# ICOM

# IC-FR5000 VHF REPEATER
# IC-FR6000 UHF REPEATER

## iDAS™
ICOM DIGITAL ADVANCED SYSTEM

Rugged
MIL-STD 810

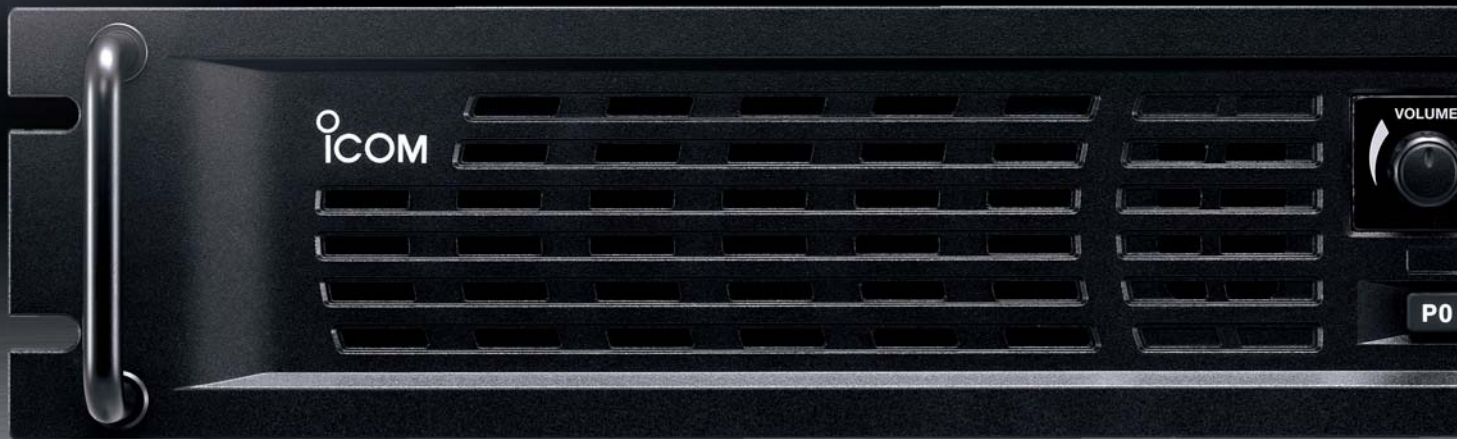## Dual mode
## Double Channels

- IDAS digital/ analog FM
- IDAS Trunking (With UC-FR5000)
- Two RF modules in one unit (option)
- 50W output 25W full duty
- 5-Tone, DTMF CTCSS, DTCS
- 2U height rackmount
- 32ch memory, dot-matrix LCD

ICOM
PWR   TX   RX

VOLUME   Vol   01 Icom Inc.   SELECT   A   B   PWR   TX   BUSY

P0   P1   P2   P3   P4

# *Value, Performance and*



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

The IC-FR5000 series uses only 2U height. This low profile configuration allows you to stack multiple units in an industry standard 19-inch rack and provides great space efficiency.

## Two RF modules in one unit

The IC-FR5000 series has an internal space for installing another RF unit. Two RF modules* can be installed and can be programmed and operated independently. LEDs on the front panel show both channel conditions.

\* Optional UR-FR5000/UR-FR6000 required.



Two RF units can be installed inside. (Left side is an option.)

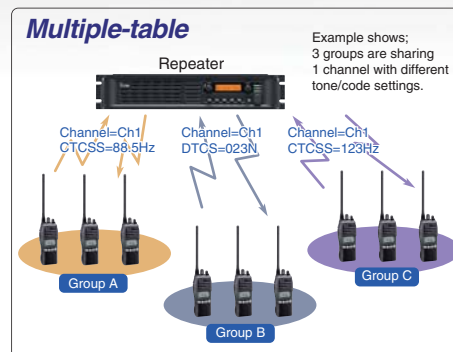## 25W 100% duty cycle operation*

Employing a high performance power amplifier, the IC-FR5000 series provides a reliable 100% duty cycle operation at 25W output. When need higher power, the optional UR-PA5000 series power amplifier provides 100W output power with a 50% duty cycle and 50W output with 100% duty cycle. (* Ambient temperature: 25˚C)

## 32 channel capacity and 5 programmable buttons

The 12-digit dot-matrix display, 5 programmable buttons, 32 memory channels and internal speaker allow you to use the repeater as a simple base station or to check repeater activity.

## Multiple CTCSS, DTCS tone and RAN code decode

The IC-FR5000 series decodes multiple CTCSS and DTCS as well as digital RAN (Radio Access Number) codes on a per channel basis (up to 16 tones/codes) and downlinks the received signal with a specified tone/code. This function is useful for sharing a channel with multiple groups and provides quiet stand-by while using other groups.



## D-SUB 25-pin accessory connector

The IC-FR5000 series has a programmable D-SUB 25-pin accessory connector for connecting various trunking controllers or external remote control devices. Also, modulation/demodulation signals can be input/output from the D-SUB connector.

## Superior receiver performance

The IC-FR5000 series has class leading receiver performance of selectivity and intermodulation rejection. It improves the quality of the repeater service even under congested band conditions.

## Voice scrambler

The built-in inversion type* voice scrambler provides secure conversation as standard. When a more secure system is required, the 32 code non-rolling type voice scrambler UT-109R* and 1020 code rolling type UT-110R* are available as an option. In IDAS digital mode, a 15-bit encryption key provides over 32,000 scrambling codes.

\* These voice scramblers (inversion type, UT-109R and UT-110R) are available with analog mode only.

## Built-in audio compander*

The built-in audio compander improves the signal to noise ratio and provide clear audio. * Analog mode only.

## Other features

- PTT priority setting (Local Mic., external PTT or repeater operation)
- 5-Tone and DTMF encoder/decoder*
- CW ID transmitter
- Analog wide/narrow (12.5/25kHz) channel spacing programmable*
- ±0.5ppm high stability oscillator
- Normal and priority scan
- Convenient key assign stickers supplied
- Quick and easy programming from a PC
- Beat cancel capability
- Low voltage alert*

\* For analog mode only

# Flexibility: All Standard

## IDAS™
### ICOM DIGITAL ADVANCED SYSTEM

## The IC-FR5000 series is ready for IDAS™ trunking and IDAS™ conventional.

### Spectrum efficiency

The IDAS system utilizes 6.25kHz narrowband FDMA technology. This system is not only spectrum efficient but meets the FCC 2013 deadline for narrow band compliance.

### Audio quality and coverage

When compared to an analog FM signal, digital easily outperforms analog in audio clarity at the fringes of the communication range, thus providing more reliable audio over a greater total area, even if the coverage footprint is the same as analog FM.

### Secure conversation

The digital modulation/demodulation makes it difficult to decode the IDAS digital signal by using the current scanner receivers at this time. The digital voice scrambler adds security on your conversation.

### IDAS™ Trunking

The IDAS trunking conforms with NXDN™ type-D trunking protocol. The IDAS trunking is a distributed system which does not use a dedicated control channel.
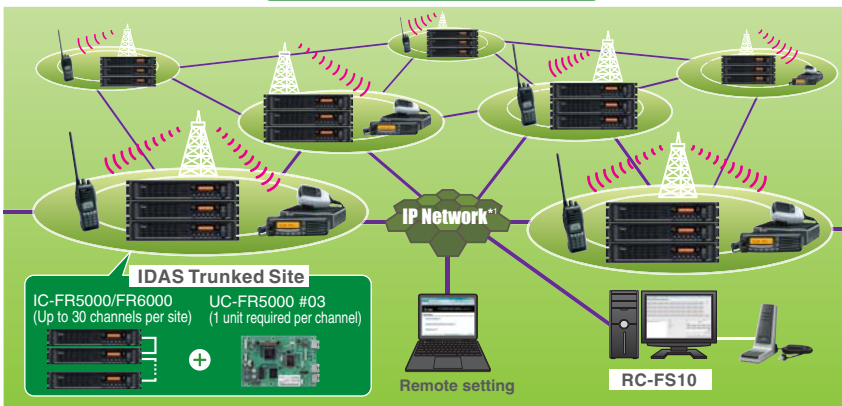
### Flexible IP Network

The IDAS multi-site trunking/conventional system integrates IP network capability in the system and extends your communication coverage. The remote communicator, RC-FS10, creates an IP-based virtual radio on a PC and works as a simple dispatcher.
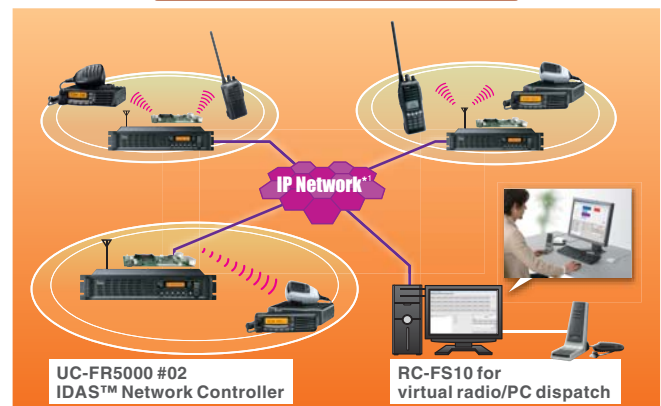
### Flexible migration path

The IDAS system allows you to scale migration to narrow band digital at your own pace and needs, while running your existing analog system. The IDAS radios can receive both analog and IDAS conventional mode signals on a single channel.

### IDAS multi-site trunking

### IDAS multi-site conventional



IP Network[1]

**IDAS Trunked Site**
IC-FR5000/FR6000 (Up to 30 channels per site)
UC-FR5000 #03 (1 unit required per channel)

Remote setting

RC-FS10

UC-FR5000 #02 IDAS™ Network Controller

RC-FS10 for virtual radio/PC dispatch

[1] Note: Private IP Network or VPN Tunnels through the Internet with Static endpoints. Please see the IDAS brochure for details.

# IC−FR5000 • IC−FR6000

## SPECIFICATIONS

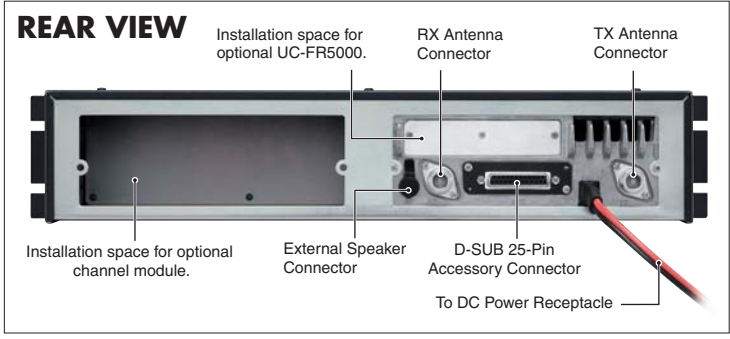|  | IC-FR5000 | IC-FR6000 |
|---|---|---|
| **GENERAL** | | |
| Frequency coverage | 136–174MHz | 400–470, 450–512, 450–520 350–400* MHz (* Non-FCC) |
| Number of channels | Max. 32 channels | |
| Channel spacing | 6.25/12.5/25kHz 7.5/15.0/30kHz | 6.25/12.5/25kHz |
| Type of emission | 16K0F3E, 11K0F3E/F7E/F7D/F7W, 8K50F3E* , 4K00F1E/F1D/F3E (* VHF EXP version only) | |
| Frequency stability | ±0.5ppm | |
| Antenna impedance | 50Ω (Type-N × 2) | |
| Operating temperature range | −30˚C to +60˚C; −22˚F to +140˚F | |
| Power supply voltage | 13.6V DC | |
| Current drain (at 13.6V DC) | | |
|   TX  50W | 15A | |
|   RX  Max. audio | 1.9A | |
|        Stand-by | 500mA, 400mA (FAN, LCD backlight off) | |
| Dimensions (W×H×D) | 483×88×260 mm ; 19.02×3.46×10.24 in | |
| Weight | 5.6kg ; 12.3lb (approx.) | |
| **TRANSMITTER** | | |
| Output power | 50W (adjustable to 5W) | |
|   100% duty cycle | 25W (at 25˚C) | |
| Max. frequency deviation | ±5.0kHz/±2.5kHz (W/N) | |
| Spurious emissions | 80dB typ. | |
| FM hum and noise | 52/49dB typ. (W/N) | 50/45dB typ. (W/N) |
| Audio harmonic distortion | 1% typ. (40% deviation) | |
| FSK error | 5% Max. (Digital) | |
| Microphone impedance | 600Ω (8-pin modular) | |
| **RECEIVER** | | |
| Sensitivity  12dB SINAD | 0.30µV typ. | 0.25µV typ. |
|           5% BER | 0.25µV typ. | 0.25µV typ. |
| Adjacent channel selectivity | 80/56dB typ. (W/N) 63dB typ. (Digital) | 78/56dB typ. (W/N) 63dB typ. (Digital) |
| Spurious response | 90dB typ. (W/N) 90dBµV typ.emf (Digital) | 70dB typ. (W/N) 65dBµV typ.emf (Digital) |
| Intermodulation rejection | 78dB typ. (W/N) 75dBµV typ. emf (Digital) | 70dB typ. (W/N) 65dBµV typ. emf (Digital) |
| Hum and noise ratio | 52/50/66dB typ. (W/N/D) | 50/45/55dB typ. (W/N/D) |
| Audio output power | 4.0W typ. at 5% distortion with a 4Ω load | |
| External speaker connector | 2-conductor 3.5 (d) mm (1⁄8″)/4Ω | |

Measurements made in accordance with TIA-603-B (for FM) and EN 301 166 (for Digital).
All stated specifications are subject to change without notice or obligation.
* 25kHz bandwidth will not be available for FCC Part 90 licensees for USA versions going forward. Ask your dealer if you need 25kHz bandwidth for T band.

### Applicable U.S. Military Specifications

| Standard | MIL 810 F | |
|---|---|---|
|  | Method | Procedure |
| High Temperature | 501.4 | I, II |
| Low Temperature | 502.4 | I, II |
| Dust | 510.4 | I |
| Vibration | 514.5 | I |
| Shock | 516.5 | I |

Also meets equivalent MIL-STD-810-C, -D and -E.

**Supplied Accessories**
• DC power cable     • Handle kits     • Key assign stickers

## REAR VIEW



Installation space for optional UC-FR5000.
RX Antenna Connector
TX Antenna Connector
Installation space for optional channel module.
External Speaker Connector
D-SUB 25-Pin Accessory Connector
To DC Power Receptacle

## OPTIONS

**HAND MICROPHONE HM-152**

**DESKTOP MICROPHONE SM-26**

**EXTERNAL SPEAKERS
SP-35:** 2m cable
**SP-35L:** 6m cable

**POWER AMPLIFIERS
UR-PA5000:** 136–174MHz,
**UR-PA6000:** 400–470MHz
50W 100% duty, 100W 50% duty

**CHANNEL MODULES
UR-FR5000:** 136–174MHz, 50W
**UR-FR6000:** 400–470, 450–512, 450–520, 350–400MHz, 50W

**IDAS TRUNKING/NETWORK CONTROLLER
UC-FR5000**
#01 IDAS single-site trunking
#02 IDAS multi-site conventional
#03 IDAS multi-site trunking

**IDAS multi-site conventional software
CF-FR5000MC
IDAS multi-site trunking software
CF-FR5000MT**

Same as supplied with UC-FR5000 #02 or #03.

**VOICE SCRAMBLER UNITS**
(For analog mode)

UT-109R     UT-110R

**CONNECTION CABLE
OPC-2202:** IC-FR5000 and UR-PA5000 connection cable.