



**MISSION READY WHEN IT MATTERS MOST**

# APX™ 4000 PROJECT 25 PORTABLE RADIO

Chemical spill. Catastrophic storm. Power outage. When every minute matters, you must communicate instantly with other agencies and responders. But how do you prepare for a disaster and keep control of operating costs? That's where the APX 4000 P25 portable radio answers the call, expertly and affordably.

The APX 4000 delivers all the benefits of TDMA technology in the smallest P25 capable portable in the industry. Easy to use, tough as nails, a hard value to beat, it seamlessly connects agencies throughout your city for fast, interoperable communications.

## EVERY INCH AN APX

The APX 4000 leverages the leading attributes of the APX family of P25 TDMA portables. From the 2-microphone design that reduces background noise so you can speak and hear clearly over heavy equipment, diesel engines and sirens to the high-spec RF performance for excellent coverage in challenging environments.

With its easy-to-use interface, color display, intelligent lighting and radio profiles, you get all the power of APX in a compact radio. Plus, you can extend the performance of your radio with a complete portfolio of industry-leading IMPRES smart energy and audio accessories.

## COMPACT AND UNCOMPROMISING

A compact P25 Phase 2 capable portable, the APX 4000 gets the job done without getting in the way. Simplified controls and a choice of either dedicated volume and channel knobs (2 knob model), or an enlarged multifunction knob (1 knob model), the APX 4000 provides readiness for any type of work setting. And its standard IP67 and MIL-STD certified to withstand dust, heat, shock, drops and water immersion, so you can count on it wherever you need it – at the factory line, power line or fire line.

## P25 PERFORMANCE, INSIDE AND OUT

Loaded with key P25 features to increase safety, the APX 4000 features Mission Critical Wireless, a unique Bluetooth® solution that provides an encrypted link to a high performance earpiece, GPS for quickly locating personnel outdoors, AES encryption for improved security, and over-the-air programming to program radios in the field without interrupting voice operation.

## IMPROVE RESPONSE AND EXPENSES

The APX 4000 is P25 Phase 2 capable for twice the voice capacity so you can add more users without adding more frequencies or infrastructure. And it's backwards and forwards compatible with all Motorola mission critical radio systems, so you can interoperate with confidence while you improve operating expenses.

## POWER UP WITH APX 4000 ACCESSORIES

- Designed, tested and certified for optimum performance with your radio
- Complete portfolio of remote speaker microphones, headsets and Mission Critical Wireless Bluetooth® accessories
- High-powered IMPRES™ batteries that have a slim design to fit the compact radio size

**PRODUCT DATA SHEET**  
**APX™ 4000 P25 PORTABLE RADIO**

Software Key  
 ASTRO 25 Integrated Voice & Data



**FEATURES AND BENEFITS**

- Available in 700/800 MHz, VHF, UHF R1, UHF R2 and 900 MHz bands
- 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 / 30 kHz / 25 kHz)<sup>1</sup>
- Standard with 2 dedicated control knobs for volume and channel changes
- Embedded digital signaling (ASTRO & ASTRO 25)
- Man Down
- Available in 2 models
- Lightbar with Intelligent Lighting
- Radio Profiles
- Unified Call List
- Software Key
- ASTRO 25 Integrated Voice & Data
- User programmable Voice Announcement
- Meets Applicable MIL-STD-810C, D, E, F and G
- IP67 standard (submersible 1 meter, 30 minutes)

- 2-Knob Model Only - Rugged Submersible housing (2 meters for 2 hours)
- Superior Audio Features:
  - 0.5 W high audio speaker
  - 2-mic noise canceling technology
- Utilizes Windows XP, Vista and Windows 7 and 8 Customer Programming Software (CPS)<sup>6</sup>
  - Supports USB communications
  - Built in FLASHport™ support
- Full portfolio of accessories including IMPRES batteries, chargers and audio devices<sup>3</sup>
- Mission Critical Wireless Bluetooth<sup>4</sup>

**OPTIONAL FEATURES**

- AES Encryption
- Programming Over Project 25
- Text Messaging
- GPS Outdoor Location Tracking
- Man Down
- Site Selectable Alert Tones
- P25 Over the Air re-keying
- P25 Link Layer Authentication
- Enhanced Data
- Multifunction Knob

<sup>1</sup> Per the FCC Narrowbanding rules, new products (APX4000 VHF, UHF R1, UHF R2) submitted for FCC certification after January 1, 2011 are restricted from being granted certification at 25KHz for United States - State & Local Markets only.  
<sup>2</sup> Radios meet industry standards (IPx7) for immersion.  
<sup>3</sup> Chargers and batteries for the APX 4000 radios do not interoperate with other APX radios.  
<sup>4</sup> Compatible with BT 2.1 HSP, PAN, DUN and SPP BT Profiles.  
<sup>5</sup> When used with a Hazardous Location tested radio.  
<sup>6</sup> CPS version R12.00.00 and greater ordered after June 2014 will only support Windows 7 and 8.

**TRANSMITTER - TYPICAL PERFORMANCE SPECIFICATIONS**

	700/800	VHF	UHF Range 1	UHF Range 2	900 MHz <sup>6</sup>
Frequency Range/ Bandsplits	700 MHz 800 MHz	763-776, 793-806 MHz 806-824, 851-870 MHz	136-174 MHz	380-470 MHz	450-520 MHz 896-901, 935-940 MHz
Channel Spacing	25/12.5 kHz	30/25/12.5 kHz	25/12.5 kHz	25/12.5 kHz	12.5 kHz
Maximum Frequency Separation	Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit
Rated RF Output Power Adj <sup>1</sup>	1-3 Watts Max	1-5 Watts Max	1-5 Watts Max	1-5 Watts Max	1-2.5 Watts Max
Frequency Stability <sup>1</sup> (-30°C to +60°C; +25°C Ref.)	±0.00010 %	±0.00010 %	±0.00010 %	±0.00010 %	±0.00010 %
Modulation Limiting <sup>1</sup>	±5 kHz / ±4 kHz / ±2.5 kHz	±5 kHz / ±4 kHz / ±2.5 kHz	±5 kHz / ±4 kHz / ±2.5 kHz	±5 kHz / ±4 kHz / ±2.5 kHz	±2.5 kHz
Emissions (Conducted and Radiated) <sup>1</sup>	-75 dB	-75 dB	-75 dB	-75 dB	-75 dB
Audio Response <sup>1</sup>	+1, -3 dB	+1, -3 dB	+1, -3 dB	+1, -3 dB	+1, -3 dB
FM Hum & Noise	25 kHz 12.5 kHz	-47 dB -45 dB	-47 dB -47 dB	-47 dB -45 dB	-47 dB -45 dB
Audio Distortion <sup>1</sup>	25 kHz 12.5 kHz	1.00%	1.00%	1.00%	1.00%

**BATTERIES FOR APX 4000**

Battery Capacity / Type	Dimensions (HxWxD)	Weight	Battery Part Number	Battery Capacity
Li-Ion IMPRES 1900 mAh IP67	114.5x55.04x17.85	150 grams	NNTN8128A (1 knob model only)	1900 mAh
Li-Ion IMPRES 2300 mAh IP67 Non-HazLoc	114.5x55.04x23.15	160 grams	PMNN4424AR (1 knob model only)	2300 mAh
Li-Ion IMPRES 2300 mAh IP67 HazLoc <sup>5</sup>	114.5x55.04x23.15	210 grams	NNTN8560A (2 knob model only)	2500 mAh
Li-Ion IMPRES 2700 mAh IP54 Non-HazLoc	114.5 x 55.04 x 23.15	160 grams	PMNN4448AR (1 knob model only)	2700 mAh

**PRODUCT DATA SHEET**  
APX™ 4000 P25 PORTABLE RADIO



**MODEL 2**



**MODEL 3**

<b>RADIO MODELS</b>		
	<b>MODEL 2</b>	<b>MODEL 3</b>
Display	Full bitmap color LCD display 3 lines of text x 14 characters 1 line of icons 1 menu line x 3 menus White backlight	Full bitmap color LCD display 3 lines of text x 14 characters 1 line of icons 1 menu line x 3 menus White backlight
Keypad	Backlight keypad 3 soft keys 4 direction Navigation key Home and Data buttons	Backlight keypad 3 soft keys 4 direction navigation key 4x3 keypad Home and Data buttons
Channel Capacity	512	512
FLASHport Memory	64 MB	64 MB
700/800 MHz (763-870 MHz)	H51UCF9PW6AN Q360GK	H51UCH9PW7AN Q360GK
VHF (136-174 MHz)	H51KDF9PW6AN Q360GX	H51KDH9PW7AN Q360GX
UHF Range 1 (380-470 MHz)	H51QDF9PW6AN Q360GL	H51QDH9PW7AN Q360GL
UHF Range 2 (450-520 MHz)	H51SDF9PW6AN Q360HA	H51SDH9PW7AN Q360HA
900 MHz (896-940 MHz) (1 knob model only)	H51WCF9PW6AN Q360JF	H51WCH9PW7AN Q360JE
Buttons & Switches	Large PTT button ■ Angled On/Off Volume Control ■ 16 position top-mounted rotary switch ■ Orange emergency button ■ 3 programmable side buttons	

**TRANSMITTER CERTIFICATION**

700/800 (764-869 MHz)	AZ489FT7049
VHF (136-174 MHz)	AZ489FT3828
UHF Range 1 (380-470 MHz)	AZ489FT4905
UHF Range 2 (450-520 MHz)	AZ489FT4910
900 MHz (896-901, 935-940 MHz)	AZ489FT5864

**FCC EMISSIONS DESIGNATORS**

FCC Emissions Designators	11K0F3E, 16K0F3E, 8K10F1D, 8K10F1E, 8K10F1W, 20K0F1E*
FCC Emissions Designators for 900 MHz	11K0F3E, 8K10F1D, 8K10F1E, 8K10F1W

**POWER SUPPLY**

Power Supply	One rechargeable Li-Ion 1900 mAh battery standard, or 2300 mAh/2700 mAh high cap Li-Ion.
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\* Per the FCC Narrowbanding rules, new products (APX4000 VHF, UHF1, UHF2) submitted for FCC certification after January 1, 2011 are restricted from being granted certification at 25KHz for United States - State & Local Markets only.

**RECEIVER - TYPICAL PERFORMANCE SPECIFICATIONS**

	<b>700/800</b>	<b>VHF</b>	<b>UHF Range 1</b>	<b>UHF Range 2</b>	<b>900 MHz (1 knob model only)</b>	
Frequency Range/Bandsplits	700 MHz 800 MHz	763-776 MHz 851-870 MHz	136-174 MHz	380-470 MHz	450-520 MHz 935-940 MHz	
Channel Spacing		25/12.5 kHz	30/25/12.5 kHz	25/12.5 kHz	25/12.5 kHz 12.5 kHz	
Maximum Frequency Separation		Full Bandsplit	Full Bandsplit	Full Bandsplit	Full Bandsplit	
Audio Output Power at Rated <sup>1</sup>		500mW	500mW	500mW	500mW	
Frequency Stability <sup>1</sup> (-30°C to +60°C; +25°C Ref.)		±0.00010 %	±0.00010 %	±0.00010 %	±0.00010 %	
Analog Sensitivity <sup>2</sup>	12 dB SINAD	0.266µV	0.216µV	0.234µV	0.234µV	0.236µV
Digital Sensitivity <sup>4</sup>	1% BER (800 MHz)	0.400µV	0.277µV	0.307µV	0.307µV	0.333µV
	5% BER	0.266µV	0.188µV	0.207µV	0.207µV	0.222µV
Selectivity <sup>1</sup>	25 kHz channel	-76 dB	-76 dB	-76 dB	-76 dB	-76 dB
	12.5 kHz channel	-67 dB	-70 dB	-67 dB	-67 dB	-67 dB
Intermodulation		-75 dB	-76 dB	-77 dB	-77 dB	-75 dB
Spurious Rejection		-76.6 dB	-85 dB	-80.3 dB	-90 dB	-80 dB
FM Hum and Noise	25 kHz	-53 dB	-51 dB	-50 dB	-50 dB	-50 dB
	12.5 kHz	-47 dB	-45 dB	-45 dB	-45 dB	-47 dB
Audio Distortion <sup>1</sup>		1.00%	1.00%	1.00%	1.00%	1.00%

**PRODUCT DATA SHEET**  
APX™ 4000 P25 PORTABLE RADIO

<b>PORTABLE MILITARY STANDARDS 810 C, D, E, F &amp; G</b>										
	<b>MIL-STD 810C</b>		<b>MIL-STD 810D</b>		<b>MIL-STD 810E</b>		<b>MIL-STD 810F</b>		<b>MIL-STD 810G</b>	
	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/Basic Hot	501.5	I/A1, II/A2
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/C1
Temperature Shock	503.1	I	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	1 Proc	507.5	II/Aggravated
Salt Fog	509.1	I	509.2	I	509.3	I	509.4	1 Proc	509.5	1 Proc
Blowing Dust	510.1	I	510.2	I	510.3	I	510.4	I	510.5	I
Blowing Sand	1 Proc	1 Proc	510.2	II	510.3	II	510.4	II	510.5	II
Vibration	514.2	VIII/F, Curve-W	514.3	I/10, II/3	514.4	I/10, II/3	514.5	I/24	514.6	I/24
Shock	516.2	I, III, V	516.3	I, V, VI	516.4	I, V, VI	516.5	I, V, VI	516.6	I, V, VI
Shock (Drop)	516.2	II	516.2	IV	516.4	IV	516.5	IV	516.6	IV

<b>DIMENSIONS OF THE RADIOS WITHOUT BATTERY</b>			<b>GPS SPECIFICATIONS</b>	
	<b>Inches (1 knob/2 knob)</b>	<b>Millimeters (1 knob/2 knob)</b>		
Length	5.26/5.42	133/137.7	Channels	12
Width Push-To-Talk button	2.37/2.42	60.2/61.4	Tracking Sensitivity	-159 dBm
Depth Push-To-Talk button	1.72/1.41	43.6/35.75	Accuracy <sup>5</sup>	<10 meters (95%)
Width Top	2.56/2.62	65/66.55	Cold Start	<60 seconds (95%)
Depth Top	2.13/1.84	43/46.7	Hot Start	<10 seconds (95%)
Weight of the radios without battery	9.17 oz/10.05 oz	260 g/285 g	Mode of Operation	Autonomous (Non-Assisted) GPS

<b>ENCRYPTION</b>		<b>ENVIRONMENTAL SPECIFICATIONS</b>	
Supported Encryption Algorithms	ADP, AES, (DES-XL, DES-OFB)	Operating Temperature <sup>6</sup>	-30°C / +60°C
Encryption Algorithm Capacity	8	Storage Temperature <sup>6</sup>	-40°C / +85°C
Encryption Keys per Radio	Module capable of storing 1024 keys. Programmable for 64 Common Key Reference (CKR) or 16 Physical Identifier (PID)	Humidity	Per MIL-STD
Encryption Frame Re-sync Interval	P25 CAI 300 mSec	ESD	IEC 801-2 KV
Encryption Keying	Key Loader	Water and Dust Intrusion	IP67
Synchronization	XL – Counter Addressing OFB – Output Feedback	Immersion	MIL-STD 512.X/I
Vector Generator	National Institute of Standards and Technology (NIST) approved random number generator		
Encryption Type	Digital or Analog		
Key Storage	Tamper protected volatile or non-volatile memory		
Key Erasure	Keyboard command and tamper detection		
Standards	FIPS 140-2 Level 3; FIPS 197		

<sup>1</sup> Measured in the analog mode per TIA / EIA 603 under nominal conditions  
<sup>2</sup> When used with an FM approved intrinsically safe radio  
<sup>3</sup> Measured conductively in analog mode per TIA / EIA 603 under nominal conditions.  
<sup>4</sup> Measured conductively in digital mode per TIA / EIA IS 102.CAAA under nominal conditions.  
<sup>5</sup> Accuracy specs are for long-term tracking (95th percentile values >5 satellites visible at a nominal -130 dBm signal strength).  
<sup>6</sup> Temperatures listed are for radio specifications. Battery storage is recommended at 25°C, ±5°C to ensure best performance.  
 Specifications subject to change without notice. All specifications shown are typical. Radio meets applicable regulatory requirements.

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