above provides the user with the information needed to make him or her aware of RF exposure, and what to do to assure that this radio operates with the FCC and IC RF exposure limits of this radio.

Electromagnetic Interference/Compatibility
During transmissions, your Icom radio generates RF energy that can possibly cause interference with other devices or systems. To avoid such interference, turn off the radio in areas where signs are posted to do so. DO NOT operate the transmitter in areas that are sensitive to electromagnetic radiation such as hospitals, aircraft, and blasting sites.

Occupational/Controlled Use
The radio transmitter is used in situations in which persons are exposed as consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure.

INFORMATION SUR LA FORMATION Á LA SÉCURITÉ

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. Cet appareil a été évalué et jugé conforme, aux limites d'exposition aux RF de la FCC et d'IC, pour une «utilisation grand public». En outre, votre radio Icom satisfait les normes et directives qui suivent en matière de niveaux d'énergie et d'énergie électromagnétique de RF et d'évaluation de tels niveaux en ce qui concerne l'exposition humaine:
- Supplément C, édition 97-01, du Bulletin OET n° 65 de la FCC, «Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields».
- Norme de l'American National Standards Institute (ANSI): IEEE C95.1-1992 sur les niveaux de sécurité compatibles avec l'exposition humaine aux champs électromagnétiques de radiofréquences (3 kHz à 300 GHz).
- Norme de l'ANSI: IEEE C95.3-1992 sur la méthode d'évaluation recommandée du champ magnétique potentiellement dangereux des radiofréquences et des micro-ondes.
- Les accessoires illustrés à la p. 28–29 sont approuvés pour une utilisation avec ce produit. L'utilisation d'accessoires autres que ceux précisés peut entraîner des niveaux d'exposition aux RF supérieures aux limites établies par la FCC et d'IC en matière d'exposition aux RF sans fil.

Afin de vous assurer que votre exposition à une énergie électromagnétique de RF se situe dans les limites permises par la FCC et d'IC 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 et d'IC. 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»). La notion «50% du facteur d'utilisation» s'applique également au mode VOX/PTT. 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. Lorsque le voyant DEL rouge s'allume, cette radio est en train d'émettre. La radio émettra si vous appuyez sur le bouton du microphone.

TOUJOURS tenir l'antenne éloignée d'au moins 2,5 cm de votre corps au moment d'émettre et utiliser uniquement l'attache pour ceinture Icom illustrée à la p. 28, lorsque vous attachez la radio à votre ceinture, ou à autre chose, de façon à vous assurer de ne pas provoquer une exposition aux RF supérieure aux limites fixées par la FCC et d'IC. Pour offrir à vos interlocuteurs la meilleure qualité de transmission possible, tenez l'antenne à au moins 5 cm de votre bouche et légèrement de côté.

Les renseignements ci-dessus fournissent à l'utilisateur toute l'information nécessaire sur l'exposition aux RF et sur ce qu'il faut faire pour assurer que cette radio fonctionne en respectant les limites d'exposition aux RF établies par la FCC et d'IC.

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.

Usage professionnel/contrôlé
Ce radio émetteur est utilisé dans des cas où des personnes sont exposées en raison de leur travail, pourvu qu'elles soient conscientes du risque d'exposition et qu'elles puissent exercer un contrôle sur cette exposition.
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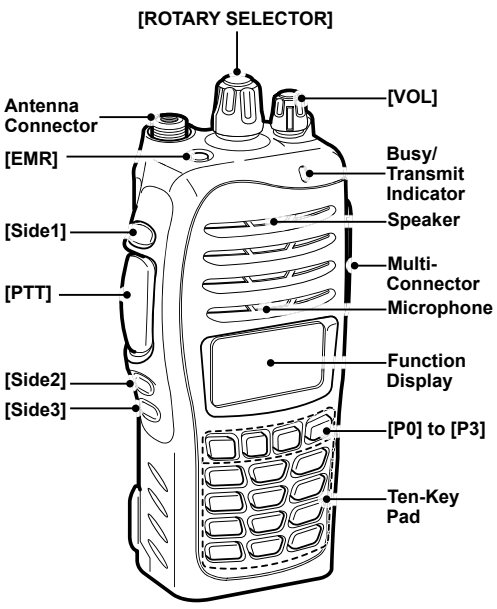
PANEL DESCRIPTION



◇ Busy/Transmit Indicator

- Lights green while receiving a signal, or when the squelch is open.
- Lights red while transmitting.

◇ Multi-connector

Connect an optional equipment.

CAUTION: Attach the connector cover when the optional equipment is not used. Otherwise the terminals of the multi-connector may be shorted by metal object, etc., and this could damage the transceiver.

◇ About the Dealer-Programmable Keys ([P0] to [P3])

Desired function can be programmed independently by your dealer.

FUNCTION DISPLAY

◇ Icon Area

Indicators

SIGNAL STRENGTH INDICATOR
Displays the relative received signal strength level.

BATTERY INDICATOR
Displays or blinks when the battery power decreases to a specified levels.

Indication				
Battery level	Full	Middle	Charging required	No battery

blinks when the battery is over charged.

blinks when the battery is exhausted.

Icons

LOW POWER INDICATOR
Displayed when low power output is selected.

AUDIBLE INDICATOR
- Displayed when the channel is in the 'audible' (unmute) condition.
- Displayed when the matched signal is received.

COMPANDER INDICATOR
Displayed when the compander function is ON.

SCRAMBLER INDICATOR
Displayed when the voice scrambler function is ON.

BELL INDICATOR
Displayed or blinks when the matched signal is received, depending on the programming.

CALL MODE MEMORY INDICATOR
Displayed when the call code memory is selected.

◇ ALPHANUMERIC DISPLAY

- Displays the selected channel number, channel name, Set mode contents, DTMF code, if set.
- The indication mode can be selected from 1 line or 2 lines. Ask your dealer for details.
  ⓘ In this instruction manual, the LCD illustration is described using the 2 lines indication mode.

◇ KEY INDICATOR

Indicates the programmed function of the front panel keys ([P0], [P1], [P2] and [P3]).

BASIC OPERATION

◇ Turning power ON

NOTE: Before using the transceiver for the first time, the battery pack must be fully charged for optimum life and operation. See the BATTERY CHARGING section of this sheet.

Rotate [VOL] to turn ON the transceiver.

◇ Receiving and Transmitting

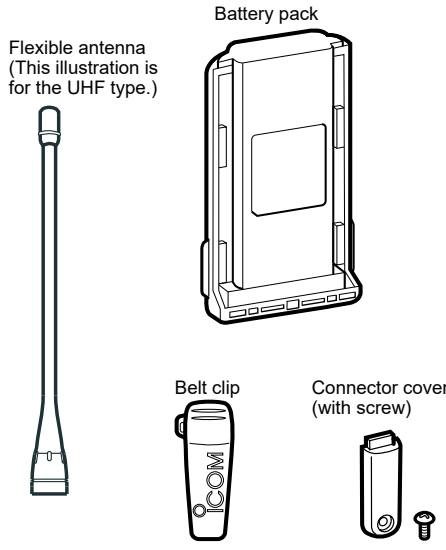
Receiving:
1. Push [CH Up] or [CH Down], or rotate [ROTARY SELECTOR]* to select the conventional system channel, in sequence.
   ⓘ Depending on the presetting.
2. When receiving a call, rotate [VOL] to adjust the audio output level to a comfortable listening level.

Transmitting:
1. Wait until the channel is clear to avoid interference.
2. While holding down [PTT], speak at your normal voice level.
3. Release [PTT] to receive.

IMPORTANT:
To maximize the readability of your signal:
1. After pushing [PTT], pause briefly before you start speaking.
2. Hold the microphone 5 ~ 10 cm (2 ~ 4 inches) from your mouth, then speak at your normal voice level.

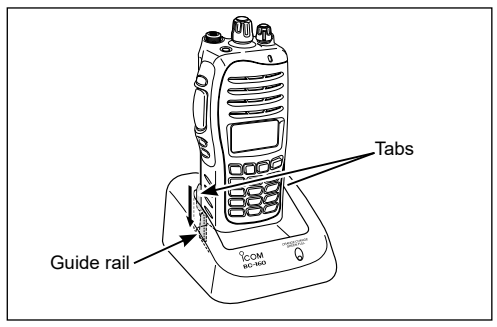
SUPPLIED ACCESSORIES

The following accessories are supplied.



BATTERY CHARGING

IMPORTANT: Battery charging caution
Ensure the guide tabs on the battery pack are correctly aligned with the guide rails inside the charger adapter.
(This illustration is described with the BC-160.)



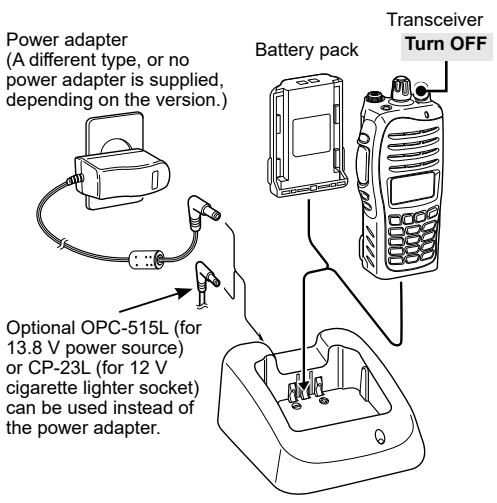
◇ Rapid charging with the BC-160

The optional BC-160 provides rapid charging of the Li-ion battery pack.

Charging time: Approximately 3.5 hours (with BP-232H)

Additionally needed item (purchase separately):
- A power adapter (may be supplied with BC-160 depending on version) or the DC power cable (OPC-515L/CP-23L).

CAUTION: DO NOT reverse the polarity when connecting the OPC-515L to a power source. This will ruin the battery charger.
White line: ⊕, Black line: ⊖



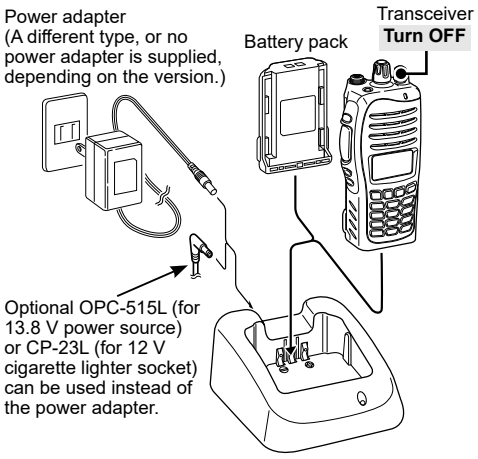
◇ Rapid charging with the BC-171

The optional BC-171 provides regular charging of the Li-ion battery pack.

Charging time: Approximately 4 hours (with BP-230N)

Additionally needed item (purchase separately):
- A power adapter (may be supplied with BC-171 depending on version) or the DC power cable (OPC-515L/CP-23L).

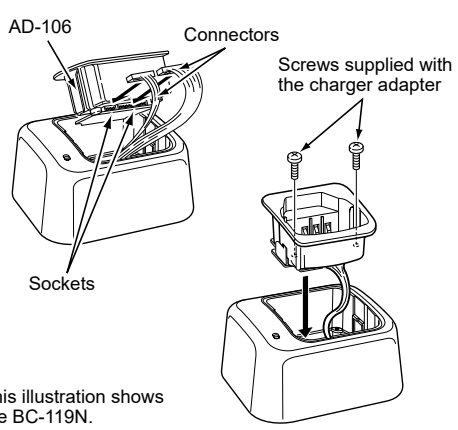
CAUTION: DO NOT reverse the polarity when connecting the OPC-515L to a power source. This will ruin the battery charger.
White line: ⊕, Black line: ⊖



◇ AD-106 installation

The AD-106 CHARGER ADAPTER must be installed into the BC-119N or BC-121N before battery charging.

ⓘ Connect the AD-106 charger adapter and the BC-119N/ BC-121N as below, then install the AD-106 into the holder space of the BC-119N or BC-121N with the supplied screws.



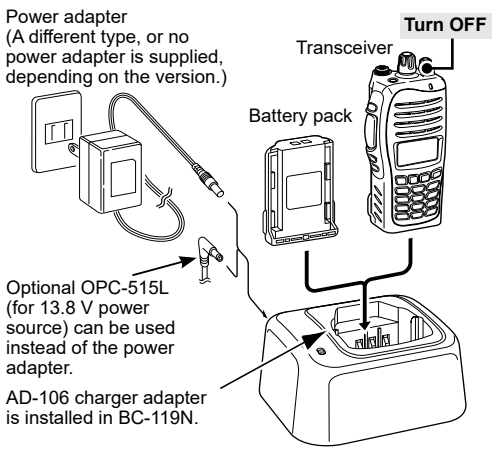
◇ Rapid charging with the BC-119N + AD-106

The optional BC-119N provides rapid charging of the Li-ion battery pack.

Charging time: Approximately 3.5 hours (with BP-232H)

Additionally needed item (purchase separately):
- AD-106 CHARGER ADAPTER
- A power adapter (may be supplied with BC-119N depending on version) or the DC power cable (OPC-515L/CP-23L).

CAUTION: DO NOT reverse the polarity when connecting the OPC-515L to a power source. This will ruin the battery charger.
White line: ⊕, Black line: ⊖

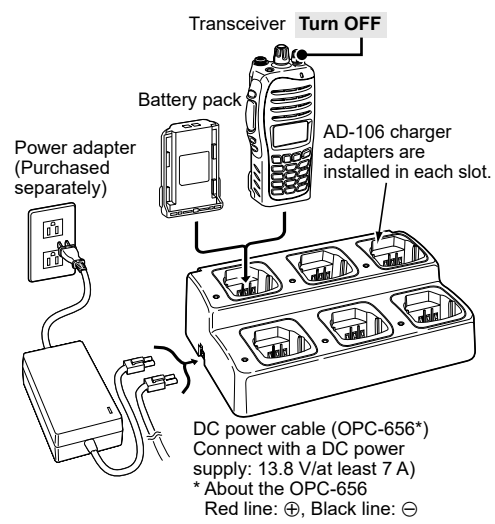


◇ Rapid charging with the BC-121N + AD-106

The optional BC-121N allows up to 6 battery packs to be charged simultaneously.

Charging time: Approximately 3.5 hours (with BP-232H)

Additionally needed item (purchase separately):
- Six AD-106 CHARGER ADAPTERS
- A power adapter or the DC power cable (OPC-656)



CAUTION: When using the OPC-656 DC power cable DO NOT reverse the polarity when connecting the OPC-656 to a power source. This will ruin the battery charger.
OPC-656: Red line: ⊕, Black line: ⊖

NOTE: For the instructions on the BC-197 MULTI-CHARGER, see the instruction manual supplied with the charger.

OPTIONS

◇ BATTERY PACKS

- **BP-230N** Li-ion BATTERY PACK
  Voltage: 7.4V
  Capacity: 950mAh (minimum), 980mAh (typical)
  Battery life*: 7.35 hrs.
- **BP-232N** Li-ion BATTERY PACK
  Voltage: 7.4V
  Capacity: 1900mAh (minimum), 2000mAh (typical)
  Battery life*: 12 hrs.
- **BP-232H** Li-ion BATTERY PACK
  Voltage: 7.4V
  Capacity: 2250mAh (minimum), 2300mAh (typical)
  Battery life*: 14 hrs.
- **BP-240** BATTERY CASE FOR AAA (LR03) × 6 alkaline
  Operating period depends on the alkaline cells used.
  * When the power save function is turned ON, and the operating periods are calculated under the following conditions;
  TX : RX : standby = 5 : 5 : 90

◇ CHARGERS

- **BC-119N** DESKTOP CHARGER + **AD-106** CHARGER ADAPTER + **BC-145S** AC ADAPTER
  For rapid charging of battery pack. A power adapter is supplied with the charger depending on versions.
  Charging time: Approximately 3.5 hours for the BP-232H.
- **BC-121N** MULTI-CHARGER + **AD-106** CHARGER ADAPTER (6 pcs.) + **BC-157S** AC ADAPTER
  For rapid charging of up to 6 battery packs simultaneously (six AD-106s are required). A power adapter may be supplied with the charger, depending on the version.
  Charging time: Approximately 3.5 hours for the BP-232H.
- **BC-197** MULTI-CHARGER + **AD-122** CHARGER ADAPTER (6 pcs.) + **BC-157S** AC ADAPTER
  For rapid charging of up to 6 battery packs simultaneously (six AD-122s are required). A power adapter may be supplied with the charger, depending on the version.
  Charging time: Approximately 3.5 hours for the BP-232H.
- **BC-160** DESKTOP CHARGER + **BC-123S** AC ADAPTER
  For rapid charging of battery pack. A power adapter is supplied with the charger depending on versions.
  Charging time: Approximately 3.5 hours for the BP-232H.
- **BC-171** DESKTOP CHARGER + **BC-147S** AC ADAPTER
  For regular charging of battery packs. A power adapter is supplied with the charger depending on versions.
  Charging time: Approximately 11.5 hours for the BP-232H.
  Approximately 4 hours for the BP-230N

◇ BELT CLIPS

- **MB-93** SWIVEL BELT CLIP
- **MB-94** BELT CLIP
  Exclusive alligator-type belt clip.
- **MB-96N/MB-96F** LEATHER BELT HANGER

◇ OPTIONAL UNITS

- **UT-96R** 2/5 TONE UNIT
- **UT-109R/UT-110R** SCRAMBLER UNITS
  Non-rolling type (UT-109R)/Rolling type (UT-110R) voice scrambler unit provides higher communication security.
- **UT-126H** DIGITAL MODULATOR/DEMODULATOR UNIT
  Provides 6.25 kHz digital mode operation.
- **UT-124R** MAN DOWN UNIT
  Provides a measure of safety when working in a hazardous environment, etc.

◇ DC CABLES

- **CP-23L** CIGARETTE LIGHTER CABLE
  Allows charging of the battery pack through a 12 V cigarette lighter socket. (For BC-119N/BC-160/BC-171)
- **OPC-515L/OPC-656** DC POWER CABLES
  Allows charging of the battery pack using a 13.8 V power source instead of the power adapter.
  OPC-515L : For BC-119N/BC-160/BC-171
  OPC-656 : For BC-121N/BC-197

◇ OTHER OPTIONS

- **SP-13** EARPHONE
  Provides clear receive audio in noisy environment.
- **AD-52** EARPHONE ADAPTOR
  Provides clear receive audio in noisy environment.
- **HM-131SC/HM-159SC** SPEAKER-MICROPHONE
  Combination speaker-microphone that provides convenient operation while hanging the transceiver from your belt.
- **HM-169** SPEAKER-MICROPHONE
  Rugged type speaker-microphone.
- **HM-170GP** SPEAKER-MICROPHONE
  GPS speaker-microphone for BIIS and Digital modes operation.
- **VS-1SC** VOX/PTT CASE + **HS-94/HS-95/HS-97** HEADSET
  VS-1SC : VOX/PTT switch box for hands-free operation
  HS-94 : Ear-hook type
  HS-95 : Neck-arm type
  HS-97 : Throat microphone
- **MB-130** VEHICLE CHARGER BRACKET
  Vehicle mounting bracket for the BC-160 battery charger.

◇ ANTENNAS

- **FA-SC56VS/FA-SC57VS/FA-SC73US** STUBBY ANTENNAS
  Shorter VHF or UHF antennas.
  FA-SC56VS: Frequency range 150–162 MHz
  FA-SC57VS: Frequency range 160–174 MHz
  FA-SC73US: Frequency range 450–490 MHz
- **FA-SC25V/FA-SC55V/FA-SC03U/ FA-SC25U/FA-SC57U/FA-SC72U** FLEXIBLE ANTENNAS
  VHF or UHF antennas.
  FA-SC25V: Frequency range 136–150 MHz
  FA-SC55V: Frequency range 150–174 MHz
  FA-SC03U: Frequency range 380–430 MHz
  FA-SC25U: Frequency range 400–430 MHz
  FA-SC57U: Frequency range 430–470 MHz
  FA-SC72U: Frequency range 470–520 MHz
- **FA-SC61VC/FA-SC61UC** CUT ANTENNAS
  FA-SC61VC: 136–174 MHz
  FA-SC61UC: 380–520 MHz

Some options may not be available in some countries. Please ask your dealer for details.