TABLE OF CONTENTS

Figures

Tables

REVISION HISTORY

REVISION	DESCRIPTION	DATE
0.1	Preliminary version	June 07
0.2	Updated block diagram	Oct 07
0.3	GPIs enabled	Sept 08

This page left intentionally blank

1. OVERVIEW

The 7746FS-EAES8-DD-AC3E-HD frame synchronizer is designed to re-time a SMPTE 292M (1080i/60, 1080i/59.94, 1080i/50, 1080p/24sF, 1080p/23.94, 720p/60, 720p/59.95, 720p/50, 1035i/59.94, 1035i/60, or 480p/59.94) or SMPTE 259M (625i/50, 525i/59.94) input to a local reference tri-level or composite sync signal. When necessary, frames are repeated or dropped to maintain synchronization. During the synchronizing process, the video delay varies from 3 lines through to 1 frame plus 3 lines. Additional delay can be added to the synchronizing process in 1-frame increments.

On the 7746FS-EAES8-DD-AC3E-HD, the user can choose to have 8 stereo pairs from 4 groups in the upstream embedded audio and, from the 8 AES inputs embedded on the output video and outputs as AES.

One selected channel pair is processed by the on-card Dolby decoder. If the channel contains Dolby-E or Dolby Digital (AC-3), it will yield up to 8 additional discrete audio channels, 2 channels of stereo down mix and the associated Dolby-E metadata. Up to 16 selected channels may be optionally delayed and re-embedded into the output video and/or directed to AES outputs. Video output may be optionally delayed to help with lip sync. If PCM audio is embedded, the device acts as a simple 4 group audio de-embedder.

Up to 6 channels can be encoded into Dolby AC-3 with the on-card Dolby AC-3 encoder. Default metadata can be generated, or selected from various sources such as the metadata from the on-card Dolby decoder, external metadata over the DB-9 connector, authored metadata, or metadata de-embedded from VANC of the SDI input signal. The input to the Dolby AC-3 encoder comes from a secondary dedicated audio mixer.

The 7746FS-EAES8-DD-AC3E-HD also handles Dolby-E Metadata. Metadata is optionally embedded in the Vertical Ancillary data (VANC) and can be provided as an output for downstream devices (i.e. Dolby Encoders, Multi-channel Audio Tool, etc.). For lip sync cohesion and ease of editing, Dolby-E data is organized in blocks with lengths matching the associated video frame. The decoder will match the beginning of each output block with the start of video, as provided with the genlock input. The 8 AES/De-embedder inputs can be configured as a backup, in the event the primary is lost, or as a voice-over source.

This device can pass all VANC data after switching line. When the input video is lost, it will pass the input AES or mute if embedded audio is selected for synchronizing. The frame synchronizers have the ability to set the audio delay independently from the video delay.

The 7746FS-EAES8-HD series modules also have the ability to adjust video parameters such as brightness, contrast, and saturation. Hue control is available for SD standards (525i/59.94 and 625i/50). They can also adjust audio parameters such as gain, invert, two-channel mixing, and reassignment of audio channels. The embedder and AES outputs can individually choose between two independent audio mixers.

A breakout-audio mode is provided which allows the direct output thru the AES outputs of the de-embedded audio, or the Dolby Decoder output before the audio synchronizer/delay and processor blocks.

The 7746FS-EAES8-HD series modules occupy two card slots in the 3RU frame (7700FR-C), which will hold up to 15 1-slot modules or one slot in the 1RU frame (7701FR), which will hold up to three modules. The 7746FS-EAES8-HD can also fit in a standalone unit (S7701FR).

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®.

Features:

- Synchronizes 1080i/60, 1080i/59.94, 1080i/50, 1080p/24sF, 1080p/23.98sF, 720p/60, 720p/59.94, 720p/50, 1035i/59.94, 1035i/60, 480p/59.94, 525i/59.94, or 625i/50
- Minimum video input to output delay – 3 lines
- Maximum video input to output delay – 1 frame plus 3 lines
- 12 additional frames of delay can be added for interlaced video formats, 28 frames for progressive formats
- Program Video output bypass relay protected on power loss
- Programmable output phase with respect to reference input
- Freeze on last good frame, or field, go to black on loss of video or pass input
- Synchronizes 4 groups of embedded audio and re-embeds 4 groups
- Front panel LEDs indicate: module fault, video and embedded audio group presence, and AES signal presence
- Card edge display
- Serial remote data logging
- Adjustable video black level (brightness), Y level (contrast), and chroma level (saturation)
- Adjustable hue control for SD video standards
- Maximum audio input to output delay – equivalent to additional frames of video delay
- Synchronizes VANC data starting after switching line
- Synchronizes RP188 time codes
- Separate control of video and audio delay
- Audio Sample Rate Converters can be disabled, or set to automatically detect non-PCM data (i.e. Dolby-E) and disable on a per-input basis
- Independently adjustable audio levels and inversion on all channels
- Ability to combine any two inputs to any output (including monaural down-mixes of all input stereo pairs)
- Reassignment of audio channels
- Synchronizes eight external AES signals
- Synchronized audio is output as 8 AES signals
- AES and embedded outputs can choose from two independent mixers
- AES outputs bypass relay protected on power loss
- De-embeds and embeds Dolby-E metadata to and from video
- Flexible audio channel mixer
- Headphone jack (on card edge) for monitoring stereo down mix or any input source
- Dolby Metadata is embedded in HD VANC for downstream device decoding

Dolby Decoder features:

- Automatic switchover to backup audio source on loss of selected Dolby stream.
- Adjustable video delay to match Dolby decoder audio delay
- Decodes Dolby-E and Dolby AC-3
- Metadata from encoded input can be routed to automatically control the on-card Dolby AC-3 encoder
- Stereo down-mix provided from encoded input

Dolby AC-3 Encoder features:

- Supports 1/0, 2/0, 3/0, 2/1, 3/1, 2/2, and 3/2 audio coding modes
- Bit-rates of 56 kbps up to 640 kbps supported
- Two automatic bit-rate modes provided to adjust according to audio coding mode
- Encoded output can be routed to any output pair, and duplicated to any number of output pairs
- Encoder can be set to automatic mode and configured using presets, or driven by metadata

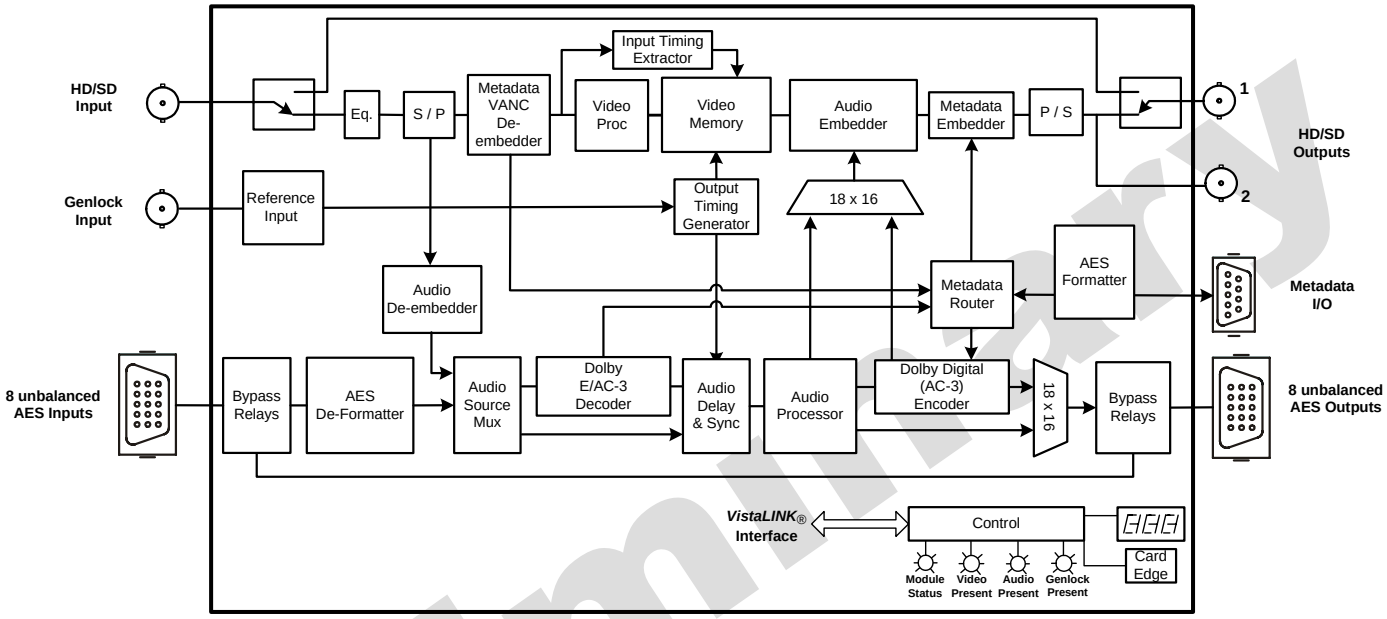

Figure 1-1: 7746FS-EAES8-DD-AC3E-HD Block Diagram

2. INSTALLATION

The 7746FS-EAES8-HD series modules come with a companion rear plate that occupies two slots in the frame. For information on mounting the rear plate and inserting the module into the frame see section 3 of the 7700FR chapter.

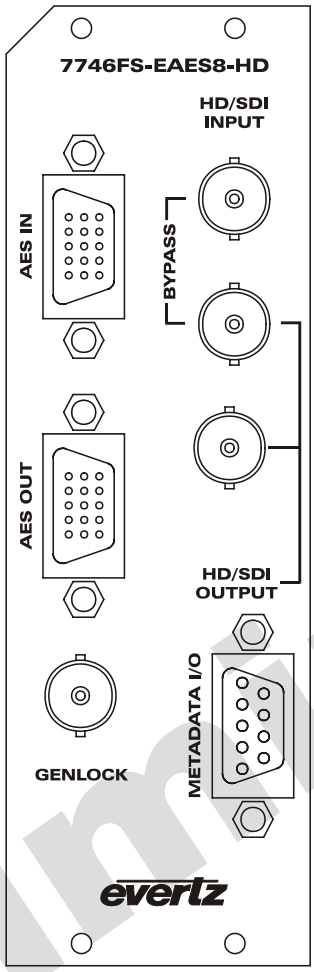

Figure 2-1: Rear Panel

2.1. VIDEO CONNECTIONS

HD/SDI INPUT: The input BNC connector for 10-bit serial digital video signals compatible with the SMPTE 292M or SMPTE 259M standard. The module can automatically detect the video standard or can be manually set for a specific video standard.

HD/SDI OUTPUT: There are two BNC connectors with reclocked serial component video outputs, in the same video standard as the input. These outputs contain the input video synchronized to the GENLOCK signal or to the free running oscillator if GENLOCK is not present. The audio present at AES inputs 1 to 8 is embedded in accordance with the SMPTE 272M or SMPTE 299M standard. The top HD/SDI output is protected by a bypass relay, which will activate in the event of power loss to the module. The remaining output is not bypass protected.

2.2. GENLOCK REFERENCE

For proper synchronization of the output video, the module must be locked to a genlock signal of the output video format.

GENLOCK This BNC is for connecting a video or tri-level sync reference and is auto-detected by the module. Jumper J5 selects whether the reference input is terminated to 75 ohms or high impedance (default). (See section 7.3).

2.3. AES INPUT AND OUTPUT AUDIO CONNECTIONS

Eight unbalanced AES inputs and eight unbalanced AES outputs conforming to SMPTE 276M are provided on the two high-density DB-15 connectors labeled **AES IN** and **AES OUT**. The breakout cables provided will bring these signals conveniently to BNC connectors. The eight AES input channels can be used as a backup or voice-over source. The de-embedded and processed audio can be output as eight AES channels. Table 2-1 and Table 2-2 show the respective DB-15 connector pin outs.

Name	Description	DB-15 Pin
GPI2	Reserved for Future Use	1
	Reserved for Future Use	2
	Reserved for Future Use	3
	Reserved for Future Use	4
	Reserved for Future Use	5
	Reserved for Future Use	6
AES In 2	AES Input 2 - Unbalanced	7
GPI1	Reserved for Future Use	8
AES In 6	AES Input 6 – Unbalanced	9
AES In 5	AES Input 5 – Unbalanced	10
AES In 1	AES Input 1 - Unbalanced	11
AES In 8	AES Input 8 – Unbalanced	12
AES In 7	AES Input 7 – Unbalanced	13
AES In 4	AES Input 4- Unbalanced	14
AES In 3	AES Input 3- Unbalanced	15
GND	Ground	Shell

Table 2-1: AES INPUT Audio Connector Pin Out

Name	Description	DB-15 Pin
	Reserved for Future Use	1
	Reserved for Future Use	2
	Reserved for Future Use	3
	Reserved for Future Use	4
	Reserved for Future Use	5
	Reserved for Future Use	6
AES Out 2	AES Output 2 - Unbalanced	7
	Reserved for Future Use	8
AES Out 6	AES Output 6 – Unbalanced	9
AES Out 5	AES Output 5 – Unbalanced	10
AES Out 1	AES Output 1 - Unbalanced	11
AES Out 8	AES Output 8 – Unbalanced	12
AES Out 7	AES Output 7 – Unbalanced	13
AES Out 4	AES Output 4- Unbalanced	14
AES Out 3	AES Output 3- Unbalanced	15
GND	Ground	Shell

Table 2-2: AES OUTPUT Audio Connector Pin Out

The 7746FS-EAES8-HD series modules are shipped with two breakout cables for the DB-15 connector (Evertz Part # WPAES8-BNCM-6F), which can be used to facilitate wiring the AES audio and GPI connections. The pin out of the cables is shown in Table 2-3.

DB-15 PIN	Wire	Ground/Shield Connection	Label Name	Connector Type	AES IN FUNCTION	AES OUT FUNCTION
1	Red		W1 RED	WIRE	GPI2	X
2	Green		W2 GREEN	WIRE	X	X
3	Blue		W3 BLUE	WIRE	X	X
4	(not used)		(not used)		X	X
5	(not used)		(not used)		X	X
6	White		W4 WHITE	WIRE	X	X
7	Coax	DB15 Shell	AES A2	BNC MALE	AES In 2	AES Out 2
8	Yellow		W5 YELLOW	WIRE	GPI1	X
9	Coax	DB15 Shell	AES B2	BNC MALE	AES In 6	AES Out 6
10	Coax	DB15 Shell	AES B1	BNC MALE	AES In 5	AES Out 5
11	Coax	DB15 Shell	AES A1	BNC MALE	AES In 1	AES Out 1
12	Coax	DB15 Shell	AES B4	BNC MALE	AES In 8	AES Out 8
13	Coax	DB15 Shell	AES B3	BNC MALE	AES In 7	AES Out 7
14	Coax	DB15 Shell	AES A4	BNC MALE	AES In 4	AES Out 4
15	Coax	DB15 Shell	AES A3	BNC MALE	AES In 3	AES Out 3
Shell	Black		GND	WIRE	GND	GND

Table 2-3: AES Audio Breakout Cable (Evertz Part # WPAES8-BNCM-6F)

2.4. METADATA I/O

The 7746FS-EAES8-HD series modules provide a DB-9 connector for the handling of Metadata. The 7746FS-EAES8-HD series modules can transmit Metadata; receive Metadata or both, depending on the application.

For the cases where the module is either transmitting or receiving Metadata, a typical 9-pin serial cable (not provided) can be used to connect the modules to a Dolby device like the DP570. The pin out of the connector is shown in Table 2-4.

PIN Number on Connector	Module Operation (See section 6.11.2 for settings) 7746FS-EAES8-HD to DP570	Module Operation (See section 6.11.2 for settings) DP570 to7746FS-EAES8-HD
1	Shield	Shield
2	TX A asynchronous out -	RX A asynchronous out -
3	RX B asynchronous out +	TX B asynchronous out +
4	Ground	Ground
5	NC	NC
6	Ground	Ground
7	TX B asynchronous out +	RX B asynchronous out +
8	RX A asynchronous out -	TX A asynchronous out -
9	Shield	Shield

Table 2-4: Metadata Transmit or Receive Connections

In applications where the Metadata I/O will both transmit AND receive, the module and the transmitting and receiving DP570 will need to be wired as shown in Figure 2-2. The module will also have to be configured to operate in RXTX mode (see 6.11.2).

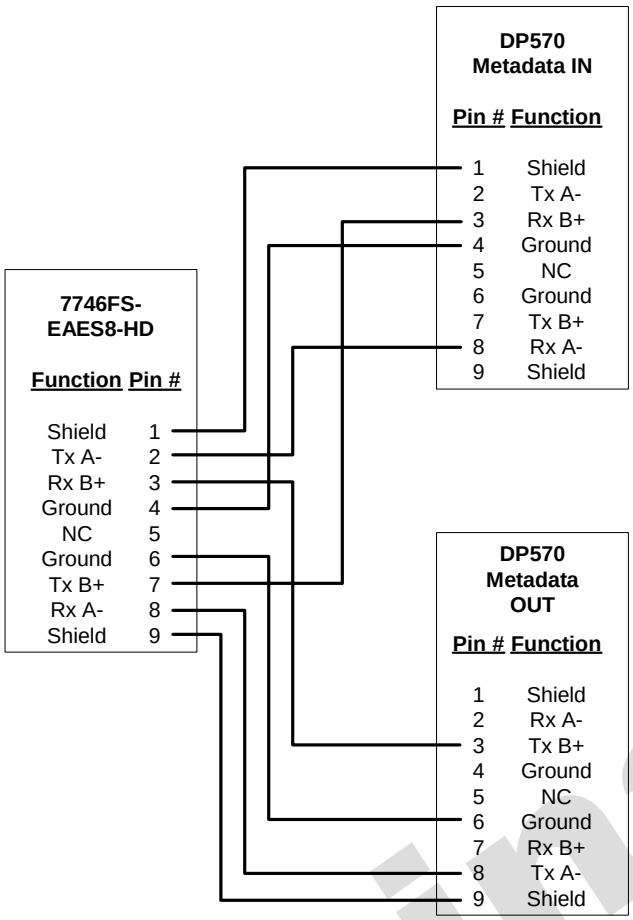

Figure 2-2: Metadata Transmit and Receive

2.5. GENERAL PURPOSE INPUTS

The 7746FS-EAES8-HD series modules have 2 general-purpose inputs (GPI) available on the **AES IN** port.

3. SPECIFICATIONS

3.1. SERIAL DIGITAL VIDEO INPUTS

Standards: Auto detectable and user settable.
SMPTE 292M (1.5Gb/s), 1080i/60, 1080i/59.94, 1080i/50, 1080p/24sF, 1080p/23.94, 720p/60, 720p/59.95, 720p/50, 1035i/59.94, 1035i/60, or 480p/59.94
SMPTE 259M-C (270 Mb/s) 525 or 625 line component

Number of Inputs: 1

Connector: BNC per IEC 60169-8 Amendment 2

Input Equalization:

SD Standards: Automatic to 300m @ 270Mb/s with Belden 1694 or equivalent cable.

HD Standards: Automatic to 125m @ 1.5Gb/s with Belden 1694 or equivalent cable.

Return Loss:

SD Standards: <-15 dB up to 270Mb/s

HD Standards: <-15 dB up to 1. 5Gb/s

3.1. SERIAL DIGITAL VIDEO OUTPUTS

Standard: same as input

Number of Outputs: 2 (1 output bypass relay protected)

Connector: BNC per IEC 60169-8 Amendment 2

Signal Level: 800mV nominal

DC Offset: 0V ±0.5V

Rise and Fall Time:

SD Standards: 740ps nominal

HD Standards: 200ps nominal

Overshoot: <10% of amplitude

Wide Band Jitter:

SD Standards: < 0.10UI

HD Standards: < 0.22UI

3.2. GENLOCK INPUT

Type: HD Tri-Level sync, NTSC or PAL Colour Black 1 V p-p (auto detect)

Connector: BNC per IEC 60169-8 Amendment 2

Termination: Hi-Z or 75 ohm (jumper selectable)

Return Loss: >40dB to 10 MHz

3.3. AES AUDIO INPUTS

Standard: SMPTE 276M, single ended synchronous or asynchronous AES
Number of Inputs: 8 unbalanced
Connectors: Female High Density DB-15, breakout cable to BNC connectors supplied
Input Level: 0.1 to 2.5 Vp-p (5Vp-p tolerant)
Input Impedance: 75 Ω
Return Loss: >25 dB 100 kHz to 6 MHz
Equalization: Automatic to 1000m with Belden 1694 or equivalent cable @ 48 kHz AES signal
Sampling Rate: 48 kHz ± 100 ppm
Impedance: 75 Ω
Resolution: Up to 24-bit

3.4. AES AUDIO OUTPUTS

Standard: SMPTE 276M, single ended synchronous AES
Number of Outputs: 8 unbalanced
Connectors: Female High Density DB-15, breakout cable to BNC connectors supplied
Sampling Rate: 48 kHz
Impedance: 75 Ω
Resolution: Up to 24-bit

3.5. DOLBY DECODER

Types Supported: Dolby-E and Dolby AC-3
Number of Outputs: up to 8, with 2 additional stereo down-mix outputs
AC-3 Bit-rates Supported: 56 kbps to 640 kbps
Dolby-E frame rates supported: 23.98, 24, 25, and 29.97 fps

3.6. DOLBY AC-3 ENCODER

Types Supported: Dolby AC-3
Number of Encoded channels: up to 6
AC-3 Bit-rates Supported: 56 kbps to 640 kbps, with 2 automatic bit-rate modes
Audio Coding Modes: 1/0, 2/0, 3/0, 3/0L, 2/1, 2/1L, 3/1, 3/1L, 2/2, 2/2L, 3/2, 3/2L
Encoding Control: metadata or automatic presets

3.7. METADATA INPUT/OUTPUT

Type: SMPTE RDD6 Dolby-E Metadata
Connectors: Female DB-9
Baud Rate: 115200 baud

3.8. HEADPHONE AUDIO OUTPUTS

Number of Outputs:	1
Type:	Stereo 3.5mm jack
Output Load:	32 Ω +
Signal Level:	100 mW max, soft adjustable over 40 dB range
THD+N:	1 %
SNR:	90 dB RMS, “A” weighted

3.9. DELAY

AC3 Decode Delay:	32 ms nominal
Dolby E Decode Delay:	1 frame nominal
De-embedding Latency:	600 μs nominal
Additional Audio Delay:	0 to 1.2 seconds (user programmable)
Additional Video Delay:	0 to 7 frames (user programmable)

3.10. ELECTRICAL

Voltage:	+12VDC
Power:	22.5 Watts
EMI/RFI:	Complies with FCC regulations for class A devices. Complies with EU EMC directive.

3.11. PHYSICAL

Number of slots:

7700 frame mounting:	2
7701 frame mounting:	1

4. STATUS INDICATOR

The 7746FS-EAES8-HD series modules have 17 LED Status indicators on the front card edge to show operational status of the card at a glance. Figure 4-1 shows the location of the LEDs and card edge controls.

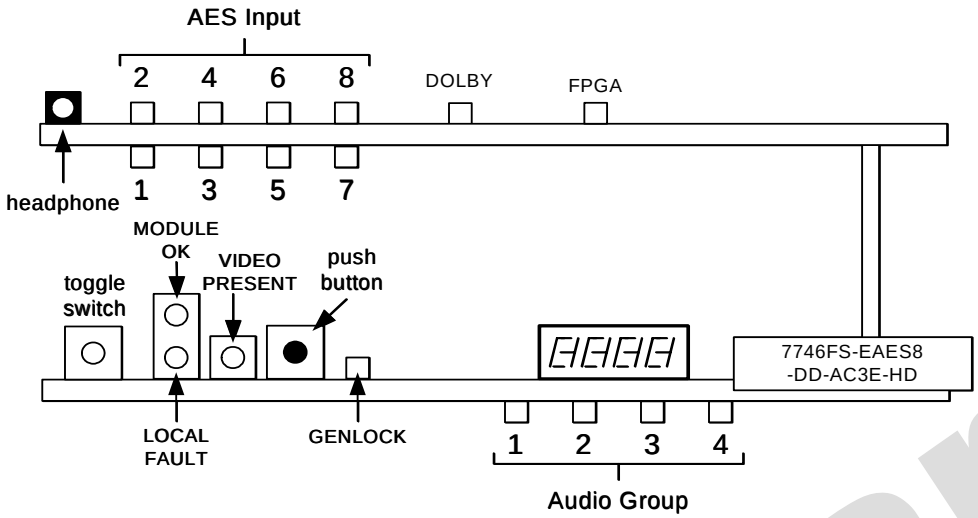

Figure 4-1: Status LED Locations

Three large LEDS on the front of the main board indicate the general health of the module:

LOCAL FAULT: This Red LED indicates poor module health and will be ON during the absence of a valid input signal, an invalid genlock, or 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 indicates good module health. It will be ON when a valid input signal and valid genlock is present, and the board power is good.

VIDEO PRESENT: This Green LED will be ON when there is a valid video signal present at the module input.

The following are the other LEDs on the card:

GENLOCK: This Green LED will be ON when there is a signal present at the module genlock input.

DOLBY STATUS: This LED will be GREEN and ON when the Dolby Decoder and/or Dolby Encoder is processing or active. The LED will be RED and ON if there is an error with the either Dolby Decoder or Encoder.

FGPA CONFIG: This LED will be RED and ON when the FPGA is loading on power up. The LED is OFF during normal module operation.

4.1. EMBEDDED AUDIO STATUS LEDS

Four LEDs located on the lower end of the main board of the module (near the card extractor) indicate which embedded audio groups are present in the input video. Audio Group LED 1 is located closest to the center of the module.

Audio Group LED	Colour	Audio Group Status
1	Off	No group 1 present on input video.
	Green	Group 1 present on input video.
2	Off	No group 2 present on input video.
	Green	Group 2 present on input video.
3	Off	No group 3 present on input video.
	Green	Group 3 present on input video.
4	Off	No group 4 present on input video.
	Green	Group 4 present on input video.

Table 4-1: Audio Group Status LEDs

Eight LEDs located on the sub card of the module indicate which AES input channels are present. AES input channel 1 is the top leftmost LED, and AES input channel 2 to the right.

AES Input Channel LED	Colour	AES Input Channel Status
1	Off	AES input channel 1 is not present
	Green	AES input channel 1 is present.
	Yellow	AES input channel 1 is present with encoded Dolby.
2	Off	AES input channel 2 is not present
	Green	AES input channel 2 is present.
	Yellow	AES input channel 2 is present with encoded Dolby.
3	Off	AES input channel 3 is not present
	Green	AES input channel 3 is present.
	Yellow	AES input channel 3 is present with encoded Dolby.
4	Off	AES input channel 4 is not present
	Green	AES input channel 4 is present.
	Yellow	AES input channel 4 is present with encoded Dolby.
5	Off	AES input channel 5 is not present
	Green	AES input channel 5 is present.
	Yellow	AES input channel 5 is present with encoded Dolby.
6	Off	AES input channel 6 is not present
	Green	AES input channel 6 is present.
	Yellow	AES input channel 6 is present with encoded Dolby.
7	Off	AES input channel 7 is not present
	Green	AES input channel 7 is present.
	Yellow	AES input channel 7 is present with encoded Dolby.
8	Off	AES input channel 8 is not present
	Green	AES input channel 8 is present.
	Yellow	AES input channel 8 is present with encoded Dolby.

Table 4-2: AES Input Channel Presence LEDs

5. CARD EDGE CONTROLS

The 7746FS-EAES8-HD series modules can be configured by the card edge controls. There are some key control components, which can be found at the card edge:

1. Toggle Switch
2. 4 Character Dot Matrix Display
3. Push Button
4. 4 Audio LEDs

Toggle Switch: This component will become active once the card has completed booting. Its primary function is to navigate through the menu system.

4 Character Dot Matrix Display: This component will become active once power is applied to the card. This component is used to relay text-based information to the user. It will be used to scroll build and card information, or display the menu options to the user.

Push Button: This component will become active once the card has completed booting. It is primarily used for navigating through the menu system.

4 Audio Group LEDs: These LEDs are primarily used to indicate what groups are embedded in the input video signal during normal operation. However, when navigating the card edge menu, these LEDs are used to indicate menu depth status. For example, when at the top-level menu, all the LEDs are OFF. When the user navigates into another menu (e.g. Video Control), Audio group 1 LED turns ON. Audio group LED 1 is located closest to the center of the module. If the user enters a sub-menu (e.g. Video Control -> Video Standard Select), then both Audio Group LEDs 1 and 2 turn ON, indicating another depth within the menu system.

When navigating the card edge menu system, when all the Audio LEDs are OFF the user is at the Top Level menu.

The 7746FS-EAES8-HD series modules are also equipped with an 8-position DIP switch. Currently, the DIP switch has no functionality and is reserved for future use.

6. CARD EDGE MENU SYSTEM

6.1. NAVIGATING THE MENU SYSTEM

You can use the toggle switch to move up and down the list of available parameters to adjust. To adjust any parameter, use the toggle switch to move up or down to the desired parameter and press the pushbutton. Using the toggle switch, 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 choices, you can cycle through the list by pressing the toggle switch in either direction. The parameter values are changed as you cycle through the list.

When you have stopped at the desired value, depress the pushbutton. This will return to the parameter select menu item you were setting (the display shows the parameter name you were setting). To change another parameter, use the toggle switch to select other parameters. If neither the toggle switch nor pushbutton is operated for several seconds the card edge control will exit the menu system and return to an idle state.

On all menus, there is an extra selectable item: *BACK*. Selecting *BACK* will take you to the previous menu (the one that was used to get into the current menu). On the main menu, *BACK* will both take the user to the normal operating mode (indicated by the moving line on the card edge display).

6.2. TOP LEVEL MENU STRUCTURE

Table 6-1 provides a brief description of the top level of the menu tree that appears when you enter the card edge menu system. Selecting one of these items will take you down into the next menu level to set the value of that parameter. The details of the each of the menu items are described in sections 6.3 to 6.13.

VCTR	Video Control	Sets the video standard that the module will operate in, timing offset of the video output, and loss of video mode.
ACTR	Audio Control	Sets audio controls for the module such as: Coarse and fine audio delays; Sample Rate Converter mode; C-bit control; Embedder Group enable; and Demux loss of video mode.
VP	Video Proc Control	Sets the black, luma, and chroma levels. Also, adjusts hue for SD video standards.
AP	Audio Proc Control	Sets the audio processor and router controls.
HEAD	Headphone Monitor	Sets the headphone volume level and selects the source for headphone monitoring.
DLBY	Dolby Encoder & Decoder Control	Sets the controls for the Dolby AC-3 Encoder and the Dolby Decoder, as well as the Dolby Decoder loss of signal mode.
META	Metadata	Sets the Metadata Mux and Demux settings and configures the DB-9 Metadata I/O.
STAT	Status	Reports the status of the firmware, FPGA revisions, input video standard, operating standard, audio group detection, AES Input presence, and Dolby Status.
MISC	Miscellaneous	Enables VistaLINK®, sets display orientation, and performs factory reset.

Table 6-1: Top Level Menu Structure

The parameter adjustments are REAL TIME ADJUSTMENTS and will affect the output video/audio immediately. These settings should not be adjusted when the output video/audio is in the broadcast chain.

6.3. CONFIGURING THE VIDEO CONTROLS

The *Video Control* menus are used to configure parameters associated with the module's operating standards, output video timing and loss of video mode. The chart below shows the items available in the *Video Control* menus. Sections 6.3.1 to 6.3.5 give detailed information about each of the menu items.

VSTD	Video Standard Select	Sets the video standard that the module will operate in.
VDLY	Vertical Phase	Sets the vertical delay of the output video.
HDLY	Horizontal Phase	Sets horizontal delay of the output video.
FDLY	Frame Phase	Sets frame delay of the output video.
LOVM	Freeze Mode	Sets module action when input video is lost.

Table 6-2: Video Controls Menu

6.3.1. Setting the Video Standard

Video Control	
VSTD	
Auto detect	*AUTO*
625i/50	*PALB*
525i/59.94	*NTSC*
1080i/50	*1I50*
1080i/59.94	*1I59*
1080i/60	*1I60*
720p/59.94	*7P59*
720p/60	*7P60*
1080p/23.98sF	*1S23*
1080p/24sF	*1S24*
1035i/59.94	*3I59*
1035i/60	*3I60*
720p/50	*7P50*

This control selects the operating standard that the module will operate in. The internal timing of the module will be based on this standard. If the operating standard is set to *Auto detect*, then the module will operate based on the input video standard.

If the operating standard is set to a specific value (e.g. 525i/59.94), then regardless of the input video standard, the module will operate in the selected value (in this example it would be 525i/59.94).

The output video standard will always be the same as the operating standard. However, NO format or standard conversion will occur.

This control is NOT a LIVE control. The parameter will change once the pushbutton is pressed.

6.3.2. Setting the Vertical Phase

Video Control	
VDLY	
0 to Max	
0	

This control selects the vertical delay of the output video signal in respect to the input video. The range of values is based on the operating standard of the module.

6.3.3. Setting the Horizontal Phase

Video Control
HDLY
0 to Max
0

This control selects the horizontal delay of the output video signal in respect to the input video. The range of values is based on the operating standard of the module.

6.3.4. Setting the Frame Phase

Video Control
FDLY
0 to Max
1

This control selects the frame delay of the output video signal in respect to the input video. The range of values is based on the operating standard of the module. *Max* will be 12 for interlaced standards and 28 for progressive standards.

6.3.5. Setting the Action to Take when Input Video Is Missing.

Video Control	
LOVM	
Black	BLK
Frame	FRM
Field 1	FLD1
Field 2	FLD2
Pass	PASS

This control allows the user to set the action to take when the input video is missing: the output to go to black, freeze on the good frame only, freeze on field 1 of last good frame, freeze on field 2 of last good frame or pass the input with this control.

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

When set to *Frame*, the output video will show the last good frame.

When set to *Field 1*, the output video will show the first field of the last good frame.

When set to *Field 2*, the output video will show the second field of the last good frame.

When set to *Pass* the output video may be incoherent when the video input standard mismatches the video output standard. If input video is completely unlocked, video output is frozen.

6.4. CONFIGURING THE AUDIO CONTROLS

The *Audio Control* menus are used to configure the coarse and fine audio delay; the mode of the sample rate converter, C-bit control, which embedded group to enable, and the demux behaviour with a loss of video. The chart below shows the items available in the *Audio Control* menus. Sections 6.4.1 to 6.4.6 give detailed information about each of the menu items.

ADLY	Coarse Audio Delay	Sets audio delay in frame of video increments (coarse).
ASDLY	Fine Audio Delay	Sets audio delay in milliseconds (in 20.48 µs increments, 1 sample increments))
SRC	SRC Mode	Sets the audio sample rate converter bypass mode.
CBIT	C-Bit Control	Sets the AES channel status bit handling.
EMB1	Embedder Group 1 Enable	Enables audio embedder for group 1.
EMB2	Embedder Group 2 Enable	Enables audio embedder for group 2.
EMB3	Embedder Group 3 Enable	Enables audio embedder for group 3.
EMB4	Embedder Group 4 Enable	Enables audio embedder for group 4.
DLVM	Demux Loss of Video Mode	Sets the action of the audio demux in case of input video loss.
BRKA	Breakout Audio Mode	Allows the direct output thru the AES outputs of the demux or Dolby Decoder outputs before audio synchronization/delay or processing.

Table 6-3: Audio Controls Menu

6.4.1. Setting the Coarse Audio Delay

Audio Control
- *ADLY*
  - *FDLY*
  - *0 to Max*

This control adjusts the audio delay in terms of video frames (coarsely). The delay is respective of the input video. The range of the parameter is based on the operating standard of the module, since this parameter follows the video frame phase.

When *FDLY* is selected then the audio delay is the same as the frame delay (see section 6.3.4).

Otherwise, the user can insert a delay of *0 to max* video frames.

6.4.2. Setting the Fine Audio Delay

Audio Control	
ASDLY	
-33ms to +33ms	
0	

This control adjusts the audio delay (finely). This parameter is displayed in milliseconds and adjusted in approximately sample increments (approximately 20.83µs).

If *ADLY* (see section 6.4.1) is set to 0, then the parameter range is 0 to 33ms.

Otherwise, fine audio delay ranges from –33ms to +33ms.

6.4.3. Setting the SRC Mode

Audio Control	
SRC	
Enable	ON
Bypass	BYPS
Automatic	AUTO

This sets the bypass mode of the audio sample rate converter.

When *Enabled*, audio is sample rate converted at 48 kHz that is synchronous to the input video. Audio can be either synchronous or asynchronous to the video source.

When in *Bypass* mode, the content of the audio is preserved without any loss, and directly embedded into the input video. Audio must be synchronous to the video source. If not, there may be samples that are dropped or repeated.

When set to *Automatic*, the sample rate converter will be automatically enabled when the module detects a PCM signal. It will also bypass the SRC, if Dolby E is detected.

6.4.4. Setting the C-bit Control

Audio Control	
CBIT	
Preserve	PRO
Replace	STMP

This control determines how the AES channel status bits are handled when being routed from input to output. When set to *preserve*, the module will preserve as many bits as possible, but always change to professional 48 kHz. When set to *replace*, all the C-bit will be replaced with static channel status message that reads professional 48 kHz.

6.4.5. Enabling the Audio Embedders

There are four menu items used to enable embedder groups. The menu item for each embedder group component works in the same way so for simplicity only the menu item for *Embedder Group* 1 will be shown in the manual.

Audio Control	
EMB1	
Enable	*ON*
Disable	*OFF*

This control enables or disables audio embedder for group 1.

When *Enable* is selected, Group 1 will be embedded into the output video signal.

When *Disable* is selected, Group 1 will not be embedded into the output video signal.

The default setting for EMB2, EMB3, and EMB4 is *Disable.* Some legacy SD equipment does not function correctly with more than 1 embedded audio group. Therefore, by default ONLY EMB1 is enabled.

6.4.6. Setting the Demux Loss of Video Mode

Audio Control	
DLVM	
Mute	*MUTE*
Pass AES	*AES*

This sets the demux action in the event of input video loss.

When *Mute* is selected, the module will *mute* the outputs.

When *Pass AES* is selected, the module routes AES inputs as a backup.

6.4.7. Setting the Breakout Audio Mode

Audio Control	
BRKA	
Normal	*NRML*
Demux	*DMX*
Dolby Decoder	*DDA*

This sets the breakout audio mode.

Normal (NRML) disables breakout mode and processed audio is routed to the AES outputs.

When Demux (DMX) is selected. The output of the de-embedder is routed directly to the AES outputs prior to any audio synchronization, delay, processing or Dolby decoding/encoding.

When Dolby Decoder (DDA) is selected. The output of the Dolby Decoder is routed to the AES outputs prior to any audio synchronization, delay of processing. The AES1 to AES4 will contain the decoded output, the AES 5 will contain the stereo downmix of the first program, and the remaining AES outputs will be muted. When this mode is selected, the Dolby Decoder outputs will not be available to the on-board audio mixers. This mode is typically used when external audio processing is required. The processed audio signals can be re-ingested into the module for additional processing.

6.5. CONFIGURING THE VIDEO PROCESSING FUNCTIONS

The *Video Processor* menus are used to configure parameters associated with the video processing functions. The chart below shows the items available in the *Video Processor* menu. Sections 6.5.1 to 6.5.4 give detailed information about each of the menu items.

BLVL	Black Level Adjust	Sets the black level of the output video (brightness)
Y_GN	Luma Gain Adjust	Sets the luma gain of the output video (contrast)
C_GN	Chroma Gain Adjust	Sets the chroma gain of the output video (saturation)
HUE	Hue Control	Adjusts the hue of the output SD signal.

6.5.1. Setting the Black Level

Video Processor
BLVL
-7.0 to 7.0 IRE *0*

With this control, the user can adjust the black level of the output video. For no offset of the black level, set the control to 0. The adjustment range is +/- 7 IRE with ½ IRE resolution.

6.5.2. Setting the Luma Gain

Video Processor
Y_GN
-6 to 6 dB *0*

With this control, the user can adjust the gain of luminance channel of the output video (contrast). For unity gain, set this value to 0. The adjustment range is +/- 6 dB.

6.5.3. Setting the Chroma Gain

Video Processor
C_GN
-6 to 6 dB *0*

With this control, the user can adjust the gain on the Cb and Cr channels of the output video (saturation). For unity gain, set this value to 0. The adjustment range is +/- 6 dB.

6.5.4. Setting the Hue

Video Processor
HUE
-20 to +20 deg. *0*

With this control the user can adjust the Hue or color of components. The hue adjustment is only applied to SD output video signals only. For unity gain, set this value to 0. The adjustment range is +/- 20 degrees, in 0.5-degree steps.

6.6. UNDERSTANDING THE AUDIO PROCESSOR

In order to understand the parameters of the Audio Processor on the 7746FS-EAES8-DD-AC3E-HD, this section gives a brief description of each of the major components that comprise the Audio Processor. This section is meant to aid the user when configuring the Audio Processor (sections 6.7 to 6.9).

6.6.1. Single Mixer

This is the basic building block of the Audio Processor. There are two mixers on the 7746FS-EAES8-DD-AC3E-HD module. Mixer-A has 16 output channels that feed the AES and embedded outputs. Mixer-B has 6 output channels that feed the on-card Dolby AC-3 Encoder. Figure 6-1 describes one stage for a mixer output channel. The user can mix two sources, adjust the gain and inversion of each source, and output them.

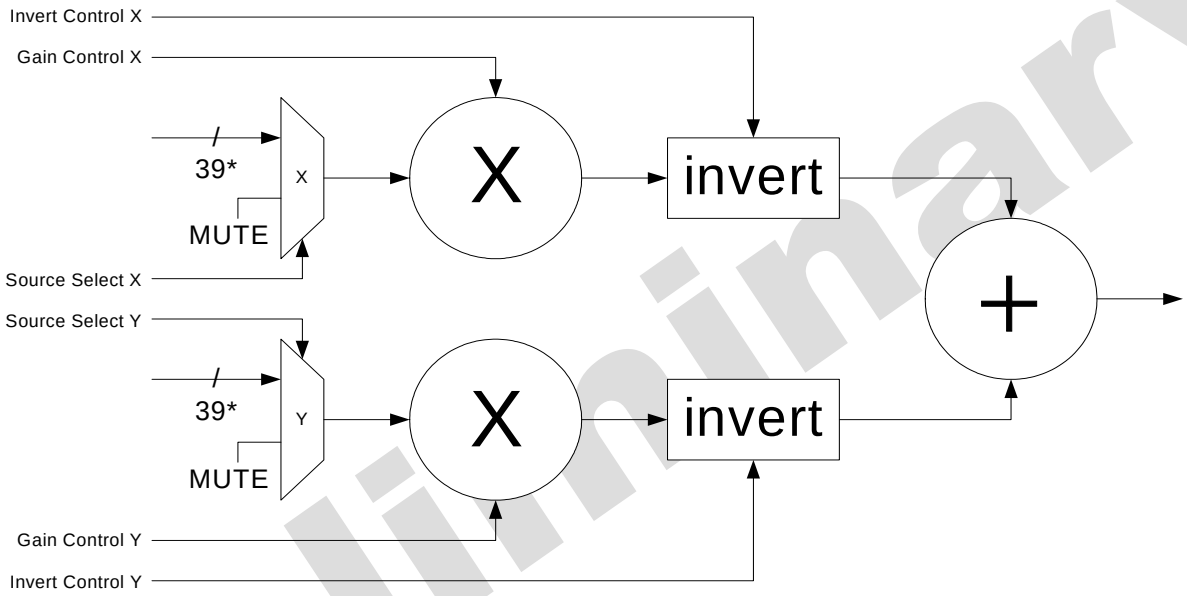

Figure 6-1: Single Mixer Stage

Typically, only Input X is used, and Input Y is defaulted to MUTE. Input Y would be used when mixing in voice-overs.

6.6.2. Full Mixer

Figure 6-2 shows all the mixer stages for Mixer-A on the 7746FS-EAES8-DD-AC3E-HD module. The figure shows how the user can map mix any input sources to the 16 output channels of the mixer. Mixer-B will have only 6 outputs and is the direct input source to the on-board Dolby AC-3 encoder.

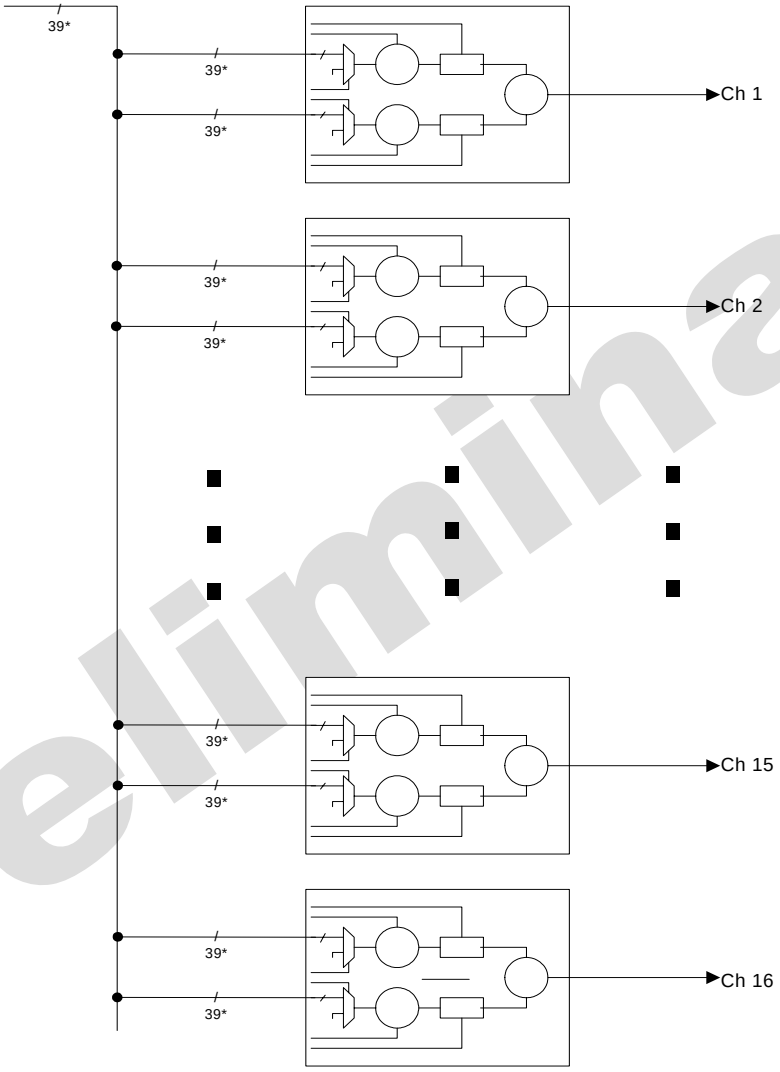

Figure 6-2: Full Mixer

6.6.3. Mixer A and B, Breakout Audio, and the Dolby AC-3 Encoder

Figure 6-3 shows how Mixer-A is used for the external AES and embedded output video. This also shows how Mixer-B is used to route audio to the Dolby AC-3 Encoder. Breakout audio routing is also shown.

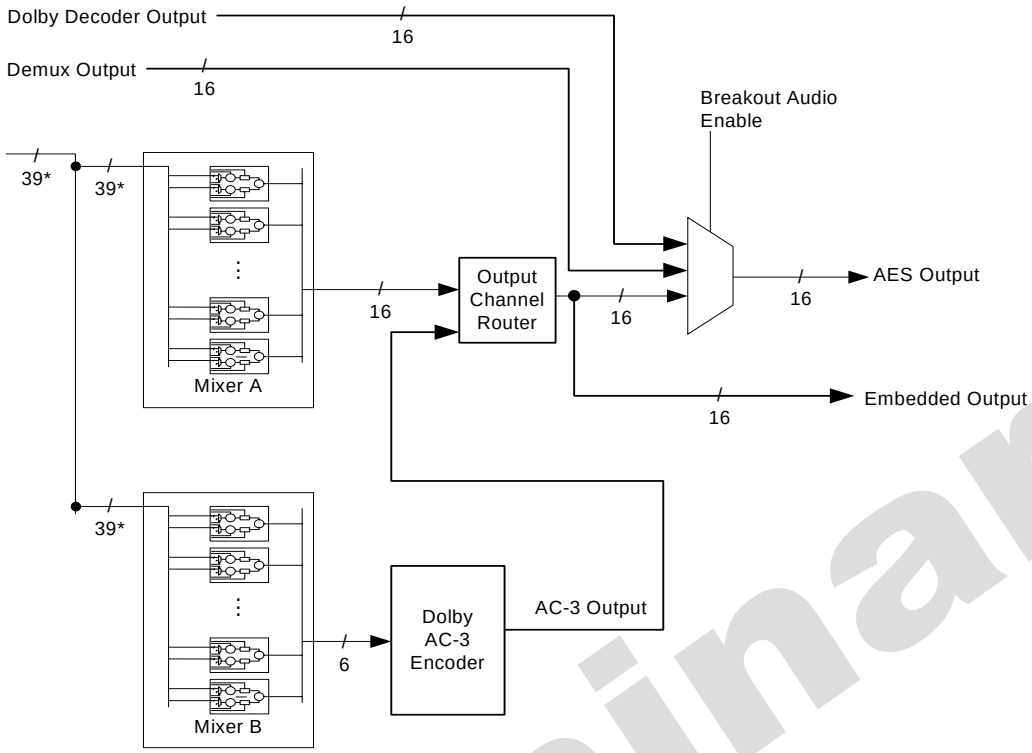

Figure 6-3: Mixer A and B

6.6.4. Mono Mixer

Figure 6-4 describes how the mono-mixers are used to provide mono down mixes as input sources for the two mixers.

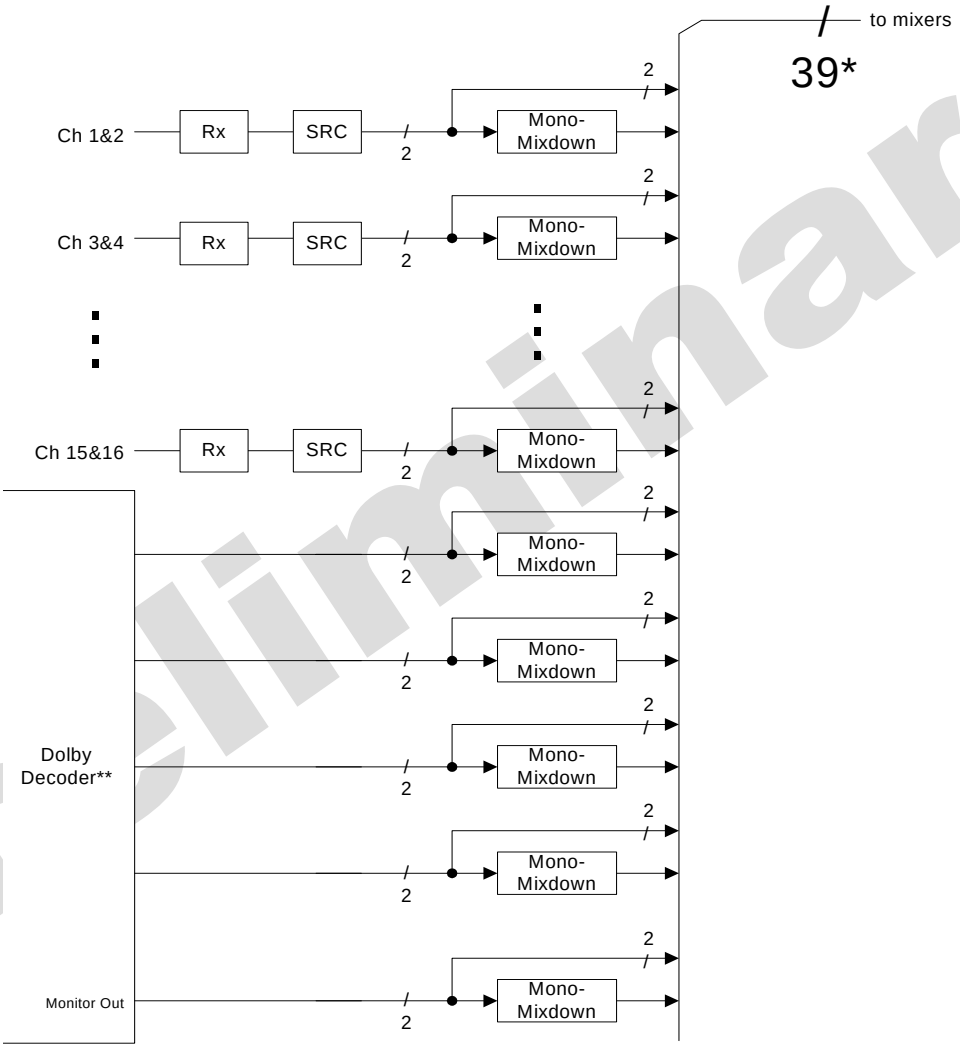

Figure 6-4: Mono-Mixers

6.6.5. Dolby Decoder

On the 7746FS-EAES8-DD-AC3-HD module, there is a Dolby decoder that can decode either Dolby-E or Dolby Digital (AC-3) data. The decoder can automatically detect the type of Dolby stream that is applied. Figure 6-5 describes how the Dolby Decoder can be used to provide decoded Dolby-E as input sources for the two mixers.

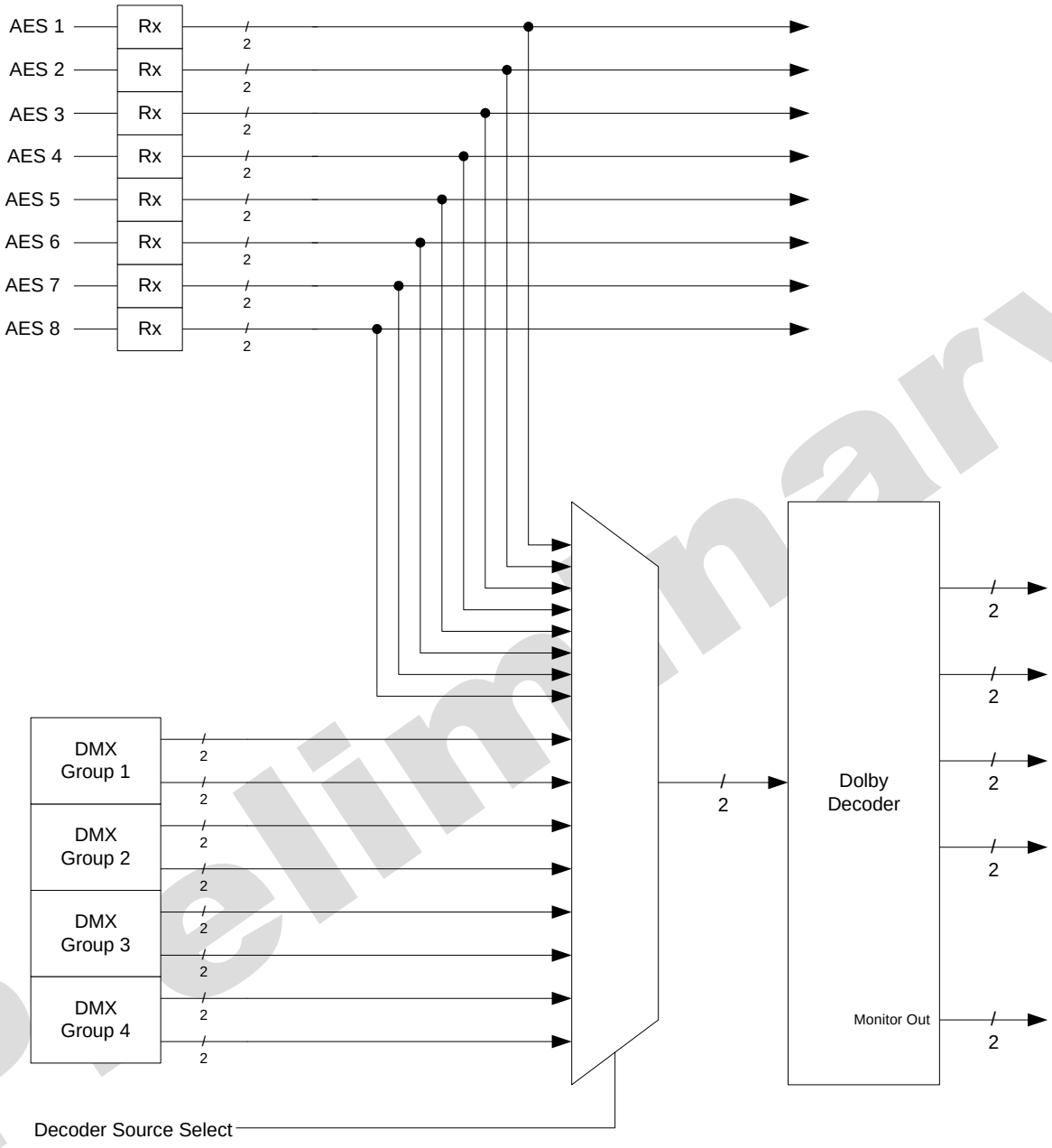

Figure 6-5: Dolby Decoder Source Routing

6.6.6. Headphone Monitoring

Figure 6-6 describes which sources are available for the user to monitor through the card edge headphone jack.

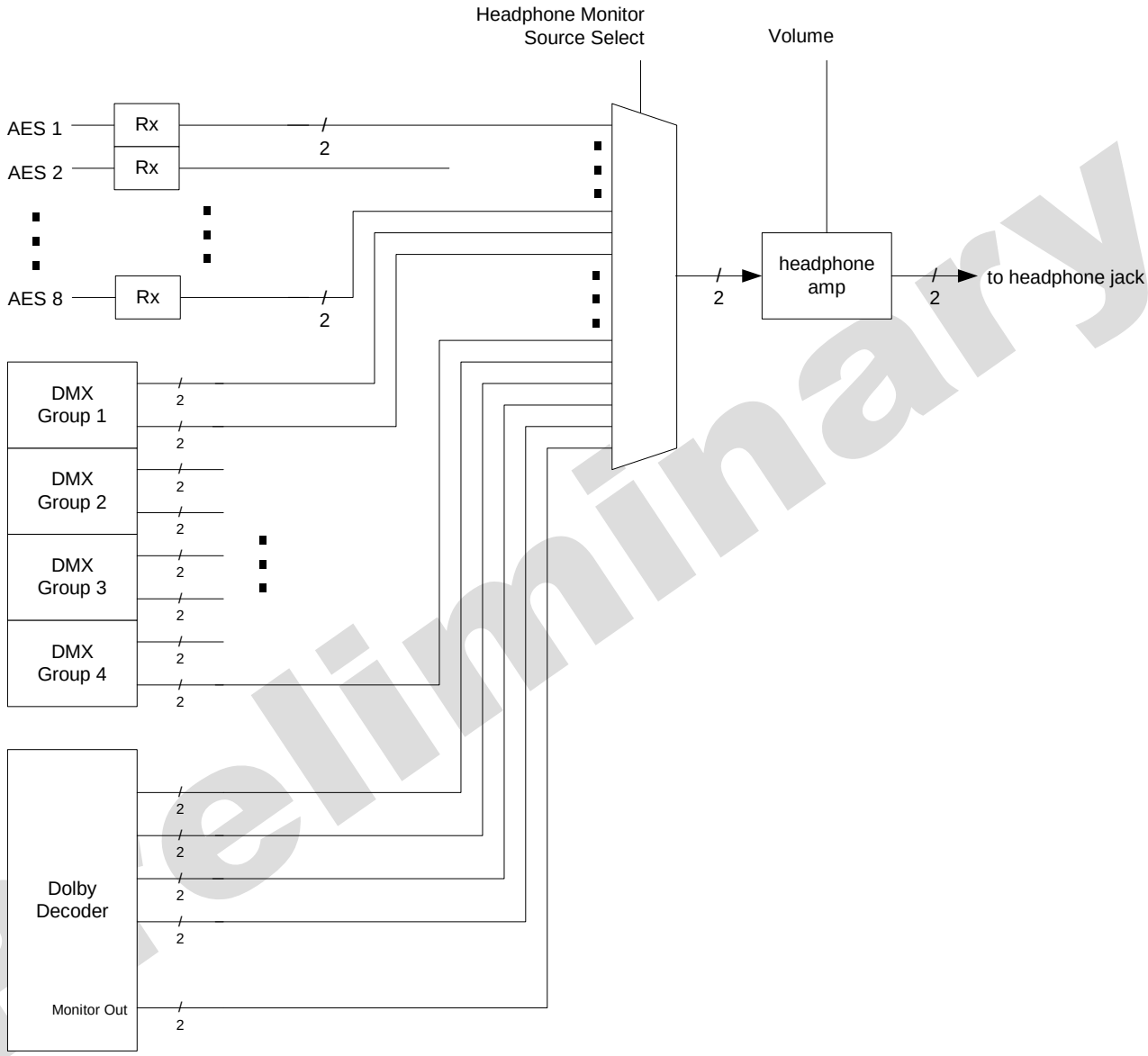

Figure 6-6: Headphone Monitoring

Due to hardware resource limitations, occasional drop/repeat of samples MAY occur when using the headphones to monitor AES outputs. This only occurs on the headphone monitoring outputs.

6.7. CONFIGURING THE AUDIO PROCESSING FUNCTIONS

The *Audio Processor* menus are used to configure parameters associated with the audio processing and routing functions of the 7746FS-EAES8-HD. The chart below shows the items available in the *Audio Processor* menu. Sections 6.7.1 to 6.7.4 give detailed information about each of the menu items.

MASS	Mixer A Source Select	Selects the input source for Mixer A.
MAGC	Mixer A Gain Control	Sets the gain of the inputs for Mixer A.
MAIV	Mixer A Inversion Control	Sets the inversion control for the inputs for Mixer A.
MBSS	Mixer B Source Select	Selects the input source for Mixer B.
MAGC	Mixer B Gain Control	Sets the gain of the inputs for Mixer B.
MAIV	Mixer B Inversion Control	Sets the inversion control for the inputs for Mixer B.
EMBM	Embedder Mixer Selection	Sets which mixer (A or B) will output as embedded audio in output video.
AESO	AES Output Selection	Sets which mixer (A or B) will output to external AES.
SRCS	Sample Rate Converter Source	Selects the source for Sample Rate Converters

6.7.1. Selecting Input Source for Mixer A

The parameters for both Mixer A and B are similar. The only difference is that Mixer-A will have 16 output channels, while Mixer-B will have only 6 output channels. Mixed B only allows for 6 channel audio outputs because this is the maximum number of audio channels that can be Dolby AC-3 encoded. For the sake of simplicity in the manual only the menus for Mixer A will be described.

Audio Processor	
MASS	
Ch1 X Source Select	*1AS*
Ch1 Y Source Select	*1BS*
Ch2 X Source Select	*2AS*
Ch2 Y Source Select	*2BS*
Ch3 X Source Select	*3AS*
Ch3 Y Source Select	*3BS*
Ch4 X Source Select	*4AS*
Ch4 Y Source Select	*4BS*
Ch5 X Source Select	*5AS*
Ch5 Y Source Select	*5BS*
Ch6 X Source Select	*6AS*
Ch6 Y Source Select	*6BS*
Ch7 X Source Select	*7AS*
Ch7 Y Source Select	*7BS*
Ch8 X Source Select	*8AS*
Ch8 Y Source Select	*8BS*
Ch9 X Source Select	*9AS*
Ch9 Y Source Select	*9BS*
Ch10 X Source Select	*AAS*
Ch10 Y Source Select	*ABS*
Ch11 X Source Select	*BAS*
Ch11 Y Source Select	*BBS*
Ch12 X Source Select	*CAS*
Ch12 Y Source Select	*CBS*
Ch13 X Source Select	*DAS*
Ch13 Y Source Select	*DBS*
Ch14 X Source Select	*EAS*
Ch14 Y Source Select	*EBS*
Ch15 X Source Select	*FAS*
Ch15 Y Source Select	*FBS*
Ch16 X Source Select	*GAS*
Ch16 Y Source Select	*GBS*

This control allows the user to specify the input source for each pair (X and Y) of the 16 channels of Mixer A.

The following are the default values for each of the input sources (same for MBSS):

1AS = CH1
1BS = MUTE
2AS = CH2
2BS = MUTE
3AS = CH3
3BS = MUTE
4AS = CH4
4BS = MUTE
5AS = CH5
5BS = MUTE
6AS = CH6
6BS = MUTE
7AS = CH7
7BS = MUTE
8AS = CH8
8BS = MUTE
9AS = CH9
9BS = MUTE
AAS = CHA
ABS = MUTE
BAS = CHB
BBS = MUTE
CAS = CHC
CBS = MUTE
DAS = CHD
DBS = MUTE
EAS = CHE
EBS = MUTE
FAS = CHF
FBS = MUTE
GAS = CHG
GBS = MUTE

6.7.1.1. Selecting the Source for Channel 1-X of Mixer A

The parameters for each pair (X and Y) for all 16 channels are the same. For the sake of simplicity in the manual only the menus for Channel 1-X for Mixer A will be described.

Audio Processor
MASS
1AS

Ch. 1	*CH1*
Ch. 2	*CH2*
Ch. 3	*CH3*
Ch. 4	*CH4*
Ch. 5	*CH5*
Ch. 6	*CH6*
Ch. 7	*CH7*
Ch. 8	*CH8*
Ch. 9	*CH9*
Ch. 10	*CHA*
Ch. 11	*CHB*
Ch. 12	*CHC*
Ch. 13	*CHD*
Ch. 14	*CHE*
Ch. 15	*CHF*
Ch. 16	*CHG*
Dolby Decoder A Ch. 1	*DDA1*
Dolby Decoder A Ch. 2	*DDA2*
Dolby Decoder A Ch. 3	*DDA3*
Dolby Decoder A Ch. 4	*DDA4*
Dolby Decoder A Ch. 5	*DDA5*
Dolby Decoder A Ch. 6	*DDA6*
Dolby Decoder A Ch. 7	*DDA7*
Dolby Decoder A Ch. 8	*DDA8*
Dolby Decoder A Mon. 1	*DDAA*
Dolby Decoder A Mon. 2	*DDAB*
Mono Mix Ch. 1 & 2	*MM12*
Mono Mix Ch. 3 & 4	*MM34*
Mono Mix Ch. 5 & 6	*MM56*
Mono Mix Ch. 7 & 8	*MM78*
Mono Mix Ch. 9 & 10	*MM9A*
Mono Mix Ch. 11 &12	*MMBC*
Mono Mix Ch. 13 & 14	*MMDE*
Mono Mix Ch. 15 & 16	*MMFG*
Mono Mix DD A Ch. 1 & 2	*MA12*
Mono Mix DD A Ch. 3 & 4	*MA34*
Mono Mix DD A Ch. 5 & 6	*MA56*
Mono Mix DD A Ch. 7 & 8	*MA78*
Mono Mix DD A M1 & M2	*MAMM*
MUTE	*MUTE*

This parameter selects the source for Channel 1-X of Mixer A.

6.7.2. Setting the Gain of the Input Sources for Mixer A

Audio Processor	
MAGC	
Ch1 X Gain Control	1AGC
Ch1 Y Gain Control	1BGC
Ch2 X Gain Control	2AGC
Ch2 Y Gain Control	2BGC
Ch3 X Gain Control	3AGC
Ch3 Y Gain Control	3BGC
Ch4 X Gain Control	4AGC
Ch4 Y Gain Control	4BGC
Ch5 X Gain Control	5AGC
Ch5 Y Gain Control	5BGC
Ch6 X Gain Control	6AGC
Ch6 Y Gain Control	6BGC
Ch7 X Gain Control	7AGC
Ch7 Y Gain Control	7BGC
Ch8 X Gain Control	8AGC
Ch8 Y Gain Control	8BGC
Ch9 X Gain Control	9AGC
Ch9 Y Gain Control	9BGC
Ch10 X Gain Control	AAGC
Ch10 Y Gain Control	ABGC
Ch11 X Gain Control	BAGC
Ch11 Y Gain Control	BBGC
Ch12 X Gain Control	CAGC
Ch12 Y Gain Control	CBGC
Ch13 X Gain Control	DAGC
Ch13 Y Gain Control	DBGC
Ch14 X Gain Control	EAGC
Ch14 Y Gain Control	EBGC
Ch15 X Gain Control	FAGC
Ch15 Y Gain Control	FBGC
Ch16 X Gain Control	GAGC
Ch16 Y Gain Control	GBGC

This control allows the user to adjust the gain of the input sources for each pair (X and Y) of the 16 channels of Mixer A.

6.7.2.1. Setting the Gain for Channel 1-X of Mixer A

The parameters for each pair (X and Y) for all 16 channels are the same. For the sake of simplicity in the manual only the menus for Channel 1 Input X for Mixer A will be described.

Audio Processor
MAGC
1AGC
-24 to +24 dB
0

This parameter sets the gain for Channel 1-X of Mixer A. For unity gain, set the parameter to 0. The adjustment range is +/- 24 dB, in increments of 0.1 dB.

6.7.3. Setting the Inversion Control of the Input Sources for Mixer A

Audio Processor	
MAIV	
Ch1 X Invert	*1AIV*
Ch1 Y Invert	*1BIV*
Ch2 X Invert	*2AIV*
Ch2 Y Invert	*2BIV*
Ch3 X Invert	*3AIV*
Ch3 Y Invert	*3BIV*
Ch4 X Invert	*4AIV*
Ch4 Y Invert	*4BIV*
Ch5 X Invert	*5AIV*
Ch5 Y Invert	*5BIV*
Ch6 X Invert	*6AIV*
Ch6 Y Invert	*6BIV*
Ch7 X Invert	*7AIV*
Ch7 Y Invert	*7BIV*
Ch8 X Invert	*8AIV*
Ch8 Y Invert	*8BIV*
Ch9 X Invert	*9AIV*
Ch9 Y Invert	*9BIV*
Ch10 X Invert	*AAIV*
Ch10 Y Invert	*ABIV*
Ch11 X Invert	*BAIV*
Ch11 Y Invert	*BBIV*
Ch12 X Invert	*CAIV*
Ch12 Y Invert	*CBIV*
Ch13 X Invert	*DAIV*
Ch13 Y Invert	*DBIV*
Ch14 X Invert	*EAIV*
Ch14 Y Invert	*EBIV*
Ch15 X Invert	*FAIV*
Ch15 Y Invert	*FBIV*
Ch16 X Invert	*GAIV*
Ch16 Y Invert	*GBIV*

This control allows the user to set the inversion control of the input sources for each pair (X and Y) of the 16 channels of Mixer A.

This allows the user to invert audio pairs if desired. This control is useful in cases of wiring errors, etc.

6.7.3.1. Setting the Inversion Control for Channel 1-X of Mixer A

The parameters for each pair (X and Y) for all 16 channels are the same. For the sake of simplicity in the manual only the menus for Channel 1 Input X for Mixer A will be described.

Audio Processor	
MAIV	
1AIV	
Normal	*NRML*
Invert	*INVT*

This parameter sets the inversion control for Channel 1 Input X of Mixer A. When set to *Normal*, the pairs will remain as is. When set to *Invert*, the pairs will be inverted.

Audio Processor
EMBM
Mixer A
Mixer B

This parameter selects which mixer (A or B) will output as embedded audio in output video.

6.7.4. Setting which Mixer will output to AES

Audio Processor
AESO
Mixer A
Mixer B

This parameter selects which mixer (A or B) will output to external AES.

6.7.5. Setting Input Sources for Sample Rate Converters

Audio Processor
SRCS
SRC12
SRC34
SRC56
SRC78
SRC9A
SRCBC
SRCDE
SRCFG

The parameter selects which Sample Rate Converter to configure the input source for.

6.7.5.1. Setting the Input Sources for Each SRC

Audio Processor	
SRCS	
SRC12	
Normal	DMX1
AES Input 1	AES1

This parameter will select the source for Sample Rate Converter for channels 1 and 2.

The source can be the de-muxed audio from the input signal or the external AES 1 Input.

Audio Processor	
SRCS	
SRC34	
Normal	DMX2
AES Input 2	AES2

This parameter will select the source for the Sample Rate Converter for channels 3 and 4.

The source can be the de-muxed audio from the input signal or the external AES 2 Input.

Audio Processor	
SRCS	
SRC56	
Normal	DMX3
AES Input 3	AES3

This parameter will select the source for the Sample Rate Converter for channels 5 and 6.

The source can be the de-muxed audio from the input signal or the external AES 3 Input.

Audio Processor	
SRCS	
SRC78	
Normal	*DMX4*
AES Input 4	*AES4*

This parameter will select the source for Sample Rate Converter for channels 7 and 8.

The source can be the de-muxed audio from the input signal or the external AES 4 Input.

Audio Processor	
SRCS	
SRC9A	
Normal	*DMX5*
AES Input 5	*AES5*

This parameter will select the source for Sample Rate Converter for channels 9 and 10.

The source can be the de-muxed audio from the input signal or the external AES 5 Input.

Audio Processor	
SRCS	
SRCBC	
Normal	*DMX6*
AES Input 6	*AES6*

This parameter will select the source for Sample Rate Converter for channels 11 and 12.

The source can be the de-muxed audio from the input signal or the external AES 6 Input.

Audio Processor	
SRCS	
SRCDE	
Normal	*DMX7*
AES Input 7	*AES7*

This parameter will select the source for Sample Rate Converter for channels 13 and 14.

The source can be the de-muxed audio from the input signal or the external AES 7 Input.

Audio Processor	
SRCS	
SRCFG	
Normal	*DMX8*
AES Output 8	*AES8*

This parameter will select the source for Sample Rate Converter for channels 15 and 16.

The source can be the de-muxed audio from the input signal or the external AES 8 Input.

6.8. CONFIGURING THE HEADPHONE MONITOR

The *Headphone Monitor* menus are used to configure parameters associated with the headphone jack on the module. The chart below shows the items available in the *Headphone Monitor* menu. Sections 6.8.1 to 6.8.2 give detailed information about each of the menu items.

HVOL	Headphone volume
HSRC	Headphone source

Sets the volume for the headphone.

Selects the source for the headphone monitoring

6.8.1. Setting the Headphone Volume

Headphone Monitor	
HVOL	
HV00 to HV15	
HV07	

With this control you can set the headphone volume to one of 16 levels.

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

Please be aware that if the headphone source is compressed Dolby E/AC3, the output will be full-scale noise.

6.8.2. Selecting the Source for the Headphone Monitoring

Headphone Monitor	
HSRC	
AES1	*AES1*
AES2	*AES2*
AES3	*AES3*
AES4	*AES4*
AES5	*AES5*
AES6	*AES6*
AES7	*AES7*
AES8	*AES8*
DMX Ch. 1 & 2	*DMX1*
DMX Ch. 3 & 4	*DMX2*
DMX Ch. 5 & 6	*DMX3*
DMX Ch. 7 & 8	*DMX4*
DMX Ch. 9 & 10	*DMX5*
DMX Ch. 11 & 12	*DMX6*
DMX Ch. 13 & 14	*DMX7*
DMX Ch. 15 & 16	*DMX8*
Dolby Decoder A Ch. 1 & 2	*DA12*
Dolby Decoder A Ch. 3 & 2	*DA34*
Dolby Decoder A Ch. 5 & 2	*DA56*
Dolby Decoder A Ch. 7 & 2	*DA78*
Dolby Decoder A M1 & M2	*DAAB*

This selects the audio input source for the headphone monitoring. These sources are taken before any audio processing or loss-of-signal routing.

If the parameter is set to *AES1* to *AES8*, then the headphone will be monitoring the external discrete AES inputs.

If the parameter is set to *DMX1* to *DMX8*, then the headphone will be monitoring the incoming embedded audio.

If the parameter is set to *DA12* to *DAAB*, then the headphone will be monitoring the Dolby Decoded channels. This source is taken before the "Dolby loss of signal" (DDLS) router.

Note: Due to hardware resource limitations, occasional drop/repeat of samples MAY occur when using the headphones to monitor AES outputs. This noise only occurs on the headphone monitoring outputs.

6.9. UNDERSTANDING THE DOLBY AC-3 ENCODER

The on-card Dolby AC-3 encoder takes the output of Mixer-B and a selected source of metadata to encode a single AC-3 encoded output. This output can be substituted to any output pair (including duplicating to any number of outputs) and routed to the AES and embedded outputs.

There is neither a frame-rate relationship nor a frame phase relationship between the AC-3 packet and the video frame. Switches of encoded AC-3 outputs, either discrete AES or embedded, into the video signal will result in packet corruption issues.

There are certain restrictions to what can be encoded to AC-3 relating to the LFE (low frequency effects) channel, bit-rate and audio configuration.

LFE (low frequency effects channel), can only be included on audio configurations of 3/2, 2/2, 3/1, 2/1 and 3/0.

There is also a restriction on the minimum bit-rate allowed for specific audio configurations. The following table indicates what bit-rates are allowed (shaded boxes indicate the bit-rate is not allowed):

	3/2	2/2	3/1	2/1	3/0	2/0	1/0
56							Y
64							Y
80							Y
96						Y	Y
112						Y	Y
128				Y	Y	Y	Y
160				Y	Y	Y	Y
192		Y	Y	Y	Y	Y	Y
224	Y	Y	Y	Y	Y	Y	Y
256	Y	Y	Y	Y	Y	Y	Y
320	Y	Y	Y	Y	Y	Y	Y
384	Y	Y	Y	Y	Y	Y	Y
448	Y	Y	Y	Y	Y	Y	Y
512	Y	Y	Y	Y	Y	Y	Y
576	Y	Y	Y	Y	Y	Y	Y
640	Y	Y	Y	Y	Y	Y	Y

Table 6-4: Encoder Bit-rate Restrictions

There are also two automatic bit-rate configurations. These will automatically adjust the bit-rate accordingly with the audio configuration of the encoder. The following table shows the bit-rates used for a specific audio configuration:

	3/2	2/2	3/1	2/1	3/0	2/0	1/0
Auto-384	384	320	320	256	256	224	96
Auto-448	448	320	320	256	256	256	96

Table 6-5: Automatic Encoder Bit-rate Selection

6.9.1. Encoder Channel Mappings

Program Config	Channels	ch 1	ch 2	ch 3	ch 4	ch 5	ch 6
3/2L	5.1	L	R	C	LFE	Ls	Rs
3/2	5.0	L	R	C		Ls	Rs
2/2L	4.1	L	R		LFE	Ls	Rs
2/2	4.0	L	R			Ls	Rs
3/1L	4.1	L	R	C	LFE	S	
3/1	4.0	L	R	C		S	
2/1L	3.1	L	R		LFE	S	
2/1	3.0	L	R			S	
3/0L	3.1	L	R	C	LFE		
3/0	3.0	L	R	C			
2/0	2.0	L	R				
1/0	1.0			C			

Table 6-6: Channel Mappings and Program Configurations

(Channel naming convention L=left R=right C=center S=surround, LFE=low frequency effects (subwoofer) Ls=left surround, Rs=right surround). Shaded box indicated channel is not used.

6.10. CONFIGURING THE DOLBY ENCODER and DECODER

The *Dolby Configuration* menus are used to configure parameters associated with the Dolby AC-3 Encoder and the Dolby Decoder on the module and the decoder's behaviour with a loss of signal. The chart below shows the items available in the *Dolby Configuration* menu. Sections 6.10.1 to 6.10.2 give detailed information about each of the menu items.

DD	Dolby Decoder	Sets the controls for Dolby Decoder.
DDLS	Dolby Decoder Loss of Signal	Sets the response of the Dolby Decoder to a loss of signal
DE	Dolby AC-3 Encoder	Sets the controls for the Dolby AC-3 Encoder.

6.10.1. Setting the Controls for Dolby Decoder

Dolby Configuration		
DD		
	Decoder Source Select	*DDSS*
	Video Sync Source Select	*DDVS*
	Decoder Mode	*DDMO*
	Output Latency	*DDOL*
	Program Play Feature	*DDPP*
	Dynamic Range Processing	*DDDR*
	Monitor Channel Map	*DDMM*

This sets the controls for the Dolby Decoder. These controls will determine what the decoder's inputs are, its sync source, its mode, and its output latency.

This will also control the program play feature, dynamic range processing, and the monitor channel map.

6.10.1.1. Selecting the Source for Dolby Decoder

Dolby Configuration	
DD	
DDSS	
AES 1	*AES1*
AES 2	*AES2*
AES 3	*AES3*
AES 4	*AES4*
AES 5	*AES5*
AES 6	*AES6*
AES 7	*AES7*
AES 8	*AES8*
DMX Ch. 1 & 2	*DMX1*
DMX Ch. 3 & 4	*DMX2*
DMX Ch. 5 & 6	*DMX3*
DMX Ch. 7 & 8	*DMX4*
DMX Ch. 9 & 10	*DMX5*
DMX Ch. 11 & 12	*DMX6*
DMX Ch. 13 & 14	*DMX7*
DMX Ch. 15 & 16	*DMX8*

This selects the input source for Dolby Decoder. The sources can be any one of the external discrete AES channels or one of the 8 pairs of de-embedded audio.

6.10.1.2. Selecting the Sync Source for Dolby Decoder

Dolby Configuration	
DD	
DDVS	
Output Video	*VOUT*
Input Video	*VIN*
Genlock	*GL*

With this control you can select the source of sync for the Dolby Decoder.

Select *GL* to use the genlock input as the source of sync.

Select *VIN* to use the video input as the source of sync.

Select *VOUT* to use the video output as the source of sync.

6.10.1.3. Selecting the Mode for Dolby Decoder

Dolby Configuration	
DD	
DDMO	
Mute	*MUTE*
Only Dolby Digital	*D-D*
Only Dolby E	*D-E*
Decode All	*ALL*

With this control you can select the Dolby Decoder mode.

When the control is set to *Mute*, then the Dolby Decoder outputs Mute, regardless of the input contents.

When the control is set to *Only Dolby Digital*, then only Dolby Digital is decoded.

When the control is set to *Only Dolby E*, then only Dolby E is decoded.

When the control is set to *Decode All*, the Dolby Decoder will decode all Dolby formats and pass PCM inputs through.

6.10.1.4. Selecting the Output Latency for Dolby Decoder

Dolby Configuration	
DD	
DDOL	
Minimum	*MIN*
1 Video Frame	*1FRM*

With this control you can setup the Dolby Decoder decoded outputs latency.

Select *MIN* to configure the Dolby Decoder for the minimum possible decoding delay.

Select *1FRM* to configure the Dolby Decoder for a decoding delay equivalent to 1 frame of video.

6.10.1.5. Setting the Program Play Feature for Dolby Decoder

Dolby Configuration	
DD	
DDPP	
No	*NO*
Yes	*YES*

With this control you can setup the Dolby Decoder "Program Play" feature for Dolby E.

Select *No* to configure the Dolby Decoder Program Play for normal (synchronous) operation.

Select *Yes* to configure the Dolby Decoder Program Play to enable proper decoding of Dolby-E stream coming off of a VTR that has been sped up by up to 15%. Additional pitch-shift processing is applied and output latency is forced to min. NOTE: The Dolby-E stream has to be input via the external ("backup") AES input.

6.10.1.6. Setting the Dynamic Range Processing of Dolby Decoder

Dolby Configuration	
DD	
DDDR	
Bypass	*BYPS*
RF	*RF*
LINE	*LINE*

With this control you can setup the Dolby Decoder dynamic range compression for AC3 (Dolby Digital only).

Select *BYPS* to configure the Dolby Decoder to bypass dynamic range processing. Program levels are unaltered.

Select *RF* to configure the Dolby Decoder to adjust the dynamic range using a RF (or 'strong") dynamic range compression profile.

Select *LINE* to configure the Dolby Decoder to adjust the dynamic range using a LINE (or 'light") dynamic range compression profile.

6.10.1.7. Selecting the Monitor Channel Map of Dolby Decoder

Dolby Configuration	
DD	
DDMM	
Mono	*MONO*
Stereo	*STRO*
Pro-Logic	*PROL*

This controls the format of the monitored down-mix output of the Dolby Decoder.

When the control is set to *Mono*, then the format of the down-mixed output will be mono.

When the control is set to *Stereo*, then the format of the down-mixed output will be a stereo pair.

When the control is set to *Pro-Logic*, then the format of the down-mixed output will be Pro-Logic.

6.10.2. Setting the Action on Loss of Signal from the Dolby Decoder

Dolby Configuration	
DDLS	
SRC output	*SRC*
Dolby Decoder	*DLBY*

With this control you can select the audio source to use when the input for the Dolby Decoder is not a Dolby encoded stream. This control affects all the sources that are set to take their inputs from the Dolby Decoder.

Select *SRC* to automatically switch the input sources from the input audio sample rate converters.

Select *DLBY* to always keep the input sources as the Dolby Decoder. When the Dolby Decoder is given a PCM stream, its output will be the PCM audio on pair 1 and silence on the remaining pairs.

6.10.3. Setting the Controls for Dolby AC-3 Encoder

Dolby Configuration	
DE	
Automatic Program Config	*DEAP*
Metadata Source	*DEAM*
Metadata Reversion Mode	*DEAB*
Program Selection	*DEPS*
Bit-rate Control	*DEBR*

This set of control defines the operation of the Dolby AC-3 Encoder. These controls determine the output configuration and bit-rate of the Dolby AC-3 output, as well as the metadata source.

6.10.3.1. Selecting the Automatic Program Configuration

Dolby Decoder	
DE	
DEAP	
1/0	*1/0*
2/0 dsurmod=0X	*2/0*
2/0 dsurmod=10	*2/0D*
2/1	*2/1*
3/1	*3/1*
3/2	*3/2*
3/2L	*3/2L*

This selects the automatic program configuration and audio configuration default. This is only used if "auto" mode is selected for the metadata source.

A standard default metadata message will be used to encode the selected audio configuration mode.

6.10.3.2. Selecting the Metadata Source for the Dolby AC-3 Encoder

Dolby Configuration	
DE	
DEAM	
Dolby Decoder	*DLBA*
VANC	*VANC*
External (DB-9)	*EXTA*
Metadata Processor	*PRCA*
Metadata Authoring	*MAUT*
Automatic Default	*AUTO*

With this control you can select the metadata source that controls the Dolby AC-3 Encoder.

Select the Dolby Decoder (DLBA) to use the metadata decoded by the on-card Dolby Decoder. If PCM is provided to the Dolby Decoder, a default 4x2 Dolby-E metadata message is generated.

Select *VANC (VANC) to use metadata de-embedded from VANC area of video.*

Select External (EXTA) to use external metadata provided on the DB-9 metadata connector.

Select Metadata Processor (PRCA) to use the output of the metadata monitor/processor block.

Select Metadata Authoring (MAUT) to use the output of the on-card metadata authoring tool. The metadata authoring tool is only available thru VistaLINK®.

Select Automatic Default (AUTO) to use the selected automatic default configuration selected by the "DEAP" control.

6.10.3.3. Selecting the Metadata Reversion Source for the Dolby AC-3 Encoder

Dolby Configuration	
DE	
DEAB	
Dolby Decoder	*DLBA*
VANC	*VANC*
External (DB-9)	*EXTA*
Metadata Processor	*PRCA*
Metadata Authoring	*MAUT*
Automatic Default	*AUTO*
Stop Encoding	*STOP*
Use Last Known	*LAST*

With this control you can select the backup (reversion) metadata source in case the primary source is lost or in error.

DLBA, VANC, EXTA, PRCA, MAUT, AUTO are identical to the previous control.

Stop Encoding (STOP) will halt the AC-3 encoder. Its output will be mute with no AC-3 packets present.

Use Last Known (LAST) will use the last un-corrupt metadata message received.

6.10.3.4. Selecting the Encoder Metadata Program Selection

Dolby Configuration	
DE	
DEPS	
Program 1	*PGM1*
Program 2	*PGM2*
Program 3	*PGM3*
Program 4	*PGM4*
Program 5	*PGM5*
Program 6	*PGM6*
Program 7	*PGM7*
Program 8	*PGM8*

With this control you can select which metadata program the Dolby Encoder should use.

AC-3 can only encode one program, but Dolby-E metadata can contain information for up to 8 programs.

6.10.3.5. Setting the Output Bit-rate for the Dolby AC-3 Encoder

Dolby Configuration	
DE	
DEBR	
56 kbps	*56*
64 kbps	*64*
80 kbps	*80*
96 kbps	*96*
112 kbps	*112*
128 kbps	*128*
160 kbps	*160*
192 kbps	*192*
224 kbps	*224*
256 kbps	*256*
320 kbps	*320*
384 kbps	*384*
448 kbps	*448*
512 kbps	*512*
576 kbps	*576*
640 kbps	*640*
Auto-384	*A384*
Auto-448	*A448*

With this control you can select the output bit-rate for the encoded AC-3 output.

Please note, not all bit-rates are applicable for all AC-3 audio coding modes.

Auto-384 will automatically select a bit-rate appropriate for the audio coding mode of the AC-3 encoder.

Please refer to the AC-3 encoder section for more details.

6.11. CONFIGURING THE METADATA

The *Metadata* menu is used to configure the parameters related to the Dolby Metadata. The chart below shows the items available in the *Metadata* menu. Sections 6.11.1 to 6.11.2 give detailed information about each of the menu items.

MD_A	Metadata Routing, VANC Embedding and De-embedding	Sets the controls for Metadata routing, embedding and de-embedding.
DB9C	DB-9 Configuration	Sets the behaviour of the DB-9 Metadata I/O.
MMON	Metadata Monitor and Processor	Sets the controls for the metadata monitor and dialnorm processor.

6.11.1. Setting the Controls for Metadata Decoder

Metadata	
MD_A	
Output Source Select	*METO*
Embed Source Select	*METV*
De-embed Line	*VADL*
De-embed DID	*VADI*
De-embed SID	*VADS*
Pass Existing Metadata	*VAKL*
Embed Line	*VAEL*
Embed DID	*VAEI*
Embed SID	*VAES*
Embed Enable	*VAEN*

This sets the controls for the Metadata Decoder A.

METO specifies the output of the Metadata.

METV specifies the type of Metadata that is inserted in VANC.

VADL selects the input VANC line for de-embedding.

VADI selects the VANC Data ID.

VADS selects the VANC Secondary Data ID.

VAKL selects whether to delete specified VANC packets.

VAEL selects the output VANC for embedding.

VAEI selects the output VANC Data ID.

VAES selects the output VANC Secondary Data ID.

VAEN selects whether VANC will be embedding on the output video.

6.11.1.1. Selecting the Destination of Metadata that is Output from Metadata Decoder

Metadata	
MD_A	
METO	
Dolby Decoder	DLBA
VANC	VNCA
External	EXTA

With this control you can set the destination of Metadata output.

Select *DLBA* to output Metadata from the Dolby Decoder.

Select *VNCA* to output Metadata from the input VANC packets.

Select *EXTA* to output Metadata from the external META input.

6.11.1.2. Selecting the Source of Metadata that is Inserted into VANC

Metadata	
MD_A	
METV	
Dolby Decoder	DLBA
VANC	VNCA
External	EXTA

With this control you can set the type of Metadata that is inserted into VANC data by the embedder when *VAEN* menu item is set to *ON.*

Select *DLBA* to insert Metadata from the Dolby Decoder.

Select *VNCA* to insert Metadata from the input VANC packets.

Select *EXTA* to insert Metadata from the external META input.

6.11.1.3. Configuring the VANC Metadata De-Embedder

There are four menu items used to configure the input VANC de-embedder.

Metadata
MD_A
VADL
0 to 31

With this control you can set the line for de-embedding VANC Metadata packets from the input video.

Metadata
MD_A
VADI
0 to FF (hex)

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

The default value of data ID 45 corresponds to the latest proposals of SMPTE RP291

Metadata
MD_A
VADS
1
1 to FF (hex)

With this control you can set the Secondary Data ID for de-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 *VADI* menu item is set to values in the range of *C0 to CF*, type 1 Metadata packets will be de-embedded and the *VADS* menu item is not relevant as dictated by SMPTE 291M.

Metadata	
MD_A	
VAKL	
Clean	*KILL*
Pass	*PASS*

With this control you can set whether the VANC packets matching the *VADI* and *VADS* menu item values will be removed from the video or passed through to the output.

Select *KILL* to remove the VANC packets

Select *PASS* to pass the packets trough to the output video

6.11.1.4. Configuring the VANC Metadata Embedder

There are four menu items used to configure the input VANC de-embedder.

Metadata
MD_A
VAEL
0 to 31

With this control you can set the line for embedding VANC Metadata packets onto the output video.

Metadata
MD_A
VAEI
0 to FF (hex)

With this control you can 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.

Metadata
MD_A
VAES
1
1 to FF (hex)

With this control you can 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.

Metadata	
MD_A	
VAEN	
On	*ON*
Off	*OFF*

With this control you can select whether the VANC packets will be embedded onto the output video or not.

Select *ON* to insert VANC Metadata packets on the output video. The input source of Metadata for the VANC packets is set by the *METV* menu item. See 6.11.1.2.

Select *OFF* to disable VANC insertion.

6.11.2. Configuring the External Metadata I/O

Metadata	
DB9C	
Tx Primary/ Rx Secondary	*TX*
Rx Primary/Tx Secondary	*RX*
	RX
	TX

This configures the external Metadata I/O DB-9 connection.

TXRX configures the Metadata I/O to receive from a Dolby DP570 unit with the following pin out:

Pin	Function
2	Rx A-
3	Tx B+
7	Rx B+
8	Tx A-

RXTX configures the Metadata I/O to transmit to a Dolby DP570 unit with the following pin out:

Pin	Function
2	Tx A-
3	Rx B+
7	Tx B+
8	Rx A-

6.11.3. Setting the Metadata Monitor/Processor Controls

Metadata	
MMON	
Monitor Source Select	*MSRC*
Dialnorm Adjust Pgm 1	*DP1A*
Dialnorm Adjust Pgm 2	*DP2A*
Dialnorm Adjust Pgm 3	*DP3A*
Dialnorm Adjust Pgm 4	*DP4A*
Dialnorm Adjust Pgm 5	*DP5A*
Dialnorm Adjust Pgm 6	*DP6A*
Dialnorm Adjust Pgm 7	*DP7A*
Dialnorm Adjust Pgm 8	*DP8A*

This sets the controls for the Metadata Monitor and Processor (allows the adjustment of the dialnorm setting).

Monitor Source Select (MSRC) specifies the metadata source.

Dialnorm Adjust Pgm 1-8 (DP1A to DP8A) allows the modification of the dialnorm field in the metadata message.

6.11.3.1. Selecting the Type of Metadata Monitor Source

Metadata	
MMON	
MSRC	
Dolby Decoder	*DLBA*
VANC	*VNCA*
External	*EXTA*

With this control you can set the type of metadata to monitor and process.

Select *DLBA* to output Metadata from the Dolby Decoder.

Select *VNCA* to output Metadata from the input VANC packets.

Select *EXTA* to output Metadata from the external META input.

6.11.3.2. Selecting the Type of Metadata that is Inserted into VANC

Metadata	
MMON	
DP1A to DP8A	
Do Not Modify	*DNM*
-1 to –31 dB	*-1 to -31*

With this control you can modify the dialnorm field value for a specific program.

DP1A allows the modification of program 1. DP2A modifies program 2 etc.

DNM passes the dialnorm without modification.

A value of –1 dB to –31 dB can also be set to change the dialnorm value.

This modified metadata is available as a metadata source called "processed" or PRCA.

6.12. DISPLAYING THE MODULE STATUS

The *Status* menus are used to show the status of various parameters of the 7746FS-EAES8-HD. The chart below shows the items available in the *Status* menu. Sections 6.12.1 to 6.12.5 give detailed information about each of the menu items.

UPRV	Module Firmware	Displays the firmware revision of the module.
F1RV	FPGA1 Revision	Displays the FPGA revision of the module's main board
F2RV	FPGA2 Revision	Displays the FPGA revision of the module's sub board
IVSD	Input Video Standard	Displays the detected input video standard.
OVSD	Operating Standard	Displays the operating standard of the module.

6.12.1. Checking the Module Firmware

Status
UPRV
Eg. "V1.0 BUILD 100"

The status parameter will report the firmware version that is operating on the module.

6.12.2. Checking FPGA 1 Revision

Status
F1RV
Eg. "7"

The status parameter will report the revision of FPGA 1 on the module.

6.12.3. Checking FPGA 2 Revision

Status *F2RV* *Eg. "8"*	The status parameter will report the revision of FPGA 2 on the module.

6.12.4. Checking the Input Video Standard

Status *IVSD* *Eg. "1I59"*	The status parameter will report the input video standard. See section 6.3.1 for supported standards.

6.12.5. Checking the Output Video Standard

Status *OVSD* *Eg. "1I59"*	The status parameter will report the output video standard. See section 6.3.1 for supported standards.

6.13. CONFIGURING MISCELLANEOUS PARAMETERS

The *Miscellaneous* menu is used to configure miscellaneous parameters to enable VistaLINK® control, display orientation, and to perform a factory reset. The chart below shows the items available in the *Closed Captioning* menu. Sections 6.13.1 to 6.13.3 give detailed information about each of the parameters.

VLNK	VistaLINK® control enable	Enables the ability to control the module through VistaLINK®.
DISO	Display Orientation	Sets the orientation of the card edge dot matrix display.
FRST	Factory Resets	Resets various components of the module to their factory settings.

6.13.1. Enabling VistaLINK® Control of the Module

Miscellaneous		
VLNK		
Enable	*RMTE*	
Disable	*LCAL*	

This control configures the VistaLINK® control of the module.

RMTE enables VistaLINK® control of the module. The user is able to use VistaLINK® to monitor and configure the module in addition to the card edge controls.

LCAL disables VistaLINK® control of the module. The user is only able to monitor and configure the module from the card edge controls.

6.13.2. Setting Card Edge Display Orientation

Miscellaneous	
DISO	
Horizontal	*HORZ*
Vertical	*VERT*

With this control you can select a horizontal or vertical orientation for the displays to accommodate mounting the module in the 3RU or 1RU frames.

6.13.3. Resetting the Module to its Factory Defaults

Miscellaneous	
FRST	
Reset All	*ALL*
Video Control Reset	*VCR*
Audio Control Reset	*ACR*
Video Proc Reset	*VPR*
Audio Proc Reset	*APR*
Mixer A Reset	*MAR*
Mixer B Reset	*MBR*
Dolby Decoder & Met A Reset	*DAR*

With this control you can reset the entire module or certain functional blocks to its factory default condition.

ALL will reset the entire module to the factory settings.

VCR will reset the Video Control only to factory settings. All the other module settings will remain the same.

ACR will reset the Audio Control only to factory settings. All the other module settings will remain the same.

VPR will reset the Video Proc only to factory settings. All the other module settings will remain the same.

APR will reset the Audio Proc only to factory settings. All the other module settings will remain the same.

MAR will reset the Mixer A only to factory settings. All the other module settings will remain the same.

MBR will reset the Mixer B only to factory settings. All the other module settings will remain the same.

DAR will reset the Dolby Decoder A and Metadata A only to factory settings. All the other module settings will remain the same.

6.13.3.1. Resetting the Module to Factory Settings

The resetting of module and its components to factory settings behave the same way. For the sake of simplicity in the manual only the reset menu for the *Reset All* will be described.

Miscellaneous	
FRST	
ALL	
Yes	*YES*
No	*NO*

With this control you can reset the entire module to the factory settings.

YES will reset the module to the factory settings.

NO will not reset the module to factory settings.

7. JUMPERS

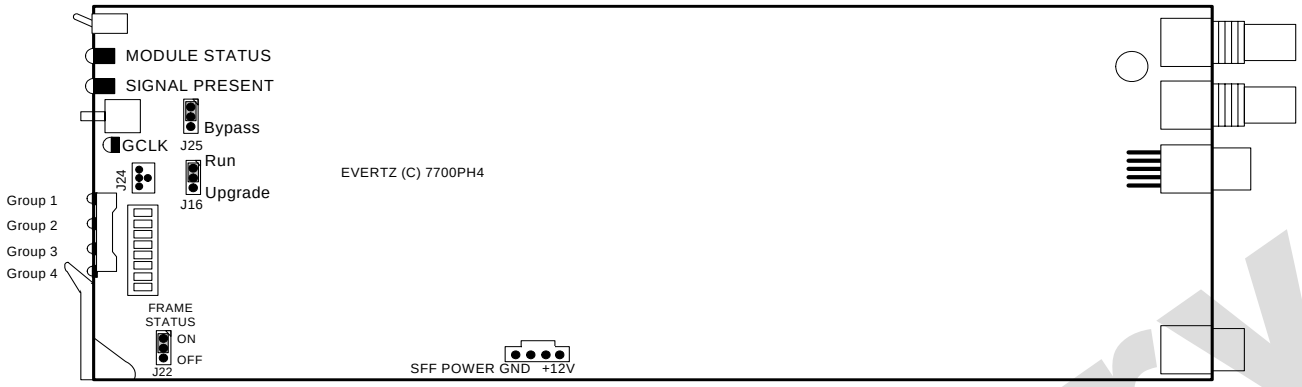

Figure 7-1: Location of Jumpers – Rev C Main Board

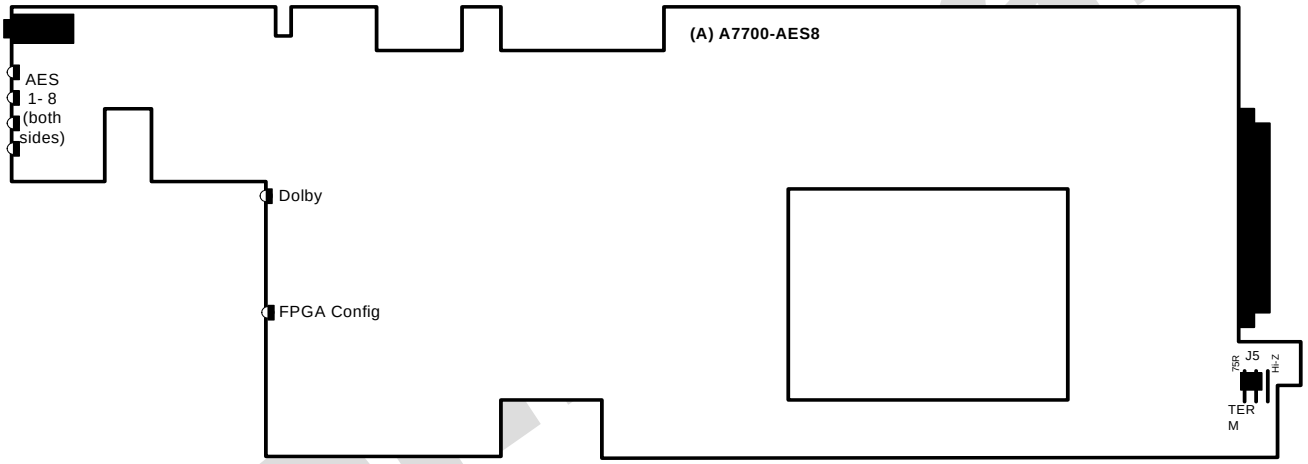

Figure 7-2: Location of Jumpers/LEDs – Rev. A Sub Board

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

FRAME STATUS

The FRAME STATUS jumper J22, located at the front of the main module, determines whether local faults (as shown by the Local Fault indicator) will be connected to the 7700FR 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.

7.2. CONFIGURING THE MODULE FOR FIRMWARE UPGRADES

UPGRADE

The UPGRADE switch is located at J16 jumper location on the front side of the main module and is used when firmware upgrades are being done to the module. 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 J16 into the *UPGRADE* position. Install the Upgrade cable provided (located in the vinyl pouch in the front of this manual) onto header J24 at the card edge. Re-install the module into the frame. Run the upgrade as described in the *Upgrading Firmware* chapter. Once the upgrade is completed, remove the module from the frame, move J16 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 7746FS-EAES8-DD-AC3E-HD is 115,200 baud.

7.3. SELECTING WHETHER THE GENLOCK REFERENCE INPUT IS TERMINATED

TERM

The TERM jumper J5 located at the rear of the sub-board is used to terminate the genlock loop input. When it is in the 75R position a 75 ohm terminating resistor will connect the input to ground. When it is in the HI-Z position the genlock input will be high impedance.

7.4. SELECTING WHETHER THE INPUT VIDEO IS BYPASS

BYPASS

The BYPASS jumper J25, located at the front of the module, is used to terminate the genlock loop input.

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® products.

2. Managed devices (such as 7746FS-EAES8-HD), each with a unique address (OID), communicate with the NMS through an SNMP Agent. Evertz VistaLINK® enabled 7700 series modules reside in the 3RU 7700FR-C MultiFrame and communicate with the manager via the 7700FC 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 7700FC Frame Controller chapter.

9. DEFAULT METADATA PARAMETERS

The following table lists the default values for the metadata generated when “auto” mode is selected (refer to the “DEAM” control defined in section 6.10.3.2)

Parameter Name	Value
Bitstream mode	Main Complete (CM)
Center downmix level	.707 (-3.0 dB)
Surround downmix level	.707 (-3.0 dB)
Dolby Surround Mode	not Dolby Surround
DC Filter	enabled
LFE Lowpass Filter	enabled
Lowpass Filter	enabled
Surround 3dB Atten	disabled
Surround Phase Shift	enabled
RF Overmod Protect	disabled
Dialogue Level	-27 dB
Audio Prod Info	no
Mixing Level	105 dB
Room Type	Not Indicated
Copyright	yes
Original Bitstream	yes
RF Mode Pro Film	Standard
Line Mode Pro Film	Standard
Extnd Bitstream	enabled
Pref Dwnmx	Lt/Rt
Lt/Rt C Dwnmx	.707 (-3.0 dB)
Lo/Ro C Dwnmx	.707 (-3.0 dB)
Lt/Rt S Dwnmx	.707 (-3.0 dB)
Lo/Ro S Dwnmx	.707 (-3.0 dB)
Dolby Srnd EX	not Surround EX
A/D Conv Type	Standard

Table 9-1: Default Metadata

10. MENU QUICK REFERENCE

Video Control (VCTR)
- Video Standard Select
- Vertical Phase
- Horizontal Phase
- Frame Phase
- Freeze Mode

Video Proc Control (VP)
- Black Level Adjust
- Luma Gain Adjust
- Chroma Gain Adjust
- Hue Control

Headphone Monitor (HEAD)
- Headphone Volume
- Headphone Source

Status (STAT)
- Module Firmware
- FPGA1 Version
- FPGA2 Version
- Input Video Standard
- Operating Standard

Audio Control (ACTR)
- Coarse Audio Delay
- Fine Audio Delay
- SRC Mode
- C-Bit Control
- Embedded Group 1 Enable
- Embedded Group 2 Enable
- Embedded Group 3 Enable
- Embedded Group 4 Enable
- Demux Loss of Video Mode
- Breakout Audio Mode

Audio Proc Control (AP)
- Mixer A Source Select
- Mixer A Gain Control
- Mixer A Inversion Control
- Mixer B Source Select
- Mixer B Gain Control
- Mixer B Inversion Control
- Embedder Mixer Selection
- AES Output Selection
- Sample Rate Converter Source

Dolby Decoder Control (DLBY) (–DD version only)
- Dolby Decoder
- Dolby Decoder Loss of Signal
- Dolby AC-3 Encoder

Metadata (META)
- Metadata Routing, VANC Embedding & De-embedding
- DB-9 Configuration
- Metadata Monitor & Process

Miscellaneous (MISC)
- VistaLINK® Control Enable
- Display Orientation
- Factory Resets

This page left intentionally blank