ICOM

IC–FR5100 (VHF Repeater)
IC–FR6100 (UHF Repeater)

iDAS
ICOM DIGITAL ADVANCED SYSTEM

Rugged MIL-STD 810

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

VOLUME   SELECT   A   B

PWR
TX
BUSY

01 Icom Inc.

P0 P1 P2 P3 P4

PWR TX RX

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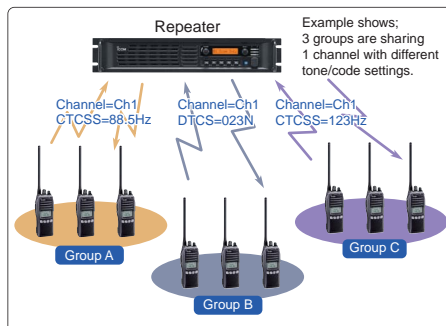

32 channel capacity and 5 programmable buttons

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

01 Icom Inc.

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.
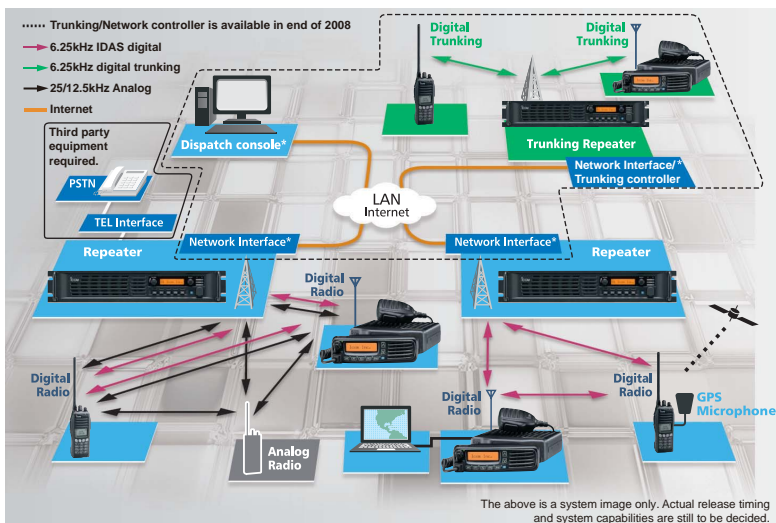
Improved audio quality and coverage

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.
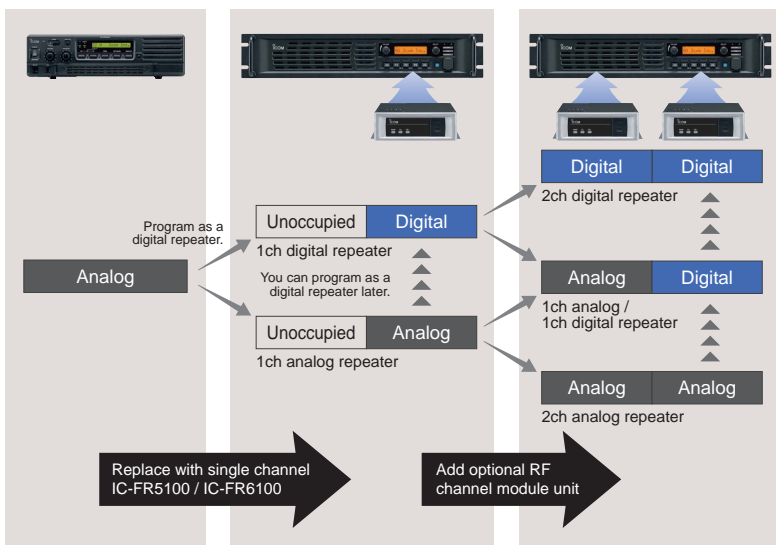
Digital trunking*

The IC-FR5100 series will offer optional single site digital trunking capability in the near future* for effective channel management, and fleet management.
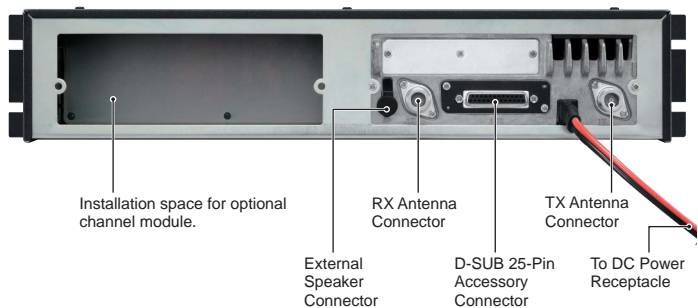
* Optional trunking controller required. (Planned availability: End of 2008.)

Trunking/Network controller is available in end of 2008
- 6.25kHz IDAS digital
- 6.25kHz digital trunking
- 25/12.5kHz Analog
- Internet

Third party equipment required.

Dispatch console*
PSTN
TEL Interface
Repeater
Network Interface*
Network Interface*
Repeater
Digital Radio
Digital Radio
Digital Radio
Digital Radio
Digital Radio
Analog Radio
Digital Trunking
Digital Trunking
Trunking Repeater
Network Interface/* Trunking controller
LAN Internet
GPS Microphone

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

■ Example of Digital Migration Path

Program as a digital repeater.

Analog

Unoccupied | Digital
1ch digital repeater
You can program as a digital repeater later.

Unoccupied | Analog
1ch analog repeater

Digital | Digital
2ch digital repeater

Analog | Digital
1ch analog / 1ch digital repeater

Analog | Analog
2ch analog repeater

Replace with single channel IC-FR5100 / IC-FR6100

Add optional RF channel module unit

REAR VIEW

Installation space for optional channel module.

External Speaker Connector

RX Antenna Connector

D-SUB 25-Pin Accessory Connector

TX Antenna Connector

To DC Power Receptacle

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

IC-F5062 series

IC-F3162 series

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 × 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
    - 400mA (FAN, LCD backlight off)
- Operating Temp. range : –25˚C to +55˚C
- Dimensions (W×H×D) : 483×88×260 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)

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

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 VHF : 86/83/77dB typ. (W/M/N)
  selectivity 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
  (⅛")/4Ω

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

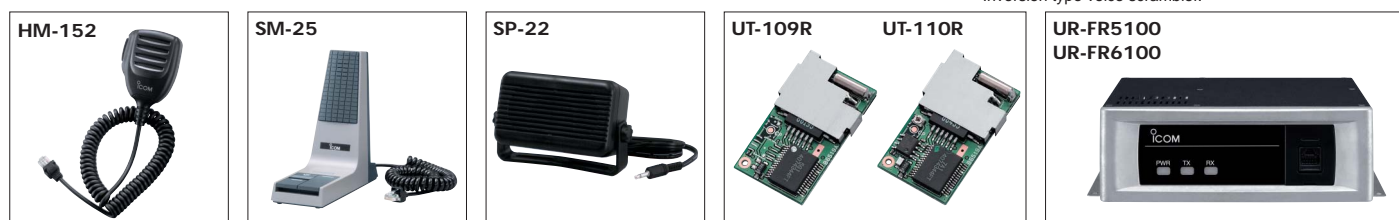Also meets equivalent MIL-STD-810-C, -D and -E.

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 × 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.

HM-152

SM-25

SP-22

UT-109R   **UT-110R**

UR-FR5100 UR-FR6100