ICOM NEW IDAS SERIES



ÎCOM

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Icom IC-F3400D

icom

h-01

Icom IC-F5400D



6.25 kHz FDMA **True RF Efficiency**

ICOM

IC-F5400r

LOOK SMART, WORK SMART

99

ÎCOM

IDAS Radio Systems Advantages

NXDN/dPMR Protocol Choice

The IDAS digital radio system has two protocol choices, NXDN and dPMR. Both protocols are an open digital radio standards using 6.25 kHz FDMA narrowband technology.

With this flexible choice, the IDAS radio system allows for interop-

erability with other manufactures equipment for seamless supply/ replacement of existing NXDN and/or dPMR systems. And naturally these FDMA based protocols are a perfect match, when migrating an analog system to digital.

(****) System Scalability According to Communication Traffic and Coverage

Depending on communication traffic and coverage, the IDAS radio system can grow up to multi-site trunking from single site conventional to match your communication needs.

Trunking (NXDN Type-C, Type-D or dPMR Mode 3)

IDAS trunking can bind multiple channels and effectively share the limited number of channels with a large number of users.

* Licence key (ISL-UGMTR for NXDN Type-D or ISL-UGMD3 for dPMR Mode 3) required. Type-C trunking upgrade key will be available later.

Multi-site connectivity

Connect two or more repeater sites over the IP network and expand the communication coverage. The multi-site connectivity can be applied to both conventional and trunking modes.

Voting scan

When used in a multi-site conventional system, the IDAS radio searches an optimal repeater site and automatically selects the repeater. Useful for users moving over wide area.



Licence Upgrade / System Migration for Initial Cost Saving

Mix Mode Operation

(NXDN conventional or dPMR Mode 1/2)

The IDAS radio can receive both analog and digital mode signals on a channel and can reply either in analog or digital mode according to the received mode. You can partially introduce the IDAS radios, while still using the existing analog radios in a system.

Licence Key Upgrade

Necessary functions such as trunking capability, channel capacity, AES encryption and other functions can be added with licence key options. The IDAS radios can be upgraded and customised to meet your specific needs.



Trunking capability
AES encryption
Channel capacity

Programming





System / Radio Unit Management Efficiency

Over-the-Air-Programming (OTAP)

The OTAP function allows you to distribute a radio configuration file over-the-air to update the IDAS radios. Save considerable time with no need to return the radio for reprogramming.

* Licence key (ISL-OTAPML) is required. The OTAP function will be available with the future firmware update.

System Management Software, RS-MGR1/RS-MGR2 (NXDN Type-D trunking and dPMR Mode 3)

The system management software remotely monitors multiple repeater conditions and traffic statistics over the IP network. If it detects abnormal conditions, the software can send an e-mail alert to the system administrator.

- Interopearability with Various System

RoIP Gateway, VE-PG3

(NXDN conventional, Type-D trunking, dPMR Mode 2 and Mode 3*)

With a VE-PG3 RoIP gateway, the IDAS radio system can interconnect with an IP phone, analog phone, IP advanced radio system and analog radio as well as NXDN and dPMR protocols.

* The RoIP gateway for dPMR Mode 3 will be released in the future.



Icom's dPMR Mode 3 system server can export an SCF which includes common system parameters and the IDAS radio can import the SCF for further programming efficiency.







Why 6.25 kHz FDMA Narrowband?

True Narrowband: Reliable Communications for Half the Spectrum!

6.25 kHz FDMA allows you to double the capacity of your valued spectrum. The choice of two independent 6.25 kHz in 12.5 kHz, or a standalone 6.25 kHz channel is yours. This double capacity/independent channel flexibility and efficiency is only possible with 6.25 kHz FDMA.

Communications Reliability When You Most Need It

No need to allow for TDMA time slot synchronization. Instant communications in emergencies and critical situations. FDMA is the fail safe mode of choice in land mobile radio. Nothing else compares.

FDMA: Proven History Like No Other Radio Technology

For over 50 years, FDMA has been the backbone of two-way radio communication. Generational enhancements have cul-

minated in the realization of 6.25 kHz FDMA digital protocols that are literally ahead of their time, while keeping backward compatibility with analog FM.

6.25 kHz Channels: the Current and Future Trend

6.25 kHz channel plans and standards are used in North America, Europe, Japan, Oceania, and the list goes on. 6.25 kHz provides an answer to the worldwide problem of spectrum shortage and efficient use.

Communications Reliability When You Most Need It

Narrower bandwidth FDMA provides technical excellence in sensitivity, interference resistance, increased coverage, audio quality, spectrum efficiency and more. Why look at anything else?

IDAS™ Radio Advantages Takes You To a New Level of "Smart"

Small, Slim and Smart

The compact body is made possible from new engineering techniques including the use of a custom SoC (System-on-a-Chip) and flat sheet keypad. The slim dimensions are also supplemented with reduced power consumption, allowing for a thinner battery pack.

IP68 Waterproof and Dust-tight (Handheld)

The IDAS handheld radio is built durable to endure 1 m depth water for 1 hour and dust-tight protection. The radio also passes MIL-STD-810 specifications.

Operating Convenience

Over-the-Air-Alias (OAA)

The OAA function sends own alias name with a call to receivers ers and automatically shows the callers name on the receivers display. It eliminates the need to program the call list to each radio, when a new radio is entered or existing radio is passed to another person.

Hands-Free Operation with Bluetooth Headset

The built-in Bluetooth module provides remote operation and hands-free communication paired with a third-party headset*.

* Available functions depend on paired Bluetooth devices. Icom does not guarantee all functions and performance of the Bluetooth headset.

Digital Voice Recording

The IDAS radio can record incoming and outgoing calls, and the user can check recorded communications just in case. When a 32 GB microSD* card is used, a Max. 500 hours of recording is possible.

* A microSD card is required separately.

Vibration Alert (Handheld)

When a call is received, the IDAS radio vibrates powerfully enough for the incoming call to be felt through heavy clothing.

Multiple Languages

Functions and menu items can be programmed in a language other than English. Cyrillic and Simplified Chinese fonts are supported.

- Voice announcement
- Message of up to 100 characters
 Status message
 Low battery beep
- Normal, priority and voting scan
 Internal clock

Audio Quality

Active Noise Canceller

The active noise canceller assists in providing clear audio, while suppressing background noise. The function improves both your transmitted voice and incoming call. The radio user does not need to shout into the microphone even under extremely noisy environments.

Colour LCD and improved User Interface

A high-resolution colour LCD and new user interface is adopted. The colour LCD enhances the visibility both in natural and indoor lighting, with the night mode LCD setting as an alternative for use in night time or low lighting conditions. Functions can be easily set by following easy to understand icons and menu items.





AES/DES Encryption with Over-the-Air-Rekeying (OTAR)

For digital communication security, the IDAS radio provides basic 4-key DES encryption as standard and can be upgraded to 64-key DES with the optional UT-134. When used with the optional UT-134 and licence key (ISL-AKAES), the AES encryption with the OTAR function are available. The OTAR function* allows updating of encryption keys over the radio channel.

 * The OTAR function will be available with future firmware upgrade.

Emergency Call by Man Down and Motion/ Stationary Detection (Handheld)

To remotely monitor worker safety, the IDAS handheld radio has four emergency related functions: motion detection, stationary detection, man down and lone worker functions. If one of these functions are activated, the radio automatically sends an emergency signal.

Power OFF Emergency (Mobile)

The Power OFF emergency sends an emergency signal even though the radio appears to be powered OFF.

Radio Kill, Stun and Revive

If a radio a lost or stolen, the radio kill function disables the radio over the air to reduce a security threat. When the radio Stun command is received, all functions will be temporarily locked out until a Revive command is received or the user password is entered.

- Remote monitor (NXDN) /Ambience listening (dPMR) functions
- Power ON Password Surveillance function
- Tactical group function for temporarily regroup of user groups

Audio Equalizer Effect

The audio equalizer allows you to tailor the audio tone to optimise voice quality in various use environments.

- 14-pin ACC connector with BTL amplifier output (handheld radio only)
- AquaQuake[™] draining function clears water away from the speaker grill (handheld radio only)
- Audio compander
 Beat cancel



Data Communication

Transparent Data

The IDAS radio can be used as a transparent data modem which transmits various data up to 3600 bps over the radio channel. The NXDN 12.5 kHz digital mode doubles the data speed.

Built-in GPS Receiver

The position data can be sent with voice call or status call and can be used with a thir-party AVL (Automatic Vehicle Location) system. The GPS log functions logs user position data at regular intervals. * An optional GPS antenna UX-241 is required for mobile radios.

	IC-F3400DT/DS/D IC-F5400D/DS NXDN Version	IC-F3400DPT/DPS/DP IC-F5400DP/DPS dPMR Version	
Operating type			
NXDN Single-site Conventional	Yes	N/A	
NXDN Multi-site Conventional	Yes	N/A	
NXDN Type-D trunking (Single/multi)	Option (ISL-UGMTR)	N/A	
NXDN Type-C trunking (Single/multi)	Option*1	N/A	
12.5 kHz digital mode	Yes	N/A	
dPMR Mode 1/2 conventional	N/A	Yes	
dPMR Mode 3 trunking	N/A	Option (ISL-UGMD3)	
Analog mode	Yes	Yes	
Analog/Digital mix mode	Yes	Yes	
Digital functions			
OTAP (Over-the-Air Programming)	Option ^{*1} (ISL-OTAPML)	Option ^{*1} (ISL-OTAPML)	
OAA (Over-the-Air Alias)	Yes	Yes	
Transparent data mode	Yes	Yes	
Status message	Yes	Yes	
Short data message	Yes	Yes	
Radio Stun/Revive/Kill	Yes	Yes	
Remote monitor/Ambience listening	Yes	Yes	
Analog functions			
2-Tone/5-Tone encoder/decoder	Yes	Yes	
CTCSS/DTCS encoder/decoder	Yes	Yes	
DTMF autodial/decoder	Yes	Yes	
BIIS 1200 (MSK)	N/A	Yes	
MDC functions	Yes	N/A	
LTR trunking	Yes	N/A	
Security			
DES encryption (4-key)	Yes	Yes	
DES encryption (64-key)	Option (UT-134)	Option (UT-134)	
AES encryption	Option (UT-134 + ISL-AKAES)	Option (UT-134 + ISL-AKAES)	
OTAR (Over-the-Air Rekeying)	Option*1	Option*1	
Digital voice scrambler	Yes	Yes	
Analog voice scrambler (Inversion)	Yes	Yes	

Multiple Controller Configurations

USB Port for PC Connection

The IDAS radio can be connected to a PC through a USB port for programming radios and accessing the installed microSD card in mass storage mode.

- Horn, dimmer and external PTT programmable through D-SUB 25-pin connector for mobile radio
- Serial communication interface with Bluetooth® for wireless connection
- · Radio programming through a microSD card

	IC-F3400DT/DS/D IC-F5400D/DS NXDN Version	IC-F3400DPT/DPS/DP IC-F5400DP/DPS dPMR Version	
Scan functions			
Priority scan	Yes	Yes	
Voting scan	Yes	Yes	
Emergency functions			
Lone worker function	Yes	Yes	
Man down function	Yes (For handheld)	Yes (For handheld)	
Motion/Stationary detection	Yes (For handheld)	Yes (For handheld)	
Power OFF emergency	Yes (For mobile)	Yes (For mobile)	
Voice/Audio functions			
Voice announcement	Yes	Yes	
VOX function	Yes	Yes	
Voice recording/playback	Yes	Yes	
Active noise canceller	Yes	Yes	
TX/RX Audio equalizer	Yes	Yes	
Hardwares			
GPS receiver	Yes*2	Yes*2	
Vibration alert	Yes (For handheld)	Yes (For handheld)	
Bluetooth®	Yes Yes		
microSD memory card slot	Yes	Yes	
USB connector	Yes	Yes	
Dual head controller	Option (for IC-F5400D/F6400D)	Option (for IC-F5400DP/F6400DP)	
COMMANDMIC™	Option (for IC-F5400D/F6400D)	Option (for IC-F5400DP/F6400DP)	

*1 Type-C trunking upgrade key will be available later. OTAP and OTAR functions will be available with

future firmware upgrade. *2 Optional GPS antenna UX-241 is required separately for mobile radios.



A detached controller head with the separated RF unit is a simple to install in almost any vehicle.

Suitable for double cab vehicles. Install the controller head to front and rear seats respectively. * Detached Controller, Dual head and COMMANDMIC configurations are for IC-F5400D/IC-F6400D/F5400DP/IC-F6400DP only.

The COMMANDMIC is handy for installing a work platform on the rear part of the vehicle.











Commandmic[™]



IC-F5400D

IC-F5400DS

IC-F3400DT



VHF DIGITAL TRANSCEIVERS (dPMR Version)



Handheld Radios

Products Lineup

Handheld Radios Options

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





SPECIFICATIONS

	IC-F3400DT/DS/D NXDN Version	IC-F4400DT/DS/D NXDN Version	IC-F5400DT/DS/D NXDN Version	IC-F6400DT/DS/D NXDN Version	
	IC-F3400DPT/DPS/DP dPMR Version	IC-F4400DPT/DPS/DP dPMR Version	IC-F5400DPT/DPS/DP dPMR Version	IC-F6400DPT/DPS/DP dPMR Version	
GENERAL					
Frequency coverage (NXDN) (* Depending on version)	136–174 MHz	380–470 MHz, 450–512 MHz	136–174 MHz	380–470 MHz, 450–512 MHz	
Frequency coverage (dPMR)	136–174 MHz	380–470 MHz	136–174 MHz	380–470 MHz	
Number of channels	1024 channe 4000 channels /12 32 channels /2 zones	ls /128 zones 8 zones (Option*1) s (Non-display type)*2	1024 channels /128 zones 4000 channels /128 zones (Option*1) 99 channels (7 Segment display type)*3		
Type of emission (NXDN) (* Depending on version)	16K0F3E*4, 14K0F3E, 11K0F3E, 8K50F3E ,8K30F1E/D, 4K00F1E/D		16K0F3E*4, 14K0F3E, 11K0F3E, 8K50F3E,8K30F1E/D, 4K00F1E/D		
Type of emission (dPMR) (* Depending on version)	16K0F3E*4, 14K0F3E, 8K50F3E, 4K00F1E/D		16K0F3E ^{*4} , 14K0F3E, 8K50F3E, 4K00F1E/D		
Power supply requirement	7.5 V DC	C nominal	13.6 V DC nominal (USA/EX	P), 13.2 V DC nominal (EUR)	
Current Tx High	1.5 A	1.8 A	9.0 A typ. (at 50 W) 5.0 A typ. (at 25 W)	8.8 A typ. (at 45 W) 5.0 A typ. (at 25 W)	
(approx.) Rx Max. audio/ Standby	450 mA (Internal SP)/140 mA		0.9 A typ. (Internal SP)/ 370 mA typ.	0.8 A typ. (Internal SP)/ 270 mA typ.	
Antenna impedance	50	Ω	50 Ω		
Operating temperature range	-30 °C to +60 °C; -22 °F to	+140 °F (Radio specifications)	-30 °C to +60 °C;	–22 °F to +140 °F	
Dimensions (W × H × D; Projections not included)	53.6 × 123.5 2.1 × 4.9 × 1.2	5 × 29.3 mm; in (With BP-283)	174 × 55 × 150 mm; 6.9 × 2.2 × 5.9 in		
Weight (approx.)	180 g; 6.4 o 305 g; 10.8 oz (BP-283, MB-133, FA-S81VS)	z (main unit) 300 g; 10.6 oz (BP-283, MB-133, FA-S81US)	oz 1.5 kg; 3.3 lb A-S81US)		
TRANSMITTER					
Output power (Hi, L2, L1) (Depending on version)	5 W, 2 W, 1 W		50 W, 25 W, 5 W 25 W, 10 W, 5.8 W	45 W, 25 W, 4.5 W 25 W, 10 W, 5.8 W	
Frequency stability	±1.0	ppm	±1.0 ppm		
Spurious USA	80 d	80 dB typ.		90 dB typ. 80 dB typ.	
emissions EUR	0.25 µW (≤ 1 GHz)), 1.0 μW (> 1 GHz)	0.25 µW (≤ 1 GHz)), 1.0 μW (> 1 GHz)	
FM Hum and noise (W/N)	55/55 dB typ.	60/59 dB typ.	54/54 dB typ.		
Audio harmonic distortion (AF 1kHz 40% deviation)	0.5% typ.	0.4% typ.	0.5% typ.		
FSK error	1% typ. (DN/DVN)	1% typ. (DN/DVN)		
RECEIVER					
12 dB SINAD	0.22 µV typ.	0.23 µV typ.	0.22 µV typ.	0.25 µV typ.	
Sensitivity 20 dB SINAD (W/N) 5% BER (DVN/DN)	−5.5/−2.5 dBµV emf typ. −5.5/−4.0 dBµV emf typ.	-5.0/-2.0 dBµV emf typ. -4.0/-4.0 dBµV emf typ.	-4.0/-4.0 d -6.0/-5.0 d	BμV emf typ. BμV emf typ.	
Adjacent channel (W/N) (DVN/DN)	80/76 dB typ. 71/70 dB typ.	75/72 dB typ. 66/66 dB typ.	75/72 dB typ. 65/68 dB typ.		
Spurious response rejection	81 dB typ.	76 dB typ.	85 dB typ.		
Intermodulation USA rejection DVN/DN	75 dB typ. 67 dB typ. 72 dBμV emf typ./ –41 dBm typ.	74 dB typ. 68 dB typ. 73 dBμV emf typ./ –41 dBm typ.	78 dB typ. 70 dB typ. 70/70 dB typ.	75 dB typ. 70 dB typ. 70/70 dB typ.	
Audio output power Internal SP (With 12 Ω load) External SP (With 8 Ω load)	; 12 Ω load) 800 mW typ. (at 5% distortion) h 8 Ω load) 1000 mW typ. (at 5% distortion)		4.0 W typ. (at 5% distortion) 4.0 W typ. (at 5% distortion)		

Measurements made in accordance with TIA-603, EN300 086, EN301 166, EN300 113.

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

Optional licence key (ISL-CHEX) required.

⁴⁴ 25 kHz bandwidth is no longer available for FCC Part 90 licencees for USA versions.

DVN: Digital Very Narrow (6.25 kHz), DN: Digital Narrow (12.5 kHz). DN is for NXDN version only.

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Supplied accessories for handheld radios: (May differ depending on version) • Battery pack, BP-283 • Belt clip, MB-133

Applicable U.S. Military Specifications & IP Rating

Method

500.5

501.5

502.5

503.5

505.5

506.5

507.5

509.5

510.5

512.5

514 6

516.6

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

IC-F3400D/DP series IP68 (Dust-tight and waterproof protection) IC-F5400D/DP series IP55 (Dust-protection and jet water resistance)

Standard

Low Pressure

High Temperature

Low Temperature

Solar Radiation

Humidity Salt Fog

Dust Blowing

Immersion*

Vibration

Shock

Temperature Shock

Rain Blowing/Drip

* Handheld radios only

Ingress Protection Standard

MIL 810G

Procedure

I, II

LII

I. II

I

I

I, III

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I

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I. IV

Supplied accessories for mobile radios:

(May differ depending on version)

Hand microphone, HM-220 or HM-221
 OC power cable • Mounting bracket kit

Microphone hanger

6.25 kHz FDMA True RF Efficiency

Check our web site to know more about 6.25 kHz FDMA narrow band. www.icom.co.jp/world/fdma/