

MX4000  
Genex™ Series  
Simplex Multiplexer





Installation/  
Operation Manual

C1927M (5/99)



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## IMPORTANT SAFEGUARDS AND WARNINGS

Prior to installation and use of this product, the following WARNINGS should be observed.

1. Installation and servicing should only be done by qualified service personnel and conform to all local codes.
2. Unless the unit is specifically marked as a NEMA Type 3, 3R, 3S, 4, 4X, 6, or 6P enclosure, it is designed for indoor use only and it must not be installed where exposed to rain and moisture.
3. Only use replacement parts recommended by Pelco.
4. After replacement/repair of this unit's electrical components, conduct a resistance measurement between line and exposed parts to verify the exposed parts have not been connected to line circuitry.

Please thoroughly familiarize yourself with the information in this manual prior to installation and operation.

## DESCRIPTION

Thank you and congratulations on selecting Pelco's Genex™ Series multiplexer. You have chosen to work with the highest quality, most sophisticated yet easy-to-use video multiplexer on the market today. Using ActiVImage™ technology, the Genex™ Series multiplexers have exceptionally high resolution digital multiple-screen displays.

With the addition of the KBD4000 remote keyboard and/or the MX4000SVR multiplexer server, the Genex™ Series offers the greatest degree of system flexibility and expandability as well.

## WHAT IS A VIDEO MULTIPLEXER?

Wherever closed circuit television (CCTV) systems are used, there is often a need to record and display many different camera views. Whether it is in a small retail environment, a large casino, or an airport, multiplexers have become the preferred method of collecting pictures from as many as 16 cameras for recording on a single time-lapse VCR.

In addition, multiplexers allow users to watch up to 16 cameras simultaneously on one screen, either live or in playback. Should a scene require closer examination, the user can select full-screen viewing without the loss of detail, as occurs with "quad" devices that compress four pictures into one for recording.

The multiplexer acts as an interface between the CCTV cameras and the time-lapse VCR. The multiplexer is designed to switch between cameras much like an ordinary sequential switcher. Unlike a switcher, however, a multiplexer should switch at exactly the same rate as the VCR is recording so that just one video picture, or field, is recorded from each camera before it switches to the next camera. The reason for this is that with a large number of cameras, you need to switch as fast as you possibly can in order to minimize the time gap between successive pictures from a given camera.

In most respects, time-lapse VCRs are very similar to the VHS video recorder that you probably have in your home. The single largest difference is that a time-lapse VCR allows as much as 960 hours of video to be recorded on a single T-120 (two-hour) VHS cassette. The total amount of time varies by make and model, but even the lowest cost models allow for a lot longer recording time than a normal consumer VCR.

When you record a tape on your home VCR and play the tape, you see normal motion, just as you do on your television. If you connect one camera to a multiplexer and record the video at the two-hour speed on a time-lapse recorder, motion will appear normal when you play the tape, just like on your home VCR. But as you add more cameras to the multiplexer, the multiplexer has to switch between cameras and there is a gap in the video pictures recorded for any one camera. The more cameras there are, the longer the gap is because it takes longer for the multiplexer to switch between all the cameras. When the tape is played, the motion becomes jerky because of the missing video.

Not only does the number of cameras affect the time gap, but so does the recording speed. The slower the recording speed, the longer the gap. Normal recording speed for full motion is the two-hour mode. But if you slow the recording speed down to record 12 hours, 48 hours, or 960 hours of video on a two-hour tape, it means that a lot of video is left out.

Thus, the more cameras there are and the slower the recording speed, the longer the time gap becomes between recorded pictures for any one camera. It is important to understand this concept because, depending on what you are recording, important video could be lost. In a system with two or three cameras recording in 12-hour mode, a person might appear on the left side of the screen, then the left center, then the right center, and finally the right side of the screen. But in a system with 16 cameras recording in 120-hour mode, a person might appear on the left side of the screen and be gone in the next picture.

## GENEX™ SERIES SIMPLEX MULTIPLEXERS

The MX4000 Genex™ Series is a high-quality family of simplex multiplexers that can accept video inputs from a maximum of 9 or 16 cameras, depending on the model. The simplex multiplexers have three modes of operation: live, record, and VCR.

- In the live mode, the main monitor can show live video both in full-screen or multiple-screen views. You cannot record in the live mode.
- In the record mode, the main monitor will show live video of an individual camera in full-screen view only. You can record only in the record mode. While recording, all cameras are being recorded simultaneously.
- In the VCR mode, the main monitor will display full-screen or multiple-screen views of videotape playback. You cannot record in the VCR mode.

Video from the cameras can be shown on two monitors: main and spot.

The main monitor displays video from a single camera or from multiple cameras. Video can be either live or from a tape playback. Multiple-screen displays can be picture-in-picture, 4-, 9-, or 16-camera formats.

A spot monitor displays live video from a single camera. A spot monitor is optional, but increases the flexibility of your system. For example, you can keep an eye on all cameras in a multiple-screen format on the main monitor while watching a full-screen view of any one camera on the spot monitor. Or, if you are playing a tape on the main monitor, you can use the spot monitor to watch live video.

Cameras can be sequenced on both monitors.

In the full-screen view on the main monitor, a zoom function doubles or quadruples the image size for better viewing.

Depending on the model, there are 9 or 16 alarm inputs—one per camera—that tag the camera images when an alarm is activated. The main and spot monitors can be programmed to display alarms. Alarm inputs also activate a relay output, which can be used to change a VCR to its preprogrammed alarm record speed. When there is an alarm, the VCR, depending on how it is programmed, will either record alarm cameras only or record both alarm and non-alarm cameras. An alarm log lists the last 20 alarms.

Activity detection continually monitors selected camera inputs for motion. When the multiplexer detects motion, it increases the frequency at which it records a camera or cameras with motion. The main and spot monitors can be programmed to display motion-detection activated switching.

## APPLICATIONS

The MX4000 Genex™ Series is very flexible in its design, allowing you to configure your system in a variety of ways.

The simplest system is a stand-alone multiplexer (refer to Figure 1). All you have to do is connect cameras, monitors, a VCR, and alarm inputs. Operation of the multiplexer is done with front panel push buttons.

**NOTE:** The KBD4000 keyboard in combination with a multiplexer provides Coaxitron® control of pan, tilt, and lens functions.

When used with 15-bit standard Coaxitron® receivers, such as the CX9000 Series, the PT7700, and the ED25/27/28/29, the KBD4000 keyboard in conjunction with a multiplexer supports all pan, tilt, and lens functions, and AUX on/off. The keyboard will not set or call presets or support preset scanning.

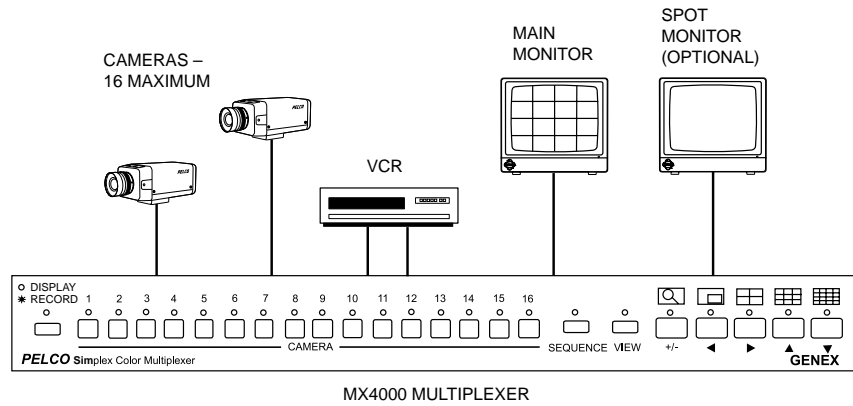
When used with 32-bit extended Coaxitron® receivers, such as Intercept®, Spectra®, and LRD41C21/LRD41C22 Series, the KBD4000 keyboard in conjunction with a multiplexer will support all the functions of a 15-bit receiver, including the setting and calling of presets and patterns. It will not support programming of labels for presets or patterns. If labels for presets or patterns are required, they would need to be programmed with a different control, such as the MPT9500.

By adding a KBD4000 keyboard to the multiplexer (refer to Figure 2), you can control 1-16 multiplexers from up to 25 feet (7.6 m) away with the cable supplied with the keyboard. Greater distances between the multiplexer and keyboard can be obtained if you provide a Pelco KBDKIT(-X) and your own cable.

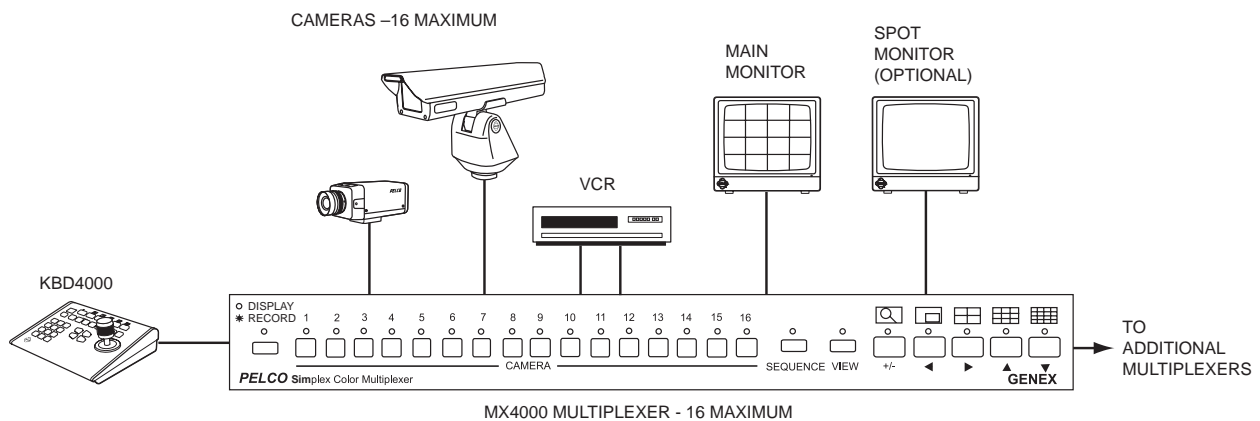
A keyboard also gives you the added capability of controlling moveable cameras. Control systems for moveable cameras must be Coaxitron® compatible. In Figure 1 cameras are fixed.

The systems shown in Figures 1 and 2 are for a single operator only. To permit up to four operators to use the system, an MX4000SVR multiplexer server can be added, as shown in Figure 3.

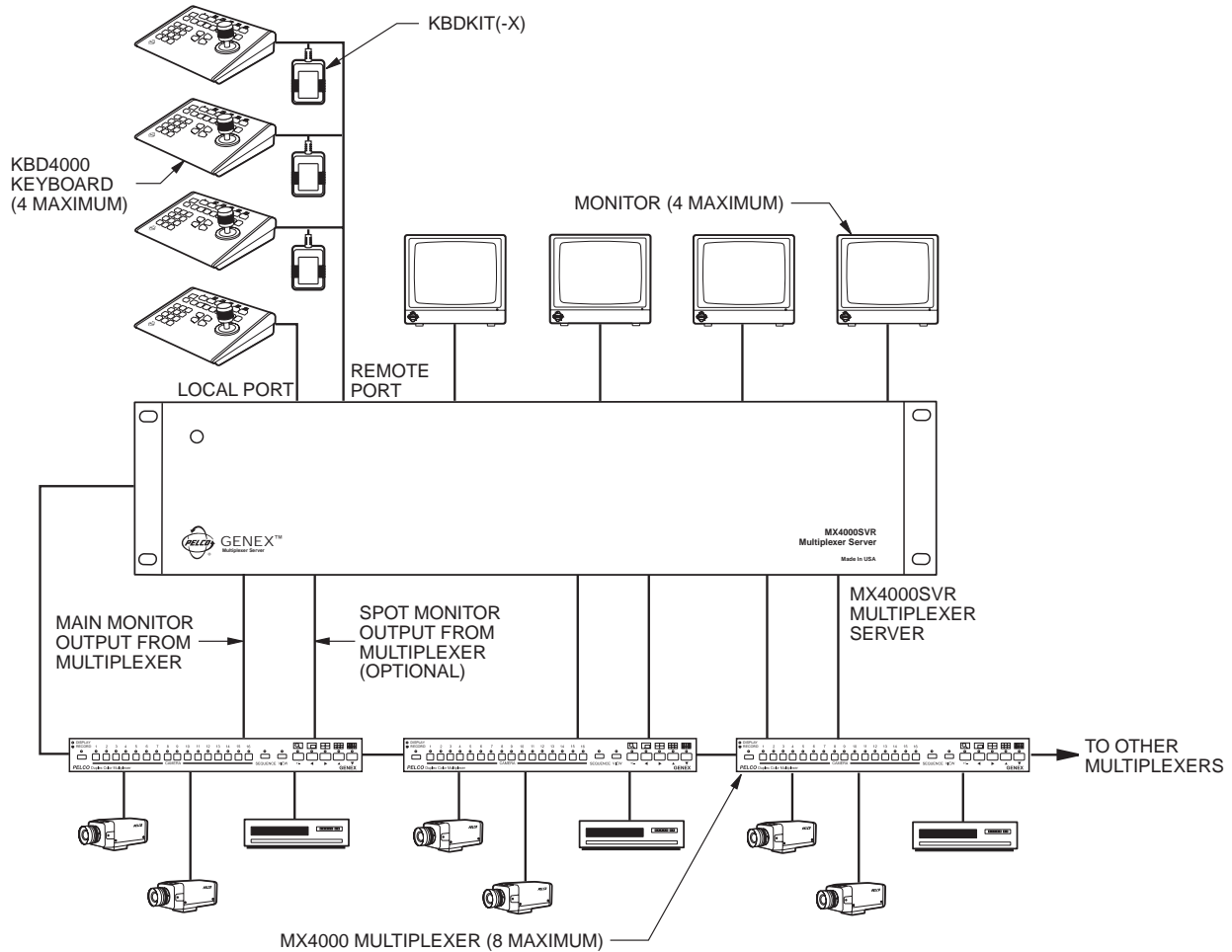
The main and spot monitor outputs from each multiplexer are connected to the server, providing two video channels. The design is not a true matrix, however, because only two operators (instead of all operators in a true matrix ) can select cameras from the same multiplexer at the same time, one operator using the main monitor and the other operator using the spot monitor.



**Figure 1. Stand-Alone Multiplexer**



**Figure 2. Multiplexers with KBD4000 Keyboard**



**Figure 3.** Multiplexers with KBD4000 Keyboards and MX4000SVR Server

## MODELS

### Color Simplex

MX4009CS	9-channel, color simplex multiplexer, NTSC standard, 120 VAC, 60 Hz (UL, cUL, FCC)
MX4009CS-X	Same as MX4009CS except PAL standard, 230 VAC, 50 Hz (CE)
MX4016CS	16-channel, color simplex multiplexer, NTSC standard, 120 VAC, 60 Hz (UL, cUL, FCC)
MX4016CS-X	Same as MX4016CS except PAL standard, 230 VAC, 50 Hz (CE)

### Monochrome Simplex

MX4009MS	9-channel, monochrome simplex multiplexer, EIA RS-170 standard, 120 VAC, 60 Hz (UL, cUL, FCC)
MX4009MS-X	Same as MX4009MS except CCIR standard, 230 VAC, 50 Hz (CE)
MX4016MS	16-channel, monochrome simplex multiplexer, EIA RS-170 standard, 120 VAC, 60 Hz (UL, cUL, FCC)
MX4016MS-X	Same as MX4016MS except CCIR standard, 230 VAC, 50 Hz (CE)



# INSTALLATION

Unpack and inspect all parts carefully.

The following parts are supplied:

- 1 MX4000 Series multiplexer
- 1 Rack ear kit
  - 2 Rack ears
  - 4 4-40 x .375-inch pan head screws
  - 4 10-32 x .750-inch pan head screws
- 1 Power cord
- 1 6-foot (1.8 m) data cable with RJ-45 connectors

Installation of the multiplexer varies according to the type of installation.

The *Basic Installation* section covers the basic installation procedures for all applications.

This section also covers the complete installation instructions of a stand-alone multiplexer (refer to Figure 1 in the *Applications* section).

The *Multiplexer with KBD4000 Keyboard* section, provides additional procedures beyond the basic instructions for installing up to 16 multiplexers that are controlled by a single KBD4000 keyboard (refer to Figure 2).

The *Multiplexer with MX4000SVR Server* section, gives additional steps beyond the basic instructions for installing up to eight multiplexers that are controlled from as many as four KBD4000 keyboards. The multiplexers and keyboards are linked together through a server (refer to Figure 3). A KBDKIT(-X) is required for each keyboard connected to the remote port.

Rear panel views shown in the installation procedures are for 16-channel color models. The 9-channel models have fewer video inputs and outputs. Monochrome models have no SVHS connections.

## BASIC INSTALLATION

### MOUNTING

The multiplexer can be placed on a flat surface, such as a desk or shelf, or it can be installed in a 19-inch (48.26 cm) equipment rack.

To install the multiplexer in an equipment rack (refer to Figure 4):

1. Remove the four rubber feet (A) from the bottom of the unit.
2. Remove the front two flat-head screws (B) on each side of the multiplexer. Discard the screws.

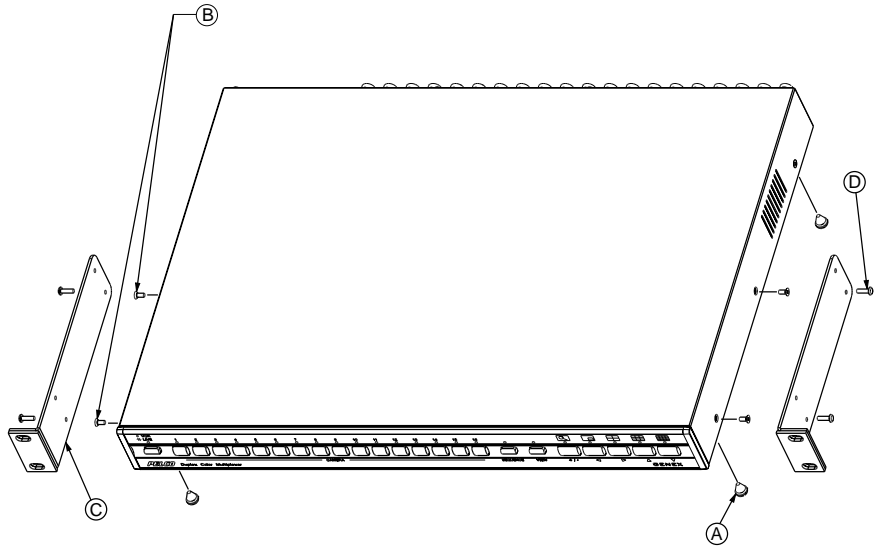


Figure 4. Rack Installation

*NOTE: Camera power should be wired in phase to all cameras. When cameras are sequenced, they will roll on the spot monitor if they are out of phase. On the main monitor, cameras are digitally time corrected and will not roll when sequenced if they are out of phase.*

3. Attach the rack ears (C) to the multiplexer. The rack ears are universal and can be used on either side of the unit. Attach the ears with the 4-40 x .375-inch screws (D) that are supplied with the ears. Only the two bottom holes on the rack ears are needed for mounting.
4. Install the multiplexer in the rack using the four 10-32 x .750-inch screws that are supplied.

Proceed to the *Cameras* section.

## CAMERAS

Video inputs can come from any conventional source. No external camera synchronization is required. Refer to Table A for the type of video coaxial cable to use.

To connect cameras (refer to Figure 5):

1. Connect the coaxial cables from your cameras or receivers to the IN connectors. If you are using moveable cameras, the receivers must be Coaxitron® compatible.

Stand-Alone Multiplexer - Connect fixed cameras. Moveable cameras may be used if the video is looped out to an MPT9500 Series controller.

Multiplexer with KBD4000 - Connect fixed or moveable cameras.

Multiplexer with KBD4000 and MX4000SVR Server - Connect fixed or moveable cameras.

2. If you want to loop a video signal out to another device, connect coaxial cables from the looping OUT connectors to the external equipment.
3. Termination of the camera inputs is programmable and is described in the *Programming* section.

**Table A.** Video Coaxial Cable Requirements

Cable Type*	Maximum Distance
RG59/U	750 ft (229 m)
RG6/U	1,000 ft (305 m)
RG11/U	1,500 ft (457 m)

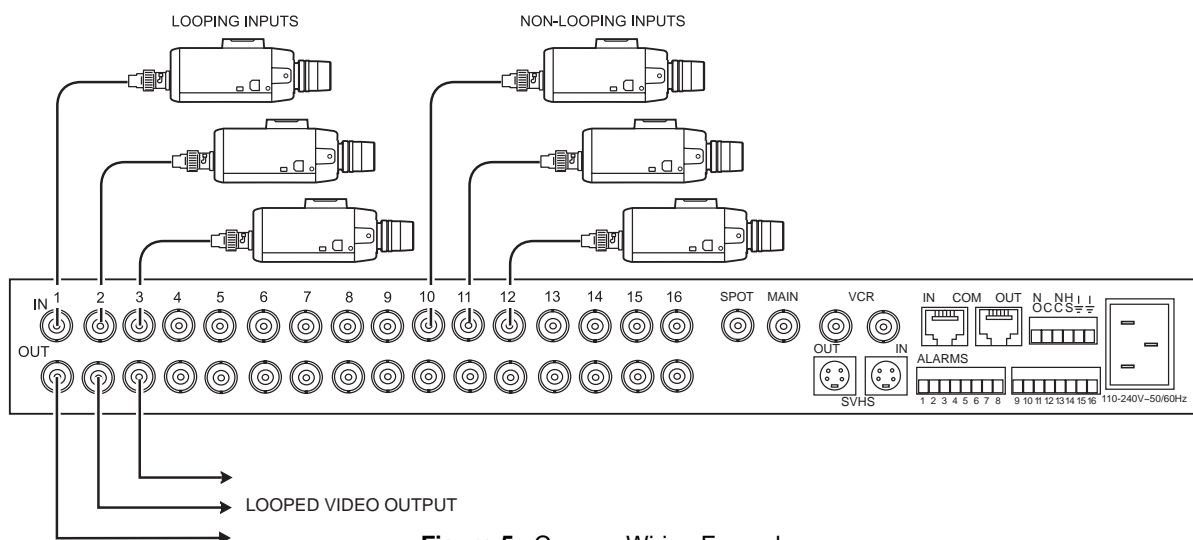
\* Minimum cable requirements:

75 ohms

All-copper center conductor

All-copper braided shield with 95% braid coverage

Proceed to the *Monitors* section.



**Figure 5.** Camera Wiring Example

*NOTE: Skip this section if you are connecting your multiplexer to a MX4000SVR Multiplexer Server.*

## MONITORS

**Main Monitor** - The main monitor can show live video of an individual camera or a sequence of individual cameras, the same as the spot monitor. But the main monitor is the only monitor that can show multi-screen displays (more than one camera displayed simultaneously), run multi-screen sequences, play back video from a VCR, or use the digital zoom feature of the multiplexer. These functions can be done only when the multiplexer is in DISPLAY mode. The multiplexer will not record in DISPLAY mode.

The monitor can be overridden by an alarm(s) and/or activity detection.

Cameras are digitally time corrected in LIVE and VCR modes and will not roll when sequenced if they are out of phase.

Connect your main monitor to the MAIN output. Refer to Table A for the type of video coaxial cable to use.

**Spot Monitor (Optional)** - The operator can manually call up live video of an individual camera or a sequence of individual cameras.

The monitor can be overridden by an alarm(s) and/or activity detection.

Cameras are not digitally time corrected and will roll when sequenced if they are out of phase.

Connect your spot monitor to the SPOT output. Refer to Table A for the type of video coaxial cable to use.

Proceed to the VCR section.

## VCR

If you have a Pelco VCR, proceed to the next section, *Pelco's Time-Lapse VCRs*.

You can connect one VCR to the multiplexer to record or play tapes.

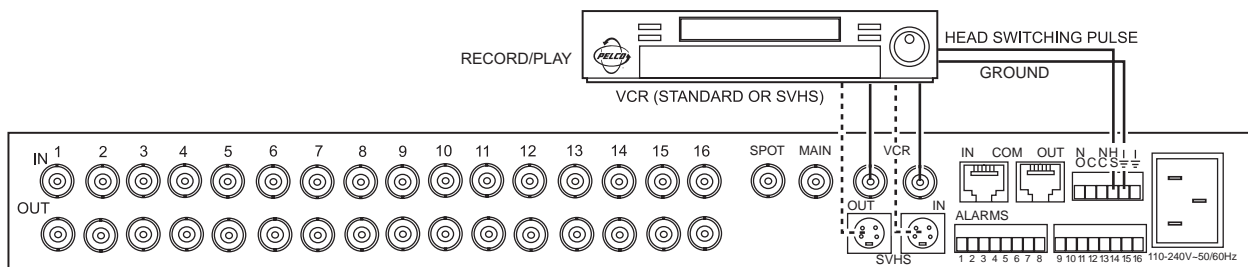
To connect a VCR:

1. Connect the video. Refer to Figure 6.

For monochrome multiplexers, use standard VCRs. For color multiplexers, use standard or SVHS VCRs.

For standard VCRs, use the BNC connectors. Refer to Table A for the type of video coaxial cable to use. For SVHS VCRs, use the SVHS connectors. Use video cable designed for SVHS.

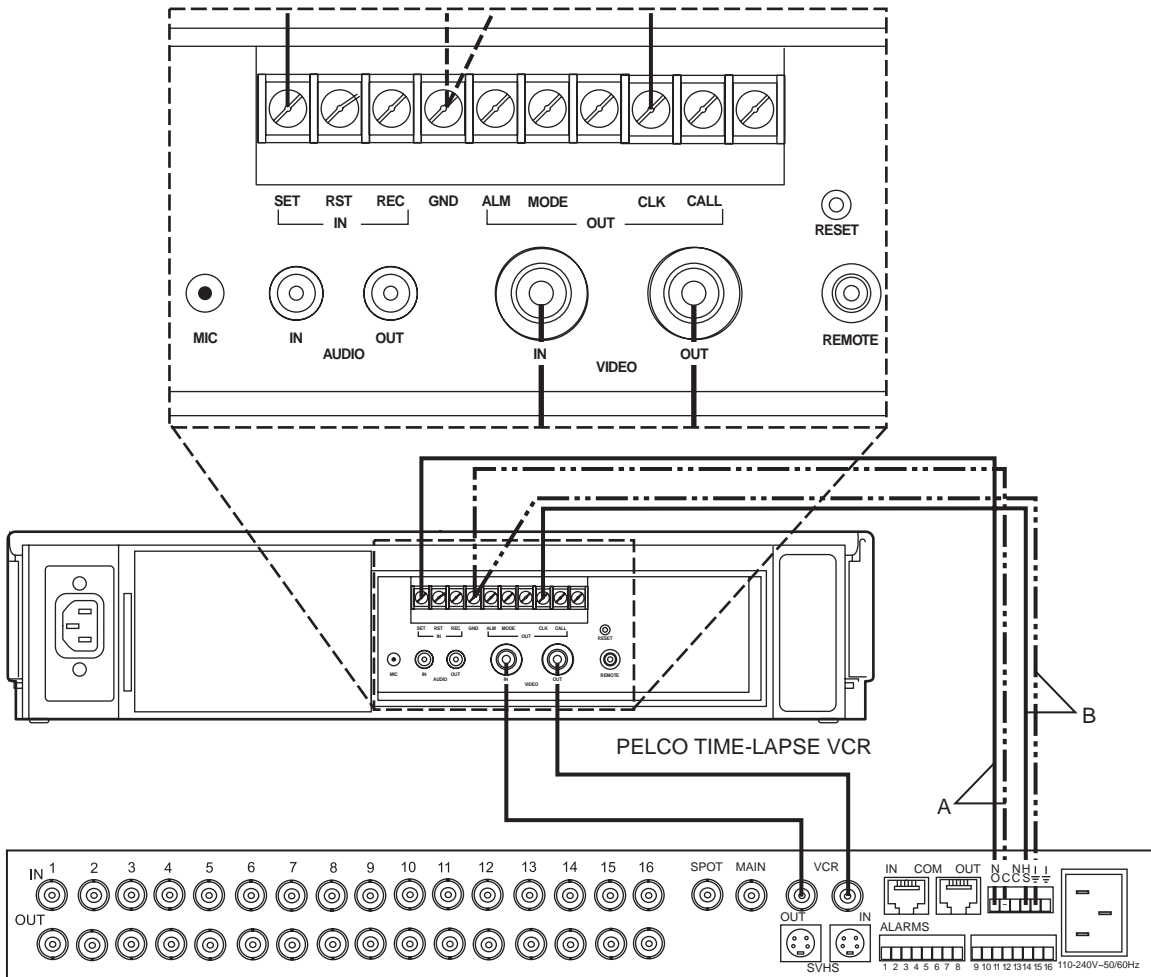
- a. Connect the VCR OUT connector on the multiplexer to the VIDEO IN on your VCR.
- b. Connect the VCR IN connector on the multiplexer to the VIDEO OUT on your VCR.



**Figure 6.** VCR Wiring Example

2. For proper recording, the switching rate of the multiplexer between cameras must match that of the VCR. There are two ways to do this:
  - a. One way is with a head switching pulse from the VCR. This is the most reliable way to synchronize the multiplexer and VCR. The pulse from the VCR tells the multiplexer how fast to switch between cameras. To use this method, connect the head switching pulse output from the VCR to the HS (head switching) connection on the multiplexer. Refer to Figure 6. The six-pin plug-in terminal block may be pulled out of the connector on the back of the multiplexer to facilitate ease of wiring.
  - b. If a head switching pulse from the VCR is not available, you can synchronize the VCR and multiplexer by programming the multiplexer switching rate to match the recording speed of the VCR. This will be done in the *Programming* section, after you have finished installing your multiplexer. No wiring is required if you use this method.

Proceed to the *Alarms* section.



**Figure 7.** Pelco Time-Lapse VCR Wiring Example

## PELCO'S TIME-LAPSE VCRS

You can connect one of Pelco's Time-Lapse VCR Models TLR2024, TLR2096, or TLR2168 to the multiplexer as follows (refer to Figure 7):

1. Connect BNC video cable between the VCR connectors on the multiplexer and the VIDEO connectors on the VCR.
2. Automatic Speed Tracking lets the VCR control the multiplexer's recording speed. It is the most efficient recording method. To wire (refer to the "B" lines in Figure 7):
  - a. Connect the VCR's CLK output to the multiplexer's head switching (HS) input to synchronize camera switching.
  - b. Connect the multiplexer's ground terminal to the VCR's GND terminal.
3. Alarm recording starts and stops recording when there are alarms. To wire (refer to the "A" lines in Figure 7):
  - a. Connect the multiplexer's normally open (NO) relay terminal to the VCR's SET IN (alarm input) terminal.
  - b. Connect the multiplexer's common (C) terminal to the VCR's GND terminal.

Proceed to the *Alarms* section.

## ALARMS

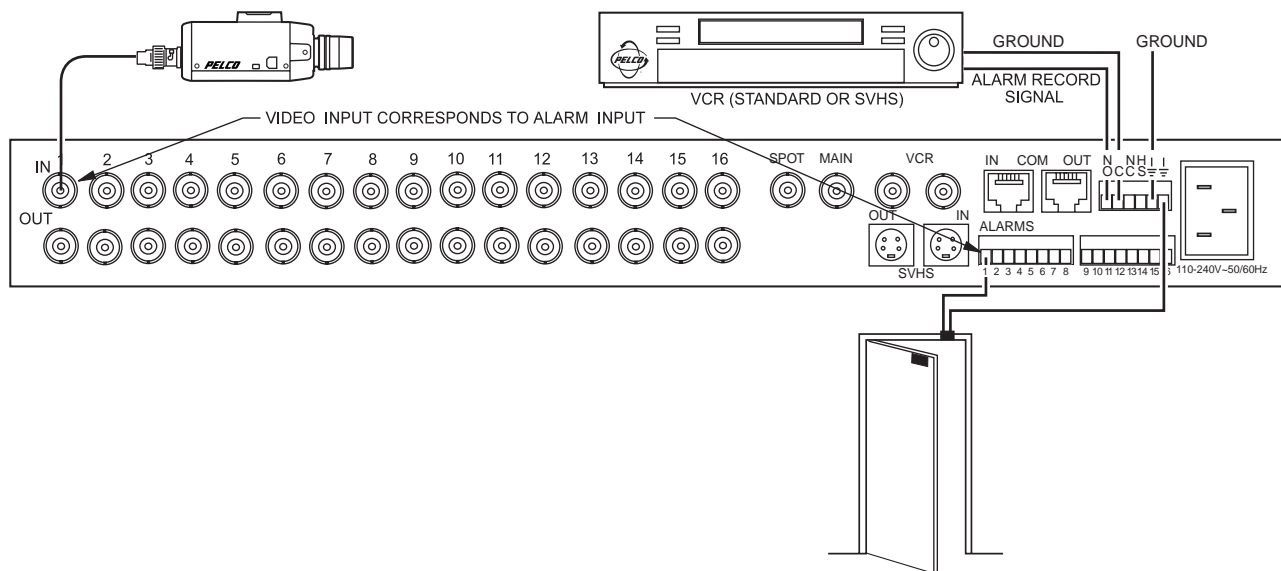
Alarm inputs require a ground signal through a contact opening or closure, such as a switch or relay.

To wire the alarm inputs (refer to Figure 8):

1. Connect one wire from the alarm source (for example, door) to one of the alarm input pins of the multiplexer. The alarm input must correspond to the camera input. There is only one alarm input per camera.

The eight-pin plug-in terminal blocks may be pulled out of the connectors on the back of the multiplexer to facilitate ease of wiring.

2. Connect a second wire from the alarm source to one of the ground connections on the six-pin plug-in terminal block on the back of the multiplexer.



**Figure 8.** Alarm Wiring Example

3. Alarm inputs will be programmed in the *Programming* section for normally open or normally closed operation.

Normally closed operation = current flow = alarm switch or relay closed  
Normally open operation = no current flow = alarm switch or relay open

In the example in Figure 8, current flows through the contacts (switch) in the door when it is closed. When the door is open, no current flows. To cause an alarm when the door is opened, program the alarm input for normally closed (door is normally closed). To cause an alarm when the door is closed, program the alarm input for normally open (door is normally open).

4. If your VCR has an alarm input to change the VCR to its alarm recording speed when the multiplexer receives an alarm, connect the VCR alarm input to the normally open (NO) relay contact on the multiplexer. Connect a wire from the relay's common (C) connection to ground on the VCR.

Proceed to the *Powering the Multiplexer* section.

### POWERING THE MULTIPLEXER

It is recommended that multiplexers being powered up for the first time or after extended storage be initialized using the following procedure. This will clear any random data remaining in the multiplexer and initialize the memory for user programming.

1. Turn on power to your cameras, monitors, and any other equipment that is connected to the multiplexer.
2. Plug in one end of the power cord into the multiplexer.
3. Press and hold the VIEW button on the front panel of the multiplexer while you plug the power cord into an electrical outlet. When the Initialization Menu appears, release the VIEW button. The monitor will indicate PLEASE WAIT and begin a 20-second countdown. When the countdown has been completed, the Initialization Menu will disappear, all programming menus will be at their default settings, and the multiplexer will be ready for use.

If you are installing your system with a KBD4000 keyboard or MX4000SVR Multiplexer Server, proceed to the appropriate section for further installation instructions.

### MULTIPLEXER WITH KBD4000 KEYBOARD

Refer to Figure 2 in the *Applications* section for an overview of a typical installation.

1. Follow the instructions in the *Basic Installation* section to mount the multiplexer; to connect cameras, monitors, VCR, and alarms; and to power-up the multiplexer.
2. A maximum of 16 multiplexers can be daisy-chained together. If you are going to daisy-chain multiplexers, use the 6-foot (1.8 m) data cables that are supplied with the multiplexers. Connect a cable from the COM OUT port of the first multiplexer to the COM IN port of the second multiplexer, then connect the COM OUT port of the second multiplexer to the COM IN port of the third multiplexer, etc.
3. Proceed to the KBD4000 Genex™ Multiplexer Keyboard Installation/Operation Manual to complete the installation, which involves setup and connection of the KBD4000 keyboard, and programming the multiplexer.

## MULTIPLEXER WITH MX4000SVR SERVER

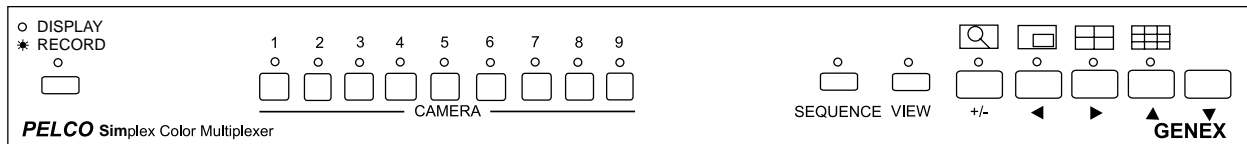
Refer to Figure 3 in the *Applications* section for an overview of a typical installation.

1. Follow the instructions in the *Basic Installation* section to mount the multiplexer; to connect cameras, VCR, and alarms; and to power-up the multiplexer. Skip the *Monitors* section.
2. Proceed to the MX4000SVR Genex™ Multiplexer Server Installation/Operation Manual to complete the installation. Also use the server manual to program the server.
3. Refer to this manual to program the multiplexer.

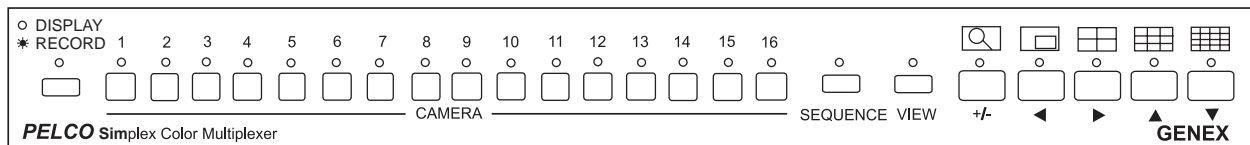
## OPERATION

Refer to Figures 9 and 10 for views of the front panels. Monochrome front panels are the same except for the word “Monochrome” instead of “Color” in the lower left corner.

There are three modes of operation that are selected by pressing the DISPLAY/RECORD button: RECORD, LIVE, VCR. The LED illuminates in the RECORD mode only. When the LED is off, look at the upper left corner of the monitor to see if the multiplexer is in the LIVE or VCR mode. The default mode is RECORD.








**Figure 9.** Front Panel, 9-Channel Color Simplex Multiplexer



**Figure 10.** Front Panel, 16-Channel Color Simplex Multiplexer

**Table B. Front Panel Controls**

Button	Operation	Function
DISPLAY/ RECORD	Press once  Press for 3 seconds	Toggles main monitor display between record, live inputs, and playback from VCR. In the RECORD mode, the red LED lights. Displays or exits the record setup menu on the main monitor.
CAMERA	Press once Press twice Press for 3 seconds	Switches the selected camera to the main monitor (record, live, or playback). Switches the selected camera to the spot monitor (live only). Displays or exits the camera setup menu on the main monitor.
SEQUENCE	Press once Press twice Press for 3 seconds	Initiates or stops sequence on the main monitor. Initiates or stops sequence on the spot monitor. Displays or exits sequence setup menu on the main monitor.
VIEW	Press once  Press twice Press twice Press once Press for 3 seconds	In RECORD mode shows the multiplexed output to the VCR. Press again to exit. In VCR mode shows the multiplexed input from the VCR. Press again to exit. Displays alarm log on the main monitor. Clears the alarm list and closes the log. Exits the alarm log without clearing the alarm list. Displays or exits system setup menu on the main monitor.
 (Does not work in RECORD mode)	Press once	Enables 2X zoom on displayed camera. Press the button a second time for 4X zoom. Press the button a third time to exit.
 (Does not work in RECORD or VCR modes)	Press once	Displays on the main monitor a picture-in-picture insert on top of full-screen display. Press button again to exit. Once in the PIP mode, press for three seconds to enter the programming mode.
 (Does not work in RECORD mode)	Press once  Press for 3 seconds	Displays a group of four cameras on the main monitor. Repeat pressing the button to display other groups. Enables programming mode to select four groups of four cameras to display on the main monitor.
 (Does not work in RECORD mode)	Press once  Press for 3 seconds	Displays a group of nine cameras on the main monitor. Press button again to display second group (16-channel models only). Enables programming mode to select two groups of nine cameras to display on the main monitor.
(16-channel models only)  (Does not work in RECORD mode)	Press once Press for 3 seconds	Displays all 16 cameras on the main monitor. Enables programming mode to select the order of 16 cameras to display on the main monitor.




**Table C. Operation Guide**

OPERATION	FRONT PANEL COMMAND	RESULT
Call a camera to the main monitor.	Press any CAMERA button.	Stops a sequence if one is in progress. Displays the camera on the main monitor.
Call a camera to the spot monitor.	Press any CAMERA button twice.	Displays the camera on the spot monitor.
Set main tracking	<ol style="list-style-type: none"> <li>1. Go to the Advanced System Setup menu.</li> <li>2. Press the arrow buttons so the cursor highlights SPOT MONITOR DISPLAY.</li> <li>3. Press the +/- button until TRACK MAIN is displayed.</li> <li>4. Exit the Advanced System Setup menu.</li> </ol>	Spot monitor follows the camera switching that occurs on the main monitor in single screen mode. In multi-screen mode, the spot monitor switches to camera 1.
Call a group of cameras. (Does not work in RECORD mode)	<ol style="list-style-type: none"> <li>1. Make sure the RECORD LED on the left of the front panel is OFF. If the light is on, press the DISPLAY/RECORD button to toggle the light OFF.</li> <li>2. Press the button below the 4, 9, or 16 icon.</li> <li>3. Repeat pressing the button until the correct group is displayed.</li> </ol>	Displays the group of cameras on the main monitor.
Display a picture-in picture (PIP) insert. (Does not work in RECORD or VCR modes)	<ol style="list-style-type: none"> <li>1. Press the button of the camera you want to display full size.</li> <li>2. Press the PIP icon button.</li> <li>3. Press the button of the camera you want to display in the insert.</li> <li>4. To change the display in the insert, press another camera button.</li> <li>5. To exit, press the PIP icon button.</li> </ol>	The full-size view appears on the main monitor with the PIP insert.
Run a sequence of cameras on the main monitor.	<ol style="list-style-type: none"> <li>1. To sequence individual cameras, make sure the monitor shows a full-screen view of any camera (all modes). To sequence groups of cameras, make sure the monitor shows a four- or nine-camera display (LIVE and VCR modes only).</li> <li>2. Press the SEQUENCE button.</li> </ol>	Starts the pre-programmed sequence of individual cameras or groups of cameras on the main monitor.
Run a sequence of cameras on the spot monitor.	Press the SEQUENCE button twice.	Starts the sequence of individual cameras on the spot monitor.
Sequence multiple cameras in one location of a 4-, 9-, or 16-camera display. (Does not work in RECORD mode)	<ol style="list-style-type: none"> <li>1. Select the desired multi-camera display.</li> <li>2. Press and hold the multi-camera display button to enter the multi-screen programming mode. A bar will appear in the first camera location.</li> <li>3. Use the arrow buttons to move the on-screen bar to the desired camera location for sequencing, and press the sequence button to initiate the sequencing of all active cameras.</li> </ol>	The sequence will run until the sequence button is pressed or until another camera or multi-screen display has been selected.

*(Continued on next page)*

**Table C.** Operation Guide (Continued)

OPERATION	FRONT PANEL COMMAND	RESULT
<p>Sequence PIP display.</p> <p>(Does not work in RECORD or VCR modes)</p>	<ol style="list-style-type: none"> <li>1. Push the  button.</li> <li>2. Push the SEQUENCE button.</li> </ol>	<p>Sequences all active cameras in the PIP display.</p>
<p>Stop a sequence.</p>	<p>Press the SEQUENCE button once or press any CAMERA button to stop a sequence on the main monitor. Press the SEQUENCE button twice to stop a sequence on the spot monitor.</p>	<p>Stops the sequence. The monitor displays video from the camera on which the sequence stops.</p>
<p>Zoom on a camera.</p> <p>(Does not work in RECORD mode)</p>	<ol style="list-style-type: none"> <li>1. Press the CAMERA button for the camera on which you want to zoom.</li> <li>2. Press the button below the ZOOM icon. The display will zoom to 2X magnification.</li> <li>3. Use the arrow buttons to control the zoom location.</li> <li>4. Press the zoom button a second time to increase the zoom to 4X.</li> <li>5. To exit, press the zoom button a third time.</li> </ol>	<p>Stops a sequence if one is in progress. Displays a 2X or 4X zoom of the camera selected on the main monitor.</p>
<p>Record a tape.</p>	<p>Recording is done automatically as long as a VCR is connected and both the multiplexer and VCR are in the RECORD mode. While the multiplexer is in the RECORD mode (RECORD LED is on), you can only see a full-screen view of one camera (or one camera at a time if sequencing) on the main monitor.</p>	<p>Records all cameras connected to the multiplexer.</p>
<p>Play a tape.</p>	<ol style="list-style-type: none"> <li>1. Make sure the RECORD LED on the left of the front panel is OFF. If the light is not off, press the DISPLAY/RECORD button until the monitor shows VCR mode.</li> <li>2. Turn on the VCR and press the PLAY button.</li> <li>3. Press the button of the camera you want to view, or press a button below the 4, 9, or 16 icons for multiple camera playback.</li> </ol>	<p>Displays the recorded cameras in the selected format on the main monitor.</p>
<p>Deactivate alarm(s) for camera displayed on the main monitor</p>	<ol style="list-style-type: none"> <li>1. For a single alarm, press the VIEW button once.</li> <li>2. For multiple alarms press the VIEW button once each time a camera with an alarm sequences to the main monitor.</li> </ol>	<p>Deactivates the alarm.</p> <p>Deactivates the alarms.</p>
<p>Deactivate alarm(s) for camera displayed on the spot monitor.</p>	<ol style="list-style-type: none"> <li>1. For a single alarm, press the VIEW button twice.</li> <li>2. For multiple alarms, press the VIEW button twice each time a camera with an alarm sequences to the spot monitor.</li> </ol>	<p>Deactivates the alarm.</p> <p>Deactivates the alarms.</p>
<p>Open or close a log of the last 20 alarms.</p>	<ol style="list-style-type: none"> <li>1. Press the VIEW button twice to display the alarm list.</li> <li>2. Press the VIEW button twice to clear the list and close the log.</li> <li>3. Press any CAMERA or the VIEW button once to close the log without clearing the alarm list.</li> </ol>	<p>Displays or removes alarm list on the main monitor.</p>

**Table C.** Operation Guide (Continued)

OPERATION	FRONT PANEL COMMAND	RESULT
Display and record alarms and/or activity detection.	Program alarms in the System Setup, Record Setup, Camera, and Advanced System Setup menus. Program activity detection in the System Setup, Camera, and Advanced System Setup menus. Multiplexer must be in the RECORD mode to record alarms or activity.	Main and spot monitors respond to programming instructions. If there are multiple alarms/activity detection, monitors will sequence cameras. Monitors will return to routine operation approximately 15 seconds after all activity detection has stopped or after alarms have timed out. In alarms/activity mode, any alarm will take precedence and override the camera being displayed.

## PROGRAMMING

*NOTE: Whenever a multiplexer server is installed, programming the multiplexer must be done at the multiplexer front panel. In this situation, the multiplexer cannot be programmed from the keyboard. The keyboard can only be used to program the multiplexer server, not the multiplexer.*

Programming allows you to configure the multiplexer for the way that you want your system to operate. The multiplexer automatically selects the most common operating parameters and can be operated without programming it. You should program the multiplexer if you want to use different settings.

Programming of system, camera, and VCR setup; camera sequencing; and alarm and activity detection are done through on-screen menus that are displayed on the main monitor. A password can be enabled to prevent unauthorized access to the menus.

Programming of the picture-in-picture, and 4-, 9-, and 16-camera displays can be done directly without going through menus.

## PASSWORD

You can program the multiplexer to request a password for access to programming menus. The password is enabled in the Advanced System Setup menu (refer to the *Advanced System Setup [View Button]* section).

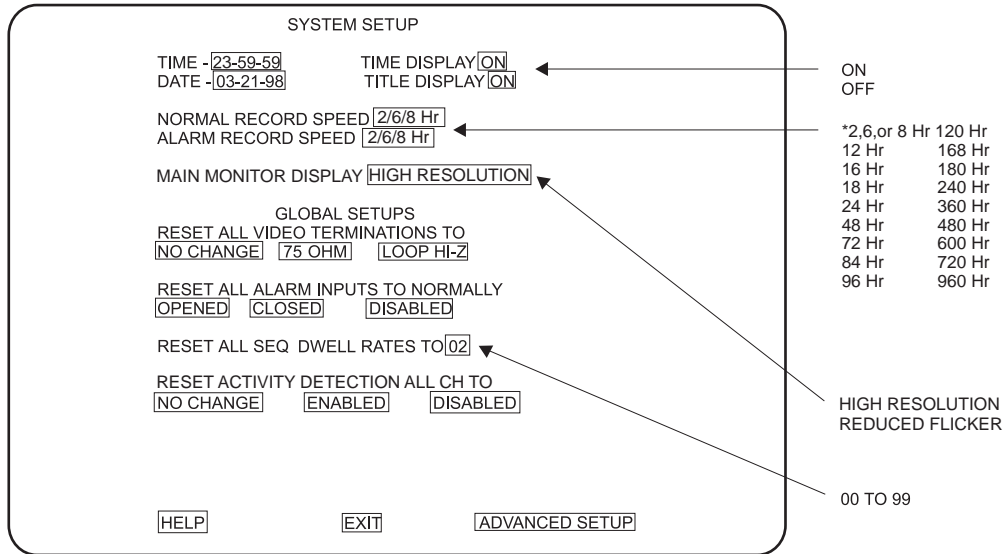
The universal password is 3916 and cannot be changed. This password must be entered by pressing the camera number keys whenever a password is requested.

## MENUS

### SYSTEM SETUP (VIEW BUTTON)

To program the main system parameters:

1. Press the VIEW button for approximately three seconds. Type the password, if requested. The System Setup menu appears.
2. The currently selected menu item blinks.
3. Use the arrow buttons to move between items on the screen.



\* 2/6/8 HR FOR NTSC/EIA MODEL MULTIPLEXERS, 3 HR FOR PAL/ CCIR MODELS.  
REMAINING RECORD SPEEDS DEPEND UPON VCR MODEL.

**Figure 11. Basic System Setup Menu**

*TIP: In any menu you can reverse the direction in which the options cycle by double-pressing the +/- button.*

*TIP: You can exit a menu by pressing the corresponding button for approximately three seconds as you did to enter the menu.*

*NOTE: Title Display shows a maximum of 12 characters in all modes except 16-camera display, in which only 9 characters are shown.*

4. When the menu item you desire is highlighted (blinking), do one of the following:

- If a menu item has more than one option, press the +/- button to cycle through the options to select the one you want.
- If a menu item has only one option, press the +/- button to select it.

**Time and Date**

Set the current time and date. The time uses a 24-hour clock.

**Time Display**

ON - Displays the time on the main monitor.  
OFF - The time is not shown on the main monitor.

**Title Display**

ON - Displays camera titles on the main monitor.  
OFF - Camera titles are not shown on the main monitor.

**Record Speeds**

Sets the speed at which the VCR normally records video and the speed at which it records when there is an alarm(s). Setting the speeds in the System Setup menu also sets the speeds in the Record Setup and Custom VCR Setup menus.

**Main Monitor Display**

The options are High Resolution or Reduced Flicker. Reduced Flicker can be selected when there is flickering on the monitor screen, such as from a neon light. This is more visible to the eye in PAL format multiplexers.

**Global Setups**

**Video Terminations**

These settings set the terminations for all video inputs. To set individual inputs, refer to the *Camera Setup* section.

Set to 75 OHM when all equipment is connected only to the video IN connectors.

Set to LOOP HI-Z when all equipment is connected to the video OUT (looping) connectors. Equipment connected to the looping connectors must be terminated at 75 ohms.

NO CHANGE - This is a pass-through selection in case you unintentionally hit the +/- button. This is not an undo button.

#### Alarm Inputs

Refer to the *Alarms* section for an explanation of normally closed and normally open operation.

#### Dwell Rates

Sets the sequence dwell rate for all cameras. To set individual dwell rates for cameras, refer to the *Sequence Setup* section.

#### Activity Detection

ENABLED/DISABLED - Turns activity detection on or off for all video inputs. To set individual inputs, refer to the *Camera Setup* section.

NO CHANGE - This is a pass-through selection in case you unintentionally hit the +/- button. This is not an undo button.

5. When you have completed all the changes you want to make, go to EXIT or ADVANCED SETUP.
6. Press the +/- button to exit the programming mode or to go to the advanced system setup menu.

When HELP is highlighted, you may press the +/- button to display a help screen that will tell you which buttons to press to configure specific options.

### ADVANCED SYSTEM SETUP (VIEW BUTTON)

To program the advanced main system parameters:

1. Press the VIEW button for approximately three seconds. The basic System Setup menu appears.
2. The currently selected menu item blinks. Use the arrow buttons to highlight ADVANCED SETUP.
3. Press the +/- button.
4. The Advanced System Setup menu appears.
5. Use the arrow buttons to move between items on the screen.
6. When the menu item you desire is highlighted (blinking), press the +/- button to cycle through the options.

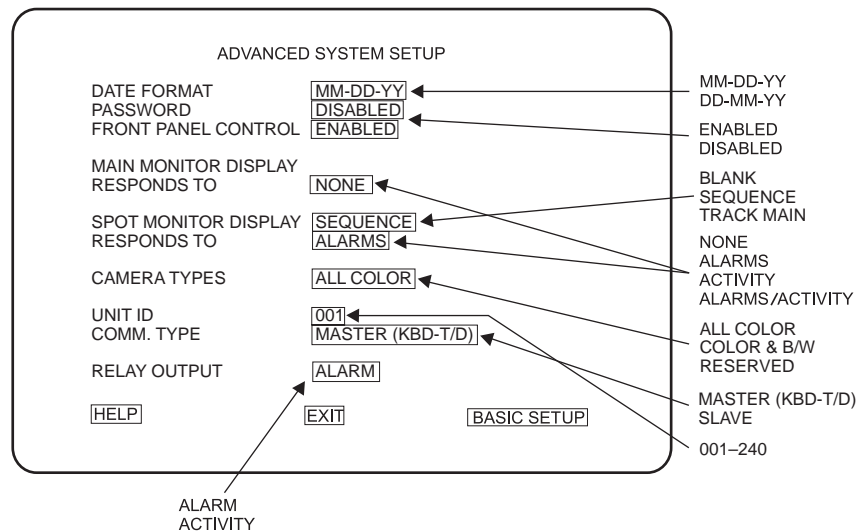


Figure 12. Advanced System Setup Menu

#### Date Format

Sets the format for displaying the date on the main monitor.

#### Password

Enables or disables password control to access programming menus.

#### Front Panel Control

Enables or disables the front panel buttons to operate the multiplexer. In either mode you can access programming menus.

#### Main Monitor Display

Select ALARMS, ACTIVITY, or ALARMS/ACTIVITY if you want the main monitor to switch to cameras that have alarms or activity detection. If you are using the main monitor for normal video and you do not want alarms or activity detection to override what you are observing, select NONE.

#### Spot Monitor Display

If you want the spot monitor to switch to cameras that have alarms or activity detection, select BLANK, SEQUENCE, or TRACK MAIN, then under RESPONDS TO select ALARMS, ACTIVITY, or ALARMS/ACTIVITY. If you are using the spot monitor for normal video and you do not want alarms or activity detection to override what you are observing, select NONE.

BLANK - Allows you to view an individual camera, but you cannot run a sequence. An alarm or activity detection will override the camera you are viewing. When the alarm or activity detection goes away, the screen will return to the camera you were viewing.

SEQUENCE - Allows you to view an individual camera or run a sequence. An alarm or activity detection will override what you are observing. When the alarm or activity detection goes away, the screen will return to the camera or sequence you were viewing.

TRACK MAIN - The spot monitor will follow the camera switching that occurs on the main monitor. This feature is used only when a KBD4000 keyboard is connected to the multiplexer for controlling moveable cameras.

#### Camera Types

The COLOR & B/W setting allows the multiplexer to adapt to the combination of both color and monochrome video signals. The switching speed of the multiplexer is not as fast when it has to change formats between monochrome and color cameras. For monochrome models, you will not receive color from a color camera except in RECORD mode. The RESERVED setting can improve performance when using cameras with non-standard sync or poor video quality.

#### Unit ID

This is the address of the multiplexer. If your system has more than one multiplexer, each multiplexer must have its own address.

#### Comm. Type

If your system has an MX4000SVR Genex™ Multiplexer Server and/or a KBD4000 Genex™ Multiplexer Keyboard, one multiplexer (any one) must be the master. Only one multiplexer can be the master. All other multiplexers must be slaves. The master multiplexer communicates between the server and the slave multiplexers. If there is only one multiplexer connected to a server, it must be the master. The KBD4000 keyboard communicates with the multiplexer only when the multiplexer is in its default setting of MASTER (KBD-T/D).

#### Relay Output

Operates the relay on the back of the multiplexer. The relay is used to change the VCR to its alarm recording speed (refer to the *Alarms* section).

7. When you have completed all the changes you want to make, go to EXIT or BASIC SETUP.
8. Press the +/- button to exit the programming mode or to go to the basic system setup menu.

When HELP is highlighted, you may press the +/- button to display a help screen that will tell you which buttons to press to configure specific options.

*NOTE: Remember, one multiplexer must be the master. The default setting is Master (KBD-T/D).*

*NOTE: In the alarms mode, an alarm signal is produced when a remote switch opens or closes a ground in the multiplexer; for example, if a switch is on a door and the door is opened (refer to the Alarms section). In the activity mode, the multiplexer continually monitors selected camera inputs for motion. When motion is detected, the multiplexer increases the frequency with which that camera(s) is shown and recorded. Activity detection is most effective when only a few cameras are showing activity (refer to the Camera Setup section).*

## RECORD SETUP (DISPLAY/RECORD BUTTON)

To program the VCR recording parameters:

1. Press the DISPLAY/RECORD button for approximately three seconds. Type the password, if requested. The Record Setup menu appears.
2. The currently selected menu item blinks.
3. Use the arrow buttons to move between items on the screen.
4. When the menu item you desire is highlighted (blinking), press the +/- button to cycle through the options to select the one you want.

### Record Speeds

Sets the speed at which the VCR normally records video and the speed at which it records when there is an alarm(s). Setting the speeds in the Record Setup menu also sets the speeds in the System Setup and Custom VCR Setup menus.

### VCR Type

See Table D. If your VCR is not listed among the options, do either of the following:

- Select UNIVERSAL. In the recording speed menu item at the top of the screen, select an option that your VCR will support.
- Select CUSTOM. Then go to CONFIGURE CUSTOM VCR and press the +/- button to go to the Custom VCR Setup menu. The switch interval can be changed only while in this setting.

### VCR Video Format

Composite is standard video on a coaxial cable. SVHS is higher resolution video on a special cable. This feature is not available on monochrome units.

### VCR Switch Pulse

ENABLED means the multiplexer waits for a head switching pulse from the VCR. If the multiplexer does not get a pulse from the VCR (because of a broken wire or the VCR does not give a pulse in some modes), it may appear that the multiplexer is not working properly.

DISABLED means the VCR head switching pulse is not used.

### Alarm Handling

Determines how alarms are recorded and for how long.

AS A PRIORITY updates and records camera(s) with an alarm more often than camera(s) without an alarm.

ONLY records only camera(s) with an alarm.

### Configure Custom VCR

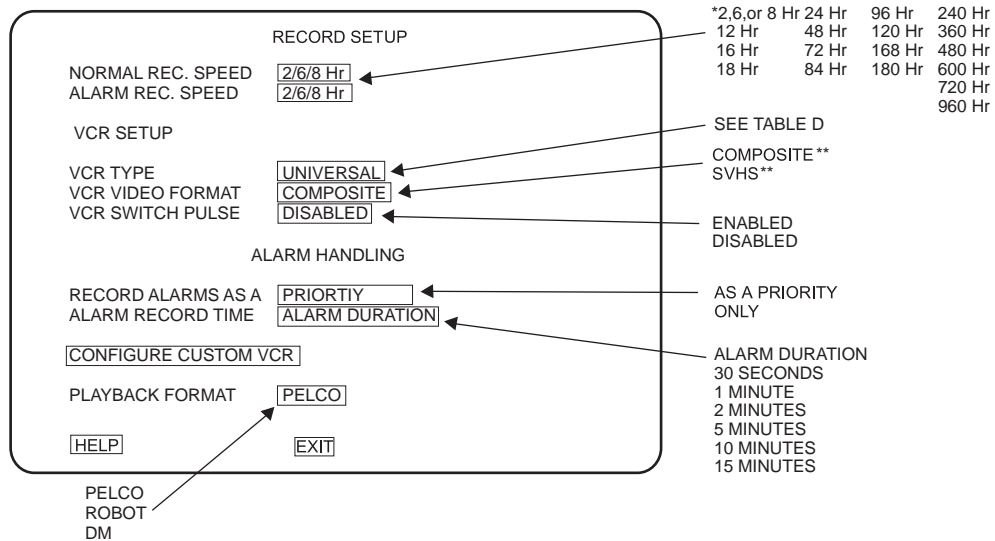
Press the +/- button to get to the CUSTOM VCR SETUP menu.

### Playback Format

Tapes made using Pelco, Robot, and DM multiplexers can be played.

5. When you have completed all the changes you want to make, go to EXIT.
6. Press the +/- button to exit the programming mode.

When HELP is highlighted, you may press the +/- button to display a help screen that will tell you which buttons to press to configure specific options.



\* 2/6/8 HR FOR NTSC/EIA MODEL MULTIPLEXERS, 3 HOUR FOR PAL/CCIR MODELS.  
REMAINING RECORD SPEEDS DEPEND UPON VCR MODEL.  
\*\* NOT SHOWN ON MONOCHROME MODELS.

Figure 13. Basic VCR Settings Menu

Table D. VCR Types

NTSC	PAL
UNIVERSAL	UNIVERSAL
GYR TLC1800	ASUTSA TLVCR 251
GYR 2100	ASUTSA TLVCR 964
GYR 2100 HD MODE	BURLE TC3910X
JVC SR-L900U	HITACHI VTL30E
JVC SR-L901U	HITACHI VT-L1000E
JVC SR-9070U	HITACHI VT-L2000E
JVC BR-S925U	JVC BR9060E
mitsubishi HS7424U	JVC BR-S920/925
mitsubishi HS7496U	JVC SR-L900E
mitsubishi HS5168U	MITS. HS5300/5600
MITS. HS7168U NORM	MITS. HS5424E
MITS. HS7168U HD	PANAS. AG6024/6124
PANASONIC AG-RT600	PANASONIC AG6720
PANASONIC AG6124	PANASONIC AG6730
PANASONIC AG6730	PANASONIC AG6040
PELCO TLR2024	SANYO TLS900P
PELCO TLR2096	SANYO TLS1000
PELCO TLR2168 NORM	SANYO SRT-500P
PELCO TLR2168 HD	SANYO TLS2000
SANYO SRT600	SONY SVT100P
SANYO TLS924/972	SONY SVT5000P
SANYO TLS2500/7000	CUSTOM
TOSHIBA KV6300	
TOSHIBA KV7024A	
TOSHIBA KV7168A	
TOSHIBA KV7960A	
TOSHIBA KV8168A	
CUSTOM	



*NOTE: For proper recording, the switching rate of the multiplexer must match that of the VCR. If they do not match, the VCR may skip frames or record duplicate frames.*

## CUSTOM VCR SETUP (DISPLAY/RECORD BUTTON)

To program the advanced VCR parameters:

1. Press the DISPLAY/RECORD button for approximately three seconds. The Record Setup menu appears.
2. Make sure the VCR Type in the Record Setup menu is set to CUSTOM.
3. The currently selected menu item blinks. Use the arrow buttons to highlight CONFIGURE CUSTOM VCR.
4. Press the +/- button.
5. The Custom VCR Setup menu appears.
6. Use the arrow buttons to move between items on the screen.
7. When the menu item you desire is highlighted (blinking), press the +/- button to cycle through the options.

### Record Speeds

Sets the speed at which the VCR normally records video and the speed at which it records when there is an alarm(s).

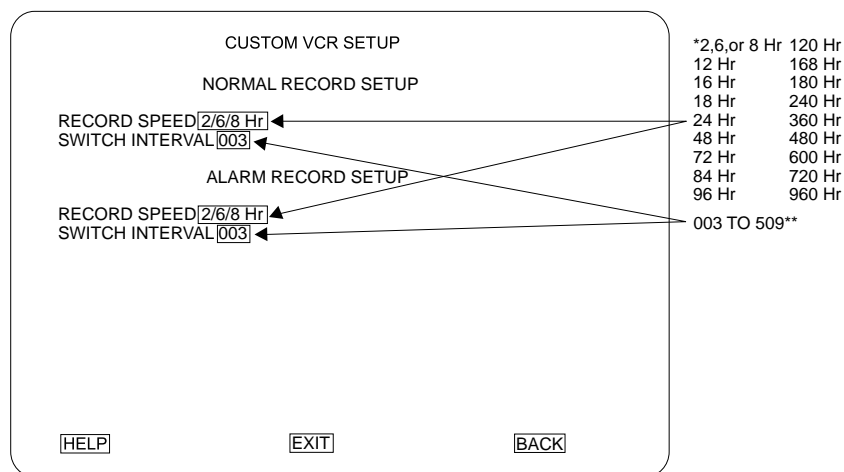
Setting the speeds in the Custom VCR Setup menu also sets the speeds in the System Setup and Record Setup menus.

### Interval

Interval is the number of fields recorded by the VCR before switching to the next camera.

8. When you have completed all the changes you want to make, go to EXIT or BACK.
9. Press the +/- button to exit the programming mode or to return to the Record Setup menu.

When HELP is highlighted, you may press the +/- button to display a help screen that will tell you which buttons to press to configure specific options.



\* 2/6/8 HR FOR NTSC/EIA MODEL MULTIPLEXERS, 3 HR FOR PAL/CCIR MODELS. REMAINING RECORD SPEEDS DEPEND UPON VCR MODEL.  
 \*\* VCR TYPE IN RECORD SETUP MENU MUST BE SET TO CUSTOM IN ORDER TO MAKE SELECTIONS.

**Figure 14.** Custom VCR Setup Menu

## CAMERA SETUP (CAMERA BUTTONS)

To program a camera input:

1. Press the desired CAMERA button for approximately three seconds. Type the password, if requested. The Camera menu appears. A video insert appears that shows what the camera is viewing. This is useful to make sure you have selected the correct camera and to see what effect there is on the video when you select a menu option.
2. The currently selected menu item blinks.
3. Use the arrow buttons to move between items on the screen.
4. When the menu item you desire is highlighted (blinking), press the +/- button to cycle through the options to select the one you want. Use the right arrow button to advance to the next character position when titling a camera.

### Video Termination

Set to 75 OHM when equipment is connected only to the video IN connector.

Set to LOOP HI-Z when equipment is connected to the video OUT (looping) connector. Equipment connected to the looping connector must be terminated at 75 ohms.

### Alarm Input

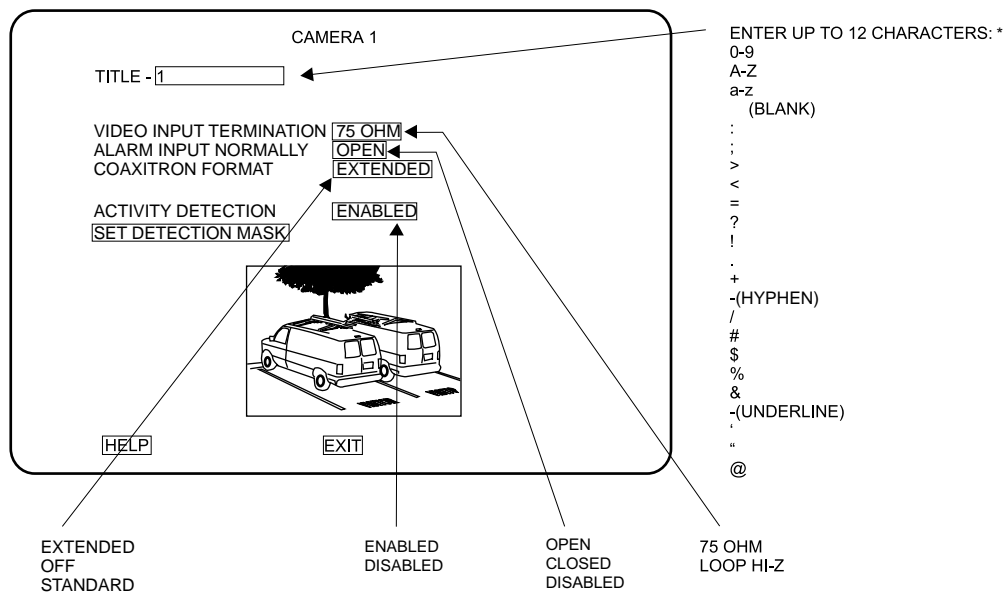
Refer to the *Alarms* section for an explanation of normally closed and normally open operation.

### Coaxitron® Format

EXTENDED - Use when your system has moveable cameras controlled by 32-bit Coaxitron® receivers, such as Esprit™, Intercept®, Spectra®, and LRD41C21/LRD41C22 Series.

OFF - Use when your system has fixed cameras only.

STANDARD - Use when your system has moveable cameras controlled by 15-bit Coaxitron® receivers, such as the CX9000 Series, the PT7700, and the ED25/27/28/29.



\* ONLY NINE CHARACTERS APPEAR WHEN IN THE 16-CAMERA DISPLAY.

**Figure 15.** Basic Camera Menu

### Activity Detection

A camera can be set to respond or not to respond to motion. If enabled, select SET DETECTION MASK to define what part of the camera's viewing field will be monitored for motion.

5. To program another camera, press the button for that camera. Repeat steps 2-4.
6. When you have completed all the changes you want to make, go to EXIT.
7. Press the +/- button to exit the programming mode.

When HELP is highlighted, you may press the +/- button to display a help screen that will tell you which buttons to press to configure specific options.

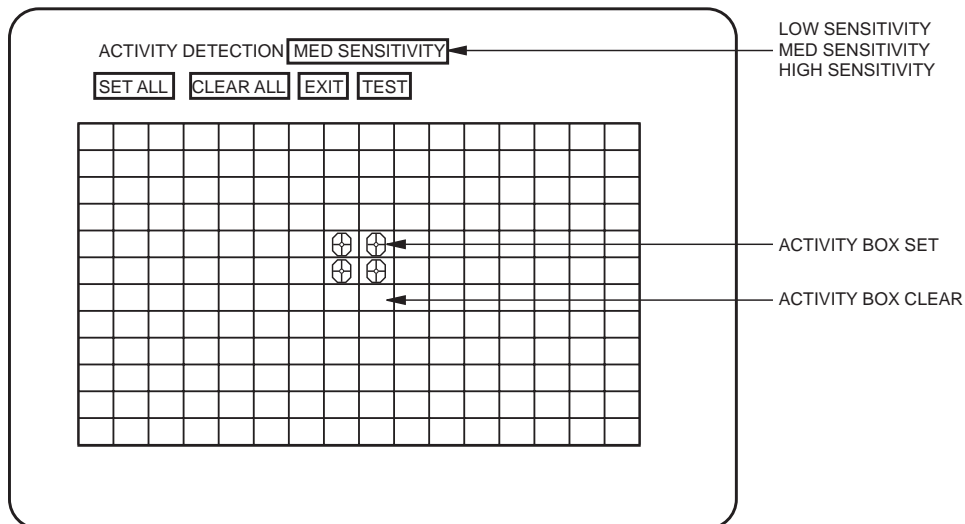
### ACTIVITY MASK SETUP

Activity detection continually monitors selected camera inputs for motion. When motion is detected, the multiplexer increases the frequency with which that camera(s) is shown and recorded. Activity detection is most effective when only a few cameras are showing activity. As the number of cameras with activity increases, the slower the frequency at which they can be shown and recorded. If all 16 cameras show activity, there will be virtually no increase.

The activity mask selects that portion or portions of the camera's field of view that the multiplexer will monitor for motion. The entire grid is active on default.

To program an activity mask for a camera:

1. Press the desired CAMERA button for approximately three seconds. The Camera menu appears.
2. The currently selected menu item blinks. Use the arrow buttons to highlight SET DETECTION MASK.
3. Press the +/- button. The Activity Mask appears.
4. The currently selected menu item or activity box blinks.
5. Use the arrow buttons to move between menu items and activity boxes on the screen.
6. Highlight the sensitivity menu item. Press the +/- button to select the sensitivity. The higher the sensitivity is, the less the amount of motion that will be needed to detect activity.



**Figure 16.** Activity Detection Mask

7. Turn activity boxes on or off.

To turn on all activity boxes, use the arrow buttons to choose SET ALL. Press the +/- button. All boxes will contain a symbol as shown in Figure 16. The multiplexer will monitor motion in those boxes.

To turn off all activity boxes, use the arrow keys to choose CLEAR ALL. Press the +/- button. All boxes will be blank.

To turn on or off an individual box, use the arrow keys to select the box. Press +/- button to toggle a box on or off.

Turn off activity boxes where you want motion ignored, such as blowing trees, highways, computer monitors, fluorescent lighting, and non-problem areas. An example of a non-problem area would be a camera focused on a bank vault entrance but ignoring tellers working nearby.

8. To test the activity detection, highlight TEST and press the +/- button.

Create motion in front of the camera. Small black and white dashes will flash where motion is detected.

To exit the test mode, press the +/- key to return to the mask.

9. If you did not like what you saw in the test mode, change the mask and test the activity detection again.
10. When you finish defining the activity mask, go to EXIT. Press the +/- button to exit the programming mode.
11. If necessary, repeat steps 1-10 to program the activity mask for other cameras.

## SEQUENCE SETUP (SEQUENCE BUTTON)

Sequencing can be programmed in full screen, four-camera and nine-camera displays. The cameras will not sequence when operating the zoom function. The LED(s) above the camera button(s) will illuminate to indicate which camera(s) is being displayed.

To program camera sequencing:

1. Press the SEQUENCE button for approximately three seconds. Type the password, if requested. The Sequence menu appears.
2. The currently selected menu item blinks.
3. Use the arrow buttons to move between items on the screen.
4. When the menu item you desire is highlighted (blinking), press the +/- button to cycle through the options to select the one you want.
5. When you have completed all the changes you want to make, go to EXIT.
6. Press the +/- button to exit the programming mode.

When HELP is highlighted, you may press the +/- button to display a help screen that will tell you which buttons to press to configure specific options.

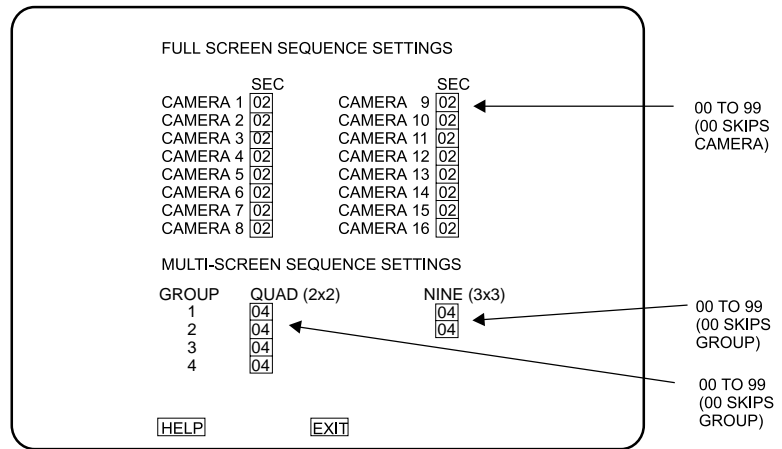


Figure 17. Camera Sequence Menu

## HELP MENU

The Help menu is accessed from any other menu.

1. Use the up and down arrow buttons in any menu to highlight HELP.
2. Press the +/- button. The Help menu appears.

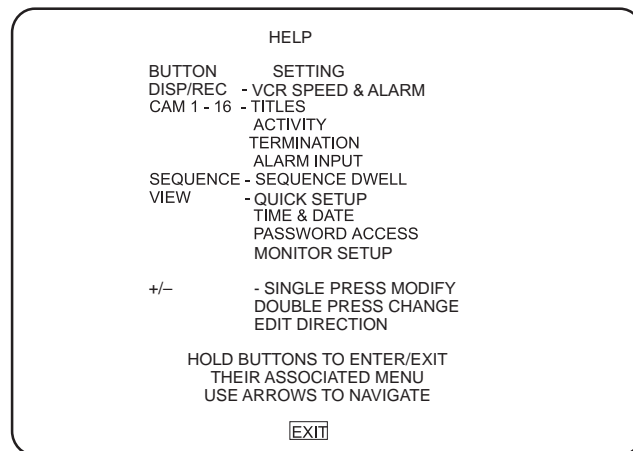


Figure 18. Help Menu



## MULTIPLE CAMERA DISPLAY SETUP

The multiple camera display formats may be configured using the front panel controls. The LEDs above the camera buttons will illuminate to indicate which cameras are being displayed.

### PROGRAMMING THE PICTURE-IN-PICTURE DISPLAY ( BUTTON)


The on-screen location and size of the picture-in-picture (PIP) display are programmable. PIP is not available in VCR or RECORD modes.

To program the PIP display:




1. Press the  button.
2. Press the  button (for approximately three seconds) until the message PROGRAM PIP SIZE appears.
3. Use the arrow buttons to increase or decrease the PIP display size.
4. Press the +/- button. The message PROGRAM PIP POSITION appears.
5. Use the arrow buttons to move the PIP display location.
6. Press the +/- button to exit the PIP programming menu.

*NOTE: All active cameras may be sequenced in one location of a 4-, 9-, or 16-camera display mode. While in a multiple-camera display mode, use the arrow buttons to move the on-screen bar to the camera location for sequencing. Press the sequence button to initiate sequencing of all active cameras. Refer to the Operation Guide table also.*


### PROGRAMMING THE 4-CAMERA DISPLAYS ( BUTTON)

You can program four groups of four cameras each. Each of the four groups can be programmed to include any four cameras.  is not available in RECORD mode.




To program the four-camera displays:

1. Press the  button to call up a four-camera display. If necessary, press the  button again to advance to the four-camera group that you wish to configure.
2. Press the  button for approximately three seconds. A bar will appear in the first camera location of the four-camera display, indicating that you are in the programming mode.
3. Use the arrow buttons to move to each camera location in the four-camera display.
4. When the camera location that you desire is highlighted, choose the new camera by pressing the camera button for the desired camera.
5. To exit the programming mode, press any arrow button as many times as necessary until the bar moves off the screen.
6. If necessary, repeat steps 1-5 to program another group.


### PROGRAMMING THE 9-CAMERA DISPLAYS ( BUTTON)

You can program two groups of nine cameras each. Both groups can be programmed to include any nine cameras.  is not available in RECORD mode.



To program the nine-camera displays:

1. Press the  button to call up a nine-camera display. If necessary, press the  button again to advance to the other nine-camera group.
2. Press the  button for approximately three seconds. A bar will appear in the first camera location of the nine-camera display, indicating that you are in the programming mode.
3. Use the arrow buttons to move to each camera location in the nine-camera display.
4. When the camera location that you desire is highlighted, choose the new camera by pressing the camera button for the desired camera.
5. To exit the programming mode, press any arrow button as many times as necessary until the bar moves off the screen.
6. If necessary, repeat steps 1-5 to program the second group.

### PROGRAMMING THE 16-CAMERA DISPLAY ( BUTTON)

 is not available in RECORD mode.

To program the 16-camera display:

1. Press the  button to call up the 16-camera display.
2. Press the  button for approximately three seconds. A bar will appear in the first camera location of the 16-camera display, indicating that you are in the programming mode.
3. Use the arrow buttons to move to each camera location in the 16-camera display.
4. When the camera location that you desire is highlighted, choose the new camera by pressing the camera button for the desired camera.
5. To exit the programming mode, press any arrow button as many times as necessary until the bar moves off the screen.

PROGRAMMING MENU DEFAULTS

**Table E.** Programming Menu Defaults

Menu	Item	Default
System Setup	Time Display Title Display Normal Record Speed  Alarm Record Speed  Main Monitor Display Reset All Video Terminations To Reset All Alarm Inputs To Normally Reset All Seq Dwell Rates To Reset Activity Detection All Ch To	On On 2/6/8 Hr (NTSC/EIA) 3 Hr (PAL/CCIR) 2/6/8 Hr (NTSC/EIA) 3 Hr (PAL/CCIR) High Resolution 75 Ohm Opened 02 Enabled
Advanced System Setup	Date Format  Password System Password Front Panel Control Main Monitor Display Responds To Spot Monitor Display Responds To Camera Types Unit ID Comm. Type Relay Output	MM-DD-YY (NTSC/EIA) DD-MM-YY (PAL/CCIR) Disabled 3916 Enabled None Sequence Alarms All Color 001 Master (KBD-T/D) Alarm
Record Setup	Normal Rec. Speed  Alarm Rec. Speed  VCR Type VCR Video Format VCR Switch Pulse Record Alarms Alarm Record Time Playback Format	2/6/8 Hr (NTSC/EIA) 3 Hr (PAL/CCIR) 2/6/8 Hr (NTSC/EIA) 3 Hr (PAL/CCIR) Universal Composite Disabled As A Priority Alarm Duration Pelco
Custom VCR Setup	Normal Record Speed  Normal Switch Interval Alarm Record Speed  Alarm Switch Speed	2/6/8 Hr (NTSC/EIA) 3 Hr (PAL/CCIR) 003 2/6/8 Hr (NTSC/EIA) 3 Hr (PAL/CCIR) 003
Camera	Title Video Input Termination Alarm Input Normally Coaxitron Format Activity Detection	Camera Number 75 Ohm Open Extended Enabled
Activity Detection	Sensitivity Activity Boxes	Med Set All
Sequence	Individual Camera Dwell Time Quad (2x2) Dwell Time Nine (3x3) Dwell Time	02 04 04

## TROUBLESHOOTING

If you have difficulty operating your system, run through the following checklist to see if you can solve the problem.

1. Are the keyboard switches set properly?
2. Is the equipment wired properly?
3. Are the menu options in the multiplexer(s) and server set properly?
4. Has the multiplexer been set to the correct mode using the DISPLAY/RECORD button?
5. The main monitor will display multiple screen images. The spot monitor displays full screen views only.
6. SPOT MONITOR must be selected to operate presets, patterns, and auxiliaries.
7. Tape playback can be done only on the main monitor while in the VCR mode.
8. Moveable cameras must be Coaxitron® compatible and the proper Coaxitron® format selected in the Camera menu of the multiplexer. If the proper format is not selected, the camera will either not move or have sluggish control.
9. Moveable cameras can be operated with the joystick only if the spot monitor is programmed to track the main monitor or SPOT MONITOR is chosen. The camera will move on the main monitor if the same camera is being shown on both the main and spot monitors.
10. The position of switch 7 on the keyboard determines how you call cameras.

If the switch is ON, all cameras are addressed consecutively. Do not count just the cameras installed. Count 16 camera inputs per multiplexer, even if a multiplexer has only 9 inputs. The first input of multiplexer 1 is always camera 1, the first input of multiplexer 2 is always camera 17, the second input of multiplexer 3 is always camera 34.

If the switch is OFF, cameras are addressed in groups of 9 or 16 according to the address of the multiplexer. Select a multiplexer (for example, number 3), then choose a camera (1-9 or 1-16).

11. If you have one multiplexer, it must be the master. If you have more than one multiplexer, one of them (any one) must be the master and all the others slaves (Advanced System Setup menu of multiplexer).
12. If you have more than one multiplexer, they must have different addresses (Advanced System Setup menu of multiplexer).
13. If you have a server, the address of the multiplexer must correspond to the input it is connected to on the server. For example, if the multiplexer goes to input 4 on the server, the multiplexer must be address 4.
14. If you have a server, each keyboard must have its own address.
15. If you have a server, each keyboard controls its corresponding monitor(s). In the SINGLE mode, keyboard 1 controls monitor 1, keyboard 2 controls monitor 2, etc. In the PAIRED mode, keyboard 1 controls monitor 1 (main) and monitor 2 (spot), and keyboard 3 controls monitor 3 (main) and monitor 4 (spot). In the paired mode, keyboards 2 and 4 are not used.
16. If you have a server and cannot change between full screen and multiple screen views on the main monitor, check the MAIN MONITOR CONTROL setting in the Monitor menu of the server.
17. Adjust head tracking control on the VCR until the picture stabilizes if:
  - a. the picture appears jittery when multiplexer is in VCR playback mode, or
  - b. one camera view sequences out of order when the multiplexer is in multi-screen VCR playback mode.



## RESET

To reset the multiplexer:

1. Unplug the power cord.
2. Press and hold the VIEW button on the front panel of the multiplexer while you plug the power cord into an electrical outlet. When the Initialization Menu appears, release the VIEW button. The monitor will indicate PLEASE WAIT and begin a 20-second countdown. When the countdown has been completed, the Initialization Menu will disappear, all programming menus will be at their default settings, and the multiplexer will be ready for use.
3. Reprogram the multiplexer. Refer to the *Programming* section.

## SPECIFICATIONS

### VIDEO

Input Level:	1 Vp-p, composite
NTSC:	525 lines, 60 fields/second
PAL:	625 lines, 50 fields/second
Digital Image:	768(H) x 512(V) pixels full screen, 1536 bytes horizontal memory, 26 MB display image memory, 8-bit luminance, 256 shades of gray 8-bit chrominance, over 16 million colors
Format:	CCIR 601 4:2:2
Sampling Rate:	13.5 MHz
Geometric Error:	Less than 1 percent, all modes
Resizing:	Multi-element horizontal and vertical finite impulse response

### Analog Processing

Bandwidth:	20 MHz
Differential Phase:	Less than 2 degrees
Differential Gain:	Less than 2 percent

Character Generator: Programmable, bit mapped

### ELECTRICAL

Operating Voltage:	120 VAC (+15/-30%), 50/60 Hz or 230 VAC (+15/-30%, 50/60 Hz)
Power:	Less than 25 watts
Video Inputs:	Nine or sixteen BNC, looping with programmable termination, 75 ohms or Hi-Z
Monitor Outputs:	Two
Main:	BNC, 75 ohms
Spot:	BNC, 75 ohms
VCR Inputs:	One
VCR In:	BNC, composite, 75 ohms 4-pin mini-DIN, YC input (SVHS)
VCR Outputs:	One
VCR Out:	BNC, composite, 75 ohms 4-pin mini-DIN, YC input (SVHS)
Alarm Inputs:	Sixteen individually programmable for NO or NC
Alarm Output:	One Form-C relay, 0.5 A continuous, 1.0 A momentary

### GENERAL

Operating					
Temperature:	32° to 122°F (0° to 50°C)				
Relative Humidity:	90% (non-condensing)				
Construction:	Aluminum				
Finish:	Black				
Dimensions:	1.75" H x 17.2" W x 12.2" D (4.45 cm x 43.69 cm x 30.99 cm)				
Weight:	<table><tr><td><u>Unit</u></td><td><u>Shipping</u></td></tr><tr><td>10.6 lb (4.80 kg)</td><td>14 lb (6.35 kg)</td></tr></table>	<u>Unit</u>	<u>Shipping</u>	10.6 lb (4.80 kg)	14 lb (6.35 kg)
<u>Unit</u>	<u>Shipping</u>				
10.6 lb (4.80 kg)	14 lb (6.35 kg)				

*(Design and product specifications subject to change without notice.)*

## REGULATORY NOTICES

Note: This equipment has been tested and found to comply with the limits of a Class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

## WARRANTY AND RETURN INFORMATION

### WARRANTY

Pelco will repair or replace, without charge, any merchandise proved defective in material or workmanship for a period of one year after the date of shipment. Exceptions to this warranty are as noted below:

- Three years on Genex™ Series (multiplexers, server, and keyboard).
- Two years on all standard motorized and fixed focal length lenses.
- Two years on Esprit™, Legacy®, Intercept®, PV1000 Series, CM6700/CM8500/CM9500/CM9750/CM9760 Matrix, Spectra®, DF5 Series and DF8 Fixed Dome products.
- Two years on WW5700 series window wiper (excluding wiper blades).
- Two years on cameras.
- Six months on all pan and tilts, scanners or preset lenses used in continuous motion applications (that is, preset scan, tour and auto scan modes).

Pelco will warrant all replacement parts and repairs for 90 days from the date of Pelco shipment. All goods requiring warranty repair shall be sent freight prepaid to Pelco, Clovis, California. Repairs made necessary by reason of misuse, alteration, normal wear, or accident are not covered under this warranty.

Pelco assumes no risk and shall be subject to no liability for damages or loss resulting from the specific use or application made of the Products. Pelco's liability for any claim, whether based on breach of contract, negligence, infringement of any rights of any party or product liability, relating to the Products shall not exceed the price paid by the Dealer to Pelco for such Products. In no event will Pelco be liable for any special, incidental or consequential damages (including loss of use, loss of profit and claims of third parties) however caused, whether by the negligence of Pelco or otherwise.

The above warranty provides the Dealer with specific legal rights. The Dealer may also have additional rights, which are subject to variation from state to state.

If a warranty repair is required, the Dealer must contact Pelco at (800) 289-9100 or (559) 292-1981 to obtain a Repair Authorization number (RA), and provide the following information:

1. Model and serial number
2. Date of shipment, P.O. number, Sales Order number, or Pelco invoice number
3. Details of the defect or problem

If there is a dispute regarding the warranty of a product which does not fall under the warranty conditions stated above, please include a written explanation with the product when returned.

Ship freight prepaid to: Pelco  
300 West Pontiac Way  
Clovis, CA 93612-5699

Method of return shipment shall be the same or equal to the method by which the item was received by Pelco.

### RETURNS

In order to expedite parts returned to the factory for repair or credit, please call the factory at (800) 289-9100 or (559) 292-1981 to obtain an authorization number (CA number if returned for credit, and RA number if returned for repair). Goods returned for repair or credit should be clearly identified with the assigned CA/RA number and freight should be prepaid. All merchandise returned for credit may be subject to a 20% restocking and refurbishing charge.

Ship freight prepaid to: Pelco  
300 West Pontiac Way  
Clovis, CA 93612-5699

## REVISION HISTORY

Manual #	Date	Comments
C1927M	3/99	Preliminary version released for beta evaluation.
	5/99	Original version.

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