iCOM

VHF AND UHF REPEATERS

IC-FR5100 (25W VHF REPEATER)
IC-FR5100H (50W VHF REPEATER)
IC-FR6100 (25W UHF REPEATER)
IC-FR6100H (50W UHF REPEATER)

iDAS™
iCOM DIGITAL ADVANCED SYSTEM

Rugged
MIL-STD 810

Dual mode
Double
Channels

- IDAS digital/ Analogue FM
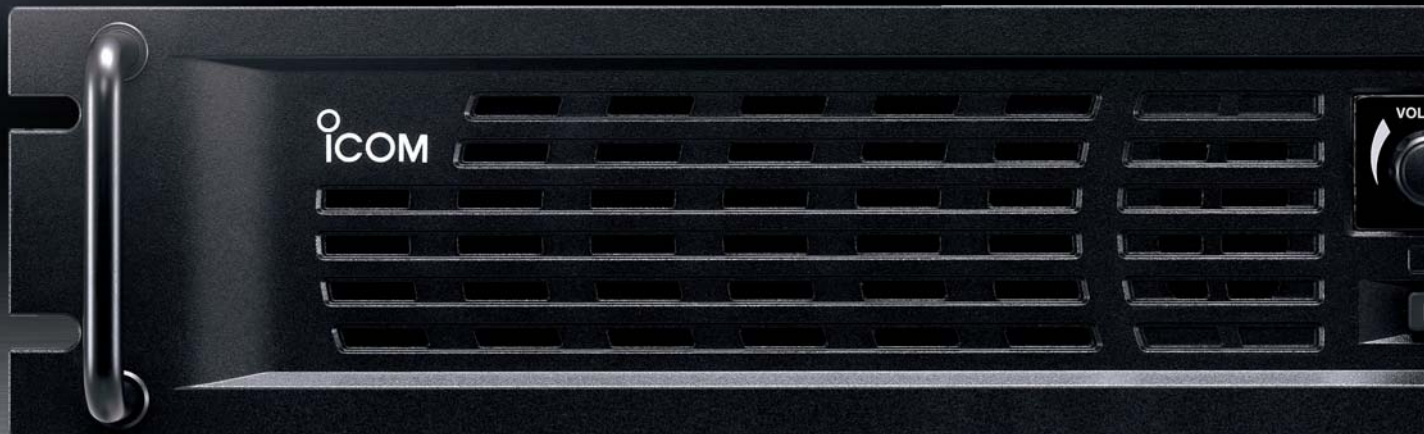- Two RF modules in one unit (option)
- 50W full duty (IC-FR5100H/FR6100H)
- 5-Tone, DTMF CTCSS, DTCS
- 2U height rackmount
- 32 Ch memory, dot-matrix LCD

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VOLUME   SELECT   A   B
                                PWR
                                TX
                                BUSY

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PWR TX RX

P0 P1 P2 P3 P4

Value, Performance and I

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

The IC-FR5100/H 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.
* Optional UR-FR5100/UR-FR6100 required.

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

100% duty cycle operation

Employing a high performance power amplifier, the IC-FR5100 series provides a reliable 100% duty cycle operation at 25 W output. When higher power is needed, the IC-FR5100H series provides a powerful 50 W output with 100% duty cycle.
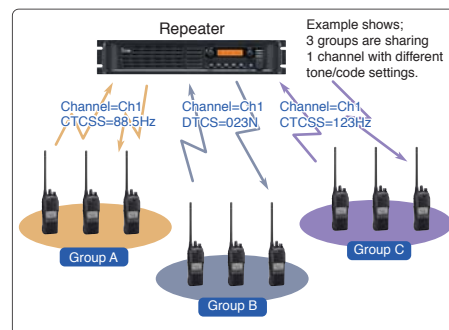(* Ambient temperature: 25°C)

IC-FR5100H series has built-in power amplifier unit.

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 digital channel code decode

The IC-FR5100/H series decodes multiple CTCSS and DTCS as well as digital channel 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.

Repeater

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

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-FR5100/H 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/H 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 analogue mode only.

Built-in audio compander*

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

Other features

- PTT priority setting (Local Mic., external PTT or repeater operation)
- 5-Tone and DTMF encoder/decoder*
- CW ID transmitter
- Wide/narrow (12.5/25, 12.5/20 kHz) 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 analogue mode only

Flexibility: All Standard

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iDAS™ — ICOM DIGITAL ADVANCED SYSTEM
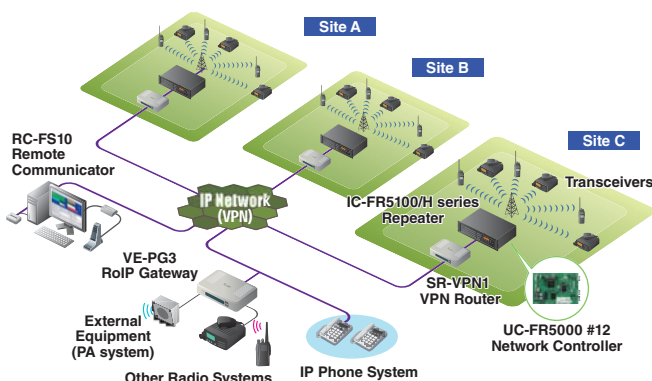
The IC-FR5100/H series is ready for dPMR™ Mode 3 digital trunking and Mode 2 conventional mode.
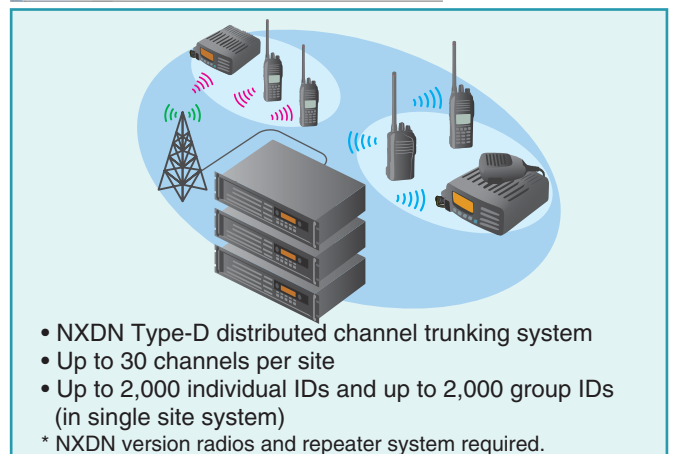
dPMR™ Mode 3 Digital Trunking

Site A
Site B
Site C

Transceivers

IC-FR5100/H series Repeater

Network Switch (Required for more than 5 channel site)

IP Network (VPN)

CS-FC5000 Controller Management Software

Control Server

CS-FC5000SCS System Control Software

SR-VPN1 VPN Router

IC-FC5000E Controller

UC-FR5000SE Ethernet Board
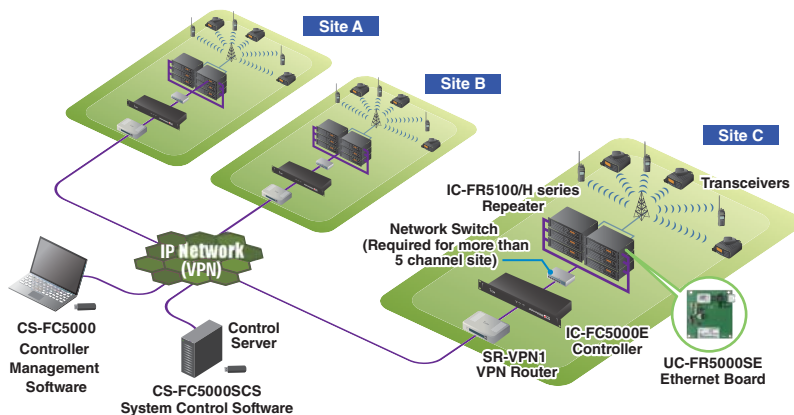
- Up to 32 channels per site (Minimum 2 channels)
- Up to 32 site multi-site trunking with System Control Software, CS-FC5000SCS
- Channel licence system. Four channel activation key is supplied with the IC-FC5000E
- CS-FC5000 web based management software allows to connect multiple clients
- Individual, group and broadcast call
- Call queuing
- Emergency call with pre-emption

dPMR™ Mode 2 Conventional Repeater Mode

Site A
Site B
Site C

Transceivers

RC-FS10 Remote Communicator

IP Network (VPN)

IC-FR5100/H series Repeater

VE-PG3 RoIP Gateway

SR-VPN1 VPN Router

UC-FR5000 #12 Network Controller

External Equipment (PA system)

Other Radio Systems

IP Phone System

- Up to 16 IDAS repeater sites connection over an IP network.

NXDN™ Simple Trunking

- NXDN Type-D distributed channel trunking system
- Up to 30 channels per site
- Up to 2,000 individual IDs and up to 2,000 group IDs (in single site system)
* NXDN version radios and repeater system required.

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

SPECIFICATIONS

	IC-FR5100/IC-FR5100H	IC-FR6100/IC-FR6100H
GENERAL		
Frequency coverage	136–174 MHz	400–470 MHz
Number of channels	Max 32 channels	
Type of emission	16K0F3E, 14K0F3E, 8K50F3E, 4K00F1E/F1D/F3E	
Channel spacing	6.25/12.5/20/25 kHz	
PLL channel step	2.5/3.125 kHz	
Power supply requirement	13.2 V DC nominal	
Current drain (approx.)		
Tx IC-FR5100/FR6100	8 A (25 W)	7 A (25 W)
IC-FR5100H/FR6100H	17 A (50 W)	18 A (50 W)
Rx Max. audio	1.9 A	
Standby	500 mA, 400 mA (FAN, LCD backlight off)	
Antenna impedance	50 Ω (Type-N × 2)	
Operating temperature range	−25 °C to +55 °C	
Dimensions (W × H × D) (Projections not included)	483 × 88 × 260 mm	
Weight (approx.)		
IC-FR5100/FR6100	5.6 kg	
IC-FR5100H/FR6100H	8.1 kg	
TRANSMITTER		
Output power (at 13.2 V DC)		
IC-FR5100/FR6100	25 W (100% duty cycle)	
IC-FR5100H/FR6100H	50 W (100% duty cycle)	
Max. frequency deviation	±5.0 kHz/±4.0 kHz/±2.5 kHz (W/M/N)	
Frequency stability	±0.2 kHz	±0.5 kHz
Spurious emissions	0.25 µW (≤1 GHz) 1.0 µW (>1 GHz)	
Audio harmonic distortion	1% typ. (40% deviation)	
Intermodulation attenuation	40 dB min.	
FSK error	5% Max. (Digital)	
Ext. microphone impedance	600 Ω (8-pin modular)	
RECEIVER		
Sensitivity (at 20 dB SINAD)	0 dBµV typ. (emf)	
(at 1% BER)	0 dBµV typ. (emf)	
Adjacent channel selectivity	86/83/77 dB typ. (W/M/N) 67 dB typ. (Digital)	80/78/70 dB typ. (W/M/N) 63 dB typ. (Digital)
Spurious response rejection	72 dB typ. (W/M/N) 95 dBµV typ. (emf, digital)	72 dB typ. (W/M/N) 90 dBµV typ. (emf, digital)
Intermodulation	72 dB typ. (W/M/N) 76 dBµV typ. (emf, digital)	72 dB typ. (W/M/N) 74 dBµV typ. (emf, digital)
Audio output power	3.5 W min. (at 5% distortion, 4 Ω load)	
Ext. speaker connector	2-conductor 3.5 (d) mm (⅛")/4 Ω	

Measurements made in accordance with EN 300 086 (analogue) & EN 301 166 (digital). All stated specifications are subject to change without notice or obligation.

Applicable U.S. Military Specifications & IP Rating

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

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

Supplied Accessories
• DC power cable   • Handle kit   • Key assign stickers
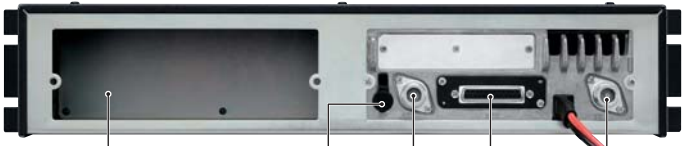
OPTIONS

HAND MICROPHONE HM-152

DESKTOP MICROPHONE SM-26

EXTERNAL SPEAKER SP-35

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

CHANNEL MODULES
UR-FR5100: 136–174 MHz, 25 W
UR-FR6100: 400–470 MHz, 25 W

dPMR Mode 2 NETWORK CONTROLLER UC-FR5000 (#12)

ETHERNET BOARD UC-FR5000SE
Required for each repeater to connect with IC-FC5000E

OPC-2202:
UR-PA5000/PA6000 connection cable

VOICE SCRAMBLER UNITS
(For analog mode)

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

REAR VIEW

Installation space for optional unit. (UR-PA5000/PA6000 is already installed for IC-FR5100H/FR6100H)

RX Antenna Connector

TX Antenna Connector

External Speaker Connector

D-SUB 25-Pin Accessory Connector

To DC Power Receptacle