APX 2500

Single-band P25 Mobile Radio

Better communication.
Better outcomes.

A sudden demonstration in the city center or a downed power line can bring the city transit system to a halt. When the unexpected strikes, you need to interoperate securely and seamlessly across agencies. The APX™ 2500 P25 mobile makes it possible for agencies, such as police, emergency services, utilities and transportation, to communicate securely at all times.

Security is more important than ever. Criminals are testing you on the streets and over the air. Fight back with multiple levels of protection to encrypt and secure your voice and data communication against eavesdropping.

The APX 2500 is designed to reduce cost of ownership. The compact, lightweight design makes the APX 2500 conveniently small and easy to install across a variety of vehicles. And built-in Wi-Fi makes it easy to update and maintain for years.

Communicate better and get better outcomes with the APX 2500 P25 mobile radio.

MOTOROLA SOLUTIONS

Rugged and reliable

When out in the field, you face all types of conditions. Your radio shouldn't hold you back. Whether it be getting caught in a storm or undergoing extreme temperature shock, you can remain confident in the APX 2500 and know that it won't let you down in the moments that matter.

Built-in Wi-Fi

Integrated Wi-Fi helps to keep your radio update to date. Receive new codeplugs, firmware updates and software features at the speed of Wi-Fi— without interruptions to voice communications.

Lightweight, compact design

The APX 2500 is ideal for many vehicle installations. Its small and lightweight form factor simplifies installation and its IP56 rating provides ample protection from dust and water intrusion.

P25 collaboration

Although you are out of the office, you still need to communicate with others to get the job done. As a P25 mobile radio, the APX 2500 allows you to communicate with other P25 radio users. Seamlessly collaborate within your department or with other departments and organizations using the APX 2500 P25 mobile radio.

Device management services

Motorola Solutions offers three levels of service plans – Essential, Advanced and Premier. From simple support for technical troubleshooting to a complete transfer of optimization and maintenance services to Motorola Solutions, you choose the level of support that suits you best.

RF antenna port   Accessory connector   GPS   Wi-Fi   DC power

APX 2500 compatible control heads

Extreme usability

The O2 control head provides rugged simplicity for efficient and confident communication. Extreme controls with easy to read color display and a built-in 7.5 watt speaker provides a streamlined visual experience with loud, clear audio. Available in high impact green or black.

Exaggerated design and rugged housing for extreme environments

Full color display with night mode and intelligent lighting

Integrated high density speaker for loud, clear audio

Programmable multi-select buttons

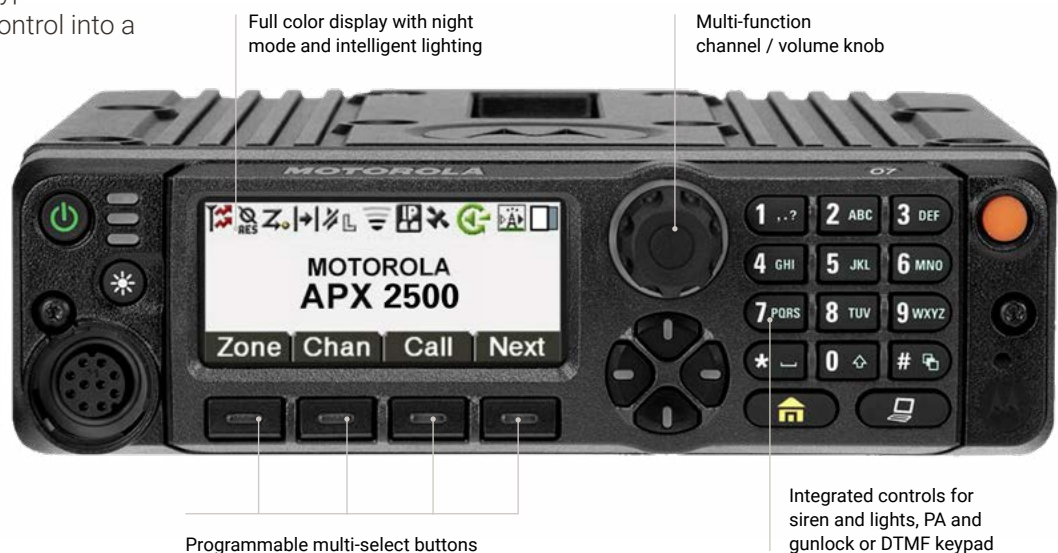Enlarged multi-function channel/volume knob

Handheld flexibility

The O3 handheld control head fits all your mobile controls in your hand. With the O3 your radio controls are never out of reach.

Programmable buttons all around

Full color display with intelligent lighting

Programmable menu buttons

Dedicated volume and channel rockers

Fully integrated DTMF keypad

Integrated control head and microphone design

Integrated multi-functionality

The O7 is a sophisticated control head with a color display and built-in keypad. It can integrate your radio vehicle control into a single ergonomic interface.

Full color display with night mode and intelligent lighting

Multi-function channel / volume knob

Programmable multi-select buttons

Integrated controls for siren and lights, PA and gunlock or DTMF keypad

Features

GENERAL FEATURES

Channel Capacity	512 channels standard, expandable to 1,000 channels
Wireless Connectivity	GPS/GLONASS, Wi-Fi
WLAN (Wi-Fi) Protocols	802.11 b/g/n (2.4GHz) 802.11 a/n/ac (5GHz)

OPERATING MODES

Digital Trunking	9600 Baud APCO P25 Phase 1 FDMA and Phase 2 TDMA
Analog Trunking	3600 Baud SmartNet®, SmartZone®, Omnilink
Digital Conventional	APCO 25
Analog Conventional	Analog MDC 1200, Quik Call II System Configurations

INTEGRATED WI-FI, GPS, AND DATA CONNECTIVITY

Frequency Range/ Band splits	WLAN (Wi-Fi): 2412 - 2472 MHz; 5180 - 5320 MHz; 5500 - 5825 MHz	
WLAN (WiFi) 802.11 b/g/n (2.4GHz) 802.11 a/n/ac (5GHz)	Security protocols WPA-2, WPA, WEP	
	SSIDs Up to 20 pre-provisioned	
Data Modem Tethering[1]		
ASTRO 25 Integrated Voice and Data		
Enhanced Data[1]		
Integrated GPS/GLONASS for Outdoor Location Tracking		
Mission Critical Geofence[1]		
Personnel Accountability[1]		

MANAGEMENT

Customer Programming Software (CPS)
Radio Management
Over-the-air Programming (OTAP)[1]

SECURITY

P25 Authentication[1]
Software Key
Single-key ADP Encryption
Multikey for 128 keys and multi-algorithm[1]
Over-the-air Rekeying (OTAR)[1]

GPS/GNSS SPECIFICATIONS

Channels	12
Tracking Sensitivity	-164 dBm
Accuracy*	<5 meters (95%)
Cold Start*	<60 seconds (95%)
Hot Start*	<5 seconds (95%)
Mode of Operation	Autonomous (Non-Assisted) GNSS or SBAS

[1] Optional

[2] Measured conductively with >6 satellites visible at a nominal -130 dBm signal strength

ENCRYPTION

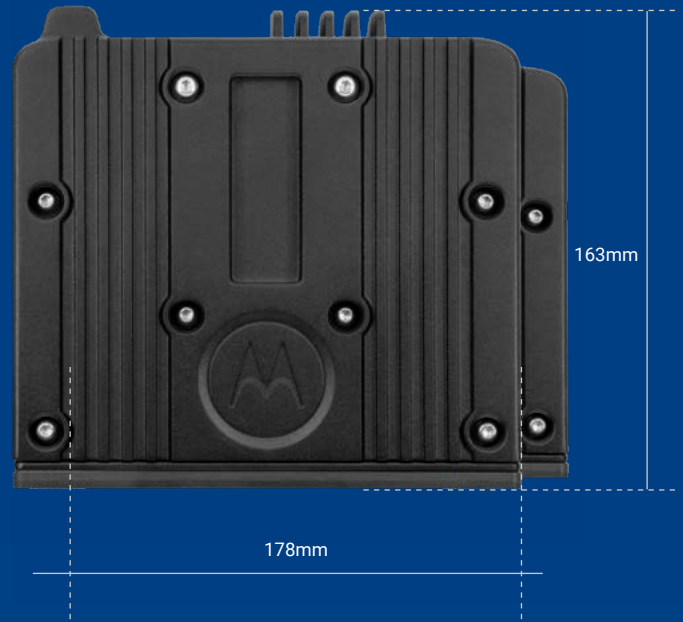|	
Supported Encryption Algorithms	ADP (standard), 256-bit AES, DES, DES-XL, DES-OFB, DVP-XL
Encryption Algorithm Capacity	8
Encryption Keys per Radio	Module capable of storing 1024 keys. Programmable for 128 Common KeY Reference (CKR) or 16 PhysicalIdentifier (PID)
Encryption Frame Re-sync Interval	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 Level 3, FIPS 197

OTHER FEATURES

Text Messaging
Radio Profiles
Dynamic Zone
Intelligent Priority Scan
Unified Call List
Instant Recall
Data Modem Connection (wired or Wi-Fi)[1]
12 Character RFID Asset Tracking[1]
Digital Tone Signaling[1]
Siren and Light Interface Module[1]

SIGNALING (ASTRO 25 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

[1] Optional

DIMENSIONS AND WEIGHT

Radio Transceiver	51 x 178 x 163 mm (2.0 x 7.0 x 6.4 in)	2.18 kg (4.80 lbs)
Radio Transceiver and O2 Control Head - Dash Mount	69 x 207 x 223 mm (2.7 x 8.1 x 8.8 in)	2.43 kg (5.36 lbs)
Radio Transceiver and O7 Control Head - Dash Mount	51 x 178 x 208 mm (2 x 7 x 8.2 in)	2.24 kg (4.94 lbs)
Radio Transceiver and Remote Mount	51 x 178 x 194 mm (2 x 7 x 7.62 in)	2.18 kg (4.80 lbs)
O2 Control Head Remote Mount	69 x 206 x 53 mm (2.7 x 8.1 x 2.1 in)	-
O7 Control Head Remote Mount	51 x 178 x 40 mm (2.0 x 7.0 x 1.5 in)	-

51mm

178mm

163mm

178mm

Performance and regulatory

TRANSMITTER					
	VHF	**UHF R1**	**UHF R2**	**700 MHZ**	**800 MHZ**
Frequency Range/ Bandsplits	136-174 MHz	380-470 MHz	450-520 MHz	764-776, 794-806 MHz	806-825, 851-870 MHz
Rated RF Output Power (Adjustable)	1-50 W 1-25W[3]	1-40 W 1-25W[3]	1-45 W 1-25W[3]	3-30 W	3-35 W
Frequency Stability (-30°C to +60°C; +25°C Ref.)	±0.8 PPM	±0.8 PPM	±0.8 PPM	±0.8 PPM	±0.8 PPM
Emissions	Conducted -85 dBc / Radiated -10 dBm	Conducted -85 dBc / Radiated -20 dBm	Conducted -85 dBc / Radiated -20 dBm	Conducted -75/-85 dBc / Radiated -20/-40 dBm	Conducted -75 dBc / Radiated -20 dBm
Modulation Limiting (12.5/20/25 kHz)	±5/±2.5 kHz	±5/±2.5kHz	±5/±2.5kHz	±5/±2.5 kHz	±5/±2.5 kHz
Modulation Fidelity (C4FM) 12.5 kHz Digital Channel	2.5%	1.50%	1.50%	1.50%	1.50%
Audio Response	+1. -3 dB (EIA)	+1, -3 dB (EIA)	+1, -3 dB (EIA)	+1, -3 dB (EIA)	+1, -3 dB (EIA)
FM Hum & Noise (12.5 kHz/25 kHz)	-52 dB / -53 dB	-50 dB/ -53 dB	-50 dB/ -53 dB	-48 dB / -50 dB	-48 dB / -50 dB
Audio Distortion (12.5 kHz/25 kHz)	0.50%	0.50%	0.50%	0.50%	0.50%

RECEIVER

	VHF		UHF R1		UHF R2		700 MHZ	800 MHZ
Frequency Range/ Bandsplits	136-174 MHz		380-470 MHz		450-520 MHz		764-776 MHz	851-870 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/Max	7.5 / 15 W		7.5 / 15W		7.5 / 15W		7.5 / 15 W	7.5 / 15 W
Frequency Stability (-30 °C to +60 °C; +25 °C Ref.)	±0.8 ppm		±0.8 ppm		±0.8 ppm		±0.8 ppm	±0.8 ppm
Analog Sensitivity (12db SINAD)	Pre-Amp -123 dBm (0.158µV)	Standard -119 dBm (0.251µV)	Pre-Amp -123 dBm (0.158µV)	Standard -119 dBm (0.251µV)	Pre-Amp -123 dBm (0.158µV)	Standard -119 dBm (0.251µV)	-121 dBm (0.199 µV)	-121 dBm (0.199 µV)
Digital Sensitivity (5% BER)	Pre-Amp -123 dBm (0.158µV)	Standard -119 dBm (0.251µV)	Pre-Amp -123 dBm (0.158µV)	Standard -119 dBm (0.251µV)	Pre-Amp -123 dBm (0.158µV)	Standard -119 dBm (0.251µV)	-121.5 dBm (0.188 µV)	-121.5 dBm (0.188 µV)
Selectivity (12.5 kHz / 25 kHz/ 30 Khz)	77 dB / 89 dB / 90 dB		72 dB / 83dB / -		72 dB / 83dB / -		75 dB / 85 dB / -	75 dB / 85 dB / -
Intermodulation Rejection (12.5 kHz / 25 kHz)	Pre-Amp 84 dB	Standard 86 dB	Pre-Amp 82 dB	Standard 86 dB	Pre-Amp 82 dB	Standard 86 dB	82 dB	82 dB
Spurious Rejection	95 dB		93 dB		93 dB		91 dB	91 dB
FM Hum & Noise (12.5 kHz / 25 kHz)	-50 dB / -59 dB		-50 dB / -55 dB		-50 dB / -55 dB		-50 dB / -59 dB	-50 dB / -59 dB
Audio Distortion (12.5 kHz / 25 kHz)	1.2 %		1.5 %		1.5 %		1.2 %	1.2 %

POWER AND BATTERY DRAIN

	VHF	UHF R1	UHF R2	700/800 MHZ
Frequency Range/Bandsplits	136-174 MHz	380-470 MHz	450-520 MHz	764-870 MHz
RF Power Output	1-50 W 1-25 W[3]	1-40 W 1-25 W[3]	450-485 MHz: 1-45W 485-512 MHz: 1-40W 512-520 MHz: 1-25W	3-30 W (764-776 MHz) 3-30 W (794-806 MHz) 3-35 W (806-824 MHz) 3-35 W (851-870 MHz)
Operation	13.8V DC ±20% Negative Ground	13.8V DC ±20% Negative Ground	13.8V DC ±20% Negative Ground	13.8V DC ±20% Negative Ground
Standby at 13.8V	0.85A	0.85A	0.85A	0.85A (764-870 MHz)
Receive Current at Rated Audio at 13.8V	3.2A	3.2A	3.2A	3.2A (764-870 MHz)
Transmit Current (A) at Rated Power	8 A @ 15 W 13 A @ 50 W	11A (40 W) 8A (15 W)	11A (40 W) 8A (15 W)	12A (35 W) 8A (15 W)

[3] 1-25W applies to countries with a 25W maximum limit

POWER AND BATTERY DRAIN

	VHF	UHF R1	700/800 MHZ
Frequency Range/Bandsplits	136-174 MHz	380-470 MHz	764-870 MHz
RF Power Output	1-50 W	1-40 W	3-30 W (764-776 MHz) 3-30 W (794-806 MHz) 3-35 W (806-824 MHz) 3-35 W (851-870 MHz)
Operation	13.8V DC ±20% Negative Ground	13.8V DC ±20% Negative Ground	13.8V DC ±20% Negative Ground
Standby at 13.8V	0.85A	0.85A	0.85A (764-870 MHz)
Receive Current at Rated Audio at 13.8V	3.2A	3.2A	3.2A (764-870 MHz)
Transmit Current (A) at Rated Power	8 A @ 15 W 13 A @ 50 W	11A (40 W) 8A (15 W)	12A (35 W) 8A (15 W)

ENVIRONMENTAL

Operating Temperature	-30°C/+60°C
Storage Temperature	-40°C/+85°C
Humidity	Per MIL-STD
ESD	IEC 61000-4-2
Water and Dust Intrusion (w/ O2 control head)	IP56, MIL-STD

RADIO MODEL NUMBER

VHF	M24KSS9PW1BN
UHF R1	M24QSS9PW1BN
700/800 MHz	M24URS9PW1BN

FCC/IC TYPE ACCEPTANCE ID

FCC/IC ID	BAND AND POWER LEVEL
FCC ID: AZ492FT7130 IC ID: 109U-92FT7130	136-174 MHz (1-50 W)
FCC ID: AZ492FT7129 IC ID: 109U-92FT7129	380-470 MHz (1-40 W)
FCC ID: AZ492FT49674 IC ID: 109U-92FT4967	450-520 MHz (1-45 W)
	485-512 MHz (1-40 W)
	512-520 MHz (1-25 W)
FCC ID: AZ492FT7124 IC ID: 109U-92FT7124	764-776 MHz (3-30 W)
	794-806 MHz (3-30 W)
	806-824 MHz (3-35 W)
	851-870 MHz (3-35 W)

RED CERTIFICATION

TYPE DESIGNATOR	BAND AND POWER LEVEL
MMCR308PE	136-174 MHz (1-50 W)
MMCR508PE	380-470 MHz (1-40 W)

All specifications shown are typical. Specifications are subject to change without notice

MOBILE MILITARY STANDARDS 810, C, D, E, F, G & H

	MIL-STD 810C		MIL-STD 810D		MIL-STD 810E		MIL-STD 810F		MIL-STD 810G		MIL-STD 810H	
	METHOD	PROC./CAT.	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	I/II	500.6	II	500.6	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	501.6	I/A1, II/A1	501.7	I/A1, II/A1
Low Temperature	502.1	I	502.2	I/C3, II/C1	502.3	I/C3, II/C1	502.4	I/C3, II/C1	502.6	I/C3, II/C1	502.7	I/C3, II/C1
Temperature Shock	503.1	I	503.2	1/A1C3	503.3	1/A1C3	503.4	I	503.6	I/C	503.7	I/C
Solar Radiation	505.1	II	505.2	I	505.3	I	505.4	I	505.6	I/A1	505.7	1/A1
Rain	506.1	I, II	506.2	I, II	506.3	I, II	506.4	I, III	506.6	I, III	506.6	I, III
Humidity	507.1	II	507.2	II	507.3	II	507.4	-	507.6	II/Aggravated	507.6	II/Aggravated
Salt Fog	509.1	I	509.2	I	509.3	I	509.4	-	509.6	-	509.7	-
Blowing Dust	510.1	I	510.2	I	510.3	I	510.4	I	510.6	I	510.7	I
Blowing Sand	-	-	510.2	II	510.3	II		II	510.6	II	510.7	II
Vibration	514.2	VIII, F, W	514.3	I/10, II/3	514.4	I/10, II/3	514.5	I/24	514.7	I/24	514.8	I/24, II/5
Shock	516.2	I, III, V	516.3	I, V, VI	516.4	I, V, VI	516.5	I, V, VI	516.7	I, V, VI	516.8	I, V, VI

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