Hytera

20th
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MD78X/78XG
Versatile Digital Mobile Two-Way Radio

- Large-size HD Transflective Color Display
- Superior Digital Voice

For more information please visit: dmr.hytera.com

DMR
DIGITAL MOBILE RADIO ASSOCIATION
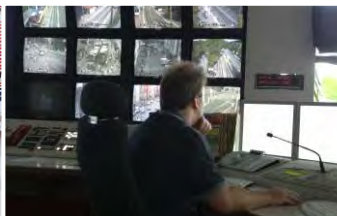
MD78X/78XG
Higher Efficiency,
Richer Experience

As a product built to the DMR standard, MD78X/78XG (MD78XG is the model with GPS) is endowed with ergonomic design, all-round digital functions and remarkable quality to increase your management efficiency and enable you to be responsive to emergent situations.

Applications

Public Safety	Public Utilities	Transportation (port, airport, railway, etc.)
Forest Industry	Business	Manufacturing

Product Features

● **User-centered Design**

The large-size color display allows good visibility even under extremely strong light. And the seven programmable keys facilitate your communication in various conditions.

● **Reliable Quality**

MD78X/78XG is strictly compliant with MIL-STD-810 C/D/E/F/G and IP54 standards, ensuring outstanding performance even under harsh environments.

● **Superior Voice**

With the combined application of narrowband codec and digital error-correction technologies, MD78X/78XG is capable of ensuring you superior voice under noisy environments or at the edge of the coverage area. In addition, the adoption of the AGC technology also optimizes your voice. With a built-in 4W speaker, MD78X/78XG ensures clear and crisp voice communication.

● **Higher Spectrum Efficiency, Higher Channel Capacity**

Benefiting from the TDMA technology, MD78X/78XG allows twice the channels based on the same spectrum resource. This is a big help to relieve the stress of increasing shortage in spectrum resource.

● **Dual-slot Pseudo Trunk**

With this feature, the free slot can be allocated to a member that needs to communicate, effectively enhancing frequency efficiency and allowing you to communicate timely under emergency situations.

● **Secure Communication**

Besides the intrinsic encryption of the digital technology, MD78X/78XG provides enhanced encryption capability (such as 256-bit encryption algorithm) and the Scrambler feature (selectable).

● **Versatile Services**

In addition to conventional communication services, MD78X/78XG features rich data services and selectable functions such as Text Message, Scan, Emergency, Channel Steering, Auto Registration and Lone Worker.

● **Further Development Port**

The reserved front and rear port in MD78X/78XG allows users or any third party partner to further develop other helpful applications to extend the radio functionalities!

● **Option Board Interface**

MD78X/78XG supports option board interfaces to radio, allowing third party partner to develop various applications to interconnect with radios to control the radio to expand its functionalities! Among the supported features are voice recording, encryption etc. Please refer to the API Partner Programmed for more information!

Main Functions

● **Dual Modes (Analog+Digital)**

MD78X/78XG can operate in either analog or digital mode. It is compatible with the prevalent analog system, ensuring a smooth analog-to-digital transition.

● **Versatile Voice Calls**

Intelligent signaling of MD78X/78XG supports various voice call types, including Private Call, Group Call , All Call and Emergency Call.

● **GPS**

MD78XG supports viewing of GPS positioning information and sending of GPS text message.

● **Data Services**

MD78X/78XG supports data capabilities of sending Private, Group text message. It also supports Third Party to control the radio via Third party API (GPS, Radio Registration Services, Radio Call Control, Telemetry, Data Transfer), via Telemetry control to radio.

● **Accessory Expansion**

MD78X/78XG supports third party to develop accessories expansion via front and rear port of the mobile. (Check out that features as channel steering, emergency footswitch has been supported via the back port!)

● **Various Analog Signaling Types**

MD78X/78XG supports various analog signaling types (HDC1200, DTMF phone , 2-Tone and 5-Tone), various squelch control types (CTCSS/CDCSS), thus providing higher function expansion capacity to the analog world.

● **Supplementary Services**

MD78X/78XG supports supplementary services of Radio Check, Remote Monitor, Call Alert, Radio Enable and Radio Disable.

● **Multiple Languages**

MD78X/78XG supports up to 15 languages, including English, Simplified Chinese, Traditional Chinese, Thai, Arabic, Farsi, Korean, Portuguese, Italian, Russian, Polish, Turkish, French, Spanish and German, allowing users to select it per their needs.

● **One Touch**

MD78X/78XG supports One Touch features that comprise of Text Message, Voice Calls and Supplementary Services.

● **Scan**

MD78X/78XG supports scanning of pure analog voice and signaling, pure Digital voice and data, and also mix mode scan that comprise of Analog and Digital activities.

● **Roaming**

MD78X/78XG supports automatic roaming of all sites in a IP Multi-site Connect system.

● **Privacy of Voice and Data**

MD78X/78XG supports analog scrambling, and digital encryption using Advanced Encryption Standard (AES) and ARCFOUR (ARC4) encryption methodology to both voice and data.

● **Analog/Digital Telephone Interconnect (via DTMF signaling)**

MD78X/78XG supports simplex voice communications between radio and telephone users. It allows a radio user to make a telephone call; or a telephone user to make either a Group or Private call to radio users. This feature utilizes the Commercial Off The Shelf (COTS) Analog Phone Patch boxes and a Plain Old Telephone Service (POTS) line to connect the radio users to the Corporate Office Phone System (PBX) or Public Switched Telephone Network (PSTN).

● **Software Upgradable**

Upgrade software enables new features without buying a new radio; MD78X(G) could also be switched into MPT and DMR trunking modes with corresponding trunking license applied in the same hardware.

Standard Accessories

| Palm Microphone | Microphone Hanger | Microphone Hanger Screws | Mounting Bracket |
| Power Cord | Fuse | GPS Antenna   for MD78XG only | |

Specifications

General				
Frequency Range		UHF1: 400-470MHz; UHF2: 450-520MHz UHF3: 350-400MHz; UHF5: 804-941MHz* VHF: 136-174MHz		
Channel Capacity		1024		
Zone Capacity		64(each with a maximum of 16 channels)		
Channel Spacing		12.5 KHz / 20 KHz / 25 Khz		
Operating Voltage		13.6 V ± 15%		
Current Drain	Standby	< 0.6A		
	Receive	< 2.0A		
	Transmit	5W		< 5A
		25W		< 8A
		45W/50W		< 12A
Frequency Stability		± 1.5ppm		
Antenna Impedance		50		
Dimensions (H× W× D)		60× 174× 200 mm		
Weight		1.7Kg		
LCD Display		220× 176 pixels, 262000 colors 2.0 inch, 4 rows		

Receiver			
Sensitivity	Analog	0.3μ V (12dB SINAD); 0.22μ V (Typical) (12dB SINAD) 0.4μ V (20dB SINAD)	
	Digital	0.3μ V /BER5%	
Selectivity TIA-603 ETSI		65dB @ 12.5KHz / 75dB @ 20/25KHz 60dB @ 12.5KHz / 70dB @ 20/25KHz	
Intermodulation TIA-603 ETSI		75dB @ 12.5/20/25KHz 70dB @ 12.5/20/25KHz	
Spurious Response Rejection TIA-603 ETSI		75dB @ 12.5/20/25KHz 70dB @ 12.5/20/25KHz	
Blocking TIA-603 ETSI		90dB 84dB	
Hum and Noise		40dB @ 12.5KHz; 43dB @ 20KHz; 45dB @ 25KHz	
Rated Audio Power Output		Internal (@20 ohm load)	3W
		External (@8 ohm load)	7.5W
Max Audio Power Output		Internal (@20 ohm load)	8W
		External (@8 ohm load)	20W
Rated Audio Distortion		3%	
Audio Response		+1 ~ -3dB	
Conducted Spurious Emission		< -57dBm	

Transmitter			
RF Power Output		Low Power UHF1/UHF2/UHF3: 5-25W VHF: 5-25W	
		High Power UHF1/UHF2/UHF3: 5-45W; UHF5* 5-35W VHF: 5-50W	
FM Modulation		11K0F3E @ 12.5KHz; 14K0F3E @ 20KHz 16K0F3E @ 25KHz	
4FSK Digital Modulation		12.5KHz Data Only: 7K60FXD 12.5KHz Data & Voice: 7K60FXW	
Conducted/Radiated Emission		-36dBm<1GHz; -30dBm>1GHz	
Modulation Limiting		± 2.5KHz @ 12.5KHz; ± 4.0KHz @ 20KHz; ± 5.0KHz @ 25KHz	
FM Hum & Noise		40dB @ 12.5KHz; 43dB @ 20KHz; 45dB @ 25KHz	
Adjacent Channel Power		60dB @ 12.5KHz; 70dB @ 20/25KHz	
Audio Response		+1 ~ -3dB	
Audio Distortion		3%	
Digital Vocoder Type		AMBE++or SELP	
Digital Protocol		ETSI-TS102 361-1,-2,-3	

Environmental Specifications		
Operating Temperature	-30 ~ +60	
Storage Temperature	-40 ~ +85	
ESD	IEC 61000-4-2 level 4 ± 8kV (contact) ± 15kV (air)	
American Military Standard	MIL-STD-810 C/D/E/F/G	
Dust & Water Intrusion	IP54 Standard	
Humidity	Per MIL-STD-810 C/D/E/F/G Standard	
Shock & Vibration	Per MIL-STD-810 C/D/E/F/G Standard	

GPS (For MD78XG only)	Accuracy specs are for long-term tracking(95th percentile values>5 satellites visible at a nominal -130dBm signal strength)	
	TTFF (Time To First Fix) Cold Start	<1 minute
	TTFF (Time To First Fix) Hot Start	<10 seconds
	Horizontal Accuracy	<10 meters

* This frequency band is only available for DMR trunking mode

All Specifications are tested according to applicable standards, and subject to change without notice due to continuous development.

Optional Accessories

External Speaker SM09D1

Desktop Microphone SM10A1

320W External Power Supply PS22002

Programming Cable (USB Port) PC37

Data Cable PC40

Keypad Microphone SM19A1

Antenna

GPS Antenna

1DIN vehicle mounting bracket

Adaptor cable for repeater accessory pin

Dispatch cable

Mobile Radio Remote Mount Kit

Cabinet Power Supply PS16001

Palm Microphone (IP67) SM16A2

Telephone Style Headset SM20A1

DB26 Connector Dispatching Cable PC43

Programming Cable PC47

Pictures above are for reference only and may vary from actual products.

Hytera Respond & Achieve

Your local distributor/dealer:

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Contact ALCOM to discuss your communication needs.

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