



IC-F7010 Series
IC-F7020 Series
IC-F7040 Series

VHF, UHF AND 700/800 MHz P25 DIGITAL TRANSCEIVERS

P25 Conventional and Phase 1/2 Trunking Smallest and Lightest of Its Class

The IC-F7010 series is a small and lightweight P25-compliant radio and can be upgraded to Phase 1 trunking and Phase 2 trunking with a license key. The radio offers uncompromising durability and IP68 submersible protection with ease of use operation and high visibility color LCD. Plus the GPS receiver, Bluetooth® capability and microSD card slot come standard.

- P25 Phase 1 conventional, trunking* and Phase 2 trunking* capable**
- DHS P25 CAP certified (TIA-102) compliant for multiple vendor interoperability**
- Optional FIPS 140-3 compliant AES encryption unit***
- P25 voting scan* (P25 conventional mode)**
- Up to 1024 channel capacity with 128 zones**
- IP68 waterproof protection (1 m depth/1 hour)**
- High visibility and readability with color LCD**
- Icom's custom high power handling capacity speaker for 1300 mW of powerful audio**
- Built-in Bluetooth®, voice recording and P25 packet data (GPS)* functions**
- Enhanced dual-rate AMBE+2™ vocoder**



IC-F7010T

IC-F7020S

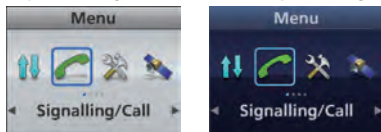
IC-F7040T

* License key upgrade required.
Pending FIPS 140-3 approval.



General Features

- 136 ~ 174, 380 ~ 470, 450 ~ 512, 450 ~ 520, 700/800 MHz versions
- 1024 channels / 128 zones
- High resolution color LCD and intuitive user interface
- Day and night mode display settings



Day and night mode example

- Functions and menu items can be set in a language other than English (For example French, Spanish, Russian, and Traditional Chinese)
- 16-position rotary selector and ON/OFF volume knob
- Quick A/B switch on the top panel programmable for various functions such as zone, scrambler/encryption, etc.
- 1300 mW loud and intelligible internal speaker audio
- MIL-STD-810 G such as shock, vibration and temperature
- IP68, one meter depth for one hour waterproof and dust-tight protection
- 38.2 mm (1.5 inch) slim dimensions (With BP-284 battery pack)
- Battery information display
- Flat sheet keypad offers large button space and protects the radio from dust
- Front panel programming option (ISL-P25FP License key required)
- Fast resume time wake up from the power save mode
- DTMF autodial

Operating Mode

- P25 Phase 1 conventional
- P25 Phase 1 trunking (ISL-P25TR License key required)
- P25 Phase 2 trunking (ISL-P25P2 and ISL-P25TR License keys required)
- Analog mode • Analog/digital mixed operation

Digital Functions (Voice and Data)

- Over-the-Air Programming (OTAP) function (Conventional only) (CS-OTPM2 manager software required)
- Individual, group call
- Unit ID and talkgroup display on receive
- Status update and status query
- Short data message (Up to 100 characters)
- GPS position and transparent data transmission (ISL-P25DS License key required)
- Call alert • Phone number list • Call log

Analog Functions

- CTCSS and DTCS tone squelch supported
- 2-Tone paging (encode and decode) supported
- MDC signaling supported

Security and Safety

- Optional UT-125FIPS FIPS compliant AES/DES encryption unit and UT-134 non-FIPS AES/DES unit (ISL-P25AES License key required for AES encryption)
- Capable of storing 64 AES/DES keys. Programmable for 32 Common Key Reference (CKR)
- ARC4 40-bit software encryption (ISL-P25AES/ARC4 and UT-125FIPS or UT-134 required)
- 8 software encryption keys using ARC4
- Over-the-Air Rekeying (OTAR)
- LLA function (P25 Radio Authentication) provides both Unit (infrastructure initiated) and Mutual Authentications (unit and infrastructure authenticate each other) methods
- Analog inversion voice scrambler (16-codes)
- Power ON password
- Tactical group temporarily regroup user groups
- Radio stun/kill/revive • Remote monitor • Radio check
- Emergency key for emergency call
- Man down function • Lone worker function
- Motion/stationary detection
- Advanced System Key (ASK) protects the radio from unauthorized programming

Scan Functions

- Priority scan • Talkgroup scan
- Voting scan for automatically selecting optimal repeater site (ISL-P25VS License key required)

Voice/Audio Functions

- Voice announcement (Channel number and zone)
- VOX function for hands-free operation
- Voice recording/playback is saved to a microSD card (Up to 500 hours with a 32 GB card) (User supplied)
- TX/RX active noise canceller
- TX/RX audio equalizer (Flat, high/mid/low boost, low cut)
- AF volume equalizing function adds high-pass filter to provide clear, intelligible audio, when increases the volume
- Adjustable analog and digital volume level

Hardware Features

- Programmable vibration alert and ringer beep
- Built-in Bluetooth® for wireless audio and data
- Third-party wireless Bluetooth® headset (Like a 3M™ Peltor™ WS™ 5) can be used
- Wireless radio programming over Bluetooth®
- USB connector for data transfer mode or card reader mode
- 14-pin accessory connector
- Built-in GPS with GPS position screen
- Internal clock with time auto adjustment
- Optional BC-225 intelligent charger and RS-BC225 reader software for BC-225 for battery life cycle management

			IC-F7010T/S	IC-F7020T/S	IC-F7040T/S
GENERAL					
Frequency coverage (* Depending on the version)			136 ~ 174 MHz	380 ~ 470, 450 ~ 512, 450 ~ 520 MHz	769 ~ 775, 851 ~ 869 MHz (RX/TX), 799 ~ 805, 806 ~ 824 MHz (TX),
Number of channels			1024 channels /128 zones		
Type of emission (* Depending on the version)			16K0F3E*1, 11K0F3E, 8K50F3E, 8K10F1E/F1D, 8K10F1W		16K0F3E, 14K0F3E, 11K0F3E, 8K50F3E, 8K10F1E/F1D, 8K10F1W
Power supply requirement			7.5 V DC nominal		
Current drain (approx.)	TX		1.5 A	1.8 A	1.6 A
	RX	Max. audio	560 mA (Internal SP)		620 mA (Internal SP)
		Standby	150 mA		250 mA
Antenna impedance			50 Ω		
Operating temperature range			-30 °C ~ +60 °C; -22 °F ~ +140 °F (Radio specifications)		
Dimensions (W × H × D; Projections not included)			53.6 × 123.5 × 38.2 mm; 2.1 × 4.9 × 1.5 in (With BP-284)		
Weight (approx.)			180 g; 6.4 oz (main unit)		
			355 g; 12.5 oz (BP-284, MB-133, FA-S81VS)	355 g; 12.5 oz (BP-284, MB-133, FA-S81US)	345 g, 12.2 oz (BP-284, MB-133 and FA-S100U)
TRANSMITTER					
Output power (Hi, L2, L1)			5 W, 2 W, 1 W		3 W, 2 W, 1 W
Maximum frequency deviation			±5.0 kHz (25 kHz), ±2.5 kHz (12.5 kHz)		±5.0 kHz (25 kHz), ±4.0 kHz (20 kHz), ±2.5 kHz (12.5 kHz)
Frequency stability			±1.0 ppm		
Spurious emissions			80 dB typ.		70 dB min.
FM hum and noise			55 dB typ.		
Audio harmonic distortion			0.5% typ. (AF 1kHz 40% deviation)		1.5% typ. (AF 1kHz 40% deviation)
FSK error			1% typ. (C4FM), 3% typ. (H-CPM)		
RECEIVER					
Sensitivity	Analog (12 dB SINAD)	0.22 μV typ. (25/12.5 kHz)		0.23 μV typ. (25/12.5 kHz)	0.25 μV typ. (25/12.5 kHz)
	Digital (5% BER)	0.22 μV typ. (C4FM, H-DQPSK)		0.23 μV typ. (C4FM, H-DQPSK)	0.25 μV typ. (C4FM, H-DQPSK)
Adjacent channel selectivity	Analog	80/57 dB typ. (25/12.5 kHz, TIA-603B), 80/76 dB typ. (25/12.5 kHz, TIA-603)	75/55 dB typ. (25/12.5 kHz, TIA-603B), 75/72 dB typ. (25/12.5 kHz, TIA-603)		75/75/53 dB typ. (25/20/12.5 kHz, TIA-603B) 75/75/72 dB typ. (25/20/12.5 kHz, TIA-603)
	Digital	63 dB typ. (C4FM, H-DQPSK, TIA-102)	60 dB typ. (C4FM, H-DQPSK, TIA-102)		60 dB typ. (C4FM, H-DQPSK, TIA-102)
Spurious response rejection			80 dB typ.		70 dB
Intermodulation rejection	Analog	75 dB typ.		74 dB typ.	70 dB typ.
	Digital	75 dB typ.		74 dB typ.	70 dB typ.
Audio output power	Internal SP	1300 mW typ. (at 5% distortion with 8 Ω load)			
	External SP	1000 mW typ. (at 5% distortion with 8 Ω load)			

Measurements made in accordance with TIA-102 (P25), TIA-603 (FM Wide/narrow).

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

*1 ISL-P25W required for 25 kHz bandwidth operation for the USA versions.

Applicable U.S. Military Specifications & IP Rating

Standard	MIL 810G	
	Method	Procedure
Low Pressure	500.5	I, II
High Temperature	501.5	I, II
Low Temperature	502.5	I, II
Temperature Shock	503.5	I-C
Solar Radiation	505.5	I
Rain Blowing/Drip	506.5	I, III
Humidity	507.5	II
Salt Fog	509.5	—
Dust Blowing	510.5	I
Immersion	512.5	I
Vibration	514.6	I
Shock	516.6	I, IV

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

Ingress Protection Standard	
Dust & Water	IP68 (Dust-tight and waterproof protection)

Battery Life

Battery pack	Type	Capacity	Operating time* (Approx.)
BP-283	Rechargeable Li-ion	2010 mAh (typ.), 1910 mAh (min.)	9 hours (VHF)
BP-284	Rechargeable Li-ion	3210 mAh (typ.), 3070 mAh (min.)	14 hours (VHF)

* Tx: Rx: standby = 5:5:90 duty cycle.

Supplied accessories: (May differ depending on the version)

- Battery pack, BP-284
 - Belt clip, MB-133
 - Antenna, FA-S100U* (* For IC-F7040T/S)
- * Please note that Battery charger and VHF/UHF antenna must be purchased separately.

BATTERY PACKS

- BP-283:** Rechargeable Li-ion battery. 2010 mAh (typ.), 1910 mAh (min.). IP68 protection
- BP-284:** Rechargeable Li-ion battery. 3210 mAh (typ.), 3070 mAh (min.). IP68 protection



BATTERY CHARGERS

- BC-225:** Intelligent charger. Shows the charging information with LED lighting. Charges the BP-283/BP-284 in 2.5/4.5 hours (approx.)
- + **BC-123SA/SE/SV:** AC adapter
- RS-BC225:** Reader software for BC-225. Windows® PC software
- BC-227:** Compact type desktop charger. Charges the BP-283/BP-284 in 2.7/4.3 hours
- + **BC-123SA/SE/SV:** AC adapter
- BC-219N:** Desktop charger. Charges the BP-283/BP-284 in 2.8/4.5 hours (approx.)
- + **BC-123SA/SE/SV:** AC adapter
- BC-214:** Multi-charger. Charges up to six BP-283/BP-284 batteries in 2.8/4.5 hours (approx.)
- + **BC-157S:** AC adapter
- * AD-132N charger adapter is supplied with the BC-214, depending on version



RS-BC225

POWER SUPPLY CABLES

- CP-23L:** Vehicle charger cable for use with the BC-219N or BC-227
- OPC-515L:** DC power cable for use with the BC-219N, BC-225 or BC-227
- OPC-656:** DC power cable for use with the BC-214

SPEAKER-MICROPHONE

- HM-222H:** Speaker microphone with an emergency button and a 3.5 mm earphone jack. Enough margin of 2.5 W high capacity speaker. IP68 protection



HEADSETS AND PTT SWITCH CABLE

- HS-94:** Earphone-headset. VS-4MC is required
- HS-95:** Behind-the-head headset. VS-4MC is required
- HS-97:** Throat microphone. VS-4MC is required
- VS-3:** Bluetooth headset
- VS-4MC:** PTT switch cable. VS-4MC is required when using any of HS-94, HS-95 or HS-97



BELT CLIPS, BELT HANGERS AND CARRYING CASE

- MB-133:** Alligator belt clip. Same as supplied
- MB-136:** Swivel belt clip
- MB-96N:** Swivel type belt hanger
- MB-96F:** Fixed type belt hanger. For use with the MB-133
- MB-96FL:** Long fixed type belt hanger. For use with the MB-133
- LC-184:** Carrying case



AES/DES ENCRYPTION UNITS

- UT-134:** AES/DES encryption unit
- UT-125FIPS:** AES/DES encryption unit
(* Pending FIPS 140-3 approval)



OTHER OPTIONS AND CABLES

- KVL125:** DES/AES keyloader
- OPC-IAKVL14:** KVL125 encryption keyloading cable
- OPC-1871:** DES/AES keyloader
- AD-118:** ACC adapter. For use with Hirose plug accessory
- OPC-2338:** Programming cable. USB-14-pin type
- OPC-1870:** Zone copy cable. Handheld to handheld cable
- OPC-2362:** Zone copy cable. Handheld to mobile cable

SOFTWARE AND ACTIVATION KEYS

- CS-F7500:** Programming software
- CS-F7500ASK:** P25 advanced system key manager software
(Available only to trunking system owners)
- CS-OTPM2:** OTAP manager software
- ISL-P25VS:** P25 conventional voting scan upgrade key
- ISL-P25TR:** P25 Phase 1 trunking upgrade key
- ISL-P25P2:** P25 Phase 2 trunking upgrade key
- ISL-P25DS:** P25 packet data service (GPS and transparent data) upgrade key
- ISL-P25AES:** AES encryption upgrade key. Either UT-134 or UT-125FIPS is required
- ISL-P25ARC4:** ARC4 encryption upgrade key. In addition to ISL-P25ARC4, ISL-P25AES and either UT-134 or UT-125FIPS are required
- ISL-P25FP:** Front panel programming key
- ISL-P25W:** 25 kHz activation key
- IASKF7P:** P25 advanced system owner master key
(Available only to trunking system owners)
- IASKF7S:** P25 accessory advanced system key (Required for trunking programming)

ANTENNAS

- FA-S81V:** 136 ~ 150 MHz
- FA-S82V:** 148 ~ 162 MHz
- FA-S83V:** 160 ~ 174 MHz
- FA-S81U:** 380 ~ 430 MHz
- FA-S82U:** 430 ~ 480 MHz
- FA-S83U:** 470 ~ 520 MHz
- FA-S100U:** 700/800 MHz

CUT-TYPE ANTENNAS

- FA-S67VC:** 136 ~ 174 MHz
- FA-S76UC:** 380 ~ 520 MHz

STUBBY ANTENNAS

- FA-S81VS:** 136 ~ 150 MHz
- FA-S82VS:** 148 ~ 162 MHz
- FA-S83VS:** 160 ~ 174 MHz
- FA-S81US:** 400 ~ 450 MHz
- FA-S82US:** 450 ~ 490 MHz

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

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