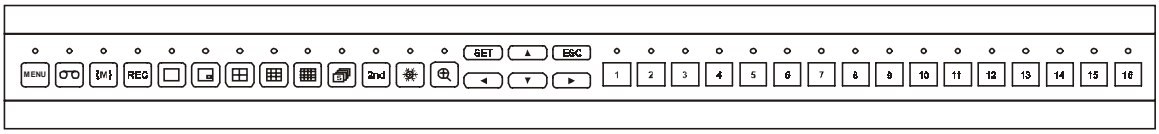
16-Channel
Color Multiplexer

Installation and Operating Instructions



GV-CMP 163R

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LIMITATION OF LIABILITY

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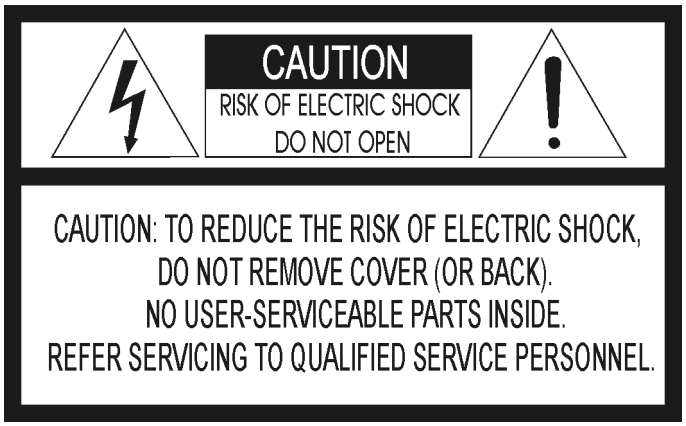
WARNINGS AND CAUTIONS

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE. DO NOT INSERT ANY METALLIC OBJECTS THROUGH THE VENTILATION GRILLS OR OTHER OPENINGS ON THE EQUIPMENT.

CAUTION



EXPLANATION OF GRAPHICAL SYMBOLS

The lightning flash with 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 the presence of important operating and maintenance (servicing) instruction in the literature accompanying the product.

FCC COMPLIANCE STATEMENT

FCC INFORMATION : THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR 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.

CAUTION : CHANGES OR MODIFICATIONS NOT EXPRESSLY APPROVED BY THE PARTY RESPONSIBLE FOR COMPLIANCE COULD VOID THE USER'S AUTHORITY TO OPERATE THE EQUIPMENT.

THIS CLASS A DIGITAL APPARATUS COMPLIES WITH CANADIAN ICES-003.

CET APPAREIL NUMÉRIQUE DE LA CLASSE A EST CONFORME À LA NORME NMB-003 DU CANADA.

CE COMPLIANCE STATEMENT

WARNING
This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

IMPORTANT SAFEGUARDS

1. **READ AND RETAIN INSTRUCTIONS**
   Read the instruction manual before operating the equipment. Retain the manual for future reference.

2. **CLEANING**
   Turn the unit off and unplug from the power outlet before cleaning. Use a damp cloth for cleaning. Do not use harsh cleansers or aerosol cleaners.

3. **ATTACHMENTS**
   Do not use attachments unless recommended by manufactured as they may affect the functionality of the unit and result in the risk of fire, electric shock or injury.

4. **MOISTURE**
   Do not use equipment near water or other liquids.

5. **ACCESSORIES**
   Equipment should be installed in a safe, stable location. Any wall or shelf mounting accessory equipment should be installed using the manufacture's instructions. Care should be used when moving heavy equipment. Quick stops, excessive force, and uneven surfaces may cause the equipment to fall causing serious injury to persons and objects.

6. **VENTILATION**
   Openings in the equipment, if any, are provided for ventilation to ensure reliable operation of the unit and to protect if from overheating. These openings must not be blocked or covered

7. **POWER SOURCES**
   The equipment 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 supplied at the installation location, contact your dealer. For equipment designed to operate from battery power, refer to the operating instructions.

8. **GROUNDING OR POLARIZATION**
   Equipment that is powered through a polarized plug (a plug with one blade wider than the other) 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. Do not defeat the safety purpose of the polarized plug.

   Alternate Warning: If the equipment is powered through a three-way grounding-type plug, a plug having a third (grounding) pin, the plug will only fit into a grounding-type power outlet. This is a safety feature. Do not defeat the safety purpose of the grounding-type plug. If your outlet does not have the grounding plug receptacle, contact your local electrician.

9. **CORD AND CABLE PROTECTION**
   Route power cords and cables in a manner to protect them from damage by being walked on or pinched by items places upon or against them.

10. **LIGHTNING**
    For protection of the equipment during a lightning storm or when it is left unattended and unused for long periods of time, unplug the unit from the wall outlet. Disconnect any antennas or cable systems that may be connected to the equipment. This will prevent damage to the equipment due to lightning or power-line surges.

11. **OVERLOADING**
    Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.

12. **SERVICING**
    Do not attempt to service the video monitor or equipment yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

13. **DAMAGE REQUIRING SERVICE**
    Unplug the equipment from the wall outlet and refer servicing to qualified service personnel under the following conditions:

    A. When the power supply cord or the plug has been damaged.
    B. If liquid has spilled or objects have fallen into the unit.
    C. If the equipment has been exposed to water or other liquids.
    D. If the equipment does not operate normally by following the operating instructions, adjust only those controls that are covered by the operating instructions. Improper adjustment of other controls may result in damage to the unit.
    E. If the equipment has been dropped or the casing damaged.
    F. When the equipment exhibits a distinct change in performance.

14. **REPLACEMENT PARTS**
    When replacement parts are required, be sure the service technician uses replacement parts specified by the manufacturer or that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.

15. **SAFETY CHECK**
    Upon completion of any service or repairs to the equipment, ask the service technician to perform safety checks to verify that the equipment is in proper operating condition.

16. **FIELD INSTALLATION**
    The installation of equipment should be made by a qualified service person and should conform to all local codes.

TABLE OF CONTENTS

CHAPTER 1
INTRODUCTION

Features

- Compatible with standard color cameras and other video sources
- Able to decode tapes from many other brands of multiplexers
- Multiple user-selectable formats for displaying camera images.
- Multiple monitor outputs (1 Main, 1 Auxiliary) allow simultaneous multi-camera and full-screen viewing.
- On-screen display includes date, time, alarm status, video loss, camera number, and 24-character camera titles.
- Programmable day and night motion-detection schedules.
- Each camera has a programmable 256-target (16 x 16) motion-detection grid.
- Nonvolatile program memory saves all user settings and protects them against power outages.
- One TTL/CMOS contact closure alarm for each camera.
- Alarm input polarity is user selectable.
- VCR switch pulse input for synchronization with VCRs having switch pulse feature.
- Full triplex operation allows simultaneous recording, playback, and live viewing.
- 256-event alarm history log.
- Linear zoom IN and OUT up to 32 times.

Technical Overview

The Triplex Multiplexers feature motion detection and multi-lingual setup menus.

The multiplexer contain BNC input and output for VCR connection. The main monitor connect to a composite BNC output. This BNC auxiliary output to be used for “spot” monitor or as sources of video for other devices.

The multiplexer has a large selection of user selectable display formats. It also has digital zooming up to 32 times the original scene.

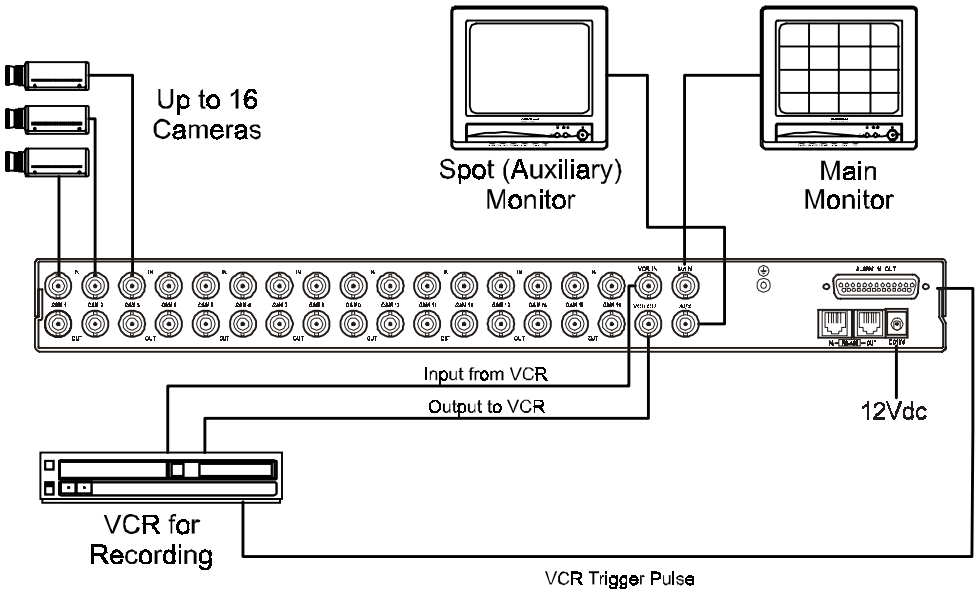
A multi-lingual menu allows for easy setup. The user’s configuration is stored in nonvolatile memory to protect against loss of settings during power outages.

The multiplexer plays back video tapes recorded with many other multiplexers. These include but are not limited to: Dedicated Micros, Robot, Kalatel, and Pelco. Multiplexers can be “daisy chained” and addressed and controlled by a single control panel. The multiplexer can also be addressed by a computer using either an RS-232 or RS-485 connection.

CHAPTER 2
INSTALLATION

System Configuration

The Triplex Multiplexer is only one part of a complete system that controls cameras, monitors, recording devices, alarm equipment, and other accessory items. The following figure illustrates the connections feeding off a 16-channel multiplexer for a complete security system solution.



Camera Connections

The multiplexer support 16 camera inputs depending on the model. Cameras attach directly to the BNC IN connectors. BNC OUT connections provide loop-out capability with an auto-terminating feature for looping video to another device without additional termination.

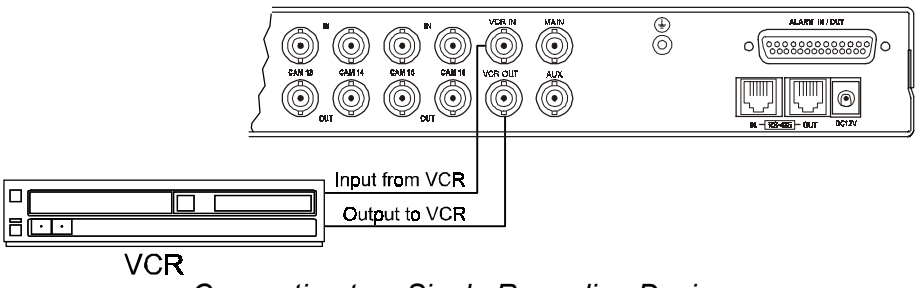
NOTE: Connecting a cable to the loop-through connector switches off the termination. Do not connect a cable to the BNC OUT connection unless it is connected to the input of another video device.

Adding Monitors

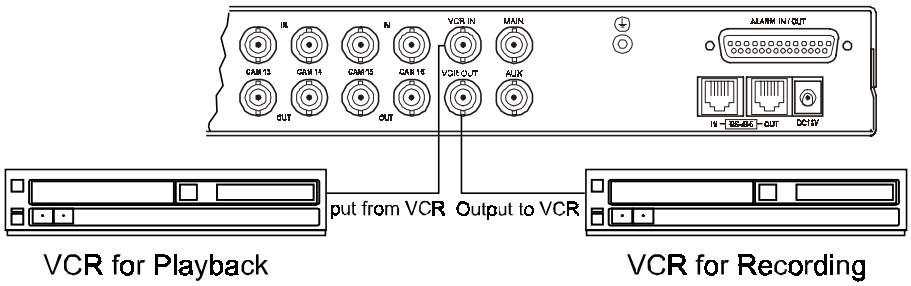
The MAIN BNC output connections are for the primary monitors used with the system. Up to one auxiliary monitor can be connected to the multiplexer for use as spot monitors or to view live video while playing recorded video on the main monitor. The auxiliary monitor connect to the AUX BNC connector.

Connecting Recording Devices

The multiplexer have BNC connection for use with a recording device such as a VCR or DVR (Digital Video Recorder). The figures below show examples of one VCR connected to the multiplexer for use in both recording and playback, and two VCRs being used to allow simultaneous recording and viewing of video.



Connection to a Single Recording Device



Using multiple Recording Devices

Daisy–Chaining Equipment

The multiplexer can be daisy-chained to other multiplexers.

Accessing the TOP and BOTTOM Menus

The multiplexers use On-Screen Display (OSD) menus. Navigation through the menus is possible through the front panel buttons or through a remote control device.

There are two main menus: Top and Bottom. The Top Menu is accessed by moving the cursor to the top edge of the screen. The Bottom Menu is accessed by moving the cursor to the bottom edge of the screen.

Top Menu

Live	Playback	Preview	Setup	Cancel

The Top Menu has five options:

Live Selecting Live returns the unit to the last Live mode screen format displayed.

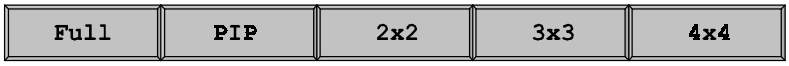
Playback The Playback option returns the unit to the last screen format accessed in the Playback mode.

Preview Selecting the Preview options displays a preview of recorded video.

Setup The Setup option provides access to the Setup menu. This feature is password protected. The options in the Setup menu are described in detail in the following section.

Cancel The Cancel button exits the Top Menu without any changes.

Bottom Menu



The Bottom Menu is only available in the Live Mode. The options available depend on the model of the multiplexer. The menu shown above lists all the options available on the 16-channel model.

Full Switches to a full screen view of a single camera

PIP Switches to the Picture-In-Picture (PIP) display

2x2 Switches to a four camera display on the screen

3x3 Switches to a nine camera display on the screen

4x4 Switches to a sixteen camera display on the screen

Live

The Live option on the Top Menu returns the display to the last live mode screen format when selected.

Playback

The Playback option on the Top Menu returns the display to the last screen format accessed in the Playback mode.

Preview

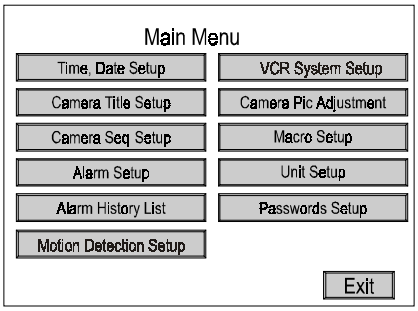
The Preview option displays a preview of recorded images from the VCR.

Setup Menu

To access the Setup Menu move the cursor to the top of the screen. On the Top Menu Bar select the Setup option using the ACCEPT button.

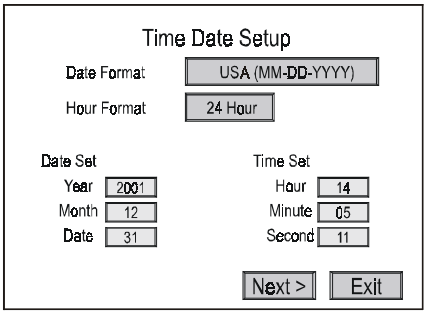
Note: If Password Protect is ON, see the Password Setup section on page 17 for more details.

Upon selecting the Setup option on the Top Menu, the Main Menu screen appears. Access to submenus to change camera, alarm, playback, recording, and password appear on this screen.



Time Date Setup

The Time Date Setup screen is used to format the multiplexer's time and date settings and to setup the daylight savings time option. The NEXT option at the bottom of the screen leads to the Daylight Savings Time setup screen. The EXIT option saves the settings and exits the Time & Date Setup screen.



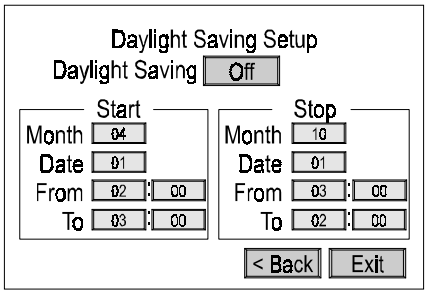
Date Format: There are three date options to choose from where MM = month, DD = day, and YYYY = year.

USA	MM-DD-YYYY
EURO	DD-MM-YYYY
ASIA	YYYY-MM-DD

Hour Format: The hour format options are: "24 Hour" for military time, or "AM/PM" for clock time.

Date Set: Use the arrow buttons on the front panel to move the cursor position for the year, month, and date. The SET button decreases the number. The ESC button increases the number.

Time Set: Use the arrow buttons on the front panel to move the cursor for the hour, minutes, and seconds. The SET button decreases the number. The ESC button increases the number.



Daylight Savings: If you are in an area that does not have Daylight Savings Time, set this option to OFF. When you set this to ON, you must set the start and stop dates and times.

Start: Set the month and day (date) for the beginning of daylight savings time in your area.

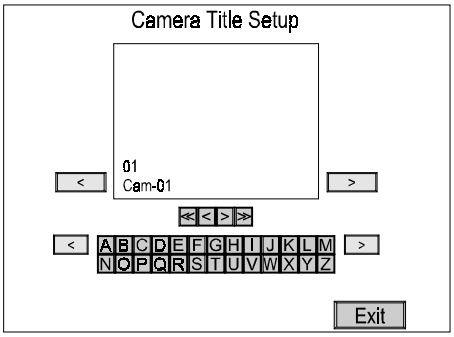
Stop: Set the month and day (date) for the ending of daylight savings time in your area.

The BACK option at the bottom of the screen reverts back to the Time & Date Setup screen. The EXIT option saves the settings and exits the Daylight Saving Setup screen.

Camera Title Setup

The Camera Title Setup screen allows the user to enter a title for each camera. The maximum length of the title is 24 characters, including spaces.

To set the camera title, select the desired camera so the image appears in the display window. The < and > buttons to the left and right of the display window are used to move the cursor position when using the mouse. The SET button on the front of the unit is also used to move the cursor position.



Underneath the display window the <<, <, >, and >> arrow buttons are used to select the camera. The << and >> options move to the beginning and end of the list of available

cameras, respectively. The < and > options move one position back or forward in the list respectively.

Below the display window buttons are two rows of characters. There are a total of six character sets that can be displayed. To move to the next or previous character set, move the cursor to the < and > button options on the left and right sides of the character set, then press the SET button. The character set options are as follows:

Set 1: A to Z (upper case letters)

Set 2: a to z (lower case letters)

Set 3: Blank ! " # $ % & ' ( ) * + , - . / 0 1 2 3 4 5 6 7 8 9

Set 4: : ; , = . ? [\ ] ^ _ ' { | } ~

Set 5: À Á Â Ä Ç È É Ê Ë Ì Î Ï Ñ Ò Ó Ô Ö Ù Ú Û Ü ß à á â

Set 6: ä ç è é ê ë ì í î ï ñ ò ó ô ö ù ú û ü

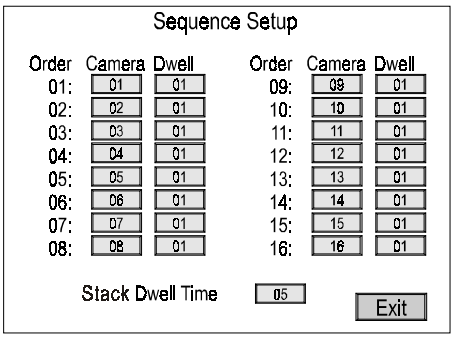
The Exit option at the bottom of the Camera Title Setup screen saves the changes and returns to the main Setup menu.

Camera Sequence Setup

The Camera Sequence Setup screen allows the user to set the order in which the cameras appear when the multiplexer is in the sequence mode. It is also used to set the dwell time of the display from OFF to 99 seconds.

To change the camera or dwell setting, use the arrow keys on the front panel to move the cursor to the option to be changed. Use the SET button to decrease and the ESC button to increase the number selection.

The Stack Dwell Time is the length of time each group of cameras will display. Use the Exit button to save the settings and return to the main Setup menu.

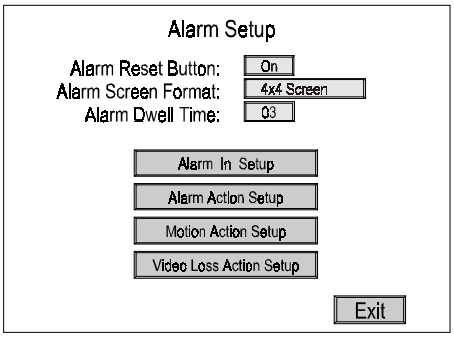


Alarm Setup

When the Alarm Reset Button is set to ON, alarm events can be cleared using the front panel buttons or the Pop Up menu. When set to OFF, the only way to clear the alarm is to enter the Setup Menu.

The Alarm Screen Format option sets the display mode that the multiplexer defaults to when an alarm occurs. The options are: Full, 4x4 Screen, and Unchanged.

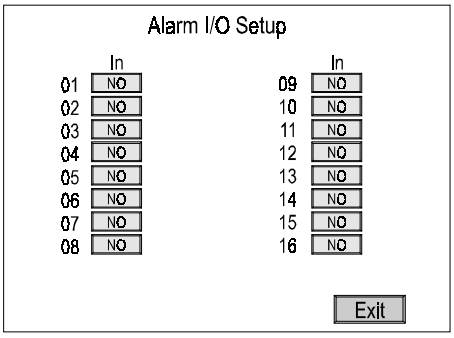
The Alarm Dwell Time can be set from 1 to 99 seconds. The screen will automatically sequence in a multi-alarm condition.



The Alarm setup screen has four sub-menu screens to setup alarm actions. These are described in the following pages.

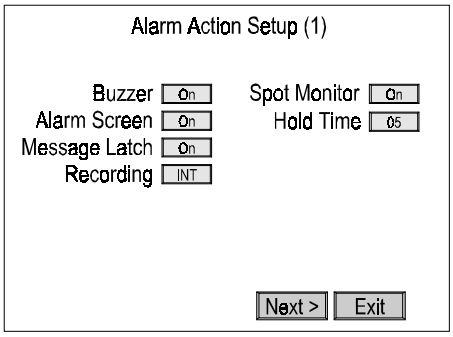
Alarm In Setup

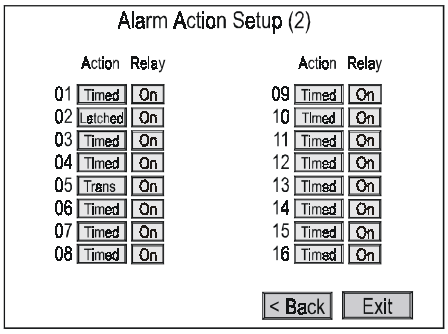
The Alarm In setting options are NO (Normally Open), NC (Normally Closed), or OFF. The Exit option saves the changes and returns to the Alarm Setup menu.



Alarm Action Setup

There are two screens for the Alarm Action Setup as shown below. The Next and Back buttons toggle between the two screens. The Exit button saves the settings and returns to the main Alarm Setup menu.





Buzzer: When set to ON, the multiplexer's internal buzzer sounds upon an alarm condition.

Alarm Screen: When set to ON, the screen display changes to the one defined in the Alarm Screen Format menu during an alarm condition.

Message Latch: When set to ON, an "A" displays on the screen when an alarm conditions occurs. It remains on the screen until it is cleared.

Recording: This allows the user to select how video will be recorded during an alarm condition. INT interleaves images from the camera with an alarm every other field, thereby providing more images from the camera. When there are multiple alarms, the cameras with alarms are interleaved. The ONLY option records images from only the camera with an alarm condition. UNC leaves the recording parameters unchanged.

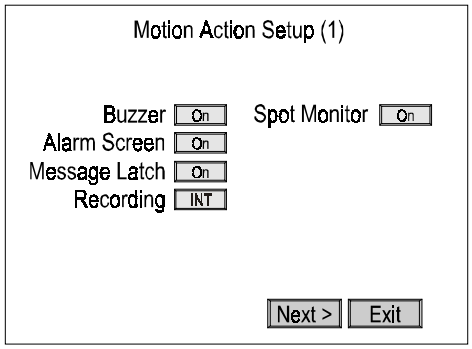
Spot Monitor : When set to ON, the Spot Monitor display the camera with an alarm condition. When there are multiple alarms, cameras with alarms display sequentially. When set to OFF, the Spot Monitor display do not change during an alarm condition.

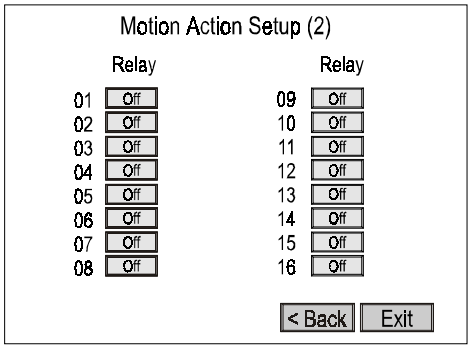
Hold Time: The Hold Time setting allows the user to set the alarm actions to last from 1 to 99 seconds. Hold Time is applicable only if the alarm action is set to Timed OUT.

Action: The action options are Timed, Latched, and Trans. When Timed is selected, the alarm "times out" at the designated hold time unless the user clears it earlier. The Latched setting means the alarm remains active until the operator acknowledges it. The Trans (transparent) setting means the alarms are not latched and cannot be cleared by the user.

Motion Action Setup

There are two screens for the Motion Action Setup as shown below. The Next and Back buttons toggle between the two screens. The Exit button saves the settings and returns to the main Alarm Setup menu.





Buzzer: When set to ON, the multiplexer's internal buzzer sounds upon a motion alarm condition.

Alarm Screen: When set to ON, the screen display changes to the one defined in the Alarm Screen Format menu during a motion alarm condition.

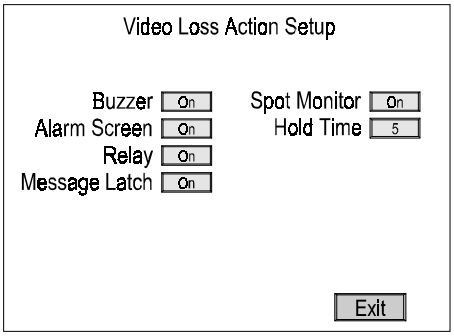
Message Latch: When set to ON, an "M" displays on the screen when a motion alarm condition occurs. It remains on the screen until it is cleared.

Recording: This allows the user to select how video will be recorded during a motion alarm condition. INT interleaves images from the camera with an alarm every other field, thereby providing more images from the camera. When there are multiple alarms, the cameras with alarms are interleaved. The ONLY option records images from only the camera with an alarm condition. UNC leaves the recording parameters unchanged.

Spot Monitor : When set to ON, the Spot Monitor display the camera with a motion alarm condition. When there are multiple alarms, cameras with alarms will display sequentially. When set to OFF, the Spot Monitor display do not change during a motion alarm condition.

Video Loss Action Setup

The Video Loss Action Setup screen allows the user to set up the action the multiplexer takes when there is a video loss condition.



Buzzer: When set to ON, the multiplexer's internal buzzer sounds upon a video loss condition.

Alarm Screen: When set to ON, the screen display changes to the one defined in the Alarm Screen Format menu during a video loss condition.

Message Latch: When set to ON, a "V" displays on the screen when a video loss condition occurs. It remains on the screen until it is cleared.

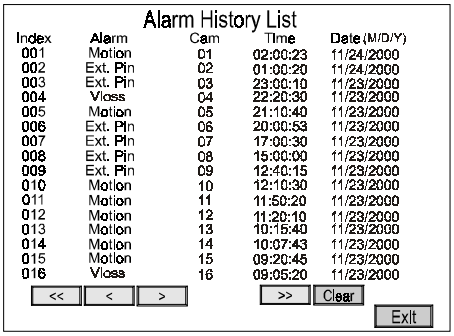
Spot Monitor : When set to ON, the Spot Monitor display the camera with a video loss condition. When there are multiple alarms, cameras with alarms will display sequentially. When set to OFF, the Spot Monitor display do not change during a video loss condition.

Hold Time: The Hold Time setting allows the user to set the alarm actions to last from 1 to 99 seconds.

Alarm History List

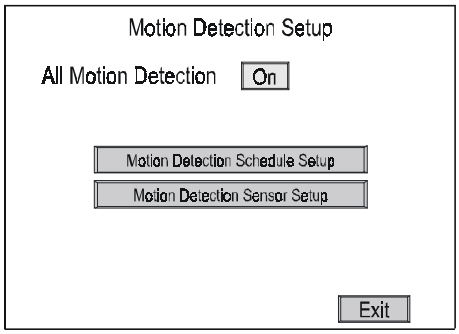
The Alarm History List displays historical alarm information for up to 256 events. The arrow options moves the screen display forward or backwards within the list. The << and >> options move the screen to the beginning or end of the list, respectively. The < and > options move the screen backward or forward one page, respectively.

The Clear option erases the information from the list. A confirmation screen appears when this option is selected, allowing you the option of changing your mind before the information is deleted.



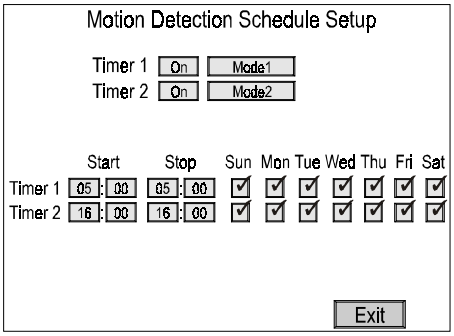
Motion Detection Setup

The Motion Detection Setup menu is used to set the motion detection feature ON or OFF. Two additional submenu's provide further setting options scheduling and sensor options. The All Motion Detection option is a global switch that turns the motion detection function ON or OFF for all cameras.



Motion Detection Schedule Setup

The multiplexer can be set to detect or ignore motion based on a schedule. This feature allows the motion detection to ignore certain cameras with high activity during normal business hours yet detect generate an alarm condition when the office is closed and activity needs to be monitored.



Timer 1 / Timer 2: Each timer can be set to ON or OFF, and Mode 1 or Mode 2. The Mode settings are described in the Motion Detection Sensor Setup section directly following this Schedule Setup section.

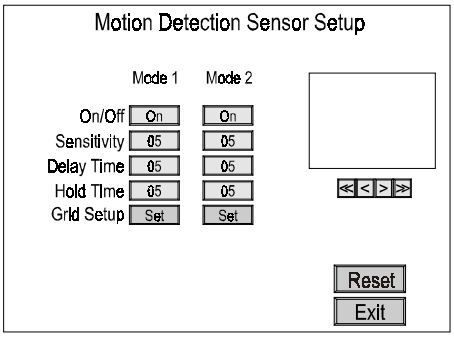
Start / Stop: The Start and Stop times fore each timer using the 24-hr time format.

Days: The timers can be turned ON or OFF for each day of the week. A check mark (√) activates the day. A circle (O) removes the option from the schedule.

Motion Detection Sensor Setup

Each camera can be set to two different modes of motion detection. The parameter sets for each Mode are shown on the following Motion Detection Sensor Setup screen.

A small window in the upper right portion of the screen displays the camera view. The < and > options move the camera displayed in the window back or forward by one. The << and >> options move the camera scene to the first or last in the sequence.



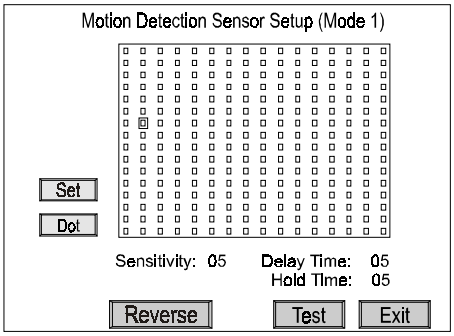
On / Off: This turns the motion detection option for the selected mode either ON or OFF.

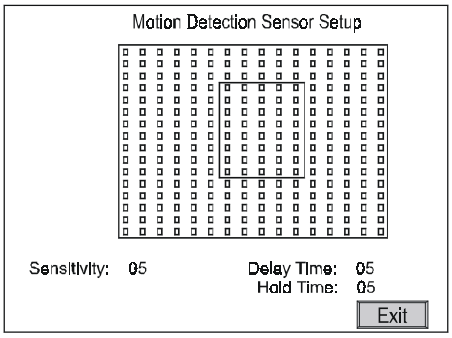
Sensitivity: The Sensitivity option determines the luminance change that must occur in the target area before the multiplexer reads the change as motion. The lowest sensitivity number is 01. The highest sensitivity number is 16.

Delay Time*:* The Delay Time is used to make adjustments for scenes that have sudden changes such as lights and shadows created by headlights or nearby traffic. The delay can be set from 0 to 5 seconds.

Hold Time: The Hold Time can be set from 1 to 99 seconds.

Grid Setup: The Grid Setup option brings up the Motion Detection Sensor Setup screen shown below on the left.





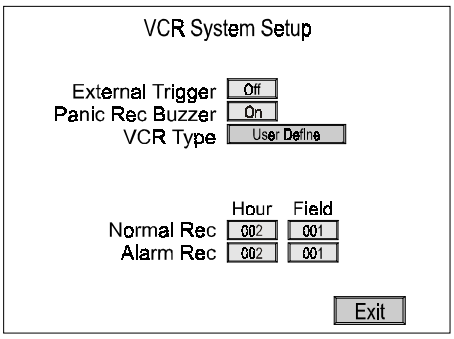
- **Set:** Highlights the grid area.
- **Dot / Line / All:** Determines how many targets will be turned ON or OFF. DOT = single target, LINE = row of targets, ALL = all of the targets.
- **Reverse:** Sets all targets to the reverse side.
- **Test:** When selected, it brings up the test screen shown on the previous page (to the right of the Motion Detection Sensor Setup screen).

The Test screen shows when the multiplexer detects motion by drawing a box around the active area. This provides instant feedback on whether the settings are acceptable for the application.

Reset: The Reset option returns all settings to the motion detection sensor setup defaults.

VCR System Setup

The VCR System Setup screen provides optional settings when connecting a VCR with the multiplexer.



External Trigger: Set to OFF when not using the VCR synchronizing trigger pulse. When using the VCR's synchronizing trigger pulse, set to match the VCR's signal by selecting + for positive edge sensing and – for negative edge sensing.

Panic Rec Buzzer: When set to ON, a buzzer sounds every 20 seconds. Setting this option to OFF disables the buzzer.

VCR Type: Selecting this brings up a list of VCRs. Select the VCR you are using from the list. If it is not listed select the User Define option. The VCR model numbers available to choose from are listed below.

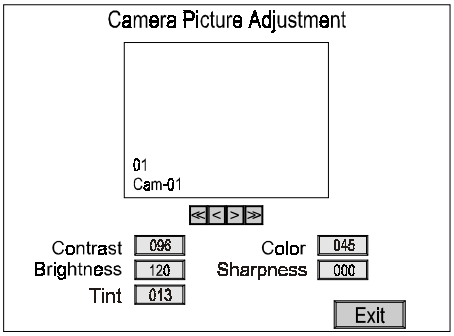
AVR30	SRT7168	RT24A	KV9096A
AVR30A	AGRT600A	LTC392461	SVT168E
AVR960	AGTL500	LTC396361	SVT40E
AVR960SR	AG6540	KV7024A	SVT168
TLS9072	AGRT650	KV7168A	TLC2100
SRT7072	AG6740	KV9168A	TLC2100HD

Normal Record / Alarm Record: If a VCR is selected from the list, the user must set the Hour for the Normal and Alarm Record options. If User Define is selected, both the Hour and the Field options must be set. The setting for the Hour ranges from 001 to 960 (1hr to 960 hrs). For Field, the setting ranges from 001 to 480.

Although you can set Normal and Alarm hours the same, you usually want higher quality video in an alarm situation. For example, you might set Normal to 24-hour time-lapse (024) and Alarm to 2-hr mode (002).

Camera Picture Adjustment

The Camera Picture Adjustment screen is used to individually adjust the Contrast, Brightness, Tint, Color, and Sharpness of each of the cameras. It is recommended that no adjustments be made using this option until the actual cameras and monitors have been adjusted.



The center window displays the camera view selected for adjustment. To move backward or forward one camera position, use the < and > options under the center display window. To move to the beginning or end of the camera list, use the << and >> options.

Contrast: The contrast adjustment range is –100 to +153.

Brightness: The brightness adjustment range is –127 to +126.

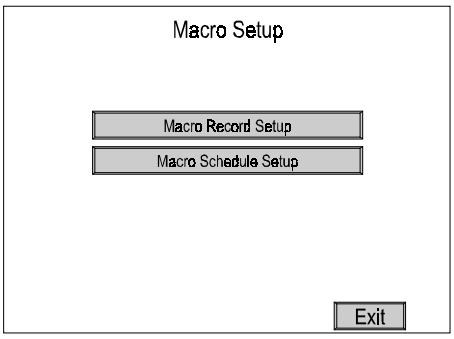
Tint: The tint adjustment range is –127 to +126. (Not available for PAL operation.)

Color: The color adjustment range is –103 to +114.

Sharpness: The sharpness setting ranges from Nominal to 5.

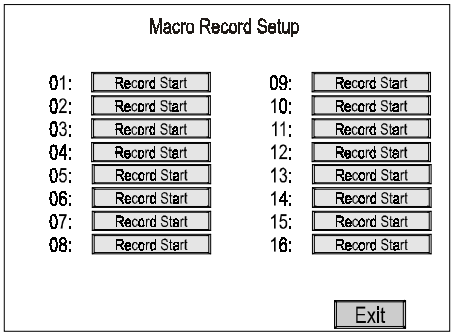
Macro Setup

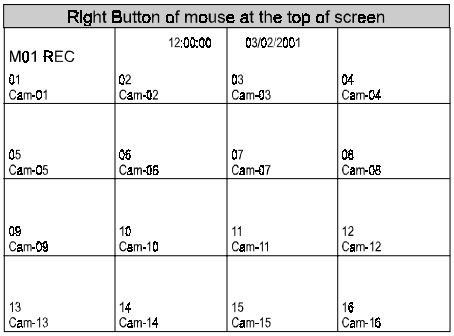
The Macro Setup screen is used to access the recording and scheduling capabilities of the multiplexer.



Macro Record Setup

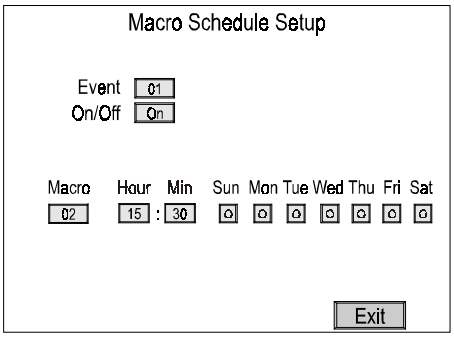
The multiplexer can record up to 16 macros on the 16-channel multiplexer. Selecting any of the Record Start buttons brings up a live screen where actions taken on the front panel buttons will be recorded as a macro. The password protection operations are excluded from this feature.





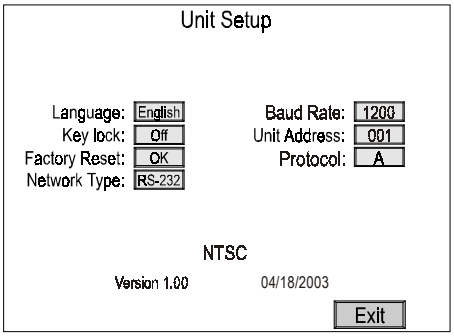
Macro Schedule Setup

The Macro Schedule feature allows the user to schedule up to 20 events that use a recorded macro. Select the Event option (01 through 20) and set the ON/OFF option to ON to activate it. Select the Macro number (01 through 16) to correspond to the event, then set the hour, minute, and day(s) of the week the event is to occur. A check mark (√) indicates the day has been selected (enabled).



Unit Setup

The Unit Setup screen provides options for changing the basic settings on the multiplexer such as language, key lock, and resetting the unit to the factory default settings.



Language: The language options for the multiplexer are English, French, Italian, German and Spanish.

Key Lock: To prevent unauthorized use of the front panel keys, set this option to ON. When the keys are locked a password is required to access the unit. Pressing any button or clicking the mouse will bring up the password screen. Enter the Admin User password to unlock the keys.

Factory Reset: Selecting the Factory Reset option returns all user defined settings to the factory default setting. A confirmation screen appears when selecting this option to verify the request for a factory reset. See Appendix C for the factory default settings.

Network Type: The multiplexer can be set to RS-232, RS-485 when connected to a network.

Baud Rate: When connected to a network, the baud rate can be set to 1200, 2400, 4800, 9600, or 19200.

Unit Address: Networked multiplexers can be assigned addresses from 001 to 255.

Protocol : A is multiplexer protocol.

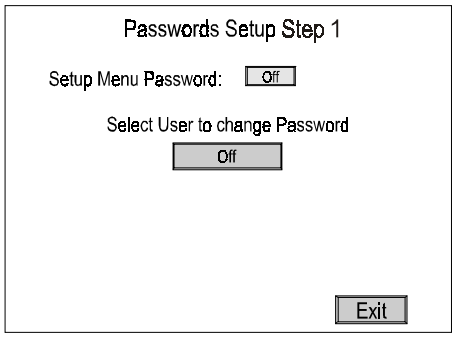
B1 is dome camera control protocol.

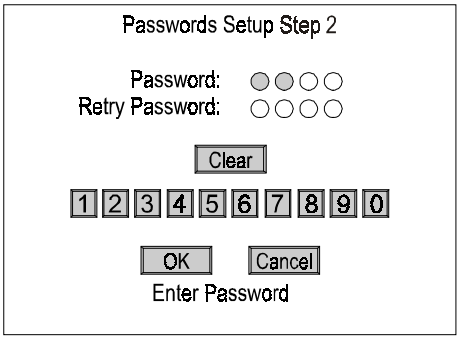
Password Setup

The Password Setup screen allows the user to assign PIN codes to the supervisor. Keep a copy of the supervisor password in a safe place. Once you have changed the supervisor password from the default setting, you will not be able to access protected areas without it.

An supervisor password is required to access the Setup Menu. After changing the passwords, keep it in a safe place. The new passwords will be the only way to access certain features of the multiplexer once you have changed from the factory default passwords.

NOTE: The factory default passwords are listed in the Technical Specifications section at the back of this manual.



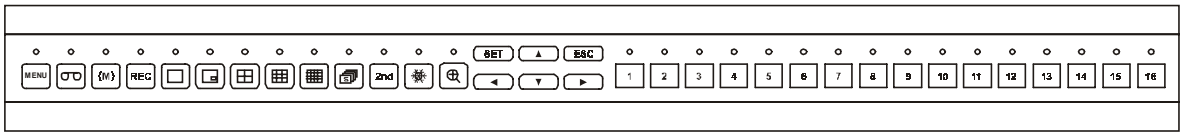


Setup Menu Password: When set to ON, only the supervisor can access the Setup menu and make changes.

The supervisor Password screen shown below appears. Enter the password by moving the cursor over the desired number and pressing the SET key. As you enter each digit, the circles fill in and the cursor moves to the right one position. Once you have entered all four digits, select OK. If you have entered an incorrect number, an Incorrect Password message displays for ten seconds, then the unit returns to a live display. Repeat the process and re-enter the correct supervisor Password.

CHAPTER 3
PRODUCT OVERVIEW

Front Panel Buttons



Front View of 16-channel Multiplexer

MENU Press MENU to switch the Setup Menu.

VCR (○○) Pressing this button switches the multiplexer into VCR playback mode or VCR preview mode.

OPERATION : Press VCR(○○) to switch the multiplexer into VCR playback mode. Press 2nd and then VCR (○○) to switch the VCR preview mode.

MACRO ({M}) Plays a Macro.

OPERATON : Press MACRO ({M}) and then a camera button to play macro 1 to 16.

REC Put a camera in the Panic Record mode.

OPERATION : Press REC and then a camera button to put that camera in the panic record mode.

FULL (▭) Puts the multiplexer in Full-Screen mode or 3+4 display mode.

OPERATION : Press FULL (▭) and the currently selected camera displays full screen. Press another camera button will display that camera full screen. Press 2nd and then FULL (▭) to display the 3+4 mode.

PIP (▭) PIP (Picture in Picture) inserts a selected camera as a small image in the main image.

OPERATION : Press PIP (▭) and then the camera button of the camera you want displayed in the insert. Press 2nd and then PIP (▭) to display the PIP4 mode.

2x2 (**)** Puts the multiplexer in 2x2 display mode or 1+7 display mode.

OPERATION : Press 2x2 ( ) and four cameras display on the screen. Press 2nd and then 2x2 ( ) to display the 1+7 mode.

3x3 (**)** Puts the multiplexer in 3x3 display mode or 2+8 display mode.

OPERATION : Press 3x3 ( ) and nine cameras display on the screen. Press 2nd and then 3x3 ( ) to display the 2+8 mode.

4x4 (**)** Puts the multiplexer in 4x4 display mode or 1+12 display mode.

OPERATION : Press 4x4 ( ) and sixteen cameras display on the screen. Press 2nd and then 4x4 ( ) to display the 1+12 mode.

SEQUENCE (**)** Put the multiplexer in the Sequence mode.

OPERATION : Press Sequence ( ) to start or stop all cameras sequencing while in the 2x2, 3x3 and PIP modes. Press Sequence ( ) while in the Full-Screen mode to start or stop a user sequence. Press ESC and Sequence ( ) to Stack Sequence which sequences through multi-format screens.

2nd 2nd button can be used to assign cameras to the Spot monitor.

OPERATION : Press 2nd and then camera button of the camera you want displayed on that Spot monitor.

FREEZE (**)** This button freezes the video.

OPERATION : Press FREEZE ( ) to freeze the video from the currently selected camera. Press ESC then FREEZE ( ) to freeze the video from all the cameras.

ZOOM (**)** This button enters the Zoom mode.

OPERATION : Press ZOOM ( ) to enter the ZOOM mode.

SET This button has several functions; it brings up a Popup Menu, sets selections on the OSD menus and decreases numbers in the number setup function.

OPERATION : Press **SET** to enter the Popup Menu or to set a selected item from on of the menus.

ESC This button has several functions; it acts as a “Cancel” button, clears Cameo selections and increases numbers in the number setup function.

OPERATION : Press **ESC** to cancel entries, clear the Cameo or to decrease the number.

UP, DOWN, LEFT, RIGHT (✥) The Up, Down, Left and Right buttons are used whenever you need to move the cursor, highlight bar or Cameo window.

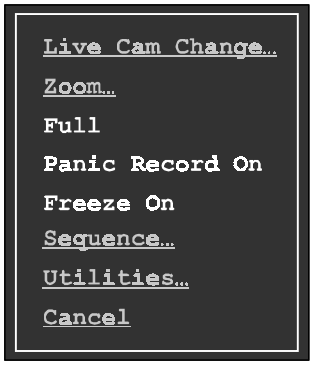
OPERATION : Press the arrow corresponding to the direction you want to move.

1 to 16 These buttons are used to make camera selections or enter numbers as needed.

CHAPTER 4
MENU SETUP AND OPERATION

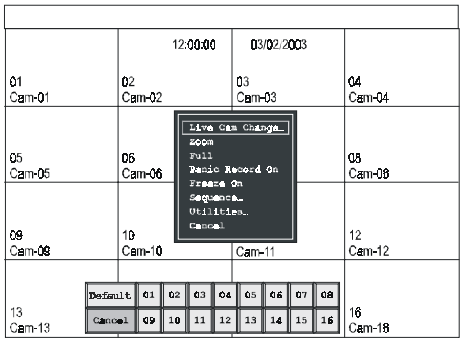
POP–Up Menu

Pressing the ACCEPT button on the front of the unit causes the Pop Up menu to appear. The menu options includes Live Cam Change, VCR Cam Change, Zoom, Full, Panic Record, Freeze, Sequence, and Utilities.



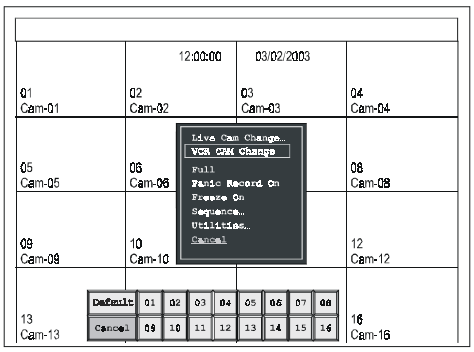
Live Camera Change

The Live Cam Change option on the Pop Up menu allows the user to assign any camera to an active cameo. The following screen shows the options for the 16 channel unit.



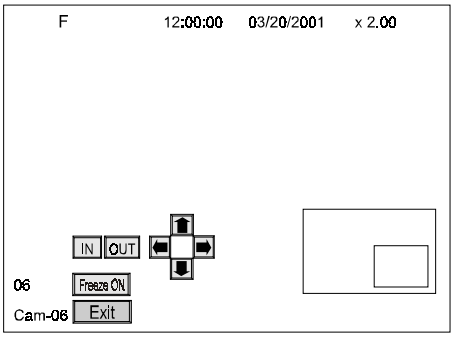
VCR Camera Change

The VCR Camera Change option on the Pop Up menu is only available when the unit is in the VCR Playback mode. Like the Live Camera Change, the VCR Camera Change option allows the user to assign any camera to a cameo view. The following screen shows options for the 16 channel unit.



Zoom

The digits on the top right of the screen indicate the amount of zoom. The maximum zoom is X32. The picture insert at the bottom right shows the entire scene with a center rectangle representing the zoomed area. Use the IN and OUT options to zoom in or out of the area. Use the arrow buttons to move the center rectangle left, right, up or down, to position it in an area to zoom. Use the FREEZE option to freeze the displayed image on the screen.



Full

Selecting the Full option causes the active camera to display full screen.

Panic Record

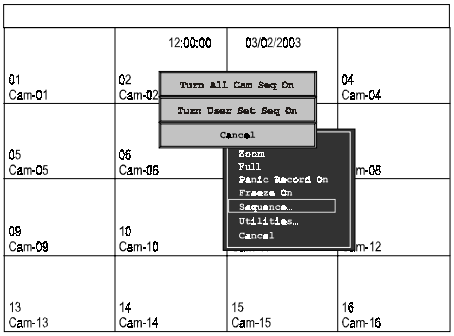
When Panic Record is ON, only the selected camera is recorded and it is recorded in real-time mode.

Freeze

When Freeze is ON, the image is frozen on the screen until it is reset.

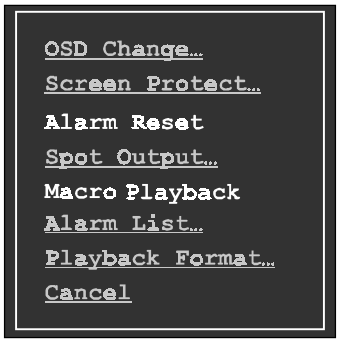
Sequence

The Sequence option on the Pop Up menu can activate the sequencing for all the cameras not currently displayed on the screen or a sequencing pattern defined in the Setup Menu. The options are: Turn All Cam Seq On and Turn User Set Seq On. Select the Cancel option on the menu to exit without any changes.



Utilities

The Utilities option on the Pop Up menu brings up another Pop Up menu with additional options.

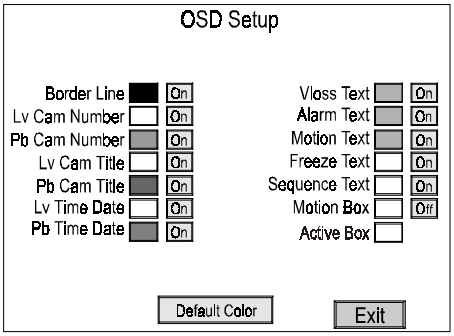


OSD Change

The OSD Setup screen allows the user to select the text that is to appear on the screen and to select the color. Border Line is the border around the images. “Lv” stands for Live. “Pb” stands for Playback. The Camera Number, Camera Title, and Time & Date text can be set to On or Off.

Text can be turned On or Off for Vloss (V), Alarm (A), Motion (M), Freeze (F) and Sequence (S). The Motion Box text is the box that appears on the screen showing the area where motion has been detected. The Active Box refers to the window box of the actively selected camera.

Color options for the text and border are: black, gray, white, red, green, yellow, magenta, cyan, and blue. To reset the text and board colors to the factory default setting, select the Default Color option button.



Screen Protect

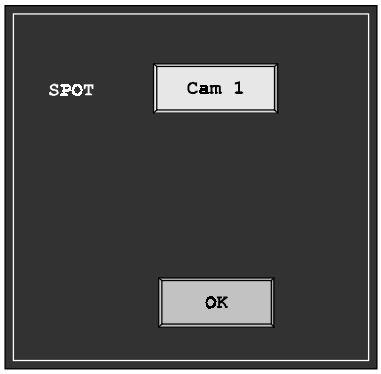
The Screen Protect feature allows the user to protect their setup against unauthorized use.

Alarm Reset

Alarm Reset is used to reset a sounding alarm.

Spot Output

The Spot Output screen allows the user to assign different camera to the spot monitor.



Macro Playback

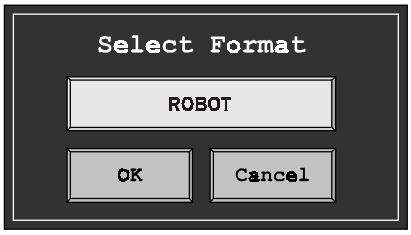
The Macro Playback option allows the user to select which macro will play.

Alarm List

The Alarm List option brings up the Alarm History List.

Playback Format

The multiplexer can play back tapes that were recorded using multiplexers designed by different manufacturers. The Playback Format option allows the user to select from the settings: OWN, Dedicated Micros, Robot (Sensormatic), Pelco, and Kalatel (Impac).



PB Picture Adjust

The PB Picture Adjust option only appears on the Utilities Pop Up menu when the multiplexer is in the VCR Playback mode. It allows the user to adjust images played back from the VCR.

Contrast: The contrast adjustment range is –101 to +152.

Brightness: The brightness adjustment range is –127 to +126.

Tint: The tint adjustment range is –127 to +126. (Not available for PAL operation.)

Color: The color adjustment range is –95 to +122.

Sharpness: The sharpness setting ranges from Nominal to 5.

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APPENDIX A - TROUBLESHOOTING

Problem	**Check**
No Video (black screen)	Check power connections
No Video (one camera)	Check camera power and coaxial cable
No Video (jumbled colors)	Make certain the multiplexer is set correctly for your system (NTSC or PAL)
Fuzzy Image (one camera)	Check camera focus
Bad video (one camera)	Check the loop through connector. If a cable is attached, make certain it is connect to another video device on the other end.
Wrong Language	Change the language in the Setup Menu
Buttons do not work	Unlock buttons in Setup Menu
Recorded Video Rolls	Check VCR configuration in Setup Menu. Use the trigger pulse from the multiplexer for optimum synchronization with a time-lapse VCR.
Tape Plays Only 4x4	Make certain the video cable to the VCR input is connected to the VCR OUT of the multiplexer.
Too Many Motion Alarms	Adjust the sensitivity of the motion detection grid. Adjust size of grid required to activate motion alarm. Make certain only the area you want to detect motion is activated.
Motion Not Detected	Adjust the sensitivity of the motion detection grid. Adjust size of grid required to activate motion alarm. Make certain only the area you want to detect motion is activated.

APPENDIX B
REMOTE CONTROL OPERATION

Remote Control for Daisychained Multiplexers

If you are using a computer to control two or more daisy-chained multiplexers, you need to send a re-address command to select the multiplexer to control. (Up to 16 multiplexers can be daisy-chained.) Re-address commands are not printable characters; you need an 8-bit binary address or hex value to select which daisy-chained multiplexer you control. If you lose power to one or more multiplexers, you will need to use the re-address command again to select the correct multiplexer.

HEX	RESULTS	HEX	RESULTS
00	NUL (changes active multiplexer)	09	9 (9th connected multiplexer)
01	1 (1st connected multiplexer)	0A	10 (10th connected multiplexer)
02	2 (2nd connected multiplexer)	0B	11 (11th connected multiplexer)
03	3 (3rd connected multiplexer)	0C	12 (12th connected multiplexer)
04	4 (4th connected multiplexer)	0D	13 (13th connected multiplexer)
05	5 (5th connected multiplexer)	0E	14 (14th connected multiplexer)
06	6 (6th connected multiplexer)	0F	15 (15th connected multiplexer)
07	7 (7th connected multiplexer)	10	16 (16th connected multiplexer)
08	8 (8th connected multiplexer)		

< Table 1 > Re-Address Commands

Remote Command Set

Simple three-character ASCII commands represent single or combination front panel button press on the multiplexer. The effect of a button press or remote command depends on the multiplexer's current status. Check the multiplexer's current status before issuing a remote command. Because this multiplexer has a different front keys from the old model, some new commands are added to control the multiplexer correctly.

ASCII	MULTIPLEXER KEY	ASCII	MULTIPLEXER KEY
/MU	MENU	/01	Camera 1
/TP	VCR	/02	Camera 2
/MA	MACRO	/03	Camera 3
/SX	RECORD	/04	Camera 4
/FZ	FULL	/05	Camera 5
/PP	PIP	/06	Camera 6
/22	2 x 2	/07	Camera 7
/33	3 x 3	/08	Camera 8
/44	4 x 4	/09	Camera 9
/SQ	SEQUENCE	/10	Camera 10
/2N	2ND	/11	Camera 11
/FR	FREEZE	/12	Camera 12
/ZO	ZOOM	/13	Camera 13
/ST	SET	/14	Camera 14
/ES	ESC	/15	Camera 15
/UP	UP	/16	Camera 16
/DO	DOWN		
/LE	LEFT		
/RI	RIGHT		

< Table 2 > Front key emulation commands

Functional remote commands

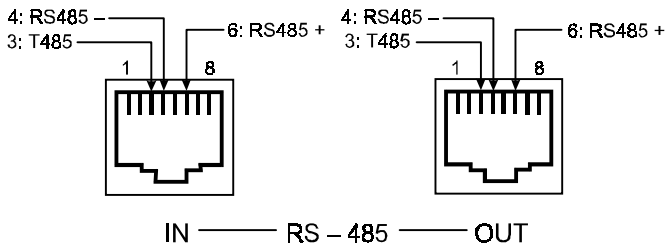
HEX	RESULTS	HEX	RESULTS
/S1	Panic record (camera 1)	/X1	Select camera 1 for display
/S2	Panic record (camera 2)	/X2	Select camera 2 for display
/S3	Panic record (camera 3)	/X3	Select camera 3 for display
/S4	Panic record (camera 4)	/X4	Select camera 4 for display
/S5	Panic record (camera 5)	/X5	Select camera 5 for display
/S6	Panic record (camera 6)	/X6	Select camera 6 for display
/S7	Panic record (camera 7)	/X7	Select camera 7 for display
/S8	Panic record (camera 8)	/X8	Select camera 8 for display
/S9	Panic record (camera 9)	/X9	Select camera 9 for display
/SA	Panic record (camera 10)	/XA	Select camera 10 for display
/SB	Panic record (camera 11)	/XB	Select camera 11 for display
/SC	Panic record (camera 12)	/XC	Select camera 12 for display
/SD	Panic record (camera 13)	/XD	Select camera 13 for display
/SE	Panic record (camera 14)	/XE	Select camera 14 for display
/SF	Panic record (camera 15)	/XF	Select camera 15 for display
/SG	Panic record (camera 16)	/XG	Select camera 16 for display
/AV	Stop panic record	/_U	Up (press & hold arrow button)
/AF	Setup Menu	/_D	Down (press & hold arrow button)
/AU	Factory Reset	/_L	Left (press & hold arrow button)
/AD	Alarm History List	/_R	Right (press & hold arrow button)
/AL	Alarm History List	/_AR	Time / Date OSD ON / OFF

<Table 3 > Remote commands

Connector PIN Assignments

The table below provides a reference for the connector PIN assignments of the multiplexer.

PIN Number	Connector PIN Assignment
1	Alarm Input 1
2	Alarm Input 2
3	Alarm Input 3
4	Alarm Input 4
5	Alarm Input 5
6	Alarm Input 6
7	Alarm Input 7
8	Alarm Input 8
9	RS-232 RX Input
10	RS-232 TX Input
11	RS-232 RX Output
12	RS-232 TX Output
13	VCR Trigger Input
14	Alarm Input 9
15	Alarm Input 10
16	Alarm Input 11
17	Alarm Input 12
18	Alarm Input 13
19	Alarm Input 14
20	Alarm Input 15
21	Alarm Input 16
22	Alarm Hold Input
23	Alarm Output Common
24	Alarm Output NC
25	Alarm Output NO



NOTE : *If termination of RS-485 network is required, short pin 3 and pin 4.*

APPENDIX C -
FACTORY DEFAULT SETTINGS

Setting	**Default Configuration**
Date Format	US (MM/DD/YY)
Time Format	24-hour
Daylight Savings	OFF
Stack Dwell Time	3 seconds
Sequence Dwell Time	3 seconds
Alarm Reset Button	ON
Alarm Screen Format	4x4
Alarm Dwell Time	3 seconds
Alarm Input Polarity	NO (Normally Open)
Alarm Buzzer	ON
Alarm Screen	ON
Alarm Message Latch	ON
Alarm Recording	INT (Interleaving)
Alarm Spot Monitor Output	ON
Alarm Hold Time	20 seconds
Alarm Action	Timed Out
Alarm Relay	ON
Motion Alarm Buzzer	OFF
Motion Alarm Screen	OFF
Motion Alarm Message Latch	ON
Motion Alarm Recording	INT (Interleaving)
Motion Alarm Spot Monitor Output	OFF
Motion Alarm Relay	OFF
Vloss Buzzer	ON
Vloss Screen	OFF
Vloss Message Latch	ON
Vloss Spot Monitor Output	ON
Vloss Hold Time	20 seconds
All Motion Detection	ON
Motion Detection Timer	OFF
Sensitivity	10
Delay Time	0 seconds

Setting	Default Configuration
Motion Hold Time	5 seconds
Target Grids	All Grids ON
External Trigger	OFF
Panic Record Buzzer	ON
VCR Type	Standard VHS
VCR Normal Record Time	2 Hours (NTSC), 3 Hours (PAL)
VCR Alarm Record Time	2 Hours (NTSC), 3 Hours (PAL)
Camera Contrast	000
Camera Brightness	000
Camera Color	000
Camera Tint	000
Camera Sharpness	000
Language	English
Key Lock	OFF
Network Type	RS-232
Baud Rate	1200
Unit Address	001
Protocol	A
Setup Menu Password	OFF
Password Code	5555
VCR Picture Adjustment	000
Border Line	ON (Black)
Live Camera Number	ON (White)
PB Camera Number	ON (Blue)
Live Camera Title	ON (White)
PB Camera Title	ON (Blue)
Live Time, Date	ON (White)
PB Time, Date	ON (Blue)
Vloss Text	ON (White)
Alarm Text	ON (White)
Motion Text	ON (White)
Freeze Text	ON (Red)
Sequence Text	ON (White)
Motion Box	OFF (Blue)

APPENDIX D - SPECIFICATIONS

Operating Defaults	
Display Format	4x4 multi-screen format
Operation Mode	Live
Video Format	
NTSC / PAL	Standard
Video Level	
Camera Inputs / Outputs	1.0V p-p, 75 ohms
Loop through Output	1.0V p-p, 75 ohms
VCR Input: Composite	1.0V p-p, 75 ohms
Main Output: Composite	1.0V p-p, 75 ohms
Auxiliary Output	1.0V p-p, 75 ohms
Resolution	
Sampling	720 x 480 (720 x 576)
Full (Active)	648 x 448 (648 x 518) (10 to 9 down-scaling)
1/ 4 Size	324 x 224 (324 x 259)
1/ 9 Size	216 x 149 (216 x 173)
1/ 16 Size	162 x 112 (162 x 129)
VCR Out (full)	720 x 480 (720 x 576)
Spot Out	Analog
Sampling Standard	
Y:Cb:Cr	CCIR 601 (4:2:2)
Gray Scale	256 levels
Color	16 million (True Color)
Video Memory	
Main Display	64Mb SDRAM
VCR Output	64Mb / 16Mb SDRAM
Refresh Rate (fields / sec)	
Full, PIP, Squish, Zoom, Spot Out	60
Priority mode (major)	60
(minor)	30 / number of cameras
Spot Out	60
Power Requiements	12 Vdc, 2.5 Amps
Power Adaptor	100 - 240 Vac Universal Adaptor
Dimensions	
Unit size	17”(W) x 1.73”(H) x 12.2”(D) 432(W) x 44(H) x 310(D)mm
Weight	
Unit Weight	5.31 lbs (2.4 Kgs)
Operating Environment	
Ambient Temperature	32° to 95° F (0° to 35° C)
Ambient Humidity	10% to 90% non-condensing

16-Channel
Color Multiplexer

50301683A