CM5000

TETRA Gateway / Repeater

Maximise system performance in mission critical applications

Motorola's CM5000 TETRA DMO Gateway / Repeater, developed in conjunction with Cleartone, the leading provider of TETRA Gateway/Repeater technology, enhances TETRA radio performance and usability in locations where coverage is compromised. Inside buildings, underground locations or where handheld radio coverage is limited, the CM5000 can extend the reach of TETRA systems.

With its full data capability and proven Motorola user interface, the CM5000 combines three modes of operation – a TETRA Mobile, a DMO Gateway and a DMO Repeater. When configured in 'Gateway' mode, it acts as a bridge between the trunked radio network and TETRA radios operating outside the network in Direct Mode (DMO). When configured in "Repeater" mode, it extends the range of DMO communication by receiving and re-broadcasting communications from other DMO users.

Key Benefits Include

Multiple operating modes delivering powerful TETRA mobile services

- Standard 5W TETRA Mobile
- DMO Gateway, extending network coverage
- DMO Repeater, enhancing Direct Mode performance

Proven capability & feature set

- Enhanced Data Performance
- Multi-slot packet data provides rapid access to information

Integrated GPS option

- Enhance efficiency through ability to locate resources
- Locate users in need of assitance

Common User Interface

- Common keys and menu structures as other Motorola TETRA terminals
- simplifies user training

Comprehensive, ffiexible installation options

- DIN Compatible, available in dash mount and Remote Head

Common accessory portfolio

- Shared accessories with other Motorola mobile platforms

CM5000

TETRA GATEWAY / REPEATER

Specifications

MODELS

Dash	Compact radio, for vehicle installation. Compatible for installation in DIN slot
Desk	Compact radio, for use in the office. Optional range of accessories such as desk tray with integrated loudspeaker
Remote	Radio with remote mount control head capability. Range of installation options enable use in cars, vans and other vehicles.

OPERATING MODES

TMO Mobile	Standard TETRA Mobile Radio, supporting TMO Voice & Data services detailed below
DMO Mobile	Standard TETRA Mobile Radio, supporting DMO Voice & Data services detailed below
TMO / DMO Gateway	ETSI TETRA Gateway Operation, extending network coverage for DMO users
	Supports Group and Emergency Group calls from TMO to DMO / DMO to TMO
	Automatic detection and management of co-located Gateways
	Call pre-emption
DMO / DMO Repeater	ETSI TETRA Type 1b DMO Repeater, extending DMO coverage
	Re-broadcast of Group and Emergency Group calls on configured DMO talkgroups
Analogue Gateway	Optional interface to 3rd party analogue radio* to provide TETRA <-> Analogue interface.
	Provides method to link TETRA and legacy analogue radio systems, for inter-agency cooperation or to assist in migration to TETRA.
	* requires additional Analogue Radio Interface and analogue radio provided by end-user.

PRODUCT SPECIFICATIONS

Dimensions (H x W x D) mm	65 x 190 x 187	Dash and Desk models (radio + control head)
	65 x 190 x 30	Remote control head only
	44 x 168 x 163	Radio chassis only
Weight (typ) kg	1.75	Dash Model
	0.25	Remote control head only
	1.50	Radio chassis only

USER INTERFACE & DISPLAY

Display	Diagonal dimension	2,8″
	Type	212 x 140 pixels, 65K colours
	Backlight	variable backlight, user configurable
	Options	Privacy screen saver
Buttons & Keypad	Numeric	Integral backlit numeric keypad of 12 keys
	Navigation	4 way navigation key, menu and soft keys
	Emergency	Emergency button with backlight
Rotary	Dual function	On/Off and volume change with lock option
Indication	LED	Multi-function indicator for In service, In traffic, Channel Busy and Tx Inhibit
	Tones	Configurable notification tones
User Interface Languages	Standard Options	English, German, Dutch, French, Spanish, Swedish

Specifications

ELECTRICAL SPECIFICATIONS

Voltage Range	10.8 to 15.6 V DC		
Current consumption (A, typ)	Idle / RX / TX	1.2 / 2.2 / 2.2	

RF SPECIFICATIONS

Frequency Bands (MHz)	380 – 430
Transmit Band (MHz)	380 – 430
Receive Band (MHz)	380 – 430
DMO Band (MHz)	380 – 430
RF Channel Bandwidth (kHz)	25
Transmit / receive Separation (MHz)	10
Switching Bandwidth (TMO) (MHz)	50
Switching Bandwidth (DMO) (MHz)	50
Transmitter RF Power	5W (progammable by CPS to 3W or 5W max)
RF Power Control	4 Steps of 5 dB
RF Power Level Accuracy	+/- db 2
Receiver Class	A
Receiver Static Sensitivity (dBm)	-112 minimum, -114 typical
Receiver Dynamic Sensitivity (dBm)	-103 minimum, -105 typical

GPS SPECIFICATIONS

Simultaneous Satellites	12
Mode of operation	Autonomous
GPS antenna	Supports active antenna (5V, 30mA max supply) via FME male connector
GPS Sensitivity	-150 dbm tracking
Accuracy	5 meter (50% probable)
	10 meter (95% probable)
Location protocols	ETSI Location Information Protocol (LIP)
	NMEA format using SDS-TL

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature (°C)	-20 to +60	
Storage Temperature (°C)	-40 to +80	
Humidity	ETS 300 019-1-5 class 5.1 and 5.2 EIA/TIA 603 (95%)	
Dust and Water	IP54 (cat.2)	
Shock, drop and vibration	IEC 68-2-29 Test Eg	
	IEC 68-2-6 Test Fc	
	TIA/EIA 603-b Forestry	
	MIL-STD 810F	

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	EN 60950-1 (2001)	
(R&TTE Article 3.1.a)	EN50360:2001	EME
Environmental	Directive 2002/96/EC WEE	
	Directive 2002/95/EC RoHS	

Specifications

VOICE SERVICES

Talkgroups	2048 (TMO) & 1024 (DMO)	
Contact Book entries	1000 persons. Up to 6 numbers per entry (TETRA ID, mobile, office etc).	
Scan lists	20 lists of 20 talkgroups, fixed or user defined, with configurable priority scanning	
Trunk Mode (TMO)	Group call	Late entry, TMO/DMO mapping, announcement calls, priority calls, Site Wide Call
	Private call	Half and full duplex. Flexible dialling by list scroll, short number dial, direct entry, alphabetical search
		Call History lists including last number dialled, missed calls list
		Busy user pre-emption
	Telephony	Full duplex, DTMF overdial, Busy user pre-emption.
	DGNA	up to 2047 groups
	Scanning	attachment signalling, supports SwMI initiated attachment/detachment
Direct Mode (DMO)	Group call	late entry, TMO/DMO mapping,
	Private call	
Emergency	Smart emergency	TMO to DMO / DMO to TMO automatic switching options
	Hot Mic	Configurable timers for automatic open mic
	Location	Location (GPS) sent with emergency
	Target Address	Sent to individual or group address (selected or dedicated)
	Alarm	Emergency status
Other Services	Ambience Listing	
	Transmit Inhibit (TxI)	ETSI Enhanced Mode TxI with On / Off Status Messaging

DATA COMMUNICATIONS

Status	Alias messages	100
Short Data Service (SDS)	Inbox	20 messages
	100 predefined and user defined messages	
	Target Address	Sent to individual or group address (selected or dedicated)
	voice interaction	SDS can be sent and received during voice call
Packet Data	Single Slot	7.2 kbps gross
	Multi Slot	Up to 28.8kbps gross
Peripheral Equipment	ETSI Compliant PEI port	
Interface (PEI)	Interface Protocol :	AT Commands
		TNP1 ; enables simultaneous PD & SDS sessions

SECURITY FEATURES

Air Interface Encryption	Algorithms	TEA1, TEA2, TEA3
	Security Classes	Class1 (clear), Class2 (SCK), Class3 (DCK, CCK)
Key Provisioning	Secure provisioning tool (key variable loader KVL)	
	Over the Air Rekeying (OTAR) for SCK and Class 3 (CCK)	
Network Access Control	Authentication	Infrastructure initiated and made mutual by terminal
	Temporary Enable / Disable (Stun) for remote management of lost or stolen radios or radios in transit.	
User Access Control	PIN / PUK code access	
Data	Packet data user authentication	

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