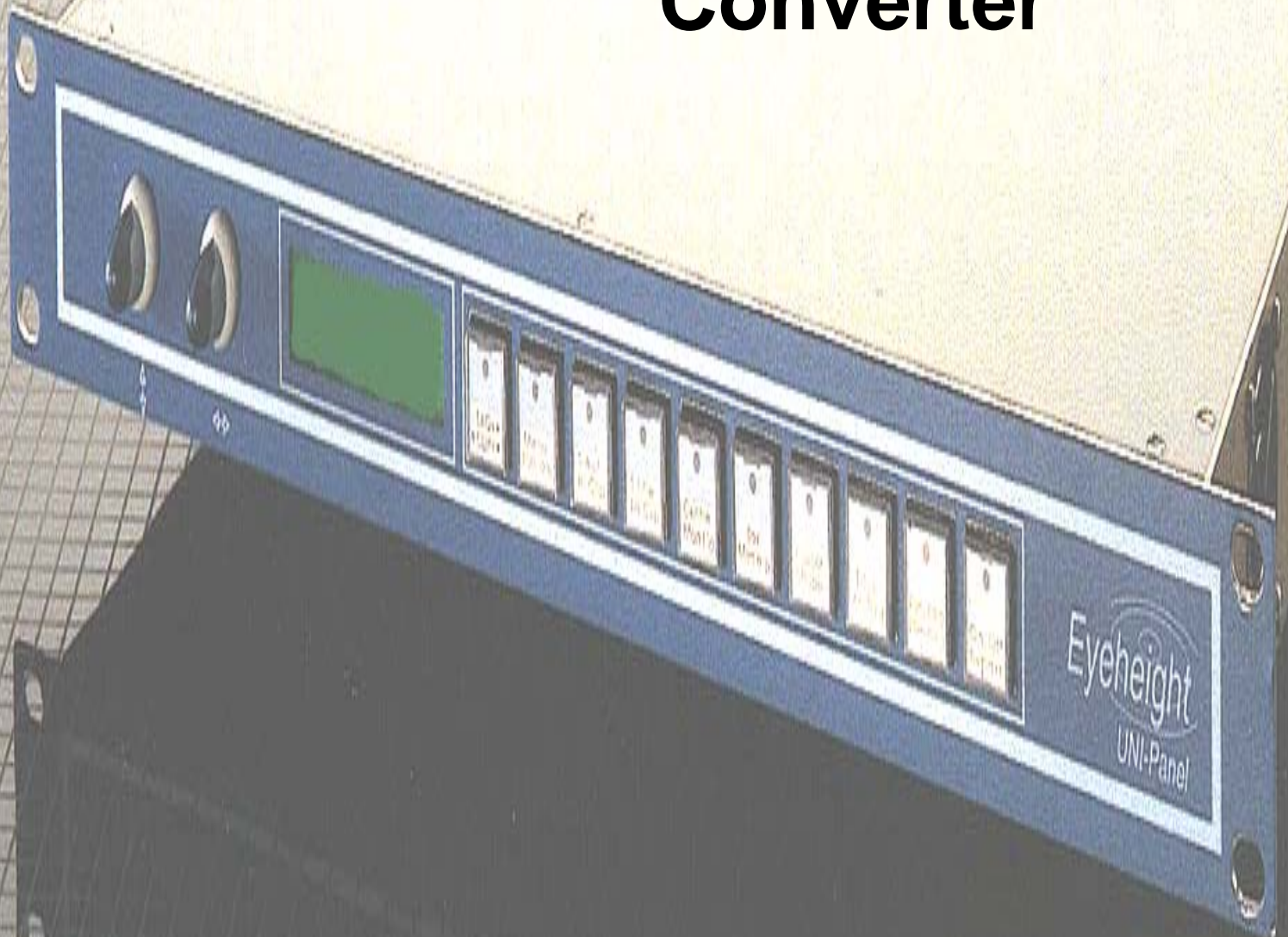


# User Guide For: The Eyeheight SQ-500 Aspect Ratio Converter



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# Overall Specification

## SQ-500

Physical Format	Host PCB Subsystem for fitting into an Eyeheight Uni-Box System.
Power Requirements	+5V at 1.5 Amp, supplied from the Uni-Box. -5V at 100 mA, supplied from the Uni-Box.
General Features	<ul style="list-style-type: none"><li>• All common aspect ratios available as presets.</li><li>• Variable Vertical and Horizontal Magnification and Minification.</li><li>• Horizontal and Vertical aperture corrector.</li><li>• AES Audio delay automatically tracks the video delay.</li><li>• Linear Timecode delay, automatically tracks the video delay.</li><li>• Stereo Analogue Audio output converted from AES Input for Monitoring only.</li><li>• Monitoring Quality PAL/NTSC output</li><li>• Monitoring Quality RGB/YUV output</li><li>• Monitoring Quality Y/C output</li><li>• Optional EDH Re-insertion</li><li>• Optional Fail-safe Dual Contact Relay bypass from input to output 1 on power failure.</li></ul>
Local Control	Standard Eyeheight Uni-Panel (UP-1000)
Remote Control	Standard Eyeheight Uni-Panel situated up to 50M remotely using RS422 control with power from the Uni-Box.
Accessories	The SQ-500 PCB requires a spare slot in an Eyeheight Uni-Box (UB-1000) Control is by Eyeheight Uni-Panel (UP-1000).
Input	270 Mbit Serial Digital with active loop through. Input R.L <=-15dB, 75 Ohm
Outputs	2 off Main Serial Digital outputs (BNC) (Output 1 is "Fail Safe"). 75 Ohm.
System Delay	The system delays the input signal by 1 Video Frame
Other Connections	AES I/O, Timecode I/O, Stereo Audio output available on a 15 Way D-Type connector (female).

# Technical Specification

# SQ-500

SDI Input	1 Off CCIR 601 Component 525/625, 10 bits data, Scrambled NRZI, 270 Mb/s. Complies with SMPTE 259M and CCIR 656.  Input Impedance 75 Ohm Input Level 800mV +/- 80mV (Pk-Pk) at Signal Source. Return Loss >=-15dB from 1MHz to 270MHz Equalisation Minimum of 100 Metres PSF 1/3
SDI Output	2 off CCIR 601 Component 525/625, 10 bits data, Scrambled NRZI, 270 Mb/s. Complies with SMPTE 259M and CCIR 656.  Output 1 Equipped with Relay Bypass from Input For Power failsafe situations. Output 2 Standard O/P not equipped with the above. Output Impedance 75 Ohm Output Level 800mV +/- 80mV (Pk-Pk) at BNC. Return Loss >=-15dB from 1MHz to 270MHz Jitter <= +/- 200pS + (Jitter on incoming Signal) Jitter on incoming signal <= +/- 200pS EDH Option Menu for EDH Re-Insertion
Analogue Video Outputs	4 BNC Connectors with 3 Soft Menus Selecting the Monitoring Quality Video Outputs as follows:  <u>Menu--CVBS/Y/U/V:</u> CVBS PAL/NTSC Auto Configure. 0.7 Volt Pk-Pk Luma +/- 3% Fully Adjustable Chroma by menu Colour Burst 0.3V Pk-Pk +/-5% Sync 0.3V Pk-Pk +/- 5% Y 1 Volt Pk-Pk +/-10% with Sync (0.3V +/-10%) U 0.7 Volt Pk-Pk +/- 10% V 0.7 Volt Pk-Pk +/- 10% <u>Menu--CVBS/R/G/B:</u> CVBS As Above. G 1 Volt Pk-Pk +/-10% with Sync (0.3V +/-10%) B 0.7 Volt Pk-Pk +/- 10% R 0.7 Volt Pk-Pk +/- 10% <u>Menu--Y/C/Off/Off:</u> Y 1 Volt Pk-Pk +/-10% with Sync (0.3V +/-10%) C Fully Adjustable Chroma by menu. Off Unused BNC Off Unused BNC
Digital Audio Input	1 off AES EBU (AES 2) Input with Balancing Transformer. Input Impedance 110 Ohms. Input Level 500mV to 5V Pk-Pk Connector High Density 15W D type.
Digital Audio Output	1 off AES EBU (AES 2) Output with Balancing Transformer and equipped with passive relay bypass for power failsafe. Output Impedance 110 Ohms. Connector High Density 15W D type. Output Delay Exactly 1 Video Frame with respect to The Digital Audio Input.
Timecode Input	1 off Longitudinal Timecode input, Electronically Balanced Input. Level 0 dB +6dB/-12dB

	Input Impedance	10 K Ohms
	Connector	High Density 15W D type.
	Operation Range	From 1/5 to 10 Normal speed Min.
Timecode Output	1 off Longitudinal Timecode output Electronically Balanced and equipped with passive relay bypass for power failsafe.	
	Output Level	0 dB +/- 1dB
	Output Impedance	100 Ohms a.c. coupled
	Output Delay	Exactly 1 Video Frame with respect to the Timecode Input.
	Connector	15W D type.
Analogue Audio Outputs	1 off monitoring quality stereo output pair converted from the Digital Audio Input. Electronically Balanced.	
	Output Level	2V Pk-Pk at -18dB Digital level.
	Output Loading	600 Ohms max load, dc coupled.
	Output Delay	Exactly 1 Video Frame with respect to the Digital Audio (AES EBU) Input.
	Connector	High Density 15W D type.
Processing	Field Based Processing using an 8 Bit Image Reduction Engine with 3 line Vertical aperture corrector and 3 pixel Horizontal Aperture corrector.	
System Delay	Dependent On menu Selection:	
	Option1/ Min Delay Mode OFF	One video Frame +/- 1 uS 1/50 <sup>th</sup> Sec 625 Lines 1/60 <sup>th</sup> Sec 525 Lines
	Option2/ Min Delay Mode ON	Approx. 125 Video Lines. Approx. 1/250 <sup>th</sup> Sec.
Auxiliary Information	All Auxiliary Data is passed to full 10 Bit resolution in Normal operation. (In Minimum Delay mode this is not guaranteed)	
Bypass Mode	Full 10 Bit Bypass mode with all Picture and Auxiliary data being Bypassed. Processing Delay stays at 1 Video Frame. (Auto Bypass must be "ON" for this to be true)	
Other Connections	RS422 control 9W D type (female) Min 50 Metres Operation Power for Remote Uni-panel optionally down Pin 5	

# SQ-500 Presets

The SQ-500 Aspect Ratio Converter is controlled from an Eyeheight Uni-Panel either locally mounted on the front of a Uni-Box or remotely sited using the rear RS422 control system. Fig. 1 shows the 10 Pre-set switches for the SQ-500 operation.

ARC1-> ARC2->	<b>BYPASS</b>	<b>16/9 LB</b>	<b>14/9LB</b>	<b>LB-&gt;WS</b>	<b>Mem 1</b>	<b>Mem 2</b>	<b>Mem 3</b>	<b>Mem 4</b>	<b>Setup</b>
<b>SW 1</b>	<b>SW 2</b>	<b>SW 3</b>	<b>SW 4</b>	<b>SW 5</b>	<b>SW 6</b>	<b>SW 7</b>	<b>SW 8</b>	<b>SW 9</b>	<b>SW10</b>
Selects between the Two possible ARC's	Bypass Mode, No Conversion	16F16 to 16L12.	16F16 to 14L12	16L12 to 16F16	Memory 1 can store any user defined Aspect Ratio	Memory 2 can store any user defined Aspect Ratio	Memory 3 can store any user defined Aspect Ratio	Memory 4 can store any user defined Aspect Ratio	Enables the user to setup any aspect ratio and store it

Fig. 1 Uni-Panel Pre-set Switches for Single SQ-500 Unit

The function of the 10 pre-set switches are as follows:

SW 1 - Device Select	This button toggles between the Two possible systems being controlled by the Uni-Panel. In the case where there is only one SQ-500 system installed, this button does nothing. If a second SQ-500 was installed in the second slot, control would toggle between the two SQ-500 Aspect Ratio Converters.
SW 2 - Bypass	In this mode the unit electronically bypasses with full 10 bit resolution. The unit still has either a 1 Video Frame delay or a 125 Line delay depending upon the set mode. (See "Full menu Set", minimum delay option).
SW 3 – 16/9 Lb	This button converts a Full Frame Widescreen picture as viewed on a widescreen monitor, to a "Letter Boxed" widescreen picture as viewed on a normal 4:3 monitor.
SW 4 – 14/9 Lb	This button converts a Full Frame Widescreen picture as viewed on a widescreen monitor, to a "Letter Boxed" 14:9 picture as viewed on a normal 4:3 monitor. In this mode the edges of the picture are removed in order to have less of a letterbox.
SW 5 – Lb→Ws	This button converts a "Letter Boxed" widescreen picture as viewed on a normal 4:3 monitor to a Full Frame Widescreen picture as viewed on a widescreen monitor.
SW 6 - Memory 1	There are 4 Memories which can be used to store 4 User Preset Aspect Ratios. These are not lost on power down. In order to Store a User Aspect Ratio the Setup mode must be entered (See Sw10)

SW 7 - Memory 2	See above
SW 8 - Memory 3	See above
SW 9 - Memory 4	See above
SW10- Setup	This button is used to enter the setup mode. Entering Setup mode is done by keeping this button pressed in for more than 2 Seconds. This mode enables the User to set up his or her own user presets and gives full control of vertical and horizontal size and position. For a full explanation see the section titled "Setup Mode".

## Full Menu Set

The “Full Menu Set” allows the user access to all the detailed functions of the SQ-500. The full menu set can be browsed using the “Right hand rotary switch”. Any selected menu can then be adjusted using the “Left hand rotary switch”.

MENU (SELECT -“MENU” KNOB)	EFFECT (CHANGE-“ADJ” KNOB)
Preset Aspect Ratio Conversions	<p>This will Toggle through all the List of preset aspect ratios available to the user. (Except the user defined aspect ratios in Memories 1-4)</p> <p>These are as follows:</p> <ul style="list-style-type: none"> <li>• Bypass</li> <li>• 16F16 → 16L12</li> <li>• 16F16 → 14L12</li> <li>• 16F16 → 12F12</li> <li>• 12F12 → 12P16</li> <li>• 12F12 → 14P16</li> <li>• 14L12 → 16F16</li> <li>• 14F12 → 16P16</li> <li>• 16L12 → 16F16</li> <li>• 16L12 → 12F12</li> <li>• 16L12 → 14L12</li> <li>• USER ASPECT (Do Not Use)</li> </ul> <p>The Terminology used is now an industry standard for describing picture ratios . This is explained in the Appendix 1. “Aspect Ratio Terminology”</p>
Horz pos=<nnn>  <small>(This menu can only be adjusted in set-up mode. See set-up key operation in “SQ-500 Presets” chapter above)</small>	This enables adjustment of the horizontal position. The units are in luminance pixels. (720 pixels per full screen width for Image reduction but <b>not</b> for image expansion).
Vert pos= <nnn>  <small>(This menu can only be adjusted in set-up mode. See set-up key operation in “SQ-500 Presets” chapter above)</small>	This enables adjustment of the vertical position. The units are in video lines for image reduction but <b>not</b> for Image expansion. (576 per full screen height)
Horz Size= <nnn>  <small>(This menu can only be adjusted in set-up mode. See set-up key operation in “SQ-500 Presets” chapter above)</small>	This enables the adjustment of the picture width. The units are in luminance pixels. (720 pixels per full screen width for Image reduction but <b>not</b> for image expansion).
Vert size= <nnn>  <small>(This menu can only be adjusted in set-up mode. See set-up key operation in “SQ-500 Presets” chapter above)</small>	This enables the adjustment of the picture height. The units are in video lines. The units are in video lines for

	image reduction but <b>not</b> for Image expansion. (576 per full screen height)
Left Blnk= <0-7>	This will adjust the blanking position on the left hand side of the picture
Right Blnk= <0-7>	This will adjust the blanking position on the left hand side of the picture
HAK level <0-7>	This introduces variable horizontal aperture correction from 0-7.
VAK level <0-9>	This introduces variable Vertical aperture correction from 0-7.
ReInsert EDH <on-off>	Inserts an EDH Checksum into the final output stage. It can be switched on or off. This is a "factory fit" Option on the SQ-500 system.
GPIS are <on-off>	There are 2 input GPI's that call up Memories 1 and 2 respectively. They can be enabled or disabled with this menu. (See rear connectons).
Mon Op= <X+R+B+G> <X+V+U+Y> <Y+C+X+X> <CVBS+X+X+X>	This menu changes the Analogue Video options available from the Four Analog BNC Connectors at the rear of the unit. NOTE THAT NOT ALL ANALOGUE OUTPUT TYPES ARE AVAILABLE SIMULTANEOUSLY.
Chroma level=<0-127>	This adjusts the chroma level on the CVBS and the Y/C Analogue outputs. 127 is maximum chroma and 0 is monochrome.(106=default)
VITC on CVBS= <on/off>	This option decides whether vertical interval information from lines 10-19 in 525, and lines 15-22 in 625, are to be allowed through on the CVBS output.
Min Delay= <on/off>	In normal operation this is OFF and the unit has exactly one frame delay. In Minimum Delay Mode (ON) the unit has approximately 125 Line delay. This is useful for situations where the Audio is not being delayed with the Video. NOTE THAT IN MINIMUM DELAY MODE THE AUXILIARY DATA MAY NOT BE PASSED THROUGH THE UNIT TRANSPARENTLY.
Luma Clipper= <on/off>	This provides the user with the option of clipping the luminance at dec 940 (0.7V) in the whites and dec 64 (0V). This keeps the luminance within analogue "Legal" Limits. This is particularly useful to suppress ringing caused by the effect of the vertical and

	horizontal aperture correctors
Auto Bypass= <on/off>	With Auto Bypass on, the system will automatically bypass all processing when in 4/3 (Bypass) mode. This means that in 4/3 mode the Luma clipper and the aperture correction and the noise reduction will be unusable in this mode. (i.e. what comes in will be exactly what comes out of the unit, but one video frame late.)
Vert Blank=<0-3>	This will blank out 0 to 3 lines of picture, on each field, at top of the picture. This is because certain data information often appears here (for example Line 23 Wide Screen Signalling or Closed caption data) and it is undesirable to have them visible in the aspect ratio converted picture.

## **Further explanation of the Full menu Set Parameters**

### **Aperture Correction (VAK=, HAK=)**

This unit is provided with a Vertical and Horizontal 3 Pixel luminance aperture correction system. This will subjectively “Sharpen up” the picture independently in the vertical and horizontal directions. It is best to adjust these depending on the picture content. The user needs to be aware that overuse of this will cause “Ringing” (Overshoots and undershoots) on the picture. (See “Luma Clipper” Below)

### **Luma Clipper (Luma Clip=)**

The Luma clipper has been provided to keep the Digital signal within the limits of Analogue luminance Legality (0V-0.7V). This is particularly useful when the user is using aperture correction as this may cause the signal to go analogue “Illegal”, due to overshoots and undershoots.

### **Left and Right Picture Blanking (Right Blank= Left Blank=)**

This enables the user to blank the Left and right edges of the picture and replaces it with digital black. This can be useful in certain aspect ratio conversions that cause the extreme edges of the picture to end up in a more central position in it’s destination format. This means that any edge tearing, or edge artefacts, that normally would have been “Unseen” by the viewer on an overscanned Television set may become visible. The edge blanking can be wound in to cover this up.

### **Minimum Delay Mode (Min Delay=)**

Minimum delay mode has been provided largely for picture monitoring situations where the audio is left unprocessed. Because the delay in this

mode is only 1/250<sup>th</sup> second, for normal viewing the audio stays “More or less” in sync. The intended uses are for Audience monitoring of Widescreen signals on 4/3 Monitors or for example Simple VHS Dubs.

It is worth knowing that in Minimum delay mode not all of the auxiliary information is passed cleanly (i.e. vertical and horizontal blanking). And also VITC will not be passed through on either the SDI or the CVBS outputs of the device.

**Luminance Clipper** (Luma Clip=)

With the Luma Clipper ON, the unit will clip the Luminance to Analogue “Legal” Levels. (0V-0.7V). This is particularly useful if using large amounts of aperture correction which may cause Undershoots or Overshoots on the luminance signal. The Clipper will stop these Undershoots and overshoots going “Illegal”.

**Auto Bypass Mode** (Auto Bypass=)

With Auto Bypass on, the system will automatically bypass all processing when in 4/3 (Bypass) mode. This means that in 4/3 mode the Luma clipper and the aperture correction and the noise reduction will be unusable in this mode. (I.e. what comes in will be exactly what comes out of the unit, but one video frame late). With Auto Bypass ON, the unit will also put in a pre-defined amount of aperture correction whilst in reduction or Magnification. This is used to “Sharpen up” the look of the picture in order to compensate for the natural filtering required to reduce or magnify the picture.

With Auto Bypass OFF, the user is free to adjust all the picture modifiers without any “Automatic” Correction.

## **Setup Mode and User Memories**

The unit also has four “User defined Memories”. These are labelled as Mem <1-4>. They can be used to set up user defined states of the machine rather than using the preset buttons. In user mode the user simply hits the button to recall the memory.

Setup Mode is used to set up new states of the Aspect Ratio Converter into the four User Memories. You enter the setup mode by pressing the setup key for more than 2 seconds before releasing it.

Once you are in setup mode the four LEDs flash on the memory buttons. You can now use the Menu and adjust keys to set up the full menu set in any way the user desires.

Once the User has set up the required state, it can be saved in a memory. One of the four memory buttons can be hit, which will prompt a “Save or Abort” message. To save the setting press the memory button again. Aborting a save can be done at any time by pressing the setup button to bring the user into “User mode”.

Below is a list of the features that are stored in the memories:

<b>Feature</b>	<b>Stored</b>	<b>Not Stored</b>
Horizontal Position	<input type="checkbox"/>	
Vertical Position	<input type="checkbox"/>	
Horizontal Size	<input type="checkbox"/>	
Vertical Size	<input type="checkbox"/>	
Left Blanking		<input type="checkbox"/>
Right Blanking		<input type="checkbox"/>
Horizontal Aperture Correction	<input type="checkbox"/>	
Vertical Aperture Correction	<input type="checkbox"/>	
EDH Insertion		<input type="checkbox"/>
GPI Enable		<input type="checkbox"/>
Monitoring Output Video		<input type="checkbox"/>
Monitoring Output Chroma Level		<input type="checkbox"/>
Minimum Delay Mode		<input type="checkbox"/>
Luma Clipping		<input type="checkbox"/>
Auto Bypass		<input type="checkbox"/>

### **List of Parameters that are retained in the Memory Presets**

## UNI-Panel Set-up

The Uni-Panel has a number of set-up features that are important to know about. These set-up features are permanently stored in EE-prom such that once they are set up there should be little or no need to change them again.

Pressing certain keys on the Uni-Panel while the unit is being powered up activates the set up modes. If the Uni-Panel is locally situated on the front of a Uni-Box, then the whole Uni-box must be re-powered while the set-up keys are pressed in. If the Uni-panel is remotely sited, then it may be easier to re-power the panel only by disconnecting and reconnecting the 9W D type, while the set-up keys are being pressed.

In the following text the terminology “**slot 0**” refers to the PCB system on the Right Hand side looking from the **rear** of the Uni-Box.

The terminology “**slot 1**” refers to the PCB system on the Left Hand side looking from the **rear** of the Uni-Box.

### First Birthday:

Pressing switches 1 and 10 together when power-up happens will cause a 1st Birthday to occur. This will clear the EE-prom to 00h, **and consequently put the panel into ‘Local’ mode and lose all the SQ-500 start-up data and the user set device names.** Re-powering will however put the system into a sensible default mode.

After EE-Prom is cleared, the message ‘EE-OK’ will appear on the LCD display and the host systems must be restarted by a total power down.

### Protocol Change:

Pressing switches 3 and 8 together when power-up happens, will cause the panel protocol to toggle between ‘Eyeheight 2 wire local talk’ and RS422. If the panel is remotely sited ‘RS422’ is required. If the panel is on the front of a Uni-Box then ‘Local’ is required.

### Slot Identification Text:

Pressing switches 5 and 6 together when power-up happens, will cause a mode to be entered such that the "user slot text" can be changed and stored in EE-prom.

The Text is displayed when a user uses SW 1 to switch between slot 0/1. This announces that now you are controlling, for example ‘Studio1 ARC’ or ‘EDIT 1 ARC’.

The default text after a first birthday is ‘Dev 1’ for slot 0 and ‘Dev 2’ for slot 1.

To change the text for slot 0, enter this mode by powering up with sw 5 and 6 pressed. You will now see the Slot 0 text (Dev 1). adjust character under the underscore by moving the 'adj.' digipot. To move the underscore use the 'menu' digipot.

When you have completed the slot 0 text, press sw 10 (Flashing led). this will then do the same for the slot 1 text. When this is complete press SW 10 and after a few seconds re-power the system.

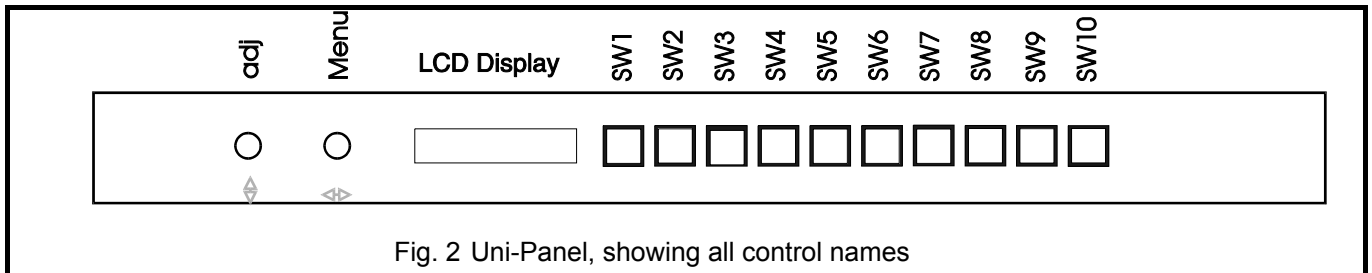


Fig. 2 Uni-Panel, showing all control names

## GPI Operation

There are Two external Triggers (GPI's) that can remotely change the state of the Aspect Ratio Converter. These are called GPI1 and GPI2. They can be triggered by a short to ground on the RS422 remote 9W D type at the rear of the unit. Pin 4 is GPI1 and Pin 6 is GPI2. Ground is available on Pin 1 and 9 of the connector.

Activating GPI1 will cause the System to change to the Memory 1 Setting.  
Activating GPI2 will cause the System to change to the Memory 2 Setting.

The GPI's are edge rather than state sensitive, and will automatically be mapped out on power up. (If a GPI is permanently ON, i.e. always shorted to ground by accident, the software will recognise this and always ignore it, even on power up of the unit).

The GPI's can be enabled or disabled by the software on the appropriate menu on the full menu set. The GPI enable status is always remembered after power down. The Memories do not store the GPI enable status (Otherwise this could cause them to automatically disable themselves!!)

## **Assembly of the SQ-500 PCB into a Uni-box.**

Normally a system will be assembled and set-up at the factory, However a user may wish to move cards from one Uni-Box to another and change user settings from time to time.

The procedure for assembling a SQ-500 into a Uni-Box is as follows:

- 1).... Remove the mains from the Uni-Box.
- 2).... Remove the blank rear cover, by unscrewing the six M2.5 screws at the rear slot. If there is already one PCB Subsystem in the rear of the unit there will only be one rear blank cover over Slot 1 and this will be on the LEFT looking from the rear of the unit. If for and reason there are NO PCB Subsystems in this Uni-Box, then the SQ-500 MUST be inserted into Slot 0, which is the Right Hand slot looking from the rear.
- 3).... Insert the SQ-500 PCB into the slot and affix the six M2.5 screws. Take care not to snag the Coaxial cables as you do this, the connections are delicate.
- 4).... Re-apply the mains to the Uni-Box and the systems will start-up.
- 5).... On start-up you should now get the message "SQ-500 V1.0" either once or twice depending on whether there are one or two SQ-500 PCBs in this Uni-Box. On the first power-up you should also observe the message "EE-upload" rather than the usual EE-download message on the LCD Display of the Uni-Panel.
- 6).... Refer to the "Slot Identification text" section of this manual under "Uni-Panel" set-up for instruction on how to personalise the name of the Aspect Ratio Converter (e.g. "ARC 1")

## **SQ-500 RS422 And GPI Connection**

This is the Pinout for the 9W D-type RS422 Connector

Pin 1	Ground 0V
Pin 2	Tx-
Pin 3	Rx+
Pin 4	GPI 1
Pin 5	+12V dc Power (UP-1000)
Pin 6	GPI 2
Pin 7	Tx+
Pin 8	Rx-
Pin 9	Ground 0V

A short to ground (Pin 1 ) activates a GPI.

## **SQ-500 AES Audio and Timecode Connections**

This is the Pinout for the 15W Standard Density D-type AES and Timecode Connector.

Pin 1	Analogue Audio GND
Pin 2	Analogue Audio Out Right +
Pin 3	Analogue Audio Out Left +
Pin 4	AES Delay Output -
Pin 5	AES Input -
Pin 6	Timecode Output -
Pin 7	Timecode Input -
Pin 8	Timecode GND
Pin 9	Analogue Audio Out Right -
Pin 10	Analogue Audio Out Left -
Pin 11	AES GND
Pin 12	AES Delay Output +
Pin 13	AES Input +
Pin 14	Timecode Output +
Pin 15	Timecode Input +

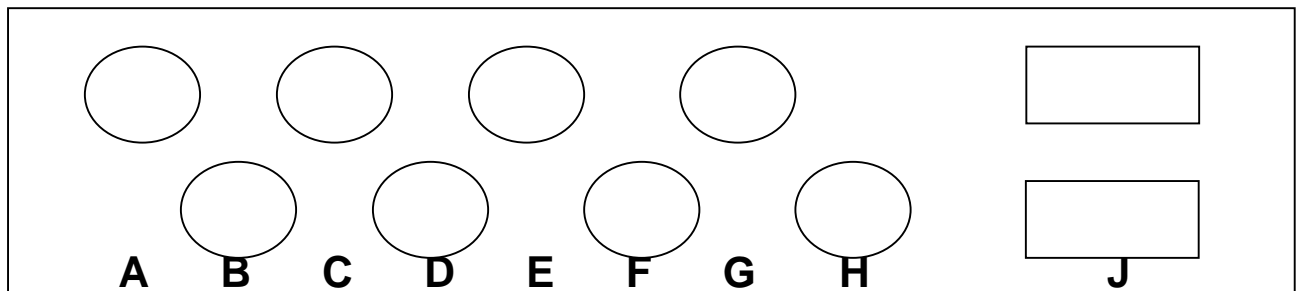
## **User Jumpers on the SQ-500 PCB**

The Following is a list of the User Jumpers on the Aspect Ratio Converter PCB (Issue 3)

Jumper	Function Of Jumper	Status
LK1	Computer Reset	Do Not Jumper
LK2	Firmware Load Input	Must Jumper
LK3	Firmware Load Output	Must Jumper
LK4	Syncs Off on Analogue "Y" or "G" Output	User Selectable
LK5	Firmware Load Post-processing	Must Jumper
LK6	Audio Clock Select	Must Jumper (Centre-In)
LK7	Remote Uni-Panel +12Volts Power Enable	User Selectable
LK8	GPI 1 Enable	User Selectable
LK9	GPI 2 Enable	User Selectable

## Rear Panel Connections

I



A	Serial Digital Input
B	Serial Digital Active Loop Through
C	Serial Digital Output 1, with failsafe relay bypass from input A
D	Serial Digital Output 2
E	Analogue Output 4 Y/Green/Off
F	Analogue Output 3, Cb/Blue/Off
G	Analogue Output 2, Cr/Red/ Chroma (C)
H	Analogue Output 1, CVBS/CVBS/Luma (Y)
I	RS422, Uni-Panel Connection
J	AES EBU/Timecode/Analogue Audio Connections

## Appendix 1- Aspect Ratio Terminology

Recent developments in widescreen technology have made the use of Aspect Ratio Converters Prolific. The industry as a whole has found it necessary to formalise specifying the format of a picture on a 4:3 or 16:9 monitoring glass using a sequence of letters and numbers. For example 16F16 is a normal Full frame Widescreen picture viewed on a widescreen monitor.

Generally the format of the code is as follows

PPAMM

“**PP**” is a number (usually 12, 14 or 16) which describes the aspect ratio divided by 9\*\* of the “Viewable Picture” when viewed correctly (i.e not distorted). Note this does not include any “Black” which goes to make parts of the picture that have no picture content (e.g the black of the letterbox).

“**A**” is a letter describing the appearance of the “Viewable Picture” within the Glass Screen. This can be:

“F”, which means the picture completely fills the screen

“L”, which means the picture is letter-boxed. (Letter-box means there is a black band at the top and the bottom of the picture).

“P”, which means the picture is pillar-boxed. (Pillar-box means that there is black to the left and the right of the picture)

“**MM**” is a number (usually 12, 16) which describes the aspect ratio divided by 9\*\* of the “Glass”.

(\*\*Note that 16 therefore means 16:9, and 12 means 12:9, which is the same as 4:3.)

An example of a conversion is:

16F16→16L12

This means converting from:

“A picture that has a 16:9 appearance on a 16:9 monitor and completely fills the screen”. (In other words a normal Widescreen picture)

To:

“A picture that has a 16:9 appearance on a 4:3 monitor and looks like a letter-box”.

## Some Common Aspect Ratios

16F16	A Normal Widescreen (16:9) Picture.
12F12	A normal 4:3 Picture.
16L12	A 16:9 Letterbox viewed on a 4:3 (12:9) monitor.
14L12	A 14:9 Letterbox viewed on a 4:3 (12:9) monitor.
12P16	A 4:3 picture viewed on a 16:9 monitor leaving black to the left and right. (Pillar-box)
14P16	A 14:9 picture viewed on a 16:9 monitor leaving black to the left and right. (Pillar-box)