MXM7000

TETRA AND LTE MOBILE SOLUTION

YOUR APPS. YOUR COMMS. YOUR TEAM. TOGETHER

MOTOROLA SOLUTIONS

MXM7000 IS FOR USERS WHO REQUIRE BOTH MISSION-CRITICAL PUSH-TO-TALK AND ANDROID APPLICATIONS IN THE VEHICLE

MXM7000

MISSION-CRITICAL CONVERGED TETRA AND LTE MOBILE SOLUTION

MXM7000 is a secure mobile solution for mission-critical TETRA and 4G LTE broadband voice and data communications. It comprises the MXM7000 LTE control head with Android OS and the MTM5500 TETRA transceiver — for in-vehicle or desk-mounted use.

Thanks to its external roof-mounted antenna, the MXM7000 offers high transmit power and receiver sensitivity that helps keep people connected, even in areas of low coverage. LTE connectivity can turn the vehicle into a broadband hotspot for tethering a range of devices. The MXM7000 control head runs the Android operating system, supporting a large number of applications.

The rugged MXM7000 is easy to use and operate, with a touch screen for interacting with data, glove-friendly buttons and separate LEDs for TETRA and broadband notifications.

The MXM7000 is easy to deploy and manage. Time consuming device updates are streamlined with over-the-air updates available over Wi-Fi. In addition you can re-use MTM5000 series audio accessories.

With mission-critical TETRA and LTE broadband for voice and data, along with LTE tethering capabilities in a rugged, secure and easy to operate solution, the MXM7000 transforms communications.

CONVERGED MOBILE SOLUTION

IN-VEHICLE MISSION-CRITICAL CONNECTIVITY

The MXM7000 is a fully-featured mission-critical mobile solution with TETRA and LTE broadband voice and data communications. Instead of different solutions for LMR and LTE, you need only install the MXM7000 LTE control head and the connected MTM5500 TETRA transceiver[1]. By optimising in-vehicle space, and having one interface for TETRA and LTE, the MXM7000 helps mobile teams to focus on the task at hand. The MXM7000 can also be configured as a desk-mounted solution.

[1] If you already have a MTM5500 TETRA transceiver please speak to your Motorola Solutions representative to see if the MXM7000 LTE control head is compatible with your model.

RUGGED AND READY FOR ACTION

Your personnel and vehicles work in all kinds of conditions and environments.

The rugged MXM7000 is ready to handle extreme temperature and vibration. The control head display is made from tough Corning® Gorilla® glass. It has been tested to the MIL-STD-810H military standard developed by the U.S. Department of Defence. With an IP54 rating, the MXM7000 control head is also protected from limited dust ingress and water spray from any direction.
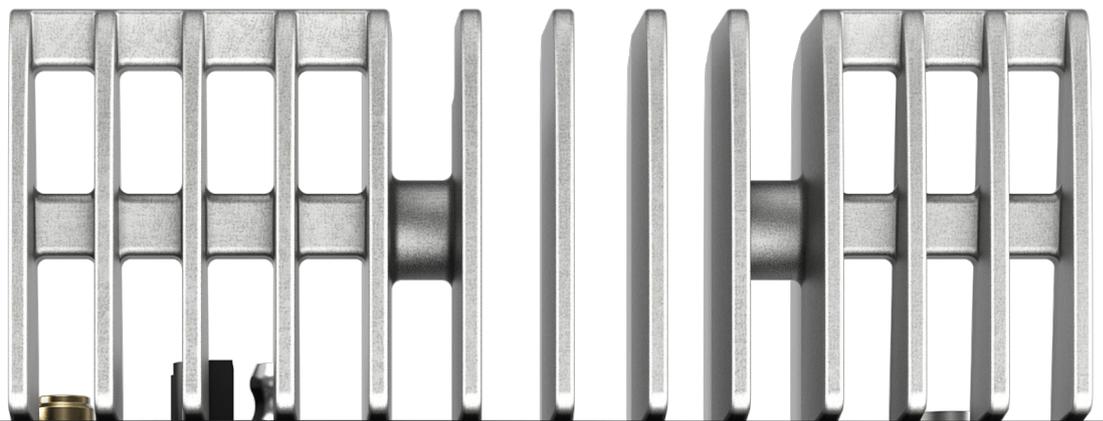
LOCATION PRECISION

When the unexpected happens, it's important to know exactly where your people are. The MXM7000 supports GPS and aGPS (Assisted GPS) as well as other Global Navigation Satellite Systems (GNSS) including Galileo, Beidou and GLONASS.

SECURE COMMUNICATIONS

Staying protected against threats is crucial. The MXM7000 is a highly secure converged TETRA and LTE solution with security features in both the TETRA transceiver and MXM7000 Control Head.

TETRA Transceiver

Multiple levels of security protect your mission-critical TETRA data and communications. TETRA security features include:

- Air Interface Encryption[2] (AIE) where data and communications are encrypted between terminals and base stations.
- Over-The-Air-Rekeying[3] (OTAR) that enables radio users to stay out in the field and have encryption keys remotely pushed to their device.
- End-to-End Encryption closes the gap of unencrypted communications through the TETRA network infrastructure. It is available on the TETRA transceiver via an optional Hardware Security Module (HSM). The HSM uses 128-bit AES or 256-bit AES to encrypt voice, data and location information from sender to receiver.

LTE Control Head

The MXM7000 control head is security hardened with a range of security features including:

- User Authentication using PIN or password
- Hardware-backed encryption with Trusted Execution Environment (TEE) for key storage
- Trusted boot process with the use of tamper resistant hardware
- Android OS hardening and SELinux access control
- Auditing / logging functionality, with security logs captured and stored in a secured manner
- Data-at-Rest protection using Android's AES256 File Based Encryption.
- Data-in-Transit encryption with IPSec VPN support
- Secured device management and configuration with the use of our Integrated Terminal Management (iTM) solution
- Restricted recovery mode to avoid unauthorised access to features.

Secure Bluetooth®

The MXM7000 features Bluetooth 5.1 with Secure Connections (used in security mode 4, level 4 as recommended by NIST[4]), the highest Bluetooth security classification. The support of Secure Connections allows the MXM7000 to support the most up-to-date Bluetooth security practices, including the Advanced Encryption Standard (AES) algorithm, with 128-bit key length.

[2] MXM7000 supports TEA1, TEA2, TEA3

[3] Supports: Group Cypher Key (GCK), Common Cypher Key (CCK) and Static Cypher Key (SCK)

[4] https://csrc.nist.gov/publications/detail/sp/800-121/rev-2/final

MISSION-CRITICAL TETRA VOICE AND DATA COMMUNICATIONS

RELY ON UNCOMPROMISING TETRA COMMUNICATIONS

The MXM7000 has been designed to provide reliable in-vehicle TETRA coverage for voice and data. It has dynamic receiver sensitivity of -109dBm (typical), static receiver sensitivity of -117dBm (typical) and high 10 watt transmission power, allowing users to maintain conversations and send SDS messages even in remote areas.

Its external roof-mounted antenna supports higher transmit power than a portable radio. This capability can be extended to nearby portable radios, to keep their users connected to the TETRA network.
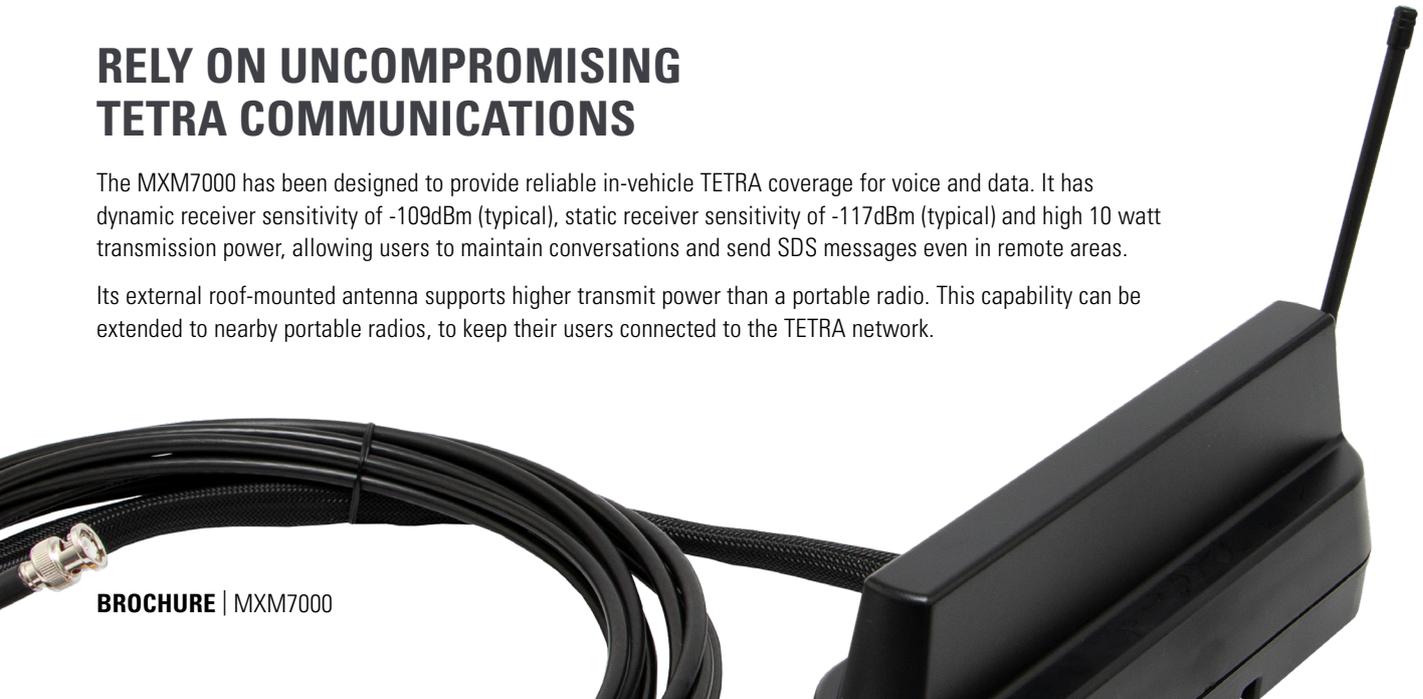
DMO repeater functionality

The MXM7000 also has Direct Mode Operation (DMO) repeater functionality to act as a bridge between users who are out of coverage of each other, but within coverage of the MXM7000. This can be used to extend the DMO range by retransmitting group calls, private calls and data from one TETRA radio to another.

DMO
Repeater Mode

Out of Range

KEY
DMO
DMO via Repeater
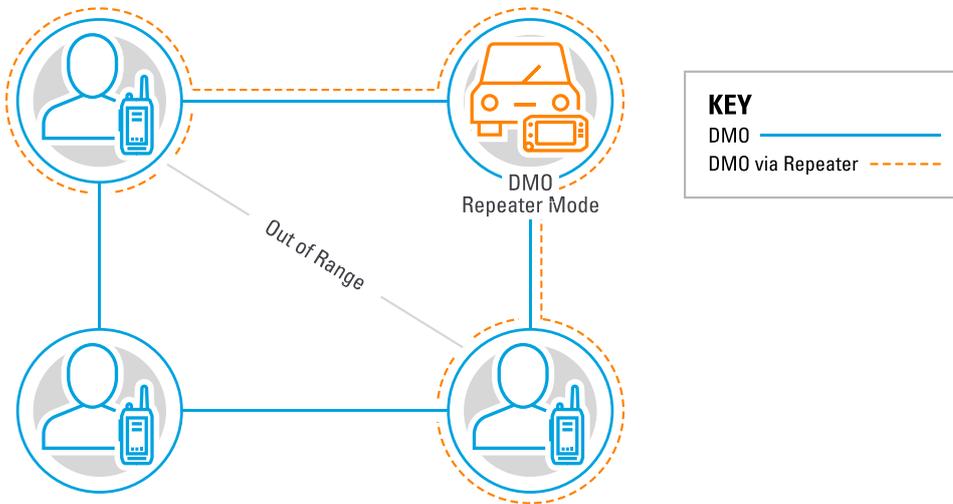
Gateway to a TETRA network

When a device is connected to the TETRA network it is in Trunked Mode Operation (TMO). When in gateway mode, the MXM7000 acts as a bridge between TETRA radios and the TETRA network to preserve trunked communications. For example, police officers investigating inside a building with thick walls may lose network coverage on their portable TETRA radios, but with the MXM7000 acting as a gateway, the officers only need their portable radios to be able to reach the MXM7000 in the car outside via DMO, and the MXM7000 can be the connection to the TETRA network via TMO.

TETRA
Network

DMO
Gateway Mode

KEY
TMO
DMO
TETRA Network
via a DMO Gateway
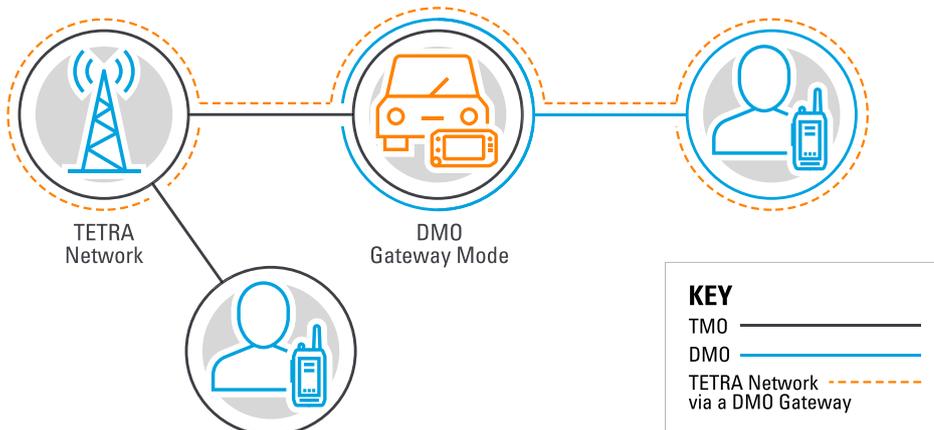
WITH HIGH TRANSMIT POWER OF 10W AND HIGH RECEIVER SENSITIVITY THE MXM7000 HELPS KEEP TEAMS CONNECTED

ENHANCED WITH LTE VOICE AND DATA CAPABILITIES

UNLOCK POWERFUL LTE MOBILE BROADBAND

Equip vehicles with a solution that not only provides mission-critical TETRA voice and data communications but also broadband voice and data capabilities via LTE, as well as the ability to run Android applications.

The MXM7000 can run work applications created for your specific use cases. Whether that's location data on a military training exercise, push-to-talk via WAVE PTX™, mobile video footage from a roadside incident or servicing updates on the rail network, users get real-time visibility of the latest information.

EXTEND TO PTT LTE

The MXM7000 can also provide PTT over LTE broadband via WAVE PTX.

WAVE PTX is a carrier-independent broadband PTT service that delivers the MCPTT-based features necessary to enhance user safety, increase situational awareness, and improve operational efficiency.

WAVE PTX allows the MXM7000 user to communicate over an LTE network using the same PTT button and user interface as when they are on a TETRA network.

CREATE A LOCAL HOTSPOT

The MXM7000 enables Wi-Fi tethering that turns the vehicle into a Wi-Fi hotspot that opens access to broadband data for a wide range of devices. Tethering laptops, tablets, body-worn and vehicle video cameras and other equipment to the MXM7000 Wi-Fi Access Point connects them to LTE, enabling information sharing and live streaming. Devices can also be connected via the Ethernet port on the MXM7000 LTE control head.

MXM7000 CAN HELP CONNECT OTHER DEVICES TO LTE BY ACTING AS MODEM TO THE LTE NETWORK VIA A WI-FI HOTSPOT AND ETHERNET

- Military vehicles on exercises can set up a Wi-Fi hotspot connected to LTE that helps provide personnel in the field with essential mission and mapping information

- Police can communicate with colleagues over TETRA voice and stream body-worn and in-vehicle video camera footage back to the control room over LTE

- On-board train systems, that run the length of the train via Ethernet, can share information with the control room over LTE via the MXM7000

LTE DIV   GNSS   LTE MAIN

THE MXM7000 HAS INTUITIVE CONTROLS
AND RUGGED 5-INCH TOUCH SCREEN

EASY TO USE

EFFORTLESS OPERATION IN THE FIELD

The MXM7000 has been designed for ease and efficiency on the move. It features a toughened Corning® Gorilla® glass 5-inch touch screen display to take advantage of the capabilities of Android applications. The display has been optimised to support use with gloves, including disposable and combat gloves.

As well as the touch screen, there are an array of easy to use controls, including a large dual-function rotary knob for volume and talkgroup selection and two programmable buttons for activating frequently used functions. To the left of the screen, two status LEDs provide separate notifications for TETRA and LTE. Should users get into difficulties, the MXM7000 includes an emergency button.

FUTURE-PROOF CONNECTIONS

To equip the MXM7000 for today and tomorrow, a variety of connectors are included for linking up with sensors and accessories. The control head includes a GCAI-MMP, and there's a 26-pin connector on the transceiver – same connector as MTM5000 TETRA radios. The MXM7000 also includes a USB-A port, enabling connections to other devices. For example, with the right software, a police officer can connect a dash-mounted camera for continuous live incident streaming. Bluetooth® 5.1 connects with our range of wireless accessories including remote speaker microphones and headsets.
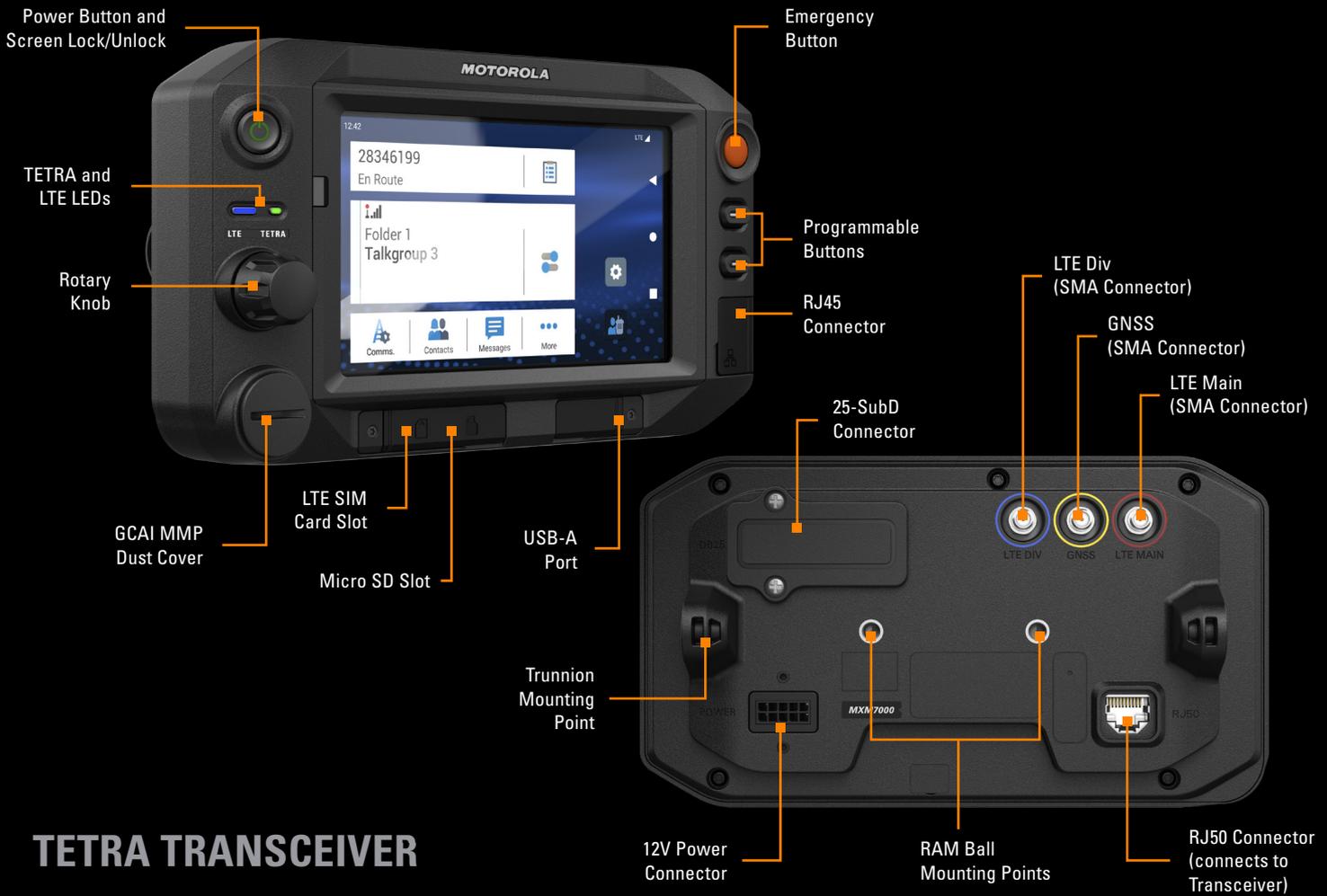
SUPPORTS COVERT OPERATIONS

The MXM7000 has features that make it suitable for military and undercover operations. The screen has a night vision mode. This dims the display to a very low intensity that can only be seen effectively while wearing night vision goggles. The device also supports covert mode – with all sound and visual indications including the display, LEDs and backlight disabled.
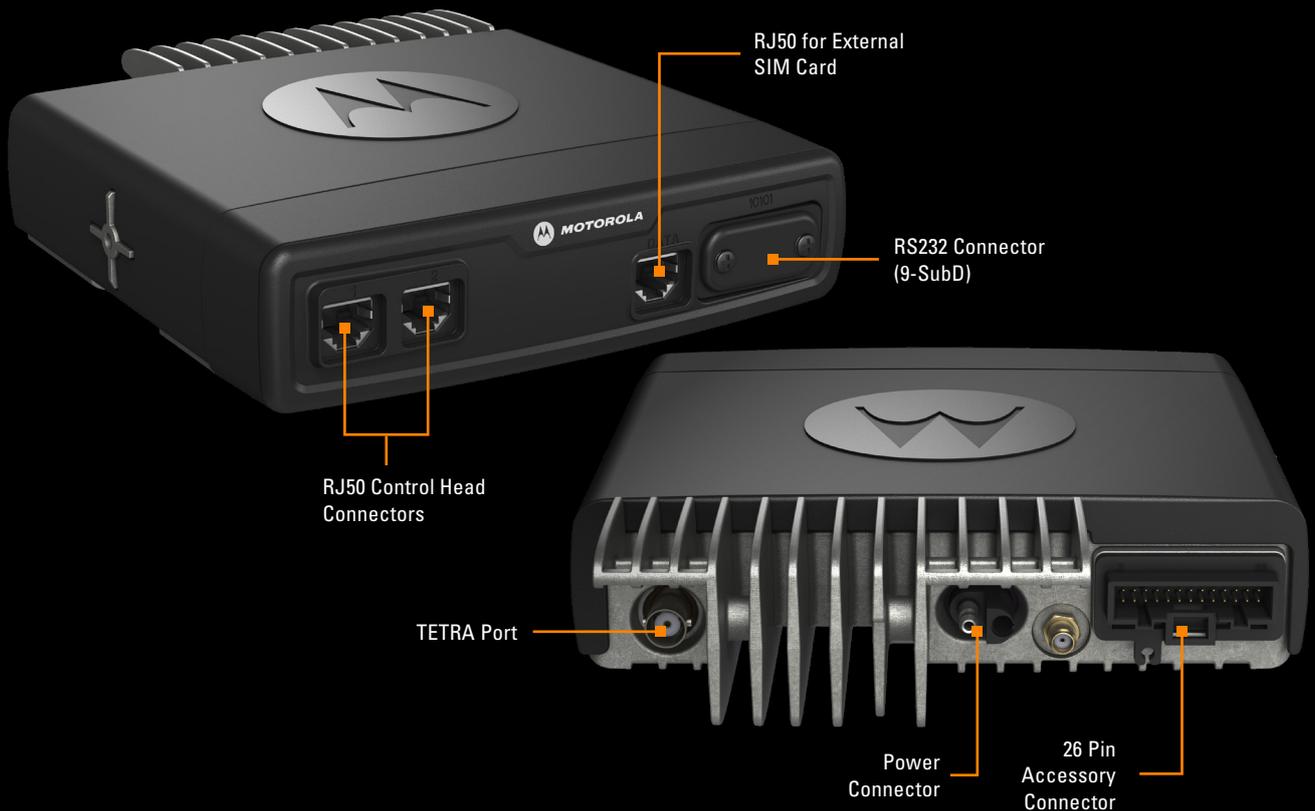
MULTIPLE CONFIGURATIONS TO SUIT YOUR NEEDS

The MXM7000 is a highly flexible solution with multiple installation options. It is hardware-ready to support two control heads from one transceiver, as well as to support two transceivers controlled from one control head. With two control heads connected to one transceiver, users in the front and back of a fire engine, train or boat can control the same radio. With one control head controlling two transceivers, a single user can switch radios on different Trunked Mode Operation (TMO) or Direct Mode Operation (DMO) channels from one location.

The loudspeaker, push-to-talk button and microphone of the transceiver can also be configured in multiple configuration options. The control head also has mounting options via a trunnion or in a 2-DIN frame.

MXM7000 LTE CONTROL HEAD

Power Button and
Screen Lock/Unlock

Emergency
Button

TETRA and
LTE LEDs

Programmable
Buttons

Rotary
Knob

RJ45
Connector

LTE Div
(SMA Connector)

GNSS
(SMA Connector)

LTE Main
(SMA Connector)

25-SubD
Connector

LTE SIM
Card Slot

GCAI MMP
Dust Cover

Micro SD Slot

USB-A
Port

Trunnion
Mounting
Point

TETRA TRANSCEIVER

12V Power
Connector

RAM Ball
Mounting Points

RJ50 Connector
(connects to
Transceiver)

RJ50 for External
SIM Card

RS232 Connector
(9-SubD)

RJ50 Control Head
Connectors

TETRA Port

Power
Connector

26 Pin
Accessory
Connector

ACCESSORIES

You can customise the installation and user experience to the needs of your team with a wide range of accessories available for the MXM7000. Accessories include: mounting solutions, mobile microphones, external speakers and cables.

Control head mounting solutions

Mount the MXM7000 control head on the vehicle dash or on a desk with the trunnion solution. The trunion also allows for pivoting of the screen. Alternatively, attach the control head in the centre console of a vehicle with the 2-DIN Frame.

Trunnion

2-DIN Frame

Antenna

Simplifying and streamlining installation work is the new combined magnetic mount antenna that works with TETRA[5], LTE and GNSS, removing the need for a separate antenna for each of TETRA, LTE and GNSS.

Audio

There is a range of compatible audio accessories including mobile speakers, microphones, remote speaker microphones and PTT buttons for the MXM7000.

Cables

We offer a selection of installation cables to best tailor each installation to your configuration needs, and our power cables have protection circuitry for both control head and transceiver.

With the MXM7000, you can reuse all of your existing stock of MTM5000 series audio accessories and many of the cables from the MTM5000 series TETRA radios, saving you the time and cost of re-equipping your teams. This is ideal if you have a large fleet requiring a large number of mobile accessories.

[5] A low pass filter is required between the TETRA cable from the antenna and the TETRA transceiver.

SIMPLE TO DEPLOY AND MANAGE

SIMPLIFIED FLEET MANAGEMENT

MXM7000 is easy to deploy and manage. It comprises an MTM5500 TETRA transceiver[6], LTE control head and a single antenna for TETRA and LTE voice and data. You can also reuse existing accessories and cabling[7] from MTM5000 TETRA radios.

With the MXM7000, you only need to purchase and maintain one in-vehicle solution for TETRA and LTE, saving cost and time. Having one supplier for your TETRA and LTE communications using industry standard connector interfaces, helps you quickly and efficiently manage your fleet.

STREAMLINED FIELD DEPLOYMENT

The MXM7000 uses the same Integrated Terminal Management (iTM) tool as other TETRA radios from Motorola Solutions, for fast and easy programming of your fleet.

OVER-THE-AIR UPDATES

The MXM7000 supports both 2.4GHz and 5GHz bands of Wi-Fi. Radio managers can take advantage of Wi-Fi for device programming and updates. Planned upgrades that would have taken weeks can now be done in a few days or a few hours. Instead of having to physically update each mobile device, the MXM7000 can be updated as soon as the vehicle is in range of its assigned Wi-Fi. This reduces the hassle and operational downtime associated with upgrades.

Connections are secured via the Transport Layer Security (TLS1.2) protocol to ensure the data pipe between the device and the server is secure and data integrity is guaranteed. This means that updates can be performed securely anywhere the MXM7000 can access assigned Wi-Fi.

[6] If you already have a MTM5500 TETRA transceiver please speak to your Motorola Solutions representative to see if the MXM7000 LTE control head is compatible with your model.

[7] Some additional cables will be required, for example the cable from the control head to antenna. Please speak with your Motorola Solutions representative for more details.

GET THE MOST
FROM YOUR MXM7000

To support your MXM7000 fleet and maximise the value of your investment, we offer a variety of service packages[8] that transfer the risk and responsibility of providing the right level of services for your needs to Motorola Solutions.

Service capabilities covering the MXM7000 LTE control head and the MTM5500 TETRA transceiver include:

Hardware Repair
Troubleshooting, testing and repairing your equipment at a centralised facility

Technical Support and Service Desk
Remote technical support services to ensure your radios are rapidly restored and functional

Software Maintenance
Access to latest certified software releases for reliable and secure device operations

You can rely on us to help you achieve your device performance targets and maximise the value of your radio investments with the right level of services designed specifically for your needs. Each package provides a higher level of support, transferring the risk and responsibility to Motorola Solutions.

[8] For the complete list of service packages, please talk with your local Motorola Solutions representative.

For more information, please visit: **www.motorolasolutions.com/mxm7000**

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