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)
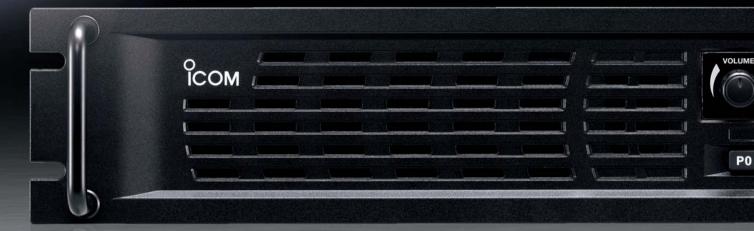- Two RF modules in one unit (option)
- 50W output 25W full duty
- 5-Tone, DTMF CTCSS, DTCS
- 2U height rackmount
- 32ch memory, dot-matrix LCD

VOLUME   01 Icom Inc.   SELECT   A   B   PWR   TX   BUSY

ICOM   PWR   TX   RX   P0   P1   P2   P3   P4

Value, Performance and

iCOM

VOLUME

P0

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.)

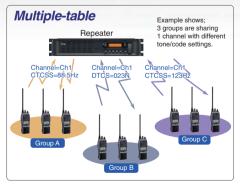### 50W output at 50% duty cycle, 25W 100% duty cycle operation

Employing a high stability ±0.5ppm oscillator and high performance power amplifier, the IC-FR5000 series provides a reliable 100% duty cycle operation at 25W output. When operated at the high power setting of 50W, the repeater operates with a 50% duty cycle.

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.

Multiple-table

Example shows; 3 groups are sharing 1 channel with different tone/code settings.

Repeater

Channel=Ch1 CTCSS=88.5Hz
Channel=Ch1 DTCS=023N
Channel=Ch1 CTCSS=123Hz

Group A
Group B
Group C

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*
- Wide frequency range: VHF 136–174MHz, UHF: 400–470 or 450–520MHz
- 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™ digital and IDAS™ trunking.

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, which complies with the FCC mandate for narrow banding capability by 2011.

Flexible IP network possibilities

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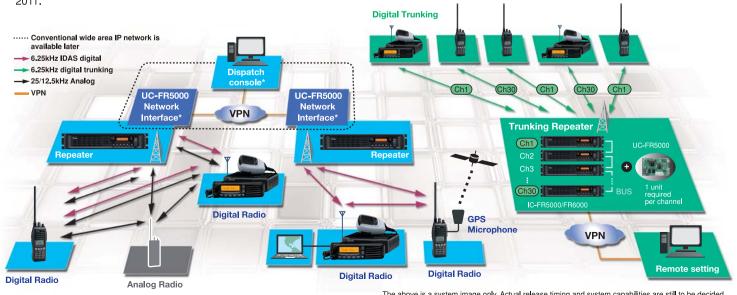
Improved audio quality and coverage

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.
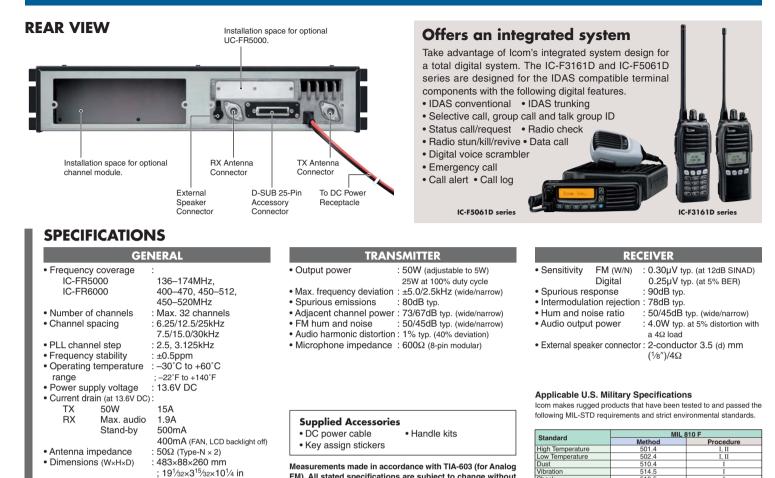
IDAS trunking with optional UC-FR5000

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.

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

Dispatch console*

UC-FR5000 Network Interface*

VPN

UC-FR5000 Network Interface*

Repeater

Repeater

Digital Radio

Digital Radio

Analog Radio

Digital Radio

Digital Radio

GPS Microphone

Digital Trunking

Ch1   Ch30   Ch1   Ch30   Ch1

Trunking Repeater

Ch1
Ch2
Ch3
⋮
Ch30

UC-FR5000

IC-FR5000/FR6000

BUS

1 unit required per channel

VPN

Remote setting

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

REAR VIEW

Installation space for optional UC-FR5000.

Installation space for optional channel module.

RX Antenna Connector

TX Antenna Connector

External Speaker Connector

D-SUB 25-Pin Accessory Connector

To DC Power Receptacle

Offers an integrated system

Take advantage of Icom's integrated system design for a total digital system. The IC-F3161D and IC-F5061D series are designed for the IDAS compatible terminal components with the following digital features.
- IDAS conventional • IDAS trunking
- Selective call, group call and talk group ID
- Status call/request • Radio check
- Radio stun/kill/revive • Data call
- Digital voice scrambler
- Emergency call
- Call alert • Call log

IC-F5061D series

IC-F3161D series

SPECIFICATIONS

GENERAL

- Frequency coverage :
  IC-FR5000   136–174MHz,
  IC-FR6000   400–470, 450–512, 450–520MHz
- Number of channels : Max. 32 channels
- Channel spacing : 6.25/12.5/25kHz 7.5/15.0/30kHz
- PLL channel step : 2.5, 3.125kHz
- Frequency stability : ±0.5ppm
- Operating temperature : –30˚C to +60˚C
  range ; –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)
- Antenna impedance : 50Ω (Type-N × 2)
- Dimensions (W×H×D) : 483×88×260 mm ; 19$\frac{1}{32}$×3$\frac{15}{32}$×10$\frac{1}{4}$ in
- Weight : 5.6kg ; 12.3lb (approx.)

TRANSMITTER

- Output power : 50W (adjustable to 5W) 25W at 100% duty cycle
- Max. frequency deviation : ±5.0/2.5kHz (wide/narrow)
- Spurious emissions : 80dB typ.
- Adjacent channel power : 73/67dB typ. (wide/narrow)
- FM hum and noise : 50/45dB typ. (wide/narrow)
- Audio harmonic distortion : 1% typ. (40% deviation)
- Microphone impedance : 600Ω (8-pin modular)

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

Measurements made in accordance with TIA-603 (for Analog FM). All stated specifications are subject to change without notice or obligation.

RECEIVER

- Sensitivity   FM (W/N)   : 0.30µV typ. (at 12dB SINAD)
            Digital   0.25µV typ. (at 5% BER)
- Spurious response : 90dB typ.
- Intermodulation rejection : 78dB typ.
- Hum and noise ratio : 50/45dB typ. (wide/narrow)
- Audio output power : 4.0W typ. at 5% distortion with a 4Ω load
- External speaker connector : 2-conductor 3.5 (d) mm (⅛″)/4Ω

Applicable U.S. Military Specifications
Icom makes rugged products that have been tested to and passed the following MIL-STD requirements and strict environmental standards.

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.

OPTIONS

- **HM-152** HAND MICROPHONE
  Regular hand microphone.
- **SM-25** DESKTOP MICROPHONE
  Equipped with a monitor switch.
- **SP-22** EXTERNAL SPEAKER
  Compact and easy-to-install.

- **UT-109R** VOICE SCRAMBLER UNIT*
  Provides operating security. Up to 32 non-rolling scrambling codes are available. (Analog mode only)
- **UT-110R** VOICE SCRAMBLER UNIT*
  Up to 1020 rolling scrambling codes are available. (Analog mode only)

* UT-109R/UT-110R voice scramblers are not compatible with Inversion type voice scrambler.

- **UR-FR5000** VHF CHANNEL MODULE 136–174MHz, 50W
- **UR-FR6000** UHF CHANNEL MODULE 400–470MHz, 450–520MHz, 50W

- **UC-FR5000** IDAS TRUNKING/NET-WORK CONTROLLER BOARD
  Provides IDAS digital trunking capability. The IDAS trunking system can have up to 30 channels per site. One UC-FR5000 is required per channel. Most of the UC-FR5000 settings can be configured from a web browser.

HM-152   SM-25   SP-22   UT-109R   UT-110R   UR-FR5000 UR-FR6000   UC-FR5000