



**MOTOROLA SOLUTIONS**

# ASTRO<sup>®</sup> 25 APCO P25 TWO-WAY RADIOS AT A GLANCE SAFETY REDEFINED





## **YOU ARE READY FOR THE NEXT CALL. WITH APX™, SO IS YOUR RADIO.**

In an emergency, other first responders may be a few metres or several kilometres away. When every second counts, you need a radio you can rely on to get the job done. Since coordinating response and protecting lives is at the heart of every mission, every two-way radio transmission is crucial. Every radio has one job and one job only: to keep you safe.

ASTRO 25 is the leading Project 25 (P25) standards-based system used by over 11,000 agencies around the world. With uncompromising real-world performance and legendary Motorola Solutions reliability, the ASTRO 25 solution continues to evolve, adding practical innovations and performance-driven capabilities that enable government agencies to protect the communities they work in and support neighboring communities through interoperability.

The APX P25 two-way radio series redefines safety in communication. APX puts the right device into the hands of the right user. Every feature and function is designed with its users in mind – from the rugged, easy to operate design to the loudest, clearest audio. The result is the ability to keep your people and community safer than ever before.



# THE WORLD'S LEADING P25 PLATFORM

## **IMMEDIATE AND ASSURED VOICE IN AN EMERGENCY**

When the emergency is critical, a call for help must get through. Motorola Solutions' ASTRO 25 system is a dedicated communication system optimised to make sure the voice call gets through even during times of peak demand.

## **ACCESSIBILITY IN CHALLENGING ENVIRONMENTS**

Tunnels, high rises and sub-basements create unique challenges for wireless communications, but ASTRO 25 is optimised to handle them. We offer unique solutions to minimise interference in specific environments.

## **RELIABLE VOICE AND DATA INTEGRATED AS ONE**

Expanding your data usage while maintaining mission critical voice, ASTRO 25 provides reliable, always-available communications so multiple agencies can share voice and data communication simultaneously among their teams, deploy resources efficiently, maintain communication security and track personnel.

## **FUTURE-READY PLATFORM**

ASTRO 25 and APX radios are flexible and future-ready, adapting to your communications needs and evolving to support new technologies and applications, so you can be ready for the next call the moment it happens.

## **INTEROPERABILITY ON DEMAND**






A variety of our APX radios work across P25 systems, digital and analogue networks to achieve true interoperability. Some of these radios, such as the APX 8000/7500 offer not only this, but also the means to communicate seamlessly through multiple frequency bands.



## **THE MOST COMPLETE LINEUP OF TWO-WAY RADIOS DESIGNED TO KEEP YOU SAFE**

Agencies expect their investment to deliver maximum value and performance. From day one, every portable and mobile radio will meet your most demanding performance expectations.

## ASTRO 25 PORTABLES

<p><b>APX 8000</b></p>		<p>An ideal solution for first responders, the APX 8000 offers all band interoperability in one radio which can operate in all of the following frequency bands: VHF, UHF Range 1, UHF Range 2 and 700/800MHz. Available in model 1.5 (top display only), 2.5 (top and front displays with limited keypad) and 3.5 (top and front displays with full DTMF keypad), the APX 8000 offers backward and forward compatibility (FDMA and TDMA) with data functionality, P25 OTAR, POP25, integrated GPS, Mission Critical Wireless Bluetooth, integrated WiFi for Radio Management, Man Down sensor, three microphones with adaptive noise suppression software, 3 watt speaker, multi algorithm support, and IP68 (2m/2h) water immersion ruggedness.</p>
<p><b>APX 8000XE</b></p>		<p>Built for and designed by fire first responders, the APX 8000XE offers all band interoperability in one radio which can operate in all of the following frequency bands: VHF, UHF Range 1, UHF Range 2 and 700/800MHz. Complete with an exaggerated control top and available in model 1.5 (top display only), 2.5 (top and front displays with limited keypad) and 3.5 (top and front displays with full DTMF keypad), the APX 8000XE offers backward and forward compatibility (FDMA and TDMA) with data functionality, P25 OTAR, POP25, integrated GPS, Mission Critical Wireless Bluetooth, integrated WiFi for Radio Management, Man Down sensor, three microphones with adaptive noise suppression software, 3 watt speaker, multi algorithm</p>
<p><b>APX 6000</b></p>		<p>The APX 6000 is Motorola Solutions' primary single-band mission-critical P25 radio which can operate in any of the following frequency bands: VHF, UHF Range 1, UHF Range 2 and 700/800MHz. Available in model 1.5 (top display only), 2.5 (top and front displays with limited keypad) and 3.5 (top and front displays with full DTMF keypad), the APX 6000 offers a wide range of capabilities including backward and forward compatibility (FDMA and TDMA) with data functionality, P25 OTAR, POP25, integrated GPS, Bluetooth 4.0, integrated WiFi for Radio Management, Man Down sensor, three microphones with adaptive noise suppression software, 3 watt speaker, multi algorithm support, and IP68 (2m/2h) water immersion ruggedness.</p>
<p><b>APX 6000XE</b></p>		<p>As the leading single-band P25 radio designed specifically for firefighters and users in extreme environments, the APX 6000XE can operate in any of the following frequency bands: VHF, UHF Range 1, UHF Range 2 and 700/800MHz. Complete with an exaggerated control top and available in model 1.5 (top display only), 2.5 (top and front displays with limited keypad) and 3.5 (top and front displays with full DTMF keypad), the APX 6000XE offers a wide range of capabilities including backward and forward compatibility (FDMA and TDMA) with data functionality, P25 OTAR, POP25, integrated GPS, Bluetooth 4.0, integrated WiFi for Radio Management, Man Down sensor, three microphones with adaptive noise suppression software, 3 watt speaker, multi algorithm support, and Delta T (2m/4h) heat and water immersion ruggedness. HazLoc certified.</p>
<p><b>SRX 2200</b></p>		<p>Designed and created for the military markets, the SRX 2200 radio offers single band interoperability in 1 of the following frequency bands: 700/800 MHz, VHF, UHF Range 1, and UHF Range 2. Available in model 1.5 (top display only) and 3.5 (top and front display with full DTMF keypad) the SRX 2200 offers backward and forward compatibility (FDMA and TDMA) with full tactical data features, night vision goggle capability, salt water protection, POP25, P25 OTAR, integrated GPS, Mission Critical Wireless Bluetooth, Man Down sensor, dual mic/speaker, noise suppression software, multi algorithm support, and Delta T heat and water immersion ruggedness. Intrinsic Safety optional.</p>

## ASTRO 25 PORTABLES

### APX 3000



Designed and created for covert law enforcement operations, the APX 3000 radio offers single band interoperability in 1 of the following frequency bands: 700/800 MHz, VHF, UHF Range 1, and UHF Range 2. Available in model 1 (no display) the APX 3000 offers backward and forward compatibility (FDMA and TDMA) with data functionality, POP25, integrated GPS, Mission Critical Wireless Bluetooth, Man Down sensor, and IP 67 water immersion. All audio capabilities are managed via mission critical wireless or wired audio accessory kits. Intrinsic Safety certified.

### APX 2000



Designed for local government and utility markets, the APX 2000 radio offers single band P25 interoperability in 1 of the following frequency bands: 700/800 MHz, VHF, UHF Range 1, and UHF Range 2. Available in model 2 (front display with limited keypad) and 3 (front display with full DTMF keypad) the APX 2000 offers backward and forward compatibility (FDMA and TDMA) with data functionality, POP25 integrated GPS, Mission Critical Wireless Bluetooth, Man Down sensor, dual microphone, noise suppression software, and IP 67 water immersion. Intrinsic Safety certified.





## ASTRO 25 MOBILES

### APX 7500



Complete and ideal mobile solution for first responders, the APX 7500 radio offers dual band interoperability in one radio which can operate in any 2 of the following frequency bands: 700/800 MHz, VHF, UHF Range 1, and UHF Range 2. It provides backwards and forwards compatibility (FDMA and TDMA) and data functionality, P25 OTAR, POP25, intelligent lighting, multi-algorithm support and integrated GPS. The APX 7500 offers a complete control head portfolio with 5 options, giving users the flexibility to choose the control head that best meets their operational needs.

### APX 6500



Complete solution for mission critical first responders, the APX 6500 radio offers single band P25 interoperability in one radio which can operate in any 1 of the following frequency bands: 700/800 MHz, VHF, UHF Range 1, and UHF Range 2. It provides backwards and forwards compatibility (FDMA and TDMA) and data functionality, P25 OTAR, POP25, intelligent lighting, multi-algorithm support, and integrated GPS. The APX 6500 offers a complete control head portfolio with 5 options.

## ASTRO 25 MOBILES

### APX 2500



Ideal solution for local government and public safety, the APX 2500 radio offers single band P25 capability in one radio which can operate in any 1 of the following frequency bands: 700/800 MHz, VHF, UHF Range 1, and UHF Range 2. It provides backwards and forwards compatibility (FDMA and TDMA) and data functionality, POP25, intelligent lighting, multi algorithm support, and integrated GPS. The APX2500 is compatible with O2, O3 and O7 control heads, and supports dash-mount, remote-mount and control station configurations.





## ASTRO 25 CONTROL HEADS

<b>02</b>		<p>Compatible with APX 7500, 6500 and APX 2500. Provides XE ergonomics controls, multiple control head configuration with 02 and 07, motorcycle availability, multifunction control knob, intelligent lighting, with a built in 7.5 watt speaker.</p>
<b>03</b>		<p>Compatible with APX 7500, 6500 and 2500 radios. Contains full integrated DTMF keypad, hand-held control head with intuitive user interface, and large colour display with intelligent lighting.</p>
<b>05</b>		<p>Compatible with APX 7500 and 6500 radios. Provides variable colour display, compatible with keypad microphone, can configure up to 4 05 control head configurations, and available in motorcycle configuration.</p>
<b>07</b>		<p>Compatible with APX 7500, 6500 and 2500 radios. Contains large colour display with intelligent lighting, multiple control head configurations with 02 and 07, motorcycle configuration available, multifunction volume/channel knob, day/night mode and available with Lighting and Siren Controls or DTMF keypad.</p>
<b>09</b>		<p>Compatible with APX 7500 and 6500. Contains an extra large full colour display with intelligent lighting, integrated full size DTMF keypad, large programmable one-touch buttons, dedicated siren controls, integrated response selector, and day/night mode capability.</p>

# ASTRO TWO-WAY PORTABLES

SELECT THE RIGHT PRODUCT TO ENSURE SAFETY AND RELIABILITY

Features	APX 8000	APX 8000XE	SRX 2200	APX 6000	APX 6000XE	APX 2000
<b>Supported Frequencies</b>						
VHF (136 - 174)	●	●	●	●	●	●
UHFR1 (380 - 470)	●	●	●	●	●	●
UHFR2 (450 - 520)	●	●		●	●	●
700/800 MHz (764 - 870)	●	●	●	●	●	●
<b>Protocols and Systems Supported</b>						
Multi-Band Capable	●	●				
Dynamic Dual Mode (FDMA/TDMA)	●	●	●	●	●	●
Analogue Conventional	●	●	●	●	●	●
P25 Phase I (FDMA) Conventional and Trunking	●	●	●	●	●	●
P25 Phase II (TDMA) Trunking	●	●	●	●	●	●
SmartNet/SmartZone Analogue and Digital Trunking	●	●	●	●	●	●
3600 and 9600	●	●	●	●	●	●
MDC-1200 Analogue Signaling	●	●	●	●	●	●
Standard Channels	3000	3000	1000	1000	1000	1000
<b>Encryption Capability</b>						
Encryption Capability (Optional)	AES and DES	AES and DES	AES and DES	AES and DES	AES and DES	AES and DES
Multi-key	128	128	64	64	64	48
ADP	●	●	●	●	●	●
Radio Authentication	●	●	●	●	●	●
POP 25	●	●	●	●	●	●
P25 OTAR	●	●	●	●	●	●
<b>Applications</b>						
Rugged	Delta T option	IS & Delta T Std	Delta T option	Std IP67, Delta T option	IS & Delta T Std	Standard IP67
Models	1.5, 3.5	1.5, 3.5	1.5, 3.5	1.5, 2.5, 3.5	1.5, 2.5, 3.5	2 and 3
Colours	Black, Yellow, Green	Black, Yellow, Green	Coyote Brown	Black, Yellow, Green	Black, Yellow, Green	Black, Yellow
Colour Sleeves/Stickers	Sleeves Only Red, Orange, Blue			Sleeves Only Red, Orange, Blue		Reflective sticker
Mission Critical Wireless (Bluetooth)	●	●	●	●	●	●
Manage over WiFi	●	●		●	●	
Mandown	●	●	●	●	●	●
GPS	●	●	●	●	●	●
Integrated Voice and Data	●	●	●	●	●	●
Enhanced Data	●	●	●	●	●	●
Voice Announcement	●	●	●	●	●	●

# ASTRO TWO-WAY MOBILES

SELECT THE RIGHT PRODUCT TO ENSURE SAFETY AND RELIABILITY

Features	APX 7500	APX 6500	APX 2500
<b>Control Heads</b>			
Control Heads	02, 03, 05, 07, 09	02, 03, 05, 07, 09	02, 03, 07
Max. # of Control Heads	4	2	1
Rugged (IP Rating)	IP54	IP54	IP54
<b>Protocols and Systems Supported</b>			
Multi-Band Capable	●		
Dynamic Dual Mode Capable (FDMA/TDMA)	●	●	●
Analogue Conventional	●	●	●
P25 Phase I (FDMA) Conventional and Trunking	●	●	●
P25 Phase II (TDMA) Trunking	Optional	Optional	●
SmartNet/SmartZone Analogue and Digital Trunk	●	●	●
3600 and 9600	●	●	●
MDC-1200 Analogue Signaling	●	●	●
Standard Channels	3000	1000	1000
<b>Mounting Options</b>			
Dash Mount	●	●	●
Remote Mount	●	●	●
Motorcycle	●		
Control Station	●	●	●
Console	●		
<b>Encryption Capability</b>			
Encryption Capability (Optional)	AES and DES	AES and DES	AES and DES
Multi-key	128	64	48
ADP	●	●	●
POP 25	●	●	●
P25 OTAR	●	●	
<b>Applications</b>			
Integrated Voice and Data	●	●	●
Enhanced Data	●	●	●
Integrated GPS - Outdoor Location	●	●	●
GPS	●	●	●
Radio Authentication	●	●	●
Voice Announcement	●	●	●

## ADVANCED SOFTWARE FEATURES

**INTELLIGENT LIGHTING** – Uses colour alerts to notify you of the radio mode, potential emergencies or specific events.

**RADIO PROFILES** – Radios can be configured to adjust audio level, lighting and tones through user selected or automated options. Whether on surveillance or working in bright sunlight, you can customise settings as needed.

**EXTREME AUDIO PROFILE** – Intelligent 2-microphone noise reduction software and the latest AMBE vocoder dynamically adjusts for changing high noise environments.

**TEXT MESSAGING** – Offers a freeform or canned messaging solution so you can efficiently and discreetly send and receive messages to and from subscribers or dispatch operators.

**UNIFIED CALL LIST** – Consolidates all call lists underneath one unified list so you can easily access all information associated with a particular contact.

**VOICE ANNOUNCEMENT** – Allows you to navigate through channels/talk-groups and zones in the radio while an audible, pre-recorded voice file provides a description of the selected channel or zone.

**P25 TDMA CAPABLE** – Provides twice the voice capacity, so you can add more users to your system without the need for additional frequencies or infrastructure.

**MULTIBAND OPERATION** – Multiple frequency bands supported with best-in-class transceiver specifications and performance.

**SEAMLESS SCAN** – Seamless scanning of multiple protocols including FDMA and TDMA systems and multiple RF bands.

**ENHANCED DATA** – Utilising TDMA technology, this feature offers greater capacity and reliability of the slotting mechanism where fewer collisions occur.

**SITE SELECTABLE ALERT** – Continuous tones sent to alert sites of mining detonation activity, evacuation of sites, or vehicle stops.

## ADVANCED HARDWARE FEATURES

**GPS LOCATION** – Integrated GPS receiver can transmit the outdoor location of an individual or vehicle to map-based location software.

**MISSION CRITICAL WIRELESS** – A unique Bluetooth® solution that provides an encrypted link to high performance accessories and applications to support different mission critical environments. Also supports commercial off the shelf (COTS) and personal area network (PAN) devices.

**MAN DOWN** – Unique accelerometer that senses the physical position of the user to communicate updated information to incident command/dispatch. Contains an audible beacon with a unique critical emergency tone that will repeat itself until the emergency is manually deactivated.

**RADIO AUTHENTICATION** – Providing an extra, secure level of verification every time a radio registers onto a system.

## FUTURE READY

**PROGRAMMING OVER PROJECT 25** – Motorola Solutions' POP25 solution allows subscriber radios to be programmed over the air via the ASTRO 25 systems while remaining in the field without interruption.

**RADIO MANAGEMENT OVER WIFI** – Allows radios to be updated and configured through a WiFi hotspot without interrupting radio voice communications.



# ASTRO 25 TWO-WAY RADIO APPLICATIONS

Highlighting the most reliable and efficient application solution for ASTRO subscriber radio products to meet each customer's need.

## APX™ P25 PERSONNEL ACCOUNTABILITY

Created and designed for fire safety personnel and battalion officers, APX P25 Personnel Accountability is an integrated solution that provides a cohesive report and improves responder safety. A NIMS compliant based solution, APX Accountability allows for better roll call integration, integrated graphical user interface (GUI) and Personnel Accountability Report (PAR) timers based on when agencies arrive on scene and when key events have occurred on scene.

### USER-FRIENDLY GUI

Partnering with Systems Definition Inc., we developed a new, streamlined GUI that integrates multiple tasks on a single screen. Now, incident commanders can manage all of their tasks – conducting roll call, monitoring PAR checks and issuing evacuation notifications – from the convenience of one user-friendly screen.

### ROLL CALL ALERT

With advanced features such as roll-call accountability, you no longer have to acknowledge your status with a voice-based response. Simply open the roll call window from the laptop at incident command to initiate an accountability roll call. Each responder acknowledges the Incident Commander's request for PAR from their APX series portable radios; they simply press the PTT button to acknowledge. Incident command receives confirmation of who has acknowledged the roll call and a count of those yet to respond. As a result, they not only have better accountability of personnel but the solution significantly reduces cycle time on PAR checks throughout the incident.

### MAN DOWN ALERT

An optional, automatic Man Down alert on APX series P25 portable two-way radios adds another valuable level of safety. The on-board accelerometer in the radio monitors an individual's movement and orientation. If a responder is motionless or in a horizontal position for a predetermined amount of time, the APX portable radio will automatically transmit an emergency alert, notifying incident command that the responder is in distress.



## APX™ RADIO MANAGEMENT

The APX CPS Management application can program up to 16 radios at one time and track which radios have been successfully programmed, providing a clear view of the entire radio fleet and a codeplug history for each radio.

### ACCESS AND SHARE CODEPLUGS

When codeplug updates occur, the radio codeplug database can be stored on a network server allowing remote programmers to access and program radios and share a codeplug template across multiple radios. Changes to codeplug templates can be automatically applied to all affected radios while radio programming jobs can be scheduled ahead of time giving you more flexibility and operational efficiency.

### MINIMISE DOWNTIME

Save time and fuel by programming radios either via a USB port on a local or remote PC via WiFi, or with Over-the-Air-Programming (OTAP) on a Project 25 system. With USB programming, a Device Programmer application resides on a PC and you can connect up to 16 radios via a USB hub to expedite the programming. To read/write multiple radios through a single computer or USB hub, the radios must be programmed with a unique IP address the first time they are read/written.

No application knowledge or application interaction is necessary by the user to program a radio with the Device Programmer application. The user simply plugs the radio into a USB port and the application automatically reads and writes the updates from the server to the radio.

Radio Management batch programming of APX radios via OTAP can only occur with a Motorola Solutions ASTRO® 25 Project 25 system, which has voice priority over data, so a user's call, emergency notifications or critical communications will not be interrupted with OTAP. Should an OTAP session be interrupted with communications, programming will resume after the call without the need to restart, expediting the process.

## APX™ BATTERY FLEET MANAGEMENT

A radio is only as good as the battery that powers it. So when a battery fails and communication is lost, it impacts every aspect of your organisation from serving customers to saving lives. But monitoring and maintaining the status of a large fleet of batteries can be time-consuming, inefficient and potentially overwhelming.

That's why we created our proprietary IMPRES™ Battery Fleet Management technology. It saves you the guesswork, complexity and costs of managing hundreds even thousands of radio batteries and chargers wherever they're located, and make it easier for your employees to do their work safely and successfully.

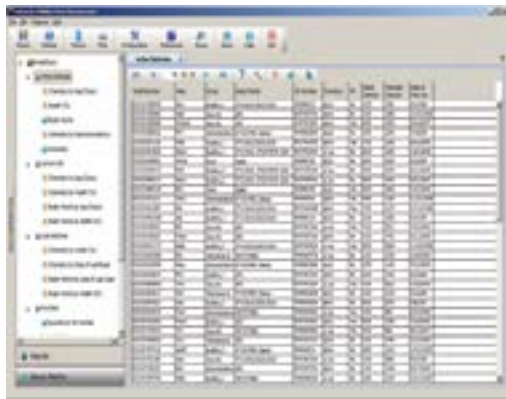
### HOW DOES IT WORK?

Our IMPRES Battery Fleet Management software automatically collects critical data from IMPRES batteries when they are inserted into an IMPRES charger including battery age, capacity, charge and recondition history, the dates manufactured and put into service. This software analyses battery data and tells you how "healthy" a battery is and when it needs to be changed, so you can quickly and efficiently determine when to remove a poor-performing battery, purchase a new one or redeploy it to less demanding users, and even identify missing batteries.

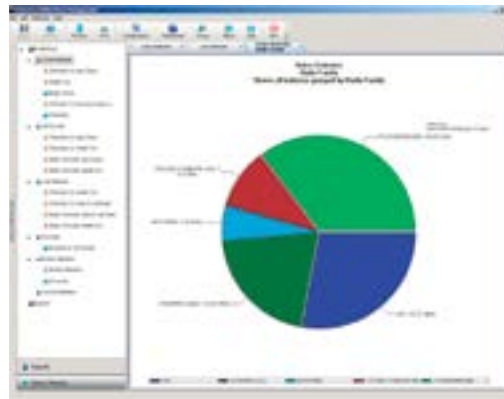
### VIEW CURRENT REPORTS OR CREATE CUSTOM ONES

Use existing reports or customise new ones to see the most relevant information for your organisation. Data is stored in your database and can be exported to an Excel file or printed. IMPRES Battery Fleet Management software records and organises a variety of data so you can:

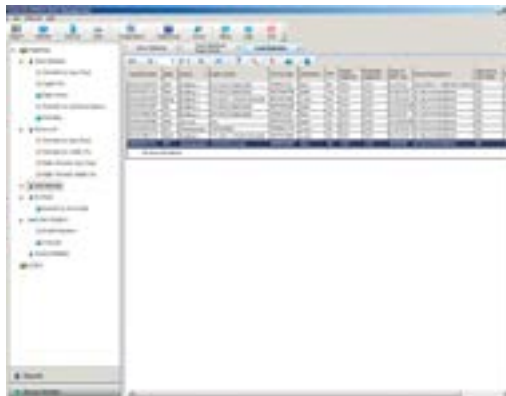
- See a status snapshot of your entire battery fleet
- Evaluate whether batteries are meeting your performance criteria
- Determine when batteries are nearing their end-of-life
- Decide exactly when to buy new batteries
- Get a lost battery report
- Optimise your charger utilisation
- Monitor all devices in the system



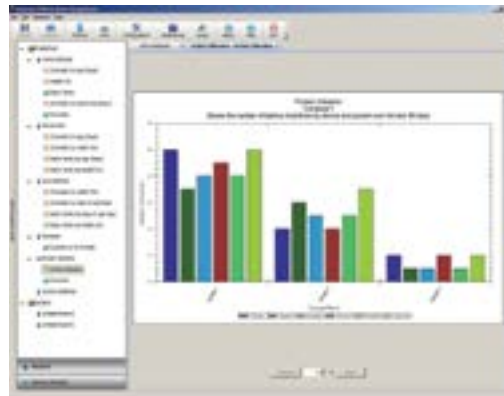
Active batteries



Batteries in use by radio family



Lost batteries



Charger pocket utilisation

### IMPRES BATTERY FLEET MANAGEMENT DELIVERS BATTERY-CRITICAL INFORMATION

- Tells you when batteries are below an acceptable capacity
- Helps ensure users have enough capacity for a full work shift
- Alerts you to low capacity batteries so you can remove them
- Eliminates unexpected downtime and work interruptions
- Avoids the expense of throwing batteries away prematurely
- Confirms chargers are optimally distributed and used

### EACH SOFTWARE LICENSE SUPPORTS:

- 1 System Administrator Server
- 19 Remote Clients
- 25 IMPRES Chargers or IMPRES Battery Readers per client
- 25,000 IMPRES Batteries (the total number of batteries for the entire system cannot exceed 25,000)



## DIGITAL VEHICULAR REPEATER SYSTEM (DVRS)

Digital Vehicular Repeater Systems (DVRS) from Futurecom is a radio system component that provides repeater capability between portable subscribers and RF base station infrastructure, extending radio coverage of your network.

Installed in the trunk of a car, fire truck, or other vehicles, the DVRS extends your ASTRO 25 network when portable users are outside of your vehicle, inside of a building or in any marginal coverage area. The DVRS also supports fixed mounting and is transportable.



### FEATURES AND BENEFITS

- Flexible Coverage
- In-Band/Cross-Band
- Intelligent Activation
- End-to-End Encryption
- Portable ID Pass-Through
- Flash Upgradable
- Power Output 1-10W
- Compatible with APX 7500, APX 6500 and APX 2500 Remote Mount
- P25 Digital/Analogue Operation
- Available in VHF, UHF, 700 MHz and 800 MHz



[www.motorolasolutions.com.au](http://www.motorolasolutions.com.au)

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