



idAS™

ICOM DIGITAL ADVANCED SYSTEM

Digital/Analog Migration
IDAS™ Conventional IP Network
IDAS™ Trunking



IDAS is Icom's digital land mobile radio system using the NXDN™ common air interface and offers a complete system of handheld radios, mobile radios, repeaters, network interface/trunking controller, IP-based virtual radio, various accessories and a complete system solution.

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IDAS™ system features

Digital/analog mixed mode operation

IDAS radios can receive both analog mode and digital mode signals on a single channel. You can partially introduce the IDAS radios while using your existing analog radios in a system. The IDAS system allows you to scale migration to narrow band digital at your own pace and needs, while running your existing analog system. It is a cost efficient way to obtain the next generation in two way radio technology, while protecting your current system investment.

Peer-to-peer communication with FDMA

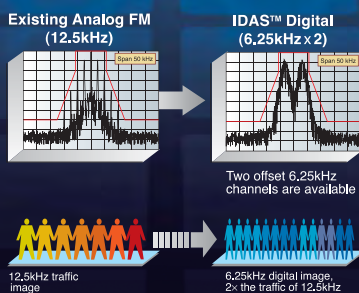
When compared to a TDMA (Time Division Multiple Access) 6.25 equivalent system, the FDMA (Frequency Division Multiple Access) enables "peer to peer" communication between radios in

6.25kHz digital mode. It ensures communication with no reduction in channel capacity, even if a repeater site is not available, or goes down.

Spectrum efficiency

As explained, the IDAS system allows you to meet US FCC narrow banding requirements, and provides a solution to overcrowded airwaves.

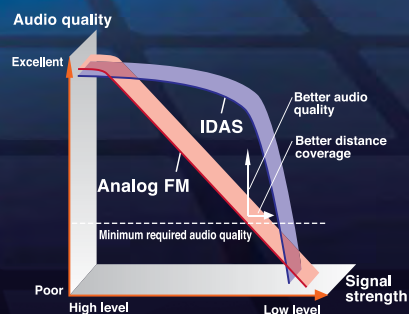
Spectrum efficiency



Digital signal advantage

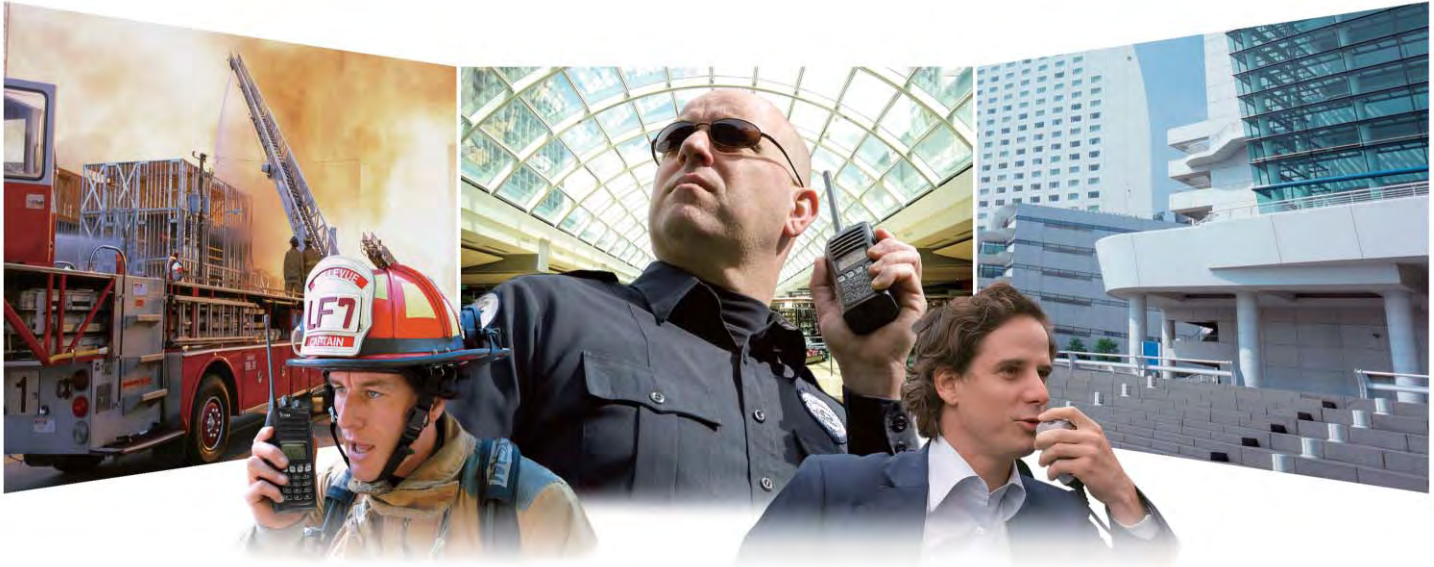
When comparing digital with analog FM, the audio quality of analog FM gradually deteriorates with static noise as the distance increases. On the other hand, the digital audio provides noise-less, stable audio for longer until the fringes of the communication range.

Analog vs Digital Coverage



IDAS™ calling features

IDAS supports following calling features in digital conventional mode.



Selective call, group call and talkgroup ID

The IDAS system allows you to call individual or group users. IDAS radios automatically send their own ID number when the PTT button is held down. IDAS radios memorize up to 500 of both individual/group ID numbers and alias names in the table. The alias name or individual/group ID is displayed on the LCD while receiving a message allowing you to identify who is calling.

Talk back function and call mode selection

When the talk back function is enabled, the IDAS radio automatically selects the received talkgroup or individual ID to reply to the received call, while the talk back timer remains. After the talk back timer is exceeded, the IDAS radios will set to an initial call mode depending on programming which is either talkgroup or individual call or retain the previous user call mode selection.

Digital voice scrambler

When secure communication is required, the IDAS system provides a digital voice scrambler using a 15-bit key (about 32,000 codes) as standard. This is added security to the digital modulation/demodulation.

Emergency call functions

When the emergency button is pushed,

an emergency signal will be automatically sent to the dispatcher or another radio. Other emergency features are a man down feature*1 and a lone worker function, available for automated emergency calls (in digital and analog modes). A remote radio monitor function allows the dispatcher to turn on the PTT button from a remote location and transmit anything the microphone hears for a preprogrammed time period.

*1 Optional UT-124R required.

Status message

You can set up to 100 conditions such as "on duty", "at lunch" or "in route". This message will be sent each time the PTT button is pushed until the status message feature is turned off. Also, you can request another unit to send their status and receive it.

GPS position reporting

When used with the HM-170GP GPS speaker microphone for the handheld IDAS radio or an external, third-party GPS for the mobile IDAS radio, you can send your current position information to another radio or the dispatch. Three different sending intervals can be programmable: on PTT; when polled; or at periodic times. When connected to a PC that has mapping software installed, the dispatch will know the real-time activity of the fleet members.

Radio kill, stun and revive

The radio kill function disables a lost or stolen radio over the air, eliminating security threats from undesired listeners. When the radio stun command is received, all functions will be temporary locked out until the revive command is received or the user password is entered. The IDAS radio can also send radio stun, kill and revive commands.

RAN for digital code squelch

The RAN (Radio Access Number) code is the digital equivalent of CTCSS for accessing an IDAS repeater or digital squelch function.

Short Data Message capability

Short data messages of up to 12 characters may be sent and received between IDAS radios or from the remote communicator.

Other features

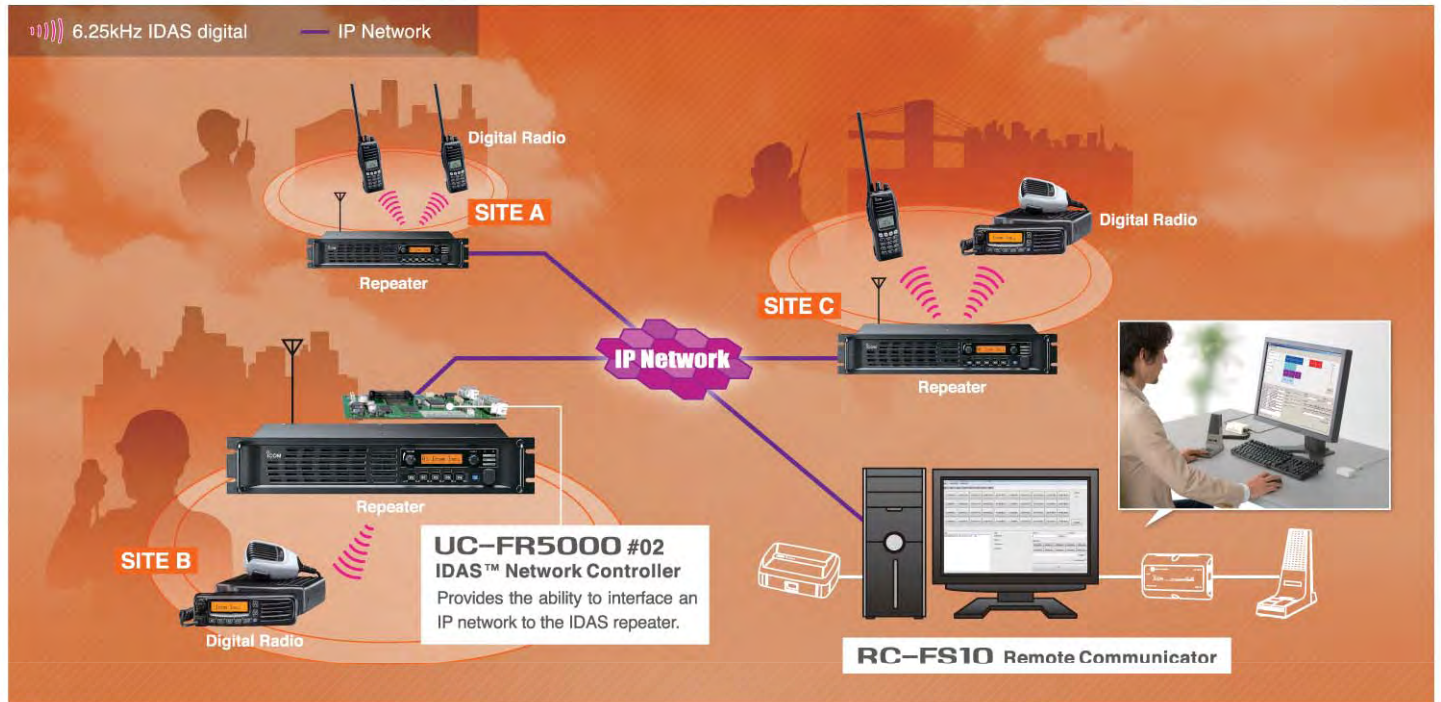
- Radio check function allows you to verify if another radio is within communication range
- Call log displays the received call history
- Call alert function notifies receiving party that a call is coming with a beep sound and blinking icon
- Base station operation for repeater
- Late entry: IDAS radio can decode the received ID and show group ID, unit ID or alias name on the display even when turned on during a conversation.



IDAS™ conventional IP network

IDAS™ conventional IP network links up to 16 repeater sites

Communication link for distant locations



Communication link for distant locations

An IDAS conventional IP network can extend your communication coverage. It lets you connect dispersed sites and allows you to communicate like a single site.

Up to 16 IDAS™ repeaters connection over IP network

With the optional UC-FR5000 (#02), up to 16 IDAS repeaters can be interlinked with each other. An IDAS terminal radio user can communicate with other IDAS terminal radio users belonging to the interlinked repeater sites and/or a virtual dispatch station on the network.

* The IDAS conventional IP network cannot relay voice traffic over the IP network if the uplink is analog.

Low bandwidth requirement

By using the AMBE+2™ vocoder compression, an IDAS conventional IP network requires only about 13kbps bandwidth per one voice path in theory. It means a DSL class line is sufficient for the IDAS conventional IP network. The IDAS conventional IP network system requires only one fixed IP address in a group of networked repeaters. Other repeater sites can work with dynamically allocated IP addresses when the IP manager/client

mode is enabled though some restrictions may still be applicable.

Integrated system for clean and simple installation

Icom has made it simple and easy to introduce and install an IDAS conventional IP network system. The IDAS conventional IP network system requires only the UC-FR5000 (#02) network controller which can be installed into the IC-FR5000 series repeater – no control server and no extra rack space is required. In addition, the repeater and network controller settings can be

remotely maintained and monitored over an IP connected PC.

RC-FS10 Remote Communicator

The remote communicator creates an IP-based virtual radio on a PC and works as a simple dispatch. IDAS communication features can be used with the remote communicator software. Up to 8 target IDAS repeater sites* can be programmable in the software. 8 remote communicators can connect to a single repeater.

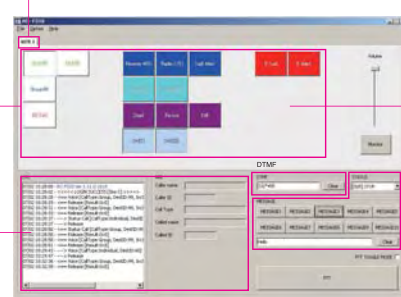
* The RC-FS10 software can transmit one voice path at a time. One CT-24 is required for receiving an IDAS repeater site and up to 8 repeater sites can be monitored simultaneously with 8 CT-24s.

RC-FS10 screen

Site tab :
Up to 8 repeaters are programmable

Function buttons :
Up to 40 functions are programmable.

Communication log and ANI
The software shows user ID and name who is using the target repeater on the display and creates communication logs.



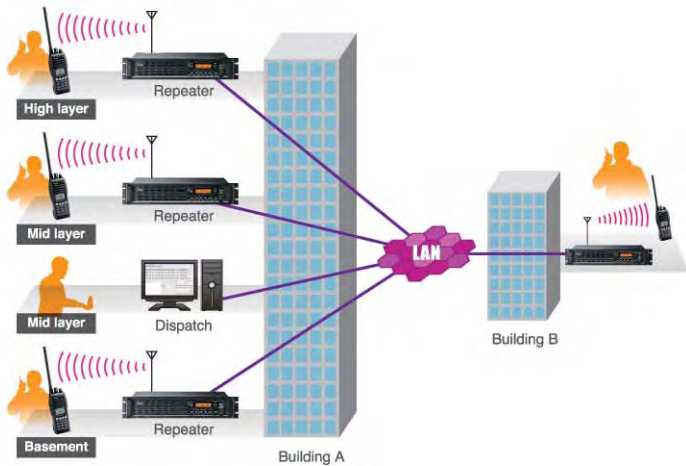
Flexible settings
The skin settings such as button layout, button name, button color and background color can be customized freely.

Short Data Message and Status Message
Sending and receiving a short data message and status message can be made easily.

IDAS™ conventional IP network application example

CASE 1 Intra-building and inter-building solution

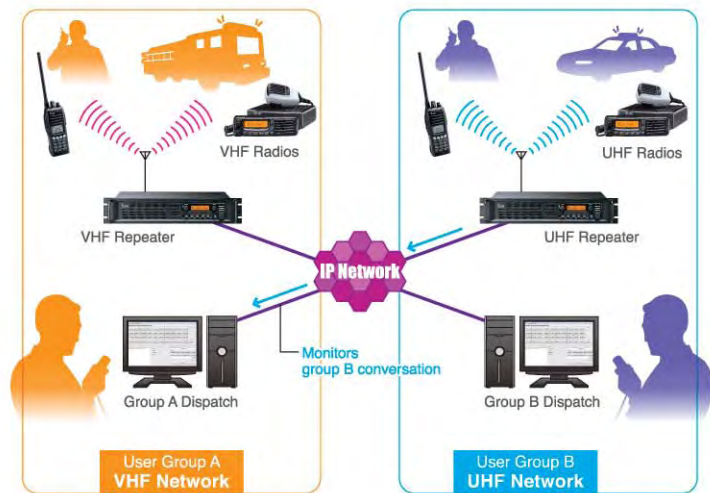
||||| IDAS digital
— IP Network



With an IDAS conventional IP network system, it is possible to have radio communications all the way from the basement to the top floor, all in stable digital audio. Already deployed LAN cables can be used in an in-building solution.

CASE 2 Crossband repeater

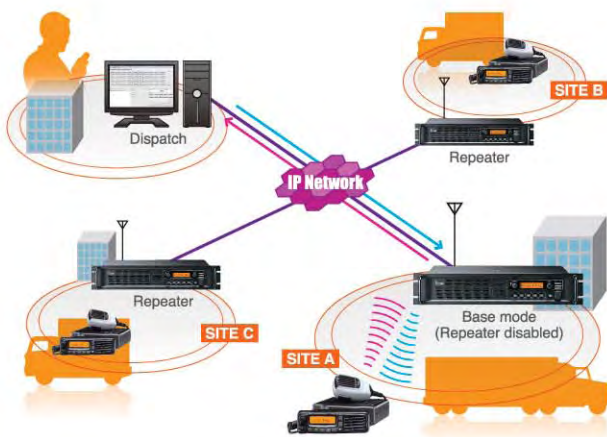
||||| IDAS digital (VHF)
||||| IDAS digital (UHF)
— IP Network



Different agencies might use different bands. For example, a police department might be using VHF while a fire department uses UHF. An IDAS conventional IP network establishes a crossband repeater system so everyone can communicate with each other.

CASE 3 Remote base station over IP network

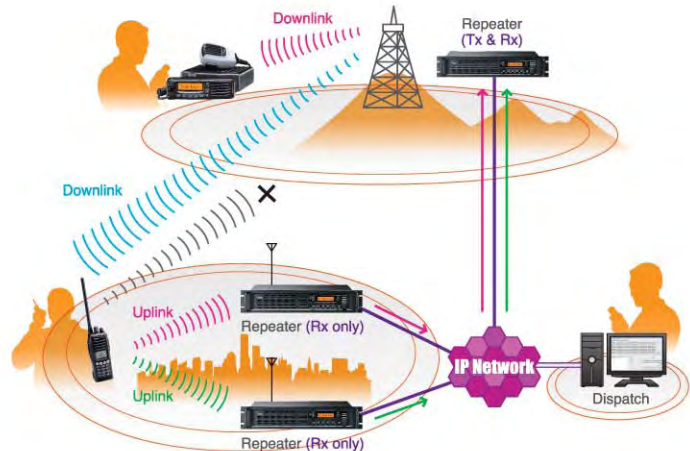
||||| IDAS digital (Uplink)
||||| IDAS digital (Downlink)
— IP Network



In base mode operation with an IDAS conventional IP network system, the uplinked voice from IDAS radios will not be repeated to other IDAS terminal radios, but only sent to the assigned virtual radio/dispatcher via IP. The uplink from the virtual radio/dispatcher will be down-linked from the IDAS repeaters. This mode may be used in case communications between terminals is not intended or may be used in a simplex channel system.

CASE 4 Receiver voting operation

||||| IDAS digital (Uplink A)
||||| IDAS digital (Uplink B)
||||| IDAS digital (Downlink)
— IP Network



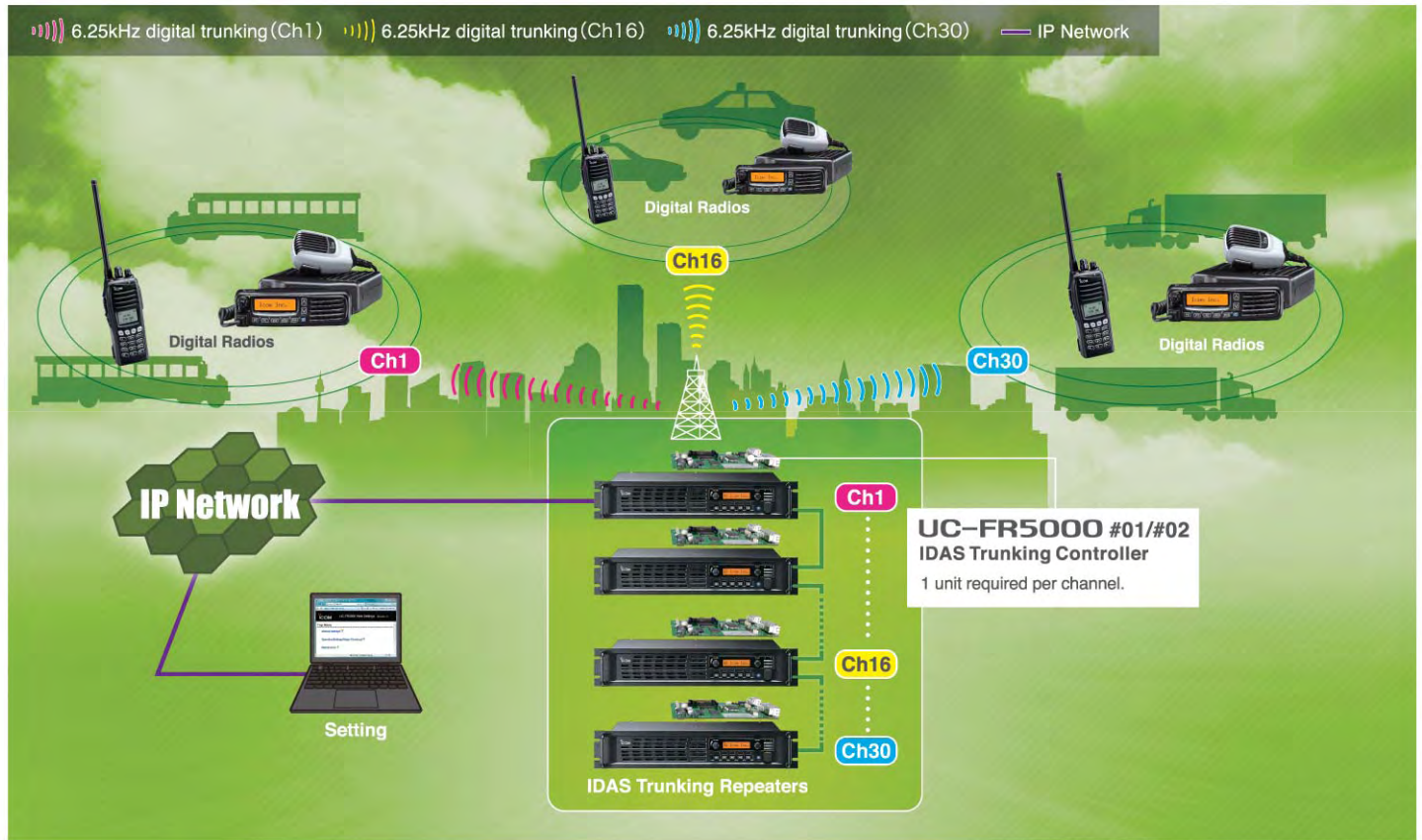
IDAS receiver voting improves the talk back capability of IDAS handheld and mobile radios. The IDAS networked receivers (where IDAS repeaters' transmission is inhibited and used as receivers) are distributed to the communication area. Each receiver receives a signal from a terminal radio and transfers it to the repeater site, and the repeater relays the best signal or transfers it to the remote dispatch. The UC-FR5000 has a built-in voting function, so an external voter device is not required.



IDAS™ trunking features

IDAS™ trunking for efficient channel management

Shares up to 30 channels with a large number of users



Distributed control channel

The IDAS trunking system is a distributed system (similar to the analog LTR™ trunking) which does not have a dedicated control channel. Trunking channels can be used for voice channels to share more effectively with a large number of users.

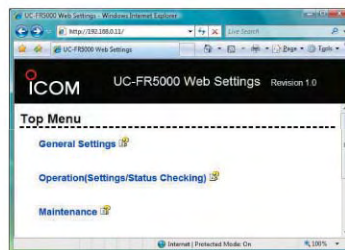
Number of unit ID and talkgroup ID

The IDAS trunking system can have up to 30 channels (RF units) per site. The system has the potential ability to handle up to 2000 unit ID codes and 2000 talkgroup ID codes per home channel. The practical number of users in any one system (site) may vary due to many factors, but the IDAS trunking system is designed to be used by up to 100 to 200 users (radios) per channel.

Please note: The IDAS multi-site trunking/IP networking system is not available at this time. It will be release in the future.

Web browser configuration

All of the UC-FR5000 configurations can be made via a Web browser.



Secondary home channel

If the home repeater fails, the system automatically switches to a secondary repeater/channel for backup operation.

Area bit setting

If there are two IDAS trunking systems using the same frequency within a close area, the area bit setting allows the trunked radios to identify its own repeater site.

Two RF modules in one unit

The IC-FR5000 series uses only 2U height and has an internal space for installing another RF module. The optional UR-FR5000 series RF module can be installed in the chassis to save installation space.

*For a two channel IDAS trunking repeater, an optional UC-FR5000 (#01/#02) is required for each channel.



IDAS™ products lineup

VHF DIGITAL/ANALOG REPEATER

UHF DIGITAL/ANALOG REPEATER

IC-FR5000 IC-FR6000



50W

Features

- Frequency coverage : 136-174MHz, 400-470MHz, 450-512MHz
- Number of channels : Max. 32 channels
- 19-inch rack mount design, 2U height low profile design
- 12-digit dot-matrix display and 32 memory channels
- Multiple CTCSS, DTCSS tone and digital RAN code decode
- 50W output power at 50% duty operation, 25W at 100% duty operation
- "2 channel in 1 box" configuration (Optional UR-FR5000/UR-FR6000 required)
- 5-Tone and DTMF encoder/decoder (For analog FM mode)
- Accessory connector (D-sub 25-pin) for connecting analog trunking controllers or other external devices

Options



UC-FR5000
IDAS Trunking/Network Controller
For IDAS Conventional IP network,
UC-FR5000 #02 required,
(or upgrade UC-FR5000 #01
with CF-FR5000MC)



CF-FR5000MC
CF Card
IP Network Upgrade Software
for UC-FR5000 #01.
* CF-FR5000MC is already
installed to UC-FR5000 #02.



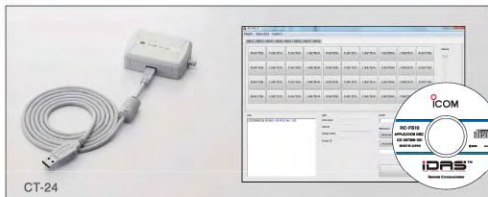
UR-FR5000 (VHF)
UR-FR6000 (UHF)
Channel Modules



Two RF units can be installed in the unit.
(Left side is an option.)

Remote Communicator

RC-FS10



RC-FS10 Remote Communicator
CT-24 Digital Voice Converter (Supplied with RC-FS10)



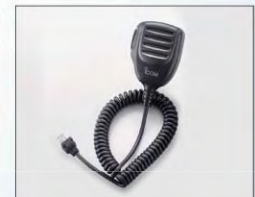
CT-23 PTT Microphone Adapter



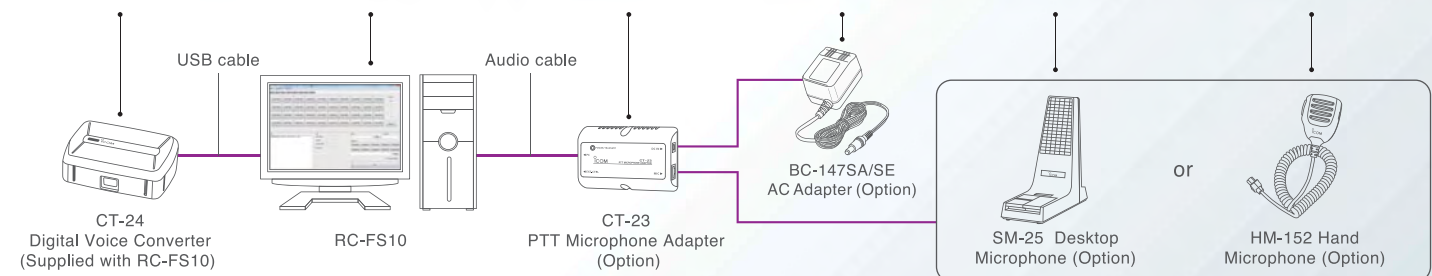
BC-147SA/SE
AC Adapter



SM-25 Desktop Microphone



HM-152 Hand Microphone



- CT-23 connects HM-152 or SM-25 microphone audio (RJ-45 jack) and PTT/Monitor signals to the 3.5mm stereo jack for connection with a PC. A stereo jack cable is supplied with the CT-23. AC adapter, BC-147SA/SE is required separately.
- The digital voice converter, CT-24, is a USB connection device

which converts microphone audio to an IDAS compatible digital signal. The remote communicator software will not work if the CT-24 is not connected.

- RC-FS10SDK: Allows you to develop IDAS compatible applications. (A non-disclosure agreement required)

VHF DIGITAL/ANALOG TRANSCEIVERS

UHF DIGITAL/ANALOG TRANSCEIVERS

IC-F3161DT
IC-F3161DS

IC-F4161DT
IC-F4161DS

Features

- Frequency coverage: 136-174MHz, 400-470MHz, 450-512MHz
- Number of channels : Max. 512 Ch./128 zones
- Compatibility with digital 6.25kHz NXDN™ protocol. Abundant digital functions
- 512 memory channels with 128 zones
- Dot matrix, multi-function LCD
- Large capacity Lithium-Ion battery pack
- Dust-protection and waterjet resistance equivalent to IP55
- MIL-STD rugged construction
- 5W RF output power
- Operating time: 14 hours* (approx. with BP-232N battery pack)
* Tx: Rx: standby=5:5:90. Power save on. (at 20°C)
- Loud speaker audio with BTL amplifier and audio compander
- Built-in 2-Tone / 5-Tone / CTCSS / DTCS / MDC 1200 signaling (For analog FM mode)

Options



HM-170GP GPS Speaker-microphone HS-95 Behind-the-head Headset



VS-1SC PTT/VOX Unit UT-124R Man Down Unit



T Series
(10-Keypad Version)

S Series
(Simple Keypad Version)

VHF DIGITAL/ANALOG TRANSCEIVER

UHF DIGITAL/ANALOG TRANSCEIVER

IC-F5061D

IC-F6061D

Features

- Frequency coverage : 136-174MHz, 400-470MHz, 450-512MHz
- Number of channels : Max. 512 Ch./128 zones
- Compatibility with digital 6.25kHz NXDN™ protocol. Abundant digital functions
- 512 memory channels with 128 zones
- Large dot matrix display and multi-function LCD
- Detachable front panel with optional RMK-3 and separation cable
- D-Sub accessory connector and ignition sensing line
- 50W (VHF), 45W (UHF) RF output power
- IP54 dust-protection and splash resistance (Front panel only)
- MIL-STD rugged construction
- Front mounted loud speaker and audio compander
- Built-in 2-Tone / 5-Tone / CTCSS / DTCS / MDC 1200 signaling (For analog FM mode)

50W (VHF) **45W** (UHF)



Options



SM-25 Desktop Microphone HT-148T DTMF Microphone SP-30 External Speaker RMK-3 Separation Kit Separation Cables
OPC-609 (1.9m; 6.2ft)
OPC-607 (3m; 9.8ft)
OPC-726 (5m; 16.4ft)
OPC-608 (8m; 26.2ft)

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