



# APX 2500

SINGLE-BAND P25 MOBILE RADIO



## BETTER COMMUNICATION. BETTER OUTCOMES.

A sudden demonstration in the city centre 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. Integrated Bluetooth provides wireless communication with Commercial off the shelf (COTS) Bluetooth accessories.

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





## RUGGED AND RELIABLE

### RESPOND WITH CONFIDENCE

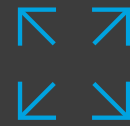
When out in the field, you face all types of conditions. Your radio shouldn't hold you back. Whether it be getting caught in a storm or undergoing extreme temperature shock, you can remain confident in the APX 2500 and know that it won't let you down in the moments that matter.



## BUILT-IN Wi-Fi

### VOICE AND DATA, ALL AT ONCE

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

### FLEXIBLE, EASY INSTALLATION

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.



RF antenna port

Accessory connector

GPS

Wi-Fi/Bluetooth

DC power



## P25 COLLABORATION

### COLLABORATE SEAMLESSLY

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 organisations using the APX 2500 P25 mobile radio.



## DEVICE MANAGEMENT SERVICES

### ALL THE SUPPORT YOU NEED

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

## 02 CONTROL HEAD

### EXTREME USABILITY

The 02 control head provides rugged simplicity for efficient and confident communication. Extreme controls with easy to read colour 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.



## 03 HANDHELD CONTROL HEAD

### HANDHELD FLEXIBILITY

The 03 handheld control head fits all your mobile controls in your hand. With the 03 your radio controls are never out of reach.



# APX 2500 COMPATIBLE CONTROL HEADS



## 07 CONTROL HEAD

### INTEGRATED MULTI-FUNCTIONALITY

The 07 is a sophisticated control head with a colour display and built-in keypad. It can integrate your radio vehicle control into a single ergonomic interface.



# 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)
Encryption Algorithms	ADP (standard), 256-bit AES, DES, DES-XL, DES-OFB, DVP-XL

## OPERATING MODES

Digital Trunking: 9600 Baud APCO P25 Phase 1 FDMA and Phase 2 TDMA
Analog Conventional: 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

Wi-Fi 802.11 b/g/n with up to 20 Wi-Fi networks provisioned in the radio <sup>1</sup>
Data Modem Tethering <sup>1</sup>
ASTRO 25 Integrated Voice and Data
Enhanced Data <sup>1</sup>
Integrated GPS/GLONASS for Outdoor Location Tracking <sup>1</sup>
Mission Critical Geofence <sup>1</sup>
Personnel Accountability <sup>1</sup>
Bluetooth (Version 4.2)

## MANAGEMENT

Customer Programming Software (CPS)
Radio Management
Over-the-air Programming (OTAP) <sup>1</sup>

## SECURITY

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

## GPS/GNSS SPECIFICATIONS

Channels	12
Tracking Sensitivity	-164 dBm
Accuracy <sup>2</sup>	<5 meters (95%)
Cold Start <sup>2</sup>	<60 seconds (95%)
Hot Start <sup>2</sup>	<5 seconds (95%)
Mode of Operation	Autonomous (Non-Assisted) GNSS or SBAS

<sup>1</sup> Optional

<sup>2</sup> Measured conductively with >6 satellites visible at a nominal -130 dBm signal strength



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 128 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 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) <sup>1</sup>
12 Character RFID Asset Tracking <sup>1</sup>
Digital Tone Signaling <sup>1</sup>
Siren and Light Interface Module <sup>1</sup>

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
Integrated GPS/GLONASS for outdoor location tracking <sup>1</sup>		
Data Modem Tethering <sup>1</sup>		
Bluetooth Version 4.2	2402-2480 MHz Compatible with HSP, PAN, DUN and SPP Profiles found in off-the-shelf Bluetooth accessories. Supports up to 6 data connections and 1 audio connection.	

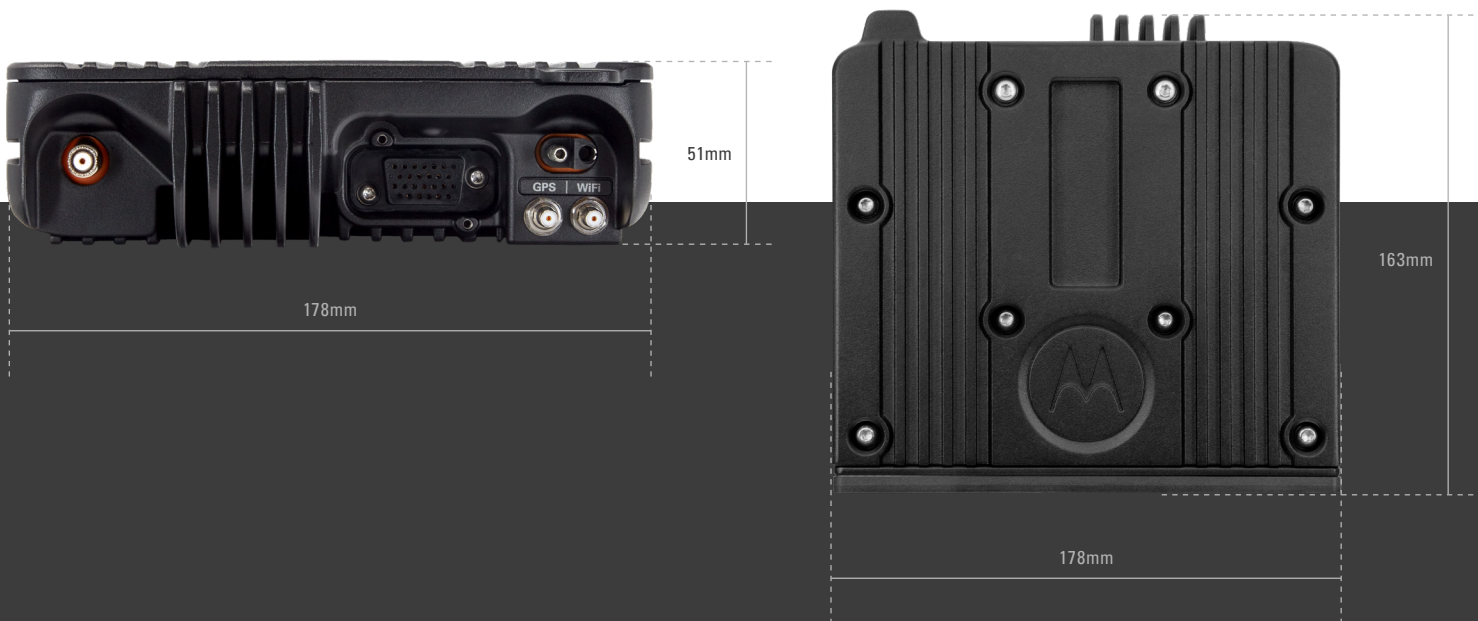
SIGNALING (ASTRO 25 MODE)	
Signalling Rate	9.6 kbps
Digital ID Capacity	10,000,000 Conventional / 48,000 Trunking
Digital Network Access Codes	4,096 network site addresses
ASTRO Digital User Group Addresses	4,096 network site addresses
Project 25 – CAI Digital User Group Addresses	65,000 Conventional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

<sup>1</sup> 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)	-



# 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 1-25 W <sup>3</sup>		1-40 W 1-25 W <sup>3</sup>		1-45 W 1-25 W <sup>3</sup>		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%		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		7.5/15 W		7.5 / 15 W		7.5 / 15 W	
Frequency Stability (-30 °C to +60 °C; +25 °C Ref.)	±0.8 ppm		±0.8 ppm		±0.8ppm		±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 (0.158 µV)	Standard -119 dBm (0.251 µV)	-121 dB (0.199 µV)		-121 dB (0.199 µV)	
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 (0.158 µV)	Standard -119 dBm (0.251 µV)	-121.5 dB (0.188 µV)		-121.5 dB (0.188 µV)	
Selectivity (12.5 kHz / 25 kHz/ 30 Khz)	77 dB / 89 dB / 90 dB		72 dB / 83dB / -		72 dB / 83 dB / -		75 dB / 85 dB / -		75 dB / 85 dB / -	
Intermodulation Rejection (12.5 kHz / 25 kHz)	Pre-Amp 84 dB / 84 dB	Standard 86 dB / 86 dB	Pre-Amp 82 dB/ 82dB	Standard 86 dB / 86 dB	Pre-Amp 82 dB / 82 dB	Standard 86 dB / 86 dB	82 dB / 82 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 %		1.50%		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 <sup>3</sup>	1-40 W 1-25 W <sup>3</sup>	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	13.9V 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)

<sup>3</sup> 1-25W applies to countries with a 25W maximum limit.

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
UHF2 R2	M24SSS9PW1BN
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: AZ492FT4967 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)

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	I/A	
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	

For more information, please visit [www.motorolasolutions.com/APX](http://www.motorolasolutions.com/APX)

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