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REVISION HISTORY

REVISION	DESCRIPTION	DATE
0.1	Preliminary Version.	Jun 2005
0.2	Added VistaLINK® parameters section 7.2, 7.3 and 7.4. Minor Corrections.	Mar 2007
1.0	Update to “Top Level Menu Structure” section	July 2013

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1. OVERVIEW

The 520AE-HD series Audio and Dolby Metadata embedders insert AES audio signals into a 1.5Gb/s HDTV SDI video signal (as specified in SMPTE 299M) or into a 270Mb/s serial SDTV SDI video signal (as defined by SMPTE 272M). The companion 520AD4-HD series Audio Deembedders facilitate audio demultiplexing at the destination.

The 520AE-HD series embedders are available in 2 different versions.

Throughout this manual the term "520AE-HD series" is used to refer to all versions. When features apply only to specific versions the specific version will be listed explicitly (e.g. "520AE4-HD version" or "520AE8-HD version").

Model	AES Inputs	Metadata Input	HD/SDI Outputs	Audio Delay
520AE4-HD	4 unbalanced	1 dedicated	4	Up to 3 sec
520AE8-HD	8 unbalanced	1 shared with AES 8	1	

Before they are embedded, AES audio channel pairs may be optionally sample-rate-converted (SRC'ed) to a video-synchronous 48 kHz rate. This processing will automatically detect Dolby E / AC3 inputs and bypass the sample rate converters to maintain the integrity of the NON-PCM audio data. Also, audio channels can be independently rearranged (routed) in any desired way before embedding.

On the 520AE4-HD version, all audio channels may be independently delayed by up to 3 seconds.

The 520AE-HD series embedders also embed Dolby Metadata in the vertical ancillary data space (VANC) of HDTV signals. The 520AE4-HD version has a dedicated BNC for externally supplied Metadata while 520AE8-HD version shares its Metadata input with the AES input #8.

VistaLINK® enables control and configuration capabilities via Simple Network Management Protocol (SNMP). This offers the flexibility to manage the module status monitoring and configuration from SNMP enabled control systems such as Evertz VistaLINK® PRO locally or remotely.

Features: (all versions)

- Supports SMPTE 292M (1.5 Gb/s) or SMPTE 259M (270 Mb/s) serial digital video signals – auto-detect
- Video input relay bypass to the 1st video output, for power failure bypass protection.
- Fully configurable input audio packet annihilator (pass/delete).
- Highest performance Sample Rate Converters (to video-synchronous 48kHz) on all AES inputs, with automatic protection of Dolby streams. The conversion can be forced OFF, if so desired.
- Audio channels to be embedded are selectable from any of the input audio channels (full audio router)
- 1 Dolby Metadata input (unbalanced RS485)
- Dolby Metadata VANC embedder (selectable line, group ID, and sub-ID)
- Monitoring headphone jack with user selected stereo channel
- Card edge LEDs for module status, video and audio present
- Card edge display for miscellaneous card status & audio channel peak level bar graphs (includes detection of PCM vs. Dolby audio streams)
- VistaLINK® - enabled for remote monitoring via SNMP (using VistaLINK® PRO) when installed in 500FR frame with 500FC VistaLINK® Frame Controller

Additional Features: (520AE4-HD version)

- 4 AES unbalanced inputs
- Adjustable audio delay (up to 3 seconds)
- Embeds up to 2 audio groups
- 4 processed video outputs

Additional Features: (520AE8-HD version)

- 8 AES unbalanced inputs (last input is shared with Dolby Metadata input)
- Embeds up to 4 audio groups
- 1 processed video output

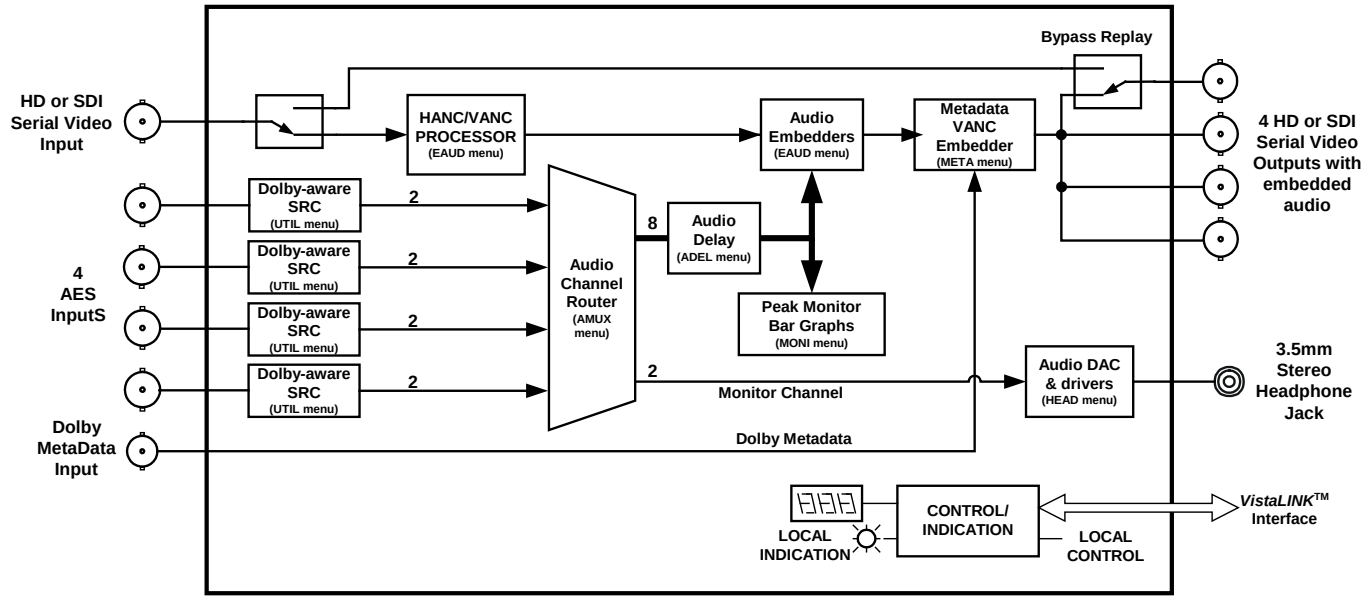

Figure 1-1: 520AE4-HD Block Diagram

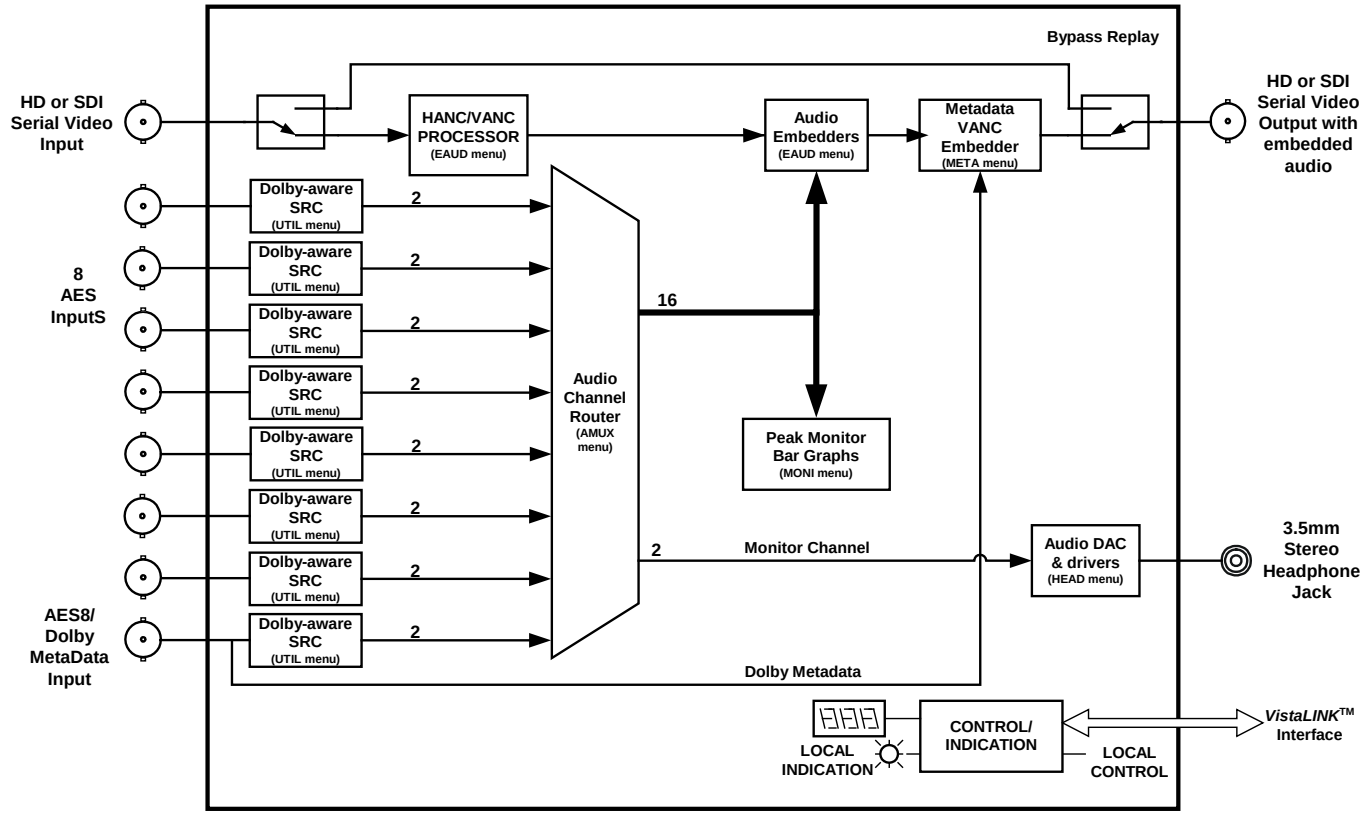

Figure 1-2: 520AE8-HD Block Diagram

2. INSTALLATION

The 520AE-HD series embedders come with companion rear panel overlays that can be placed over the rear panel BNC connectors to identify their function. For information on inserting the module into the frame see section 3 of the 500FR chapter.

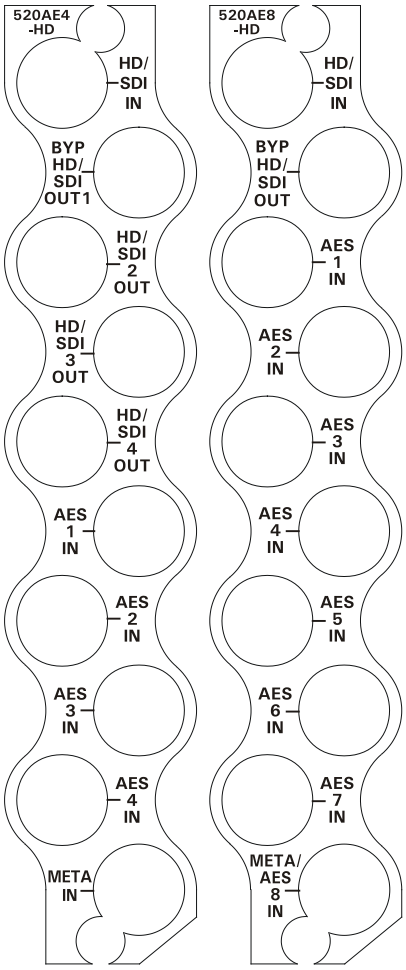

Figure 2-1: Rear Panel Overlays

2.1. VIDEO CONNECTIONS

HD/SDI IN Input BNC connector for 10-bit serial digital video signals compatible with the SMPTE 292M or SMPTE 259M-C standards. The video standard is selected automatically. See section 3.1 for a list of the video standards supported.

BYP HD/SDI OUT This output BNC connector is used to output reclocked serial component video, in the same standard as the video input. This output contains the input video with the selected input audio embedded in accordance with the SMPTE 272M or SMPTE 299M standards. The **BYP HD/SD OUT** output is protected by a bypass relay, which will activate in the event of power loss to the module.

HD/SDI OUT 2, 3, 4 On the 520AE4-HD version, these output BNC connectors have copies of the **BYP HD/SD OUT** contents. They are not bypass protected.

2.2. AES AUDIO CONNECTIONS

2.2.1. AES Inputs

AES IN 1, 2, 3, 4 These BNCs are dedicated as AES audio inputs. In the default audio routing configuration, **AES IN 1** and **2** will be embedded in audio group 1, while **AES IN 3** and **4** will be embedded in audio group 2.

2.2.2. Additional AES Inputs (520AE8-HD version only)

AES IN 5, 6, 7, 8 These BNC's are dedicated as additional AES audio inputs. In the default audio routing configuration, **AES IN 5** and **6** will be embedded in audio group 3, while **AES IN 7** and **8** will be embedded in audio group 4.

The AES8 IN connector used is shared with Metadata input.

2.3. DOLBY METADATA CONNECTIONS

2.3.1. Metadata Input on 520AE4-HD Version

META IN This BNC is a dedicated input for DOLBY Metadata from a Dolby E Decoder or a Dolby Multi-channel Tool. Please ensure that the on-board jumper J14 is in HI-Z position.

2.3.2. Metadata Input on 520AE8-HD Version

META / AES8 IN This BNC can be used as an input for DOLBY Metadata from a Dolby E Decoder or a Dolby Multi-channel Tool. When used as such, ensure that the on-board jumper J14 is in HI-Z position. The connector can also be used as an additional AES audio input for AES pair 8.

2.3.3. Connecting to Dolby DP570 or DP572

The 520AE-HD series modules use BNC connectors for Metadata inputs. They are shipped with a DD-DB9-BNC adapter that converts the unbalanced signals on the BNCs so that they are compatible with RS-485 signals from a source of Dolby metadata such as Dolby E Decoder DP572 or Dolby Multi-channel Tool DP570. Jumper J14 on the 520AE-HD series modules must also be placed in HI-Z position.

Connect the DD-DB9-BNC adapter to the *METADATA OUTPUT* DB-9 connector on the rear of the DP570. Connect a coaxial cable from the BNC on this connector to the **META/AES8 IN** BNC on the 520AE8-HD rear panel, or the **META IN** BNC on the 520AE4-HD rear panel. If desired, you may connect a straight-through 9 pin cable between the adapters and the DP570. See Figure 2-2 for more information.

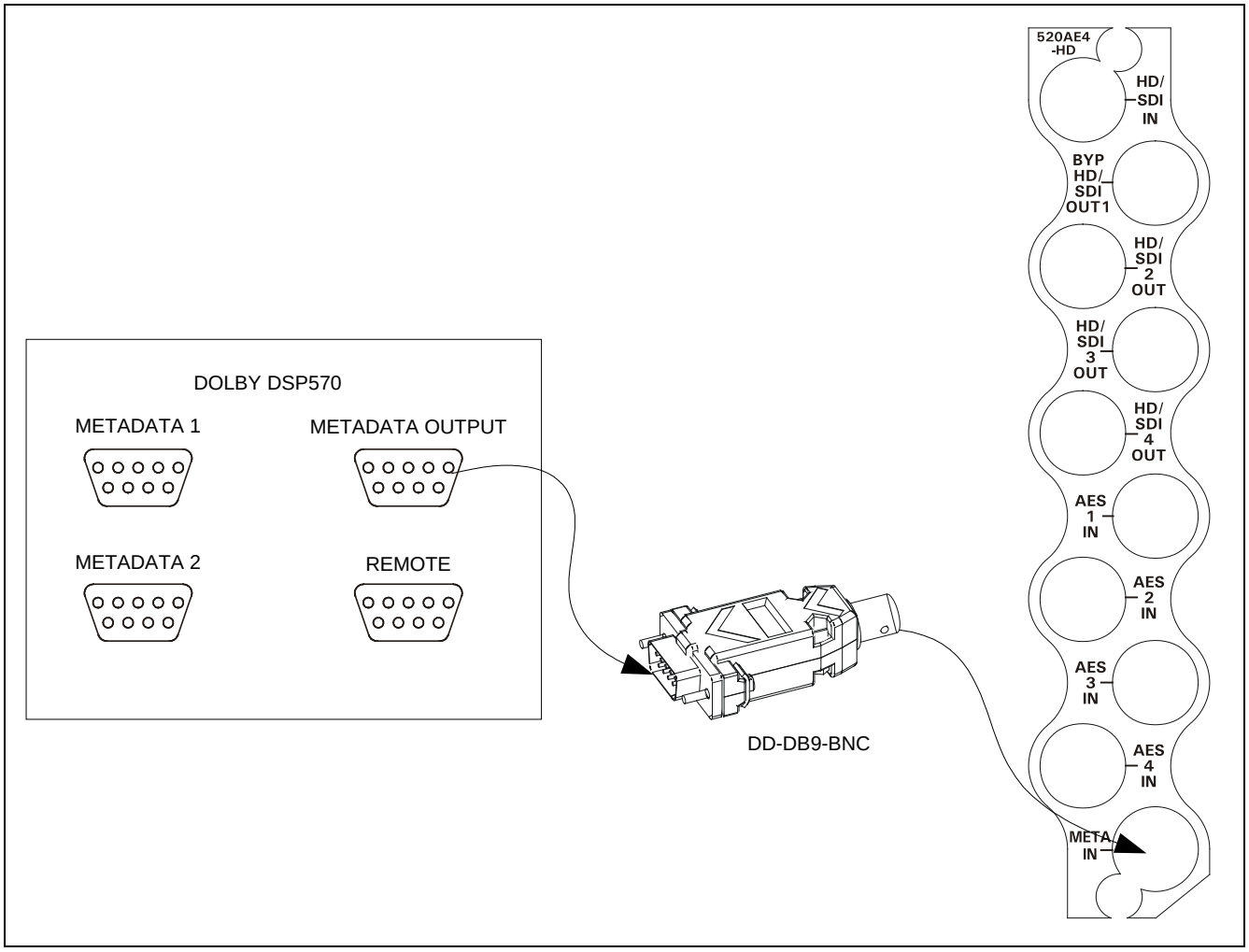

Figure 2-2: Connecting the 520AE-HD series Embedders to the Dolby DP570

3. SPECIFICATIONS

3.1. SERIAL VIDEO INPUT

Standard:	SMPTE 292M: 1080i/60, 1080i/59.94, 1080i/50, 1080p/30(sF), 1080p/29.97(sF), 1080p/25(sF), 1080p/24(sF), 1080p/23.98(sF), 720p/60, 720p/59.94, 720p/50, 1035i/60, 1035i/59.94 SMPTE 259M-C (270 Mb/s) 525 or 625 line component
Connector:	BNC per IEC 60169-8 Amendment 2
Equalization:	Automatic 100m @ 1.5 Gb/s with Belden 1694A (or equivalent) 40m with bypass relay active and card powered up 100m with card powered down

3.2. PROCESSED SERIAL VIDEO OUTPUT

Standard:	Same as input or user controlled
Number of Outputs:	1 bypass protected on all models 3 additional non bypass protected on 520AE4-HD version
Connector:	BNC per IEC 60169-8 Amendment 2
Signal Level:	800mV nominal
DC Offset:	0V ±0.5V
Overshoot:	<10% of amplitude
Wide Band Jitter:	<0.2 UI

3.3. AES AUDIO INPUTS

Standard:	SMPTE 276M single ended AES
Number of Inputs:	
520AE4-HD	4
520AE8-HD	8
Connector:	BNC per IEC 60169-8 Amendment 2
Input Level:	0.2 to 2.5 Vp-p (5 Vp-p tolerant)
Input Impedance:	75 ohm (Hi-z is jumper selectable on AES IN 7 and 8)
Return Loss:	>25dB 100kHz to 6MHz
Equalization:	Automatic to 1000m with Belden 1694A (or equivalent) @ 48 kHz AES signal
Sample Rate:	48 kHz ± 100ppm

3.4. METADATA INPUT

Type:	DOLBY E Metadata
Connector:	BNC per IEC 60169-8 Amendment 2 (shared with AES 8 IN on 520AE8-HD version)
Baud Rate:	115,200 baud

3.5. SYSTEM PERFORMANCE

Embedding Latency:
- **SD Video:** to be measured
- **HD Video:** 80μsec nominal

Audio Delay: embed latency + 0 to 3 sec (520AE4-HD), embed latency only (520AE8-HD)
Video Delay: few lines

3.6. ELECTRICAL

Voltage: + 12VDC
Power: 10 Watts
EMI/RFI: Complies with FCC Part 15
Class A and EU EMC directive

3.7. PHYSICAL

Number of slots: 1

4. STATUS INDICATORS AND DISPLAYS

The 520AE-HD series embedders have 11 LED Status indicators on the main circuit board front card edge to show operational status of the card at a glance. Figure 6-1 displays the location of the LEDs and card edge controls.

4.1. MODULE STATUS LEDS

Two large LEDs on the front of the board indicate the general health of the module

LOCAL FAULT: This Red LED will be On if a local input power fault exists (i.e.: a blown fuse). The LOCAL FAULT indication can also be reported to the frame through the FRAME STATUS jumper.

MODULE OK: This Green LED will be On when the board power is good and system is configured.

There are nine small two colour LEDs on the back side of the board that indicate various status conditions of the module as shown in Table 4-1and Table 4-2. LED 2 is located closest to the two large LEDs.

		LED Functions on 520AE4-HD			
	Description	**solid RED**	**blinking RED**	**blinking GREEN**	**solid GREEN**
LED2	Ethernet link to frame controller			Network activity	
LED3	Video input	no Video-in NOTE(1)		Video-in does not match selected standard in menu VIDE/VOFM	valid and matching Video-in
LED4	AES 1 input				AES 1 in OK
LED5	AES 2 input				AES 2 in OK
LED6	AES 3 input				AES 3 in OK
LED7	AES 4 input				AES 4 in OK
LED8	*Temporary*		Cannot lock video clock		
LED9	*Temporary*		Cannot lock audio clock		
LED10	Metadata reception		Metadata errors		Metadata in OK

Table 4-1: Functions of Card Edge Status LEDs – 520AE4-HD

		LED Functions on 520AE8-HD			
	Description	**solid RED**	**blinking RED**	**blinking GREEN**	**solid GREEN**
LED2	Ethernet link to frame controller			Network activity	
LED3	Video input	no Video-in NOTE(1)		Video-in does not match selected standard in menu VIDE/VOFM	valid and matching Video-in
LED4	AES 1 input				AES 1 in OK
LED5	AES 2 input				AES 2 in OK
LED6	AES 3 input				AES 3 in OK
LED7	AES 4 input				AES 4 in OK
LED8	AES 5/6 input			Either AES 5 or 6 OK	Both AES 5 and 6 OK
LED9	AES 7/8 input			Either AES 7 or 8 OK	Both AES 7 and 8 OK
LED10	Metadata reception		Metadata errors		Metadata in OK

Table 4-2: Functions of Card Edge Status LEDs – 520AE8-HD

Table 4-1 and Table 4-2, NOTE(1): The tables show the LED3 behaviour when control VIDE/VOFM=AUTO. With other values of this control (user forced video output format), input video will only be detected properly when it has a matching clock frequency (one of 27, 74.1576, or 74.25 MHz).

For example, with VIDE/VOFM=NTSC, only SD serial video (525 or 625) will be recognized. Applying 525 video input will result in solid green; applying 625 will yield blinking green; applying any other input formats or none will result in LED3 being solid red.

4.2. DOT-MATRIX DISPLAY

Additional signal status monitoring and control over the card's parameters is provided via the 4-character alphanumeric display located on the card edge. What is displayed is determined by where you are in the menu system. See section 5 for information on operating the menu system.

5. CARD EDGE MENU SYSTEM

5.1. NAVIGATING THE MENU SYSTEM

The card edge rotary switch, toggle switch and pushbutton are used to navigate through the menu system to monitor or set various parameters for the module. The menu system is organized into ten top level menus. Turn the rotary switch to select one of the top level menus, then press the pushbutton to enter that menu. You can use the toggle switch to move up and down the list of available sub-menu items. Once the desired submenu name is displayed, press the pushbutton to select the bottom menu level. The dot matrix display will be dimmed when you are in the bottom level of the menu tree.

If you are in one of the Status menus the selected parameter value will be displayed. If you are in one of the control menus, use the toggle switch to adjust the parameter to its desired value. If the parameter is a numerical value, the number will increase if you lift the toggle switch and decrease if you push down on the toggle switch. If the parameter contains a list of options, you can cycle through the list by pressing the toggle switch in either direction.

When you have stopped at the desired value, depress the pushbutton. This will update the parameter to the selected value and return to the sub-menu items (the display shows the menu item names). To change another parameter, use the toggle switch to find another parameter in that menu or turn the rotary knob to select another top level menu and continue selecting and adjusting other parameters.

Throughout the descriptions of the Menu items, default values are shown in <u>underlined</u> text.

5.2. TOP LEVEL MENU STRUCTURE

MONI	Status displays showing audio signal peak levels
STAT	Status displays showing input signal status items
AMUX	Control menu to set parameters relating to the audio channel routing
ADEL	Control menu to set parameters relating to the audio delay *(520AE4-HD only)*
----	Reserved for future use
HEAD	Control menu to set the card edge headphone interface
META	Control menu to set parameters relating to the Metadata
EAUD	Control menu to set parameters relating to the audio embedder
UTIL	Control menu to set miscellaneous parameters
VIDE	Control menu to set parameters relating to the video

The chart above is a brief description of the top level of the menu tree that appears when you turn the rotary knob. Selecting one of these items by pressing the pushbutton will take you down into the next menu level. The details of the each of the menus are described in the sections 5.3 to 5.10.4.

5.3. DISPLAYING THE PEAK AUDIO LEVELS

The *MONI* menu is used to show the peak values for each of the audio channels. When the *MONI* menu is entered the active display name will be shown for about 1 second, and then the value will be shown. To display the display name again press the pushbutton. To select other menu items, use the toggle switch. The chart below shows the items available in the *MONI* menu. Sections 5.3.1 and 5.3.2 provide detailed information about the menu items.

1234	Displays bar graphs for peak values of discrete channels 1, 2, 3, 4 (i.e. OP1A, OP1B, OP2A, OP2B)
5678	Displays bar graphs for peak values of discrete channels 5, 6, 7, 8 (i.e. OP3A, ..., etc.)
9ABC	Displays bar graphs for peak values of discrete channels 9, 10, 11, 12 *(520AE8-HD only)*
DEFG	Displays bar graphs for peak values of discrete channels 13, 14, 15, 16 *(520AE8-HD only)*
1to8	Displays bar graphs for peak values of pairs 1/2, 3/4, 5/6, 7/8
9toG	Displays bar graphs for peak values of pairs 9/10, 11/12, 13/14, 15/16 *(520AE8-HD only)*
1toG	Displays bar graphs for peak values of groups 1/2/3/4, 5/6/7/8, 9/10/11/12, 13/14/15/16 *(520AE8-HD only)*
dB 1	Displays the peak value of discrete channel 1 (OP1A) in dBFS
dB 2	Displays the peak value of discrete channel 2 (OP1B) in dBFS
…	...
dB 8	Displays the peak value of discrete channel 8 (OP4B) in dBFS
dB 9	Displays the peak value of discrete channel 9 (OP5A) in dBFS *(520AE8-HD only)*
dB A	Displays the peak value of discrete channel 10 (OP5B) in dBFS *(520AE8-HD only)*
…	...
dB G	Displays the peak value of discrete channel 16 (OP8B) in dBFS *(520AE8-HD only)*

5.3.1. Displaying the Peak Audio Values as Bar Graphs

Each of the 4 sections of the dot matrix display can show a bar graph representation of the peak level for the selected channel or the average of peaks of multiple channels. Each section of the display is comprised of a 5 x 5 array of dots. Diagonal rows of dots represent one of 9 different signal peak levels as shown in Figure 5-1 and Table 5-1.

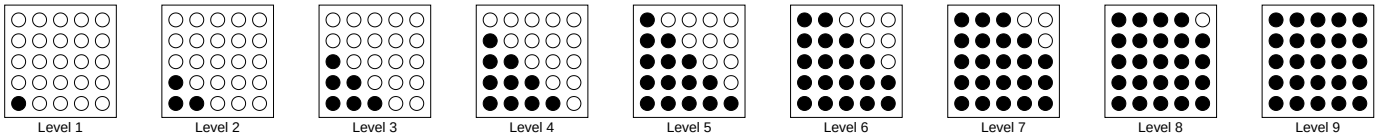

Figure 5-1: Peak Level Bar Graph Displays

Bar Graph Level	dBFS
Level 1	-60
Level 2	-36
Level 3	-30
Level 4	-24
Level 5	-21
Level 6	-18
Level 7	-15
Level 8	-12
Level 9	-6

Table 5-1: Bar Graph Peak Levels

Table 5-1 allows you to correlate the dot matrix display levels to the peak levels in dBFS units. The ballistics of all bar graphs follow the AES/EBU guidelines and have the attack time constant set to 0 seconds, and the decay time constant set to 1.5 seconds / 20 dB.

In 520AE4-HD, there are 3 menu items to show the peak values as 4 miniature bar graphs. In 520AE8-HD, there are 7 menu items to account for more channels and channel combinations. The different menu items allow you to show the peak values of discrete channels, channel pairs or groups.

5.3.1.1. Peak Audio Bar Graphs – All Versions

MONI
1234
See Figure 7 & Table 2

This display allows the user to simultaneously and graphically show the peak values for discrete channels 1 to 4 (OP1A through OP2B). Channel 1A is shown on the left (top) section and channel 2B is shown on the right (bottom) section.

MONI
5678
See Figure 7 & Table 2

This display allows the user to simultaneously and graphically show the peak values for discrete channels 5 to 8 (OP3A through OP4B). Channel 3A is shown on the left (top) section and channel 4B is shown on the right (bottom) section.

MONI *1to8* *See Figure 7 & Table 2*	This display allows the user to simultaneously and graphically show the peak values for pairs of channels 1 to 8 (OP1A through OP4B). Channel (1A+1B) is shown on the left (top) section and channel (4A+4B) is shown on the right (bottom) section.

5.3.1.2. Peak Audio Bar Graphs – 520AE8-HD version

MONI *9ABC* *See Figure 7 & Table 2*	This display allows the user to simultaneously and graphically show the peak values for discrete channels 9 to 12 (OP5A through OP6B). Channel 5A is shown on the left (top) section and channel 6B is shown on the right (bottom) section.
MONI *DEFG)* *See Figure 7 & Table 2*	This display allows the user to simultaneously and graphically show the peak values for discrete channels 13 to 16 (OP7A through OP8B). Channel 7A is shown on the left (top) section and channel 8B is shown on the right (bottom) section.
MONI *9toG* *See Figure 7 & Table 2*	This display allows the user to simultaneously and graphically show the peak values for discrete channels 9 to 16 (OP5A through OP8B). Channel (5A+5B) is shown on the left (top) section and channel (8A+8B) is shown on the right (bottom) section.
MONI *1toG* *See Figure 7 & Table 2*	This display allows the user to simultaneously and graphically show the peak values for discrete channels 1 to 16 (OP1A through OP8B). Channel (1A+1B+2A+2B) is shown on the left (top) section and channel (7A+7B+8A+8B) is shown on the right (bottom) section.

5.3.2. Displaying the Peak Audio Values as Numerical Values

In 520AE4-HD, there are eight display items to show the peak values for each of the 8 discrete audio channels. Accordingly, in 520AE8-HD, there are 16 display items. For the sake of simplicity in the manual only, the display for discrete channel 1 will be shown.

MONI *dB 1* *1-18*	This display allows the user to show the peak values for channel 1 in dBFS. In the example on the left “1-18”, the leading “1” stands for channel 1, and the “-18” stands for peak value detected of -18 dBFS. The numerical peak values decay around 20 dB per 1.5 seconds.

5.4. DISPLAYING THE SIGNAL INPUT STATUS

The *STAT* menu is used to show the status of various input signals. When the *STAT* menu is entered, the name of the currently selected status will be shown. To select other status items, use the toggle switch. To display the actual status value, press the pushbutton. The chart below shows the items available in the *STAT* menu. Sections 5.4.1 to 5.4.4 provide detailed information about each menu items.

AES1	Displays the AES 1 Input status
AES2	Displays the AES 2 Input status
AES3	Displays the AES 3 Input status
AES4	Displays the AES 4 Input status
AES5	Displays the AES 5 Input status (520AE8-HD version only)
AES6	Displays the AES 6 Input status (520AE8-HD version only)
AES7	Displays the AES 7 Input status (520AE8-HD version only)
AES8	Displays the AES 8 Input status (520AE8-HD version only)
VIFM	Displays the video input format
IGRP	Displays input embedded audio group status
EXMT	Displays the Metadata input status

5.4.1. Displaying the Status of the AES Input

There are 4 menu items to cover 4 AES input statuses in 520AE4-HD, and there are 8 menu items to cover 8 AES input statuses in 520AE8-HD. For the sake of simplicity, only the menu item for AES input 1 will be shown.

STAT	This display allows the user to show the status of the AES input.
AES1	
PCM	PCM indicates linear (“normal”) audio
DLBE	DLBE indicates that Dolby E has been detected
DLBD	DLBD indicates Dolby AC3 (Digital) has been detected
n/a	

5.4.2. Displaying the Video Input Format

STAT	When control VIDE/VOFM=AUTO, this display allows the user to show the video format recognized on the input.
VIFM	
none	No video present
PALB	PAL-B
NTSC	NTSC-M
3i59	1035i/59.94
3i60	1035i/60
1s23	1080p/23.98sF
1s24	1080p/24sF
1i50	1080i/50
1i59	1080i/59.94
1i60	1080i/60
7p59	720p/59.94
7p60	720p/60
7p50	720p/50
1p23	1080p/23.98
1p24	1080p/24
1p25	1080p/25
1p29	1080p/29.97
1p30	1080p/30

When the VIDE/VOFM is used to force a particular output video format, the formats recognized in this status will be limited to the formats with the matching clock frequency (one of 27, 74.1576, or 74.25 MHz)

5.4.3. Displaying the Status of the Input Embedded Audio Groups

STAT	This display allows the user to show which embedded audio groups are present on the input video. The corresponding digit is shown for each audio group present.
IGRP	
1234	

5.4.4. Displaying the Metadata Input Status

STAT	This display allows the use to show the status of the metadata input.
EXMT	
OK	*OK* = input Metadata present
n/a	

5.5. CONFIGURING THE AUDIO CHANNEL ROUTING

The *AMUX* menu is used to control the internal routing of audio channels. When the *AMUX* menu is entered the active menu item name will be shown. The 520AE4-HD version has two embedders (A and B) that each embed one audio group (selectable). The 520AE8-HD versions have four embedders (1,2,3, and 4) each dedicated to embed one fixed audio group (respectively group 1, 2, 3, and 4). Table 5-2 and Table 5-3 show the output channel names for each embedder. These channel names are used throughout the *AMUX* menu items.

Embedded Channel			Channel/Pair Mode		Default Channel Source
			Chan	Pair	
Output channels	Embedder A channel	1A	OP1A	OP1	IP1A
		1B	OP1B		IP1B
		2A	OP2A	OP2	IP2A
		2B	OP2B		IP2B
	Embedder B channel	1A	OP3A	OP3	IP3A
		1B	OP3B		IP3B
		2A	OP4A	OP4	IP4A
		2B	OP4B		IP4B

Table 5-2: 520AE4-HD Embedder Channel Names

Embedded Channel			Channel/Pair Mode		Default Channel Source
			Chan	Pair	
Output channels	Embedder 1 channel	1A	OP1A	OP1	IP1A
		1B	OP1B		IP1B
		2A	OP2A	OP2	IP2A
		2B	OP2B		IP2B
	Embedder 2 channel	1A	OP3A	OP3	IP3A
		1B	OP3B		IP3B
		2A	OP4A	OP4	IP4A
		2B	OP4B		IP4B
	Embedder 3 channel	1A	OP5A	OP5	IP5A
		1B	OP5B		IP5B
		2A	OP6A	OP6	IP6A
		2B	OP6B		IP6B
	Embedder 4 channel	1A	OP7A	OP7	IP7A
		1B	OP7B		IP7B
		2A	OP8A	OP8	IP8A
		2B	OP8B		IP8B

Table 5-3: 520AE8-HD Embedder Channel Names

5.5.1. Selecting the Audio Routing

There are identical menu items that control the routing for each discrete (mono) channel (when the *UTIL / 2CHA* menu item is set to *CHAN*) or for each stereo pair (when the *UTIL / 2CHA* menu item is set to *PAIR*). For the sake of simplicity only the menu item for audio output channel 1A (in *CHAN* mode) and audio output stereo pair 1 (in *PAIR* mode) will be shown. See the block diagrams in Figure 1-1 and Figure 1-2 to identify where the signals are being used.

5.5.1.1. Configuring the Audio Routing – Discrete Channel Control Mode

- *AMUX*
  - *OP1A*
    - *IP1A*
    - *IP1B*
    - *IP2A*
    - *IP2B*
    - *IP3A*
    - *IP3B*
    - *IP4A*
    - *IP4B*
    - *IP5A* (520AE8-HD only)
    - *IP5B* (520AE8-HD only)
    - *IP6A* (520AE8-HD only)
    - *IP6B* (520AE8-HD only)
    - *IP7A* (520AE8-HD only)
    - *IP7B* (520AE8-HD only)
    - *IP8A* (520AE8-HD only)
    - *IP8B* (520AE8-HD only)

When the *UTIL / 2CHA* menu item is set to *CHAN,* this menu item is used to set the input source for the discrete output channel 1A.

AES 1	IP1A
	IP1B
AES 2	IP2A
	IP2B
AES 3	IP3A
	IP3B
AES 4	IP4A
	IP4B
AES 5	IP5A (520AE8-HD only)
	IP5B (520AE8-HD only)
AES 6	IP6A (520AE8-HD only)
	IP6B (520AE8-HD only)
AES 7	IP7A (520AE8-HD only)
	IP7B (520AE8-HD only)
AES 8	IP8A (520AE8-HD only)
	IP8B (520AE8-HD only)

5.5.1.2. Configuring the Audio Routing – Stereo Pair Control Mode

- *AMUX*
  - *OP1*
    - *IP1*
    - *IP2*
    - *IP3*
    - *IP4*
    - *IP5* (520AE8-HD only)
    - *IP6* (520AE8-HD only)
    - *IP7* (520AE8-HD only)
    - *IP8* (520AE8-HD only)

When the *UTIL / 2CHA* menu item is set to *PAIR,* this menu item is used to set the input source for the stereo output pair 1.

AES 1	IP1
AES 2	IP2
AES 3	IP3
AES 4	IP4
AES 5	IP5 (520AE8-HD only)
AES 6	IP6 (520AE8-HD only)
AES 7	IP7 (520AE8-HD only)
AES 8	IP8 (520AE8-HD only)

5.6. CONFIGURING THE AUDIO DELAY (520AE4-HD VERSION ONLY)

The *ADEL* menu is used to control the audio channel delays. When the *ADEL* menu is entered, the active menu item name will be shown. To select other menu items, use the toggle switch. There are identical menu items for each output discrete audio channel (when the *UTIL / 2CHA* menu item is set to *CHAN*) or for each output stereo audio pair (when the *UTIL / 2CHA* menu item is set to *PAIR*). For the sake of simplicity, only the menu item for OP1A (1st output left channel, in *PAIR* mode) will be shown. See Table 5-2 for a list of the output channel names. Also, refer to Figure 1-1 the block diagram of the module for an illustration of the relative order of SRC, channel routing, and delay processing.

ADEL
DL1A
0sec
0 to 2

This control enables you to set the audio delay for discrete output channel 1A in seconds, milliseconds and audio samples.

When you first press the pushbutton you will be prompted to enter the whole seconds part of the delay.

ADEL
DL1A
000m
000 to 999

When you press the pushbutton you will be prompted to enter the milliseconds part of the delay. When you increase the value beyond 999 the seconds will automatically increment. When you decrease the value below 000 the seconds will automatically decrement.

ADEL
DL1A
00AS
00 to 47

When you press the pushbutton you will be prompted to enter the audio samples part of the delay. When you increase the value beyond 47 the milliseconds will automatically increment. When you decrease the value below 00 the milliseconds will automatically decrement. Press the pushbutton one more time to complete the delay entry.

5.7. CONFIGURING THE HEADPHONE PARAMETERS

The *HEAD* menu is used to set the headphone parameters. When the HEAD menu is entered the active status display name will be shown. To select other menu items, use the toggle switch. The chart below shows the items available in the *HEAD* menu. Section 5.7.1 provides detailed information about each menu items.

HVOL	Sets the headphone volume
HPML	Assigns the channel that will be monitored on the Left headphone
HPMR	Assigns the channel that will be monitored on the Right headphone

5.7.1. Setting the Headphone Volume

HEAD
HVOL
HV00 to HV15

This control allows the user to set the headphone volume to 1 of 16 levels.

The total adjustment range is over 50 dB. Level 00 is the lowest volume and is effectively mute.

5.7.2. Selecting the Channels to Monitor with the Headphones

The *HMPL* and *HMPR* menu items are used to control which channel will be monitored by the left and right headphones respectively. There are two identical menu items for each headset channel, when the *UTIL / 2CHA* menu item is set to *CHAN*: one for the left, and one for the right channel. When the *UTIL / 2CHA* menu item is set to *PAIR,* there is only one menu item selecting the source audio as a stereo pair. For the sake of simplicity, only the menu item for the left headphone channel will be shown.

HEAD	
HMPL	When the *UTIL / 2CHA* menu item is set to *CHAN,* this menu item selects the channel monitored by the left headphone channel.
IP1A	AES 1 IP1A
IP1B	IP1B
IP2A	AES 2 IP2A
IP2B	IP2B
IP3A	AES 3 IP3A
IP3B	IP3B
IP4A	AES 4 IP4A
IP4B	IP4B
IP5A (520AE8-HD only)	AES 5 IP5A (520AE8-HD only)
IP5B (520AE8-HD only)	IP5B (520AE8-HD only)
IP6A (520AE8-HD only)	AES 6 IP6A (520AE8-HD only)
IP6B (520AE8-HD only)	IP6B (520AE8-HD only)
IP7A (520AE8-HD only)	AES 7 IP7A (520AE8-HD only)
IP7B (520AE8-HD only)	IP7B (520AE8-HD only)
IP8A (520AE8-HD only)	AES 8 IP8A (520AE8-HD only)
IP8B (520AE8-HD only)	IP8B (520AE8-HD only)

5.8. CONFIGURING THE METADATA EMBEDDER

The *META* menu is used to configure parameters related to the Dolby Metadata embedder. When the *META* menu is entered the active menu item name will be shown. To select other menu items, use the toggle switch. The chart below shows the items available in the *META* menu. Section 5.8.1 provides detailed information about the menu items.

VAEL	Selects the output VANC line for embedding
VAEI	Selects the output VANC Data ID (DID)
VAES	Selects the output VANC Secondary Data ID (SDID)
VAEN	Selects whether VANC will be embedded on the output video

5.8.1. Configuring the VANC Metadata Embedder

There are four menu items used to configure the output VANC embedder.

- *META*
  - *VAEL*
    - *EL10*
    - *EL01 to EL31*

This control allows the user to set the line for embedding VANC Metadata packets on the output video.

- *META*
  - *VAEI*
    - *EI45*
    - *EI50 to EI5F*
    - *EIC0 to EICF*

This control allows the user to set the Data ID for embedding VANC Metadata packets. Normally you should not have to change this from the default value. The values shown are expressed as hexadecimal numbers.

- *META*
  - *VAES*
    - *ES01*
    - *ES01 to ESFF*

This control allows you to set the Secondary Data ID for embedding VANC Metadata packets. Normally you should not have to change this from the default value. The values shown are expressed as hexadecimal numbers. When the *VAEI* menu item is set to values in the range of *C0 to CF*, type 1 metadata packets will be generated and the *VADS* menu item is not relevant as dictated by SMPTE 291M.

- *META*
  - *VAEN*
    - *ENBL*
    - *OFF*

This control allows you to select whether the VANC packets will be embedded onto the output video or not.

Select *ENBL* to insert VANC Metadata packets on the output video.
Select *OFF* to disable VANC insertion.

5.9. CONFIGURING THE AUDIO EMBEDDERS

The *EAUD* menu is used to configure parameters related to the audio embedders. When the *EAUD* menu is entered the active menu item name will be shown. To select other menu items, use the toggle switch. The chart below shows the items available in the *EAUD* menu. Section 5.9.1 and 5.9.2 provide detailed information about the menu items.

IG1K	Selects whether to delete incoming audio group 1 from input video
IG2K	Selects whether to delete incoming audio group 2 from input video
IG3K	Selects whether to delete incoming audio group 3 from input video
IG4K	Selects whether to delete incoming audio group 4 from input video
EMAG	Selects the audio embedder A group number (520AE4-HD version only)
EMAE	Selects whether audio embedder A is enabled (520AE4-HD version only)
EMBG	Selects the audio embedder B group number (520AE4-HD version only)
EMBE	Selects whether audio embedder B is enabled (520AE4-HD version only)
EM1E	Selects whether audio group 1 embedder is enabled (520AE8-HD version only)
EM2E	Selects whether audio group 2 embedder is enabled (520AE8-HD version only)
EM3E	Selects whether audio group 3 embedder is enabled (520AE8-HD version only)
EM4E	Selects whether audio group 4 embedder is enabled (520AE8-HD version only)

5.9.1. Configuring the Incoming Audio Packet Stripper

The SMPTE 299M and SMPTE 272M standards permit up to 4 groups of 4 discrete audio channels each to be embedded respectively into the 1.5 Gb/s and 270 Mb/s video bitstream. In order to help with the control of what audio groups end up on the outputs of 520AE4-HD / 520AE8-HD modules, there are four menu items controlling removal of the incoming audio groups. For simplicity, only the menu items to control removal of audio group 1 will be shown.

EAUD
  IG1K
  KILL
  PASS
	This control allows the user to set whether the audio group 1 packets will be removed from the video or passed through to the output.
	
	Select *KILL* to remove the group 1 audio packets.
	
	Select *PASS* to pass the group 1 packets through to the output video. Note that if a conflicting audio group is set to embed on the output, then the conflicting incoming audio packets will be removed, regardless.

5.9.2. Configuring the Audio Embedders

The SMPTE 299M and SMPTE 272M standards permit up to 4 groups of 4 discrete audio channels each to be embedded respectively into the 1.5 Gb/s and 270 Mb/s video bitstreams.

The 520AE4-HD version has two embedders (A and B) that each embed one group of audio. There are two menu items used to enable and set the group for each of the audio embedders. For simplicity, only the menu items for audio embedder A will be shown.

5.9.2.1. Selecting the Audio Group Number For Each Embedder (520AE4-HD version)

EAUD
- *EMAG*
  - *1*
  - *1 to 4*

This control allows you to set the group number for embedder A.

5.9.2.2. Enabling Specific Audio Embedder (520AE4-HD version)

EAUD
- *EMAE*
  - *ENBL*
  - *OFF*

This control allows the user to select whether the audio embedder A will be enabled or not.

Select *ENBL* to enable embedder A. The audio group for embedder A is set by the *EMAG* menu item. The source of audio for embedder A is selected by the menu items in Audio Mux controls O*P1A, OP1B, OP2A* and O*P2B*.

Select *OFF* to disable embedder A.

5.9.2.3. Enabling Specific Audio Group Embedding (520AE8-HD version)

The 520AE8-HD version has four embedders (1, 2, 3, and 4), each dedicated to embed one audio group (group 1, 2, 3, and 4 respectively). There is one menu item used to enable each of the audio embedders. For simplicity, only the menu item for audio embedder 1 will be shown.

EAUD
- *EM1E*
  - *ENBL*
  - *OFF*

This control allows the user to select whether the audio group 1 embedder will be enabled or not.

Select *ENBL* to enable audio group 1 embedder. The source of audio for audio group 1 embedder is selected by the menu items in Audio Mux controls O*P1A, OP1B, OP2A* and O*P2B*.

Select *OFF* to disable Audio Group 1 Embedder.

5.10. CONFIGURING MISCELLANEOUS PARAMETERS

The *UTIL* menu is used to configure miscellaneous parameters and to view and upgrade the card firmware. When the *UTIL* menu is entered the active menu item name will be shown. To select other menu items, use the toggle switch. The chart below shows the items available in the *UTIL* menu. Sections 5.10.1 to 5.10.6 provide detailed information about the menu items.

2CHA	Selects whether audio routing, delay and voice over controls apply to individual channels or stereo pairs.
SRC1	Selects whether the sample rate converter can be used with AES1.
SRC2	Selects whether the sample rate converter can be used with AES2.
...	...
SRC8	Selects whether the sample rate converter can be used with AES8.
DISP	Selects the orientation of the Dot matrix display.
FRST	Resets the card to its factory default condition.
VERS	Displays the firmware version of the card.
UPGR	Initiates firmware upgrade for the card.

5.10.1. Configuring the Audio Channel Control Mode

UTIL
- *2CHA*
  - *CHAN*
  - *PAIR*

This control allows the user to configure the menus so that the Audio Mux and Audio Delay controls operate on individual (discrete) channels or on stereo pairs.

Select *CHAN* to control the audio as individual channels. (example: OP1A, OP1B, OP2A, etc.).

Select *PAIR* to control the audio as stereo pairs. (example: pair OP1 consisting of channels OP1A and OP1B, etc.)

NOTE: this is the only control that modifies the layout and contents of the menus.

5.10.2. Controlling the Sample Rate Converters

The 520AE-HD series modules have an audio Sample Rate Converter for each AES input that can be independently enabled or disabled. For simplicity, only the menu items for the AES 1 input sample rate converter will be shown.

UTIL	SRC1	OFF
		AUTO

This control allows the user to select whether the sample rate converter on the AES input 1 is enabled or not.

When the Sample Rate Converter is set to *OFF* the content of the AES input is preserved without any change. The AES input must be synchronous to the video source. If the input is asynchronous, samples will be dropped or repeated as required by the rate difference.

When the Sample Rate Converter is set to *AUTO,* the AES input is sample rate converted to 48 kHz that is synchronous to the input video. The AES input can be either synchronous or asynchronous to the video source. The appropriate conversion method is automatically selected based on recognized contents of the AES inputs:
- PCM contents is converted using linear techniques
- Dolby E / AC3 are converted by adjusting length of inter-packets gap

The result of sample rate conversion of an asynchronous AC3 (Dolby Digital) signal is not suitable for further distribution, at least with the current generation of Dolby decoders. Ensure that your source of AC3 is synchronous with video. The sample rate conversion of PCM or Dolby E is always OK and effectively lossless.

5.10.3. Configuring the Dot Matrix Display Orientation

UTIL	DISP	VERT
		HOR

This control allows the user to select a horizontal or vertical orientation for the displays to accommodate mounting the module in the 3RU or 1RU frames.

5.10.4. Displaying the Firmware Version

UTIL	VERS	V 1.0
		B123
		F456
		HW 7

This control allows you to display the firmware version and build number. Use the toggle switch to view the following items:
Firmware version number.
Firmware build number.
FPGA revision
Hardware build identification number

5.10.5. Resetting the Module to its Factory Defaults

UTIL
FRST
NO
YES

This control allows you to reset the module to its factory default condition.

Select *NO* to return back to the upper menu item without affecting the presets.

Select *YES* to return the module to its factory default condition. Factory defaults are shown underlined in the menu descriptions throughout this document.

5.10.6. Upgrading the Module Firmware

UTIL
UPGR
NO
YES

This control allows you to initiate an upgrade of the module firmware.

Select *NO* to return back to the upper menu item without upgrading.

To upgrade the firmware, install the Upgrade cable provided (located in the vinyl pouch in the front of this manual) onto the COM header J12 at the front edge of the card. Select *YES* to initiate the firmware upgrade. The module application will terminate and the boot monitor will start.

Run the upgrade as described in part 2 and part 3 of the *Upgrading Firmware* chapter in the front of the binder. Once the upgrade is completed, the card will reboot. Remove the upgrade cable. The module is now ready for normal operation.

See section 6.2 for information on upgrading the firmware when the application firmware is not running.

The Upgrade baud rate for the 520AE-HD series modules is 115,200 baud.

5.11. CONFIGURING THE VIDEO PARAMETERS

The *VIDE* menu is used to configure the output video parameters. When the *VIDE* menu is entered the active menu item name will be shown. To select other menu items, use the toggle switch. The chart below shows the items available in the *VIDE* menu. Sections 5.11.1 to 5.11.3 provide detailed information about the menu items.

VOFM	Selects the output video format
COLR	Selects the default screen colour to be used when there is no video input
VOUT	Selects the behaviour of the video output when there is no video input

5.11.1. Selecting the Output Video Format

- *VIDE*
  - *VOFM*
    - Auto
    - PALB
    - NTSC
    - 3i59
    - 3i60
    - 1s23
    - 1s24
    - 1i50
    - 1i59
    - 1i60
    - 7p59
    - 7p60
    - 7p50
    - 1p23
    - 1p24
    - 1p25
    - 1p29
    - 1p30

This control allows the user to select the output video format.

Select *Auto* to let the module auto-detect the video format.
PAL-B
NTSC-M
1035i/59.95
1035i/60
1080p/23.98sF
1080p/24sF
1080i/50 (1080p/25sF)
1080i/59.94 (1080p/29.97sF)
1080i/60 (1080p/30sF)
720p/59.94
720p/60
720p/50
1080p/23.98
1080p/24
1080p/25
1080p/29.97
1080p/30
Note: when the device powers up in Auto mode, the default output format is 720p/59.94 until a valid input signal is applied.

Also note: when a specific video output format has been specified, the card's input circuit is also constrained to recognize and report only formats with a matching clock frequency (one of 27, 74.1576, or 74.25 MHz).

5.11.2. Selecting The Default Output Screen Colour

- *VIDE*
  - *COLR*
    - *BLUE*
    - *BLAK*

This control allows the user to set the video output when there is no input video and the *VOUT* menu item is set to *AUTO*.

This menu setting is also used when the *VOUT* menu item is set to *COLR.*

5.11.3. Configuring the Video Output in Absence of Valid Video Input

- *VIDE*
  - *VOUT*
    - *AUTO*
    - *COLR*
    - *PASS*

Select AUTO to output the input video when it is present and switch to the default screen colour when there is no video.

Select COLR to force the output video to either black or blue screen as configured in COLR menu item. The control allows the user to force the default video output for test purposes.

Select PASS to pass the input to the output regardless.

6. JUMPERS

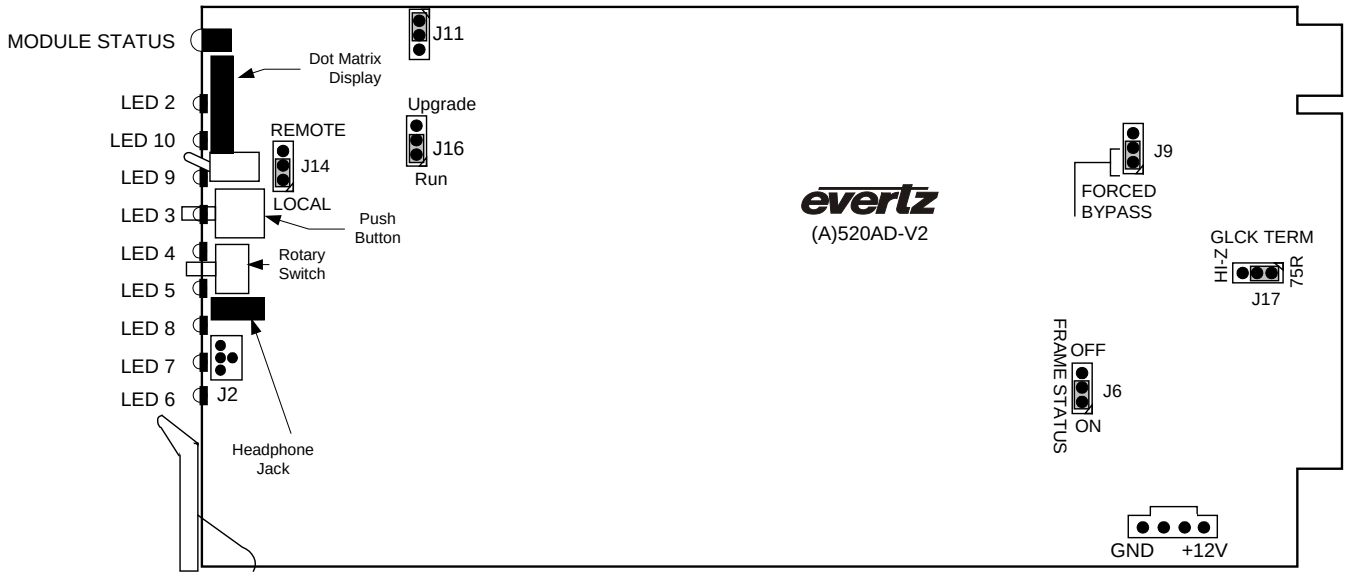

Figure 6-1: LED and Jumper Locations

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

The FRAME STATUS jumper J13, located near the rear of the module, determines whether local faults (as shown by the Local Fault indicator) will be connected to the 500FR frame's global status bus.

FRAME STATUS: To monitor faults on this module with the frame status indicators (on the power supply's FRAME STATUS LED's and on the Frame's Fault Tally output) install this jumper in the On position (away from card's display).

When this jumper is installed in the Off position (towards card's display) local faults on this module will not be monitored by the 500FR frame status.

6.2. CONFIGURING THE MODULE FOR FIRMWARE UPGRADES

UPGRADE The UPGRADE jumper J8 is used when firmware upgrades are being done to the module. For normal operation it should be installed in the *RUN* position. See the *Upgrading Firmware* section 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 J8 into the *UPGRADE* position. Install the Upgrade cable provided (located in the vinyl pouch in the front of this manual) onto the COM header J12 at the front edge of the card. Re-install the module into the frame. Run the upgrade as described in the *Upgrading Firmware* chapter in the front of the binder. Once the upgrade is completed, remove the module from the frame, move J8 into the *RUN* position, remove the upgrade cable and re-install the module. The module is now ready for normal operation.

The Upgrade baud rate for the 520AE-HD series modules is 115,200 baud.

6.3. SELECTING WHETHER THE BYPASS RELAY IS FORCED TO BYPASS MODE

FORCED BYPASS The FORCED BYPASS jumper J9, located at the rear of the module, is used to override bypass relay logic. When it is in the FORCED BYPASS position, the bypass relay is activated and the video path through the module is bypassed.

6.4. SELECTING METADATA INPUT TERMINATION

J14 Jumper J14 located at the rear of 520AE4-HD / 520AE8-HD module is used to terminate the last BNC input.

If this BNC is used as Metadata input and this Metadata is driven by a source such as Dolby DP572 or DP570 via Evertz adaptor DD-DB9-BNC, J14 should be set to "HI-Z" (towards card's display). The setting "75R" (away from card's display) can be useful when the driving source is a native coax driver (such as METADATA output of a 520AD4-HD), and the source is located far away (3000 ft+).

If the last BNC is used as AES8 input (on 520AE8-HD version), its termination is at user's discretion ("75R" gives best reliability of reception over widest range of cable lengths).

6.5. SELECTING 2ND LAST BNC TERMINATION

J15 Jumper J15, located at the rear of 520AE4-HD / 520AE8-HD module, is used to terminate the 2nd last BNC input (AES IN4 on 520AE4-HD version, AES IN7 on 520AE8-HD version). It is recommended that it be kept in "75R" position.

7. *VISTA*LINK® REMOTE MONITORING/CONTROL

7.1. WHAT IS *VISTA*LINK®?

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 *Vista*LINK® enabled products.

2. Managed devices (such as 520AE4-HD), each with a unique address (OID), communicate with the NMS through an SNMP Agent. Evertz VistaLINK® enabled 500 series modules reside in the 3RU 500FR MultiFrame and communicate with the manager via the 500FC VistaLINK® frame controller module, which serves as the 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.

For more information on connecting and configuring the VistaLINK® network, see the 500FC Frame Controller chapter.

7.2. VISTALINK® MONITORED PARAMETERS

The following parameters can be remotely monitored through the VistaLINK® interface.

Parameter	Description
Video Input Format	Indicates the current detected program video standard
AES 1 Input	Indicates if a valid AES signal is detected on AES input 1
AES 2 Input	Indicates if a valid AES signal is detected on AES input 2
AES 3 Input	Indicates if a valid AES signal is detected on AES input 3
AES 4 Input	Indicates if a valid AES signal is detected on AES input 4
Embedded Audio Group	Indicates if upstream embedded audio is detected on the video input
External Metadata Input	Indicates if external Dolby Metadata is detected

Table 7-1: VistaLINK® Monitored Parameters

7.3. VISTALINK® CONTROLLED PARAMETERS

The following parameters can be remotely controlled through the VistaLINK® interface.

Parameter	Description
Output Video Format	Selects the output video format
Output Video Default Colour	Selects the output video colour if the program video is lost
Output Video Behaviour	Selects the video output mode if the program video is lost
Sample Rate Converters 1,2,3,4	Enables or disables the Sample Rate Converters for AES inputs 1,2,3 and 4
Audio Mode	Sets the card into a mono channel or stereo pair control mode of operation
Embedder A Group Number	Sets which group audio embedder A will embed into
Embedder A Enabled	Enables or disables Audio Embedder A
Embedder B Group Number	Sets which group audio embedder B will embed into
Embedder B Enabled	Enables or disables Audio Embedder B
Delete Incoming Audio Group	Selects the control mode if embedded audio is detected upstream
Embedder A Source 1A	Selects which channel will be embedded into AES 1 left channel
Embedder A Source 1B	Selects which channel will be embedded into AES 1 right channel
Embedder A Source 2A	Selects which channel will be embedded into AES 2 left channel
Embedder A Source 2B	Selects which channel will be embedded into AES 2 right channel
Embedder B Source 1A	Selects which channel will be embedded into AES 1 left channel
Embedder B Source 1B	Selects which channel will be embedded into AES 1 right channel
Embedder B Source 2A	Selects which channel will be embedded into AES 2 left channel
Embedder B Source 2B	Selects which channel will be embedded into AES 2 right channel
Audio Delay 1A Seconds	Selects the amount of delay in seconds added in AES 1 left channel
Audio Delay 1A Microseconds	Selects the amount of delay in microseconds added in AES 1 left channel
Audio Delay 1A Samples	Selects the amount of delay in samples added in AES 1 left channel
Audio Delay 1B Seconds	Selects the amount of delay in seconds added in AES 1 right channel
Audio Delay 1B Microseconds	Selects the amount of delay in microseconds added in AES 1 right channel
Audio Delay 1B Samples	Selects the amount of delay in samples added in AES 1 right channel
Audio Delay 2A Seconds	Selects the amount of delay in seconds added in AES 2 left channel
Audio Delay 2A Microseconds	Selects the amount of delay in microseconds added in AES 2 left channel
Audio Delay 2A Samples	Selects the amount of delay in samples added in AES 2 left channel
Audio Delay 2B Seconds	Selects the amount of delay in seconds added in AES 2 right channel
Audio Delay 2B Microseconds	Selects the amount of delay in microseconds added in AES 2 right channel
Audio Delay 2B Samples	Selects the amount of delay in samples added in AES 2 right channel
Audio Delay 3A Seconds	Selects the amount of delay in seconds added in AES 3 left channel
Audio Delay 3A Microseconds	Selects the amount of delay in microseconds added in AES 3 left channel
Audio Delay 3A Samples	Selects the amount of delay in samples added in AES 3 left channel
Audio Delay 3B Seconds	Selects the amount of delay in seconds added in AES 3 right channel
Audio Delay 3B Microseconds	Selects the amount of delay in microseconds added in AES 3 right channel
Audio Delay 3B Samples	Selects the amount of delay in samples added in AES 3 right channel
Audio Delay 4A Seconds	Selects the amount of delay in seconds added in AES 4 left channel
Audio Delay 4A Microseconds	Selects the amount of delay in microseconds added in AES 4 left channel
Audio Delay 4A Samples	Selects the amount of delay in samples added in AES 4 left channel
Audio Delay 4B Seconds	Selects the amount of delay in seconds added in AES 4 right channel
Audio Delay 4B Microseconds	Selects the amount of delay in microseconds added in AES 4 right channel
Audio Delay 4B Samples	Selects the amount of delay in samples added in AES 4 right channel
VANC Embed Output	Selects what line to encode metadata onto
VANC Data ID Output	Selects what Data ID (DID) to use when encoding Dolby Metadata
VANC Secondary Data ID Output	Selects what SDID to use when encoding Dolby Metadata
Embed VANC Output	Enables or disables the VANC encoder

Table 7-2: VistaLINK® Monitored Parameters

7.4. VISTALINK® TRAPS

The following traps can be relayed to the VistaLINK® interface by the ARC Series modules.

Parameter	Description
Video Format Not Present	Alerts when the program video is missing
Module Not OK	Alerts when there is a local module fault
AES 1 Not Present	Alerts when AES 1 is missing
AES 2 Not Present	Alerts when AES 2 is missing
AES 3 Not Present	Alerts when AES 3 is missing
AES 4 Not Present	Alerts when AES 4 is missing

Table 7-3:VistaLINK® Monitored Parameters

7.5. DISCRETE CHANNEL MODE MENUS (MENU QUICK REFERENCE)

- MONI
  - 1234
  - 5678
  - 9ABC
  - DEFG
  - 1TO8
  - 9TOG
  - 1TOG
  - dB1
  - dB2
  - dB3
  - dB4
  - dB5
  - dB6
  - dB7
  - dB8
  - dB9
  - dBA
  - dBB
  - dBC
  - dBD
  - dBE
  - dBF
  - dBG
- STAT
  - AES1
  - AES2
  - AES3
  - AES4
  - AES5
  - AES6
  - AES7
  - AES8
  - VIFM
  - IGRP
  - EXMT
- AMUX
  - OP1A
  - OP1B
  - OP2A
  - OP2B
  - OP3A
  - OP3B
  - OP4A
  - OP4B
  - OP5A
  - OP5B
  - OP6A
  - OP6B
  - OP7A
  - OP7B
  - OP8A
  - OP8B
- ADEL (520AE4-HD)
  - DL1A
  - DL1B
  - DL2A
  - DL2B
  - DL3A
  - DL3B
  - DL4A
  - DL4B
- HEAD
  - HVOL
  - HPML
  - HPMR
- META
  - VAEL
  - VAEI
  - VAES
  - VAEN
- EAUD (520AE4-HD)
  - IG1K
  - IG2K
  - IG3K
  - IG4K
  - EMAG
  - EMAE
  - EMBG
  - EMBE
- EAUD (520AE8-HD)
  - IG1K
  - IG2K
  - IG3K
  - IG4K
  - EM1E
  - EM2E
  - EM3E
  - EM4E
- UTIL
  - 2CHA
  - DISP
  - VERS
  - FRST
  - UPGR
  - SRC1
  - SRC2
  - SRC3
  - SRC4
  - SRC5
  - SRC6
  - SRC7
  - SRC8
- VIDE
  - VOFM
  - COLR
  - VOUT

Greyed Items only available on 520AE8-HD version

7.6. STEREO PAIR MODE MENUS

MONI
- 1234
- 5678
- 9ABC
- DEFG
- 1TO8
- 9TOG
- 1TOG
- dB1
- dB2
- dB3
- dB4
- dB5
- dB6
- dB7
- dB8
- dB9
- dBA
- dBB
- dBC
- dBD
- dBE
- dBF
- dBG

STAT
- AES1
- AES2
- AES3
- AES4
- AES5
- AES6
- AES7
- AES8
- VIFM
- IGRP
- EXMT

AMUX
- OP1
- OP2
- OP3
- OP4
- OP5
- OP6
- OP7
- OP8

ADEL (520AE4-HD)
- DL1
- DL2
- DL3
- DL4

HEAD
- HVOL
- HPM

META
- VAEL
- VAEI
- VAES
- VAEN

EAUD (520AE4-HD)
- IG1K
- IG2K
- IG3K
- IG4K
- EMAG
- EMAE
- EMBG
- EMBE

EAUD (520AE8-HD)
- IG1K
- IG2K
- IG3K
- IG4K
- EM1E
- EM2E
- EM3E
- EM4E

UTIL
- 2CHA
- DISP
- VERS
- FRST
- UPGR
- SRC1
- SRC2
- SRC3
- SRC4
- SRC5
- SRC6
- SRC7
- SRC8

VIDE
- VOFM
- COLR
- VOUT

Greyed Items only available on 520AE8-HD version