

APX™ 7000

Project 25 Multi-Band Portable Radio



Top Display Model:

Up to 96 channels
 Universal Push-to-Talk
 T-Grip
 Dual Battery Latch
 Orange emergency button
 16 position rotary knob
 2 position concentric switch
 3 position toggle switch
 3 programmable side buttons
 Transmit LED indicator
 Full Bitmap Top Display

- 1 line of icons
- 1 line x 8 characters of text

 No keypad



Dual Display Model:

Same as APX Top Display model plus the following features:
 1250 channels
 Dial from pre-stored lists or free-form entry
 Programmable soft keys for easy access to radio menus
 Backlit Keypad

- Home and Data buttons
- 3 soft keys
- 4 direction navigation key
- 4 x 3 keypad

 Full Bitmap Display

- 2 lines of icons
- 4 lines x 14 characters of text
- Status icons

The APX 7000 Multi-Band P25 Portable Radio delivers exceptional performance combining advanced voice and data technology driven by the challenges of mission critical users.

Motorola's 4th generation P25 subscriber is multi-band capable, operating in any 2 frequency bands (700/800 MHz, VHF, UHF Range 1, and UHF Range 2), communicates with current and future networks (Phase 1 FDMA and Phase 2 TDMA) and has integrated GPS. Designed specifically for first responders the dual-sided mission critical design has both an audio and data side providing optimal functionality and loud and clear audio in a compact rugged form factor.



SPECIFICATION SHEET

APX 7000
Project 25 Multi-Band Portable Radio

FEATURES AND BENEFITS:

Available in 700/800 MHz, VHF, UHF Range 1, and UHF Range 2 bands

Optional multi-band operation

Trunking standards supported:

- Clear or digital encrypted ASTRO®25 Trunked Operation
- Capable of SmartZone®, SmartZone Omnilink, SmartNet®

Analog MDC-1200 and Digital APCO P25 Conventional System Configurations

Narrow and wide bandwidth digital receiver (6.25 kHz / 12.5 kHz / 25 kHz)

Embedded digital signaling (ASTRO & ASTRO 25)

Integrated GPS capable

Seamless wideband scan

Intelligent Lighting

Radio Profiles

Unified Call List (Dual Display model only)

Expansion Slot

Micro SD removable memory card

User programmable voice announcement

Meets Applicable Mil Specs 810C, D, E, F, and G

Ships standard IP67 (Submersible at 1 meter, 30 minutes)

Rugged option available

Public Safety Yellow and High Impact Green Rugged Housing options

Custom recessed label areas

Superior Audio Features:

- 1W high audio speaker
- Dual speakers (Dual Display model only)
- Dual microphones
- 2-mic noise canceling technology

Utilizes Windows XP and Vista Customer Programming Software (CPS)

- Supports USB communications
- Built in FLASHport™ support

Full portfolio of accessories including IMPRES batteries, chargers and audio devices

OPTIONAL FEATURES:

Enhanced Encryption capability

Programming Over Project 25

Over the Air Rekey

Text Messaging

Mission Critical Wireless

TRANSMITTER – TYPICAL PERFORMANCE SPECIFICATIONS

| | 700 MHz | 800 MHz | VHF | UHF Range 1 | UHF Range 2 |
|--|----------------------------|----------------------------|-------------------|-------------------|-------------------|
| Frequency Range/Bandsplits | 764-776 793-805 | 806-825 851-870 | 136-174 MHz | 380-470 MHz | 450-520 MHz |
| Channel Spacing | 25/20/12.5 kHz | 25/20/12.5 kHz | 25/12.5 kHz | 25/12.5 kHz | 25/12.5 kHz |
| Maximum Frequency Separation | Full Bandsplit | Full Bandsplit | Full Bandsplit | Full Bandsplit | Full Bandsplit |
| Rated RF Output Power Adj ¹ | 1-3 Watts Max | 1-3 Watts | 1-6 Watts | 1-5 Watts | 1-5 Watts |
| Frequency Stability ¹ (-30°C to +60°C; +25°C Ref.) | ±0.00010 % | ±0.00010 % | ±0.00010 % | ±0.00010 % | ±0.00010 % |
| Modulation Limiting ¹ | ±5 kHz / ±4 kHz / ±2.5 kHz | ±5 kHz / ±4 kHz / ±2.5 kHz | ±5 kHz / ±2.5 kHz | ±5 kHz / ±2.5 kHz | ±5 kHz / ±2.5 kHz |
| Emissions (Conducted and Radiated) ¹ | -75 dB | -75 dB | -75 dB | -75 dB | -75 dB |
| Audio Response ¹ | +1, -3 dB | +1, -3 dB | +1, -3 dB | +1, -3 dB | +1, -3 dB |
| FM Hum & Noise | 25 kHz 12.5 kHz | -48 dB -46 dB | -47 dB -45 dB | -47 dB -45 dB | -47 dB -45 dB |
| Audio Distortion ¹ | 0.60 % | 1 % | 0.50 % | 0.50 % | 0.50 % |

BATTERIES FOR APX 7000

| Battery Capacity / Type | Dimensions (HxWxD) | Weight | Battery Part Numbers | Battery Capacity |
|--|-----------------------|----------|----------------------|------------------|
| Li-Ion IMPRES 2900 mAh (Ruggedized) | 3.07" x 2.34" x 1.65" | 6.53 oz | NNTN7038 | 2900 mAh |
| Li-Ion IMPRES 4200 mAh Ruggedized (IP67) | 5.12" x 2.34" x 1.65" | 11.29 oz | NNTN7034 | 4200mAh |
| Li-Ion IMPRES 4100 FM ² Ruggedized (IP67) | 5.12" x 2.34" x 1.65" | 11.29 oz | NNTN7033 | 4100 mAh |
| NiMH IMPRES 2100 mAh Ruggedized (IP67) | 5.07" x 2.34" x 1.57" | 11.82 oz | NNTN7037 | 2100 mAh |
| NiMH IMPRES 2000 mAh FM ² Ruggedized (IP67) | 5.07" x 2.34" x 1.57" | 11.82 oz | NNTN7036 | 2000 mAh |
| NiMH IMPRES 2000 mAh FM ² Ruggedized PLUS | 5.07" x 2.34" x 1.57" | 11.82 oz | NNTN7035 | 2000 mAh |
| NiMH IMPRES 2100 mAh Ruggedized PLUS | 5.07" x 2.34" x 1.57" | 11.82 oz | NNTN7573 | 2100 mAh |

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RECEIVER – TYPICAL PERFORMANCE SPECIFICATIONS

| | 700 MHz | 800 MHz | VHF | UHF Range 1 | UHF Range 2 |
|--|----------------|----------------|----------------|----------------|----------------|
| Frequency Range/Bandsplits | 764-776 | 851-870 | 136-174 MHz | 380-470 MHz | 450-520 MHz |
| Channel Spacing | 12.5/25 kHz | 12.5/25 kHz | 12.5/25 kHz | 12.5/25 kHz | 12.5/25 kHz |
| Maximum Frequency Separation | Full Bandsplit | Full Bandsplit | Full Bandsplit | Full Bandsplit | Full Bandsplit |
| Audio Output Power at Rated ¹ | 1000 mW | 1000 mW | 1000 mW | 1000 mW | 1000 mW |
| Frequency Stability ¹ (-30°C to +60°C; +25°C Ref.) | ±0.00010 % | ±0.00010 % | ±0.00010 % | ±0.00010 % | ±0.00010 % |
| Analog Sensitivity ³ 12 dB SINAD | 0.250 µV | 0.250 µV | 0.216 µV | 0.234 µV | 0.234 µV |
| Digital Sensitivity ⁴ 1% BER | 0.347 µV | 0.333 µV | 0.277 µV | 0.307 µV | 0.307 µV |
| 5% BER | 0.251 µV | 0.251 µV | 0.188 µV | 0.207 µV | 0.207 µV |
| Selectivity ¹ 25 kHz channel | 75.7 dB | 75.7 dB | 79.3 dB | 78.3 dB | 78.3 dB |
| 12.5 kHz channel | 67.5 dB | 67.5 dB | 70 dB | 68.1 dB | 67.5 dB |
| Intermodulation | 80 dB | 80 dB | 80.5 dB | 80.2 dB | 80.2 dB |
| Spurious Rejection | 76.6 dB | 76.6 dB | 93.2 dB | 80.3 dB | 80.3 dB |
| FM Hum and Noise 25 kHz | -54 dB | -54 dB | -53.8 dB | -53.5 dB | -53.5 dB |
| 12.5 kHz | -48 dB | -48 dB | -48 dB | -47.4 dB | -47.4 dB |
| Audio Distortion ¹ | .9 % | .9 % | 1.20 % | 0.91 % | 0.91 % |

GPS SPECIFICATIONS

| | |
|-----------------------|-------------------------------|
| Channels | 12 |
| Tracking Sensitivity | -151 dBm |
| Accuracy ⁵ | <10 meters (95%) |
| Cold Start | <60 seconds (95%) |
| Hot Start | <10 seconds (95%) |
| Mode of Operation | Autonomous (Non-Assisted) GPS |

RADIO MODELS

| | Display | Keypad | Channel Capacity | FLASHport Memory | 700/800 MHz (764-870 MHz) | VHF (136-174 MHz) | UHF Range 1 (380-470 MHz) | UHF Range 2 (450-520 MHz) | Embedded Buttons/Switches | GPS | LED |
|---------------------------|--|--|------------------------------|------------------|------------------------------------|------------------------------------|--|--|---|-----|-------------|
| Top Display | Full bitmap monochromatic LCD display 1 line text x 8 characters 1 line of icons No menu support Multi-color backlight | None | 96 (using zone bank feature) | 64 MB | H97TGD9PW1_N QA00569 | H97TGD9PW1_N QA00570 | H97TGD9PW1_N QA00571 | H97TGD9PW1_N QA00572 | Large PTT button Angled On/Off Volume knob Orange emergency button 16-position top-mounted rotary knob 2-position concentric switch 3-position toggle switch 3 programmable side buttons | Yes | Multi-color |
| Dual Display | Top display, plus: Full bitmap color LCD display: 4 lines text x 14 characters 2 lines of icons 1 menu line x 3 menus White backlight | Multi-color backlight Keypad 3 soft keys 4-direction navigation key 4x3 keypad Home and Data buttons | 1250 | 64 MB | H97TGD9PW1_N QA00569 QA00577 | H97TGD9PW1_N QA00570 QA00577 | H97TGD9PW1_N QA00571 QA00575 | H97TGD9PW1_N QA00572 QA00576 | Large PTT button Angled On/Off Volume knob Orange emergency button 16-position top-mounted rotary knob 2-position concentric switch 3-position toggle switch 3 programmable side buttons | Yes | Multi-color |
| Transmitter Certification | | | | | AZ489FT7036 | AZ489FT7036 | AZ489FT7040 (UHF/700/800) AZ489FT4886 (UHF/VHF) | AZ489FT7040 (UHF/700/800) AZ489FT4886 (UHF/VHF) | | | |
| FCC Emissions Designators | 11K0F3E, 16K0F3E, 8K10F1D, 8K10F1E, 8K10F1W, 20K0F1E | | | | | | | | | | |
| Power Supply | One rechargeable Li-Ion 2900 mAh battery, or one optional NiMH | | | | | | | | | | |

SPECIFICATION SHEET

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DIMENSIONS OF THE RADIOS WITHOUT BATTERY

| | Inches | Millimeters |
|--------------------------------------|---------|-------------|
| Length | 6.29 | 159.71 |
| Width Push-to-Talk button | 2.31 | 58.69 |
| Depth Push-to-Talk button | 1.34 | 34 |
| Width Top | 2.98 | 75.69 |
| Depth Top | 1.6 | 40.52 |
| Depth Bottom of Battery | 1.65 | 41.78 |
| Weight of the radios without battery | 12.2 oz | |

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 | - | 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, II | 506.5 | I, III |
| Humidity | 507.1 | II | 507.2 | II | 507.3 | II | 507.4 | - | 507.5 | II/Aggravated |
| Salt Fog | 509.1 | - | 509.2 | I | 509.3 | I | 509.4 | - | 509.5 | - |
| Blowing Dust | 510.1 | I | 510.2 | I | 510.3 | I | 510.4 | I | 510.5 | I |
| Blowing Sand | - | - | 510.2 | II | 510.3 | II | 510.4 | II | 510.5 | II |
| Immersion ⁶ | 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 | 516.3 | IV | 516.4 | IV | 516.5 | IV | 516.6 | IV |

ENCRYPTION

| | |
|-----------------------------------|---|
| Supported Encryption Algorithms | ADP, 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 | Keyboard command and tamper detection |
| Standards | FIPS 140-3 FIPS 197 |

Specifications subject to change without notice. All specifications shown are typical. Radio meets applicable regulatory requirements.

RUGGED OPTION SPECIFICATIONS

| | |
|----------------------------------|--|
| Leakage (immersion) ⁶ | MIL-STD-810 C, D, E, F, G Method 512.X Procedure I |
| Housing Availability | Standard, Public Safety Yellow and High Impact Green |

ENVIRONMENTAL SPECIFICATIONS

| | |
|----------------------------------|-----------------|
| Operating Temperature | -30° C / +60° C |
| Storage Temperature ⁷ | -40° C / +85° C |
| Humidity | Per MIL-STD |
| ESD | IEC 801-2 KV |
| Water & Dust Intrusion | IP67 MIL-STD |

¹ Measured in the analog mode per TIA / EIA 603 under nominal conditions
² When used with an FM approved intrinsically safe radio.
³ Measured conductively in analog mode per TIA / EIA 603 under nominal conditions
⁴ Measured conductively in digital mode per TIA / EIA IS 102.CAAA under nominal conditions
⁵ Accuracy specs are for long-term tracking (95th percentile values >5 satellites visible at a nominal -130 dBm signal strength)
⁶ For rugged models only
⁷ Temperatures listed are for radio specifications. Battery storage is recommended at 25°C, ±5°C to ensure best performance



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