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REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	First Revision	Jul 07
1.1	Added card edge menu items and VistaLINK® screen captures	Dec 07
1.2	Updated Rear Plate drawing, features, specs, and VistaLINK screens	Nov 09

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1. OVERVIEW

The 7772MFX-HD is a JPEG2000 SD & HD encoder and decoder card. The 7772MFX-HD is the most versatile JPEG2000 codec on the market. It offers variable JPEG2000 compression rate on SDI or ASI. The 7772MFX-HD can be reconfigured on the fly to be used as a JPEG2000 encoder or JPEG2000 decoder. The 7772MFX-HD also supports pass through of up to 4 AES groups (8 pairs) of audio embeddeded or can do the embedding of the audio. The card functions are controlled from the card edge or through the VistaLINK® interface.

The 7772MFX-HD is the perfect product to back haul or archive high quality contribution video with low end-to-end delay. The JPEG2000 offers superior quality than MPEG-2 codec without the MPEG-2 blocking artifacts.

Features:

- Supports 1080i/59.94, 1080i/50, 720p/59.94, 720p/50, 480i/29.97, 576i/25
- Automatic detection of input format
- Handles up to 8 embedded AES pairs of audio (Pass through, no compression)
- Built-in audio embedder/de-embedder
- All VANC & HANC pass-through
- SDI framing with embedded uncompressed audio
- ASI framing with JPEG2000 encapsulated as piped data
- VistaLINK® capability is available when modules are used with the 3RU 7800FR frame and a 7700FC VistaLINK® Frame Controller module in slot 1 of the frame

Additional Encoder Features:

- Variable video Bitrate from 30 to 50Mbit/s for SD and 65 to 160Mb/s for HD
- Offers control over encoding parameters for optimizing encoding depending on application

Additional Decoder Features:

- Audio delay processing to match video decompression delay
- Eight separate stereo unbalanced outputs

The 7772MFX-HD can be configured on the fly as an encoder (HD SDI > ASI or SDTI) or a decoder (ASI or SDTI > HD SDI). Check the software to see which mode is enabled.

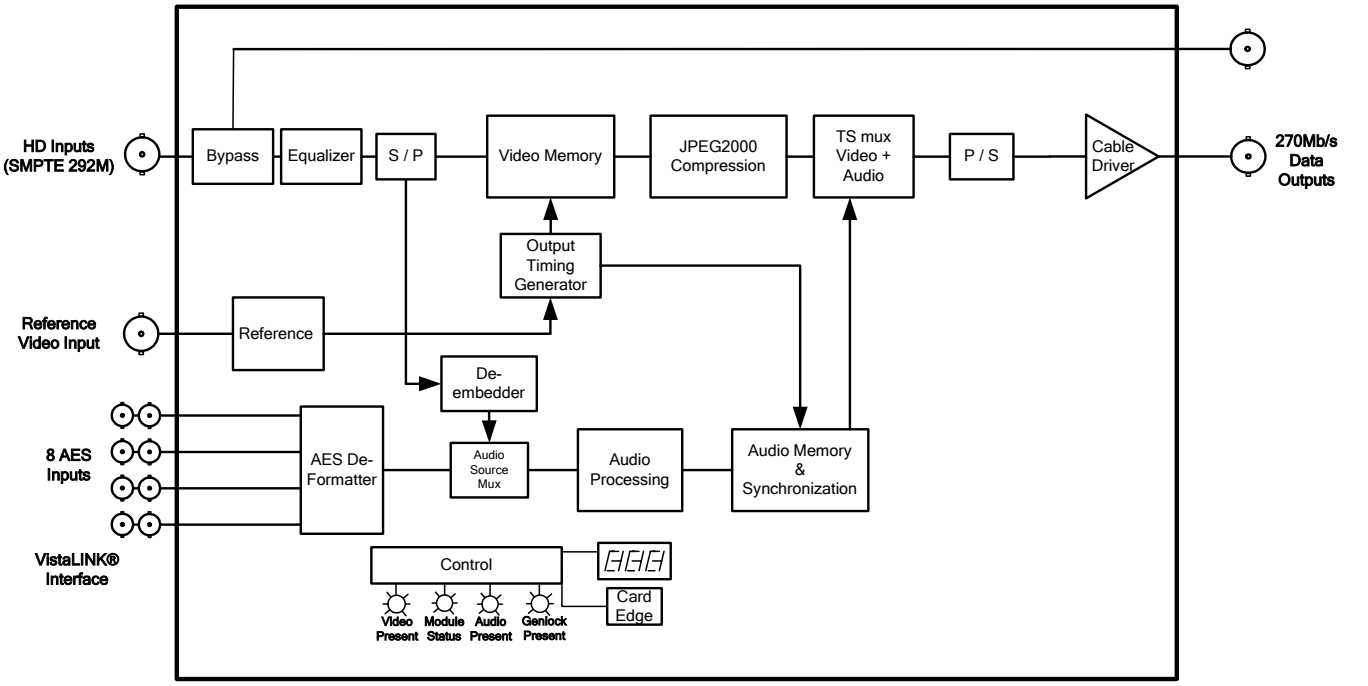

Figure 1-1: 7772MFX-HD in Encode Mode Block Diagram

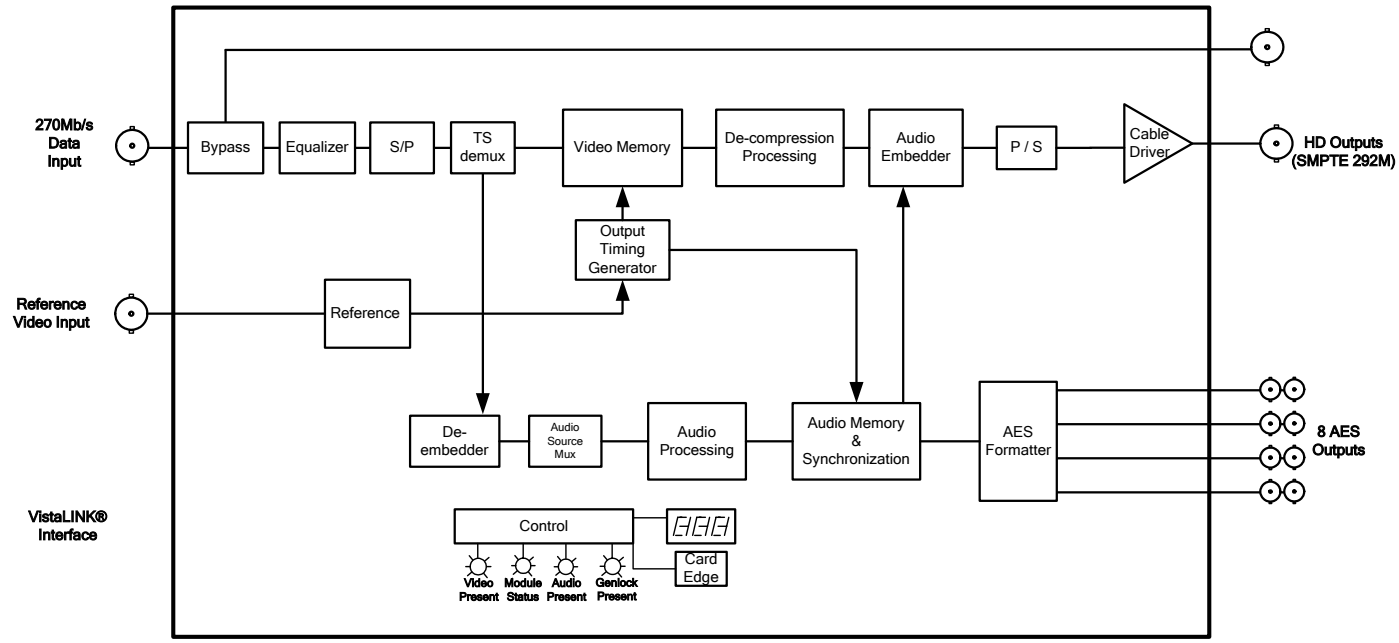

Figure 1-2: 7772MFX-HD in Decode Mode Block Diagram

2. INSTALLATION

The 7772MFX-HD comes with a companion rear plate, occupying two slots in the 7700FR frame. For information on mounting the rear plate and inserting the module into the frame see section 3 of the 7700FR chapter.

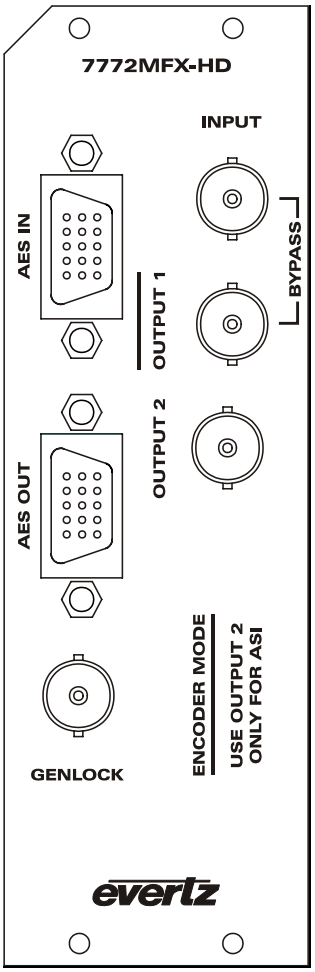

Figure 2-1: 7772MFX-HD Rear Panels

2.1. VIDEO CONNECTION

2.1.1. MFX-HD in Encode Mode

The BNC labeled **INPUT** in Encode mode supports HD-SDI (for compression), SD-SDI (bypassed reclocked) and ASI (reclocked bypass).

The BNC labeled **OUTPUT1** in Encode mode supports only SD-SDI output (HD-SDI compressed data or reclocked bypass), not the ASI output.

The BNC labeled **OUTPUT2** in Encode mode supports either ASI output or SD-SDI output (HD-SDI compressed data or reclocked bypass).

Note that Output 2 must be used when working with the ASI Output.

2.1.2. MFX-HD in Decode Mode

The BNC labeled **INPUT** in decode mode supports ASI and SD-SDI (for decompression or reclocked bypass).

The BNC labeled **OUTPUT1** in decode mode supports HD-SDI (decompressed) and SD-SDI (reclocked bypass).

The BNC labeled **OUTPUT2** in decode mode supports HD-SDI (decompressed), SD-SDI (reclocked bypass) and ASI (reclocked bypass).

2.2. AUDIO CONNECTIONS

The 7772MFX-HD has the ability to embed (MFX-HD in Encode Mode) and de-embed (MFX-HD in Decode Mode) up to four AES groups of audio streams (16 channels). No compression is applied to the AES audio streams. The audio source can be embedded audio on the HD video input or AES audio connected to the DB15 connector labeled **AES IN** when in Encode mode. It can also be re-embedded on the HD video output or output as AES audio via the DB-15 connector labeled **AES OUT** when in Decode Mode. Selection of the audio source is completed via card edge or *Vista*LINK® control.

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 2	AES IO 2 - Unbalanced	7
	Reserved for Future Use	8
AES 6	AES IO 6 – Unbalanced	9
AES 5	AES IO 5 – Unbalanced	10
AES 1	AES IO 1 - Unbalanced	11
AES 8	AES IO 8 – Unbalanced	12
AES 7	AES IO 7 – Unbalanced	13
AES 4	AES IO 4- Unbalanced	14
AES 3	AES IO 3- Unbalanced	15
GND	Ground	Shell

Table 2-1: AES INPUT/OUTPUT Audio Connector Pin Out

The 7772MFX-HD module is 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 connections. The pin out of the cables is shown in Table 2-2.

DB-15 PIN	Wire	Ground/Shield Connection	Label Name	Connector Type	AES IN FUNCTION
1	Not Functional				
2					
3					
4					
5					
6					
7	Coax	DB15 Shell	AES A2	BNC MALE	AES 2
8					
9	Coax	DB15 Shell	AES B2	BNC MALE	AES 6
10	Coax	DB15 Shell	AES B1	BNC MALE	AES 5
11	Coax	DB15 Shell	AES A1	BNC MALE	AES 1
12	Coax	DB15 Shell	AES B4	BNC MALE	AES 8
13	Coax	DB15 Shell	AES B3	BNC MALE	AES 7
14	Coax	DB15 Shell	AES A4	BNC MALE	AES 4
15	Coax	DB15 Shell	AES A3	BNC MALE	AES 3
Shell	Black		GND	WIRE	GND

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

The AES Breakout Cable (Evertz Part # WPAES8-BNCM-6F) may have GPIO terminations labeled. Please note that GPIOs are not active on the 7772MFX-HD and are reserved for future use.

2.3. GENLOCK REFERENCE

For proper synchronization of the input/output video, the module **MUST** be locked to a Genlock signal of the output video format.

It is mandatory that a Genlock source is provided to the 7772MFX-HD during operation.

GENLOCK: This BNC is for connecting a bi-level 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).

- The 7772MFX-HD in Encode mode should be locked to bi-Level genlock source for 720p, and bi-Level or tri-Level Genlock source for 1080i.
- The 7772MFX-HD in Decode Mode must be locked to bi-Level or tri-Level sync for 1080i or 720p.
- For 1080i/50 video standard the required genlock is tri-Level.

Note that in the probable case of the MFX-HD encoder and MFX-HD decoder not collocated, a different (Non-sync) genlock can be applied.

3. SPECIFICATIONS

3.1. SERIAL VIDEO INPUTS/OUTPUTS

Standard:
HD: SMPTE 292M, (1080i/59.94, 1080i/50, 720p/59.94, 720p/50)
SD: SMPTE 259M (480i/29.97, 576i/25)
Number of Inputs: 1 (Encoder)
Number of Outputs: 2 (Decoder)
Connector: BNC per IEC 61169-8 Annex A

3.2. JPEG2000 OVER SDI INPUTS/OUTPUTS

Standard: SMPTE 259M-C (270Mb/s)
Number of Inputs: 1 (Decoder)
Number of Outputs: 2 (Encoder)
Connector: BNC per IEC 61169-8 Annex A
Signal Level: 800mV nominal

3.3. JPEG2000 OVER ASI INPUTS/OUTPUTS

Standard: DVB TR 101 891-270Mb/s
Number of Inputs: 1 (Decoder)
Number of Outputs: 1 (Encoder)
Min ASI TS output bitrate 20Mb/s
Max total ASI TS output bitrate 212Mb/s

3.4. AES AUDIO INPUTS/OUTPUTS

Standard: SMPTE 276M, single ended AES
Number: 8
Sampling Rate: 48kHz
Impedance: 75Ω unbalanced
Embedding: SMPTE 272M

3.5. ENCODING PARAMETERS

Encoding: CBR or capped VBR mode
Bitrate setting: 30 to 50Mb/s for SD
65 to 160Mb/s for HD

Control of codec parameters:
Video Bit rate separately adjustable for luma and chroma
JPEG2000 Progression Style
Output Code Stream Format
Control: VistaLINK® Offers setup and remote monitoring of the card
Card edge control for easy setup

3.6. REFERENCE INPUT

Connector:	1 BNC per IEC 61169-8 Annex A
Type:	NTSC/PAL Color Black (1V p-p) or composite bi-level sync (525i/59.94 or 625i/50) 300mV
Termination:	75Ω jumper selectable

3.7. ENCODING/DECODING DELAY

Total Delay:	4 frames interlaced 6 frames progressive

3.8. ELECTRICAL

Voltage:	+12V DC
Power:	15W EMI/RFI Complies with FCC Part 15, Class A EU EMC Directive

3.9. PHYSICAL

350FR:	2
7700FR-C:	2
7800FR:	2

4. STATUS INDICATORS AND DISPLAYS

The 7772MFX-HD module has 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.

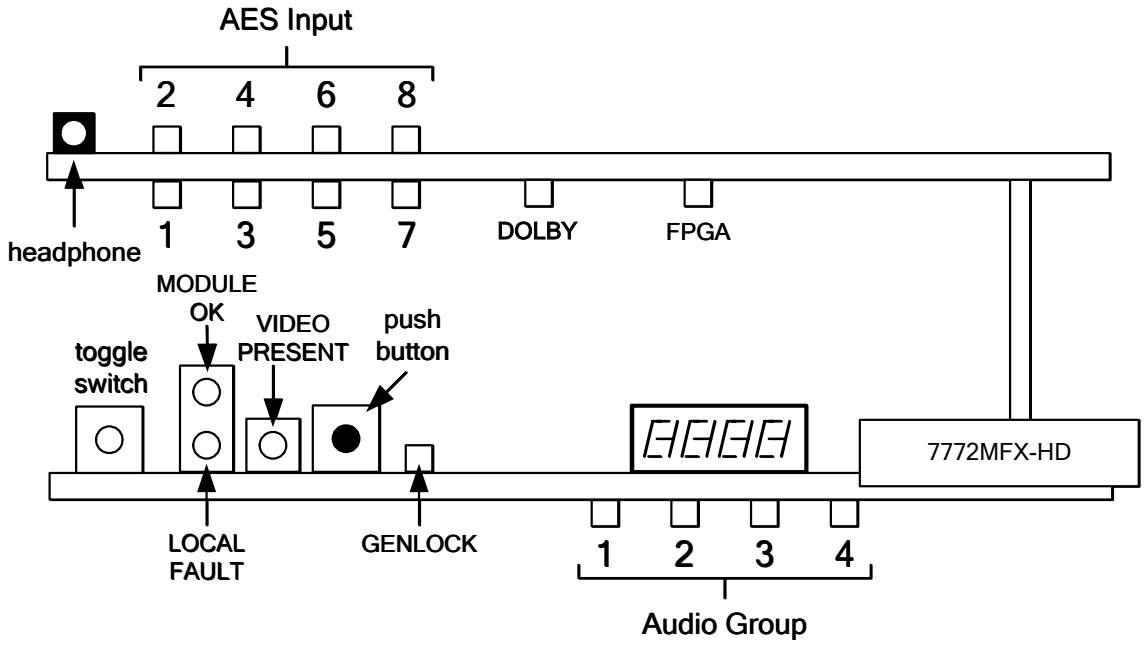

Figure 4-1: Status LED Locations

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.

There are three other small LEDs located 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 is processing or active. The LED will be RED and ON if there is an error with the Dolby Decoder. The LED is off when the Dolby Decoder is not active.

FPGA 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 located at 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 7772MFX-HD module can be configured by the card edge controls. The following key control components can be found at the card edge:

- Toggle Switch
- Four-Character Dot Matrix Display
- Push Button
- Four Audio LEDs

Toggle Switch: This component will become active when 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 when 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 when 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.

NOTE: During card edge menu system navigation, if all the Audio LEDs are OFF, the user is at the Top Level menu.

The 7772MFX-HD modules are also equipped with an eight-position DIP switch. **Currently, the DIP switches are not functional and are reserved for future use.**

6. ENCODE CARD EDGE MENU SYSTEM

6.1. TOP LEVEL ENCODE MENU STRUCTURE

Table 6-1 provides a brief description of the top-level menu tree that appears when you enter the card edge menu system. Selecting one of these items will take you to the next menu level, which enables the user to set the value of that parameter. The details of each of the menu items are described in sections 6.2 to 6.6.

ACTR	Audio Control	Sets audio controls for the module such as: Sample Rate Converter mode; C-bit control; the demux behavior with a loss of video and input video source selection.
TSCO	Transport Stream Control	Controls the transport stream parameters, such as PID numbers and program numbers.
HEAD	Headphone Monitor	Sets the headphone volume level and selects the source for headphone monitoring.
STAT	Status	Reports the status of the firmware, FPGA revisions, and input/output video standards
MISC	Miscellaneous	Enables VistaLINK®, sets display orientation, performs factory reset and more.

Table 6-1: Top Level Menu Structure

6.2. CONFIGURING THE AUDIO CONTROLS

The *Audio Control* menus are used to configure the audio delay; the mode of the sample rate converter, C-bit control, which embedded group to enable, and input audio source selection. The chart below shows the items available in the *Audio Control* menus. Sections 6.2.1 to 6.2.4 provide detailed information about each of the menu items.

SRC	SRC Mode	Sets the audio sample rate converter mode.
CBIT	C-Bit Control	Sets the AES channel status bit handling.
SRCS	Input source selection	Sets the input source.

Table 6-2: Audio Controls Menu

6.2.1. Setting the SRC Mode

Audio Control	
SRC	
Bypass	BYPS
Enable	ON
Automatic	AUTO

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

When *Enabled*, audio is sample rate converted at 48 kHz, which 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.

6.2.2. 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-bits will be replaced with static channel status message that reads professional 48 kHz.

6.2.3. Setting Audio Input Sources

Audio Control
SRCS
SRC12
SRC34
SRC56
SRC78
SRC9A
SRCBC
SRCDE
SRCFG

The parameter selects input audio source between demuxed (embedded) audio from the input video signal or the external AES inputs.

6.2.4. Setting the Audio Input Sources for AES Channels 1-16

Audio Control	
SRCS	
SRC12	
Normal	DMX1
AES Input 1	AES1

This parameter will select the source for audio channels 1 and 2.

The source can be the demuxed audio from the input signal or the external AES 1 Input.

Audio Control	
SRCS	
SRC34	
Normal	*DMX2*
AES Input 2	*AES2*

This parameter will select the source for audio channels 3 and 4.

The source can be the demuxed audio from the input signal or the external AES 2 Input.

Audio Control	
SRCS	
SRC56	
Normal	*DMX3*
AES Input 3	*AES3*

This parameter will select the source for audio channels 5 and 6.

The source can be the demuxed audio from the input signal or the external AES 3 Input.

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

This parameter will select the source for audio channels 7 and 8.

The source can be the demuxed audio from the input signal or the external AES 4 Input.

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

This parameter will select the source for audio channels 9 and 10.

The source can be the demuxed audio from the input signal or the external AES 5 Input.

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

This parameter will select the source for audio channels 11 and 12.

The source can be the demuxed audio from the input signal or the external AES 6 Input.

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

This parameter will select the source for audio channels 13 and 14.

The source can be the demuxed audio from the input signal or the external AES 7 Input.

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

This parameter will select the source for audio channels 15 and 16.

The source can be the demuxed audio from the input signal or the external AES 8 Input.

6.3. CONFIGURING THE TRANSPORT STREAM CONTROL

The transport stream configuration is used to set up PID's Number and program number. The PID number needs to be set when using ASI output for PMT, Video, luminance, video chrominance, audio and VANC.

The chart below shows the items available in the *Transport Stream Control* menu.

TSID	Program Number	Set the program number for the transport stream.
PMTI	PID Number for PMT	Set the Program Map Table PID number.
AUDI	PID Number for Audio	Set the PID Number to carry all of the audio elements.
LUMI	PID Number for Video Luminance	Set the PID Number to carry luminance video elements.
CHRI	PID Number for Video Chroma	Set the PID Number to carry chroma video elements.
VANI	PID Number for VANC	Set the PID Number to carry the VANC info.

6.3.1. Setting the Program Number

Transport Stream Control
- *TSID*
  - *1 to MAX*

This control sets the program number when using ASI transmission.

The TSID range is 1 to 9999.

6.3.2. Setting the PMT PID Number

Transport Stream Control
- *PMTI*
  - *32 to 8191*

This control selects the PMT (Program Map Table) PID to use in the transport stream.

The range is from 32 to 8191. The default value is 32.

Note that 32 is the minimum value to avoid any conflict with ATSC tables.

6.3.3. Setting the Audio PID Number

Transport Stream Control
- *AUDI*
  - *32 to 8191*

This control selects the audio PID Number. The 7772MF-HD does not compress audio.

The audio PID range is from 32 to 8191. The default value is 33.

6.3.4. Setting the Luminance PID Number

Transport Stream Control
LUMI
32 to 8191

This control selects the luminance PID Number. Luminance is carried separately from chrominance in the 7772MFX-HD.

The luminance PID range is from 32 to 8191. The default value is 34.

6.3.5. Setting the Chrominance PID Number

Transport Stream Control
CHRI
32 to 8191

This control selects the chrominance PID Number. Chrominance is carried separately from luminance in the 7772MFX-HD.

The chrominance PID range is from 32 to 8191. The default value is 35.

6.3.6. Setting the VANC PID Number

Transport Stream Control
VANI
32 to 8191

This control selects the PID Number to carry VANC (Vertical Ancillary data) in the transport stream. All VANC information in the input signal will be carried in the ASI stream under the VANC PID.

The range is from 32 to 8191. The default value is 36.

6.4. 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. The following sections provide detailed information about each of the menu items.

HVOL	Headphone volume	Sets the volume for the headphone
HSRC	Headphone source	Selects the source for the headphone monitoring

6.4.1. 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.

6.4.2. 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*

This selects the audio source for the headphone monitoring.

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.

6.5. DISPLAYING THE MODULE STATUS

The *Status* menus are used to show the status of various parameters of the 7772MFX-HD. The chart below shows the items available in the *Status* menu. Sections 6.5.1 to 6.5.5 provide 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 J2K sub-board.
F3RV	FPGA3 Revision	Displays the FPGA revision of the module's Audio sub-board.
IVSD	Input Video Standard	Displays the detected input video standard.

6.5.1. Checking the Module Firmware

Status
UPRV
Ex. "V1.0 BUILD 100"

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

6.5.2. Checking FPGA 1 Revision

Status
F1RV
Ex. "7"

The status parameter will report the revision of FPGA 1 (main board) on the module.

6.5.3. Checking FPGA 2 Revision

Status
F2RV
Ex. “8”

The status parameter will report the revision of FPGA 2 (J2K sub board) on the module.

6.5.4. Checking FPGA 3 Revision

Status
F3RV
Ex. “9”

The status parameter will report the revision of FPGA 3 on the module.

6.5.5. Checking the Input Video Standard

Status
IVSD
Ex. “1I59”

The status parameter will report the input video standard.

Unknown
None ---------- “NONE”
625i50(PAL-B) ---------- “PALB”
525i59(NTSC) ----------“NTSC”
DVB ASI ---------- “DVBA”
1080i50 ---------- “1I50”
1080i59 ---------- “1I59”
720p50 ---------- “7P50”
720p59 ---------- “7P59”

6.6. CONFIGURING MISCELLANEOUS PARAMETERS

The *Miscellaneous* menu is used to configure miscellaneous parameters, to enable VistaLINK® control, to display orientation, and to perform a factory reset. The chart below shows the items available in the *Miscellaneous* menu. Sections 6.6.1 to 6.6.8 provide detailed information about each of the parameters.

VLNK	VistaLINK® control enable	Enables the ability to control the module through VistaLINK®
DISP	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.
IMGS	Encoder or Decoder Reprogram	Switches the 7772MFX-HD to encode or decode mode.
BPLO	Bypass Lock *Genlocked* or locked to input (fast switch HD toss)	Sets the reference for the input bypass to genlock or locked to input.
SDTS	Standard for Transport (SDI or ASI)	Sets the transport output mode.
RTOL	Total Rate	Sets the total rate for the encoded video.
YCRA	Luma/Chroma	Enables the user to change the ratio of bitrate allocation between luminance and chrominance.

6.6.1. Enabling VistaLINK® Control of the Module

Miscellaneous	
VLNK	
Enable	*RMTE*
Disable	*LCAL*

This configures the VistaLINK® control of the module.

Setting the control to *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.

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

6.6.2. Setting Card Edge Display Orientation

Miscellaneous	
DISP	
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.

6.6.3. Resetting the Module to its Factory Defaults

Miscellaneous	
FRST	
Reset All	*ALL*
Audio Control Reset	*ACR*

This control enables you to reset the entire module or certain functional blocks to its factory default condition.

Select *ALL* to reset the entire module to the factory settings.

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

6.6.3.1. Resetting the Module to Factory Settings

Resetting the module and its components to factory settings can be configured the same way. For the sake of simplicity, 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 its factory settings.

Select *YES* to reset the module to the factory settings.

Select *NO* to not reset the module to factory settings.

6.6.4. Switching Encoder and Decoder Mode

Miscellaneous	
IMGS	
No	*NO*
To Decoder	*TDEC*
To Encoder	*TENC*

Switches the card between encode or decode mode.

The 7772MFX-HD can be set as an encoder or a decoder.

Select *NO* to leave the mode unchanged.
Select *TDEC* (To Decoder) to change the encoder to a decoder.
Select *TENC* (To Encoder) to change the decoder to an encoder.

6.6.5. Setting the Input Bypass Lock Mode

Miscellaneous	
BPLO	
Follow Input	*INPU*
Genlock	*GENL*

This control sets the reference for the input bypass. The two choices are: Follow Input (INPU) and Genlock (GENL).

Genlock is the default and it is also the recommended bypass lock mode.

Input genlock can be used when a fast switch from HD encode to SD bypass is required.

6.6.6. Setting the Transport Mode

Miscellaneous	
SDTS	
SDI Mode	*SDI*
TS Mode	*TS*

This control sets the transport output mode.

Setting to *SDI* mode will carry the JPEG2000 information over standard SDI. In this mode none of the ASI settings are used.

Setting to *TS* mode will carry the JPEG2000 information over standard ASI. The default mode is ASI.

6.6.7. Setting the Total Useful Output Rate

Miscellaneous	
RTOL	
85 to 165	*ASI*
85 to 180	*SDI*

This control sets the total rate for the encoded video (luminance and chrominance).

The default for ASI is 165 Mbits/s.

The default for SDI is 180Mbits/s.

6.6.8. Setting the Luma to Chroma Ratio

Miscellaneous
YCRA
1 to 10

This control allows the user to change the ratio of bitrate allocation between luma and chroma.

For example, if YCRA is set to 5 (default), the 7772MFX-HD will output 5 times more luma samples than chroma samples. It would be a 5:1 ratio.

The default value is 5.

7. DECODE CARD EDGE MENU SYSTEM

7.1. TOP LEVEL DECODE MENU STRUCTURE

Table 7-1 provides a brief description of the top level menu tree that appears when the user enters the card edge menu system. Selecting one of these items will take you to the next menu level, which enables the user to set the value of that parameter. The details of the each of the menu items are described in sections 7.2 to 7.7.

VCTR	Video Control	Sets the video standard in which the module will operate, the timing offset of the video output, the loss of video mode and VANC control.
ACTR	Audio Control	Sets the audio controls for the module such as: Coarse and fine audio delays; Sample Rate Converter mode; C-bit control; Embedder Group enable; Demux loss of video mode; and Audio output selection.
TSCO	Transport Stream Control	Controls the transport stream parameters, such as PID numbers, TSID, etc.
HEAD	Headphone Monitor	Sets the headphone volume level and selects the source for headphone monitoring.
STAT	Status	Reports the status of the firmware, FPGA revisions, input/output video standard.
MISC	Miscellaneous	Enables VistaLINK®, sets display orientation, and performs factory reset.

Table 7-1: Top Level Menu Structure

7.2. CONFIGURING THE VIDEO CONTROLS

The *Video Control* menus are used to configure parameters associated with the module's output video timing. The chart below shows the items available in the *Video Control* menus. Sections 7.2.1 to 7.2.3 provide detailed information about each of the menu items.

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	Loss of Video Mode	Sets the output status when the input is lost.

Table 7-2: Video Controls Menu

7.2.1. 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 (output) video standard of the module.

For the following standards, the maximum delay is 1124: 1080i/50 and 1080i/59.

For the following standards, the maximum delay is 749: 720p/50 and 720p/59.

When the frame phase is set to 0, the vertical phase has a minimal value of 25.

7.2.2. 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 maximum possible delay is dependent on the operating (output) video standard.

For the following standards, the maximum horizontal Phase delay is 2639: 1080i/50

For the following standards, the maximum horizontal Phase delay is 2199: 1080i/59.94

For the following standards, the maximum horizontal Phase delay is 1649: 720p/59.94

For the 720p/50 standard, the maximum delay is 1979.

7.2.3. Setting the Frame Phase

Video Control
FDLY
0 to Max
0

This control selects the frame delay of the output video signal in respect to the input video.

The default value should be 0.

Depending on the operating video standard, the value mappings are:

- Interlace video: 0,1,2,...,12
- Progressive video: 0,2,4...,24

If the vertical phase is set to less than 25, the 0 value cannot be set here.

7.2.4. Setting the Loss of Video Mode

Video Control	
LOVM	
BLACK	*BLK*
DISCONNECT	*DISC*
FRAME	*FRM*

This control selects the output behaviour of the card when the input goes missing.

Select *BLK* to set the output to black and maintain the HD SDI lock.

Select *DISC* to disconnect the output and disable the HD SDI link.

Select *FRM* to set the output to the last good frame resulting in a freeze frame.

FRM is the default setting.

7.3. CONFIGURING THE AUDIO CONTROLS

The *Audio Control* menus are used to configure the audio delay; determine the mode of the sample rate converter, configure C-bit control, choose which embedded group to enable, and select the audio output. The chart below shows the items available in the *Audio Control* menus. Sections 7.3.1 to 7.3.6 provide detailed information about each of the menu items.

ADLY	Coarse Audio Delay	Sets audio delay in frame of video increments (coarse).
ASDL	Fine Audio Delay	Sets audio delay in milliseconds (in 2048 µs 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.
AOUT	Audio output selection	Choose the audio output between AES and embedded audio.

Table 7-3: Audio Controls Menu

7.3.1. 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 7.2.3).

Otherwise, the user can insert a delay of *0 to max* video frames, and the range depends on the operating video standard:

- If the video is interlaced, the value should be mapped to 'FollowVideoDelay',0,1,2,...,12;
- If the video is progressive, the value should be mapped to 'FollowVideoDelay',0,2,4,...,24;

The default value should be 0 (following video frame delay).

7.3.2. Setting the Fine Audio Delay

Audio Control
ASDL
-33ms to +33ms
0

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

If *ADLY* is set to 0, then the parameter range is 0 to 33ms.

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

7.3.3. Setting the SRC Mode

Audio Control	
SRC	
Bypass	BYPS
Enable	ON
Automatic	AUTO

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

When *Enabled*, audio is sample rate converted at 48 kHz, which 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.

7.3.4. 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-bits will be replaced with a static channel status message that reads professional 48 kHz.

7.3.5. Enabling the Audio Embedders

There are four menu items used to enable embedder groups. The menu item for each embedder group component functions in the same way, therefore 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.

7.3.6. Setting where to Output the Audio

Audio Control
AOUT
Embedded
AES
Both
None

This control enables the user to choose the output audio of *AES* and *Embedded* audio.

Selecting *Both* will output audio to both AES and embedded audio. Selecting *None* will cut off audio from both AES and embedded audio.

7.4. CONFIGURING THE TRANSPORT STREAM CONTROL

The chart below shows the items available in the “transport stream control menu”.

TSID	Tune to Program	Sets the program number.
TSST	Reset of TS Stats	Resets the statistics.

7.4.1. Sets the Program Number

Transport Stream Control
TSID
-1
0
9999

If there are multiple programs in the ASI stream, this function allows the user to select which program number to be used.

-1 indicates that the card will automatically tune to the first program in the MPEG-2 TS that carries JPEG2000.

The default value is –1.

7.4.2. Reset the TS Statistics

Transport Stream Control
TSST
0
1

The 7772MFX-HD collects TS statistics referring to lost packets, errors, etc.

This control will reset the statistics to 0.

Select 0 to keep the statistics as is.
Select 1 to reset the statistics.

7.5. 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 6.4.1 to 6.4.2 provide detailed information about each of the menu items.

HVOL	Headphone volume	Sets the volume for the headphone.
HSRC	Headphone source	Selects the source for the headphone monitoring

7.5.1. Setting the Headphone Volume

Headphone Monitor
HVOL
HV00 to HV15
HV07

This control enables the user to 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.

7.5.2. Selecting the Source for the Headphone Monitoring

Headphone Monitor	
HSRC	
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 audio source for the headphone monitoring.

The parameter can be set to *DMX1* to *DMX8*, and the headphone will be monitoring the incoming embedded audio.

7.6. DISPLAYING THE MODULE STATUS

The status menus are used to show the status of various parameters of the 7772MFX-HD. The chart below shows the items available in the status menu. Sections 7.6.1 to 7.6.6 provide 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 J2K sub-board.
F3RV	FPGA3 Revision	Displays the FPGA revision of the module's audio sub-board.
IVSD	Input Video Standard	Displays the detected input video standard.
OVSD	Operating Standard	Displays the operating standard of the module.

7.6.1. 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.

7.6.2. Checking FPGA 1 Revision

Status
F1RV
Eg. "7"

The status parameter will report the revision of FPGA 1 (main board) on the module.

7.6.3. Checking FPGA 2 Revision

Status
F2RV
Eg. "8"

The status parameter will report the revision of FPGA 2 (J2K sub-board) on the module.

7.6.4. Checking FPGA 3 Revision

Status
F3RV
Eg. "9"

The status parameter will report the revision of FPGA 3 (audio sub-board) on the module.

7.6.5. Checking the Input Video Standard

Status
IVSD
Eg. "NTSC"

The status parameter will report the input video standard.
525i59(NTSC) ----------"NTSC"
625i50(PAL-B) ----------"PALB"

7.6.6. Checking the Output Video Standard

Status
OVSD
Eg. "1I59"

The status parameter will report the output video standard.
None ---------- "NONE"
625i50(PAL-B) ---------- "PALB"
525i59(NTSC) ----------"NTSC"
DVB ASI ---------- "DVBA"
1080i50 ---------- "1I50"
1080i59 ---------- "1I59"
720p50 ---------- "7P50"
720p59 ---------- "7P59"

7.7. 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 7.7.1 to 7.7.4 provide detailed information about each of the parameters.

VLNK	VistaLINK® Control Enable	Enables the ability to control the module through VistaLINK®.
DISP	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.
IMGS	Decoder or Encoder Reprogram	Switches the decoder and encoder mode.

7.7.1. Enabling VistaLINK® Control of the Module

Miscellaneous	
VLNK	
Enable	*RMTE*
Disable	*LCAL*

This control configures the VistaLINK® control of the module.

Select *RMTE* to enable 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.

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

7.7.2. Setting Card Edge Display Orientation

Miscellaneous	
DISP	
Horizontal	*HORZ*
Vertical	*VERT*

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

7.7.3. Resetting the Module to its Factory Defaults

Miscellaneous	
FRST	
Reset All	*ALL*
Video Control Reset	*VCR*
Audio Control Reset	*ACR*

This control enables the user to reset the entire module or certain functional blocks to its factory default condition.

Select *ALL* to reset the entire module to the factory settings.

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

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

7.7.3.1. Resetting the Module to Factory Settings

Resetting the module and its components to factory settings can be configured the same way. For the sake of simplicity, only the reset menu for the *Reset All* function will be described.

Miscellaneous	
FRST	
ALL	
Yes	*YES*
No	*NO*

This control enables you to reset the entire module to the factory settings.

Select *YES* to reset the module to the factory settings.
Select *NO* to not reset the module to factory settings.

7.7.4. Switching Encoder and Decoder Mode

Miscellaneous	
IMGS	
No	*NO*
To Decoder	*TDEC*
To Encoder	*TENC*

This control switches the encoder and decoder mode.

The 7772MFX-HD can be set as an encoder or a decoder.

Select *NO* to leave the mode unchanged.
Select *TDEC* (To Decoder) to change the encoder to a decoder.
Select *TENC* (To Encoder) to change the decoder to an encoder.

8. JUMPERS

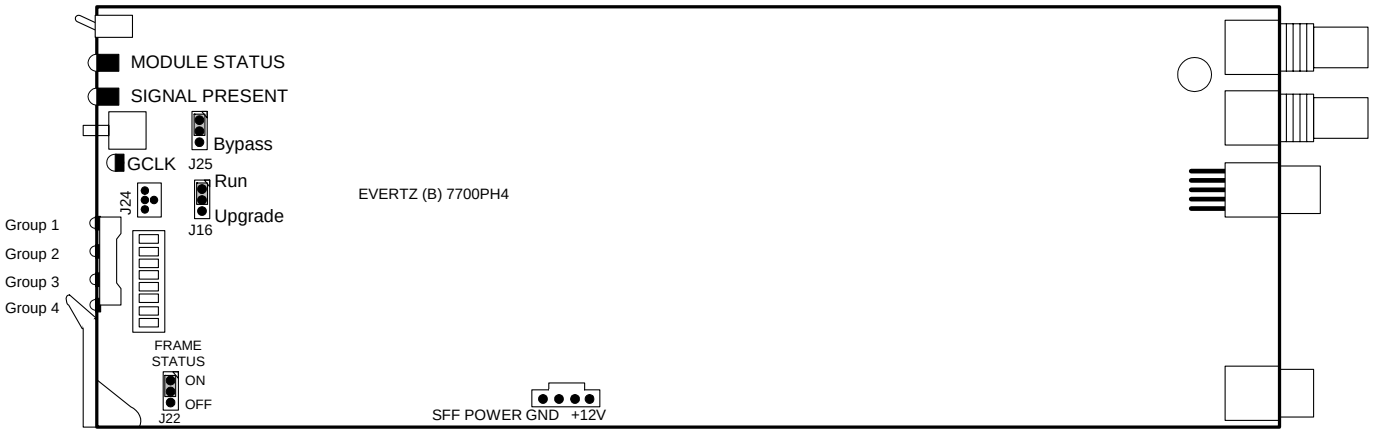

Figure 8-1: Location of Jumpers – Rev B Main Board

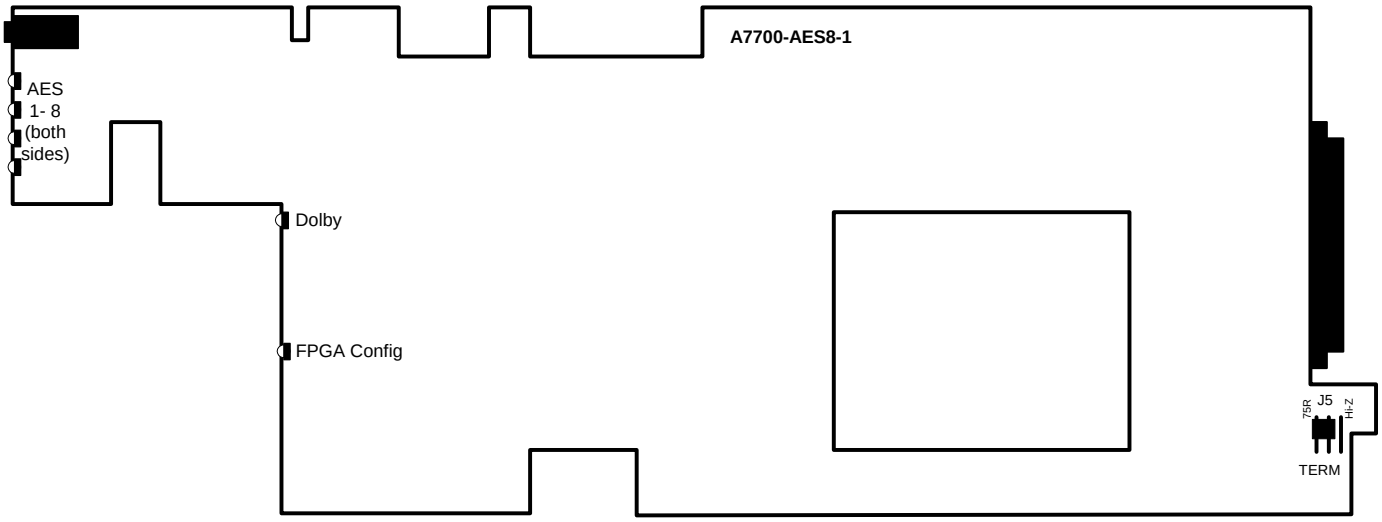

Figure 8-2: Location of Jumpers/LEDs – Rev. 1 Sub Board

8.1. 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 LEDs 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.

8.2. CONFIGURING THE MODULE FOR FIRMWARE UPGRADES

UPGRADE: The UPGRADE switch is located at jumper J16 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 complete, 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 7772MFX-HD module is 115200 baud.

8.3. 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.

8.4. SELECTING WHETHER THE INPUT VIDEO IS BYPASS

BYPASS: The BYPASS jumper J25, located at the front of the module, enables the bypass relay to always remain in the closed position.

9. *VISTA*LINK® REMOTE MONITORING/CONTROL

9.1. 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 VL-Fiber demo Manager graphical user interface (GUI), third party or custom manager software may be used to monitor and control Evertz *Vista*LINK® enabled fiber optic products.

2. Managed devices, (such as 7772MFX-HD card), 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.

9.2. *VISTA*LINK® PARAMETERS FOR MFX-HD IN ENCODE MODE

The following parameters can be remotely monitored through the *Vista*LINK® interface.

9.2.1. *Vista*LINK® GENERAL TAB

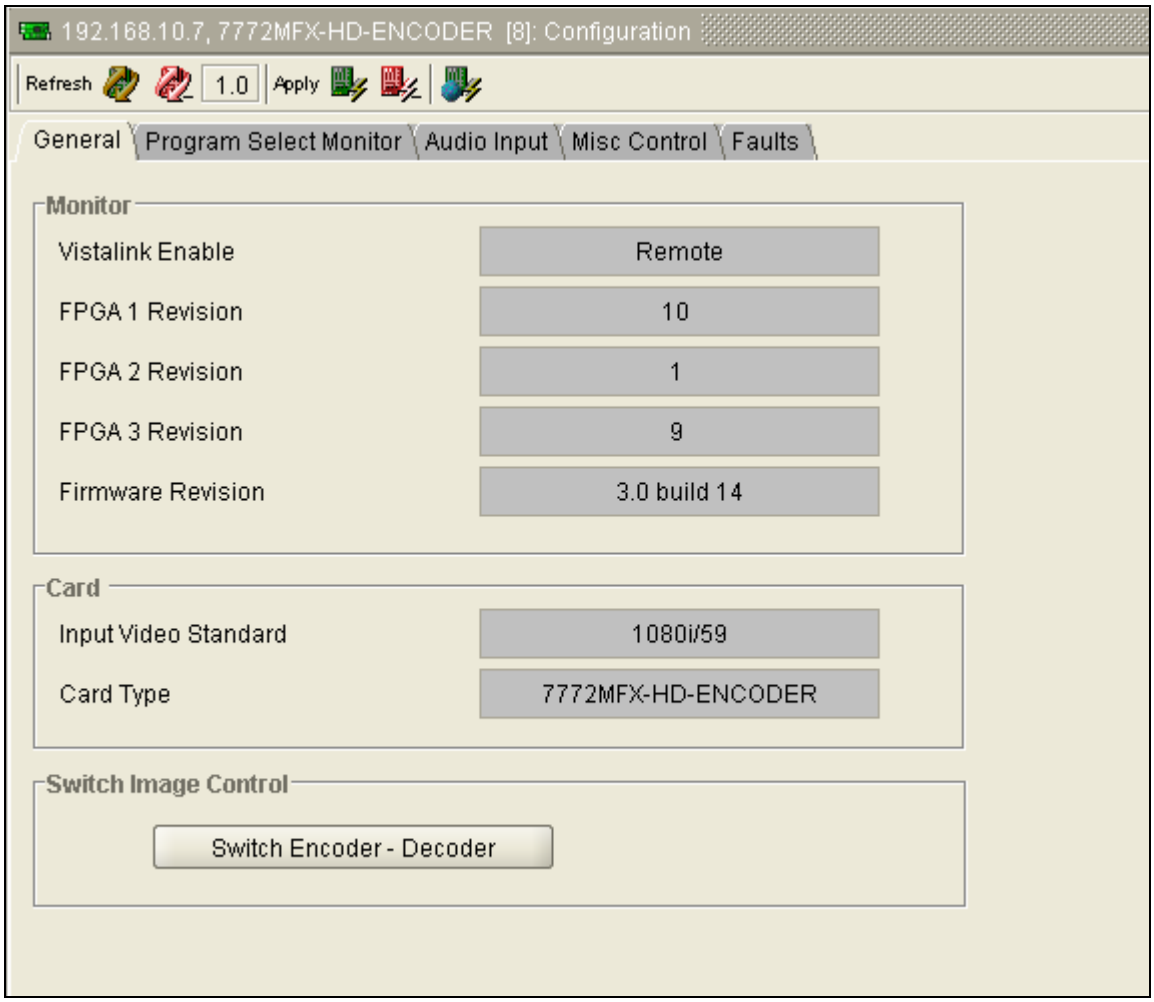

Figure 9-1: General Tab in Encode Mode

Parameter	Description
Vistalink Enable	This field indicates whether the 7772MFX-HD is under local control or *Vista*LINK® control.
FPGA 1 Revision	This field displays the revision code of the main board FPGA.
FPGA 2 Revision	This field displays the revision code of the JPEG2000 sub-board FPGA.
FPGA 3 Revision	This field displays the revision code of the audio sub-board FPGA.
Firmware Revision	This field displays the firmware version string.
Input Video Standard	This field indicates the video standard of input signal.
Card Type	This field identifies the Card Type parameter and it currently returns either '7772MFX-HD in Encode' or '7772MFX-HD in Decode'.
Switch Image Control	This control enables the user to switch the card image between jpeg2000 encoder and decoder. Jumper J30 must be installed for the switch to be successful. *NOTE:* When this control is set successfully, the card will reboot and load the newly switched to image.

Table 9-1: *Vista*LINK® General Tab

9.2.2. *Vista*LINK® PROGRAM SELECT MONITOR TAB

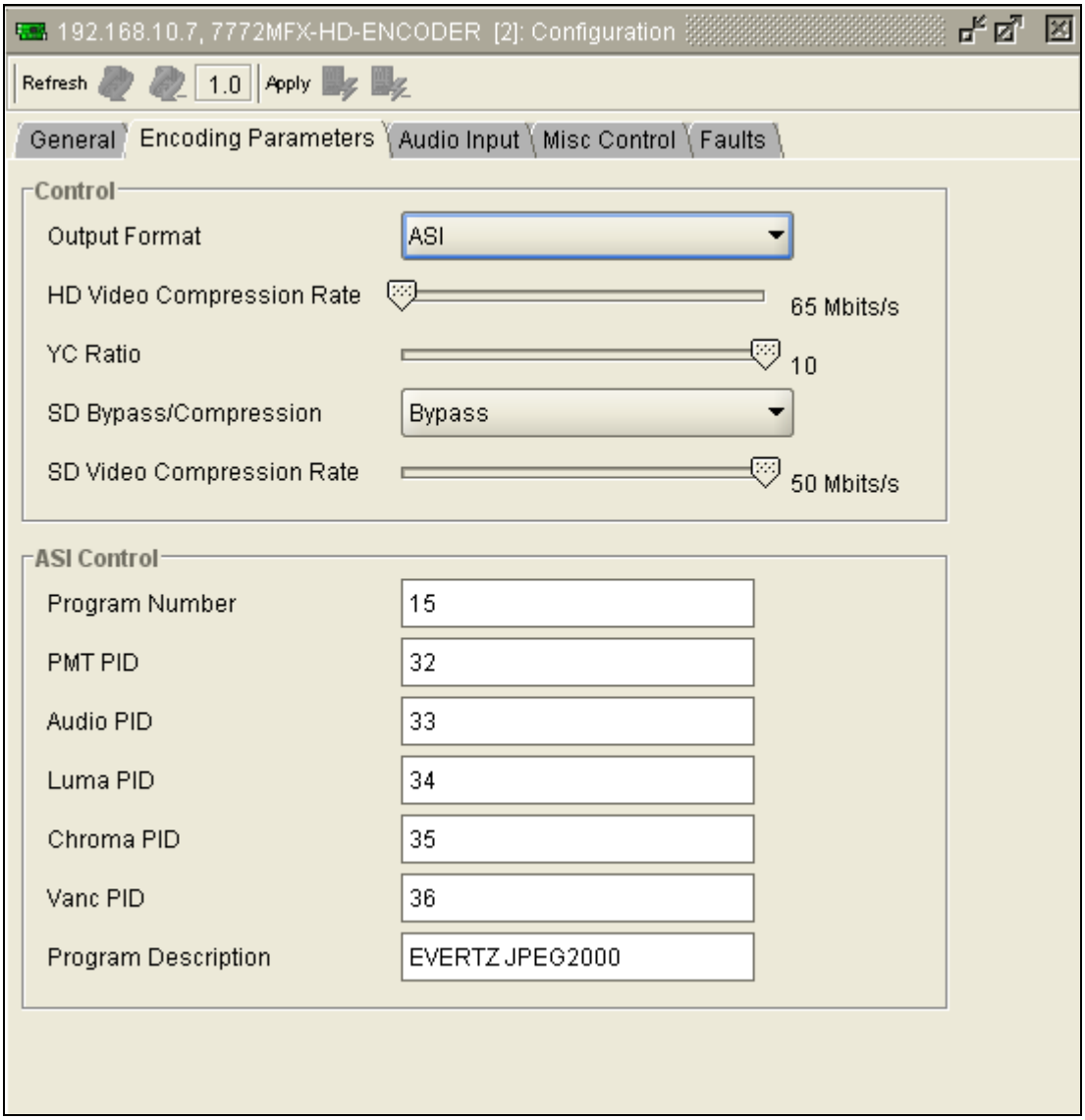

Figure 9-2: Program Select Monitor Tab in Encode Mode

Parameter	Description
Output Format	This control enables the user to switch the output transport between SDI and ASI.
HD Video Compression Rate	This control enables the user to set the HD Video Compression rate. The rate ranges from 65 to 165 Mbits/s.
YC Ratio	This control sets the Luma to chroma bit rate ratio, the default is 5 (meaning 5:1).
SD Bypass Compression	This control enables the user to bypass or compress the SD video signal.
SD Video Compression Rate	This control enables the user to set the SD Video Compression rate. The rate ranges from 30 to 50 Mbits/s.
Program Number	This control sets the JPEG2000 Program ID for output ASI TS stream, default is 1.
PMT PID	This control sets the PID for PMT table. The default is 32.
Audio PID	This control sets the PID for audio stream. The default is 33.
Luma PID	This control sets the PID for luma stream. The default is 34.
Chroma PID	This control sets the PID for chroma stream. The default is 35.
Vanc PID	This control sets the PID for vanc stream. The default is 36.
Program Description	Text string to describe the output JPEG2000 over ASI TS stream program.

Table 9-2: *Vista*LINK® Program Select Monitor Tab

9.2.3. *Vista*LINK® AUDIO INPUT TAB

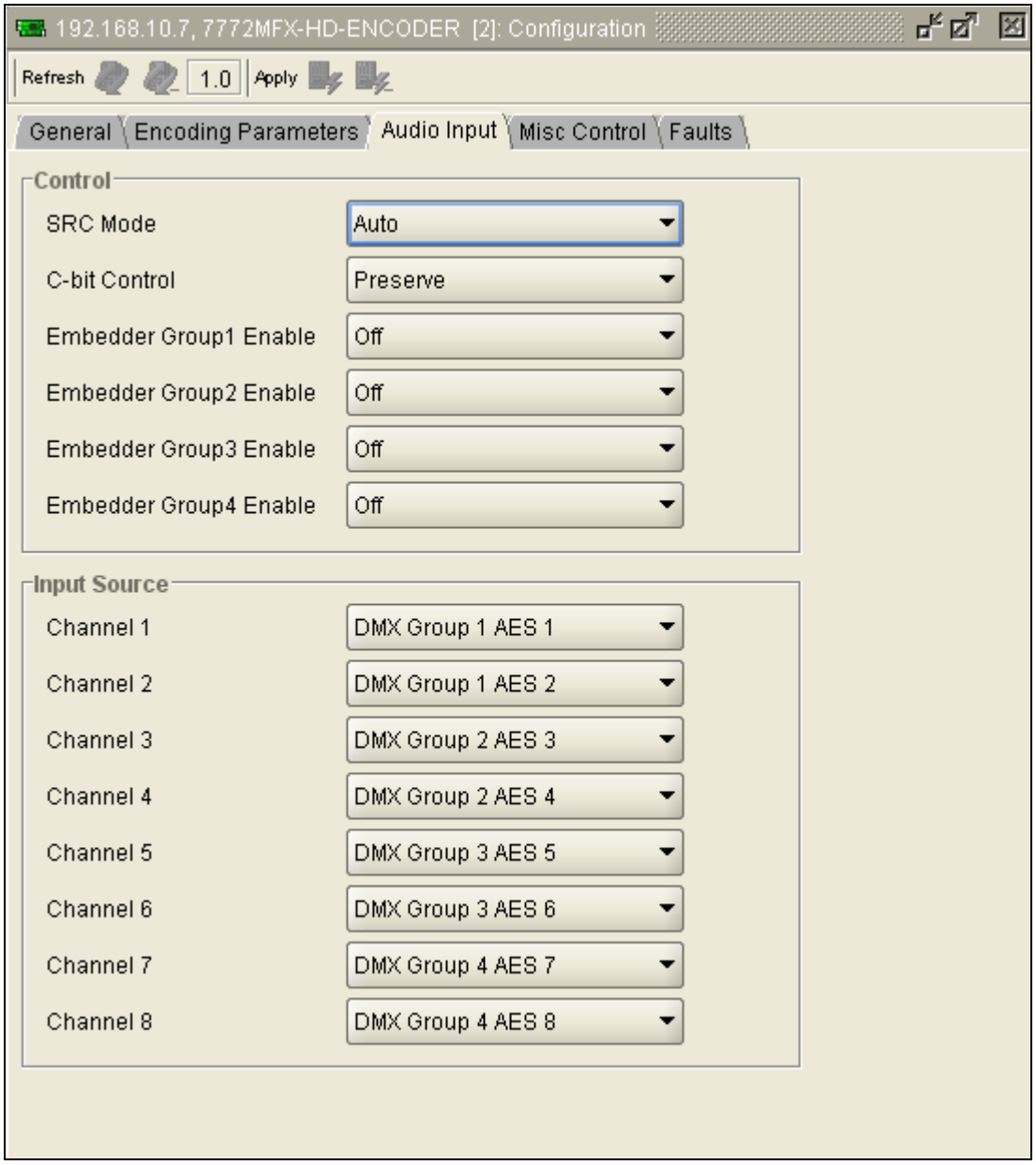

Figure 9-3: Audio Input Tab in Encode Mode

Parameter	Description
SRC Mode	This control sets the mode of the sample rate converter. The default value should be 'auto'.
Embedder Group 1 to 4 Enable	This control enables the user to enable or disable each specific embedder group. The user can turn this control on or off for groups 1 to 4.
C-bit Control	This control determines whether the c-bit is preserved or replaced. ***Preserve*:** Preserve as many bits as possible, but always change to professional 48kHz. ***Replace*:** Replace all c-bits with a static channel status message that reads 'professional 48kHz'.
Input Source	This parameter is the audio input source select. The default value should be 'dmx'.

Table 9-3: *Vista*LINK® Audio Input Tab

9.2.4. *Vista*LINK® MISC CONTROL TAB

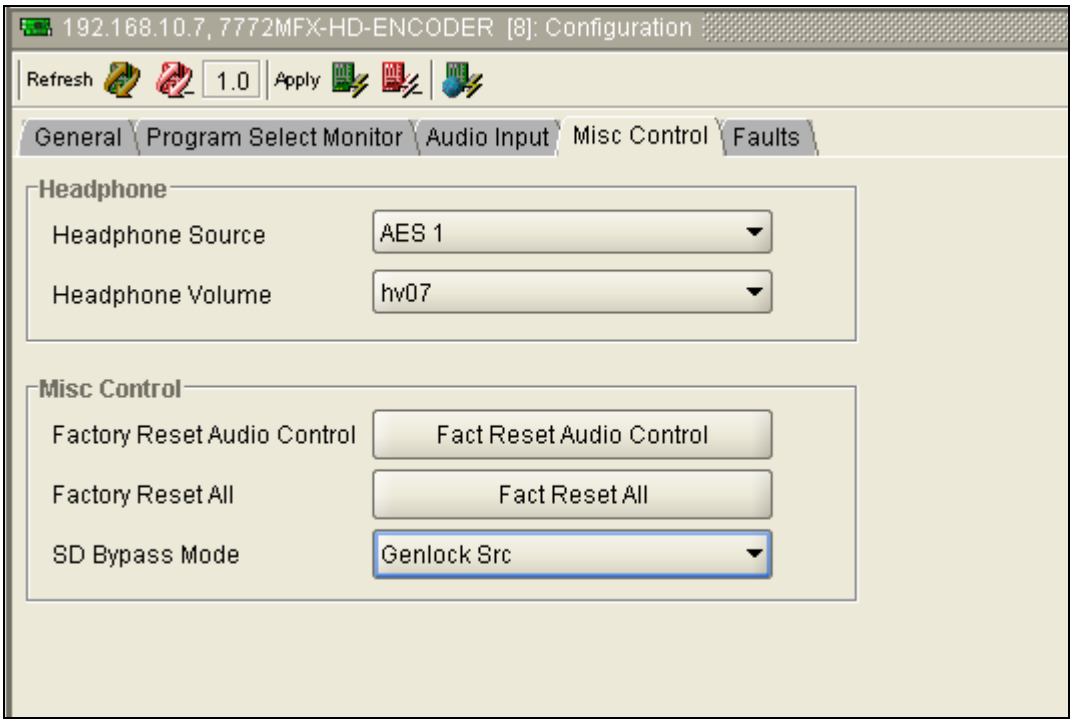

Figure 9-4: Misc Control Tab in Encode Mode

Parameter	Description
Headphone Source	This control enables the user to select the source for headphone monitoring.
Headphone Volume	This control enables the user to adjust the headphone volume.
Factory Reset Audio Control	This control applies *Factory Reset Audio Control* function.
Factory Reset All	This control applies the *Factory Reset All* function.
SD Bypass Mode	In SD bypass mode, bypass path locks to input or genlock, the default should lock to genlock. If AES embedding is required in SD-SDI bypass, SD Bypass Mode should be set to genlock, HD to SD switching is a bit slower in this mode. If fast HD to SD, or SD to HD switching is required, SD Bypass Mode should be set to input and SD-SDI input must be genlocked to the same source as 7772MFX-HD, however AES audio embedding is not supported.

Table 9-4: *Vista*LINK® Misc Control Tab

9.2.5. *Vista*LINK® FAULTS TAB

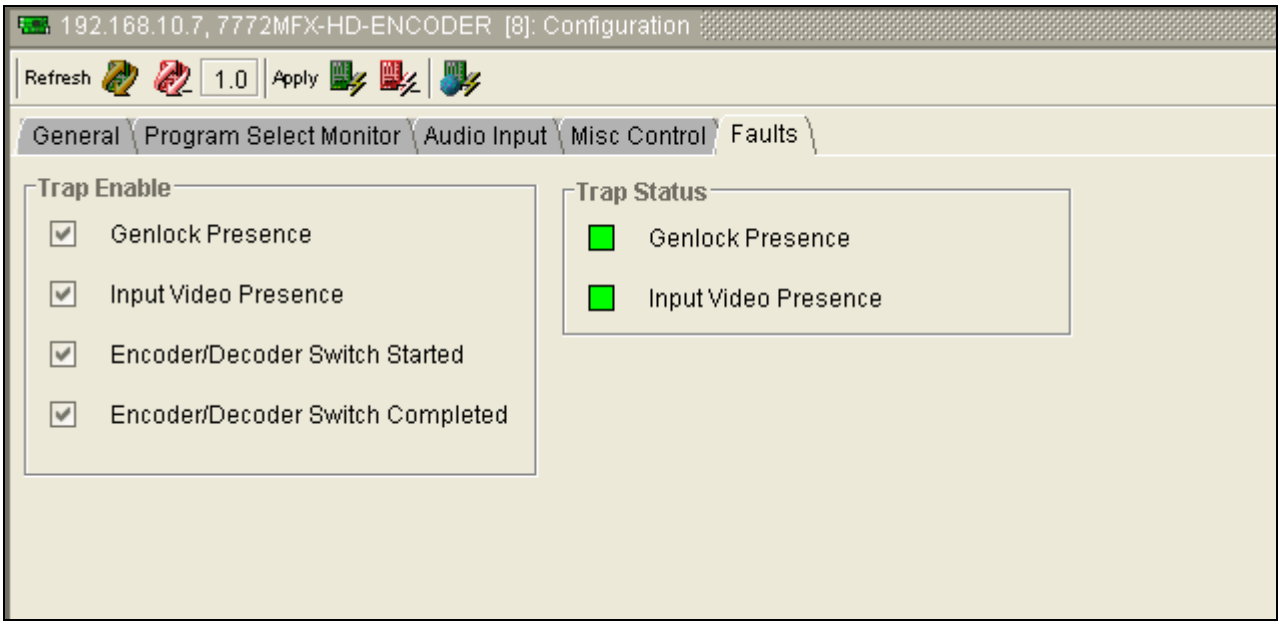

Figure 9-5: Faults Tab in Encode Mode

Parameter	Description
Genlock Presence	Indicates genlock presence.
Input Video Presence	Indicates video presence.

Table 9-5: *Vista*LINK® Faults Tab

9.3. *VISTA*LINK® PARAMETERS FOR MFX-HD IN DECODE MODE

9.3.1. *Vista*LINK® GENERAL TAB

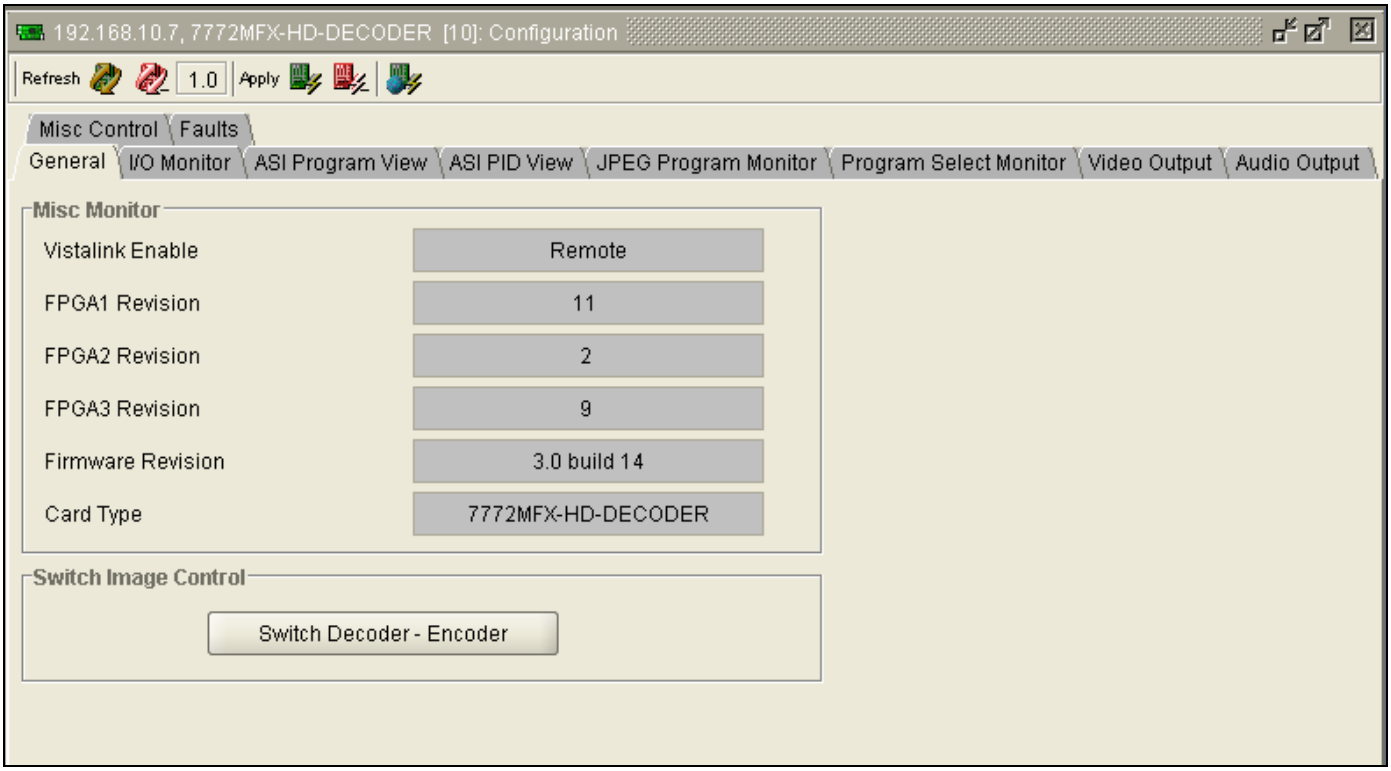

Figure 9-6: General Tab in Decode Mode

Parameter	Description
Vistalink Enable	This field indicates whether the 7772MFX-HD is under local control or *Vista*LINK® control.
FPGA 1 Revision	This field displays the revision code of the main board FPGA.
FPGA 2 Revision	This field displays the revision code of the JPEG2000 sub-board FPGA.
FPGA 3 Revision	This field displays the revision code of the audio sub-board FPGA.
Firmware Revision	This field displays the firmware version string.
Card Type	This field identifies the *Card Type* parameter. Currently this field returns either '7772MFX-HD in Encode' or '7772MFX-HD in Decode'.
Switch Image Control	To switch the card image between JPEG2000 encoder and decoder. *NOTE:* When this control is set successfully, the card will reboot and load the newly switched to image.

Table 9-6: *Vista*LINK® General Tab

9.3.2. *Vista*LINK® I/O MONITOR TAB

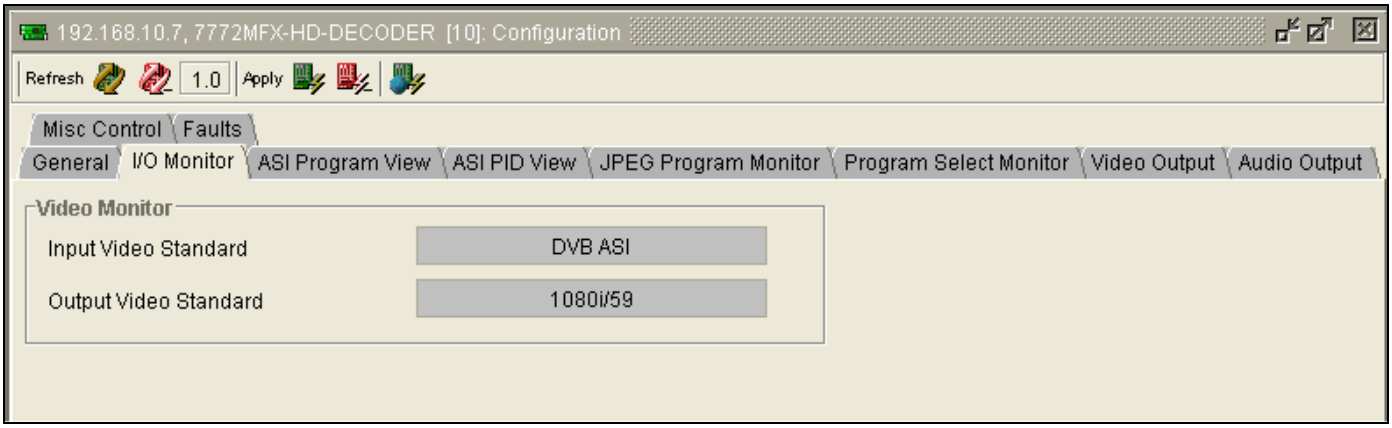

Figure 9-7: I/O Monitor Tab in Decode Mode

Parameter	Description
Input Standard	This field displays the detected input video standard. The parameter will indicate the current supported input format detected by the card.
Output Video Standard	This field displays the operating (output) video standard returned by the card.

Table 9-7: *Vista*LINK® I/O Monitor Tab

9.3.3. *Vista*LINK® ASI PROGRAM VIEW TAB

The **ASI Program View** tab displays a table of all programs detected on the input (TS Mode only).

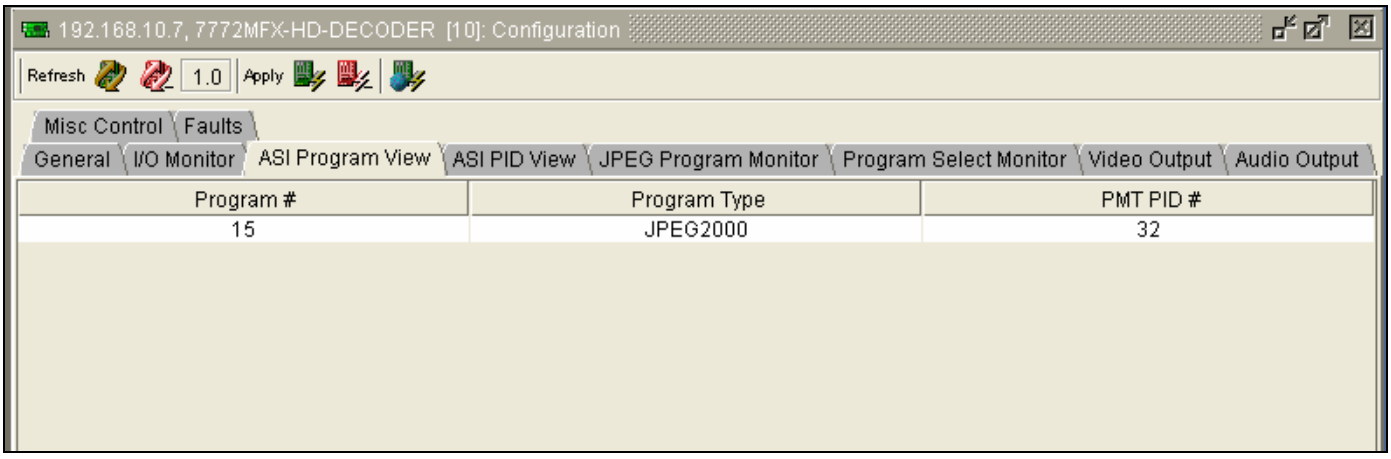

Figure 9-8: ASI Program View Tab in Decode Mode

9.3.4. *Vista*LINK® ASI PID VIEW TAB

The **ASI PID View** tab displays a table of all input TS elementary stream PIDs in the input stream (TS Mode Only).

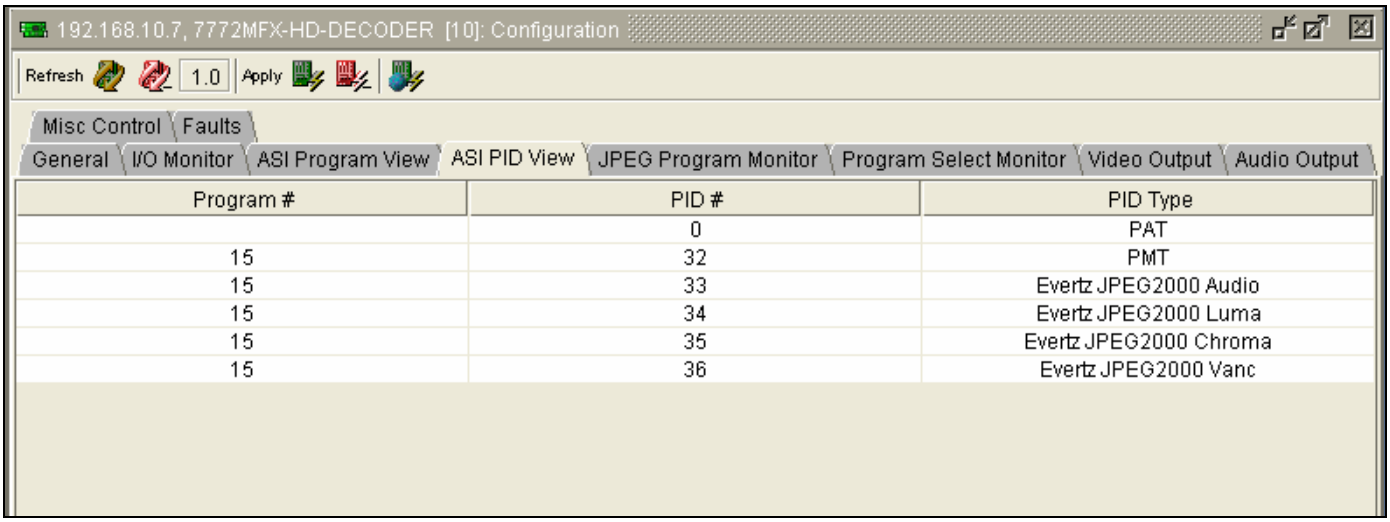

Figure 9-9: ASI PID View Tab in Decode Mode

9.3.5. *Vista*LINK® JPEG PROGRAM MONITOR TAB

The **JPEG Program Monitor** tab displays a table of all JPEG2000 input TS elementary stream PIDs in the selected program (TS Mode Only).

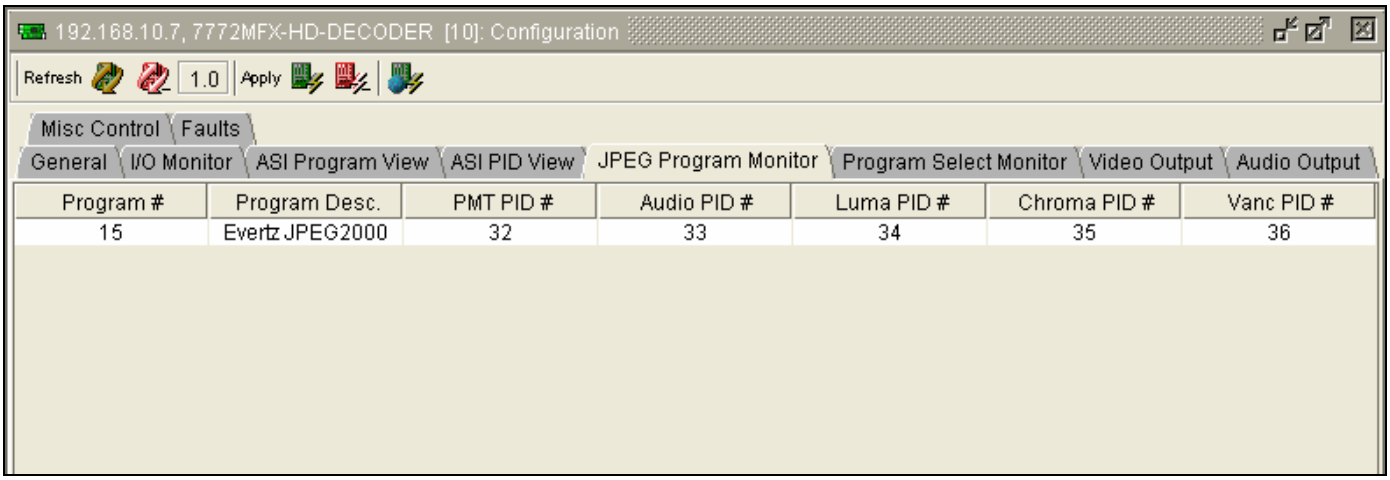

Figure 9-10: JPEG Program Monitor Tab in Decode Mode

9.3.6. *Vista*LINK® PROGRAM SELECT MONITOR TAB

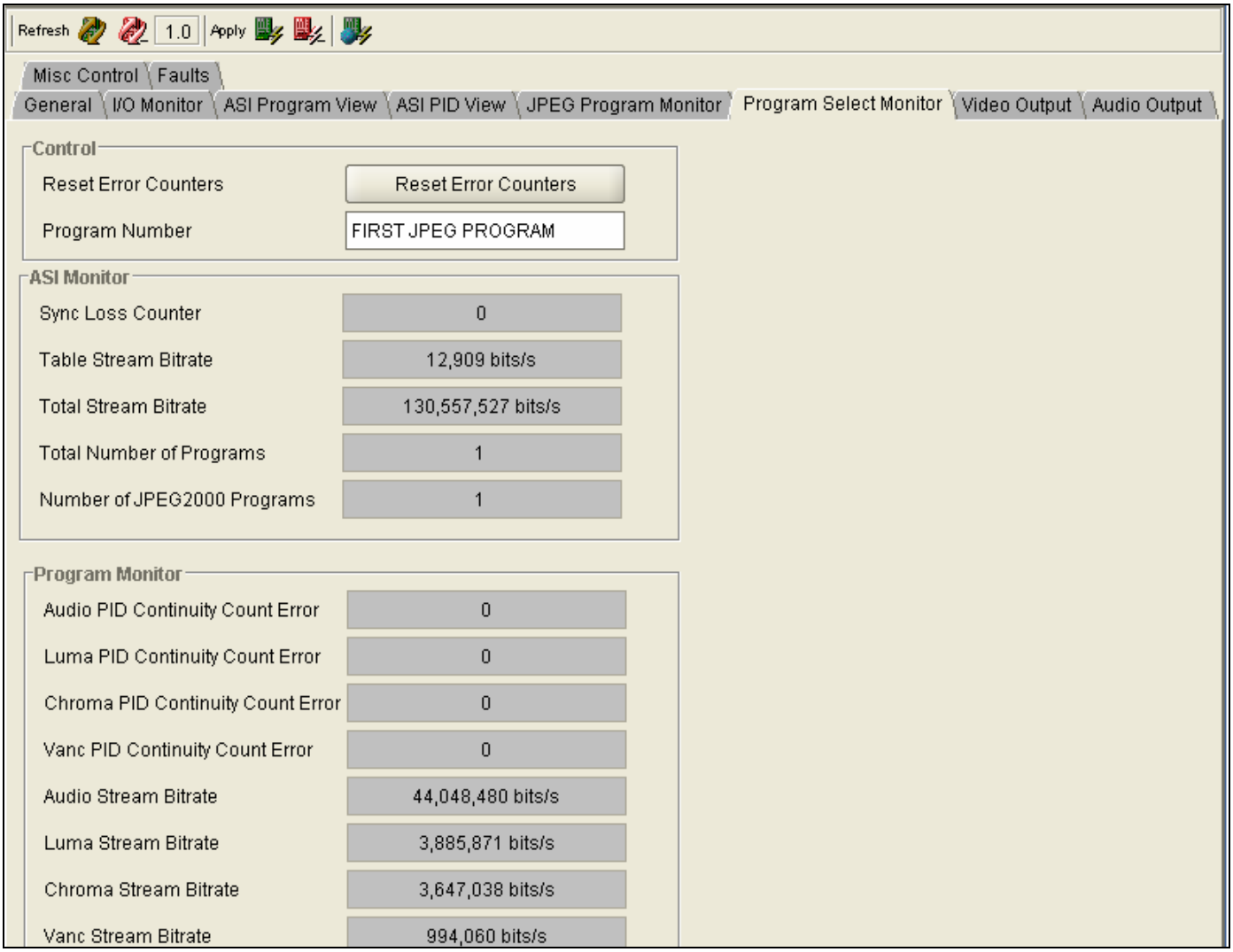

Figure 9-11: Program Select Monitor Tab in Decode Mode

Parameter	Description
Reset Error Counters	This button resets all error counters.
Program Number	Provides the program description for this program.
Sync Loss Counter	Counter for ASI input TS stream lost of synchronization byte.
Table Stream Bitrate	Bandwidth for ASI input TS tables, including PAT/PMT and configuration table, which is embedded inside luma stream.
Total Stream Bitrate	Total bandwidth for ASI input TS stream.
Total Number of Programs	Total number of ASI input TS programs.
Number of JPEG2000 Programs	Number of JPEG2000 input TS programs.
Audio PID Continuity Count Error	Counter for ASI input audio TS stream continuity count error.
Luma PID Continuity Count Error	Counter for ASI input luma TS stream continuity count error.
Chroma PID Continuity Count Error	Counter for ASI input chroma TS stream continuity count error.
Vanc PID Continuity Count Error	Counter for ASI input VANC TS stream continuity count error.
Audio Stream Bitrate	Bandwidth for ASI input audio PID.
Luma Stream Bitrate	Bandwidth for ASI input luma PID.
Chroma Stream Bitrate	Bandwidth for ASI input chroma PID.
Vanc Stream Bitrate	Bandwidth for ASI input VANC PID.

Table 9-8: *Vista*LINK® Program Select Monitor Tab

9.3.7. *Vista*LINK® VIDEO OUTPUT TAB

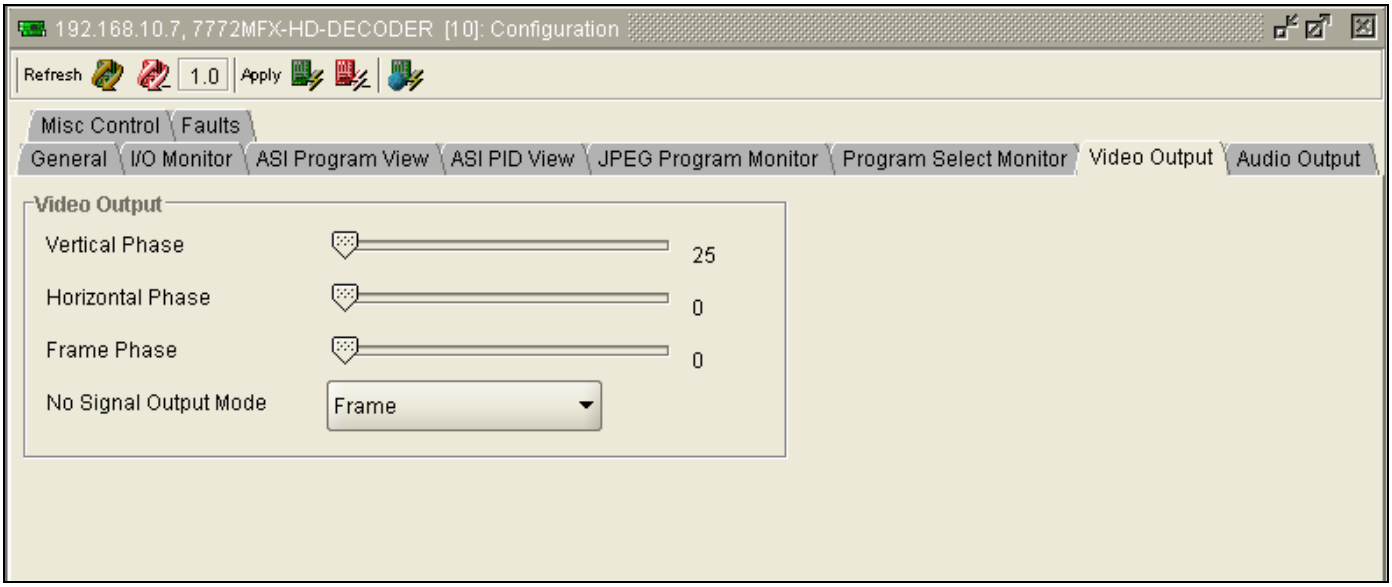

Figure 9-12: Video Output Tab in Decode Mode

Parameter	Description
Vertical Phase	Vertical phase adjustment of current video standard.
Horizontal Phase	Horizontal phase adjustment of current video standard.
Frame Phase	Frame phase adjustment of current video standard.
No Signal Output Mode	This control selects the action on loss of input video. The default 'No Signal Output Mode' is frame. ***Frame:*** The output repeats the last good frame. ***Disconnect:*** The output will be broken and invalid.

Table 9-9: *Vista*LINK® Video Output Tab

9.3.8. *Vista*LINK® AUDIO OUTPUT TAB

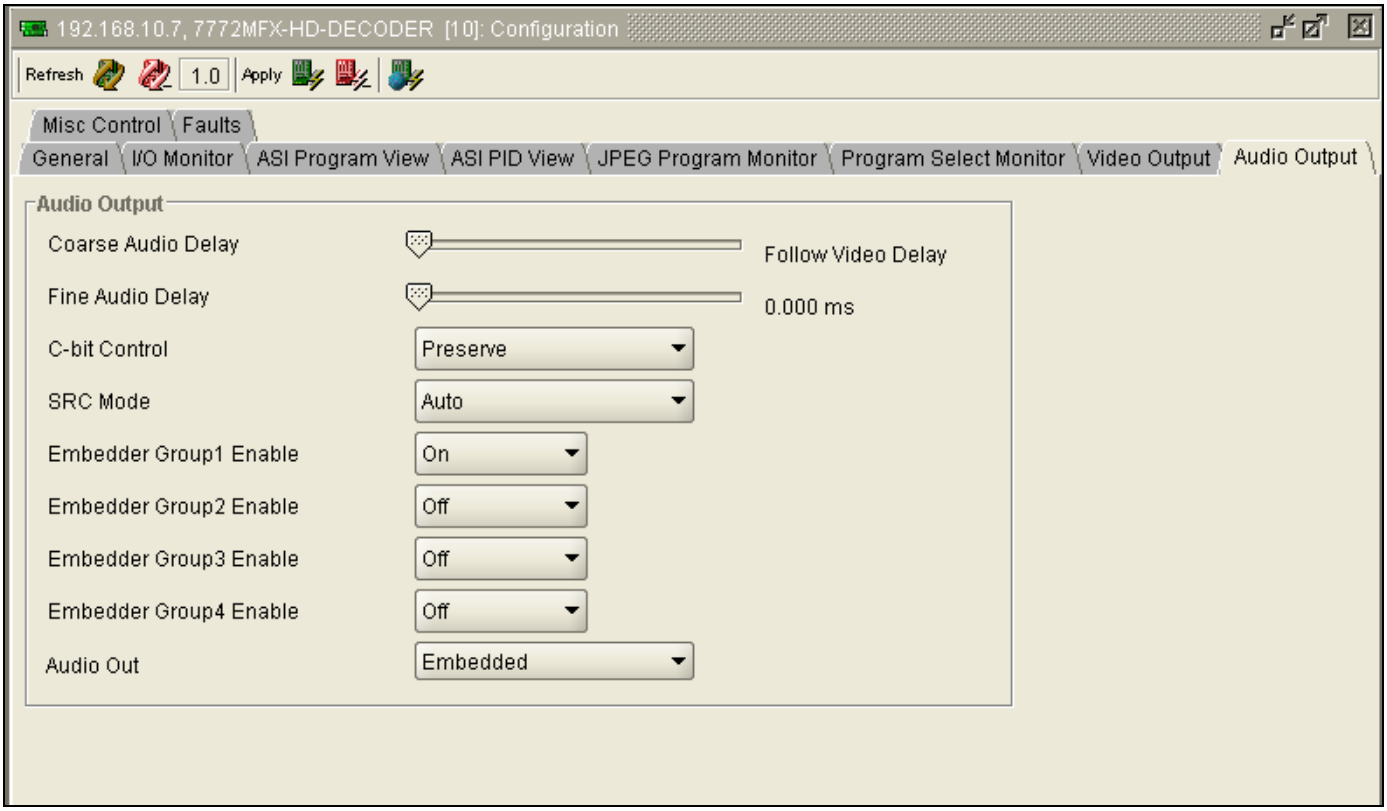

Figure 9-13: Audio Output Tab in Decode Mode

Parameter	Description
Coarse Audio Delay	Allows the user to adjust the coarse audio delay.
Fine Audio Delay	Allows the user to adjust the fine audio delay.
C-bit Control	This control determines whether the c-bit is preserved or replaced. ***Preserve:*** Preserve as many bits as possible, but always change to professional 48kHz. ***Replace:*** Replace all c-bits with static channel status message that reads professional 48kHz.
SRC Mode	This controls the mode of the sample rate converter.
Embedder Group Enable	This control determines whether the embedder group is enabled or not.
Audio Out	This control determines the audio output destination. The default setting is embedded.

Table 9-10: *Vista*LINK® Audio Output Tab

9.3.9. *Vista*LINK® MISC CONTROL TAB

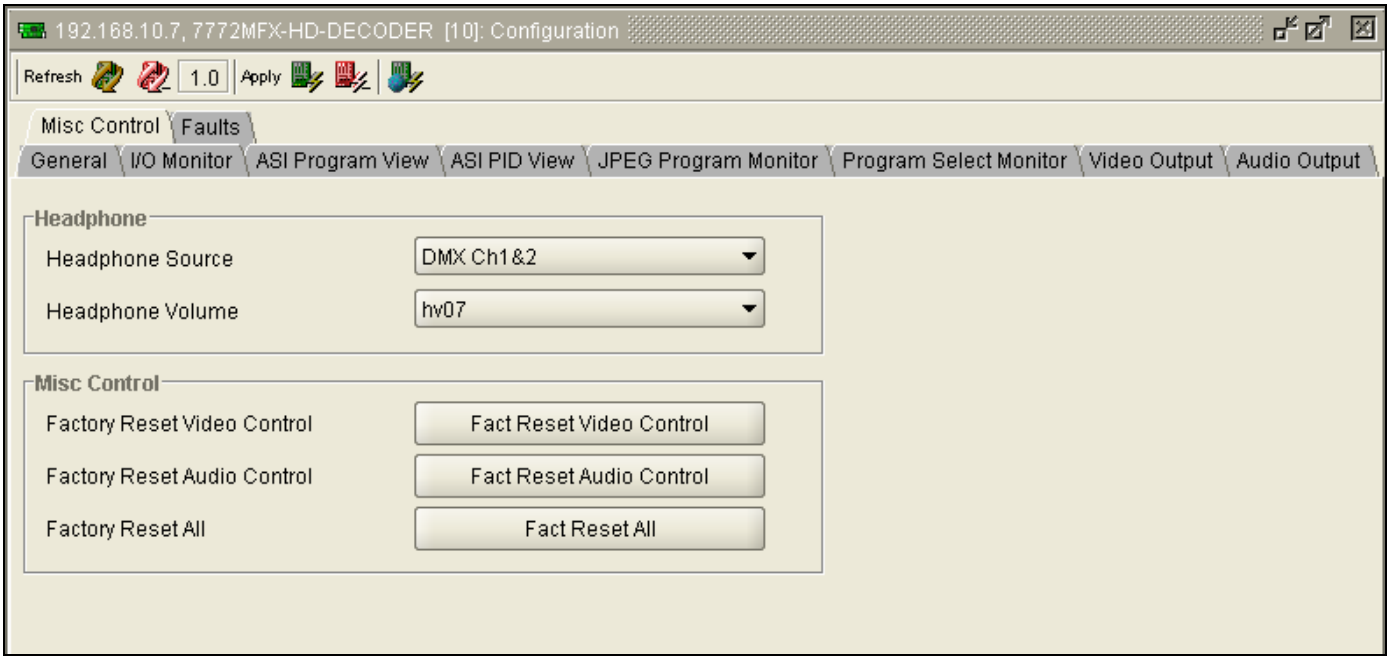

Figure 9-14: Misc Control Tab in Decode Mode

Parameter	Description
Headphone Source	This parameter is the source selection for headphone monitoring.
Headphone Volume	This parameter is the headphone volume adjustment.
Factory Reset Video Control	This parameter determines if factory reset video control should be applied.
Factory Reset Audio Control	This parameter determines if factory reset audio control should be applied.
Factory Reset All	This parameter determines if factory reset all should be applied. Selecting this option will perform a factory reset for both audio and video.

Table 9-11: *Vista*LINK® Misc Control Tab

9.3.10. *Vista*LINK® FAULTS TAB

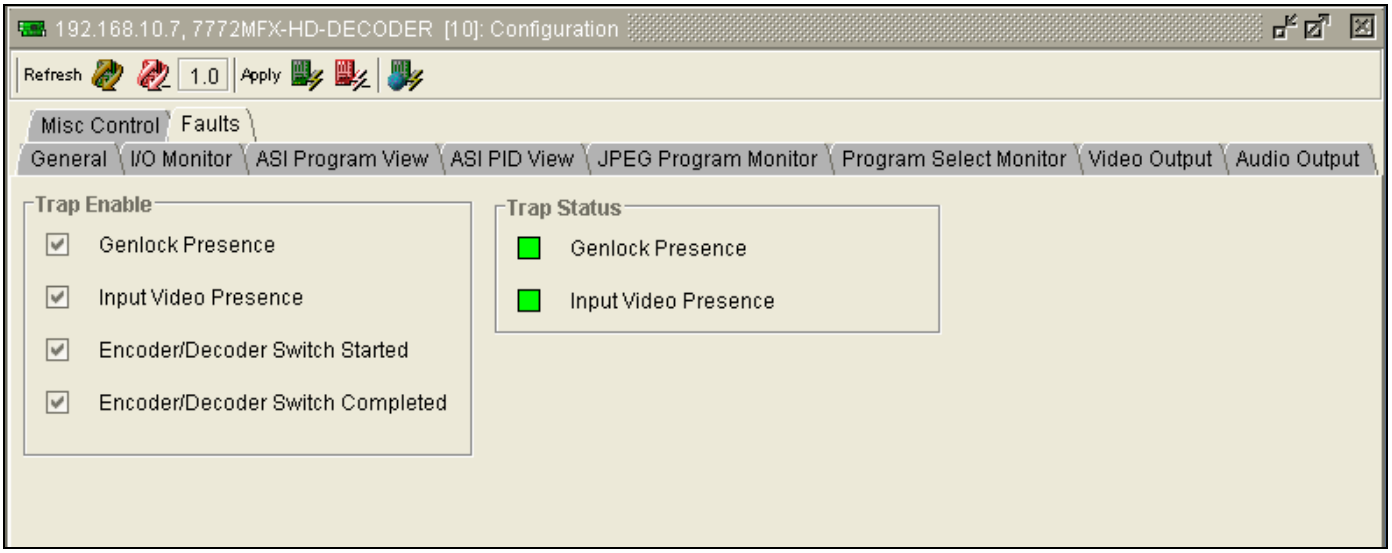

Figure 9-15: Faults Tab in Decode Mode

Parameter	Description
Genlock Presence	Indicates genlock presence.
Input Video Presence	Indicates video presence.

Table 9-12: *Vista*LINK® Faults Tab