7847FS-EAES8-3G
USER MANUAL

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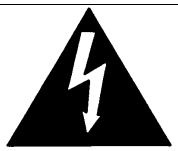
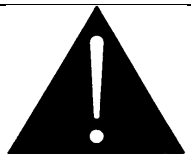
IMPORTANT SAFETY INSTRUCTIONS

	The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated “Dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.
	The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (Servicing) instructions in the literature accompanying the product.

- Read these instructions
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer’s instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

WARNING
TO REDUCE THE RISK OF FIRE OR ELECTRIC – SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE

WARNING
DO NOT EXPOSE THIS EQUIPMENT TO DRIPPING OR SPLASHING AND ENSURE THAT NO OBJECTS FILLED WITH LIQUIDS ARE PLACED ON THE EQUIPMENT

WARNING
TO COMPLETELY DISCONNECT THIS EQUIPMENT FROM THE AC MAINS, DISCONNECT THE POWER SUPPLY CORD PLUG FROM THE AC RECEPTACLE

WARNING
THE MAINS PLUG OF THE POWER SUPPLY CORD SHALL REMAIN READILY OPERABLE

INFORMATION TO USERS IN EUROPE

NOTE

CISPR 22 CLASS A DIGITAL DEVICE OR PERIPHERAL

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to the European Union EMC directive. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CE

EN60065	Safety
EN55103-1: 1996	Emission
EN55103-2: 1996	Immunity

EN504192 2005
Waste electrical products should not be disposed of with household waste.
Contact your Local Authority for recycling advice

INFORMATION TO USERS IN THE U.S.A.

NOTE

FCC CLASS A DIGITAL DEVICE OR PERIPHERAL

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING

Changes or Modifications not expressly approved by Evertz Microsystems Ltd. could void the user's authority to operate the equipment.

Use of unshielded plugs or cables may cause radiation interference. Properly shielded interface cables with the shield connected to the chassis ground of the device must be used.

REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	First Release	June 2013
1.1	Minor updates to Figure 5-10, 5-11, added Delayed Injection, added to table 5-6	Aug 2013
1.2	Major update throughout	Feb 2014
1.3	Updated Figure 1-1 and Figure 2-1	Jun 2014
1.4	Updated Section 2.4 AES Inputs	March 2020

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1. OVERVIEW

The 7847FSE-EAES8-3G series 3G/HD/SD-SDI Frame Synchronizers are designed to re-time a SMPTE 424M (3Gb/s), SMPTE 292M (1080i/59.94, 1080i/50, 720p/60, 720p/59.94) or SMPTE259M (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. The 7847FSE-EAES8-3G supports synchronization of both the video and any embedded audio present including the preservation of all VANC data. When the input video is lost, this module will pass the input content, freeze the last good frame or generate black video.

On the 7846F7-EAES8-3G, 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 output as AES. When the input video is lost, it will pass the input AES or mute if embedded audio is selected for synchronizing. The frame synchronizers also have the ability to set the audio delay independently from the video delay and have the ability to adjust many video parameters such as brightness, contrast, saturation and hue. The adjustment of audio parameters such as gain, mixing stereo pairs into monaural and reassignment of audio channels is fully supported on up to 16 channels of embedded audio.

The +SCTE104IP option allows for advanced SCTE104 processing. The module can author various SCTE104 messages and trigger them based on GPI's or SNMP commands, or can parse and pass-through SCTE104 messages based on an incoming IP connection, for use with automation systems. The module output can also be steered by SCTE104 splice request commands, allowing it to be used as the switch point for commercial insertions.

The 7847FSE-EAES8-3G is *Vista*LINK® enabled, offering remote monitoring, control and configuration capabilities via Simple Network Management Protocol (SNMP) giving the flexibility to manage operations, including signal monitoring and module configuration from SNMP capable control systems (Manager or NMS).

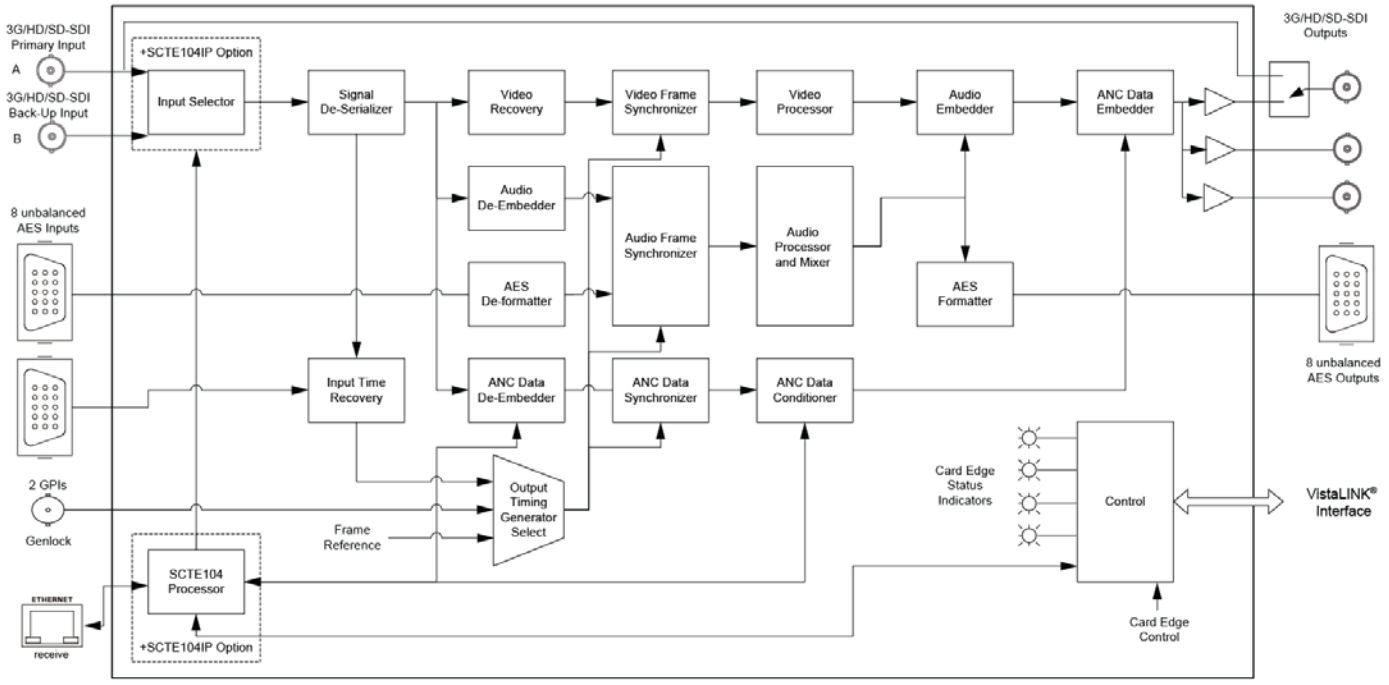

Figure 1-1: Block Diagram

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2. INSTALLATION

The 7847FS-EAES8-3G comes with a companion rear plate that occupies two slots in the 7800FR frame or three slots in the 7700FR-C frame. If a 7847FS-EAES8-3G module is installed in a 7700FR-C frame without the "slot blocker" installed, the card will not power-up and will show RED on its main status LED. For information on mounting the rear plate and inserting the module into the frame see section 3 of the 7700FR manual. Refer to section 6.4 of this manual for more information on the 7847FS-EAES8-3G slot blocker. Refer to Figure 2-1 for the 7847FS-EAES8-3G rear plate layout.

Note: For proper operation in the 7700FR-C, the on-board "slot blocker" *must be* installed in order for the card to power-up.

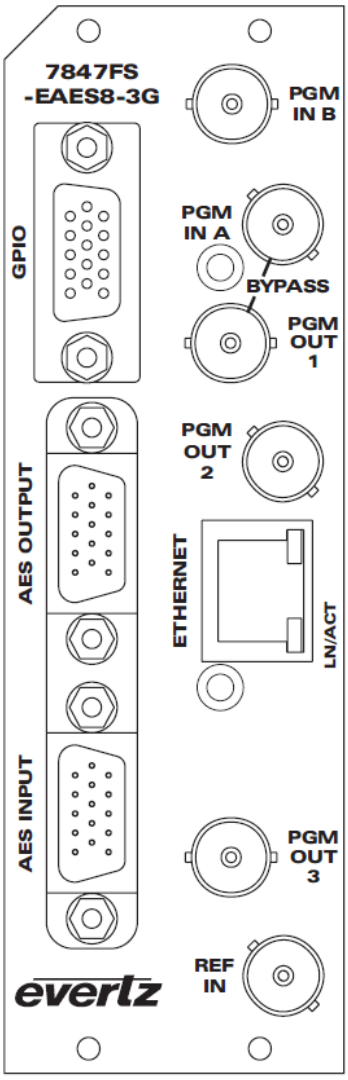


Figure 2-1: 7847FS-EAES8-3G Rear Plate Layout

2.1. INPUT/OUTPUT CONNECTIONS

PGM IN A: Accepts a 10-bit serial digital video signal. This input is compatible with SMPTE 259M, SMPTE 292M, SMPTE 372M and SMPTE 425M*. The module can be set to receive a specific video standard or set to automatically detect supplied input video standard. PGM A or PGM B can be selected for subsequent video processing.

* References to 3G, SMPTE 424M/SMPTE 425 and single link 1080p59.94/50 refer 10 bit 4:2:2 1080p59.94/50 signals (Level A or B in SMPTE 425M) References to dual link 1080p59.94/50 refer to SMPTE 372M mapping for 1080p59.94/50 4:2:2 10 bit data format only.

PGM IN B: Accepts a 10-bit serial digital video signal. This input is compatible with SMPTE 259M, SMPTE 292M, SMPTE 372M and SMPTE 425M*. The module can be set to receive a specific video standard or set to automatically detect supplied input video standard. PGM A or PGM B can be selected for subsequent video processing.

* References to 3G, SMPTE 424M/SMPTE 425 and single link 1080p59.94/50 refer 10 bit 4:2:2 1080p59.94/50 signals (Level A or B in SMPTE 425M) References to dual link 1080p59.94/50 refer to SMPTE 372M mapping for 1080p59.94/50 4:2:2 10 bit data format only.

PGM OUT1-3: These BNC connectors are used to output video as serial component video. These outputs are compatible with SMPTE 292M or SMPTE 259M or SMPTE 372M or SMPTE 425M*.

* When set it to output SMPTE72M dual link 1920x1080p50/59.94 video, PGM OUT1 and PGM OUT2 provide LINK A and PGM OUT3 provides LINK B.

REF IN: This BNC is for connecting a bi-level or tri-level reference. Reference format is auto-detected by the module. Output video can be timed with respect to the supplied reference using the *H Phase Offset* and *V Phase Offset* module controls. When no reference is provided, the output video is timed with respect to the input video. Reference may also be supplied via the 7700FR-G and 7800FR FRAME REFERENCE inputs. VLPRO is used to select either the card's external reference or the FRAME REFERENCE BNC.

2.2. ETHERNET CONNECTIONS

All 7847FS-EAES8-3G are designed to use either 10Base-T (10 Mbps) or 100Base-TX (100 Mbps), also known as *Fast Ethernet*, twisted pair Ethernet cabling systems. When connecting for 10Base-T systems, category 3, 4, or 5 UTP cable as well as EIA/TIA – 568-100Ω STP cable may be used. When connecting for 100Base-TX systems, category 5 UTP cable is required. Make the network connection by plugging one end of a "straight through" cable into the RJ-45 receptacle of the 7847FS-EAES8-3G and the other end into a port of the supporting hub. If you are connecting the 7847FS-EAES8-3G directly to an Ethernet port on a computer, you will have to use a "crossover" cable.

Straight-through RJ-45 cables can be purchased or can be constructed using the pin out information in Table 2-1. Colour coded-wiring information is also provided for the current RJ-45 standards (AT&T 258A or EIA/TIA 258B colour coding shown). Refer to the notes following the table for additional wiring guide information.

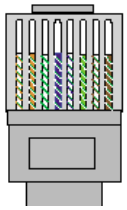
	Pin #	Signal	EIA/TIA 568A	AT&T 258A or EIA/TIA 568B	10BaseT or 100BaseT
Pin 1 	1	Transmit +	White/Green	White/Orange	X
	2	Transmit –	Green/White or White	Orange/White or Orange	X
	3	Receive +	White/Orange	White/Green	X
	4	N/A	Blue/White or Blue	Blue/White or Blue	Not used (required)
	5	N/A	White/Blue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

Table 2-1: Colour Code Wiring for the Current RJ 45 Standards

Note the following cabling information for this wiring guide:

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

The maximum cable run between the 7847FS-EAES8-3G and the supporting hub is 300 ft (90 m).

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

2.3. GPI CONNECTOR

There are 2 General Purpose Inputs (GPIs) on the 7847FS-EAES8-3G. These GPIs are interfaced using a 15-pin DB connector and an associated breakout cable (cable part # WPAES8-BNCM-9W-6F).

Note: GPI breakout cable is not included with the module when purchased.

Table 2-2 shows the Pin-out of this connector as follows:

GPI DB CONNECTOR			
DB-15 Pin	**Name**	**Description**	**Colour**
1	GPI1	General Purpose Input #1	Red
2	N/C		Green
3	GPI2	General Purpose Input #2	Blue
4	N/C		Purple
5	N/C		Orange
6	N/C		White
7	GND	Ground	A2 BNC PIN
8	N/C		Yellow
9	GND	Ground	- -
10	GND	Ground	- -
11	N/C		A1 BNC PIN
12	GND	Ground	- -
13	GND	Ground	- -
14	GND	Ground	A4 BNC PIN
15	GND	Ground	A3 BNC PIN
Shell	GND	Ground	- -

Table 2-2: GPI Connector Pin out

Each GPI has the following internal structure as shown in Figure 2-2:

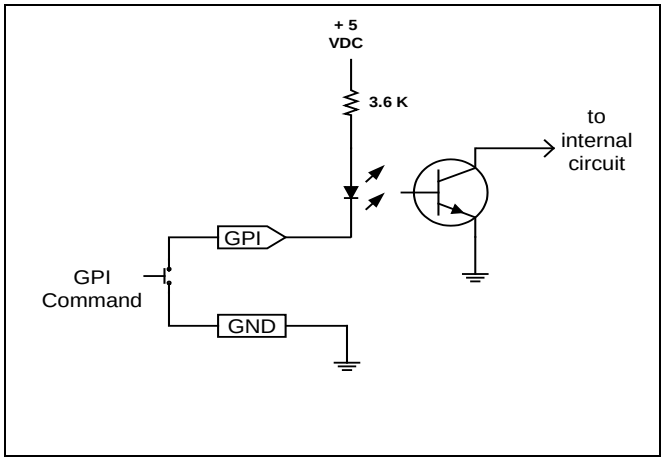


Figure 2-2: GPI Input Circuitry

2.4. AES INPUTS

The 7847FS-EAES8-3G supports 8 AES inputs and is interfaced using a DB15 connector and a breakout cable. The part number for the cable is # WPAES8-BNCM-6F. Two cables (one for AES inputs and one for AES outputs) are included with each 7847FS-EAES8-3G card. The pin-out of the DB15 connector is shown in Table 2-3. The pin-out of the breakout cable is shown in Table 2-4.

Note: All unused BNCs must be properly terminated using a 75

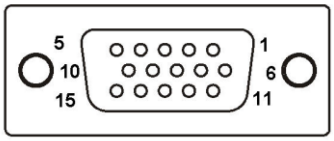
High Density DB-15 PIN (male)	Breakout Cable Connector	Ground/ Shield Connection	Labelled Name
1	Red Wire	None	W1 RED
2	Green Wire	None	W2 GREEN
3	Blue Wire	None	W3 BLUE
4	Purple Wire	None	W6 PUR
5	Orange Wire	None	W7 ORG
6	White Wire	None	W4 WHITE
7	Coax BNC Male	Soldered to Shell	AES A2
8	Yellow	None	W5 YELLOW
9	Coax BNC Male	Soldered to Shell	AES B2
10	Coax BNC Male	Soldered to Shell	AES B1
11	Coax BNC Male	Soldered to Shell	AES A1
12	Coax BNC Male	Soldered to Shell	AES B4
13	Coax BNC Male	Soldered to Shell	AES B3
14	Coax BNC Male	Soldered to Shell	AES A4
15	Coax BNC Male	Soldered to Shell	AES A3
Shell	Brown Wire	Soldered to Shell	GND BR
Shell	Black Wire	Soldered to Shell	GND BK

Table 2-4: AES Audio Input Breakout Cable (Evertz Part # WPAES8-BNCM-9W-6F)

2.5. AES OUTPUTS

The 7847FS-EAES8-3G supports 8 AES outputs and is interfaced using a DB15 connector and a breakout cable. The part number for the cable is # WPAES8-BNCM-6F. Two cables (one for AES inputs and one for AES outputs) are included with each 7847FS-EAES8-3G card. The pin-out of DB15 connector is shown in Table 2-5. The pin-out of the breakout cable is shown in Table 2-6.

AES OUT



Female

PIN #	Name	Description
1	Not used	Reserved for future use
2	TX+ Primary	Primary Dolby Metadata TX+
3	Not used	Reserved for future use
4	Reserved	Reserved for future use
5	Not used	Reserved for future use
6	TX- Primary	Primary Dolby Metadata TX-
7	AES Out 2	AES Output 2 – Unbalanced
8	Reserved	Reserved for future use
9	AES Out 6	AES Output 6 – Unbalanced
10	AES Out 5	AES Output 5 – Unbalanced
11	AES Out 1	AES Output 1 – Unbalanced
12	AES Out 8	AES Output 8 – Unbalanced
13	AES Out 7	AES Output 7 – Unbalanced
14	AES Out 4	AES Output 4 – Unbalanced
15	AES Out 3	AES Output 3 – Unbalanced
Shell	GND	Ground

Table 2-5: AES Output Audio Connector Pin out

High Density DB-15 PIN (male)	Breakout Cable Connector	Ground/ Shield Connection	Labelled Name
1	Red Wire	None	W1 RED
2	Green Wire	None	W2 GREEN
3	Blue Wire	None	W3 BLUE
4	Purple Wire	None	W6 PUR
5	Orange Wire	None	W7 ORG
6	White Wire	None	W4 WHITE
7	Coax BNC Male	Soldered to Shell	AES A2
8	Yellow	None	W5 YELLOW
9	Coax BNC Male	Soldered to Shell	AES B2
10	Coax BNC Male	Soldered to Shell	AES B1
11	Coax BNC Male	Soldered to Shell	AES A1
12	Coax BNC Male	Soldered to Shell	AES B4
13	Coax BNC Male	Soldered to Shell	AES B3
14	Coax BNC Male	Soldered to Shell	AES A4
15	Coax BNC Male	Soldered to Shell	AES A3
Shell	Brown Wire	Soldered to Shell	GND BR
Shell	Black Wire	Soldered to Shell	GND BK

Table 2-6: AES Audio Output Breakout Cable (Evertz Part # WPAES8-BNCM-9W-6F)

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3. SPECIFICATIONS

3.1. SERIAL DIGITAL VIDEO INPUTS

Standard:	SMPTE 424M (3Gb/s) 1080p
	SMPTE 292M (1.5Gb/s), 1080i, 720p, SMPTE 259M (270Mb/s) 525i, 625i
Connector:	BNC per IEC 61169-8 Annex A

3.2. INPUT EQUALIZATION

SD:	Automatic to 300m @ 270Mb/s with Belden 1694A or equivalent cable
HD:	Automatic to 115m @ 1.5Gb/s with Belden 1694A or equivalent cable
3G:	Automatic to 80m @ 3Gb/s with Belden 1694A or equivalent cable

3.3. RETURN LOSS

SD:	> 15dB up to 270MHz
HD:	> 13dB up to 1.5GHz
3G:	> 10dB up to 3.0GHz

3.4. SERIAL DIGTIAL VIDEO OUTPUTS

Number of Outputs:	3 (1 output is bypass relay protected)
Connectors:	BNC per IEC 61169-8 Annex A
Signal Level:	800mV nominal
DC Offset:	0V +/- 0.5V
Rise and Fall Time:	900ps nominal (SD)
	200ps nominal (HD)
Overshoot:	< 10% of amplitude
Wide Band Jitter:	< 0.2 UI

3.5. GENLOCK INPUT

Type:	NTSC or PAL Color Black
	1V p-p, or Composite bi-level sync (525i/59.94 or 625i/50) 300mV HD Tri-level Sync
Connector:	BNC per IEC 61169-8 Annex A
Termination:	-switch selectable)

3.6. GENERAL PURPOSE INPUTS

Number:	2
Type:	Opto-isolated, active low with internal pull-ups to +5 V
Connector:	DB 15
Signal Level:	Closure to ground

3.7. AES AUDIO INPUTS

Standard:	SMPTE 276M, single ended AES
Number of Inputs:	8 unbalanced
Connector:	Female High Density dB-15 (breakout cable to BNC provided)
Input Level:	0.1 to 2.5V p-p (5V p-p tolerant)
Input Impedance:	
Return Loss:	> 25dB 100kHz to 6MHz
Equalization:	Automatic to 1000m with Belden1694A (or equivalent) @ 48kHz AES signal
Sample Rate:	48kHz@100ppm

3.8. AES AUDIO OUTPUTS

Standard:	SMPTE 276M, single ended AES
Number of Outputs:	8 unbalanced
Connector:	Female High Density dB-15 (breakout cable to BNC provided)
Sample Rate:	48kHz
Impedance:	
Resolution:	24-bit

3.9. AUDIO

Gain:	+/- 24dB
Remapping:	Any input or mono mix of any L/R pair to any output

3.10. ELECTRICAL

Voltage:	+12V DC
Power:	26.5W
EMI/RFI:	Complies with FCC Part 15, Class A EU EMC Directive

3.11. PHYSICAL

350FR:	3
7700FR-C:	3
7800FR:	2
7801FR:	2

4. STATUS INDICATORS

4.1. MODULE STATUS LEDS

The 7847FS-EAES8-3G has several LEDs mounted on the front card edge to provide the user with quick feedback on the status of the card. Figure 4-1 depicts status LEDs on the 7847FS-EAES8-3G.

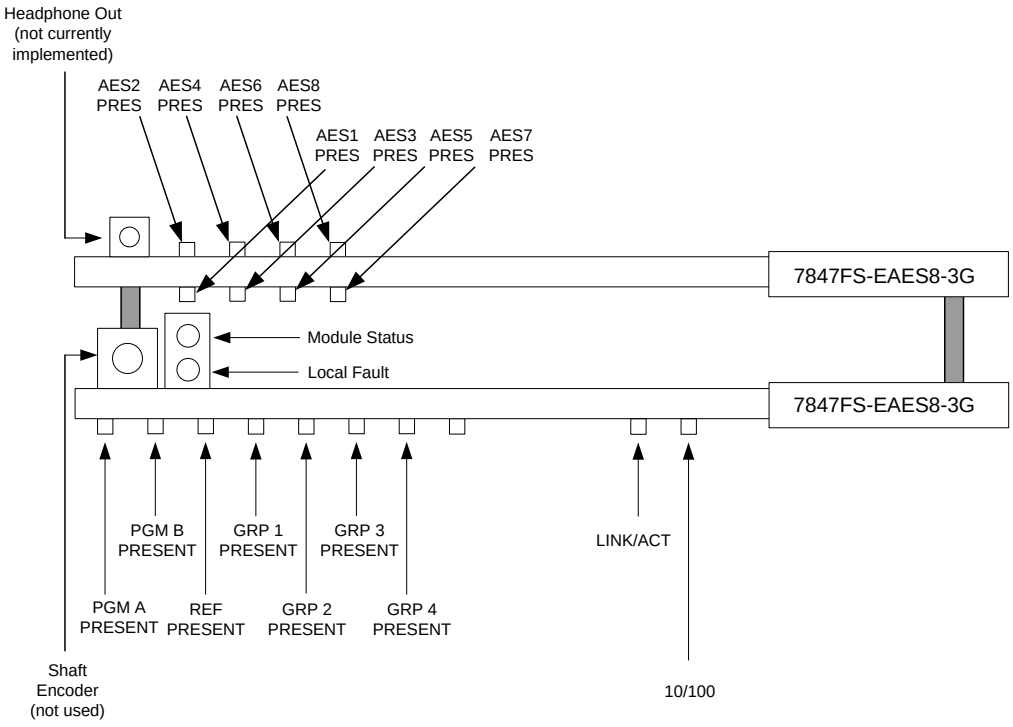

Figure 4-1: Status LEDs

MODULE STATUS: This Green LED will be On when the module is operating properly.

LOCAL FAULT: This Red LED will be On when an essential module input is missing or the module has another fault.

PGM A PRESENT: The PGM A PRESENT LED will be green when a valid input signal is present on the PGM A BNC. It will be red when missing an input signal. It will blink between red and green when an invalid input signal is presented.

PGM B PRESENT: The PGM B PRESENT LED will be green when a valid input signal is present on the PGM B BNC. It will be red when missing an input signal. It will blink between red and green when an invalid input signal is presented.

REF PRESENT: The REF PRESENT LED will be green when a valid reference signal is present on the REF IN BNC. It will be red when missing a reference signal. It will blink between red and green when an invalid genlock signal is presented. This LED will also be red when genlocking is turned off (lock to video).

GRP1 PRESENT: This LED will be Green when embedded audio Group 1 is present and Red when embedded audio Group 1 is not present.

GRP2 PRESENT: This LED will be Green when embedded audio Group 2 is present and Red when embedded audio Group 2 is not present.

GRP3 PRESENT: This LED will be Green when embedded audio Group 3 is present and Red when embedded audio Group 3 is not present.

GRP4 PRESENT: This LED will be Green when embedded audio Group 4 is present and Red when embedded audio Group 4 is not present.

AES1 PRES: This LED will be Green when AES1 is present and Red when AES1 is not present.

AES2 PRES: This LED will be Green when AES2 is present and Red when AES2 is not present.

AES3 PRES: This LED will be Green when AES3 is present and Red when AES3 is not present.

AES4 PRES: This LED will be Green when AES4 is present and Red when AES4 is not present.

AES5 PRES: This LED will be Green when AES5 is present and Red when AES5 is not present.

AES6 PRES: This LED will be Green when AES6 is present and Red when AES6 is not present.

AES7 PRES: This LED will be Green when AES7 is present and Red when AES7 is not present.

AES8 PRES: This LED will be Green when AES8 is present and Red when AES8 is not present.

LINK/ACT This LED will be Green when an Ethernet link is connected or flashing with activity.

10/100 This LED will be Green if 100Mb connection is used or off if a 10 Mb connection is used.

5. MODULE CONTROL

The 7847FS-EAES8-3G is controlled using *Vista*LINK®. *Vista*LINK® operates using Ethernet and SNMP control protocols. The 7847FS-EAES8-3G DOES NOT HAVE card edge controls. As a result, 7700FC modules must be installed in all frames that house a 7847FS-EAES8-3G. Refer to the Evertz website for the most recent firmware for the 7700FC. When using *Vista*LINK® it is also important to ensure that the most recent 7847FS-EAES8-3G ".JAR" control file is installed. Refer to the Evertz website for the most recent 7847FS-EAES8-3G ".JAR" file.

The following sections describe module controls in terms of the parameters found within the *Vista*LINK® screens for the 7847FS-EAES8-3G. As additional features and options are released, additional sections will be appended to this manual to show those control screens.

5.1. VIDEO

The *Video* tab contains two sections. The *Video Control* section allows the user to configure settings that are related to the handling of video on the card as well as reference and timecode settings. The *Video Monitor* section provides valuable information about the input video sources and the genlock input. Sections 5.1.1 to 5.1.14 describe the various controls in detail.

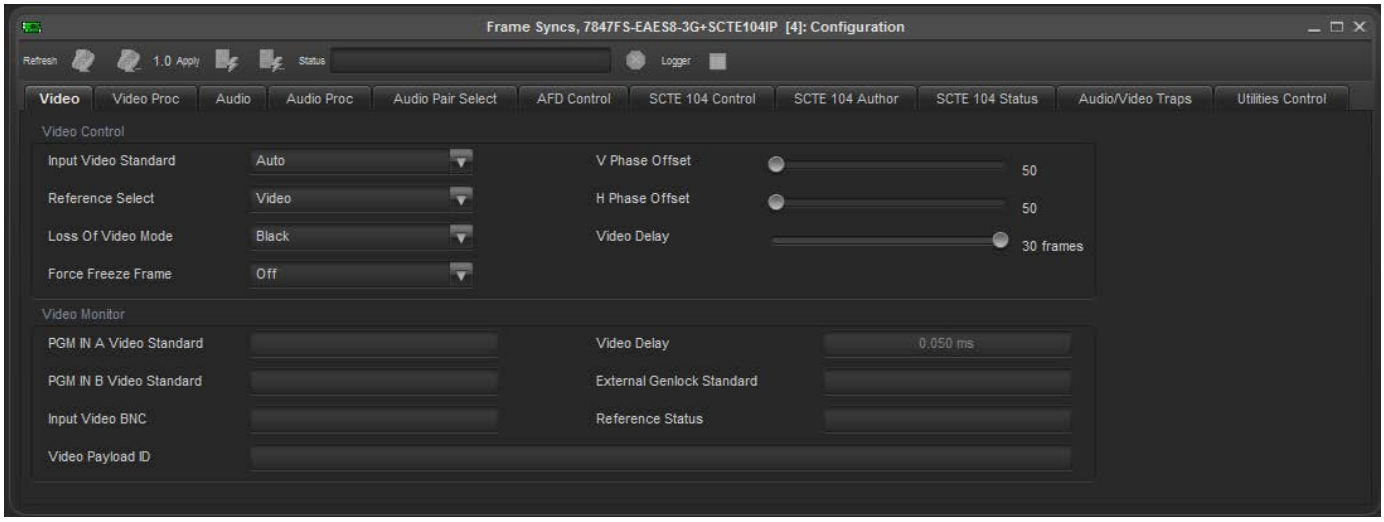

Figure 5-1: Video Tab

5.1.1. Input Video Standard

The *Input Video Standard* control enables the user to set the input video standard being used. Interlaced video formats are shown with the number of fields per second. Progressive formats are shown with the number of frames per second.

When the input standard is set to *Auto*, the module will auto detect the video standard. The full set of available input video standards includes:

Auto
1080i/59.94
720p/59.94
525i/59.94
1080i/50
720p/50
625i/50
1080p/59.94 (425M level A)
1080p/59.94 (425M level B)
1080p/59.94 (372M dual link)
1080p/50 (425M level A)
1080p/50 (425M level B)
1080p/50 (372M dual link)
1080p/23.98sF

5.1.2. Reference Select

The *Reference Select* control enables the user to set the source of video reference for the card is selected. When the card is used in the 7700FR-G or the 7800FR Frame Reference inputs may be used. The values for this control are as follows:

Video (none)	Lock to the incoming input video.
External Genlock	Lock to the local genlock reference.
Frame Reference 1	Lock to Frame Ref 1 on the 7700FR-G or the 7800FR.
Frame Reference 2	Lock to Frame Ref 2 on the 7700FR-G or the 7800FR.

Note that if the selected genlock reference disappears or is not valid, the card will lock to incoming video.

5.1.3. Loss of Video Mode

This *Loss of Video Mode* control defines the action that will be taken when the input video is lost. The values for this control are as follows:

Black	Forces the output video to black.
Blue	Forces the output video to blue.
Freeze	Freezes the output video on the last good frame of input video.

5.1.4. Force Freeze Frame

This *Force Freeze Frame* control enables or disables the force freeze frame function. It is a manual user control to freeze the output of the card. The values for this control are as follows:

Off	When set to off, the module will run as expected.
On	When set to on, the output picture will freeze with the last frame of video.

5.1.5. Vertical Phase Offset

The *Vertical Phase Offset* control enables the user to set the vertical timing of the output video with respect to the reference input set by the *Reference Select* control. There are separate settings of V phase offset for each output video type. Setting this control to 0 keeps the output video frame aligned with the reference.

Increasing the value will delay the output video in one-line increments of the output video standard. In order to advance the vertical timing of the output video with respect to the reference, set the control to the maximum total number of lines of the output video minus the number of lines that you wish to advance the output video. (I.e. for 1080i/59.94 output video, the total number of lines is 1125, so to advance the output video 5 lines set the value to 1120.) When increasing the *V Phase Offset* value causes it to go beyond the limit of the frame buffer, the *V Phase Offset* will wrap to the beginning of the frame buffer, resulting in a change of one frame of throughput delay between the input and the output.

Note: The slider is available for selecting *H* and *V Phase Offsets*. To increment, click on the right hand side of the slider. To decrement click on the left hand side of the slider. The slider can also be selected and dragged across the available range if gross movement is desired.

5.1.6. Horizontal Phase Offset

The *Horizontal Phase Offset* control enables the user to set the horizontal timing of the output video with respect to the reference input set by the *Reference Select* control. There are separate settings of H phase offset for each output video type. Setting this control to 0 keeps the output video line aligned with the reference.

Increasing the value will delay the output video in one-sample increments. In order to advance the horizontal timing of the output video with respect to the genlock video, set the control to the maximum number of samples per line for the output video standard minus the number of samples that you wish to advance the output video. (I.e. for 1080i/59.94 input video the total number of samples per line is 2200, so to advance the output video 5 samples set the value to 2195.)

5.1.7. Video Delay

The *Video Delay* control enables the user to set the value of the additional video delay to be added to the signal path. The user can adjust the delay of the video source by moving the associate slider control left to decrease the value or right to increase the value. The range for the delay adjustments is 0 to 30 frames. Video delay is incremented or decremented in 1 frame steps

5.1.8. PGM IN A Video Standard

The *PGM IN A Video Standard* reports if a valid video signal is presented to PGM IN A and what standard has been detected when it is present.

5.1.9. PGM IN B Video Standard

The *PGM IN B Video Standard* reports if a valid video signal is presented to PGM IN B and what standard has been detected when it is present.

5.1.10. Input Video BNC

The *Input Video BNC* reports what input BNC has been selected to pass through the module.

5.1.11. Video Payload ID

The *Video Payload ID* reports if a valid Video Payload ID ANC packet has been detected and will display the decoded video format information.

5.1.12. Video Delay

The *Video Delay* reports video delay through the card in milliseconds (ms).

5.1.13. External Genlock Video Standard

The *External Genlock Standard* reports if a valid video reference has been supplied to the REF IN BNC and indicates the standard that is detected when a valid reference is applied.

5.1.14. Reference Status

The *Reference Status* reports the current valid reference standard that is being applied to the module. When no reference is detected, it will state None.

5.2. VIDEO PROCESSING

The *Video Proc* tab allows the user to configure settings associated with the video processing block such as gain, offset and gamma levels. Sections 5.2.1 to 5.2.8 describe the various controls in detail.

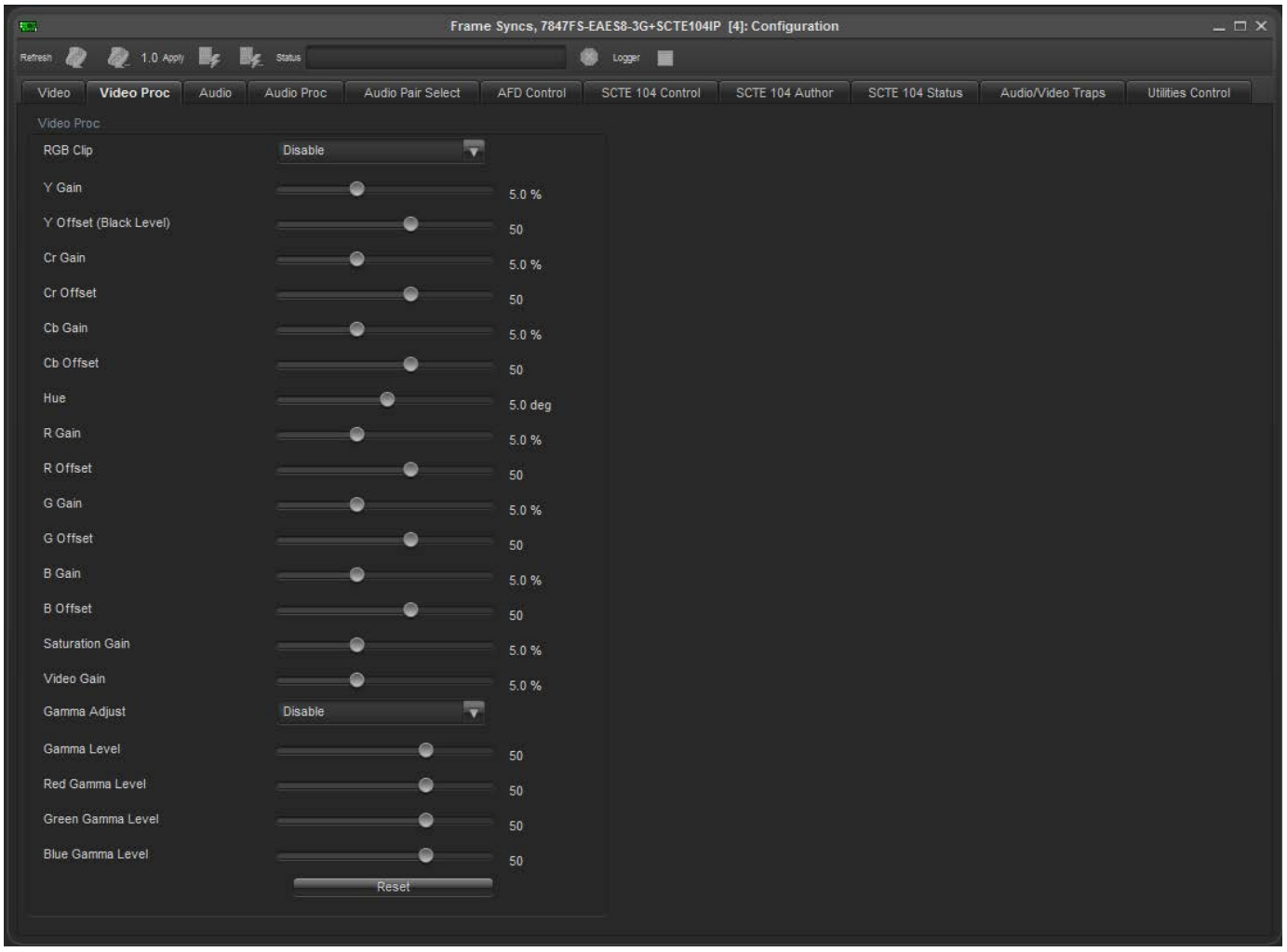

Figure 5-2: Video Processing Tab

ALL of these parameters affect the video in real time. H&V frequency bands will cause hits to the video while a new filter is loaded.

5.2.1. RGB Clip

The *RGB Clip* control enables the user to set the RGB clipping/colour legalization behavior. This control is normally set to *Disable* in order to allow for Super Black or other test patterns to pass through the module. The values for this control are as follows:

Enable	The module will clip any illegal levels of R, G, and B (individually) to their respective Black and White Levels.
Disable	Video will pass through this processing block un-modified and illegal RGB values will pass.

5.2.2. Gain Levels

There are eight controls that set the gain of the video. With these controls, the user can adjust the gain of the 3 components in either the YCbCr domain or the RGB domain. Gain adjustments in the YCbCr domain are made first, and then gain adjustments in the RGB domain. Illegal values are clipped after gain adjustments. Each control has the following ranges:

Y Gain: –50% to 100% in 0.1% increments.
Cb Gain: –50% to 100% in 0.1% increments.
Cr Gain: –50% to 100% in 0.1% increments.
R Gain: –50% to 100% in 0.1% increments.
G Gain: –50% to 100% in 0.1% increments.
B Gain: –50% to 100% in 0.1% increments.
Saturation Gain: –50% to 100% in 0.1% increments.
Video Gain: –50% to 100% in 0.1% increments.

5.2.3. DC Offsets

There are three controls that set the DC Offset of the video signal. With these controls, the user can individually adjust the DC offset of Y, Cr and Cb. Each control has the following ranges:

Y Offset: –200 to 200 quantization levels in 1 level increments.
Cb Offset: –200 to 200 quantization levels in 1 level increments.
Cr Offset: –200 to 200 quantization levels in 1 level increments.
R Offset: –200 to 200 quantization levels in 1 level increments.
G Offset: –200 to 200 quantization levels in 1 level increments.
B Offset: –200 to 200 quantization levels in 1 level increments.

5.2.4. Hue

The *Hue* control enables the user to set the hue of the video signal. This control can be applied to the video signal regardless of the type of video signal being applied (SD, HD or 3G). The range for this control is from -180 to 180 degrees in 0.1 degree increments.

5.2.5. Gamma Adjust Enable

The *Gamma Adjust Enable* control enables the user to set the gamma adjustment functionality of the card. When enabled, the module will allow the user to adjust the gamma level. If disabled, then the gamma level is set to 0. The values for this control are as follows:

Enable	The ability to adjust the gamma of the video signal is enabled. Gamma Level, Red Gamma Level, Green Gamma Level, and Blue Gamma Level controls are enabled.
Disable	The ability to adjust the gamma of the video signal is disabled. Gamma Level, Red Gamma Level, Green Gamma Level, and Blue Gamma Level controls are disabled.

5.2.6. Gamma Level

The *Gamma Level* control enables the user to set the overall gamma correction factor. The range for this control is from -128 to +127 in increments of 1.

5.2.7. Red, Green, Blue Gamma Levels

The *Red, Green* and *Blue Gamma Level* control enables the user to individually set the Red, Green, and Blue Gamma levels respectively. The range for these controls is from –128 to +127 in increments of 1.

5.2.8. Reset Video Proc Button

By pressing the *Reset* button, all Video Processing parameters in this control tab will return to their default setting.

5.3. AUDIO

The *Audio* tab contains three sections. The *Audio Control* section allows the user to configure settings that are related to the handling of audio on the card. The *Audio Monitor* section provides valuable information about the status of the SRCs as well as the audio delay through the card. The *Audio* Delay section provides controls for adding additional audio delay to the signal path. Sections 5.3.6 to 5.3.10 describe the various controls in detail.

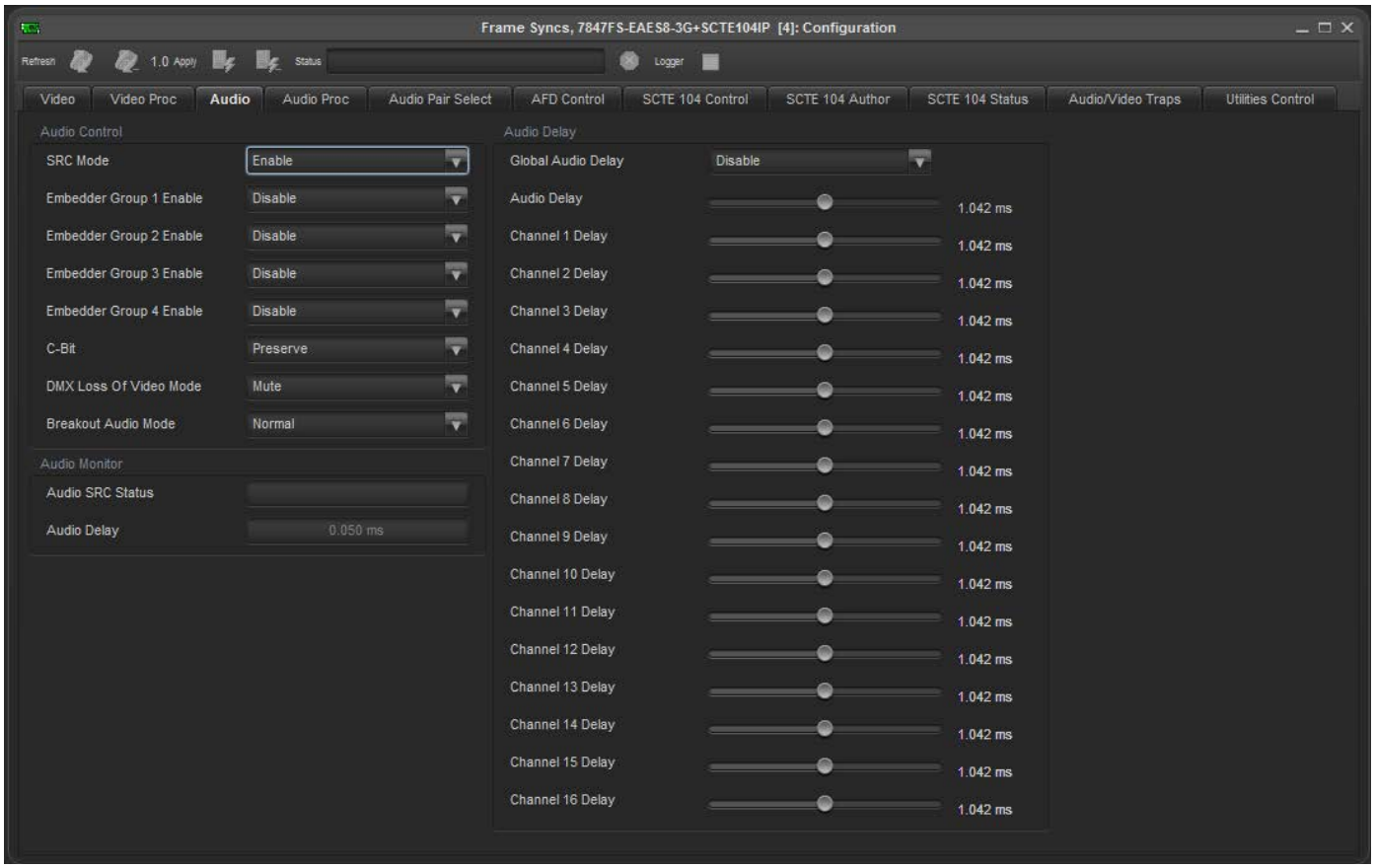

Figure 5-3: Audio Tab

5.3.1. SRC Mode

The *SRC Mode* control enables the user to set the mode for the sample rate converters. The values for this control are as follows:

Enable	Enables the sample rate converters for PCM audio.
Bypass	Bypasses the sample rate converters. This setting should be used for non-PCM audio.
Auto	The module will automatically detect PCM and non-PCM audio and automatically turn on/off the SRCs as required. Note that all SRCs are set to bypass as soon as a source of non-PCM audio is detected within any of the 16 internally processed audio channels.

5.3.2. Embedder Group 1-4 Enable

The *Embedder Group Enable* control enables the user to set the mode of the audio embedder. The 7847FS-EAES8-3G has four audio embedders that each inserts one group of audio into the outgoing serial digital video. For the sake of brevity, only the control for Audio Embedder 1 is discussed in further detail. The values for this control are as follows:

Disable	Audio embedding for group 1 will be disabled.
Enable	Audio embedding for group 1 will be enabled.

5.3.3. C-Bit

The *C-Bit* control enables the user to set the behavior of the audio embedders when dealing with C-bits. The values for this control are as follows:

Preserve	Preserves or passes the C-Bit settings from audio inputs to audio outputs.
Replace	Replace the C-Bit settings with an internal counter.

5.3.4. DMX Loss of Video Mode

This *DMX Loss of Video Mode c*ontrol enables the user to set the action that the module will take when there is a loss of input video. The values for this control are as follows:

Mute	Mutes the audio if there is a loss of video.
Pass AES	Passes the AES audio when the input video is lost.

5.3.5. Breakout Audio Mode

The *Breakout Audio Mode* control enables the user to set the source for the AES outputs on the breakout cable. The values for this control are as follows:

Normal	This option disables breakout mode and processed audio is routed to the AES outputs.
Breakout DMX	When this option is selected, the output of the de-embedder is routed directly to the AES outputs prior to any audio synchronization, delay, or processing.

5.3.6. Global Audio Delay

The *Global Audio Delay* control enables the user to set the audio delay of all channels at once using the *Audio Delay* control. The values for this control are as follows:

Enable	Enables the use of the *Audio Delay* control for global changes.
Disable	Disables the use of the *Audio Delay* control for global changes.

5.3.7. Audio Delay

The *Audio Delay* control enables the user to set the audio delay. The range of this control is +/- 350.00 ms. This delay is relative to the delay that the module automatically inserts to match audio path and video path delays.

Note: Negative values are limited to the amount of video delay; the card does not have negative delay ability. Added Video delay can be added in the Video Tab in order to achieve a greater negative audio delay. See Section 5.1.12Error! Reference source not found. for details on how to add additional Video delay

5.3.8. Channel Delay

The *Channel Delay* control enables the user to set the audio delay of each channel individually. For the sake of brevity, only the *Channel 1 Delay* control is discussed in this manual, but all of the channel delay controls behave the same. The range of this control is +/- 350.00 ms. This delay is relative to the delay that has been applied by the *Audio Delay* control, if the *Global Audio Delay* is enabled as well.

Note: If *Global Audio Delay* is enabled then the total range of this control will change depending on the amount of *Audio Delay* that has been applied. For example, if *Audio Delay* is set to +100.00 ms then the upper range of all *Channel Delay* controls will only be +250.00 ms.

5.3.9. SRC Status

The *SRC Status* parameter displays the status of the Sample Rate Converters. The status will display either *enable* or *bypass*.

5.3.10. Audio Delay

The *Audio Delay* parameter displays the delay of the audio in milliseconds (ms).

5.4. AUDIO PROCESSING

The *Audio Proc* tab allows the user to configure the settings of the audio processor. There are sixteen individual output channel mixers in the 7847FS-EAES8-3G. These output channel mixers perform audio inversion, audio gain adjustment and audio channel swapping for each of the 16 output audio channels. Using the X and Y inputs of each output channel mixer an additional level of mono-mixing is also available for each channel of output audio. Embedded audio and discrete AES audio outputs are driven with the same audio generated using these output channel mixers. Sections 5.4.1 to 5.4.6 describe the controls in detail.

For the sake of brevity, only the Audio Proc for the *Channels 1-4* control tab will be discussed in this manual. Control radial buttons for *Channels 5-8*, *Channels 9-12*, and *Channels 13-16* are identical in their operation. The controls for *Channel 1* will be described in detail, as the controls for *Channel 2*, *Channel 3* and *Channel 4* operate in an identical fashion.

Figure 5-4: Audio Proc Tab

5.4.1. Source X

The *Source X* control enables the user to route one of the 16 internally processed input audio channels to the X input of the channel mixer. The values for this control are as follows:

Source X Input	Channel 1
	Channel 2
	Channel 3
	Channel 4
	Channel 5
	Channel 6
	Channel 7
	Channel 8
	Channel 9
	Channel 10
	Channel 11
	Channel 12
	Channel 13
	Channel 14
	Channel 15
	Channel 16
	Mono mix channels 1 and 2
	Mono mix channels 3 and 4
	Mono mix channels 5 and 6
	Mono mix channels 7 and 8
	Mono mix channels 9 and 10
	Mono mix channels 11 and 12
	Mono mix channels 13 and 14
	Mono mix channels 15 and 16
	Mute

Table 5-1: Source X Control Input Values

5.4.2. Gain Adjust X

The *Gain Adjust X* control enables the user to set the value of the gain for the selected source. The user can adjust the gain of the selected source by moving the associate slider control left to decrease the value or right to increase the value. The range for the gain adjustments is -24 dB to +24 dB. Gain is incremented or decremented in 0.1 dB steps.

5.4.3. Invert Enable X

The *Invert Enable X* control enables the user to invert the phase or pass the selected audio channel. The values for this control are as follows:

Normal	Pass the audio channel through with no processing.
Invert	Invert the phase of the audio channel.

5.4.4. Source Y

The *Source Y* control enables the user to route one of the 16 internally processed input audio channels to the Y input of the channel mixer. The values for this control are as follows:

Source Y Input	Channel 1
	Channel 2
	Channel 3
	Channel 4
	Channel 5
	Channel 6
	Channel 7
	Channel 8
	Channel 9
	Channel 10
	Channel 11
	Channel 12
	Channel 13
	Channel 14
	Channel 15
	Channel 16
	Mono mix channels 1 and 2
	Mono mix channels 3 and 4
	Mono mix channels 5 and 6
	Mono mix channels 7 and 8
	Mono mix channels 9 and 10
	Mono mix channels 11 and 12
	Mono mix channels 13 and 14
	Mono mix channels 15 and 16
	Mute

Table 5-2: Source Y Input Values

5.4.5. Gain Adjust Y

The *Gain Adjust Y* control enables the user to set the value of the gain for the selected source. The user can adjust the gain of the selected source by moving the associated slider control left to decrease the value or right increase the value. The range for the gain adjustments is -24 dB to +24 dB. Gain is adjusted in 0.1 dB increments.

5.4.6. Invert Enable Y

The *Invert Enable Y* control enables the user to invert the phase or pass the selected audio channels. The values for this control are as follows:

Normal	Pass the audio channel through with no processing.
Invert	Invert the phase of the audio channel.

5.5. AUDIO PAIR SELECT

The *Audio Pair Select* tab allows the user to configure the settings of the audio input selector. The 7847FS-EAES8-3G can process 16 channels of audio and the source of these 16 channels of audio are selected (on a pair-by-pair basis) to be from the embedded audio of from the external AES. Section 5.5.1 describes the control in detail. For the sake of brevity, only the settings for channels 1 and 2 are shown.

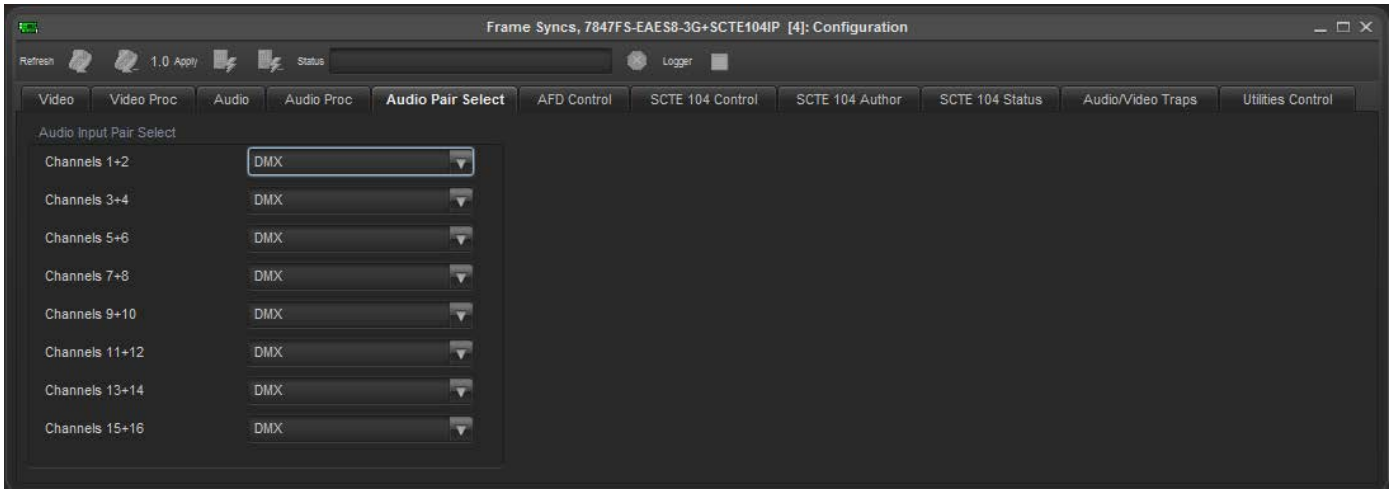

Figure 5-5: Audio Pair Select Tab

5.5.1. Audio Source for Input Channel 1 and 2

The *Audio Input Pair Select* control enables the user to set the source for internally processed channels 1 and 2. The values for this control are as follows:

DMX Group 1 CH1+2	Select this option to choose embedded audio Group 1, CH1+2 for subsequent processing in the card.
AES1	Select this option to choose AES1 input for subsequent processing in the card.

5.6. AFD CONTROL

The *AFD Control* tab allows the user to configure the AFD processing function of the card. Sections 5.6.1 to 5.6.7 describe the controls in detail.

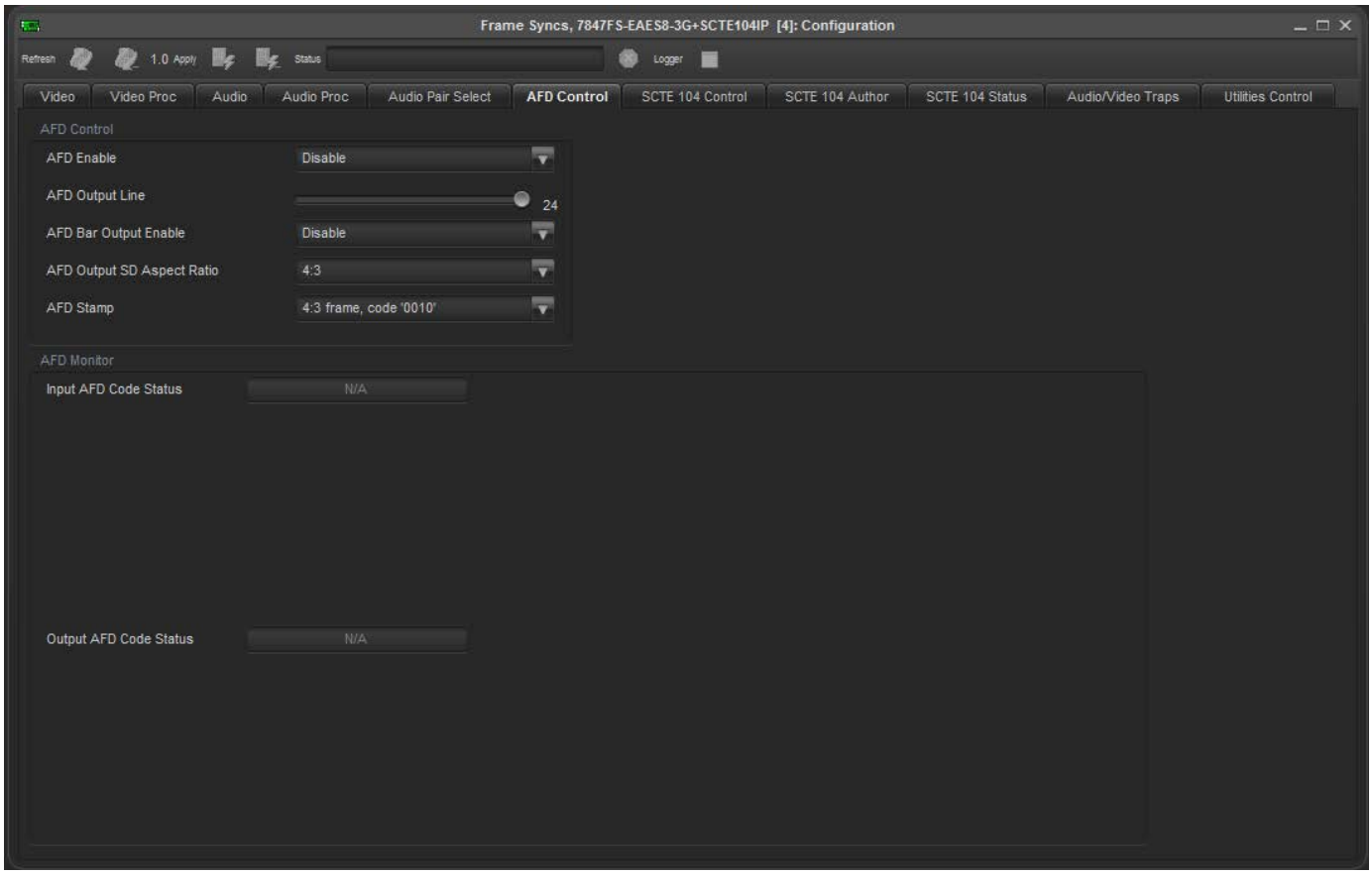

Figure 5-6: AFD Control Tab

5.6.1. AFD Enable

The *AFD Enable* control allows the user to enable and disable the AFD insertion on the output. The values for this control are as follows:

Disable	The card will not insert AFD codes but will still pass incoming AFD codes already present within the video.
Enable	The card will insert AFD codes according to the setting in AFD control tab.

5.6.2. AFD Output Line

The *AFD Output Line* control defines the line on which AFD packets will be inserted into the outgoing video signal when AFD packet insertion is enabled. The range for this control is from 7 to 24 with a default of line 9.

5.6.3. AFD Bar Output Enable

Thi *AFD Bar Output Enable* control enables or disables bar data on the output video. Bar data is used with AFD in order to indicate the exact image size if not exactly 16:9 or 4:3. The values for this control are as follows:

Disable	Bar Data will not be inserted in to the output video.
Enable	Bar data will accompany the AFD information in the output picture.
Auto	The card will automatically respond to the current card configuration and insert bar data as needed.

5.6.4. AFD Output SD Aspect Ratio

The *AFD Output SD Aspect Ratio* control enables the user to define whether SD outputs should be stamped with an AFD value that indicates a 16:9 or 4:3 output image raster. The values for this control are as follows:

4:3	AFD codes for SD outputs will be defined with a 4:3 output image raster AFD code.
16:9	AFD codes for SD outputs will be defined with a 16:9 output image raster AFD code.

5.6.5. AFD Stamp

The *AFD Stamp* control allows the user to specify the AFD signal that will be stamped on the output signal. It is possible to stamp the following AFD values.

16:9 frame, code '0010'	AFD code 16:9 frame, code '0010' will be inserted into the outgoing video.
16:9 frame, code '0011'	AFD code 16:9 frame, code '0011' will be inserted into the outgoing video.
16:9 frame, code '0100'	AFD code 16:9 frame, code '0100' will be inserted into the outgoing video.
16:9 frame, code '1000'	AFD code 16:9 frame, code '1000' will be inserted into the outgoing video.
16:9 frame, code '1001'	AFD code 16:9 frame, code '1001' will be inserted into the outgoing video.
16:9 frame, code '1010'	AFD code 16:9 frame, code '1010' will be inserted into the outgoing video.
16:9 frame, code '1011'	AFD code 16:9 frame, code '1011' will be inserted into the outgoing video.
16:9 frame, code '1101'	AFD code 16:9 frame, code '1101' will be inserted into the outgoing video.
16:9 frame, code '1110'	AFD code 16:9 frame, code '1110' will be inserted into the outgoing video.
16:9 frame code '1111'	AFD code 16:9 frame, code '1111' will be inserted into the outgoing video.
4:3 frame, code '0010'	AFD code 4:3 frame, code '0010' will be inserted into the outgoing video.
4:3 frame, code '0011'	AFD code 4:3 frame, code '0011' will be inserted into the outgoing video.
4:3 frame, code '0100'	AFD code 4:3 frame, code '0100' will be inserted into the outgoing video.
4:3 frame, code '1000'	AFD code 4:3 frame, code '1000' will be inserted into the outgoing video.
4:3 frame, code '1001'	AFD code 4:3 frame, code '1001' will be inserted into the outgoing video.
4:3 frame, code '1010'	AFD code 4:3 frame, code '1010' will be inserted into the outgoing video.
4:3 frame, code '1011'	AFD code 4:3 frame, code '1011' will be inserted into the outgoing video.
4:3 frame code '1101'	AFD code 4:3 frame, code '1101' will be inserted into the outgoing video.
4:3 frame code '1110'	AFD code 4:3 frame, code '1110' will be inserted into the outgoing video.
4:3 frame code '1111'	AFD code 4:3 frame, code '1111' will be inserted into the outgoing video.

Table 5-3: AFD Stamp Control Values

5.6.6. Input AFD Code Status

The *Input AFD Code Status* reports any detected AFD values on the incoming video signal.

5.6.7. Output AFD Code Status

The *Output AFD Code Status* reports the AFD code being stamped on the output of the card.

5.7. SCTE 104 CONTROL (+SCTE104IP OPTION ONLY)

SCTE 104 is the protocol used to trigger linear ad insertions into an uncompressed baseband SDI environment. The standard defines parameters used by the injector to accurately switch between network content to local commercial playout and back again to network programming. The 7847FS-EAES8-3G is used as the injector to receive SCTE 104 messages from an automation system (AS) to either splice in the commercial playout immediately or is presented with timing information to trigger the splice after a set amount of time has elapsed. The 7847FS-EAES8-3G is able to handle both scenarios and provide status diagnostics of its state.

The system follows the two-way protocol architecture defined in the SCTE 104 specification. This handshaking consists of initialization routines, splice request instructions and acknowledgments between the AS and the injector.

The *SCTE 104 Control* tab contains two sections. The *General SCTE Settings* section allows the user to configure the settings that determine how the card behaves when receiving SCTE 104 messages from an AS and when detecting SCTE 104 data in the VANC area of the input video path. The *SCTE IP Communication Settings* section allows the user to configure the networking information for the injector (the 7847FS-EAES8-3G card itself) and the AS which will be sending and receiving SCTE 104 data. Sections 5.7.1 to 5.7.12 describe the various controls in detail.

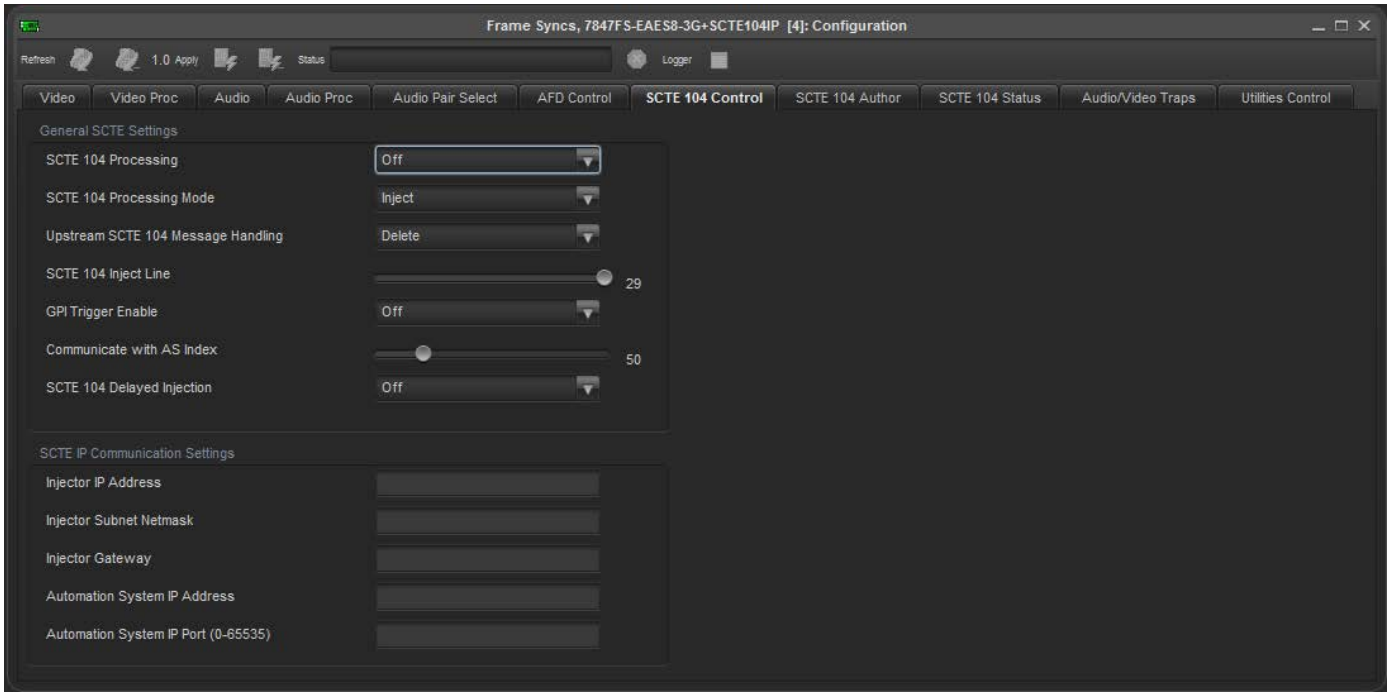

Figure 5-7: SCTE 104 Control Tab

5.7.1. SCTE104 Processing

The *SCTE104 Processing* control enables the user to set the SCTE 104 processing functionality of the card. For any subsequent control to operate this parameter must be set to enable. The values for this control are as follows:

Off	All SCTE 104 functions are disabled.
On	All SCTE 104 functions are enabled.

5.7.2. SCTE104 Processing Mode

The *SCTE104 Processing Mode* control enables the user to set the behaviour of the injector when it receives SCTE 104 data. The values for this control are as follows:

Inject	The card will insert any received SCTE 104 messages into the output video. The card will not act on any messages.
Splice	The card will switch between the commercial and network feeds according to the splice request message. It will not insert any messages into the output video.
Inject & Splice	The card will both insert any received SCTE 104 messages into the output video and also switch between the commercial and network feeds according to eh splice request message.
Non-Validated Inject	The card will insert any message whether or not it is a SCTE 104 message into the output video. *(This is a special mode that falls outside of the normal SCTE 104 operations.)*

5.7.3. Upstream SCTE104 Message Handling

The *Upstream SCTE104 Message Handling* control enables the user to define how the card processes detected SCTE 104 messages that are present in the VANC region on the primary network video input. The values for this control are as follows:

Delete	The card will ignore any SCTE 104 data and not allow them to pass onwards to the output video.
Pass (on Detect Line)	The card will pass the detected SCTE 104 data to the output video.
Forward to AS	The card will send (forward) the detected SCTE 104 data to a connected automation system defined by the *AS Index* control.

5.7.4. SCTE104 Inject Line

The *SCTE104 Inject Line* control enables the user to set the video line the injector is to insert SCTE 104 data for the outbound video. The range for this control is from 6 to 29. The typical line for SCTE 104 data is line 13, but is fully configurable to any desired line in the vertical blanking region of the video signal.

5.7.5. GPI Trigger Enable

The *GPI Trigger Enable* control allows the user to enable or disable all processing of GPIs. The values for this control are as follows:

Off	The module will ignore all GPI inputs.
On	The module will use GPI 1 and GPI 2 to insert SCTE 104 data as defined by the parameters in the *SCTE 104 Author* tab described in Section 0.

As an example, when the *GPI Trigger Enable* control is set to *On*, the user can use GPI 1 as the trigger indication to start a splice request and can use GPI 2 as the trigger to end the splice. More details regarding the messages available for authoring are detailed in Section 0.

The implementation assumes that the user will co-ordinate exclusive control between the automation system splice request over IP and local GPI controls. If the injector is processing a splice request that was received over IP from the automation system then any GPI activity will be ignored until the request has been completed. When a GPI is detected the injector will generate an SNMP trap alarm to the *Vista*LINK® control software for logging.

5.7.6. Communicate with AS Index

The *Communicate with AS Index* control enables a user to set a unique automation system for the card to communicate with. The default setting is an index of 0.

5.7.7. Delayed Injection

The *Delayed Injection* control allows the user to enable or disable the delaying of triggers when *GPI* is used as the *time_type* value (See Table 5-1) in a SCTE 104 message that is to be inserted via automation. The values for this control are as follows:

Off	The module will insert the message with the GPI information immediately.
On	The module will only insert the message once it receives a local GPI trigger that matches the one defined by the GPI information in the *time_type* field. The GPI number is 0-based so a value of 0 corresponds to GPI1 and a value of 1 corresponds to GPI2.

5.7.8. Injector IP Address

The *Injector IP Address* setting enables the user to set the IP address for the injector (the 7847FS-EAES8-3G card.) The value entered should follow the format, XXX.XXX.XXX.XXX (e.g. 192.168.100.47).

5.7.9. Injector Subnet Mask

The *Injector Subnet Mask* setting enables the user to set the subnet mask for the injector (the 7847FS-EAES8-3G card.) The value entered should follow the format, XXX.XXX.XXX.XXX (e.g. 255.255.255.0).

5.7.10. Injector Gateway

The *Injector Gateway* setting enables the user to set the gateway for the injector (the 7847FS-EAES8-3G card.) The value entered should follow the format, XXX.XXX.XXX.XXX (e.g. 192.168.100.1).

5.7.11. Automation System IP Address

The *Automation System IP Address* setting enables the user to set the IP address for the automation system that will be sending SCTE 104 messages to the card or receiving SCTE 104 messages from the card. The value entered should follow the format, XXX.XXX.XXX.XXX (e.g. 192.168.100.10).

Note: Setting *Automation System IP Address* to 0.0.0.0 will allow any automation system to connect to the card. The automation system is still required to have a matching *AS Index* as defined in Section 5.7.6.

5.7.12. Automation System IP Port

The *Automation System IP Port* setting enables the user to set the port that will be used to connect to the automation system. Up to 10 connections can be made to the card at one time.

5.8. SCTE 104 AUTHOR (+SCTE104IP OPTION ONLY)

The *SCTE 104 Author* tab allows the user to configure specific SCTE 104 messages that can be inserted using GPI triggers or manually using *Vista*LINK®. The SCTE 104 data that is inserted into VANC is constructed of various messages. The messages that are available on the 7847FS-EAES8-3G are just a subset of the ones that are available, but are the ones that are most used within the industry. All messages inserted by the 7847FS-EAES8-3G are multiple operation messages that can contain one or more operations. The operations that are supported are as follows: *Splice Request Data, Time Signal Request, Insert Avail Descriptor Request Data, Insert DTMF Descriptor Request Data,* and *Insert Segmentation Descriptor Request Data.*

The first step in creating a SCTE 104 message for insertion is to check the *Enabled* checkbox under the *SCTE 104* section. Once this is checked, a multiple operation message is constructed by checking the *Included* checkbox of each operation that is to be included in the message. The tables in sections 5.8.1 to 5.8.6 describe the various parameters within each operation in detail.

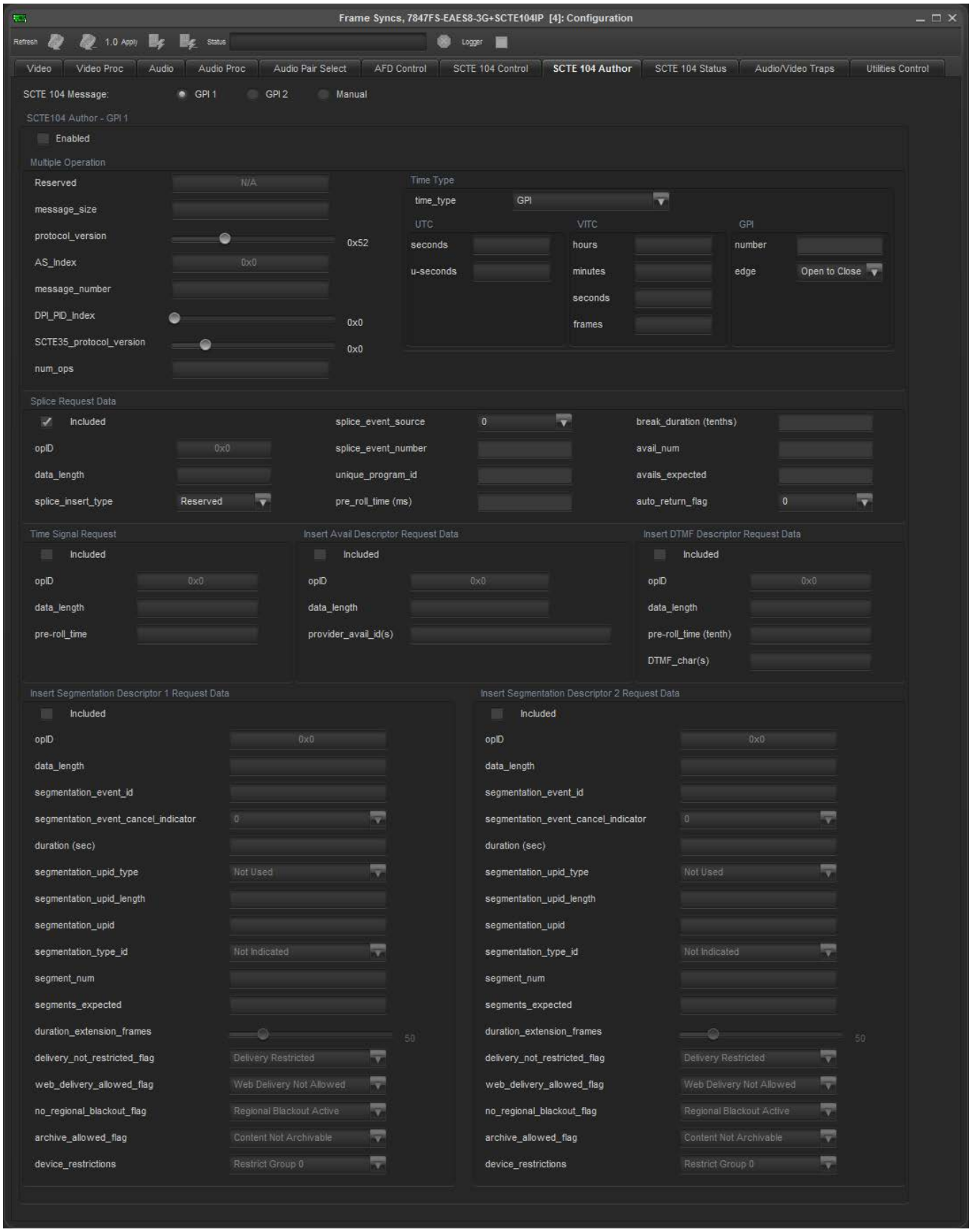

Figure 5-8: SCTE 104 Author Tab

5.8.1. Multiple Operation

Reserved	This parameter is a fixed value and cannot be modified. The reserved parameter is two-byte field and is fixed to a value of 0xFFFF. It will be inserted as the first word in the SCTE 104 packet.
messageSize	The *messageSize* parameter defines the size of the entire *multiple_operation_message()* structure in bytes. This parameter is a read-only parameter and the 7847FS-EAES8-3G generates its value dynamically.
protocol_version	The *protocol_version* is an 8-bit unsigned integer field whose function is to allow, in the future, this message type to carry parameters that may be structured differently than those defined in the current SCTE 104 protocol. It shall be zero (0x00). Non-zero values of *protocol_version* may be used by future versions of the SCTE 104 standard to indicate structurally different messages. This parameter has a range of 0x00 to 0xFF.
AS_Index	The *AS_index* uniquely identifies the source of the message (since it is possible to have several automation systems active at once). The number ranges from 0 to 255 and shall be zero if this index is not required. If non-zero, AS_index shall be unique within a single digital compression system.
message_number	The *message_number* can be any number in the range 0 to 255 and must be unique for the life of a message. The *message_number* is used to identify an individual request. This parameter is a read-only parameter and the 7847FS-EAES8-3G generates its value dynamically. Each time a new message is injected, the message number will increment.
DPI_PID_index	The DPI_PID_index specifies the index to the DPI PID, which will carry the splice_info_sections. The number ranges from 0 to 65535. DPI_PID_index shall be zero if not required by the system architecture. This parameter has a range of 0x0000 to 0xFFFF.
SCTE35_protocol_version	An 8-bit unsigned integer field whose function is to allow, in the future, this message type to carry parameters that may be structured differently than those defined in the current protocol. It shall be zero (0x00). Non-zero values of *protocol_version* may be used by a future version of the SCTE 104 standard to indicate structurally different messages. This parameter is has a range of 0x00 to 0xFF.

timestamp (time_type)	If the value is set to *None*, then there is no time required and the remainder of the structure is empty. A value of *UTC* indicates that the time field has been setup for UTC time for triggering a DPI splice_info_section. A value of *VITC* indicates that the time field has been setup for SMPTE VITC timecode [see Informative Reference 4 of SCTE 104 for more information] for triggering a DPI Splice_info_section. A value of *GPI* indicates that a GPI input is being used to trigger a DPI splice_info_section. Note: Non-zero values of time_type that are not currently defined are reserved for future standardization. Any message received with a time_type it does not understand should be ignored and an error code of "time type unsupported" returned to the requestor. This error should not occur under normal circumstances, since the protocol_version will need to be increased to support new definitions of time. UTC • seconds – Elapsed seconds since 12:00 AM UTC January 6, 1980 UTC with the count of intervening leap seconds included. • u-seconds – Offset in microseconds of the UTC_seconds field. VITC • hours – This field encodes the hour of the day in 24-hour time. Values range from 0 to 23. • minutes – This field encodes the minute of the hour. Values range from 0 to 59. • seconds – This field encodes the seconds of the minute. Values range from 0 to 59. • frames – This field encodes the frame within the current second. The range of values changes based upon whether the system is 30 Hz or 25 Hz based video and whether or not the frame rate is actually divided by 1.001. Typical values are 0 to 29 for 30 or 30/1.001 Hz systems, and 0 to 24 for 25 Hz systems. GPI • number – This field encodes a number from 0 to 255 and indicates the GPI to use for triggering the insertion of the DPI splice_info_section. The actual number of GPI's available, the GPI numbering and the edge used for triggering are details of implementation. The automation system should know these details in order to choose a proper value for this field. If the physical GPI does not exist, the Injector should discard the request and raise an alarm to the operator. • edge – This field encodes the edge to use to trigger message processing. A value of 0 indicates a transition from open to closed. A value of 1 indicates a transition from closed to open.
num_ops	This field defines an integer value that indicates the number of requests contained within the data packet. This parameter has a fixed value that is generated by the 7847FS-EAES8-3G.

Table 5-4: SCTE 104 Multiple Operation Parameters

5.8.2. Splice Request Data

opID	The opID is an integer value that indicates what request is being sent. This parameter is fixed to a value of 0x0101, indicating that the *splice_request_data()* table is transmitted. This value is fixed and cannot be modified.
data_length	The *data_length* is the size of the data() field being sent in bytes. This parameter is a read-only parameter and the 7847FS-EAES8-3G generates its value dynamically.
splice_insert_type	The *splice_insert_type* parameter is an 8-bit unsigned integer defining the type of insertion operation desired. This parameter has 6 possible states: *reserved, spliceStart_normal*, *spliceStart_immediate*, *spliceEnd_normal*, *sliceEnd_immediate*, and *splice_cancel*. (The *reserved* type is undefined by SCTE 104 by is left as a placeholder for future use. It has a value of 0.) Please refer to SCTE 104 for clarification of the inferred values. *spliceStart_normal* section(s) occur at least once before a splice point. This interval should match the requirements of SCTE 35 and serve to set up the actual insertion. It is recommended that if sufficient pre-roll time is given by the AS, the Injector sends several succeeding SCTE 35 *splice_info_section*() sections (per SCTE 35 and SCTE 67) in response to a single *splice_request* message with a *spliceStart_normal* *splice_insert_type* value. *spliceStart_immediate* sections may come once at the splice point's exact location. The Injector shall set the *splice_immediate_flag* to 1 and the *out_of_network_indicator* to 1 in the resulting SCTE 35 *splice_info_section*() section. Usage of "immediate mode" signaling is not recommended by SCTE 35 and may result in inaccurate splices. *spliceEnd_normal* sections come to terminate a splice done without a duration specified. They may also be sent to ensure a splice has terminated on schedule. The Injector sets the *out_of_network_indicator* to 0. If they are to terminate a *spliceStart_normal* with no duration specified, they should be sent prior to the minimum interval before the return point and carry a value for *pre_roll_time*, especially if terminating a long form insertion. *spliceEnd_immediate* sections come to terminate a current splice before the splice point, or a splice in process earlier than expected. The Injector sets the *out_of_network_indicator* to 0 and the *splice_immediate_flag* to 1. The value of *pre_roll_time* is ignored. *splice_cancel* sections come to cancel a recently sent *spliceStart_normal* section. The AS must supply the correct value of *splice_event_id* for the section to be cancelled. The Injector shall set the splice_event_cancel_indicator to 1.

splice_event_ source	The *splice_event_source* is a user assigned number for the source of a cue message. There are four possible values: 0, 4, 6 and 12. A value of 0 indicates that the source of the cue message is a cue embedded in the original source material. A value of 4 indicates a cue created by automation system switching. A value of 6 defines a cue created by a live event trigger system, and a value of 12 indicates a cue created by a local content replacement system. The *splice_event_source* and the *splice_event_number* together define the *splice_event_id* parameter that is inserted into the SCTE 104 message.
splice_event_ number	The *splice_event_number* is the number chosen by the event source to identify an instance of the cue message. Its value makes up the lower 28 bits of the *splice_event_id*.
unique_program_id	This parameter is defined as a two-byte parameter and has a possible range of 0 to 65535. According to SCTE 104, the use of this field by servers and splicers is unknown at this time.
pre_roll_time (ms)	The *pre_roll_time* parameter is a 16-bit field giving the time to the insertion point in milliseconds. This parameter has a possible range of 0 to 65535. This field is ignored for *splice_insert_type* values other than *spliceStart_normal* and *spliceEnd_normal*.
break_duration (tenths)	The *break_duration* parameter is a 16-bit field giving the duration of the insertion in tenths of seconds. This parameter has a possible range of 0 to 65535. This field is ignored for *splice_insert_type* values other than *spliceStart_normal* and *spliceStart_immediate*.
avail_num	This parameter is an 8-bit field giving identification for a specific avail within the current *unique_program_id*. The value follows the semantics specified in SCTE 35 for this field. It may be zero to indicate its non-usage. This parameter has a possible range of 0 to 255.
avails_expected	This parameter is an 8-bit field giving a count of the expected number of individual avails within the current viewing event. If zero, it indicates that *avail_num* has no meaning. This parameter has a possible range of 0 to 255.
auto_return_flag	If this field is non-zero and a non-zero value of *break_duration* is present, then the *auto_return* field in the resulting SCTE 35 section will be set to one. This field is ignored for *splice_insert_type* values other than *spliceStart_normal* and *spliceStart_immediate*. Within this implementation this field is fixed to 0x00 and cannot be modified.

Table 5-5: Splice Data Request Parameters

5.8.3. Time Signal Request

opID	The opID is an integer value that indicates what request is being sent. This parameter is fixed to a value of 0x0104, indicating that the *time_signal_request_data()* table is transmitted. This value is fixed and cannot be modified.
data_length	The *data_length* is the size of the data() field being sent in bytes. This parameter is a read-only parameter and the 7847FS-EAES8-3G generates its value dynamically.
pre-roll_time	The splice splice_info_section may be sent by the automation system well in advance of when it is required. In order to support repeated sending of the same splice_info_section and to support multiple sections being outstanding simultaneously, this request supports the preloading of its parameters. The timestamp() indicates the time to process the splice_info_section. The pre-roll field indicates the amount of time, in milliseconds, after being processed that the action will occur. For the time_signal_request() this is the pre-roll for the associated descriptors. If this request arrives after the indicated time, the splice_info_section is sent as soon as possible. The timestamp field can indicate immediate processing (and therefore uses relative timing) or delayed processing (which uses exact timing). In all cases, the signaling point is calculated relative to the time the Request is processed. The pre-roll field determines the exact delay period for the splice point relative to the Request being processed. If this Request is processed immediately on arrival, then the physical insertion of the time signal request is as soon as it is received. In the case of an exact timestamp using a UTC timecode, VITC timecode or GPI triggering, the Request is processed at the indicated time. In the case when a component mode request is used to modify this basic request, the overall pre-roll time is not used. That is, this field is only used when the DPI splice_info_section produced is for a program mode splice. For component mode splicing, each component will have its own time stamp.

Table 5-6: Time Signal Request Parameters

5.8.4. Insert Avail Descriptor Request Data

opID	The opID is an integer value that indicates what request is being sent. This parameter is fixed to a value of 0x010A, indicating that the *insert_avail_descriptor_request_data()* table is transmitted. This value is fixed and cannot be modified.
data_length	The *data_length* is the size of the data() field being sent in bytes. This parameter is a read-only parameter and the 7847FS-EAES8-3G generates its value dynamically.
provider_avail_id(s)	This is an optional 32-bit field which may be inserted into the resulting SCTE 35 splice_info_section. If the value of num_provider_avails is zero, this field shall be ignored and no avail_descriptor() shall be created. This parameter has a possible range of 0 to 4294967296. Up to 10 values can be entered in this field, each one with the same range, separated by a semicolon. The number of values entered will determine the num_provider_avails parameter in the message, which is generated by the 7847FS-EAES8-3G dynamically.

Table 5-7: Insert Avail Descriptor Request Data Parameters

5.8.5. Insert DTMF Descriptor Request Data

opID	The opID is an integer value that indicates what request is being sent. This parameter is fixed to a value of 0x0109, indicating that the *insert_DTMF_descriptor_request_data()* table is transmitted. This value is fixed and cannot be modified.
data_length	The *data_length* is the size of the data() field being sent in bytes. This parameter is a read-only parameter and the 7847FS-EAES8-3G generates its value dynamically.
pre-roll_time (tenth)	The pre-roll time encodes the number of tenths of seconds before the splice_point signaled in the resulting SCTE 35 section that a DTMF tone sequence should finish being emitted. To allow for processing time, the pre-roll signaled in the SCTE 35 message should be greater than this value.
DTMF_char(s)	This field carries the characters of a DTMF sequence to be output by an IRD. This field should contain a sequence of the ASCII characters '0' through '9', '*', '#', and 'A' through 'D'. (no lowercase letters) Refer to SCTE 35 for detailed usage of this field. Up to 32 characters can be entered without any spaces in between. The number of characters entered will determine the dtmf_length parameter in the message, which is generated by the 7847FS-EAES8-3G dynamically.

Table 5-8: Insert DTMF Descriptor Request Data Parameters

5.8.6. Insert Segmentation Descriptor Request Data

opID	The opID is an integer value that indicates what request is being sent. This parameter is fixed to a value of 0x010B, indicating that the *insert_segmentation_descriptor_request_data()* table is transmitted. This value is fixed and cannot be modified.
data_length	The *data_length* is the size of the data() field being sent in bytes. This parameter is a read-only parameter and the 7847FS-EAES8-3G generates its value dynamically.
segmentation_ event_id	A 4 byte (32-bit) unique segmentation event identifier. This parameter has a possible range of 0 to 4294967296.
segmentation_event _cancel_indicator	A 1 byte flag that when set to '1' indicates that a previously sent segmentation event, identified by segmentation_event_id, has been cancelled.
duration (sec)	A 2 byte (16-bit) field giving the duration of the program segment in whole seconds. A zero value is legal and results in the segmentation_duration_flag in the resulting SCTE 35 section being set to '0'. See duration_extension_frames. This parameter has a possible range of 0 to 65535.
segmentation_ upid_type	A 1 byte field that specifies the type of "UPID" utilized in this program. There are multiple types allowed to insure that programmers will be able to use an id that their systems support. The ones supported by the 7847FS-EAES8-3G are: *User Defined, ISCI, Ad-ID, UMID, ISAN,V-ISAN, TID, Turner Identifier (TI)* and *ADI.* Refer to SCTE 35 for full details.
segmentation_ upid_length	A 1 byte field that specifies the length in bytes of the segmentation_upid. This parameter is a read-only parameter and the 7847FS-EAES8-3G generates its value dynamically depending on the value entered for the segmentation_upid parameter.
segmentation_upid	A variable-length field that specifies the "UPID" value for this segment. Refer to SCTE 35 for details. This parameter has a possible range of 0 to 32 characters.
segmentation_ type_id	A 1 byte field which designates type of segmentation. The values for this field are: *Not Indicated, Content Identification, Program Start, Program End, Program Early Termination, Program Breakaway, Program Resumption, Program Runover Planned, Program Runover Unplanned, Program Overlap Start, Chapter Start, Chapter End, Provider Advertisement Start, Provider Advertisement End, Distributor Advertisement Start, Distributor Advertisement End, Placement Opportunity Start, Placement Opportunity End, Unscheduled_event_start* and *Unscheduled_even_end.*
chapter_num	Also known as segment_num. A 1 byte field that provides identification for a specific chapter within a segmentation_upid. Refer to SCTE 35 for full details. This parameter has a possible range of 0 to 255.
chapters_expected	Also known as segments_expected. A 1 byte field that provides a count of the expected number of individual chapters within the current segmentation event. This parameter has a possible range of 0 to 255.

duration_extension_frames	A one byte field that shall carry a value in the range from 0 to the value of the greatest integer less than frame rate, which shall be the number of frames in the fractional second not included in duration. The total duration of the program segment is duration seconds plus duration_extension_frames frame times. If duration is 0 this field caries no meaning. This parameter has a possible range of 0 to 255.
delivery_not_restricted_flag	A one byte flag that when set to 1 indicates there is no need for external checks prior to delivery. A value of 0 indicates the content requires external checks. Refer to SCTE 35 for full details. The values for this field are: *Delivery Restricted* and *Delivery Not Restricted.*
web_delivery_allowed_flag	A one byte flag that when set to 1 indicates web delivery is allowed. Refer to SCTE 35 for full details. The values for this field are: *Web Delivery Not Allowed* and *Web Delivery Allowed.*
no_regional_blackout_flag	A one byte flag that when set to 1 indicates there is not a regional blackout. Refer to SCTE 35 for full details. The values for this field are: *Regional Blackout Active* and *No Regional Blackout.*
archive_allowed_flag	A one byte flag that when set to 1 indicates the content is archiveable. Refer to SCTE 35 for full details. The values for this field are: *Content Not Archiveable* and *Content Archiveable.*
device_restrictions	A 1 byte field which designates type of segmentation and takes values specified in SCTE 35. The values for this field are: *Restrict Group 0, Restrict Group 1, Restrict Group 2* and *No Restrictions.* These values represent the hex values 0x00, 0x01, 0x10 and 0x11.

Table 5-9: Insert Segmentation Descriptor Request Data Parameters

5.9. SCTE 104 STATUS (+SCTE104IP OPTION ONLY)

The *SCTE 104 Status* tab contains several sections. The *SCTE 104 Quick Status Monitor* section allows the user to monitor the health of the communications between the 7847FS-EAES8-3G and the automation system. Sections 5.9.1 to 5.9.7 describe the controls of the *SCTE 104 Quick Status Monitor* section in detail.

The remaining sections allow the user to monitor the SCTE 104 messages received by the 7847FS-EAES8-3G from the automation system or transmitted by the 7847FS-EAES8-3G to the automation system. The user can select between the two modes using the radial buttons beside the control labeled *Last AS Message.* The parameters reported by the various messages that can be received or transmitted will be the same values that are available in the SCTE 104 authoring tab which are described by the tables in sections 5.8.1 to 5.8.6

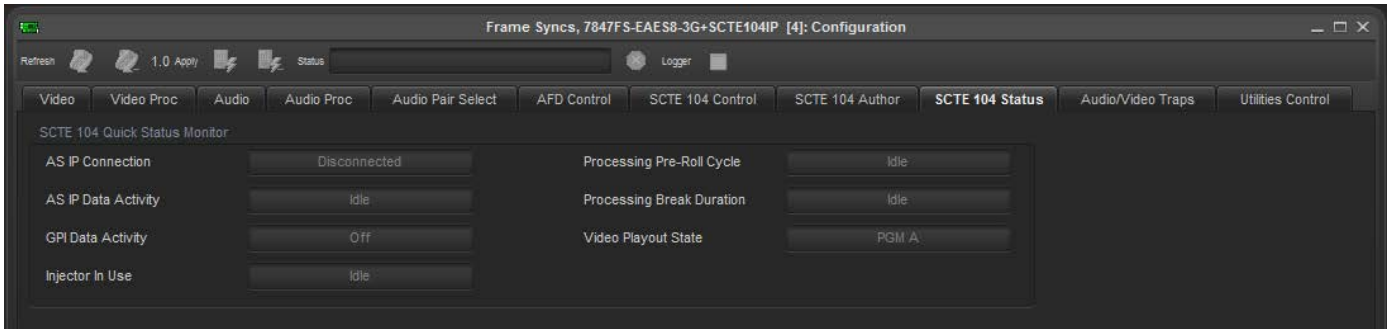

Figure 5-9: STCE 104 Status Tab (SCTE 104 Quick Status Monitor Section)

Figure 5-10: SCTE 104 Status Tab (Message Section)

5.9.1. AS IP Connection

The *AS IP Connection* parameter reports if a valid connection to the automation system is present. The status will display either *disconnected* or *connected.*

5.9.2. AS IP Data Activity

The *AS IP Data Activity* parameter reports if activity is detected between the card and the automation system. The status will show one of the following values: *Idle, Receiving* or *Transmitting.*

5.9.3. GPI Data Activity

The *GPI Data Activity* parameter reports if there is any GPI activity on the card. The status will show one of the following values: *Off, Idle, GPI1* or *GPI2.*

5.9.4. Injector In Use

The *Injector In Use* parameter displays the status of the injector (the 7847FS-EAES8-3G). The status will show one of the following values: *Idle* or *In Use.* The injector is considered *In Use* if it is receiving data from the automation system or transmitting data to the automation system.

5.9.5. Processing Pre-Roll Cycle

The *Processing Pre-Roll Cycle* parameter reports if the card is in the pre-roll stage of insertion. The status will show one of the following values: *Idle, No* or *Yes.*

5.9.6. Processing Break Duration

The *Processing Break Duration* parameter reports if the card is in the break duration stage of insertion. The status will show one of the following values: *Idle, No* or *Yes.*

5.9.7. Video Playout State

The *Video Playout State* parameter reports the current input that is being routed to the output. The status will display either *PGMA* or *PGMB* representing Program A or Program B respectively.

5.10. AUDIO/VIDEO TRAPS

The *Audio/Video Traps* tab allows the user to configure various traps and monitor the trap statuses. To enable a particular trap, simply click the box located beside each trap in the *Trap Enable* section so that a check mark appears. When a check mark is present, the trap is enabled. When a check mark is not present, the trap is disabled.

If a parameter under the *Trap Status* section is green, then the trap is present. If the parameter is red, then the trap is missing.

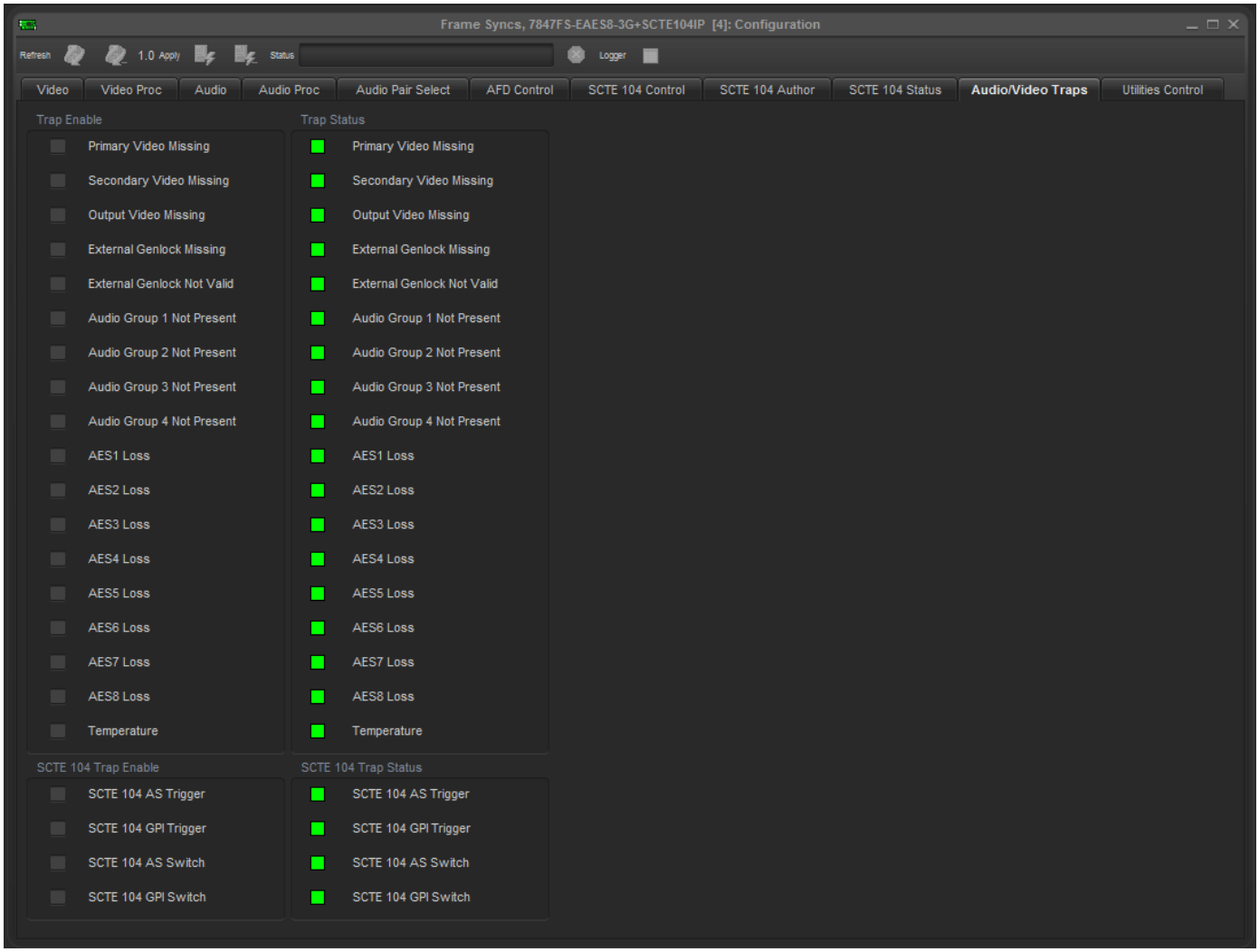

Figure 5-11: Audio/Video Traps Tab

5.11. UTILITIES CONTROL

The *Utilities Control* tab allows the user to configure settings related to the storing and recalling of presets. The 7847FS-EAES8-3G is capable of storing and retrieving 10 user presets. Sections 5.11.1 to 5.11.2 describe the various controls in detail.

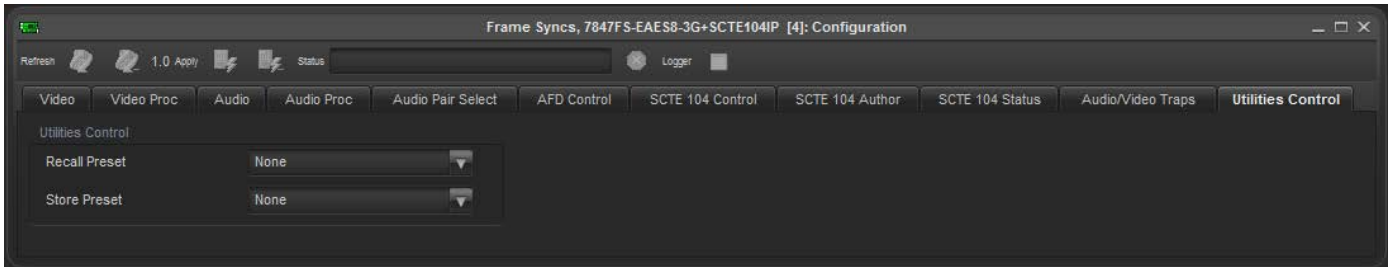

Figure 5-12: Utilities Control Tab

There may be a slight disturbance in the operation of the card while the new preset is being recalled.

5.11.1. Recall Preset

The *Recall Preset* control enables the user to initiate a recall of the card configuration from one of the user presets or reset the card to factory defaults. The values for this control are as follows:

None	No Presets will be recalled
Default	All controls for the card will revert to defaults
User 1	Recall User Preset 1
User 2	Recall User Preset 2
User 3	Recall User Preset 3
User 4	Recall User Preset 4
User 5	Recall User Preset 5
User 6	Recall User Preset 6
User 7	Recall User Preset 7
User 8	Recall User Preset 8
User 9	Recall User Preset 9
User 10	Recall User Preset 10

5.11.2. Store Preset

The *Store Preset* control enables the user to initiate a store of the current card configuration into one of the user presets. To store a card configuration to a specific preset, select the desired preset to store the card settings and press the APPLY button. The values for this control are as follows:

None	No Presets will be stared
User 1	Store to User Preset 1
User 2	Store to User Preset 2
User 3	Store to User Preset 3
User 4	Store to User Preset 4
User 5	Store to User Preset 5
User 6	Store to User Preset 6
User 7	Store to User Preset 7
User 8	Store to User Preset 8
User 9	Store to User Preset 9
User 10	Store to User Preset 10

6. JUMPERS

Figure 6-1 and Figure 6-2 provide the locations of the jumpers and LEDs on the 7847FS-EAES8-3G boards.

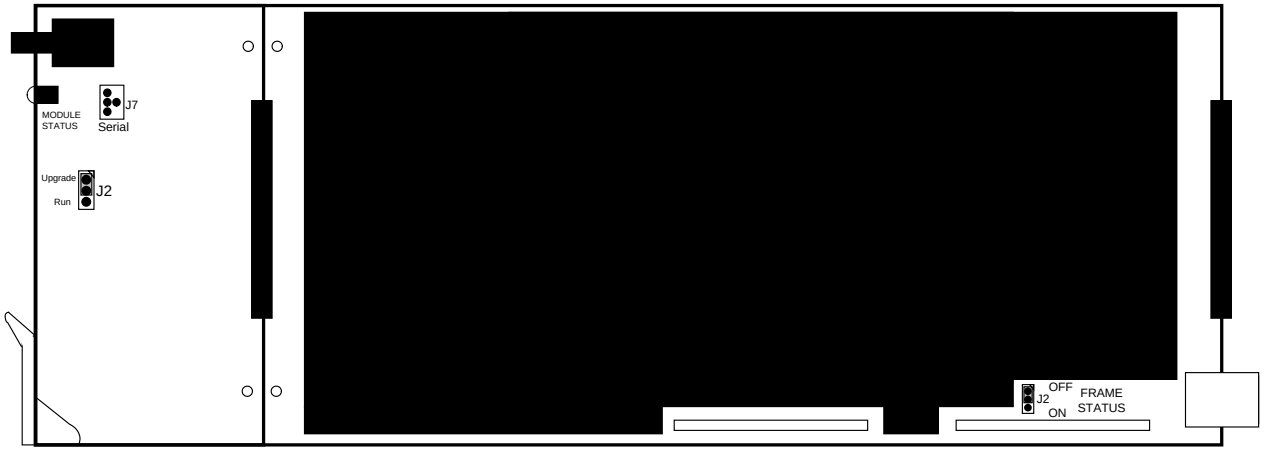

Figure 6-1: Location of Jumpers – Top View Main Module

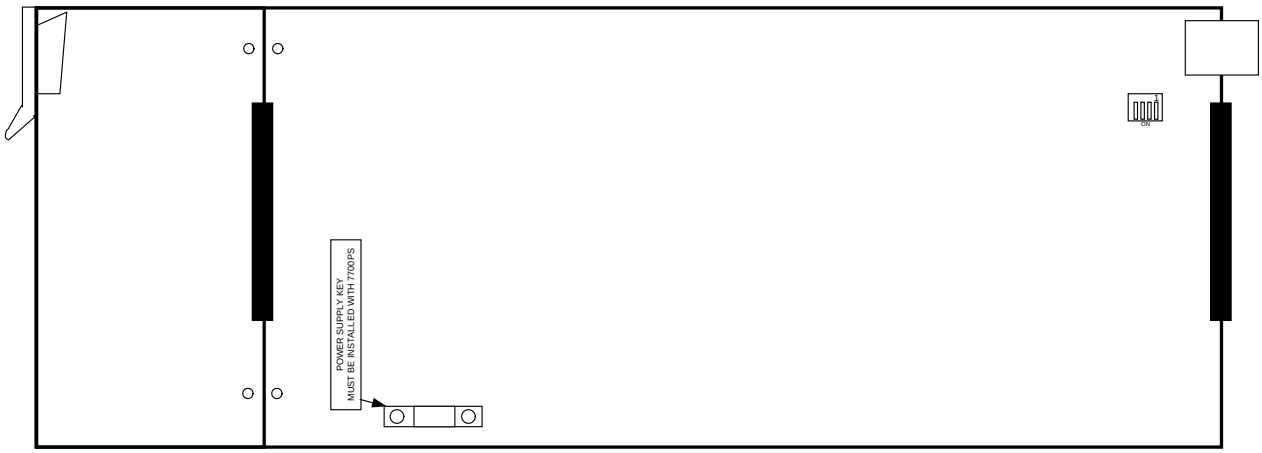

Figure 6-2: Location of Jumpers – Bottom View Main Module

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

FRAME STATUS: The FRAME STATUS jumper J2 is located near the rear of the board and close to the white metal connector. The FRAME STATUS jumper determines whether local faults (as shown by the Local Fault indicator) will be connected to the 7700FR-C or 7800FR 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.

6.2. CONFIGURING THE MODULE FOR FIRMWARE UPGRADES

Firmware updates can be performed using two methods. The first method is Ethernet based up-load of firmware using *Vista*LINK®. The second method is using serial interface based up-load of firmware using the on-card upgrade serial port.

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

UPGRADE: The UPGRADE jumper (J2) is located on the top side of the main near the front of the card 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 J2 into the *UPGRADE* position. Install the Upgrade cable provided (located in the vinyl pouch in the front of this manual) onto header J7 at the card edge. Re-install the module into the frame. Run the upgrade as described in *Upgrading Firmware* chapter. Once the upgrade is completed, remove the module from the frame, move J2 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 7847FS-EAES8-3G is 115,200 baud. Additional serial connection settings are as follows:

Data Bits = 8
Parity = None
Stop Bits=1
Flow Control = None

6.3. SELECTING WHETHER THE GENLOCK REFERENCE INPUT IS TERMINATED

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

6.4. 7847FS-EAES8-3G "SLOT BLOCKER"

The 7847FS-EAES8-3G can be installed in either the 7700FR-C or the 7800FR frames. These modules are designed to take two slots in the Evertz 7800FR frame and three slots in the 7700FR-C.

Modules can fit into two slots in a 7800FR frame because the 7800FR allows modules to consume more power on a per slot basis than the Evertz 7700FR-C. When a 7847FS-EAES8-3G is installed in the 7700FR-C, the module must occupy 3 slots to ensure that the frame power is managed properly. This is accomplished by installing a "Slot Blocker" on the bottom side of the board. If the "Slot Blocker" is not installed on the card and the card is inserted into the 7700FR, the card will not power-up. When installing the card in a 7800FR, the "Slot Blocker" may be removed and it will power-up and operate normally. If the "Slot Blocker" remains installed and the card is inserted into the 7800FR, the card will also power-up and operate normally.

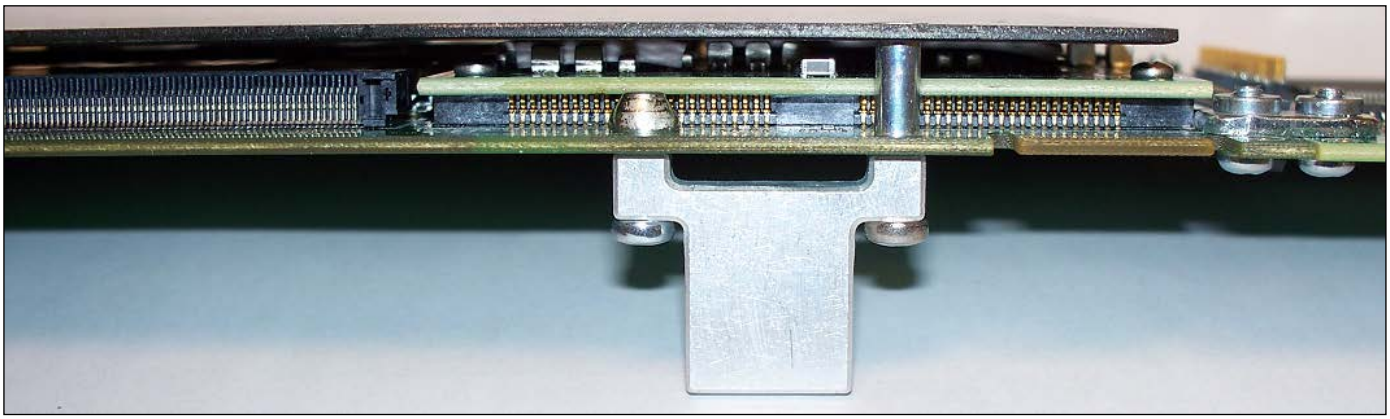

Figure 6-3: Slot Blocker

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7. *VISTA*LINK® REMOTE MONITORING/CONTROL

7.1. WHAT IS *VISTA*LINK®?

*Vista*LINK® is Evertz' 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. *Vista*LINK® 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 *Vista*LINK® 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, *Vista*LINK® 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 7707EO and 7707OE cards), each with a unique address (OID), communicate with the NMS through an SNMP Agent. Evertz *Vista*LINK® enabled 7700/7800 series modules reside in the 3RU 7700FR-C/7800FR/7800FR-QT MultiFrame and communicate with the manager via the 7700FC *Vista*LINK® 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 *Vista*LINK® network, see the 7700FC Frame Controller chapter.

7.2. *VISTA*LINK® PARAMETERS

All control and monitoring of the 7847FS-EAES8-3G is done through the use of *Vista*LINK® so all control and monitoring parameters described in Section 0 are the same as the ones available through *Vista*LINK®. Please refer to that section for more information.

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