

APX™ 7500

Project 25 Multi-Band Mobile Radio



STANDARD FEATURES

Available in 700/800 MHz and VHF bands

Up to 1250 Channels

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 equivalent/12.5 kHz/25 kHz)

Embedded digital signaling (ASTRO and ASTRO 25)

Integrated GPS capable

Integrated Encryption Hardware

Seamless wideband scan

Intelligent lighting

Radio profiles

Unified Call List

Expansion Slot Standard

Meets applicable MIL-specs 810C, D, E, F and G

Ships standard IP54

Utilizes Windows XP and Vista Customer Programming Software (CPS)

- Supports USB Communications
 - Built in FLASHport™ support
- Re-use of most XTL™ accessories

OPTIONAL FEATURES

Enhanced Encryption Software Options

Programming over Project 25 (POP25)

Text Messaging

Over the Air Re-Key (OTAR)

12 character RF ID asset tracking

The APX 7500 mobile exemplifies Motorola's commitment to meet the voice and data demands of today's first responders in mission critical environments—to enable, anywhere, anyplace, anytime connectivity. With integrated voice and data capabilities, these radios offer improved communications between multiple agencies, as well as neighboring communities, from everyday operations to disaster response.

Motorola's newest P25 mobile is multi-band (700/800 MHz and VHF), communicates with current and future networks (FDMA and TDMA)



SPECIFICATION SHEET

APX 7500
Project 25 Multi-Band Mobile Radio



O3 HANDHELD CONTROL HEAD FEATURES

4 lines: 2 lines text (14 characters), 1 line icons, 1 line soft menu keys
3 x 6 keypad with up to 24 programmable soft keys
Cellular style user interface and color display



O5 CONTROL HEAD FEATURES

Tri-color LCD display
4 lines: 2 lines text (14 characters), 1 line icons, 1 line soft menu keys
3 x 6 keypad microphone accessory with 3 programmable soft keys
5 programmable soft key buttons and 5 scroll-through menus with up to 24 programmable soft keys
Multiple control head configuration to fully control a single radio with up to 4 different wired locations
Motorcycle configuration available

O9 INTEGRATED CONTROL HEAD AVAILABLE AS A FUTURE RELEASE.

| SIGNALLING (ASTRO MODE) | |
|---|---|
| Signalling Rate | 9.6 kbps |
| Digital ID Capacity | 10,000,000 Conventional / 48,000 Trunking |
| Digital Network Access Codes | 4,096 network site addresses |
| ASTRO Digital User Group Addresses | 4,096 network site addresses |
| Project 25 – CAI Digital User Group Addresses | 65,000 Conventional / 4,094 Trunking |
| Error Correction Techniques | Golay, BCH, Reed-Solomon codes |
| Data Access Control | Slotted CSMA: Utilizes infrastructure-sourced data status bits embedded in both voice and data transmissions. |

| MOBILE APX7500 | |
|-----------------------|---|
| Dimensions | Mid Power Radio Transceiver 2" x 7" x 8.6" (50.8 x 177.8 x 218.4 mm) |
| | O5 Control Head 2" x 7" x 2.5" (50.8 x 180.3 x 63.5 mm) |
| | Mid Power Radio Transceiver and O5 Control Head–Dash Mount 2" x 7" x 9.6" (50.8 x 180.3 x 243.8 mm) |
| | Mid Power Radio Transceiver and Remote Mount 2.0" x 7" x 9.6" (50.8 x 180.3 x 243.8 mm) |
| | High Power Radio Transceiver 2.9" x 11.5" x 8.8" (74 x 293 x 223 mm) |
| | High Power Radio Transceiver with Handle 3.4" x 11.5" x 8.8" (87 x 293 x 223 mm) |
| Weight | Mid Power Radio Transceiver and Control Head 7.0 lbs (3.17 kg) |
| | High Power Radio Transceiver 14.2 lbs with trunnion (6.4 kg) 12 lbs without trunnion (5.4 kg) |

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Project 25 Multi-Band Mobile Radio

TRANSMITTER – TYPICAL PERFORMANCE SPECIFICATIONS

| | 700MHz | 800MHz | VHF |
|---|---------------------------|----------------------------------|----------------------|
| Frequency Range/Bandsplits | 764-776 794-806 | 806-824 851-870 | 136-174 |
| Channel Spacing | 25/12.5 kHz | 25/20/12.5 kHz | 30/25/12.5 kHz |
| Maximum Frequency Separation | Full Bandsplit | Full Bandsplit | Full Bandsplit |
| Rated RF Output Power Adj* | 10-30 Watts | 10-35 Watts | 25-100 Watts |
| Frequency Stability* (-30°C to +60°C; +25°C Ref.) | ±0.00015 % | ±0.00015 % | ±0.0002 % |
| Modulation Limiting* | ±5 kHz/±2.5 kHz | ±5 kHz/±4 kHz (NPSPAC) /±2.5 kHz | ±5 kHz/±2.5 kHz |
| Modulation Fidelity (C4FM) 12.5kHz Digital Channel | ±2.8 kHz | ±2.8 kHz | ±2.8 kHz |
| Emissions* | Conducted+ -70/-85 dBc | Radiated+ -20/-40 dBm | Conducted -70 dBc |
| | | | Radiated -20 dBm |
| Audio Response* | +1, -3 dB (EIA) | +1, -3 dB (EIA) | +1, -3 dB (EIA) |
| FM Hum & Noise (25 & 20 KHz/12.5 KHz) | 40/34 dB | 40/34 dB | 50/40 dB |
| Audio Distortion* | 2% | 2% | 2% |

RECEIVER – TYPICAL PERFORMANCE SPECIFICATIONS

| | 700MHz | 800MHz | VHF |
|--|------------------|------------------|-----------------------------------|
| Frequency Range/Bandsplits | 764-776 | 851-870 | 136-174 MHz |
| Channel Spacing | 25/12.5 kHz | 25/20/12.5 kHz | 30/25/12.5 kHz |
| Maximum Frequency Separation | Full Bandsplit | Full Bandsplit | Full Bandsplit |
| Audio Output Power at 3% distortion* | 7.5 W or 13 W ** | 7.5 W or 13 W ** | 7.5 W or 13 W ** |
| Frequency Stability* (-30°C to +60°C; +25°C Ref.) | ±0.00015 % | ±0.00015 % | ±0.0002 % |
| Analog Sensitivity* 12 dB SINAD | 0.25 µV | 0.25 µV | Pre-Amp 0.2 µV Standard 0.3 µV |
| Digital Sensitivity 1% BER | 0.3 µV | 0.3 µV | 0.25 µV 0.4 µV |
| 5% BER | 0.25 µV | 0.25 µV | 0.2 µV 0.3 µV |
| Intermodulation | 80 dB | 80 dB | 80 dB 85 dB |
| Spurious Rejection | 90 dB | 90 dB | 90 dB |
| Audio Distortion at rated* | 3.00% | 3.00% | 3.00% |
| Selectivity* 25 kHz/30 kHz | 80 dB | 80 dB | 90 dB |
| 12.5 kHz | 65 dB | 65 dB | 70 dB |

GPS SPECIFICATIONS

| | |
|----------------------|-------------------------------|
| Channels | 12 |
| Tracking Sensitivity | -153 dBm |
| Accuracy** | <10 meters (95%) |
| Cold Start | <60 seconds (95%) |
| Hot Start | <10 seconds (95%) |
| Mode of Operation | Autonomous (Non-Assisted) GPS |

POWER AND BATTERY DRAIN

| | |
|---|--|
| Model Type | 136-174 MHz 764-870 MHz |
| Minimum RF Power Output | 10-35 Watt (764-870 MHz) 25-100 Watt (136-174 MHz) |
| Operation | 13.8V DC ±20% Negative Ground |
| Standby at 13.8V | 764-870 MHz (10-35 Watt) 0.85A 136-174 MHz (25-100 Watt) 0.85A |
| Receive at Rate Audio at 13.8V | 764-870 MHz (10-35 Watt) 3.2A 136-174 MHz (25-100 Watt) 3.2A |
| Transmit Current (A) at Rated Power (W) | 764-870 MHz (10-35 Watt) 12A (35W), 8A (15W) 136-174 MHz (25-100 Watt) 20A (100W) |

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MOBILE 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/Hot | 501.5 | I-A1, II |
| 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 |
| 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,III | 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 | - | 509.3 | - | 509.4 | - | 509.5 | - |
| Blowing Dust | 510.1 | I | 510.2 | I,II | 510.3 | I,II | 510.4 | I,II | 510.5 | I, II |
| Vibration | 514.1 | VIII/F, Curve-W | 514.3 | I/10, II/3 | 514.4 | I/10, II/3 | 514.5 | I/24 | 514.6 | I-cat.24 |
| Shock | 516.1 | I,II | 516.3 | I,IV | 516.4 | I,IV | 516.5 | I,IV | 516.6 | I, V, VI |

ENCRYPTION

| | |
|-----------------------------------|--|
| Supported Encryption Algorithms | ADP, AES, DES, DES-XL, DES-OFB, DVP-XL |
| Encryption Algorithm Capacity | 7 |
| Encryption Keys per Radio | Module capable of storing 1024 keys. Programmable for 48 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 140-2 FIPS 197 |

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

** Accuracy specs are for long-term tracking (95th percentile values >5 satellites visible at a nominal -130 dBm signal strength)

* Specs includes performance for the non-GNSS/GNSS bands

** Output power in to 8 and 3.2 Ohm external speakers respectively

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

ENVIRONMENTAL SPECIFICATIONS

| | |
|------------------------|---------------|
| Operating Temperature | -30°C / +60°C |
| Storage Temperature | -40°C / +85°C |
| Humidity | Per MIL-STD |
| ESD | IEC 801-2 KV |
| Water & Dust Intrusion | IP54, MIL-STD |

FCC TYPE ACCEPTANCE ID

| Band | Output Power | Transmitter Number |
|-------------|--------------|--------------------|
| 136-174 MHz | 25-100 Watt | AZ492FT3821 |
| 764-870 MHz | 10-35 Watt | AZ492FT5858 |



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