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The Future of Mobile Radio



**M7100<sup>IP</sup>**  
Desktop Station  
Wall Mount Station

## MANUAL REVISION HISTORY

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# 1 SAFETY INFORMATION

The following conventions are used throughout this manual to alert the user to general safety precautions that must be observed during all phases of operation, service, and repair of this product. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the product. M/A-COM, Inc. assumes no liability for the customer's failure to comply with these standards.



The **WARNING** symbol calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personal injury. Do not proceed beyond a **WARNING** symbol until the conditions identified are fully understood or met.



The **CAUTION** symbol calls attention to an operating procedure, practice, or the like, which, if not performed correctly or adhered to, could result in damage to the equipment or severely degrade the equipment performance.



The **NOTE** symbol calls attention to supplemental information, which may improve system performance or clarify a process or procedure.



The **ESD** symbol calls attention to procedures, practices, or the like, which could expose equipment to the effects of **Electro-Static Discharge**. Proper precautions must be taken to prevent ESD when handling circuit modules.

## 2 INTRODUCTION



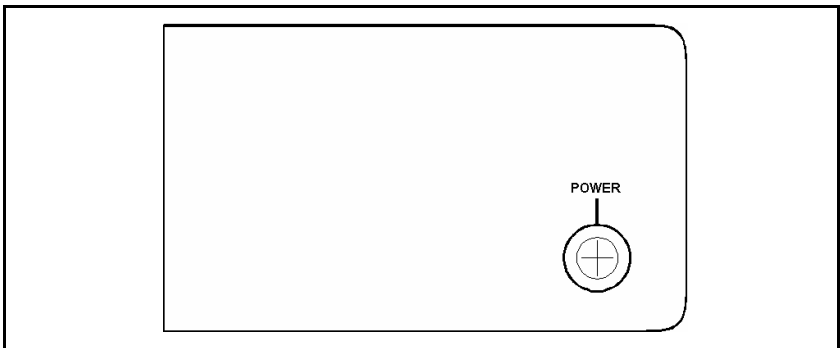
**Figure 2-1: Desktop Station Front Panel with VU Meter/Clock**

The M/A-COM® M7100<sup>IP</sup> Desktop Station is shown in Figure 2-1. This Station combines the flexibility of a Local Control Station with a Remote Control Station in one desktop package.

The M7100<sup>IP</sup> Wall Mount Station is designed specifically for Remote Control applications with no user accessible controls. The Wall Mount Station housing is equipped with a key lock to prevent unauthorized entry.

### 2.1 STANDARD FEATURES

The basic Desktop Station comes equipped with the Standard Control Panel as shown in Figure 2-2. The Standard Control Panel is equipped with a single Power LED to indicate the status of the power being supplied to the station. This indicator is present on all configurations.



**Figure 2-2: Standard Control Panel**

## 2.2 OPTIONS

The standard Desktop Station can be configured in several different ways including Remote/Intercom controls, and/or VU (Volume Unit) Meter/Clock display.

### 2.2.1 Remote/Intercom Option

Desktop Stations equipped with the Remote/Intercom option (see Figure 2-3) permits the use of Remote Controllers. Local and Remote Station control is provided for station functions such as Transmit, Receive and Intercom Audio, PTT (Press-To-Talk) Control, and Channel Guard Monitor.

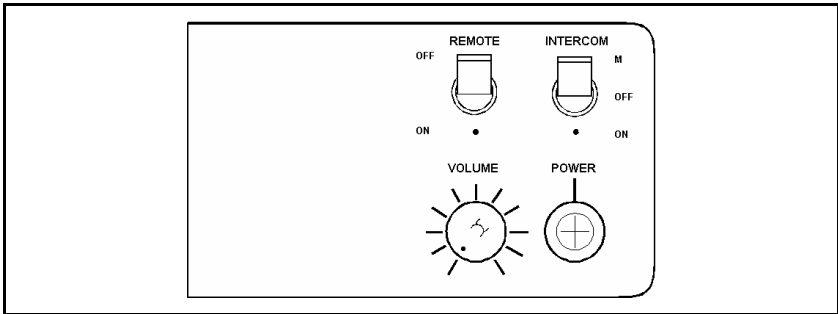


Figure 2-3: Remote/Intercom Option Control Panel

### 2.2.2 VU Meter/Clock Option

The VU Meter/Clock option provides transmit and receive audio level display, together with a twelve/twenty-four hour digital clock display (see Figure 2-4).

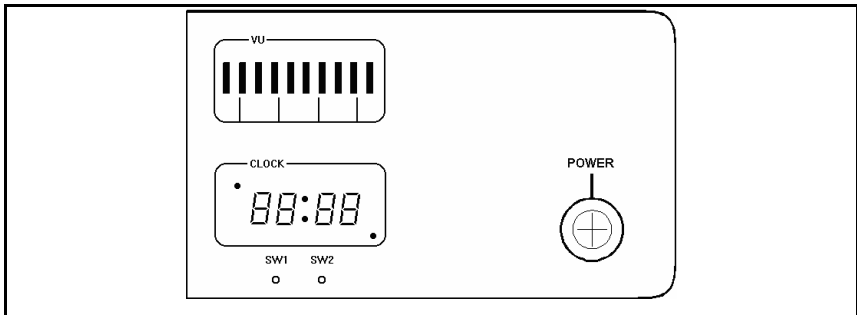


Figure 2-4: VU/Clock Option Control Panel

### 2.2.3 Remote/Intercom/VU Meter/Clock Option

Desktop Stations with the Remote/Intercom/VU Meter/Clock option have the full compliment of controls described in sections 2.2.1 and 2.2.2 (see Figure 2-5).

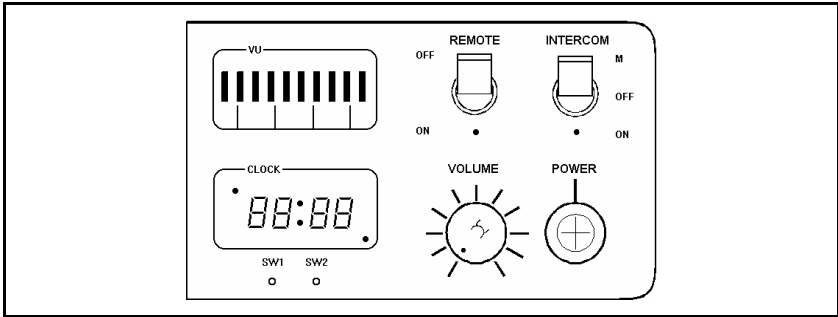


Figure 2-5: Remote/Intercom/VU Meter/Clock Option Control Panel

### 2.2.4 Wall Mount Station Control Panel

Wall Mount Stations include a basic control panel located inside the housing (see Figure 2-6). The Wall Mount control panel includes a volume control, remote ON/OFF switch, intercom ON/OFF switch, microphone jack, power indicator lamp, and speaker ON/OFF switch. The speaker is unique only to the Wall Mount Station and is typically turned ON only during servicing. All other features operate in the same manner as the Desktop Station.

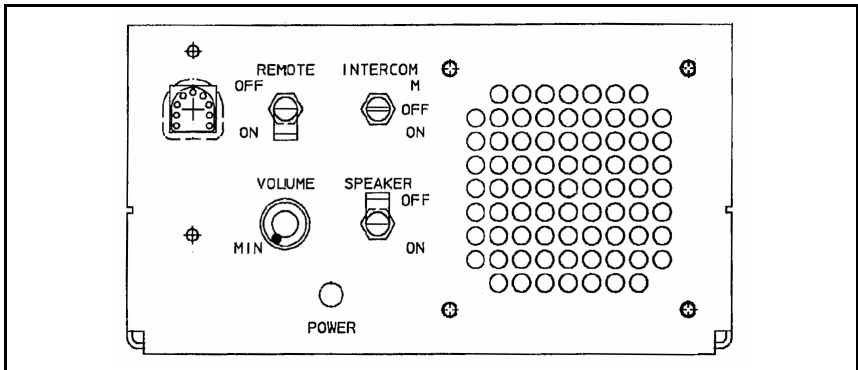


Figure 2-6: Wall Mount Station Control Panel

## 3 CONTROLS AND INDICATORS

### 3.1 VOLUME CONTROL

The radio volume control is used for Desktop Stations with the Standard Control Panel (Non-Remote Control Stations). The volume control on the radio must be variable only for the Local Control Stations.

Desktop Stations equipped with the optional Remote Control Panel are equipped with a separate volume control located on the Station Control Panel. This knob controls the level of audio fed to the Station speaker as determined by the Intercom and Remote Switch positions.

### 3.2 REMOTE/INTERCOM SWITCHES

These switches control the audio paths for stations equipped with one of several Remote Control options. Audio control is accomplished between remote and local microphones, the radio, and remote and local speakers. The Remote switch allows for remote control of the radio. The Intercom switch allows communication between the Desktop Station and a Remote Controller.

### 3.3 VU METER AND CLOCK

The VU Meter displays, in bar graph format, transmit/receive audio levels. The time is displayed in an “Hours: Minutes” format.



#### NOTE

An illuminated indicator in the lower right corner of the clock display indicates that the internal battery of the VU Meter/Clock is defective or the VU Meter calibration data has been lost. Contact a service technician to correct the problem.

### 3.4 DESK MICROPHONE

The desk microphone is equipped with the traditional PTT (Push-to-Talk) Transmit button, and a Monitor button. In configurations using Channel Guard, the Microphone Monitor button provides the operator the ability to listen for other users on the selected channel before transmitting. This helps to prevent unnecessary interference to other users. On stations equipped with the Local/Remote option, the functionality of the microphone PTT button is determined by the Local/Remote switch settings (see Section 4.2).



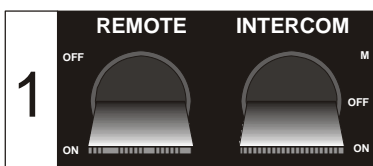
## 4 STATION OPERATION

### 4.1 BASIC STATION

Turn on the main ON/OFF power switch located on the rear of the Station housing. The front panel LED illuminates, indicating that the power supply to the cooling fan is on. Fan operation is temperature controlled.

### 4.2 REMOTE/INTERCOM

These switches control the audio paths between remote and local microphones, the radio, and remote and local speakers. There are four possible switch configurations.



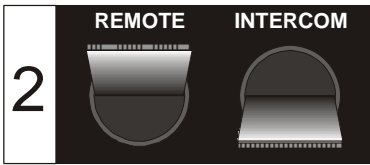
With this switch configuration, intercom communication is possible between the Desktop Station and the Remote Controller. The Remote Controller can also key the radio transmitter and hear the receiver's audio output.

When the Desktop Mic is keyed, there is no connection to the radio transmitter. If the radio receiver is squelched, the Remote hears the audio as an intercom conversation. Should the radio receiver be unsquelched, receiver audio is heard on both the Desktop speaker and the Remote speaker, with priority over the intercom message from the Desktop Mic to the Remote speaker.

The audio from the Remote Mic is heard on the Desktop speaker. The Remote's Intercom switch must be OFF to key the Station's radio transmitter.

The audio from the unsquelched radio receiver is heard on both the Station speaker and the Remote speaker.

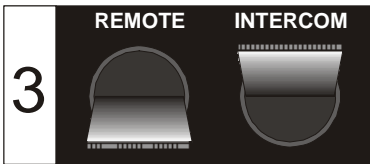
Intercom messages from the Remote are muted when radio messages are being received or when the Desktop Station operator is using the Desktop Mic.



This configuration offers intercom service only. Neither the Desktop nor the Remote Mics can key the radio transmitter. The radio receiver's audio can be heard on the Station speaker, but not on the Remote speaker.

A message from the Desktop Mic is heard on the Remote speaker.

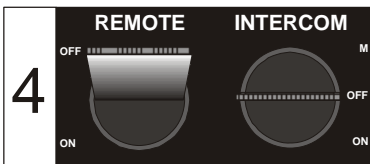
An intercom message from the Remote Mic can be heard on the Desktop speaker, but only if the Desktop Mic is not active. The Desktop Mic has priority over the Remote Mic in the intercom connection.



This configuration is for remote control of the radio, without an intercom connection. When the Desktop Mic is keyed, the radio transmitter is keyed and the Remote Controller is able to monitor the transmission.

If only the Remote Mic is keyed, and not the Desktop Mic, then the Remote Mic is connected to the radio transmitter. In addition, the Remote Mic is connected to the Desktop speaker if the radio receiver is squelched and the Desktop Mic is not keyed (so that the "Desktop Mic Audio to Line Path" is inactive).

The radio receiver audio is connected to the Remote speaker if the receiver is unsquelched. The PA output from the receiver is unconditionally connected to the Desktop speaker, but is subject to the radio's internal squelch.



This configuration is used when operating the Desktop Station as a radio. If the Desktop Mic is keyed, it is connected to the radio transmitter only. The radio receiver's PA audio output is connected to the Desktop speaker only.

A summary of these four combinations of Intercom and Remote switches is given in Section 5: LOCAL/REMOTE CONTROLS SUMMARY.

## 4.3 CLOCK



### NOTE

The VU Meter bar graphic display is inactive during time setting mode.

### 4.3.1 12/24 hour mode

Below the clock display, there are two switches: SW1 and SW2.

1. Press SW1 for approximately 1 second. "12\_\_" or "24\_\_" will appear in the display.
2. Press SW2 to toggle between two modes.
3. Press SW1 for approximately 1 second to select required mode.

### 4.3.2 Setting the Time

Having selected the hour mode, the time will display (no flashing colon) with hours intensified.

Press SW2 to advance the hours. Holding SW2 down will automatically advance the clock in increments of about three counts per second. Note the dot in the upper left indicates PM.

1. Press SW1 for approximately 1 second when the correct hour is displayed. The time will display with minutes intensified.
2. Press SW2 to advance the minutes.
3. Press SW1 for approximately 1 second when the correct minutes are displayed.

### 4.3.3 Light Intensity

SW2 controls the VU Meter/Clock display intensity. There are four settings available. Press SW2 to toggle through the intensities. When the correct level is reached, and the reference clock advances to the next minute, press SW1 for approximately 1 second.

## **4.4 TONE REMOTE CONTROLLER**

Tone Remote Controllers are used to control Remote Control base stations from locations not near the base station. Remote operation is accomplished over telephone lines or a continuously keyed radio frequency link.

Typical Tone Remote Controllers are capable of selecting up to four predefined radio channels, systems, groups, or special call combinations. The presets are programmed into the radio using PC Programmer.

The Controller and Desktop Station can operate as an intercom by setting the Intercom switch to ON or M.

Remotes can be disabled by setting the Station Remote switch to OFF.

## **4.5 5-FUNCTION REMOTE CONTROLLER**

The 5-Function Remote Controller is a versatile, full-function controller used for operating and controlling a remotely located EDACS® base station. Remote operation is accomplished over telephone lines or a continuously keyed radio frequency link. The Controller is capable of selecting up to five software defined radio systems, group, or special call combinations. The presets are programmed into the radio using M/A-COM ProGrammer™ software.

The Controller and Desktop Station can operate as an intercom by setting the Intercom switch to ON or M. Remotes can be disabled by setting the Station Remote switch to OFF.

### **4.5.1 Making a Call from a Remote Controller**

1. Select the desired function/frequency switch on the Controller.
2. Use the Monitor function (if equipped) and wait for a clear channel to proceed.
3. Key the Mic PTT to make a call. For EDACS wait for a short beep before beginning to speak. Release the PTT when finished.
4. Adjust the Volume as necessary while receiving a call.

## 5 LOCAL/REMOTE CONTROLS SUMMARY

	Remote Mic —>	Radio Xmtr
	Remote Mic —>	Station Spkr
	Desktop Mic —/—>	Radio Xmtr
	Desktop Mic —>	Remote Spkr if Rx is muted; otherwise, Rx —> Remote Spkr & Station Spkr
	Rx Audio —>	Station Spkr & Remote Spkr.
	Remote Mic —/—>	Radio Xmtr
	Remote Mic —>	Station Spkr, if Desktop Mic PTT inactive
	Desktop Mic —/—>	Radio Xmtr
	Desktop Mic —>	Remote Spkr
	Rx Audio —/—>	Remote Spkr
	Rx Audio —>	Station Spkr
	Remote Mic —>	Radio Xmtr, if no Desktop Mic; otherwise, with Desktop Mic PTT, Desktop Mic —> Radio Xmtr
	Remote Mic —>	Desk Spkr, if Desktop Mic PTT inactive, otherwise Remote Mic muted
	Desktop Mic —>	Radio Xmtr with Desktop Mic PTT
	Desktop Mic —>	Remote Spkr
	Rx Audio —>	Remote Spkr, if Rx unmuted
	TX PA Audio —>	Station Spkr
	Remote Mic —/—>	Radio Xmtr
	Remote Mic —/—>	Station Spkr
	Desktop Mic —>	Radio Xmtr
	Desktop Mic —/—>	Remote Spkr
	Rx Audio —/—>	Remote Spkr
	Rx PA Audio —>	Station Spkr
<b>KEY</b>		
—> = connection		
—/—> = no connection		

## 6 WARRANTY

- A. M/A-COM, Inc. (hereinafter "Seller") warrants to the original purchaser for use (hereinafter "Buyer") that Equipment manufactured by or for the Seller shall be free from defects in material and workmanship, and shall conform to its published specifications. With respect to all non-M/A-COM Equipment, Seller gives no warranty, and only the warranty, if any, given by the manufacturer shall apply. Rechargeable batteries are excluded from this warranty but are warranted under a separate Rechargeable Battery Warranty (ECR-7048).
- B. Seller's obligations set forth in Paragraph C below shall apply only to failures to meet the above warranties occurring within the following periods of time from date of sale to the Buyer and are conditioned on Buyer's giving written notice to Seller within thirty (30) days of such occurrence:
1. for fuses and non-rechargeable batteries, operable on arrival only.
  2. for parts and accessories (except as noted in B.1) sold by Seller's Service Parts Operation, ninety (90) days.
  3. for PANTHER™ Series handportable and mobile radios, two (2) years.
  4. for all other equipment of Seller's manufacture, one (1) year.
- C. If any Equipment fails to meet the foregoing warranties, Seller shall correct the failure at its option (i) by repairing any defective or damaged part or parts thereof, (ii) by making available at Seller's factory any necessary repaired or replacement parts, or (iii) by replacing the failed Equipment with equivalent new or refurbished Equipment. Any repaired or replacement part furnished hereunder shall be warranted for the remainder of the warranty period of the Equipment in which it is installed. Where such failure cannot be corrected by Seller's reasonable efforts, the parties will negotiate an equitable adjustment in price. Labor to perform warranty service will be provided at no charge during the warranty period only for the Equipment covered under Paragraph B.3 and B.4. To be eligible for no-charge labor, service must be performed at a M/A-COM factory, by an Authorized Service Center (ASC) or other Servicer approved for these purposes either at its place of business during normal business hours, for mobile or personal equipment, or at the Buyer's location, for fixed location equipment. Service on fixed location equipment more than thirty (30) miles from the Service Center or other approved Servicer's place of business will include a charge for transportation.
- D. Seller's obligations under Paragraph C shall not apply to any Equipment, or part thereof, which (i) has been modified or otherwise altered other than pursuant to Seller's written instructions or written approval or, (ii) is normally consumed in operation or, (iii) has a normal life inherently shorter than the warranty periods specified in Paragraph B, or (iv) is not properly stored, installed, used, maintained or repaired, or, (v) has been subjected to any other kind of misuse or detrimental exposure, or has been involved in an accident.
- E. The preceding paragraphs set forth the exclusive remedies for claims based upon defects in or nonconformity of the Equipment, whether the claim is in contract, warranty, tort (including negligence), strict liability or otherwise, and however instituted. Upon the expiration of the warranty period, all such liability shall terminate. The foregoing warranties are exclusive and in lieu of all other warranties, whether oral, written, expressed, implied or statutory. NO IMPLIED OR STATUTORY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSE SHALL APPLY. IN NO EVENT SHALL THE SELLER BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL, SPECIAL, INDIRECT OR EXEMPLARY DAMAGES.

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## NOTES

