



# PROFESSIONAL COMMUNICATIONS



HARD WORKING RADIOS

# COMPANY PROFILE

## ICOM, THE WIRELESS COMMUNICATION EXPERTS

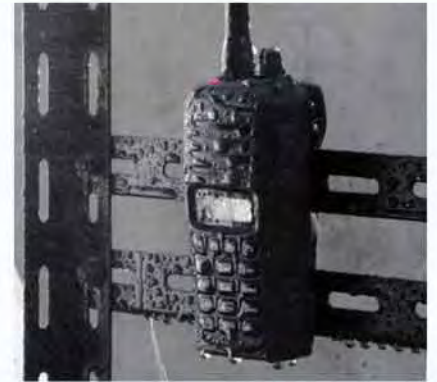
Icom Inc. is a wireless communications manufacturing company located in Osaka, Japan. Since Icom's establishment in 1954, We've had a long record as a trusted manufacturer of land mobile radio, amateur radio, marine radio, navigation products, aviation radio and communications receivers.



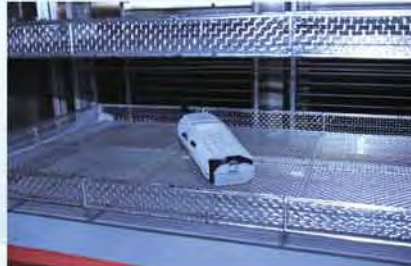
# QUALITY & RELIABILITY

## ICOM QUALITY AND ICOM RELIABILITY

Over 50 years of engineering and production excellence is a part of every Icom product. Using the latest equipment, Icom radios are tested to pass rigorous in-house tests as well as environmental tests to U.S. Military standard 810 specifications.



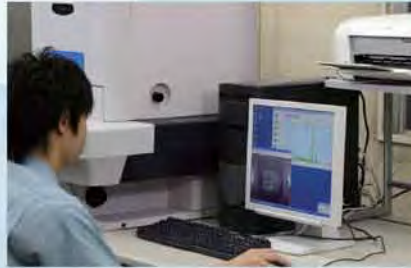
Water resistant



Temperature shock



Vibration



Shock



Solar radiation



## PRODUCTION

### MADE IN JAPAN QUALITY

Icom is a rare example of an electronics manufacturer that has not shifted production to lower cost countries, but kept its production base in Japan. The Wakayama Icom plant has an advanced production system to produce small volume/multi-model wireless communication products.



## ICOM BRAND

### ICOM, WORLD BRAND NAME

Icom is recognized as a reliable 2-way radio global brand name around the world. Our land mobile radios are used by many professional organizations all over the world, like the United States Department of Defense. In fact, Icom was chosen as the first Japanese company to supply radios to the U.S. Marine Corps.



## NETWORK

### ICOM'S WORLDWIDE NETWORK

Icom products are sold in over 80 countries around the world. Icom has an international sales and service network, including sales subsidiaries in the U.S., Australia, Germany, Spain and China. Icom is here to support and service our products and your communication needs.





# FEATURED FOR THE FIRST RESPONDER! READY FOR: P25 CONVENTIONAL, P25 TRUNKING AND ANALOG CONVENTIONAL. ALL IN ONE RADIO!

## VHF HANDHELD TRANSCEIVERS

- IC-F9011T P25 Trunking/  
Conventional ready
- IC-F9011S P25 Trunking/  
Conventional ready
- IC-F9011B P25 Trunking/  
Conventional ready  
(6W)

## UHF HANDHELD TRANSCEIVERS

- IC-F9021T P25 Trunking/  
Conventional ready
- IC-F9021S P25 Trunking/  
Conventional ready
- IC-F9021B P25 Trunking/  
Conventional ready  
(5W)



IC-F9011T



IC-F9011B



IC-F9021S

**P25 Conventional and Trunking**  
The IC-F9011T/S/B series has analog conventional, and P25 conventional or P25 trunking capabilities, all standard within one radio, and conforms to the TIA/EIA-102.CAAB standard.

**Digital/Analog mixed mode operation**  
Receives both analog and P25 digital modes and transmits either mode depending on programming.

**Optional AES/DES encryption**  
Optional UT-125 AES/DES or UT-128 DES encryption unit required. Versions certified to FIPS 140-2 Level 1 for AES encryption are planned for future release.

**OTAR (Over-the-Air-Rekeying)**  
**AMBE+2™ Enhanced vocoder ready**

**4-way navigation cross keypad**  
The 4-way cross keypad\*1 on the front panel provides an intuitive user interface. On the top of the radio, there is a toggle switch to turn the encryption on or off\*2 and the 3 position switch allows you to quickly select an operating zone\*2.  
\*1 IC-F9011T/S series only. \*2 According to the programmed setting.

**6W RF output power**  
The IC-F9011T/S/B series provides 6W\*3 of high output power. The supplied 3040mAh (typ.) Li-Ion battery pack, BP-254, provides 9 hours\*4 of operating time.  
\*3 5W for UHF model \*4 Typical operation with Tx: Rx: standby=5:5:90.

**1000mW audio output power**  
The built-in BTL amplifier doubles the audio output power and delivers loud audio to receive all calls under noisy environments.

- Other features**
- IP57 dust and waterproof protection
  - Slim dimensions (41.8mm (1<sup>21</sup>/<sub>32</sub> in) thick)
  - 512 channels/128 zones • DTMF autodial\*5
  - 14-pin accessory connector • Built-in audio compander\*5
  - Built-in inversion type voice scrambler\*5
  - VOX function for hands-free operation • Optional man down unit, UT-124R
  - FM wide/narrow channel spacing\*5 • CTCSS and DTCS encoder and decoder\*5
  - 2-Tone encoder and decoder\*5 and MDC 1200 compatible\*5 (Available in future)
- \*5 Analog mode only

<p><b>Supplied Accessories</b> (May differ according to version)</p>	<ul style="list-style-type: none"> <li>• Battery pack, BP-254</li> <li>• Antenna</li> <li>• Belt clip, MB-115</li> </ul>
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# THE SMART MIGRATION FROM ANALOG TO AN APCO P25 DIGITAL RADIO SYSTEM

## VHF HANDHELD TRANSCEIVERS

- IC-F70DT P25 Conventional ready
- IC-F70DS P25 Conventional ready
- IC-F70T
- IC-F70S (5W)

## UHF HANDHELD TRANSCEIVERS

- IC-F80DT P25 Conventional ready
- IC-F80DS P25 Conventional ready
- IC-F80T
- IC-F80S (4W)



### P25 conventional mode

The IC-F70D series is APCO Project 25 (P25) compliant. It ensures interoperability with other manufacturer's P25 digital radios in conventional mode. The radio is programmable digital and/or analog FM modes per channel.

### Intrinsically safe version

Versions of the IC-F70 series are available that conform to the intrinsically safe rating of the FM Approvals.

Intrinsically safe : Class I, II, III, Division 1, Groups C, D, E, F, G ;  
 Nonincendive : Class I, Division 2, Groups A, B, C, D hazardous locations  
 Connected battery pack : BP-254FM, "Max. Temp. : T3C at 40°C"  
 Approved options: HM-138, HM-168IS, HS-94, HS-95, HS-97, VS-1SC, UT-109, UT-110, UT-124



### AES/DES digital encryption

AES and DES are encryption standards required by public safety agencies. The IC-F70D series provides secure encryption with DES and AES accordingly when activated with EX-2785 J02 (for DES) and EX-2785 J03 (for AES) activation software. Versions certified to FIPS 140-2 Level 1 for AES encryption are also available.

TM: A Certification Mark of NIST, which does not imply product endorsement by NIST, the U.S. or Canadian Governments.



FIPS-140-2 inside

### IPX7 waterproof protection

The IC-F70 series has solid waterproof\* construction. A speaker grill designed for water removal keeps communications clear in inclement weather.

\* Submersible in 1m depth of water for 30 minutes, equivalent to IPX7.

### Other features

- 5W (VHF), 4W (UHF) output power
- 256 channels/32 zones
- Dot matrix multi function display
- Built-in audio compander (Analog mode)
- Large capacity Li-Ion battery pack
- Built-in 5-Tone, 2-Tone, CTCSS, DTCS and MDC 1200 (Analog mode)
- Optional man down unit UT-124
- Tactical group function with optional zone copy cable
- Built-in Voice Operated Transmission (VOX) capability
- P25 upgrade is available for analog versions (Optional UT-120 and EX-2785 J01 are required)



IC-F80DS

IC-F70DT

#### Supplied Accessories

(May differ according to version)

- Battery pack, BP-253/BP-254
- Antenna
- Belt clip, MB-94

# POWER PUBLIC SAFETY RELIES ON! READY FOR: P25 CONVENTIONAL, P25 TRUNKING

VHF MOBILE TRANSCEIVER

## IC-F9511HT

(110W)

P25 Trunking/  
Conventional ready



Optional SP-30

IC-F9511HT

### Common features in IC-F9511HT and IC-F9511T/S

#### P25 Conventional and Trunking

The IC-F9511HT/T/S series has analog conventional, P25 conventional or P25 trunking capabilities, all standard within one radio and conforms to the TIA/EIA-102.CAAB standard.

#### Digital/Analog mixed mode operation

Receives both analog and P25 digital modes and transmits either mode depending on programming.

#### Optional AES/DES encryption

Optional UT-125 AES/DES or UT-128 DES encryption unit required.

#### OTAR (Over-the-Air-Rekeying)

#### AMBE+2™ Enhanced vocoder ready

### 110W of powerful RF output

A full 110W of output power is available for reliable long distance communication. A large heat sink provides effective cooling mechanism allowing reliable duty cycle operation (20% duty cycle transmission).

### Compact “letter size” RF unit

While the IC-F9511HT provides 110W of RF output, the RF unit dimensions are only 175 (W) × 279 (D) × 60 (H) mm, so the IC-F9511HT can be fit into the “letter size” console box. The controller and speaker are separated from the main (RF) unit for flexible installation.

### 9-pin external speaker connector

The IC-F9511HT has a 9-pin speaker connector with 15W (typ.) BTL audio amplifier for connecting SP-30 external speaker, horn honk and ignition sensing line, etc.,.

### IP54 dust-protection and splash resistance

The front panel and RF unit of the IC-F9511HT has dust-protection and splash resistance, equivalent to IP54.

### Other features

- FM wide/narrow channel spacing\*1
- 512 channels/128 zones • Dot matrix multi-function display
- D-SUB 25-pin programmable ACC connector
- Self-grounding microphone, HM-148G
- Optional external speaker, SP-30
- NTIA VHF specification compliant • Talk around function
- Built-in audio compander\*1
- Built-in inversion type voice scrambler\*1
- DTMF autodial\*1 • Tactical group function
- CTCSS and DTCS encoder and decoder\*1
- 2-Tone encoder and decoder\*1 and MDC 1200 compatible\*1 (Available in future)

\*1 Analog mode only

### Supplied Accessories (May differ according to version)

- |                            |   |
|----------------------------|---|
| • Hand microphone, HM-148G | • Mounting bracket kit                              |
| • Controller unit          | • Mounting bracket kit for main unit and controller |
| • Separation cable (5m)    | • Fuse • Crimp terminals                            |
| • DC power cable           | • Socket terminals                                  |
| • Key assign stickers      |   |





# AND ANALOG CONVENTIONAL. ALL IN ONE RADIO!

## VHF MOBILE TRANSCEIVERS

**IC-F9511T** P25 Trunking/  
Conventional ready  
(50W)

**IC-F9511S** P25 Trunking/  
Conventional ready  
(50W)



IC-F9511S



IC-F9511T

## Detachable controller (front panel)

With the optional remote control kit, RMK-2 and separation cable, the front panel controller of the IC-F9511T/S can be detached from the main unit. The controller has dust-protection and splash resistance equivalent to IP54.

## 512 memory channels, 128 zones

Up to 512 memory channels can be divided into 128 memory zones, allowing you flexible channel and communication group management.

## Programmable accessory connector

The IC-F9511T/S has a D-SUB 25-pin ACC connector for connecting external devices. It has reserved pins for programming to input operating channels, and output received audio or honk a horn, etc. In addition, an ignition sensing line allows you to control the radio power from the engine ignition switch.

## Self-grounding microphone, HM-148G

The supplied HM-148G self-grounding microphone has a mechanism for self grounding where a grounding wire is no longer required.

## Other features

- 50W output power • FM wide/narrow channel spacing\*1
  - 512 channels/128 zones • Dot matrix multi function display
  - Built-in 22W BTL audio amplifier for PA function and RX speaker
  - NTIA VHF specification compliant • Talk around function
  - Built-in audio compander\*1 • DTMF autodial\*1
  - Built-in inversion type voice scrambler\*1 • Tactical group function
  - CTCSS and DTCS encoder and decoder\*1
  - 2-Tone encoder and decoder\*1 and MDC 1200 compatible\*1 (Available in future)
- \*1 Analog mode only

## Supplied Accessories

(May differ according to version)

- Hand microphone, HM-148G
- DC power cable
- Microphone hanger
- Mounting bracket kit
- Key assign stickers
- External speaker, SP-22\*  
\* IC-F9511T only.



IC-F1721

IC-F1821

- P25 conventional mode
- Powerful 50W (VHF), 45W (UHF) output
- Optional AES/DES digital encryption
- Built-in 5-Tone, 2-Tone, CTCSS, DTCS and MDC 1200 (Analog mode)
- Optional zone copy cable for tactical group operation
- Complementary model to the IC-F70/D series
- P25 upgrade is available for analog versions (Optional UT-120 and EX-2785 J01 are required)

## VHF MOBILE TRANSCEIVERS

**IC-F1721D**  
**IC-F1821D**  
**IC-F1721**  
**IC-F1821**

## UHF MOBILE TRANSCEIVERS

**IC-F2721D**  
**IC-F2821D**  
**IC-F2721**  
**IC-F2821**

## Supplied Accessories

(May differ according to version)

- Hand microphone, HM-148G
- DC power cable
- Microphone hanger
- Mounting bracket kit
- Key assign stickers
- External speaker, SP-22\*  
\* IC-F1821/D, IC-F2821/D only.



# Conventional/IDAS™\* / LTR™ MULTI-MODE LAND MOBILE!

## VHF HANDHELD TRANSCEIVERS

- IC-F3161DT (5W)
- IC-F3161DS (5W)
- IC-F3161T (5W)
- IC-F3161S (5W)
- IC-F3163T (5W)
- IC-F3163S (5W)

## UHF HANDHELD TRANSCEIVERS

- IC-F4161DT (5W)
- IC-F4161DS (5W)
- IC-F4161T (5W)
- IC-F4161S (5W)
- IC-F4163T (5W)
- IC-F4163S (5W)



\* Already installed in IC-F3161DT/DS, F4161DT/DS. Optional UT-126H required.

### IDAS™, 6.25kHz digital mode ready

The IDAS digital conventional and trunking modes are available with the optional UT-126H digital unit\*. (See page 17-19 for IDAS details.)

\* Already installed to the IC-F3161/F4161 "D" versions.

### 512 memory channels with 128 zones

The 512 memory channel capacity with 128 zones allows you to divide and store a variety of channel groupings for versatile and efficient fleet management.

### Dot matrix, multi-function LCD

The IC-F3161/D series has a large dot matrix display to show information with high resolution characters. The display setting is programmable to show one line and 12 characters, or two lines and 24 characters. The bottom row shows assigned functions to the [P0] to [P3] buttons.

### Voting operation

The Voting operation detects the signal strength level of repeater sites and automatically selects the strongest station, useful for roaming between 2 or more voting repeater sites. Once you program for voting operation in a memory zone, you can easily start voting operation by changing the zone setting.

### Basic LTR™ mode operation

Group, selective, and phone call are available in LTR™ mode.

### Loud audio output with BTL amp

The IC-F3161/D series employs a BTL amplifier (500mW typ.) that increases the audio output and the built-in audio compander provides clear, low noise communications.

### Other features

- 5W (VHF/UHF) output power
- Built-in inversion type voice scrambler and optional UT-109R and UT-110R for higher security  
Inversion type voice scrambler is not compatible with UT-109/UT-110 voice scrambler.
- The mode independent setting automatically selects the scanning list, according to the operating channel
- Nuisance delete
- MDC 1200 compatible
- IP55 dust-protection and water jet resistance
- Optional man down unit, UT-124R and lone worker function
- Embedded ESN (Electronic serial number) and more...



IC-F3161T

IC-F4161S

#### Supplied Accessories

(May differ according to version)

- Battery pack, BP-232N
- Antenna
- Belt clip, MB-94





# RADIO & PAGER, ALL IN ONE

VHF HANDHELD TRANSCEIVER

**IC-F50V** (5W)

UHF HANDHELD TRANSCEIVER

**IC-F60V** (4W)



## Vibration alert function\*

When a pre-programmed 2-tone/5-tone code or call from a specific user (MDC mode only) is received, the radio vibrates powerfully enough to be felt through heavy clothing.

\* Depending on version.

## 8 minutes' voice recorder\*

When a pre-programmed 2-tone/5-tone code or a SelCall (MDC mode only) is received, the voice recorder automatically starts recording the incoming message. You will not miss an important call even when you are temporarily away from the radio.

\* Depending on version.

## 700mW (typical) audio output with internal speaker

The IC-F50V series delivers a loud 700mW audio output with the built-in BTL amp. The built-in audio compander provides clear, low noise communications.

## IP67, dust-tight and waterproof protection

The IC-F50V series can withstand submersion in 1m depth of water for up to 30 minutes and has dust-tight construction that prevents the ingress of dust.

## Other features

- 5W (VHF), 4W (UHF) output power
- 56(W)×97(H)×36.4(D) mm compact body
- MDC 1200 compatible
- Built-in Inversion type voice scrambler
- Optional waterproof speaker-microphone, HM-168
- Large capacity Lithium-Ion battery pack, BP-227
- Built-in CTCSS, DTCS, 2-Tone and 5-Tone capability
- Mode-dependent scan
- Nuisance delete function

## Supplied Accessories

(May differ according to version)

- Battery pack, BP-227
- Antenna
- Belt clip, MB-98
- Key assign sticker



IC-F50V

IC-F60V

- 5W (VHF), 4W (UHF) output power
- IPX7 waterproof protection
- Built-in CTCSS, DTCS, 2-Tone and 5-Tone capability
- 56(W)×97(H)×36.4(D)mm, compact body
- Built-in UT-110 equivalent voice scrambler\*
- Inversion type voice scrambler is built-in to all versions
- MDC 1200 compatible\*
- FM intrinsically safe version available (Ask your dealer for details) and more ...

\* depending on version



VHF HANDHELD TRANSCEIVER **IC-F50**  
 UHF HANDHELD TRANSCEIVER **IC-F60**



IC-F50 IC-F60



# ADVANCED STANDARD MODEL

VHF HANDHELD TRANSCEIVERS

**IC-F33GT** (5W)  
**IC-F33GS** (5W)

UHF HANDHELD TRANSCEIVERS

**IC-F43GT** (4W)  
**IC-F43GS** (4W)



IC-F33GT

IC-F43GS

## 256 memory channels with 16 zones

The 256 memory channel capacity with 16 zones allows you to divide and store a variety of channel groupings. Channel selection can be made easily with a rotation of the rotary channel knob.

## Lithium-Ion battery pack

The supplied 2000mAh Li-Ion battery pack, BP-232N, provides 15/16 hours\* of operating time. An optional AA size battery case BP-240 is an ideal choice for emergency preparedness.

\* UHF/VHF, typical operation TX:RX: Standby=5:5:90, power save on.

## Multiple 5-Tone, Multiple 2-Tone

The IC-F33G series can encode and decode up to 10 2-Tone codes or 32/8\* 5-Tone codes on a single memory channel. This is perfect for professionals who require multiple district paging on one channel.

\* Encode/decode.

## Alphanumeric display

The 8-character alphanumeric display shows channel, zone, tone code, MDC alias names and scanning channel names on the display. A separate row of operational icons indicate battery, signal strength, RX/TX and other radio conditions.

## MDC 1200 compatible

See page 21-22 for MDC 1200 details.

## Other features

- 5W (VHF), 4W (UHF) output power
- Optional man down unit, UT-124
- Wide frequency coverage and wide, and narrow channel spacing programmable
- Compact and lightweight body
- Built-in audio compander
- Flash CPU for future upgrades

### Supplied Accessories (May differ according to version)

- Battery pack, BP-232N
- Antenna
- Belt clip, MB-94
- Unit cover





# ECONOMICAL STANDARD MODEL

## VHF HANDHELD TRANSCEIVERS

- IC-F3021T (5W)
- IC-F3021S (5W)
- IC-F3023T (5W)
- IC-F3023S (5W)

## UHF HANDHELD TRANSCEIVERS

- IC-F4021T (4W)
- IC-F4021S (4W)
- IC-F4023T (4W)
- IC-F4023S (4W)



Limited functions only



IC-F3021S

IC-F4021T

### 128 memory channels with 8 zones

The IC-F3021 series has 128 memory channels with 8 zones. Memory channel selection can be made easily with up/down buttons. A large LCD provides at-a-glance convenience so that you can visually confirm with whom you are talking to.

### Supports multiple, flexible selective call

CTCSS, DTCS, 2-Tone, 5-Tone encoder/decoder and DTMF encoder are built-in. The optional UT-108R decodes received DTMF code.

### Lone worker function

When the radio is not operated for a preset period, the radio sounds a beep and requires you to push any button. If the radio is not operated for a preset time, an emergency signal automatically transmits and informs a co-worker or dispatcher that something may have happened to the individual worker.

### Mode dependent scan

When you change the operating channel, the scanning list automatically changes following that channel setting. It is convenient when you move to a different operating area and change an operating channel, you don't have to change the scanning setting.

### Other features

- 5W (VHF), 4W (UHF) output power
- MDC 1200 compatible (limited functions only)
- Optional voice scrambler, UT-109R and UT-110R
- Optional man down unit, UT-124R
- Surveillance function temporarily turns off the LED backlight and beep sound
- Dust-protection and splash resistance equivalent to IP54
- Compact and lightweight body
- Low battery beep function
- Nuisance delete

### Supplied Accessories

(May differ according to version)

- Battery pack, BP-232N
- Antenna
- Belt clip, MB-94
- Unit cover



# BUILT TO LAST, BUILT TO WORK!

## VHF HANDHELD TRANSCEIVERS

**IC-F14** (5W)

**IC-F14S** (5W)

## UHF HANDHELD TRANSCEIVERS

**IC-F24** (4W)

**IC-F24S** (4W)



Limited functions only



IC-F14(Rotary type)

IC-F24S(Simple type)

### Tough and reliable construction

The IC-F14/S series is built around an aluminum die-cast chassis and covered with a tough polycarbonate casing. This radio is built to last. Its dual slide rail securely locks the battery to the radio. The belt clip is clamped between the radio and the battery, making it nearly impossible to knock loose.

### Simple operation

Having only 3 buttons, one volume and one channel knob, the IC-F14/S series does not require special training to use. Positive button action for sure operation even when wearing gloves allows you to get down to the business of communicating without fuss.

### Optional board

The IC-F14/S series has an option slot for adding an optional unit. Individual board options include: voice scrambler, man down and DTMF decoder features.

### Most popular signalings built-in

Use the built-in 2-Tone, 5-Tone, CTCSS and DTCS capabilities as standard to set up your own talk groups and quiet stand-by when others are talking. In addition, MDC 1200 PTT ID and emergency call functions are available. (Transmit only)

### Other features

- 5W (VHF), 4W (UHF) output power
- Wide frequency coverage in one version
- Optional voice scrambler, UT-109 and UT-110
- Optional DTMF decoder, UT-108 • Optional man down unit, UT-124
- Multiple 2-Tone, Multiple 5-Tone • Lithium-Ion battery standard
- LED low battery alert • TOT function and lock out penalty timer
- 2 step power saver • Normal and priority scan
- 500mW loud and clear audio
- Embedded ESN (Electronic serial number)
- Wide/narrow (25/12.5kHz) channel spacing capability, and more...

**Supplied Accessories** • Battery pack, BP-232N • Antenna  
(May differ according to version) • Belt clip, MB-94 • Unit cover

- The on-site communications solution
- Simple controls, easy to use
- Multiple selective calling functions
- Powerful 4 or 5W of output power
- Military rugged construction

VHF HANDHELD TRANSCEIVER **IC-F11 IC-F11S**  
UHF HANDHELD TRANSCEIVER **IC-F21 IC-F21S**



IC-F11S  
(Simple type)

IC-F21  
(Rotary type)





# Conventional/IDAS™\*/LTR™ MULTI-MODE PROFESSIONAL MOBILE!

## VHF MOBILE TRANSCEIVERS

- IC-F5061D (50W)
- IC-F5061 (50W)
- IC-F5063 (50W)

## UHF MOBILE TRANSCEIVERS

- IC-F6061D (45W)
- IC-F6061 (45W)
- IC-F6063 (45W)



\* Optional UT-126H required.  
Already installed in IC-F5061D, F6061D.



The above photo includes optional separation kit (RMK-3) and separation cable (OPC-609)

## IDAS™, 6.25kHz digital mode ready

The IDAS digital conventional and trunking modes are available with the optional UT-126H digital unit\*. (See page 17-19 for the IDAS details)  
\* Already installed in the IC-F5061/F6061 'D' versions.

## Built-in versatile tone signaling

Use the built-in CTCSS, DTCS, 2-Tone 5-Tone or MDC 1200 capability to set up your own talk groups, and have your radio standby quietly when other groups are talking. Up to ten 2-Tone, eight 5-Tone codes can be decoded on a single memory channel.

## IP54 dust-protection and splash resistance (Controller only)

When used with the optional separation kit (RMK-3) and separation cable, the front panel of the IC-F5061/D series can be detached from the main unit. The control head has dust-protection and splash resistant construction equivalent to IP54.

## Built-in basic LTR™ mode operation

Group, selective and phone calls are available in built-in the LTR™ mode. MDC signaling is also available with LTR™ mode.

## Voting operation

The Voting operation detects the signal strength level of repeater sites and automatically selects the strongest station, useful for roaming between 2 or more voting repeater sites. Once you program for voting operation in a memory zone, you can easily start voting operation by changing the zone setting.

## Other features

- 50W (VHF), 45W (UHF) output power
- The mode independent setting automatically selects the scanning list, according to the operating channel
- Nuisance delete
- Lone worker function
- Built-in inversion-type voice scrambler and optional UT-109R/UT-110R available\*
- \* Inversion type voice scrambler is not compatible with UT-109R/UT-110R voice scrambler.
- Large dot matrix display and multi-function LCD
- 8 DTMF autodialing memories
- Shares same programming software with IC-F3161 series
- D-Sub accessory connector, ignition sensing line and more...

### Supplied Accessories

(May differ according to version)

- Hand microphone, HM-148G
- DC power cable
- Microphone hanger
- Mounting bracket kit
- Key assign stickers



# A FLEXIBLE YET SIMPLE TOOL FOR B&I USERS

## VHF MOBILE TRANSCEIVERS

**IC-F521** (50W)  
**IC-F520** (25W)

## UHF MOBILE TRANSCEIVERS

**IC-F621** (45W)  
**IC-F620** (25W)



### Flexible selective calling

CTCSS, DTCS, 2-tone and 5-tone encoder/decoder and DTMF encoder are built-in. These signalings are applicable to a wide variety of selective calling systems to call specific station(s) or control a repeater. The DTMF decode function is available with optional UT-108.

### 256 memory channels

With 256 channels separated into 16 memory banks and identifiable by a 10-character alphanumeric LCD, you can quickly access pre-programmed contingency frequency plans-ideal for wide area, cross-municipality communications!

### Face the speaker in the direction you need

The IC-F521/F621 series lets you simply rotate the chassis to face the speaker in the direction you need while the control head remains right side up.



The front panel is invertible from the main unit. You can always keep the front panel and the speaker face position convenient to you for ease of use.

\* Avoid installation and/or use of the transceiver in direct sunlight.

### 9 programmable buttons

Two pairs of up/down buttons and P0-P4 function assignable buttons allow you to customize functions to meet specific needs.

### Other features

- Built-in audio compander
- Backlit keypad
- Independent AF volume knob
- Optional voice scrambler, UT-109 or UT-110
- Selectable channel spacing (12.5/15kHz)
- Stun and power-on password function
- Flash ROM CPU
- F521 50W, F621 45W version available

### Supplied Accessories

(May differ according to version)

- Hand microphone, HM-152
- DC power cable
- Microphone hanger
- Mounting bracket kit
- Key assign stickers





# THE NEW STANDARD FOR MOBILE B&I USE

## VHF MOBILE TRANSCEIVERS

**IC-F5021** (50W)  
**IC-F5023** (25W)  
**IC-F5023H** (50W)

## UHF MOBILE TRANSCEIVERS

**IC-F6021** (45W)  
**IC-F6023** (25W)  
**IC-F6023H** (45W)



Limited functions only



## Max. 128 channels with 8 memory zones

Up to 128 channels with 8-character channel names can be stored and divided into 8 zones for flexible channel management.

## 8-character alphanumeric display

The alphanumeric LCD shows a variety of information at a glance. The “Z” icon on the upper right of the display shows the scanning is activated.

## Advanced 2-Tone/5-Tone systems

2-Tone, 5-Tone, CTCSS, and DTCS encoder/decoder are equipped as standard. Multiple 2-Tone/5-Tone codes are programmable on a channel. When received the 2-Tone/5-Tone radio stun code, the radio operation is temporary disabled. The revive function resumes the stunned radio operation over the air.

## External memory channel control with optional OPC-1939

The optional OPC-1939 is a D-SUB 15-pin ACC cable for connecting various external devices like a PC, vehicle’s horn, etc. The external memory channel control function allows you to select the operating channel from external device.

## Other features

- Selectable wide/narrow channel spacing per channel
- Hook scan function and Hook scan on/off button programmable
- MDC 1200 compatible (limited functions)

- 8 autodialing memories for DTMF and optional decoder UT-108R
- Optional voice scrambler, UT-109R or UT-110R
- ±2.5 ppm frequency stability both in VHF and UHF
- 4W (typ.) front mounted speaker
- 10 scanning lists, normal/priority scan and more...

### Supplied Accessories

(May differ according to version)

- Hand microphone, HM-152
- DC power cable
- Microphone hanger
- Mounting bracket kit
- Key assign stickers



Limited functions only

- Simple operation with up to 8 memory channels
- Powerful 50W (VHF), 45W (UHF) output\* (depending on version)
- Programmable LED lighting
- Built-in 5-Tone, 2-Tone, CTCSS and DTCS
- MDC 1200 compatible (limited functions)
- 4W (typ.) front mounted speaker
- Optional voice scrambler, UT-109R or UT-110R
- Optional DTMF decoder, UT-108 and more...

## VHF MOBILE TRANSCEIVERS

**IC-F121S**  
**IC-F111S**

## UHF MOBILE TRANSCEIVERS

**IC-F221S**  
**IC-F211S**

### Supplied Accessories

(May differ according to version)

- Hand microphone, HM-152
- DC power cable
- Microphone hanger
- Mounting bracket kit
- Key assign stickers

# UNIQUE TWO-IN-ONE REPEATERS

VHF REPEATER

**IC-FR5000** (50W)

UHF REPEATER

**IC-FR6000** (50W)

## IDAS™, 6.25kHz digital mode ready

The IDAS digital conventional mode is available. With optional UC-FR5000, the IDAS trunking is also available.

## Two RF modules in one unit

The IC-FR5000 series has an internal space for installing an optional RF unit, UR-FR5000 series. Two RF modules can be installed in a chassis reducing installation space, and increasing channel capacity. They can be programmed and operated independently.



## 19-inch rack mount design, 2U height low profile design

The IC-FR5000 series has a rack mount bracket and handles for installation in an industry standard 19-inch rack.

## Multiple CTCSS and DTCS tone decode

The IC-FR5000 series detects multiple CTCSS and DTCS on a channel (up to 16 tones on a table) and downlinks (transmits) the received signal with a specified tone. This function is useful for sharing a channel with multiple groups.

## Base station operation

The IC-FR5000 series has 5 programmable buttons, 12-digit dot-matrix display and 32 memory channels allowing you to use the repeater as a base station.

## Other features

- Programmable accessory connector (D-sub 25-pin) for connecting trunking controllers or other external devices
  - 5-Tone and DTMF encoder/decoder
  - Normal and priority scan setting
  - 50W output power (at 50% duty operation), 25W full duty
  - Built-in audio compander
  - Optional voice scrambler UT-109R/UT-110R and built-in inversion type voice scrambler\*
  - Optional UC-FR5000 for IDAS trunking mode
- \* Inversion type voice scrambler is not compatible with UT-109R/UT-110R voice scrambler.

### Supplied Accessories

(May differ according to version)

- DC power cable
- Key assign stickers





# ADVANCED ALL-IN-ONE REPEATERS

VHF REPEATER

UHF REPEATER

**IC-FR3000** (50W)

**IC-FR4000** (50W)



## 50 Watt continuous full duty cycle operation

A rugged heat sink, large cooling fans and a high performance power module provide the repeater with a stable 50W at full duty cycle operation.

## Automatic battery backup system

The IC-FR3000 series accepts both AC and DC power source. A built-in backup system supports automatic switching to an external power supply (13.6V DC) if the AC power supply fails.

## CTCSS, DTCS, 2-Tone, 5-Tone, DTMF encoder/decoder

Multiple signaling systems are equipped as standard. These systems are fully compatible with Icom F-series radios.

## Internal space for duplexer and isolator

The repeater has an internal space to install a duplexer and isolator\*. The controls of the duplexer are accessible from the front of the repeater without disassembly. Faster and easier maintenance and adjustment is possible.

\* Ask your dealer for details about available duplexers and isolators.

## Other features

- Telephone interconnect capability
- DTMF remote control capability
- Optional wall mount bracket, MB-77 and 19 inch rack mount bracket, MB-78
- Accessory connector (D-sub 25-pin) on the rear panel for trunking controller
- Compatible with VEGA tone remote control system
- Optional Voice Scrambler UT-109 or UT-110
- CW ID transmitter (DTMF or 5-Tone also selectable)
- Password and kill/stun function for security
- 16-digit alphanumeric display
- Self check function checks for internal errors and alerts with a phone call
- Master/Slave backup operation by connecting two repeaters

### Supplied Accessories

(May differ according to version)

- AC power cable
- Spare fuses

# IDAS™

ICOM DIGITAL ADVANCED SYSTEM

THE IDAS™ SYSTEM  
THE GAP BETWEEN



## Flexible migration path from analog to digital

The IC-FR5000 series can receive both analog and digital mode signals on a single channel. You can partially introduce IDAS™ digital radios, while still maintaining the existing analog radios in the system.



## Spectrum efficiency

The IDAS™ system utilizes 6.25kHz narrow channel spacing. This system is not only spectrum efficient but meets the 2011 deadline for narrow band compliance.



## Improved audio quality and coverage

Enjoy low noise audio over a greater comparable area to analog FM. The IDAS™ radio uses the AMBE+2™ codec, the latest evolution in vocoding technology.



## IDAS™ trunking with optional UC-FR5000

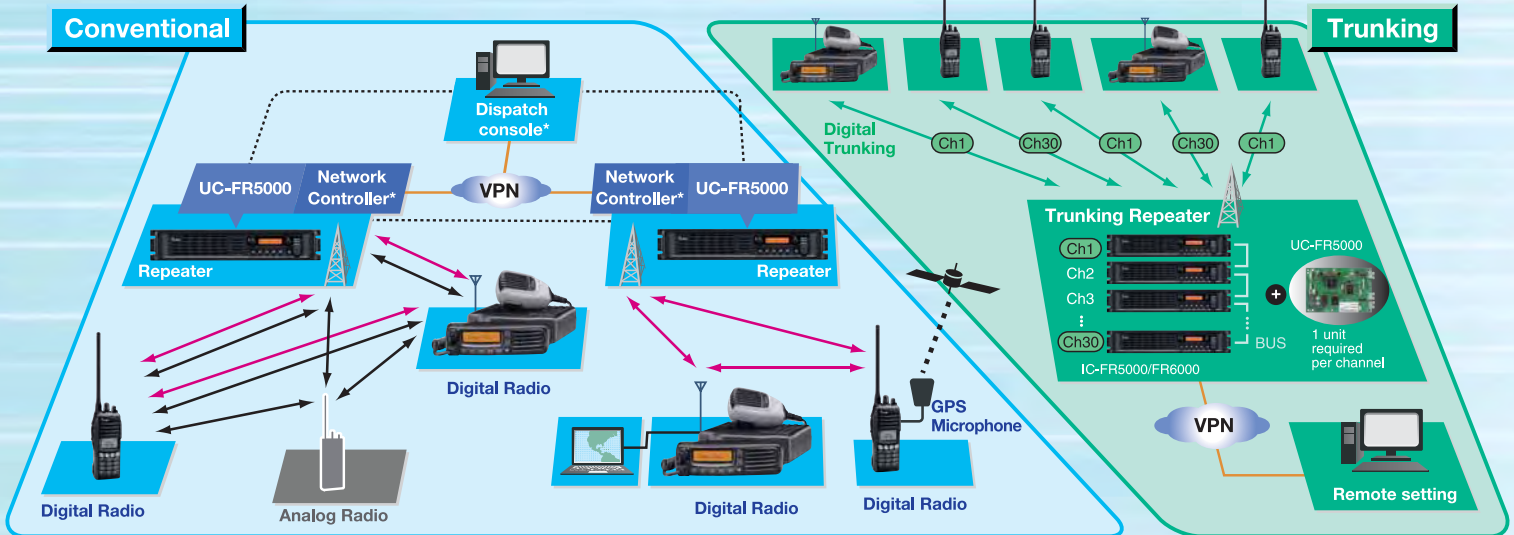
The optional UC-FR5000 offers single site digital trunking capability for effective channel management. Its distributed system (similar to analog LTR™ trunking) does not require a dedicated control channel. Up to 30 channels (RF units) per site can be set up.



## Flexible IP network possibilities

Being digital, integration and convergence with IP technology will be possible soon to enhance the basic system.

- ..... Conventional wide area IP network is available later
- 6.25kHz IDAS™ digital
- 6.25kHz digital trunking
- 25/12.5kHz Analog
- VPN



The above is a system image only. Actual release timing and system capabilities are still to be decided.



VHF HANDHELD TRANSCEIVERS  
**IC-F3161DT**  
**IC-F3161DS**  
UHF HANDHELD TRANSCEIVERS  
**IC-F4161DT**  
**IC-F4161DS**



VHF MOBILE TRANSCEIVER  
**IC-F5061D**  
UHF MOBILE TRANSCEIVER  
**IC-F6061D**



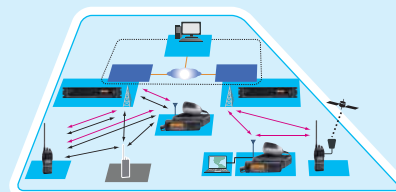
# BRIDGES ANALOG AND DIGITAL



## DIGITAL

### IDAS™ Conventional Features

IDAS™ is the Icom's digital land mobile radio system using the conventional NXDN™ common air interface and has complete system components including handheld, mobile radios and repeater. Useful calling features including selective calling, status message, radio stun/kill/revive, GPS position reporting, and more. Make the IDAS™ is ideal for business and industry users who are thinking to migrate to a digital system, and future narrow channel spacing now.



#### Selective call, group call and talk group ID

The IDAS™ radios allow you to call individual or group users. The radio automatically sends its own ID number while holding the PTT button. The IDAS™ radio memorizes up to 500 each of individual/group ID numbers and alias names in the table. The alias name or individual/group ID is displayed on the LCD while receiving a message allowing you to identify who is calling.

#### Emergency call functions

When the emergency button is pushed, the emergency signal will be automatically sent to the dispatcher or another radio. The emergency man down function\* with the optional man down unit, UT-124R, and the lone worker function are also available.

\* IC-F3161D series only.

#### Status message

You can set up to 100 conditions such as "on duty", "at lunch" or "in route" and send your status to another unit or the dispatch. Also, you can request another unit to send their status and receive it.

#### GPS position reporting

When connected to a GPS receiver or GPS microphone, position information can be sent with PTT button or at preprogrammed intervals. If a base station is connected to a PC with mapping software, a vehicle management system can allow you to manage a vehicle fleet efficiently. GPS position information also can be set to send with status message or call alert.

#### Radio kill, stun and revive

The radio kill function disables a lost or stolen radio over the air, eliminating security threats from undesired listeners. When the radio stun command is received, all functions will be temporary locked out until the revive command is received or the user password is entered. The radio can also send radio stun, kill and revive commands.

#### RAN for digital code squelch

The RAN (Radio Access Number) code is the digital equivalent of CTCSS for accessing an IDAS™ repeater or digital code squelch function.

#### Network interface\*1

The optional UC-FR5000 network controller will interconnect between IDAS™ repeaters through a IP network. Ideal for cover a wide area network. When connected to a PC, you can remotely maintain the repeater configuration from your PC.

\*1 Available in the future.

#### Other features

- Radio check function allows you to verify if another radio is within the communication range
- Call log displays the received call history
- Call alert function notifies receiving party that a call is coming with a beep sound and blinking icon
- Base station operation for repeater
- PC control capability

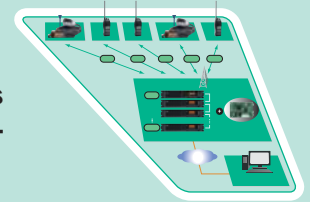


VHF REPEATER  
**IC-FR5000**  
UHF REPEATER  
**IC-FR6000**



## IDAS™ Trunking Features

With the optional UC-FR5000 IDAS™ trunking controller, the IDAS™ repeater offers single site digital trunking capability. This allows you further effective channel management by sharing a minimum of channels with a large number of users.



UC-FR5000

### Distributed control channel

The IDAS™ trunking system distributes the IDAS™ trunking service to any requested channel, and every channel can be used for voice communications. The IDAS™ trunking system utilizes given channels more effectively than a centralized control channel system and reduces waiting time for access.

### Digital Common Features

Many calling features such as selective call, data call, status call, emergency call, remote stun, remote monitor and digital voice scrambler are also available in the IDAS™ trunking system.

### Up to 30 channels in a system

The IDAS™ trunking system can have up to 30 channels (RF units) per site. All of the repeaters must be interconnected with a data bus\* (Category 5 straight cable).

\* Cannot be used for multi-site connection at this time.

### Number of unit ID and talkgroup ID

The IDAS™ trunking system has a potential ability to handle up to 2,000 unit ID codes and 2,000 talkgroup ID codes per channel. The practical number of users in any one system (site) may vary from many factors, but the IDAS™ trunking system is designed to be used by up to 100 to 200 users (radios) per channel.

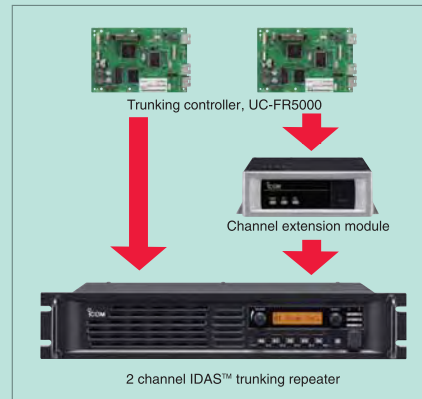
### Secondary home channel

If the home repeater fails, the system automatically switches to a secondary repeater/channel for backup operation.

### Two RF modules in one unit

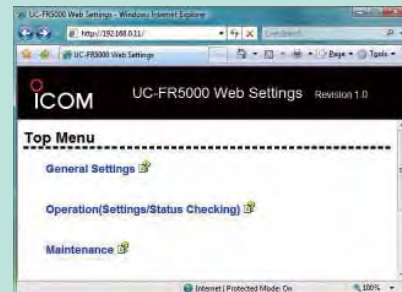
The IC-FR5000 series uses only 2U height and has an internal space for installing another RF unit, the optional UR-FR5000 series. Two RF modules\* can be installed in the chassis to save installation space. For example, a 10 channel IDAS™ trunking system would use a 10U height, instead of a 20U height.

\* For a two channel IDAS™ trunking repeater, two UC-FR5000s are required for each channel.



### Web browser configuration

Most of the UC-FR5000 configurations can be made via a web browser.



### Area bit setting

If there are two IDAS™ trunking systems using the same frequency within a close area, the area bit setting allows the trunked radios to identify its own repeater site.





# THE NEW LEADER IN COMMERCIAL GRADE SUBSCRIBER UNITS

## UHF TRUNKED HANDHELD RADIO

LTR/PassPort Version

**IC-F43TR** (4W)

## UHF TRUNKED MOBILE RADIOS

LTR/PassPort Version

**IC-F620TR** (25W)

**IC-F621TR** (45W)



### Multiple modes

The IC-F43TR and F620/F621TR offer basic LTR™, PassPort and conventional operations in one unit. Conventional operation and talk-around are both available with the touch of a button, even while you are operating in LTR™ or PassPort mode.

### LTR™ Features and Select Call

The IC-F43TR and F620/F621TR offer maximum flexibility to program up to 50 systems or up to 250 groups per system. All basic LTR™ features, including direct phone calling and wide-narrow channel spacing are available.

### PassPort Features — NTS Release 2.2

- Individual Selective Call (MIN call) — Allows private call between individual members within a fleet.
- Display MIN Text — While in group conversation, you can see the name of the calling party in the display, instead of the MIN number.
- Primary Talk Group — “All Call” allows individual users to call all groups in the fleet.
- RSSI (Receive signal strength indicator) — Detects the strongest signal site, providing seamless roaming.
- Site Lock — Allows the user to lock the radio onto the current site to avoid roaming.

### Other features

- 400–430 and 440–490MHz coverage, 45W output (IC-F621TR only)
- 400–470 and 450–512MHz coverage, 5W output (IC-F43TR only)
- Optional voice scrambler, UT-109 provides secure communication in all modes
- Optional man down function, UT-124 (IC-F43TR only)
- Military grade durability, tested to MIL-STD 810
- Multiple scan mode
- Dynamic Talk Around
- Built-in audio compander (IC-F43TR only)
- Dead beat disable, ASID text, and more...



IC-F43TR  
(10 Keypad version)





# UTILIZING THE ADVANTAGES OF THE MDC

## PTT ID\*

The radio automatically sends its own ID number when the PTT button is pushed or released. Everyone in the system will know who is calling.

## SelCall (Selective Call)\*

In the MDC 1200 system, each radio has a unique ID number to make a selective call. The radio memorizes alias names and ID numbers may be used in the table.

## Call alert\*

The call alert function allows you to send a beep sound instead of a voice call.

## Status\*

You can set up to 16 conditions such as “on duty”, “at lunch” or “in route” and send your status to another unit or the dispatch. You can also request\* to send a status message from other unit to know their current status.

## Message\*

You can send and receive a preprogrammed text message instead of voice. 16 message codes are programmable. It improves channel efficiency by sending messages in digital format.

## Emergency function\*

The emergency call function allows you to send an emergency signal until the dispatch acknowledges the emergency signal. If the dispatch acknowledges an emergency message, the dispatcher can make the radio transmit whatever the radio microphone picks up for a preprogrammed period.

## Radio stun and revive\*

The radio stun function disables a lost or stolen radio over the air, eliminating security threats from undesired listeners. When the radio receives the stun command, all functions will be locked out until the revive command is received. The radio\* can also send radio stun and revive commands.

## Other features

- Radio check function\* allows you to verify if another radio is within communication range
- Up to 5 different combinations of MDC profiles are available\* in a radio
- External output\* turns on a connected external device such as a siren or alarm strobe light, when it receives a selective call, call alert or emergency call
- Call log\* displays the received call history including type of call, caller name and called time
- Emergency man down (optional UT-124/R required) and lone worker functions\*

\* Depending on models, some MDC functions are not available. Please see the MDC function chart for details.



VHF MOBILE TRANSCEIVERS

**IC-F1821/D**

UHF MOBILE TRANSCEIVERS

**IC-F2821/D**



VHF MOBILE TRANSCEIVERS

**IC-F1721/D**

UHF MOBILE TRANSCEIVERS

**IC-F2721/D**



VHF MOBILE TRANSCEIVERS

**IC-F5061/D**

**IC-F5063**

UHF MOBILE TRANSCEIVERS

**IC-F6061/D**

**IC-F6063**



VHF MOBILE TRANSCEIVERS

**IC-F5021**

**IC-F5023/H**

UHF MOBILE TRANSCEIVERS

**IC-F6021**

**IC-F6023/H**



VHF MOBILE TRANSCEIVERS

**IC-F121S**

**IC-F111S**

UHF MOBILE TRANSCEIVERS

**IC-F221S**

**IC-F211S**



# 1200 SYSTEM



**MDC 1200**  
Compatible

## MDC function chart

	IC-F70T/S,DT/DS IC-F80T/S,DT/DS	IC-F3161T/S,DT/DS IC-F4161T/S,DT/DS	IC-F50V IC-F60V	IC-F50 IC-F60	IC-F33GT/GS IC-F43GT/GS	IC-F3021T/S IC-F4021T/S	IC-F14/S IC-F24/S	IC-F1821/D IC-F2821/D	IC-F1721/D IC-F2721/D	IC-F5061/D,F5063 IC-F6061/D,F6063	IC-F5021,IC-F5023/H IC-F6021,IC-F6023/H	IC-F121S/F111S IC-F221S/F211S
PTT ID	Tx/Rx	Tx/Rx	Tx/Rx	Tx/Rx	Tx/Rx	Tx/Rx	Tx only	Tx/Rx	Tx/Rx	Tx/Rx	Tx/Rx	Tx only
Seicall	Tx/Rx	Tx/Rx	Tx/Rx	Tx/Rx	Tx/Rx			Tx/Rx	Tx/Rx	Tx/Rx		
Call Alert	Tx/Rx	Tx/Rx	Tx/Rx	Tx/Rx	Tx/Rx			Tx/Rx	Tx/Rx	Tx/Rx		
Status Message	Tx/Rx	Tx/Rx	Tx only	Tx only	Tx only			Tx/Rx	Tx/Rx	Tx/Rx		
Status Request	Tx/Rx	Tx/Rx	Rx only	Rx only	Rx only			Tx/Rx	Tx/Rx	Tx/Rx		
Message	Tx/Rx	Tx/Rx	Tx only	Tx only	Tx only			Tx/Rx	Tx/Rx	Tx/Rx		
Emergency	Tx/Rx	Tx/Rx	Tx/Rx	Tx/Rx	Tx/Rx	Tx/Rx (No Ack)	Tx only	Tx/Rx	Tx/Rx	Tx/Rx	Tx/Rx (No Ack)	Tx only
Radio Check	Tx/Rx	Tx/Rx	Tx/Rx	Tx/Rx	Tx/Rx	Rx only		Tx/Rx	Tx/Rx	Tx/Rx	Rx only	
Stun/Revive	Tx/Rx	Tx/Rx	Rx only	Rx only	Rx only	Rx only		Tx/Rx	Tx/Rx	Tx/Rx	Rx only	
Call Log	Available	Available						Available	Available	Available		
Man Down Function	UT-124	UT-124R			UT-124	UT-124R	UT-124					
Lone Worker Function		Available	Available			Available				Available	Available	
External Out								Available	Available	Available	Available	



VHF HANDHELD TRANSCEIVERS  
**IC-F14/S**  
UHF HANDHELD TRANSCEIVERS  
**IC-F24/S**



VHF HANDHELD TRANSCEIVERS  
**IC-F3021GT/GS**  
**IC-F3023GT/GS**  
UHF HANDHELD TRANSCEIVERS  
**IC-F4021GT/GS**  
**IC-F4023GT/GS**



VHF HANDHELD TRANSCEIVERS  
**IC-F33GT/GS**  
UHF HANDHELD TRANSCEIVERS  
**IC-F43GT/GS**



VHF HANDHELD TRANSCEIVERS  
**IC-F50V**  
**IC-F50**  
UHF HANDHELD TRANSCEIVERS  
**IC-F60V**  
**IC-F60**



VHF HANDHELD TRANSCEIVERS  
**IC-F3161DT/DS**  
**IC-F3161T/S**  
**IC-F3163T/S**  
UHF HANDHELD TRANSCEIVERS  
**IC-F4161DT/DS**  
**IC-F4161T/S**  
**IC-F4163T/S**



VHF HANDHELD TRANSCEIVERS  
**IC-F70DT/DS**  
**IC-F70T/S**  
UHF HANDHELD TRANSCEIVERS  
**IC-F80DT/DS**  
**IC-F80T/S**

# OPTIONS FOR HANDHELD TRANSCEIVERS

MODEL NAME	BATTERY PACKS								
	BP-209N (Ni-Cd) 7.2V/1100mAh BP-222N (Ni-Cd) 7.2V/600mAh	BP-210N (Ni-MH) 7.2V/1650mAh	BP-227 (Li-Ion) 7.4V/1850mAh (min.) 1950mAh (typ.)	BP-227FM 7.4V/1850mAh (min.) 1950mAh (typ.) (For I/S models)	BP-230N (Li-Ion) 7.4V/950mAh (min.) 980mAh (typ.)	BP-232N (Li-Ion) 7.4V/1900mAh (min.) 2000mAh (typ.)	BP-253 (Li-Ion) 7.4V/1570mAh (min.) 1650mAh (typ.)	BP-254 (Li-Ion) 7.4V/2900mAh (min.) 3040mAh (min.)	BP-254FM (Li-Ion) 7.4V/2900mAh (min.) 3040mAh (min.) (For I/S models)
IC-F9011T/S/B, IC-F9021T/S/B, IC-F9023T/S/B								✓	
IC-F70DT/DS, IC-F70T/S IC-F80DT/DS, IC-F80T/S							✓	✓	✓ (I/S models only)
IC-F3161DT/DS, IC-F3161T/S, IC-F3163T/S IC-F4161DT/DS, IC-F4161T/S, IC-F4163T/S					✓	✓			
IC-F50V, IC-F60V			✓						
IC-F50, IC-F60			✓	✓ (I/S models only)					
IC-F33GT/GS, IC-F43GT/GS					✓	✓			
IC-F3021T/S, IC-F3023T/S IC-F4021T/S, IC-F4023T/S					✓	✓			
IC-F14/S, IC-F24/S					✓	✓			
IC-F11/S, IC-F21/S	✓	✓							
IC-F43TR					✓	✓			

MODEL NAME	BATTERY CASES				CHARGERS				
	BP-208N AA(LR6)×6 cells	BP-226 AA(LR6)×5 cells Equivalent to IPX4 water resistance.	BP-237 AA(LR6)×6 cells Equivalent to IPX4 water resistance.	BP-240 AAA(LR03)×6 cells	BC-119N Rapid charger	BC-121N Rapid multi-charger	BC-144N Rapid charger	BC-146 Regular charger	BC-152 Regular charger
IC-F9011T/S/B, IC-F9021T/S/B, IC-F9023T/S/B			✓		✓ (AD-110 is required)	✓ (AD-110 is required)			
IC-F70DT/DS, IC-F70T/S IC-F80DT/DS, IC-F80T/S			✓		✓ (AD-110 is required)	✓ (AD-110 is required)			
IC-F3161DT/DS, IC-F3161T/S, IC-F3163T/S IC-F4161DT/DS, IC-F4161T/S, IC-F4163T/S				✓	✓ (AD-106 is required)	✓ (AD-106 is required)			
IC-F50V, IC-F60V		✓			✓ (AD-100 is required)	✓ (AD-100 is required)			✓
IC-F50, IC-F60		✓			✓ (AD-100 is required)	✓ (AD-100 is required)			✓
IC-F33GT/GS, IC-F43GT/GS				✓	✓ (AD-106 is required)	✓ (AD-106 is required)			
IC-F3021T/S, IC-F3023T/S IC-F4021T/S, IC-F4023T/S				✓	✓ (AD-106 is required)	✓ (AD-106 is required)			
IC-F14/S, IC-F24/S				✓	✓ (AD-106 is required)	✓ (AD-106 is required)			
IC-F11/S, IC-F21/S	✓				✓ (AD-94 or AD-101 is required)	✓ (AD-94 or AD-101 is required)	✓	✓	
IC-F43TR				✓	✓ (AD-106 is required)	✓ (AD-106 is required)			

MODEL NAME	CHARGERS			CHARGER ADAPTERS				AC ADAPTERS	
	BC-160 Rapid charger	BC-171 Regular charger	BC-190 Rapid charger	AD-100	AD-101 or AD-94	AD-106	AD-110	BC-145*1 16V/1A	BC-147*1 12V/200mA
IC-F9011T/S/B, IC-F9021T/S/B, IC-F9023T/S/B							✓ (Use with BC-119N/BC-121N)	✓ (Use with BC-119N)	
IC-F70DT/DS, IC-F70T/S IC-F80DT/DS, IC-F80T/S							✓ (Use with BC-119N/BC-121N)	✓ (Use with BC-119N)	
IC-F3161DT/DS, IC-F3161T/S, IC-F3163T/S IC-F4161DT/DS, IC-F4161T/S, IC-F4163T/S	✓	✓				✓ (Use with BC-119N/BC-121N)		✓ (Use with BC-160/BC-119N)	✓ (Use with BC-171)
IC-F50V, IC-F60V			✓	✓ (Use with BC-119N/BC-121N)				✓ (Use with BC-119N/BC-190)	✓ (Use with BC-152)
IC-F50, IC-F60			✓	✓ (Use with BC-119N/BC-121N)				✓ (Use with BC-119N/BC-190)	✓ (Use with BC-152)
IC-F33GT/GS, IC-F43GT/GS	✓	✓				✓ (Use with BC-119N/BC-121N)		✓ (Use with BC-160/BC-119N)	✓ (Use with BC-171)
IC-F3021T/S, IC-F3023T/S IC-F4021T/S, IC-F4023T/S	✓	✓				✓ (Use with BC-119N/BC-121N)		✓ (Use with BC-160/BC-119N)	✓ (Use with BC-171)
IC-F14/S, IC-F24/S	✓	✓				✓ (Use with BC-119N/BC-121N)		✓ (Use with BC-160/BC-119N)	✓ (Use with BC-171)
IC-F11/S, IC-F21/S					✓ (Use with BC-119N/BC-121N)			✓ (Use with BC-144N/BC-119N)	✓ (Use with BC-146)
IC-F43TR	✓	✓				✓ (Use with BC-119N/BC-121N)		✓ (Use with BC-160/BC-119N)	✓ (Use with BC-171)

\*1 BC-145/BC-147SA for 120V AC. SE for 230V AC. SV for 240V AC

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

✓ : Applicable    □ : Not applicable



# OPTIONS FOR HANDHELD TRANSCEIVERS





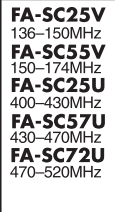
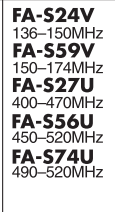
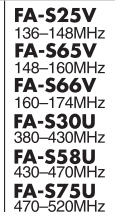


MODEL NAME	AC ADAPTERS	SPEAKER-MICROPHONES							
	BC-157 12V/6.6A	HM-131SC	HM-138 IPX7, waterproof	HM-158L	HM-159L/SC	HM-168 IPX7, waterproof HM-168IS (For US models)	HM-169 IP57, dust protected and waterproof	HM-170GP With GPS receiver IP57	HM-184 IP57
IC-F9011T/S/B, IC-F9021T/S/B, IC-F9023T/S/B	✓ (Use with BC-121N)								✓
IC-F70DT/DS, IC-F70T/S IC-F80DT/DS, IC-F80T/S	✓ (Use with BC-121N)		✓			✓	✓		
IC-F3161DT/DS, IC-F3161T/S, IC-F3163T/S IC-F4161DT/DS, IC-F4161T/S, IC-F4163T/S	✓ (Use with BC-121N)	✓			✓ (HM-159SC only)	✓ (HM-168 only)	✓	✓	
IC-F50V, IC-F60V	✓ (Use with BC-121N)		✓			✓ (HM-168 only)	✓	✓	
IC-F50, IC-F60	✓ (Use with BC-121N)		✓			✓ (HM-168 only)	✓	✓	
IC-F33GT/GS, IC-F43GT/GS	✓ (Use with BC-121N)			✓	✓ (HM-159L only)				
IC-F3021T/S, IC-F3023T/S IC-F4021T/S, IC-F4023T/S	✓ (Use with BC-121N)			✓	✓ (HM-159L only)				
IC-F14/S, IC-F24/S	✓ (Use with BC-121N)			✓	✓ (HM-159L only)				
IC-F11/S, IC-F21/S	✓ (Use with BC-121N)			✓	✓ (HM-159L only)				
IC-F43TR	✓ (Use with BC-121N)			✓	✓ (HM-159L only)				



MODEL NAME	SPEAKER-MICROPHONES		HEADSETS				VOX/PTT CASE	EARPHONE	EARPHONE ADAPTER
	HM-153L	HM-166L	HS-51	HS-94 Earhook type with boom microphone	HS-95 Behind-the-head type	HS-97 Throat microphone type	VS-1L/SC/MC	SP-13	AD-52
IC-F9011T/S/B, IC-F9021T/S/B, IC-F9023T/S/B				✓ (Use with VS-1MC)	✓ (Use with VS-1MC)	✓ (Use with VS-1MC)	✓ (Use with VS-1MC)		
IC-F70DT/DS, IC-F70T/S IC-F80DT/DS, IC-F80T/S				✓ (Use with VS-1SC)	✓ (Use with VS-1SC)	✓ (Use with VS-1SC)	✓ (Use with VS-1SC)		
IC-F3161DT/DS, IC-F3161T/S, IC-F3163T/S IC-F4161DT/DS, IC-F4161T/S, IC-F4163T/S				✓ (Use with VS-1SC)	✓ (Use with VS-1SC)	✓ (Use with VS-1SC)	✓ (Use with VS-1SC)	✓ (Use with AD-52)	✓
IC-F50V, IC-F60V				✓ (Use with VS-1SC)	✓ (Use with VS-1SC)	✓ (Use with VS-1SC)	✓ (Use with VS-1SC)		
IC-F50, IC-F60									
IC-F33GT/GS, IC-F43GT/GS	✓	✓		✓ (Use with VS-1L)	✓ (Use with VS-1L)	✓ (Use with VS-1L)	✓ (Use with VS-1L)	✓	
IC-F3021T/S, IC-F3023T/S IC-F4021T/S, IC-F4023T/S	✓	✓		✓ (Use with VS-1L)	✓ (Use with VS-1L)	✓ (Use with VS-1L)	✓ (Use with VS-1L)	✓	
IC-F14/S, IC-F24/S	✓	✓		✓ (Use with VS-1L)	✓ (Use with VS-1L)	✓ (Use with VS-1L)	✓ (Use with VS-1L)	✓	
IC-F11/S, IC-F21/S	✓	✓	✓	✓ (Use with VS-1L)	✓ (Use with VS-1L)	✓ (Use with VS-1L)	✓ (Use with VS-1L)	✓	
IC-F43TR	✓	✓		✓ (Use with VS-1L)	✓ (Use with VS-1L)	✓ (Use with VS-1L)	✓ (Use with VS-1L)	✓	

MODEL NAME	BELT CLIPS						LEATHER BELT HANGERS		CIGARETTE LIGHTER CABLE
	MB-86 Swivel type	MB-93 Swivel type	MB-94 Alligator type	MB-98 Alligator type	MB-103 Alligator type	MB-115 Alligator type	MB-96N Swivel type. MB-86 and MB-93 swivel joints supplied.	MB-96F Fixed type	CP-17L
IC-F9011T/S/B, IC-F9021T/S/B, IC-F9023T/S/B						✓			✓ (Use with BC-119N)
IC-F70DT/DS, IC-F70T/S IC-F80DT/DS, IC-F80T/S		✓	✓				✓	✓	✓ (Use with BC-119N)
IC-F3161DT/DS, IC-F3161T/S, IC-F3163T/S IC-F4161DT/DS, IC-F4161T/S, IC-F4163T/S		✓	✓				✓	✓	✓ (Use with BC-119N)
IC-F50V, IC-F60V	✓			✓			✓	✓	✓ (Use with BC-119N)
IC-F50, IC-F60	✓			✓			✓	✓	✓ (Use with BC-119N)
IC-F33GT/GS, IC-F43GT/GS		✓	✓				✓	✓	✓ (Use with BC-119N)
IC-F3021T/S, IC-F3023T/S IC-F4021T/S, IC-F4023T/S		✓	✓				✓	✓	✓ (Use with BC-119N)
IC-F14/S, IC-F24/S		✓	✓				✓	✓	✓ (Use with BC-119N)
IC-F11/S, IC-F21/S	✓				✓		✓	✓	✓ (Use with BC-119N)
IC-F43TR		✓	✓				✓	✓	✓ (Use with BC-119N)

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

# OPTIONS FOR HANDHELD TRANSCEIVERS

MODEL NAME	DC POWER CABLES		ZONE COPY CABLES		ANTENNAS			CUT ANTENNAS	
	<b>OPC-656</b> 12-20V DC CABLE 	<b>OPC-515L</b> 	<b>OPC-1533</b> Handheld to mobile <b>OPC-1536</b> Handheld to handheld 	<b>OPC-1871</b> Handheld to mobile <b>OPC-1870</b> Handheld to handheld 	<b>FA-SC25V</b> 136–150MHz <b>FA-SC55V</b> 150–174MHz <b>FA-SC25U</b> 400–430MHz <b>FA-SC57U</b> 430–470MHz <b>FA-SC72U</b> 470–520MHz 	<b>FA-S24V</b> 136–150MHz <b>FA-S59V</b> 150–174MHz <b>FA-S27U</b> 400–470MHz <b>FA-S56U</b> 450–520MHz <b>FA-S74U</b> 490–520MHz 	<b>FA-S25V</b> 136–148MHz <b>FA-S65V</b> 148–160MHz <b>FA-S66V</b> 160–174MHz <b>FA-S30U</b> 380–430MHz <b>FA-S58U</b> 430–470MHz <b>FA-S75U</b> 470–520MHz 	<b>FA-SC61VC</b> 136–174MHz <b>FA-SC61UC</b> 380–520MHz 	<b>FA-S67VC</b> 136–174MHz <b>FA-S76UC</b> 380–520MHz 
IC-F9011T/S/B, IC-F9021T/S/B, IC-F9023T/S/B	✓ (Use with BC-121N)	✓ (Use with BC-119N)		✓			✓		✓
IC-F70DT/DS, IC-F70T/S IC-F80DT/DS, IC-F80T/S	✓ (Use with BC-121N)	✓ (Use with BC-119N)	✓		✓			✓	
IC-F3161DT/DS, IC-F3161T/S, IC-F3163T/S IC-F4161DT/DS, IC-F4161T/S, IC-F4163T/S	✓ (Use with BC-121N)	✓ (Use with BC-119N)			✓			✓	
IC-F50V, IC-F60V	✓ (Use with BC-121N)	✓ (Use with BC-119N)				✓			
IC-F50, IC-F60	✓ (Use with BC-121N)	✓ (Use with BC-119N)				✓			
IC-F33GT/GS, IC-F43GT/GS	✓ (Use with BC-121N)	✓ (Use with BC-119N)			✓			✓	
IC-F3021T/S, IC-F3023T/S IC-F4021T/S, IC-F4023T/S	✓ (Use with BC-121N)	✓ (Use with BC-119N)			✓			✓	
IC-F14/S, IC-F24/S	✓ (Use with BC-121N)	✓ (Use with BC-119N)			✓			✓	
IC-F11/S, IC-F21/S	✓ (Use with BC-121N)	✓ (Use with BC-119N)			✓			✓	
IC-F43TR	✓ (Use with BC-121N)	✓ (Use with BC-119N)			✓			✓	

MODEL NAME	STUBBY ANTENNAS	
	<b>FA-SC56VS</b> 150–162MHz <b>FA-SC57VS</b> 160–174MHz <b>FA-SC73US</b> 450–490MHz 	<b>FA-S62VS</b> 150–162MHz <b>FA-S63VS</b> 160–174MHz <b>FA-S57US</b> 450–490MHz 
IC-F9011T/S/B, IC-F9021T/S/B, IC-F9023T/S/B		
IC-F70DT/DS, IC-F70T/S IC-F80DT/DS, IC-F80T/S	✓	
IC-F3161DT/DS, IC-F3161T/S, IC-F3163T/S IC-F4161DT/DS, IC-F4161T/S, IC-F4163T/S		✓
IC-F50V, IC-F60V		✓
IC-F50, IC-F60	✓	
IC-F33GT/GS, IC-F43GT/GS	✓	
IC-F3021T/S, IC-F3023T/S IC-F4021T/S, IC-F4023T/S	✓	
IC-F14/S, IC-F24/S	✓	
IC-F11/S, IC-F21/S	✓	
IC-F43TR	✓	

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



# OPTIONS FOR MOBILE TRANSCEIVERS AND REPEATERS

MODEL NAME	SEPARATION KITS		SEPARATION CABLES	HAND MICROPHONES				DESKTOP MICROPHONE	INTERFACE CABLE
	RMK-2	RMK-3	<b>OPC-608</b> (8m; 26.2ft) <b>OPC-726</b> (5m; 16.4ft) <b>OPC-607</b> (3m; 9.8ft) <b>OPC-609</b> (1.9m; 6.2ft)	HM-152	HM-152T DTMF type keypad	HM-148G Heavy-duty type	HM-148T Heavy-duty type with DTMF keypad	SM-25	OPC-822 PC to transceiver
IC-F9511T, IC-F9511S	✓		✓	✓	✓	✓	✓	✓	
IC-F9511HT			✓	✓	✓	✓	✓	✓	
IC-F1821/D, IC-F1721/D IC-F2821/D, IC-F2721/D	✓		✓	✓	✓	✓	✓	✓	
IC-F5061/D, IC-F5063 IC-F6061/D, IC-F6063		✓	✓	✓	✓	✓	✓	✓	
IC-F520, IC-F521 IC-F620, IC-F621			✓	✓	✓	✓	✓	✓	
IC-F5021, IC-F5023/H IC-F6021, IC-F6023/H			✓	✓	✓	✓	✓	✓	✓
IC-F111S, IC-F121S IC-F211S, IC-F221S			✓	✓	✓	✓	✓	✓	
IC-F620TR, IC-F621TR			✓	✓	✓	✓	✓	✓	✓
IC-FR5000, IC-FR6000			✓	✓	✓	✓	✓	✓	
IC-FR3000, IC-FR4000			✓	✓	✓	✓	✓	✓	

MODEL NAME	ACC CABLES		ZONE COPY CABLES		DC POWER CABLES	EXTERNAL SPEAKERS			
	OPC-617	OPC-1939	<b>OPC-1532</b> Mobile to mobile <b>OPC-1533</b> Mobile to handheld	<b>OPC-1532</b> Mobile to mobile <b>OPC-1871</b> Mobile to handheld	<b>OPC-1132A</b> (3m; 9.8ft) <b>OPC-347</b> (7m; 23ft)	SP-5	SP-10	SP-22	SP-30
IC-F9511T, IC-F9511S				✓	✓	✓	✓	✓	
IC-F9511HT				✓					✓
IC-F1821/D, IC-F1721/D IC-F2821/D, IC-F2721/D	✓		✓		✓	✓	✓	✓	
IC-F5061/D, IC-F5063 IC-F6061/D, IC-F6063					✓	✓	✓	✓	
IC-F520, IC-F521 IC-F620, IC-F621	✓				✓	✓	✓	✓	
IC-F5021, IC-F5023/H IC-F6021, IC-F6023/H		✓			✓	✓	✓	✓	
IC-F111S, IC-F121S IC-F211S, IC-F221S	✓				✓	✓	✓	✓	
IC-F620TR, IC-F621TR	✓				✓	✓	✓	✓	
IC-FR5000, IC-FR6000								✓	
IC-FR3000, IC-FR4000									

MODEL NAME	MOUNTING BRACKETS		CHANNEL MODULES	IDAS TRUNKING / NETWORK CONTROLLER
	<b>MB-77</b> WALL MOUNT BRACKET	<b>MB-78</b> 19" RACK MOUNT BRACKET	<b>UR-FR5000</b> (136-174MHz, 50W) <b>UR-FR6000</b> (400-470, 450-520MHz, 50W)	<b>UC-FR5000</b>
IC-F9511T, IC-F9511S				
IC-F9511HT				
IC-F1821/D, IC-F1721/D IC-F2821/D, IC-F2721/D				
IC-F5061/D, IC-F5063 IC-F6061/D, IC-F6063				
IC-F520, IC-F521 IC-F620, IC-F621				
IC-F5021, IC-F5023/H IC-F6021, IC-F6023/H				
IC-F111S, IC-F121S IC-F211S, IC-F221S				
IC-F620TR, IC-F621TR				
IC-FR5000, IC-FR6000			✓	✓
IC-FR3000, IC-FR4000	✓	✓		

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

: Applicable
  : Not applicable

# SPECIFICATIONS FOR HANDHELD TRANSCEIVERS

		IC-F9011T/S/B	IC-F9021T/S/B IC-F9023T/S/B	IC-F70T/S IC-F70DT/DS	IC-F80T/S IC-F80DT/DS	IC-F3161DT/DS IC-F3161T/S IC-F3163T/S	IC-F4161DT/DS IC-F4161T/S IC-F4163T/S	IC-F50V	IC-F60V	
<b>GENERAL</b>	Frequency coverage (Unit: MHz) (Varies according to version)	136-174	380-450 400-470 450-520	136-174	380-450 400-470 450-520	136-174	400-470 450-512 (USA) 450-520 (GEN)	136-174	400-470 450-512 (USA) 450-520 (GEN)	
	Number of channels (Max.)	512 ch/128 zones		256 ch/32 zones		512 ch/128 zones		128 ch/8 zones		
	Channel spacing (Unit: kHz) (Varies according to version)	12.5 (digital), 15/30 (analog)	12.5 (digital), 12.5/25 (analog)	12.5/25, 15/30		12.5/25		12.5/25, 15/30 6.25 (With UT-126H)	12.5/25, 6.25 (With UT-126H)	12.5/25, 15/30
	PLL channel step (Unit: kHz)	2.5, 3.125			2.5, 3.125	5, 6.25		2.5, 3.125		2.5, 3.125
	Current drain	Tx High	2.2A	2.1A	2.2A	2.4A		1.5A	1.8A	1.8A
		Rx Stand-by	300mA	300mA	150mA	150mA		150mA	140mA	85mA
		Max. audio	800mA	800mA	450mA	450mA		600mA	600mA	500mA
Dimensions (projections not included; WxHxD)	58.6×167×41.8mm 2 <sup>5</sup> / <sub>16</sub> ×6 <sup>7</sup> / <sub>16</sub> ×1 <sup>21</sup> / <sub>32</sub> in			58.6×152×38mm 2 <sup>5</sup> / <sub>16</sub> ×5 <sup>3</sup> / <sub>32</sub> ×1 <sup>1</sup> / <sub>2</sub> in		53×136×38.5mm 2 <sup>3</sup> / <sub>32</sub> ×5 <sup>11</sup> / <sub>32</sub> ×1 <sup>17</sup> / <sub>32</sub> in		56×97×36.4mm 2 <sup>7</sup> / <sub>32</sub> ×3 <sup>13</sup> / <sub>16</sub> ×1 <sup>7</sup> / <sub>16</sub> in		
Weight (approx.)	533g; 1.17lb (with BP-254)			400g; 14.1oz (With BP-253)		340g; 12.0oz (With BP-232N)		280/284g; 9.9/10.0oz (With BP-227, V/U)		
<b>TX</b>	RF output power (High)	6W	5W	5W	4W	5W	5W	5W	4W	
	Spurious emissions	75dB (typ.)	80dB (typ.)	70dB (typ.)		75dB (typ.)		70dB (typ.)		
	Adjacent channel power (W/M)	70/60dB (min., analog), 67dB (min., digital)			70/60dB (min.)		80/70dB (typ.)		70/60dB (min.)	
<b>RX</b>	Sensitivity (at 12dB SINAD)	0.25μV (typ., analog) 0.30μV (typ., digital)		0.25μV (typ.)		0.25μV (typ.)		0.25μV (typ.)		
	Adjacent channel selectivity (W/M)	FM 80/70dB (typ.) P25 60dB (typ.)	FM 76/70dB (typ.) P25 60dB (typ.)	FM 80/73dB (typ.) P25 60dB (typ.)	FM 78/70dB (typ.) P25 60dB (typ.)	75/68dB (typ.)		75/65dB (typ.)		
	Spurious response rejection	80dB (typ.)		80dB (typ.)	75dB (typ.)	70dB (typ.)		70dB (typ.)		
	Intermodulation rejection	75dB (typ.)		75dB (typ.)		74dB (typ.)		74dB (typ.)		
	AF output power (at 5% distortion with an 8Ω load)	1000mW (typ.)		500mW (typ.)		500mW (typ.)		700mW (typ. Internal SP) 500mW (typ. External SP)		

		IC-F50	IC-F60	IC-F33GT/GS	IC-F43GT/GS	IC-F43TR	IC-F3021T/S IC-F3023T/S	IC-F4021T/S IC-F4023T/S	
<b>GENERAL</b>	Frequency coverage (Unit: MHz) (Varies according to version)	136-174	400-470 450-512 (USA) 450-520 (GEN)	136-174	400-470 450-512 (USA) 450-520 (GEN)	400-470 450-512	136-174	400-470 450-512 (USA) 450-520 (GEN)	
	Number of channels (Max.)	128 ch/8 zones		256 ch/16 zones		250 (Conventional)	128 ch/8 zones		
	Channel spacing (Unit: kHz) (Varies according to version)	12.5/25, 15/30	12.5/25	12.5/25, 15/30	12.5/25	12.5/25	12.5/25, 15/30	12.5/25	
	PLL channel step (Unit: kHz)	2.5, 3.125		2.5, 3.125	5, 6.25	5, 6.25	2.5, 3.125		
	Current drain	Tx High	1.5A	1.5A	1.5A	1.7A	1.7A	1.5A	1.5A
		Rx Stand-by	85mA	85mA	85mA	85mA	85mA	75mA	75mA
		Max. audio	300mA	300mA	300mA	300mA	300mA	250mA	250mA
Dimensions (projections not included; WxHxD)	56×97×36.4mm 2 <sup>7</sup> / <sub>32</sub> ×3 <sup>13</sup> / <sub>16</sub> ×1 <sup>7</sup> / <sub>16</sub> in		53×120×37mm 2 <sup>3</sup> / <sub>32</sub> ×4 <sup>23</sup> / <sub>32</sub> ×1 <sup>15</sup> / <sub>32</sub> in			53×120×37mm 2 <sup>3</sup> / <sub>32</sub> ×4 <sup>23</sup> / <sub>32</sub> ×1 <sup>15</sup> / <sub>32</sub> in			
Weight (approx.)	280g; 9.9oz (With BP-227)		340g; 12.0oz (With BP-232N)			340g; 12.0oz (With BP-232N)			
<b>TX</b>	RF output power (High)	5W	4W	5W	4W	4W	5W	4W	
	Spurious emissions	70dB (min.)		80dB (typ.)	70dB (typ.)	70dB (typ.)	80dB (typ.)		
	Adjacent channel power (W/M)	70/60dB (min.)		70/60dB (min.)			80/70dB (typ.)	75/68dB (typ.)	
<b>RX</b>	Sensitivity (at 12dB SINAD)	0.25μV (typ.)		0.25μV (typ.)		0.25μV (typ.)			
	Adjacent channel selectivity (W/M)	75/65dB (typ.)		75/65dB (typ.)		75/65dB (typ.)			
	Spurious response rejection	70dB		70dB		70dB (min.)			
	Intermodulation rejection	74dB (typ.)		74dB (typ.)		75dB (typ.)	74dB (typ.)		
	AF output power (at 5% distortion with an 8Ω load)	500mW (typ.)		500mW (typ.)		500mW (typ.)			



# SPECIFICATIONS FOR HANDHELD TRANSCEIVERS

		IC-F14/S	IC-F24/S	IC-F11/S	IC-F21/S	
<b>GENERAL</b>	Frequency coverage (Unit: MHz) (Varies according to version)	136–174	400–470 450–512 (USA) 450–520 (GEN)	146–174	400–430 440–470	
	Number of channels (Max.)	16 ch (Rotary type) 4 ch (Max. simple type)		16 ch (Rotary type) 4 ch (Max. simple type)		
	Channel spacing (Unit: kHz) (Varies according to version)	12.5/25, 15/30	12.5/25	12.5/25, 15/30	12.5/25	
	PLL channel step (Unit: kHz)	2.5, 3.125	5, 6.25	2.5, 3.125	5, 6.25	
	Current drain	Tx High	1.5A	1.6A	1.6A	1.6A
		Rx Stand-by	70mA	70mA	70mA	70mA
		Max. audio	300mA	300mA	250mA	250mA
Dimensions (projections not included; W×H×D)	53×120×42.4mm 2 <sup>1</sup> / <sub>2</sub> ×4 <sup>2</sup> / <sub>3</sub> ×1 <sup>7</sup> / <sub>16</sub> in		54×128×37mm 2 <sup>1</sup> / <sub>8</sub> ×5 <sup>1</sup> / <sub>32</sub> ×1 <sup>1</sup> / <sub>2</sub> in			
Weight (approx.)	300g; 10.6oz (With BP-232N)		310g; 10.9oz (With BP-209N)			
<b>TX</b>	RF output power (High)	5W	4W	5W	4W	
	Spurious emissions	80dB (typ.)		73dBc (typ.)		
	Adjacent channel power (W/M)	80/70dB (typ.)	75/68dB (typ.)	70/60dB (typ.)	75/68dB (typ.)	
<b>RX</b>	Sensitivity (at 12dB SINAD)	0.25µV (typ.)		0.25µV (typ.)		
	Adjacent channel selectivity (W/M)	75/65dB (typ.)		70/65dB (typ.)		
	Spurious response rejection	70dB (min.)		70dB (typ.)		
	Intermodulation rejection	74dB (typ.)		70dB (typ.)		
	AF output power (at 5% distortion with an 8Ω load)	500mW (typ.)		500mW (typ.)		

# FUNCTION COMPARISON AND INTERNAL UNIT OPTIONS

		IC-F9011T/S/B IC-F9021T/S/B IC-F9023T/S/B	IC-F70DT/DS IC-F70T/S IC-F80DT/DS IC-F80T/S	IC-F3161DT/DS IC-F3161T/S IC-F3163T/S IC-F4161DT/DS IC-F4161T/S IC-F4163T/S	IC-F50V IC-F60V	IC-F50 IC-F60	IC-F33GT/GS IC-F43GT/GS	IC-F3021T/S IC-F3023T/S IC-F4021T/S IC-F4023T/S	IC-F14/S IC-F24/S	IC-F11/S IC-F21/S	IC-F43TR
<b>Number of option slots</b>		1	1	2 <sup>*2</sup>	–	–	1	1	1	–	1
<b>CTCSS/ DTCS</b>	encoder	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	decoder	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>2-Tone</b>	encoder	✓ <sup>*7</sup>	✓	✓	✓	✓	✓	✓	✓	✓	–
	decoder	✓ <sup>*7</sup>	✓	✓	✓	✓	✓	✓	✓	✓	–
<b>5-Tone</b>	encoder	–	✓	✓	✓	✓	✓	✓	✓	✓	–
	decoder	–	✓	✓	✓	✓	✓	✓	✓	✓	–
<b>DTMF autodial</b>		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
<b>DTMF decoder</b>		–	✓ <sup>*3</sup>	✓ <sup>*3</sup>	–	–	UT-108	UT-108R	UT-108	✓ <sup>*3</sup>	UT-108
<b>Voice Scrambler<sup>*1</sup></b>	Inversion	✓	✓	✓	✓	✓	✓	–	–	–	–
	Non-rolling	–	UT-109 (Version 02)	UT-109R	–	✓ <sup>*4</sup>	UT-109 (Version 02)	UT-109R	UT-109 (Version 01)	–	UT-109 (Version 02)
	Rolling	–	UT-110 (Version 02)	UT-110R	–	✓ <sup>*4</sup>	UT-110 (Version 02)	UT-110R	UT-110 (Version 01)	–	UT-110 <sup>*5</sup> (Version 02)
<b>APCO P25 digital</b>		✓	✓ <sup>*6</sup>	–	–	–	–	–	–	–	–
<b>APCO P25 trunking</b>		✓	–	–	–	–	–	–	–	–	–
<b>AES encryption</b>		UT-125	EX-2785 J03	–	–	–	–	–	–	–	–
<b>DES encryption</b>		UT-125 or UT-128	EX-2785 J02	–	–	–	–	–	–	–	–
<b>FIPS 140-2 Level 1</b>		✓ <sup>*4 *7</sup>	✓ <sup>*4</sup>	–	–	–	–	–	–	–	–
<b>IDAS digital</b>		–	–	UT-126H	–	–	–	–	–	–	–
<b>IDAS digital trunking</b>		–	–	UT-126H	–	–	–	–	–	–	–
<b>MDC 1200</b>		✓ <sup>*7</sup>	✓	✓	✓	✓ <sup>*4</sup>	✓ <sup>*4</sup>	✓	✓	–	–
<b>LTR™ trunking</b>		–	–	✓	–	–	–	–	–	–	✓
<b>PassPort</b>		–	–	–	–	–	–	–	–	–	✓
<b>Man Down function</b>		UT-124R	UT-124	UT-124R	–	–	UT-124	UT-124R	UT-124	–	UT-124
<b>Intrinsically safe</b>		–	✓ <sup>*4</sup>	–	–	✓ <sup>*4</sup>	–	–	–	–	–
<b>Vibration alert</b>		–	–	–	✓ <sup>*4</sup>	–	–	–	–	–	–
<b>Voice recorder</b>		–	–	–	✓ <sup>*4</sup>	–	–	–	–	–	–

<sup>\*1</sup> Inversion type voice scrambler is not compatible with UT-109/UT-110 voice scrambler. <sup>\*2</sup> One for UT-126H digital unit and one for another option unit. <sup>\*3</sup> Possible as a kind of 5-Tone format.

<sup>\*4</sup> Depending on version. <sup>\*5</sup> Available in conventional mode only. <sup>\*6</sup> UT-120 (version 01) required for IC-F70T/S,F80T/S. <sup>\*7</sup> Available later.

# SPECIFICATIONS FOR HANDHELD TRANSCEIVERS

		IC-F9511T IC-F9511S	IC-F9511HT	IC-F1821D, F1821 IC-F1721D, F1721	IC-F2821D, F2821 IC-F2721D, F2721	IC-F5061D IC-F5061, F5063	IC-F6061D IC-F6061, F6063	
<b>GENERAL</b>	Frequency coverage (Unit: MHz) (Varies according to version)	136–174	136–174	136–174	400–470 450–512	136–174	400–470 450–512 (USA) 450–520 (GEN)	
	Number of channels (Max.)	512 ch/128 zones		256 ch/32 zones		512 ch/128 zones		
	Channel spacing (Unit: kHz) (Varies according to version)	12.5 (digital), 15/30 (analog)		15/30	12.5/25	12.5/25, 15/30 6.25 (option)	12.5/25 6.25 (option)	
	PLL channel step (Unit: kHz)	2.5, 3.125		2.5, 3.125	5, 6.25	2.5, 3.125	2.5, 3.125	
	Current drain	Tx High	11A	22A	14A	14A	14A/7A(50/25W)	14A/7A(45/25W)
		Rx Stand-by	350mA	400mA	600mA	600mA	300mA	300mA
		Max. audio	1000mA	3.0A	1.2A	1.2A	1.2A	1.2A
Dimensions (projections not included; W×H×D)	175×45×170mm 6 <sup>7</sup> / <sub>8</sub> ×1 <sup>25</sup> / <sub>32</sub> ×6 <sup>11</sup> / <sub>16</sub> in	175×60×279mm 6 <sup>7</sup> / <sub>8</sub> ×2 <sup>3</sup> / <sub>8</sub> ×10 <sup>31</sup> / <sub>32</sub> in	175×45×170mm 6 <sup>7</sup> / <sub>8</sub> ×1 <sup>25</sup> / <sub>32</sub> ×6 <sup>11</sup> / <sub>16</sub> in		160×45×150mm 6 <sup>3</sup> / <sub>16</sub> ×1 <sup>25</sup> / <sub>32</sub> ×5 <sup>29</sup> / <sub>32</sub> in			
Weight (approx.)	1.5kg; 3.3lb	4.7kg; 10.4lb (With controller)	1.5kg; 3.3lb		1.3kg; 2.9lb			
<b>TX</b>	RF output power (High)	50W	110W	50W	45W	50W (F5061/D) 25W (F5063)	45W (F6061/D) 25W (F6063)	
	Spurious emissions	70dB (min.)	70dB (typ.)	75dB (typ.)		75dB (typ.)		
	Adjacent channel power (W/N)	70/60dB (min., analog) 67dB (min., digital)		70/60dB (min.)		70/60dB (min.)		
<b>RX</b>	Sensitivity (at 12dB SINAD)	0.25μV (typ., analog) 0.25μV (typ., digital)	0.25μV (typ., analog) 0.30μV (typ., digital)	0.25μV (typ.)	0.3μV (typ.)	0.25μV (typ. analog), 0.20μV (typ. digital at 5% BER)		
	Adjacent channel selectivity (W/N)	FM 85/77dB (typ.) P25 63dB (typ.)		FM 80/75dB (typ.), P25 73dB (typ.)		85/75dB (typ.)		
	Spurious response rejection	85dB (min.)		80dB (typ.)		90dB (typ.)		
	Intermodulation rejection	78dB (typ.)		FM 77/75dB (typ.), P25 77dB (typ.)		77dB (typ.)		
	AF output power (at 10% distortion with an 4Ω load)	4W (typ.), 22W (typ., External audio)	15W (3% Dist., External audio)	4W (typ.), 22W (typ., External audio)		4W (typ.)		

		IC-F520 IC-F521	IC-F620 IC-F621	IC-F620TR IC-F621TR	IC-F5021 IC-F5023/H	IC-F6021 IC-F6023/H	IC-F111S IC-F121S	IC-F211S IC-F221S	
<b>GENERAL</b>	Frequency coverage (Unit: MHz) (Varies according to version)	136–174	440–490 400–430 (25W) 480–520 (25W GEN) 480–512 (25W USA)	400–430 440–490	136–174	400–470 450–512 (USA) 450–520 (GEN)	136–174	440–490 400–430 (GEN)	
	Number of channels (Max.)	256 ch/16 zones		250 (Conventional)	128 ch/8 zones		8 ch/2 zones		
	Channel spacing (Unit: kHz) (Varies according to version)	12.5/25, 15/30	12.5/25	12.5/25	12.5/25, 15/30	12.5/25	12.5/25, 15/30	12.5/25	
	PLL channel step (Unit: kHz)	2.5, 3.125	5, 6.25	5, 6.25	2.5, 3.125		2.5, 3.125	5, 6.25	
	Current drain	Tx High	14A/7A (50/25W)	13A/7A (45/25W)	13A/7A (45/25W)	14A/7A (50/25W)	14A/7A (45/25W)	14A	13A
		Rx Stand-by	300mA	300mA	300mA	300mA	300mA	300mA	300mA
		Max. audio	1.2A	1.2A	1.2A	1.2A	1.2A	1.2A	1.2A
Dimensions (projections not included; W×H×D)	140×40×170mm 5 <sup>1</sup> / <sub>2</sub> ×1 <sup>9</sup> / <sub>16</sub> ×6 <sup>11</sup> / <sub>16</sub> in		150×40×167.5mm 5 <sup>29</sup> / <sub>32</sub> ×1 <sup>15</sup> / <sub>16</sub> ×6 <sup>19</sup> / <sub>32</sub> in (50/45W) 150×40×117.5mm 5 <sup>29</sup> / <sub>32</sub> ×1 <sup>15</sup> / <sub>16</sub> ×4 <sup>5</sup> / <sub>16</sub> in (25W)		150×40×167.5mm 5 <sup>29</sup> / <sub>32</sub> ×1 <sup>9</sup> / <sub>16</sub> ×6 <sup>19</sup> / <sub>32</sub> in				
Weight (approx.)	1.2kg; 2.6lb		1.1kg; 2.4 lb (50/45W), 0.8kg; 1.8lb (25W)		1.1kg; 2.4lb				
<b>TX</b>	RF output power (High)	50W (F521) 25W (F520)	45W (F621) 25W (F620)	45W (F621TR) 25W (F620TR)	50W (F5021, F5023H) 25W (F5023)	45W (F6021, F6023H) 25W (F6023)	50W	45W	
	Spurious emissions	70dB (typ.)		70dB (typ.)		70dB (typ.)			
	Adjacent channel power (W/N)	70/60dB (min.)		70/60dB (min.)		70/60dB (min.)			
<b>RX</b>	Sensitivity (at 12dB SINAD)	0.25μV (typ.)		0.25μV (typ.)		0.25μV (typ.)			
	Adjacent channel selectivity (W/N)	75/65dB (typ.)		75/65dB (typ.)		75/65dB (typ.)			
	Spurious response rejection	75dB		85dB (typ.)		75dB			
	Intermodulation rejection	74dB (typ.)	75dB (typ.)	75dB (typ.)	75dB (typ.)		74dB (typ.)	75dB (typ.)	
	AF output power (at 5% distortion with an 8Ω load)	4W (typ.)		4W (typ.)		4W (typ.)			

# SPECIFICATIONS FOR HANDHELD TRANSCEIVERS

		IC-FR5000	IC-FR6000	IC-FR3000	IC-FR4000	
<b>GENERAL</b>	Frequency coverage (Unit: MHz) (Varies according to version)	136-174	400-470 450-520	150-174 148-172	400-430 430-450 450-480	
	Number of channels (Max.)	32 ch		32 ch		
	Channel spacing (Unit: kHz) (Varies according to version)	6.25/12.5/25 or 7.5/15/30		12.5/25		
	PLL channel step (Unit: kHz)	2.5, 3, 125	2.5, 3, 125	2.5*, 5, 6, 25	5, 6, 25	
	Power supply requirement	13.6V DC		13.6V DC, 100-120V AC*3 or 220-240V AC*3		
	Current drain	Tx High	15A	15A	15A	20A
		Rx Stand-by	400mA*1	400mA*1	1A (typ.)	1A (typ.)
Max. audio		1900mA	1900mA	2A (typ.)	2A (typ.)	
Dimensions (projections not included; W×H×D)	483×88×260mm 19 <sup>3</sup> / <sub>32</sub> ×3 <sup>15</sup> / <sub>32</sub> ×10 <sup>1</sup> / <sub>4</sub> in		410×110×360mm 16 <sup>23</sup> / <sub>32</sub> ×4 <sup>11</sup> / <sub>32</sub> ×14 <sup>3</sup> / <sub>16</sub> in			
Weight (approx.)	5.6kg; 12.3lb		12kg; 26.4lb			
<b>TX</b>	RF output power (High)	50W		50W		
	Spurious emissions	80dB (typ.)		70dB		
	Adjacent channel power (W/M)	73/67dB (typ.)		70/60dB		
<b>RX</b>	Sensitivity (at 12dB SINAD)	0.30μV (typ. analog) 0.25μV (typ. digital at 5% BER)		0.25μV (typ.)		
	Adjacent channel selectivity (W/M)	78/56dB (typ.)		70/60dB		
	Spurious response rejection	90dB (typ.)		70dB		
	Intermodulation rejection	78dB (typ.)		70dB		
	AF output power(at 5% distortion)	4.0W (typ.) with a 4Ω load		2.5W (typ.) with a 4Ω load		

\*1 Fan, LCD backlight OFF.

\*2 Repeater operation only. \*3 depending on version








# FUNCTION COMPARISON AND INTERNAL UNIT OPTIONS

		IC-F9511T IC-F9511S	IC-F9511HT	IC-F1821/D IC-F1721/D IC-F2821/D IC-F2721/D	IC-F5061/D IC-F5063 IC-F6061/D IC-F6063	IC-F520 IC-F521 IC-F620 IC-F621	IC-F5021 IC-F5023/H IC-F6021 IC-F6023/H	IC-F111S IC-F121S IC-F211S IC-F221S	IC-F620TR IC-F621TR	IC-FR5000 IC-FR6000	IC-FR3000 IC-FR4000
Number of option slots		1	1	1	2*2	1	1	1	1	1	1
CTCSS/ DTCS	encoder	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	decoder	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2-Tone	encoder	✓*7	✓*7	✓	✓	✓	✓	✓	-	-	✓
	decoder	✓*7	✓*7	✓	✓	✓	✓	✓	-	-	✓
5-Tone	encoder	-	-	✓	✓	✓	✓	✓	-	✓	✓
	decoder	-	-	✓	✓	✓	✓	✓	-	✓	✓
DTMF autodial		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
DTMF decoder		-	-	✓*3	✓*3	UT-108	UT-108R	UT-108	UT-108	✓	✓
Voice Scrambler*1	Inversion	✓	✓	✓	✓	-	-	-	-	✓	-
	Non-rolling	-	-	UT-109 (Version 02)	UT-109R	UT-109 (Version 02)	UT-109R	UT-109 (Version 02)	UT-109 (Version 02)	UT-109R	UT-109 (Version 01)
	Rolling	-	-	UT-110 (Version 02)	UT-110R	UT-110 (Version 02)	UT-110R	UT-110 (Version 02)	UT-110*4 (Version 02)	UT-110R	UT-110 (Version 01)
APCO P25 digital		✓	✓	✓*5	-	-	-	-	-	-	-
APCO P25 trunking		✓	✓	-	-	-	-	-	-	-	-
AES encryption		UT-125	UT-125	EX-2785 J03	-	-	-	-	-	-	-
DES encryption		UT-125 or UT-128	UT-125 or UT-128	EX-2785 J02	-	-	-	-	-	-	-
IDAS digital		-	-	-	UT-126H	-	-	-	-	✓	-
IDAS digital trunking		-	-	-	UT-126H	-	-	-	-	UC-FR5000	-
MDC 1200		✓*7	✓*7	✓	✓	-	✓	✓	-	-	-
LTR™ trunking		-	-	-	✓	-	-	-	✓	✓*5	✓*5
PassPort		-	-	-	-	-	-	-	✓	✓*5	✓*5

\*1 Inversion type voice scrambler is not compatible with UT-109/UT-110 voice scrambler. \*2 One for UT-126H digital unit and one for another option unit.

\*3 Possible as a kind of 5-Tone format. \*4 Available in conventional mode only. \*5 External controller required.

\*6 UT-120 (version 02) required for IC-F1721/F1821,F2721/F2821. \*7 Available later

<b>UT-108/R</b> DTMF DECODER 	<b>UT-109/R</b> VOICE SCRAMBLER UNIT 
<b>UT-110/R</b> VOICE SCRAMBLER UNIT 	<b>UT-120</b> P25 DSP UNIT 
<b>UT-124/R</b> MAN DOWN UNIT 	<b>UT-125</b> AES/DES ENCRYPTION UNIT 
<b>UT-126H</b> IDAS DIGITAL UNIT 	

✓ : Available    
 UT-108 : Required internal unit (Eg. UT-108)    
 - : Not available



# BATTERY PACKS AND CHARGERS

Battery packs	BP-253	BP-254 BP-254FM	BP-227 BP-227FM	BP-230N	BP-232N	BP-209N	BP-210N	BP-222N
Transceiver	IC-F70T/S series	IC-F9011T/S/B series IC-F70T/S series	IC-F50V IC-F60V IC-F50 IC-F60	IC-F3161T/S series IC-F33GT/GS series IC-F3021T/S series IC-F14/S series		IC-F11/S IC-F21/S		
Rapid charger	BC-119N + BC-145 + AD-110		BC-119N + BC-145 + AD-100 or BC-190 + BC-145	BC-119N + BC-145 + AD-106 or BC-160 + BC-145		BC-119N + BC-145 + AD-101 (or AD-94) or BC-144N + BC-145		
Regular charger	N/A		BC-152 + BC-147	BC-171 + BC-147		BC-146 + BC-147		
Multi charger	BC-121N + BC-145 + AD-110 *1		BC-121N + BC-157 + AD-100 *1	BC-121N + BC-157 + AD-106 *1		BC-121N + BC-157 + AD-101 (or AD-94) *1		
Operating time (Tx:Rx:Stand-by=5:5:90)	8 hours*2	9 hours (with IC-F9011T)	10 hours*2	7.3 hours*2 (with IC-F3161T)	14 hours*2 (with IC-F3161T)	8.5 hours*2	13 hours*2	4.5 hours*2

\*1 Six charger adapters are required. \*2 As a rough value.

## ADDITIONAL SPECIFICATIONS AND FEATURES



Icom makes rugged products that have been tested to and passed the following MIL-STD requirements and International Protection standards.

Standard	Low Pressure	High Temperature	Low Temperature	Temperature Shock	Solar Radiation	Rain Blowing/Drip	Humidity	Salt Fog	Dust	Immersion	Vibration	Shock	International Protection Rating
MIL-810 F	500.3, I, II	501.4, I, II	502.4-3, I, II	503.4, I	505.4, I	506.4, I, III	507.4	509.4	510.4, I	512.4, I	514.5, I	516.5, I, IV	Ingress of dust and water
IC-F9011T/S/B series	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	IP57
IC-F70T/S series	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	IPX7
IC-F3161T/S series	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	IP55
IC-F50V/F60V	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	IP67
IC-F50/F60	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	IP67
IC-F33GT/GS series	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
IC-F3021T/S series	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	IP54
IC-F14/S series	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
IC-F11/S series	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
IC-F9511T/S series	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	IP54*2
IC-F9511HT	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	IP54
IC-F1821 series	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	IP54*2
IC-F1721 series	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	IP54*2
IC-F5061 series	✓	✓	✓	✓	✓	✓*1	✓	✓	✓	✓	✓	✓	IP54*2
IC-F521 series	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
IC-F5021 series	✓	✓	✓	✓	✓	✓	✓	✓	✓*3	✓	✓	✓	
IC-F111S series	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
IC-FR5000, IC-FR6000	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓*4
IC-FR3000, IC-FR4000	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓*4

\*1 Rain blowing, drip and IP dust and water tests were performed on the controller and RMK-3 only. \*2 IP dust and water tests were performed on the controller and RMK-2 only.  
\*3 Settling dust test (510.4 III) passed only. \*4 Shock Functional test (516.5 I) passed only.

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