

ICOM

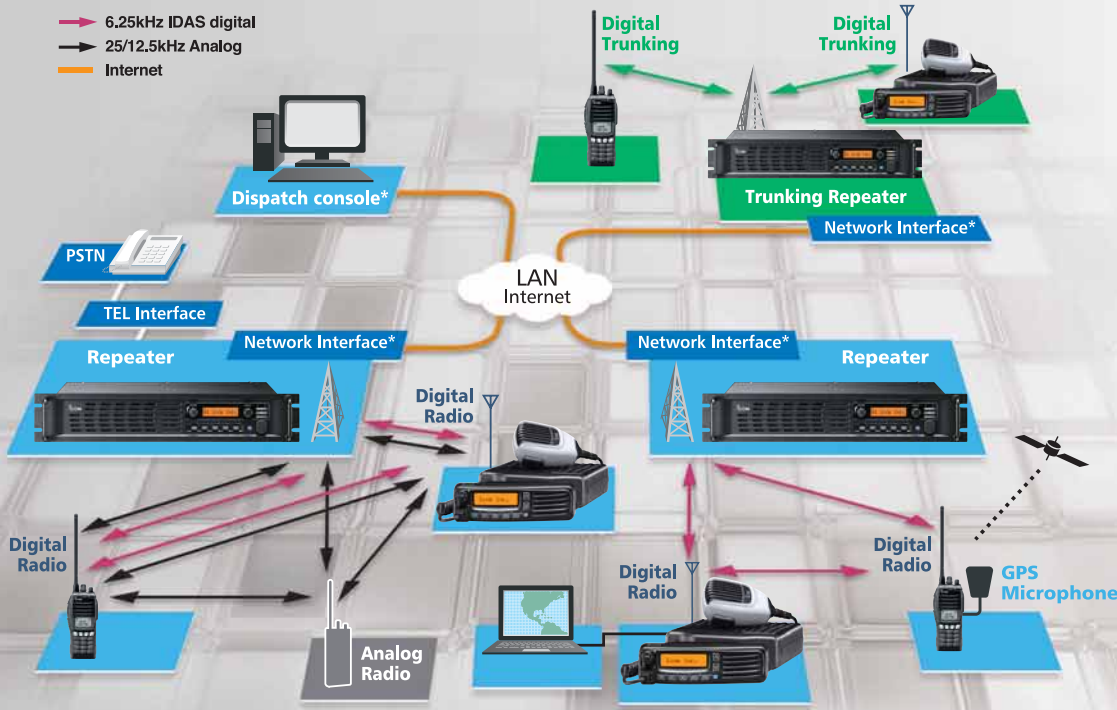
**IDAS**  
ICOM DIGITAL ADVANCED SYSTEM

ICOM DIGITAL  
ADVANCED SYSTEM



## The IDAS system bridges the gap between analog and digital

IDAS is Icom's digital land mobile radio system using the NXDN™ common air interface. It has useful calling features including selective calling, status message, radio stun/kill/revive and GPS position reporting, etc. The IDAS system is ideal for business and industry users who are thinking to migrate to a digital system and hence to future mandated narrow channel spacing.



The above is system image only.

### Five initial benefits of the IDAS system

#### Offers a flexible migration path from analog to digital

No need to replace an entire radio system. All products are dual mode (Analog/digital), so they have compatibility with current analog FM systems.

#### Double your channel capacity

The IDAS radios utilize 6.25kHz narrow channel spacing, which within a 12.5kHz channel, you can create two offset 6.25kHz channels, (i.e. doubling the channel efficiency and capacity.) You can use these channels, for example, in a one for voice and one for data communication configuration.

#### Improved communication security

The digital encryption adds extra security over analog voice scrambling.

#### Flexible application possibilities

Being digital, integration and convergence with IP technology as well as multiple data applications are possible.

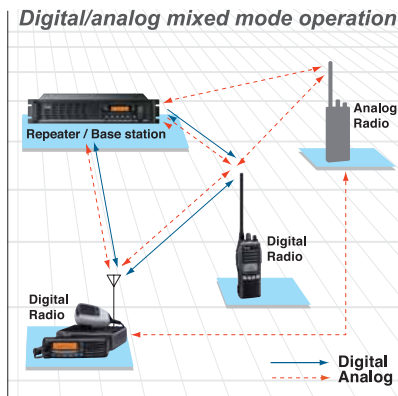
#### Improved audio quality

The IDAS system occupies only 6.25kHz spacing per channel. With the improved sensitivity of narrow band communications, increased communication coverage than comparable analog FM mode using 12.5kHz/25kHz channel spacing can be achieved. The IDAS radio uses the AMBE+2™ codec providing clear audio and simultaneous data communication.



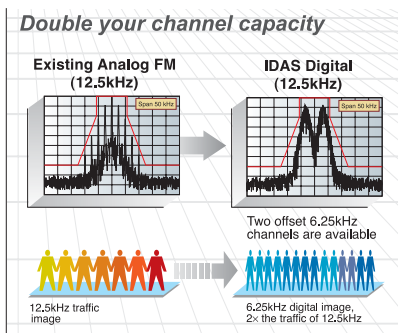
## Digital/analog mixed mode operation

The IDAS radio can receive both analog mode and digital mode signals on a single channel. You can partially introduce the IDAS radios, while using the existing analog radios in a system. The IDAS system allows you to scale migration to narrow band digital at your own pace and need, 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.



## Double your channel capacity

The IDAS system doubles the capacity of the current 12.5kHz channel allocation. Icom allows you to meet any narrow banding requirements today, and provides a solution to any future spectrum deficiency now.



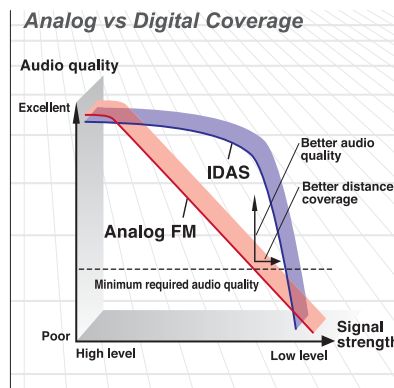
## Peer-to-peer communication with FDMA

The FDMA enables "peer to peer" communication between subscriber units in

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

## Improved audio quality and distance

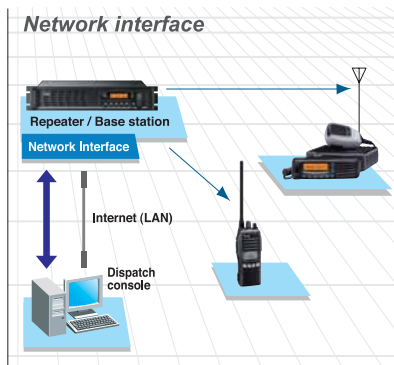
Better sensitivity and a lower noise floor at the narrower bandwidth plus the latest in vocoding technology mean you have crystal clear audio over a greater coverage area than analog FM as the narrower signal travels further at the same output power.



## Network interface\*

The IDAS repeater has a network interface\*1 and can be connected to a LAN or the Internet via Ethernet cable. Communication range is vastly extended by the Internet connection and eliminates the need for expensive leased lines. When connected to a PC via a LAN or the Internet, you can remotely maintain the repeater configuration from your PC.

\*1 Option (Available in the future)



## Digital trunking\*

The repeater will also have digital trunking capability in the near future. This will allow you further effective channel management by sharing a minimum of channels with a large number of users.

## Secure communication

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

## Selective call, group call and talk group ID

The IDAS system allows you to call individual or group users. The radio automatically sends its own ID number when holding the PTT button. The IDAS radio memorizes 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.

## Emergency call functions

When the emergency button is pushed, the emergency signal will be automatically sent to the dispatcher or another radio. The man down\*2 and the lone worker functions are available for automated emergency calls. (in digital and analog modes) The 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.

\*2 Optional UT-124R required.

## Status message

You can set up to 100 conditions such as "on duty", "at lunch" or "in route" and send your status to another unit or the dispatch. Also, you can request another unit to send their status and receive it.

## GPS position reporting

When used with the GPS speaker microphone, HM-170GP for the handheld radio or an external GPS receiver for the mobile radio, the IDAS radio can send the current position information to another unit or the dispatch. Simultaneous status message and GPS data can also be sent. When connected to a PC installed with a mapping software application, the dispatcher will know the real-time activity of the fleet members.

## Data communication

The IDAS radio allows you 4800bps\*<sup>3</sup> data communication. You can send a data

message without an external data modem. Future third party data applications will provide further features.

\*<sup>3</sup> Error correction, control data, etc, will reduce number of bits available for actual data communication.

## Radio stun, kill and revive

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

## RAN (Radio Access Number) for digital code squelch

The RAN code is the digital equivalent of CTCSS for accessing an IDAS repeater or digital code squelch function.

## Other features

- Radio check function allows you to verify if another radio is within the communication range
- Call log displays the received call history
- Call alert function allows you to send a beep sound instead of a voice call.

\* Some features are planned and released in the future.

VHF Digital Repeater

# IC-FR5000

UHF Digital Repeater

# IC-FR6000

## Features

- 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
- Normal and priority scan setting
- 50W output power at 50% duty operation, 25W at 100% duty operation
- Two RF modules can be installed in a unit for a "2Ch in 1box 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
- Audio compander
- Built-in inversion type voice scrambler and optional UT-109R/ UT-110R for higher security (For analog FM mode)
- CW ID transmitter

## Options



UR-FR5000 (VHF) /UR-FR6000 (UHF)  
Channel module units



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



VHF Digital Transceivers

UHF Digital Transceivers

IC-F3161DT IC-F4161DT  
IC-F3161DS IC-F4161DS



T Series  
(10-Keypad Version)

S Series  
(Simple Keypad Version)

Features

- Compatibility with NXDN™ protocol and 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
- VOX for hands-free operation with optional headsets
- Voting mode scanning
- Escalating alarm
- Loud speaker audio with BTL amplifier and audio compander
- Built-in 2-Tone / 5-Tone / CTCSS / DTCS signaling (For analog FM mode)
- Basic LTR™ mode operation (For analog FM mode)
- MDC 1200 compatible (For analog FM mode)
- Built-in inversion type voice scrambler and optional UT-109R / UT-110R for higher security (For analog FM mode)

Options



HM-170GP  
GPS speaker-microphone.  
Equivalent to IP57.



HS-95  
Behind-the-head headset  
with flexible boom microphone.



VS-1SC  
PTT/VOX unit. Required  
when using the headset.



UT-124R  
Man down unit. Automatically  
sends an emergency  
signal when the transceiver  
is left in a horizontal position  
for a preset time.

VHF Digital Transceiver

UHF Digital Transceiver

IC-F5061D IC-F6061D

Features

- Compatibility with NXDN™ protocol and 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 (Controller only)
- MIL-STD rugged construction
- Voting mode scanning
- Front mounted loud speaker and audio compander
- Built-in 2-Tone / 5-Tone / CTCSS / DTCS signaling (For analog FM mode)
- Built-in basic LTR™ mode operation (For analog FM mode)
- MDC 1200 compatible (For analog FM mode)
- Built-in inversion type voice scrambler and optional UT-109R / UT-110R for higher security (For analog FM mode)
- 8 DTMF autodialing memories and ANI function (For analog FM mode)
- Escalating alarm

Options



SM-25  
Desktop microphone



RMK-3  
Separation kit



OPC-607/OPC-608/OPC-609  
Separation cables.  
OPC-609 (1.9m; 6.2ft),  
OPC-607 (3m; 9.8ft),  
OPC-608 (8m; 26.2ft)





## Specifications

### VHF Digital Transceivers UHF Digital Transceivers

#### IC-F3161DT IC-F4161DT

#### IC-F3161DS IC-F4161DS

#### GENERAL

- Frequency range : 136–174MHz  
400–470MHz  
450–512MHz
- Number of channels : Max. 512 Ch./128 zones
- Channel spacing : 25.0/12.5/6.25kHz,  
30.0/15.0/7.5kHz
- Antenna impedance : 50Ω
- Power supply requirements : 7.2V DC (nominal)
- Current drain (at 7.2V DC; approx.):  
Tx High (5W) 1.5A/1.8A (VHF/UHF)  
Rx AF max. 600mA  
Stand-by 100mA  
(With UT-126H) 150mA/140mA (VHF/UHF)
- Operating Temp. range : –30°C to +60°C  
; –22°F to +140°F
- Dimensions (W×H×D) : 53×136×38.5 mm  
(projections not included) ; 2<sup>9</sup>/<sub>32</sub>×5<sup>11</sup>/<sub>32</sub>×1<sup>17</sup>/<sub>32</sub> in  
(with BP-232N)
- Weight (with BP-232N) : 340g; 12.0oz (approx.)

#### TRANSMITTER

- Output power : 5.0W (VHF/UHF)
- Frequency error : ±1.0ppm
- Spurious emissions : 75dB typ.
- FM hum and noise : 46/40dB typ. (Wide/Narrow)
- Audio harmonic distortion : 3% typ. (40% deviation)
- External MIC connector : 9-pin multi connector/2.2kΩ

#### RECEIVER

- Intermediate frequencies : 46.35MHz/450kHz (1st/2nd)
- Sensitivity FM (W, N) : 0.25μV typ. (at 12dB SINAD)  
Digital : 0.20μV typ. (at 5% BER)
- Spurious response : 70dB min. (Wide/narrow)
- Intermodulation : 74dB typ. (Wide/narrow)
- Audio output power : 0.5W typical at 5% distortion  
with an 8Ω load
- External SP connector : 9-pin multi connector/8Ω

All stated specifications are subject to change without notice or obligation.  
Measurements made in accordance with TIA-603 (Analog FM).

### VHF Digital Transceiver UHF Digital Transceiver

#### IC-F5061D IC-F6061D

#### GENERAL

- Frequency coverage : 136–174MHz  
400–470MHz  
450–512MHz
- Number of channels : Max. 512 Ch./128 zones
- Channel spacing : 25.0/12.5/6.25kHz,  
30.0/15.0/7.5kHz
- Antenna impedance : 50Ω (SO-239)
- Power supply requirements : 13.6V DC
- Current drain (approx.) :  
Tx 50W/45W 14.0A  
Rx Max. audio 1.2A  
Standby 300mA
- Operating Temp. range : –30°C to +60°C  
; –22°F to +140°F
- Dimensions (W×H×D) : 160×45×150 mm  
; 6<sup>3</sup>/<sub>16</sub>×1<sup>29</sup>/<sub>32</sub>×5<sup>29</sup>/<sub>32</sub> in
- Weight : 1310g; 2.9lb (approx.)

#### TRANSMITTER

- Output power : 50W (VHF), 45W (UHF)
- Frequency error : ±1.0ppm
- Spurious emissions : 75dB typ.
- FM hum and noise : 46/40dB typ. (Wide/Narrow)
- Audio harmonic distortion : 3% typ. (40% deviation)

#### RECEIVER

- Intermediate frequencies : 46.35MHz/450kHz (1st/2nd)
- Sensitivity FM (W, N) : 0.25μV typ. (at 12dB SINAD)  
Digital : 0.20μV typ. (at 5% BER)
- Spurious response : 90dB typ. (Wide/narrow)
- Intermodulation : 77dB typ. (Wide/narrow)
- Audio output power : 4.0W typ. at 5% distortion  
with a 4Ω load

### VHF Digital Repeater UHF Digital Repeater

#### IC-FR5000 IC-FR6000

#### GENERAL

- Frequency coverage : 136–174MHz  
400–470MHz  
450–520MHz
- Number of channels : Max. 32 channels
- Channel spacing : 25.0/12.5/6.25kHz,  
30.0/15.0/7.5kHz
- Antenna impedance : 50Ω (Type-N × 2)
- Power supply requirements : 13.6V DC
- Current drain (approx.) :  
Tx 50W 15.0A  
Rx Max. audio 1.9A  
Standby 500mA  
400mA (FAN off)
- Operating Temp. range : –30°C to +60°C  
; –22°F to +140°F
- Dimensions (W×H×D) : 483×88×260 mm  
; 19<sup>1</sup>/<sub>32</sub>×3<sup>15</sup>/<sub>32</sub>×10<sup>1</sup>/<sub>4</sub> in
- Weight : 5.6kg; 12.3lb (approx.)

#### TRANSMITTER

- Output power : 50W (adjustable to 5W)
- Frequency error : ±0.5ppm
- Spurious emissions : 80dB typ.
- FM hum and noise : 50/45dB typ. (Wide/Narrow)
- Audio harmonic distortion : 1% typ. (40% deviation)

#### RECEIVER

- Intermediate frequencies : 46.35MHz/450kHz (1st/2nd)
- Sensitivity FM (W, N) : 0.30μV typ. (at 12dB SINAD)  
Digital : 0.25μV typ. (at 5% BER)
- Spurious response : 90dB typ. (Wide/Narrow)
- Intermodulation : 78dB typ. (Wide/Narrow)
- Audio output power : 4.0W typ. at 5% distortion  
with a 4Ω load

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