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REVISION HISTORY

<u>REVISION</u>	<u>DESCRIPTION</u>	<u>DATE</u>
0.1	Preliminary version	May 2010
0.2	Updated for 444 version – new block diagrams and features	May 2010
0.3	Added Features for Firmware version 2.0 b 250	June 2010
1.0	First Release Corrected GPI pinout, added features for Firmware version 3.0 b11	July 2010
1.1	Preliminary release of features for Firmware version 8.0	May 2011
2.0	Full release of features for Firmware version 8.0	June 2011
2.1	Added features for Firmware version 9.0	August 2011
3.0	Full release of features for Firmware version 11.0	June 2012

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1. OVERVIEW

The 7832SVP Stereoscopic Video Processor module is a second generation multi-purpose module designed specifically to aid in the production and post production of high definition Stereoscopic 3D video. This 7800 series module provides for Left Eye and Right Eye inputs and processed program outputs. In addition, it also provides 2D monitoring tools to aid in rig alignment, and a 3D formatted output to drive flat panel 3D displays.

The 7832SVP can also be used to solve common problems encountered in 3D broadcasting, such as frame syncing, Frame compatible formatting for 3D playout, and timing alignment of 3D backhauls to the studio (with the +STM option)

The 7832SVP series modules are available in 2 versions. The 7832SVP-3G version (also referred to as the 'standard version') supports only 4:2:2 video formats. The 7832SVP-444-3G version (also referred to as the '444 version') supports 4:2:2 and 4:4:4 video formats. When used with 4:4:4 formats it also provides 4:2:2 outputs for monitoring, and has the ability to apply user programmable 2D Look up Tables to normalize logarithmic program inputs for monitoring.



In this manual, references to 7832SVP apply to both versions. Specific references to 7832SVP-3G or 7832SVP-444-3G apply only to the stated version.

The 7832SVP occupies two card slots in the 7800 Series 3RU frame, which will hold up to 15 modules. The 7832SVP occupies two card slots in the 7801FR 1RU frame, which will hold up to 4 modules.

Features:

- Left Eye and Right Eye program inputs and outputs – each serial digital HD input supports SMPTE ST 292-1 1.5 Gb/s or SMPTE ST 425-1 Level A 3 Gb/s signals.
- Supports Left Eye and Right Eye on a single SMPTE ST 425-2 Stereoscopic 3 Gb/s signal
- Supports Left Eye and Right Eye as a 'Frame Compatible' input
- Supports most international 4:2:2 video standards including 1080p/60, 1080p/50, 1080i/60, 1080i/50, 1080p/30, 1080p/30sF, 1080p/25, 1080p/25sF, 1080p/24, 1080p/24sF, 720p/60, 720p/50 and the 1/1.001 rates where applicable – auto sense using SMPTE ST 352 payload ID.
- Supports 4:2:2 2048 x 1080 2K Digital Cinematography production image formats
- Camera Flip Modes to compensate for beam splitter camera rigs – swaps Left Eye and Right Eye images with each other and performs a horizontal and/or vertical flip of each image
- Horizontal and vertical image alignments for both Left Eye and Right Eye
- Five Auxiliary outputs are assignable to Mixer, On Screen Display and 3D Formatted output functions
- Mixer output - 1.5 Gb/s serial digital HD output provides a processed combination of the Left Eye and Right Eye for convergence pulling, camera alignment, colour matching, etc. Mixer output modes – 50/50 blend, difference, luma only difference, horizontal 50/50 split, tile, anaglyph, wiggle
- 3D Formatter output - 1.5 Gb/s or 3 Gb/s serial digital HD output provides a formatted output for directly driving 3D capable display devices in the following modes – Top-and-Bottom, Side-by-Side, Line Interleave – output standard set to match display resolution, independent of input resolution.
- Broadcast quality 3D Formatter output can also be used as 'Frame compatible' output for 3D playout or backhaul in the following modes – Top-and-Bottom, Side-by-Side.
- Horizontal Image Translation (HIT) on Auxiliary outputs allows adjustment of the convergence plane without affecting the program path to aid in monitoring 'unconverged' content.
- Stereo frame sync locks both eyes to an external reference, or permits the Right Eye to be locked to the Left Eye. Independent H and V phasing controls for PGM output and 3D Formatted Output

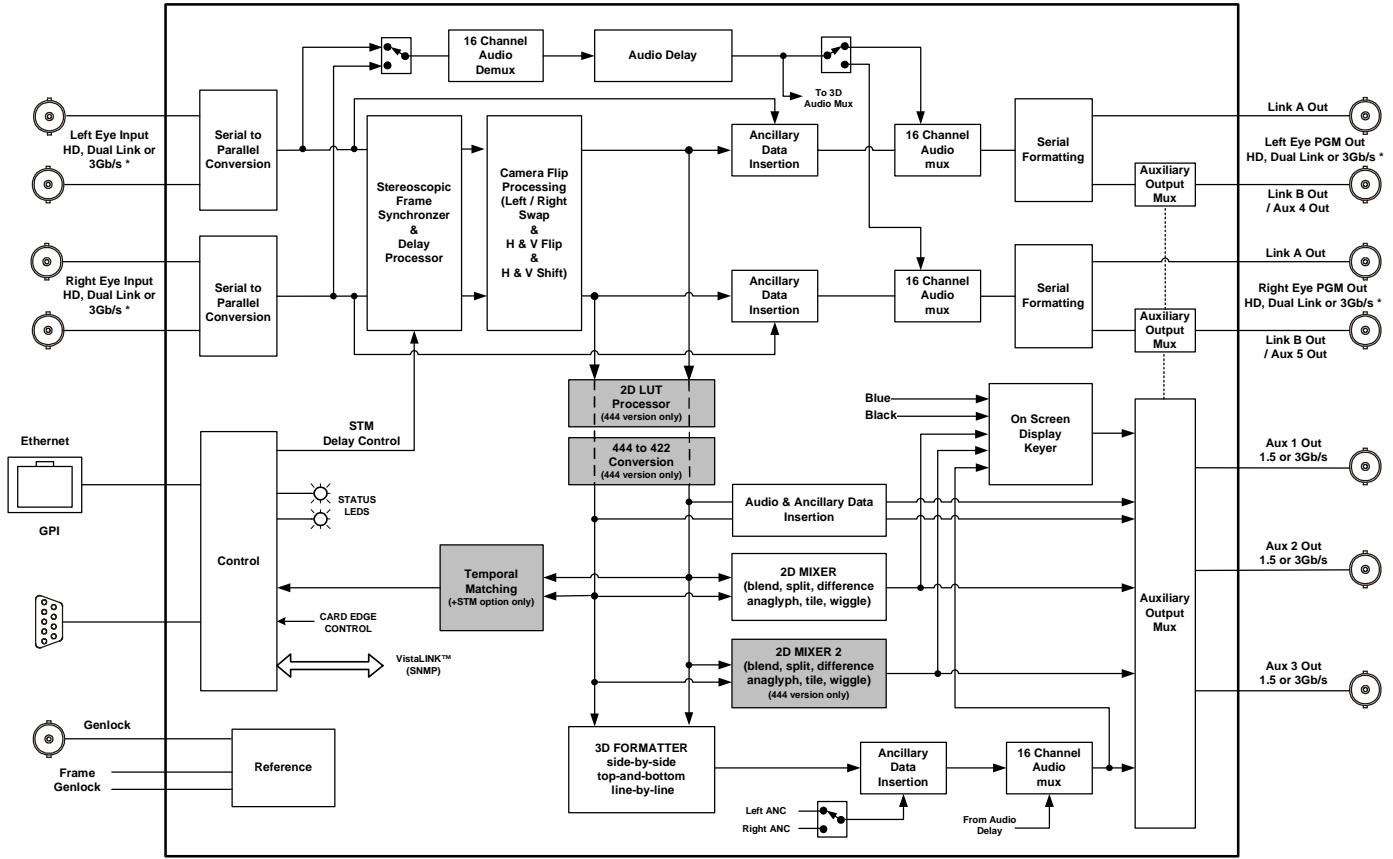
- External reference – supports colour black or tri-level sync from BNC input or frame reference.
- Passes 4 groups of audio from Left Eye or Right Eye input to corresponding program output as well as 3D Formatted output
- Passes VANC ancillary data as well as timecode from inputs to PGM outputs and from Left Eye or Right Eye input to 3D Formatted Output
- Card edge menu using On Screen Display superimposed on the Mixer, 3D Formatter, blue or black video is used to configure the operating modes and display critical module status
- 10 user presets to quickly load user configurations to the card.
- 8 Programmable GPI control inputs - select mixer modes, adjust horizontal and vertical shift, load card presets, etc.
- Card Edge LEDs for signal presence, module status
- VistaLINK[®] - capable for remote monitoring, control and configuration capabilities via SNMP, using VistaLINK[®] PRO, CP-2116E or CP-2232E Control Panels. VistaLINK[®] is available when modules are used with the 3RU 7800FR frame and a 7700FC VistaLINK[®] Frame Controller in slot 1 of the frame. VistaLINK[®] is also available with direct Ethernet connection to the module.

Additional Features supported on 444 version

- Supports 4:4:4 RGB video standards including 1080i/60, 1080i/50, 1080p/30, 1080p/30sF, 1080p/25, 1080p/25sF, 1080p/24, 1080p/24sF and the 1/1.001 rates where applicable
- Supports 4:2:2 and 4:4:4 2048 x 1080 2K Digital Cinematography production image formats
- Supports SMPTE ST 372 dual link 1.5 Gb/s or SMPTE ST 425-1 Level B Dual Link 3 Gb/s signals
- Converts SMPTE ST 372 dual link 1.5 Gb/s inputs to SMPTE ST 425-1 Level B Dual Link 3 Gb/s outputs and vice versa for compatibility with legacy cameras and recorders
- Additional Mixer engine allows two different mixer outputs simultaneously
- 4:4:4 to 4:2:2 conversion for all Auxiliary outputs – up to five Auxiliary outputs are assignable to Mixer, On Screen Display, Left 4:2:2, Right 4:2:2 and 3D Formatted output functions
- Applies user programmable 2D Look Up tables to provide linear monitoring outputs when using logarithmic program input video formats

Additional Features supported on +STM option

- Uses IntelliTrak[™] technology to measure the temporal mismatch between Left Eye and Right Eye images.
- Auto corrects temporal mismatch or user can manually enter a correction
- Manually add additional delay to both Left Eye and Right Eye images.
- Supports full resolution or 'frame compatible' input modes for temporal matching
- Used to temporally match outgoing 3D playout feeds before sending to Master Control
- Used to re-time 3D contribution links sent over separate backhaul channels.



* PGM inputs and output 4:2:2 on standard version, 4:2:2 or 4:4:4 on 444 version

Figure 1-1: 7832SVP Block Diagram

2. INSTALLATION

The 7832SVP comes with a companion rear plate that occupies two slots in the 3RU frame. For information on inserting the module into the frame see section 3 of the 7700FR, 7800FR or 7801FR chapter.

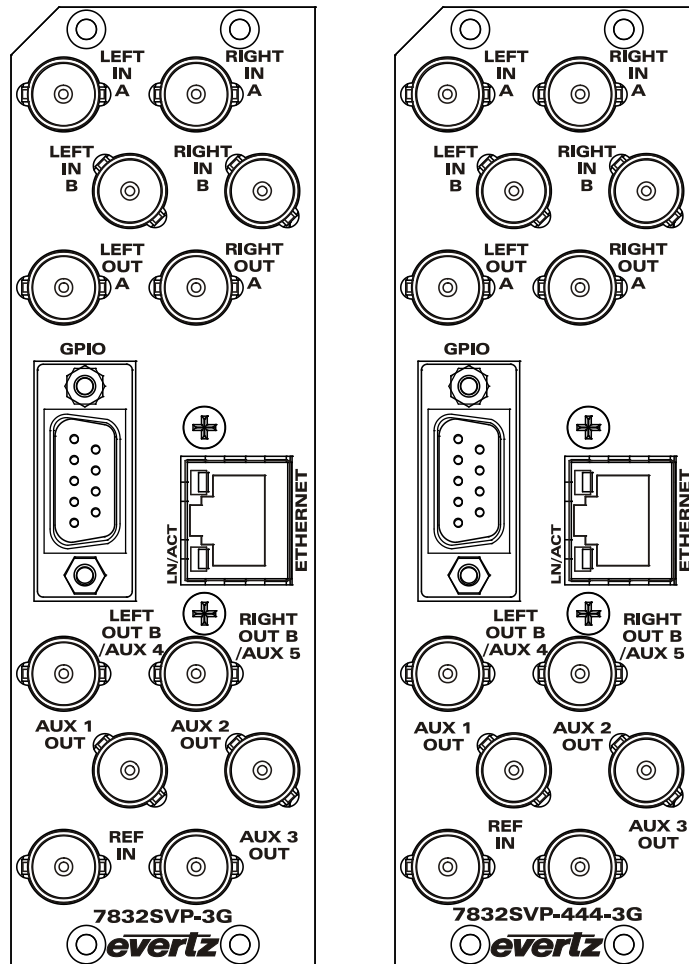


Figure 2-1: 7832SVP Rear IO Module

2.1. Program Video Inputs and outputs

LEFT IN A & B, RIGHT IN A & B: Accepts a 10-bit serial digital video signal compatible with SMPTE ST 292-1, (1.5 Gb/s) SMPTE ST 372 (dual Link 1.5 Gb/s) and SMPTE ST 425-1 (3 Gb/s). The module can be set to receive a specific video standard or set to automatically detect supplied input video standard. Connect 1.5 Gb/s or 3 Gb/s signals from the Left Eye and Right Eye to LEFT IN A and RIGHT IN A respectively. Connect SMPTE ST 372 signals from the Left Eye and Right Eye to LEFT IN A & B and RIGHT IN A & B respectively. The standard version accepts only 4:2:2 video formats, whereas the 444 version accepts 4:2:2 and 4:4:4 video formats – see specifications for a complete list of the video formats supported.

When the input is a single link 1.5 Gb/s or 3 Gb/s Level A signal, you can also use the LEFT IN B and RIGHT IN B BNCs as an alternate video input. The *Input Select* control allows you to switch between the main input and the alternate input. (See section 5.6.6)

LEFT OUT A & B, RIGHT OUT A & B: Output BNC connectors with processed outputs for Left Eye and Right Eye video. By default, the outputs will be in the same format as the inputs. However you can reconfigure the outputs to a different interface type, (e.g. when you are using ST 292-1 (1.5 Gb/s) inputs, you also have the option of combining the left and Right Eye onto a single 3 Gb/s output.) In all video formats where the output will fit on one coaxial connection (1.5 Gb/s or 3 Gb/s) you can assign **LEFT OUT B** and **RIGHT OUT B** as **AUX 4 OUT** and **AUX 5 OUT** respectively.

2.2. Auxillary Video Outputs

There are three BNC connectors labelled **AUX 1 OUT**, **AUX 2 OUT** and **AUX 3 OUT**. On early versions of the module these were labelled as **MON 1 OUT**, **MON 2 OUT** and **MON 3 OUT** respectively. Each of these outputs is selectable among one of several Auxiliary output video signals. In addition, when the program output video will fit on one coaxial connection, **LEFT OUT B** and **RIGHT OUT B** can be assigned as two additional auxiliary video outputs and they become **AUX 4 OUT** and **AUX 5 OUT** respectively.

Mixer Output: This Auxiliary output combines the Left Eye and Right Eye inputs in one of several modes and is intended to be displayed on a standard (2D) video monitor. There are several mix output modes that can be selected to aid the use in alignment, colour matching, convergence and interocular adjustments of the Left Eye and Right Eye. See the Mixer Output tab of the VistaLINK[®] configuration tool or the *MIXER OUTPUT* menu item of the Card Edge menu system for controlling the Mixer Output modes.

OSD Output: This Auxiliary output has the On Screen Display of the Card Edge Menu overlaid over a selectable background video. See the Video tab of the VistaLINK[®] configuration tool or the *VIDEO* menu item of the Card Edge menu system for controlling the OSD background video.

3D Formatter Output: This Auxiliary output contains a 1.5 Gb/s or 3 Gb/s serial digital signal formatted to drive 3D capable display devices in the following modes – Top-and-Bottom, Side-by-Side , Line-by-line (The output standard is set to match display resolution, independent of input resolution). In addition the 3D Formatter output can be used for a broadcast quality ‘Frame compatible’ output for 3D playout or backhaul in the following modes – Top-and-Bottom, Side-by-Side. See the 3D Formatter Output tab of the VistaLINK[®] configuration tool or the *3D FORMATTER* menu item of the Card Edge menu system for controlling the 3D formatter video output standard and output format modes.

Left Eye 4:2:2 Output: This Auxiliary output contains a 4:2:2 copy of the Left Eye input. When the video format is 4:2:2 this output is just a copy of the Left Eye program output.

Right Eye 4:2:2 Output: This Auxiliary output contains a 4:2:2 copy of the Left Eye input. When the video format is 4:2:2 this output is just a copy of the Right Eye program output.

The default functions of the auxiliary outputs are as follows:

AUX 1 OUT: Mixer output
AUX 2 OUT: OSD output

AUX 3 OUT: 3D Formatter output

AUX 4 OUT: LEFT B Program output (a copy of the LEFT A output in 4:2:2 modes)

AUX 5 OUT: RIGHT B Program output (a copy of the RIGHT A output in 4:2:2 modes)



The functions of the Auxiliary outputs are selectable using the *Aux 1 to Aux 5 Output* select menu items on the *VIDEO* menu or Video Tab in VistaLINK®. (See sections 0 to 5.6.17.5)

2.3. Genlock Inputs

REF IN: This BNC is for connecting a bi-level or tri-level reference. The reference signal format is auto-detected by the module. Program output video can be timed with respect to the supplied reference using the *PGM H Phase* and *PGM V Phase* module controls. The 3D Formatter output video can be timed with respect to the supplied reference using the *3D Fmt H Phase* and *3D Fmt V Phase* module controls. When no reference is provided, the output video is timed with respect to the Left Eye input video. Reference may also be supplied via the frame reference inputs. VistaLINK® or the Card Edge menu may be used to select the module's reference source.

2.4. ETHERNET CONNECTIONS

The 7832SVP modules are designed to use either 10Base-T (10 Mbps) or 100Base-TX (100 Mbps) also known as *Fast Ethernet*, twisted pair Ethernet cabling systems. When connecting for 10Base-T systems, category 3, 4, or 5 UTP cable as well as EIA/TIA – 568 100 STP cable may be used. When connecting for 100Base-TX systems, category 5 UTP cable is required. Make the network connection by plugging one end of a “straight through” cable into the RJ-45 receptacle of the 7832 modules and the other end into a port of the supporting hub. If you are connecting the 7832 series module directly to an Ethernet port on a computer you will have to use a “crossover” cable.

Pin #	Signal	EIA/TIA 568A	AT&T 258A or EIA/TIA 568B	10BaseT or 100BaseT
1	Transmit +	White/Green	White/Orange	X
2	Transmit -	Green/White or White	Orange/White or Orange	X
3	Receive +	White/Orange	White/Green	X
4	N/A	Blue/White or Blue	Blue/White or Blue	Not used (required)
5	N/A	White/Blue	White/Blue	Not used (required)
6	Receive -	Orange/White or Orange	Green/White or Green	X
7	N/A	White/Brown	White/Brown	Not used (required)
8	N/A	Brown/White or Brown	Brown/White or Brown	Not used (required)

Pin 1

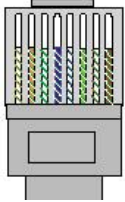


Figure 2-2: Colour Code Wiring for the Current RJ 45 Standards

Straight-through RJ-45 cables can be purchased or can be constructed using the pinout information in Figure 2-2. A colour code wiring table is provided in Figure 2-2 for the current RJ-45 standards (AT&T 258A or EIA/TIA 258B colour coding shown). Also, refer to the notes following the table for additional wiring guide information.

Note the following cabling information for this wiring guide:

- Only two pairs of wires are used in the 8-pin RJ 45 connector to carry Ethernet signals.
- Even though pins 4, 5, 7 and 8 are not used, it is mandatory that they be present in the cable.
- 10BaseT and 100BaseT use the same pins; a crossover cable made for one will work with the other.
- Pairs may be solid colours and not have a stripe.
- Category 5 cables must use Category 5 rated connectors.

The maximum cable run between the 7832SVP modules and the supporting hub is 300 ft (90 m). The maximum combined cable run between any two end points (i.e. 7832SVP and PC/laptop via network hub) is 675 feet (205 m).

Devices on the Ethernet network continually monitor the receive data path for activity as a means of checking that the link is working correctly. When the network is idle, the devices also send a link test signal to one another to verify link integrity. The rear panel is fitted with an LED to monitor the Ethernet connection.

LN/ACT: This dual purpose Green LED indicates that the 7832SVP has established a valid linkage to its hub, and whether the 7832SVP is sending or receiving data. This LED will be ON when the 7832SVP has established a good link to its supporting hub. This gives you a good indication that the segment is wired correctly. The LED will BLINK when the 7832SVP is sending or receiving data. The LED will be OFF if there is no valid connection.

Note: On early versions of the hardware, the two LEDs on the Ethernet connector are not used and will not light up when connected to an Ethernet network. Ethernet functionality is not impacted by the lack of these LEDs lighting up.

In order to use the Ethernet connection you will have to configure the module IP address for your network. See section 5.15.4 to 5.15.8.

2.5. GENERAL PURPOSE INPUTS & OUTPUTS

Table 2-1 shows the pinout of the 9 pin female D GPI connector. The 9 pin D connector has 8 general purpose inputs. The GPI inputs are active low. This means that if you leave an input floating (not connected) then it will not be activated. Lowering the GPI input to a voltage below 0.8 volts will activate the input. The user can activate GPIs simply by connecting the GPI input pins to Ground using a button, switch, relay or an open collector transistor. The inputs are internally pulled up to +5 volts DC. See the GPIO Controls tab of the VistaLINK[®] configuration tool or the *GPIO* menu item of the Card Edge menu system to configure the operation of the GPI inputs. (See section 5.15.3)

DB-9	Name	Description
1	GPI01	General Purpose Input/Output 1
2	GPI02	General Purpose Input/Output 2
3	GPI03	General Purpose Input/Output 3
4	GPI04	General Purpose Input/Output 4
5	GPI05	General Purpose Input/Output 5
6	GPI06	General Purpose Input/Output 6
7	GPI07	General Purpose Input/Output 7
8	GPI08	General Purpose Input/Output 8
9	GND	Ground
Shell	Ground	Ground

Table 2-1: GPIO Pinouts

When a particular GPIO is configured to be a GPI, the following interface shall apply:

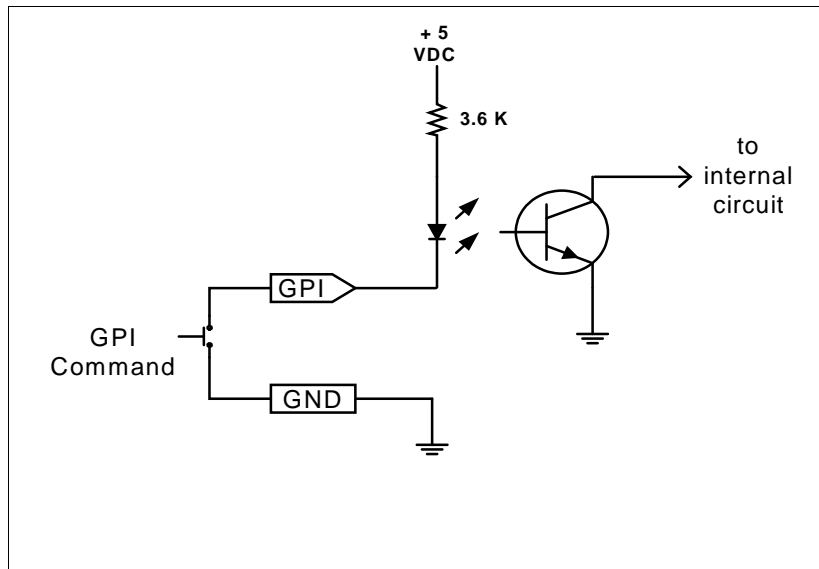


Figure 2-3: GPI Input Circuitry

When a particular GPIO is configured to be a GPO, the interface shown below shall apply. The GPO is active low with internal pull up (10k Ohm) resistors to +5V. When the output goes low it is able to sink up to 10mA. When high, the signal will go high (+5V). **Do not draw more than 100mA from the output.** Figure 2-4 shows the circuit for the general-purpose output.

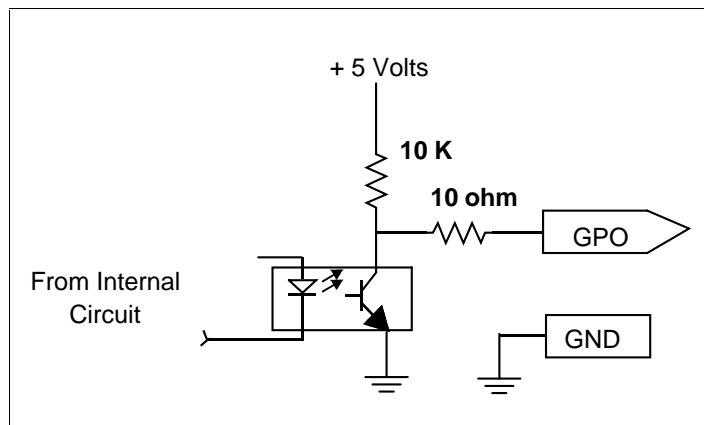


Figure 2-4: GPO Output Circuitry

3. SPECIFICATIONS

3.1. SERIAL DIGITAL VIDEO INPUTS

Standard:

422 version: 1.485 Gb/s SMPTE ST 292-1 10 bit 4:2:2 (1080i/60, 1080i/50, 1080p/30, 1080p/30sF, 1080p/25, 1080p/25sF, 1080p/24, 1080p/24sF, 720p/60, 720p/50, 720p/30, 720p/25, 2048 x 1080p/30, 2048 x 1080p/30sF, 2048 x 1080p/25, 2048 x 1080p/25sF, 2048 x 1080p/24, 2048 x 1080p/24sF)*
2.970 Gb/s SMPTE ST 425-1 Level A - 10 bit 4:2:2 (1080p/60, 1080p/50, 2048 x 1080p/60, 2048 x 1080p/50)*
2.970 Gb/s SMPTE ST 425-2 Stereoscopic (Left Eye & Right Eye on one input)
10 bit 4:2:2 - same formats as 1.485 Gb/s

*Includes the 1/1.001 rates where applicable

444 Version All standards supported in 4:2:2 version plus
12 Bit 4:2:2 versions of all the 1.485 Gb/s standards in the 4:2:2 version
Dual Link 1.485 Gb/s SMPTE ST 372 - 10 bit 4:2:2 (1080p/60, 1080p/50, 2048 x 1080p/60, 2048 x 1080p/60) and 10 bit and 12 bit 4:4:4 (1080i/60, 1080i/50, 1080p/30, 1080p/30sF, 1080p/25, 1080p/25sF, 1080p/24, 1080p/24sF, 2048 x 1080p/30, 2048 x 1080p/30sF, 2048 x 1080p/25, 2048 x 1080p/25sF, 2048 x 1080p/24, 2048 x 1080p/24sF)*
2.970 Gb/s SMPTE ST 425-1 Level B Dual Link – same formats as SMPTE ST 372

*Includes the 1/1.001 rates where applicable

Number of Inputs: 4 (LEFT IN A, LEFT IN B, RIGHT IN A and RIGHT IN B)

Connector: BNC per IEC 61169-8 Annex A

Signal Level: 800 mV nominal

Synchronization Inputs are frame synchronized to external genlock reference or Right Eye input is synchronized to Left Eye input

Input Equalization: Automatic to 160m @ 1.485 Gb/s with Belden 1694A or equivalent

Automatic to 80m @ 2.970 Gb/s with Belden 1694A or equivalent

Return Loss: > 15 dB to 1.5 GHz

> 10 dB to 3.0 GHz

3.2. SERIAL DIGITAL VIDEO OUTPUTS

Standard:	Left Eye & Right Eye program outputs - Same as inputs Mixer Outputs - 1.485 Gb/s SMPTE ST 292-1 10 bit 4:2:2 (1080i, 720p, 1080p or 1080psF) 3D Formatter Output – same as Aux Outputs or 2.97 Gb/s 10 bit 4:2:2 SMPTE ST 425-1 Level A (1080p). 444 version also supports ST425-1 Level B-DL (1080p).
Number of Outputs:	4 PGM (LEFT OUT A, LEFT OUT B, RIGHT OUT A and RIGHT OUT B) 3 Aux OUT - Selectable as Mixer, On Screen Display, 3D Formatter, 4:2:2 Left or 4:2:2 Right Additional Aux Output functions on 444 version: Mixer 2 Link B of the PGM outputs can be used as two additional Aux outputs for single link PGM video formats.
Connector:	BNC per IEC 61169-8 Annex A
Signal Level:	800 mV nominal
HD Rise/Fall Times:	200 ps nominal
Output phasing	Separate H and V controls for phasing program outputs and 3D Formatter output. Other Aux outputs are phased to the program outputs.
Return Loss:	> 15 dB to 1.5 GHz > 10 dB to 3.0 GHz

3.3. REFERENCE VIDEO INPUT

Type:	HD Tri-Level sync, NTSC or PAL Colour Black or bi-level sync 1 V p-p
Connector:	BNC per IEC 61169-8 Annex A or Frame Genlock
Termination:	75 ohm (selectable – see section 0)

3.4. MINIMUM INPUT TO OUTPUT VIDEO PROCESSING DELAY

Input to PGM Out:	Approx 1 frame (without +STM option)
Input to 3D Formatter Out	1 additional Frame

3.5. STEREOSCOPIC TEMPORAL MATCHING (+STM OPTION)

Match Range:	Up to +/- 10 frames between Left Eye and Right Eye Input
Match Correction	Auto or manual up to +/- 10 frames
Additional Delay	Up to 10 additional frames added to both Left Eye and Right Eye

3.6. CONTROL

Card Edge:	Full control of all module functions using On screen menu, controlled from card edge shaft encoder.
VistaLINK®	VistaLINK® - capable for remote monitoring, control and configuration capabilities via SNMP, using VistaLINK® PRO, CP-2116E or CP-2232E Control Panels. VistaLINK® is available when modules are used with the 3RU 7800FR frame and a 7700FC VistaLINK® Frame Controller in slot 1 of the frame. VistaLINK® is also available with direct Ethernet connection to the module
GPIO	8 configurable General purpose inputs
User Presets	10 User presets to store and recall user configurations instantly

3.7. GENERAL PURPOSE INPUTS AND OUTPUTS

Number:	8 (configurable as inputs or outputs)
Type:	Opto-isolated, active low with internal pull-ups to +5 V
Connector:	DB 9
Signal Level:	Closure to ground
Function:	User preset select or programmable functions

3.8. ELECTRICAL

Voltage:	+12VDC
Power:	
422 version:	24 Watts
444 version:	38 Watts
EMI/RFI:	Complies with FCC regulations for class A devices. Complies with EU EMC directive.

3.9. PHYSICAL

Number of slots	
7800FR Frame:	2
7801FR Frame	2
7700FR-C Frame:	2 for 7832SVP-3G 3 for 7832SVP-444-3G (slot blocker must be installed for proper operation)

4. STATUS INDICATORS

4.1. MODULE STATUS LEDS

The 7832SVP series modules have 10 LED Status indicators on the main circuit board front card edge to show operational status of the card at a glance. Figure 4-1 shows the location of the status LEDs and card edge controls.

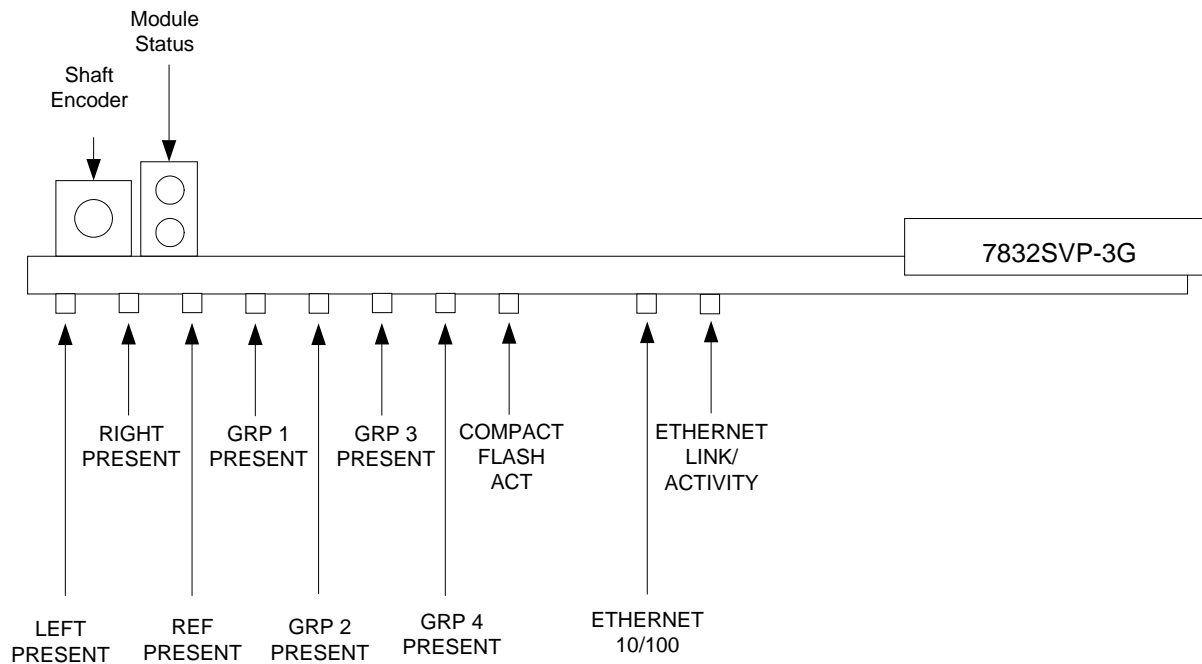


Figure 4-1: Status LEDs

- MODULE STATUS:** This Green LED will be On when the module is operating properly.
- LOCAL FAULT:** This Red LED will be On when an essential module inputs are missing or the module has another fault.
- LEFT PRESENT:** The LEFT PRESENT LED will be green when a valid input signal is present on the LEFT A and LEFT B BNCs. It will be red when missing an input signal. It will blink between red and green when an invalid input signal is presented, or when one of the links is missing for a dual link signal format.
- RIGHT PRESENT:** The RIGHT PRESENT LED will be green when a valid input signal is present on the RIGHT A and RIGHT B BNCs. It will be red when missing an input signal. It will blink between red and green when an invalid input signal is presented, or when one of the links is missing for a dual link signal format.
- REF PRESENT:** The REF PRESENT LED will be Off when the *Reference Source* is set to *Video*. This LED will be green when a valid reference signal is present and the *Reference Source* is not set to *Video*. It will be red when the reference signal is missing. It will blink between red and green when an invalid reference signal is presented.

-
- GRP1 PRESENT:** This Green LED will be On when embedded audio Group 1 is present and Red when embedded audio Group 1 is not present.
- GRP2 PRESENT:** This Green LED will be On when embedded audio Group 2 is present and Red when embedded audio Group 2 is not present.
- GRP3 PRESENT:** This Green LED will be On when embedded audio Group 3 is present and Red when embedded audio Group 3 is not present.
- GRP4 PRESENT:** This Green LED will be On when embedded audio Group 4 is present and Red when embedded audio Group 4 is not present.
- COMPACT FLASH ACT:** This Green LED will be On when the compact flash is inserted. It will blink Red when the CPU is accessing the compact flash.
- ETHERNET 10/100:** This Green LED will be On when a 100Base-TX link is last detected. The LED will be OFF when a 10Base-T link is last detected (the LINK LED is ON). Upon power-up the LED is OFF as the last detected rate is not known and therefore defaults to the 10Base-T state until rate detection is complete.
- ETHERNET LN/ACT:** This dual purpose Green LED indicates that the 7823SVP has established a valid linkage to its hub, and whether the 7823SVP is sending or receiving data. This LED will be ON when the 7823SVP has established a good link to its supporting hub. This gives you a good indication that the segment is wired correctly. The LED will BLINK when the 7823SVP is sending or receiving data. The LED will be OFF if there is no valid connection.

5. CARD EDGE MENU CONTROLS

Control and configuration of this module can be done either with VistaLINK[®] (see section 8), GPIs, or via a card edge rotary knob with pushbutton action and an On-Screen Display menu (OSD) that is keyed over video on the OSD output, available on one of the AUX Out BNCs. (See section 5.3 for information on selecting the BNC that will contain the OSD output). The following sections detail how to control the card from the card edge and OSD menu system.

5.1. CONFIGURING THE OSD VIDEO FORMAT

Not all monitors can display all types of HD video. Normally the OSD output will be in a similar format to the program input video format. However, you may need to see the OSD in order to select the Input Video format, so we have provided a way to set the On-Screen Display (OSD) output standard without any complex computer hook-up. The card edge LEDs can be used to help you get the card into a state that will allow you to use it with the OSD output. To configure the OSD standard with just the card edge controls:

1. Power up the card and wait for it to initialize.
2. Press and hold it for 5 seconds until all but one of the LEDs go off.
3. Release the knob.
4. You can now rotate the knob to select your desired OSD video standard. The LED that is Green will indicate the OSD format according to the following chart:

Video Format	LED
1080i/59.94	LEFT PRESENT
1080i/50	RIGHT PRESENT
720p/59.94	REF PRESENT
720p/50	GRP1 PRESENT
1080p/23.98sF	GRP2 PRESENT
1080p/24F	GRP3 PRESENT

5. When you have selected the desired OSD video standard press the knob. All of the LEDs should come back on as either Red or Green to indicate that you are in normal operating mode again.
6. Hook up a monitor to the AUX 2 OUT (OSD) and verify that you have the correct standard. By default the AUX 2 OUT will function as the OSD display but may be selected on one of the other Auxiliary outputs.
7. Continue to configure the card using the rotary knob and the On Screen Display menu (OSD).



When you force the OSD format using this method, the functions of the Auxiliary outputs are reset back to their defaults. (OSD will be on AUX 2 Output). This is so that you can see the OSD menu if it has been inadvertently turned OFF.

5.2. ON-SCREEN DISPLAY

The On-Screen Display (OSD) is visible on one of the three Auxiliary outputs when it is selected as the OSD Display output. The OSD functionality is divided into two modes; a **Status Display** and a **Menu System** for configuring and controlling the module. The status screen may be displayed on the OSD output when the user is not accessing the menu system. Leaving the menu system can be accomplished by backing out of the menu hierarchy or by selecting the *EXIT* commands within any menu.

5.3. STATUS DISPLAY

The status display may be displayed on the OSD output when the menu is not being accessed. The OSD output is available by default on the **AUX 2 OUT** BNC.



You can choose to have the OSD/Status Display output on any/all of the Auxiliary output BNCs using the *Aux1 to Aux 5 Output* select menu items on the *VIDEO* menu or Video Tab in VistaLINK®. (See sections 0 to 5.6.17.5)

The Status Display items provide the user with a quick way to see the configuration or operational settings/status of the card. The Status display is divided into two different status screens to group similar items together, promoting ease of use. The Configuration Status Screen allows you to see configuration settings such as video standard, video presence on the inputs, genlock source, etc. The Operational Status Screen allows you to see the status of menu items that would be used more in operation of the card, such as Video Flip Status, GPI status, HV alignment, etc.

To enable the status display on the OSD, use the *Status Display Enable* menu item on the *VIDEO* menu. To choose which status screen will be displayed use the *Status Display Selection* menu item on the *VIDEO* menu or VIDEO tab in VistaLINK®. The screens are summarized as follows:



Not all status screen items are available in the 7832SVP-3G. Some are only available on the 7832SVP-444-3G or when the STM Option is installed.

Item	Value	Example
System Standard:	{input type detected selected}	1080i/59.94
LE A:	{Not present input type detected}	1080i/59.94
LE B:	{Not present input type detected}	Not present
RE A:	{Not present input type detected}	1080i/59.94
RE B:	{Not present input type detected}	Not present
REF:	[Source (std Not present) Valid	FR1(525/59.94) valid
Aux 1 Output:	[3D Formatter Mixer OSD LE RE}	Mixer
Aux 2 Output:	[3D Formatter Mixer OSD LE RE}	Mixer
Aux 3 Output:	[3D Formatter Mixer OSD LE RE}	Mixer
Mixer Mode:	[List of mix modes]	Difference
3D Formatter Output	[output video type]	1080i/psf 1.5G
3D Formatter Mode	Mode	Side-by-Side - left right
INPUT	SWAP: {Off On} Sngl-EYE: {disabled force from {LE RE} (depth)	Off sngl-eye disabled
LEFT :	Flip: H {On Off} V {On Off} Align: H (val) V (val)	H Off V Off H -2 V 0
RIGHT:	Flip: H {On Off} V {On Off} Align: H (val) V (val)	H Off V Off H -2 V 0

Table 5-1: Configuration Status Screen Items

Item	Value	Example
REF:	[Source (std Not present) Valid	FR1(525/59.94) valid
FR OFF IN:	(Offset val) {LE delayed RE delayed aligned}	0 Fr. - Aligned
COMPENSATION:	(compensation val) AUTO: {OFF ON}	0 Fr. AUTO: Off
FR OFF OUT:	(Offset val) {LE delayed RE delayed aligned} CONFID: (Confidence val / 9)	0 Fr. - Aligned CONFID: 9/9
STM DELAY:	LE (Delay val) RE (Delay val)	LE 1 Fr. RE 1 Fr.9
INPUT	SWAP: {Off On} Sngl-EYE: {disabled force from {LE RE} (depth)	Off sngl-eye disabled
LEFT :	Flip: H {On Off} V {On Off} Align: H (val) V (val)	H Off V Off H -2 V 0
RIGHT:	Flip: H {On Off} V {On Off} Align: H (val) V (val)	H Off V Off H -2 V 0
GPI 1:	active inactive :{GPI function}	Inactive: Recall Preset 1
GPI 2:	active inactive :{GPI function}	Inactive: Recall Preset 2
GPI 3:	active inactive :{GPI function}	Inactive: LE V Flip
GPI 4:	active inactive :{GPI function}	Inactive: LE H Flip
GPI 5:	active inactive :{GPI function}	Inactive:Enable Status Display
GPI 6:	active inactive :{GPI function}	Inactive: RE V Flip
GPI 7:	active inactive :{GPI function}	Inactive: RE H Flip
GPI 8:	active inactive :{GPI function}	: OFF

Table 5-2: Operational Status Screen Items

5.4. OPERATING THE ON SCREEN MENU

When you press and release the rotary knob without rotating it, you will enter the menu system. The On Screen menu will appear on the auxiliary output configured to display the OSD display. (By default the AUX 2 OUT will function as the OSD display but may also be configured to be output on one of the other auxiliary outputs. The remainder of the card configuration and control is done via the menu system on the On-Screen Display of this auxiliary output.

When you press and release the rotary knob, this will bring you to the main Setup menu where you can turn the rotary knob to move up and down the list of available sub-menus. An arrow (➔) moves up and down the left hand side of the menu items to indicate which item you are currently choosing. Once the arrow is on the desired item, press the rotary knob pushbutton to select the next menu level.

On all menus, there are two extra selectable items: *Back* and *Exit*. Selecting *Back* will take you to the previous menu (the one that was used to get into the current menu) while *Exit* will return the display to its normal operating mode. On the main menu, **BACK** and **EXIT** will both exit the menu system and return you to the normal operating mode.

Once in a sub-menu, there may be another menu layer, or there may be a list of parameters to adjust. If there is another set of menu options, turn the rotary knob to select the desired menu item and press the rotary knob pushbutton.

To adjust any parameter, turn the rotary knob to move up or down to the desired parameter and press the rotary knob pushbutton. The arrow will move to the right hand side of the line (➡) indicating that you can now adjust the parameter. Turning the rotary knob, adjust the parameter to its desired value.



Most of the On screen menu parameters are updated in real time. They will take effect immediately, and affect the operation of the card. Some of the menu parameters will not take effect until you press the button again. The parameters that require the button press are mentioned in the help text at the bottom of the OSD menu screen for that particular parameter.



When setting numeric values in the OSD menu, the rotary knob will use larger step sizes if it is turned faster. For example, to adjust a value by single units, turn the rotary knob slowly. If you need to adjust a value by a large amount (say 500 units), turn the rotary knob fast.

When you have stopped at the desired value, press the rotary knob pushbutton. This will update the parameter to the selected value and move the arrow back to the left side of the parameter list (➔). Continue selecting and adjusting other parameters or use the **BACK** or **EXIT** commands.

5.5. TOP LEVEL MENU STRUCTURE

The OSD menu is arranged in a layered structure that groups similar configuration items together. The menu structure models the VistaLINK[®] tabbed GUI interface. The following section gives a brief description of the top level of menus that appear when you enter the OSD screens. Selecting one of these items will take you to the next menu level. Sections 5.6 to 5.15 provide detailed descriptions of each of the top level sub-menus. The tables in sections 5.6 to 5.15 are arranged in an indented structure to indicate the path taken to reach the control. Menu items or parameters that are underlined indicate the factory default values.

<i>VIDEO</i>	Configures Video setup items
<i>ANC DATA</i>	Configures Ancillary Data forwarding items
<i>AUDIO</i>	Configures Audio setup items
<i>STEREO VIDEO ADJUSTMENT</i>	Configures Flip and shift setup items
<i>STM (STEREO TEMPORAL MATCHING)</i>	Configures Stereo Temporal matching items (STM Option only)
<i>LUT</i>	Configures the colour lookup tables (444 Version only)
<i>MIXER 1</i>	Configures the operation of the primary 2D Mixer
<i>MIXER 2</i>	Configures the operation of the second 2D Mixer (444 Version only)
<i>3D FORMATTER</i>	Configures the 3D Formatter
<i>GPIO</i>	Configures the GPIO functions
<i>UTILITIES</i>	Configures the IP Addresses, user presets and views firmware version

5.6. CONFIGURING THE VIDEO CONTROLS

The *VIDEO* menus are used to configure parameters associated with the video input and output functions. The chart below shows the items available in the *VIDEO* menu. Sections 5.6.1 to 5.6.19 give detailed information about each of the menu items.

<i>Input Video standard</i>	Selects the video standard for the program input.
<i>Frame Rate</i>	Selects the frame rate of the video standard for the program input.
<i>Raster</i>	Selects the raster of the video standard for the program input.
<i>Sampling Structure</i>	Selects the sampling structure of the video standard for the program input.
<i>Input Interface</i>	Selects the interface type for the program input.
<i>Input Select</i>	Select whether the video input will be from the A or B input BNCs when the <i>Input Interface</i> is set to a single link video format.
<i>Input Mode</i>	Sets the stereo input mode for the program input as discrete or frame compatible.
<i>HD Output Interface</i>	Selects the interface type for the program output when the image format is 4:2:2 10 bit and can be carried in 1.5 Gb/s.
<i>3G Output Interface</i>	Selects the interface type for the program output when the image format is 4:2:2 10 bit and can be carried in 3 Gb/s.
<i>444 Output Interface</i>	Selects the interface type for the program output when the image format is 4:4:4 or 12 bit.
<i>PGM H Phase</i>	Sets the video H phase with respect to the reference for the program outputs.
<i>PGM V Phase</i>	Sets the video V phase with respect to the reference for the program outputs.
<i>Top-and-Bottom Order</i>	Sets the LE RE order for Top-and-Bottom stereo input mode
<i>Side-by-Side Order</i>	Sets the LE RE order for Side-by-Side stereo input mode
<i>Reference Source</i>	Selects the video reference source for the module.
<i>Loss of single input</i>	Selects the action to take when one input video is missing.
<i>Loss of both Inputs</i>	Selects the action to take when both input videos are missing.
<i>Auxiliary Outputs</i>	Selects the functions of the Auxiliary outputs.
<i>Status Display Enable</i>	Selects whether the status display will be shown or not.
<i>Status Display Mode</i>	Selects which status screen will be shown if the status display is visible.

5.6.1. Setting the Input Video Standard

There are five menu items that allow you to select the wide variety of supported video standards for the card. In Auto mode, the card will use the SMPTE ST 352 payload ID packet along with the detected bit rate and raster structure to adjust operation as needed for the incoming standard. If your input video does not have a payload ID packet, you may have to manually select the video standard using this menu, or the *Frame Rate*, *Raster*, *Sampling Structure* and *Input Link Type* menus.

VIDEO
Video Standard
Auto
1080i/59.94 YCbCr 422
720p/59.94 YCbCr 422
1080i/50 YCbCr 422
720p/50 YCbCr 422
1080p/23.98sF YCbCr 422
1080p/24sF YCbCr 422
User

This control is used to set the input video standard mode for the card.

If set to *Auto* mode, the card adjust operation as needed for the incoming standard.

The common 4:2:2 HDTV video formats may be chosen directly.

Select *User* if the Video standard you are using is not in the short list, can not be autodetected or you wish to choose it manually.

The *Frame Rate*, *Raster* and *Sampling Structure* will be automatically updated in all modes except *User*.



The 7832SVP series cards have the ability to automatically convert between progressive (P) and the Segmented Frame (PsF) format of the same frame rate when the *Video Standard* is not set to *Auto*. When operating in this mode the system standard will dictate the output video format and the 7832SVP will behave in the following manner. It will automatically convert from P to PsF when the system standard is set to PsF but the detected input video standard is P. It will automatically convert from PsF to P when the system standard is set to P but the detected input video standard is PsF. When the input video is the same as the system standard, the video standard will be unchanged.

5.6.2. Setting the Input Video Frame Rate

VIDEO
Frame Rate
60.00 Hz
59.94 Hz
50.00 Hz
30.00 Hz
29.97 Hz
25.00 Hz
24.00 Hz
23.98 Hz

This control is used to set the input video standard frame rate when the *Video Standard* is set to *User*. Otherwise, this menu item will show the video standard frame rate selected or detected.

5.6.3. Setting the Input Video Raster

VIDEO
Raster
2048 x 1080 psF
2048 x 1080 p
2048 x 1080 i
1280 x 720p
1920 x 1080 psF
1920 x 1080 p
1920 x 1080 i

This control is used to set the input video standard raster format when the *Video Standard* is set to *User*. Otherwise, this menu item will show the video standard raster selected or detected.

See the note in section 5.6.1 regarding conversion of progressive to segmented frame raster formats.

5.6.4. Setting the Input Video Sampling Structure

VIDEO
Sampling Structure
RGB 4:4:4 12 bits
RGB 4:4:4 10 bits
YCbCr 4:4:4 12 bits
YCbCr 4:4:4 10 bits
YCbCr 4:2:2 12 bits
YCbCr 4:2:2 10 bits

This control is used to set the input video standard sampling structure when the *Video Standard* is set to *User*. Otherwise, this menu item will show the video standard sampling structure selected or detected.

5.6.5. Setting the Input Video Interface Type

VIDEO
Input Interface
1.5G each eye - ST 292-2
3G both eyes - ST 425-2
3G-A each eye ST 425-1 A
3G-B each eye ST 425-1 B
DL 1.5G each eye – ST 372

This control is used to set the input video interface type when the *Video Standard* is set to *User*. Otherwise, this menu item will show the interface type selected or detected

When the *Input Mode* is set to *Top-and-Bottom* or *Side-by-side*, the input should be applied to the LEFT A input. This menu item describes the input interface for the frame compatible input containing both eyes.

5.6.6. Setting the Video Input Source

VIDEO
Input Select
Normal
Alternate(B)

This control is used to allow the user to select an alternate video input source when the *Input Interface* is set to *1.5G each eye - ST 292-2* or *3G-A each eye ST 425-1 A*. When the *Input Interface* is set to *DL 1.5G each eye – ST 372* or *3G-B each eye ST 425-1 B* this control is ignored and the input will always come from the *Normal BNCs*.

When the *Input Select* is set to *Normal*, the video inputs for the card will be from the LEFT A and RIGHT A BNCs.

When the *Input Select* is set to *Alternate (B)*, the video inputs for the card will be from the LEFT B and RIGHT B BNCs.

5.6.7. Setting the Input Mode

VIDEO
Input Mode
Full Resolution
Top-and-Bottom
Side-by-side

This control is used to select whether the input to the card is a separate Left Eye and Right Eye input, or whether it is a 'frame compatible' format with the Left Eye and Right Eye squeezed into one video raster.

Select *Full Resolution* when the Left Eye and Right Eye are full resolution on separate (or separate dual link) inputs, or if they are full resolution combined on one input

Select *Top-and-Bottom* when the Left Eye and Right Eye are reduced to half resolution vertically on a Top-and-Bottom 'frame compatible' video input. Input video should be connected to the **LEFT A BNC**.

Select *Side-by-side* when the Left Eye and Right Eye are reduced to half resolution horizontally on a Side-by-Side 'frame compatible' video input. Input video should be connected to the **LEFT A BNC**.

When this menu item is set to one of the frame compatible input types, the program outputs will be in the same frame compatible format as the input.

5.6.8. Setting the Program Output Interface Type for HD Rate 4:2:2 Video Formats

VIDEO
HD Output Interface
Follow Input
1.5G each eye - ST 292-2
3G both eyes - ST 425-2

This control is used to set the program output video interface type when the image format is a 4:2:2 10-bit image that can be carried by a 1.5 Gb/s interface.

This control is used when the image format is one of the following:

- 2048 x 1080 or 1920 x 1080 progressive, segmented frame or interlaced with 4:2:2 10-bit sampling at frame rates less than or equal to 30 Fps.
- 1280 x 720 progressive with 4:2:2 10-bit sampling at frame rates up to 60 Fps.

5.6.9. Setting the Program Output Interface Type for 3G Rate 4:2:2 Video Formats

VIDEO
3G Output Interface
Follow Input
3G-A each eye ST 425-1 A
3G-B each eye ST 425-1 B
DL 1.5G each eye ST 372

This control is used to set the program output video interface type when the image format is a 4:2:2 10-bit image that can be carried by a 3 Gb/s interface.

This control is used when the image format is one of the following:

- 2048 x 1080 or 1920 x 1080 progressive with 4:2:2 10-bit sampling at frame rates greater than 30 Fps.

5.6.10. Setting the Program Output Interface Type for 4:4:4 and Other Video Formats

VIDEO
444 Output Interface
Follow Input
3G-B each eye ST 425-1 B
DL 1.5G each eye ST 372

This control is used to set the program output video interface type when the image format is a 4:4:4 10-bit or 12-bit images.

This control is used when the image format is any format not included in the *HD Rate* or *3G Rate* lists shown in sections 5.6.8 and 5.6.9.

5.6.11. Setting the Program Output Video Phase

VIDEO
PGM H Phase
0 to max samples

This control is used to set the program output horizontal phase with respect to the *Reference Source* (See section 5.6.14). Changing the horizontal phase of the program output will also affect the horizontal phase of all auxiliary outputs except the 3D Formatter output.

VIDEO
PGM V Phase
0 to max lines

This control is used to set the program output vertical phase with respect to the *Reference Source* (See section 5.6.14). Changing the vertical phase of the program output will also affect the vertical phase of all auxiliary outputs except the 3D Formatter output.

5.6.12. Configuring the Image Order in Top - Bottom Mode

VIDEO
Top-and-Bottom Order
Top LE / Bottom RE
Top RE / Bottom LE

This control is used to determine the image order when the *Input Video Mode* is set to *Top-and-Bottom*. (See section 0)

Select *Top LE / Bottom RE*, when the vertically squeezed Left Eye image will be on the top and the vertically squeezed Right Eye image is on the bottom.

Select *Top RE / Bottom LE*, when the vertically squeezed Right Eye image will be on the top and the vertically squeezed Left Eye image is on the bottom.

5.6.13. Configuring the Image order in Side-by-Side Mode

VIDEO
Side-by-Side Order
LE / RE
RE / LE

This control is used to determine the image order when the *Input Video Mode* is set to *Side-by-Side*. (See section 0)

Select *LE / RE*, when the horizontally squeezed Left Eye image is on the left side and the horizontally squeezed Right Eye image will be on the right side.

Select *RE / LE*, when the horizontally squeezed Right Eye image is on the left side and the horizontally squeezed Left Eye image will be on the right side.

5.6.14. Setting the Reference Source

VIDEO
Reference Source
Video
External
Frame Reference 1
Frame Reference 2

This control is used to set the source of the input video reference.

When set to *Video*, the video reference is taken from the Left Eye input if present otherwise from the Right Eye video input.

When set to *External*, the video reference is taken from the reference signal applied to the REF BNC on the rear plate.

When set to *Frame Reference 1*, the video reference is taken from the reference signal applied to the REF 1 BNC on the frame rear panel.

When set to *Frame Reference 2*, the video reference is taken from the reference signal applied to the REF 2 BNC on the frame rear panel.

5.6.15. Selects the Action to Take when Either Input Video Is Missing

VIDEO
Loss of Single Input
Black
Blue
<u>Red(L)/Green(R)</u>
Freeze
Duplicate

This control is used to determine what action to take when *either* the Left Eye or Right Eye video input is missing.

When set to *Black*, the output corresponding to the missing input will be black video.

When set to *Blue*, the output corresponding to the missing input will be blue video.

When set to *Red(L)/Green(R)*, the output corresponding to the missing input will be red video for the Left Eye output and green video for the Right Eye output.

When set to *Freeze*, the output corresponding to the missing input will be the last valid frame on that input.

When set to *Duplicate*, the output corresponding to the missing input will be a duplicate of the other input with the *Single Source Horizontal Shift* value applied.

5.6.16. Selects the Action to Take when Both Input Videos Are Missing

VIDEO
Loss of Both Inputs
Black
Blue
<u>Red(L)/Green(R)</u>
Freeze

This control is used to determine what action to take when *both* the Left Eye and Right Eye video inputs are missing.

When set to *Black*, both outputs will be black video.

When set to *Blue*, both outputs will be blue video.

When set to *Red(L)/Green(R)*, the outputs will be red video for the Left Eye output and green video for the Right Eye output.

When set to *Freeze*, the outputs will be the last valid frame on that input.

5.6.17. Auxiliary Output Controls

The *Aux Output sub*-menu is used to configure the functions of the Auxiliary Video Outputs. The chart below shows the items available in the *Aux Output* menu. Sections 5.6.1 to 5.6.19 give detailed information about each of the menu items.

<i>LE B/Aux 4 Out Mode</i>	Selects the video output available on the Left B / AUX 4 OUT BNC.
<i>RE B/Aux 5 Out Mode</i>	Selects the video output available on the Right B / AUX 5 OUT BNC.
<i>Aux 1 Out Mode</i>	Selects the video output available on the AUX 1 OUT BNC.
<i>Aux 2 Out Mode</i>	Selects the video output available on the AUX 2 OUT BNC.
<i>Aux 3 Out Mode</i>	Selects the video output available on the AUX 3 OUT BNC.
<i>OSD Background</i>	Selects the video that the OSD will be keyed over.

5.6.17.1. Setting the Function of the LEFT B / AUX 4 OUT BNC

VIDEO
Aux Outputs
LE Link B Out Mode
LE Link B
RE Link B
OSD
Mixer
3D Formatter
LE 422
RE 422
Mixer 2

This control selects the function of the LEFT B / AUX 4 OUT BNC.

Select *LE Link B*, for the normal Left Link B output video.
 Select *RE Link B*, for the normal Right Link B output video.
 Select *OSD*, for the On screen menu/status display video.
 Select *Mixer*, for the Mixer video. (Mixer 1 on the 444 version)
 Select *3D Formatter*, for the 3D Formatter output video.
 Select *LE*, for a 4:2:2 copy of the Left Eye program output video.
 Select *RE*, for a 4:2:2 copy of the Right Eye program output video.
 Select *Mixer 2*, for the Mixer 2 Output video. (444 version only)



When the Program Out Interface is set to *DL 1.5G each eye ST 372* the *LE Link B Out Mode* should be set to *LE Link B* in order to get both links of the dual link output.

5.6.17.2. Setting the Function of the RIGHT B / AUX 5 OUT BNC

VIDEO
Aux Outputs
RE Link B Out Mode
LE Link B
RE Link B
OSD
Mixer
3D Formatter
LE 422
RE 422
Mixer 2

This control selects the function of the RIGHT B / AUX 5 OUT BNC.

Select *LE Link B*, for the normal Left Link B output video.
 Select *RE Link B*, for the normal Right Link B output video.
 Select *OSD*, for the On screen menu/status display video.
 Select *Mixer*, for the Mixer video. (Mixer 1 on the 444 version)
 Select *3D Formatter*, for the 3D Formatter output video.
 Select *LE*, for a 4:2:2 copy of the Left Eye program output video.
 Select *RE*, for a 4:2:2 copy of the Right Eye program output video.
 Select *Mixer 2*, for the Mixer 2 Output video. (444 version only)



When the Program Out Interface is set to *DL 1.5G each eye ST 372* the *RE Link B Out Mode* should be set to *RE Link B* in order to get both links of the dual link output.

5.6.17.3. Setting the Function of the AUX 1 OUT BNC

VIDEO
Aux Outputs
Aux 1 Out Mode
OSD
Mixer
3D Formatter
LE 422
RE 422
Mixer 2

This control selects the function of the AUX 1 OUT BNC.

Select *OSD*, for the On screen menu/status display video.
 Select *Mixer*, for the Mixer video. (Mixer 1 on the 444 version)
 Select *3D Formatter*, for the 3D Formatter output video.
 Select *LE*, for a 4:2:2 copy of the Left Eye program output video.
 Select *RE*, for a 4:2:2 copy of the Right Eye program output video.
 Select *Mixer 2*, for the Mixer 2 Output video. (444 version only)

5.6.17.4. Setting the Function of the AUX 2 OUT BNC

VIDEO
Aux Outputs
Aux 2 Out Mode
OSD
Mixer
3D Formatter
LE 422
RE 422
Mixer 2

This control selects the function of the AUX 2 OUT BNC.

Select *OSD*, for the On screen menu/status display video.
 Select *Mixer*, for the Mixer video. (Mixer 1 on the 444 version)
 Select *3D Formatter*, for the 3D Formatter output video.
 Select *LE*, for a 4:2:2 copy of the Left Eye program output video.
 Select *RE*, for a 4:2:2 copy of the Right Eye program output video.
 Select *Mixer 2*, for the Mixer 2 Output video. (444 version only)

5.6.17.5. Setting the Function of the AUX 3 OUT BNC

VIDEO
Aux Outputs
Aux 3 Out Mode
OSD
Mixer
<u>3D Formatter</u>
LE 422
RE 422
Mixer 2

This control selects the function of the AUX 3 OUT BNC.

Select *OSD*, for the On screen menu/status display video.
 Select *Mixer*, for the Mixer video. (Mixer 1 on the 444 version)
 Select *3D Formatter*, for the 3D Formatter output video.
 Select *LE*, for a 4:2:2 copy of the Left Eye program output video.
 Select *RE*, for a 4:2:2 copy of the Right Eye program output video.
 Select *Mixer 2*, for the Mixer 2 Output video. (444 version only)

5.6.17.6. Setting the Background Video for the On Screen Menu Display and Status Display

VIDEO
Aux Outputs
OSD Background
Black
Blue
Mixer
3D Formatter
Mixer 2

This control selects the background video for the On screen display.

Select *Black* to key the OSD over Black video.
 Select *Blue* to key the OSD over Blue video.
 Select *Mixer (Mixer 1)* to key the OSD over the Mixer video.
 Select *3D Formatter*, to key the OSD over the 3D Formatter video.
 Select *Mixer 2* to key the OSD over the Mixer 2 video. (444 version)

5.6.18. Enabling the Status Display

VIDEO
Status Display Enable
Disable
Enable

This control is used to enable the Status Display.

Select *Disable*, to turn Off the Status Display.
 Select *Enable* to turn On the Status Display. The Status screen selected by the *Status Display Mode* menu item will be shown on the OSD output when the menu system is not active.

5.6.19. Selecting which Status Screen to Display

VIDEO
Status Display Mode
Configuration
Operational

This control is used to select which Status screen will be shown when the Status Display is enabled. See section 5.3 for a description of the status displays available.

Select *Configuration*, to show the Configuration status screen.
 Select *Operational*, to show the Operational status screen.

5.7. CONFIGURING THE ANCILARY DATA PROCESSING CONTROLS

The *ANC DATA* menus are used to configure parameters associated with the embedded audio on the video inputs and outputs. The chart below shows the items available in the *ANC DATA* menu. Sections 5.7.1 to 5.7.6 give detailed information about each of the menu items.

<i>ANC Forwarding–PGM</i>	Selects if ANC data from the inputs will be inserted on the program outputs
<i>ANC Forwarding–3D Fmt</i>	Selects if ANC data from the inputs will be inserted on the 3D Formatter output
<i>ANC Forwarding Source</i>	Selects the source of the ancillary data that will be forwarded to the 3D Formatter output
<i>Timecode–PGM</i>	Selects if timecode from the inputs will be inserted on the program outputs
<i>Timecode–3D Fmt</i>	Selects if timecode from the inputs will be inserted on the 3D Formatter output
<i>Timecode Source</i>	Selects the source of the timecode that will be forwarded to the 3D Formatter output

5.7.1. Selecting if the Program Video Outputs will have Ancillary Data

<i>ANC DATA</i>	This control is used to select whether the program video outputs will have ancillary data forwarded from the inputs or not.
<i>ANC Forwarding - PGM</i>	
<i>Enable</i> <i>Disable</i>	

5.7.2. Selecting if the 3D Formatted Video Output will have Ancillary Data

<i>ANC DATA</i>	This control is used to select whether the 3D Formatter output will have ancillary data forwarded from the inputs or not.
<i>ANC Forwarding – 3D Fmt</i>	
<i>Enable</i> <i>Disable</i>	

5.7.3. Selecting Source of the Ancillary Data

<i>ANC DATA</i>	This control is used to select the source of the ancillary data to be forwarded to the 3D Formatter output.
<i>ANC Source</i>	
<i>LE</i> <i>RE</i>	

5.7.4. Selecting if the Program Video Outputs will have Timecode from the inputs

ANC DATA
Timecode - Main
Enable
Disable

This control is used to select whether the program video outputs will have timecode from the inputs or not.

5.7.5. Selecting if the 3D Formatted Video Output will have Timecode from the inputs

ANC DATA
Timecode – 3D Fmt
Enable
Disable

This control is used to select whether the 3D Formatter output will have timecode from the inputs or not.

5.7.6. Selecting Source of the Ancillary Data

ANC DATA
Timecode Source
LE
RE

This control is used to select the source of the timecode to be forwarded to the 3D Formatter output.

5.8. CONFIGURING THE AUDIO CONTROLS

The *AUDIO* menus are used to configure parameters associated with the embedded audio on the video inputs and outputs. The chart below shows the items available in the *AUDIO* menu. Sections 5.8.1 to 5.8.4 give detailed information about each of the menu items.

Audio Forwarding - PGM	Selects if audio will be present on the Program Outputs
Audio Forwarding – 3D Fmt	Selects if audio will be present on the 3D Formatter Output
Audio Source	Selects the source of the audio embedder
SRC Mode	Selects the mode of the sample rate converters

5.8.1. Selecting if the Program Video Outputs will have Embedded Audio

AUDIO
Audio Forwarding - PGM
Enable
Disable

This control is used to select whether the program video outputs will have audio embedded forwarded from the inputs or not.

5.8.2. Selecting if the 3D Formatted Video Output will have Embedded Audio

AUDIO
Audio Forwarding – 3D Fmt
Enable
Disable

This control is used to select whether the 3D Formatter output will have audio embedded forwarded from the inputs or not.

5.8.3. Selecting Source of the Audio Embedder

AUDIO
Audio Source
LE
RE

This control is used to select the source of the audio to be embedded. It also determines whether audio will be embedded on the Left Eye or Right Eye Program Outputs.

5.8.4. Selecting the Operation of the Sample Rate Converters

AUDIO
SRC Mode
Auto
Enable
Disable

This control is used to select whether the program video outputs will have audio embedded or not.
Select *Auto* to disable the SRC when compressed audio is present
Select *Enable* to enable the SRC
Select *Disable* to enable the SRC

5.9. CONFIGURING THE STEREO PROCESSING CONTROLS

The *STEREO VIDEO ADJUSTMENT* menus are used to configure parameters associated with the video Left Eye and Right Eye program inputs (flipping, shifting, aligning, etc.). These adjustments affect all downstream processing in the card. See Figure 5-1 for more information about Stereo Processing controls. The chart below shows the items available in the *STEREO VIDEO ADJUSTMENT* menu. Sections 5.9.1 to 5.9.13 give detailed information about each of the menu items.

<i>Input Swap</i>	Selects whether the Left Eye and Right Eye inputs will be swapped or not.
<i>LE H Flip</i>	Selects whether the Left Eye video will be horizontally flipped or not.
<i>LE V Flip</i>	Selects whether the Left Eye video will be vertically flipped or not.
<i>LE H Alignment</i>	Sets the amount of horizontal shift for the Left Eye video.
<i>LE V Alignment</i>	Sets the amount of vertical shift for the Left Eye video.
<i>RE H Flip</i>	Selects whether the Right Eye video will be horizontally flipped or not.
<i>RE V Flip</i>	Selects whether the Right Eye video will be vertically flipped or not.
<i>RE H Alignment</i>	Sets the amount of horizontal shift for the Right Eye video.
<i>RE V Alignment</i>	Sets the amount of vertical shift for the Right Eye video.
<i>Single Eye Mode</i>	Selects Single Eye mode.
<i>Single Eye Depth</i>	Sets the amount of H offset (depth) for Single Eye mode.
<i>Aux HIT</i>	Enables Horizontal Image Translation for the auxiliary outputs.
<i>Aux HIT Depth</i>	Sets the amount of H offset (depth) when Horizontal Image Translation is active.

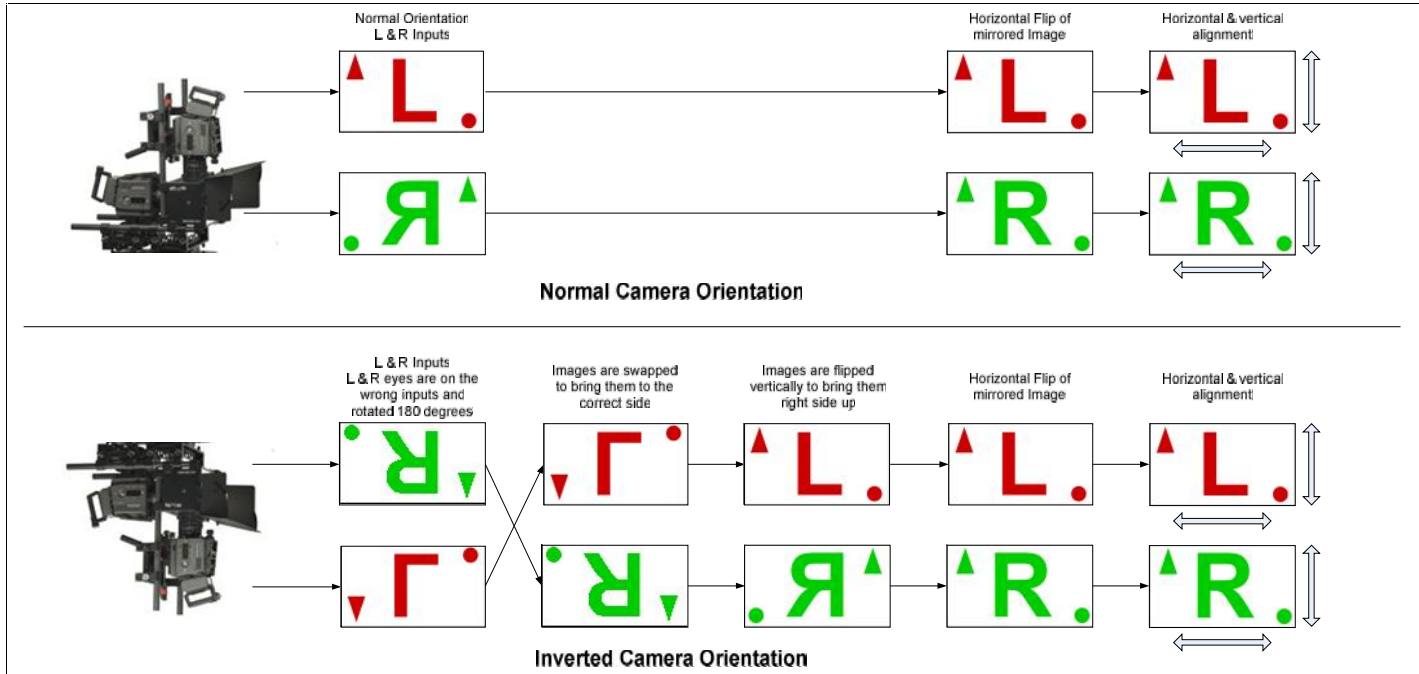


Figure 5-1: Image Flip Processing

5.9.1. Controlling whether the Left Eye is Swapped with the Right Eye Video

STEREO VIDEO ADJUSTMENT
Input Swap
Off
On

This control is used to select whether the Left Eye and Right Eye video will be swapped or not.

When set to On the Left Eye video input will be swapped with the Right Eye video at the module input.

5.9.2. Controlling whether the Left Eye Video is Flipped Horizontally

STEREO VIDEO ADJUSTMENT
LE H Flip
Off
On

This control is used to select whether a horizontal flip will be applied to the Left Eye video.

When set to On the Left Eye video will be mirrored horizontally from the Left Eye input video.

5.9.3. Controlling whether the Left Eye Video is Flipped Vertically

STEREO VIDEO ADJUSTMENT

LE V Flip

Off
On

This control is used to select whether a vertical flip will be applied to the Left Eye video.

When set to *On* the Left Eye video will be mirrored vertically from the Left Eye input video.

5.9.4. Horizontally Shifting the Left Eye Image

STEREO VIDEO ADJUSTMENT

LE H Alignment

-500 to + 500
0

This control is used to align the Left Eye image horizontally on the video raster by a specific number of pixels. The range of numbers depends on the image raster in use.

To shift the image left, turn the knob counter-clockwise. Black pixels will be shifted in on the right side. The numbers will become negative when the image is shifted to the left of its nominal position.

To shift the image right, turn the knob clockwise. Black pixels will be shifted in on the left side. The numbers will become positive when the image is shifted to the right of its nominal position.

5.9.5. Vertically Shifting the Left Eye Image

STEREO VIDEO ADJUSTMENT

LE V Alignment

-500 to + 500
0

This control is used to align the Left Eye image vertically on the video raster by a specific number of lines. The range of numbers depends on the image raster in use.

To shift the image up, turn the knob counter-clockwise. Black lines will be shifted in on the bottom. The numbers will become negative when the image is shifted above its nominal position.

To shift the image down, turn the knob clockwise. Black lines will be shifted in on the top. The numbers will become positive when the image is shifted below its nominal position.

5.9.6. Controlling whether the Right Eye Video is Flipped Horizontally

STEREO VIDEO ADJUSTMENT

RE H Flip

Off
On

This control is used to select whether a horizontal flip will be applied to the Right Eye video.

When set to *On* the Right Eye video will be mirrored horizontally from the Right Eye input video.

5.9.7. Controlling whether the Right Eye Video is Flipped Vertically

STEREO VIDEO ADJUSTMENT
RE V Flip
Off
On

This control is used to select whether a vertical flip will be applied to the Right Eye video.

When set to On the Right Eye video will be mirrored vertically from the Right Eye input video.

5.9.8. Horizontally Shifting the Right Eye Image

STEREO VIDEO ADJUSTMENT
RE H Alignment
-500 to + 500
0

This control is used to align the Right Eye image horizontally on the video raster by a specific number of pixels. The range of numbers depends on the image raster in use.

To shift the image left, turn the knob counter-clockwise. Black pixels will be shifted in on the right side. The numbers will become negative when the image is shifted to the left of its nominal position.

To shift the image right, turn the knob clockwise. Black pixels will be shifted in on the left side. The numbers will become positive when the image is shifted to the right of its nominal position.

5.9.9. Vertically Shifting the Right Eye Image

STEREO VIDEO ADJUSTMENT
RE V Alignment
-500 to + 500
0

This control is used to align the Right Eye image vertically on the video raster by a specific number of lines. The range of numbers depends on the image raster in use.

To shift the image up, turn the knob counter-clockwise. Black lines will be shifted in on the bottom. The numbers will become negative when the image is shifted above its nominal position.

To shift the image down, turn the knob clockwise. Black lines will be shifted in on the top. The numbers will become positive when the image is shifted below its nominal position.

5.9.10. Selecting Single Eye Mode to Create a Pseudo 3D Image from One Input

STEREO VIDEO
ADJUSTMENT

Single Eye Mode

Disable

Create RE from LE

Create LE from RE

This control is used to select if the Single Eye mode will be active or not. In Single Eye mode, one eye is selected as the primary input and the other eye is duplicated from the selected eye. A horizontal offset is applied to both eyes to create parallax. Single Eye mode can also be automatically enabled when one of the inputs is missing. (See section 5.6.2)

When set to *Disable* the normal Left Eye and Right Eye video inputs will be applied to the input of the stereo video processing block for further processing.

When set to *Create RE from LE* the Left Eye video will be selected as the single source. The Right Eye video will be created by duplicating the Left Eye video. The Left Eye video and Right Eye video will then be each shifted by half of the *Single Source Depth* amount to create parallax.

When set to *Create RE from LE* the Right Eye video will be selected as the single source. The Left Eye video will be created by duplicating the Right Eye video. The Left Eye video and Right Eye video will then be each shifted by half of the *Single Source Depth* amount to create parallax.

5.9.11. Setting the Single Eye Depth Amount

STEREO VIDEO
ADJUSTMENT

Single Eye Depth

-500 to + 500

0

This control is used to set the amount of horizontal offset that will be applied when Single Eye Mode is On. One half of the depth offset will be applied (in opposite directions) to each eye. The range of numbers depends on the image raster in use. The depth value is the number of pixels of offset between the left and right images. The image offset will only change when the depth value is set to an even number.

To move the virtual views toward the viewer, turn the knob counter-clockwise. The depth numbers will become negative when the virtual views are in front of the screen.

To move the virtual views away from the viewer, turn the knob clockwise. The depth numbers will become positive when the virtual views are behind the screen.

5.9.12. Selecting Horizontal Image Translation Mode to Converge the Auxiliary Outputs when Shooting Parallel

In some cases the 3D camera rig is set up so that the Left Eye and Right Eye camera are shooting parallel to each other (i.e. they are not converged). Normally, the Horizontal Image Translation (HIT) is applied during post production to create a point of convergence. During this process, the Left Eye and Right Eye images are shifted in opposite directions to create a point of convergence. When shooting on the set, it is helpful to see how it will look in post, and so the 7832SVP provides a HIT adjustment that applies a horizontal shift on the auxiliary (mix, mix 2, and 3D Formatted) video outputs only. HIT does not affect the program outputs. There are two menu items to control HIT adjustment – one to enable HIT adjustment, the other to set the HIT offset (depth).

STEREO VIDEO ADJUSTMENT
Aux HIT
<i>Disable</i> <i>Enable</i>

This control is used to select if the Horizontal Image Translation (HIT) will be active for the auxiliary video outputs or not.

When set to *Disable* the normal Left Eye and Right Eye video inputs will be applied to the input of the monitor video processing block for further processing.

When set to *Enable* the Left Eye video and Right Eye video will be each shifted by half of the *Aux HIT Depth* amount to set the point where the images converge.

5.9.13. Setting the HIT Depth Amount

STEREO VIDEO ADJUSTMENT
Aux HIT Depth
-500 to + 500 <i>0</i>

This control is used to set the amount of horizontal offset that will be applied when *Aux HIT* is enabled. One half of the depth offset will be applied (in opposite directions) to each eye. The range of numbers depends on the image raster in use. As the images are shifted, the sides will be cropped by the corresponding amounts so that 3D window violations do not occur

To move the virtual views toward the viewer, turn the knob counter-clockwise. The numbers will become negative when the virtual views are in front of the screen.

To move the virtual views away from the viewer, turn the knob clockwise. The numbers will become positive when the virtual views are behind the screen.

5.10. CONFIGURING THE STEREO TEMPORAL MATCHING CONTROLS (+STM OPTION)

When the +STM option is installed on the card, the *STEREO TEMPORAL MATCHING* menus are used to configure parameters associated with measuring and correcting temporal mismatches of the Left Eye and Right Eye video inputs and outputs.

In stereoscopic imagery it is crucial that the Left Eye image and the corresponding Right Eye image be presented to the viewer at the same time. Even one frame time of offset between the Left Eye and Right Eye images will cause considerable viewing discomfort, as the perceived depth of objects will be constantly changing especially if they are moving horizontally. The STM option is useful to temporally match outgoing 3D playout feeds before sending to Master Control or to re-time 3D contribution links sent

over separate backhaul channels. The STM option uses IntelliTrak™ technology to measure the temporal alignment between the Left Eye and Right Eye images. The STM option allows the user to automatically apply an appropriate delay to the leading eye to correct the mismatch, or the correction can be applied manually. In addition you can manually add additional delay to both the Left Eye and Right Eye images

Item	Value	Example
FR OFF IN:	(Offset val) {Measuring LE delayed RE delayed aligned}	0 Fr. - Aligned
COMPENSATION:	(compensation val) AUTO: {OFF ON}	0 Fr. AUTO: Off
FR OFF OUT:	(Offset val) {Measuring LE delayed RE delayed aligned} CONFID: (Confidence val / 9)	0 Fr. - Aligned CONFID: 9/9
STM DELAY:	LE (Delay val) RE (Delay val)	LE 1 Fr. RE 1 Fr.9

Table 5-3: STM Items from the Operational Status Screen

The *Operational Status* screen or the Stereo Temporal Matching tab on the VistaLINK® configuration screen shows the measurement and compensation status in real time. (Set VistaLINK® to auto refresh to update the status in real time.) When the card sees a difference in temporal alignment of the eyes it will show “Measuring” (shown in FR OFF IN and FR OFFSET OUT). When the confidence of the measurement is 6 or higher, it will show the measured value (shown in FR OFFSET OUT). If auto compensation is enabled, then the card will automatically enter a compensation delay into the leading eye (shown in COMPENSATION), and the confidence value (shown in CONFID) will go to zero while it recalculates the temporal alignment of the eyes. Once it is confident of the new value, the card will show the temporal alignment at the output of the card (shown in FR OFFSET OUT). The (STM DELAY) value shows the frame compensation delay for the Left Eye and Right Eye, and any additional delay that is added to both eyes, but does not include delay related to frame synchronization and image flipping.

The chart below shows the items available in the *STEREO TEMPORAL MATCHING* menu. Sections 5.10.1 to 5.10.3 give detailed information about each of the menu items.

<i>Auto Compensation</i>	Selects whether Auto temporal matching is enabled or not
<i>Manual Compensation</i>	Selects the delay to add to the Left Eye or Right Eye to match the temporal relationship.
<i>Additional Delay</i>	Selects additional delay that can be added to both the Left Eye and Right Eye

5.10.1. Selecting if Auto Temporal Matching is Enabled

STEREO TEMPORAL MATCHING
Auto Compensation
Disable
Enable

This control is used to select whether temporal mismatches measured by the card will be automatically compensated or not.

When *Auto Frame Offset Comp* is set to *Disable* the user must manually apply a delay to the leading eye by the number of frames that it is ahead of the lagging eye. This is done using the *Frame Offset Adjustment* menu item.

When *Auto Frame Offset Comp* is set to *Enable* the card will try to automatically delay the leading eye by the number of frames that it is ahead of the lagging eye.

5.10.2. Selecting the Frame Offset Adjustment

STEREO TEMPORAL MATCHING
Manual Compensation
0
-10 to 10

This control is used to add delay to the leading eye when the *Auto Compensation* is disabled.

Enter the number of frames to delay the leading eye. Negative values add delay to the Left Eye, positive values add delay to the Right Eye

5.10.3. Selecting the Additional Frames of Delay

STEREO TEMPORAL MATCHING
Additional Delay
0 to 10

This control is used to add additional delay to both the Left Eye and Right Eye program video outputs

5.11. CONFIGURING THE 2D COLOUR LUT CONTROLS (444 VERSION ONLY)

The *LUT* menus are used to configure parameters associated with the 2D look-up table processor on the auxiliary outputs. The chart below shows the items available in the *LUT* menu. Sections 5.11.1 to 5.11.2 give detailed information about each of the menu items.

<i>LUT Enable</i>	Selects whether LUT Processor is active or not
<i>Load LUT</i>	Selects the active LUT

5.11.1. Selecting if the LUT Processor is active

LUT
LUT Enable
Enable
Disable

This control is used to select whether the LUT processor in the auxiliary output path is active or not. The LUTs are applied prior to conversion from 4:4:4 to 4:2:2 in the auxiliary output path. See the block diagram (Figure 1-1) for more information.

5.11.2. Selecting the Active LUT

LUT
Load LUT
None Loaded/No change
1 to 1
User LUT 1
User LUT 1
...
User LUT 10

This control is used to select the active LUT when the LUT processor is enabled in the auxiliary output path. The LUTs are stored as text files on the compact flash and may be recalled using this control.

Select *None Loaded/No change* to disable LUT processing
 Select *1 to 1* to load the unity LUT

Select the LUT from the available list to load user LUTS from the compact flash

The LUT is loaded dynamically as you select it, so you can see the impact on the output.

5.11.3. Creating LUTs and loading them on the Compact Flash

Look up Tables are stored on the Compact FLASH card that is accessible via the card edge. The available LUTs will depend on the files on the Compact FLASH card. The 7832SVP-444-3G will search the root directory of the file system on the compact flash for LUTS with one of these names:

- LUT1
- LUT2
- LUT3
- LUT4
- LUT5
- LUT6
- LUT7
- LUT8
- LUT9
- LUT10

With one of these extensions

- .lt4
- .lt1
- .lt_

The file extensions are searched in that order and the 7832SVP444-3G will use whatever it finds first.

5.11.3.1. LUT File Formats

The .lt1 and .lt_ file extensions are 1K LUTs used for 10 bit video formats and are formatted as follows:
Each 1K LUT consists of a list of 3072 integers (1 number per line) between 0 and 1023
The order is 1024 entries for red, then green, then blue.
The data can have spaces in front of it or be preceded by a single comma. Anything can be after it.
Lines that do not start with numbers are considered comments

The .lt4 file extension is a 4K LUT used for 12 bit video formats and is formatted as follows:
Each 4K LUT consists of a list of 12288 integers (1 number per line) between 0 and 4095.
The order is 4096 entries for red, then green, then blue.
The number can have spaces in front of it or be preceded by a single comma. Anything can be after it.
Lines that do not start with numbers are considered comments

When the video standard is YCbCr, the R,G,B correspond to Cr, Y, Cb.

5.12. CONFIGURING THE MIXER OUTPUTS

The MIXER output is intended to be displayed on a standard (2D) video monitor and provides a set of tools to aid in calibrating the image alignment, convergence, interocular and colour matching of the Left Eye and Right Eye cameras. The *MIXER* menus are used to configure parameters associated with the primary Mixer. The Mixer is available by default on the **AUX 1 OUT** BNC.

On the 7823SVP-444-3G version of the module, the *MIXER* menu is called *MIXER 1*, and there is an additional Mixer called Mixer 2. The Mixer 2 output is controlled by the *MIXER 2* menus which are identical to the *MIXER 1* menus. Only the *MIXER 1* menus will be shown in the manual for simplicity.



You can choose to have the MIXER output (and MIXER 2 output on the 444 version) on any/all of the Auxiliary output BNCs using the *Aux 1 to Aux 5 Output* select menu items on the *VIDEO* menu or Video Tab in VistaLINK®. (See sections 0 to 5.6.17.5)

The chart below shows the items available in the *MIXER* menu. Sections 5.12.1 to 5.12.13 give detailed information about each of the menu items.

<i>Mode</i>	Selects the Mixer mode
<i>Difference Order</i>	Selects how the Difference output or Luma only Difference output is created
<i>Anaglyph Mode</i>	Selects the Anaglyph mode
<i>H Split Marker</i>	Selects if a visible marker is present on the horizontal split boundary
<i>H Split Offset</i>	Sets the location of the horizontal split boundary
<i>H Split Order</i>	Selects whether the Left Eye or Right Eye image will be on the left side of the split
<i>Tile H Size</i>	Sets the horizontal size of the tiles in <i>Tile</i> mode
<i>Tile V Size</i>	Sets the vertical size of the tiles in <i>Tile</i> mode
<i>Tile Marker</i>	Selects if a visible marker is present on the tile edges
<i>Tile Order</i>	Sets the Left Eye or Right Eye image will be in the top left tile in <i>Tile</i> mode
<i>Wiggle Time</i>	Sets the display duration for the Left Eye and Right Eye images in wiggle mode.
<i>Depth Ruler</i>	Selects if depth ruler is visible
<i>Ruler Scale</i>	Sets the distance between the ruler lines

5.12.1. Selecting the Mixer Mode

MIXER 1
Mode
<i>50/50 Blend</i>
<i>Difference</i>
<i>Anaglyph</i>
<i>Horizontal Split</i>
<i>Luma Only</i>
<i> Difference</i>
<i>Tile</i>
<i>Wiggle</i>

This control is used to determine what is presented on the Mixer output as shown in Figure 5-2.

When set to *50/50 Blend* the Left Eye image and Right Eye image are mixed at 50% each and presented on the Mixer output.

When set to *Difference* the Right Eye image is subtracted from the Left Eye image according to the setting of the *Difference Order* menu item and presented on the Mixer output.

When set to *Anaglyph*, the Left Eye and Right Eye video have an Anaglyph filter applied and then the images are combined and presented on the Mixer Output. There are several Anaglyph modes available (selected by the *Anaglyph Mode* menu item).

When set to *Horizontal Split* a split screen output from Left Eye and Right Eye video will be presented on the Mixer output. The left side of the one eye video will be on the left side and the right side of the other eye video on the right side. The placement of the Left Eye and Right Eye images in the split screen can be selected using the *H Split Order* menu item. The split horizontal position may be adjusted using the *H Split Position* menu item. An optional white vertical line can be turned on according to the setting of the *H Split Marker* menu item.

When set to *Luma Only Difference* the Right Eye image luma is subtracted from the Left Eye image luma according to the setting of the *Difference Order* menu item and presented on the Mixer Output. The output will be gray scale only.

When set to *Tile* a mosaic comprised of alternating rectangular sections (i.e. tiles) from the Left Eye and Right Eye video will be presented on the Mixer output. The placement of the Left Eye and Right Eye images into the tiles can be selected using the *Tile Order* menu item. The H and V size of the tiles may be adjusted using the *Tile H Size* and *Tile V Size* menu items. An optional white border line can be turned on according to the setting of the *Tile Marker* menu item.

When set to *Wiggle* the Left Eye and Right Eye images are displayed in sequence on the Mixer output. The *Wiggle Time* menu item sets the amount of time each eye is displayed before alternating to the other eye.




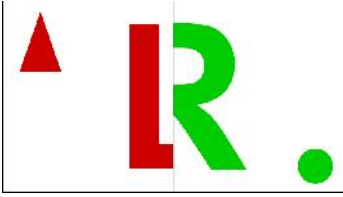

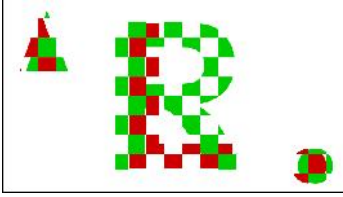
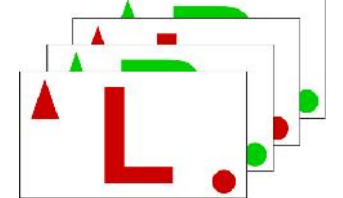
	<p>50/50 Blend Mode</p> <p>A 50/50 linear mix of the Left Eye and Right Eye images.</p>
	<p>Difference Mode</p> <p>Right Eye image is subtracted from the Left Eye image. Difference Order will subtract Left Eye image from the Right Eye image.</p>
	<p>Anaglyph Mode</p> <p>Left Eye and Right Eye video have an Anaglyph filter applied before they are combined and presented on the Mixer Output. Different anaglyph modes are selected by the Anaglyph Mode.</p>
	<p>Horizontal Split Mode</p> <p>Left side is taken from the left of the Left Eye image and right side is taken from the right of the Right Eye image. H Split Order will reverse this. Split position is adjustable with H Split Offset.</p>
	<p>Luma Difference Mode</p> <p>Right Eye luma is subtracted from the Left Eye luma. Colour is gray scale only. Difference Order will subtract Left Eye luma from the Right Eye luma.</p>
	<p>Tile Mode</p> <p>Alternating rectangular tiles from Left Eye and Right Eye video. Tile Order will swap Left Eye and Right Eye on the tiles. H & V tile size is adjustable with H & V Size Controls.</p>
	<p>Wiggle Mode</p> <p>Left Eye image and Right Eye image are alternately displayed. Wiggle Time menu controls the rate at which the eyes alternate.</p>

Figure 5-2: Mixer

5.12.2. Configuring the Difference Order

MIXER 1
Difference Order
<u>LE - RE</u>
<u>RE - LE</u>

This control is used to determine how the difference output and luma only difference out are created. This control is only applicable when the *Mixer Mode* is set to *Difference*. (See section 5.12.1)

When set to *LE-RE* the difference output on the Mixer is created by subtracting the Right Eye image from the Left Eye image.

When set to *RE-LE* the difference output on the Mixer is created by subtracting the Left Eye image from the Right Eye image.

5.12.3. Configuring the Anaglyph Mode

MIXER 1
Anaglyph Mode
<u>Red Blue</u>
<u>Red Cyan</u>
<u>- Gray</u>
<u>Red Cyan</u>
<u>- Colour</u>
<u>Red Cyan</u>
<u>- Half Colour</u>
<u>Red Cyan</u>
<u>- Optimized</u>

This control is used to determine how the Anaglyph output is created. This control is only applicable when the *Mixer Mode* is set to *Anaglyph*. (See section 5.12.1)

Red | Blue anaglyph mode, also known as 'true anaglyph' has a darker image, no colour reproduction and little ghosting.

Red | Cyan – Gray anaglyph mode has no colour reproduction and has more ghosting than true anaglyphs.

Red | Cyan – Colour anaglyph mode has partial colour reproduction but suffers from retinal rivalry¹ between the Left Eye and Right Eye images.

Red | Cyan – Half Colour anaglyph mode has partial colour reproduction (but not as good as color anaglyphs) and less retinal rivalry¹ than colour anaglyphs.

Red | Cyan – Optimized anaglyph mode is similar to Half colour, has partial color reproduction (but not of red shades), and has almost no retinal rivalry¹.

¹ In this context retinal rivalry refers only to the retinal rivalry caused by brightness differences of coloured objects.

5.12.4. Configuring the Horizontal Split Marker

MIXER 1
H Split Marker
<u>Disable</u>
<u>Enable</u>

This control is used to determine if a white line will be used to mark the horizontal split location. This control is only applicable when the *Mixer Mode* is set to *Horizontal Split*. (See section 5.12.1)

When set to *Enable* a vertical white line marking the horizontal split position is superimposed over the Left/Right split video on the Mixer Output.

5.12.5. Configuring the Horizontal Split Position

MIXER 1
H Split Offset
-512 to + 511
<u>0</u>

This control is used to set the horizontal split location. This control is only applicable when the *Mixer Mode* is set to *Horizontal Split*. (See section 5.12.1)

When set to *0* the horizontal split position will be at the center of the screen. To move the horizontal split position to the right turn the rotary knob clockwise – the position numbers will be positive when the split position is on the right of center. To move the horizontal split position to the left turn the rotary knob counter-clockwise – the position numbers will be negative when the split position is on the left of center.

5.12.6. Configuring the Horizontal Split Order

MIXER 1
H Split Order
LE / RE RE / LE

This control is used to determine whether the Left Eye image will be placed on the left or right side of the Horizontal split output. This control is only applicable when the *Mixer Mode* is set to *Horizontal Split*. (See section 5.12.1)

When set to *LE / RE*, the Left Eye image will be placed on the left side and the Right Eye image will be placed on the right side of the Horizontal split output presented on the Mixer Output.

When set to *RE / LE*, the Right Eye image will be placed on the left side and the Left Eye image will be placed on the right side of the Horizontal split output presented on the Mixer Output.

5.12.7. Configuring the Tile Horizontal Size

MIXER 1
Tile H Size
2 to max H size
<u>96</u>

This control is used to set the horizontal size of the tiles. This control is only applicable when the *Mixer Mode* is set to *Tile*. (See section 5.12.1)

The maximum value is set by the applicable video standard, and allows horizontal stripes to be created when set to the maximum tile width.

5.12.8. Configuring the Tile Vertical Size

MIXER 1
Tile V Size
2 to max V size
<u>54</u>

This control is used to set the vertical size of the tiles. This control is only applicable when the *Mixer Mode* is set to *Tile*. (See section 5.12.1)

The value is the number of lines per field for interlaced video formats and the number of lines per frame for progressive video formats. The maximum value is set by the applicable video standard, and allows vertical stripes to be created when set to the maximum tile height.

5.12.9. Configuring the Tile Order

MIXER 1
Tile Order
<u>LE First</u>
RE First

This control is used to determine whether the Left Eye image or Right Eye image will be placed in the top left tile position. The Left Eye and Right Eye images alternate on adjacent tile positions horizontally and vertically. This control is only applicable when the *Mixer Mode* is set to *Tile*. (See section 5.12.1)

When set to *LE First*, the Left Eye image will be placed on the top left tile position.

When set to *RE First*, the Right Eye image will be placed on the top left tile position.

5.12.10. Configuring the Tile Marker

MIXER 1
Tile Marker
<u>Disable</u>
Enable

This control is used to determine if a white line will be used to outline the perimeter of each tile. This control is only applicable when the *Mixer Mode* is set to *Tile*. (See section 5.12.1)

When set to *Enable* a vertical white line marking the boundary between the tiles on the Mixer Output.

5.12.11. Configuring the Wiggle Rate

MIXER 1
Wiggle Time
<u>fast</u>
2 to 10
20
slow

This control is used to set the time that each eye is displayed in Wiggle mode. This control is only applicable when the *Mixer Mode* is set to *Wiggle*. (See section 5.12.1)

The smaller numbers indicate a shorter display time (i.e. a faster wiggle rate).

5.12.12. Configuring the Depth Ruler

MIXER 1
Depth Ruler
<u>Disable</u>
Enable

This control is used to determine if the depth ruler will be superimposed on top of the Mixer output. The Depth Ruler is a set of vertical lines occurring at regular intervals across the screen width. It is useful in determining approximate depth due to parallax between the Left Eye and Right Eye images.

When set to *Enable* the Depth Ruler is superimposed on the Mixer output. The distance between the lines of the ruler can be seen using the *Ruler Scale* menu item.

5.12.13. Configuring the Depth Ruler Scale

MIXER 1
Ruler Scale
1 to 5%
2%

This control is used to set distance between the lines on the depth ruler. This control is only applicable when the *Ruler Enable* is set to *Enable*. (See section 5.12.11). The ruler scale is set in percentage of screen width.

5.13. CONFIGURING THE 3D FORMATTER

The *3D FORMATTER* menus are used to configure parameters associated with the 3D Formatter Output. The 3D Formatter output is available by default on the **AUX 3 OUT** BNC.



You can choose to have the 3D Formatter output on any/all of the Auxiliary output BNCs using the *Aux 1 to Aux 5 Output* select menu items on the *VIDEO* menu or Video Tab in VistaLINK®. (See sections 0 to 5.6.17.5)

The 3D Formatter output provides the Left Eye and Right Eye properly formatted to display on a variety of 3D display panels. Fundamentally there are two types of display panels – micro-polarized, which use passive (polarized) glasses, and frame-sequential, which use active (shuttered) glasses. The 3D Formatter output signal is either a standard SMPTE ST 292-1 1.5 Gb/s or SMPTE ST 425-1 Level A 3 Gb/s signal and can be distributed over longer distances using available HDSDI distribution hardware. On the 7832SVP-444-3G SMPTE ST 425-1 Level B-DL 3 Gb/s signals are also supported. Normally you will have to connect it to a HDSDI or 3GSDI to HDMI/DVI converter such as the Evertz 2430RX-2-3G in order to connect it to the 3D display panel.

Note: some professional 3D displays will take the 3D formatted signal directly on a coaxial BNC input.

The 3D Formatter output can also be used in 3D broadcasting to provide a ‘Frame compatible’ output for 3D payout or backhaul.

The chart below shows the items available in the *3D FORMATTER* menu. Sections 5.13.1 to 5.13.6 give detailed information about each of the menu items.

<i>Output Format</i>	Selects the 3D Formatter video format
<i>Output Mode</i>	Selects the 3D Formatter format mode
<i>Top-and-Bottom Order</i>	Selects the Left / Right Order in Top-and-Bottom mode
<i>Side-by-Side Order</i>	Selects the Left / Right Order in Side-by-Side mode
<i>Line-by-Line Order</i>	Selects the Left / Right Order in Line-by-Line mode
<i>3D Fmt H Phase</i>	Sets the video H phase with respect to the reference for the main outputs.
<i>3D Fmt V Phase</i>	Sets the video V phase with respect to the reference for the main outputs.

5.13.1. Selecting the 3D Formatter Output Video Format

3D FORMATTER
<i>Output Format</i>
<i>1080p 3G Level A</i>
<i>1080p 3G Level B</i>
<i>1080p 1.5G</i>
<i>1080i/psF 1.5G</i>
<i>720p 1.5G</i>

This control is used to determine video format of the 3D Formatter output. The 7832SVP will perform a broadcast quality scaling of the input video into the 3D Formatter output video format prior to combining the Left Eye and Right Eye. The frame rate will be set in accordance with the input video frame rate. It is desirable to use the highest resolution supported by the 3D Display.

When set to *1080p 3G Level A*, the output will be formatted as a 1080p signal according to SMPTE ST 274 and SMPTE ST 425-1 Level A.

When set to *1080p 3G Level B*, the output will be formatted as a 1080p signal according to SMPTE ST 274 and SMPTE ST 425-1 Level B-DL. This format is only available on the 7832SVP-444-3G version of the card.

When set to *1080p 1.5G*, the output will be formatted as a 1080p/29.97 or 1080p/25 signal according to SMPTE ST 274 and SMPTE ST 292-1

When set to *1080i/psF 1.5G*, the output will be formatted as a 1080i or 1080psF signal according to SMPTE ST 274 and SMPTE ST 292-1. This is the default mode and may be converted to a HDMI/DVI signal for connection to the 3D panel.

When set to *720p*, the output will be formatted as a 720p signal according to SMPTE ST 296 and SMPTE ST 292-1.

5.13.2. Selecting the 3D Formatter Output Mode

3D FORMATTER
<i>Output Mode</i>
<i>Line-by-Line</i>
<i>Side-by-Side</i>
<i>Top-and-Bottom</i>

This control is used to determine how the Left Eye and Right Eye images are combined to send to the 3D Display as shown in Figure 5-3. Consult the product literature for your specific 3D Display panel to select a compatible formatting method.

When set to *Line-by-Line*, the Left Eye and Right Eye images are each scaled to the total height and total width of the *3D Formatter Output Video Format*. Then the odd lines from one image are interleaved with the even lines from the other image, resulting in a frame that fills the video raster determined by the *3D Formatter Output Video Format* menu item. The *Line-by-Line Order* menu item is used to determine if the Left Eye or Right Eye image will be placed on the top line. This mode is only compatible with micro-polarized 3D panels that use passive glasses and is not suitable for 3D broadcasting where the output will be compressed.

When set to *Side-by-Side*, the Left Eye and Right Eye images are each scaled to the total height and half the width of the *3D Formatter Output Video Format*. Then one is placed beside the other, resulting in a frame that fills the video raster determined by the *3D Formatter Output Video Format* menu item. The *Side-by-Side Order* menu item is used to determine if the Left Eye or Right Eye image will be placed on the left side.

When set to *Top-and-Bottom*, the Left Eye and Right Eye images are each scaled to half the height and the total width of the *3D Formatter Output Video Format*. Then one is placed on top of the other, resulting in a frame that fills the video raster determined by the *3D Formatter Output Video Format* menu item. The *Top-and-Bottom Order* menu item is used to determine if the Left Eye or Right Eye image will be placed on the top.

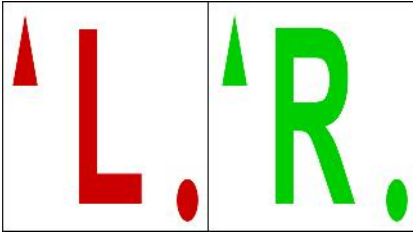
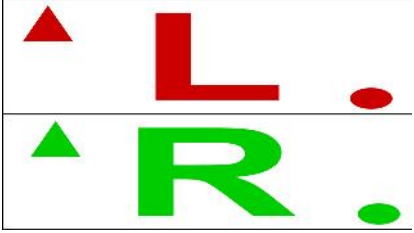
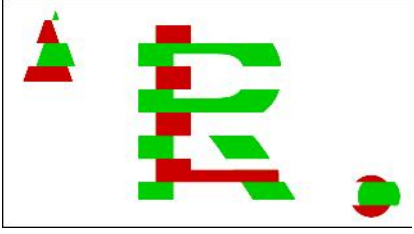
	<p>Side-by-Side Mode</p>
	<p>Top-and-Bottom Mode</p>
	<p>Line-by-Line Mode</p>

Figure 5-3: 3D Formatter Modes

5.13.3. Configuring the Image Order in Top - Bottom Mode

3D FORMATTER
Top-and-Bottom Order
Top LE / Bottom RE
Top RE / Bottom LE

This control is used to determine the image order when the *3D Output Mode* is set to *Top - Bottom*. (See section 5.13.2)

When set to *Top LE / Bottom RE*, the vertically squeezed Left Eye image will be on the top and the vertically squeezed Right Eye image will be on the bottom.

When set to *Top RE / Bottom LE*, the vertically squeezed Right Eye image will be on the top and the vertically squeezed Left Eye image will be on the bottom.

5.13.4. Configuring the Image order in Side-by-Side Mode

3D FORMATTER
Side-by-Side Order
LE / RE
RE / LE

This control is used to determine the image order when the *3D Output Mode* is set to *Side-by-Side*. (See section 5.13.2)

When set to *LE / RE*, the horizontally squeezed Left Eye image will be on the left side and the horizontally squeezed Right Eye image will be on the right side.

When set to *RE / LE*, the horizontally squeezed Right Eye image will be on the left side and the horizontally squeezed Left Eye image will be on the right side.

5.13.5. Configuring the Image order in Line-by-Line Mode

3D FORMATTER
Line-by-Line Order
LE First
RE First

This control is used to determine the image order when the *3D Output Mode* is set to *Line-by-Line*. (See section 5.13.2)

When set to *LE First*, the first line of the output will be from the Left Eye image and the second line will be from the Right Eye image and so on.

When set to *RE First*, the first line of the output will be from the Right Eye image and the second line will be from the Left Eye image and so on.

5.13.6. Setting the 3D Formatter Output Video Phase

3D FORMATTER
3D Fmt H Phase
0 to max samples

This control is used to set the 3D Formatter output horizontal phase with respect to the *Reference Source* (see section 5.6.14).

3D FORMATTER
3D Fmt V Phase
0 to max lines

This control is used to set the 3D Formatter output vertical phase with respect to the *Reference Source* (see section 5.6.14).

5.14. CONFIGURING THE GPIO FUNCTIONS

The *GPIO* menus are used to configure the General Purpose interface (GPIO). The chart below shows the items available in the *GPIO* menu. Sections 5.15.1 to 5.15.9 give detailed information about each of the parameters.

There are eight pairs of menu items that are used to program the functions of the GPIOs. For the sake of simplicity only the menu item for GPIO1 will be described in the manual.

<i>GPIO 1 Mode</i>	Selects whether GPIO 1 is an input or an output.
<i>GPIO 1 Sensitivity</i>	Selects whether GPI 1 is edge or level sensitive
<i>GPIO 1 Active State</i>	Selects whether GPIO 1 is active high or active low
<i>GPI 1 Function</i>	Selects the function of GPI 1 when it is active and GPIO 1 Mode is <i>Input</i> .
<i>GPO 1 Function</i>	Selects the function of GPO 1 when it is active and GPIO 1 Mode is <i>Output</i> .
<i>GPIO 2 Mode</i>	Selects whether GPIO 2 is an input or an output.
<i>GPIO 2 Sensitivity</i>	Selects whether GPI 2 is edge or level sensitive
<i>GPIO 2 Active State</i>	Selects whether GPIO 2 is active high or active low
<i>GPI 2 Function</i>	Selects the function of GPI 2 when it is active and GPIO 2 Mode is <i>Input</i> .
<i>GPO 2 Function</i>	Selects the function of GPO 2 when it is active and GPIO 2 Mode is <i>Output</i> .
<i>GPIO 3 Mode</i>	Selects whether GPIO 3 is an input or an output.
<i>GPIO 3 Sensitivity</i>	Selects whether GPI 3 is edge or level sensitive
<i>GPIO 3 Active State</i>	Selects whether GPIO 3 is active high or active low
<i>GPI 3 Function</i>	Selects the function of GPI 3 when it is active and GPIO 3 Mode is <i>Input</i> .
<i>GPO 3 Function</i>	Selects the function of GPO 3 when it is active and GPIO 3 Mode is <i>Output</i> .
<i>GPIO 4 Mode</i>	Selects whether GPIO 4 is an input or an output.
<i>GPIO 4 Sensitivity</i>	Selects whether GPI 4 is edge or level sensitive
<i>GPIO 4 Active State</i>	Selects whether GPIO 4 is active high or active low
<i>GPI 4 Function</i>	Selects the function of GPI 4 when it is active and GPIO 4 Mode is <i>Input</i> .
<i>GPO 4 Function</i>	Selects the function of GPO 4 when it is active and GPIO 4 Mode is <i>Output</i> .
<i>GPIO 5 Mode</i>	Selects whether GPIO 5 is an input or an output.
<i>GPIO 5 Sensitivity</i>	Selects whether GPI 5 is edge or level sensitive
<i>GPIO 5 Active State</i>	Selects whether GPIO 5 is active high or active low
<i>GPI 5 Function</i>	Selects the function of GPI 5 when it is active and GPIO 5 Mode is <i>Input</i> .

<i>GPO 5 Function</i>	Selects the function of GPO 5 when it is active and GPIO 5 Mode is <i>Output</i> .
<i>GPIO 6 Mode</i>	Selects whether GPIO 6 is an input or an output.
<i>GPIO 6 Sensitivity</i>	Selects whether GPI 6 is edge or level sensitive
<i>GPIO 6 Active State</i>	Selects whether GPIO 6 is active high or active low
<i>GPI 6 Function</i>	Selects the function of GPI 6 when it is active and GPIO 6 Mode is <i>Input</i> .
<i>GPO 6 Function</i>	Selects the function of GPO 6 when it is active and GPIO 6 Mode is <i>Output</i> .
<i>GPIO 7 Mode</i>	Selects whether GPIO 7 is an input or an output.
<i>GPIO 7 Sensitivity</i>	Selects whether GPI 7 is edge or level sensitive
<i>GPIO 7 Active State</i>	Selects whether GPIO 7 is active high or active low
<i>GPI 7 Function</i>	Selects the function of GPI 7 when it is active and GPIO 7 Mode is <i>Input</i> .
<i>GPO 7 Function</i>	Selects the function of GPO 7 when it is active and GPIO 7 Mode is <i>Output</i> .
<i>GPIO 8 Mode</i>	Selects whether GPIO 8 is an input or an output.
<i>GPIO 8 Sensitivity</i>	Selects whether GPI 8 is edge or level sensitive
<i>GPIO 8 Active State</i>	Selects whether GPIO 8 is active high or active low
<i>GPI 8 Function</i>	Selects the function of GPI 8 when it is active and GPIO 8 Mode is <i>Input</i> .
<i>GPO 8 Function</i>	Selects the function of GPO 8 when it is active and GPIO 8 Mode is <i>Output</i> .
<i>GPIO Update Mode</i>	Allows the user to select the mode of GPIO 8.
<i>GPIO Update Rate</i>	Allows the user to select the function of GPIO 8 when it is active.

5.14.1. Selecting the Mode of the GPIO

<i>GPIO</i>	<p>This control is used to select whether the GPIO will be disabled, or used as an input or an output.</p> <p>When set to <i>Disable</i> the GPIO is ignored.</p> <p>When set to <i>Input</i> the GPIO will function as a general purpose input. The <i>GPI Function</i> menu determines what the input controls. See section 5.14.2.</p> <p>When set to <i>Output</i> the GPIO will function as a general purpose output. The <i>GPO Function</i> menu determines what the input controls. See section 5.14.2.</p>
<i>GPIO 1 Mode</i>	
<i>Disable</i>	
<i>Input</i> <i>Output</i>	

5.14.2. Selecting Whether the GPIO is Edge or Level Sensitive

GPIO
GPIO 1 Sensitivity
Edge Sensitive
Level Sensitive

This control is used to select whether the GPIO is Edge or Level Sensitive

When set to *Edge Sensitive* the GPI will be triggered based on the transition from its inactive state to its active state as determined by the *GPIO Active State* control. i.e. if the *GPIO Active State* control is set to *Active Low* then the GPI will be triggered at the time it goes from High to Low and transitions from Low to High will be ignored.

When set to *Level Sensitive* the GPI will be triggered based when it is at the level of its active state as determined by the *GPIO Active State* control. i.e. if the *GPIO Active State* control is set to *Active Low* then the GPI will be triggered when the GPI is Low and it will be ignored when the GPI is High.

5.14.3. Selecting Whether the GPIO is Active High or Active Low

GPIO
GPIO 1 Active State
Active Low
Active High

This control is used to select whether the GPIO is Active High or Active Low

When set to *Active Low* the GPO will be Low when it is active and High when it is not active. The *Active State* also affects the operation of the GPI Sensitivity control. See section 5.14.2.

When set to *Active High* the GPO will be High when it is active and Low when it is not active. The *Active State* also affects the operation of the GPI Sensitivity control. See section 5.14.2.

5.14.4. Selecting the Function of the GPIO Pin when set to Input Mode

GPIO	
GPIO 1 Function	
Preset 1	Recalls Preset 1
Preset 2	Recalls Preset 2
...	...
Preset 10	Recalls Preset 10
LE V Flip	Enables the Left Eye V flip mode
LE H Flip	Enables the Left Eye H flip mode
LE V Align Inc	Increments Left Eye vertical offset (moves Left Eye up)
LE V Align Dec	Decrements Left Eye vertical offset (moves Left Eye down)
LE V Align Zero	Resets Left Eye vertical offset to zero (nominal position)
LE H Align Inc	Increments Left Eye horizontal offset (moves Left Eye right)
LE H Align Dec	Decrements Left Eye horizontal offset (moves Left Eye left)
LE H Align Zero	Resets Left Eye horizontal offset to zero (nominal position)
RE V Flip	Enables the Right Eye V flip mode
RE H Flip	Enables the Right Eye H flip mode
RE V Align Inc	Increments Right Eye vertical offset (moves Right Eye up)
RE V Align Dec	Decrements Right Eye vertical offset (moves Right Eye down)
RE V Align Zero	Resets Right Eye vertical offset to zero (nominal position)
RE H Align Inc	Increments Right Eye horizontal offset (moves Right Eye right)
RE H Align Dec	Decrements Right Eye horizontal offset (moves Right Eye left)
RE H Align Zero	Resets Right Eye horizontal offset to zero (nominal position)
Input Swap	Swaps Left Eye and Right Eye inputs
Force SE from LE	Force Single Eye mode – Create Right Eye from Left Eye
Force SE from RE	Force Single Eye mode – Create Left Eye from Right Eye
Single Eye Depth Inc	Increments Single Eye mode depth (moves both Eyes inward)
Single Eye Depth Dec	Decrements Single Eye mode depth (moves both Eyes outward)
Toggle mixer mode	Toggles through the various Mixer (Mixer 1) modes
Toggle mixer 2 mode	Toggles through the various Mixer 2 modes
Enable Status Display	Turns the Status Window on or Off (set Status Window menu to GPI)
Toggle Status Display	Toggles through the various Status Window modes
Aux HIT Enable	Enables the Horizontal Image translation (HIT) mode on AUX outputs
Aux HIT Depth Inc	Increments HIT mode depth (moves both Eyes inward)
Aux HIT Depth Dec	Decrements HIT mode depth (moves both Eyes outward)
Aux HIT Depth Zero	Resets HIT mode depth to zero (nominal position)
Sub-Preset 1	Recalls Sub-Preset 1
Sub-Preset 2	Recalls Sub-Preset 2
...	...
Sub-Preset 10	Recalls Sub-Preset 10

5.14.5. Selecting the Function of the GPIO Pin when set to Output Mode

GPIO
GPO 1 Function
LE A Not Present
LE B Not Present
LE A Not Present
LE B Not Present
LE/RE Not Present
LE A Not Valid
LE B Not Valid
RE A Not Valid
RE B Not Valid
LE/RE Not Valid
3D Standard Change
Audio Not Present
Timecode Not Present
Genlock Not Present
Genlock Not Valid
Card Ref Not Present
LE/RE Not Ph Aligned
LE/RE Not Clk Locked
HIT Active
Single Eye Mode Active
STM In Offset not zero
STM Out Offset not zero
STM LE/RE Identical
Temperature Warning
Temperature Error

This control is used to select the function of GPIO 1 when the *GPIO 1 Mode* is set to *Output*. Most of these functions are also available as Vistalink Traps. See section 8.2.12 to 8.2.14 This control is ignored when the *GPIO 1 Mode* is set to *Disabled* or *Input*.

Left Eye video Link A is not present
 Left Eye video Link B is not present
 Right Eye video Link A is not present
 Right Eye video Link B is not present
 Left Eye or Right Eye video is not present
 Left Eye video Link A is not valid (not the correct format)
 Left Eye video Link B is not valid (not the correct format)
 Right Eye video Link A is not valid (not the correct format)
 Right Eye video Link B is not valid (not the correct format)
 Left Eye or Right Eye video is not valid (not the correct format)
 3D Formatter Standard Change Detected
 Audio is not present on Left Eye and Right Eye video
 Timecode is not present on Left Eye and Right Eye video
 Genlock is not present
 Genlock is present but not in a format that matches the input video
 Card reference is not present
 Left Eye and Right Eye video are not phase aligned (within tolerance)
 Left Eye and Right Eye video are not clock locked
 Horizontal Image Translation mode is active
 Single Eye mode is active
 LE and RE video are not temporally matched at input
 LE and RE video are not temporally matched at output
 LE and RE video are temporally matched at output
 Temperature Warning
 Temperature Error

5.14.6. Selecting the Polling rate of the GPIO Pin when set to Input Mode

There are two controls that allow the user to determine the how often the GPI inputs are polled. This function is particularly useful when using the Increment or Decrement GPI function.

GPIO
GPIO Update Mode
Time (ms)
Video Frames

This control is used to select whether the update rate is set in time or frame counts

When set to Time (ms) the GPIO Update Rate control will be in Milliseconds.

When set to Video Frames the GPIO Update Rate control will be in video frames.

GPI0
<i>GPI0 Update Rate</i>
1
...
50

This control is used to select the update rate

5.14.7. Loading Presets using the GPI controls

Each user preset is a snapshot of the settings of ALL the controls on the module. This includes the GPI control settings. In order to use the GPI controls to load presets, you must ensure that each of your user presets has at least one GPI control set to load a default preset that will in turn allow you to load additional presets.

Alternately you can use Sub-Presets. Each user Sub-Preset is a snapshot of the settings of SOME of the controls on the module. The user decides which settings are included in a sub-preset. In order to use the GPI controls to load sub-presets, you must ensure that each of your user sub-presets has at least one GPI control set to load a default sub-preset that will in turn allow you to load additional sub-presets. See section 8.3 for more information on working with sub-presets.

The following examples apply to user presets or sub-presets.

Example 1

Preset 1 has the following GP1 controls

GPI	Function
1	Load Preset 2
2	Load Preset 3
3	Load Preset 4
...	
8	Load Preset 9

Preset 2 through 9 have the following GP1 controls

GPI	Function
1	Load Preset 1
2	Other function
3	Other function
...	
8	Other function

From any of the presets you can press GPI1 to get back to Preset 1 which will then allow you to choose another preset.

Example 2

If you only need two or three presets you could do it this way

Sub-Preset 1 has the following GP1 controls

GPI	Function
1	Load Sub-Preset 2
2	Load Sub-Preset 3
3	Other function
...	
8	Other function

Sub-Preset 2 has the following GP1 controls

GPI	Function
1	Load Sub-Preset 1
2	Load Sub-Preset 3
3	Other function
...	
8	Other function

Sub-Preset 3 has the following GP1 controls

GPI	Function
1	Load Sub-Preset 1
2	Load Sub-Preset 2
3	Other function
...	
8	Other function

From any of the Sub-Presets you can press GPI1 or GPI2 to get to either of the other Sub-Presets.

5.15. UTILITIES

The *UTILITIES* menus are used to list the module firmware version, manage the user presets and configure the network settings. The chart below shows the items available in the *UTILITIES* menu. Sections 5.15.1 to 5.15.9 give detailed information about each of the parameters.

<i>Preset Selection</i>	Selects a preset that will be acted on by the <i>Recall Preset</i> or <i>Save Preset</i> menu items.
<i>Recall Preset</i>	Recall the selected preset to the card
<i>Store Preset</i>	Store the current configuration of the card to a user preset.
<i>Sub-Preset Selection</i>	Selects a Sub-Preset that will be acted on by the <i>Recall Sub-Preset</i> menu item.
<i>Recall Sub-Preset</i>	Recall the selected Sub-Preset to the card
<i>IP Address</i>	Allows the user to set the IP Address of the card.
<i>IP Subnet Mask</i>	Allows the user to set the IP Subnet Mask of the card.
<i>IP Gateway</i>	Allows the user to set the IP Gateway Address of the card.
<i>About...</i>	Shows the firmware version of the module.

5.15.1. Selecting a User Preset to Recall or Save

<i>UTILITIES</i>	This control is used to select a User preset to Recall or Save. It is used in conjunction with the <i>Recall Preset</i> or <i>Save Preset</i> menu items.	
<i>Preset Selection</i>		
<i>Factory Default</i>		Select the preset you want to recall or save. If you want to reset the card to its factory default condition select <i>Factory Default</i> . This is the first step in recalling or saving a preset.
<i>User Preset 1</i>		
<i>User Preset 2</i>		
<i>...</i>		
<i>User Preset 10</i>		

5.15.2. Recalling Card Configurations from the User Presets

<i>UTILITIES</i>	This control is used to restore the current card configuration to the preset selected using the <i>Preset Selection</i> menu item. (See section 5.15.1)
<i>Recall preset</i>	
<i>no</i> <i>yes</i>	



When you recall a preset the current card configuration will be overwritten from the selected user preset.



On a new unit, Preset 1 to Preset 10 will be empty. Recalling an empty preset will have no effect on the module configuration.

5.15.3. Saving Card Configurations to the User Presets

UTILITIES

Save preset

no

yes

This control is used to save the current card configuration to the preset selected using the *Preset Selection* menu item. (See section 5.15.1)

To save the selected preset, set this menu item to Yes. You can abort the operation by pressing the knob when *no* is displayed.



When you save a preset the current card configuration will overwrite the selected user preset.



User presets can be named using the controls on the VistaLINK® *Utilities* tab.

5.15.4. Selecting a Sub-Preset to Recall

Sub-Presets contain a subset of the settings of the card. The user determines which settings are included in the Sub-Preset. See section xx for more information on working with Sub-Presets.

UTILITIES

Sub-Preset Selection

S1:Sub 1

S2:Sub 2

...

S10:Sub 10

This control is used to select a Sub-Preset to Recall. It is used in conjunction with the *Recall Sub-Preset* menu item.

Select the Sub-Preset you want to recall. They are numbered S1 to S10 and will show the Sub-Preset name if you have changed the default names sub 1 to sub 10 respectively. This is the first step in recalling a Sub-Preset.

5.15.5. Recalling Card Configurations from the Sub-Presets

UTILITIES

Recall preset

no

yes

This control is used to load the settings saved in the Sub-Preset selected using the *Preset Selection* menu item. onto the card. (See section 5.15.4)

To recall the selected Sub-Preset, set this menu item to Yes. You can abort the operation by pressing the knob when *no* is displayed.



When you recall a Sub-Preset the current card configuration will be overwritten from the selected Sub-Preset. Only settings included in the Sub-Preset will be

affected.

5.15.6. Setting up the Internet Protocol Address

UTILITIES
IP Address
0.0.0.0
192.168.1.32

This control sets the unique Internet Protocol (IP) address of the 7832SVP within the network. 192.168.1.32 is an example of an IP address in a private (internal) network.

Press the knob to enter the IP address. You will be presented with an entry screen showing the current IP address. A special down arrow () indicates the end of the message. The IP Address is entered as a set of four octets, each having a value from 0 to 255. Octet values can be entered as a 1, 2 or 3 digit number (i.e. leading zeros are not required). There is a small cursor arrow () beneath the leftmost digit. Turn the shaft encoder knob to the value you wish to enter, then press the knob. The arrow will advance to the next digit. When you have entered the digits for the first octet, select the period separator character (.) then press the knob. Continue doing this until all 4 octets have been entered. If the IP address you entered is shorter than the maximum allowed, set the last character to the special down arrow () character. If you want to move back to correct a value entered select the left arrow () character. After you select the last digit you will be returned to the *UTILITIES* menu screen, and the value you just entered will be shown.

5.15.7. Setting up the Internet Protocol Subnet Mask

UTILITIES
IP Subnet Mask
255.255.255.0

This control sets the “subnet mask” of the network. This parameter specifies all the IP addresses that can directly communicate with the 7832SVP without having to go through a gateway or router. This parameter is usually set to 255.255.255.0 for a private network. Normally you will not have to adjust this parameter from its default value.

To enter a new value, press the knob and follow the procedure outlined for entering the *IP Address* in section 5.15.4.

5.15.8. Setting up the Internet Protocol Gateway Address

UTILITIES
IP Gateway
0.0.0.0
192.168.1.1

This control sets the IP address of the “gateway” (sometimes also referred to as the “firewall”). This parameter tells the 7832SVP where to send data that is destined for an IP address outside the range defined by the subnet mask. In a private network, this gateway could be identified as 192.168.1.1. If the computer controlling the card is on the same subnet as the card you will not have to adjust this parameter from its default value of 0.0.0.0

To enter a new value, press the knob and follow the procedure outlined for entering the *IP Address* in section 5.15.4.

5.15.9. Accessing Information about this Module and its Firmware

UTILITIES

About...

This control lists the hardware version of this module and the firmware residing within it. It gives quick access to information about revisions that can be used to determine when upgrades are required.

6. TECHNICAL INFORMATION

6.1. LOCATION OF JUMPERS

Figure 6-1 and Figure 6-2 provide the locations of the jumpers and LEDs on the 7832SVP series boards.

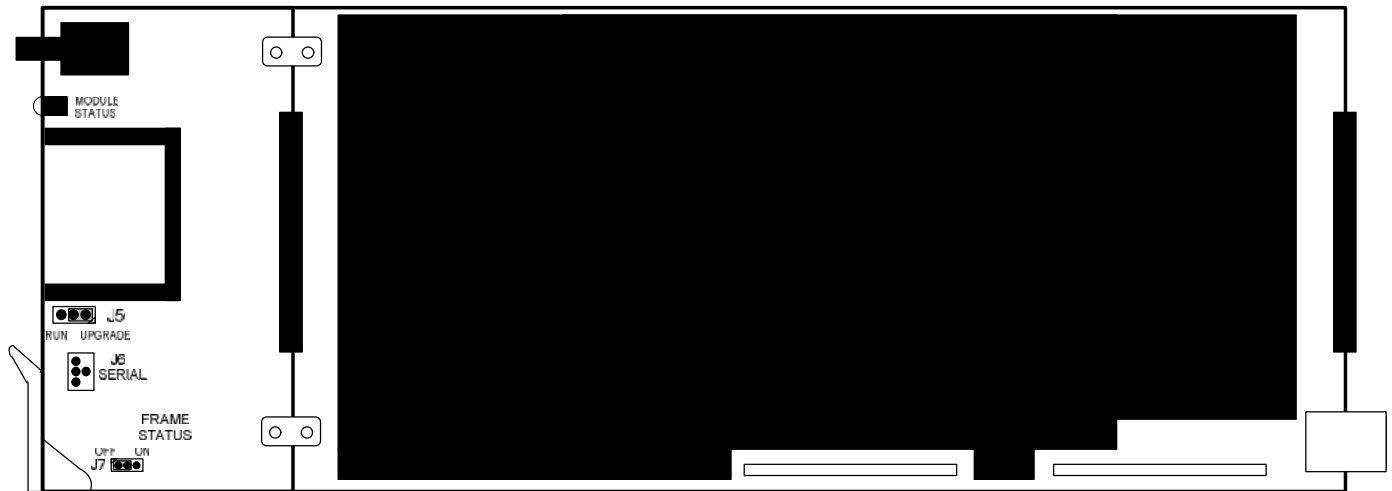


Figure 6-1: Location of Jumpers – Top View Main Module

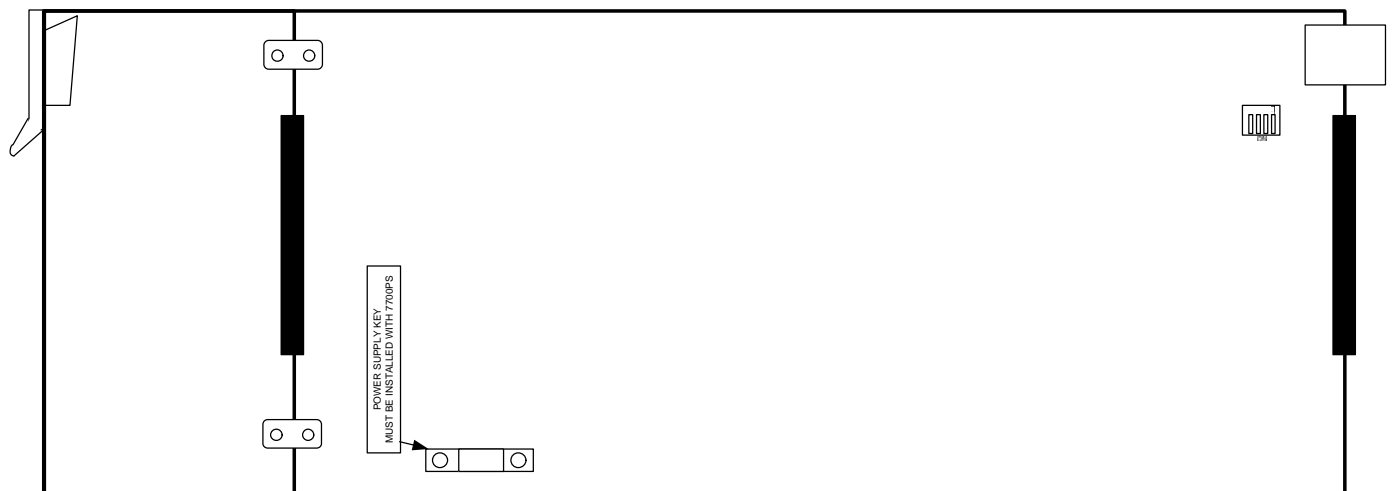


Figure 6-2: Location of Jumpers – Bottom View Main Module

6.2. SELECTING WHETHER LOCAL FAULTS WILL BE MONITORED BY THE GLOBAL FRAME STATUS

FRAME STATUS: The FRAME STATUS jumper J7 is located near the front of the board and close to the card ejector. The FRAME STATUS jumper determines whether local faults (as shown by the Local Fault indicator) will be connected to the frame's global status bus.

To monitor faults on this module with the frame status indicators (on the PS FRAME STATUS LED's and on the Frame's Fault Tally output) install this jumper in the On position. (Default)

When this jumper is installed in the Off position, local faults on this module will not be monitored by the frame status.

6.3. CONFIGURING THE MODULE FOR FIRMWARE UPGRADES

Firmware updates can be performed using two methods. The preferred method is an Ethernet based upload of firmware using VistaLINK[®] PRO. Consult the VistaLINK[®] Pro documentation for information on how to perform an Ethernet based Upload. The second method is the serial interface based up-load of firmware using the on-card upgrade serial port described below.

6.3.1. Performing Firmware Upgrades using the Serial Interface

The following outlines the details of how to perform a serial interface based upgrade.

UPGRADE: The UPGRADE jumper (J5) is located on the top side of the main board near the front of the card and is used when firmware upgrades are being done to the module using the serial port method. For normal operation it should be switched to the *RUN* position as shown in the diagrams above. See the *Upgrading Firmware* chapter in the front of the binder for more information.

To upgrade the firmware in the module unit pull it out of the frame. Move Jumper J5 into the *UPGRADE* position. Install the Upgrade cable provided (located in the vinyl pouch in the front of this manual) onto header J6 at the card edge. Re-install the module into the frame. Run the upgrade as described in *Upgrading Firmware* chapter. Once the upgrade is complete, remove the module from the frame, move J5 into the *RUN* position, remove the upgrade cable and re-install the module. The module is now ready for normal operation.

Configure the port settings of the terminal program as follows:

Baud	115200
Data bits	8
Parity	None
Stop bits	2
Flow Control	None

6.4. SELECTING WHETHER THE GENLOCK REFERENCE INPUT IS TERMINATED

TERM: The micro DIP switch on the bottom of the board (near the connector) is used to terminate the genlock loop input. When DIP Switch 1 is set to “ON” there is in the 75 ohm terminating resistor placed between the genlock input and ground. When DIP Switch 1 is set in the “OFF” position the genlock input will be high impedance. Leave DIP SWITCH 2, 3 and 4 in the OFF position.

6.5. 7832SVP SERIES “SLOT BLOCKER”

The 7832SVP modules can be installed in either the Evertz 7700 series or the 7800 series frames. The 7832SVP modules can fit into two slots in 7800 series frames because the 7800 series frames allow modules to consume more power on a per slot basis than the 7700 series frames. The 7832SVP-3G version of the card is below the power allotment for two slots in the 7700 or 7800 series frames, so no special action is required.

The 7832SVP-444-3G version of the card is below the power allotment for two slots in the 7800 series frames, so no special action is required. When a 7832SVP-444-3G module is installed in the 7700 series frame, the module must occupy 3 slots to ensure that the frame power is managed properly. This is accomplished by installing a “Slot Blocker” on the bottom side of the board. If the “Slot Blocker” is not installed on the card and the card is inserted into the 7700 series frame, the card will not power-up. When installing the card in a 7800 series frame, the “Slot Blocker” may be removed and it will power-up and operate normally. If the “Slot Blocker” remains installed and the card is inserted into the 7800 series frame, the card will also power-up and operate normally.



The Slot blocker must be removed if the module is installed in the 1R 7801FR frame, otherwise it will not fit.

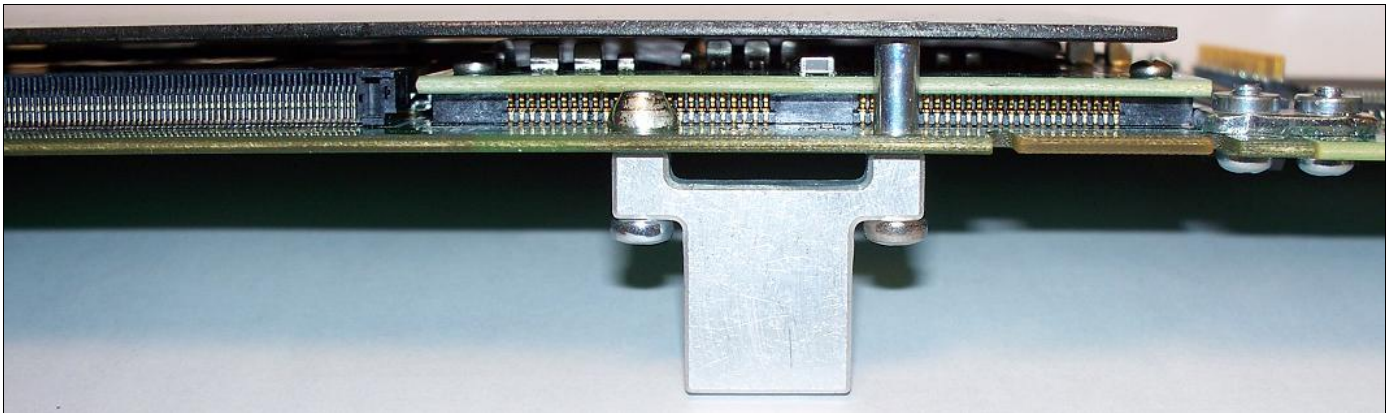


Figure 6-3: Slot Blocker

6.6. SETTING THE IPADDRESS USING THE SERIAL PORT

Through the card-edge’s serial port, and using the serial 7800 upgrade cable connected to a PC’s serial port running HyperTerminal (or equivalent), the 7832SVP module’s IP address, subnet, and gateway address can be set. The 7800 upgrade cable supplied with the 7800FR frame is a multi-coloured ribbon cable with a six pin header socket on one end and a female 9 pin D connector on the other end, (Evertz part number WA-S76) which is normally in the vinyl pouch at the front of the manual binder.

Configure the port settings of the terminal program as follows:

Baud	115200
Data bits	8
Parity	None
Stop bits	2
Flow Control	None

Once the card is powered-up, the HyperTerminal connection displays boot-up status information and once complete, press the <ENTER> key to see the serial terminal prompt ">"

The following serial port commands are used to configure the network settings of the card. Note that commands are lower case.

show_ip	Shows the current IP Address, subnet mask and gateway
set_ip xxx.xxx.xxx.xxx	Sets the IP address where xxx.xxx.xxx.xxx is the IP Address
set_subnet xxx.xxx.xxx.xxx	Sets the IP subnet mask where xxx.xxx.xxx.xxx is the subnet mask
set_gateway xxx.xxx.xxx.xxx	Sets the IP gateway where xxx.xxx.xxx.xxx is the gateway address

6.7. LOADING LOOK UP TABLES TO THE COMPACT FLASH USING FTP

There are two ways to load Look up tables to the compact flash. You can remove the Compact Flash and store them directly using your computer. Alternately, you can send them to the 7832SVP-444-3G using IP based File Transfer Protocol (FTP)

You will need the following equipment in order to upload the LUT files:

- **Computer with Ethernet network port.**
- **Appropriate Ethernet cable as outlined in section Error! Reference source not found..**
- **Look-up Table files.**

6.7.1. Step 1 – Determine the IP Addresses

Before any FTP (file transfer protocol) uploads can be initiated, the user must determine the IP address of the 7832SVP card. Both the PC/laptop and the unit must be on the same subnet for the FTP upgrade to work properly. Follow the procedure outlined in section 5.15.4 to 5.15.8 to set the IP address for the card.

6.7.2. Step 2 – Establishing a Valid Network Connection

1. Connect a network cable from the computer to a network router/hub and a second card from the network router/hub to the card. If you make a direction connection from the computer to the card you will need a network crossover cable.
2. Open a DOS window. This can be accomplished by using the run command under the start button, type "cmd". See Figure 6-4 for more information.

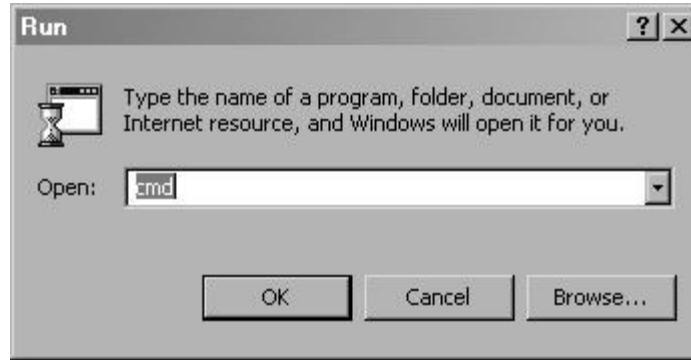


Figure 6-4: Run Window

3. “Ping” the IP address of the module being upgraded to confirm that you have a valid network connection. In the command prompt window type: `ping xxx.xxx.xxx.xxx` (IP address of the module) and press <Enter>.

If a proper network connection has been established, a “reply” is displayed on the DOS window. If there is a faulty network connection, a “Destination Host Unreachable” message is provided. If this occurs, either the IP addresses of the nodes should be verified or the network (Ethernet) cable is faulty. Contact your network administrator if you are having difficulties establishing a connection to the card.

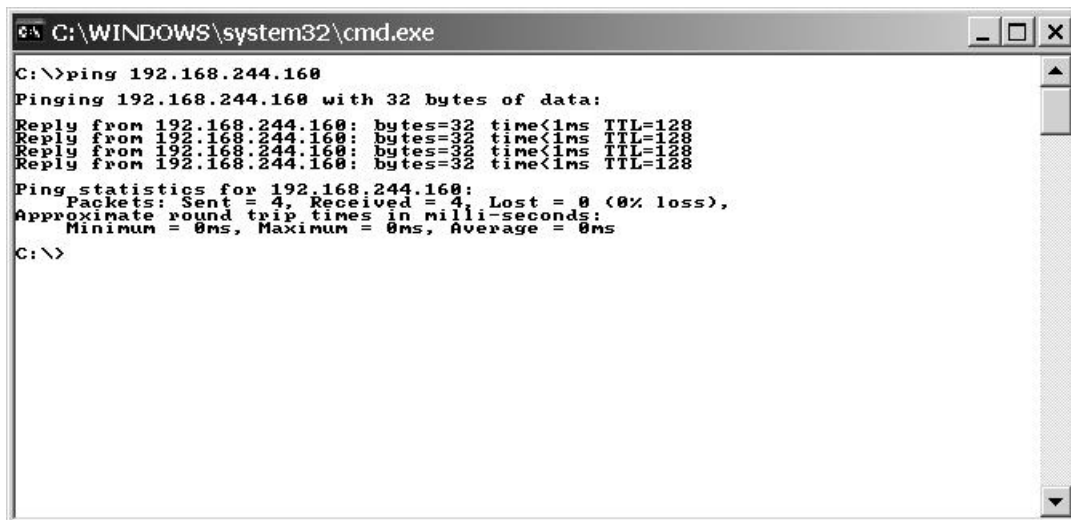


Figure 6-5: Pinging the IP Address

6.7.3. Step 3 – Uploading the Look Up table

4. Obtain the new Look Up table files place them on the local drive of the PC.
5. In the command prompt window type: `ftp xxx.xxx.xxx.xxx` (IP address of the module).
6. Press the <Enter> key when prompted for a “Username”.
7. Press the <Enter> key when prompted for a “Password”. A message indicating that you have logged in is displayed.
8. At the “FTP>” prompt type `hash` to turn on the progress indicator during the ftp upload.
9. At the “FTP>” prompt type: `put "the name of the lut file.lut_"` to upload the LUT file to the card.
(For example: `put LUT1.lut_`) If the LUT file is not local to where you are performing the ftp, then include the path with the name (For example: `put c:\lut\ LUT1.lut_`).
10. At the “FTP>” prompt type: `get "the name of the lutfile.txt"` to download the LUT file from the card to the computer. (For example: `get LUT1.lut_`) The file will be saved in the local directory on the computer.
11. File transfer occurs in several seconds, and the DOS window displays the “FTP>” prompt again.
12. Upload additional LUT files following step 9 or download additional files following step 10.
13. When you are finished, at the “FTP>” prompt type `quit` to exit the FTP procedure.

7. MENU QUICK REFERENCE

VIDEO

- Input Video
 - standard
- Frame Rate
- Raster
- Sampling Structure
- Input Interface
- Input Select
- Input Mode
- HD Output Interface
- 3G Output Interface
- 444 Output
 - Interface
- PGM H Phase
- PGM V Phase
- Top-and-Bottom
 - Order
- Side-by-side Order
- Reference Source
- Loss of Single Input
- Loss of Both Inputs
- Auxiliary Outputs
 - LE Link B Out
 - Mode
 - RE Link B Out
 - Mode
 - Aux 1 Out Mode
 - Aux 2 Out Mode
 - Aux 3 Out Mode
 - OSD Background
- Status Display
 - Enable
- Status Display
 - Mode

ANC DATA

- ANC Forwarding
 - PGM
- ANC Forwarding
 - 3D Fmt
- ANC Forwarding
 - Source
- Timecode - PGM
- Timecode - 3D Fmt
- Timecode Source

AUDIO

- Audio Forwarding
 - PGM
- Audio Forwarding
 - 3D Fmt
- Audio Source
 - SRC Mode

STEREO VIDEO ADJUSTMENT

- Input Swap
- LE H Flip
- LE V Flip
- LE H Alignment
- LE V Alignment
- RE H Flip
- RE V Flip
- RE H Alignment
- RE V Alignment
- Single Eye Mode
- Single Eye Depth
- Aux HIT
- Aux HIT Depth

STM

- (+STM Option only)
- Auto Compensation
- Manual Compensation
- Additional Delay

LUT

- (444 version only)
- LUT Enable
- Load LUT

MIXER 1

- Mode
- Difference Order
- Anaglyph Mode
- H Split Marker
- H Split Offset
- H Split Order
- Tile H Size
- Tile V Size
- Tile Marker
- Tile Order
- Wiggle Time
- Depth Ruler
- Ruler Scale

MIXER 2

- (444 version only)
- Mode
- Difference Order
- Anaglyph Mode
- H Split Marker
- H Split Offset
- H Split Order
- Tile H Size
- Tile V Size
- Tile Marker
- Tile Order
- Wiggle Time
- Depth Ruler
- Ruler Scale

3D FORMATTER

- └ Output Format
- └ Output Mode
- └ Top-and-Bottom Order
- └ Side-by-Side Order
- └ Line-by-Line Order
- └ 3D Fmt H Phase
- └ 3D Fmt V Phase

GPIO

- └ GPIO 1 Mode
- └ GPIO 1 Function
- └ GPIO 2 Mode
- └ GPIO 2 Function
- └ GPIO 3 Mode
- └ GPIO 3 Function
- └ GPIO 4 Mode
- └ GPIO 4 Function
- └ GPIO 5 Mode
- └ GPIO 5 Function
- └ GPIO 6 Mode
- └ GPIO 6 Function
- └ GPIO 7 Mode
- └ GPIO 7 Function
- └ GPIO 8 Mode
- └ GPIO 8 Function

UTILITIES

- └ Preset Selection
- └ Recall Preset
- └ Store Preset
- └ IP Address
- └ IP Subnet Mask
- └ IP Gateway
- └ About...

8. VISTALINK® REMOTE MONITORING/CONTROL

8.1. What is VistaLINK®?

VistaLINK® is Evertz's remote monitoring and configuration platform which operates over an Ethernet network using Simple Network Management Protocol (SNMP). SNMP is a standard computer network protocol that enables different devices sharing the same network to communicate with each other. VistaLINK® provides centralized alarm management, which monitors, reports, and logs all incoming alarm events and dispatches alerts to all the VLPro Clients connected to the server. Card configuration through VistaLINK® PRO can be performed on an individual or multi-card basis using simple copy and paste routines, which reduces the time to configure each module separately. Finally, VistaLINK® enables the user to configure devices in the network from a central station and receive feedback that the configuration has been carried out.

There are 3 components of SNMP:

1. An SNMP manager also known as a Network Management System (NMS) is a computer running special software that communicates with the devices in the network. Evertz VistaLINK® Pro Manager graphical user interface (GUI), third party or custom manager software may be used to monitor and control Evertz VistaLINK® enabled products.
2. Managed devices (such as 7832SVP), each with a unique address (OID), communicate with the NMS through an SNMP Agent. Evertz VistaLINK® enabled 7700/7800 series modules reside in the 3RU 7700FR-C or 7800 series MultiFrame and communicate with the manager via the 7700FC VistaLINK® frame controller module, which serves as the Agent. Starting with firmware version 7.0, the 7832SVP can also communicate directly with the NMS through its own Ethernet connection. In this configuration the 7832SVP communicates directly with the manager via its on-board mini-Agent.
3. A virtual database known as the Management Information Base (MIB) lists all the variables being monitored which both the Manager and Agent understand. Please contact Evertz for further information about obtaining a copy of the MIB for interfacing to a third party Manager/NMS.

8.1.1. Connecting to VistaLINK® using the Frame Controller

For more information on connecting and configuring the VistaLINK® network, see the 7700FC Frame Controller chapter. When connecting the 7832SVP through the 7700FC you will need to make sure you are using the VistaLINK® JAR file called VLProProd_SVP.jar. The latest Firmware and VistaLINK® JAR files can be downloaded from the Evertz web site <http://www.evertz.com/downloads/>.

8.1.2. Connecting to VistaLINK® using the On-Board Mini-Agent

To configure the 7832SVP to operate through its on-board mini-Agent you will have to configure the network settings for the card. This may be done through the *IP Address*, *IP Subnet Mask* and *IP Gateway* menu items on the *UTILITIES* menu (see sections 5.15.4 to 5.15.8). You can also configure the network settings using the debug serial port (see section 6.6). Once you have configured the network settings, connect the 7832SVP to your computer running the VistaLINK® software. When connecting to the 7832SVP directly using the on-board mini-Agent you will need to make sure you are using the VistaLINK® JAR file called VLProProd_SVPmini.jar. The latest Firmware and VistaLINK® JAR files can be downloaded from the Evertz web site <http://www.evertz.com/downloads/>.

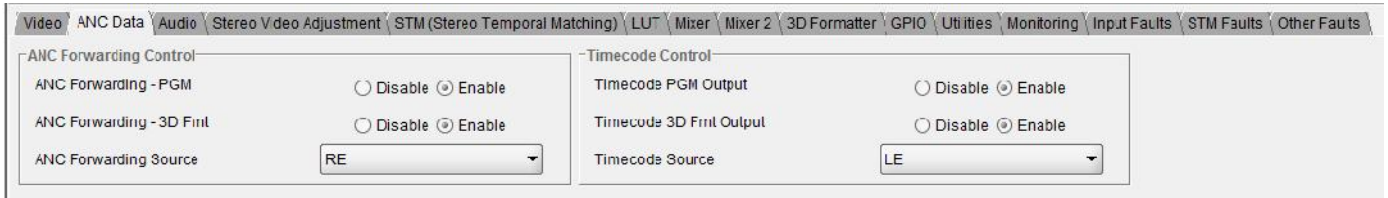
8.2. VistaLINK® GUI SCREENS

The following screen shots show the various tabs of the VistaLINK® configuration screens for this module. (Screen shots taken from VistaLINK® JAR file version 48.)

8.2.1. Video Configuration

Video		ANC Data		Audio		Stereo Video Adjustment		STM (Stereo Temporal Matching)		LUT		Mixer		Mixer 2		3D Formatter		GPIO		Utilities		Monitoring		Input Faults		STM Faults		Other Faults		
Video Control																														
Input Video Standard	Auto											Loss of single input mode	Duplicate from remaining input																	
Frame Rate	29.97Hz											Loss of both inputs mode	Red(L) / Green(R)																	
Raster	1920 x 1080i											Input Frame Compatible Mode	Full Resolution																	
Sampling Structure	YCbCr 4:2:2 10 bits/sample											PGM H Phase	0																	
Input Interface	1.5G each eye - ST 292-2											PGM V Phase	0																	
HD Output Interface	Follow Input											Dual Stream Input Select	Left Eye																	
3G Output Interface	Follow Input											Frame Compatible Input Select	Left Eye																	
444 Output Interface	Follow Input																													
Current Output Carrier	1.5G each eye - ST 292-2																													
Input Select	Normal																													
Video Monitor																														
Detected BNC Standard																														
Left in A	1080i/59.94 (1.5GHz SMPTE ST 292-1)																													
Left in B	Not present																													
Right in A	1080i/59.94 (1.5GHz SMPTE ST 292-1)																													
Right in B	Not present																													
Card Reference																														
Reference Source	Video											Reference Status	Video																	
											External Genlock Video Standard	Not present																		
Link B/Aux 4 and 5 Outputs																														
LE Link B / Aux 4	OSD																													
RE Link B / Aux 5	RE Link B																													
Aux Outputs																														
Aux 1 Out Mode	Mixer											OSD Output Background	3D Formatter																	
Aux 2 Out Mode	OSD																													
Aux 3 Out Mode	3D Formatter																													
Enable Status Display	<input type="radio"/> Disable <input checked="" type="radio"/> Enable											Status Display Mode	Configuration																	
											Status Display Justified	Bottom Justified																		

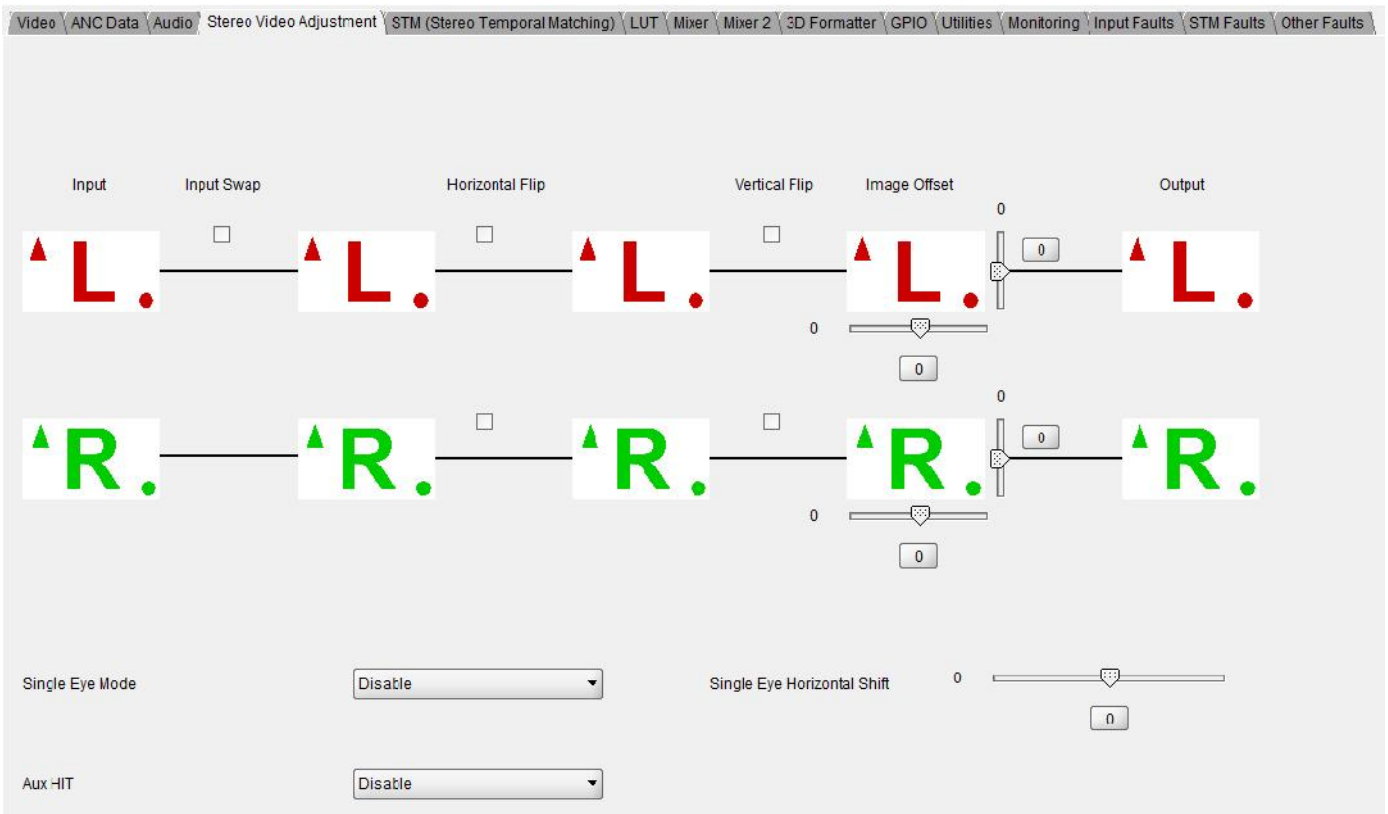
8.2.2. Ancillary Data and Timecode Configuration



8.2.3. Audio Configuration



8.2.4. Stereo Video Adjustment Configuration



8.2.5. Stereo Temporal Matching Configuration (STM Option only)

Configuration

Auto Compensation:

Input Offset:

Compensation:

Output Offset:

Additional Frames: LE RE

Total Frames of Delay:

Manual Compensation: Delay LE Delay RE 0 Frames

Confidence:

8.2.6. Look Up Table Configuration (444 version only)

Control

Aux Output LUT:

LUT Selection:

8.2.7. Mixer and Mixer 2 Configuration

Mixer Mode:

Depth Ruler: Disable Enable

Ruler Scale:

Anaglyph Mode:

8.2.8. 3D Formatter Output Configuration

Video | ANC Data | Audio | Stereo Video Adjustment | STM (Stereo Temporal Matching) | LUT | Mixer | Mixer 2 | 3D Formatter | GPIO | Utilities | Monitoring | Input Faults | STM Faults | Other Faults

3D Formatter Output Video Format: 1080p 3G Level A

3D Formatter Output Mode: Line-by-Line

3D Fmt H Phase: 0

3D Fmt V Phase: 0

Line-by-Line Order: LE First

8.2.9. GPIO Configuration

Refresh | 1.C | Apply | Status | Refreshing | Logger

Video | ANC Data | Audio | Stereo Video Adjustment | STM (Stereo Temporal Matching) | LUT | Mixer | Mixer 2 | 3D Formatter | GPIO | Utilities | Monitoring | Input Faults | STM Faults | Other Faults

GPIO Mode	GPIO Function
GPIO1: Input	GPIO1: Recall User Preset 1
GPIO2: Input	GPIO2: LE H Shift Increment
GPIO3: Input	GPIO3: Toggle Mixer Mode
GPIO4: Input	GPIO4: AUX HIT Enable
GPIO5: Input	GPIO5: AUX HIT Dec
GPIO6: Input	GPIO6: AUX HIT Zero
GPIO7: Input	GPIO7: None
GPIO8: Input	GPIO8: None

GPIO Active State	GPIO Sensitivity
GPIO 1: Active Low	GPIO 1: Edge Sensitive
GPIO 2: Active Low	GPIO 2: Edge Sensitive
GPIO 3: Active Low	GPIO 3: Edge Sensitive
GPIO 4: Active Low	GPIO 4: Edge Sensitive
GPIO 5: Active Low	GPIO 5: Edge Sensitive
GPIO 6: Active Low	GPIO 6: Edge Sensitive
GPIO 7: Active Low	GPIO 7: Edge Sensitive
GPIO 8: Active Low	GPIO 8: Edge Sensitive

GPIO Update Rate

GPIO Update Mode: Time

GPIO Update Rate: 5 ms

8.2.10. Utilities Configuration

Video \ ANC Data \ Audio \ Stereo Video Adjustment \ STM (Stereo Temporal Matching) \ LUT \ Mixer \ Mixer 2 \ 3D Formatter \ GPIO \ Utilities \ Monitoring \ Input Faults \ STM Faults \ Other Faults

IP controls
 Note After applying changes the module must be rebooted in order for the changes to take effect.

IP Address: 192.108.77.22
 IP Subnet Mask: 255.255.255.0
 IP Default Gateway: 0.0.0.0

Snmp Trap Address Controls

Snmp Trap Address 1: 0.0.0.0
 Snmp Trap Address 2: 0.0.0.0
 Snmp Trap Address 3: 0.0.0.0
 Snmp Trap Address 4: 0.0.0.0

Presets
 Recall Preset: None
 Store User Preset: None
 Recall Sub Preset: None

Presets
 Select Label to Modify: None

Import Sub Preset to module:
 Configuration File:
 Store Sub Preset: None
 FTP SNMP

8.2.11. Monitoring Configuration

Video \ ANC Data \ Audio \ Stereo Video Adjustment \ STM (Stereo Temporal Matching) \ LUT \ Mixer \ Mixer 2 \ 3D Formatter \ GPIO \ Utilities \ Monitoring \ Input Faults \ STM Faults \ Other Faults

In A Monitor

	Left	Right
Input Video Standard	1080i/59.94 (1.5GHz SMPTE ST 292-1)	1080i/59.94 (1.5GHz SMPTE ST 292-1)
Input Video Carrier Rate	1.5CHz SMPTE ST 292 1	1.5CHz SMPTE ST 292 1
Input Video Frame Rate	29.97 Hz	29.97 Hz
Input Video Raster Size	1920 x 1080i	1920 x 1080i
Input Video Payload ID	Not present	Nct present
Input Video Payload ID Description	Not present	Nct present

In B Monitor

	Left	Right
Input Video Standard	Not present	Nct present
Input Video Carrier Rate	Unknown	Unknown
Input Video Frame Rate	Unknown	Unknown
Input Video Raster Size	Unknown	Unknown
Input Video Payload ID	Not present	Nct present
Input Video Payload ID Description	Not present	Nct present

Out Monitor
 3D Formatter Output Video Standard: 1080p/59.94 (3GHz SMPTE ST 425-1 A)

Video Delay Monitor

Delay Left To PGM	66.763 ms
Delay Right To PGM	66.763 ms
Delay Left To 3D	116.815 ms
Delay Right To 3D	116.815 ms

STM Monitor

Input Offset	LE & RE Aligned
Compensation	No compensation
Output Offset	LE & RE Aligned
	LE RE
Total Frames of Delay	1 1
Confidence	9

Miscellaneous Monitor
 Temperature: 57 Celcius

8.2.12. Input Faults Configuration

Video | ANC Data | Audio | Stereo Video Adjustment | STM (Stereo Temporal Matching) | LUT | Mixer | Mixer 2 | 3D Formatter | GPIO | Utilities | Monitoring | **Input Faults** | STM Faults | Other Faults

Input Trap Enable	Input Trap Status
<input checked="" type="checkbox"/> Left Eye A Video Not Present	<input type="checkbox"/> Left Eye A Video Not Present
<input checked="" type="checkbox"/> Left Eye B Video Not Present	<input type="checkbox"/> Left Eye B Video Not Present
<input checked="" type="checkbox"/> Right Eye A Video Not Present	<input type="checkbox"/> Right Eye A Video Not Present
<input checked="" type="checkbox"/> Right Eye B Video Not Present	<input type="checkbox"/> Right Eye B Video Not Present
<input checked="" type="checkbox"/> Left Eye Or Right Eye Video Not Present	<input type="checkbox"/> Left Eye Or Right Eye Video Not Present
<input checked="" type="checkbox"/> Left In A Video Not Valid	<input type="checkbox"/> Left In A Video Not Valid
<input checked="" type="checkbox"/> Left In B Video Not Valid	<input type="checkbox"/> Left In B Video Not Valid
<input checked="" type="checkbox"/> Right In A Video Not Valid	<input type="checkbox"/> Right In A Video Not Valid
<input checked="" type="checkbox"/> Right In B Video Not Valid	<input type="checkbox"/> Right In B Video Not Valid
<input checked="" type="checkbox"/> Left Eye Or Right Eye Video Not Valid	<input type="checkbox"/> Left Eye Or Right Eye Video Not Valid
<input checked="" type="checkbox"/> Audio Not Present	<input type="checkbox"/> Audio Not Present
<input checked="" type="checkbox"/> Time Code Not Present	<input type="checkbox"/> Time Code Not Present
<input checked="" type="checkbox"/> Left Eye And Right Eye Not Phase Aligned	<input type="checkbox"/> Left Eye And Right Eye Not Phase Aligned
Phase Align Threshold: +/- 0.5 lines	
<input checked="" type="checkbox"/> Left Eye And Right Eye Not Clock Locked	<input type="checkbox"/> Left Eye And Right Eye Not Clock Locked

8.2.13. STM Faults Configuration (STM Option only)

Video | ANC Data | Audio | Stereo Video Adjustment | **STM (Stereo Temporal Matching)** | LUT | Mixer | Mixer 2 | 3D Formatter | GPIO | Utilities | Monitoring | Input Faults | STM Faults | Other Faults

STM Trap Enable	STM Tap Status
<input checked="" type="checkbox"/> STM Left Eye And Right Eye Identical	<input type="checkbox"/> STM Left Eye And Right Eye Identical
Difference Threshold: 0	
Difference Timeout: 0 Secs	
<input checked="" type="checkbox"/> STM Input Offset Not Zero	<input type="checkbox"/> STM Input Offset Not Zero
<input checked="" type="checkbox"/> STM Output Offset Not Zero	<input type="checkbox"/> STM Output Offset Not Zero

8.2.14. Other Faults Configuration

Video | ANC Data | Audio | Stereo Video Adjustment | STM (Stereo Temporal Matching) | LUT | Mixer | Mixer 2 | 3D Formatter | GPO | Utilities | Monitoring | Input Faults | STM Faults | Other Faults

Output Faults

Output Trap Enable

- Display Formatter Video Std Change
- HIT Active
- Single Eye Mode Active

Output Trap Status

- Display Formatter Video Std Change
- HIT Active
- Single Eye Mode Active

Reference Faults

Reference Trap Enable

- Genlock Signal Not Present
- Genlock Signal Not Valid
- Card Reference Not Present

Reference Trap Status

- Genlock Signal Not Present
- Genlock Signal Not Valid
- Card Reference Not Present

Miscellaneous Faults

Misc Trap Enable

- Temperature Warning
- Temperature Warning Threshold: 80°C
- Temperature Error
- Temperature Error Threshold: 85°C

Misc Trap Status

- Temperature Warning
- Temperature Error

8.3. Working with Sub-Presets Using VistaLINK®

Within VistaLINK® we will use CONFIGURATION views to define user Sub-Presets. By using CONFIGURATIONS in VistaLINK®, we can define *exactly* what card parameters we want to change when a Sub-Preset is loaded. This avoids having to load a full set of card parameters every time a preset is recalled. The following example will walk through the process of defining and loading two Sub-Presets that have two different Mixer settings.

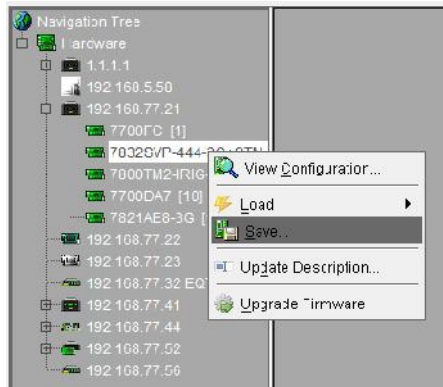
Sub-Preset files may be created using VistaLINK® Standalone or VistaLINK® Server/Client. The following procedure outlines how to define and save a Sub-Preset file within VistaLINK® Standalone.

8.3.1. STEP 1 – Getting Started

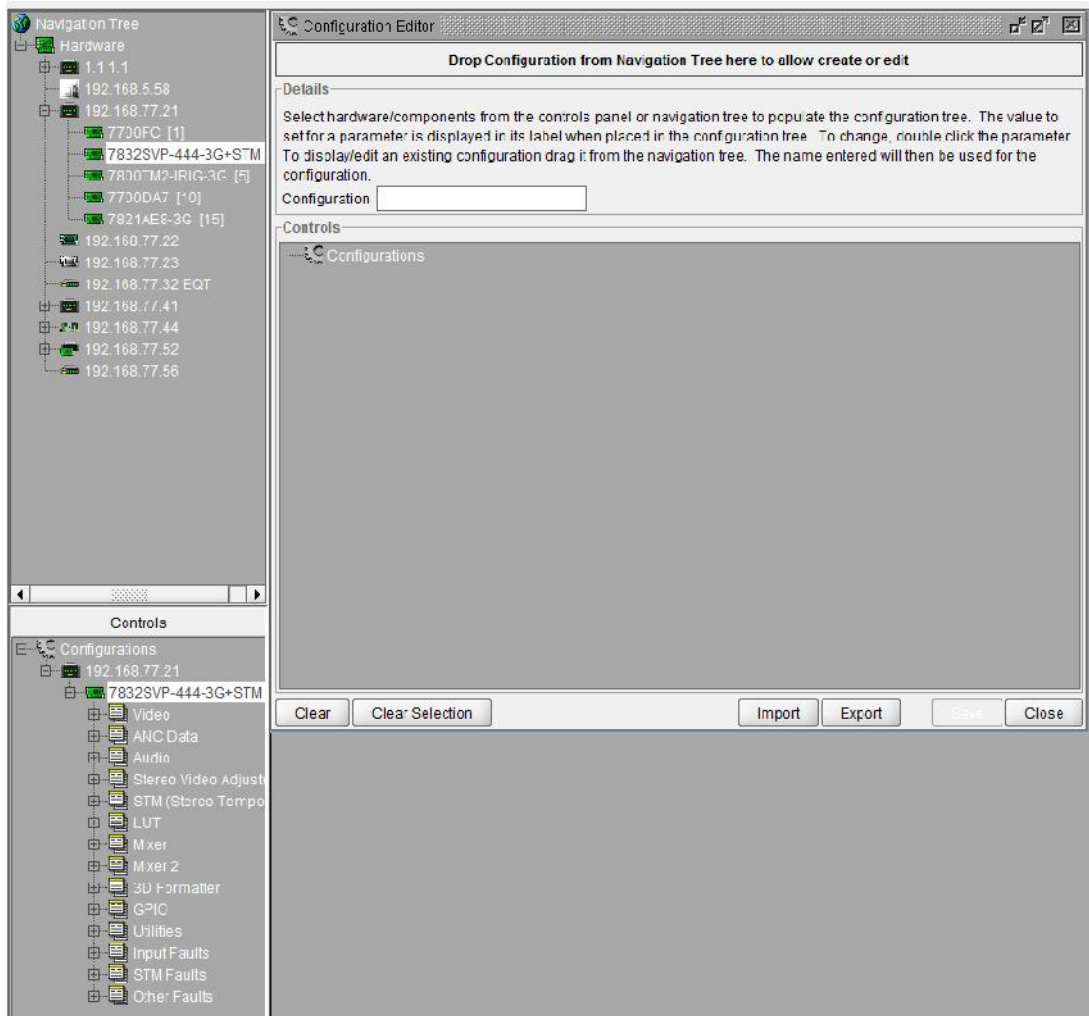
- Ensure you are running a recent version of VistaLINK®.
- This tutorial will assume that you are using VistaLINK® Stand-alone.
- For information on how to define and save a Sub-Preset file within VistaLINK® Server/Client contact Evertz Customer Support.
- Ensure that your JAR file is of a recent build.
- Ensure that you have recent 7832SVP series firmware (version 11.02 or later) installed.

8.3.2. STEP 2 - Define Sub-Presets

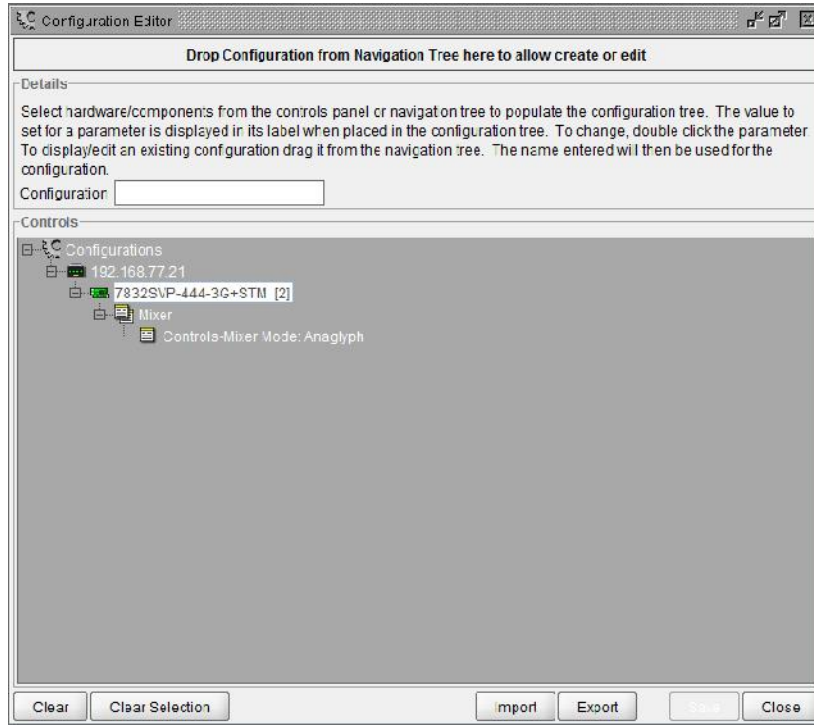
Open VistaLINK® Standalone and navigate the hardware tree to the card in question. Right click on the card and select, SAVE as shown below.



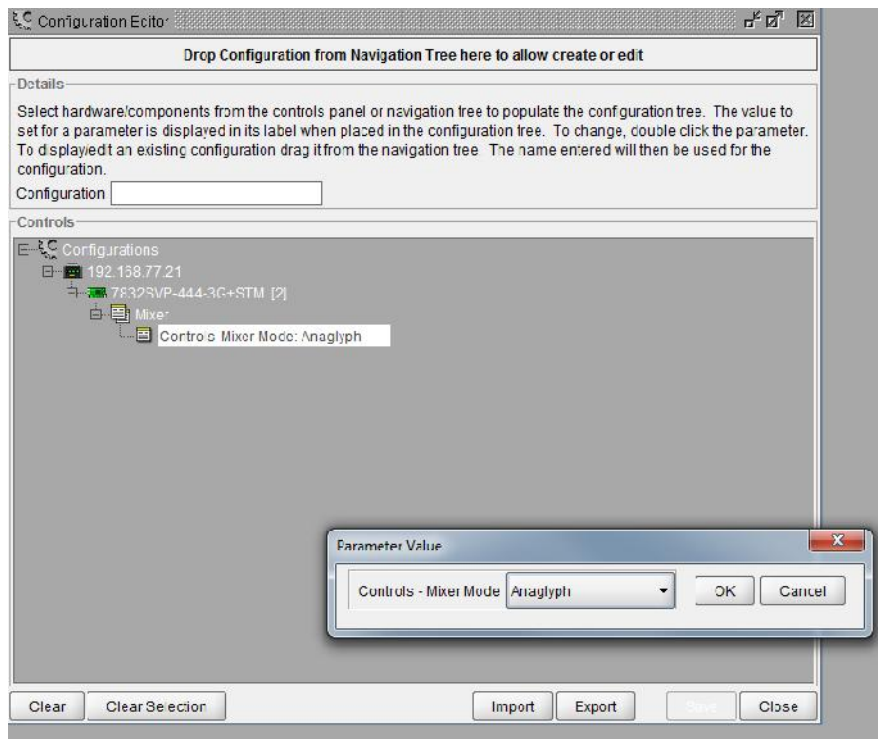
This will open the configuration editor screen as shown below. The card you right clicked on previously will show in the CONTROLS section of VistaLINK®.



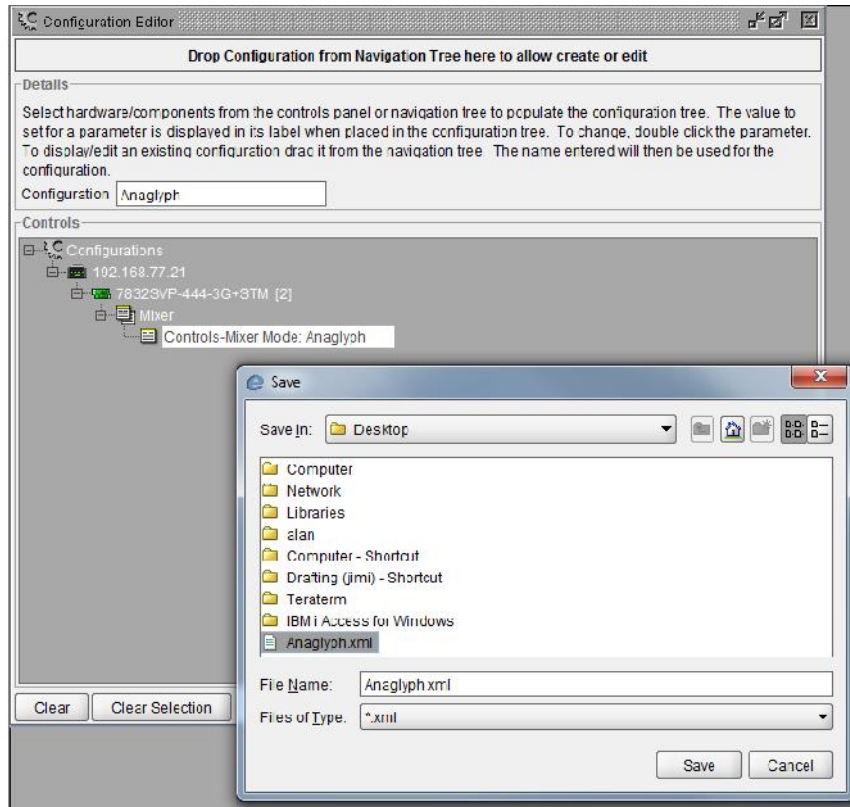
Navigate through the card control tree to the *Mixer* and then to the *Mixer Mode* control. Left click on the *Mixer Mode* control and then drag/drop that control into the CONFIGURATION EDITOR. Left-click on the Mixer control in the CONFIGURATION EDITOR and you should see the *Mixer Mode* control as shown below.



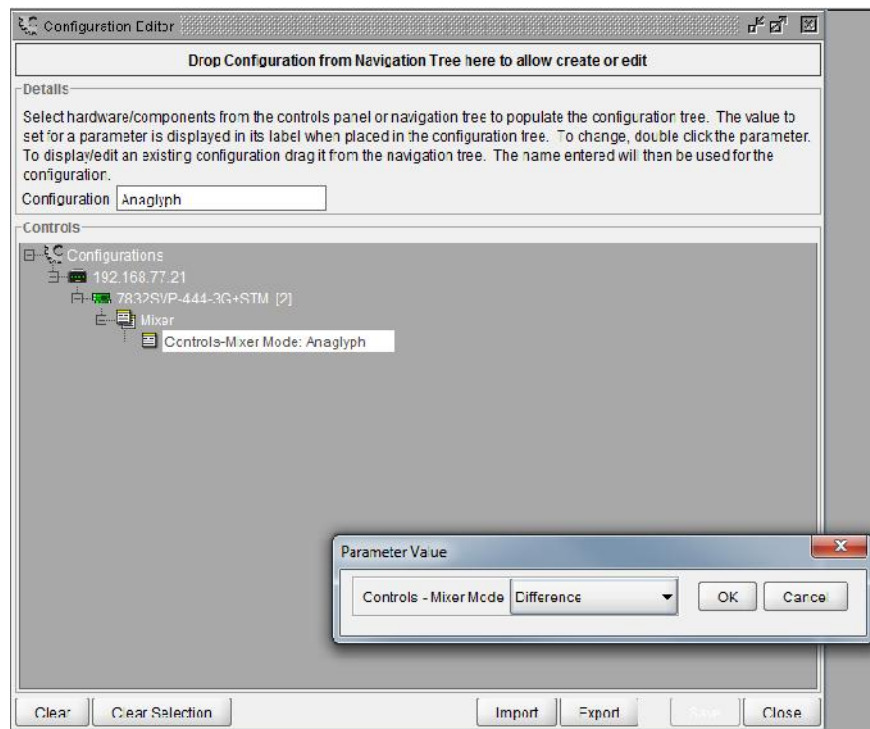
Double click on the *Mixer Mode* control and set the type of Mixer mode that you wish to use and click OK.



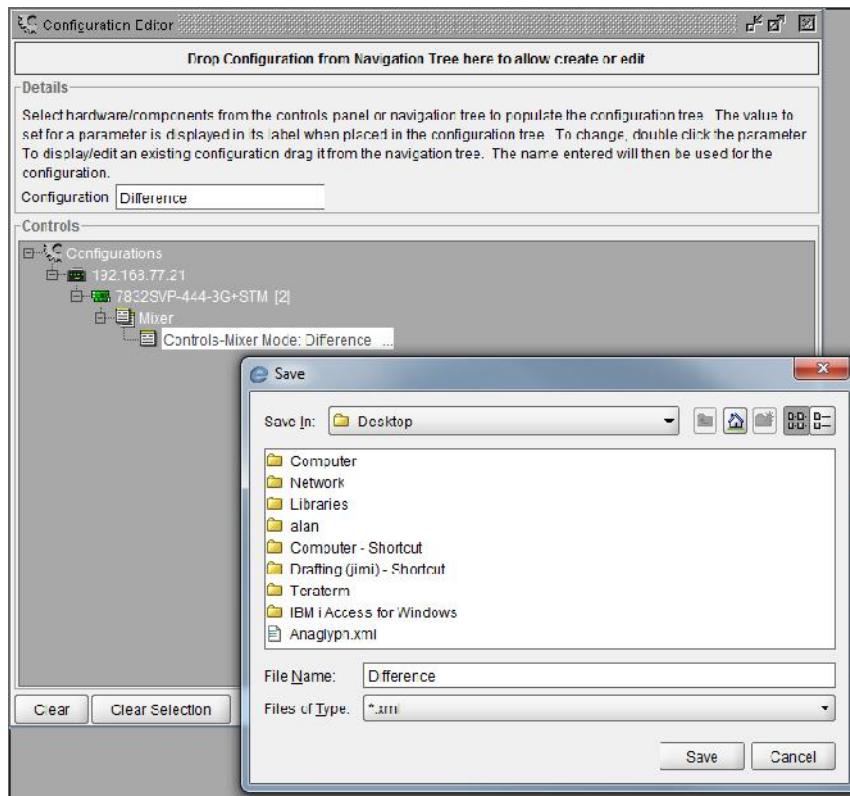
Export the Configuration file by selecting a unique name for the configuration (*Anaglyph* as shown below) and then pressing the EXPORT button. Select a unique file name and directory into which you will save the configuration file. Make a note of where you store the file for later importing.



Double click on the *Mixer Mode* control and set the type of Mixer mode that you wish to use for the second Sub-Preset and click OK.



Export the second Configuration file by selecting a unique name for the configuration (*Difference* as shown below) and then pressing the EXPORT button. Select a unique file name and directory into which you will save the configuration file.



Once you have exported all the Sub-Preset files you want, you can close the CONFIGURATION EDITOR screen

8.3.3. STEP 3 - Loading Sub-Presets

Proceed to the UTILITIES control tab for the 7832SVP. The screen should look as shown in section 8.2.10.

Load the Anaglyph.xml file created above (or whatever name you gave Sub-Preset 1) to the card's internal Sub-Preset memory by Browsing to the file. The figure below shows the process of browsing to the desired configuration file.

Select the Sub-Preset memory that you want to store the Sub-Preset in using the *Store Sub-Preset* Control. VistaLINK® will prompt you to enter a user friendly name for the preset (in place of the sub x name). After entering the desired Sub-Preset then press the LOAD button.

192.130.77.21, 7032SVP-444-30+STM [2]: Configuration

Refresh 1.0 Apply Status Refreshing X Logger

Video ANC Data Audio Stereo Video Adjustment STM (Stereo Temporal Matching) LUT Mixer Mixer 2 3D Formatter GPIO Utilities Monitoring Input Faults STM Faults Other Faults

IP controls
 Note: After applying changes the module must be rebooted in order for the changes to take effect.
 IP Address: 192.168.77.22
 IP Subnet Mask: 255.255.255.0
 IP Default Gateway: 0.0.0.0

Snmp Trap Address Controls
 Snmp Trap Address 1: 0.0.0.0
 Snmp Trap Address 2: 0.0.0.0
 Snmp Trap Address 3: 0.0.0.0
 Snmp Trap Address 4: 0.0.0.0

Presets
 Recall Preset: None
 Store User Preset: None
 Recall Sub Preset: None

Presets
 Select Label to Modify: None

Import Sub Preset to module
 Configuration File:
 Store Sub Preset: None
 FTP SNMP

Choose Configuration File...
 Look In: Desktop
 Computer Network Libraries aan Computer - Shortcut Drafting (Jim) - Shortcut Tarsterm IBM i Access for Windows Anaglyph.xml
 File Name: Anaglyph.xml
 Files of Type: *.xml
 Open Cancel

192.163.77.21, 7832SVP-447-36+STM [2]: Configuration

Refresh 1.0 Apply Status Refreshing X Logger

Video ANC Data Audio Stereo Video Adjustment STM (Stereo Temporal Matching) LUT Mixer Mixer 2 3D Formatter GPIO Utilities Monitoring Input Faults STM Faults Other Faults

IP controls
 Note: After applying changes the module must be rebooted in order for the changes to take effect.
 IP Address: 192.168.77.22
 IP Subnet Mask: 255.255.255.0
 IP Default Gateway: 0.0.0.0

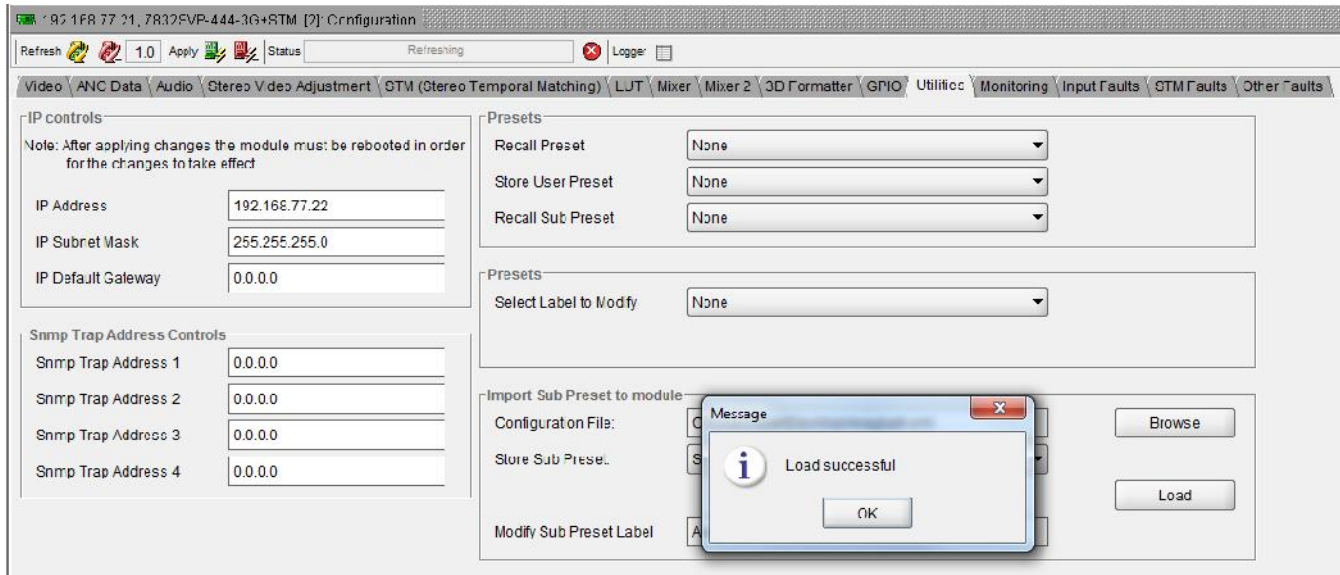
Snmp Trap Address Controls
 Snmp Trap Address 1: 0.0.0.0
 Snmp Trap Address 2: 0.0.0.0
 Snmp Trap Address 3: 0.0.0.0
 Snmp Trap Address 4: 0.0.0.0

Presets
 Recall Preset: None
 Store User Preset: None
 Recall Sub Preset: None

Presets
 Select Label to Modify: None

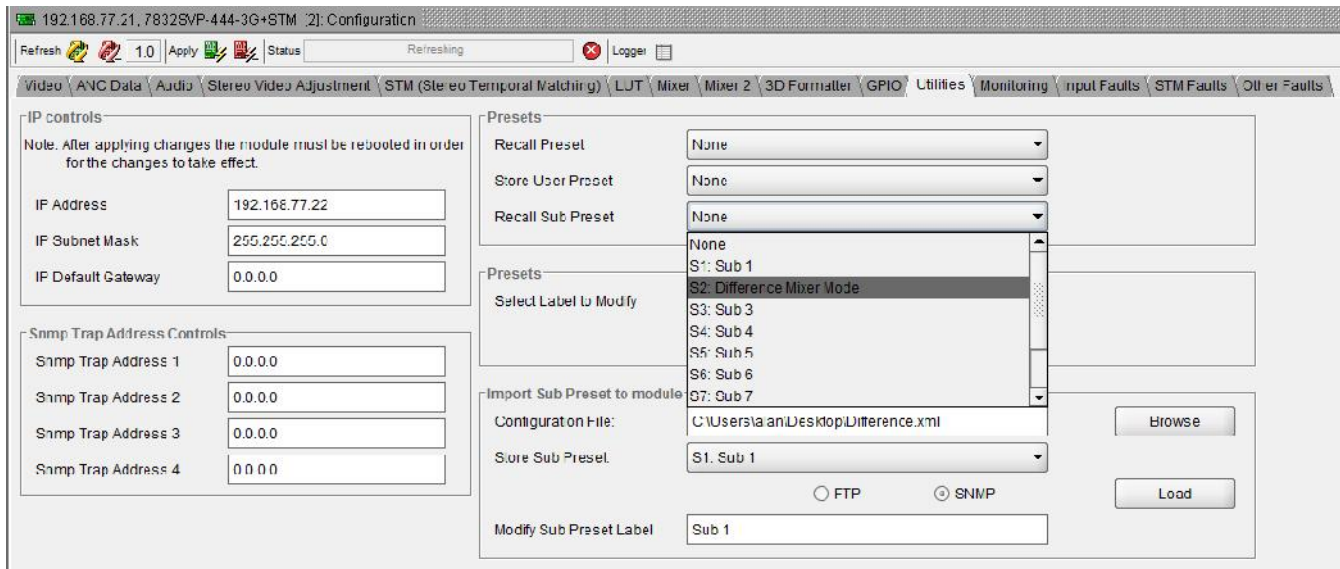
Import Sub Preset to module
 Configuration File: C:\Users\alan\Desktop\Anaglyph.xml
 Store Sub Preset: S1: Sub 1
 FTP SNMP
 Modify Sub Preset Label: Anaglyph Mixer Mode

After a SUB-PRESET is successfully loaded to the card, VLPRO will give you an acknowledgement screen as shown below.



Load Sub-Preset 2 (difference.xml) using the same procedure.

Sub-Preset 1 and Sub-Preset 2 will now be available in the 7832SVP card and can be recalled using GPI functions, or using the Recall Sub-Preset control on the Utilities tab as shown below.



After selecting the Sub-Preset to load then press the Apply button.

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