

# DMX-16

## 16-channel Color, Digital Video Multiplexer Recorder

Installation Instructions

Eng



|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b><u>WARNING!</u></b></p> <p>To prevent fire and electric shock, do not expose this product to rain or moisture.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <p>The lightning flash with the arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the products enclosure that maybe of sufficient magnitude to constitute a risk of electric shock to persons.</p> |                                                                                                                                                                                          | <p>The exclamation point, within an equilateral triangle, is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.</p> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <p><b><u>CAUTION!</u></b></p> <p>To prevent electric shock, do not remove cover.<br/>No user serviceable components are inside.<br/>Refer servicing to qualified service personnel.</p>                                                                                                    |                                                                                                                                                                                          |                                                                                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p><b><u>CAUTION!</u> Lithium Battery</b></p> <p>Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.</p>                                                                                                | <p><b><u>ATTENTION</u></b></p> <p>This product contains a recyclable lithium battery. It may be illegal to dispose of this battery improperly under local, state, or federal laws. Check with your local waste management officials for disposal and recycling options.</p> |                                                                                                                                                                                                                         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p><b><u>CAUTION!</u></b></p> <p><b>Electrostatic-Sensitive Device!</b></p> <p><b>Use proper CMOS and MOSFET handling precautions, including approved grounded wrists straps, etc., to avoid damage to this unit or its internal components, from electric discharge.</b></p>              |                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                         |
| <p><b><u>WARNING!</u></b></p> <p>This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions in this manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to subpart J of part 15 of FCC rules which are designed to provide reasonable protection against such interference when operated in a commercial environment. This equipment has also been tested and found to comply with the requirements for a CE Class A device and TUV safety standards.</p> <p>Operation of this equipment in a residential area may cause interference, in which case the user is required to take all measures that are necessary, at the user's expense, to correct the interference.</p> |                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                         |

## IMPORTANT INFORMATION

Software and/or firmware is furnished to the purchaser under a license for use on a single system. Software and/or firmware included with this equipment are the sole proprietary property of, confidential to, and copyrighted by Philips. The software/firmware are not to be copied or disclosed in any manner without the express written consent of Philips.

---

|              |                                                                                                                                                                                                                                                                                                                                              |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NOTE:</b> | All information and specifications furnished by Philips are believed to be accurate and reliable. No responsibility is assumed by Philips for neither its use nor any infringements of rights of third parties that may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Philips. |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

---



# Contents

|          |                                                   |            |
|----------|---------------------------------------------------|------------|
| <b>1</b> | <b>INSTALLATION AND GENERAL INFORMATION .....</b> | <b>1-1</b> |
| 1.1      | Product Description.....                          | 1-1        |
| 1.2      | Features.....                                     | 1-1        |
| 1.3      | Unpacking .....                                   | 1-2        |
| 1.4      | Installation Environment .....                    | 1-2        |
| 1.5      | Default Passwords.....                            | 1-3        |
| 1.8      | Connections .....                                 | 1-5        |
| 1.9      | Power Supply .....                                | 1-9        |
| 1.10     | Power-Up and Testing .....                        | 1-10       |
| 1.11     | Battery-Backed-Up Memory for Menu Options .....   | 1-10       |
| <b>2</b> | <b>OPERATING MODES AND CAPABILITIES .....</b>     | <b>2-1</b> |
| 2.1      | Principal Operating Modes .....                   | 2-1        |
| 2.2      | Active Cameo Mode.....                            | 2-12       |
| 2.3      | Sequencing.....                                   | 2-14       |
| 2.4      | Motion Detection.....                             | 2-14       |
| 2.5      | Alarm Operations.....                             | 2-14       |
| <b>3</b> | <b>THE MENU SYSTEM.....</b>                       | <b>3-1</b> |
| 3.1      | Pull-Down Menus .....                             | 3-2        |
| 3.2      | Pop-Up Menus.....                                 | 3-2        |
| 3.3      | The Available Menus .....                         | 3-3        |
| <b>4</b> | <b>INSTALLER PROGRAMMING .....</b>                | <b>4-1</b> |
| 4.1      | Main Menu → Time/Date.....                        | 4-1        |
| 4.2      | Main Menu → Sequencing.....                       | 4-3        |
| 4.3      | Main Menu → Record .....                          | 4-4        |
| 4.4      | Main Menu → Alarms.....                           | 4-7        |
| 4.5      | Main Menu → Action Detection .....                | 4-11       |
| 4.6      | Main Menu → Camera Setup.....                     | 4-18       |
| 4.7      | Main Menu → Camera Setup → Camera Titles.....     | 4-18       |
| 4.8      | Main Menu → Video Archive Setup .....             | 4-21       |
| 4.9      | Main Menu → Communications.....                   | 4-22       |
| <b>5</b> | <b>TECHNICAL SPECIFICATIONS.....</b>              | <b>5-1</b> |
| <b>6</b> | <b>SPECIAL FUNCTIONS .....</b>                    | <b>6-1</b> |
| 6.1      | Text Insertion Protocol.....                      | 6-1        |

|     |                                 |     |
|-----|---------------------------------|-----|
| 6.2 | Link Text Message.....          | 6-2 |
| 6.3 | Link Text Response Message..... | 6-2 |
| 7   | RS-232 REMOTE PROTOCOL .....    | 7-1 |
| 8   | SERVICE AND RETURNS.....        | 8-1 |
| 8.1 | Maintenance .....               | 8-1 |
| 8.2 | Factory Service .....           | 8-1 |

# 1 INSTALLATION AND GENERAL INFORMATION

---

## 1.1 Product Description

The following are two Philips multiplexer model numbers available: DMX-161 (NTSC), and DMX-162 (PAL). These multiplexers are video recording and playback systems capable of simultaneously recording multiple camera signals on a single hard disk. Duplex units contain dual digital video processors for continued background recording while viewing multiscreen live. The units also allow access to stored video and live camera images via an Ethernet connection.

The unit is a single, integrated unit in a 19-inch rack-mountable enclosure. It requires 12-V<sub>DC</sub> power from an external AC power supply. The front panel contains all operator control keys and indicators. Looping auto-terminating video inputs, video outputs, alarm inputs and outputs, and remote control connectors are on the rear panel.

The unit has two monitor outputs, A and B.

**MULTI:** A composite or Y/C (SVHS) fullscreen or multiscreen digital image display that can be frozen and zoomed.

**Monitor B:** Fullscreen, live, and analog display.

### **WARNING!**

**The unit's primary purpose is to furnish efficient video multiplexing and multiscreen display. Alarm handling and motion detection are secondary functions.**

**The unit should not be the only alarm device on site. Associated equipment must comply with national standards.**

## 1.2 Features

- Simple operator menus and easy-to-use controls and indicators.
- Independent monitor control.
- Dual-Monitor operation.
- Video freeze and electronic zoom with digital pan and tilt.
- Remote programming and remote control through the RS-232 port.
- Internal hard disk storage and retrieval system.
- Video Archiving options using the unit's SCSI port including digital audio tape (DAT), advanced intelligent tape (AIT), and CD recording.

- Video playback of Recorded images via Ethernet.
- Access to Live Video via Ethernet.
- Downloading video clips to a local PC via Ethernet.

The front panel contains all the operator control keys, indicators, while the video inputs, video outputs, alarm inputs and outputs, and the remote control connectors are on the rear panel. The controls and indicators have been designed to be convenient and easy to use.

All units require 12-V<sub>DC</sub> power and are supplied with external AC power supplies.

## 1.3 Unpacking

Check the package and contents for visible damage. If any components are missing or damaged, contact the supplier immediately. **Do not attempt to use the unit.** If, for any reason, they must be returned, the package and contents must be shipped in the original packing box.

### Package Contents

- The Philips DMX-161/162 unit.
- Alarm Interface circuit board.
- An AC main power cable and 12-V<sub>DC</sub> power adapter.
- A complete instruction manual covering Installation, Operation and Programming.

### Associated Equipment

A typical system could contain the following components:

- A primary monitor for digital display.
- A second monitor for:
  - Analog display.
  - OR –
  - Digital display, if in dual-monitor mode.
- Cameras with 1-V<sub>P-P</sub> composite video outputs.
- 75-ohm BNC connectors and video coaxial cable for connecting the video signals.
- An AC main power outlet for the unit that allows for secure isolation. (The unit has no on/off switch for security reasons.)
- An external tape or CD drive and SCSI cable for archiving purposes.

## 1.4 Installation Environment

Ensure that the site's AC power supply is stable and within the rated voltage of the external 12-V<sub>DC</sub> power supply. If the site's AC power is likely to have spikes or power dips, use power line conditioning or a UPS (uninterruptable power supply).

**Ventilation:** Ensure that the location planned for the installation of the unit is well ventilated. Take note of the locations of the cooling vents in the unit's enclosure, and ensure that they are not obstructed.

**Temperature:** Observe the unit's ambient temperature specifications when choosing an installation space. Extremes of heat or cold beyond the specified operating temperature limits may cause the unit to fail. Do not install the unit on top of other hot equipment.

You can place the monitor on top of the unit if it weighs less than 35 pounds (16 Kilograms).

## 1.5 Default Passwords

Table 1-1. Passwords.

| Password | Function                                    | Changeable by User? | Default Keys                                        |
|----------|---------------------------------------------|---------------------|-----------------------------------------------------|
| 1        | Resets multiplexer to the factory defaults. | No                  | <div>8</div> <div>1</div> <div>1</div> <div>1</div> |

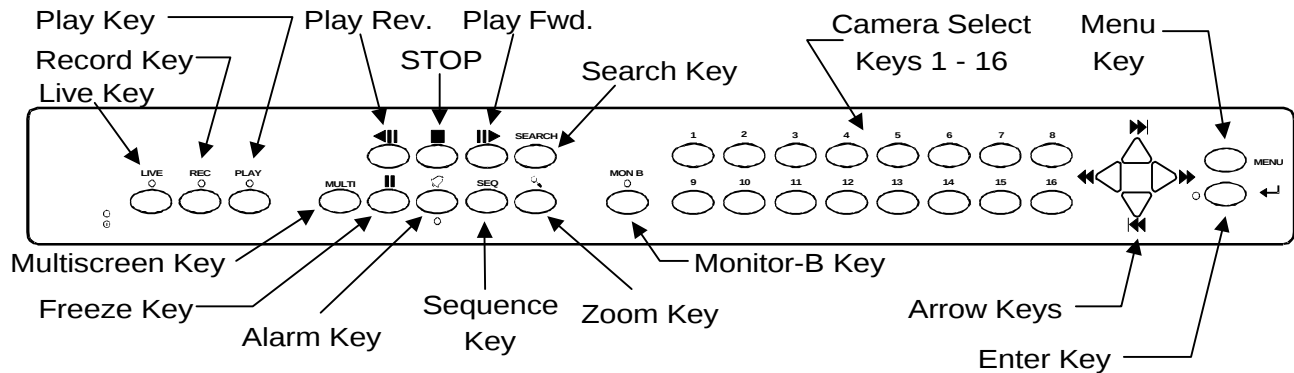
All passwords changed by the user must be numerical. That is, only the number keys can be used when changing a password. It is recommended that Password 1 be changed after installation is complete.

**NOTE:** When the unit is first set up, and all connections are made, it is advisable to command the unit to restore all factory default settings. This should be done before any programming takes place.

**NOTE:** As a security measure, store passwords in the Administrator's secured files or in a limited-access area.

## 1.6 The Front Panel

The unit's front panel appears in the following figure:



**Figure 1-1. The Front Panel 16-Channel Unit.**

## 1.7 The Rear Panel

On its rear panel the unit has:

- 16 loop-through camera inputs with automatic termination.
- Two monitor outputs, Multiscreen (MULTI key) and Monitor B (**call** or **spot** monitor).
- A Standard 50-pin high density SCSI-2 port.
- Alarm inputs (on the 25-pin D-type connector), each of which can be normally open (N/O) or normally closed (N/C).
- RS-232 and RS-485 connectors.
- Two alarm output relays on the DB-25 connector.

The unit's rear panel appears in the following figure:

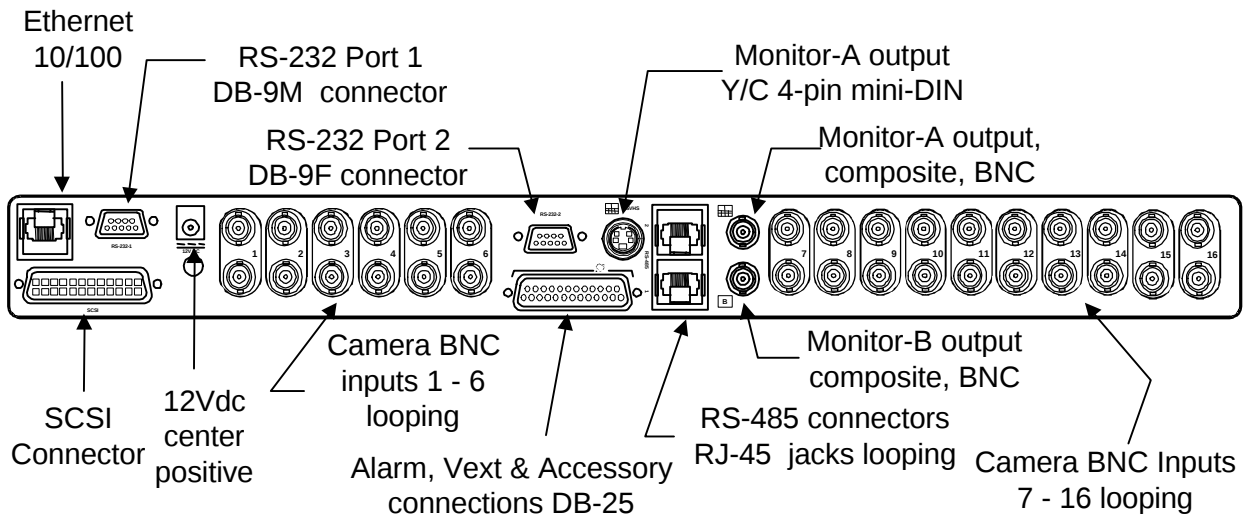


Figure 1-2. The Rear Panel 16-Channel Unit.

## 1.8 Connections

The following instructions relate to the Philips DMX-161/162 units only. Refer to the relevant instructions for the associated equipment. All the connectors are on the rear panel of the unit.

### Camera Connections

When connecting cameras to the multiplexer, use only 75-ohm video coaxial cables and BNC connectors. For each camera, there are two BNC jacks. Either jack can receive a camera's signal. This signal is **looped** (directly connected) to the other jack, making the camera's signal accessible to other equipment.

Whether the video is looped or not, the camera input connectors are auto-terminating. Make sure that there is a 75-ohm termination at the end of the video line.

If the full complement of cameras (16) are not used, the unused camera jacks can be disabled through the menu system. See Camera Enable/Disable on page 4-20.

### Monitor Connections

Connect the monitor outputs using 75-ohm BNC connectors and video coaxial cable to the monitors (see page 5-1).

If you are connecting directly from the unit to the monitor (rather than using the monitor's looping output), then select the 75-ohm impedance setting on the monitor.

If the monitor's looping output is connected to an additional device, the device's termination is set to 75 ohms, and the monitor's termination is set to HI-Z (high impedance).

In addition to a composite video output, multiscreen also has an SVHS output. This connection, when viewed from the rear, is to the right of the composite BNC connection. You may connect by using the 4-pin mini-DIN SVHS connectors and leads (see page 5-1).

This output is identical to the composite video output for Multiscreen in the Live and Play modes, but in the Record mode, it displays the multiplexed video images that are being recorded on the disk.

## RS-485 Connections

Please see the RS-485 Connections and Wiring section on page 4-3.

## LAN (Ethernet) Connections

Please see the LAN (Ethernet) Cable Connections and Wiring section on pages 4-25.

## Alarms

Alarm inputs can be triggered by a relay contact from such devices as smoke detectors, infrared sensors, pressure pads, and the like. Be sure to connect only **resistive** loads to the alarm output relays. Alarms are disabled while the menu system is active.

---

---

|              |                                                                                                                                                          |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NOTE:</b> | Do not exceed 30 V (AC or DC), 500 mA (continuous) on an alarm output relay's contacts. Specifically, the contacts must not be used at AC line voltages. |
|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|

---

---

## Silencing and Acknowledging Alarms

The Silence-and-Acknowledge function silences alarms by grounding pin 23 to pins 18 through 20. This operation merely deactivates the alarm LED, alarm output relay, and keyboard buzzer. However, the condition creating the alarm may still exist. Alarms can be programmed in any one of three ways:

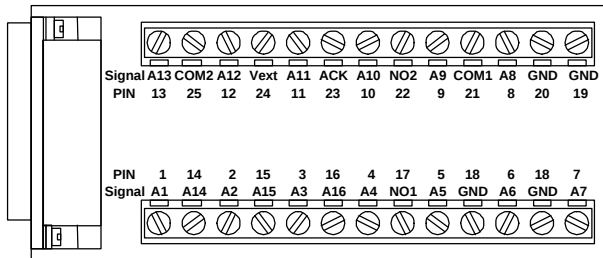
|                     |                                                           |
|---------------------|-----------------------------------------------------------|
| <b>Latched On:</b>  | An alarm is active until it is silenced and acknowledged. |
| <b>Transparent:</b> | An alarm is active only while the input is active.        |
| <b>Timed Out:</b>   | An alarm is active until a menu-programmed time expires.  |

Wire all alarm and relay connectors to the Alarm I/O PCB supplied. **Do not** attempt to wire directly to the connector on the multiplexer back panel.

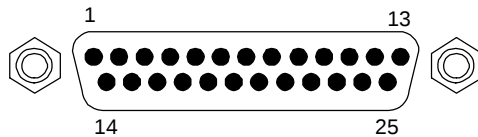
If the Alarm I/O PCB is lost or missing, contact Philips Customer Service (see page 8-1) for a replacement. Alternatively, purchase a female DB-25 connector, and make all connections as shown in the following table.

**Table 1-1. DB-25 Pin Assignments.**

| Function                                              | DB-25 Pins    |
|-------------------------------------------------------|---------------|
| Alarm inputs 1 through 16.                            | 1 through 16  |
| Alarm output 1 (Relay #1), Normally Open.             | 17            |
| Ground connections.                                   | 18 through 20 |
| Alarm output 1: Relay #1 common ground.               | 21            |
| Alarm output 2: Relay #2, Normally Open.              | 22            |
| External Alarm silences or acknowledges (active-low). | 23            |
| Alarm output 2: Relay #2 common ground.               | 25            |



This drawing shows the Alarm I/O PCB supplied with the unit. This wiring interface greatly simplifies all alarm connections to the unit.



The DB-25 connector, looking towards the rear panel. The numbers are labeled on the connector, although they may be difficult to read.

**Figure 1-3. The DB-25 and Alarm I/O PCB Connectors.**

## Connecting the Alarm Inputs

Each alarm input line can be switched by a relay contact from devices such as pressure pads, passive infrareds, smoke detectors and similar devices.

Wire them as either N/O or N/C (see the following figure). You can configure the alarm inputs as N/O or N/C in the menu system. The alarms are disabled while the menu system is active.

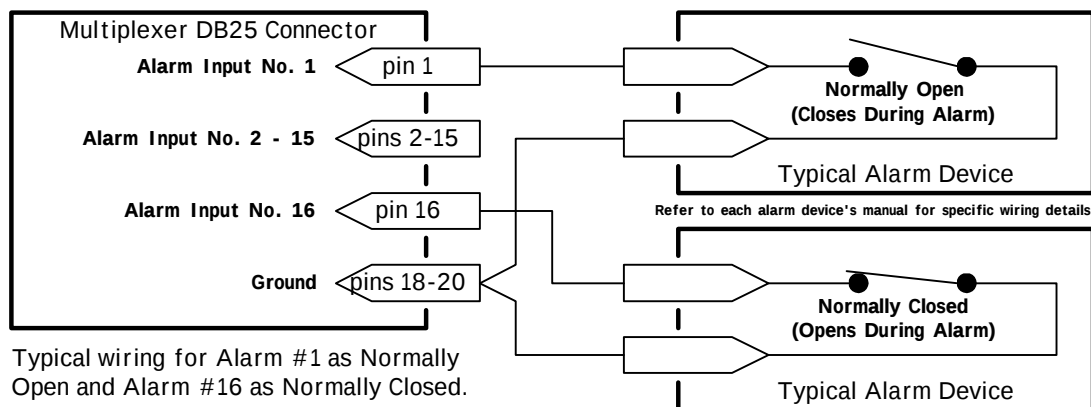


Figure 1-4. Normally Open and Normally Closed Connections.

## Connecting the Alarm Outputs

**NOTE:** Do not exceed 30 V (AC or DC), 500 mA (continuous) on an alarm output relay's contacts. Specifically, the contacts must not be used at AC line voltages.

The alarm output relays respond to alarms, and Motion Detection Relay 1 activates on any alarm, and Relay 2 activates on any motion Detection. The relays are active for the duration of the driving event. Connect the application to the alarm output relays (resistive loads only).

Typical wiring for Alarm Relays.

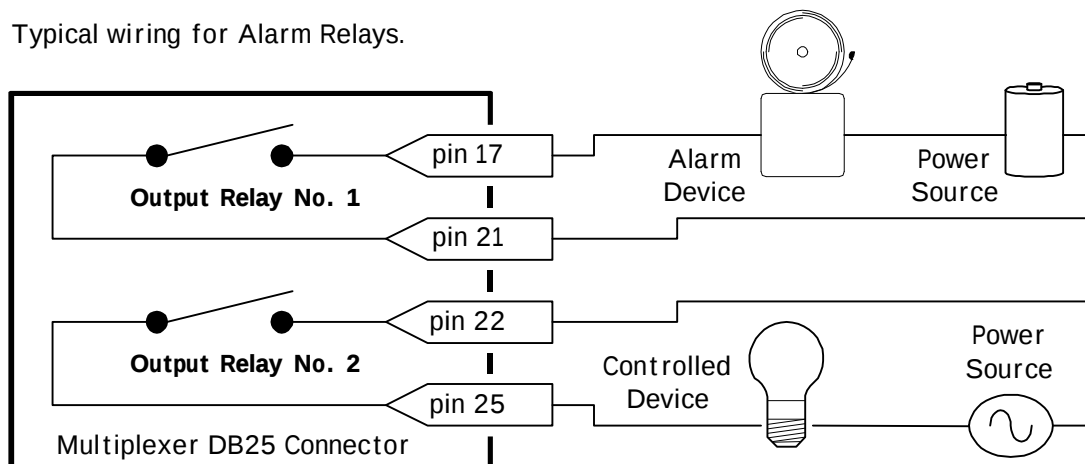


Figure 1-5. Alarm output Relays, External Circuitry.

## Connecting the External Alarm Clear

You can use the External Alarm Clear to clear alarms by connecting it to ground on pins 18, 19 and 20. Clearing an alarm only clears the LED and the keyboard buzzer. The alarm output relay is always active for the duration of the alarm input. If the alarms are selected as latched or timed out in the Alarms menu, then the alarm output can remain active after the alarm input has reset.

## Connecting the Archive System

The unit provides a 50-pin high density SCSI-2 port for connection of an archiving system. The archive system may be an external CDR, DAT, or AIT drive. To use this feature, connect the drive's SCSI cable to the SCSI-2 connector on the DMX-161/162's rear panel.

Current acceptable models are identified in an Addendum to this manual.

---

---

**CAUTION:** The SCSI bus must be terminated properly. Otherwise, the system will not operate properly.

If a termination device is not provided with your archive unit, you must obtain one and install it.

---

---

---

---

**NOTE:** Please refer to the Addendum-Tape Archiving Devices (part # 0150-0145) for more information using an archive device with the DMX-161/162.

---

---

## 1.9 Power Supply

---

---

**NOTE:** Be sure to read **Power-Up and Testing** below before applying power.

---

---

The unit is furnished with a power supply as shown in the following table.

**Table 1-6. Multiplexer Power Supply.**

| Input     |                            |
|-----------|----------------------------|
| Voltage   | 120 to 240 V <sub>AC</sub> |
| Tolerance | ± 10%                      |
| Frequency | 50 to 60 Hz                |
| Output    |                            |
| Voltage   | 12 V <sub>DC</sub>         |
| Power     | 35 W                       |

---

---

|               |                                                                                                        |
|---------------|--------------------------------------------------------------------------------------------------------|
| <b>NOTES:</b> | Do not use any other power supply.                                                                     |
|               | The manufacturer accepts no responsibility for any damage caused by the use of any other power supply. |

---

---

## 1.10 Power-Up and Testing

Once the installation is complete, turn on the power in the order indicated below. The unit starts by displaying the software version on Multiscreen. This is followed by a multiscreen display on duplex units. All units begin recording automatically.

If any settings in the menu system have been changed, those settings are stored while the power is off and are still in effect.

### Procedure

1. Energize the monitors and all the cameras.
2. After doing so, energize the unit's 12-V<sub>DC</sub> power supply.
3. In Live mode, select fullscreen display for each camera and check the picture quality. If the quality is poor, check:
  - The BNC connections.
  - Loop-through terminations.
  - Video levels of incoming signals and the possibility of ground loops.

### Record/Play Quality

Record for at least three minutes at the highest recording speed (2-hour for NTSC/EIA, 3-hour for PAL/CCIR). Then play back the recording, selecting each camera for fullscreen display in turn. Check the playback picture quality. Check to see whether the programmed quality setting is correct. (For advice on setting up the cameras, consult the camera's installation instructions.)

## 1.11 Battery-Backed-Up Memory for Menu Options

Menu selections are saved to battery-backed-up memory. In general, the battery has a five-year shelf life, and holds memory even if the unit is off for several months.

---

---

|                 |                                                                               |
|-----------------|-------------------------------------------------------------------------------|
| <b>CAUTION:</b> | All stored information is lost if the battery is removed.                     |
|                 | In addition, when the system is re-energized, it reverts to factory defaults. |

---

---

# 2 OPERATING MODES AND CAPABILITIES

## 2.1 Principal Operating Modes

Table 2-1. The Four Principal DMX-161/162 Operating Modes

| Mode   | Key Number | Description                                                                                                                                                                                                                      |
|--------|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Live   | 1          | Displays live images in various multiscreen formats.<br>On Duplex units, either Record mode or Play mode can be active with Live mode, but not both.                                                                             |
| Play   | 2          | Displays recorded images in fullscreen or multiscreen format. Record mode is stopped during playback.                                                                                                                            |
| Record | 3          | Activates the capture of images and the storing of them on the disk. Playback is not possible during recording.                                                                                                                  |
| Stop   | 4          | Since Duplex units can continue to record or play back video in the Live mode, Stop mode only occurs when the unit is not recording or playing back video. Pressing the <b>STOP</b> button ensures the unit will enter this mode |

**NOTES:** Where referred to in this manual, the term Stop Mode means that all playback and recording operations are halted. Live and Stop modes are not the same.

| Mode       | Live                                                                                | Play                                                                                | Record                                                                               | Stop                                                                                  |
|------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Key Number | 1                                                                                   | 2                                                                                   | 3                                                                                    | 4                                                                                     |
| Key        |  |  |  |  |

Figure 2-1. Front Panel Operating Keys.

In addition, the following three keys are described below:

| Key Name                  | Key                                                                               | Description                                   |
|---------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------|
| Single Frame/Play Forward |  | Starts a single frame/play forward operation. |
| Single Frame/Play Reverse |  | Starts a single frame/play reverse operation. |
| Search                    |  | Starts the search operation.                  |

## Live Mode

---

**NOTES:** Duplex units can continue to record or play back video in the Live mode depending on how the installer has programmed the unit.

---

## Multiscreen Displays in Live Mode

There are several options for Multiscreen in Live Mode:

| Multiscreen Options in Live Mode              |                                                                                                                                                                                                                                              |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Multiscreen Display</b><br>(See page 2-9.) | Ranging from 16-way, 4x4, to a quad, 2x2 display of the full complement of cameras.<br>If a multiscreen does not include all cameras, the system can automatically <b>sequence</b> the remaining cameras into the last (bottom right) cameo. |
| <b>Fullscreen Display</b>                     | Of any single camera.                                                                                                                                                                                                                        |
| <b>Sequenced Display</b>                      | Of fullscreen cameras.                                                                                                                                                                                                                       |
| <b>Zooming</b>                                | A 2x <b>zoom</b> capability.<br>Ability to <b>pan</b> and <b>tilt</b> across the entire image smoothly.                                                                                                                                      |
| <b>Freezing</b>                               | For fullscreen, multiscreen, or individual cameos.                                                                                                                                                                                           |

## Monitor B Displays in Live Mode

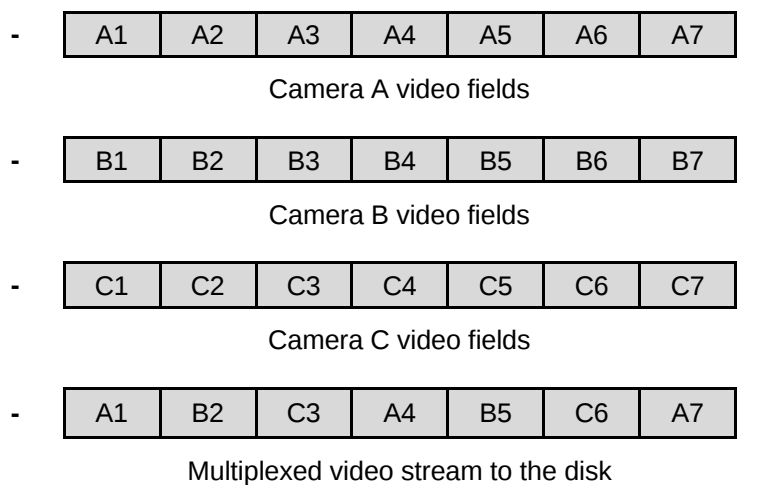
Monitor B displays only live, analog, fullscreen images from a single camera input. These images cannot be zoomed or frozen.

## Record Mode

**NOTES:** Duplex units can continue to display Live video in the Record mode.

**Time Division Multiplexing (TDM)** combines images from several cameras into one, continuous, multiplexed video signal.

**EXAMPLE:** Three multiplexed inputs are recorded like this:



Captured fields are controlled by the Record List, which the system modifies in case of alarms, motion detection, or videoloss. The unit can then record the multiplexed video fields on the disk.

The list can be edited manually by the Installer through the menu system.

**NOTE:** Time base correction is performed during digital capture. As a result, cameras do not require synchronization.

## Multiscreen Record Speed Symbol in Record Mode

In Record mode, the unit indicates the recording speed on Multiscreen. It uses the same time format generally used by time-lapse VCRs. For example, **R024** indicates a unit recording in 24-hour mode.

## Multiscreen Displays in Record Mode

There are several options for Multiscreen in Record Mode:

| Feature                                       | Description                                                                                                                                                                                                                                  |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Multiscreen Display</b><br>(See page 2-9.) | Ranging from 16-way, 4x4, to a quad, 2x2 display of the full complement of cameras.<br>If a multiscreen does not include all cameras, the system can automatically <b>sequence</b> the remaining cameras into the last (bottom right) cameo. |
| <b>Fullscreen Display</b>                     | Of any single camera.                                                                                                                                                                                                                        |
| <b>Sequenced Display</b>                      | Of fullscreen cameras.                                                                                                                                                                                                                       |
| <b>Zooming</b>                                | A 2x <b>zoom</b> capability.<br>Ability to <b>pan</b> and <b>tilt</b> across the entire image smoothly.                                                                                                                                      |
| <b>Freezing</b>                               | For fullscreen or individual cameos.                                                                                                                                                                                                         |

## Monitor B Displays in Record Mode

Monitor B displays only live, analog, fullscreen images from a single camera input. These images cannot be zoomed or frozen.

## Play Mode

---

|              |                                                                                                                          |
|--------------|--------------------------------------------------------------------------------------------------------------------------|
| <b>NOTE:</b> | Duplex units can continue to display Live video in the Play mode depending on how the installer has programmed the unit. |
|--------------|--------------------------------------------------------------------------------------------------------------------------|

---

## Playback of Multiplexed Recordings

Multiplexed recordings consist of time-stamped video fields received from the disk. The embedded digital data packets are decoded, and all the associated status information, titles, time and date of recording (as well as the alarm or videoloss status of the camera) are displayed during playback.

The user selects one of several screen formats, the fields to be displayed (or skipped), and the camera positions in multiscreen. The unit then selects a multiscreen that displays the recorded images on Multiscreen.

The appearance of the symbol:  at the top of the screen indicates that the unit is in Play mode.

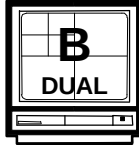
The time and date that appear are for the recorded image. They are not the current time and date.

If videoloss occurred while recording, a **V** appears in the corresponding camera cameo (**VDL** if fullscreen display has been selected).

## Play Mode Sequencing

Multiscreens use the same dwell times in both Play and Live modes. Full screens are sequenced according to the factory default settings.

## Single and Dual Monitor Modes

| Single Monitor Mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                   | Dual Monitor Mode                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                     |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <p>This mode is ideal for DMX-161/162 systems with only one monitor connected or when traditional spot monitor operations are required. Primary functions are handled on Multiscreen while Monitor B always displays live full screen analog.</p>                                                                                                                                                                                                                                        |                                                                                   | <p>This mode requires two monitors be connected to the DMX-161/162. Users can simultaneously view Live multiscreen displays on Multiscreen and multiscreen playback of recorded images on Monitor B.</p>                                                                                                                                                                                                                                                        |                                                                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                               |  |
| <ul style="list-style-type: none"><li>• All menus are displayed on Multiscreen, including the SEARCH menu.</li><li>• Monitor B displays only Live, fullscreen analog video.</li><li>• Controls default to Multiscreen unless Monitor B is selected.</li><li>• The Monitor B LED is off unless Monitor B is selected.</li><li>• Play LED is on.</li><li>• Video indicators such as the Record speed, disk utilization status, and Play back speed are displayed on Multiscreen.</li></ul> |                                                                                   | <ul style="list-style-type: none"><li>• All menus are displayed on Multiscreen, except the SEARCH menu.</li><li>• Monitor B displays multiscreen Play back images.</li><li>• Controls default to Monitor B.</li><li>• Live LED is on, Play LED is on.</li><li>• The Monitor B LED is on unless Multiscreen is selected.</li><li>• Video indicators such as the Record speed, disk utilization status, and Play back speed are displayed on Monitor B.</li></ul> |                                                                                     |

## Monitor Display Options in Play Mode

There are several display options for Monitors A and B in Play Mode:

| Multiscreen Options in Play Mode              |                                                                                                                                                                                                                                              |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Multiscreen Display</b><br>(See page 2-9.) | Ranging from 16-way, 4x4, to a quad, 2x2 display of the full complement of cameras.<br>If a multiscreen does not include all cameras, the system can automatically <b>sequence</b> the remaining cameras into the last (bottom right) cameo. |
| <b>Fullscreen Display</b>                     | Of any single camera.                                                                                                                                                                                                                        |
| <b>Sequenced Display</b>                      | Of fullscreen cameras.                                                                                                                                                                                                                       |
| <b>Zooming</b>                                | A 2x <b>zoom</b> capability.<br>Ability to <b>pan</b> and <b>tilt</b> across the entire image smoothly.                                                                                                                                      |
| <b>Freezing</b>                               | For fullscreen or individual cameos.                                                                                                                                                                                                         |

| Monitor B Options in Play Mode (Single Monitor Mode)  |                                                  |
|-------------------------------------------------------|--------------------------------------------------|
| <b>Fullscreen Display</b>                             | Of any single camera, Analog only. <sup>†</sup>  |
| <b>Sequenced Display</b>                              | Of fullscreen cameras, Analog only. <sup>†</sup> |
| <sup>†</sup> These images cannot be zoomed or frozen. |                                                  |

| Monitor B Options in Play Mode (Dual Monitor Mode) |                                                                                                                                                                                                                                              |
|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Multiscreen Display</b><br>(See page 2-9.)      | Ranging from 16-way, 4x4, to a quad, 2x2 display of the full complement of cameras.<br>If a multiscreen does not include all cameras, the system can automatically <b>sequence</b> the remaining cameras into the last (bottom right) cameo. |
| <b>Fullscreen Display</b>                          | Of any single camera.                                                                                                                                                                                                                        |
| <b>Sequenced Display</b>                           | Of fullscreen cameras.<br>Customizable.                                                                                                                                                                                                      |
| <b>Zooming</b>                                     | A 2x <b>zoom</b> capability.<br>Ability to <b>pan</b> and <b>tilt</b> across the entire image smoothly.                                                                                                                                      |
| <b>Freezing</b>                                    | For fullscreen or individual cameos.                                                                                                                                                                                                         |

## How the DMX-161/162 Handles LAN Connections

---

**NOTE:** If the DMX-161/162 user disables Ethernet value in **Ethernet Settings** (so as not to relinquish control of the front panel), no communication can be established with the unit via the Ethernet or LAN connections.

---

At the start of an Ethernet session, the DMX-161/162 locks out its own front panel.

When the Ethernet session ends, DMX-161/162 re-enables front panel control.

The DMX-161/162 supports the following concurrent operations:

- Record mode and Ethernet transfers (live or from disk).
- Stop mode and Ethernet transfers (live or from disk).
- Play mode, which activates the Stop mode and allows Ethernet transfers (either live or from disk). When the session is terminated, the unit will remain in the Stop mode.

## Monitor Operations

---

**NOTE:** One monitor is selected for control at all times. If the Monitor B LED is on, then Monitor B is selected. Otherwise, Multiscreen is selected.

---

## Operating on Either Monitor

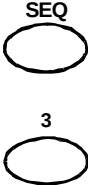
### Selecting a Live Camera Fullscreen on Either Monitor

|                                                                                     |                                   |
|-------------------------------------------------------------------------------------|-----------------------------------|
|  | Press a <b>camera number</b> key. |
|-------------------------------------------------------------------------------------|-----------------------------------|

### Starting Fullscreen Sequencing on Either Monitor

|                                                                                     |                                                                          |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
|  | Press a <b>camera number</b> key.<br>Then press the <b>SEQUENCE</b> key. |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------|

## Canceling Fullscreen Sequencing on Either Monitor

|                                                                                   |                                                                                                |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
|  | <p>Either press the <b>SEQUENCE</b> key again, or else press any <b>camera number</b> key.</p> |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|

## Fullscreen Sequence List and Dwell Time

Independent sequences operate on Multiscreen (MULTI Key) and Monitor B. The default sequence is all cameras in numerical order with a fixed dwell time of 3 seconds.

## On screen Monitor Messages

Table 2-3. On-Screen Messages.

| Situation                            | Appearance on Screen                                                                                                                                                                                  |                                             |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
|                                      | Fullscreen                                                                                                                                                                                            | Multiscreen                                 |
| Alarm                                | The symbol <b>ALM</b> in each cameo in alarm.                                                                                                                                                         | The symbol <b>A</b> in each cameo in alarm. |
| Frozen                               | A flashing <b>FRZ</b> symbol in each frozen cameo.                                                                                                                                                    | A flashing * symbol in each frozen cameo.   |
| Videoloss<br>(real-time or playback) | The symbol <b>VDL</b> when the affected camera is displayed.                                                                                                                                          | The symbol <b>V</b> in each affected cameo. |
| Motion Detection                     | When enabled in programming, the symbol <b>M</b> appears in each camera scene when motion is detected. It remains on each active camera display for at least two seconds after the motion has ceased. |                                             |
| Record Speed                         | <b>R###</b> (such as <b>R024</b> to indicate 24-hour mode).                                                                                                                                           |                                             |
| Playback                             |  (top center of screen)                                                                                           |                                             |
|                                      | <b>P###</b> (such as <b>P024</b> to indicate 24-hour mode).                                                                                                                                           |                                             |
| Zoom                                 | <b>ZOOM</b> (The ZOOM key's LED lights. The <b>ZOOM</b> key must be pressed again to return to normal.)                                                                                               |                                             |

# Multiscreen Displays on MULTI Key

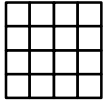
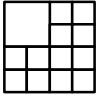
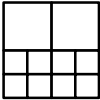
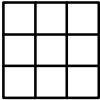
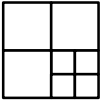
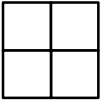
**NOTE:** MULTI Key must be selected for this mode of operation.

## Multiscreen Order of Display

MULTI  


Select different multiscreen displays by pressing the **MULTI** key on the front panel.

The multiscreen order of display changes and repeats each time the key is pressed:

|                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |  |  |
| <b>16-WAY</b><br>4 by 4                                                           | <b>13-WAY</b><br>1 and 12                                                         | <b>10-WAY</b><br>2 and 8                                                          | <b>9-WAY</b><br>3 by 3                                                            | <b>7-WAY</b><br>3 and 4                                                             | <b>QUAD</b><br>2 by 2                                                               |

## Automatic Multiscreen Format Memory

2  
  
  
MULTI  


The user can switch from a multiscreen to fullscreen camera image by pressing the **camera number** key.  
  
Subsequently pressing the **MULTI** key restores the previous multiscreen display.

## Changing Cameras in Multiscreen Displays

Any camera can be displayed in any position in the unit's multiscreen displays. The default multiscreen displays show the cameras in ascending order. In the Live mode, the user can display one camera in more than one position, while in Play mode each camera can be displayed only once on each multiscreen.

Use the Active Cameo mode (page 2-12) to select the cameras.

**NOTES:** Changing the default cameras and positions in multiscreen displays are user preferences or operating parameters, not programmed parameters. Such changes are saved in volatile memory, not in battery-backed-up memory.

## Changing Colors and Positions of Titles and Date/Time

In Live and Play modes, the user can change a monitor's display of camera title, as well as of time and date.

The available colors are black, gray, and white. The available positions for the camera title are top left, and bottom left. (The time and date always appear at the top right.)

The available options are as follows:

| Monitor | Configuration           | Can Color be Changed? |               | Can Position be Changed? |                                 |
|---------|-------------------------|-----------------------|---------------|--------------------------|---------------------------------|
|         |                         | Title                 | Time and Date | Title                    | Time and Date                   |
| A       | Any                     | Yes                   | Yes           | Yes                      | No<br>(always at the top right) |
| B       | Duplex, Dual-Monitor.   | Yes                   | Yes           | Yes                      |                                 |
|         | Duplex, Single-Monitor. | No                    | No            | No                       |                                 |

## Changing Title Color and Position on Multiscreen Displays



Select a fullscreen view of that camera on the monitor, and then press **ENTER** several times to toggle the title position and color. Select from one of the first 7 options shown below. If camera 1 is selected, steps 14 through 21 are also included, because the Time/Date display is also affected. In this case, select from one of the 21 options shown below.

Repeatedly pressing the **ENTER** key (LED turns on) generates the following 21-step cycle:

| Number of Times ENTER<br>Key is Pressed | Camera Title                   |       | Time and Date |       |
|-----------------------------------------|--------------------------------|-------|---------------|-------|
|                                         | Position                       | Color | Position      | Color |
| 1                                       | Top left                       | Black | Top right     | Black |
| 2                                       |                                | White |               |       |
| 3                                       |                                | Gray  |               |       |
| 4                                       | Bottom left                    | Black |               |       |
| 5                                       |                                | White |               |       |
| 6                                       |                                | Gray  |               |       |
| 7                                       | Camera title is not displayed. |       |               |       |
| 8 - 14 (camera 1 only)                  | Same as 1-7 above              |       | Top right     | White |
| 15 - 21 (camera 1 only)                 | Same as 1-7 above              |       | Top right     | Gray  |

## Changing Position and Color on Monitor B

---

**NOTE:** This is possible only on duplex model set up for Dual-Monitor operation.

---

The procedure is the same as for the multiscreen.

## Displays on Monitor B

During Play, Live, and Record modes in Single-Monitor operation, Monitor B displays live, fullscreen, analog images. A sequenced or fixed display of any one camera can be selected on Monitor B.

In Dual-Monitor operation, Playback images appear on Monitor B. Fullscreen and multiscreen displays are also available. Multiscreen operations in this mode behave exactly the same as they do when Multiscreen is used for playback. (See the following table in the next page.)

| Operation                                                                            | Type of Data <sup>†</sup> | Monitor     |
|--------------------------------------------------------------------------------------|---------------------------|-------------|
| Single-Monitor                                                                       | Playback                  | Multiscreen |
|                                                                                      | Live                      | Monitor B   |
| Dual-Monitor                                                                         | Playback                  | Monitor B   |
|                                                                                      | Live                      | Multiscreen |
| <sup>†</sup> Including time, date, alarm, videoloss, titles, and all on-screen data. |                           |             |

## Zooming

The unit provides a digital 2x zoom for fullscreen displays on Multiscreen in the Live and Play modes. This feature is not available on Monitor B (except for Duplex models in Dual-Monitor operation with Play mode selected).

|                                                                                     |                                                                                                                                                                             |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | First select a fullscreen display on Multiscreen, and then press the <b>ZOOM</b> key. Zooming works with both frozen and non-frozen displays. A zoomed image can be frozen. |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### NOTES:

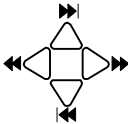
The word **ZOOM** appears on-screen, and the ZOOM key LED turns on.

The **ZOOM** key must be pressed again to return to normal.

Most other keys are disabled while zooming is in effect.

If the **ZOOM** key is pressed in a multiscreen display, the image in the last active cameo (page 2-12) selected expands to fullscreen.

## Panning and Tilting

|                                                                                     |                                                                                                                                                                                                                                        |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Use the <b>arrow</b> keys to pan and tilt to different sections of zoomed displays on Multiscreen.<br><br>Panning and tilting not available on Monitor B (except for Duplex models in Dual-Monitor operation with Play mode selected). |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Freezing

The unit provides a freeze frame feature for fullscreen and multiscreen displays in the Live and Play modes. This feature is not available on Monitor B (except for Duplex models in Dual-Monitor operation with Play mode selected).

|                                                                                   |                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>The <b>FREEZE</b> key is used to freeze and unfreeze displays. In the Live and Play modes, use this key to freeze displays on Multiscreen. Frozen fullscreen images can be zoomed.</p> <p>Freezing is not available on Monitor B (except for Duplex models in Dual-Monitor operation with Play mode selected).</p> |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

---

**NOTES:**

- The symbol **FRZ** appears on full screen displays while a flashing \* symbol appears in each frozen cameo of a multiscreen display.
- The **FREEZE** key must be pressed again to return to normal.
- Most other keys are disabled while freezing is in effect.
- If the **FREEZE** key is pressed in a multiscreen display, the entire multiscreen display is frozen, unless one of the cameos is currently active. (See Active Cameo Mode.) If a cameo is active, only that cameo is frozen.

---

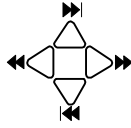
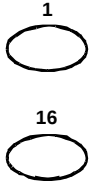
## 2.2 Active Cameo Mode

To select different cameras in a multiscreen display, the unit uses **active cameos**.

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>Press the <b>ENTER</b> key (LED turns on) during any multiscreen display. The top left cameo is the initial active cameo. The active cameo is indicated by flashing its camera number and title.</p> <p>The Active Cameo mode persists for about 15 seconds after the last key is pressed, or until the <b>ENTER</b> key is pressed again to exit the mode. Active Cameo mode is canceled if a new multiscreen display is selected, or if there is switching between Live and Play modes.</p> |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Dual-Monitor operation supports customary position and display selection with active cameos.

**Table 2-2. Key Functions In Active Cameo Mode.**

| Key                                                                                | Description              | Function                                                                                                                                                                                                                                                                                         |
|------------------------------------------------------------------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | Arrow                    | Moves the active cameo around the multiscreen.                                                                                                                                                                                                                                                   |
|   | Camera<br>(1 through 16) | Selects a camera to be displayed in the active cameo. Once the desired camera is selected, the active cameo advances to the next logical cameo on the right.                                                                                                                                     |
|   | FREEZE                   | Freezes the active cameo.                                                                                                                                                                                                                                                                        |
|  | ZOOM                     | Switches to a fullscreen display of the active cameo.<br><br>ZOOM cancels Active Cameo mode.<br><br>Notice that if the <b>ZOOM</b> key is pressed with no active cameo selected, then the display switches fullscreen to the camera displayed in the cameo last selected. The LED turns on also. |

## Automatic Camera Location Memory

The user can set up camera numbers and locations to be displayed in a particular multiscreen display. Each time that particular multiscreen is selected, the setup appears. The unit saves this information in volatile memory and it will not be retained if power is removed from the unit.

## Freezing an Active Cameo

In a multiscreen display, the user can freeze or unfreeze a cameo. This is useful when other cameras continue to be monitored while an event is frozen for further investigation or review.

A flashing on-screen display of the symbol \* in each frozen cameo will appear. The **FREEZE** key must be pressed again to unfreeze the display.

Most other keys are disabled while freezing is in effect.

---

**NOTE:** If the **FREEZE** key is pressed in a multiscreen display, the entire multiscreen is frozen.

---

## 2.3 Sequencing

### Fullscreen and Multiscreen Dwell Times

In the Sequence menu, the user can select the dwell time for both fullscreen and multiscreen. The default dwell time is three seconds, and is set from the menus.

## 2.4 Motion Detection

These units offer activity detection including an adjustable, sensitivity setting, and size discrimination per camera. Motion detection is used to adjust the rate at which cameras are recorded (Activity Detection).

When enabled in programming, the symbol **M** appears in each camera scene where motion is detected. This **M** remains on each active camera display for at least two seconds after the motion has ceased. An isolated output relay is provided. Any motion detection will activate Relay #2.

## 2.5 Alarm Operations

The system is equipped with one alarm input per camera, each normally associated with its live video input. An alarm input displays on-screen warnings on the monitors, flashes front panel LED, and sounds an internal buzzer. Record List priority automatically changes.

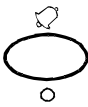
An isolated alarm output relay is provided. Any alarm input will activate Relay 1.

During alarms, the unit can automatically record alarmed cameras more frequently. Any alarm input can be enabled or disabled.

### Programmed and Manual Alarm Capabilities

Alarms can be programmed to latch until reset, timed-out (latched for a preset time), operate as transparent, and follow the status of the alarm input, either in-alarm or normal.

### Silencing and Acknowledging Alarms

|                                                                                     |                                                                                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>To silence and acknowledge all displayed alarms, press only the <b>ALARM</b> key.</p> <p>This action returns the unit to the non-alarm operating mode, silences the buzzer, and turns off the Alarm LED even if the condition causing the alarm is still present.</p> |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Pre-programmed alarm responses run automatically when an alarm is initiated. Programmed parameters control the alarm, camera recording, and latching mode.

### How Alarms Are Displayed

An alarm LED is provided on the front panel above the ALARM key. During alarms, this LED flashes until:

- A Live alarm is silenced or acknowledged (latched and timed-out alarms).
- The alarm times out or returns to normal status (timed-out and transparent alarms).

An internal buzzer sounds while the alarm condition exists.

## Alarm Displays on Multiscreen

### Live and Record Modes

During alarms, Multiscreen switches to a fullscreen alarm display.

---

---

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NOTES:</b> | <p>It is very important to select the best alarm-latching mode for alarm displays. Alarms on Multiscreen are displayed only while they are active. Once the alarm times out or is cleared, the display:</p> <ul style="list-style-type: none"><li>• Reverts to sequencing (if sequencing was in effect when the alarm occurred).</li><li>• Continues to display the recently alarmed camera (if sequencing was not in effect when the alarm occurred).</li></ul> <p>If the user changes the camera displayed while an alarm is active, then the unit continues to display the selection after the alarm clears. It does not revert to the pre-alarm screen display.</p> |
|---------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

---

---

### Displays for Multiple Alarms

If more than three alarms are active at the same time, the unit sequences all alarmed cameras of a fixed dwell of 1 second.

### Play Mode

Except for units with the Dual Monitor mode selected, alarms are not displayed on Multiscreen when Play mode is selected. Rather, the monitor displays the playback images from the disk according to the selected formats. See the discussion of active cameos on page 2-12 and 2-13.

The normal **A** alarm indicator appears only if a camera was in alarm when a recording was made.

If the camera is not being displayed, no on-screen indication of an alarm appears. When scanning through the images during playback for cameras in alarm, make sure all cameras recorded on the disk are displayed using a format that displays all cameras. Otherwise, consider using the search filters to locate alarms more efficiently and quickly (see page 2-18).

## Alarm Displays on Monitor B

### Alarms in Live and Record Modes

During alarms, Monitor B switches to a fullscreen display of the camera in alarm. If multiple alarms are active, Monitor B sequences among the alarm cameras at a fixed one-second dwell, which is not programmable. Monitor B cannot freeze images on alarm.

---

---

|              |                                                                                                                                                                                                                                                                         |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NOTE:</b> | <p>If sequencing was active on Monitor B before the alarm, then Monitor B continues to sequence after the alarm is cleared. Otherwise, Monitor B does not revert to its original display after the alarm is cleared. It continues to display the last alarm camera.</p> |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

---

---

### Alarms in Play Mode

In the Single Monitor mode, Live alarms are displayed on Monitor B as fullscreen analog images.

In Dual-Monitor operation, Live alarms are not displayed on Monitor B. Recorded video is presented on Monitor B. All Live alarms are displayed on Multiscreen and operate as previously described.

## The Search Operation

The DMX-161/162 can search through recorded alarms according to search parameters (**filters**) that you specify.

Begin this operation by pressing the **SEARCH** key. The following menu opens:

| Search Filters                                                                         |  |  |      |  |                                                           |                |  |  |  |       |
|----------------------------------------------------------------------------------------|--|--|------|--|-----------------------------------------------------------|----------------|--|--|--|-------|
| <b>Start</b><br><b>DATE: 12/10/00</b><br>[ ]<br>(MM/DD/YY)                             |  |  |      |  | <b>Stop</b><br><b>DATE: 12/20/00</b><br>[ ]<br>(MM/DD/YY) |                |  |  |  | ①     |
| <b>Start</b><br><b>TIME: 11/45/00</b><br>[ ]                                           |  |  |      |  | <b>Stop</b><br><b>DATE: 12/10/99</b><br>[ ]               |                |  |  |  | ②     |
| 1 2 3 4 5 6 7 8<br><b>Camera:</b> [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]<br><b>Alarm:</b> [ ] |  |  |      |  |                                                           |                |  |  |  | ③     |
| <b>Text:</b> 01 Camera 01                                                              |  |  |      |  |                                                           |                |  |  |  | ④     |
| [CANCEL]                                                                               |  |  | [OK] |  |                                                           | [START SEARCH] |  |  |  | ⑤ ⑥ ⑦ |

---

**NOTE:** This screen appears on the monitor designated for operations.

---

## An Outline of the Procedure

1. In block ① of the above menu, define the search date interval.
2. In block ② of the above menu, define the search time interval.
3. In block ③ of the above menu, select the camera(s) whose records are to be searched.
4. Also, in block ③ of the above menu, select the alarm(s) whose records are to be searched.
5. In block ④ of the above menu, enter a sequence of text characters to be searched for. This is a global search and will find any match, anywhere within the recorded text.
6. Cancel any changes (item ⑤), or save them (item ⑥).
7. Start the search (item ⑦).

Exit the Search operation with the **MENU** key.

A detailed description of the procedure follows in the next page.

## Specifying Dates, Times, Cameras, and Alarms

Use the **PLAY FORWARD** and **PLAY REVERSE** keys to navigate among items ① through ⑦.

In blocks ① through ③, proceed as follows:

| Block | Use these keys:       | If you wish to:                                                                                                                                                 |
|-------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ①     | Left and Right Arrows | 1) <b>Select</b> the Month, Day, or Year <b>field</b> under <b>Start</b> .<br>2) <b>Select</b> the Month, Day, or Year <b>field</b> under <b>Stop</b> .         |
|       | Up and Down Arrows    | 1) <b>Change</b> the Month, Day, or Year <b>entry</b> under <b>Start</b> .<br>2) <b>Change</b> the Month, Day, or Year <b>entry</b> under <b>Stop</b> .         |
| ②     | Left and Right Arrows | 1) <b>Select</b> the Hour, Minute, or Second <b>field</b> under <b>Start</b> .<br>2) <b>Select</b> the Hour, Minute, or Second <b>field</b> under <b>Stop</b> . |
|       | Up and Down Arrows    | 1) <b>Change</b> the Hour, Minute, or Second <b>entry</b> under <b>Start</b> .<br>2) <b>Change</b> the Hour, Minute, or Second <b>entry</b> under <b>Stop</b> . |
| ③     | Left and Right Arrows | <b>Select</b> a box [ ] for <b>Camera</b> or <b>Alarm</b> .                                                                                                     |
|       | Up and Down Arrows    | <b>Check</b> or <b>clear</b> a box [ ] for <b>Camera</b> or <b>Alarm</b> .                                                                                      |

At this point, you can:

- Save any changes by clicking **[OK]** (item ⑥).
- Discard any changes by clicking **[CANCEL]** (item ⑤).
- Begin the search by clicking **[START SEARCH]** (item ⑦).
- Enter block ④ to specify a **text** criterion.

## Searching for a Text String

An external device can be set up to send a text string to the DMX-161/162 through the RS-232, Port 1 (see page 4-23). An example of such a string would be: **Cash Register**. This text can be selected as a search criterion as follows.

1. Go to block ④.
2. Press **ENTER**.
3. A character set appears.



4. Press the **FUNCTION** key to browse forward through the available character sets. Press the **SEQUENCE** key to browse backward.
5. Using the **Left** and **Right Arrow** keys, select a location in the **Text** string.
6. Using the **Up** and **Down Arrow** keys, select a character in the character set check.
7. Use the **Camera 2** key to insert the selected character at the selected location.
8. Use the **Camera 1** key to insert a space character at the selected location.
9. When finished, press **ENTER** again.
10. Use the **Up** and **Down Arrow** keys to check the box [ ] in block ④.

---

**NOTES:** The text search feature is available only when searching the disk.  
Playback from Archive must be off for the text search feature to be available.

---

## Starting the Search

Begin the search by clicking **[START SEARCH]**. A window opens, displaying any events that match your search criteria.

| Search Results                                               |            |           |                                           |
|--------------------------------------------------------------|------------|-----------|-------------------------------------------|
| Start Date                                                   | Start Time | Size (MB) | Archive                                   |
| 11/10/99                                                     | 11:49:04   | 2         |                                           |
| 11/16/99                                                     | 13:22:15   | 3         |                                           |
| 11/22/99                                                     | 16:09:32   | 4         |                                           |
| 11/30/99                                                     | 19:45:00   | 5         |                                           |
|                                                              |            |           | Selected [        ](MB)                   |
|                                                              |            |           | Available on Target Medium [        ](MB) |
| Message:<br>4 matches found                                  |            |           |                                           |
| 'ENTER' to play event;        'PLAY REV/FWD' to page up/down |            |           |                                           |
| 'LEFT/RIGHT' to select/deselect for archive                  |            |           |                                           |
| 'PAUSE' to select/deselect all items on this page            |            |           |                                           |
| 'RECORD' to start archive                                    |            |           |                                           |

---

**NOTE:**        This screen appears on the monitor designated for operations.

---

Use the panel keys as indicated to perform various functions.

## Exiting

Exit the Search operation with the **MENU** key.



# 3 THE MENU SYSTEM

## A Word About Notation

In the following chapters, there are section headings like these:

### ■ Main Menu → Camera Titles

#### Meaning:

From the Main menu, select **Camera Titles**, and press the **ENTER** key.

### ■ Main Menu → Sequencing → Multiscreen Dwell

#### Meaning:

1. From the Main menu, select **Sequencing**, and press the **ENTER** key.
2. This opens another menu. In this menu, select **Multiscreen Dwell**, and press the **ENTER** key.

When the indicated steps have been carried out, a menu or box appears, a discussion of which completes the section.

These sections are either numbered, or else preceded by this symbol: ■

In some boxes, particular items are **highlighted** on the screen. They can be distinguished as follows:

#### Not highlighted:

Camera 03

#### Highlighted:

ENABLE

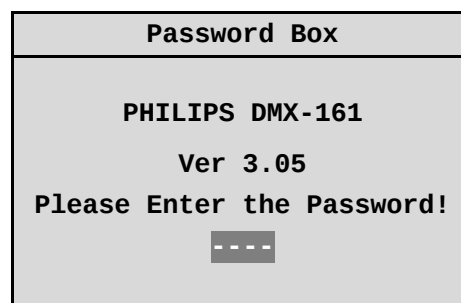
The unit provides user-friendly on-screen menus for entry of data such as titles or selecting options. The options can also be accessed through the RS-232 port from a central controller or PC.

**NOTE:** The ALARM key and on-screen symbols are disabled while the menu system is active.



If a password has been programmed, the **Password Box** appears when the **MENU** key is pressed.

For example, this box appears for a unit running version 3.05 software.



To enter the on-screen program menus, enter the four-key password.

The password can be changed in the menus.

---

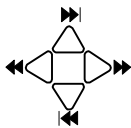
---

**NOTE:** Each section in this manual gives a description of choices that are programmable through the menu. Read these sections in their entirety before programming menu options.

---

---

## Keys for Operating and Entering Menus

|                                                                                                                                                                            |                                                                                                                                                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <br>  | <p>Use the <b>ENTER</b> key to go to the next menu level or to accept a selection parameter.</p> <p>Use the <b>MENU</b> key to exit, or to back up one menu level, without making any changes to the current level.</p> |
| <br> | <p>To access a menu, use the <b>arrow</b> keys to select, and then press the <b>ENTER</b> key. <b>Arrow</b> keys can also be used to change values or parameters in some of the menus.</p>                              |

## 3.1 Pull-Down Menus

Pull-down menus are the top-level menus. Additional selections are available in the menus, and choices are typically made in pop-up menus. To leave a pull-down menu, select **Exit**, and press either the **ENTER** key or the **MENU** key.

## 3.2 Pop-Up Menus

Pop-up menus are lower-level menus. Use the **up/down arrow** keys to select sections in the pop-up menu, and then use the **left/right arrow** keys to change values.

To exit a Pop-up menu without making changes, press the **MENU** key or else select **Cancel** and press the **ENTER** key. To exit and save the changes made, select **OK** and press the **ENTER** key.

---

---

**CAUTION:** Pressing **MENU** to exit from a pop-up menu does not save the changes made in that pop-up menu. In this instance, the **MENU** key has the same effect as does selecting **Cancel** and then pressing the **ENTER** key.

---

---

## 3.3 The Available Menus

Highlight the selection using the **left** or **right arrow** keys, and press **ENTER** or the **down arrow** key.

When selected, one of the menus shown below appears on **Multiscreen**.

### ■ Main Menu

The Main menu provides access to all the programmable options in logical subsections.

Read the corresponding section in the manual before starting to program the options in the menus.

|                     |
|---------------------|
| Time/Date           |
| Sequencing          |
| Record              |
| Alarms              |
| Motion Detection    |
| Camera Setup        |
| Monitor Mode        |
| Video Archive Setup |
| Communications      |
| Factory Settings    |
| Passwords           |
| Exit                |

### ■ Main Menu → Time/Date

Use this menu to specify:

- Whether the date and time are to be displayed on **Multiscreen**, Monitor B, both, or neither.
- What time and date formatting to use.
- The time and date.
- Whether the unit is a master or a slave.

|                     |
|---------------------|
| Time / Date Display |
| Set Time Format     |
| Set Date Format     |
| Set Time            |
| Set Date            |
| Master/Slave        |
| Exit                |

### ■ Main Menu → Sequencing

Use this menu to specify:

- Multiscreen dwell time (used for the sequencing cameos in the multiscreen mode).
- Fullscreen sequence dwell times.

|                   |
|-------------------|
| Multiscreen Dwell |
| Fullscreen Dwell  |
| Exit              |

## ■ Main Menu → Record

Use this menu to specify:

- The order in which images are to be recorded from the different camera inputs. Use this selection to increase the update rate of more important cameras.
- Recording quality (Low, Medium, or High).
- Normal recording speed.
- Alarm recording speed (2-hour for NTSC/EIA, 3-hour for PAL/CCIR).
- Whether previously recorded information is to be overwritten automatically, or only with the user's approval.

|                            |
|----------------------------|
| <b>Record List</b>         |
| <b>Record Quality</b>      |
| <b>Normal Record Speed</b> |
| <b>Alarm Record Speed</b>  |
| <b>Record Mode</b>         |
| <b>Disk Maintenance</b>    |
| <b>Exit</b>                |

The user can also have previously stored information:

- Deleted (with the possibility of restoring it).
- Undeleted (restored).
- Destroyed (removed with no possibility of restoration).

## ■ Main Menu → Alarms

The standard unit is equipped with one alarm input per camera output, each associated with its Live video input. An alarm input displays a warning on both Multiscreen and Monitor B, flashes a front panel LED, sounds an internal buzzer, and automatically changes Record List priority.

Use this menu to specify:

- Whether the alarm input for each camera is N/O or N/C.
- Whether the alarms are Latched, Transparent, or Timed Out.
- How the images from the alarmed cameras are to be recorded (Interleaved, Exclusive or, No Change).
- Whether some or all of the alarms are to be enabled or disabled.
- Pre Alarm Duration. See page 4-10.
- Whether Relay 2 responds to a malfunction that occurs during archiving.

|                            |
|----------------------------|
| <b>Input Configuration</b> |
| <b>Alarm Latch</b>         |
| <b>Alarm Record Mode</b>   |
| <b>Enable / Disable</b>    |
| <b>Pre Alarm Duration</b>  |
| <b>Archive Alarms</b>      |
| <b>Exit</b>                |

## ■ Main Menu → Motion Detection

Use this menu to specify for each camera:

- Whether motion detection is enabled.
- Which zones in the camera's view are to be active for motion detection.
- Whether a motion detection indicator is to be displayed on the monitor.
- Motion detection adjustments, such as the record rate to be used.

|                                 |
|---------------------------------|
| <b>Enable/Disable Detection</b> |
| <b>Setup Active Zones</b>       |
| <b>Indicate Detection</b>       |
| <b>Setup Parameters</b>         |
| <b>Exit</b>                     |

## ■ Main Menu → Camera Setup

Use this menu to specify for each camera:

- Whether camera titles are to be displayed on Multiscreen, Monitor B, both, or neither.
- What those titles are for each camera.
- Whether the camera is enabled or disabled.

Finally, use this menu to specify whether each camera is color or monochrome.

|                |
|----------------|
| Camera Titles  |
| Camera Disable |
| Camera Color   |

## ■ Main Menu → Monitor Setup

The operation of this feature is discussed in Section 2, but is programmed in this menu.

|                |
|----------------|
| Single Monitor |
| Dual Monitor   |

## ■ Main Menu → Video Archive Setup

The unit records video images in the hard disk files that can be archived on a media like Digital Audio Tape (DAT) drives. This menu lets the user select hard disk files to be archived. Hard disk files can be restored from the archive to the disk for review.

The user can archive all recorded hard disk files automatically by using the background archiving feature, or choose any certain files to be transferred in the Selection Archive Mode.

|                 |
|-----------------|
| Archive Mode    |
| Archive Setting |
| Erase Medium    |
| Exit            |

## ■ Main Menu → Communications

Use this menu to specify:

- The communication settings to be used for the RS-232 port.
- The unit's unique network address on the RS-485 bus.
- The settings for use with a LAN.

|          |
|----------|
| RS232    |
| RS485    |
| Ethernet |
| Exit     |

## ■ Main Menu → Factory Settings

### **CAUTION!**

Entering **8,1,1,1**  
resets ALL settings (except time and date)  
to the factory defaults!

### **Password Box**

Please enter the Factory  
Password

----

[CANCEL]

[OK]

## ■ Main Menu → Password

Use this menu to change the password for the menu system.

---

---

**NOTE:** Initially, no password is required to access the menus. The password box for menu access will appear only after a password has been programmed.

---

---

# 4 INSTALLER PROGRAMMING

**NOTE:** For an explanation of the notation used in this chapter, see page 3-1.

## 4.1 Main Menu → Time/Date

Use this menu to specify:

- Whether the date and time are to be displayed on Multiscreen, Monitor B, both, or neither.
- What time and date formatting to use.
- The time and date.
- Whether the unit is a master or a slave.

|                        |
|------------------------|
| Time / Date<br>Display |
| Set Time Format        |
| Set Date Format        |
| Set Time               |
| Set Date               |
| Master/Slave           |
| Exit                   |

### ■ Main Menu → Time/Date → Time / Date Display

Use this box to specify whether the time and date will be displayed on Multiscreen, Monitor B, both, or neither.

|                       |      |
|-----------------------|------|
| Time and Date Display |      |
| Multiscreen           | : ON |
| Monitor B             | : ON |
| [CANCEL]              | [OK] |

### ■ Main Menu → Time/Date → Set Time Format

Time format is either a 12-hour or 24-hour clock.

|                   |
|-------------------|
| Time Format Setup |
| Select Format     |
| 24 HOUR           |

### ■ Main Menu → Time/Date → Set Date Format

Date format can be DD/MM/YY, MM/DD/YY, or YY/MM/DD.

|                   |
|-------------------|
| Date Format Setup |
| Select Format     |
| MM/DD/YY          |

## ■ Main Menu → Time/Date → Set Time

Set the time as follows.

1. Press the **ENTER** key. The highlighting moves to the row of numbers.
2. Enter the proper numerals for **HH**, **MM**, and **SS**. Use the **left/right arrow** keys to move among the three fields. Use the **up/down arrow** keys to change the numbers themselves.
3. When finished, press the **ENTER** key again.
4. Use the **arrow** keys to select **[OK]**.
5. Press the **ENTER** key again to confirm and exit.

| Time Setup |      |
|------------|------|
| HH MM SS   |      |
| 12 13 30   |      |
| [CANCEL]   | [OK] |

## ■ Main Menu → Time/Date → Set Date

Set the date as follows.

1. Press the **ENTER** key. The highlighting moves to the row of numbers.
2. Enter the proper numerals for **MM**, **DD**, **YY**, and **Day**. Use the **left/right arrow** keys to move among the three fields. Use the **up/down arrow** keys to change the numbers themselves.
3. When finished, press the **ENTER** key again. Use the **arrow** keys to go to **[OK]**.
4. Press the **ENTER** key again to confirm and exit.

| Date Setup   |      |  |  |
|--------------|------|--|--|
| MM DD YY Day |      |  |  |
| 12 13 99 2   |      |  |  |
| [CANCEL]     | [OK] |  |  |

---

---

**NOTE:** A number from 1 through 7 specifies the day of the week. Day 1 of the week varies with geographic location and local custom.

For example, if Sunday is day 1 and today is Wednesday, enter **4** as the **Day** value.

This setting ensures that a scheduled macro (timed macro) is run on the correct day of the week.

---

---

## ■ Main Menu → Time/Date → Set Master / Slave

Master/slave selection can be used to set one particular multiplexer (of several in an installation) as a master clock. If this is done, the time changes and daylight savings time need to be changed on the master unit only.

The master clock controls the time and date display for the other multiplexers in the RS-485 network. For master/slave selection to function properly, each multiplexer in the network must be separately set up through the menu, and the multiplexers must be connected together via their RS-485 parts.

| Master/Slave Select |      |
|---------------------|------|
| Master Clock :      | NO   |
| [CANCEL]            | [OK] |

---

---

**NOTE:** There can be only one master clock. The rest must be slaves.

---

---

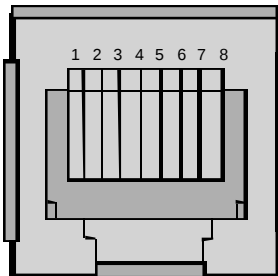
## RS-485 Connections for Master/Slave Timekeeping

**NOTE:** Shields are grounded at one end only, preferably at the multiplexer.

With a properly wired RS-485, the length is limited to 3,200 feet (1,000 meters) from node to node, without requiring additional transmission equipment.

The connection details are shown in the following table below.

**Table 4-1. RJ-45 Pin Connections.**

|  <p>RJ-45 socket on rear panel.</p> | Pin | Use                 |
|----------------------------------------------------------------------------------------------------------------------|-----|---------------------|
|                                                                                                                      | 1   | GND (Shield)        |
|                                                                                                                      | 2   | +12 V <sub>DC</sub> |
|                                                                                                                      | 3   | Network <b>+ve</b>  |
|                                                                                                                      | 4   | (N/C)               |
|                                                                                                                      | 5   | (N/C)               |
|                                                                                                                      | 6   | Network <b>-ve</b>  |
|                                                                                                                      | 7   | GND (Shield)        |
|                                                                                                                      | 8   | +12 V <sub>DC</sub> |

For networks longer than thirty feet, the user must terminate the network at each end. The network is polarity-dependent. Connect pin 3 to pin 3, pin 6 to pin 6, and so forth. Do not reverse the polarity of the network.

Do not use the 12-V<sub>DC</sub> power leads in the RS-485.

This power configuration was designed for demonstration purposes, and is not intended for normal use. In all other circumstances, such as multi-dropped multiplexers, do not use the 12-V<sub>DC</sub> power leads in the RS-485 cable.

## 4.2 Main Menu → Sequencing

Use this menu to specify:

- Multiscreen dwell time (used for the **SEQUENCING** cameos in the multiscreen mode).
- Fullscreen dwell times

|                          |
|--------------------------|
| <b>Multiscreen Dwell</b> |
| <b>Fullscreen Dwell</b>  |
| <b>Exit</b>              |

The fullscreen dwell time is the same for both Multiscreen and Monitor B in Live and Play modes. Dwell time settings determine the time between each camera in the sequence list.

## ■ Main Menu → Sequencing → Multiscreen Dwell

Use this box to set the Multiscreen Dwell time in seconds. The range is from 1 through 250, with a default value of 3.

A similar box appears for **Fullscreen Dwell**.

|                          |
|--------------------------|
| <b>Multiscreen Dwell</b> |
| (Time in Seconds)        |
| 03                       |

## 4.3 Main Menu → Record

Use this menu to specify:

- Recording quality (Low, Medium, or High).
- Normal recording speed.
- Alarm recording speed (2-hour for NTSC/EIA, 3-hour for PAL/CCIR).
- Whether previously recorded information is to be overwritten automatically or only with the user's approval.

|                            |
|----------------------------|
| <b>Record Quality</b>      |
| <b>Normal Record Speed</b> |
| <b>Alarm Record Speed</b>  |
| <b>Record Mode</b>         |
| <b>Disk Maintenance</b>    |
| <b>Exit</b>                |

The user can also have previously stored information:

- Deleted (with the possibility of restoring it).
- Undeleted (restored).
- Destroyed (removed with no possibility of restoration).

The Record List is used to set the record order of camera output signals. Up to thirty cameras can be selected in any order. This allows the same camera number to be repeated in the list (for more important cameras) as required to increase the update rate or camera priority.

### Automatic Modification of the Record List

The unit automatically modifies the Record List in the case of videoloss, alarm, or activity detection, according to the parameters set up by the user in the Alarm and Motion Detection menus. For example, if Interleaved recording on alarm is selected, a single camera in alarm is recorded in virtual real time.

---

---

|              |                                                                                                                                                                                             |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NOTE:</b> | If alarms and motion detection occur at the same time, the alarm modifications to the Record List take precedence and cancel all modifications made to the Record List by motion detection. |
|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

---

---

## ■ Main Menu → Record → Record Quality

Use this menu to set each camera's recording quality (resolution) individually. The options are Low, Medium, or High.

| <u>Resolution</u> | <u>Compression</u> | <u>Storage Space Needed</u> | <u>Fineness of Detail</u> |
|-------------------|--------------------|-----------------------------|---------------------------|
| High              | Lowest             | Greatest                    | Excellent                 |
| Medium            | Medium             | Medium                      | Good                      |
| Low               | Highest            | Least                       | Fair                      |

| Record Quality |      |  |
|----------------|------|--|
| Camera 01:     | High |  |
| Camera 02:     | High |  |
| Camera 03:     | High |  |
| Camera 04:     | High |  |
| Camera 05:     | High |  |
| Camera 06:     | High |  |
| Camera 07:     | High |  |
| :              |      |  |
| :              |      |  |
| :              |      |  |
| Camera 16:     | High |  |
| [CANCEL]       | [OK] |  |

## ■ Main Menu → Record → Normal Record Speed

## ■ Main Menu → Record → Alarm Record Speed

The ALARM recording speed is usually the recorder's fastest speed setting: 2-hour for NTSC/EIA, 3-hour for PAL/CCIR.

Normal time-lapse recording typically runs at a slower speed, such as 24-hour or 48-hour, resulting in disk space savings while no alarm events are occurring.

The normal Record Speed can also be programmed in the Operator menu. The factory default setting is 2-hour for NTSC/EIA, 3-hour for PAL/CCIR.

| Normal Record Speed |       |
|---------------------|-------|
| Fields              | Hours |
| 001                 | 002   |

| Alarm Record Speed |       |
|--------------------|-------|
| Fields             | Hours |
| 001                | 002   |

For most time-lapse speeds, the **Fields** value corresponds to the record duration as follows:

| Fields Value | Record Value |             |
|--------------|--------------|-------------|
|              | NTSC (hours) | PAL (hours) |
| 001          | 2            | 3           |
| 003          | 6            | 6           |
| 005          | 8            | 12          |
| 007          | 12           | 18          |
| 009          | 16           | 24          |
| 011          | 20           | 30          |
| 013          | 24           | 36          |

## ■ Main Menu → Record → Record Mode

Use this menu to specify whether recorded information is to be overwritten automatically, or only with the user's approval.

|                       |
|-----------------------|
| <b>Auto Overwrite</b> |
| <b>User Confirm</b>   |

If **Auto Overwrite** is selected, the disk is used as a **record buffer**, automatically overwriting the oldest recorded information with the incoming data.

If **User Confirm** is selected, recording stops when the disk becomes full. The user is prompted to authorize the overwriting of old information.

## ■ Main Menu → Record → Disk Maintenance

The user can also have previously stored information:

- Deleted (with the possibility of restoring it).
- Undeleted (restored).
- Destroyed (removed with no possibility of restoration).

|                 |
|-----------------|
| <b>Delete</b>   |
| <b>Undelete</b> |
| <b>Destroy</b>  |

---

---

**CAUTION:** Concerning the **Delete**, **Undelete**, and **Destroy** processes:

Pressing the **ENTER** key will begin the process.

**No confirmation box will appear. Once started, the process cannot be stopped.**

---

---

Selecting **Destroy** in the **Disk Maintenance** menu opens this box:

|                                                           |
|-----------------------------------------------------------|
| <b>Message</b>                                            |
| <b>Delete all records in memory buffer. Please wait!!</b> |
| <b>[OK]</b>                                               |

Selecting **Delete** in the **Disk Maintenance** menu opens this box:

|                                                           |
|-----------------------------------------------------------|
| <b>Message</b>                                            |
| <b>Delete all records in memory buffer. Please wait!!</b> |
| <b>[OK]</b>                                               |

Selecting **Undelete** in the **Disk Maintenance** menu opens this box:

|                                                   |
|---------------------------------------------------|
| <b>Message</b>                                    |
| <b>Recover all deleted records. Please wait!!</b> |
| <b>[OK]</b>                                       |

This box appears after restoration.

| Message             |
|---------------------|
| Disk data undeleted |
| [OK]                |

## 4.4 Main Menu → Alarms

The standard unit is equipped with one alarm input per camera output, each typically associated with its Live video input. An alarm input displays a warning on both Multiscreen and Monitor B, flashes a front panel LED, sounds an internal buzzer, and automatically changes Record List priority.

Use this menu to specify:

- Whether the alarm input for each camera is N/O or N/C.
- Whether the alarms are Latched, Transparent, or Timed Out.
- How the images from the alarmed cameras are to be recorded (Interleaved, Exclusive or, No Change).
- Whether some or all of the alarms are to be enabled or disabled.
- Pre Alarm Duration. See page 4-10.
- Whether Relay 2 responds to a malfunction that occurs during archiving.

|                            |
|----------------------------|
| <b>Input Configuration</b> |
| Alarm Latch                |
| Alarm Record Mode          |
| Enable / Disable           |
| Pre Alarm Duration         |
| Archive Alarms             |
| Exit                       |

Alarms trigger displays of a flashing symbol **A** in each corresponding cameo on multiscreen, and **ALM** on any fullscreen or Monitor B screens of cameras in alarm.

### ■ Main Menu → Alarms → Input Configuration

The alarm inputs are configured as zero potential relay contacts, individually programmable as normally open (N/O) or normally closed (N/C). To select the alarm input configuration as N/O or N/C, use the Input Configuration section of the Alarm menu (shown below). The factory default is **N/OPEN**.

| Alarm Input |          |
|-------------|----------|
| Alarm 01:   | N/OPEN   |
| Alarm 02:   | N/CLOSED |
| Alarm 03:   | N/OPEN   |
| Alarm 04:   | N/OPEN   |
| Alarm 05:   | N/OPEN   |
| Alarm 06:   | N/CLOSED |
| Alarm 07:   | N/OPEN   |
| :           |          |
| :           |          |
| :           |          |
| Alarm 16:   | N/OPEN   |
| [CANCEL]    | [OK]     |

■ **Main Menu → Alarms → Alarm Latch**

Alarm latching determines how the unit responds to alarm inputs.

|                    |
|--------------------|
| <b>Latched</b>     |
| <b>Transparent</b> |
| <b>Timed Out</b>   |

There are three types of alarm latching, as shown in the following table.

**Table 4-2. The Three Types of Alarm Latching.**

| Type                                          | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Latched</b>                                | Alarms are latched until silenced and acknowledged. A new input restarts the alarm.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Timed Out</b>                              | <p>Timed out alarms are latched for a preset period from the start of alarm activation. When the preset interval times out, the alarm is automatically silenced and acknowledged. The timeout period is a programmable selection in the menu.</p> <p>If an alarm input is still active after the timeout, the alarm LED remains on.</p> <p>If an alarm ceases and restarts before the timeout period ends, the timeout period starts over.</p> <p>Timed out alarms can be silenced and acknowledged at any time. Like latched alarms, if the alarm is canceled, it is silenced and acknowledged, and does not reactivate until new input occurs.</p> |
| <b>Transparent<br/>(not Latched or Timed)</b> | Alarms are active only while the alarm input is active. As soon as the alarm input ceases, the alarm automatically is silenced and acknowledged.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

■ **Main Menu → Alarms → Alarm Latch → Timed Out**

Use this box to set the timeout interval in seconds. The range is from 1 through 250.

|                          |
|--------------------------|
| <b>Alarm Timeout</b>     |
| <b>(Time in Seconds)</b> |
| <b>020</b>               |

---

**NOTES:**      A Transparent alarm cannot be silenced or acknowledged. It remains active as long as the corresponding alarm input is active.

                    If the ability to silence or acknowledge active alarms is desired and Transparent mode is preferred, select Timed Out alarms in the Alarm Latching menu, and set the timeout period to two seconds.

---

■ Main Menu → Alarms → Record Mode

Use this menu to select among No Change recording, Exclusive recording, or Interleaved recording as the response to an alarm. The latter two modes always result in a faster update to disk storage of a camera in alarm.

This is a global system setting, and all cameras in alarm will be recorded using this method.

**Alarm Record Mode**

**Select Mode**

**INTERLEAVED**

### Table 4-3. The Three Record Modes.

| Mode                                 | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>No Change</b>                     | <p>In this mode, recording during alarms means that no priority recording exists for the cameras in alarm, and the Record List remains unchanged during alarms.</p> <p>However, the user can still program the unit to switch from a time-lapse speed to a faster recording speed during alarms, ensuring alarm events at faster update speed.</p>                                                                                                                                                                                                                                                                            |
| <b>Exclusive</b>                     | <p>In this mode, the system records only alarmed cameras. All non-alarmed cameras are omitted from the Record List during an alarm.</p> <p>Exclusive recording mode is chosen when several simultaneous alarms are expected to occur often, and a near real-time record of those alarm events is required. The disadvantage is that other cameras are not recorded during an alarm.</p> <p>If Exclusive alarm recording is selected, the alarm input sensors must be very sensitive and reliable, so that alarm events are not missed, and the system does not initiate exclusive alarm mode recordings for false alarms.</p> |
| <b>Interleaved<br/>(Recommended)</b> | <p>In this mode, both the alarmed cameras and non-alarmed cameras are recorded. Alarmed cameras have a higher priority and are interleaved between non-alarmed cameras. The Interleaved mode results in increased recording of cameras in alarm, without stopping the recording of other cameras. This is the mode recommended for most installations.</p>                                                                                                                                                                                                                                                                    |

**EXAMPLE:** Non-alarmed cameras: 1,2,3,5,7  
Cameras in alarm: 4,6  
Interleaved recording sequence:  
1, **4**, **6**, 2, **4**, **6**, 3, **4**, **6**, 5, **4**, **6**, 7, **4**, **6**, 1, . . .

**NOTE:** In general, Interleaved recording provides quick updates of cameras in alarm (including multiple alarms.) Interleaved mode is the recommended setting.

## ■ Main Menu → Alarms → Enable/Disable

This selection offers three options:

- **Individual Enable:** Allows individual alarms to be enabled or disabled.
- **Enable All:** Globally enables all alarm inputs.
- **Disable All:** Globally disables all alarm inputs.

|                          |
|--------------------------|
| <b>Individual Enable</b> |
| <b>Enable All</b>        |
| <b>Disable All</b>       |
| <b>Exit</b>              |

## ■ Main Menu → Alarms → Enable/Disable → Individual Enable

Selecting **Individual Enable** in the previous menu opens this menu. Each camera can be individually enabled or disabled.

| Alarms Enable |         |
|---------------|---------|
| Alarm 01:     | ENABLE  |
| Alarm 02:     | DISABLE |
| Alarm 03:     | ENABLE  |
| Alarm 04:     | ENABLE  |
| Alarm 05:     | ENABLE  |
| Alarm 06:     | DISABLE |
| Alarm 07:     | ENABLE  |
| :             |         |
| :             |         |
| :             |         |
| Alarm 16:     | ENABLE  |
| [CANCEL]      | [OK]    |

## ■ Main Menu → Alarms → Pre Alarm Duration

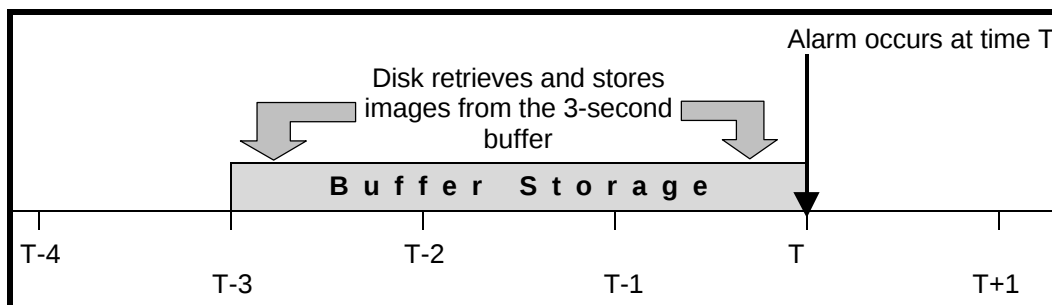
See the discussion on the next page.

The maximum setting is **05**.

The minimum setting is **0**.

| Pre Alarm Duration |
|--------------------|
| (Time in Seconds)  |
| 03                 |

While recording, images entering the DMX-161/162 are stored in a buffer. If the **Pre Alarm Duration** is set for **03** seconds, the buffer contains the last 3 seconds of images. If an alarm occurs at time T (seconds), the DMX-161/162 retrieves the buffer contents and places it on the disk **ahead** of the alarm event. This allows the user to see what triggered the alarm.




---

---

**NOTE:** The buffer is not maintained unless recording is in progress (the Record LED is on).

---

---

#### ■ Main Menu → Alarms → Archive Alarms

Use this menu to program Relay 2 to respond if a malfunction occurs during archiving. (The relay can be wired to sound an alarm.)

| Archive Alarm           |      |
|-------------------------|------|
| Relay 2 : <b>ENABLE</b> |      |
| [CANCEL]                | [OK] |

## 4.5 Main Menu → Action Detection

These options are discussed below.

|                          |
|--------------------------|
| Enable/Disable Detection |
| Setup Active Zones       |
| Indicate Detection       |
| Setup Parameters         |
| Exit                     |

These units offer complete motion detection, including an adjustable sensitivity setting, and size discrimination per camera. Motion detection (Activity Detection) is used to adjust the rate at which cameras are recorded.

## Activity Detection

Activity detection looks for luminance changes in selected areas of the screen. Changes above a set threshold are interpreted as activity. Changes in light and camera vibration may be falsely interpreted as activity. This type of motion detection is offered by most multiplexers, and is adequate to detect activity in a scene when false detection is not important. Typically, activity detection is used in areas where motion is not the result of intruders, and where movement is normal and expected.

---

|              |                                                                                                                                                                                                                                                                                                       |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NOTE:</b> | Some outdoor environments have complex intrusion detection requirements. In those cases, use a motion detector intended specifically for such situations. If the unit is intended for intrusion detection, read this section before installing the cameras and setting up the motion detection menus. |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

---

## Motion Detection Symbols

Motion Detection displays the symbol **M** for motion detection on Multiscreen and Monitor B. The factory default is set to activate this symbol. If no displayed symbol is desired, select NO in the Indicate Detection menu. This is a global setting, affecting all cameras with enabled motion detection. If motion has been turned on, but no **M** appears when motion is present, check the Setup Active Zones and the sensitivity settings in the Activity Parameters Setup.

### ■ Main Menu → Motion Detection → Enable/Disable Detection

The factory default for Motion Detection is the disabled mode. Program all motion, type, parameter, and grid setups before enabling motion detection. (The last setup item should be the enabling of motion detection.)

|                          |
|--------------------------|
| <b>Individual Enable</b> |
| <b>Enable All</b>        |
| <b>Disable All</b>       |
| <b>Exit</b>              |

Enable motion detection on individual cameras using Individual Enable. Alternatively, select **Enable All** or **Disable All** from this menu.

■ **Main Menu → Motion Detection → Enable/Disable Detection → Individual Enable**

This menu appears if **Individual Enable** is selected in the previous menu.

| Detection Enable    |     |         |
|---------------------|-----|---------|
| Detection on Camera | 01: | ENABLE  |
| Detection on Camera | 02: | DISABLE |
| Detection on Camera | 03: | ENABLE  |
| Detection on Camera | 04: | ENABLE  |
| Detection on Camera | 05: | ENABLE  |
| Detection on Camera | 06: | DISABLE |
| Detection on Camera | 07: | ENABLE  |
|                     | :   |         |
|                     | :   |         |
|                     | :   |         |
| Detection on Camera | 16: | ENABLE  |
| [CANCEL]            |     | [OK]    |

■ **Main Menu → Motion Detection → Setup Active Zones → Active Zones**

Select the Setup Active Zones menu, and the camera to set up. Then press **ENTER**, and select by number the camera to be programmed. This will display the screen showing 256 zones arranged in a 16 x 16 grid.

| Active Zones  |
|---------------|
| Select Camera |
| 01            |

---

**NOTE:** All cameras can have motion detection disabled. This must not be confused with enabling or disabling individual zones within the camera scene.

---



---

**RECOMMENDATION:** Disable zones that may contain **incidental movement**. Incidental movement includes:

- Trees that can sway in the wind.
- Pedestrian and vehicular motion.
- Reflections from glass, other highly polished surfaces, and stretches of water. These can be sources of **apparent** motion.

---

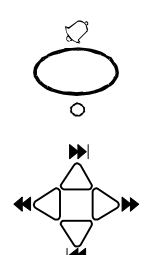
## Cursor

|                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>The upper left zone has a flashing square symbol, known as the cursor. The zone with the flashing cursor can be enabled or disabled. Use the <b>arrow</b> keys to move the cursor to the grid zones to be changed. (When the cursor reaches the end of a line in the zone grid, it automatically wraps around to the beginning of the next line.)</p> <p>The ALARM key selects the Enable, Disable, or No Action mode. The ALARM key toggles between three possible zone setup modes, and the flashing cursor changes color as shown in the table below.</p> |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Table 4-4. Colors of the Flashing Cursor.**

| Choice        | Color of Flashing Cursor |
|---------------|--------------------------|
| No Action     | Gray/White               |
| Enable Zones  | Black/White              |
| Disable Zones | Clear/White              |

## No Action Mode

|                                                                                    |                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>Use the <b>ALARM</b> key to select <b>No Action</b> mode, and then use the <b>arrow</b> keys to go to the first zone to be changed.</p> <p>No Action mode is chosen when no adjacent zones require a change.</p> <p>The flashing cursor will have the color of Gray/White in this mode.</p> |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Enable Zones

Changes disabled zones to enabled zones. Enabled zones sense all motion.

## Disable Zones

Changes enabled zones to disabled zones. Disabled Zones ignore all motion.

After selecting Enable/Disable Zones mode with the **ALARM** key, the flashing cursor changes to the selected mode. Use the **arrow** keys to move the cursor and enable or disable adjacent zones as necessary. Change the mode to No Action when no adjacent zones require a change.

Enabled zones have a gray symbol , and disabled zones have a clear symbol  inside the corresponding grid position.

The factory default is that all zones are enabled.

■ **Main Menu → Motion Detection → Indicate Detection**

Use this menu to specify whether detection is to be indicated (by displaying an **M**).

| Indicate Detection |           |
|--------------------|-----------|
| Detection :        | <b>ON</b> |
| [CANCEL]           | [OK]      |

■ **Main Menu → Motion Detection → Setup Parameters**

Select a camera in this box.

Use the **arrow** keys to select the camera.

| Motion Detection Setup |
|------------------------|
| Select Camera          |
| <b>01</b>              |

This box appears when the **enter** key is pressed.

The camera fields displays the number of the selected camera and cannot be changed.

| Activity Parameters Setup |             |
|---------------------------|-------------|
| Camera                    | : <b>01</b> |
| Sensitivity               | : <b>05</b> |
| Target Size               | : <b>03</b> |
| Record Rate               | : <b>4X</b> |
| [CANCEL]                  | [OK]        |

## Motion Detection Sensitivity

The motion detection sensitivity for each camera can be set to levels of from 1 through 10. This setting is made on a camera-by-camera basis, and applies to all enabled zones in any particular camera scene. Each of the 256 zones (16 x 16 grid) distinguishes among 256 grayscale levels averaged over the zone's area.

Changes in the 256 gray levels in a zone can be set as shown in the following table.

**Table 4-5. Sensitivity Settings.**

| <b>Sensitivity Setting</b>                                                                                                                                 | <b>Meaning<sup>†</sup></b> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|
| 1 (least sensitive)                                                                                                                                        | 100                        |
| 2                                                                                                                                                          | 75                         |
| 3                                                                                                                                                          | 55                         |
| 4                                                                                                                                                          | 40                         |
| 5 (factory default)                                                                                                                                        | 30                         |
| 6                                                                                                                                                          | 23                         |
| 7                                                                                                                                                          | 17                         |
| 8                                                                                                                                                          | 12                         |
| 9                                                                                                                                                          | 8                          |
| 10 (most sensitive)                                                                                                                                        | 5                          |
| <sup>†</sup> An entry of <b>N</b> in this column means that the unit detects a change of:<br><b>N</b> gray levels<br>out of 256<br>averaged over the zone. |                            |

---

---

**NOTE:** The highest sensitivity (10) is reasonable only if the video signal has very little noise.

---

---

---

---

**RECOMMENDATIONS:** For sensitivity setting, start at factory default setting of 5, and increase setting until false motion detection occurs (alarm will activate).

Then, reduce setting by 1 (see pages 4-15 & 4-16).

Also, camera zones can be disabled to eliminate incidental movement (see page 4-14).

---

---

## Record Rate

The multiplexer has one disk to record images from many cameras. For this reason, the video from each camera (60 fields/second in NTSC/EIA, 50 in PAL/CCIR) must be time-sliced and reduced to a lower field rate, allowing other cameras to insert fields into the same video stream going to the disk.

If little movement is present in the scene, the lowered update rate for each camera is not a problem. If activity is present in the camera view, it is best to generate as many updated fields of the activity as possible so that all activity events are recorded.

The unit resolves this matter in two ways:

1. A very fast, optimized update rate to disk at 2-hour for NTSC/EIA, 3-hour for PAL/CCIR is up to three times as fast as most other multiplexers.
2. If ongoing motion occurs within a camera's field of view, the update rate for each camera is automatically adjusted by the system. In this way, cameras without activity are recorded less often, and cameras with frequent activity are recorded more often.

A unique feature of the unit is the increase in update rate that can be set in the Record Rate option. Active cameras can record either two or four times as often as normal. Alternatively, they can be interleaved allowing flexibility to set up a custom installation.

Record Rate has four choices for activity in the table below:

**Table 4-6. The Four Record Rate Activity Choices.**

| Choice      | Description                                                                                                                                         |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| None        | Used when most cameras are expected to sense motion at the same time, or when the particular camera scene is not important yet has a lot of motion. |
| Interleaved | When very few cameras sense motion at any one time.                                                                                                 |
| 2X          | Used when not all cameras are connected.                                                                                                            |
| 4X          | This is the factory default.                                                                                                                        |

## Target Size Settings

The unit's target size setting is related to the number of zones a single target fills. This setup is only used for intrusion detection and defines the minimum size. Set the target size between 1 and 256 for each camera. The factory default target size setting is **1**. This means that all sizes of targets result in motion detection if the sensitivity is set up properly.

### Target Size

The size of a target for motion detection (normally a human being) varies depending on the camera lens and the distance from the camera. In general, if size discrimination is considered during the detection of motion, fewer false alarms result from small animals, movement of plants in the wind, or reflections.

---

---

|              |                                                                                                                                                       |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NOTE:</b> | The sensitivity setting can affect the degree of detection within each zone, and must be adjusted together with the target size for best performance. |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|

---

---

Estimate how many zones the target normally fills based on the camera view, and enter a number close to that value as the target size.

---

---

**EXAMPLE:** If a person normally fills a 5 x 2 grid on a particular camera scene, which is 10 zones, then the target size for that camera should be set accordingly.

---

---

---

---

**RECOMMENDATION:** Set the target size to the lowest reasonable setting for the target and the camera scene. For more reliable intrusion detection, the target size should preferably be set to at least 2.

---

---

### Lens Selection for Motion Detection

Motion is more easily detected if an intruder crosses the field of view. The unit is less sensitive to motion toward or away from the lens.

Select a lens so that a person always fills two or more zones in the camera scene.

Select the lens and field of view so that the target remains in the field of view for at least two seconds at expected target speeds.

## 4.6 Main Menu → Camera Setup

Use this menu to specify for each camera:

- A title.
- Whether the camera is enabled or disabled.

|                |
|----------------|
| Camera Titles  |
| Camera Disable |
| Camera Color   |

Finally, use this menu to specify whether each camera is color or monochrome.

## 4.7 Main Menu → Camera Setup → Camera Titles

Use this menu to specify:

- Whether camera titles are to be displayed on Multiscreen, Monitor B, both, or neither.
- What those titles are for each camera.

|               |
|---------------|
| Title Display |
| Edit Titles   |
| Exit          |

### ■ Main Menu → Camera Titles → Title Display

Use this box to specify whether the camera's title is to be displayed on Multiscreen, Monitor B, both, or neither.

|                |      |
|----------------|------|
| Titles Display |      |
| Multiscreen :  | ON   |
| Monitor B :    | ON   |
| [CANCEL]       | [OK] |

## ■ Main Menu → Camera Titles → Edit Titles

Use this menu to select a camera whose name is to be edited.

|                                             |
|---------------------------------------------|
| <b>Edit Camera Title</b>                    |
| <p><b>Select Title</b></p> <p><b>01</b></p> |

## ■ Main Menu → Camera Titles → Edit Camera Title

Initially, row ② is blank.

Edit the camera's title as follows:

1. Press the **ENTER** key. The alphabet appears in ②, and the camera's current title appears in ①.
2. Press the **SEQUENCE** key to browse backward.
3. Using the **left/right arrow** keys, select a location in the camera's title in row ①.
4. Select a character in row ② using the **up/down arrow** keys.
5. Use the **2** key to insert the selected character at the selected location.
6. Use the **1** key to insert a space character at the selected location.
7. When finished, press **ENTER** again.
8. Use the **arrow** keys to highlight either **[CANCEL]** or **[OK]**, and exit.

|                                                                                                                                         |   |
|-----------------------------------------------------------------------------------------------------------------------------------------|---|
| <b>Camera Title Edit</b>                                                                                                                |   |
| <p><b>Camera 01</b></p> <p><b>[CANCEL] [OK]</b></p>                                                                                     | ① |
| <b>ABCDEFGHIJKLMNOPQRSTUVWXYZ</b>                                                                                                       | ② |
| <p><b>SEQ selects character bank</b></p> <p><b>'1' Key selects blank character</b></p> <p><b>'2' Key inserts selected character</b></p> |   |

■ **Main Menu → Camera Setup → Camera Disable**

**Individual Disable:** Provides a listing from which each camera can be disabled or enabled individually.

**Power Up Disable:** If activated, automatically disables cameras whose sync or video levels are missing from the video inputs when power is applied to the unit.

**Auto Disable Now:** Automatically disables cameras whose sync or video levels are missing from the video inputs.

|                    |
|--------------------|
| Individual Disable |
| Power Up Disable   |
| Auto Disable Now   |
| Exit               |

If a camera is not installed, the continuous display of the videoloss symbol **V** for a cameo (**VDL** for a fullscreen) can distract an operator. In addition, too much time must be spent removing the camera from the sequence lists. The unit can be programmed in one step, setting active cameras as disabled, so that the symbols **V** or **VDL** do not appear. In addition, disabled cameras are automatically removed from all programmable sequence lists and the Record Lists. This feature is useful when a camera is undergoing maintenance or has a temporary fault.

---

**NOTE:** The disabled setting does not affect cameras displayed on Multiscreen during Play mode.

---

■ **Main Menu → Camera Setup → Camera Disable → Individual Disable**

Use this menu to enable or disable cameras individually.

| Camera Disable |        |
|----------------|--------|
| Camera 01 :    | ENABLE |
| Camera 02 :    | ENABLE |
| Camera 03 :    | ENABLE |
| Camera 04 :    | ENABLE |
| Camera 05 :    | ENABLE |
| Camera 06 :    | ENABLE |
| Camera 07 :    | ENABLE |
| :              |        |
| Camera 16 :    | ENABLE |
| [CANCEL]       | [OK]   |

■ **Main Menu → Camera Setup → Camera Disable → Power Up Disable**

Use this menu to turn this feature on or off.

| Power Up Disable |      |
|------------------|------|
| Disable          | OFF  |
| [CANCEL]         | [OK] |

## ■ Main Menu → Camera Setup → Camera Color

The Camera Color menu is useful if a black and white (monochrome) camera is replaced with a color camera, or a change is made from a monochrome to a color display.

|                         |
|-------------------------|
| <b>Color Setup</b>      |
| <b>Color Detect Now</b> |

The Camera Color menu must be accessed from the Camera Setup menu to change the default settings from color to monochrome.

When the unit is first set up, and all connections are made, it is advisable to command the unit to restore all factory default settings. This should be done before any programming takes place.

When a Factory Default command is given, the unit also checks each input for the presence of a video signal, and determines whether the signal (if present) is a color or monochrome. From this point forward, it is necessary to access the **Color Setup** and **Color Detect Now** menus from the **Camera Setup** menu to change the default settings for color and monochrome. This is necessary, for example, if a failed monochrome camera has been replaced with a color camera.

## ■ Main Menu → Camera Setup → Camera Color → Color Setup

Specify either monochrome (black and white) or color images for each camera.

| Color Setup |         |
|-------------|---------|
| Camera 01   | : Color |
| Camera 02   | : Color |
| Camera 03   | : Mono  |
| Camera 04   | : Color |
| Camera 05   | : Color |
| Camera 06   | : Mono  |
| Camera 07   | : Mono  |
|             | :       |
| Camera 16   | : Color |
| [CANCEL]    | [OK]    |

## 4.8 Main Menu → Video Archive Setup

The unit stores video image files that can be archived on an external medium like Digital Audio Tape (DAT). This menu lets the user select files to be archived. Files can be restored from the archive to the disk for review.

|                        |
|------------------------|
| <b>Archive Mode</b>    |
| <b>Archive Setting</b> |
| <b>Erase Medium</b>    |
| <b>Exit</b>            |

## ■ Main Menu → Video Archive Setup → Archive Mode

Use this menu to:

- Turn archiving off. In this case, pressing the **SEARCH** key makes the unit search the disk only.
- Select recorded images (files) to be stored onto tape.
- View Archived data or restore it to the disk.
- Archive recorded data automatically. Recording is done to both disk and archiving tape simultaneously.

|                      |
|----------------------|
| Archiving OFF        |
| Selective Archive    |
| Restore from archive |
| Background archive   |

---

### NOTES on Selective Archiving:

Selecting an archive mode in the above menu does **not** cause an archiving or restoring operation to begin. Instead, it causes the search function to operate differently when activated from the Live or Play modes.

You must exit the menu system and press the **SEARCH** key. The search parameter window then opens.

---

## ■ Main Menu → Video Archive Setup → Archive Setting

The tape with the most recent recorded event is the starting point.

- If that tape is not full, it is loaded, and archiving begins.
- If it is full, the magazine is sequentially searched for a tape having some free space.
- If one is found, it is loaded, and archiving begins. Otherwise, the magazine is ejected.

|              |
|--------------|
| No Overwrite |
| Write Once   |
| Continuous   |
| Exit         |

Please refer to the Addendum - Archiving Devices (P/N 0150-0145) for additional details.

## ■ Main Menu → Video Archive Setup → Erase Medium

This is a confirmation box for erasing an **entire tape** (not just an archive). In Selective Archive Mode, a tape can also be erased.

| Message                     |
|-----------------------------|
| Erase Medium. Are you sure? |
| YES                         |

## 4.9 Main Menu → Communications

Use this menu to specify:

- The communication settings to be used for the RS-232 port.
- The unit's unique network address on the RS-485 bus.
- The unit's LAN/WAN IP Address settings.

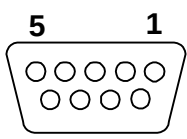
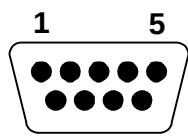
|          |
|----------|
| RS232    |
| RS485    |
| Ethernet |
| Exit     |

## ■ Main Menu → Communications → RS-232

The menu functions and front panel controls can be set up through the RS-232 port, providing programmable remote control from a PC or similar controller.

**Port 1**  
**Port 2**

**Table 4-7. RS-232 Connectors (Type DB-9).**

|                                  | RS-232                                                                            |                                                                                     |
|----------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                  | Port Number 1                                                                     | Port Number 2                                                                       |
| <b>Rear Panel View</b>           |  |  |
| <b>Rear Panel Location</b>       | Near Edge                                                                         | Near Center                                                                         |
| <b>Design</b>                    | Male                                                                              | Female                                                                              |
| <b>Receive Data (RX) Signal</b>  | Pin 3                                                                             | Pin 2                                                                               |
| <b>Transmit Data (TX) Signal</b> | Pin 2                                                                             | Pin 3                                                                               |
| <b>Ground (GND)</b>              | Pin 5                                                                             |                                                                                     |

## ■ Main Menu → Communications → RS-232 → Port 1

Port 1 allows flash upgrading of the PPC or operating system software.

**9600 Baud**  
**19200 Baud**  
**38400 Baud**  
**57600 Baud**

## ■ Main Menu → Communications → RS-232 → Port 2

Port 2 allows the baud rate to be set. RS-232 baud rates are selectable from 1200 to 9600. The factory default is 9600.

Note that the baud rates are different from those of Port 1.

**1200 Baud**  
**2400 Baud**  
**4800 Baud**  
**9600 Baud**

■ **Main Menu → Communications → Ethernet**

This box displays a message box for changing **Ethernet Settings**.

If **[YES]** is chosen, the next box below appears.

| Message                                                                                                   |
|-----------------------------------------------------------------------------------------------------------|
| <p><b>Changing Ethernet setting will cause system reboot.</b></p> <p><b>Accept?</b></p> <p><b>Yes</b></p> |

Use this box to change the values in the **Ethernet Settings**.

Use **UP/DOWN** to navigate and change values.

Press **[OK]** to reboot system.

To leave the **Ethernet Settings** unchanged, press **[CANCEL]**.

| Ethernet Settings                |   |                        |
|----------------------------------|---|------------------------|
| <b>Ethernet</b>                  | : | <b>ENABLE</b>          |
| <b>IP Address</b>                | : | <b>192.168.001.201</b> |
| <b>Subnet Mask</b>               | : | <b>255.255.255.000</b> |
| <p><b>[CANCEL]      [OK]</b></p> |   |                        |

---

**NOTE:** The following occurs for front panel lock-out during a Philips' DMX-161/162 Remote Viewer (current version 1.0.863) Ethernet session (IP Address connection) with the DMX-161/162:

- DMX-161/162 user disables Ethernet value in **Ethernet Settings** so as not to relinquish control of the front panel.
  - At start of session, the DMX-161/162 locks out its own front panel.
  - When TCP/IP session ends, DMX-161/162 re-enables front panel.
- 

---

**NOTE:** **DMX-161/162 Modes**

The DMX-161/162 will support concurrent standard and Ethernet operating sessions as follows:

- Record mode and Ethernet transfers (live or from disk).
  - Stop mode and Ethernet transfers (live or from disk).
  - Play mode, which activates the Stop mode, and allows Ethernet transfers (live or from disk).
-

## LAN (Ethernet) Cable Connections and Wiring

With a properly wired RJ-45, the length is limited to 100 feet (30.5 meters) maximum length, 6 feet (1.8 meter) minimum length, from node to node.

---

**NOTE:** Use either a **Straight Through** or a **CrossOver** LAN cable, depending on your LAN HUB configuration.

**Consult with your local site MIS personnel for the specific type of LAN HUB configuration.**

The wrong LAN cable may cause your unit to not work properly.

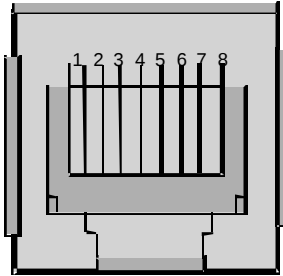
---

The following type of LAN cable needed depends on your local site LAN HUB configuration:

- For a DMX-161/162 that connects directly to a LAN HUB, use a **Straight Through** LAN cable.
- For a DMX-161/162 that connects directly to a PC, use a **CrossOver** LAN cable.

The RJ-45 connection details are shown in the following table below:

**Table 5-10. LAN RJ-45 Pin Connections on DMX-161/162.**

|  <p>LAN RJ-45 socket on rear panel.</p> | Pin | Use   |
|----------------------------------------------------------------------------------------------------------------------------|-----|-------|
|                                                                                                                            | 1   | TX+   |
|                                                                                                                            | 2   | TX-   |
|                                                                                                                            | 3   | RX+   |
|                                                                                                                            | 4   | (N/C) |
|                                                                                                                            | 5   | (N/C) |
|                                                                                                                            | 6   | RX-   |
|                                                                                                                            | 7   | NC    |
|                                                                                                                            | 8   | NC    |

## ■ Main Menu → Factory Settings

**CAUTION!**  
Entering **8,1,1,1**  
resets **ALL** settings (except time and date)  
to the factory defaults!

| Password Box                                                     |
|------------------------------------------------------------------|
| Please enter the Factory Password<br>-----<br>[CANCEL]      [OK] |

## ■ Main Menu → Password

Use this box to change the Menu password.

| Password Box                                                |
|-------------------------------------------------------------|
| Enter a new Install Password<br>-----<br>[CANCEL]      [OK] |

When you have entered a new password, a confirmation box is displayed where you must enter the same password again. Again use **[OK]** or **[CANCEL]** to complete this operation.

| Confirmation Box                                            |
|-------------------------------------------------------------|
| Please re-enter the Password<br>-----<br>[CANCEL]      [OK] |

If you select **[OK]** in the previous box, this message appears.

If you select **[CANCEL]** instead, the message reads:

**The Password was NOT changed!**

| Message                                     |
|---------------------------------------------|
| The new Password has been accepted!<br>[OK] |

# 5 TECHNICAL SPECIFICATIONS

| Multiplexer Connectors (CCIR-Compatible)<br>(One each unless otherwise noted) |                                                                                                                                                                                                                                                |                                                                                              |
|-------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Interface                                                                     | Type                                                                                                                                                                                                                                           | Description                                                                                  |
| <b>Cameras</b><br>↓<br><b>MUX</b>                                             | BNC                                                                                                                                                                                                                                            | 16 looping connectors. (COMPOSITE)<br>Both color and monochrome camera signals are accepted. |
| <b>MUX</b><br>↓<br><b>Monitors</b>                                            | BNC                                                                                                                                                                                                                                            | Multiscreen (digital multiscreen, COMPOSITE).                                                |
|                                                                               | BNC                                                                                                                                                                                                                                            | Monitor B (analog switching, COMPOSITE).                                                     |
|                                                                               | 4-pin mini-DIN                                                                                                                                                                                                                                 | Multiscreen (digital multiscreen, SVHS/YC).                                                  |
| <b>RS-232</b>                                                                 | Two ports: DB-9, female, three-wire, N-8-1, 1200 to 9600-baud.<br>Allows: <ul style="list-style-type: none"> <li>• Remote programming of menus.</li> <li>• Uploading of status data.</li> <li>• Remote control of front panel keys.</li> </ul> |                                                                                              |
| <b>RS-485</b>                                                                 | Two ports.<br>RJ-45.<br>Looping.<br>Range: up to 3,200 feet (1,000 meters) without conditioning.                                                                                                                                               |                                                                                              |
| <b>LAN</b>                                                                    | One LAN RJ-45 Connector.                                                                                                                                                                                                                       |                                                                                              |
| <b>Other</b>                                                                  | 50-pin high density SCSI-2 output port.<br>12-V <sub>DC</sub> power.                                                                                                                                                                           |                                                                                              |

| Video Parameters           |                                                                                                |
|----------------------------|------------------------------------------------------------------------------------------------|
| <b>Signal conditioning</b> | Input AGC, 0.7 to 2.0 V <sub>PP</sub> composite video inputs accepted.                         |
| <b>Termination</b>         | Manual, 75-ohm, or high-impedance if looped.                                                   |
| <b>Display memory</b>      | 1,024 x 1,024 memory array<br>8 megabytes                                                      |
| <b>Resolution</b>          | Horizontal: 720 pixels<br>Vertical: 484 active lines (NTSC/EIA)<br>576 active lines (PAL/CCIR) |
| <b>Gray scale</b>          | 256 levels                                                                                     |

| Keys and Indicators              |                        |                                                                                                                                        |
|----------------------------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>1 - 16</b>                    | Keys                   | Each selects a corresponding camera, fullscreen.                                                                                       |
| <b>ALARM</b>                     | Key,<br>LED,<br>Buzzer | Used to accept alarms.<br>An LED flashes on any alarm.<br>A buzzer sounds.                                                             |
| <b>Arrow</b>                     | Key                    | Multiple arrow key used in menus, panning, and tilting.                                                                                |
| <b>ENTER</b>                     | Key,<br>LED            | Selects menu items when programming.<br>Initiates the Active Cameo mode, LED lit in Active Cameo mode.                                 |
| <b>FREEZE</b>                    | Key                    | Freezes any display in Live or Play mode.                                                                                              |
| <b>LIVE</b>                      | Key,<br>LED            | Selects Live mode, LED lit.                                                                                                            |
| <b>MENU SETUP</b>                | Key                    | Enters and exits menu screens for programming of unit.<br>Password-protected.                                                          |
| <b>MULTISCREEN</b>               | Key                    | Selects multiscreen displays in Live or Play mode.<br>Toggles through a series of multiscreens.                                        |
| <b>MONITOR B</b>                 | Key,<br>LED            | Selects Monitor B for control, LED lit.                                                                                                |
| <b>Electronic Pan and Tilt</b>   | Key                    | Multiple-arrow key provides digital pan and tilt on zoomed images.                                                                     |
| <b>PLAY</b>                      | Key,<br>LED            | Selects playback mode for decoding tapes, LED lit.                                                                                     |
| <b>SINGLE FRAME/PLAY FORWARD</b> | Key                    | Selects playback mode for decoding tapes.                                                                                              |
| <b>SINGLE FRAME/PLAY REVERSE</b> | Key                    | Selects playback mode for decoding tapes.                                                                                              |
| <b>RECORD</b>                    | Key,<br>LED            | Selects record mode, LED lit.                                                                                                          |
| <b>SEARCH</b>                    | Key                    | Starts the Search operation for recorded data.                                                                                         |
| <b>SEQUENCE</b>                  | Key                    | Starts or stops sequencing.<br>Operates on both multiscreen and fullscreen displays.<br>Selectable dwell time and AutoList indicators. |
| <b>STOP</b>                      | Key                    | Stops recording and playback.                                                                                                          |
| <b>ZOOM</b>                      | Key,<br>LED            | Zooms 2x, fully interlaced, on fullscreen displays, LED lit.                                                                           |

See page 2-2 for the SEARCH key description.

| Video Indications                                                              |                                                       |
|--------------------------------------------------------------------------------|-------------------------------------------------------|
| Alarms<br>Videoloss<br>Record speed<br>Playback Speed                          | Motion Detection<br>Time/Date<br>Disk Space Remaining |
| <b>Titles:</b> 12 characters plus camera number.<br>Display can be turned off. |                                                       |

| Alarms                 |                                                      |
|------------------------|------------------------------------------------------|
| <b>Inputs</b>          | 1 per Camera.                                        |
| <b>Configuration</b>   | User programmable N/O or N/C (voltage free contact). |
| <b>Status</b>          | Same as motion.                                      |
| <b>Record Priority</b> | Interleaved, Exclusive, No Change.                   |

| Motion Detection            |                                                                                     |
|-----------------------------|-------------------------------------------------------------------------------------|
| <b>Zones per camera</b>     | 256: 16 x 16 grid                                                                   |
| <b>Sensitivity settings</b> | 10 levels                                                                           |
| <b>Gray levels per zone</b> | 256 levels                                                                          |
| <b>Recording priority</b>   | 2x, 4x, interleaved, or none.                                                       |
| <b>Status Output</b>        | Full Status available via RS-232.<br>Relays, link to alarms, on-screen indications. |

| Physical                 |                                                              |
|--------------------------|--------------------------------------------------------------|
| <b>Dimensions</b>        | 1U, 19" rack unit<br>17.5 X 14 X 1.7 in. (444 x 360 x 43 mm) |
| <b>Weight</b>            | Nominal: 9 lb. (4 kg)                                        |
| <b>Finish Protection</b> | Zinc-coated metal surfaces                                   |
| <b>Finish Paint</b>      | Black                                                        |

| Environmental                                 |                                                 |
|-----------------------------------------------|-------------------------------------------------|
| <b>Temperature</b>                            | Operating: 0 to 40 °C<br>Storage: -20 to +60 °C |
| <b>Relative Humidity<br/>(Non-Condensing)</b> | Operating: 10% to 80%<br>Storage: 10% to 95%    |

| Electrical           |                                                                                    |
|----------------------|------------------------------------------------------------------------------------|
| <b>Input voltage</b> | 12 V <sub>DC</sub><br>An auto-ranging 120-240 V <sub>AC</sub> adapter is included. |
| <b>Power</b>         | Maximum: 35 W                                                                      |

| Item                     | Model Numbers                                                                                                          |
|--------------------------|------------------------------------------------------------------------------------------------------------------------|
| Rack Mount Kit           | P/N 0820-0032                                                                                                          |
| Replacement Manual       | 0150-0149                                                                                                              |
| Replacement Power Supply | 4010-0016                                                                                                              |
| RS485                    | Cable P/N: 2-wire, Belden 9841 (shielded)<br>4-wire, Belden 9842 (shielded)<br>Terminator Plug, 100-ohm, P/N 0720-0027 |

---



---

**NOTE:** All specifications are subject to change without notice. Philips believes all specifications are correct, however, no liability is assumed for omissions or errors whatsoever.

---



---

# 6 SPECIAL FUNCTIONS

---

## 6.1 Text Insertion Protocol

|             |
|-------------|
| DELIMITER   |
| CLASS       |
| COMMAND     |
| DATA LENGTH |
| DATA[0]     |
| :           |
| :           |
| DATA[N-1]   |
| CHECKSUM    |

Each message consists of a four-byte header, a variable length data portion, and a single byte checksum.

The DELIMITER (hexadecimal 0xFF) signals the start of a new message.

The CLASS of External Text messages is defined to be hexadecimal 0x14.

The following COMMAND types are currently supported:

- 0x00 = CMD\_LINK\_TEST
- 0x01 = CMD\_TEXT\_INPUT
- 0x80 = CMD\_LINK\_TEST\_RESPONSE
- 0x81 = CMD\_TEXT\_INPUT\_RESPONSE

The DATA LENGTH byte is used to indicate how many bytes of data are contained in the message (that is, the number of bytes between the DATA LENGTH byte and the CHECKSUM byte). The maximum length for the DATA LENGTH is 32 characters.

The CHECKSUM byte is the result of an exclusive OR (XOR) operation on all the bytes in the message.

## 6.2 Link Text Message

The LINK TEXT message is used to test the communications link between the PC and the MUX.

|                    |      |
|--------------------|------|
| <b>delimiter</b>   | 0xFF |
| <b>class</b>       | 0x14 |
| <b>command</b>     | 0x00 |
| <b>data length</b> | 0x00 |
| <b>checksum</b>    | 0xEB |

## 6.3 Link Text Response Message

The MUX responds to a LINK TEXT with a LINK TEXT RESPONSE message. This message has the same format as the LINK TEXT message.

### Text Input Message

The TEXT INPUT message is used to store text when in record mode.

|                    |
|--------------------|
| <b>0xFF</b>        |
| <b>0x14</b>        |
| <b>0x01</b>        |
| <b>data length</b> |
| <b>camera</b>      |
| <b>line</b>        |
| <b>string[0]</b>   |
| <b>string[1]</b>   |
| <b>:</b>           |
| <b>string[n-1]</b> |
| <b>checksum</b>    |

The CAMERA byte indicates the camera associated with the text. Zero is used to reference Camera 1. The LINE byte must be either 0 or 1. The STRING bytes contain the text characters.

## Text Input Response

The MUX responds to a TEXT INPUT message with a TEXT INPUT RESPONSE message.

|                    |
|--------------------|
| <b>0xFF</b>        |
| <b>0x14</b>        |
| <b>0x81</b>        |
| <b>Data Length</b> |
| <b>Camera</b>      |
| <b>Line</b>        |
| <b>Status</b>      |
| <b>Checksum</b>    |

The **Status** byte value will be one of the following:

1. Text input message was accepted.
2. The previous text input message for that camera and line has not yet been written to disk.
3. The message was rejected as being too long.
4. The message was rejected because an invalid camera number was specified.
5. The message was rejected because an invalid line number was specified.



# 7 RS-232 REMOTE PROTOCOL

## SETUP PARAMETERS

Baud Rate (menu-selectable):

Start Bit: 1

Data Length: 8

Stop Bit: 1

No Parity

No Flow Control

## COMMUNICATION TYPES:

### A. Remote Front Panel Simulation

#### i) Data structure

Byte 1: 0xFF

Byte 2: 0x55

Byte 3: Front panel Key Code

#### ii) Description

Byte 1 and 2 are communication type ID bytes.

Byte 3 contains the code for a specific front panel key.

The different keys and their corresponding codes are as follows.

|            |    |
|------------|----|
| NO_KEY     | 0  |
| RECORD_KEY | 1  |
| PLAY_KEY   | 2  |
| LIVE_KEY   | 3  |
| ALARM_KEY  | 4  |
| FREEZE_KEY | 5  |
| PAUSE_KEY  | 5  |
| ZOOM_KEY   | 6  |
| SEQ_KEY    | 7  |
| QUAD_KEY   | 8  |
| CAM_1_KEY  | 9  |
| CAM_2_KEY  | 10 |
| CAM_3_KEY  | 11 |
| CAM_4_KEY  | 12 |
| CAM_5_KEY  | 13 |
| CAM_6_KEY  | 14 |
| CAM_7_KEY  | 15 |
| CAM_8_KEY  | 16 |
| CAM_9_KEY  | 17 |
| CAM_10_KEY | 18 |
| CAM_11_KEY | 19 |
| CAM_12_KEY | 20 |
| CAM_13_KEY | 21 |
| CAM_14_KEY | 22 |
| CAM_15_KEY | 23 |
| CAM_16_KEY | 24 |

|                   |        |
|-------------------|--------|
| Reserved          | 25-46  |
| MENU_KEY          | 47     |
| ENTER_KEY         | 48     |
| Reserved          | 49-55  |
| MON_B_KEY         | 56     |
| Reserved          | 57-69  |
| LEFT_ARROW_KEY    | 70     |
| RIGHT_ARROW_KEY   | 71     |
| UP_ARROW_KEY      | 72     |
| DOWN_ARROW_KEY    | 73     |
| UP_LEFT_KEY       | 74     |
| DOWN_LEFT_KEY     | 75     |
| UP_RIGHT_KEY      | 76     |
| DOWN_RIGHT_KEY    | 77     |
| Reserved          | 78-116 |
| SEARCH_KEY        | 117    |
| FRAME_REVERSE_KEY | 118    |
| FRAME_ADVANCE_KEY | 119    |
| PLAY_REVERSE_KEY  | 120    |
| STOP_KEY          | 121    |
| PLAY_FORWARD_KEY  | 122    |
| Reserved          | 123    |
| Reserved          | 124    |

### B. Remote Data and Commands

#### i) Data structure

Byte 1: 0xFF

Byte 2: Command Type

Byte 3: Data Length n

Byte 4: Data Type

Byte 5: Data byte 1

Byte 6: Data byte 2

:

:

Byte x: Data byte n

#### ii) Description

Byte 1: Always 0xFF.

Byte 2: Command Type

0xAA: (SET) Update system with data.

0xBB: (GET) Extract data from system.

0xCC: (DO) Reserved.

Byte 3: Contains number of data bytes in the stream [n]. Range: 0 - 255

Byte 4: Indicates the data type.

The data bytes start at Byte 5.

The data types (Byte 4) are as follows.

**For Command Types SET and GET:**

0: TITLE1  
1: TITLE2  
2: TITLE3  
3: TITLE4  
4: TITLE5  
5: TITLE6  
6: TITLE7  
7: TITLE8  
8: TIMEDATE  
9: Reserved  
10: Reserved  
11: SPARE  
12: Reserved  
13: ENCAMERA  
14: ENALARM  
15: DWELLMULTISCREEN  
16: DWELLFULLSCREEN  
17: ALARMTIMEOUT  
18: ALARMINP  
19: Reserved  
20: BAUDRATE  
21: DISPLAYTD  
22: DISPLAYTITLE  
23: Reserved  
24: ALARMMODE  
25: TDFORMAT  
26: Reserved  
27: Reserved  
28: NORRECSPEED  
29: ALMRECSPEED  
30-45: Reserved  
46: TITLE9  
47: TITLE10  
48: TITLE11  
49: TITLE12  
50: TITLE13  
51: TITLE14  
52: TITLE15  
53: TITLE16  
54-63: Reserved  
64: ENABLACTION  
65: UP\_ACT\_SETTINGS  
66: UP\_ACT\_GRID  
67: UP\_ALM\_AND\_VDL  
68: DN\_ACT\_SETTINGS  
69: DN\_ACT\_GRID\_1  
70: DN\_ACT\_GRID\_2  
71: DN\_ACT\_GRID\_3  
72: DN\_ACT\_GRID\_4  
73: DN\_ACT\_GRID\_5  
74: DN\_ACT\_GRID\_6

75: DN\_ACT\_GRID\_7  
76: DN\_ACT\_GRID\_8  
77: DN\_ACT\_GRID\_9  
78: DN\_ACT\_GRID\_10  
79: DN\_ACT\_GRID\_11  
80: DN\_ACT\_GRID\_12  
81: DN\_ACT\_GRID\_13  
82: DN\_ACT\_GRID\_14  
83: DN\_ACT\_GRID\_15  
84: DN\_ACT\_GRID\_16  
85-100: Reserved  
101: ALARM\_RECORD\_MODE  
102-104: Reserved  
105: MOT\_DET\_INDICATE  
106: Reserved  
107: Reserved  
108: UP\_UNIT\_STATUS  
109: FLASH\_REBOOT  
110-113: Reserved  
254: UPLOAD\_DATA\_BLOCK  
(SET\_DATA\_TO\_MUX)  
255: DOWNLOAD\_DATA\_BLOCK  
(GET\_DATA\_FR\_MUX)

**For command type DO:**

0: Reserved

**UPLOADING DATA BYTES**

When a message of type 0xBB is sent to the system, it responds by sending a 0xFF start byte, followed by the requested information, followed by a 0xFF stop byte.

**CHANGING AND ACCESSING INDIVIDUAL PARAMETERS**

**a) Changing Camera Titles**

buffer [0]: 0xFF  
buffer [1]: 0xAA  
buffer [2]: 13  
buffer [3]: TITLE1 to TITLE16  
buffer [4] - buffer [16]: The title  
(12 ASCII characters + NULL terminator)

**b) Changing the time and date**

buffer [0]: 0xFF  
buffer [1]: 0xAA  
buffer [2]: 12  
buffer [3]: TIMEDATE  
buffer [4]: Month MSB  
buffer [5]: Month LSB  
buffer [6]: Day MSB  
buffer [7]: Day LSB  
buffer [8]: Year MSB  
buffer [9]: Year LSB

buffer [10]: Hour MSB  
buffer [11]: Hour LSB  
buffer [12]: Minute MSB  
buffer [13]: Minute LSB  
buffer [14]: Second MSB  
buffer [15]: Second LSB

#### **c-e) Reserved**

#### **f) Reserved**

#### **g) Enabling or disabling certain cameras**

buffer [0]: 0xFF  
buffer [1]: 0xAA  
buffer [2]: 16  
buffer [3]: ENCAMERA  
buffer [4] - buffer [19]:  
For each: 0 = Disable, 1 = Enable

#### **h) Enabling or disabling certain alarms**

buffer [0]: 0xFF  
buffer [1]: 0xAA  
buffer [2]: 16  
buffer [3]: ENALARM  
buffer [4] - buffer [19]:  
For each: 0 = Disable, 1 = Enable

#### **i) Changing the Multiscreen Dwell time**

buffer [0]: 0xFF  
buffer [1]: 0xAA  
buffer [2]: 1  
buffer [3]: DWELLQUAD  
buffer [4]: Dwell time in seconds (1-99)

#### **j) Changing the Full Screen Dwell time**

buffer [0]: 0xFF  
buffer [1]: 0xAA  
buffer [2]: 1  
buffer [3]: DWELLFS  
buffer [4]: Dwell time in seconds (1-99)

#### **k) Changing the Alarm ON time**

buffer [0]: 0xFF  
buffer [1]: 0xAA  
buffer [2]: 1  
buffer [3]: ALARMTO  
buffer [4]: Alarm time in seconds (1-99)

#### **l) Alarm input configuration**

buffer [0]: 0xFF  
buffer [1]: 0xAA  
buffer [2]: 16  
buffer [3]: ALARMINP  
buffer [4] - buffer [19]:  
For each: 0 = N/C, 1 = N/O

#### **m) Reserved**

#### **n) Changing the Baud rate of the Remote channel:**

buffer [0]: 0xFF  
buffer [1]: 0xAA  
buffer [2]: 1  
buffer [3]: BAUDRATE  
buffer [4]: Baud rate  
1 = 1200; 1 = 2400; 2 = 4800; 3 = 9600

#### **o) Enable or disable the display of the time and the date**

buffer [0]: 0xFF  
buffer [1]: 0xAA  
buffer [2]: 1  
buffer [3]: DISPLAYTD  
buffer [4]: 0 = Disable, 1 = Enable

#### **p) Enable or disable the display of the titles**

buffer [0]: 0xFF  
buffer [1]: 0xAA  
buffer [2]: 1  
buffer [3]: DISPLAYTITLE  
buffer [4]: 0 = Disable, 1 = Enable

#### **q) Reserved**

#### **r) Changing the alarm mode**

buffer [0]: 0xFF  
buffer [1]: 0xAA  
buffer [2]: 1  
buffer [3]: ALARMMODE  
buffer [4]: 0 = Latched, 1 = Transparent,  
2 = Timed Out

#### **s) Changing the time and date format**

buffer [0]: 0xFF  
buffer [1]: 0xAA  
buffer [2]: 2  
buffer [3]: TDFORMAT  
buffer [4]: Time format: 0 = 12-hour, 1 = 24-hour  
buffer [5]: Date format: 0 = mm/dd/yy,  
1 = dd/mm/yy, 2 = yy/mm/dd

#### **t) Reserved**

#### **u) Reserved**

#### **v) Setting the normal record speed**

buffer [0]: 0xFF  
buffer [1]: 0xAA  
buffer [2]: 1  
buffer [3]: NORRECSPEED

buffer [4]: A number from 1 through 13

**w) Setting the alarm record speed**

buffer [0]: 0xFF

buffer [1]: 0xAA

buffer [2]: 1

buffer [3]: ALMRECSPEED

buffer [4]: A number from 1 through 13

**x) Reserved**

**y) Enable activity detection**

buffer [0]: 0xFF

buffer [1]: 0xAA

buffer [2]: 16

buffer [3]: ENACTIVITY

buffer [4] - buffer [19]:

For each: 0 = Disable, 1 = Enable

**z) Request activity settings**

buffer [0]: 0xFF

buffer [1]: 0xBB

buffer [2]: 0

buffer [3]: UP\_ACT\_SETTINGS

**aa) Request activity grid**

buffer [0]: 0xFF

buffer [1]: 0xBB

buffer [2]: 0

buffer [3]: UP\_ACT\_GRID

**ab) Request alarm and videoloss status**

buffer [0]: 0xFF

buffer [1]: 0xBB

buffer [2]: 0

buffer [3]: UP\_ALM\_AND\_VDL

**ac) Download activity grid**

buffer [0]: 0xFF

buffer [1]: 0xAA

buffer [2]: 32

buffer [3]: DN\_ACT\_GRID\_1 to

DN\_ACT\_GRID\_16

buffer [4] - buffer [35]: BINARY digits

corresponding to zones

Two bytes per row, 16 rows 1 = Active, 0 = Off

**NOTE: This message must be used with caution. Delays of 100 msec must be inserted between consecutive camera grids.**

**ad-ag) Reserved**

**ah) Setting the Network Address**

buffer [0]: 0xFF

buffer [1]: 0xAA

buffer [2]: 1

buffer [3]: NETWORK\_ADDRESS

buffer [4]: Binary number (0-255)

**ai) Reserved**

**aj) Setting the Signal Gain**

buffer [0]: 0xFF

buffer [1]: 0xAA

buffer [2]: 10 or 16

buffer [3]: SIGNAL\_GAIN

buffer [4] – buffer [19]:

Signal gain value (1 to 10)

**ak-am) Reserved**

**an) Alarm Record Mode**

buffer [0]: 0xFF

buffer [1]: 0xAA

buffer [2]: 1

buffer [3]: ALARM\_RECORD\_MODE

buffer [4]:

0 = Interleaved, 1 = Exclusive, 2 = No Change

**ao-ap) Reserved**

**aq) RS485 Master/Slave**

buffer[0] = 0xff

buffer[1] = 0xAA

buffer[2] = 1

buffer[3] = RS485\_MASTER\_SLAVE

buffer[4] = 0 (SLAVE), 1 (MASTER)

**ar) Motion Detection Indication**

buffer [0]: 0xFF

buffer [1]: 0xAA

buffer [2]: 1

buffer [3]: MOT\_DET\_INDICATE

buffer [4]: 0 = No indication, 1 = Indication

**as) Set Intrusion or Activity**

buffer [0]: 0xFF

buffer [1]: 0xAA

buffer [2]: 10 or 16

buffer [3]: MOT\_DET\_ACT\_INT

buffer [4] – buffer [19]:

0 = Activity, 1 = Intrusion

**at-au) Reserved**

#### **av) Flash Reboot**

buffer [0]: 0xFF

buffer [1]: 0xAA

buffer [2]: 10 or 16

buffer [3]: FLASH\_REBOOT

#### **aw-az) Reserved**

#### **ba-bb) Reserved**

### **UPLOADING DATA**

#### **a) Alarm history list**

When the **Request Alarm History List** message is received by the system, it responds by sending an ASCII string for every alarm event in the alarm history list. The string is formatted as follows:

**dd.bmm/ddBhh:mm:ss<CR><LF>**

**dd** = alarm event number (0-99)

**B** = space character

**mm** = month

**dd** = day

**hh** = hours

**mm** = minutes

**ss** = seconds

**<CR><LF>** = carriage return/linefeed

#### **b) Activity settings**

Six bytes are uploaded:

- 1) Sensitivity, (1-10)
- 2) Relay: 0 = None, 1 = Relay 1, 2 = Relay 2, 3 = Both
- 3) Link to Alarm, (1-16)
- 4) False Alarm Rejection: 0 = Low, 1 = Medium, 2 = High
- 5) Size Discrimination, (1-255)
- 6) Record Rate: 0 = None, 1 = 2x, 2 = 4x, 3 = Interleaved)

#### **c) Activity grids**

16 x 32 bytes are uploaded (two bytes per row, 16 rows). The first 32 bytes are zones from camera 1, the second 32 bytes are from camera 2, and so forth.

#### **d) Alarm and videoloss**

Four bytes are uploaded (MSB,LSB).

The first two represent the alarms in the system. The last two represent the videoloss status.



# 8 SERVICE AND RETURNS

---

## 8.1 Maintenance

Programmer maintenance of this unit is limited to external cleaning and inspection.

## 8.2 Factory Service

Ensure that the cooling vents are not blocked and that the unit is installed in a well-ventilated location. In addition, do not place the unit on top of other equipment, which may increase the operating temperature of the unit.

Refer all servicing to qualified personnel.

**WARNING!**

**Do not open the top cover or attempt to service the unit as this may expose you to dangerous voltages and other hazards.**

**Doing so will void the warranty !**

Contact the local Philips Representative for Services.

3935 890 33211 00-21  
Printed In U.S.A.

© 2000 Philips Electronics N.V.  
© 2000 Philips Communication, Security & Imaging, Inc.  
All Rights Reserved. Philips ® is a registered trademark of  
Philips Electronics N.V.  
Data subject to change without notice