

ICOM



# IDAS™

COM DIGITAL ADVANCED SYSTEM

Digital/Analog Migration  
IDAS™ Single-site Trunking

IDAS™ Multi-site Trunking  
IDAS™ Multi-site Conventional



IDAS is Icom's digital land mobile radio system using the NXDN™ common air interface. IDAS offers a complete system of handheld radios, mobile radios, repeaters, network interface/trunking controller, remote communicator and various accessories. IDAS is a complete digital solution that system owners and managers can grow into as their own time and budgets allow.

## IDAS™ SYSTEM FEATURES

### Spectrum efficiency

The IDAS system utilizes 6.25kHz narrowband FDMA technology. This system is not only spectrum efficient but meets the FCC 2011 deadline for narrow band compliance.

### IDAS™ Trunking

The IDAS trunking conforms with NXDN™ type-D trunking protocol. The IDAS trunking is a distributed system which does not use a dedicated control channel and it is an affordable digital trunking solution for high volume users.

### Audio quality and coverage

When compared to an analog FM signal, digital easily outperforms analog in audio clarity at the fringes of the communication range, thus providing more reliable audio over a greater total area, even if the coverage footprint is the same as analog FM.

### Flexible IP Network

The IDAS multi-site trunking/conventional system integrates IP network capability in the system and extends your communication coverage. The remote communicator, RC-FS10, creates an IP-based virtual radio on a PC and works as a simple dispatcher.

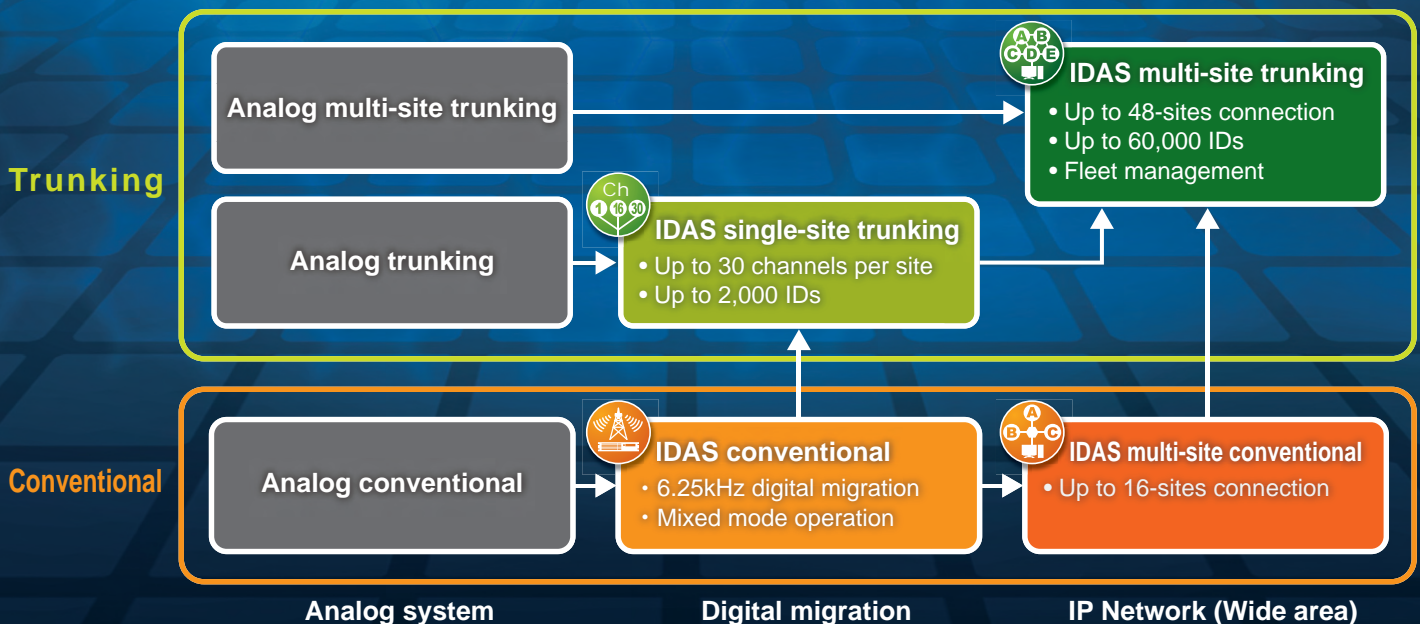
### Secure conversation

The digital modulation/demodulation makes it difficult to decode the IDAS digital signal by using the current scanner receivers at this time. The digital voice scrambler adds security on your conversation.

### Flexible migration path

The IDAS system allows you to scale migration to narrow band digital at your own pace and needs, while running your existing analog system. The IDAS radios can receive both analog and IDAS conventional mode signals on a single channel.

## IDAS™ MIGRATION PATH





# IDAS™ calling features

IDAS supports following calling features in digital mode.



## Digital/analog mixed mode

The IDAS radio can receive both analog mode and IDAS conventional mode signals on a single channel and automatically selects the received mode to reply to the received call, while the talk back timer remains. It's a smart way to grow into digital radio – at your own pace, as your budget and comfort allow.

## Individual/group call

The IDAS radio allows you to call individual or group users. The radio automatically sends own ID number when the PTT button is held down. The alias name or individual/group ID is displayed on the LCD\*1 while receiving a message allowing the radio user to identify who is calling.

## 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\*2 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.

## Status message and short data message

Up to 100 status conditions can be set and sent with voice call.

## IDAS function chart

	IC-F3161D IC-F4161D series	IC-F5061D IC-F6061D series	IC-F3101D IC-F4101D series	IC-F5121D IC-F6121D series	RC-FS10	IC-FR5000 IC-FR6000 Base mode
IDAS multi-site conventional	✓(Rev. 2.0 or later)	✓(Rev. 2.0 or later)	✓	✓	✓	✓
IDAS single-site trunking	✓(Rev. 2.4 or later)	✓(Rev. 2.4 or later)	✓	✓	—	—
IDAS multi-site trunking	✓(Rev. 4.0 or later)	✓(Rev. 4.0 or later)	—	—	Available later	—
PTT ID	✓	✓	TX only	✓	✓	✓
Individual List	✓(Max. 500 ID)	✓(Max. 500 ID)	—	✓(Max. 500 ID)	✓(Max. 500 ID)	✓(Max. 500 ID)
Talkgroup List	✓(Max. 500 ID)	✓(Max. 500 ID)	—	✓(Max. 500 ID)	✓(Max. 500 ID)	✓(Max. 500 ID)
Log for individual Call	✓	✓	—	✓	✓	—
Block Decode	✓	✓	✓	✓	✓	✓
RAN code	✓	✓	✓	✓	✓	✓
Status	✓	✓	TX only *1	✓	✓	✓
SDM (Short Data Message)	✓	✓	—	✓	✓	✓
Call Alert	✓	✓	RX only	✓	✓	✓
Radio Check	✓	✓	RX only	RX only	✓	✓
Stun/Revive/Kill	✓	✓	RX only	RX only	TX only	✓
Emergency	✓	✓	TX only	✓(No ACK TX)	✓	RX only
Remote Monitor	✓	✓	RX only	RX only	TX only	✓
Digital voice scrambler	✓	✓	✓	✓	✓	—
GPS	✓	✓	TX only	✓	RX only	—
GPS microphone	HM-170GP	—	HM-171GP	—	—	—

Also, the radio user can request another IDAS radio to send their status and receive it. Up to 100-character of short data message can be sent and received.\*1

## GPS capability

When used with the optional GPS speaker microphone for the handheld IDAS radio or an external GPS receiver for the mobile IDAS radio, the IDAS radio can transmit accurate position data for use with vehicle management applications.

## 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.

## 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.

## Other features

- Radio check function allows you to verify if another radio is within communication range
- Call log displays the received call history\*1
- Call alert function notifies the receiving party that a call is coming by using a beep sound and blinking icon
- RAN (Radio Access Number) code for digital code squelch
- Late entry: IDAS radio can decode the received ID and show group ID, unit ID or alias name on the display\*1 even when turned on during a conversation

\*1 Except IC-F3101D series (No-LCD) radio.

\*2 IC-F3161D series only. Optional UT-124R required.

\*1 Power on/off status only.  
TX: Transmit, RX: Receive

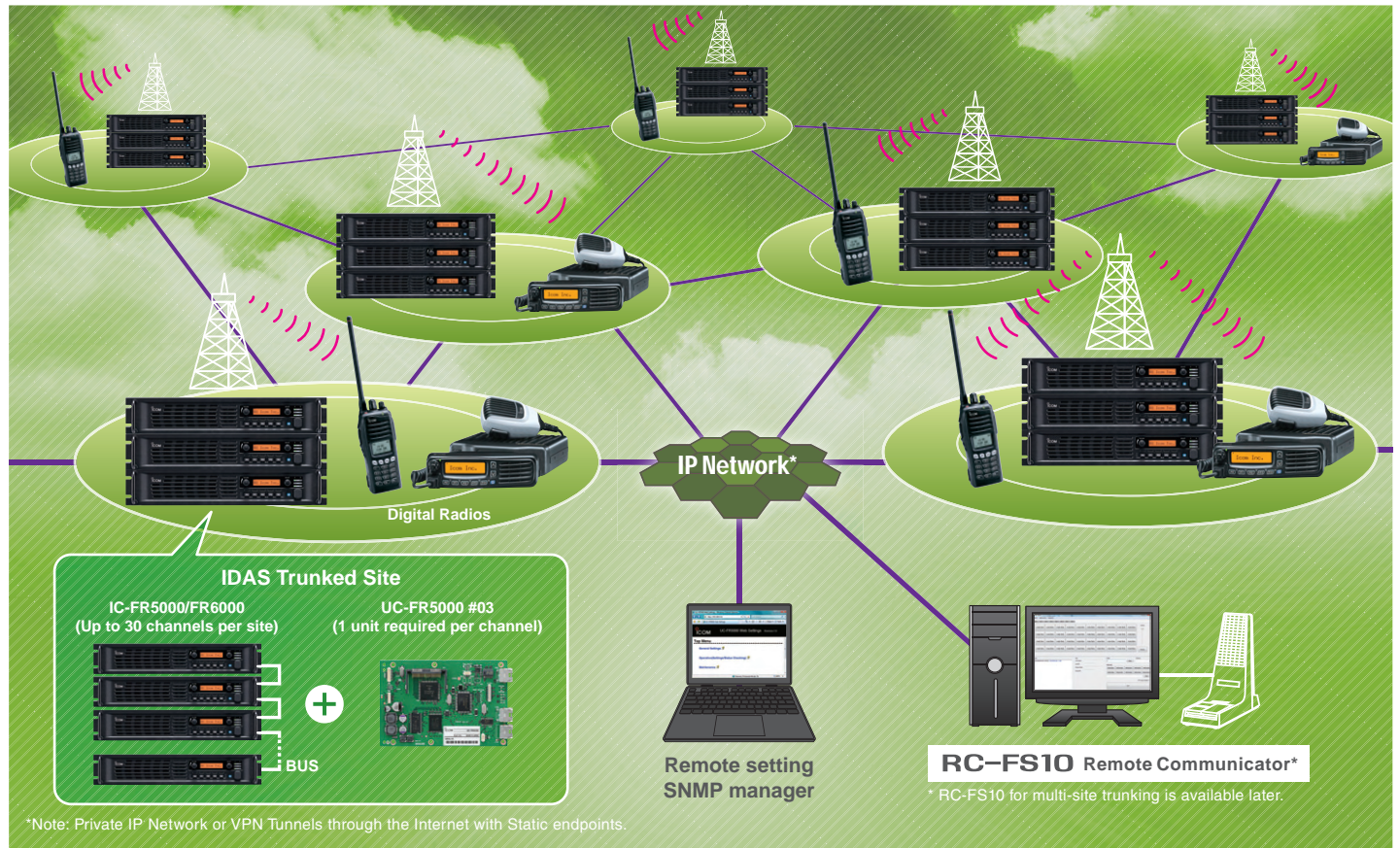




# IDAS™ multi-site trunking features

IDAS™ multi-site trunking for high volume, wide area communication

## Shares up to 48-sites × 30 channels for managing large fleets



### Distributed control channel

The IDAS trunking uses a distributed logic system which does not use a dedicated control channel. All trunked channels can be used for voice traffic channels to be shared more effectively with a large number of users.

### Up to 48 IDAS™ trunked sites connection over an IP network

The IDAS multi-site trunking can have up to 30 repeaters (RF units) per site and up to 48 trunked sites can be interlinked over the IP network. An IDAS terminal radio user can communicate with other IDAS terminal radio users working under the interlinked trunked sites.\*

\* Up to 16 pre-programmed sites can be down-linked simultaneously for a group call.

### Up to 60,000 individual ID and 60,000 group ID numbers

In the IDAS multi-site trunking, the combination of prefix ID and individual ID (or group ID) codes is used as a unique identifier. The IDAS multi-site trunking can have up to 30 prefix ID codes per system and up to 2,000 individual ID codes and 2,000 group ID codes per prefix ID. In total, up to 60,000 individual IDs and 60,000 group ID numbers can be used in a system.

### Automatic site roaming

When a user turns on a radio, or moves from site to another

site, the radio automatically starts the hunt scan and registers the own ID information to the repeater site. No user interaction required.

### Fleet management

The fleet management allows the system manager to control a user group in a fleet. Users can be assorted into up to 5,000 fleets and the system manager can enable or disable the use of the system for any fleet.

#### Fleet management example

Fleet (1-5000)	Alias name	Prefix ID (1-30)	Individual ID (1-2000)	Group ID (1-2000)	Status
1	Security A	1	1-10,31-400	1-20	Enable
2	Taxi B	1	11-30	21-25	Enable
3	Bus C	2	1-30	1-30	Disable
4	Truck D	2	1001-1005	51-53	Enable

The system manager can enable or disable the use of the system for any fleet. (Above example shows the Fleet 3 is disabled.)

### Integrated system for clean and simple installation

The IDAS multi-site trunking requires only the UC-FR5000 (#03) trunking controller which can be installed into the IC-FR5000 series repeater – no external server and no extra rack space is required.

## ESN authentication

IDAS multi-site trunking can reject to register an unauthorized terminal radio to the repeater site by using the electronic serial number (ESN) or individual ID of the radio.

## Over the air update

IDAS repeater sites can update terminal radios programmed content with new system information like added channels and new sites over the air without interrupting use of the radio.

## Call priorities

Terminal radios can listen to a call of higher priority even in the middle of lower priority on-going calls in the order below.  
(1) Emergency Call (2) Individual Call (3) Group Call

## SNMP system monitoring

When used with a third party SNMP manager software, the MIB (Management Information Base) of the trunked site can be remotely monitored. The system manager can efficiently manage the multi-site trunked sites over the network.

## RC-FS10 Remote Communicator for multi-site trunking\*

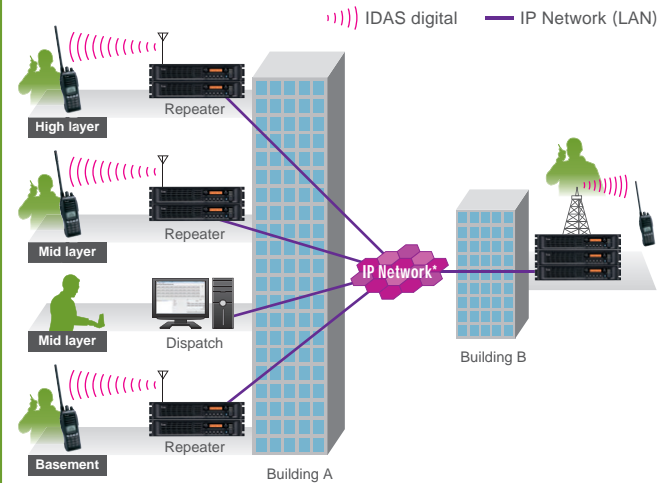
The remote communicator creates an IP-based virtual radio on a PC and works as a simple dispatch. IDAS communication features can be used with the remote communicator software.  
\* RC-FS10 remote communicator for multi-site trunking is available later.

## Other features

- Load-leveling for trunk-out channels
- Restriction control can limit use (TX) from the terminal radios in case there are too much traffic.

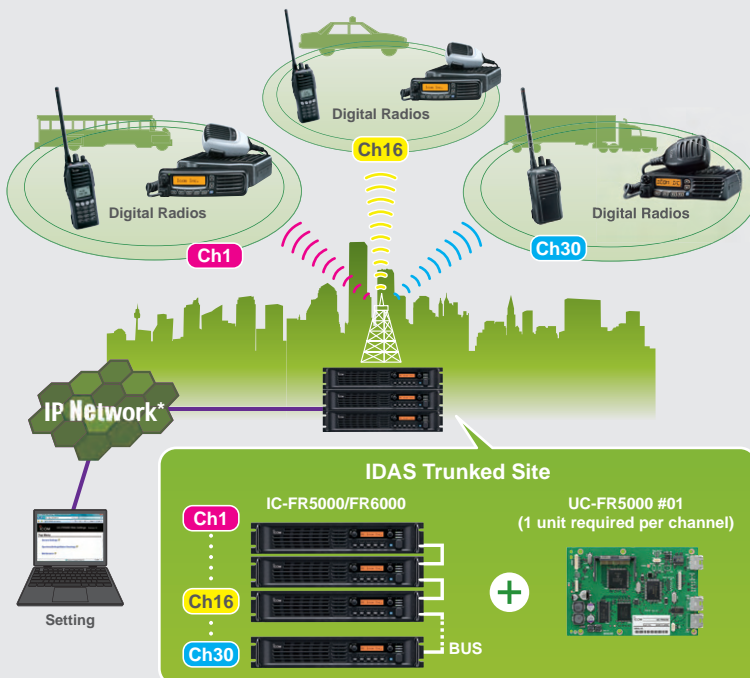
### Application example — Intra-building and inter-building solution

With an IDAS multi-site trunking, 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.



\*Note: Private IP Network or VPN Tunnels through the Internet with Static endpoints.

# Ch 1 16 30 IDAS™ single-site trunking



## Distributed control channel

### IDAS single-site trunking

The IDAS single-site trunking provides an affordable multi-channel digital radio system. Selective call, group call, status message and short data message can be used over the IDAS trunking.

### Up to 30 repeaters in a system

The IDAS single-site trunking can have up to 30 repeaters (RF units) per site. All of the connected repeaters can be configured from a web browser via IP network.

### Up to 2,000 IDs

The system has an ability to handle up to 2,000 individual ID codes and 2,000 group ID codes per home channel.

## Other features

- Unit ID authentication
- IC-F3101D, IC-F3161D, IC-F5121D and IC-F5061D series can be used as a IDAS trunking radio\*  
\* Single-site trunking only for IC-F3101D and IC-F5121D series.
- Area bit setting

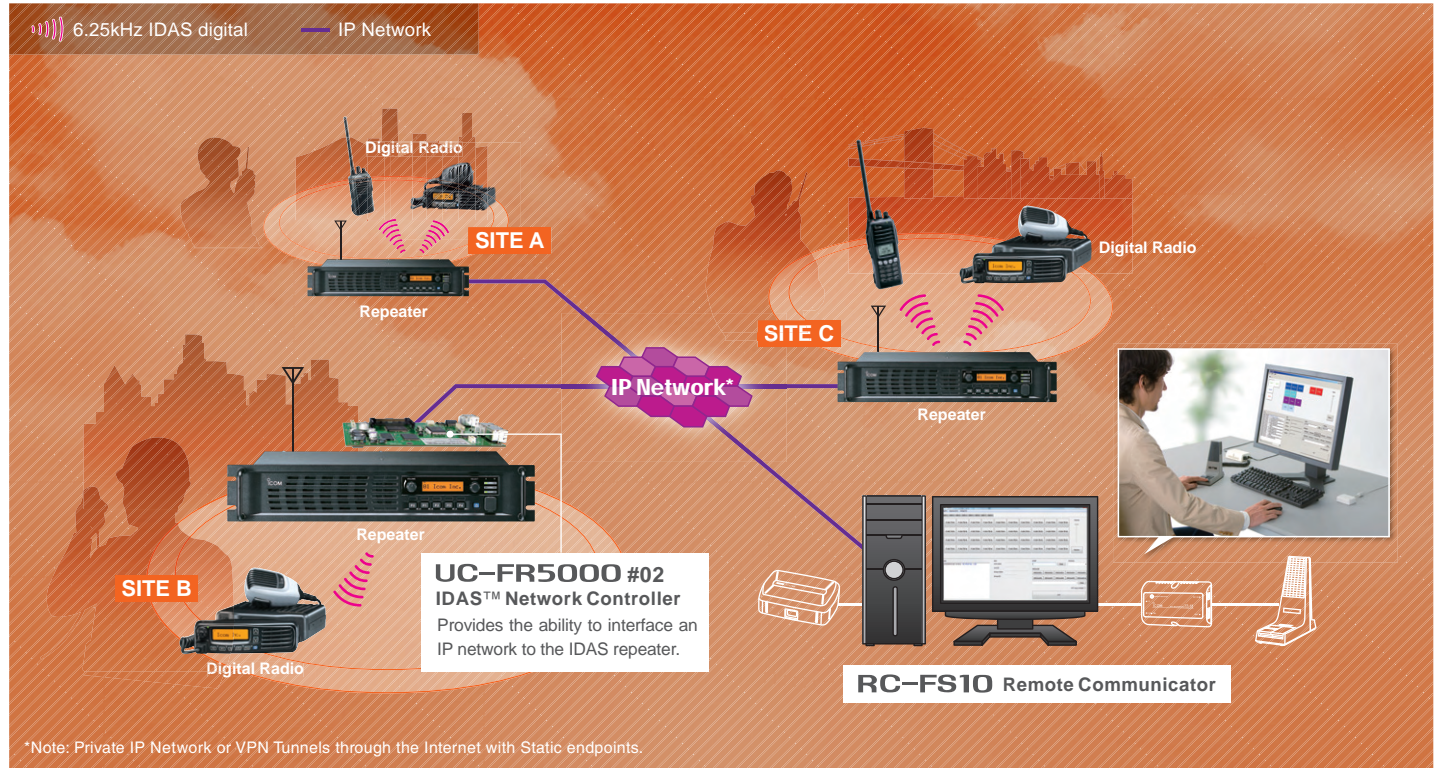
\*Note: Private IP Network or VPN Tunnels through the Internet with Static endpoints.



# IDAS™ multi-site conventional

## 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 within the reach of each repeater site 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

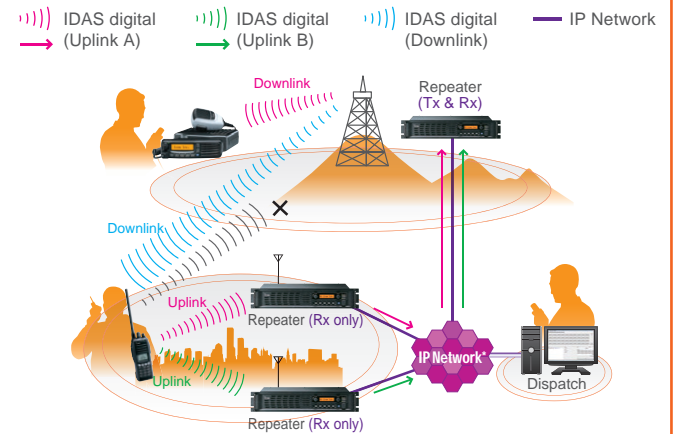
By using the AMBE+2™ vocoder compression, an IDAS multi-site conventional requires only about 13kbps bandwidth per one voice path. It means a DSL class line is sufficient for the IDAS multi-site conventional.

### 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.

### Application example — Receiver voting operation

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.



\*Note: Private IP Network or VPN Tunnels through the Internet with Static endpoints.

# IDAS™ products lineup

VHF DIGITAL/ANALOG REPEATER

UHF DIGITAL/ANALOG REPEATER

## IC-FR5000 IC-FR6000

50W



### Features

- 136-174, 400-470, 450-512, 350-400MHz coverage
- 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, DTCS tone and digital RAN code decode
- 50W output power at 50% duty operation, 25W at 100% duty operation\* (\* ambient temperature :25°C)
- "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  
UC-FR5000 #01 IDAS single-site trunking  
UC-FR5000 #02 (UC-FR5000+CF-FR5000MC)  
IDAS multi-site conventional  
UC-FR5000 #03 (UC-FR5000+CF-FR5000MT)  
IDAS multi-site trunking

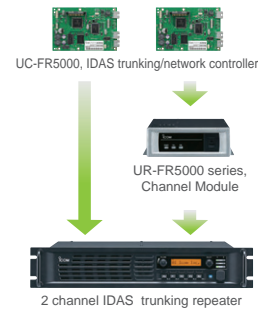


CF-FR5000MT  
CF Card  
IDAS multi-site trunking upgrade software for UC-FR5000 #01.  
\* CF-FR5000MT is already installed to UC-FR5000 #03.



CF-FR5000MC  
CF Card  
Multi-site conventional upgrade software for UC-FR5000 #01.  
CF-FR5000MC is already installed to UC-FR5000 #02.

### "2 channel in 1 box" configuration



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



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

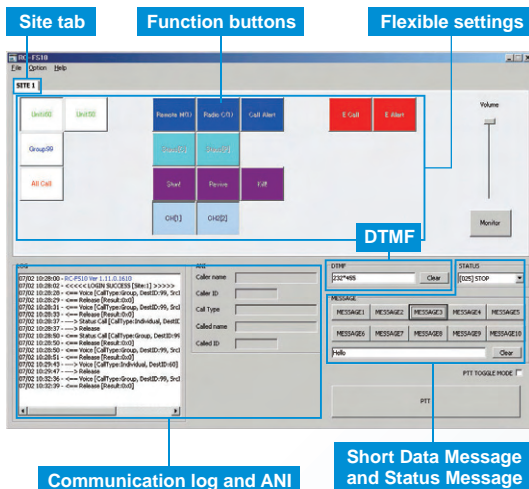
### REMOTE COMMUNICATOR

## RC-FS10

Multi-site conventional

Multi-site trunking

- The digital voice converter, CT-24, is a USB connection device that converts microphone audio to an IDAS compatible digital signal. The remote communicator software will not work if the CT-24 is not connected.
- HM-152 or SM-26 can be connected to a PC through the CT-23 PTT microphone adapter which converts the microphone audio and PTT signal to the 3.5mm stereo jack. AC adapter BC-147SA/SE is required separately for use with the CT-23.
- 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 for multi-site trunking is available later.



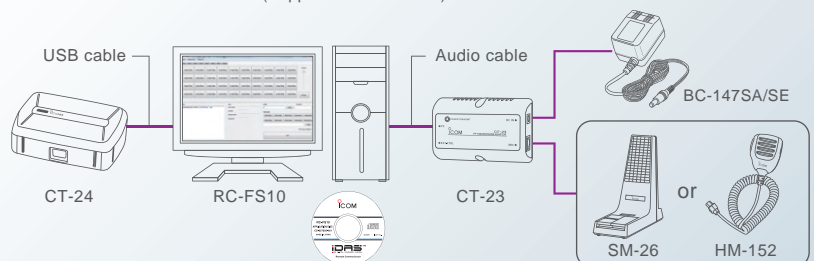
RC-FS10 Remote Communicator



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



CT-23 PTT Microphone Adapter



IDAS™ calling features

IDAS™ trunking features

IDAS™ multi-site conventional

IDAS™ products lineup

VHF HANDHELD TRANSCEIVER

**IC-F3161DT IC-F3161DS**

UHF HANDHELD TRANSCEIVER

**IC-F4161DT IC-F4161DS**

VHF MOBILE TRANSCEIVER

**IC-F5061D**

UHF MOBILE TRANSCEIVER

**IC-F6061D**

Multi-site conventional

Multi-site trunking

Single-site trunking



T Series  
(10-Keypad Version)



S Series  
(Simple Keypad Version)



### Features

- 136-174, 400-470, 450-512, 350-400MHz coverage
- 512 Channels/128 zones
- NXDN™ CAI-based IDAS
- IDAS multi-site trunking
- IDAS single-site trunking
- IDAS conventional & multi-site conventional
- Digital/analog mixed mode operation
- Built-in 2-Tone / 5-Tone / CTCSS / DTCS / MDC 1200 signaling (For analog FM mode)
- Dot matrix, multi-function LCD
- Detachable front panel with optional RMK-3 and separation cable (IC-F5061D series)
- D-Sub 25-pin accessory connector and ignition sensing line (IC-F5061D series)
- Optional GPS speaker-microphone, HM-170GP (IC-F3161D series)

VHF HANDHELD TRANSCEIVER

**IC-F3101D**

UHF HANDHELD TRANSCEIVER

**IC-F4101D**

VHF MOBILE TRANSCEIVER

**IC-F5121D**

UHF MOBILE TRANSCEIVER

**IC-F6121D**

Multi-site conventional

Single-site trunking



IC-F3101D



IC-F4101D



### Features

- 136-174, 400-470, 450-512, 350-400MHz coverage
- 16 Channels (IC-F3101D series), 128 Channels/8 zones (IC-F5121D series)
- NXDN™ CAI-based IDAS
- IDAS single-site trunking
- IDAS conventional & multi-site conventional
- Digital/analog mixed mode operation
- Built-in 2-Tone / 5-Tone / CTCSS / DTCS / MDC 1200 signaling (For analog FM mode)
- Channel announcement (IC-F3101D series)
- D-Sub 25-pin accessory connector with optional OPC-2078 (IC-F5121D series)
- Optional GPS speaker-microphone, HM-171GP (IC-F3101D series)

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IDAS™ calling features

IDAS™ trunking features

IDAS™ multi-site conventional

IDAS™ products lineup