



# APX 4500

SINGLE-BAND P25 MOBILE RADIO



## UNCOMPROMISING PERFORMANCE. EFFECTIVE RESPONSE.

You need a P25 radio to communicate and collaborate effectively with other P25 radio users. And, you need the performance and reliability of an APX™ radio. That is why we built the APX 4500 single-band mobile radio.

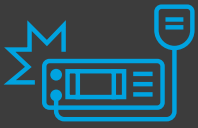
Everyone has something to like with the APX 4500. We've paired it with our rugged O2 Control Head for confident, reliable radio communication that can stand up to everyday use.

The compact form factor simplifies vehicle installation. Integrated

hardware encryption protects your mission-critical communication. Impact detection automatically alerts dispatch to keep its users safer and integrated Wi-Fi helps to keep you current with fast and easy software updates. Integrated Bluetooth provides wireless communication with Commercial off the shelf (COTS) Bluetooth accessories.

Improve your operational efficiency with the performance and reliability of the APX 4500 mobile radio.





## RUGGED AND RELIABLE

### RESPOND WITH CONFIDENCE

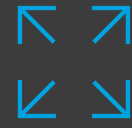
When out in the field, you face all types of conditions. Your radio shouldn't hold you back. Whether it be getting caught in a storm or undergoing extreme temperature shock, you can remain confident in the APX 4500 and know that it won't let you down in the moments that matter.



## BUILT-IN Wi-Fi

### VOICE AND DATA, ALL AT ONCE

Integrated Wi-Fi helps to keep your radio update to date with over-the-air updates. 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 4500 is ideal for a growing ecosystem of vehicle installations. Its small and lightweight form factor simplifies installation and its IP56 rating provides ample protection from dust and water intrusion.



## 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 4500 allows you to communicate with other P25 radio users. Seamlessly collaborate within your department or with other departments and organizations using the APX 4500 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 optimization and maintenance services to Motorola Solutions, you choose the level of support that suits you best.

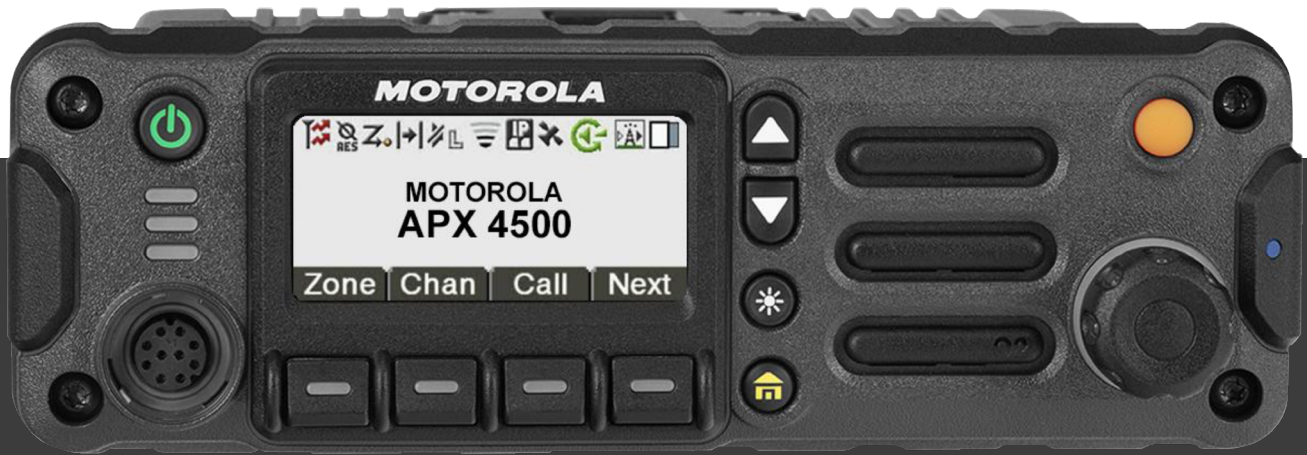


# APX 4500 COMPATIBLE CONTROL HEAD

## 02 CONTROL HEAD

### EXTREME USABILITY

The 02 control head provides rugged simplicity for efficient and confident communication. Oversized controls with an easy to read color display and a built-in 7.5 watt speaker provides clear visual and audible user experiences. 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



# FEATURES

## GENERAL SPECIFICATIONS

Channel Capacity	512 standard, expandable to 1,000 channels
Encryption Algorithms	ADP, 256-bit AES

## 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 AND DATA CONNECTIVITY

Wi-Fi (2.4GHz), 802.11 a/n/ac (5GHz) 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
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 <sup>1</sup>
Multikey for 128 keys <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, AES 256
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 140-3 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>

## INTEGRATED WI-FI, GPS, BLUETOOTH AND DATA CONNECTIVITY

Frequency Range/Band splits	WLAN (WiFi): 2412 - 2472 MHz; 5180 - 5320 MHz; 5500 - 5825 MHz	
WLAN (WiFi) 802.11 b/g/n	Security protocols	WPA-2, WPA, WEP
	SSIDs	Up to 20 pre-provisioned
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.	

<sup>1</sup> Optional

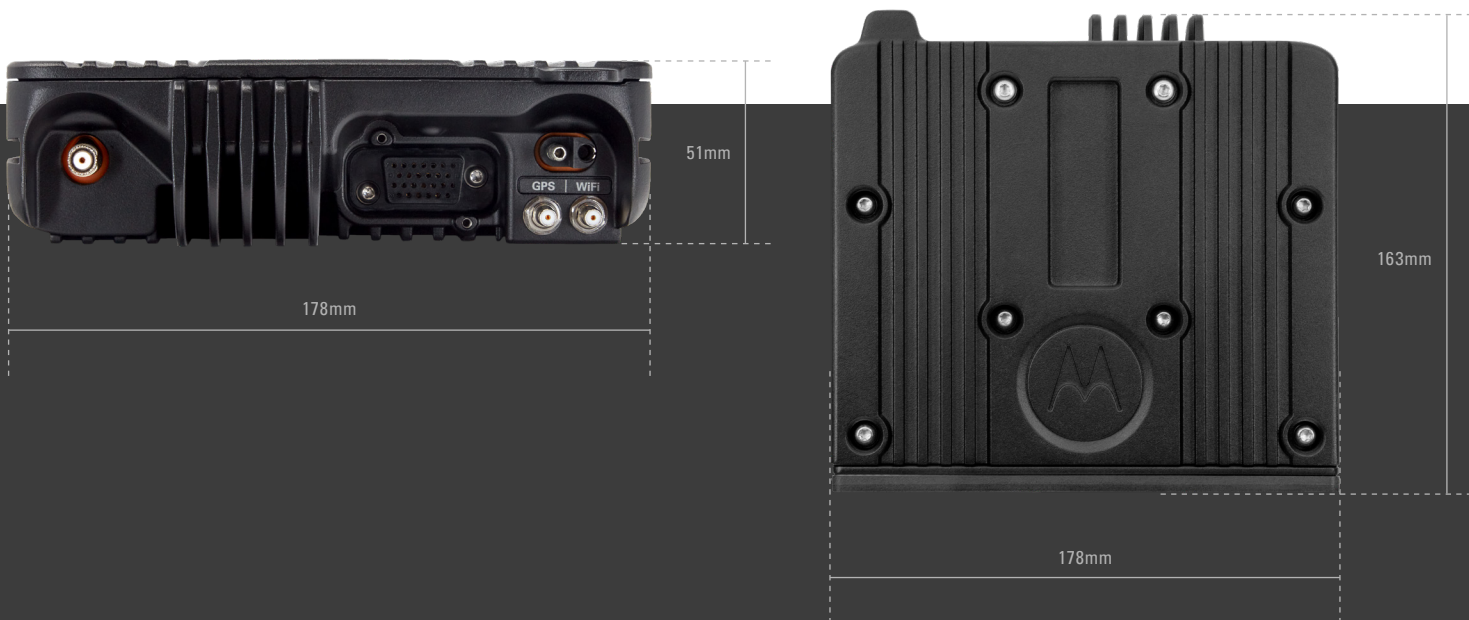


### SIGNALING (ASTRO 25 MODE)

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

### DIMENSIONS AND WEIGHT

Mid Power 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)
Mid Power Radio Transceiver and Remote Mount	51 x 178 x 193 mm (2.0 x 7.0 x 7.6 in)	2.18 kg (4.80 lbs)





# PERFORMANCE AND REGULATORY

## TRANSMITTER

	VHF		UHF R1		UHF R2		700 MHz		800 MHz		900 MHz	
Frequency Range/Bandsplits	136-174 MHz		380-470 MHz		450-520 MHz		764-776, 794-806 MHz		806-825, 851-870 MHz		896-902, 935-941 MHz	
Rated RF Output Power (Adjustable)	1-50 W		1-40 W		1-45 W		3-30 W		3-35 W		1-30 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		±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	Conducted -70 dBc	Radiated -20 dBm
Modulation Limiting (12.5/20/25 kHz)	±5/±2.5 kHz		±5/±2.5 kHz		±5/±2.5 kHz		±5/±2.5 kHz		±5/±2.5 kHz		±2.5 kHz (12.5kHz only)	
Modulation Fidelity (C4FM) 12.5 kHz Digital Channel	2.5%		1.50%		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)		+1, -3 dB (EIA)	
FM Hum & Noise (12.5 kHz/25 kHz)	-52 dB / -53 dB		-50 dB / -53 dB		-50dB / -53dB		-48 dB / -50 dB		-48 dB / -50 dB		-45 dB (12.5kHz only)	
Audio Distortion (12.5 kHz/25 kHz)	0.50%		0.50%		0.50%		0.50%		0.50%		0.80% (12.5kHz only)	

## RECEIVER

	VHF		UHF R1		UHF R2		700 MHz		800 MHz		900 MHz	
Frequency Range/Bandsplits	136-174 MHz		380-470 MHz		450-520 MHz		764-776 MHz		851-870 MHz		935-941 MHz	
Channel Spacing	12.5/25 kHz		12.5/25 kHz		12.5/25 kHz		12.5/25 kHz		12.5/25 kHz		12.5 kHz	
Maximum Frequency Separation	Full Bandsplit		Full Bandsplit		Full Bandsplit		Full Bandsplit		Full Bandsplit		Full Bandsplit	
Audio Output Power at Rated/Max	7.5 / 15 W		7.5 / 15 W		7.5 / 15 W		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		±0.8 PPM		±0.8 PPM		±0.8 PPM		±0.8 PPM	
Analog Sensitivity (12db SINAD)	Pre-Amp -123 dBm (0.158 µV)	Standard -119 dBm (0.251 µV)	Pre-Amp -123 dBm (0.158 µV)	Standard -119 dBm (0.251 µV)	Pre-Amp -123 dBm (0.158 µV)	Standard -119 dBm (0.251 µV)	-121 dB (0.199 µV)		-121 dB (0.199 µV)		-120 dBm (0.224 µV)	
5% BER	Pre-Amp -123 dBm (0.158 µV)	Standard -119 dBm (0.251 µV)	Pre-Amp -123 dBm (0.158 µV)	Standard -119 dBm (0.251 µV)	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)		-121 dBm (0.199 µV)	
Selectivity (12.5 kHz / 25 kHz / 30 kHz)	77 dB / 89 dB / 90 dB		72 dB / 83 dB / -		72 dB / 83 dB / -		75 dB / 85 dB / -		75 dB / 85 dB / -		74 dB (12.5kHz only)	
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		82 dB	
Spurious Rejection	95 dB		93 dB		93 dB		91 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		-50 dB (12.5kHz only)	
Audio Distortion (12.5 kHz / 25 kHz)	1.20%		1.50%		1.50%		1.20%		1.20%		1.20% (12.5kHz only)	

## POWER AND BATTERY DRAIN

	VHF		UHF R1		UHF R2		700 MHz		800 MHz		900 MHz	
Model Type	136-174 MHz		380-470 MHz		450-520 MHz		764-775, 794-806 MHz		806-825, 851-870 MHz		896-902, 935-941 MHz	
Minimum RF Power Output	1-50 W		1-40 W		450-485 MHz: 1-45 W 485-512 MHz: 1-40 W 512-520 MHz: 1-25 W		3-30 W		3-35 W		896-901 MHz: 1-30W 901-902 MHz: 1-3W 935-940 MHz: 1-30W 940-941MHz:1-3W	
Operation	13.8 V DC ±20% Negative Ground		13.8 V DC ±20% Negative Ground		13.8 V DC ±20% Negative Ground		13.8 V DC ±20% Negative Ground		13.8 V DC ±20% Negative Ground		13.8 V DC ±20% Negative Ground	
Standby at 13.8V	0.85 A		0.85 A		0.85 A		0.85 A		0.85 A		0.85 A	
Receive Current at Rated Audio at 13.8V	3.2 A		3.2 A		3.2 A		3.2 A		3.2 A		3.2 A	
Transmit Current (A) at Rated Power	8 A @ 15 W 13 A @ 50 W		11 A @ 40 W 8A @ 15 W		11 A @ 40 W 8A @ 15 W		8 A @ 15 W		8 A @ 15 W 12 A @ 35 W		10 A @ 30 W 5 A @ 3 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	IP56, MIL-STD

### RADIO MODEL NUMBER

VHF	M22KSS9PW1BN
UHF R1	M22QSS9PW1BN
UHF R2	M22SSS9PW1BN
700/800	M22URS9PW1BN
800/900	M22VRS9PW1CN

### 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 ISED ID: 109U-92FT4967	450-520 MHz (1-45 W)
	485-512 MHz (1-40 W)
	512-520 MHz (1-25 W)
	764-776 MHz (3-30 W)
FCC ID: AZ492FT7124 IC ID: 109U-92FT7124	794-806 MHz (3-30 W)
	806-824 MHz (3-35 W)
	851-870 MHz (3-35 W)
FCC ID: AZ492FT7141 ISED ID: 109U-92FT7141	896-902MHz (1-30W)
	935-941MHz (1-30W)

### 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/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





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



Motorola Solutions, Inc. 500 West Monroe Street, Chicago, IL 60661 U.S.A. 800-367-2346 [motorolasolutions.com](http://motorolasolutions.com)

MOTOROLA, MOTO, MOTOROLA SOLUTIONS and the Stylized M Logo are trademarks or registered trademarks of Motorola Trademark Holdings, LLC and are used under license. All other trademarks are the property of their respective owners. © 2022 Motorola Solutions, Inc. All rights reserved. 10-2022 [BG13]