



VHF AND UHF REPEATERS

IC-FR5100

(VHF Repeater)

IC-FR6100

(UHF Repeater)

**IDAS**  
ICOM DIGITAL ADVANCED SYSTEM



**Dual mode  
Double  
Channels**

IDAS digital/  
analog FM

Two RF modules  
in one unit (option)

25W full duty

5-Tone, DTMF  
CTCSS, DTCS

2U height  
rackmount

32ch memory,  
dot-matrix LCD



b0 b1 b5 b3 b4

# Value, Performance and



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

The IC-FR5100 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-FR5100 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-FR5100/UR-FR6100 required.



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

## 25W 100% duty cycle operation

Employing a high stability  $\pm 0.5$ ppm oscillator and high performance power amplifier, the IC-FR5100 series provides a reliable 100% duty cycle operation at 25W output.

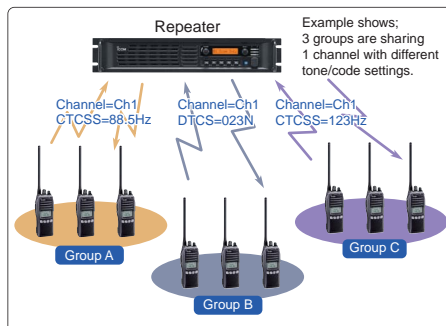


## 32 channel capacity and 5 programmable buttons

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-FR5100 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-FR5100 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-FR5100 series has the 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 (12.5/25, 12.5/20kHz) channel spacing programmable\*
- 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



VHF Repeater

**IC-FR5100**

UHF Repeater

**IC-FR6100**

## IDAS

ICOM DIGITAL ADVANCED SYSTEM

**The IC-FR5100 series is ready for IDAS digital mode.**



### Flexible migration path from analog to digital

The IC-FR5100 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.



### Double your channel capacity

The IDAS system utilizes 6.25kHz narrow channel spacing, which within a 12.5kHz channel, you can create two offset channels. (i.e. doubling the channel efficiency and capacity)



### Flexible application possibilities

Being digital, integration and convergence with IP technology as well as multiple data applications will be possible to enhance the basic system.



### Improved audio quality and coverage

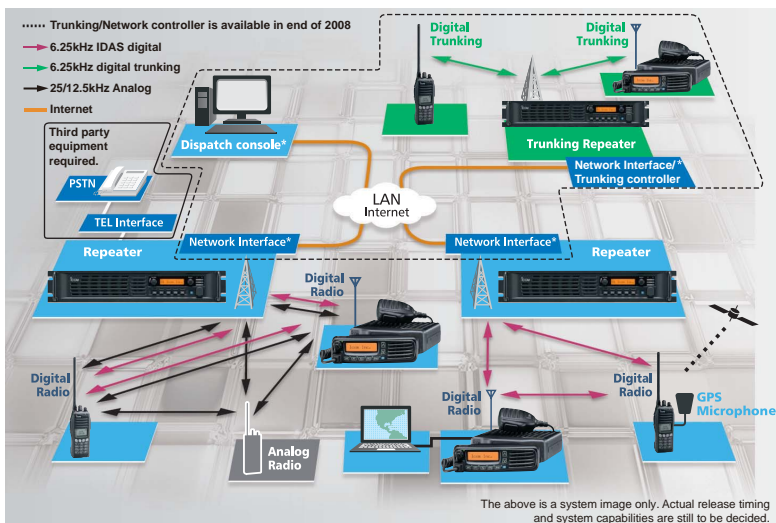
Enjoy noise free audio over a greater comparable area than analog FM. The IDAS radio uses the AMBE+2™ codec the latest evolution in vocoding technology.



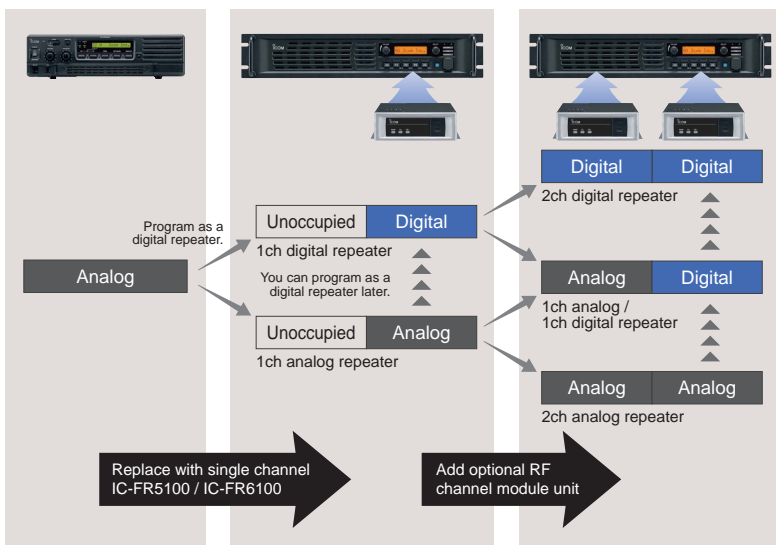
### Digital trunking\*

The IC-FR5100 series will offer optional single site digital trunking capability in the near future\* for effective channel management, and fleet management.

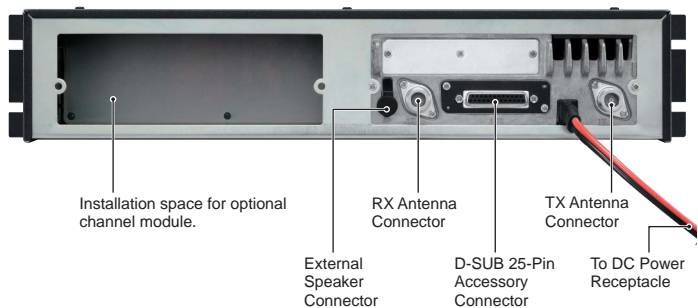
\* Optional trunking controller required. (Planned availability: End of 2008.)



### Example of Digital Migration Path



REAR VIEW



Offers an integrated system

Take advantage of Icom's integrated system design for a total digital system. The IC-F3162 and IC-F5062 series are IDAS compatible components with the following digital features.

Following digital features are available.

- 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



SPECIFICATIONS

GENERAL

- Frequency coverage : IC-FR5100 136-174MHz, IC-FR6100 400-470MHz
- Number of channels : Max. 32 channels
- Channel spacing : 6.25\*/12.5/20/25kHz
- PLL channel step : 2.5, 3.125kHz
- Antenna impedance : 50Ω (Type-N x 2)
- Power supply voltage : 13.2V DC
- Current drain (at 13.2V DC) : TX 25W 8.0A/7.0A (VHF/UHF), RX Max. audio 1.9A, Stand-by 500mA (FAN, LCD backlight off), 400mA (FAN, LCD backlight off)
- Operating Temp. range : -25°C to +55°C
- Dimensions (WxHxD) : 483x88x260 mm
- Weight : 5.6kg (approx.)

\* Digital mode turned off from factory. Measurements made in accordance with EN 300 086 (analog). All stated specifications are subject to change without notice or obligation.

TRANSMITTER

- Output power : 25W (adjustable to 2.5W) 100% duty cycle
- Max. frequency deviation : ±5.0/4.0/2.5kHz (W/M/N)
- Frequency stability : ±0.2±0.5kHz (VHF/UHF)
- Spurious emissions : 0.25μW (≤1GHz), 1.0μW (>1GHz)
- Adjacent channel power : 73/73/65dB min. (W/M/N)
- Audio harmonic distortion : 1% typ. (40% deviation)
- Intermodulation : 40dB min.
- Microphone impedance : 600Ω (8-pin modular)

RECEIVER

- Sensitivity FM (W/M/N) : -4dBμV typ. (emf, at 20dB SINAD), Digital -6dBμV typ. (emf, at 5% BER)
- Squelch sensitivity : -4dBμV typ. (emf, threshold)
- Adjacent channel selectivity VHF : 86/83/77dB typ. (W/M/N), UHF 80/78/70dB typ. (W/M/N)
- Spurious response : 70dB min. (W/M/N)
- Intermodulation rejection : 70dB min. (W/M/N)
- Audio output power : 3.5W min. at 5% distortion with a 4Ω load
- Ext. speaker connector : 2-conductor 3.5 (d) mm (1/8"/4Ω)

Supplied Accessories

- DC power cable
- Handle kits
- Key assign stickers

Applicable U.S. Military Specifications

| Standard         | MIL 810F |           |
|------------------|----------|-----------|
|                  | 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.

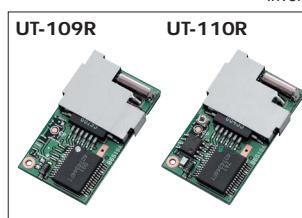
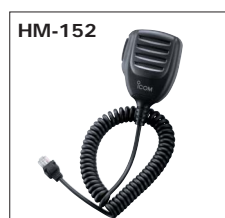
OPTIONS

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

- **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 (255 codes x 4 groups) rolling scrambling codes are available. (Analog mode only)

- **UR-FR5100 VHF CHANNEL MODULE**  
136-174MHz, 25W
- **UR-FR6100 UHF CHANNEL MODULE**  
400-470MHz, 25W

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



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