

*The M7100<sup>IP</sup> mobile is a digital two-way radio that operates on Project 25 conventional and trunked modes, as well as the Enhanced Digital Access Communications System (EDACS) and ProVoice digital trunked communications systems. The M7100<sup>IP</sup> is also ideal for analog conventional communications systems. This rugged mobile was designed to work in rigorous environmental conditions and meets MIL-STD-810F, U.S. Forest Service vibration, and TIA/EIA-603 shock and vibration requirements. This leading edge mobile complements the P7100<sup>IP</sup> portable family of radios designed to excel in the challenging public safety environment.*



## Product Overview

The M7100<sup>IP</sup>, based on the tradition of the popular Orion<sup>™</sup> mobile, was designed to meet the critical communications demands of public safety users. It is a high-specification, feature-rich mobile built to deliver superior performance. The M7100<sup>IP</sup> sets new standards for flexibility, performance, and reliability.

### Project 25 Interoperability

The M7100<sup>IP</sup> is Project 25 compliant and is ideal for use either as a P25 digital conventional or trunked mobile. The mobile provides digital interoperability with other Project 25 users during critical communications situations.

### Flexible Operation

The M7100<sup>IP</sup> offers many of the flexible operating features that were proven with the Orion, and adds some new features as well.

- Dual transceivers offer operation in multiple frequency bands with a single controller.
- Dual control units can be programmed to control a single transceiver.
- The Hand Held Controller provides a more covert level of operation and is especially effective in space-constrained areas.
- Versatile mounting configurations allow users a choice between front or remote mount.

### Feature Rich, Software-Based Mobile

Based on Digital Signal Processor (DSP) architecture, the feature set of the M7100<sup>IP</sup> is extensive and easily expandable through software

upgrades to meet the specific requirements of users.

- The standard M7100<sup>IP</sup> incorporates the critical communications features Emergency and Dynamic Regroup to deliver advanced performance.
- Trunked systems/groups may be configured for up to 800 different combinations and up to 255 conventional channels.
- The Extended Network feature package upgrades capacity to 800 system/group combinations and includes ProScan<sup>™</sup> and ProFile<sup>™</sup>. Individual software options may also be added to meet user requirements.
- ProFile offers easy over-the-air programming for efficient updates of radios.
- ProScan provides the user smooth, automatic roaming between sites.
- The M7100<sup>IP</sup> includes the full conventional feature set, including dual priority scan and various tone signaling formats.

### Advanced Digital Voice

The M7100<sup>IP</sup> is available with M/A-COM's third-generation digital voice technology, ProVoice. ProVoice utilizes the acclaimed Improved MultiBand Excitation (IMBE<sup>™</sup>) vocoder. State-of-the-art digital signal processing techniques used in ProVoice also allow the M7100<sup>IP</sup> to deliver exceptional voice quality in areas where the signal strength from the repeater is weak.

### EDACS Security Key

The M7100<sup>IP</sup> supports the EDACS Security Key (ESK), which is an EDACS/ProVoice feature. ESK prevents unauthorized users from programming radios for use on and from accessing an EDACS or ProVoice system.

### Radio TextLink Text Messages

With this option, users may receive, display, and respond to text messages sent from authorized users on the ProVoice, EDACS, or P25<sup>IP</sup> network. This feature improves real-time situation intelligence and communications among first responders while also providing the capability to leave messages with users who are actively engaged in other critical activities.

### Backwards Compatibility

The M7100<sup>IP</sup> mobile protects the user's investment by assuring backward compatibility and forward migration. Users may continue to rely on the proven technology of the Orion-compatible products such as the control units and vehicular repeaters and may add new features to the radio as their requirements change.

### For More Information

For more information about this or any other M/A-COM Wireless Systems product, call toll free in the U.S. 1-800-368-3277. From outside the U.S. call 1-434-455-9223 (Asia Pacific), 1-434-455-9229 (Latin America and Middle East), and 1-434-455-9219 (Europe).

## General Specifications

### Dimensions (H x W x D):

Radio (Includes Plastic Front Cover and Gasket, 110W unit):

2.4 x 6.9 x 11.3 in.  
(61 x 176 x 286 mm)

Radio and Control Unit (Includes Knobs):

2.4 x 6.9 x 13.1 in.  
(61 x 176 x 332 mm)

Radio (Includes Plastic Front Cover and Gasket, 50W unit):

2.0 x 6.9 x 9.3 in.  
(51 x 176 x 236 mm)

Radio and Control Unit (Includes Knobs):

2.4 x 6.9 x 11.1 in.  
(61 x 176 x 282 mm)

### System Voltage:

10.8 to 16.6\* VDC Negative Ground  
\*Not to exceed 14.3V above +50°C for motorcycle applications.

### Ambient Temperature Range:

-22 to +140°F  
(-30 to +60°C)

### Relative Humidity:

90% @ 122°F (50°C)

### Altitude:

15,000 ft (4572 m)

### Duty Cycle:

TIA/EIA-603

### Programming:

Field PC Programmable

### Microphone:

Weatherproof microphone with hookswitch

### Mounting:

Front or Remote Mount available

### Construction:

Control Unit: High Impact Plastic  
Transceiver: Cast Metal

### Speaker:

External, 15W

### Operation:

12 VDC Negative Ground

### Maximum Capacity\*\*:

EDACS Systems/Groups: 800  
Conventional Channels: 255

\*\*Channel/group capacity is actually higher than 255 but is restricted due to 255 unique aliases and 255 unique frequencies programmed in the radio. Users who can re-use the same frequencies in different systems can actually go above 255 channels/groups.

### Signaling:

EDACS Digital Control  
Conventional  
Type 99  
P25 Conventional  
Channel Guard (CTCSS)  
Digital Channel Guard  
G-STAR™ Emergency/ID Encode  
Two-Tone Individual Call Decode

## Options and Accessories

Remote mount kit, system and scan control units, Hand Held Controller, mobile mic, DTMF mic, noise canceling mic, desk mic, desktop control station, and motorcycle kit.

## Encryption Standards

FIPS 140-2 Level 1

## M/A-COM Wireless Systems

P. O. Box 2000  
Lynchburg, Virginia 24501  
Phone: 1-800-368-3277  
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## Transmitter

	VHF
Frequency Range (MHz):	136-174
Rated Power Output (W):	50-110, 8-50
RF Output Impedance (ohm):	50
Frequency Stability (ppm):	±2.0
Modulation/Deviation (kHz):	±5
FM Hum and Noise(Wideband/Narrowband) (dB):	52/46
Audio Response:	+1/-3.0 dB from 6 dB/octave pre-emphasis; 300-2500 Hz
Audio Distortion (typical):	<2.5% @ 1 kHz, <5.0% @ 2.5 kHz
Spurious and Harmonics Emissions (dBm):	<-20
Adjacent Channel Power (dBc):	
C4FM (6 kHz bw):	>67
Wideband:	>70

## Receiver

	VHF
Frequency Range (MHz):	136-174
RF Input Impedance (ohm):	50
Channel Spacing (kHz):	12.5, 25
Frequency Stability (ppm):	±2.0
Reference Sensitivity (12 dB SINAD) (µV/dBm):	0.3/-117.5 (no pre-amp), 0.2/-121.0 (with pre-amp)
P25 Reference Sensitivity (dBm):	<-116
Adjacent Channel Selectivity (dB):	
@ Narrowband (15 kHz):	>70 (no pre-amp), >65 (with pre-amp)
@ Wideband (30 kHz):	>86.5 (no pre-amp), >81.5 (with pre-amp)
Intermodulation Rejection (dB):	>80 (no pre-amp), >75 (with pre-amp)
Spurious Rejection (dB):	>90
Audio Response:	+1/-3 dB of 6 dB/octave de-emphasis, 300-3000 Hz
Audio Output (W):	15W at speaker in front-mount applications 12W at speaker in remote-mount applications
Adjacent Channel Interference Power Ratio (dB):	
C4FM:	>60

NOTE: Numbers per TIA/EIA-603 Methods

## Digital Operation

Vocoding Method:	Improved MultiBand Excitation (IMBE)
Data Rate:	9600 bps
Delivered Audio Quality:	CM3 @ 5% bit error rate
Modulation:	GFSK for ProVoice, C4FM for P25

## Encryption

Encryption Technique:	Non-Linear Product/Block Transformation
Algorithm Types:	Data Encryption Standard (DES) OFB Advanced Encryption Standard (AES) (P25 only)

## Environmental Specifications

Standard	Parameter	Methods & Procedures	
MIL-STD-810F	Low Pressure	500.4, Proc. I, II	
	High Temperature	501.4, Proc. I, II	
	Low Temperature	502.4, Proc. I, II	
	Temperature Shock	503.4, Proc. I	
	Solar Radiation	505.4, Proc. II	
	Blowing Rain	506.4, Proc. I	
	Humidity	507.4	
	Salt Fog	509.4, Proc. I	
	Blowing Dust	510.4, Proc. I	
	Min Integrity Vibration	514.5, Proc. I, Category 24	
	Functional/Basic Shock	516.5, Proc. I	
	Transit Drop	516.5, Proc. IV	
	TIA/EIA-603	Vibration Stability	Par. 2.3.4 & 4.3.4
		Shock Stability	Par. 2.3.5 & 3.3.5
U.S. Forest Service	Vibration Stability	Par. 7.15	

## Regulatory Data

Frequency Range (MHz)	RF Output (W)	FCC Type Acceptance Number	Applicable FCC Rules	NTIA Certification Number
136-174	50-110	OWDTR-0019-E	Part 22, 80, 90	JF-1208073
136-174	8-50	OWDTR-0035-E	Part 80, 90	JF-1208073

ECR-7062Q

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