



**JMMS8  
8 Channel  
Monochrome Multiplexer  
Operations and Programming Guide**

January 1998

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## **IMPORTANT SAFEGUARDS**

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1. Read Instructions - All the safety and operating instructions should be read before the unit is operated.
2. Retain Instructions - The safety and operating instructions should be retained for future reference.
3. Heed Warnings - All warnings on the unit and in the operating instructions, should be followed.
4. Follow Instructions - All operating and use instructions should be followed.
5. Cleaning - Unplug the unit from the outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
6. Attachments - Do not use attachments not recommended by the product manufacturer, as they may cause hazards.
7. Water and Moisture - Do not use this unit near water - for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, near a swimming pool, in an unprotected outdoor installation, or any area which is classified as a wet location.
8. Accessories - Do not place this unit on an unstable stand, tripod, bracket, or mount. The unit may fall, causing serious injury to a person and serious damage to the unit. Use only with a stand, tripod, bracket, or mount recommended by the manufacturer, or sold with the product. Any mounting of the unit should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.
9. Ventilation - Openings in the enclosure, if any, are provided for ventilation to ensure reliable operation of the unit, and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked. This unit should not be placed in a built-in installation unless proper ventilation is provided. Do not place directly on other hot equipment which may increase its operating temperature.
10. Power Sources - This unit should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply you plan to use, consult your appliance dealer or local power company. For units intended to be operated from battery power or other sources, refer to the operating instructions.

11. Grounding or Polarization - This unit may be equipped with a polarized alternating current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.  
  
Alternately, this unit may be equipped with a 3-wire grounding type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the ground type plug.
12. Power Cord Protection - Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
13. Power Lines - An outdoor system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outdoor system, extreme care should be taken to keep from touching such power lines or circuits. When installing an outdoor system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.
14. Overloading - Do not overload outlets and extension cords as this can result in a risk of fire or electric shock.
15. Object and Liquid Entry - Never push objects of any kind into this unit through openings as they may touch dangerous voltage points, or short out paths that could result in a fire or electric shock. Never spill liquid of any kind on the unit.
16. Servicing - Do not attempt to service this unit yourself, as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
17. Damage Requiring Service - Unplug the unit from the outlet and refer servicing to qualified service personnel under the following conditions:
  - a. When the power supply cord or plug is damaged.
  - b. If liquid has been spilled, or objects have fallen into the unit.
  - c. If the unit has been exposed to rain or water.
  - d. If the unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as an improper adjustment of other controls may result in damage or void the warranty, and will often require extensive work by a qualified technician to restore the unit to its normal operation.
  - e. If the unit has been dropped or the cabinet has been damaged.

- f. When the unit exhibits a distinct change in performance, this indicates a need for service.
- 18. Replacement Parts - When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer, or that they have the same characteristics. Unauthorized substitutions may result in fire, electric shock, or other hazards.
- 19. Safety Check - Upon completion of any service or repairs to this unit, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.
- 20. Coax Grounding - If an outside cable system is connected to the unit, be sure the cable system is grounded.
- 21. Lightning - For added protection of this unit during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the cable system. This will prevent damage to the unit due to lightning and power line surges.

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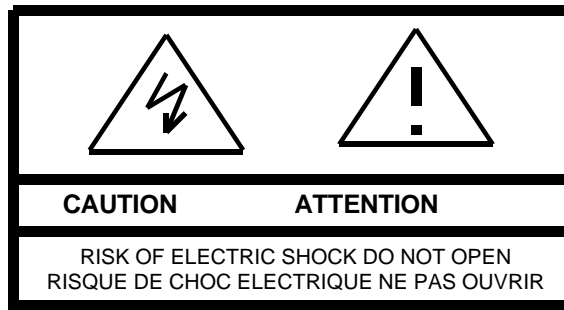
## SAFETY PRECAUTIONS

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### CAUTION:

**TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT OPEN COVERS. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.**

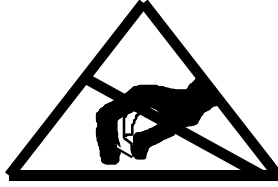


This label may appear on the bottom of the unit due to space limitations.

The lightning flash with an arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**“WARNING- TO REDUCE THE RISK OF FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.”**

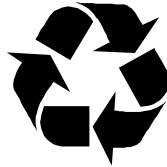


**WARNING:**

**Electrostatic-sensitive device.** Use proper CMOS/MOSFET handling precautions to avoid electrostatic discharge.

**NOTE:**

Grounded wrist straps must be worn and proper ESD safety precautions observed when handling the electrostatic-sensitive printed circuit boards.



**UNPACKING**

The shipping carton is the safest container in which the unit may be transported. Save it for possible future use.

**SAFETY AND EMISSIONS**

The equipment has UL and TUV safety agency approvals and complies to CE class A, and to part 15 of the FCC rules for emissions, class A.

**SERVICE**

If the unit ever needs factory service, the customer should contact the distributor or dealer for instructions and authorization to return the unit to the nearest service center or the factory.

Units returned to the factory should indicate the return authorization number, and freight and insurance must be prepaid.

# CHAPTER 1 GENERAL INFORMATION

This chapter introduces, identifies and describes the modes of operation, features and front panel controls and indicators used to perform security monitoring with the JMMS8 Simplex Monochrome Video Multiplexer. The front panel of this unit contains all of the buttons necessary to view all cameras, operate VCR and alarm functions, and select any operating and programming requirements that are necessary for customization of this unit to help the user perform efficiently.

## 1.1 MODES OF OPERATION

### RECORD MODE

#### How multiplexed recording works:

To record several camera inputs on one video output, single fields are digitally captured from each of the video input channels and then stacked consecutively to form a continuous video signal of time-sliced fields. The time-slicing of several camera inputs onto one VCR output is generally known as Time Division Multiplexing (TDM). Time base correction is performed during digital capture so that input cameras do not need to be synchronized. The multiplexed video fields can then be recorded onto a single VCR via the VCR OUT connector (●) located on the back panel of the JMMS8 multiplexer.

#### **Example of 3 multiplexed inputs:**

**Input:** Camera A video fields:

A1	A2	A3	<b>A4</b>	A5	A6	<b>A7</b>	...	...	etc.
----	----	----	-----------	----	----	-----------	-----	-----	------

**Input:** Camera B video fields:

B1	<b>B2</b>	B3	B4	<b>B5</b>	B6	B7	...	...	etc.
----	-----------	----	----	-----------	----	----	-----	-----	------

**Input:** Camera C video fields:

C1	C2	<b>C3</b>	C4	C5	<b>C6</b>	C7	...	...	etc.
----	----	-----------	----	----	-----------	----	-----	-----	------

**Output:** Multiplexed video stream to VCR

A1	B2	C3	A4	B5	C6	A7	...	...	etc.
----	----	----	----	----	----	----	-----	-----	------

In addition to the video content sent to the VCR in each field, a packet of digital data, which uniquely identifies the field, is inserted into each field sent to the VCR. This packet of data is not visible in the normal video and is used in the *playback* mode to recognize the incoming fields and to link them back to the original camera input from which they were captured.

### **Record Speed**

**With Vext:** (The Vext pulse is a signal sent to the JMMS8 by the VCR, but only while the VCR is actually recording.) If the VCR's Vext output is connected to the JMMS8, the unit's front panel Vext LED will flash at the Vext pulse rate as an indicator that the VCR's head switch pulse (Vext) is being received by the multiplexer. The unit's record speed will automatically synchronize to the VCR's record speed by monitoring the VCR's Vext pulse rate, and so the user does not have to set up the unit's record speed.

**Without Vext:** If the VCR's Vext output is not connected to the unit, the JMMS8 will send fields to the VCR from all connected cameras at the time lapse speed that is set by the dip switches on the rear panel. In this case, it is essential that the VCR time lapse speed be set the same as the JMMS8's time lapse speed.

### **PLAY MODE**

In PLAY mode, the VCR recording, which consists of individually recorded fields from several different cameras, is decoded and played back on the monitor output (MON). Decoding consists of automatically separating the multiplexed camera fields (several live inputs which were recorded at the same time) and then grouping each camera's fields together for display on the monitor.

Using the coded data, which was inserted into each recorded field, the multiplexer automatically reconstructs each camera identification, its status, and the date and time which was current at the time of recording, and then displays it with the corresponding camera image.

The user can view the playback in full-screen of a single camera or sequence the cameras.

## 1.2 FRONT PANEL CONTROLS AND INDICATORS

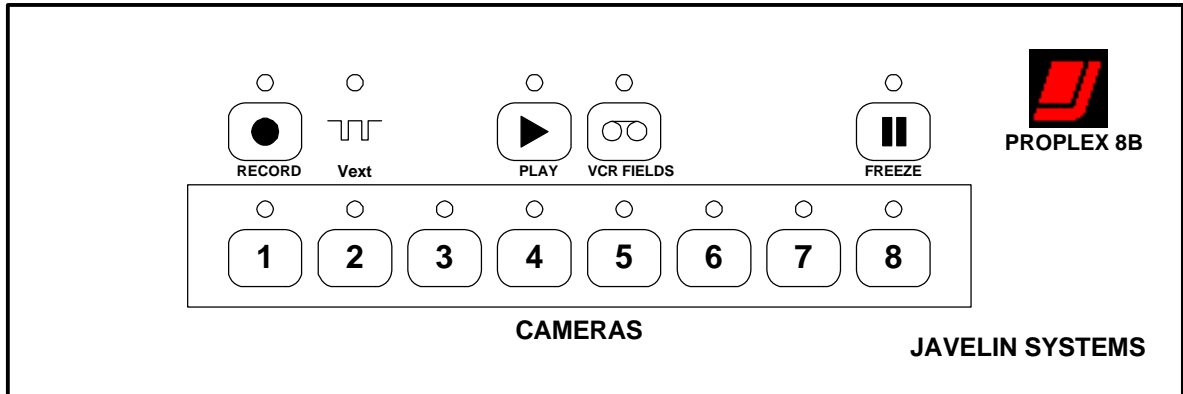


Table 1-1. JMMS8 - Front Panel Controls And Indicators

Location	Control/ Indicator	Description
	<b>RECORD</b>	Push this button to put multiplexer in record mode. The LED will be lit when in <b>RECORD</b> mode.
	<b>Vext</b>	When flashing or on steady, indicates that the JMMS8 is receiving the Vext pulse from the VCR while in record mode. The Vext LED will flash at the Vext pulse rate. Vext automatically sets the record speed to synchronize to the VCR.
	<b>PLAY</b>	Pressing this button selects playback mode for decoding tapes. The LED will be lit when in <b>PLAY</b> mode.
	<b>VCR FIELDS</b>	Pressing this button during Record or Playback will allow the user to see all the fields which are being sent to the JMMS8. They are not decoded. The LED will be lit when in <b>VCR FIELDS</b> mode.
	<b>FREEZE</b>	Pressing this button during playback will freeze the display. To unfreeze the display, press the <b>FREEZE</b> button again. The LED will be lit when in <b>FREEZE</b> mode. This button does not function in the Record Mode.
	<b>CAMERA</b>	Pressing any of these buttons will call up that camera full-screen. Also used to program the sequence list and start the sequencing of cameras during recording and playback. The associated LED will be lit when that camera is being displayed.

## 1.3 FEATURES

A key feature of the JMMS8 is its simplicity. This results in quick and easy installation, and ease of use. The unit automatically senses which camera inputs are connected, and then sets up the record list and sequence lists automatically. The JMMS8 can also automatically synchronize its multiplexed output to the VCR's record speeds. This ensures that the multiplexer's output speed will always be correct and need not be programmed by the user. This is accomplished by connecting the VCR's Vext switch pulse output to the unit.

The JMMS8 offers high resolution recording of all connected cameras. Its digital video output conforms to CCIR-601 digital broadcast standards.

While the unit is recording multiplexed video to the VCR, the user can view any camera full-screen, or the display can be sequenced with a default sequence list made up of all connected cameras. The user can also quickly create custom sequence lists using the unique *AutoList* feature (patent pending). The customized *AutoList* sequence can show the cameras in any order, with different dwell times set for each camera.

You can lock the unit in the record mode by setting a dip switch on the rear of the JMMS8. See Figure 2-1 in chapter 2, Section 2-10.

During playback of images previously recorded to a VCR, the user can select any camera to view, or the cameras can be sequenced. The playback images can be frozen at any time.

The user can also view the actual multiplexed signals which are being sent by the unit to the VCR (or which are being sent to the unit from the VCR) so that correct recording and operation of the VCR and the multiplexer can be easily verified.

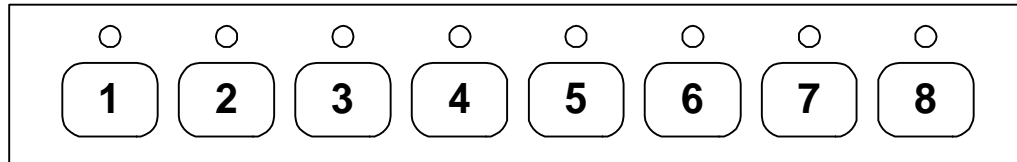
Unlike many of the more expensive multiplexers, the JMMS8 can even decode video, which is played back at time lapse VCR speeds, such as 24-hour mode. This enables the user to view motion at real life speeds during *playback*. The user can even pause the VCR and single step through recorded images while the JMMS8 continues to decode the video correctly. During this mode, video quality will remain reasonable.

At all times, front panel indicators show which mode has been selected by the user, and which camera is currently being displayed on the monitor. The front panel LEDs also indicate any video loss on the selected image.

The JMMS8 is housed in an attractive and rugged desktop enclosure with a spill proof membrane keypad. It is powered from an external 12 VDC power supply, and it can be rack mounted using the optional rack mount kit.

## CHAPTER 2 OPERATION

### 2.1 SELECTING A CAMERA



CAMERAS

#### JMMS8 FRONT PANEL CAMERA BUTTONS

##### Displaying a selected live image:

The user can select any live camera image for display on the monitor by pressing the corresponding camera button once.

**Indication:** An LED will light above the corresponding camera button to indicate which camera is currently being displayed.

##### Sequencing live images:

To sequence live images during Record mode: Press and release the button of the camera currently being displayed.

The unit will then sequence through all connected cameras at a default dwell time of 3 seconds.

To stop sequencing: Press any camera button. The corresponding camera will then be displayed and the sequencing will stop.

**NOTE:** If sequencing is restarted, it will start from the position in the sequence list at which sequencing was last stopped, and not from the current camera position.

Sequencing indication: While sequencing is active, the LED above the camera being displayed will be lit, and the LED above the next camera in the sequence list will flash briefly about once per second.

## 2.2 LIVE MONITOR DISPLAY

While the JMMS8 is recording, all the displays on the monitor are live, full-screen displays, unless **VCR FIELDS** mode is selected. The user can sequence the live full-screen camera images, or select a fixed live camera for display while recording.

The live images **can not be frozen**. During recording, the full-screen images on the monitor are analog images, displayed directly from the camera inputs. Analog displays cannot be frozen.

## 2.3 RECORD MODE

The unit defaults to the RECORD MODE. You are either in the RECORD MODE or PLAY MODE. To switch to the RECORD MODE from the PLAY MODE, press the RECORD button.

## 2.4 VEXT

The Vext LED will blink at the rate of the Vext pulse if Vext is used. The LED will appear to be lit steady if the record speed is high, say the 2 hr mode.

## 2.5 PLAY MODE

The unit defaults to the RECORD MODE. You are either in the RECORD MODE or PLAY MODE. To switch to the PLAY MODE from the RECORD MODE, press the PLAY button.

## 2.6 VCR FIELDS

### Viewing the VCR output:

To view the video fields that are going to and from the JMMS8 and the VCR: Press the VCR FIELDS button.

To exit VCR FIELDS mode, press the VCR FIELDS button again or press any camera button. Note that when VCR FIELDS mode is stopped, the display will automatically begin sequencing.

If the VCR is playing when VCR FIELDS is selected, the actual images stored on tape will be displayed. This can be used to verify that there are multiplexed images on the tape, before trying to play them back.

If the VCR is not playing and the JMMS8 is in Record mode when VCR FIELDS is selected, then the images that are going to the VCR from the unit will be displayed. This can be used to verify that the unit is multiplexing correctly, and that the desired time lapse mode has been selected.

## 2.7 VIDEO LOSS

If a camera is active when the unit is first powered up, and then has a loss of video, the unit will *not* remove this camera from the record and sequence lists. The camera will automatically reappear as soon as video is restored.

Cameras with video loss will display a blank screen on live screens. Note that a camera cannot be recorded to tape during its actual video loss, but it will be recorded again as soon as video is restored.

**Video Loss Indicator:** When the user selects camera(s) with video loss for live display, the corresponding LED above the camera button will flash slowly.

The video loss indication will begin within 4 seconds maximum of a camera signal being removed, and typically within 2 seconds. Likewise, if a camera signal is restored, the video loss indicator will stop within 4 seconds, and typically within 2 seconds.

Note that the flashing video loss indicator may not have time to start flashing when cameras are being sequenced at the default dwell of 3 seconds or faster. As a result, it is recommended that a camera be selected live, full screen to verify video loss.

### ADDING AND REMOVING CAMERAS

#### **Adding cameras to the unit:**

If cameras are added after the JMMS8 is powered up, those cameras will not be in the JMMS8's sequence and record lists until **EITHER** an added camera is selected full screen, after it is actually connected **OR** the unit is powered off, and then on again.

Note that both above procedures restore all the added cameras to the sequence and record lists.

#### **Removing cameras from the unit:**

If a camera is removed from the JMMS8, the unit will continue to show video loss for that camera until the JMMS8 is powered off and then on again.

On power up, the unit will automatically remove inactive cameras from the record and sequence lists.

### **Cameras not connected:**

On power up, the JMMS8 automatically senses which cameras are not active (not connected), and it does not include such cameras in the record list and the default sequence list.

## **2.8 AUTOLIST: A CUSTOM SEQUENCE LIST**

The JMMS8 has a unique and innovative feature for building the user's preferred custom sequence lists.

When the user selects 'AutoList' mode, the unit automatically memorizes not only the user's selection of buttons, but also the exact time that the user waited between each button activation.

Using this unique feature, the user can very easily build the 'ideal' sequence list by simply selecting each camera to be viewed, and then watching the camera scene for the length of time that is ideal for that scene, before going on to select the next camera in the sequence.

When the custom list is complete, the unit is able to sequence through the cameras in exactly the same way that the user did, making it an ideal sequence for the user.

### **TO BUILD AN AUTOLIST SEQUENCE LIST**

- 1. Starting: (Select and hold)** Press the button for the first camera in the sequence list and hold the button down for at least 3 seconds until the camera LED starts to flash.
- 2. Wait** for the time that this camera must be displayed on the monitor.
- 3. Select the next camera** to put in the sequence list, by pressing the corresponding camera button.
- 4. Repeat** the two previous steps until done. I.e., wait again for the time that this next camera should remain displayed on the monitor, and then select the following camera in the sequence, and so on until all desired cameras have been selected.
- 5. Ending:** Press **any** button except a camera button to end the *AutoList* sequence list. The dwell time for the last camera in the sequence list will be the time from which it was selected, until the time that the non-camera button was pressed. When the *AutoList* has been ended, the camera LED will then stop flashing.

## **NOTES ON AUTOLIST SEQUENCE LISTS**

If only one camera is entered into the *AutoList*, the unit will discard the *AutoList* and will revert to the default sequence list. (The default list includes all the active cameras, each with a three second dwell time.)

The *AutoList* is not saved on loss of power to the JMMS8. It must be re-entered by the user.

The unit will allow about 30 seconds for the user to select the next camera in the *AutoList* sequence list. If no button at all (including the same camera button) is pressed for 30 seconds, *AutoList* will time out, and the list will be completed with the last camera having a dwell time of 30 seconds.

If the user wants a camera to have a dwell time of more than 30 seconds in the sequence list, simply select the same camera button again until it has been on the monitor for the dwell time desired.

Cameras can be repeated later on in the same list. Repeating a camera in the list may be preferable to having a very long dwell time for the camera, because the operator's attention is better maintained with shorter dwell times.

If the user selects a camera that is not active, the button will be ignored and the camera will not be included in the *AutoList*.

If a camera is added to the JMMS8 after the *AutoList* has been built (by selecting it full-screen after it was connected), then it will not be automatically added to the end of the *AutoList*. (When the default sequence list is active, instead of the *AutoList*, then the new camera will be added to the sequence list.)

The *AutoList* cannot be edited. To be changed, it must be re-entered.

Deleting an *AutoList*: To delete the *AutoList* and revert to the default sequence list, start a new *AutoList* and select only one camera - the first camera. Alternatively, power the unit off and then on again.

There is an *AutoList* for LIVE sequencing and a different *AutoList* for sequencing during Playback. These two *AutoLists* are completely separate from each other, and they must be set up separately by the user as required.

## **2.9 FREEZE**



Pressing **FREEZE** during **PLAYBACK** sequencing will halt the sequence and display a field of the current camera. Alternately, you can pick any camera in the sequence and then freeze its frame by pressing **FREEZE**.

Pressing **FREEZE** while a field is frozen will unfreeze the current camera's image, leaving the sequence halted on the current camera.

## 2.10 SETTING THE RECORD SPEED

If the VCR's Vext output is not connected to the unit, the JMMS8 will send fields to the VCR from all connected cameras at the time lapse speed that set by the dip switches on the rear panel. In this case, it is essential that the VCR time lapse speed be set the same as the JMMS8's time lapse speed. See Figure 2-1.

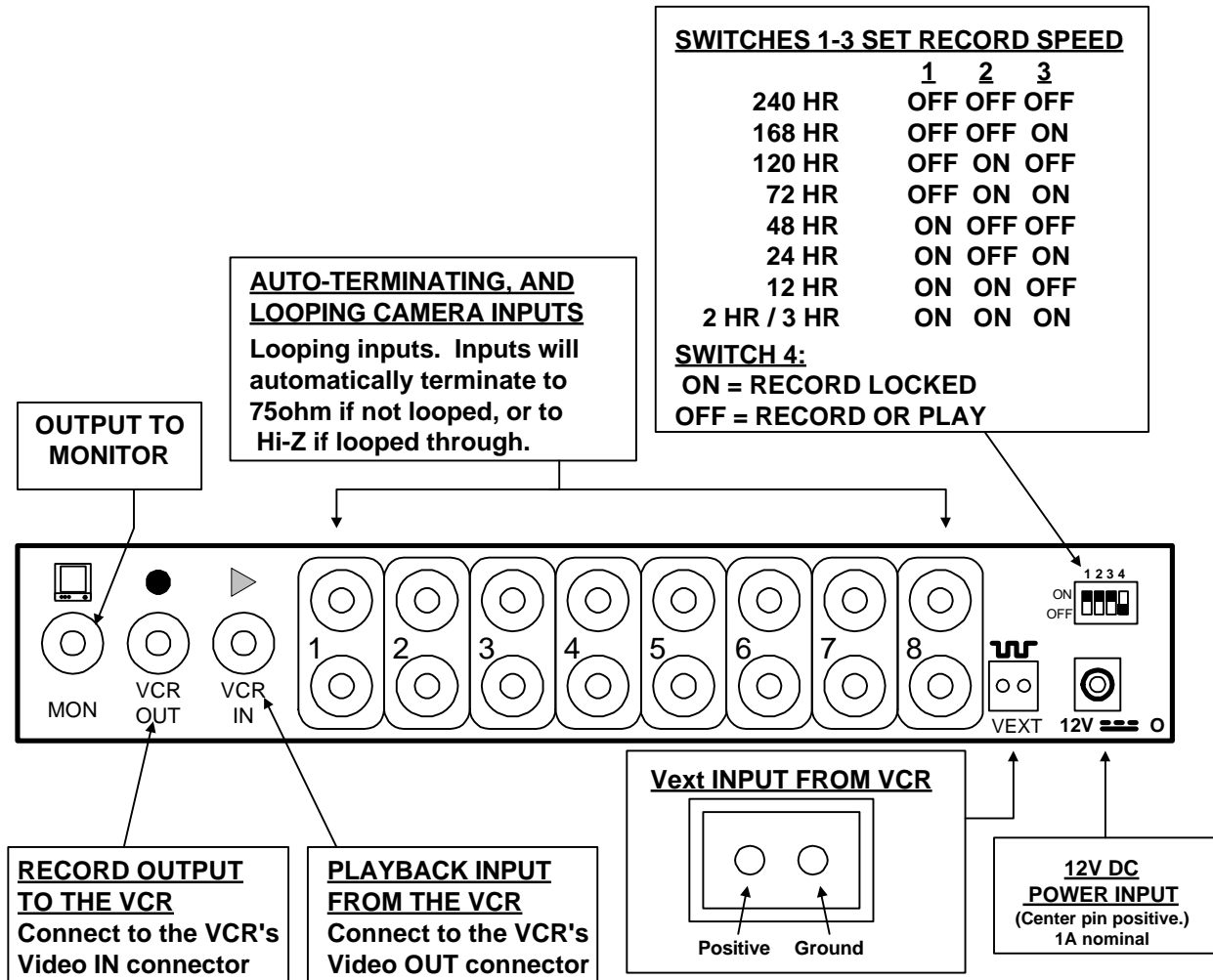


Figure 2-1. JMMS8 Rear Panel

## 2.11 RECORD LOCK

To lock out anyone from stopping the JMMS8 from recording there is a dip switch on the rear panel that can be set. Switch number 4 set to ON will lock the JMMS8 in the record mode. Set switch number 4 to OFF will allow both record and playback to operate when needed. See Figure 2-1.

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## CHAPTER 3 PLAYING TAPES

To playback from a VCR to the JMMS8, press the Play Button. Ensure that the VCR is playing back a recorded tape.

When PLAY mode is first selected, the unit will sequence through all cameras at the default dwell rate of 3 seconds per camera.

Any camera can be selected for full-screen playback. The LED above the camera button will show the camera that has been selected for playback.

No recording found on tape for the selected camera: If there are no fields found on the tape for the selected camera within about 3 seconds, the LED above the selected camera button will begin to flash slowly (video loss indication) to indicate that the camera selected was not yet found on tape for playback.

If the camera selected is then found on tape, after the LED has started flashing video loss, then the LED will stop flashing video loss and the image will be frozen until a new update for the selected camera has been received. Unless a different camera is selected for playback, either by the operator or by sequencing, the LED will not flash video loss again regardless of how long it takes to receive the next valid field from the VCR.

**NOTE:** The unit automatically freezes the display while waiting for another valid field from the tape. This is very valuable when playing tapes back in time lapse modes.

When a new camera is selected for display, either manually or through sequencing, then the camera's LED will flash 'video loss' until a field for that camera is found on tape. Once a field has been found in PLAY mode, video loss will not be indicated again while the same camera is selected.

**CAUTION:** Always check for video loss indication during playback. If a new camera is selected for playback, but a corresponding field is not received by the unit from the VCR, the camera LED will flash to show video loss. Then any frozen video being displayed is not related to the selected camera, it is probably the frozen image from the last camera. Always ensure that the camera LED is not flashing the video loss indication.

### 3.1 PLAYBACK SPEED

The playback speed depends only on the speed selected on the VCR. There is no playback speed setting required on the JMMS8.

The VCR can be set to playback at any speed, either time lapse or normal 2 hour (or 3 hour - PAL) mode. If the VCR is correctly adjusted, playback quality should remain acceptable, even if a time lapse VCR speed is selected. To playback still frames at the best quality, see section 3.5.

Playback at time lapse speeds is a very useful feature, because the user can watch the playback at the speed that shows events at the speed at which they actually occurred. (If a user is always required to playback tapes at 2 hour or 3 hour VCR speeds, but they were recorded in time lapse mode, then it can be very difficult to analyze events during playback.)

### 3.2 PICTURE QUALITY

If the playback picture shows any noise or jitter, adjust the 'tracking' and 'still adjust' controls with the VCR.

If quality remains a problem, refer to the VCR Fields procedure in Section 3.5.

### 3.3 FREEZING IMAGES

During playback, the display can be frozen at any time by pressing the Freeze button. This allows the user to quickly and easily catch a frame that requires further investigation. (Note that if VCR Fields is being used, the display is not digital and cannot be frozen.)

To un-freeze an image, press Freeze again. While an image is frozen, all buttons except the Freeze button will be ignored. This is so that the user does not un-freeze an image by mistake.

Indication: When an image is frozen by the user (by pressing the Freeze button), the LED above the Freeze button will flash.

### 3.4 SEQUENCING DURING PLAYBACK

The display can be sequenced during playback from a VCR.

To start sequencing during playback, press and release the button of the camera currently being displayed. The unit will then sequence through all cameras, whether they are on tape or not, at the default dwell time of 3 seconds.

**CAUTION:** If the playback speed on the VCR has been set too slow (usually to 48 hour mode or slower) compared to the unit's 3 second dwell time, the display may switch to a new camera before the VCR has sent a field of video for that camera.

To correct this, set up a slower sequence dwell (see AutoList), or set the VCR to playback the tape at a faster playback speed.

### **3.5 USING VCR FIELDS DURING PLAYBACK**

If VCR Fields is pressed during playback, then the user will see all the fields that are actually being sent to the JMMS8 from the VCR. They will not be decoded by the JMMS8.

In VCR Fields, the fields will normally be flashing quickly from camera to camera, and will be from several different cameras. As a result, the user will not be able to make out details recorded for any one camera. However, if the user presses 'Pause' on the VCR, and then single steps through the video fields, the actual recorded fields can be viewed directly from the VCR (analog display). There will be no loss of resolution, and this procedure can also show any VCR tracking adjustment problems or VCR noise.

Note that the Freeze function does not work while in VCR Fields, and that the camera LED's do not indicate the camera displayed.

### **3.6 AUTOLIST SEQUENCE LIST**

The user can create a new AutoList for Play mode, which is in addition to and separate from the Live mode AutoList.

The procedure to build a playback AutoList is exactly the same as used for the Live mode AutoList, except that any camera can be selected for inclusion in the AutoList, whether it is found or not. This ensures that if the VCR play speed is set too slow, and as a result some cameras are not found, then they will still be included in the user's custom playback AutoList.



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