

QSP-421SS

Owner's Manual

and

Operating Instructions

Instructions for basic operation and installation

Printing Revision 2 - 10/22/97



*For Serial numbers 2300500 and greater for EIA
For Serial numbers 2400500 and greater for CCIR*



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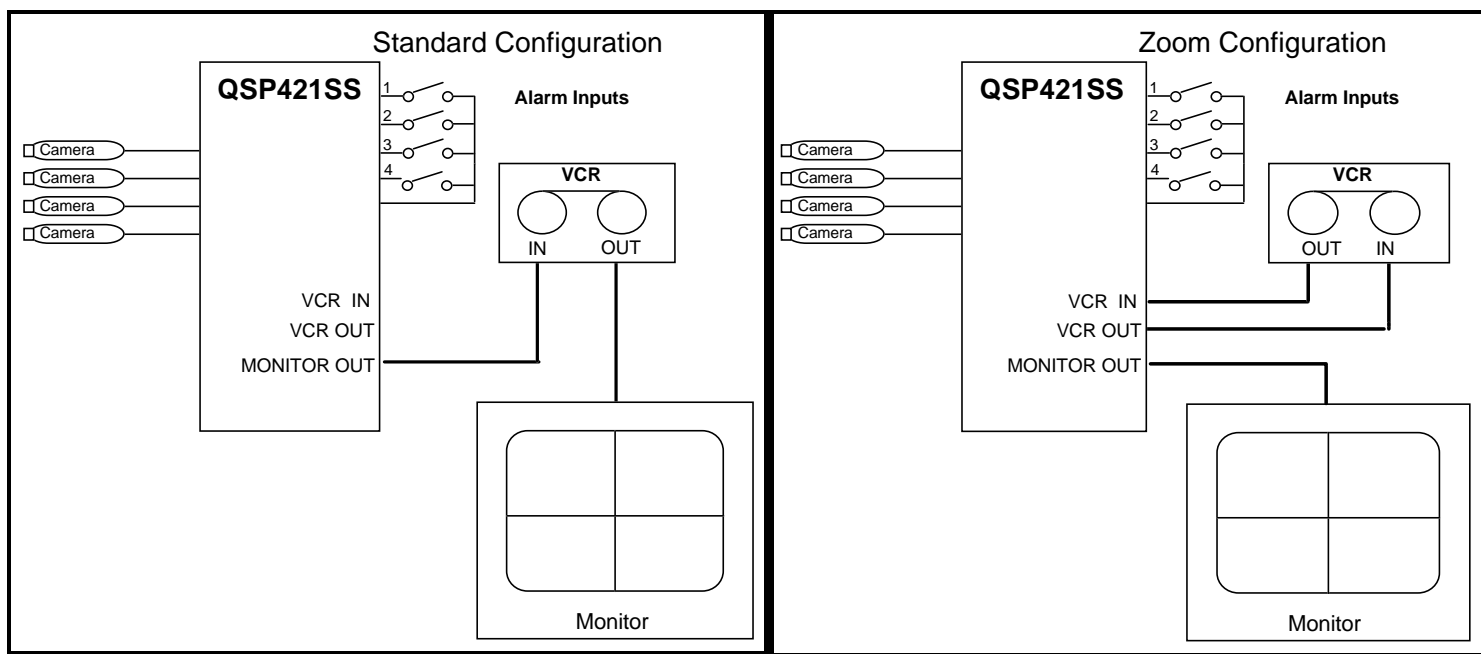
INTRODUCTION

Thank you for purchasing our QuadraSplit™ 421SS (QSP-421SS). This instruction manual will cover installation and describe in simple step-by-step detail the features of this product.

FEATURE SUMMARY

- Black and white quad in quarter frame rate
- Individual full screen call up (real time)
- Moveable Picture in Picture (PIP)
- Picture in Picture insert sequencing (roll free)
- Picture in Picture background sequencing (roll free)
- Variable dwell setting
- VCR interface with zoom on playback
- 8 Bit (256 gray scale) video
- No special camera sync required
- Auto leveling on all inputs (AGC)
- Alarming
- Loop through
- EIA and CCIR supported (EIA and EIA/CCIR versions)

EQUIPMENT INTERCONNECTION



EQUIPMENT REQUIREMENTS

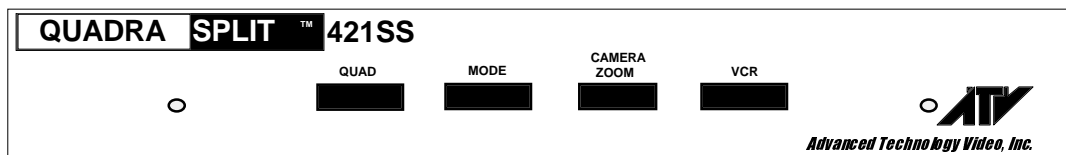
The QSP-421SS is designed to be compatible with all EIA and CCIR compatible equipment. Two versions of the product are available to make best use of these two standards. The EIA version (indicated by serial numbers 23....) will only be compatible with EIA installations. The CCIR version (indicated by serial numbers 24....) will be compatible with both EIA and CCIR installations. For installations requiring a mixture of CCIR and EIA cameras, it is recommended that the CCIR version QSP-421SS be used, with a CCIR camera on input #1. The remaining camera inputs can take either EIA or CCIR cameras.

The QSP-421SS will accept 2:1 interlace cameras in either a "line-locked" or "free running" (internal reference) modes. ATV does not recommend "Random Interlace" cameras.

To connect and use the new QSP-421SS in the same manner as the previous versions of the QSP-421SS, please refer to the "Standard Configuration" diagram on page 2. This configuration provides access to all of the new QSP-421SS features with the exception of the VCR playback "zoom" feature.

To use the VCR playback "zoom" feature, refer to the "Zoom Configuration" diagram on page 2. This configuration provides access to all the new features of the QSP-421SS as well as the VCR playback "zoom" feature. The VCR playback "zoom" feature enlarges a single quadrant of the display during playback to full screen. This allows the viewing of a single camera from a quad display recording. Because the VCR playback "zoom" is an enlargement of a smaller picture, the resulting full screen display will be of lower resolution. It is reasonable to expect some loss of detail and picture jitter in VCR playback "zoom" mode, especially in slow motion and still frame playback (refer to Field/Frame Mode Selection on page 6).

BASIC OPERATION



FRONT PANEL OPERATION

Using the figure above as your guide, you can select different display modes by pressing one or more of the following four buttons.

QUAD: Returns the unit to **QUAD MODE** directly from any other mode.

MODE : Switches from **QUAD MODE**, and with each press, cycles through **FULL SCREEN MANUAL, PICTURE IN PICTURE, FULL SCREEN SEQUENCING, PIP BACKGROUND SEQUENCING, PIP INSERT SEQUENCING**, and back to **FULL SCREEN MANUAL**.

CAMERA/ZOOM: Within each mode except **QUAD, FULL SCREEN SEQUENCING, OR VCR**, this button will allow you to select particular cameras (e.g. 1, 2, 3 & 4). When in **PIP** mode, pressing and holding this button for at least 1 second will cause the **PIP** to rotate to the next quadrant. The order is lower right, lower left, upper left, and upper right.

VCR: Pressing this button will switch the video source input back and forth from the cameras to the VCR which will be indicated by the right most indicator (an amber led). If the indicator is on, the video input is from the VCR. When in the **VCR** mode, pressing the **CAMERA/ZOOM** button will cause the display to come from the upper left quadrant of the VCR playback display. Successive pushes of the **CAMERA/ZOOM** button will cause the displayed quadrant to change to the next quadrant. The order is upper left, upper right, lower left and lower right. Another press of the **CAMERA/ZOOM** button will return the display to a full screen VCR playback display.

EXAMPLE OPERATIONS

To obtain Full Screen Camera 3: Press **QUAD, MODE, CAMERA, CAMERA**.

To obtain Camera 4 background and Camera 2 PIP as insert: Press **QUAD, MODE, CAMERA, CAMERA, CAMERA, MODE, CAMERA**.

To obtain Camera 3 background and PIP insert sequencing 1, 2, 3 & 4: Press **QUAD, MODE, MODE, MODE, MODE, CAMERA, CAMERA**.

To obtain Camera 4 PIP insert and background picture sequencing: Press **QUAD, MODE, MODE, MODE, MODE, CAMERA, CAMERA, CAMERA**.

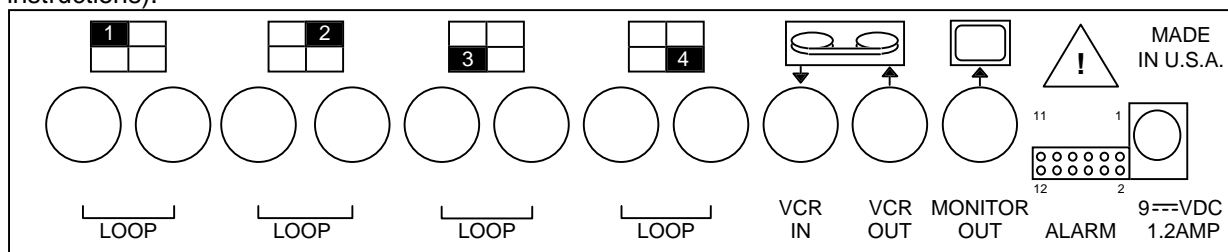
To rotate the PIP quadrant in any of the above PIP modes, press and hold the **CAMERA** button until the PIP moves to the next quadrant (approximately 1 second).

To have all cameras scanning in full screen sequencing: Press **QUAD, MODE, MODE, MODE**.

BACK PANEL CONNECTIONS

There are eleven BNC connectors on the back of the QSP-421SS. Four of these BNC connectors are for the camera inputs and corresponding looping outputs (8 total). One BNC connector is provided for a VCR input, another for an output to the VCR, and another for the output to a monitor. Cameras 1 through 4 connectors are labeled with their display position in the quad mode display.

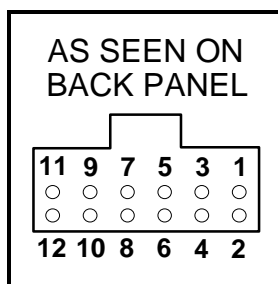
Each camera input of the QSP-421SS supports loop-through with a second BNC connector. The loop-through 75 ohm termination resistor within the QSP-421SS is enabled as a factory default (see page 6 for instructions).



The power connector is for a 9 Volt DC power adapter rated at 1.2 Amps. It is **NOT** recommended that any adapter other than the one shipped with the QSP-421SS be used.

The alarm connector has the following "Pin-out":

1. Alarm input #1
2. Alarm input #2
3. Alarm input #3
4. Alarm input #4
5. Alarm output
6. Not used
7. Not used
8. +5V Through 100 ohm resistor
9. Not used
10. Ground through 100 ohm resistor
11. Freeze input
12. Not used



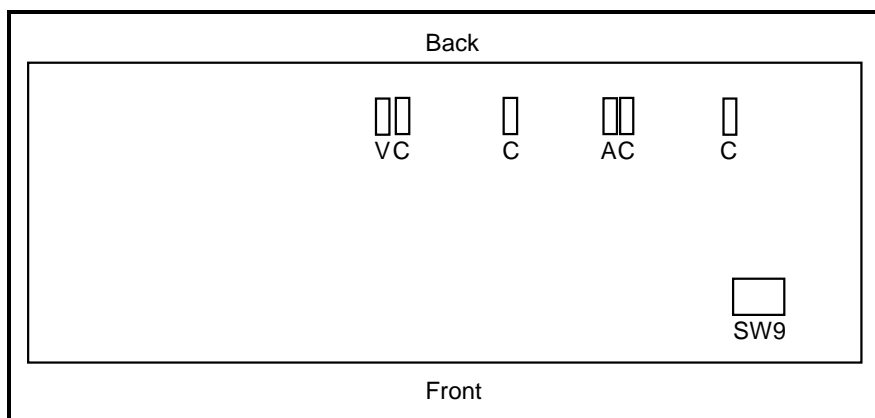
The factory default alarm contact option is “normally open” (see following section on alarm contact options). A contact closure on any alarm input (which “grounds” that input by connecting it to the alarm connector ground pin) puts the QSP-421SS in an “alarm” state. In this state, the unit will switch to a full screen view of the camera associated with that alarm input. If more than one alarm input is activated, then the QSP-421SS will sequence between each “alarmed” camera at the normal dwell rate. The alarm output will be activated when there is an alarm input. An alarm condition exists until the alarm input is deactivated.

The alarm output is limited to 30 mA of current and an external relay should be used to drive any high powered or high voltage device. An external resistor pull-up is required for some systems when the alarm out is deactivated. The pull up resistor (10K ohm typically) may be connected to the +5 Volt pin or some other higher voltage not to exceed +25 Volts (sometimes used in +12 Volt systems). The “off” or “open circuit” voltage on the alarm output should not exceed +25 Volts to avoid damaging the alarm output.

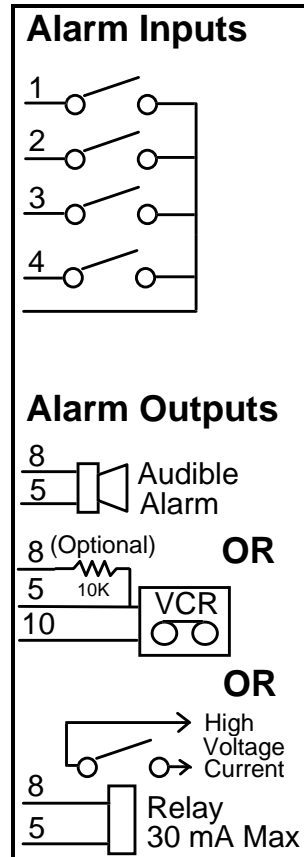
The +5 Volt and ground pins are connected through an internal 100 ohm resistor for short circuit protection. This limits the current to about 50 mA if the +5 Volt supply shorted to ground. If the +5 Volt supply is used with the alarm output to drive an external load (as shown above) the internal resistor and the load should produce less than 30 mA current to prevent damaging the alarm output.

The “Freeze” input pin will halt all picture input processing which will effectively “freeze” the present image on the quad output. Activating this pin is similar to an alarm input which merely requires “grounding” to be active.

OPTIONS

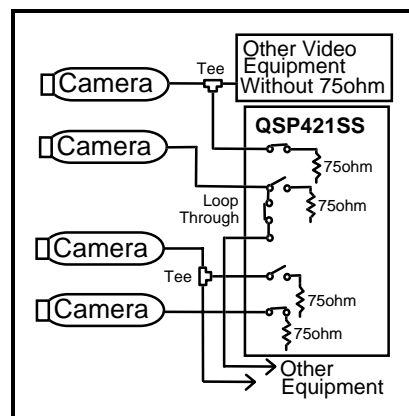


The QSP-421SS input option shunts are located in the rear of the unit and the sequence dwell setting DIP switch is located toward the front right hand corner. These are accessed by removing the top cover.



INPUT TERMINATION

The “C” jumpers affect the camera input termination resistor. When the jumper is installed a 75 Ohm termination is connected to the respective cameras. Additionally the “V” jumper serves the same purpose on the VCR input. For proper operation a termination resistor of 75 ohms should be on the last piece of video equipment which is connected to a given camera. For a simple system where cameras are brought directly into the QSP-421SS, the termination resistors are always enabled (factory default). When connecting a camera to more than one piece of equipment, or if “loop through” is used, individual terminating resistor jumpers should be removed and the termination should be made at the monitor(s).



ALARM CONTACTS

The “A” jumper affects whether the alarm inputs are active when the contacts are closed (jumper installed - factory default) or open (jumper not installed). In either case the assumption is that the alarm contacts connect together the ground pin and the alarm input pin associated with a particular camera. For “normally open” type contacts, the “A” jumper should be installed. For “normally closed” type contacts, the “A” jumper should not be installed. The QSP-421SS assumes that all the alarm inputs are of the same type. Selecting an incompatible combination of contact type and option setting will result in the QSP-421SS being in a continuous “alarm” condition which is indicated by the unit to seemingly be stuck in full frame sequencing mode, and generating a continuous alarm output state. Please note that if less than four alarm inputs are used and “A” jumper is not installed, the remaining alarm inputs must be grounded (Tied to pin 10).

DWELL OPTIONS

The QSP-421SS dwell time is set by SW9 and affects the amount of time between camera changes. The dwell setting is set to a factory default of 4 seconds but is adjustable in 4 sec steps from 4 to 16 seconds.

The dwell time affects:

1. Full frame sequencing dwell time.
2. PIP background sequencing dwell time.
3. PIP insert sequencing dwell time.
4. Alarm full frame sequencing dwell time (when more than one simultaneous alarm input).

FIELD/FRAME MODE SELECTION

Switch positions #1 and #2 on SW9 control how video field information is handled. We have preset them to defaults that should work with most systems, but there is a very large variation in the behavior of VCRs and you may have to experiment with the settings that work best for your installation.

SW9: Dwell Time Setting
Field/Frame Mode Selection

(Factory Default Shown)

Field/Frame	Dwell Time
----	OFF OFF 4 Seconds
----	OFF ON 8 Seconds
----	ON OFF 12 Seconds
----	ON ON 16 Seconds
OFF OFF	---- Field Mode Toggle
ON OFF	---- Field Mode Single
OFF ON	---- Frame Mode Force Odd
ON ON	---- Frame Mode Force Even

Some VCRs (in certain modes) and cameras will fail to generate correct field information that can be decoded by the QSP-421SS. A camera or VCR of this type may cause the Quad picture to jump up and down by one line or generate intermittent picture refreshing. In VCR recording and playback, the field decoding problem can cause line reversals and “motion artifacts” when playing back a recording of a 525 line frame (625 for CCIR).

Most time-lapse VCRs on the market are “field recorders” and if frame recording is desired (for better line resolution), the recommendation is to use “real-time” 24 hour recorders where the tape is always in motion. Motion artifacts can be eliminated by the use of shuttered cameras with a shutter speed set to 30 frames per second (25 frames per second for CCIR). Non-real-time VCRs should use field mode recording which is the factory default setting.

FIELD MODE (SW9:Position #2 = OFF)

This switch option sets the unit to display on its output only one field of video which is repeated twice per frame. This same field is used during playback for both full screen and quadrant zoom. In a few cases when the VCR is in playback but “paused”, the picture will jump (vibrate) by one line. Setting SW9:Position #1 to ON usually compensates for this. For most other cases SW9:Position #1 should be OFF.

FRAME MODE (SW9:POSITION #2 = ON)

In frame mode each independent field which makes up a frame will get displayed for monitoring or recording. In a system **without** a VCR, **frame** is the recommended mode of operation since it has twice the line resolution as field mode. When used **with** a VCR, **field** mode is recommended. During VCR playback, most VCR’s will generate intermittent field information in non-linear time lapse mode. Some VCRs tend to play back more odd fields than even and other VCRs tend to playback more even fields than odd. SW9: position 1 should be set to whatever position works best for that particular VCR.

SPECIFICATIONS

PHYSICAL

Dimensions:	H: 1-7/8” x W: 8-1/2” x D: 5-7/8” H: 48 mm x W: 216 mm x D: 150 mm
Weight:	3.125 lbs./1.42 Kg. (main unit) 1.25 lbs./0.80 Kg. (power supply)
Operating Temp:	32°F - 104° (0° - 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 1.2V p-p, 75 ohm termination
Camera Sync:	No special sync required
Monitor Output:	1.0V p-p into 75 Ohm termination
VCR Output:	1.0V p-p into 75 Ohm termination
Digital Memory:	512 x 512 with 256 gray scale level EIA 1024 x 512 with 256 gray scale level CCIR

SPECIFICATIONS (CONTINUED)

ELECTRICAL

Power: 9V DC @1.2 Amp power supply included
Safety: UL Listed and CSA Certified (CCIR units are VDE approved)
EMI: FCC Part 15, Class A

CONNECTORS

Video In: BNC, 1 per camera, 75 Ohm or HI-Z selectable termination
Loop Through: BNC, 1 per camera
Monitor Output: BNC
VCR Output and Input: BNC
Alarm Connector: Dual row 6 pin crimp connector (0.10" centers, 12 pins total)

CONTROLS

Quad: Return to quad display
Mode: Select display mode (Full camera, PIP, Sequence, etc.)
Camera/Zoom: Select display, background, or insert camera; rotate insert quadrant in PIP modes and when in VCR mode select zoom function and quadrant
VCR: Select VCR playback or normal Quad display mode

LIMITED WARRANTY STATEMENT

Advanced Technology Video, Inc. will, upon receipt of proof of purchase, repair or replace, at its option, in the event of a manufacturing defect, all parts and labor up to two (2) years from original purchase date. This warranty covers normal use and does not cover damage which occurs in shipment or failure which results from alteration, accident, misuse, neglect, faulty installation or adjustment of controls or improper maintenance. Except as herein expressly set forth, Advanced Technology Video, Inc. shall not, under any circumstances, be responsible for any direct, indirect, incidental or consequential damages, including, but not limited to, damage to the equipment. For warranty service you must obtain a return authorization number by calling (425) 885-7000 and send the product, postage paid, with a copy of your sales receipt or other proof of purchase and date of purchase to the factory address. If you have any questions about the service of your ATV product, please call the factory at (425) 885-7000.

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. Operations 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.