



IC-FR5300 IC-FR6300

VHF AND UHF DIGITAL REPEATERS

Two Channels in One Box Repeater, Compatible with Affordable Digital Simulcast

The IC-FR5300/FR6300 is a 50 W*, high duty cycle, 32 channel VHF/UHF repeater combining analog FM and IDAS™ digital mixed mode operation. The optional UC-FR5300 network/controller board provides IP network connectivity, and it is scalable to multi-site conventional, simulcast conventional, and Type-D trunking capabilities. The IC-FR5300/FR6300 is another addition to Icom's robust series of professional repeaters that support countless systems worldwide.

- | Completely new CPU/FPGA Platform
- | 50 W* output at high duty cycle operation
- | ±0.1 ppm high frequency stability with 1 pps signal
- | Digital/analog mixed mode operation
- | System scalable to IDAS™ digital simulcast or Type-D Trunking
- | Multiple tone-group using CTCSS, DTCS and digital RAN
- | VE-PG4 RoIP gateway connection for telephone interface
- | IP remote maintenance

* 25 W output power depending on the repeater version.



IDAS™ **NXDN™**
ICOM DIGITAL ADVANCED SYSTEM

FEATURES

IC-FR5300 • IC-FR6300

Completely New CPU/FPGA Platform

The IC-FR5300 series is the second generation IDAS™ Repeater, keeping system compatibility with the original IC-FR5000 series and continuing its unique package. It looks the same as the IC-FR5000, but a new CPU/FPGA platform is used. The IC-FR5300 series provides digital simulcast system capability and ± 0.1 ppm high frequency stability with a 1 pps reference signal from the GNSS antenna.

System Scalability

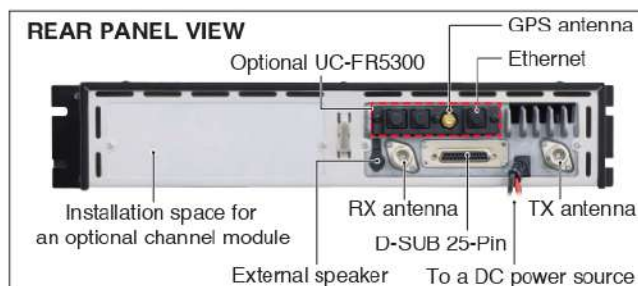
The IC-FR5300 series can be easily upgraded by installing an optional UC-FR5300 Network/controller board and software provided with a CF card. Depending on the communication density and coverage, your radio system can grow from a single site to a simulcast system or multi-site trunking* system, to match your communication needs.

* Compatible IDAS radio terminals are required for multi-site trunking.

System	Optional Network/Controller Board
Simulcast Conventional	UC-FR5300 #14 (Supplied with a CF-FR5300SC) and UX-241 GNSS antenna
Multi-site Conventional	UC-FR5300 #12 (Supplied with a CF-FR5000MC)
Single site Trunking	UC-FR5300 #11
Multi-site Trunking	UC-FR5300 #13 (Supplied with a CF-FR5000MT)

D-SUB 25-Pin Accessory Connector

The IC-FR5300 series has a programmable D-SUB 25-pin accessory connector for connecting an external remote control devices. Also, modulation/demodulation signals can be input/output from the D-SUB connector.



Rear panel view with an optional UC-FR5300

50 W Output at 50% Duty Cycle or 25 W 100% Duty Cycle Operation*

Employing a high-performance power amplifier, the IC-FR5300 series provides a reliable 100% duty cycle operation at 25 W output. When operated at the high power setting of 50W, the repeater operates with a 50% duty cycle.

* 25 W output power depending on the repeater version.

Ambient temperature: 25°C

Capable of Installing Two RF Modules in One Chassis

The IC-FR5300 series has an internal space for installing another RF unit. Two RF modules* can be installed and operated independently. LEDs on the front panel shows the status of both channel.

* Optional UR-FR5300/UR-FR6300 required.

Digital/Analog Mixed Mode and Multiple Tone-Group Using CTCSS, DTCS Tone and RAN

The IC-FR5300 series can receive both analog and digital modes on a channel, and transmit either mode, depending on the programming. It 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.

32 Channel Capacity and 5 Programmable Buttons

The 12-digit alphanumeric display, 5 programmable buttons, 32 memory channels and internal speaker enable you to use the repeater as a simple base station, or to check repeater activity. The LCD shows a variety of text and code information.

IP Remote Maintenance

When the IC-FR5300 series is connected to an IP network through the optional UC-FR5300 network/controller board, PC programming and IP address setting can be made from a remote location. The SNMP traps and Syslog can be sent to your manager for remote monitoring.

Other Features

- 19-inch rack mount 2U height low profile
- Receiver voting function improves talkback capability of radio terminals in the field
- RC-FS10 remote communicator software works as a simple dispatch station to communicate with radio terminals through the repeater
- CW ID transmitter
- PTT priority setting (Local Microphone, external PTT or repeater operation)
- 5-Tone decoder* (* For analog mode only)
- DTMF encoder/decoder
- Low voltage alert

SPECIFICATIONS

IC-FR5300 • IC-FR6300

		IC-FR5300	IC-FR6300
GENERAL			
Frequency coverage* (* Depending on the version)		136–174 MHz (USA, EXP, EUR, CAN, AUS)	330–400 MHz (EXP), 400–470 MHz (USA, EXP, EUR, CAN) 450–512 MHz (USA), 450–520 MHz (EXP, AUS)
Number of channels		32 channels /1 zone	
Type of emission* (* Depending on the version)		16K0F3E* (25 kHz), 14K0F3E (20 kHz, EUR), 11K0F3E (15 kHz, USA), 8K50F3E (12.5 kHz), 4K00F1E/F1D (6.25 kHz)	
Power supply requirement		13.6 V DC nominal (USA, EXP, CAN) 13.2 V DC nominal (EUR, AUS)	
Current drain (approx.)	TX	15.0 A maximum (at 50 W) 8.0 A maximum (at 25 W)	
	RX	1.9 A /500 mA (Maximum audio /Standby (Fan OFF))	
Antenna impedance		50 Ω	
Operating temperature range		–30 °C to +60 °C, –22 °F to +140 °F (USA, EXP, CAN) –25 °C to +55 °C, –13 °F to +131 °F (EUR, AUS)	
Dimensions (Projections not included)	IC-FR5300/FR6300 UR-FR5300/FR6300	483 × 88 × 260 mm, 19.0 × 3.5 × 10.2 in (W × H × D) 176 × 60 × 194 mm, 6.9 × 2.4 × 7.6 in (W × H × D)	
Weight (approx.)	IC-FR5300/FR6300 UR-FR5300/FR6300	5.78 kg, 12.7 lb 2.1 kg, 4.6 lb	
TRANSMITTER			
Output power (Hi, L2, L1)		50 W, 25 W, 5 W (USA, EXP, CAN, AUS Versions) 25 W, 10 W, 5.8 W (EUR, EXP Versions)	
Frequency stability		±1.0 ppm or less ±0.1 ppm or less (corrected using GNSS)	
Spurious emissions		80 dB typ. (TIA-603) 0.25 μW (≤ 1 GHz), 1.00 μW (> 1 GHz) (EN301 166, EN300 086)	
Maximum frequency deviation	Digital	±1.203 kHz–1.471 kHz (EN301 166)	
	Analog	±5.0 kHz/±2.5 kHz (25 kHz/12.5 kHz)(TIA-603) ±5.0 kHz/±4.0 kHz/±2.5 kHz (25 kHz/20 kHz/12.5 kHz)(EN300 086)	
FM hum and noise		83/77 dB typ. (25/12.5 kHz)(TIA-603)	72/67 dB typ. (25/12.5 kHz)(TIA-603)
Residual modulation (With CCITT filter)		82/82/79 dB typ. (25/20/12.5 kHz)(EN300 086)	76/74/71 dB typ. (25/20/12.5 kHz)(EN300 086)
Audio harmonic distortion		0.9% typ. (AF 1kHz 40% deviation)(TIA-603) 1.1% typ. (AF 1kHz 40% deviation)(EN 300 086)	0.8% typ. (AF 1kHz 40% deviation)(TIA-603) 0.8% typ. (AF 1kHz 40% deviation)(EN 300 086)
FSK error		0.6% typ. (EN301 166)	
RECEIVER			
Sensitivity	Digital (1% BER)	–4.0 dBμV (0.32 μV) emf typ. (EN301 166)	–3.5 dBμV (0.33 μV) emf typ. (EN301 166)
	Analog (12 dB SINAD)	–119 dBm, (0.25 μV) typ. (TIA-603)	–117 dBm, (0.32 μV) typ. (TIA-603)
	Analog (20 dB SINAD)	–4.0/–4.0/–1.0 dBμV emf typ. (25/20/12.5 kHz)(EN300 086)	–3.0/–3.0/0.0 dBμV emf typ. (25/20/12.5 kHz)(EN300 086)
Adjacent channel selectivity	Digital	66 dB typ. (EN301 166)	63 dB typ. (EN301 166)
	Analog	85/80 dB typ. (25/12.5 kHz)(TIA-603) 84/83/78 dB typ. (25/20/12.5 kHz)(EN300 086)	80/56 dB typ. (25/12.5 kHz)(TIA-603) 78/78/74 dB typ. (25/20/12.5 kHz)(EN300 086)
Spurious response rejection	Digital	87 dBμV emf typ. (EN301 166)	85 dBμV emf typ. (EN301 166)
	Analog	85 dB typ.(TIA-603) 81 dB typ. (EN300 086)	84 dB typ.(TIA-603) 81 dB typ. (EN300 086)
Intermodulation rejection	Digital	78 dBμV emf typ. (EN301 166)	78 dBμV emf typ. (EN301 166)
	Analog	81/81 dB typ. (25/12.5 kHz)(TIA-603) 75/74/73 dB typ. (25/20/12.5 kHz)(EN300 086)	80/80 dB typ. (25/12.5 kHz)(TIA-603) 74/74/73 dB typ. (25/20/12.5 kHz)(EN300 086)
Audio output power		3.9 W typ. (at 5% distortion with 4 Ω load)	

Measurements made in accordance with TIA-603, EN300 086 and EN301 166.

All stated specifications are subject to change without notice or obligation.

* 25 kHz bandwidth is not available for FCC Part 90 licensees for USA versions. Ask your dealer if you need 25 kHz bandwidth.

Applicable U.S. Military Specifications

Standard	MIL 810G	
	Method	Procedure
Low Pressure	500.5	I, II
High Temperature	501.5	I, II
Low Temperature	502.5	I, II
Temperature Shock	503.5	I-C
Solar Radiation	505.5	I
Humidity	507.5	II
Dust Blowing	510.5	I
Vibration	514.6	I
Shock	516.6	I

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

Supplied accessories: (May differ depending on the repeater version)

- DC power cable
- Handle kits

OPTIONAL ACCESSORIES

IC-FR5300 · IC-FR6300

■ CHANNEL MODULES

UR-FR5300: 136–174 MHz, 50/25 W*

UR-FR6300: 400–470, 450–512, 450–520, 330–400 MHz, 50/25 W*
* 25W output power depending on the channel module version.



UR-FR5300

■ IDAS™ NETWORK/CONTROLLER BOARD AND SOFTWARE

UC-FR5300: Network/controller board. Software (CF card) may be supplied, depending on UC-FR5300 version.

CF-FR5300SC: Simulcast software. Same as supplied with UC-FR5300 #14.

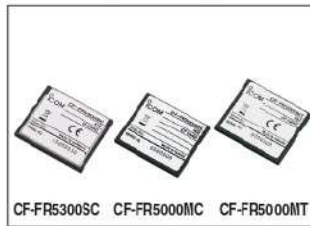
CF-FR5000MC: Multi-site conventional software. Same as supplied with UC-FR5300 #12.

CF-FR5000MT: Multi-site trunking software. Same as supplied with UC-FR5300 #13.

	Conventional		Type-D Trunking	
	Simulcast	Multi-site	Multi-site	Single site
UC-FR5300 #14 (Includes CF-FR5300SC)	✓	✓	–	✓
UC-FR5300 #12 (Includes CF-FR5000MC)	–	✓	–	✓
UC-FR5300 #13 (Includes CF-FR5000MT)	–	✓	✓	✓
UC-FR5300 #11 (CF card not supplied)	–	–	–	✓



UC-FR5300



CF-FR5300SC CF-FR5000MC CF-FR5000MT

■ GNSS ANTENNA

UX-241: External GNSS antenna. Cable length 5 m, 16.4 ft.



UX-241

■ EXTERNAL SPEAKERS

SP-35/L: Compact external speaker.

SP-35 cable length: 2 m, 6.6 ft.

SP-35L cable length: 6 m, 19.7 ft.



SP-35/SP-35L

■ HAND MICROPHONE AND DESKTOP MICROPHONE

HM-152: Hand microphone (for base station operation)

SM-26: Desktop microphone with monitor and monitor lock buttons (for base station operation).



HM-152



SM-26

■ RoIP GATEWAY

VE-PG4: RoIP gateway. Provides an interconnection with an IP phone, LTE radio, WLAN radio or an analog radio.



VE-PG4

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

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