QSP-860MPX

Owner's Manual

and

Operating Instructions

Instructions for basic operation and installation

Printing Revision 11

Version 2.3

$C \epsilon$

For Serial numbers 1808000 and greater

Advanced Technology Video, Inc.

Table of Contents

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INTRODUCTION

Thank you for purchasing Advanced Technology Video's QSP-860MPX eight camera Duplex Multiplexer. This instruction manual describes the powerful features of this product for basic and advanced operation. It also covers the installation steps that will allow quick and easy integration into your security system.

Throughout this manual we will refer to a 3x3 display format for simultaneous display of all eight cameras. The QSP-860MPX utilizes eight of the nine possible display areas of the 3x3 display format for display of the eight cameras. The ninth area (middle space) is used to display time and date information during the live camera display mode, or the message "VCR Playback" during playback mode.

The following section provides an overview of the operational features of the QSP-860MPX. If you are familiar with the QSP-860MPX, you should proceed to the "Getting Started" section on the following page for step by step installation instructions.

OPERATIONAL FEATURES DESCRIPTION

Live Camera Displays

The QSP-860MPX will initially be in the live camera display mode whenever power is applied to the unit. Live cameras can be displayed in 3x3, quad (dual page), PIP, dual PIP, split screen, squish screen, or full frame formats. In addition, any display may be frozen using a front panel button, the IR remote control, or an external signal input. In any of these display modes, the unit can be programmed to sequence one or more cameras with a programmable dwell time.

Multiplexer Recording/Playback

The QSP-860MPX records each camera individually onto a single video frame of the VCR tape at a rate compatible with the VCR recording speed (record hours mode). Proper VCR playback operation requires that the QSP-860MPX be set up to multiplex at the rate which is compatible with your VCR recording speed (see page 8). During multiplexing, a single frame from each camera is alternately output to the VCR with the factory default set so that each live camera is given an equal number of frames on the tape. Dead or unconnected camera inputs will not be recorded. In order to optimize recording for your security situation, the frequency with which individual camera inputs are sampled for multiplexing may be optionally configured using the Complexing™ camera priority function. The Camera priority set up menu allows you to set four levels of priority (giving more frames to high priority and less frames to low priority). While multiplex recording is active, the live display mode can be set to any mode (3x3, quad, PIP, Dual PIP or full screen, etc.) without affecting the multiplex recording function.

In VCR playback mode, cameras can be displayed in 3x3, quad (dual page), PIP, dual PIP, split screen, squish screen, or full frame formats. In addition, any display may be frozen. VCR playback incorporates digital decoding of the camera number from the tape so that monitor screen images may be updated at the rate that images appear on the tape. The default refresh rate of the playback monitor is the playback rate divided by the number of cameras being multiplexed. This will change when alarmed cameras or dead cameras are present or camera priorities have been changed.

DigiLock™ and Playback

In VCR playback mode, digital information is used to compensate for the poor vertical synchronization signals frequently encountered with time lapse VCRs.

The QSP-860MPX DigiLock™ decoding reconstructs the timing such that successfully decoded frames are read into monitor display memory consistently without any "jumping", "tearing" or other side-effects of poor synchronization.

VCR Bypass

Many VCRs have on-screen programming menus which require a monitor for programming the VCR. The QSP-860MPX includes a "VCR Bypass" feature which facilitates VCR programming by allowing the QSP-860MPX VCR input (VCR's video output) to be routed directly to the display monitor. The "VCR Bypass" mode can also be used to directly view the VCR's output for adjusting tracking or verifying proper VCR connections to the QSP-860MPX.

GETTING STARTED
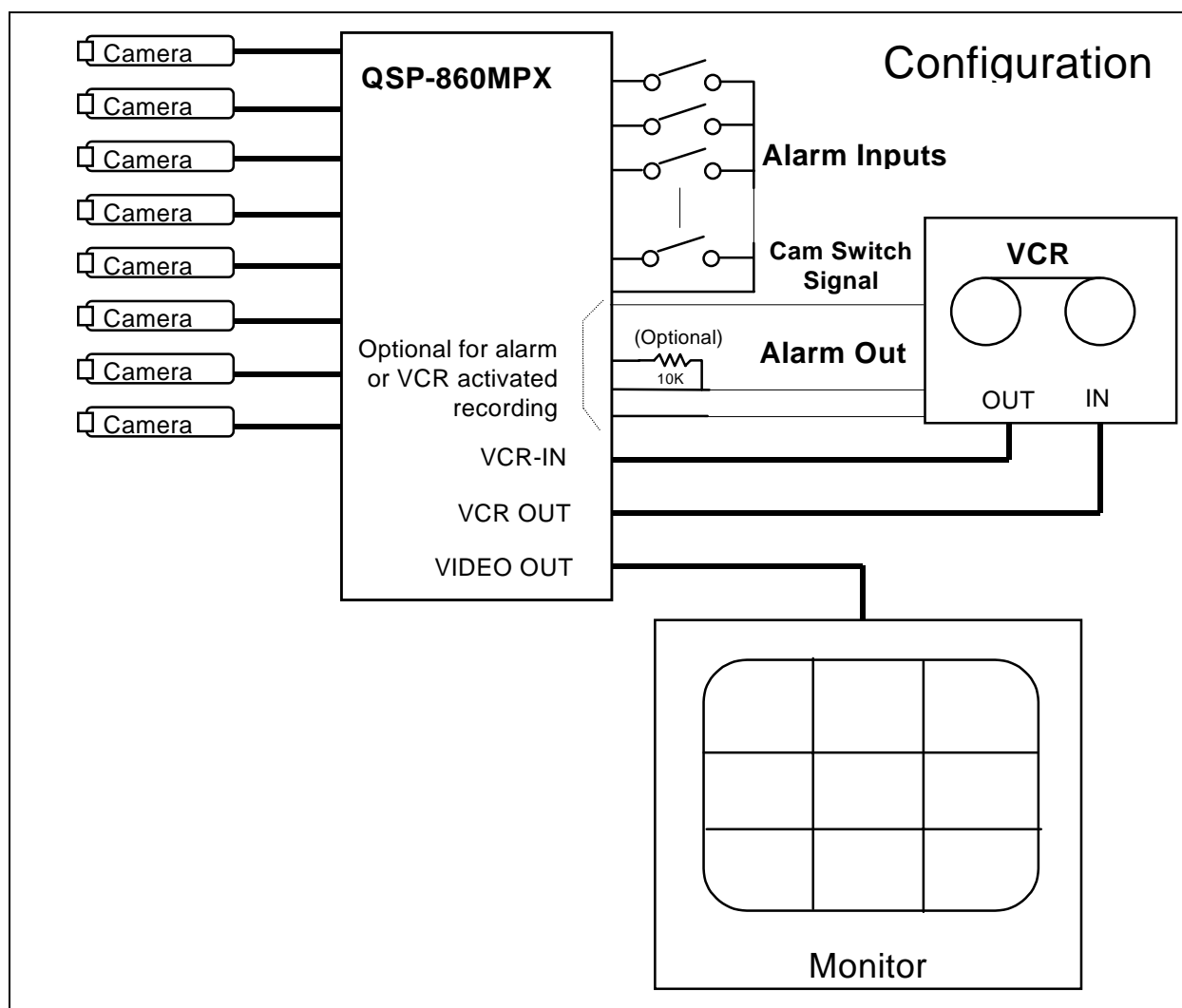
The above diagram shows the typical 8-camera installation for the QSP-860MPX. Up to eight cameras can be connected to the multiplexer using the back panel connectors. Note that the VCR and monitor connections must be as shown above for proper operation.

Installation Steps

The following steps should be followed to ensure proper connection and set up of your QSP-860MPX. A diagram showing the overall connection configuration of the QSP-860MPX is shown above. The installation steps are:

1. Connect your cameras, monitor, and VCR to the QSP-860MPX as shown above. Refer to the "Back Panel Connections" and "Video Termination Switches" sections on the next page for proper connections and switch settings for your particular installation.

2. Power up the QSP-860MPX and **enter the QSP-860MPX set up menus** by pressing and holding the **DISPLAY** button for approximately 3 seconds. Refer to the Set Up Menus section of the manual starting on page 7.

3. Set the current time and date in the QSP-860MPX using the "Time/Date Set" menu.

4.   Determine the record speed (record hours format) you will use with your VCR and set up the QSP-860MPX to work with your VCR using the "VCR Set up" and VCR Selection" menus (see page 8).

5.   Exit the QSP-860MPX menus by pressing the DISPLAY button to exit each menu and finally the menu system.

6.   If your VCR has internal "on-screen" menus for its set up, use the "VCR Bypass" feature of the QSP-860MPX (see the VCR button function description on page 6) to view the VCR's "on-screen" menus on the display monitor.

7.   At this point, the basic configuration of your QSP-860MPX is complete. You may now proceed to set more advanced functions as required for your installation (alarms, camera labels, multiplexing options, etc.). Refer to the "Advanced Function Menus" starting on page 9 for detailed information for the feature(s) you require.

BACK PANEL CONNECTIONS

The eight camera input BNC connectors are labeled "DUAL/LOOP" since they serve two purposes. The factory default configuration is "DUAL" and each BNC is an independent camera input (75 Ohm termination is ON). Four DIP switches inside the unit (see section below) determine whether each pair of inputs are independent ("DUAL") or used as a loop-through ("LOOP").

Connect the "VCR IN" BNC to the video output of the VCR and the "VCR OUT" BNC to the video input of the VCR. The alarm connector is a standard DB-15 which will mate with an alarm wire adapter board or standard computer-type cable. See page 18 for further alarm connection information.
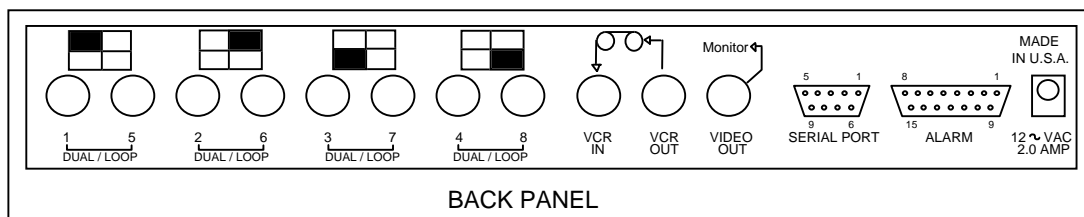
VIDEO LINE TERMINATION SWITCHES
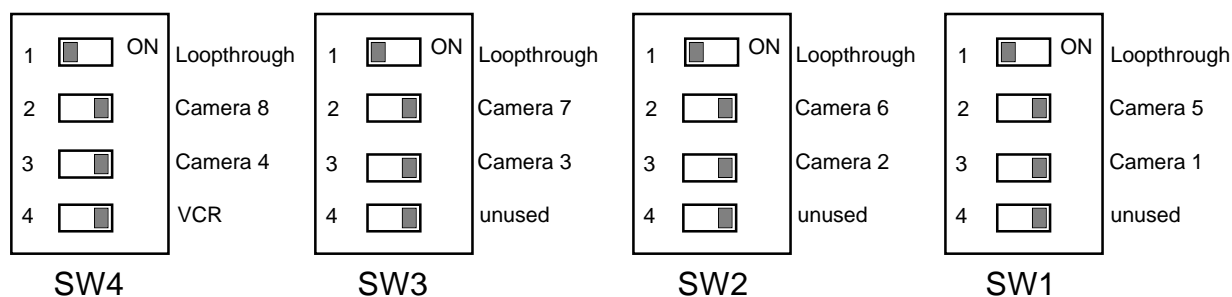
The video line termination switches for each camera input are located in the rear of the unit and are accessed by removing the top cover. The switches are in the order shown above when looking toward the back panel. The above switches are shown in the factory default settings (camera loop-through OFF, 75 Ohm terminations ON). When turned on, camera loop-through connects together the camera inputs on the same switch (i.e. the left-most loop-through switch connects camera 4 to camera 8). When an input is in "loop-through", the QSP-860MPX is unable to recognize that the two loop-through inputs are the same camera image. For multiplexing to behave as expected, one of the two loop-through inputs should be disabled using the on-screen QSP-860MPX "Sequencing set up" menu (see pages 10, 11

Dip switch positions 2 and 3 on all four groups of switches (SW1 through SW4) control the application of the 75 Ohm termination impedances for each of the eight camera inputs. The above switches show the factory default position where all eight camera inputs are terminated with 75 Ohm impedances. Also note that there is an additional termination switch for the VCR input which is on position 4 of SW 4.

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OPERATION

QSP-860MPX

DISPLAY SEQUENCE PIP QUADRANT VCR   1   2   3   4   5   6   7   8

○ [▭▭▭▭▭]   [▭▭▭▭▭▭▭▭]   **AV**

FREEZE   ZOOM

Advanced Technology Video, Inc.
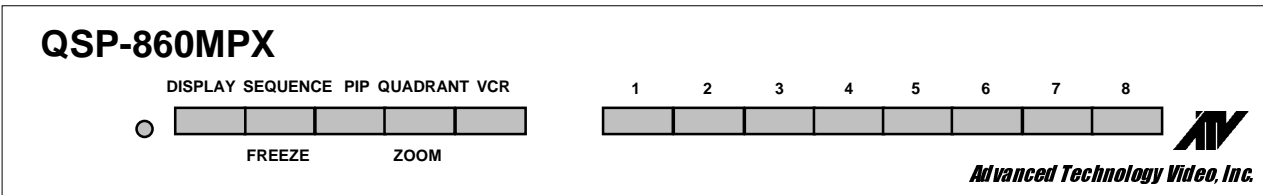
Your QSP-860MPX has five mode control buttons and eight "camera" buttons which allow easy access to all modes of operation. The five mode buttons on the left are used to control monitor display operations and VCR playback. Note that live camera display modes **do not** affect mutiplex recording. Here is a summary of each button's function:

DISPLAY
This button cycles the monitor display through the 3x3 and quad displays in live or VCR playback modes. In addition, it will return the unit to the 3x3 display mode from any other (non quad) display mode. Successive button pushes change the display operation from 3x3, to quad page A (cameras 1 through 4), then to quad page B (cameras 5 through 8), then back to 3x3, and so forth. A push and hold of this button for approximately 3 seconds will bring up the QSP-860MPX set up main menu.

SEQUENCE/FREEZE
In all display modes, a momentary press on this button will freeze all camera processing to the monitor display (the multiplex output to the VCR recording is still live during live display modes). A long button press of approximately 2 seconds will activate the camera sequencing for the present mode. Another momentary push of this button will deactivate the "freeze" or "sequencing" mode.

PIP
When starting in the 3x3, quad, or full screen camera display in live display or VCR playback modes, pressing the PIP (Picture-in-Picture) button will cause the unit to switch to the "Single PIP" display. Additional presses will cycle the unit through "Dual PIP", "Split Screen", "Squish Screen, "Full Frame" and back to "Single PIP" displays. How cameras will appear in these displays is programmable (See Display Sequence Set Up on page 11).

QUADRANT/ZOOM
This button rotates the orientation of the cameras clockwise on the screen into the desired positions in "PIP", "Dual PIP", "Split Screen", and "Squish Screen" display modes. In VCR playback modes, this button activates the ZOOM function. The ZOOM function will expand a single quadrant of full frame camera image. Each successive press of this button will rotate the quadrant which is expanded through each of the four quadrants, then return to the full screen camera display.

VCR
Pressing this button will switch monitor display from the live camera display mode to the VCR playback mode. The right hand LED indicator will light to show that VCR playback is now possible. The display will initially be in 3x3 mode and the monitor screen will show the message "VCR Playback" and be blank until VCR tape playback contains multiplexed camera images which have been previously recorded from any Version 2.0 or greater QSP-860MPX or QSP-860SPX. To see non-multiplexer images (the VCR's setup menus) or to troubleshoot VCR tracking or other problems, the "VCR Bypass" function is used.

VCR Bypass Function

The "VCR Bypass" function is activated by a long button press of the **VCR** button for approximately 3 seconds. While in "VCR Bypass" mode, the QSP-860MPX will pass the VCR output directly to the monitor. A single push of the **VCR** button will return the unit to normal VCR playback mode and a second push will return the unit to live display mode.

CAMERA Buttons (1 Through 8)
The individual camera buttons 1 through 8 are used to select which camera is to be used for display purposes during live display or VCR playback modes. In addition, Camera buttons 1 through 8 are used in the QSP-860MPX set up menus.

QSP-860MPX: Instructions for Basic Operation and Installation   **Page 6**

SET UP MENUS

The QSP-860MPX set up is accomplished through its on-screen menus. To enter the menu system, push and hold the **DISPLAY** button for approximately 3 seconds. The display will then show the top level menu. Selection of any menu item is done with the camera select keys on the front panel. Selecting **DISPLAY** will exit the present menu level.

Main Menu
Selecting:

1. Enters "Set Time/Date" menu to program the internal clock and select time and date display options.

2. Enters "VCR Set Up" menu to select VCR type and recording format (Hours).

3. Enters "Camera Set Up" menu to program camera labels and set recording priorities.

4. Enters display "Sequence Set Up" menu to set sequence cameras will be displayed.

5. Enters "Alarm Set Up" menu to enable/disable alarms and program alarm action.

6. Enters the "Other Options" menu where you can select remote control code, program a security code for locking out the menus and the front panel buttons, or reset unit to factory defaults.

```
 Advanced Technology Video
        860MPX V2.3

1: Set Time/Date . . .
2: VCR Set Up . . .
3: Camera Set Up . . .
4: Sequence Set Up . . .
5: Alarm Set Up . . .
6: Other Options . . .


Camera: Select
DISPLAY: Exit Menu System
```

Time/Date Setting

Time and date for the on-screen calendar and clock is set from this menu.
Selecting:

1. Edits the hour of the day. In 24 hour mode, 1 through 24 is accepted as entered. In 12 hour mode, values above 12 will have 12 subtracted from the entered value.

2. Edits the minutes field. Only values 0 through 59 are accepted.

3. Edits the seconds field. Only values 0 through 59 are accepted.

4. Edits the day of the month. Only valid values for the month selected will be accepted.

5. Advances the month with each press.

6. Edits the year.

7. Toggles the format between 24 hour and 12 hour, AM or PM.

8. Enters the time and date "Display Options" menu to turn ON or OFF and position the display on the screen.

```
       Time / Date Set

06:30:00          05 OCT 96

1: Hours          4: Day
2: Minutes        5: Month
3: Seconds        6: Year

7: Format AM/PM/24: 24Hr
8: Display Options . . .
Camera: Select/Change
DISPLAY: Previous Menu
```

The times shown in this menu come directly from the internal clock. Actual time is constantly changing while new values are entered. All the values shown on the screen are updated any time one of them is entered. To accurately set the clock to the desired time, edit the "SECONDS" entry last. The current time and date are preserved if a new entry is not accepted or completed.

Time & Date Display Options

This menu determines the display behavior of the date and time information for both the VCR and monitor camera displays.

Selecting:

1. Toggles the time and date display location through any one of the four display quadrants for live camera displays.

2. Toggles the time and date for the monitor display ON/OFF.

3. Toggles the time and date for the VCR display ON/OFF.

```
┌─────────────────────────────────────┐
│  Time/Date Display Options           │
│                                      │
│                                      │
│  1: Location  Lower Right            │
│                                      │
│  2: Display    On                    │
│                                      │
│  3: VCR        On                    │
│                                      │
│  Camera: Select/Change               │
│  DISPLAY: Previous Menu              │
└─────────────────────────────────────┘
```

VCR Set Up
Selecting:

1. Enters the "VCR Selection" menu for setting of a particular make and model of VCR.

2. Toggles the VCR record time format through up to 8 possible settings plus "Cam Sw Input" for the selected VCR. The default value is 24 Hour format.

3. Toggles the VCR record time format as in #2 above for an alarm condition. If the value chosen is different from the "VCR Format", the VCR must be wired to the alarms such that it changes to the rate selected under an alarm condition. The default value is 2 Hour format.

```
┌─────────────────────────────────────┐
│        VCR Set up                    │
│                                      │
│  1: VCR Selection . . .              │
│  2: Format:      24 Hr               │
│  3: Alarm Format   2 Hr              │
│  4: Advanced VCR options . . .       │
│                                      │
│                                      │
│  PIP: Restore Default Settings       │
│  Camera: Select/Change               │
│  DISPLAY: Previous Menu              │
│                                      │
└─────────────────────────────────────┘
```

4. Enters "Advanced VCR options" menu for customization of the delay table, video format, and playback discriminator functions. See the "Advanced VCR options" menu on page 14.

VCR Selection
Selecting:

1 - 6 Selects a particular VCR from the displayed list. The first two entries are for standard 12 and 24 hour steps which will accommodate most VCRs. "Standard 12 Hr steps" is the factory default.

PIP Pages the list forward for more selections. The display will cycle back to the first page after the last page is reached.

If your VCR is not on the list, it will most likely work with a "Standard steps" selection. You can determine which of the "Standard steps" (12 or 24 Hour) is correct for your VCR by looking at your VCR manual or directly at your VCR. If the difference between time settings is a multiple of 12 hours (2, 12, 24, etc.), use the Standard 12 Hour steps. If the difference between time settings is a multiple of 24 hours (2, 24, 48, etc.), use the Standard 24 Hour steps. If your VCR settings do not correspond with the either the 12 or 24 Hour Standard steps, refer to the section "What to do if Your VCR is not on the Supported List" (page 16).

```
┌─────────────────────────────────────┐
│  Current VCR Selection:              │
│   Standard 12Hr steps                │
│                                      │
│  1: Standard 12Hr steps              │
│  2: Standard 24Hr steps              │
│  3: Custom Delay Table               │
│  4: Atsutsa TL VCR251                │
│  5: Atsutsa TL VCR964                │
│  6: Gyyr 1400                        │
│  Camera 1-6: Select VCR              │
│  PIP: next page                      │
│  DISPLAY: Previous Menu              │
│                                      │
└─────────────────────────────────────┘
```

ADVANCED FUNCTION MENUS

This section describes the use of the advanced functions of the QSP-860MPX. The following features allow you to customize the operation of your QSP-860MPX as necessary to complete your installation.

Camera Set Up

This menu determines the display behavior of the camera labels and allows access to menus for entering/changing labels, setting up camera record priority, or to disable a camera in the live display. Like time and date, both the VCR and monitor displays can be independently enabled/disabled.

```
        Camera Set Up

1: Labels on Display: On
2: Labels on VCR:     On
3: Change Labels...
4: Recording Priority...
5: Monitor Disable...

PIP: Restore Default Settings
Camera: Select/Change
DISPLAY: Previous Menu
```

Selecting:
1. Toggles the camera labels ON/OFF for the monitor display.
2. Toggles the camera labels ON/OFF for the VCR display.

3. Enters "Camera Labels" menu to review, enter, or change camera labels.

4. Enters the "Camera Recording Priority" menu (CUSTOMPLEXING™ function).

5. Enters the "Monitor Disable" menu to allow a camera to be turned off in the live display.

Camera Label Changing

This menu is used for adding/changing labels that are associated with each of the eight cameras.

```
   Camera Labels        Characters
                      PIP: 0  Space
1. ' . . . . . . . . . . .     1: ABC1
2. 2                 2: DEF2
3. 3                 3: GHI3
4. 4                 4: JKL4
5. 5                 5: MNO5
6. 6                 6: PQR6
7. 7                 7: STU7
8. 8                 8: VWX8
VCR: Move Rt. QUADRANT: YZ9
DISPLAY: Accept
```

Selecting:

1 - 8   Selects the camera for editing and exposes the legend at the right hand side of the screen. After pressing a Camera **1-8** button, the display will appear as shown.

Since we have a limited set of front panel buttons, all of the buttons except **DISPLAY** and **VCR** are used to input characters. Using the legend, any character can be entered in the present character location. The **VCR** button is used to move to the next location (to the right).

CUSTOMPLEXING™ (Camera Recording Priority)
Selecting:

1 - 8   Toggles the camera between High (Factory Default), Alarm Only, Low, and Medium priorities.

```
   Camera Recording Priority

1: High Priority
2: High Priority
3: Medium Priority
4: Medium Priority
5: Low Priority
6: Low Priority
7: Alarm Only
8: Alarm Only
Camera: Select/Change
DISPLAY: Previous Menu
```

The camera priorities affect how frequently a camera's image is stored. The factory default is all cameras set to "High Priority". Using the factory defaults, the camera multiplexing ordering is:

1,2,3,4,5,6,7,8,1,2,3,4,5,6,7,8,1,2,3,4.........

Using the example shown, the multiplexing order is:

1,2,3,5,1,2,4,1,2,3,6,1,2,4,1,2,3,5,1,2,4,1,2,3,6....

The QSP-860MPX priority method gives medium priority cameras twice as many frames as low priority cameras. Similarly, high priority cameras get twice as

many frames as medium priority cameras. "Alarm Only" cameras are not recorded unless there is an alarm input and a live video signal is present. "Alarm Only" cameras, under alarm conditions, will be multiplexed like any other alarm camera. Dead or non-existent cameras will not be recorded.

Cameras under alarm conditions have a higher priority than "High Priority" cameras and will be given twice as many frames. Even under multiple alarm conditions, all cameras are guaranteed some VCR frames. Multiplexing of alarmed cameras cannot be disabled without disabling the alarm input itself (which will prevent both monitor and VCR alarm activity). In the above example, if the alarm for "Alarm Only" camera #8 were triggered, the multiplexing order would be:

8,1,8,2,8,3,8,5,8,1,8,2,8,4,8,1,8,2,8,3,8,6,8,1,8,2,8,4,8,1,8,2,8,3,8,5,8,1,8,2,8,4,8,1,8,2,8,3,8,6....

Camera Monitor Disable

This menu allows an individual camera to be eliminated from the monitor live mode display while the camera continues to be recorded (multiplexed). A "Record Only" camera is replaced by the "bar pattern" in live display modes except during an alarm condition where the camera's video is shown. A "Record Only" camera's video is still multiplexed.

```
  Monitor Disable

1: Display on Monitor
2: Display on Monitor
3: Display on Monitor
4: Display on Monitor
5: Display on Monitor
6: Display on Monitor
7: Display on Monitor
8: Record Only
Camera: Select/Change
DISPLAY: Previous Menu
```

Selecting:

1 - 8   Toggles the camera's live display from "Display on Monitor" to "Record Only". The default is "Display on Monitor".

In the example shown, Camera 8 is set to "Record Only" and it's image will be replaced by the "bar pattern" in live displays. Also note that the presence of the camera signal is sti~~ll~~ "Record Only". The "No Video" indication will be given on the li~~ve display along with the "bar pattern"~~ if the camera's signal is not present.

Display Sequence Set Up

The QSP-860MPX has a programmable display sequence format for display modes that support sequencing. The image hold (dwell) time is also programmable.

```
  Display Sequence Set Up

1: Hold Each Image
        for:   3 Sec.
2: Full Camera Call Up . . .
3: Quad . . .
4: PIP . . .
5: Dual PIP . . .
6: Split/Squish Screen . . .

PIP: Restore Default Settings
Camera: Select/Change
DISPLAY: Previous Menu
```

Dwell Adjustment
Selecting:
1   Selects the dwell time for edit.

While editing:
1 - 8   Used to enter digits "1" through "8".
PIP   Used for a "0" entry.
QUADRANT Used for a "9" entry.
DISPLAY   Completes the entry if less than 3 digits and returns to the previous value if no digits are entered.

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Display Sequencing Format

A unique feature of the QSP-860MPX is the option to customize the display sequence format to suit your application. You can program a specific selection of cameras for sequencing.

Selecting:

1. Enters edit mode for dwell time.

2. Enters "Full Camera Call Up" format menu.

3. Enters "Quad" format menu.

4. Enters "PIP" format menu.

5. Enters "Dual PIP" menu.

6. Enters "Split Screen/Squish Screen" format menu.

```
Display Sequence Set Up

1: Hold Each Image
           for:  3 Sec.
2: Full Camera Call Up . . .
3: Quad . . .
4: PIP . . .
5: Dual PIP . . .
6: Split/Squish Screen . . .


PIP: Restore Default Settings
Camera: Select/Change
DISPLAY: Previous Menu
```

Note that any changed camera display sequence will not be applied until the display sequencing mode is activated by the front panel button.

Sequencing Format Screens

```
Full Camera Display Sequence


1: Cameras: 1 2 3 4 5 6 7 8



Enter Cameras you want
displayed in the sequence

Camera: Select/Change
DISPLAY: Previous Menu
```

```
Quad Display Sequence

1: Upper Left:  1 . . . 5 . . .
2: Upper Right: . 2 . . . 6 . .
3: Lower Left:   . . 3 . . . 7 .
4: Lower Right:  . . . 4 . . . 8

Enter Cameras you want
displayed in the sequence

Camera: Select/Change
DISPLAY: Previous Menu
```

```
PIP Display Sequence


1: Background: As is
2: Insert:    1 2 3 4 5 6 7 8


Enter Cameras you want
displayed in the sequence

Camera: Select/Change
DISPLAY: Previous Menu
```

```
Dual PIP Display Sequence

1: Background: As is
2: Insert 1:  1 2 3 4 5 6 7 8
3: Insert 2:  As is


Enter Cameras you want
displayed in the sequence

Camera:  Select/Change
DISPLAY:  Previous Menu
```

```
Split/Squish Display Sequence


1: Left:    As is
2: Right:   1 2 3 4 5 6 7 8


Enter Cameras you want
displayed in the sequence

Camera:  Select/Change
DISPLAY:  Previous Menu
```

The above screens show the factory default values. The most commonly used sequencing is the full frame or dual page quad formats as shown above. You can customize any or all formats, and may have more than one section of a multi-camera display defined for sequencing. For any particular camera display, cameras are sequenced in ascending numerical order and cameras cannot be repeated. For example, if the pattern "7,5,2,4,5,5,7" were entered, the software will translate this to ". 2 . 4 5 . 7 .".

Alarm Options
Selecting:

1. Enters individual camera enable/disable menu.

2. Enters alarm hold (dwell) adjustment menu.

3. Enters alarm input contact activation type menu.

```
┌─────────────────────────────────┐
│          Alarm Options          │
│                                 │
│ 1: Enable/Disable Alarms . . .  │
│ 2: Set Alarm Hold Times . . .   │
│ 3: Set Activation Type . . .    │
│                                 │
│                                 │
│                                 │
│ PIP: Restore Default Settings   │
│ Camera: Select                  │
│ DISPLAY: Previous Menu          │
│                                 │
└─────────────────────────────────┘
```

Alarm Enable
Selecting:

1 - 8   Toggles the selected camera alarm between ON and OFF.

Alarm disabling prevents an alarm input from affecting any aspect of the VCR multiplexing or the live camera display. Alarms which are turned off will not generate an alarm output.

```
┌─────────────────────────────────┐
│        Alarm Enable/Disable     │
│                                 │
│                                 │
│ 1: On        5: On              │
│ 2: On        6: On              │
│ 3: On        7: On              │
│ 4: On        8: On              │
│                                 │
│                                 │
│ Camera: Select/Change           │
│ DISPLAY: Previous Menu          │
│                                 │
└─────────────────────────────────┘
```

Alarm Dwell Adjustment
Selecting:

1. Allows changing the alarm ACTIVATION HOLD time.

2. Allows setting of a MAXIMUM time for an alarm to be displayed.

3. Allows changing the monitor alarm display SEQUENCE DWELL time.

Some alarming devices (such as some motion detectors) generate very brief alarms lasting only a fraction of a second. The ACTIVATION HOLD time is the amount of time that the alarm event will be held so that the alarm camera image can be kept on the display screen and mutiplexed at a high frame rate to the VCR.

```
┌─────────────────────────────────┐
│        Alarm Hold Times         │
│                                 │
│ 1: Hold Detected Alarms         │
│          for:  1 Sec.           │
│ 2: Disable Detected Alarms      │
│          after:  0 Sec.         │
│ 3: Hold Alarmed Images          │
│          for:  3 Sec.           │
│                                 │
│                                 │
│ Camera: Select/Change           │
│ DISPLAY: Previous Menu          │
│                                 │
└─────────────────────────────────┘
```

The MAXIMUM time for holding an alarm display will determine how long a continuous alarm camera will be displayed. This can be adjusted so that a continuous alarm will not consume all of the VCR's record time. A value of zero (factory default) will result in no time limit for an alarm display.

The alarm SEQUENCE DWELL time determines the display hold time during multi-camera alarms. The monitor display will sequence between all cameras with alarms present using this dwell time. Every alarming camera will be multiplexed to the VCR at a high frame rate.

Both delay times are adjustable from 1 to 254 seconds though the default is 1 second for the activation hold and 3 seconds for the sequence dwell time. Camera buttons are used to enter digits **1** through **8** and **PIP** and **QUADRANT** buttons are used to enter 0 and 9 respectively. The **DISPLAY** button stops the editing of a delay value.

Alarm Activation Type

Selecting:

1 - 8   Toggles the selected camera between "Contact Closure", "Contact Open", "Logic Low", or "Logic High" triggering the alarm.

In many applications the switch contact connection is between the alarm input pin and the chassis or signal ground. In the QSP-860MPX the contact connection can be between either the ground (alarm connector pin 15) or the +5V (alarm connector pin 13). In some alarming devices this is not a metallic switch contact but rather a solid state device which "grounds" (Logic Low) the input as a normal condition or as an alarm condition. The four activation modes are provided to simplify connection to most alarm sources. See Alarm Interconnection on the QSP-860MPX on page 18.

```
Alarm Activation Type

1: Contact Closure
2: Contact Closure
3: Contact Closure
4: Contact Closure
5: Contact Closure
6: Contact Open
7: Logic Low
8: Logic High
Camera: Select/Change
DISPLAY: Previous Menu
```

The QSP-860MPX alarm activation is defined as follows:

Contact Closure: The alarm pin is connected to a current source (either +5V or ground).

Contact Open: The alarm pin is not connected to any current source (unconnected pin).

Logic Low: A logic "low" level less than 0.8V (ground) is present at the alarm pin.

Logic High: A logic "high" level greater than 2.4V (+5V) is present at the alarm pin.

Other Options

The "Other Options" menu provides access to the advanced QSP-860MPX systems options.

Selecting:

1.   Toggles the IR remote control code setting between Code 1, Code 2, and remote OFF. (See IR Handheld Remote Control on page 15.)

2.   Enters the "Security Set Up" menu for establishing a security lockout code.

```
Other Options

1: Remote Control: Code 2
2: Security Set Up . . .


PIP: Restore ALL Settings
       to Factory Defaults
Camera: Select/Change
DISPLAY: Previous Menu
```

Security Set Up

Security lockout is a means to disable the QSP-860MPX menus so that casual or inadvertent tampering can be prevented. It is not intended as a hard security measure and can be bypassed by removing the QSP-860MPX power followed by applying power and **simultaneously** pressing the **DISPLAY** button until the ATV name appears. This is not the preferred method of bypassing security since this step also returns all internal parameters and options to their factory defaults.

The security feature requires that a security code ("password") of 1 to 9 digits be entered and verified. The security lockout does not become active until the menus have been exited. "Button Lock", when "On", will disable all Front Panel and IR Remote button operations. A long press of the **DISPLAY** button will still enable menus.

```
   Security Set Up

  Menus are Unlocked

 1: Lock Menus
 2: Unlock Menus
 3: Button Lock:  Off


 Camera: Select/Change
 DISPLAY: Previous Menu
```

Advanced VCR Options

The Advanced VCR Options menu is intended for use by knowledgeable users. The programmable settings in this menu must be properly set for correct performance of your QSP-860MPX. **Do not change these settings unless it is necessary for your installation**.

Selecting:

1. Enters the "Edit Delay Table" menu for customizing delays for your VCR. See "Programming a Custom Delay Table" on page 16.

2. Toggles Camera Switch Input pulse polarity between "Negative" and Positive". The default is "Negative".

3. Allows changing the number of fields output to the VCR on each occurrence of the "Camera Switch Input" pulse. The default is 2.

4. Toggles the VCR Playback Discriminator circuit On/Off. The playback discriminator should be left "On" unless you wish to view all recorded frames of an alarm camera.

```
  Advanced VCR Options
Record
 1. Edit Delay Table...
 Camera Switch Input
 2. Pulse Polarity: Negative
 3. Fields per pulse:    2
Playback
 4. Discriminator:     On
Record/Playback
 5. Video Format:    Field
Camera: Select/Change
DISPLAY: Previous Menu
```

5. Toggles VCR Video Format between "Field" and "Frame" and the factory default is "Field". **The video format must be the same for record and playback.**

Camera Switch Input

For most applications, the VCR delay table setting will provide the simplest setup and operation for multiplex recording. For advanced applications, such as time of day dependent VCR record speed settings, an external signal can be used to control the QSP-860MPX. The Camera Switch Input (also referred to as a "head switch" input) allows the QSP-860MPX to use an external signal from the VCR to control multiplexing. The QSP-860MPX can be set to use the Camera Switch Input signal through the "VCR Format" selection (see VCR Set Up on page 8). When the Camera Switch Input signal is used, the QSP-860MPX will switch to the next camera on the falling (Negative) edge, or the rising (Positive) edge of the signal based on the "Pulse Polarity" setting in the "Advanced VCR Options" menu. **Note that if the "Cam Sw Input" format is selected, a Camera Switch Input signal *must* be provided to the QSP-860MPX for proper VCR multiplexing to occur.**

HAND HELD IR REMOTE CONTROL

The hand held remote control allows easy remote operation of your QSP-860MPX by duplicating the front panel buttons as shown in the diagram. One major difference between front panel and remote operation is that the individual camera buttons have been reduced to a single button. In this case, the first press of the "Camera" button will cause the QSP-860MPX to display camera 1. Additional button presses will cycle the selection through each available camera and back to camera 1.

Please note that the remote control may not work properly in the presence of strong sun light. The sun is a strong Infra-Red light source and may interfere with the output from the remote control.

Programming your ATV QSP-860MPX Remote Control

When first installing or when changing the batteries in your QSP-860MPX Remote Control, it may be necessary to re-program it for use with the QSP-860MPX. **If your remote control does not appear to work for any reason, please perform the following steps before contacting the factory.**

To program the remote control to work with the QSP-860MPX:

1. Ensure that batteries are properly installed in the QSP-860MPX Remote Control.

2. Turn on the **QSP-860MPX** and connect a monitor.

3. On the **QSP-860MPX**, press the **DISPLAY** button to return to **DISPLAY** mode. Then press any of the 1-8 buttons to call up a full screen picture.

4. On the remote control, press the **VCR** button first, then **DISPLAY.** Hold both buttons together until the indicator lights up and blinks twice.

5. Enter your five-digit code. The QSP-860MPX code set #1 equates to remote code 11414, and code set #2 equates to code set 11344. The red LED will now blink twice and the remote control is set.

    The codes are entered by using the four buttons shown in the above diagram (Freeze, Camera, Quadrant, PIP). For example, to enter the default code for a QSP-860MPX (code 11344) press the following:

Code set #1		Code set #2	
FREEZE	2 TIMES	FREEZE	2 TIMES
QUADRANT	1 TIME	PIP	1 TIME
FREEZE	1 TIME	QUADRANT	2 TIMES
QUADRANT	1 TIME		

Press **DISPLAY** button on the remote control for 3x3 display on the QSP-860MPX.

Your QSP-860MPX is factory set for Code set #2. See page 13 to change the QSP-860MPX Code set.

NOTE: After replacing the battery, you must re-program the remote.

WHAT TO DO IF YOUR VCR IS NOT ON THE SUPPORTED LIST

The delay tables contained in QSP-860MPX software should give you satisfactory performance for any of the VCRs listed. If your VCR is not on the list, set up of the QSP-860MPX to support your VCR is very straightforward.

Most non-real-time Time Lapse VCRs are of the formula A or B type described below. It is usually possible to determine what type of VCR you have from the VCR's manual. The manual should contain video delay times for the VCR's supported hourly formats. The "rule of thumb" for EIA systems is that you take a published delay time (in seconds) and multiply by 60 (50 for CCIR). The result should be a number which is close to either 1/2 the record hourly rate (Formula A) or 1/3 the record hourly rate (Formula B). For example:

1. Your manual states that in 24 Hr mode the picture delay time is 0.21 seconds.

2. 0.21 x 60 = 12.6   (0.21 x 50 = 10.5 for CCIR)

3. 12.6 is closer to 12, the 24 hour record rate divided by 2, than to 8, the 24 hour record rate divided by 3.

4. This means that your VCR is a Formula A type, so you should use the STANDARD 24 HR STEPS or STANDARD 12 HR STEPS setting (see VCR Selection on page 8).

If your VCR is not a Formula A type or if the VCR does not have 12 or 24 hour Standard steps, you will need to construct a Custom Delay Table as described in the next section.

PROGRAMMING A CUSTOM DELAY TABLE (ADVANCED OPTION)

The QSP-860MPX has a means of creating and/or modifying a delay table to match your particular VCR. Satisfactory performance can be obtained by setting up the one or two formats you actually plan to use according to the following basic guidelines.

What is the "Delay Table"?

The delay table is a list of pairs of numbers that control the QSP-860MPX 's multiplex output frame rate being sent to the VCR during recording. The first column (Hour) is the format number that you would see in the VCR Set Up menu. The second column (Delay) is the number of video field times the QSP-860MPX waits before putting out the next camera image.

```
Format  Hour  Delay:Custom
1:       2      4
2:      12      6
3:      24     12
4:       2      4
5:      12      6
6:      24     12
7:       2      4
8:      12      6
QUADRANT:  Delay Formula
Camera: Select/Change
DISPLAY: Previous Menu
```

The delay table allows you to program up to 8 individual hourly format settings. If your VCR has more than 8 settings you will need to pick the set of 8 choices that you are most likely to use in your installation. If your VCR has fewer choices, or you want to restrict your choices to just a few settings, the whole table should be filled such that the choices are repeated . The example here is for a VCR which only has three settings; 2, 12 and 24 hours.

DETERMINING DELAY VALUES

For a real time VCR, the delay value is the minimum delay value (4). The software will not allow the entry of a lesser number.

For a Time Lapse VCR, depending on your make and model of VCR, the delay table value for EIA systems is normally one half (most time lapse VCRs are 1/2) or one third (1/3) of the hour number. For example, if the selected hourly format is 48 hours, the delay value for the VCR is either 24 (1/2 of 48) or 16 (1/3 of 48). The QSP-860MPX has a built in calculation capability to facilitate set up of the delay table for these standard formulas.

The following formulas are supported:

Formula A   DELAY = HOUR/ 2
Formula B   DELAY = HOUR/ 3
Formula C   DELAY = HOUR
Custom, where the HOUR and DELAY can be independently entered.

Your time-lapse VCR manual should list delay times (in seconds) for each record hour setting. If you have these values, use the following formula to determine the delay value:

DELAY VALUE = (Delay Time) x 60 for EIA   DELAY VALUE = (Delay Time) x 50 for CCIR

For example, if the 24 hour delay time is 0.22 seconds, DELAY = 0.22 x 60 = 13.2

The number will often be a fraction (such as 13.2), so "round" the number to the nearest whole integer (which would be 13). To set up the QSP-860MPX delay entry for this case, you would enter "24" in the "Hours" column and "13" in the "Delay" column.

Edit Delay Table

The delay table is used to set the field delay value needed for any selected VCR so that the multiplexing rate of the QSP-860MPX matches the recording rate of the VCR. The custom delay table allows the QSP-860MPX multiplexing rate to be programmed to match a VCR not in the standard table. For further information regarding delay table values, refer to the previous section "Programming a Custom Delay Table". The default custom table is the same as "STANDARD 12 HR STEPS". Note that when any delay table is modified, it becomes the new custom delay table. This allows you to set up and test other VCR formats without loosing a custom version. You can return to a previously customized table by making the selection here, as long as the custom table has not been re-edited .

To edit the delay table and create a custom delay table, select the "VCR Set Up" menu (option 2) from the "Main Menu". Then select "Advanced VCR Options" (option 4). Select "Edit Delay Table" (option 1) and the menu shown here will appear.

Note that before you edit the delay table, you should select the Delay Formula you will be using. In addition, when using Formulas A, B, or C, you will only be allowed to enter the "Hour" portion of the delay table. The delay will automatically be calculated based on your "Hour" entry. The Custom delay option allows the "Hour" and "Delay" values to be entered independently.

Selecting:

1 - 8	Chooses one of the eight hourly formats to modify.	
QUADRANT	Toggles the Delay Formula between Custom, A, B, and C.	

While Editing:

SEQUENCE	Advances editing to the next field.
1 - 8	Used to enter digits "1" through "8".
PIP	Used for a "0" entry.
QUADRANT	Used for a "9" entry.
DISPLAY	Completes the entry if less than 3 digits entered or returns to the previous value if no digits are entered.

```
Format  Hour  Delay: Custom
1:       2     4
2:       12    6
3:       24    12
4:       36    18
5:       48    24
6:       60    30
7:       72    36
8:       84    42
QUADRANT:  Delay Formula
Camera:  Select/Change
DISPLAY:  Previous Menu
```

How do I verify the correct "Values"?

Once your basic installation is complete, you can make a recording to ensure that the QSP-860MPX is multiplexing properly with your VCR. If the QSP-860MPX is multiplexing faster than the VCR during recording, cameras will be dropped during playback. If the QSP-860MPX is multiplexing slower than the VCR during recording, cameras will be repeated in several recorded frames during playback. The closer the rates are the fewer occurrences there will be of dropping or repeating cameras. When performing these tests, be sure that all camera priorities are set to the default value (High Priority) and alarms are off.

ALARM INTERCONNECTION ON THE QSP-860MPX

The alarm connector on the back panel allows input of eight external control signals to affect the behavior of the multiplexer under alarm conditions. Alarm inputs are provided for each camera. A "picture freeze" input is also provided to allow the picture to be frozen. These inputs are normally generated by a switch located at a door, window or other point in the installation where a camera is monitoring activity. Many installations use a "normally open" switch which requires a switch "closure" to activate the alarm. As part of the QSP-860MPX's normal alarm video processing, an "alarm output" is generated on the same back panel connector. In addition to the alarm inputs, a "picture freeze" input is also provided. While "picture freeze" is activated, any present camera image is retained on the display and new video information is ignored. A picture freeze does not trigger the alarm output.

Alarm inputs contain series resistors for ESD (Electro Static Discharge) and lightning damage protection, and the outputs also contain series resistors to limit output current to prevent damage to the QSP-860MPX in the occurrence of "shorting out" the output pin. When connecting the inputs and outputs up to other equipment, consideration should be given to the limitations introduced by these current limiting resistors.

The alarm connector on the QSP-860MPX is a DB-15, 15 pin connector. For ease of installation, a "breakout" adapter is provided with the 16th terminal connected to chassis ground. A simple alarm connection is shown to the right using the QSP-860MPX "alarm breakout" adapter. In this example, switches are connected directly to the alarm inputs, and a single output is connected to some signaling device or to a controlled piece of equipment. In this case, an external resistor is required to pull the output up to +5V (High) indicating a non-alarm condition.

The external resistor makes connection to higher voltage systems possible, such as a 12 Vdc automobile system. In this application, the pull-up resistor is not tied to the QSP-860MPX +5V pin, but to the higher voltage system. Voltages greater than +5V must not exceed 30 Vdc and the current through the output pin must not exceed 50 mA.

Failure to remain within the 30 Vdc and 50 mA restriction could damage either the QSP-860MPX, the output signaling device, or both.

860 Alarm Port Internal Electrical Equivalent
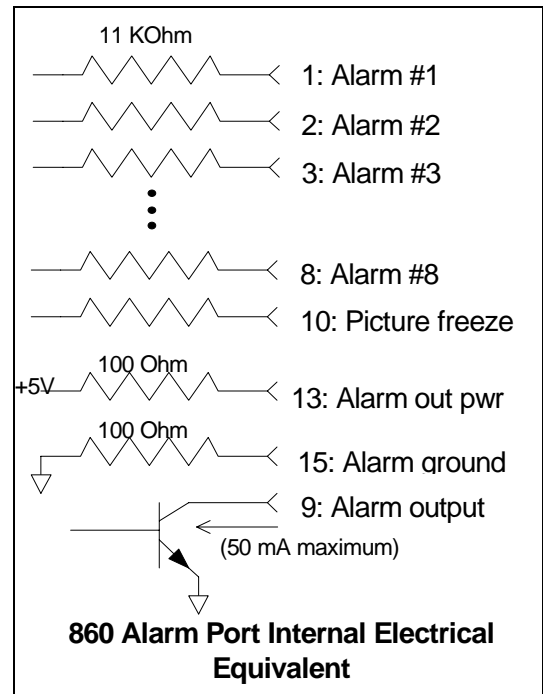
Typical Alarm Connections using the Breakout Adapter
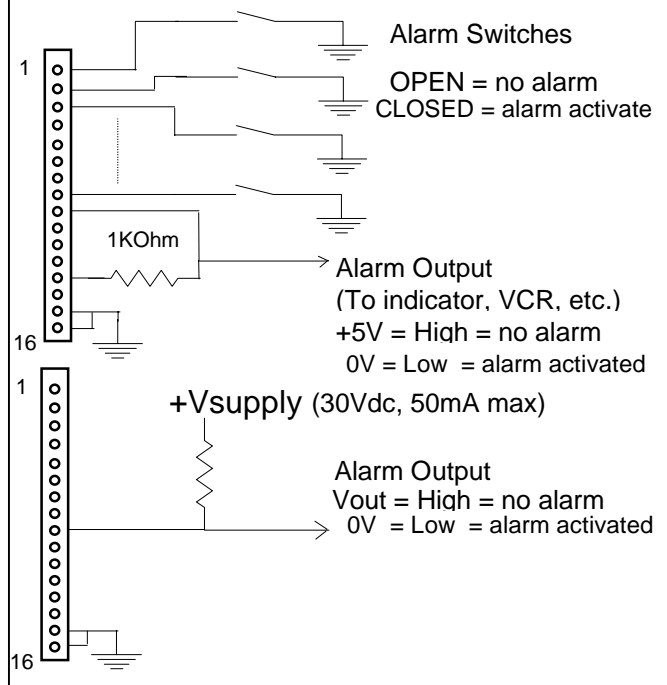
In some installations, the alarm output is used to activate or deactivate high voltage and/or high current circuitry (110 VAC lights, siren, etc.) which cannot be controlled directly by the QSP-860MPX. In other cases, the alarm output needs to control multiple circuits of different types (mixed DC and AC equipment) or the "sense" of the control logic is different (alarm needs to be "high" instead of "low").

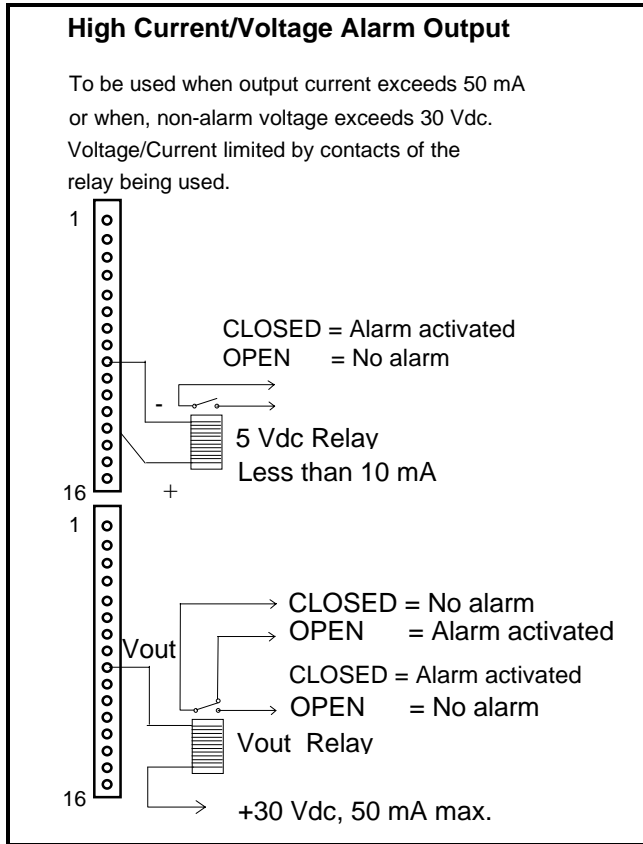The easiest method to address the above cases is to use a relay which has the number and rating on its contacts sufficient for the alarm output. Shown below are two methods to control a high current or high voltage device using a relay with a single, normally open contact. An internal, current limiting resistor for the pin 9 +5V supply will limit the usable relay current to something less than 10 mA (depending on the coil impedance). If a higher voltage, or higher current relay is used, an external supply is required. Under these conditions the open circuit voltage (no alarm) on pin 9 must not exceed 30 Vdc and the closed circuit current (alarm active) into pin 9 must be less than 50 mA.

The breakout adapter board is numbered compatibly with the DB-15 connector so the following table is applicable to either. **Note: Pin 16 is only present on the Breakout Adapter and is connected to chassis ground.**

High Current/Voltage Alarm Output

To be used when output current exceeds 50 mA
or when, non-alarm voltage exceeds 30 Vdc.
Voltage/Current limited by contacts of the
relay being used.

CLOSED = Alarm activated
OPEN   = No alarm

5 Vdc Relay
Less than 10 mA

CLOSED = No alarm
OPEN   = Alarm activated

CLOSED = Alarm activated
OPEN   = No alarm

Vout Relay

+30 Vdc, 50 mA max.

ALARM CONNECTOR PINS			
1	Alarm1	9	Alarm Out (< 50 mA)
2	Alarm2	10	Freeze
3	Alarm3	11	(reserved for future use)
4	Alarm4	12	Camera Switch Input
5	Alarm5	13	+5V (< 10 mA)
6	Alarm6	14	(reserved for future use)
7	Alarm7	15	Signal ground (< 10 mA)
8	Alarm8	16	Chassis ground

RS-232 REMOTE CONTROL INTERFACE

The QSP-860MPX has a built in RS-232 serial interface which supports remote control of the QSP-860MPX through simple ASCII commands. These commands provide access to the front panel button operations just as the IR Remote Control does.

The QSP-860MPX serial interface is fixed at 2400 baud, 8 bits, 1 stop bit, and no parity. It uses the very simple command format:

```
<command> <return>
```

The command is 2 character or 2 character plus parameter and must be followed by a "carriage return". The QSP-860MPX will respond with:

>   if the command was recognized, or

?   if the command was not recognized or is invalid

The following commands are supported by the QSP-860MPX serial interface and behave just as if the indicated front panel button was pushed:

BD   Display Button

BS   Sequence/Freeze Button - will cause QSP-860MPX to begin sequencing

BP   Pip Button

BQ   Quadrant Button

BV   VCR Button - will cause the QSP-860MPX to enter or exit VCR playback mode

BF   Sequence/Freeze Button - will cause the QSP-860MPX to freeze current display video

BB   VCR Button - will cause the QSP-860MPX to enter the VCR bypass mode

BC n   Camera Button - n is a number 1 through 8 corresponding to the camera number. A "space" or "tab" must be entered between the command and the number.

Commands can take a fraction of a second to execute within the QSP-860MPX and require that there be a delay of at least 0.3 seconds (300 milliseconds) between the "carriage return" and start of the next command. The command decode prompt (>) may occur before the command has finished executing and should not be used as an indication to send the next command. You will need to insure that your "host computer" waits for 0.3 seconds after sending the "carriage return" and before sending the next command character.

For proper RS-232 operation, the 8 position DIP switch, SW 5, located next to the DB-9 RS-232 interface connector within the QSP-860MPX must be set to the factory default positions as indicated below. The DB-9 connector pinout corresponds to a standard 9-pin DCE (modem) device.
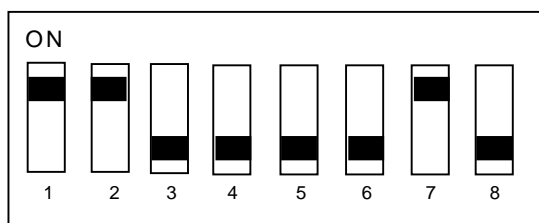
SW 5

SERIAL CONNECTOR PINS	
1	Signal ground
2	TX+ (out) RS232 or 422
3	RX+ (in) RS232 or 422
4	Signal ground
5	Signal ground
6	Signal ground
7	TX- (out) RS422
8	RX- (in) RS422
9	Signal ground

SUPPORTED VCRs

NTSC/EIA Compatible:

Atsutsa TL VCR251	Mitsubishi HS5300	Sony SVT-100
Atsutsa TL VCR964	Mitsubishi BV-1300	Sony SVT-124
Chugai CTR-024NC	Mitsubishi HS5440UA	Sony SVT-150
Gyyr 1400	Mitsubishi HS-S5600U (short, long)	Sony SVT-3000/5000
Gyyr 1550x		Sony SVT-3050
Gyyr 2051x (short, long)	NEC TL50	Sony SVT-5050 (short, long)
Gyyr TLC1800R (short, long)	Panasonic 6010	Sony SVT-S3100
Gyyr TLC2100 (short, long)	Panasonic 6024	Sony SVT-L200
Gyyr TLC2100SHD (short, long)	Panasonic 6040 (short, long)	Sony SVT-L400
Gyyr TLC2130HD	Panasonic 6730 (short, long)	Sony WatchCorder
Gyyr TLC2196	Panasonic 6720	Toshiba KV5168A
Gyyr TLC2196HD	Panasonic 6740P (short, long)	Toshiba KV6200A (short, long)
Hitachi VTL30 (field & frame)	Panasonic 6740PHD	Toshiba KV7024
Hitachi VTL2000	Panasonic 6750	Toshiba KV7168A
JVC BR9060 (field & frame)	Panasonic 8050/8051	Toshiba KV7960A (short, long)
JVC BR S920/S925	Panasonic RT600	Toshiba KV8168A
JVC BR 9050U	RCA TC3931	Toshiba KV8168AHD
JVC BR SRL 900U	Sanyo TLS900	Toshiba KV8960A
JVC BR SRL 901U	Sanyo TLS972	Toshiba KV8960AHD
JVC SR 9070U (short, long)	Sanyo TLS1000	Ultrak KR5440U
JVC SRL910U	Sanyo TLS2000	Vicon VCR400
Mitsubishi MS3600	Sanyo SRT-500	Vicon VCR401/410
Mitsubishi HS480	Sanyo SRT-600	Vicon VCR424
Mitsubishi HS5424	Sony EVT-801	

PAL/CCIR Compatible:

Atsutsa TL VCR251	Ikegami TVR 625 (Field & Frame)	Panasonic 6720
Burle 3910		Panasonic 8050/8051
Burle TC3961X	JVC 9060E (Field & Frame)	Sanyo TLS900P
Burle 3931X (Field & Frame)	Mitsubishi MS3600	Sanyo TLS1000P
Gyyr 2051X	Mitsubishi HS480E	Sony SVT-S3000P
Gyyr TLC1600X (Field & Frame)	Mitsubishi HS5424E	Sony SVT-5000P (short, long)
Gyyr TLC2100X (short, long)	Mitsubishi HSS5300E	Sony WatchCorder
Hitachi VTL30 (Field & Frame)	Mitsubishi HSS5600E	Vicon VCR400
Hitachi VTL1000	Mitsubishi HS5440	Vicon VCR401
Hitachi VTL2000	Panasonic 6010	Vicon VCR410S
	Panasonic 6024	Vicon VCR424

For VCRs which are not listed above, the standard 12 hour or standard 24 hour settings may be used.

To accommodate any remaining VCR models, a custom delay table is provided which can be tuned for optimal performance with any VCR hourly format (see page 16). Using this table, the multiplexing rate of the QSP-860MPX can be programmed to be compatible with the recording rate of the VCR.

ATV *Advanced Technology Video, Inc.*

EQUIPMENT REQUIREMENTS

The QSP-860MPX is designed to be compatible with all EIA and CCIR compatible equipment. The QSP-860MPX will accept 2:1 interlace cameras in either a "line-locked" or "free running" (internal reference) modes. The use of "random interlace" camera is not recommended unless the line lock is turned off.

SPECIFICATIONS

Physical
Dimensions .... 11-7/16" w X 9-5/16" d X 1.7/8" h
(291 mm X 237 mm X 48 mm)
Weight .... 6.5 lbs (2.95 kg), Power Supply: 1.0 lbs (0.45 kg)
Operating Temp .... 32°F - 104°F (0°C - 40°C)

Video
Signal Format .... EIA/CCIR Compatible Monochrome
EIA: 525 lines, 60 Fields / sec.
CCIR: 625 lines, 50 Fields / sec.
Camera Inputs .... 0.6 to 1.2 Vp-p 75 Ohm Termination
Monitor Output .... 1.2 Vp-p into 75 Ohms
Digital Sampling.. 512H x 512V x 8 Bits (256 Gray Levels)
Refresh Rate... 30 Fields Per Second (EIA)
25 Fields Per Second (CCIR)

Electrical
Power .... 12 V AC @ 2 Amp
Safety .... 110V, 60Hz Power Supply: UL Listed and CSA Certified
220V, 50Hz Power Supply: CE Mark and VDE approved
EMI .... FCC Part 15, Class A
CE Certified EN50081-1 (emissions), EN50082-1 (immunity)

Connectors
Video In .... BNC, 1 Per Camera, Terminating, or Hi Z (8 Total)
Loop Thru .... BNC, 1 Per Camera
Monitor Video Out .... BNC
VCR Video Out .... BNC
Serial Port... DB9
Alarm .... DB15 With Screw On Adapter Board
12 VAC, or 12 VDC.. Power Jack, 0.080" Pin Diameter

Controls
DISPLAY .... Return to 3x3 Display
SEQUENCE... Calls Up Selected Sequence Mode, or Freeze
PIP.. Calls Up Next PIP Mode
QUADRANT... Rotates Quadrant
VCR... Enables/Disables VCR Input For Recorder Playback
EIGHT CAMERA BUTTONS (1-8) .... Calls Up Individual Cameras Full Screen
IR Remote .... Duplicates Front Panel Controls
Termination Switches... Selects 75 Ohm or Hi-Z Termination For 8 Video Inputs

ATV *Advanced Technology Video, Inc.*

WARRANTY INFORMATION

Thank you for purchasing this Advanced Technology Video, Inc., hereinafter "ATV", product. We have manufactured this product in accordance with high quality standards and when it is used in the manner intended, it has a **limited warranty against defects in material and workmanship for a period of five (5) years from the date of shipment from ATV**. During the warranty period ATV's entire liability and your exclusive remedy shall be, at ATV's option, upon receipt of proof of purchase, repair or replacement of products that prove to be defective. Repair of a defective product is contingent upon availability of replacement parts from their manufacturer. Should ATV be unable to obtain replacement parts, ATV will, at its option, pro rate the value of the defective product and offer this amount toward the purchase of any new ATV product.

For warranty service or repair, this product must be returned to a service facility designated by ATV. Within the United States, you must obtain a return authorization (RMA) number by calling (888) 288-7644. Outside of the United States, contact your sales representative or the ATV factory at 425-885-7000 (email: tech@atvideo.com).   For ATV factory service after obtaining an RMA number, send the product with shipping charges and applicable duties and taxes paid, along with a copy of your sales receipt or other proof of purchase and date of purchase to the ATV factory address.

YEAR 2000 CONFORMANCE

All ATV products containing a date and time function meet Year 2000 Conformity Requirements as specified in BSI DISC PD2000-1 (described below). Year 2000 requirements do not apply to ATV products without a date and time function. ATV products' date format is "Day – Month – Year" where "Year" is a two digit representation of the year. Conformity is defined as follows:

1. No value for the current date will cause any interruption in operation of the product.
2. Date-based functionality within the product behaves consistently for dates prior to, during and after year 2000.
3. The 2 digit date within the product is implicitly assumed to be greater than 1990.
4. Year 2000 is recognized as a leap year.

LIMITATION OF WARRANTY

This warranty covers normal use and does not cover damage which occurs in shipment or failure which results from alteration, accident, misuse, neglect, voltage fluctuations, lightning, water damage (or other acts of God), faulty installation or adjustment of controls, interfacing with non-standard or custom equipment, or improper maintenance.

EXCEPT AS HEREIN EXPRESSLY SET FORTH AND TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAW, ATV OR ANY OF ITS EMPLOYEES SHALL NOT, UNDER ANY CIRCUMSTANCES, BE RESPONSIBLE FOR ANY DIRECT, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES, INCLUDING, BUT NOT LIMITED TO, DAMAGE TO THE EQUIPMENT. ATV MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED INCLUDING, BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE, AND NON-INFRINGEMENT. REMOVAL OR ALTERATION OF THE SERIAL NUMBER WILL VOID THIS WARRANTY.

FCC STATEMENT

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