P25

ICOM F1721D/F1821D SERIES

YOUR ANALOG TO DIGITAL CONVERSION

analog \ digital

P25

FEATURE	*FUNCTION*	*BENEFIT*
GENERAL		
Two Versions	The IC-F1721D/F1821D series comes in 2 styles: the simple version and the 10-key version	A choice for simple operation or use 10 key for easy select call and channel selection. The 10 key includes a speaker while the simple version has a front facing speaker.
Rugged Construction	Heavy "heat sink" and die cast aluminum construction	Use in a variety of environments and heavy use.
256 Channels and 32 Zones	Large channel/zone capacity	Allows maximum flexibility in setting up the radio for "interoperable" environments. Plenty of channel capacity. Perfect for applications requiring a multiple system design.
Alphanumeric Zone Tagging	Custom label each zone with up to 12 alpha and/or numeric characters for user display	Enables quick, easy identification of programmed zones.
Alphanumeric Memory Tagging	Up to 12 alpha and/or numeric tags, or names, can be assigned to each of the 256 channels	Enables quick, easy identification of programmed memory channels and operating modes.
Dot Matrix, Multi-function LCD	Display up to 24 characters with the option of 1 or line display	Makes this versatile radio easy to read and understand. Two lines for maximuminformation, 1 line for large, easy to see display.
Keypad and LCD Backlighting	Display/keypad back lights – manual and automatic	Illuminates display and function keys for ease of use in low light conditions.
Five Programmable Keys (simple version) **or 7 Programmable Keys** (10-keypad version)	Choose from over 30 available key functions	Assign a wide variety of functions to these keys allowing maximum flexibility when configuring radio to meet the customer's needs.
Labeled Key Caps	Removable key caps with labels included	Gives radio "finished" look. Backlit label on keys remind end user of the programmed key's function.
Tactical Group Function	Copy the most important channels over to the tactical group for easy access	Allows you to temporarily regroup memory channels into a new memory zone (without reprogramming). You can also transfer the tactical group memory between transceivers. This function allows you to construct a temporary work group on site for example during a forest fire.

FEATURE	FUNCTION	BENEFIT
Wide Frequency Range	Provides operation for full VHF high band range (136-174 MHz) and UHF (400-470 MHz or 450-512MHz)	Enables the full utilization of the spectrum by using all available frequencies even if not co-located. Spectrum efficient, use with channels not co-located.
Wide/Narrow Channel Spacing	Programmable 12.5 kHz and 25kHz channel bandwidth on FM channels	This radio features wide and narrow channel bandwidth by channel for compatibility with the older (wide) and newer (narrow) channel assignments – very flexible to grow with the users changing needs.
Flash CPU	Accommodates flash firmware upgrades	Allows the user to stay current with the newest software designs and enhancements.
Ignition Switch Sense	Radio power linked to "3rd wire" ignition control circuit	Prevents accidental radio operation when vehicle is off, eliminating needless battery drain.
Power-On Password	Password required to turn on radio	Another security conscious feature. Only those authorized to use the radio can turn on the power. Prevents unauthorized use and subsequent disruption of communications. May also be used to restore from a "stun" condition.
Dimmer Input	Radio display indicators linked to vehicle dimmer circuit.	Allows radio indicator lightto vary intensity with vehicle dash lights.
Multiple Tone Squelch Signaling	CTCSS and DCS encode/decode	Compatibility with existing CTCSS & DCS based systems.
Channel Up/Down Keys (10-key version only) Or Rotary Selector (simple version)	Changes radio channel or zone	The up/down keys or rotary selector are large, easily accessible and backlit for effortless use even with a golved hand. Programmable for either memory channel or zone select.
Power Button	Turns radio on and off	The radio's power switch features "push and momentary hold," so that the user can not accidentally turn off the power, if the user brushes up against the switch.
Over The Air Stun Or Kill	Remote disabling of radio	In the event of unauthorized use or theft, the radio can be disabled over the air from an authorized source. Excellent for maintaining communication integrity with minimal disruption.
22 Watt Audio PA	Built in audio PA	Just connect the speaker, program function key and user may use built-in PA as "hailer" or listen to radio audio outside the vehicle.
MDC1200 Signaling	Provides a wide variety of functions	Use in analog mode. Allows for PTT ID, up to 500 PTT ID Alias's, Select Call, Radio Check, Status Messages, Call Alert, Stun, Revive and advanced emergency functions.
Detachable Front Panel	Control "face plate" detaches for remote mounting	Provides a variety of mounting possibilities and is easy to mount in any type of vehicle.

RECEIVER SECTION

FEATURE	FUNCTION	BENEFIT
Volume Knob	Turn it up to hear the volume or use with the minimum volume setting	Easier to control with a gloved hand. Don't take eyes off the road, fast and convenient. The minimum volume setting means you won't miss calls due to inadvertently turning down the radio.

FEATURE	FUNCTION	BENEFIT
Hook Scan	Stop scan when using "power on" scan function	Enables user to manually override "power on" scan function for simplified communication across multiple channels.
Priority (Home) Channel Access	Instant access to 2 priority (home) channel	Enables instant access to either of the 2 priority (home) channels regardless of memory/ bank location.

TRANSMITTER SECTION

FEATURE	FUNCTION	BENEFIT
High Power (50/45)	More power for better coverage	The F1721 (VHF) radio is available in standard 50 watt. The F1821 is available in 45 watts. Both give the user extended coverage and more "punch" around obstacles and obstructions.
Multiple Format ANI	Automatic unit number identification	This is an excellent feature for public safety, plant security, and any application where it is essential to identify the user during transmission. Supports DTMF and numerous 5-tone formats. User can also customize their own ANI format.
Emergency Call	Alerts dispatch to emergency situations	The radio can transmit an emergency ID message, showing the unit number, and may repeat that emergency status message until cancelled, and the emergency is under control. Essential for public safety and plant security, as well as in any hazardous, high-risk area.
Time Out Timer	Disables transmitter after extended use	The radio's time out timer (TOT) is helpful if the radio is accidentally keyed, or if a user gets too "long- winded", tying up the frequency beyond normal use. The transmitter can also be locked out for a programmable period of time following time out.
Transmit Inhibit	Disables all transmit on channel	Configure the radio to prohibit transmission if the channel is selected as a "receive only" channel. Good for weather channel (VHF models).
Busy Channel Lockout	Disables transmitter from use while channel is busy	Configure the radio to prohibit transmission if the channel is in a muted state, busy, or when a CTCSS tone is received unmatched.

PROGRAMMABLE KEY CHOICES

FEATURE	FUNCTION	BENEFIT
Channel Up/Down	Changes programmed memory channel	Easily selects any of the channel assignments. Also used to select programmed scan lists, banks and transmit TX codes.
Priority Channel	Selects A or B priority channel	Easy selection of priority (home) channel for instant access.
Priority Re-write	Re-assigns priority A or B channel	Allows user to change the priority channe without reprogramming the radio.
Zone	Selects zone	Allows access to channel groups/zone. Use with new zone scan for improved scanning.
Scan Start/Stop	Enables/ disables scanning function	Provides scanning control and access to multiple scan lists.
Scan Tag	Provides scan select of any channel	This function adds or deletes any channel from a scan list.

FEATURE	FUNCTION	BENEFIT
Lock	Disables most functions from programmable keys	Electronically locks all programmable keys, except call, monitor and emergency ID functions.
Monitor	Unmutes audio channel	Muted channels can be "monitored" to check for traffic.
Wide/Narrow	Selects bandwidth	Both narrow (12.5 kHz) and wide (25 kHz) channel widths can be selected, for compatibility with wide/narrow systems.
High/Low	Selects transmitter power output levels	Selects low 1, low 2, or high-powered settings. Allows only the level of transmitter power needed, for reduced power supply consumption.
Talk Around	Allows transmit on receive frequency in duplex channels in analog only	Provides direct, mobile-to-mobile communications, avoiding needless repeater use and congestion. Also provides direct communications when out of range of repeater system.
Call	Transmits 2/5 tone calling code	Allows the user to send a calling code that will alert the other user's receiver by opening the audio to monitor the transmission. Also used to send stun/kill and other commands.
TX Code	Selects individual calling code	Determines what 2-tone, 5-tone or B.I.I.S. calling code to use.
Emergency	Activates emergency call	Provides single or repeated emergency ID transmissions. Cancelled by a simple "push and hold" function or with over the air cancel code (5 tone systems).
DTMF	Selects DTMF auto dial number	Selects the desired DTMF channel and transmits the code when users pushes the assigned key.
Multiple Tone/NAC	Provides access to CTCSS or DCS code list in FM mode or provides access to NAC codes in P25 mode.	Allows user to access up to 40 predefined CTCSS/DCS or NAC codes for access to different systems on the same frequency.
Set	User set mode enable	Allows user to adjust backlighting level, LCD contrast, function beep on/off and beep level, squelch level, minimum receiver audio level, and microphone gain level. Gives the user front panel squelch adjust key.
Scrambler	Enables/disables voice scrambler function on analog (FM) channels	Provides control of the two optional voice scramblers. Gives access to activate voice encryption and communications privacy. (Only one board may be installed at a time).

DUAL OPERATION

"Dual" Mode Operation	Program radio to automatically receive analog FM or P25 Digital	Four mode selections per channel. Analog or P25 only, or program "mixed-mode" receive with analog or P25 transmit.

FEATURE	FUNCTION	BENEFIT
DIGITAL MODE		
P25 Compliant	The IC-F1721D and IC-F1821D are compliant with APCO Project 25 Conventional (non-trunked) operation and are capable of digital modulation and demodulation	Icom P25 compliant radios are interoperable with P25 complaint radios of all makes. Use for analog now, digital in the future.
Mixed Digital And Analog Mode Per Channel	Program APCO P25 digital and existing analog FM mode per channel	Allows user to maximize flexibility in mixed mode installations. Operate on either digital or analog depending on the geographic conditions or system requirements.
Digital NAC (Network Access Code)	Opens the squelch when receiving the same NAC with a preset code	Controls access to repeaters and shuts out unwanted transmissions.
Digital Group And Individual Call	Allows you to make a call with an intended group or individual user	Instant dispatch access to your defined group or privacy to an individual user – your choice.
Zone Scan	Greater flexibility in scanning	Instantly scan "tagged" channels in the selected zone only. Easy to switch zones and scan lists with single selection.
Scan Lists	Forty-two total scan lists: one for each of the 32 zones, plus 10 "radio wide" scan lists	Maximum flexibility for configuring scan both within selected zones, as well as, across multiple zones.
ANALOG MODE		
Dual Priority Scan	2 priority channels during scan	Sample two separate priority channels during scan, even when stopped on another channel.
Signaling	Many industry standard signaling protocols built-in including: CTCSS, DTCS, 2-Tone, 5-Tone, DTMF, and B.I.I.S.	Allows integration into Legacy systems.
Operator Selectable "Multiple Tone" Option	User selectable CTCSS/DTCS tones from the front panel – a list of 40 tones combinations	Select up to 40 different CTCSS/DTCS tone combinations on one channel for access to multiple repeaters on a common channel.
Built-in DB25 Interface	Connects to external audio sources or modem devices and provides connection to other interfaces	Provides RS232 and PA speaker connections.
Compander	Compresses and expands speech audio	Enhanced audio clarity in new narrow band frequencies.
Scrambler Option	Voice encryption for communications privacy	The optional UT-109 provides up to 32 scrambling codes, and the optional UT-110 offers up to 1020 code combinations for the ultimate in communications privacy. Excellent for public safety, or corporate and R&D security needs. Easy installation. Voice encryption for communications privacy in analog (FM) channels.
SOFTWARE IMPROVEMENTS		
Cloning Software CSF70/F1700	Use 1 cloning software to program both portable and mobile radios	Makes programming mixed fleets easy.

Specifications follow

VHF TRANSCEIVERS

IC–F1721/D · IC–F1821/D

SPECIFICATIONS

GENERAL

- Frequency range : 136–174MHz
- Number of channels : Max. 256 channels/ 32 zones
- Channel spacing : 12.5/25kHz, 15/30kHz
- Antenna impedance : 50Ω
- PLL channel step : 2.5kHz, 3.125kHz
- Power supply requirement : 13.6V DC
- Current drain (approx) :
  - Tx 50W   14.0A
  - Rx Max. audio   1200mA
  - Stand-by   600mA
- Operating temperature range : –30˚C to +60˚C; –22˚F to +140˚F
- Dimensions (W×H×D) : 175×45×170 mm;
  - (projections not included)   6⁷⁄₈ ×1²⁵⁄₃₂ ×6¹¹⁄₁₆ in
- Weight (approx.) : 1.5kg; 3.3lb

TRANSMITTER

- Output power (approx) : 50W
- Modulation system : Variable reactance frequency modulation
- Max. frequency deviation : ±2.5kHz (Narrow)   ±5kHz (Wide)
- Frequency error : ±2.0ppm
- Spurious emissions : 75dB typ.
- Adjacent channel power : 60dB (Narrow)   70dB (Wide)
- Audio harmonic distortion : 3% typ. (40% deviation)
- FM Hum and Noise : 40dB typ. (Narrow)   45dB typ. (Wide)
- Modulation limiting : 70–100%
- Ext. microphone impedance : 600Ω (8-pin modular)

RECEIVER

- Sensitivity : 0.25μV typ. (at 12 dB SINAD)
  - 0.25μV typ. (5% BER APCO)
- Squelch sensitivity : 0.25μV typ. (at threshold)
- Adjacent channel selectivity : 75dB typ. (Narrow)   80dB typ. (Wide)
  - 73dB typ. (APCO)
- Spurious response : 80dB typ.
- Intermodulation : 75dB typ. (Narrow)   77dB typ. (Wide)
  - 77dB typ. (APCO)
- Hum and noise ratio : 45dB typ. (Narrow)   50dB typ. (Wide)
- Audio output power : 4W typ. at 10% distortion with a 4Ω load
  - External audio output (D-sub)   22W typ. at 10% distortion with a 4Ω load
- External speaker connector : 2-conductor 3.5 (d) mm (⅛″)/4Ω

Supplied Accessories

IC-F1721/D
- Hand microphone, HM-148
- Mounting bracket kit
- DC power cable
- Key assign stickers
- Microphone hanger

IC-F1821/D
- Hand microphone, HM-148
- External speaker, SP-22
- DC power cable
- Mounting bracket kit
- Microphone hanger
- Key assign stickers

Measurements made in accordance with EIA-152C/204D, TIA-603.
All stated specifications are subject to change without notice or obligation.

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

HAND MICROPHONES

HM-100N   HM-100TN   HM-148

HM-100N : Regular hand microphone.
HM-100TN : DTMF microphone.
HM-148 : Dynamic microphone for heavy duty use. Same as supplied.

SM-25
DESKTOP MICROPHONE

Convenient for dispatching, equipped with monitor switch.

EXTERNAL SPEAKERS

SP-5   SP-22

SP-5 : Large speaker for good audio quality.
SP-22 : Compact and easy-to-install. Same as supplied with the IC-F1821/D.

SEPARATION KIT   SEPARATION CABLES

OPC-607 (3m; 9.8ft)   OPC-608 (8m; 26.2ft)   OPC-609 (1.9m; 6.2ft)

RMK-2

RMK-2 : For front panel detachment installation.
Use with one of the following cables: OPC-609 (1.9m; 6.2ft), OPC-607 (3m; 9.8ft), or OPC-608 (8m; 26.2ft).

OPC-617
ACC CABLE

For external connection such as dimmer control, PTT control, horn drive, etc.

INTERNAL UNITS

UT-109 (Ver. 02) VOICE SCRAMBLER UNIT
UT-110 (Ver. 02) VOICE SCRAMBLER UNIT
UT-111 LTR® TRUNKING UNIT
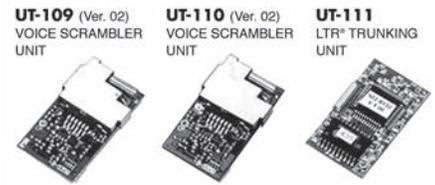
UT-109 (Ver. 02) : Non-rolling type voice scrambler.
UT-110 (Ver. 02) : Rolling type voice scrambler.
UT-111 : Provides LTR® trunking capabilities.

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