



APX™ 5000 P25 single-band portable radio

From day one, the single-band APX 5000 P25 portable radio has delivered legendary APX ruggedness and reliability, without compromising on the form factor or features required for routine activities and extreme emergencies. With additional features like WiFi, Adaptive Audio Engine and Bluetooth wireless technology, the APX 5000 helps to advance operational efficiency and enhance the safety of public safety personnel.



Voice and data, all at once

Update your radio fleet without interrupting voice communications with secure Wi-Fi. This dramatically improves the speed of configuring new codeplugs, firmware and software features over-the-air via Radio Management*. Agencies can pre-provision up to 20 secure Wi-Fi hotspots so personnel can easily access updates at the facility or in the field.

Hear and be heard

The APX 5000 is equipped with a 3-watt speaker, 3 integrated microphones and the optional Adaptive Audio Engine. This changes the level of noise suppression, microphone gain, wind-porting and speaker equalization to produce clear and loud audio in any environment.

Seamless on-scene communication

Ensure fast and seamless communication and collaboration across all responders arriving on a scene. Mission Critical Geofence automatically changes a radio's active talkgroup based on its GPS location and an agency-defined virtual barrier. For example, an incident commander can create a geofence around the 3-block radius of a burning building so that all arriving personnel are automatically placed in the same talkgroup.

Emergency find me

Bluetooth 4.0 places a wide range of wireless accessories at your disposal and provides personnel with an added level of security by improving response time in emergencies. With Emergency Find Me, a Bluetooth-enabled beacon signal guides other Bluetooth-enabled APX radios within range to assist the user in distress.



*Radio Management application simplifies APX radio configuration and management by programming up to 16 radios at one time and tracking which radios have been successfully programmed, providing a clear view of the entire radio fleet and a codeplug history for each radio.





APX 5000
Model 3.5

Specifications:

RF bands

- 700/800 MHz, VHF, UHF Range 1 & UHF Range 2
- 9600 Baud Digital APCO P25 Phase 1 FDMA and Phase 2 TDMA Trunking
- 3600 Baud SmartNet®, SmartZone®, SmartZone, Omnilink Trunking
- Digital APCO 25, Conventional, Analog MDC 1200, Quick Call II System Configurations Narrow and Wide Bandwidth Digital Receiver (6.25 kHz Equivalent/25/20/12.5 KHz)¹

Standard features

- Mission Critical Wireless Bluetooth® 4.0 (LE)²
- Emergency Find Me²
- ASTRO 25 Integrated Voice & Data
- Integrated GPS/GLONASS for Outdoor Location Tracking
- Voice Announcements
- ISSI 8000 Roaming
- Radio Profiles
- Dynamic Zone
- Intelligent Lighting
- Single-Key ADP Encryption
- IP68 submersion (2 meters, 2 hours)
- IMPRES 2 Battery
- Text Message
- Software Key

Programming

- Utilizes Customer Programming Software (CPS) with Radio Management³

Adaptive audio engine (optional)

- 3 Watt Speaker with Adaptive Equalization
- Adaptive Dual-Sided Operation
- Adaptive Noise Suppression Intensity
- Adaptive Gain Control
- Adaptive Windporting

Optional features

- Wi-Fi® 802.11 b/g/n
- SmartConnect via Wi-Fi⁵
- LEX L11 Collaboration
- RFID Volume Knob
- Multi-key for 128 keys and Multi-Algorithm
- Programming Over Project 25 (OTAP)
- Over the Air Rekey (OTAR)
- Digital Tone Signaling
- Mission Critical Geofence
- P25 Authentication
- Man Down / Fall Alert Capability
- High Impact Green and Public Safety Yellow Colored Housing Options
- Rugged Option: IP68 (2m/4hr), Mil Std 512.X Delta - T⁴
- ANSI/TIA 4950-A and CAN/CSA C22.2 NO. 157-92 for DIV1, Class I, GRP C, D ANSI/ISA 12.12.01-2015 and CAN/CSA C22.2 No 213-15 For Class II, GRP E, F, G; Class III, DIV2, Class I, GRP A, B, C, D, T3C. Temp = -25C to +60C. Intrinsically Safe when used with NNTN8930A, NNTN8921A

¹ Per the FCC Narrowbanding rules, new products (APX 5000 UHFR1, UHFR2) submitted for FCC certification after January 1, 2011 are restricted from being granted certification at 25KHz for United States - State & Local Markets only.

² Compatible with BT 2.1, HSP, PAN, DUN and SPP Profiles found in off-the-shelf BT accessories and BT 4.x

³ Requires CPS version R12.00.00 and greater.

⁴ Radios meet industry standards (IPx7) for submersion.

⁵ Check with your Motorola Solutions representative for availability in your region



Radio models

MODEL 1.5



MODEL 2.5



MODEL 3.5



| | | | |
|-------------------------------|--|--|--|
| Display | Full bitmap monochromatic LCD top display 1 line text x 8 characters 1 line of icons No menu support Multi-color backlight | Top display plus: Full bitmap color LCD display 4 lines of text x 14 characters 2 lines of icons 1 menu line x 3 menus White backlight | Top display plus: Full bitmap color LCD display 4 lines of text x 14 characters 2 lines of icons 1 menu line x 3 menus White backlight |
| Keypad | None | Backlight keypad 3 soft keys 4 direction Navigation key Home and Data buttons | Backlight keypad 3 soft keys 4 direction navigation key 4x3 keypad Home and Data buttons |
| Channel Capacity ² | 96 | 1000 | 1000 |
| FLASHport Memory | 64 MB | 64 MB | 64 MB |
| 700/800 MHz (763-870 MHz) | H98UCD9PW5BNI | H98UCF9PW6BNI | H98UCH9PW7BNI |
| VHF (136-174 MHz) | H98KGD9PW5BNI | H98KGF9PW6BNI | H98KGH9PW7BNI |
| UHF Range 1 (380-470 MHz) | H98QDD9PW5BNI | H98QDF9PW6BNI | H98QDH9PW7BNI |
| UHF Range 2 (450-520 MHz) | H98SDD9PW5BNI | H98SDF9PW6BNI | H98SDH9PW7BNI |
| Buttons & Switches | Large PTT button • Angled On/Off volume control • Orange emergency button • 16 position top-mounted rotary switch 2-position concentric switch • Multi-color backlight • 3-position toggle switch • 3 programmable side buttons | | |
| TRANSMITTER CERTIFICATION | | | |
| | FCC ID | INDUSTRY CANADA | |
| 700/800 (764-869 MHz) | AZ489FT7086 ² | 109U-89FT7086 | |
| VHF (136-174 MHz) | AZ489FT7087 ² | 109U-89FT7087 | |
| UHF Range 1 (380-470 MHz) | AZ489FT7077 ² | 109U-89FT7077 | |
| UHF Range 2 (420-520 MHz) | AZ489FT7085 ² | 109U-89FT7085 | |
| FCC EMISSIONS DESIGNATORS | | | |
| FCC Emissions Designators | 11K0F3E, 16K0F3E, 8K10F1D, 8K10F1E, 8K10F1W, 20K0F1E | | |
| POWER SUPPLY | | | |
| Power Supply | One rechargeable 2550 mAh Li-Ion Battery Standard (PMNN4485), with alternate battery options available. | | |

¹ Measured in the analog mode per TIA / EIA 603 under nominal conditions.

² Enhancement package available.



Transmitter—typical performance specifications

| | | 700/800 | VHF | UHF RANGE 1 | UHF RANGE 2 |
|---|--------------------|--|----------------------------|----------------------------|----------------------------|
| Frequency Range/Bandsplits | 700 MHz 800 MHz | 763-776, 793-806 MHz 806-824, 851-870 MHz | 136-174 MHz | 380-470 MHz | 450-520 MHz |
| Channel Spacing | | 25/20/12.5 kHz | 25/20/12.5 kHz | 25/20/12.5 kHz | 25/20/12.5 kHz |
| Maximum Frequency Separation | | Full Bandsplit | Full Bandsplit | Full Bandsplit | Full Bandsplit |
| Rated RF Output Power Adj | | 1-3 Watts Max | 1-6 Watts Max | 1-5 Watts | 1-5 Watts Max |
| Frequency Stability (-30°C to +60°C; +25°C Ref.) | | ±0.00010 % | ±0.00010 % | ±0.00010 % | ±0.00010 % |
| Modulation Limiting | | ±5 kHz / ±4 kHz / ±2.5 kHz | ±5 kHz / ±4 kHz / ±2.5 kHz | ±5 kHz / ±4 kHz / ±2.5 kHz | ±5 kHz / ±4 kHz / ±2.5 kHz |
| Emissions (Conducted and Radiated) | | -75 dB | -75 dB | -75 dB | -75 dB |
| FM Hum & Noise | 25 kHz 12.5 kHz | -52 dB -47 dB | -55 dB -50 dB | -52 dB -47 dB | -52 dB -46 dB |
| Audio Distortion | | 1.00% | 1.00% | 1.00% | 1.00% |

Receiver—typical performance specifications

| | | 700/800 | VHF | UHF RANGE 1 | UHF RANGE 2 |
|---|---|--------------------------------|--------------------------------|----------------------------------|----------------------------------|
| Frequency Range/Bandsplits | 700 MHz 800 MHz | 763-776 MHz 851-870 MHz | 136-174 MHz | 380-470 MHz | 450-520 MHz |
| Channel Spacing | | 25/20/12.5 kHz | 25/20/12.5 kHz | 25/20/12.5 kHz | 25/20/12.5 kHz |
| Maximum Frequency Separation | | Full Bandsplit | Full Bandsplit | Full Bandsplit | Full Bandsplit |
| Analog Sensitivity ¹ Digital Sensitivity ² | 12 dB SINAD 1% BER (800 MHz) 5% BER | 0.25 µV 0.375 µV 0.24 µV | 0.17 µV 0.243 µV 0.15 µV | 0.224 µV 0.298 µV 0.200 µV | 0.203 µV 0.296 µV 0.204 µV |
| Selectivity | 25 kHz channel 12.5 kHz channel | -76 dB -70 dB | -78 dB -73 dB | -77 dB -67 dB | -76 dB -67 dB |
| Intermodulation | | -80.1 dB | -80.2 dB | -80.3 dB | -80.2 dB |
| Spurious Rejection | | -75 dB | -78 dB | -80.5 dB | -80.8 dB |
| FM Hum and Noise | 25 kHz 12.5 kHz | -53 dB -49 dB | -54.3 dB -50.1 dB | -53.5 dB -47.5 dB | -52.5 dB -47.3 dB |
| Audio Distortion at Rated | | 0.90 % | 0.90 % | 0.70 % | 0.70 % |

¹ Measured conductively in analog mode per TIA / EIA 603 under nominal conditions.

² Measured conductively in digital mode per TIA / EIA IS 102.CAAA under nominal conditions.



Portable military standards 810 C, D, E, F & G

| | MIL-STD 810C | | MIL-STD 810D | | MIL-STD 810E | | MIL-STD 810F | | MIL-STD 810G | |
|-------------------|--------------|-----------------|--------------|-------------|--------------|-------------|--------------|---------------------|--------------|---------------|
| | Method | Proc./Cat. | Method | Proc./Cat. | Method | Proc./Cat. | Method | Proc./Cat. | Method | Proc./Cat. |
| Low Pressure | 500.1 | I | 500.2 | II | 500.3 | II | 500.4 | II | 500.5 | II |
| High Temperature | 501.1 | I, II | 501.2 | I/A1, II/A1 | 501.3 | I/A1, II/A1 | 501.4 | I/Hot, II/Basic Hot | 501.5 | I/A1, II/A2 |
| Low Temperature | 502.1 | I | 502.2 | I/C3, II/C1 | 502.3 | I/C3, II/C1 | 502.4 | I/C3, II/C1 | 502.5 | I/C3, II/C1 |
| Temperature Shock | 503.1 | I | 503.2 | I/A1C3 | 503.3 | I/A1C3 | 503.4 | I | 503.5 | I/C |
| Solar Radiation | 505.1 | II | 505.2 | I | 505.3 | I | 505.4 | I | 505.5 | I/A1 |
| Rain | 506.1 | I, II | 506.2 | I, II | 506.3 | I, II | 506.4 | I, III | 506.5 | I, III |
| Humidity | 507.1 | II | 507.2 | II | 507.3 | II | 507.4 | 1 Proc | 507.5 | II/Aggravated |
| Salt Fog | 509.1 | I | 509.2 | I | 509.3 | I | 509.4 | 1 Proc | 509.5 | 1 Proc |
| Blowing Dust | 510.1 | I | 510.2 | I | 510.3 | I | 510.4 | I | 510.5 | I |
| Blowing Sand | 1 Proc | 1 Proc | 510.2 | II | 510.3 | II | 510.4 | II | 510.5 | II |
| Immersion | 512.1 | I | 512.2 | I | 512.3 | I | 512.4 | I | 512.5 | I |
| Vibration | 514.2 | VIII/F, Curve-W | 514.3 | I/10, II/3 | 514.4 | I/10, II/3 | 514.5 | I/24 | 514.6 | I/24 |
| Shock | 516.2 | I, III, V | 516.3 | I, V, VI | 516.4 | I, V, VI | 516.5 | I, V, VI | 516.6 | I, V, VI |
| Shock (Drop) | 516.2 | II | 516.2 | IV | 516.4 | IV | 516.5 | IV | 516.6 | IV |

Batteries for APX 5000

| BATTERY CAPACITY / TYPE | DIMENSIONS (HXWXD) | WEIGHT | BATTERY PART NUMBER | BATTERY CAPACITY |
|---------------------------------------|--------------------|---------|---------------------|------------------|
| Li-Ion IMPRES 2 2550 mAh ¹ | 3.4" x 2.3" x 1.5" | 5.0 oz | PMNN4485 | 2550 mAh |
| Li-Ion IMPRES 2 3400 mAh | 3.4" x 2.3" x 1.7" | 6.5 oz | PMNN4486 | 3400 mAh |
| Li-Ion IMPRES 2 4850 mAh | 5" x 2.3" x 1.7" | 11.0 oz | PMNN4487 | 4850 mAh |
| Li-Ion IMPRES 2 5100 mAh | 5" x 2.3" x 1.7" | 11.0 oz | PMNN4494 | 5100 mAh |
| Li-Ion IMPRES 2 2650 mAh ² | 3.4" x 2.3" x 1.7" | 5.7 oz | NNTN8930 | 2650 mAh |
| Li-Ion IMPRES 2 4500 mAh ² | 5" x 2.3" x 1.7" | 11.0 oz | NNTN8921 | 4500 mAh |

Encryption

| | |
|-----------------------------------|---|
| Supported Encryption Algorithms | ADP, 256-bit AES, DES, DES-XL, DES-OFB, DVP-XL |
| Encryption Algorithm Capacity | 8 |
| Encryption Keys per Radio | Module capable of storing 1024 keys. Programmable for 64 Common Key Reference (CKR) or 16 Physical Identifier (PID) |
| Encryption Frame Re-sync Interval | P25 CAI 300 mSec |
| Encryption Keying | Key Loader |
| Synchronization | XL – Counter Addressing OFB – Output Feedback |
| Vector Generator | National Institute of Standards and Technology (NIST) approved random number generator |
| Encryption Type | Digital |
| Key Storage | Tamper protected volatile or non-volatile memory |
| Key Erasure | Tamper detection |
| Standards | FIPS 140-3 Level 3; FIPS 197 |

GPS/GPS/GNSS specifications

| | |
|-----------------------|---------------------------|
| Constellations | GPS & GLONASS |
| Tracking Sensitivity | -164 dBm |
| Accuracy ² | <5 meters (95%) |
| Cold Start | <60 seconds (95%) |
| Hot Start | <5 seconds (95%) |
| Mode of Operation | Autonomous (Non-Assisted) |

¹ The standard shipping battery for the APX5000

² Measured conductively with >6 satellites visible Vector Generator (NIST) approved random number generator at a nominal -130 dBm signal strength. Specs provided are 95th percentile values.



Dimensions of the radios without battery

| | INCHES | MILLIMETERS |
|--------------------------------------|---------|-------------|
| Length | 5.47 | 139 |
| Width Push-To-Talk button | 2.39 | 60.7 |
| Depth Push-To-Talk button | 1.40 | 35.6 |
| Width Top | 2.98 | 75.7 |
| Depth Top | 1.58 | 40.1 |
| Depth Bottom of Battery | 1.24 | 31.5 |
| Weight of the radios without battery | 10.9 oz | 309 g |

Emission designators

| | |
|---------------|--|
| LMR: | 8K10F1D, 8K10F1E, 8K10F1W, 11K0F3E, 16K0F3E, 20K0F1E |
| Bluetooth®: | 852KF1D, 1M17F1D, 1M19F1D, 1M04F1D |
| WLAN (Wi-Fi): | 13M7G1D, 17M0D1D, 18M1D1D |

Audio

| | |
|-----------------------------------|----------|
| Audio Output Power at Rated | 3 W |
| Audio Output Power at Max | 5 W |
| Audio Response (EIA) | +1,-3 dB |
| Speech Loudness at 12 in (300 mm) | 105 Phon |

¹ 2400 - 2483.5 MHz for EMEA region and includes guardband. Channels 1 – 11 used for FCC/IC region.

Rugged specifications

| | |
|----------------------|---|
| Leakage (submersion) | MIL-STD-810 C, D, E, F and G Method 512.X Procedure I, IP68 (2 meters, 4 hours) |
|----------------------|---|

Housing color

Black (Standard), Public Safety Yellow, and High Impact Green

Wireless connectivity and security

Frequency Range/Bandsplits: Bluetooth: 2402 - 2480 MHz, WLAN (Wi-Fi): 2400 - 2483.5 MHz

WLAN (Wi-Fi) 802.11 b/g/n supports WPA-2, WPA, WEP security protocols; radio can be pre-provisioned with up to 20 SSIDs¹

Mission Critical Wireless Bluetooth 2.1 uses 96 bit encryption for pairing & 128 bit encryption for voice, signaling and data. The radio BT supports up to 6 data connections and 1 audio connection

Bluetooth 4.0 Low Energy uses 128-bit AES-CCM encryption

Environmental specifications

| | |
|--------------------------|--------------------------|
| Operating Temperature | -30°C / +60°C |
| Storage Temperature | -50°C / +85°C |
| Humidity Per MIL-STD | ESD IEC 61000-4-2 |
| Water and Dust Intrusion | IP68 (2 meters, 4 hours) |

Temperatures listed are for radio specifications. Battery storage is recommended at 25°C, ±5°C to ensure best performance.

To learn more, visit:
www.motorolasolutions.com/apx



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