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REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	Preliminary Version	Jun 00
1.1	First Release	Jul 00
1.2	Added Embedding delay specification	Jul 00
1.3	Support input serial data at 14400 baud Specification for input serial data to be embedded within a video field Activate internal black video generation at the loss of video input	Aug 00
1.4	Disable selection of clean embedding Support parity selection for the serial input Support SMPTE 207M BREAK character according to SMPTE 207M	Mar 01
1.4.1	Typographical fixes	Oct 01
1.4.2	Corrected location of J17 in Figure 6-1 and section 6.3	Jul 03
1.4.3	Minor corrections to features	Oct 03
1.5	Added VistaLINK® section and SCTE 104 Parameters section	Oct 08

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1. OVERVIEW

The 7721DE SDI data embedder inserts an RS-232/422 serial data stream and GPI contact closure information into a 270 Mb/s SDI video signal. The RS-232/422 serial data and GPI information are first formatted into an AES audio signal, then embedded into the video stream according to SMPTE 272M-A specification. A data error detection and correction scheme is also applied to maintain data integrity for the data de-embedder at the receiver end. At the embedded packet layer, data packets resemble and have the same group DIDs as embedded audio packets.

Features:

- Automatic detection of 525 and 625 line SDI video input
- Automatic activation of internal 525 or 625 line black video generation at the loss of video input
- One RS232/422 serial input with selectable baud rate (9600, 14,400, 19,200, 38,400 or 57,600)
- Parity selection: none, even or odd
- Support serial input with BREAK character according to SMPTE 207M
- Packetize data into the sub-frame AES format according to SMPTE 337M
- Embedding mechanism based on SMPTE 272M-A
- Share the same group DIDs as for embedded audio, selectable from group 1 to 4
- Channel selection for mapping data into one of four channels within a group
- Redundant data transmission to allow data error detection and correction at the receiver end
- Automatically remove the existing embedded packets when the conflict of group DID occurs
- Remove packets with "Marked packets for deletion" and "Data end marker packet"
- Six TTL level GPI inputs to embed simple control information into the video input
- EDH generation on video output
- Card edge LEDs indicate video signal and data presence, cable equalization and module fault

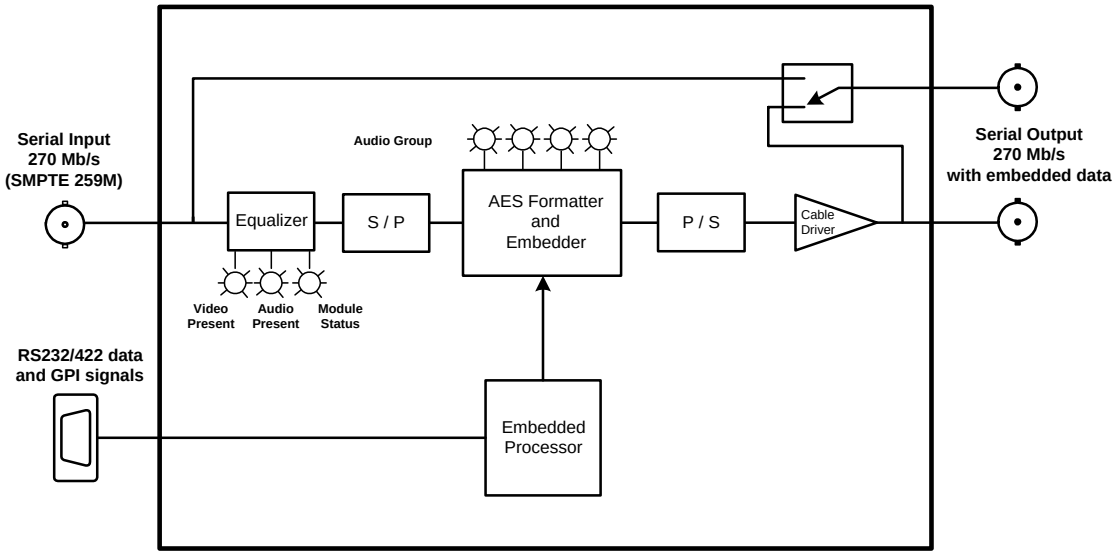

Figure 1-1: 7721DE Block Diagram

2. INSTALLATION

The 7721DE modules each come with a companion rear plate that has 3 BNCs and a female high-density DB-15 connector. For information on mounting the rear plate and inserting the module into the frame see section 3 of the 7700FR chapter.

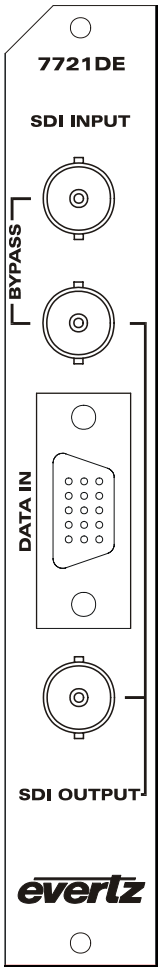

Figure 2-1: 7721DE Rear Panel

2.1. VIDEO INPUTS AND OUTPUTS

SDI INPUT: Input BNC connector for 10-bit serial digital video signals compatible with the SMPTE 259M standard.

SDI OUTPUT: There are two BNC connectors with reclocked serial component video outputs, compatible with the SMPTE 259M standard. These outputs contain the input video with the data from the RS-232/422 and GPI ports embedded in accordance with the SMPTE 272M standard. The top output is protected by a bypass relay, which will activate in the event of power loss to the module. The remaining output is not bypass protected.

2.2. GENERAL PURPOSE INPUTS AND OUTPUTS

The following is the pinout of the female HD DB-15 connector labeled **Data In**.

DB-15	Name	Description
1	GPI 6	GPI Input
2	Tx-/Tx	RS 422 Tx - / RS-232 TxD output
3	GPI 5	GPI Input
4	GPI 3	GPI Input
5	GND	Gnd
6	Rx-/Rx	RS 422 Rx- / RS-232 RxD input
7	Tx+/CTS	RS 422 Tx+ / RS-232 CTS output
8	GPI 4	GPI Input
9	GND	GND
10	GP +5v	General Purpose +5Volts Supply (output)
11	Rx+/RTS	RS 422 Rx+ / RS-232 RTS input
12	GND	Gnd
13	GPI 7	GPI Input
14	GPI 8	GPI Input
15	Vext	Ext. Voltage Input to GPI Circuitry

Table 2-1: Data In DB 15 Connector Pinout

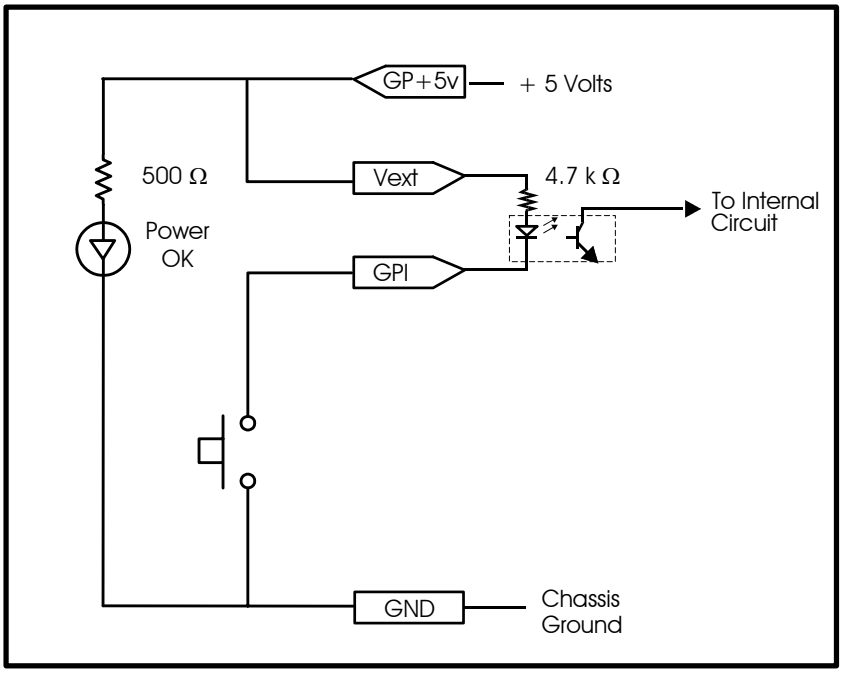

Figure 2-2: Powering the General Purpose Input Opto Isolators from the Module

The GPIs are active low with an internal pull up (4.7k Ohm) resistor to the Vext pin. The user can connect GP+5V supplied from the module into the Vext pin to provide power to the GPI opto-isolator circuitry. In this configuration the user can activate GPIs simply by connecting the GPI input pins to Ground (refer to Figure 2-2). This can be done with a button, switch, relay or an open collector transistor. Five volts is available to the user to be used for driving external circuitry. Care must be taken to limit the load to 0.5W so there is no affect on the power supply source on the module. The GPI information is embedded into the data stream and will activate the corresponding GPO outputs on the 7721DD Data De-embedder. They can be used to pass simple contact closure information along with the video signal. Alternately, the user can connect an external power source for the opto-isolator circuitry. The Vext voltage must be greater than the voltage supplied to GPI by at least 5v. Figure 2-3 shows how to wire the GPIs from an external power supply.

Warning: Do not connect GP+5V from one module to another module's GP+5V.

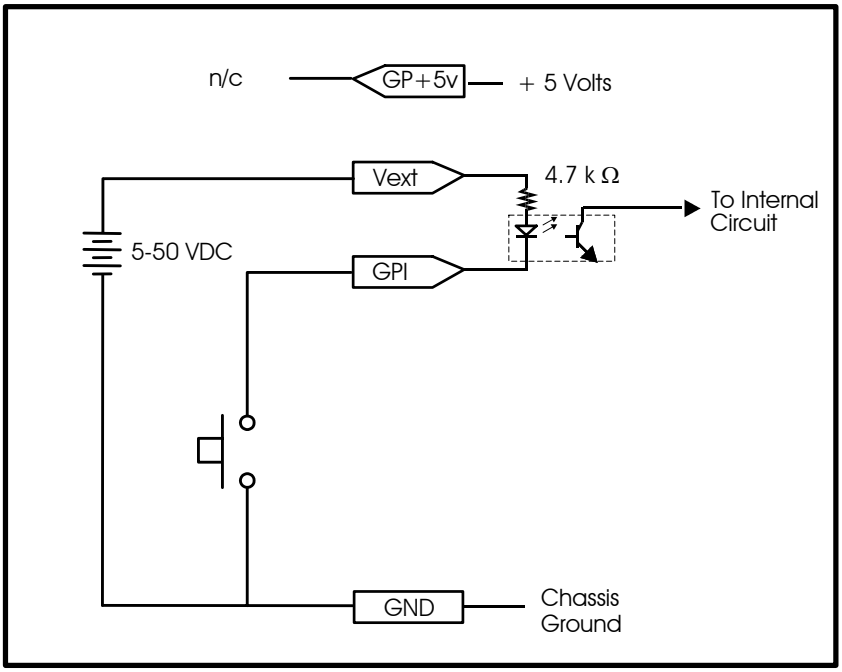

Figure 2-3: Powering the General Purpose Input Opto Isolators from an External Power Supply

3. SPECIFICATIONS

3.1. SERIAL VIDEO INPUT

Standard: SMPTE 259M C – 525 or 625 line component.
Connector: BNC per IEC 169-8
Equalization: Automatic 300m @ 270 Mb/s with Belden 8281 or equivalent cable
Return Loss: > 15 dB up to 270 Mb/s

3.2. SERIAL VIDEO OUTPUTS WITH EMBEDDED DATA

Number of Outputs: 2 (1 output bypass relay protected)
Standard: same as input
Connectors: BNC per IEC 169-8
Signal Level: 800mV nominal
DC Offset: 0V ±0.5V
Rise and Fall Time: 470ps nominal
Overshoot: <10% of amplitude
Return Loss: > 15 dB up to 270 Mb/s
Wide Band Jitter: < 0.2 UI

3.3. DATA INPUT

Standard: RS-232 or RS-422 – Jumper Selectable
Connector: Female High Density DB-15
Baud Rate: 9600, 14400, 19200, 38400 or 57600 switch selectable
Format: 8 bits, parity (none, even or odd), 1 stop bit

3.4. GENERAL PURPOSE INPUTS

Number of Inputs: 6
Type: Opto-isolated, active low with internal pull-ups to user supplied Voltage. (provides +5V which may be used for this purpose)
Connector: Female High Density DB-15
Signal Level: +5V nominal
Sample Rate: eight times SDI video frame rate.
Inputs must be held low for at least one field to be considered active.

3.5. EMBEDDING DELAY

3.5.1. Video I/O Delay

The video I/O delay is approximately 12μs

3.5.2. Delay For Data Embedding - Serial Input

Baud Rate	Average Latency (µs) +/- 20%
9600	1500
14400	1200
19200	1200
38400	1200
57600	1200

Note: Input serial data is always embedded into the same video field when the arrival time is 1.55ms (approximately 24 lines) before the end of each field.

3.5.3. Delay For Data Embedding - GPI signals

GPI inputs	Average latency (µs) +/- 10%
All	800

3.6. ELECTRICAL

Voltage: + 12VDC
Power: 6 Watts.
EMI/RFI: Complies with FCC Part 15, class A and EU EMC directive.

3.7. PHYSICAL

7700 or 7701 frame mounting:
Number of slots: 1

Stand Alone Enclosure:
Dimensions: 14 " L x 4.5 " W x 1.9 " H
(355 mm L x 114 mm W x 48 mm H)
Weight: approx. 1.5 lbs. (0.7 Kg)

4. STATUS LEDS

The location of the status LEDs is shown in Figure 6-1.

4.1. MODULE STATUS LEDS

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

LOCAL FAULT: This Red LED makes it easy to identify one module in a frame that is missing an essential input or has another fault.

The LED will blink on and off if the microprocessor is not running.

The LED will be on solid when input video is missing, or audio is missing from both AES inputs or there is a fault in the module power supply.

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

EQ: This Yellow LED will be On when the cable equalizer detects that the cable length is greater than a preset threshold. (Factory set for 250 meters of Belden 8281 or equivalent cable). See section 6.4 for information on adjusting the cable equalizer warning threshold.

DATA PRESENT: This Green LED will be On solid when there is a valid data signal present at the serial port.

4.2. AUDIO/DATA GROUP STATUS LEDS

Four LEDs located on the lower end of the module (opposite the DIP switch) indicate the status of the audio/data groups. Group LED 1 is located closest to the center of the module.

Group LED	Colour	Group Status
1	Off	There is no group 1 audio/data on the video output.
	On	Group 1 audio/data on the video output is being passed through from the input.
	Flashing	Group 1 audio/data on the video output is being embedded from the data input.
2	Off	There is no group 2 audio/data on the video output.
	On	Group 2 audio/data on the video output is being passed through from the input.
	Flashing	Group 2 audio/data on the video output is being embedded from the data input.
3	Off	There is no group 3 audio/data on the video output.
	On	Group 3 audio/data on the video output is being passed through from the input.
	Flashing	Group 3 audio/data on the video output is being embedded from the data input.
4	Off	There is no group 4 audio/data on the video output.
	On	Group 4 audio/data on the video output is being passed through from the input.
	Flashing	Group 4 audio/data on the video output is being embedded from data input.

Table 4-1: Group Status LEDs

5. CARD EDGE CONTROLS

The 7721DE is equipped with an 8 position DIP switch to allow the user to select various functions. All positions are assigned sequentially such that the first position is located at the top of the DIP switch (farthest from to the card ejector). Sections 5.1 to 5.4 show the assigned DIP switch functions. The On position is down, or closest to the printed circuit board. Table 5-1 gives an overview of the DIP switch functions.

DIP Switch	Function
1	Audio Group Selection for Data Embedding
2	
3	Primary Audio Channel Selection for Data Embedding
4	
5	Default line standard of the internal black video source
6	Serial Port baud Rate Selection
7	
8	Parity selection

Table 5-1: DIP Switch Functions

5.1. SELECTING THE AUDIO GROUP AND CHANNEL WHERE THE DATA WILL BE EMBEDDED

The SMPTE 272M standard permits up to 4 groups of 4 audio channels to be embedded into the 270 Mb/s video bitstream. DIP switches 1 and 2 are used to select which group that the incoming data will be embedded into.

DIP 1	DIP 2	Audio Group ID
Off	Off	1 (default)
On	Off	2
Off	On	3
On	On	4

Table 5-2: Audio Group Assignment for Data Insertion Switch Settings

DIP switches 3 and 4 are used to select which channel within the selected group will be the primary channel where data is inserted.

DIP 3	DIP 4	Audio Channel
Off	Off	1 (default)
On	Off	2
Off	On	3
On	On	4

Table 5-3: Audio Channel Assignment for Data Insertion Switch Settings

5.2. SELECTING LINE STANDARD OF THE INTERNAL BLACK VIDEO SOURCE

DIP switch 5 is used to select the default line standard of the internal black video source that is activated on the loss of video input.

DIP 5	Line Standard
Off	625 lines
On	525 lines

Table 5-4: Default Line Standard Selection Switch Settings

5.3. SELECTING SERIAL PORT BAUD RATE

DIP switches 6 and 7 are used to select the baud rate of the data input serial port.

DIP 6	DIP 7	Baud Rate
Off	Off	9600 (default)
On	Off	19200
Off	On	38400
On	On	57600 (14400 when h/w build number is 2)

Table 5-5: Data Input Baud Rate Selection Switch Settings

5.4. SELECTING PARITY

DIP switch 8 selects the parity of the serial input for the UART receiver at 7721DE and down-stream parity generator at 7721DD.

DIP 8	FUNCTION	DESCRIPTION
Off	None	Serial input without parity
On	Even or Odd	Serial input with parity. 7721DE can automatically detect either even or odd parity.

Table 5-6: Embedded Audio Cleaning Switch Settings

6. JUMPERS AND USER ADJUSTMENTS

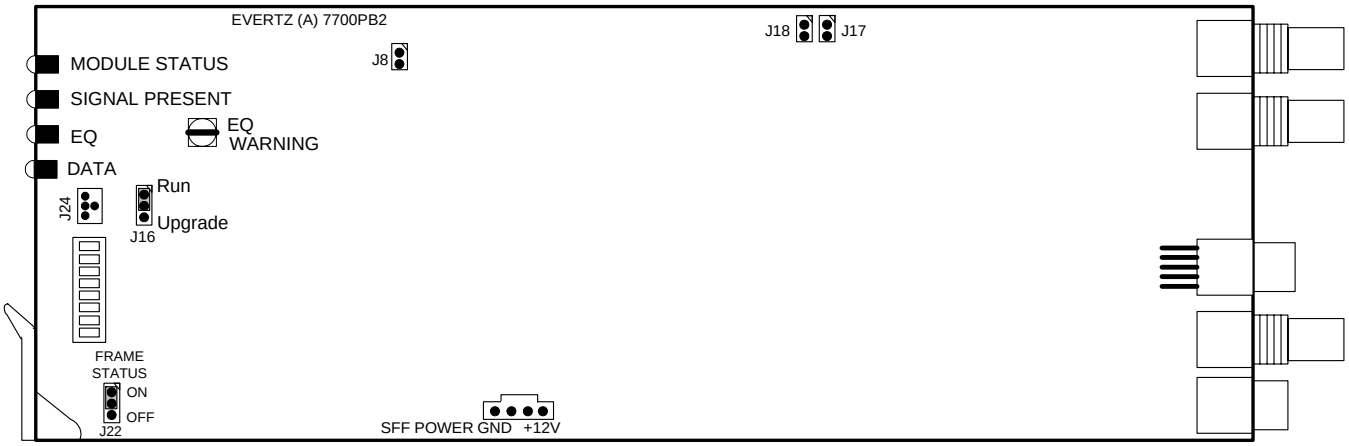

Figure 6-1: Location of Jumpers on 7700PB2 Boards

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

FRAME STATUS: The FRAME STATUS jumper located at the front of the module determines whether local faults (as shown by the Local Fault indicator) will be connected to the 7700FR frame's global status bus.

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

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

6.2. CONFIGURING THE MODULE FOR FIRMWARE UPGRADES

UPGRADE: The UPGRADE jumper J16 located at the front of the module is used when firmware upgrades are being done to the module. For normal operation it should be installed in the *RUN* position. See the *Upgrading Firmware* section of this manual 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* section of this manual. Once the upgrade is completed, remove the module from the frame, move J16 into the *RUN* position, remove the upgrade cable and re-install the module. The module is now ready for normal operation.

6.3. CONFIGURING THE SERIAL PORT FOR RS 232 OR RS 422 OPERATION

J17: Jumper J17 located at the side of the module is used to select whether the serial port receiver/driver hardware is configured for balanced RS422 or RS232 with flow control. For RS 422 operation install jumper J17. For RS 232 operation remove jumper J17. For convenience you may re-install the jumper so that only one side is connected.

6.4. SETTING THE EQUALIZER WARNING THRESHOLD

The *Cable Length Warning Adj* trimpot located near the *Signal Present* LED is used to set the threshold of the cable equalizer warning. The equalizer warning is factory set to 250 meters of Belden 8281 cable, but may be adjusted for other cable types or cable lengths. To adjust the cable equalizer warning threshold, connect a signal to the input of the module using the required length of cable. Adjust the trimpot slowly until the Equalizer warning LED comes on. You can verify that the equalizer warning is operating correctly by removing a few meters of cable from the input. The LED should go off.

7. *Vista*LINK® REMOTE MONITORING/CONTROL

7.1. What is *Vista*LINK®?

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

There are 3 components of SNMP:

1. An SNMP manager, also known as a Network Management System (NMS), is a computer running special software that communicates with the devices in the network. Evertz *Vista*LINK® Pro Manager graphical user interface (GUI), third party or custom manager software may be used to monitor and control Evertz *Vista*LINK® enabled products.

2. Managed devices (such as the frame synchronizers), each with a unique address (OID), communicate with the NMS through an SNMP Agent. Evertz VistaLINK® enabled 7700 series modules reside in the 3RU 7700FR-C MultiFrame and communicate with the manager via the 7700FC VistaLINK® frame controller module, which serves as the Agent.

3. A virtual database known as the Management Information Base (MIB) lists all the variables being monitored, which both the Manager and Agent understand. Please contact Evertz for further information about obtaining a copy of the MIB for interfacing to a third party Manager/NMS.

For more information on connecting and configuring the *Vista*LINK® network, see the 7700FC Frame Controller chapter.

7.2. *Vista*LINK® CONTROLLED PARAMETERS

SCTE 104 Settings	
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.
messsageSize	The *messageSize* parameter defines the size of the entire *single_operation_message()* structure in bytes. This parameter is a read-only parameter and the 7746FSE-GPI-HD+SCTE104 generates its value internally and 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 is a fixed value and cannot be modified.
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 7746FSE-GPI-HD+SCTE104 generates its value internally and 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 two-byte control is defined as a text entry box with a maximum possible value of 65535.
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 a fixed value and cannot be modified.
Timestamp	This field delivers the exact time to process all of the requests in the injected message. The *time_type* field may be zero, indicating the messages are processed immediately. The 7746FSE-GPI-HD+SCTE104 injects a fixed value of 0x00, thereby instructing immediate processing.
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 of 0x01, indicating a single data table embedded in the packet. This data table is the Splice Request Data table.
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 7746FSE-GPI-HD+SCTE104 generates its value internally and dynamically.
GPI Mode	The GPI mode defines what state the GPI will be considered active when triggered. This parameter has two states: Active Low and Active High. When set to Active Low, the 7746FSE-GPI-HD+SCTE104 will consider a GPI triggered when the voltage level drops from the internal +5V to ground. When set to Active High, the 7746FSE-GPI-HD+SCTE104 will consider a GPI triggered when the voltage level transitions from ground to +5V.
Upstream Pass Mode	This parameter defines the behaviour of the 7746FSE-GPI-HD+SCTE104 if SCTE 104 packets detected on the input. This parameter has two states: Pass Through and Pass Remap. If the value is set to Pass Through and a SCTE 104 packet is detected on the input, they are directly passed to the output on the same detected line. If the value is set to Pass Remap, then the original detected packets are marked for deletion as per SMPTE 291M and re-inserted onto a new line defined by the Upstream Line Remap Control.
Upstream Line Remap	This parameter defines which line to re-insert detected SCTE 104 packets. This parameter is only used when the Upstream Pass Mode parameter is set to a value of Pass Remap and has a valid range from lines 6 to 29 for both SD-SDI and HD-SDI type signals.
GPI Triggering	This parameter enables and disables the GPI processor. There are 3 possible values; disable, GPI 1, and GPI 2. To completely disengage the GPI processor set the value of this parameter to disable. When set to disable, any GPI triggering activity will be ignored. To use GPI 1 as the SCTE 104 insertion trigger, set this parameter to a value of GPI 1, and to use GPI 2 as the SCTE 104 insertion trigger, set this parameter to a value of GPI 2. Upon each successful SCTE 104 insertion the 7746FSE-GPI-HD+SCTE104 will send an SNMP trap alarm and also illuminate the card edge LED's for a period of approximately 5 seconds.
DPI Filter	This parameter is used to disable or enable upstream DPI filtering. To filter out any detected upstream SCTE 104 messages set this value to enable. To allow upstream SCTE 104 message to pass through the 7746FSE-GPI-HD+SCTE104 module, then set this value to disable. When set to disable the Upstream Pass Mode will be used to define the pass through behaviour.
Line Select	When inserting SCTE 104 messages, this parameter is used to define the insertion line and has a valid range from lines 6 to 29 for both SD-SDI and HD-SDI type signals.
Manual DPI Insert	This parameter is used primarily as a test and debug control. When set to a value of *enable*, the 7746FSE-GPI-HD+SCTE104 will insert a SCTE 104 message once every 10 seconds. Upon each successful insertion the 7746FSE-GPI-HD+SCTE104 will send an SNMP trap alarm and also illuminate the card edge LED's for a period of approximately 5 seconds.

splice_insert_type	The *splice_insert_type* parameter is an 8-bit unsigned integer defining the type of insertion operation desired. This parameter has 5 possible states: *spliceStart_normal*, *spliceStart_immediate*, *spliceEnd_normal*, *sliceEnd_immediate*, and *splice_cancel*. 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, 8 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 8 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 is automatically calculated by the 7746FSE-GPI-HD+SCTE104 and 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 7-1: *Vista*LINK® Controlled Parameters

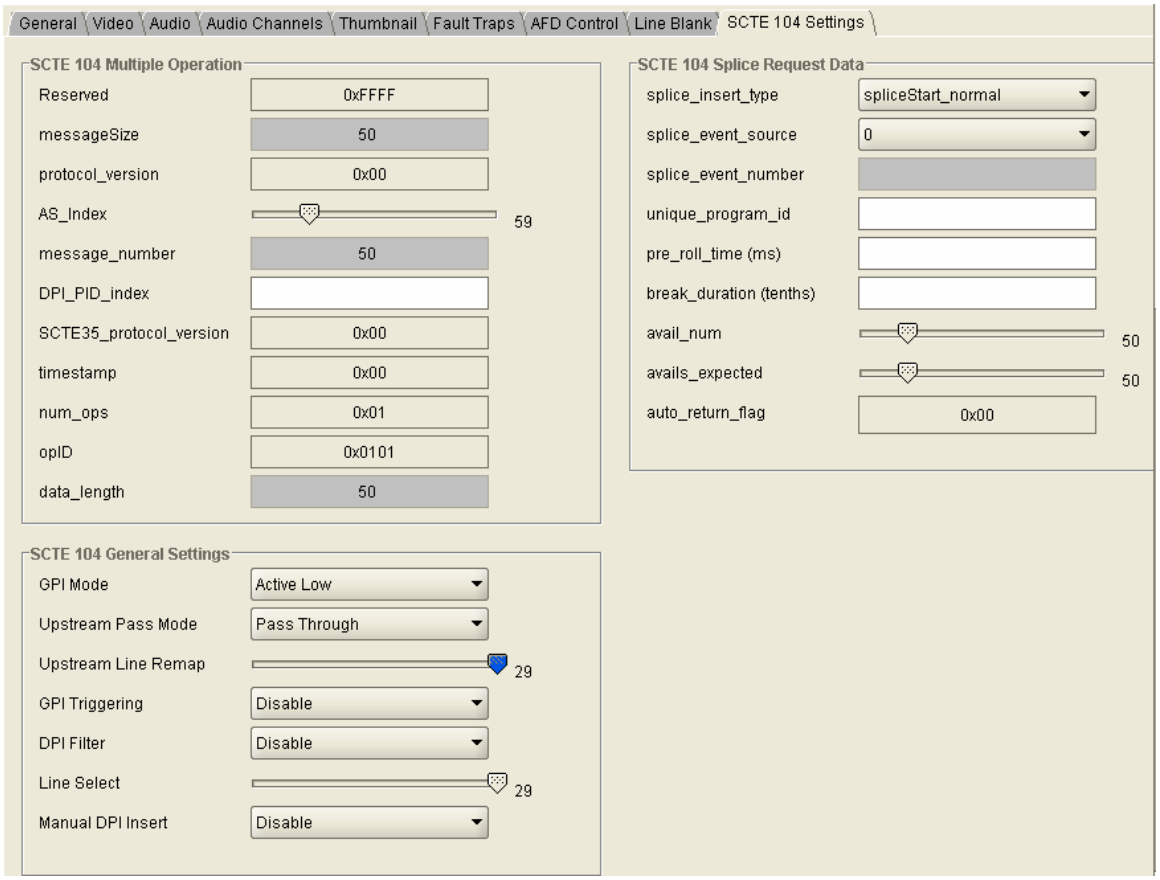

Figure 7-1: VistaLINK® 7721DE4-HD+SCTE104 Configuration View