

APX™ 7500

Project 25 Multi-Band Mobile Radio



STANDARD FEATURES

Available in 700/800 MHz, VHF, and UHF R1 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 multiband, operating in any 2 frequency bands (700/800 MHz, VHF, and UHF R1), communicates with current and future networks (FDMA and TDMA)



SPECIFICATION SHEET

APX 7500
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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

- Extra large full color display with Intelligent Lighting
- 12 button DTMF style keypad
- Dedicated siren controls
- Large programmable one touch buttons
- Night/day mode button

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)
Weight	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)
Weight	High Power Radio Transceiver with Handle
	3.4" x 11.5" x 8.8" (87 x 293 x 223 mm)
	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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TRANSMITTER – TYPICAL PERFORMANCE SPECIFICATIONS

	700 MHz	800 MHz	VHF	UHF R1				
Frequency Range/Bandsplits	764-776 MHz 794-806 MHz	806-824 MHz 851-870 MHz	136-174 MHz	380-470 MHz				
Channel Spacing	25/12.5 kHz	25/20/12.5 kHz	30/25/12.5 kHz	25/12.5 kHz				
Maximum Frequency Separation	Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit				
Rated RF Output Power Adj*	10-30 Watts	10-35 Watts	10-50 Watts or 25-100 Watts	10-40 Watts or 25-100 Watts				
Frequency Stability* (-30°C to +60°C; +25°C Ref.)	±0.00015 %	±0.00015 %	±0.0002 %	±0.0002 %				
Modulation Limiting*	±5 kHz/±2.5 kHz	±5 kHz/±4 kHz (NPSPAC) /±2.5 kHz	±5 kHz/±2.5 kHz	±5 kHz/±2.5 kHz				
Modulation Fidelity (C4FM) 12.5kHz Digital Channel	±2.8 kHz	±2.8 kHz	±2.8 kHz	±2.8 kHz				
Emissions*	Conducted* -70/-85 dBc	Radiated* -20/-40 dBm	Conducted -70 dBc	Radiated -20 dBm	Conducted -85 dBc	Radiated -20 dBm	Conducted -85 dBc	Radiated -20 dBm
Audio Response*	+1, -3 dB (EIA)	+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	45/40 dB				
Audio Distortion*	2%	2%	2%	2%				

RECEIVER – TYPICAL PERFORMANCE SPECIFICATIONS

	700MHz	800MHz	VHF	UHF R1			
Frequency Range/Bandsplits	764-776	851-870	136-174 MHz	380-470 MHz			
Channel Spacing	25/12.5 kHz	25/20/12.5 kHz	30/25/12.5 kHz	25/12.5 kHz			
Maximum Frequency Separation	Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit			
Audio Output Power at 3% distortion*	7.5 W or 15 W **	7.5 W or 15 W **	7.5 W or 15 W **	7.5 W or 15 W **			
Frequency Stability* (-30°C to +60°C; +25°C Ref.)	±0.00015 %	±0.00015 %	±0.0002 %	±0.0002 %			
Analog Sensitivity*	12 dB SINAD	0.25 µV	0.25 µV	0.2 µV	0.3 µV	0.2 µV	0.3 µV
Digital Sensitivity	1% BER	0.3 µV	0.3 µV	0.25 µV	0.25 µV	0.25 µV	0.4 µV
	5% BER	0.25 µV	0.25 µV	0.2 µV	0.2 µV	0.2 µV	0.3 µV
Intermodulation	80 dB	80 dB	80 dB	85 dB	80 dB	85 dB	
Spurious Rejection	90 dB	90 dB	90 dB		90 dB		
Audio Distortion at rated*	3.00%	3.00%	3.00%		3.00%		
Selectivity*	25 kHz/30 kHz	80 dB	80 dB	90 dB	82 dB	82 dB	
	12.5 kHz	65 dB	65 dB	70 dB	70 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, 380-470 MHz, 450-520 MHz, 764-870 MHz
Minimum RF Power Output	10-35 Watt (764-870 MHz), 10-50 Watts or 25-100 Watts (136-174 MHz), 10-40W or 25-100 Watts (380-470 MHz), 10-45Watts (450-485 MHz), 10-40Watts (485-512 MHz), 10-25Watts (512-520 MHz)
Operation	13.8V DC ±20% Negative Ground
Standby at 13.8V	0.85A (764-870 MHz), 0.85A (136-174 MHz), 0.85A (380-470 MHz), 0.85A (450-520 MHz)
Receive at Rate Audio at 13.8V	3.2A (764-870 MHz), 3.2A (136-174 MHz), 3.2A (380-470 MHz), 3.2A (450-520 MHz)
Transmit Current (A) at Rated Power (W)	136-174 MHz (10-50 Watt) 13A (50W) 8A (15W) 380-470 MHz (10-40 Watt) 11A (40W) 8A (15W) 450-520 MHz (10-45 Watt) 11A (45W) 8A (15W) 764-870 MHz (10-35 Watt) 12A (35W) 8A (15W) 136-174 MHz (25-110 Watt) 20A (100W) 380-470 MHz (25-110 Watt) 24A (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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