MOTOROLA SOLUTIONS

MTM5000 SERIES
TETRA MOBILE RADIOS

SAFER. SMARTER. FASTER.

MTM5000 SERIES

SAFER

- Hear and be heard in difficult environments with enhanced audio
- Stay in touch with great coverage, improved Rx sensitivity and high power options

SMARTER

- Versatile installation connects end users in and around the vehicle, up to 40m from the radio with the MTM5500
- Control the radio and make voice and data calls inside or outside the vehicle with the TSCH (Telephone Style Control Head)

FASTER

- TEDS (TETRA Enhanced Data Services) ready, for faster data communications to improve efficiency and safety
- Link to data devices for flexibility and powerful applications

MTM5000 SERIES BENEFITS

EXTENDED OPERATIONAL RANGE

- Up to 10W transmit power (MTM5400/5500), with class leading receiver sensitivity delivers comprehensive network coverage
- Integrated DMO Gateway, DMO Repeater capabilities (MTM5400/5500), ensure secure and resilient communications where needed most

SUPERIOR AUDIO PERFORMANCE

- Next generation audio architecture delivering the loudest and clearest audio performance of any Motorola TETRA mobile available on the market*

HIGH SPEED DATA CONNECTIVITY

- TEDS Ready hardware - with a simple software license upgrade, enables 20x faster data connectivity for accessing back-office systems and databases
- Integrated USB 2.0 PEI, enabling rapid radio programming and standardised interfacing to data terminals and accessories. For additional flexibility, USB host and slave modes are also supported

LOW USER MIGRATION COSTS

- Familiar cellular style user interface and VGA colour display for enhanced usability and reduced staff training costs
- Same intuitive user interface as latest MTP3000 Series and MTP6000 Series TETRA portable radios
- Re-use of common accessories using GCAI connector

ENHANCED END TO END ENCRYPTION OPTIONS

- Integrated hardware for SIM based end to end encryption
- Universal Crypto Module option**

LOCATION SERVICES

- The MTM5000 Series supports Global Navigation Satellite Systems (GNSS) based location services for GPC, GLONASS and BeiDou, as well as Satellite Based Augmentation Systems (SBAS) including WASS, EGNOS, MSASA, GAGAN and QZESS (Japan)

ADVANCED TERMINAL MANAGEMENT

- USB 2.0 interface for fast radio programming via Motorola's Integrated Terminal Management (ITM) solution

FLEXIBLE INSTALLATION OPTIONS

- Fully DIN-A compatible and available in Dash, Desk, Remote Head and Motorcycle mount formats
- Supports multiple control heads - an ideal solution for installations in trains, ambulances and fire vehicles where more than one control point might be required
- Supports multiple transceivers - an ideal solution for multiple agency, joint operations, or multi-task communications including bilateral such as cross-border operations
- MTM5500 ethernet style connections enable up to 40m separation to either the new ReCH Control Head or the TSCH (IP55)
- Other Equipment Manufacturer (OEM) control head solutions can be developed using the Remote Display Controls (RDC) protocols

RUGGED DESIGN WITH EXCEPTIONAL RELIABILITY

- Includes IP67 control head option (MTM5200/5400), for exposed and challenging environments
- Front and Rear rugged GCAI connector for reliable connection of audio and data peripheral equipment
- Mobile radio and accessories are performance matched for enhanced reliability

* Assuming the appropriate audio accessory is used ** Model specific

The **MTM5200** is the base model in the MTM5000 Series of TETRA radios. It shares the enhanced audio and receiver sensitivity, as well as being TEDS-ready for high speed data service which will enhance operation.

In addition to enhanced audio and receiver sensitivity, the **MTM5400** includes high power modes and Gateway Repeater functionailty features required by end users, as well as being TEDS ready.

The **MTM5500** is a highly flexible and capable system radio which permits the installation of multiple control heads up to 40m from the transceiver and 80m from each other. The TSCH also provides an alternative method to control the radio and make voice and data calls. Alternatively multiple transceivers can be supported by a single control head - either the Remote Ethernet Control Head (ReCH) or the TSCH. The ability to control multiple radios is essential for multiple agency, joint operations or bilateral cross border operations.

MTM5000 SERIES SOLUTIONS

The MTM5000 Series has a wide range of installation options with multiple expansion head options and multiple control head options, as well as the ability to connect two transceivers to one control head or connect an OEM control head.

MTM5200 AND MTM5400

EXPANSION HEAD OPTIONS

EXPANSION HEAD
SINGLE STD CONNECTION

EXPANSION HEAD ENHANCED
STD AND AUXILARY 25 PIN AND RS232

CONTROL HEAD OPTIONS

STANDARD CONTROL HEAD

REMOTE CONTROL HEAD

IP67 CONTROL HEAD

INSTALLATION OPTIONS

DASH MOUNT
CAR, TRUCK

REMOTE HEAD MOUNT
CAR, AMBULANCE, FIRE TRUCK

UP TO 10m

IP67 MOUNT
BOAT, MOTORCYCLE

UP TO 10m

DESK MOUNT
CONTROL CENTRE

DATA ONLY

DATA TERMINAL

MTM5500

EXPANSION HEAD OPTIONS

ETHERNET EXPANSION HEAD
2X STD, ETHERNET TYPE, ETHERNET SIM READER AND RS232

CONTROL HEAD OPTIONS

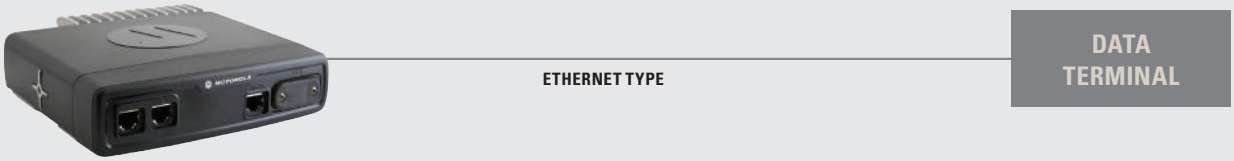
REMOTE ETHERNET CONTROL HEAD (ReCH)
SUPPORTS EXTERNAL SPEAKERS AND PTT

TELEPHONE STYLE CONTROL HEAD
SUPPORTS EXTERNAL ACCESSORIES

INSTALLATION OPTIONS

MULTIPLE CONTROL HEADS
AMBULANCE, FIRE TRUCK, INCIDENT CONTROL VEHICLE, METRO TRAIN

DATA ONLY



MULTIPLE TRANSCEIVERS

OEM CONTROL HEAD

TELEPHONE STYLE CONTROL HEAD

Combining class leading robustness with a sleek ergonomic design, the discreet TSCH provides flexibility and ease of operation, making it well suited for in-vehicle applications.

Fully compatible with MTM5500 radios, the design attributes of the TSCH ensure uncompromising performance for mission critical operations.

INSTALLATION FLEXIBILITY

For installations in long vehicles, buses or trains, the TSCH can be conveniently located as far as 40m way from the transceiver. To further simplify the installation, the TSCH is remotely powered via a single cable, from the transceiver.

The TSCH can be used in a dual control head configuration and also in conjunction with our other control head options. In addition to the TSCH, Motorola offers a wide range of control head options including pump bay terminals for fire trucks, custom control solutions and standard control heads.

The screen orientation is easily adjusted to accommodate different fitting options. For example, a horizontal screen orientation can be applied when the device is fitted onto a windscreen.

EASE OF USE

The TSCH is well suited for telephone style communications, supporting full duplex private calls as well as half duplex communications.

A vibrant, colour display makes it easy to read text and view images on the device.

To minimise training requirements, the TSCH uses the same user interface found in our proven range of portable radios. To enable a quick response in critical situations, a clearly visible emergency button and a rotary control for volume and talk group changes are easily accessed on the handset cradle.

With its sleek design, the TSCH can be comfortably used underneath a helmet and has been designed so that it completely encloses the ear - this ensures that background noise is minimized.

UNCOMPROMISING PERFORMANCE

Exceptional audio performance is achieved thanks to the digital connections between the transceiver and the TSCH. The enhanced audio processing enables louder and clearer audio from the TSCH and connected loudspeakers.

With its IP55 environmental protection rating, the TSCH is designed with the ruggedness and weather resistance needed for operation in harsh environments.

MTM5000 ACCESSORIES

ANTENNAS

GMAE4253
ANTENNA TETRA GLASS MOUNT
380-400 MHz

GMAE4255
ANTENNA TETRA PANEL MOUNT
380 - 430 MHz

GMAE4257
ANTENNA TETRA MAG MOUNT
410 - 430 MHz

GMAE4260
ANTENNA TETRA LOW PROFILE
380 -400 MHz

GMAE4258B
ANTENNA TETRA COVERT STRP
380-410MHZ

GMAE4258B
ANTENNA TETRA COVERT STRP
380-410 MHZ

MOBILE MICROPHONES

RMN5054
SMART VISOR MIC
Requires external PTT such as RLN5926A

MDHLN7016*
IMPRES TELEPHONE STYLE HANDSET KIT

RMN5106
DESKTOP MICROPHONE

RMN5107
COMPACT MOBILE MICROPHONE

RMN5111
HEAVY DUTY MICROPHONE

PMMN4087
VISOR MICROPHONE

INSTALLATION ACCESSORIES

PMLN4912
REMOTE MOUNT TRUNNION KIT

GLN7318
BASE TRAY WITHOUT SPEAKER

LOUD SPEAKER

RSN4002A
13W EXTERNAL SPEAKER

POWER SUPPLIES

PMPN4055
POWER SUPPLY
Small Power Supply with integrated wall bracket. Requires Cable PMKN4165A and Line Cord.

PMPN4076*
WEDGE POWER SUPLY
Requires DC Cable PMKN4165A and Line Cord.

*Radios not included

MODELS - COMPLIANT WITH DIN 75490 (ISO 7736)

	MTM5200	MTM5400	MTM5500
Dash	Compact radio for fast vehicle installation		N.A.
Desk	Compact radio, for use in the office. Optional range of accessories such as desk tray with integrated loudspeaker		N.A.
Multiple Remote Control Head	N.A.		Radio with multiple remote mount control head capability.
	N.A.		Range of installation options enable use in cars, vans and other vehicles
Multiple Transceiver or Control	N.A.	Radio with multiple remote mount control head capability.	Range of installation optionsenable use in cars, vans andother vehicles
Motorcycle	Environmentally enhanced radio meeting IP67 specification. Suitable for demanding environments such as motorcycle, fire appliance and marine installations		N.A.
Expansion head "Databox"	Radio without a control head, for data applications, or customised application development		

GENERAL

	Dimensions HxWxD (mm)	Weight Typical (g)	Dimensions HxWxD (mm)	Weight Typical (g)	Dimensions HxWxD (mm)	Weight Typical (g)
Dash and Desk models (transceiver + control head)	60x188x198	1300	60x188x198	1300	N.A.	
Transceiver only	45x170x169	1070	45x170x169	1070	45x170x169	1070
Standard control head	60x188x31	230	60x188x31	230	N.A.	
Remote control head	60x188x39	300	60x188x39	300	60x188x39	300
Motorcycle control head	60x188x39	320	60x188x39	320	N.A.	

USER INTERFACE & DISPLAY

Display	Diagonal dimension	2.8"
	Type	VGA - 640x480 pixels Transflective TFT, 65,000 colours
	Backlight	Variable backlight, User configurable
	Font sizes	Standard & Zoom mode (90 pixels, 4.5mm high) characters
TSCH		N.A. / Available as option*
Buttons & Keypad	Numeric	Integral backlit numeric keypad of 12 keys, with keypad lock option
	International keypad versions	Roman, Arabic, Cyrillic, Korean, Chinese, Taiwanese characters
	Programmable function keys	3 programmable function keys (plus 10 programmable numeric keys)
	Navigation	4-way navigation key, menu and soft keys
	Emergency	Emergency button with backlight
	Shortcuts	User configurable shortcuts to menus and common features using "One-Touch-Button" feature
Rotary	Dual Function	Talkgroup and volume change with lock option
Indication	LED	Tri-colour LED
	Tones	Configurable notification tones
User Interface Languages	Standard Options	Arabic, Chinese Simplified, Chinese Traditional, Croatian, Danish, Dutch, English, French, German, Greek, Hebrew, Hungarian, Italian, Korean, Lithuanian, Macedonian, Mongolian, Norwegian, Portuguese, Russian, Spanish, Swedish
	User defined	User programmable, using ISO 8859-1 character
Menu		Tailored to user needs
		Menu Shortcuts
		Menu Configuration
Contacts Management		Cellular Type
Contact List		Up to 1000 contacts
		Up to 6 numbers per contact, Max 2000 numbers
Multiple Dialling Methods		User selects how to dial
Fast/Flexible Call Response		Private Call Response to a Group Call via One Touch Button
Multiple Ring Tones		Configurable with CPS
Message Manager		Cellular Type
Text message list		20
Intelligent Keypad Text Input		All Control Heads
Status list		400
Country/Network Code List		100
Scan lists		40 lists of 20 groups
Discrete Mode		All Control Heads
Screen Saver		gif image & text (any user's selection)
Universal Time Display		All Control Heads
Keypad Lock		All Control Heads
Talkgroup Folders		Dual layer folder structure (folder/subfolder)
		256 folders
Favourite Folders		Up to 3 (to store any favourite talkgroup)

* Please refer to the separate specification sheet
** For availability of other language keypads please contact your local MSI representative

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature (°C)		-30 to +60	
Storage Temperature (°C)		-40 to +85	
Not in use - Storage	ETSI 300 019-1-1 CLASS 1.3	Non-Weather Protected Storage Locations	
Not in use - Transportation	ETSI 300 019-1-2 CLASS 2.3	Public Transportation	
Stationary use - Weather Protected Locations	ETSI 300 019-1-3 CLASS 3.2	Partly Temperature Controlled Locations	
Mobile use - Ground Vehicle Installation	ETSI 300 019-1-5 CLASS 5.2	Climatic Tests	
Mobile use - Ground Vehicle Installation	ETSI 300 019-1-5 CLASS 5M3	Mechanical Tests	
Rail Certification Environmental	EN50155:2007 and IEC60571 ED.3.0	Environmental	
MIL STD	810 C/D/E/F/G Specifications	All 11 categories met (or exceeded)	
Dust and Water Ingress Protection	IP54 (dust cat. 2)	Dash/Desk/Remote models	
	IP67	Motorcycle model (only control head is IP67; transceiver is IP54)	MTM5500 TSCH IP55

ELECTRICAL SPECIFICATIONS

		MTM5200	MTM5400	MTM5500
Voltage Range		10.8 to 15.6 V DC		
Current Consumption (A, typ.)	Idle / Rx / Tx @ 10W	N.A.	0.5 / 1.0 / 1.2 (TX 3.4A Peak)	
	Idle / Rx / Tx @ 3W	0.5 / 1.0 / .9 (TX 2.2A Peak)		
	Tx - Multi Slot PD (4 slots) @ 5.6W	N.A. (3W only)		2.7
	Tx - TEDS @ 3W	2.3		
	Using USB host	Adds 0.5A		

RF SPECIFICATIONS

Frequency Bands (MHz)		350 - 390, 380 - 430, 410 - 470, 806 - 870	
Transmitter RF Power	TETRA Release 1	N.A. (3W only)	10W, Class 2 Note: MSPD
	TETRA Release 2 (TEDS)	3W, Class 3	
RF Power Control	6 Power Step Levels (steps of 5 dBm)	Starting at 15 dBm; finishing at 40 dBm	
Receiver Class		A & B	
Receiver Static Sensitivity (dBm)		-114 minimum, -116 typical (ETSI 300-392-2)	
Receiver Dynamic Sensitivity (dBm)		-105 minimum, -107 typical (ETSI 300-392-2)	

GPS SPECIFICATIONS

Simultaneous Satellite Systems	GPS plus one other GNSS, eg GLONASS, BeiDou
Mode of Operation	Concurrent tracking, SBAS capable, 72 channel
GNSS Antenna	Supports active antenna (5V, 25mA supply)
Autonomous Acquisition Sensitivity	-163 dBm
Tracking Sensitivity	-163 dBm
Location Protocols	ETSI Location Information Protocol (LIP) Motorola LRRP

VOICE SERVICES

Talkgroups		10,000 TMO, 2000 DMO
Phone book entries		1000 persons. Up to 6 numbers per entry (mobile, office etc). Max 2000 entries
Scan lists		40 lists of 20 talkgroups
Trunked Mode (TMO) Services	Group call	Late Entry, TMO/DMO Mapping
	Private call	Half / Full Duplex
	Telephony (PABX, PSTN, MS-ISDN)	Full Duplex
	DGNA	Up to 10,000 groups
	Scanning	Attachment signalling, supports SWMI initiated attachment/detachment
Direct Mode (DMO) Services		Group call
		Private call
Emergency (tailored by users)	Tactical	Emergency Group Call to ATTACHED talkgroup
	Non-Tactical	Emergency Group Call to DEDICATED talkgroup
	Individual	Emergency Call to PREDEFINED party (half/full duplex)
	Smart emergency	TMO/DMO/DMO to TMO automatic switching options
	Hot Mic	Configurable timers for automatic open mic (talk without PTT)
	Location	Location (GPS) sent with emergency
	Target Address	Sent to individual or group address (selected or dedicated)
	Alarm (status message)	Emergency Status (or other pre-defined status)

DATA SERVICES

Status	Alias messages	400 Entries
	Options	Can be sent via One-Touch or via menu
Short Data Service (SDS)	Inbox	200 Entries (short messages), 40 Entries (long messages of up to 1000 characters)
		Cellular style iTAP predictive text entry
	Target Address	Sent to individual or group address (selected or dedicated)
	Voice Call Interaction	SDS messages can be sent and received during a voice call
Packet Data (PD)	Multi-slot PD	Data transmission with up to 4 slots supporting up to 28.8 kbit/s gross
	TETRA Enhanced Data Service (TEDS) (via software upgrade)	Supporting 25kHz and 50kHz channel bandwidths and enabling practical data rates of up to 80kbit/s
TEDS (capable)		QAM Channels: 25 kHz and 50 kHz (but not D8PSK channels)
		QAM modulation/coding modes: 4-QAM R1/2, 16-QAM R1/2, 64-QAM R1/2, and 64-QAM R2/3
WAP	Integrated WAP browser (including WAP-PUSH)	Integrated Openwave browser
		WAP 1.2.x and WAP 2.0 compatibility for UDP/IP Stack
Peripheral Equipment Interface (PEI)	Interface Protocol	AT Commands - Full Set ETSI Mandatory Compliant
		AT Multiplexer - 4 Virtual Physical Port (simultaneous PD, SDS, AT commands and Air Tracer SESSIONS)
		TNP1; enables simultaneous PD and SDS sessions
Terminal Management		Programmable via Motorola Integrated Terminal Management (iTM) solution

* Future software release

GATEWAY SERVICES

	MTM5200	MTM5400	MTM5500
DMO/TMO Gateway	N.A.	Group voice calls from DMO to TMO	
	N.A.	Group voice calls from TMO to DMO	
	N.A.	Emergency group call from DMO to TMO	
	N.A.	Emergency group call from TMO to DMO	
	N.A.	Call Pre-emption (in either direction)	
	N.A.	SDS messaging from DMO to TMO (including GPS) or from TMO to DMO*	
	N.A.	Configurable routing of SDS messages to console or PEI*	
	N.A.	Intelligent handling of point to point calls and SDS messages whilst operating as a Gateway*	

REPEATER SERVICES

DMO Repeater	N.A.	Repeats DMO voice calls on selected talkgroup
	N.A.	Repeats SDS and Status messaging on selected talkgroup*
	N.A.	ETSI type 1A DMO Repeater for channel efficient operation
	N.A.	Transmission of Repeater Presence Signal
	N.A.	Priority Call
	N.A.	Emergency Call (Pre-emptive Priority Call)
	N.A.	E2EE Encrypted DMO traffic
	N.A.	Monitoring of and participation in calls whilst in Repeater mode
	N.A.	Configurable Repeater Power Levels

INTERFACES

RS232		Four Virtual Ports via AT Multiplexer enable PC applications to run simultaneously Packet Data, AT Commands, SDS, SCOUT
USB		USB 2.0 support for PEI (Two Virtual Ports via standard Windows drivers enable PC applications to run simultaneously Packet Data and AT Commands)
		USB 2.0 support for PEI (Four Virtual Ports via AT Multiplexer enable PC applications to run simultaneously Packet Data, AT Commands, SDS, SCOUT); rapid programming
		USB On-The-Go (host & slave) capability for intelligent PEI applications
		USB 1.1 support (Host Mode) to manage USB Slave Devices (e.g. SIM CARD READER)
Rugged Accessory Connector (GCAI)		GCAI - Motorola accessory and ancillary interface for connection of accessories, data terminals and programming
General Purpose Input/Output	Digital I/O	7 (4 on remote and motorcycle control head, 3 on transceiver)
	Analog input	4 (1 on remote and motorcycle control head, with 4 levels)

SECURITY FEATURES

Air Interface Encryption	Algorithms	TEA1, TEA2, TEA3
	Security Classes	Class 1 (Clear), Class 2 (SCK), Class 3G
	Authentication	Infrastructure initiated and made mutual by terminal
Provisioning		Secure provisioning tool via Key Variable Loader (KVL)
User Access Control		PIN/PUK code access
	Service Profile Selection for Radio User Assignment / Radio User Identity (RUA/RUI) Operation	Based on login credentials, a radio user can be limited to only those radio capabilities defined in pre-installed service profiles, selected by the infrastructure
Data		Packet Data user authentication
End to End Encryption (EtEE)	Voice E2EE	Enhanced End to End Encryption with OTAR supported through Universal Crypto Module (UCM) and SIM (via integrated card slot) and or Cryptr 2 Broadband IP unit.
	Packet Data E2EE	
	Short Data (SDS) E2EE	

REGULATORY COMPLIANCE

Radio (R&TTE Article 3.2)	EN 303 035-1
	EN 303 035-2
	ETSI EN 300-394-1
	ETSI EN 300-392-2
EMC (R&TTE Article 3.1.b)	EN 301 489-1 V1.3.1
	EN 301 489-18 V1.3.1
Electrical Safety (R&TTE Article 3.1.a)	EN 60950-1 (2001)
	EN50360:2001 EME
Environmental	Directive 2002/96/EC WEEE
	EN50155:2007 (IEC 60571 ED. 3.0)
Automotive	E-mark, Automotive EMC Directive 95/54/EC
Rail Certification EMC	EN50121-3-2:2006 (IEC 62236-3-2 Ed.2.0)

* Future software release

For more information on the MTM5000 Series radios, please visit us on the web at:
www.motorolasolutions.com/MTM5000

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