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REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	Preliminary Version.	Jun 99
1.1	First Release Version.	Mar 00
1.2	Updated block diagrams to show correct Standard for AES audio.	May 00
1.2.1	De-embedding latency specification added.	Mar 01
1.3	7720AD-OE added.	Aug 01
1.4	7720AD-A4 added.	Oct 01
1.5	7720AD4-B added.	Jan 02
1.5.1	Updated Specifications and operation for 7720AD4 and 7720AD4-B.	Mar 02
1.5.2	Updated DIP Switch Table 2 for 7720AD and 7720AD-OE.	Jul 03
1.5.3	Updated Analog Audio Specs for 7720AD-A4.	Aug 03
1.6	7720AD-B-A4-LTC added.	Jan 04
1.7	Added *Vista*LINK® Information.	May 05
1.8	Added 7720AD-A4-2 Information.	Mar 08
1.9	Added block diagram, figure 1-1. Updated 7720AD4 rear plate.	July 09

1. OVERVIEW

The 7720AD series Audio De-embedders extract embedded audio as specified by SMPTE 272M from a 270 Mb/s serial digital video signal. The companion 7720AE Audio Embedder facilitates audio multiplexing at the source. The 7720AD is available in 6 different versions.

Model	Input	Audio Outputs		270 Mb/s SDI Re-clocked Outputs	VistaLINK® Enabled
		AES	Analog		
7720AD (Discontinued)	Electrical (BNC)	2 unbalanced	---	2	No
7720AD4	Electrical (BNC)	4 unbalanced	---	2*****	Yes
7720AD4-B	Electrical (BNC)	4 balanced	---	1	Yes
7720AD-B-A4-LTC	Electrical (BNC)	2 balanced	4	---	No
7720AD-A4	Electrical (BNC)	2 unbalanced	4	---	Yes
7720AD-OE	Optical	2 unbalanced	---	2	Yes
7720AD-A4-2	Electrical (BNC)	--	4	2	Yes

*****SDI Re-Clocked Outputs are available for the 7720AD4 as of April 2004.

Table 1-1: De-Embedder Versions

The 7720AD-OE version combines the Audio de-embedder with a Fiber to Electrical converter and provides an economical method of converting optical distribution to SDI video and AES audio. SMPTE 272M allows for up to four groups (4 channels/group) to be embedded within a serial digital signal. The 7720AD can de-embed one audio group onto two unbalanced AES outputs. The 7720AD4 can de-embed two audio groups onto four unbalanced AES outputs. The 7720AD4-B can de-embed two audio groups onto four balanced AES outputs. The 7720AD-A4 can de-embed one audio group onto two unbalanced AES outputs and 4 balanced analog audio outputs. The 7720AD-B-A4-LTC has the ability to read vertical interval time code (D-VITC) from the SDI video and convert it to linear time code (LTC).

Features:

- Front panel LEDs indicating module status, video presence, selected audio group data is present
- LED indication for the presence of each of the 4 audio groups within the input video
- Audio group selection via card edge DIP switches
- Audio channel swapping selection via card edge DIP switches (not on 7720AD-A4)
- 7720AD-A4 has independent volume controls for each of the audio channel outputs
- 7720AD-OE operates with multi-mode or single-mode fiber
- 7720AD-OE has SC/PC, ST/PC or FC/PC connector options
- VistaLINK® enabled for remote monitoring and control via SNMP. (Using VistaLINK® Pro) when installed in the 7700FR-C frame with a 7700FC VistaLINK® Frame Controller module. – see chart above for models that are *Vista*LINK® enabled.

Additional Features for 7720AD-B-A4-LTC:

- 4 balanced analog audio channel outputs or 3 balanced audio and one balanced LTC (DIP Switch selectable)
- 2 balanced AES pair outputs
- DIP switch selection of VITC reader line

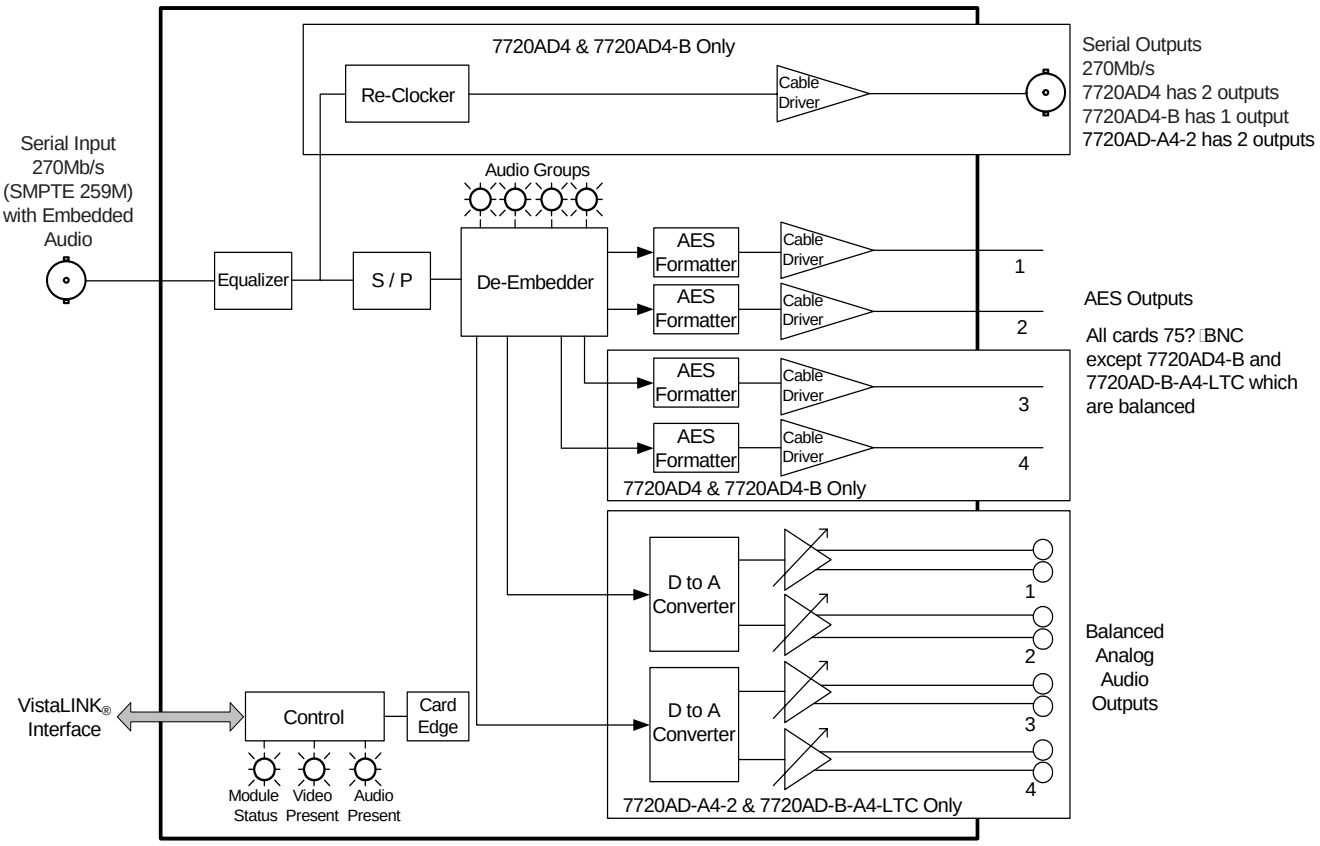


Figure 1-1: Complete 7720AD Series Block Diagram

1.1. Individual Card Block Diagrams

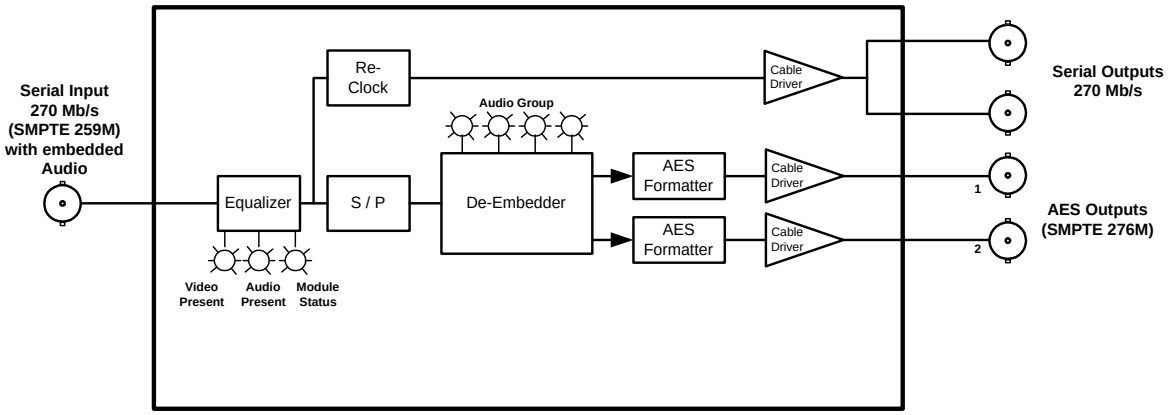


Figure 1-2: 7720AD Block Diagram

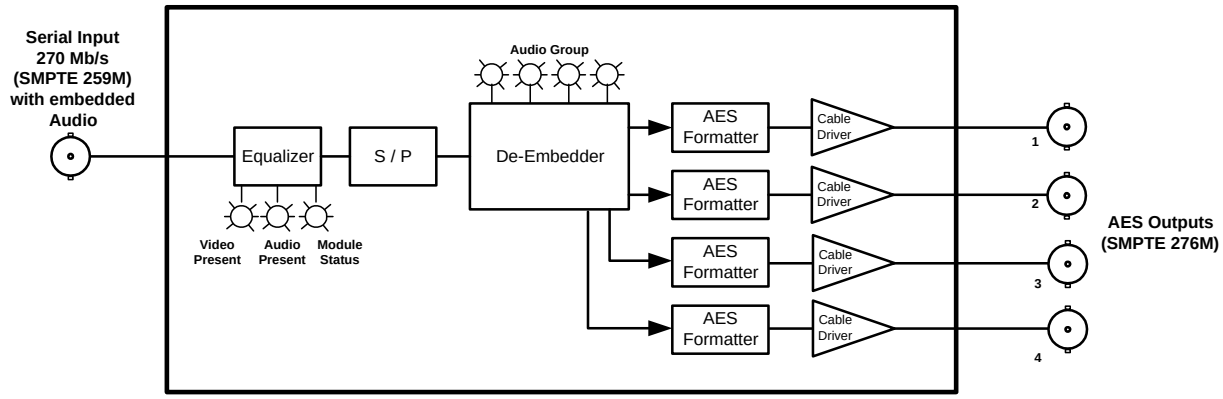


Figure 1-3: 7720AD4 Block Diagram

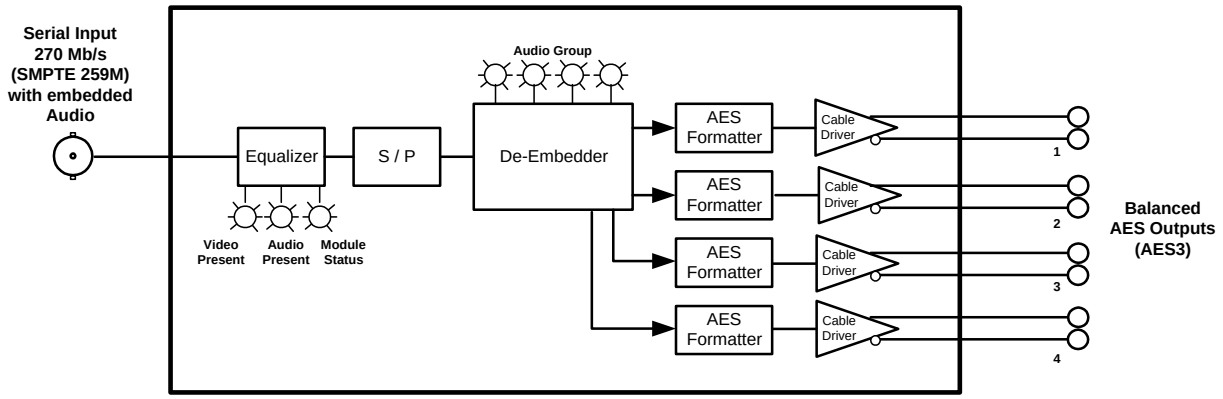


Figure 1-4: 7720AD4-B Block Diagram

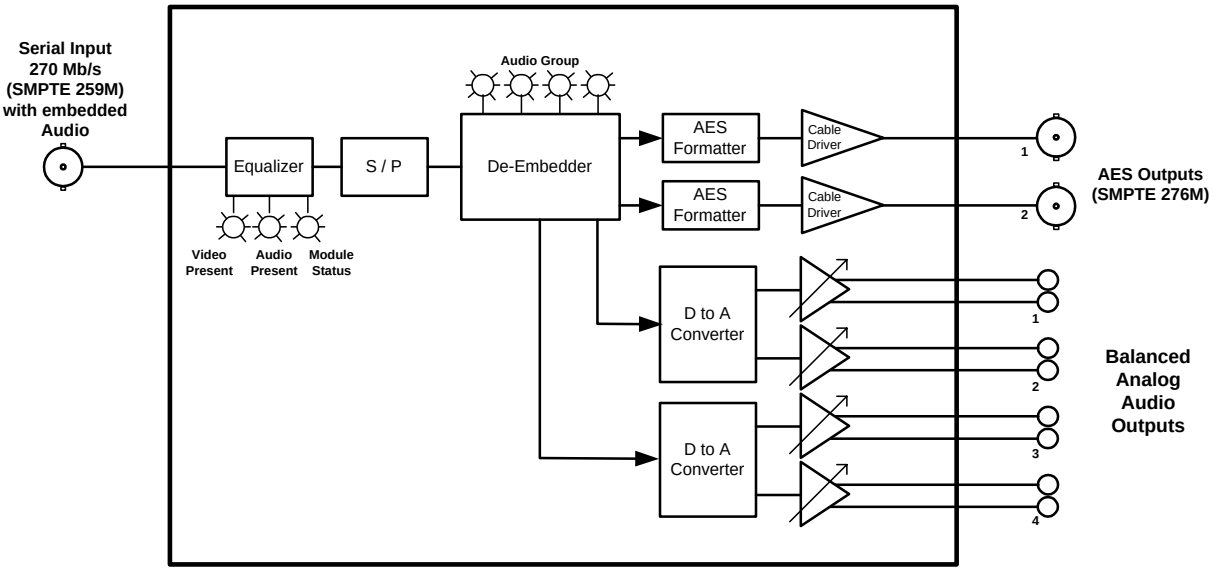


Figure 1-5: 7720AD-A4 Block Diagram

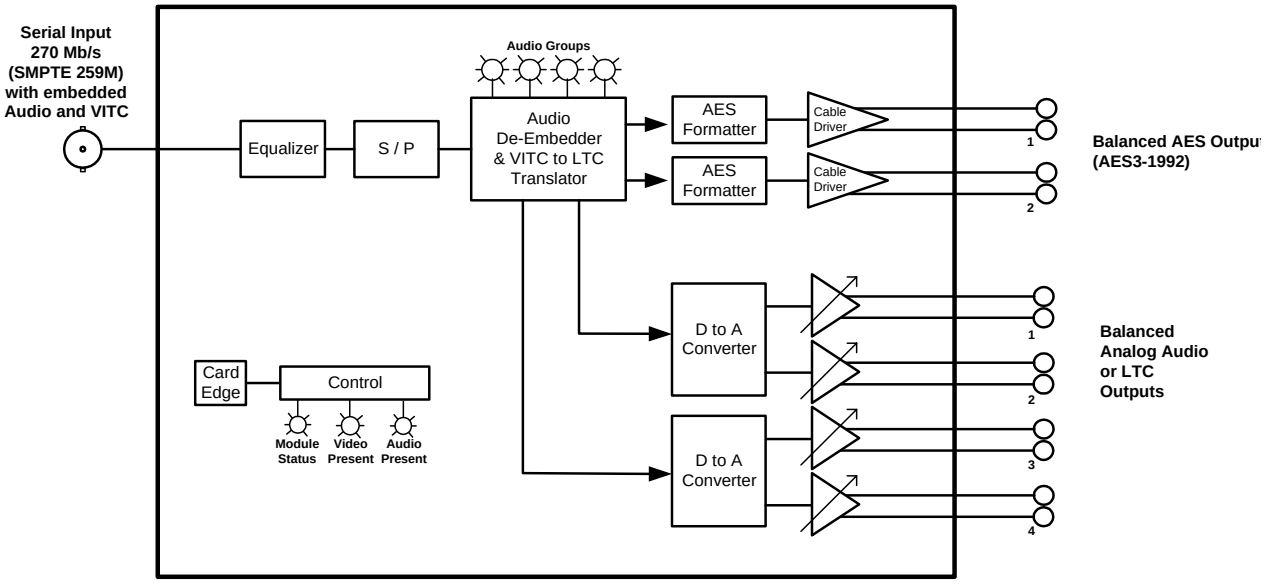


Figure 1-6: 7720AD-B-A4-LTC Block Diagram

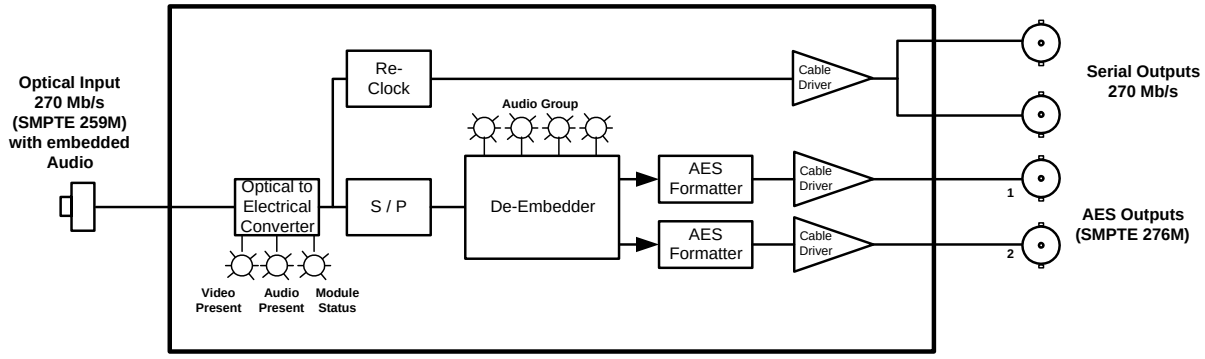


Figure 1-7: 7720AD-OE Block Diagram

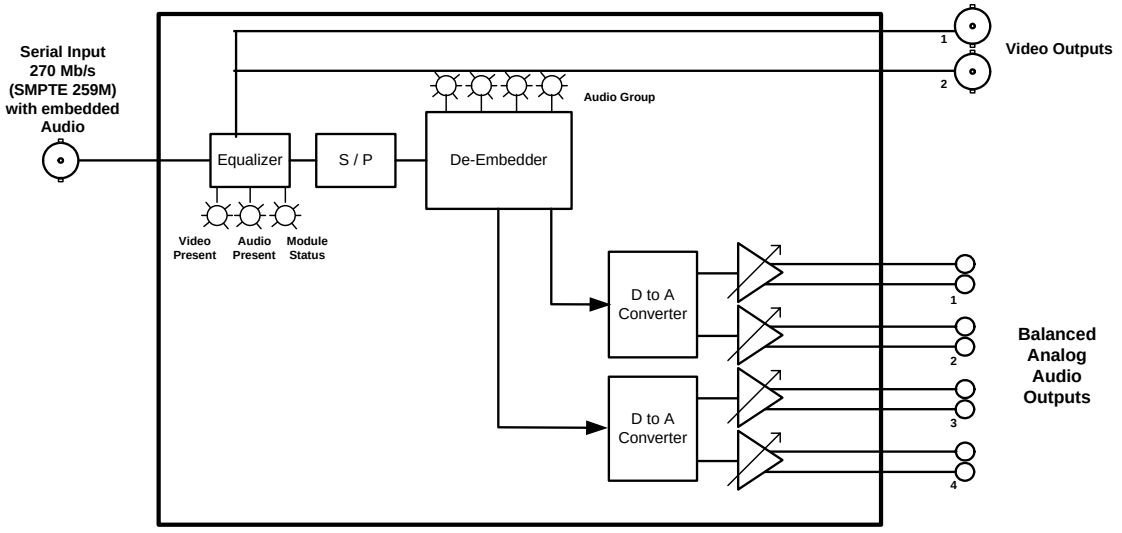


Figure 1-8: 7720AD-A4-2 Block Diagram

2. INSTALLATION

The 7720AD and 7720AD4 modules each come with a companion rear plate that has 5 BNC connectors. The 7720AD-OE comes with a companion rear plate that has 4 BNC connectors and one SC/PC (shown), ST/PC or FC/PC optical connector. The 7720AD-A4 comes with a companion rear plate that has 3 BNC connectors and two 6 pin terminal strips. The 7720AD-A4-2 comes with a companion rear plate that has 3 BNC connectors and one 2x6 pin terminal block connector. For information on mounting the rear plate and inserting the module into the frame see section 3 of the 7700FR chapter.

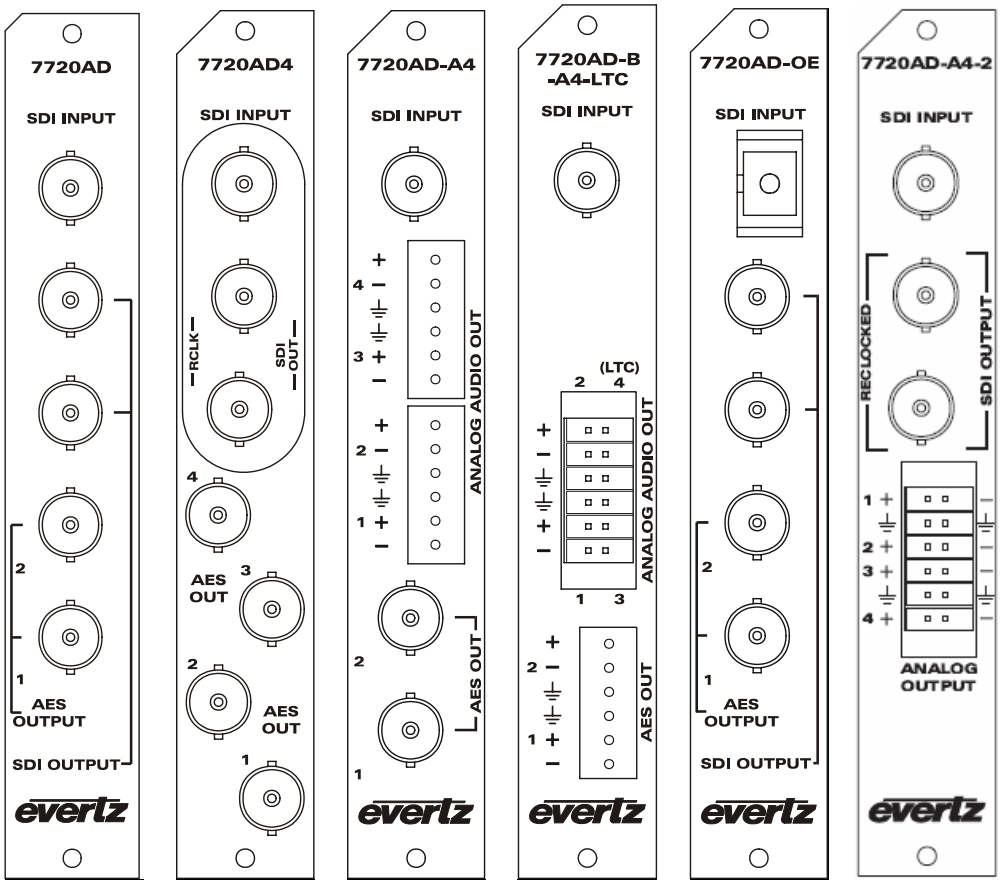


Figure 2-1: 7720AD Rear Panels

2.1. SDI VIDEO CONNECTIONS

SDI INPUT: On 7720AD, 7720AD4, 7720AD-A4 and 7720AD-B-A4-LTC versions there is an input BNC connector is for 10-bit serial digital video signals with embedded audio compatible with the SMPTE 259M standard.

SDI OUTPUT: On the 7720AD, 7720AD-A4-2 and 7720AD-OE there are two BNC connectors with reclocked serial component video outputs, compatible with the SMPTE 259M standard. These outputs contain a reclocked copy of the input video.

On the 7720AD4-B there is one BNC connector with a reclocked serial component video output, compatible with the SMPTE 259M standard. This output contains a reclocked copy of the input video.

2.2. FIBER OPTIC VIDEO CONNECTIONS

On the 7720AD-OE version there is an input SC/PC (shown), ST/PC or FC/PC female connector for optical 10-bit serial digital video signals with embedded audio compatible with the SMPTE 259M standard.

2.3. AES AUDIO CONNECTIONS

All versions except the 7720AD4-B and 7720AD-B-A4-LTC have BNC connectors containing unbalanced AES that has been de-embedded from the SDI video.

The 7720AD4-B and 7720AD-B-A4-LTC have terminal blocks containing balanced AES that has been de-embedded from the SDI video. The output audio cables can be secured into the removable portion of the terminal strips using a small screwdriver. The removable part of the terminal strip is then inserted into the rear panel.

AES OUTPUT 1: AES audio output from channels 1 and 2 of the audio group selected by DIP switches 1 and 2 for de-embedding.

AES OUTPUT 2: AES audio output from channels 3 and 4 of the audio group selected by DIP switches 1 and 2 for de-embedding.

AES OUTPUT 3: (7720AD4 and 7720AD4-B) AES audio output from channels 1 and 2 of the audio group selected by DIP switches 5 and 6 for de-embedding.

AES OUTPUT 4: (7720AD4 and 7720AD4-B) AES audio output from channels 3 and 4 of the audio group selected by DIP switches 5 and 6 for de-embedding.

2.4. ANALOG AUDIO CONNECTIONS (7720AD-A4 and 7720AD-A4-2)

The 7720AD-A4 has two 6 pin terminal blocks containing balanced analog audio that has been de-embedded from the SDI video. The 7720AD-A4-2 has one 2x6 pin terminal connector that outputs the balanced analog audio. The output audio cables can be secured into the removable portion of the terminal strips using a small screwdriver. The removable part of the terminal strip is then inserted into the rear panel.

ANALOG OUTPUT 1 to 4: Analog audio output from channels 1 to 4 of the audio group selected by DIP switches 1 and 2 for de-embedding.

2.5. ANALOG AUDIO AND LTC CONNECTIONS (7720AD-B-A4-LTC)

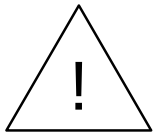
The 7720AD-B-A4-LTC has one 12 pin terminal block containing balanced analog audio that has been de-embedded from the SDI video. The output audio cables can be secured into the removable portion of the terminal strips using a small screwdriver. The removable part of the terminal strip is then inserted into the rear panel.

ANALOG OUTPUT 1 to 4: Analog audio output from channels 1 to 4 of the audio group selected by DIP switches 1 and 2 for de-embedding.

Analog output 4 can also be selected as a LTC output from the D-VITC being read from the SDI video. (See section 5.6)

2.6. CARE AND HANDLING OF OPTICAL FIBER (7720AD-OE Only)

2.6.1. Safety



Never look directly into an optical fiber. Non-reversible damage to the eye can occur in a matter of milliseconds.

The laser modules used in the Evertz fiber optic modules are Class I, with a maximum output power of 2mW, and wavelengths of either 1310 nm or 1470 to 1610 nm.

2.6.2. Handling and Connecting Fibers

Never touch the end face of an optical fiber.

The transmission characteristics of the fiber are dependent on the shape of the optical core and therefore care must be taken to prevent fiber damage due to heavy objects or abrupt fiber bending. Evertz recommends that you maintain a minimum bending radius of 3 cm to avoid fiber-bending loss that will decrease the maximum attainable distance of the fiber cable. The Evertz fiber optic modules come with cable lockout devices, to prevent the user from damaging the fiber by installing a module into a slot in the frame that does not have a suitable I/O module. For further information about care and handling of fiber optic cable see section 3 of the Fiber Optics System Design chapter of this manual.

3. SPECIFICATIONS

3.1. SERIAL VIDEO INPUT (7720AD, 7720AD4, 7720AD-A4-2 7720AD4-B and 7720AD-A4)

Standard: SMPTE 259M C – 525 and 625 component
Connector: 1 BNC per IEC 61169-8 Annex A
Equalization: Automatic 300m @ 270 Mb/s with Belden 8281 or equivalent cable
Return Loss: > 15 dB up to 540 Mb/s

3.2. OPTICAL INPUT (7720AD-OE)

Standard: SMPTE 259M C – 525 and 625 component
Connector: SC/PC, ST/PC or FC/PC female housing
Maximum Input Power: 0 dBm
Wavelength 1270 nm to 1610 nm
Optical Sensitivity: -30 dBm @ 270 Mb/s
Fiber Size: 62 μm core / 125 μm overall

3.3. RE-CLOCKED SERIAL VIDEO OUTPUTS

Number of Outputs: 2 on 7720AD, 7720AD-A4-2 and 7720AD-OE
1 on 7720AD4-B
Standard: same as input
Connectors: 1 BNC per IEC 61169-8 Annex A
Signal Level: 800mV nominal
DC Offset: 0V ±0.5V
Rise and Fall Time: 900ps nominal
Overshoot: <10% of amplitude
Return Loss: > 15 dB up to 270 Mb/s
Wide Band Jitter: < 0.2 UI

3.4. UNBALANCED AES AUDIO OUTPUTS

Number of Outputs: 2 on 7720AD, 7720AD-A4 and 7720AD-OE
4 on 7720AD4
Standards: SMPTE 276M, unbalanced synchronous AES
Connectors: 1 BNC per IEC 61169-8 Annex A
Signal Level: 1V p-p
Sampling Rate: 48 kHz
Impedance: 75 Ohms unbalanced
Dynamic Range: 20-bits

3.5. BALANCED AES AUDIO OUTPUTS (7720AD4-B and 7720AD-B-A4-LTC ONLY)

Number of Outputs:
- **7720AD4-B:** 4
- **7720AD-B-A4-LTC:** 2

Standard: AES3-1992 balanced AES
Connectors:
7720AD4-B four 3 pin removable terminal strips
7720AD-B-A4-LTC 6 pin removable terminal strip
Sampling Rate: 48 kHz
Signal Level: 5V p-p
Impedance: 110 Ohms

3.6. ANALOG AUDIO OUTPUT (7720AD-A4, 7720AD-A4-2 and 7720AD-B-A4-LTC ONLY)

Number of Outputs: 4
Type: Balanced analog audio
Connector:
- **7720AD-A4** two 6 pin removable terminal strips
- **7720AD-B-A4-LTC** 12 pin removable terminal strip

Output Impedance: 66Ω
Signal Level: 0dB FS =>8 to 24dBu into 10 kΩ loads (user settable)
0dB FS =>8 to 22dBu into 600 Ω loads (user settable)
Frequency Response: < ± 0.1dB (20Hz to 20kHz)
THD+N: > 90dB RMS @ 1kHz, with 24dBu output
Crosstalk isolation: > 90dB RMS (20Hz to 20kHz)

3.7. VITC READER (7720AD-B-A4-LTC ONLY)

Standard: SMPTE 12M, SMPTE 266M
Reader Line Range:
- **525 line video:** 10 to 31
- **625 line video:** 6 to 31

3.8. LINEAR TIME CODE OUTPUT (7720AD-B-A4-LTC ONLY)

Standard: SMPTE 12M
Rate:
- **525 line video:** 29.97 Frames per second
- **625 line video:** 25 Frames per second

Number of Outputs: 1 (when VITC reader is enabled)
Type: Balanced
Connector: 4 pins on 12 pin removable terminal strip
Output Impedance: 66Ω balanced
Signal Level: 1.6 volts p-p nominal

3.9. SYSTEM PERFORMANCE

De-embedding Latency:

SDI to AES:	1.35 mSec (7720AD-A4 and 7720AD-B-A4-LTC) 600 μSec all other versions
SDI to Analog:	2.25 mSec

3.10. ELECTRICAL

Voltage:	+ 12VDC
Power:	6 Watts (7720AD, 7720AD4, 7720AD4-B, 7720AD-OE) 12 Watts (7720AD-A4 and 7720AD-B-A4-LTC)
EMI/RFI:	Complies with FCC Part 15, class A and EU EMC directive

3.11. PHYSICAL

350FR:	1
7700FR-C:	1
7800FR:	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 INDICATORS

The location of the status LEDs is shown in Figure 6-1 to Figure 6-3.

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 lost, the selected audio group is missing or has DBN errors, 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.

AUDIO PRESENT: This Green LED will be On if the audio group(s) selected is present and free from DBN errors.

(7720AD4 and 7720AD4-B) This LED will flash if only 1 group is present and *group lock mode* is Off. (See section 5.3)

4.2. AUDIO GROUP STATUS LEDS

Four LEDs located on the lower half (opposite the DIP switch) indicates the presence of the four audio groups as shown below. Audio Group LED 1 is located near the center of the printed circuit board.

Audio Group LED	Color	Audio Group Status
1	Off	Group 1 embedded audio is not present on the video input.
	Green	Group 1 embedded audio is present on the video input.
2	Off	Group 2 embedded audio is not present on the video input.
	Green	Group 2 embedded audio is present on the video input.
3	Off	Group 3 embedded audio is not present on the video input.
	Green	Group 3 embedded audio is present on the video input.
4	Off	Group 4 embedded audio is not present on the video input.
	Green	Group 4 embedded audio is present on the video input.

Table 4-1: Audio Group Status LEDs

On the 7720AD-A4 the audio group LEDs are also used in conjunction with the pushbutton and toggle switch to allow the user to adjust the volume level of each of the 4 analog outputs. See section 5.3 for information on adjusting the analog volume levels.

5. CARD EDGE CONTROLS

At the bottom edge of the module there is an 8 position DIP switch, giving the user control over the de-embedder. The ON position is closest to the PCB. Sections 5.1 and 5.2 show the assigned DIP switch functions. On the 7720AD-A4, 7720AD-A4-2 and 7720AD-B-A4-LTC there is also a toggle switch and pushbutton which are used to set the volume level for the analog outputs.

DIP Switch	Function
1	AES 1 and AES 2 Group Selection
2	
3	AES 1 Channel Swap
4	AES 2 Channel Swap
5	Not used
6	
7	
8	

Table 5-1: DIP Switch Functions (7720AD and 7720AD-OE)

DIP Switch	Function
1	AES 1 and AES 2 Group Selection
2	
3	Not used
4	Not used
5	AES 3 and AES 4 Group Selection
6	
7	VistaLINK® Remote Control Enable
8	AES Group Lock Mode Selection

Table 5-2: DIP Switch Functions (7720AD4 and 7720AD4-B)

DIP Switch	Function
1	AES 1 and AES 2 Group Selection
2	
3	Not used
4	Not used
5	Not used
6	Not used
7	VistaLINK® Remote Control Enable
8	Analog Audio Volume Adjust Enable

Table 5-3: DIP Switch Functions (7720AD-A4 and 7720AD-A4-2)

DIP Switch	Function
1	AES 1 and AES 2 Group Selection
2	
3	VITC Reader Line Select
4	
5	
6	
7	
8	Analog Audio Volume Adjust Enable

Table 5-4: DIP Switch Functions (7720AD-B-A4-LTC)

5.1. SELECTING THE AUDIO GROUP THAT WILL BE DE-EMBEDDED

The SMPTE 272M standard permits up to 4 groups of 4 audio channels to be embedded into the 270 Mb/s video bitstream.

The models 7720AD, 7720AD-A4, 7720AD-A4-2, 7720AD-B-A4-LTC and 7720AD-OE de-embed one group of audio (selected by switches 1 and 2) onto AES outputs 1 and 2. On the 7720AD-A4, when DIP switch 7 is On, the de-embedder group is set using VistaLINK® control. On the 7720AD and 7720AD-OE models switches 3 and 4 select if the channels will be output as they were embedded or if they will be swapped.

The models 7720AD4 and 7720AD4-B will de-embed two groups of audio, the first group (selected by switches 1 and 2) on AES outputs 1 and 2, and the second group (selected by switches 5 and 6) on AES outputs 3 and 4. When DIP switch 7 is On, the de-embedder groups are set using VistaLINK® control. Switch settings are shown in Table 5-5.

DIP 1	DIP 2	Audio Group Output on AES 1 and AES 2 and Analog Audio Outputs
Off	Off	1
Off	On	2
On	Off	3
On	On	4

DIP 5	DIP 6	Audio Group Output on AES 3 and AES 4
Off	Off	1
Off	On	2
On	Off	3
On	On	4

Table 5-5: Audio Group Switch Settings

5.2. SELECTING THE AUDIO CHANNEL SWAP FUNCTIONS (7720AD and 7720AD-OE only)

Switches 3 and 4 select if the channels will be output on AES 1 and 2 as they were embedded or if they will be swapped.

DIP 3	Channel Swap for AES 1
Off	Channels 1 & 2 normal
On	Channels 1 & 2 swapped

DIP 4	Channel Swap for AES 2
Off	Channels 3 & 4 normal
On	Channels 3 & 4 swapped

Table 5-6: Channel Swap Switch Settings

5.3. ENABLING VISTALINK® CONTROL OF THE MODULE

The 7720AD4, 7720AD4-B, 7721AD-A4 and 7720AD-A4-2 can be controlled using the card edge DIP switches or remotely via SNMP (using VistaLINK® PRO or the model 9000NCP Network Control Panel). See section 8 for a full description of the parameters that can be monitored or controlled using VistaLINK®. VistaLINK® control is only available when the card is installed in the 3RU 7700FR-C frame and a 7700FC VistaLINK® Frame Controller card is installed in slot 1 of the frame.

DIP switch 7 is used to enable or disable VistaLINK® control.

DIP 7	CONTROL MODE
Off	Local control mode. The module will be controlled using the DIP switches as described in sections 5.1, 5.4 and 5.5.
On	VistaLINK® control mode. The module will be controlled remotely through SNMP.

Table 5-7: Control Mode Switch Settings

5.4. SELECTING AES LOCKED GROUP MODE (7720AD4 and 7720AD4-B only)

For audio that is synchronous to video there is exactly 8008 audio samples (48kHz sampling rate) in 5 frames of NTSC, 525 line video. Most audio embedders will spread these samples as evenly as possible throughout the 5 frames of video. Because the 8008 samples do not divide evenly into 5 frames of video, there is a sequence that only repeats every 5 frames. In order to transport 8 channels of audio (4 AES pairs) through an embedded link with exactly the same delay on each channel, both the embedder and the de-embedder must lock both groups of audio to this 5 frame sequence. Failing to do so will cause a phase difference between the audio from the two groups.

Switch 8 selects if the 7720AD4 and 7720AD4-B will de-embed the two groups independently or locked together. When DIP switch 7 is On, the locked group selection is set using VistaLINK® control.

DIP 8	Locked Group Selection
Off	Independent groups
On	Locked groups

Table 5-8: Locked Group Switch Settings

In *independent group* mode, the two selected groups will be de-multiplexed independently to each other as if two separate de-multiplexers were used. The output FIFO management will have different reset timing between the two groups creating different output phase relationships on the associated AES channels. Both groups do not necessarily need to be present.

In *locked group* mode, the resetting of the output FIFOs are locked together thus maintaining the phase relationship between all 4 AES channel pairs. Because the two groups are tightly tied together, both audio groups must be present to get any AES audio output.

To maintain a guaranteed audio phase relationship through a complete SDI link, the audio embedder MUST also provide the same locked FIFO management functionality.

5.5. ADJUSTING THE VOLUME LEVEL ON THE ANALOG OUTPUTS (7720AD-B-A4-LTC, 7720AD-A4 and 7720AD-A4-2 ONLY)

The toggle switch and pushbutton on the card edge of the 7720AD-A4, 7720AD-A4-2 and 7720AD-B-A4-LTC are used to adjust the volume control of the analog outputs individually.

On the 7720AD-B-A4-LTC, the level of analog output 4 does not affect the LTC level when the VITC reader is enabled.

When DIP switch 8 is Off, volume level adjustments are disabled to prevent accidental changes. When DIP switch 8 is On the user can adjust the volume of each of the analog audio outputs. On the 7720AD-A4, when DIP switch 7 is On, the volume is set using VistaLINK® control.

The three position, return to center toggle switch is used in conjunction with a momentary pushbutton to adjust the level of the outputs. The Audio Group LEDs, located on the lower end of the module (opposite the DIP switch) are used to indicate when the module is in volume level adjust mode and which output is being adjusted. When one of the LED's is flashing this indicates that you are adjusting the level of the respective channel as shown in Table 5-9.

Audio Group LED	Color	Audio Group Status
1	Flashing	Analog Output 1 level can be adjusted with toggle switch.
2	Flashing	Analog Output 2 level can be adjusted with toggle switch.
3	Flashing	Analog Output 3 level can be adjusted with toggle switch.
4	Flashing	Analog Output 4 level can be adjusted with toggle switch.

Table 5-9: Analog Audio Level Adjustment LEDs

To enter the volume control mode, press the pushbutton. The Output 1 Volume level adjust LED will start flashing, indicating that the toggle switch can be used to adjust the volume level of analog output 1.

Pressing the toggle switch up will increase the volume level and pressing the toggle switch down will decrease the volume level.

Continue adjusting the volume level of the other outputs by pressing the pushbutton to select the desired output and then using the toggle switch to adjust the level. Pressing the pushbutton a fourth time will exit the volume adjust mode. None of the LEDs will be flashing. You can lock the volume levels by turning off DIP switch 8. If you stop pressing the pushbutton or toggle switch for more than 30 seconds, the module will exit the volume adjust mode.

5.6. SETTING THE VITC READER LINE NUMBER (7720AD-B-A4-LTC ONLY)

On the 7720AD-B-A4-LTC switches 3 to 7 are used to select the line that the VITC reader will recover vertical interval time code from. When switches 3 to 7 are set to a valid line as shown in Table 5-10 the VITC reader will be enabled for reading on the selected line and analog audio output 4 will be used to output LTC that is slaved to the decoded VITC. When switches 3 to 7 are all Off the VITC reader will be disabled and analog audio output 4 will be used to output the audio from channel 4.

Dip Switch					Line Selected	
3	**4**	**5**	**6**	**7**	**525 Video**	**625 Video**
Off	Off	Off	Off	Off	Disabled	Disabled
Off	On	On	Off	Off	Disabled	6
On	On	On	Off	Off	Disabled	7
Off	Off	Off	On	Off	Disabled	8
On	Off	Off	On	Off	Disabled	9
Off	On	Off	On	Off	10	10
On	On	Off	On	Off	11	11
Off	Off	On	On	Off	12	12
On	Off	On	On	Off	13	13
Off	On	On	On	Off	14	14
On	On	On	On	Off	15	15
Off	Off	Off	Off	On	16	16
On	Off	Off	Off	On	17	17
Off	On	Off	Off	On	18	18
On	On	Off	Off	On	19	19
Off	Off	On	Off	On	20	20
On	Off	On	Off	On	21	21
Off	On	On	Off	On	22	22
On	On	On	Off	On	23	23
Off	Off	Off	On	On	24	24
On	Off	Off	On	On	25	25
Off	On	Off	On	On	26	26
On	On	Off	On	On	27	27
Off	Off	On	On	On	28	28
On	Off	On	On	On	29	29
Off	On	On	On	On	30	30
On	On	On	On	On	31	31

Table 5-10: VITC Reader Line Select Switch Settings

6. JUMPERS

The 7720AD-OE and early versions of the 7720AD were built using the 7700PB base board (see Figure 6-1 and Figure 6-2). Later versions of the 7720AD and all other versions were built using the 7700PB3 base board (See Figure 6-3).

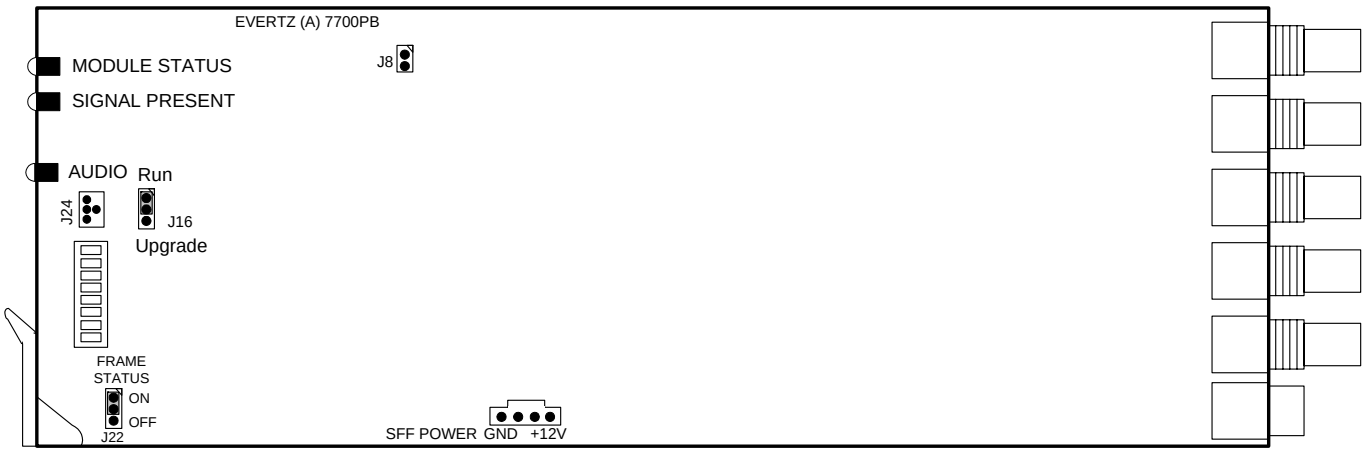


Figure 6-1: Location of Jumpers on 7700PB Based Versions of 7720AD

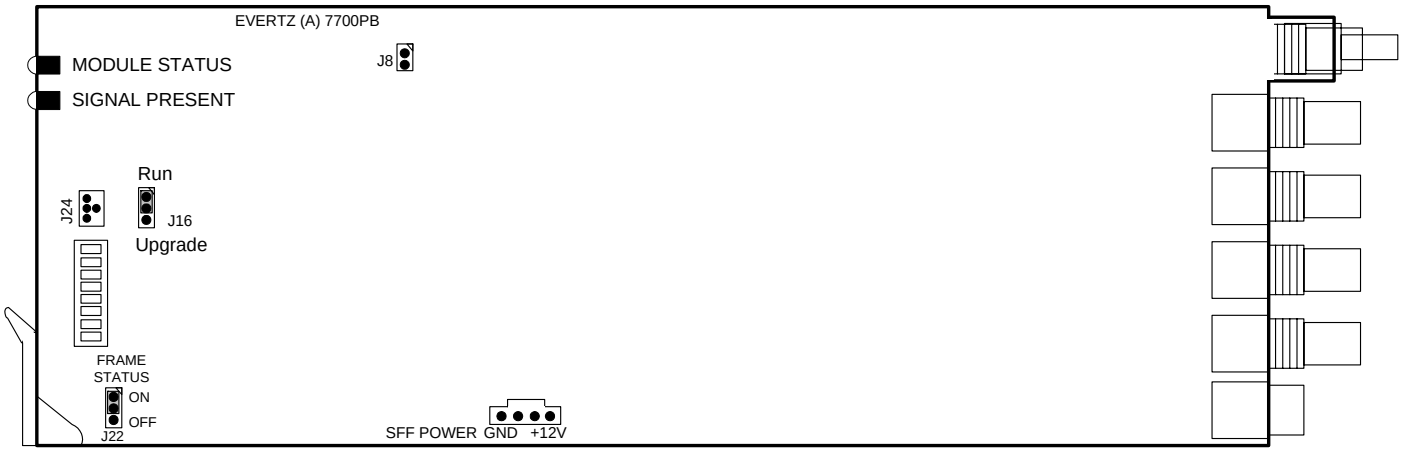


Figure 6-2: Location of Jumpers on 7720AD-OE

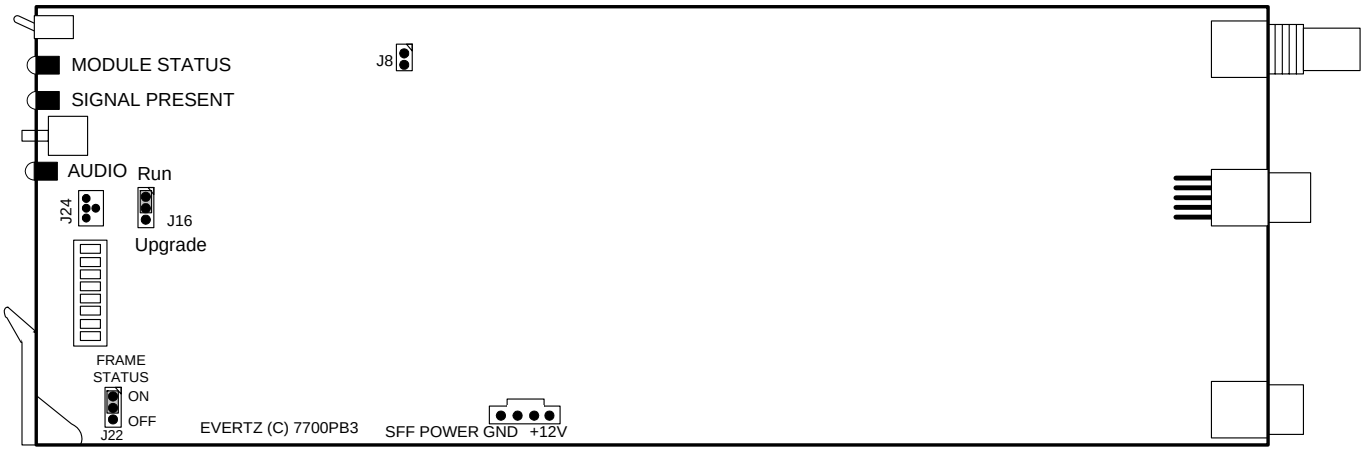


Figure 6-3: Location of Jumpers on 7700PB3 Based Versions

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

FRAME STATUS: The FRAME STATUS jumper J22, located at the front of the 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 Power Supply 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. On Rev 1 versions of this board the upgrade jumper is located in another location. See the *Upgrading Firmware* chapter in the front of the manual binder for more information.

To upgrade the firmware in the module unit pull it out of the frame. Move Jumper J16 into the *UPGRADE* position. Install the Upgrade cable provided (located in the vinyl pouch in the front of the manual binder) onto header J24 at the card edge. Re-install the module into the frame. Run the upgrade as described in the *Upgrading Firmware* chapter in the front of the manual binder. Once the upgrade is complete, remove the module from the frame, move J16 into the *RUN* position, remove the upgrade cable and re-install the module. The module is now ready for normal operation.

7. SOFTWARE CONTROL

7.1. STATUS MONITORING

The audio de-embedder status messages can be monitored using the RS232 upgrade cable on the card edge. The serial port settings are 57600 baud, 8 bits, no parity. The status messages are output on power up and each time one of the DIP switches is changed.

8. VISTALINK® REMOTE MONITORING/CONTROL

8.1. What is VistaLINK®?

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

There are 3 components of SNMP:

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

2. Managed devices (such as 7720AD4), 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 and which both the Manager and Agent understand. Please contact Evertz for further information about obtaining a copy of the MIB for interfacing to a third party Manager/NMS.

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

8.2. VistaLINK® MONITORED PARAMETERS

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

Parameter	Description
Local/Remote Mode	Indicates whether the module is in Local or Remote (*Vista*LINK®) control mode.
Card Type	Indicates module type (7720AD4, 7720AD4-B or 7720AD-A4)
Input Video Present	Indicates the presence of a valid video input signal. (the state of the VIDEO PRESENT LED)
Audio Group 1 Present	Indicates the presence of Audio Group 1 (the state of the Group 1 LED)
Audio Group 2 Present	Indicates the presence of Audio Group 2 (the state of the Group 1 LED)
Audio Group 3 Present	Indicates the presence of Audio Group 3 (the state of the Group 1 LED)
Audio Group 4 Present	Indicates the presence of Audio Group 4 (the state of the Group 1 LED)

Table 8-1: VistaLINK® Monitored Parameters

8.3. VistaLINK® CONTROLLED PARAMETERS

Parameter	Description
AES Group Lock Mode	Sets if module will de-embed two groups independently or in group lock mode. ((7720AD4 and 7720AD4-B only).
Audio De-Embedder 1 Group	Sets group for de-embedder 1 (AES 1 and AES 2 Outputs)
Audio De-Embedder 2 Group	Sets group for de-embedder 2 (AES 3 and AES 4 Outputs)
Audio Channel 1 Volume Control	Sets volume for analog channel 1 output (7720AD-A4 only)
Audio Channel 2 Volume Control	Sets volume for analog channel 2 output (7720AD-A4 only)
Audio Channel 3 Volume Control	Sets volume for analog channel 3 output (7720AD-A4 only)
Audio Channel 4 Volume Control	Sets volume for analog channel 4 output (7720AD-A4 only)

Table 8-2: VistaLINK® Controlled Parameters

8.4. VistaLINK® TRAPS

Trap	Description
Video Not Present	Triggers when video is missing
Group 1 Not Present	Triggers when group 1 audio is missing
Group 2 Not Present	Triggers when group 2 audio is missing
Group 3 Not Present	Triggers when group 3 audio is missing
Group 4 Not Present	Triggers when group 4 audio is missing

Table 8-3: VistaLINK® Traps

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