



## MD78X/78XG

Versatile Digital Mobile Two-Way Radio

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





## 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  
Forest Industry

Public Utilities  
Business

Transportation (port, airport, railway, etc.)  
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  
Power Cord

Microphone Hanger  
Fuse

Microphone Hanger Screws  
GPS Antenna ( for MD78XG only )

Mounting Bracket

# Specifications

|                        |   |  |   |      |
|------------------------|---|--|---|------|
| General                | Frequency Range                                   | UHF1: 400-470MHz; UHF2: 450-520MHz<br>UHF3: 350-400MHz; UHF5: 804-941MHz*<br>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  |      |
|                        |   |  | 5W  | < 5A |
|                        |   | Transmit   | 25W   | < 8A |
|                        | 45W/50W   |  | < 12A   |      |
| Frequency Stability    | ± 1.5ppm  |  |   |      |
| Antenna Impedance      | 50  |  |   |      |
| Dimensions (H x W x D) | 60 x 174 x 200 mm                                 |  |   |      |
| Weight                 | 1.7Kg   |  |   |      |
| LCD Display            | 220 x 176 pixels, 262000 colors, 2.0 inch, 4 rows |  |   |      |
| Receiver               | Sensitivity                                       | Analog   | 0.3 μ V (12dB SINAD); 0.22 μ V (Typical) (12dB SINAD)<br>0.4 μ V (20dB SINAD) |      |
|                        |   | Digital  | 0.3 μ V / BERS5%  |      |
|                        | Selectivity<br>TIA-603<br>ETSI                    | 65dB @ 12.5KHz / 75dB @ 20/25KHz <sup>#</sup><br>60dB @ 12.5KHz / 70dB @ 20/25KHz <sup>#</sup> |   |      |
|                        |   | Intermodulation<br>TIA-603<br>ETSI   | 75dB @ 12.5/20/25KHz <sup>#</sup><br>70dB @ 12.5/20/25KHz <sup>#</sup>        |      |
|                        | Spurious Response Rejection<br>TIA-603<br>ETSI    |  | 75dB @ 12.5/20/25KHz <sup>#</sup><br>70dB @ 12.5/20/25KHz <sup>#</sup>        |      |
|                        |   | Blocking<br>TIA-603<br>ETSI  | 90dB<br>84dB  |      |
|                        | Hum and Noise                                     |  | 40dB @ 12.5KHz; 43dB @ 20KHz;<br>45dB @ 25KHz <sup>#</sup>                    |      |
|                        |   | 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<br>UHF1/UHF2/UHF3: 5-25W<br>VHF: 5-25W                       |
|                              |                             | High Power<br>UHF1/UHF2/UHF3: 5-45W; UHF5*: 5-35W<br>VHF: 5-50W        |
|                              | FM Modulation               | 11K0F3E @ 12.5KHz; 14K0F3E @ 20KHz<br>16K0F3E @ 25KHz <sup>#</sup>     |
|                              | 4FSK Digital Modulation     | 12.5KHz Data Only: 7K60FXD<br>12.5KHz Data & Voice: 7K60FXW            |
|                              | Conducted/Radiated Emission | -36dBm<1GHz; -30dBm>1GHz   |
|                              | Modulation Limiting         | ± 2.5KHz @ 12.5KHz; ± 4.0KHz @ 20KHz;<br>± 5.0KHz @ 25KHz <sup>#</sup> |
|                              | FM Hum & Noise              | 40dB @ 12.5KHz; 43dB @ 20KHz;<br>45dB @ 25KHz <sup>#</sup>             |
|                              | Adjacent Channel Power      | 60dB @ 12.5KHz; 70dB @ 20/25KHz <sup>#</sup>                           |
|                              | 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 )<br>± 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<br>(for MDR780K only) | Accuracy specs are for long-term tracking(95th percentile values>5 satellites visible at a nominal -130dBm signal strength) |             |
|                           | TTF (Time To First Fix) Cold Start  | <1 minute   |
|                           | TTF (Time To First Fix) Hot Start   | <10 seconds |
|                           | Horizontal Accuracy   | <10 meters  |

\* This frequency band is only available for DMR trunking mode  
<sup>#</sup> 20KHz/25KHz will not be available on new equipment in the U.S. after 2011-01-01.  
 All Specifications are tested according to applicable standards, and subject to change without notice due to continuous development.

# Optional Accessories



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