

MTM5400

TETRA MOBILE RADIO

Enabling Current and Future Critical Communications



Key Benefits Include

Extended Operational Range

- Up to 10W transmit power, with class leading receiver sensitivity delivers comprehensive network coverage
- Integrated DMO Gateway, DMO Repeater capabilities ensure 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 user interface as market proven MTP850 portable and MTM800 Enhanced mobile radios
- Re-use of MTM800 Enhanced accessories using GCAI connector

Enhanced End to End Encryption Options

- Integrated hardware for SIM based end to end encryption
- Hardware Encryption (AES128 or AES256 MACE) option

Advanced Terminal Management

- USB 2.0 interface for fast radio programming via Motorola's integrated Terminal Management solution
- Hardware ready for Over-The-Air terminal management
- Enabled via a software update, background programming will allow the radio to be programmed whilst staying fully functional

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
- Works seamlessly with existing MTM800 Enhanced control head accessories

Rugged Design with Exceptional Reliability

- Includes IP67 control head option, 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

The first of a new generation of TETRA radios, the MTM5400 underlines Motorola's commitment to meeting the current and future needs of critical communications. This new radio supports a number of advanced capabilities including TEDS high speed data connectivity, integrated Direct Mode Gateway-Repeater, over the air programming and Background Programming, that combine to enhance operational efficiency and to enable users to make more informed decisions in the field.

Specifications

Dash Desk Multiple Remote Control Head Motorcycle Expansion head "Databox" GENERAL Dash and Desk models	Compact radio for fast vehicle installation Compact radio, for use in the office. Optional range of accessories such a Radio with multiple remote mount control head capability. Range of install Environmentally enhanced radio meeting IP67 specification. Suitable for d			
Multiple Remote Control Head Motorcycle Expansion head "Databox" GENERAL	Radio with multiple remote mount control head capability. Range of install			
Motorcycle Expansion head "Databox" GENERAL		ation options enable use in cars, vans and other vehicles		
Expansion head "Databox" GENERAL	Environmentally enhanced radio meeting IP67 specification. Suitable for d			
GENERAL		Environmentally enhanced radio meeting IP67 specification. Suitable for demanding environments such as motorcycle, fire appliance and marine installations		
	Radio without a control head, for data applications, or customised application development			
Dash and Desk models				
Dash and Desk models	Dimensions HxWxD (mm)	Weight Typical (g)		
Dasii alia Desk liloaeis		Troight Typical (g)		
(transceiver + control head)	60x188x198	1300		
Transceiver only	45x170x169	1070		
Standard control head	60x188x31	230		
Remote control head	60x188x39	300		
Motorcycle control head	60x188x39	320		
USER INTERFACE & DISPLAY	35/105/00			
OSER RETERITAGE & DIST EAT	Diagonal dimension	2.0"		
	Diagonal dimension	2.8"		
Display	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		
	Numeric	Integral backlit numeric keypad of 12 keys, with keypad lock option		
	International keypad versions	Roman, Arabic, Cyrillic, Korean, Chinese, Taiwanese characters		
Dutters 9 Keyned	Programmable function keys	3 programmable function keys (plus 10 programmable numeric keys)		
Buttons & Keypad	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		
Patany	Dual function			
Rotary		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			
CONTROL EIST	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				
Message Manager	Cellular Type			
Text message list	20			
Intelligent Keypad Text Input				
Status list	100			
Country/Network Code List	100			
Scan lists	40 lists of 20 groups			
Discrete Mode				
Screen Saver	GIF image & text (any user's selection)			
Universal Time Display				
Keypad Lock				
Talkgroup Folders	Dual layer folder structure (folder/subfolder) 256 folders			
Favourite Folders	Up to 3 (to store any favourite talkgroup)			
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		
	ETSI 300 019-1-5 CLASS 5.2	Climatic Tests		
Mobile use - Ground Vehicle Installation	ETSI 300 019-1-5 CLASS 5M3	Mechanical Tests		
Mobile use - Ground Vehicle Installation				
Mobile use - Ground Vehicle Installation				
	810 C/D/E/F Specifications IP54 (dust cat. 2)	All 11 categories met (or exceeded) Dash/Desk/Remote models		

ELECTRICAL SPECIFICATIONS			
Voltage Range	10.8 to 15.6 V DC		
	Idle / Rx / Tx @ 10W	0.5 / 1.0 / 1.2 (TX 3.4A Peak)	
	Idle / Rx / Tx @ 3W	0.5 / 1.0 / .9 (TX 2.2A Peak)	
Current Consumption (A, typ.)	Tx - Multi Slot PD (4 slots) @ 5.6W	2.7	
	Tx - TEDS @ 3W	2.3	
	Using USB host	Adds 0.5A	
RF SPECIFICATIONS			
Frequency Bands (MHz)	380 - 430		
Transmit / Receive Separation (MHz)	10		
TM0 Switching Bandwidth (MHz)	50		
DMO Switching Bandwidth (MHz)	50		
RF Channel Bandwidth (kHz)	25		
Transmitter RF Power	TETRA Release 1	Adjustable to Class 2 (10W), Class 2L (5.6W), Class 3 (3W) Note: MSPD limited to Class 2L (5.6W)	
	TETRA Release 2 (TEDS)	Class 3 (3W)	
RF Power Control	6 Power Step Levels (steps of 5 dBm)	Starting at 15 dBm; finishing at 40 dBm	
RF Power Level Accuracy	+/- 2dB		
Receiver Class	A & B		
Receiver Static Sensitivity (dBm)	-114 minimum, -116 typical		
Receiver Dynamic Sensitivity (dBm)	-105 minimum, -107 typical		
GPS SPECIFICATIONS	10		
Simultaneous Satellites	12		
Mode of Operation	Autonomous or assisted (A-GPS)		
GPS Antenna Autonomous Acquisition Sensitivity	Supports active antenna (5V, 25mA supply) -143 dBm / -173 dBW		
Autonomous Acquisition Sensitivity Tracking Sensitivity	-143 dBm / -173 dBW		
Accuracy	-139 dbiii / -189 db W <5m (50% probable) <10m (95% probable)		
TTFF (HOT Start - Autonomous)	<1s		
TTFF (WARM Start - Autonomous)	<36s		
TTFF (COLD Start - Autonomous)	<36s		
	ETSI Location Information Protocol (LIP)		
Location Protocols	Motorola LRRP		
VOICE SERVICES			
Talkgroups	2048 (TMO) & 1024 (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		
	Group call	Late Entry, TMO/DMO Mapping	
	Private call	Half / Full Duplex	
Trunked Mode (TMO) Services	Telephony (PABX, PSTN, MS-ISDN)	Full Duplex	
	DGNA	Up to 2047 groups	
	Scanning	Attachment signalling, supports SWMI initiated attachment/detachment	
Direct Mode (DMO) Services	Group call		
	Private call	Francisco Cosus Callas ATTA CHED tallersons	
	Tactical Non-Tactical	Emergency Group Call to ATTACHED talkgroup 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	
Emergency (tailored by users)	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			
Chatus	Alias messages	400 Entries	
Status	Options	Can be sent via One-Touch or via menu	
	Inbox	200 Entries (short messages), 40 Entries (long messages of up to 1000 characters)	
Short Data Service (SDS)	Cellular style iTAP predictive text entry		
Onort Data Service (SDS)	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	
	Multi-slot PD	Data transmission with up to 4 slots supporting up to 28.8 kbit/s gross	
Packet Data (PD)	TETRA Enhanced Data Service (TEDS) (via software upgrade)	Supporting 25kHz and 50kHz channel bandwidths and enabling practical data rates of up to 80kbit/s	
	QAM Channels: 25 kHz and 50 kHz (but not D8PSK channels)		
TEDS (capable)	QAM modulation/coding modes: 4-QAM R1/2, 16-QAM R1/2, 64-QAM R1/2, and 64-QAM R2/3		
	16-QAM R1/2, 64-QAM R1/2, and 64-QAM R2/3	Integrated Openwave browser	
TEDS (capable)		Integrated Openwave browser WAP 1.2.x and WAP 2.0 compatibility for UDP/IP Stack	
	16-QAM R1/2, 64-QAM R1/2, and 64-QAM R2/3	Integrated Openwave browser WAP 1.2.x and WAP 2.0 compatibility for UDP/IP Stack AT Commands - Full Set ETSI Mandatory Compliant	
WAP	16-QAM R1/2, 64-QAM R1/2, and 64-QAM R2/3 Integrated WAP browser (including WAP-PUSH)	WAP 1.2.x and WAP 2.0 compatibility for UDP/IP Stack	
	16-QAM R1/2, 64-QAM R1/2, and 64-QAM R2/3 Integrated WAP browser (including WAP-PUSH)	WAP 1.2.x and WAP 2.0 compatibility for UDP/IP Stack AT Commands - Full Set ETSI Mandatory Compliant	
WAP	16-QAM R1/2, 64-QAM R1/2, and 64-QAM R2/3 Integrated WAP browser (including WAP-PUSH)	WAP 1.2.x and WAP 2.0 compatibility for UDP/IP Stack AT Commands - Full Set ETSI Mandatory Compliant AT Multiplexer - 4 Virtual Physical Port	
WAP	16-QAM R1/2, 64-QAM R1/2, and 64-QAM R2/3 Integrated WAP browser (including WAP-PUSH)	WAP 1.2.x and WAP 2.0 compatibility for UDP/IP Stack AT Commands - Full Set ETSI Mandatory Compliant AT Multiplexer - 4 Virtual Physical Port (simultaneous PD, SDS, AT commands and Air Tracer SESSIONS)	
WAP	16-QAM R1/2, 64-QAM R1/2, and 64-QAM R2/3 Integrated WAP browser (including WAP-PUSH) Interface Protocol Programmable via Motorola Integrated Terminal Management (iTM) solution	WAP 1.2.x and WAP 2.0 compatibility for UDP/IP Stack 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 Background Mode Programming (BMP) capable* - while radio is operational	
WAP Peripheral Equipment Interface (PEI)	16-QAM R1/2, 64-QAM R1/2, and 64-QAM R2/3 Integrated WAP browser (including WAP-PUSH) Interface Protocol	WAP 1.2.x and WAP 2.0 compatibility for UDP/IP Stack 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	

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Door view ear in term TMU to DANO Sengency young call from TMU to DANO Sengency young youn	GATEWAY SERVICES			
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Energency and call from TMO to MUS Specific services are othrower glease dependent According of Secretic services are othrower glease are othrower gleas		Group voice calls from TMO to DMO		
Treasmission of Galevoyr Presence Signal Appelle services are sethore prices dependent) Application of Configurable restricts of SIS to consider Galevoyr Configurable restricts of SIS to consider of REI Management of point to paint calls and SIS messages whilst operating as a Galevoyr REPAIR SERVICES ***PRESENCES**** ***PRESENCES***** ***PRESENCES***** ***PRESENCES******* ***PRESENCES***** ***PRESENCES***** ***PRESENCES**** ***PRESENCES**** ***PRESENCES**** ***PRESENCES**** ***PRESENCES**** ***PRESENCES**** ***PRESENCES**** ***PRESENCES**** ***PRESENCES**** ***PRESENCES***		Emergency group call from DMO to TMO		
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Coll Pre-emption in enther direction See assaging from Mole that Mole Including PS for from TMO to DMO Configurate reacting of SOS to console or PS Management of plots to print cask and SOS messages white operating as a Sisterory REPLATER SERVICES REPLATE SER				
LOS PYR- impropor in a miner directions SDS are centred in accession Configurable residency residency SDS are centred or PEI American American SDS are centred or PEI American America		Automatic detection and management of co-located Gateways		
Configuration ranging of SDS in censors or PEI Management of point to point calls and SDS messages withit operating as 8 Gatoway REPAIRE SERVICES Reports DMO vice and tone signalling on selected talkgroup ETS type IA DMO Repeater for channel efficient operation Transmission of Repeater Presence Signal EST type IA DMO Repeater for channel efficient operation Transmission of Repeater Presence Signal Provide Configurable Repeater Presence Signal Provide Configurable Repeater Prevent Levels Provide Configurable Repeater Prevent Levels EST Encryptops DMO traitic American and American Signal	release dependent/			
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REPEATE SERVICES Repeat DND yoice and tune signalling on selected talkgroup		Configurable routing of SDS to console or PEI		
Repeats DMO vacie and trane signalling on selected talkgroup Repeats SOS and Status messaging on selected talkgroup Tensamission of Repeats Proceamed Varieties operation Tensamission of Repeats Proceamed Varieties operation Tensamission of Repeats Proceamed Varieties operation Specific services are software related despendent) Emergency Call Pro-emptor Printy Call Emptor Call Pro-emptor Call Pro-emptor Printy Call Emptor Call Pro-emptor Call Pro		Management of point to point calls and SDS messages whilst operating as a Gateway		
Repeats OS and Status messaging on selected tallgroup EST type 1A DMO Repeater for channel efficient appration Transmission of Repeater Presents Signal Privitry, Call Engrency Call File Appeater Presents Signal Privitry Call EXE Encrypted DMO traffic More than the present of Call (Personal Control Call (Personal Call Call Call Call Call Call Call C	REPEATER SERVICES			
Specific services are software related of protection of Repeated Presence Signal Friority Call Free-mptow Priority Call F		Repeats DMO voice and tone signalling on selected talkgroup		
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Priority Call Emergency Call (Pre-emptive Priority Call Emptive Priority Call Emptive Prover Levels Emptive Priority Call Emptive Prio		ETSI type 1A DMO Repeater for channel efficient operation		
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Emergency Call (Pre-migrate Priority Call) EDEE Encryption (ESEE) EDEE Encryption (See Priority Call) EDEE (ESEE (ESEE Encryption (See Priority Call)) EDE (ESEE (ESEE CALL)) EDEC (ESEE (ESEE CALL)) EDEC (ESEE (ESEE CALL)) EDEC (ESEE (ESEE C	(Specific convices are coftware	Priority Call		
Montring of and participation in calls whilst in Repeater mode	release dependent)	Emergency Call (Pre-emptive Priority Call)		
Configurable Repeater Power Levels WIREIRACES PROPEI Four Virtual Ports via AT Multiplexer enable PC applications to run simultaneously Packet Data, AT Commands, SDS, SCOUT) AND SEASON SEA		E2EE Encrypted DMO traffic		
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Security Features Security Classes Class (Clearly Classes Control Secure provisioning to large provisi		Configurable Repeater Power Levels		
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USB 0n-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 Digital VO Analog input 4 (1 on remote and motorcycle control head, 3 on transceiver) Analog input 4 (1 on remote and motorcycle control head, 3 on transceiver) Algorithms FEAURITY FEATURES Algorithms Algorithms Authentication Authentication Authentication Provisioning Security Classes Access Control PIN/PUX code access Provisioning 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 Beautiful Classes Feature Provision (REEE) Packet Data user authentication Feature Provision (REEE) Packet Data user authentication Feature Provision (REEE) Packet Data user authentication Feature Provision (REEE) Packet Data EZEE Packet Data EZEE Packet Data EZEE Packet Data (SDS) EZEE Radio (RETTE Article 3.1) EN 303 035-2 ETSIE NOS 039-2-2 EMC (RETTE Article 3.1.a) EN 503 489-1V1.3.1 EN 60950-1 (2001) EN 600950-1		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 On-The-Go (Index & sizeve) capability for intelligent PEI applications USB 11 support (Host Mode) to amange USB SID MCARD READER) Rugged Accessory Connector (IGCA) General Purpose Input/Output General Purpose Input/Output Analog input Algorithms Algorithms Algorithms Security Classes Class 1 (Clear), Class 2 (SCK), Class 3 (IGCK) (Encryption support on DMO/TMO Gateway and DMO Repeater requires specific software release) Authentication Provisioning Securic Provisioning tool via Key Variable Loader (KVL) PIN/PUK code access Sarvice Profile Salection for Radio User Assignment / Radio User Assignment / Radio User Industry (Industry) Reduct Data User authentication Packet Data user authentication Packet Data User Access Control Reduct Data CEE Sent Data (SDS) EZEE 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 included and mode mutual by terminal requires specific software release) Provisioning Provisioning Secure provisioning tool via Key Variable Loader (KVL) PIN/PUK code access Service Profile Salection for Radio User Assignment / Radio User Industry (IAMPIII) 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 included and mode mutual by terminal End to End Encryption (ELEE) Packet Data User authentication End to End Encryption (ELEE) Packet Data SZEE Santo Data (SDS) EZEE Enhanced End to End Encryption with OTAR supported through AES128 or AES256 Hardware or SIM (via integrated card slot) End (RATTE Article 3.1) EN 303 035-1 EN 303 035-1 EN 303 035-2 ETSI EN 300-392-2 EMC (RATTE Article 3.1) EN 500-1 (2001) EN 500-1 (HOD	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		
Ruged Accessory Connector (GCA) General Purpose Input/Output Analog input Analog inp	02R	USB On-The-Go (host & slave) capability for intelligent PEI applications		
Seneral Purpose Input/Output Digital VO		USB 1.1 support (Host Mode) to manage USB Slave Devices (e.g. SIM CARD READER)		
Analog input Analog input Analog input A (1 on remote and motorcycle control head, with 4 levels)	Rugged Accessory Connector (GCAI)	GCAI - Motorola accessory and ancillary interface for connection of accessories, data terminals and programming		
Analog input 4 (1 on remote and motorcycle control head, with 4 levels) ### Algorithms ### A	C	Digital I/O	7 (4 on remote and motorcycle control head, 3 on transceiver)	
Air Interface Encryption Air Interface Encryption Ecurity Classes Ecuri	General Purpose Input/Uutput	Analog input	4 (1 on remote and motorcycle control head, with 4 levels)	
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Provisioning Secure provisioning tool via Key Variable Loader (KVL) PIN/PUK code access Service Profile Selection for Radio User Assignment / Radio User Identity (RUA/RUI) Operation Data Packet Data user authentication Voice EZEE Packet Data EZEE Short Data (SDS) EZEE Packet Data EZEE Short Data (SDS) EZEE Packet Data EZEE Short Data (SDS) EZEE EN 303 035-1 EN 303 035-2 ETIS IEN 300-394-1 ETIS IEN 300-394-2 EMC (R&TTE Article 3.1.b) EN 301 489-18 V1.3.1 EN 301 489-18 V1.3.1 EN 301 489-18 V1.3.1 EN 505-50 (2001) ENGINEER EN	Air Interface Encryption	Security Classes		
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Automotive E-mark, Automotive EMC Directive 95/54/EC	Environmental	Directive e2002/95/EC RoHS		
	Automotive	E-mark, Automotive EMC Directive 95/54/EC		

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