

The M7100^{IP} mobile is a digital two-way radio that provides

- Project 25 Interoperability
- Flexible Configuration Options
- Durability and Dependability



The M7100^{IP}, based on the tradition of the popular Orion™ 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^{IP} sets new standards for flexibility, performance, and reliability.

One Radio – Multiple Applications

The M7100^{IP} uses a high-speed digital signal processor and the latest RF components to support multiple applications in one package:

- Project 25 Digital Conventional
- P25 Trunking
- ProVoice™ Digital Trunking
- EDACS® Trunking (Aegis™ is optional)
- DES Encryption
- Advanced Encryption Standard (AES) for P25 Trunking, P25 Conventional, and ProVoice Trunking
- Complete Analog Conventional features

Project 25 Interoperability

The M7100^{IP} is Project 25 compliant and is ideal for use as either 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^{IP} 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^{IP} is extensive and easily expandable through software upgrades to meet the specific requirements of users.

- The standard M7100^{IP} incorporates the critical communications features Emergency and Dynamic Regroup to deliver advanced performance.
- Trunked systems/groups may be configured for up to 1,024 different combinations and up to 1,024 conventional channels.
- The Extended Network feature package upgrades system/group combinations to maximum capacity and includes ProScan™ and ProFile™. 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^{IP} includes the full conventional feature set with dual priority scan and various tone signaling formats.

Advanced Digital Voice

The M7100^{IP} is available with Harris' third-generation digital voice technology, ProVoice. ProVoice utilizes the acclaimed

Improved MultiBand Excitation (IMBE™) vocoder. State-of-the-art digital signal processing techniques used in ProVoice also allow the M7100^{IP} to deliver exceptional voice quality in areas where the signal strength from the repeater is weak.

EDACS Security Key

The M7100^{IP} 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^{IP} 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.

Optional GPS Capability

The optional Global Positioning System (GPS) receiver module can provide standard GPS formatted data over the air for vehicle tracking systems.

Backwards Compatibility

The M7100^{IP} 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.

General Specifications

Dimensions (H x W x D):

Radio (Includes Plastic Front Cover and Gasket):

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

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



*Note: FIPS 140-2 Level 1 and CE marking apply only to 50W models.

Transmitter

	UHF	
Frequency Range (MHz):	378-430, 450-512	450-470
Rated Power Output (W):	8-50	40-100
RF Output Impedance (ohm):	50	50
Frequency Stability (ppm):	±1.5	±1.5
Modulation/Deviation (kHz):	±5	±5
FM Hum and Noise (dB):	-50	-50
Audio Response:	+1/-3.0 dB from 6 dB/octave pre-emphasis; 300-2500 Hz	+1/-3.0 dB from 6 dB/octave pre-emphasis; 300-2500 Hz
Audio Distortion (typical):	2% @ 1000 Hz	2% @ 1000 Hz
Conducted Spurious and Harmonics (dB):	-70	-70
Adjacent Channel Power (dBc):		
C4FM:	-67	-67
Wideband (25 kHz):	-60	-60

Receiver

	UHF	
Frequency Range (MHz):	378-430, 450-512	450-470
RF Input Impedance (ohm):	50	50
Channel Spacing (kHz):	12.5, 25	12.5, 25
Frequency Stability (ppm):	±1.5	±1.5
Sensitivity (EIA 12 dB SINAD) (µV):	0.3 (0.2 with pre-amp), -117.5 dBm (-121 dBm with pre-amp)	0.3 (0.2 with pre-amp), -117.5 dBm (-121 dBm with pre-amp)
Static BER Sensitivity @ 5% reference (dBm): @ 12.5 kHz:	-116.0	-116.0
Selectivity (dB): @ 12.5 kHz:	-70	-70
@ 25 kHz:	-80	-80
Intermodulation (dB): @ 25 kHz:	-80	-80
Spurious Rejection (except 2 nd image) (dB):	-90	-90
Audio Response:	+1/-3 dB of 6 dB/octave de-emphasis, 300-3000 Hz	+1/-3 dB of 6 dB/octave de-emphasis, 300-3000 Hz
Audio Output (W):	15 at speaker in front-mount apps 12 at speaker in remote-mount apps	15 at speaker in front-mount apps 12 at speaker in remote-mount apps
Adjacent Channel Interference Power Ratio (dB):		
C4FM:	-60	-60
Wideband:	-70	-70

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 Trunking, P25 Conventional, and ProVoice Trunking)

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	Industry Canada Certification Number*	Applicable Industry Canada Rules	NTIA Certification Number
378-430	50	OWDTR-0020-E	Part 90	3636B-0020	RSS119	JF-1208073
450-512	50	OWDTR-0021-E	Part 90	3636B-0021	RSS119	JF-1208073
450-470	100	OWDTR-0042-E	Part 90	NA	NA	NA

*Industry Canada certification is for 406-430 MHz and 450-470 MHz.

Approved to Australian Communications Authority (ACA) AS-4295 for 403-430 MHz.

Approved to Automotive Directive 72/245/EEC registration 011023101

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Printed in U.S.A. 07/09 ECR-7063X