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## REVISION HISTORY

<u>REVISION</u>	<u>DESCRIPTION</u>	<u>DATE</u>
1.0	Preliminary Version	Sep 01
1.1	First Release	Oct 01
1.2	Rear panel changed, added specs for –M version, general cleanup	Feb 02
1.3	Jumper numbers updated	Mar 02
1.4	Updated Figure 3 – Location of Jumpers	Apr 02
1.5	Support for separate monitoring of AES1 and AES2	Jun 02
2.0	Added VAT-A4	Sep 02
2.1	Added 8 new CWDM wavelengths, added factory reset menu	Dec 02
2.2	Added 7707VAT-U	Jul 05
2.3	Added tables to section 4. Updated VistaLINK section. General cleanup.	Feb 09

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Although every attempt has been made to accurately describe the features, installation and operation of this product in this manual, no warranty is granted nor liability assumed in relation to any errors or omissions unless specifically undertaken in the Evertz sales contract or order confirmation. Information contained in this manual is periodically updated and changes will be incorporated into subsequent editions. If you encounter an error, please notify Evertz Customer Service department. Evertz reserves the right, without notice or liability, to make changes in equipment design or specifications.

## WARNING



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



Do not hook up the 7707VAT DWDM cards and 7707VAR cards directly with a short fiber optic cable. The 7707VAT DWDM card produces +7dBm of power which will damage the receiver if connected directly.

## 1. OVERVIEW

The 7707VAT series modules are VistaLINK® -enabled fiber transmitters for SDI Video and Audio. The single slot 7707VAT series module is available in three versions. The module accepts one SDI Video plus two AES (model 7707VAT and 7707VAT-U) or four analog (model 7707VAT-A4) Audio signals, combines them using Time Domain Multiplex (TDM) technology and transmits them over a single fiber. The companion 7707VAR, 7707VAR-U and 7707VAR-A4 modules demultiplex the signals and convert them back to separate SDI video and AES or analog audio feeds. Throughout this manual references to the 7707VAT series include the 7707VAT-U and 7707VAT-A4 unless specifically noted otherwise.

The 7707VAT and companion 7707VAR series modules will transparently pass incoming SDI video feeds with embedded AES audio or any other data in the horizontal or vertical ancillary data space. Minimal audio to video latency over the transport interface is also achieved.

The fiber output is available in an assortment of optical wavelengths, accommodating standard, or CWDM transmission schemes. For the sake of simplicity only the wavelengths for the 7707CVT are shown.

<b>7707VAT13</b>	1310 nm FP	-7dBm output, suitable for distances up to 50 Km
<b>7707VAT13-M</b>	1310 nm FP	0dBm output, suitable for distances up to 75 Km
<b>7707VAT15</b>	1550 nm DFB	0dBm output, suitable for distances up to 75 Km

There are several versions with built in isolators specifically suited to coarse wave division multiplexing (CWDM) applications. These versions all have 0dBm output and are suitable for distances up to 75 Km.

<b>7707VAT27</b>	1270 nm DFB
<b>7707VAT29</b>	1290 nm DFB
<b>7707VAT31</b>	1310 nm DFB
<b>7707VAT33</b>	1330 nm DFB
<b>7707VAT35</b>	1350 nm DFB
<b>7707VAT37</b>	1370 nm DFB
<b>7707VAT43</b>	1430 nm DFB
<b>7707VAT45</b>	1450 nm DFB
<b>7707VAT47</b>	1470 nm DFB
<b>7707VAT49</b>	1490 nm DFB
<b>7707VAT51</b>	1510 nm DFB
<b>7707VAT53</b>	1530 nm DFB
<b>7707VAT55</b>	1550 nm DFB
<b>7707VAT57</b>	1570 nm DFB
<b>7707VAT59</b>	1590 nm DFB
<b>7707VAT61</b>	1610 nm DFB

There are several versions with built in isolators specifically suited to dense wave division multiplexing (DWDM) applications. The DWDM versions are suitable for distances >120 km @ 270 Mb/s (for DWDM applications contact factory).

<b>7707VATDyyy</b>	DWDM DFB laser output, yyy – ITU channel number
--------------------	---

The 7707VAT series modules occupy one card slot and can be housed in either a 1RU frame, which will hold up to three modules, or a 3 RU frame, which will hold up to 15 modules.

**Features:**

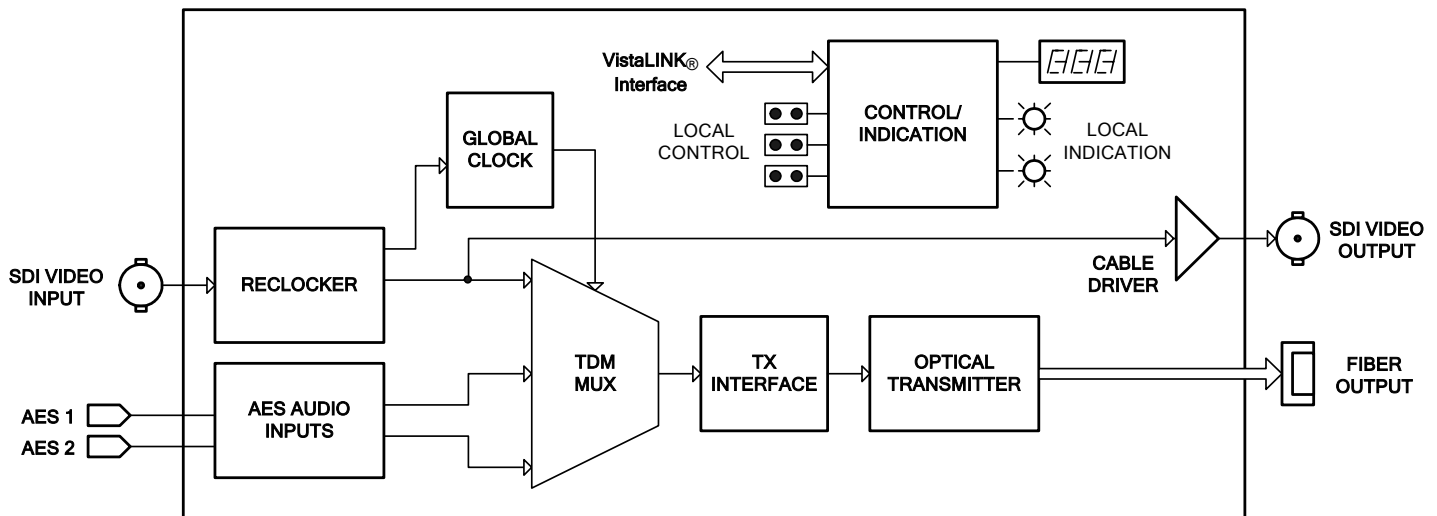
- Single card multiplexer for SDI Video and 2 AES Audio (7707VAT and 7707VAT-U) or 4 analog audio (7707VAT-A4)
- Supports 270Mb/s on 525 or 625 line 4:2:2 component SDI or SDTi (SMPTE 305M) video signals
- Reclocked SDI output for additional signal distribution or monitoring
- Signal transport over fiber is uninterrupted by loss of input SDI or audio feeds
- Low audio to video latency over transport interface
- Comprehensive signal and status monitoring via four-digit card-edge display, or through SNMP and VistaLINK<sup>®</sup> enabled capability
- Local display of input SDI signal strength, video format, and EDH errors.
- Automatic coaxial input equalization to 300m at 270Mb/s (Belden 1694)
- Optional support for DVB-ASI signals
- Fully Hot-swappable from front of frame with no fiber disconnect/reconnect required
- Supports Single-mode and Multi-mode fiber optic cable
- The 7707VAR-U has unbalanced audio connections

**Features: (model 7707VAT and 7707VAT-U)**

- Supports 32, 44.1, 48 KHz AES audio inputs
- AES audio inputs can be synchronous or asynchronous to each other and/or to the input video
- Dolby E compatible

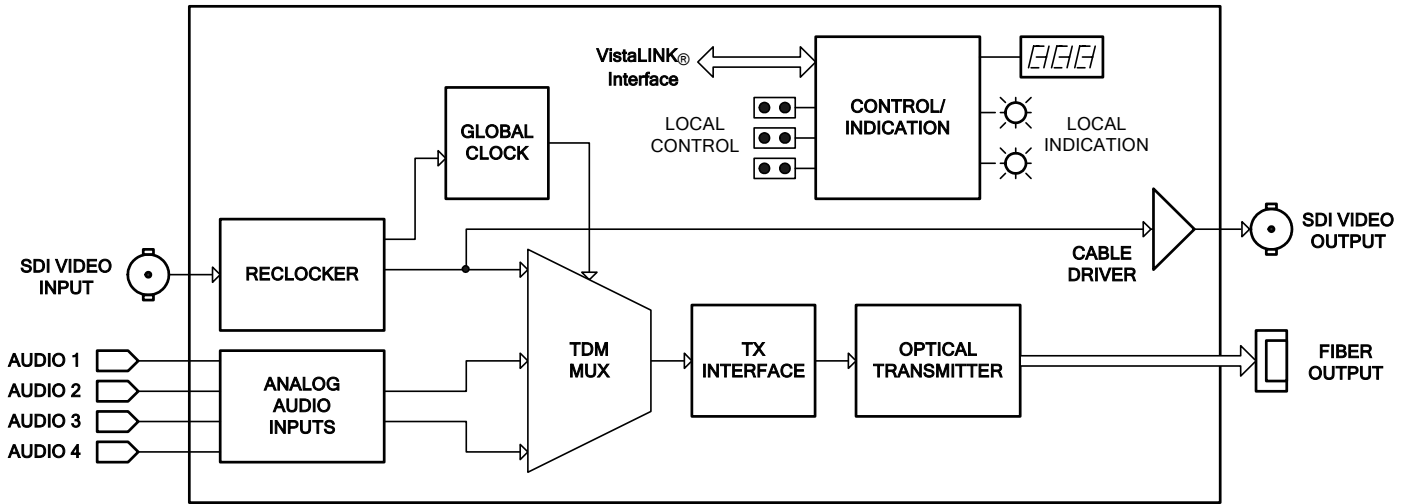
**Features: (model 7707VAT-A4 only)**

- Broadcast quality analog audio performance



**Figure 1-1: 7707VAT and 7707VAT-U Block Diagram**





**Figure 1-2: 7707VAT-A4 Block Diagram**

## 2. INSTALLATION

The 7707VAT and 7707VAT-A4 modules come with a companion rear plate that has two BNC connectors, one terminal header with removable terminal block and one SC/PC, SC/PC with cover (shown), ST/PC or FC/PC optical connector. The 7707VAT-U modules come with a companion rear plate that has four BNC connectors and one SC/PC, SC/PC with cover (shown), ST/PC or FC/PC optical connector. For information on mounting the rear plate and inserting the module into the frame see the 7700FR chapter section 3.

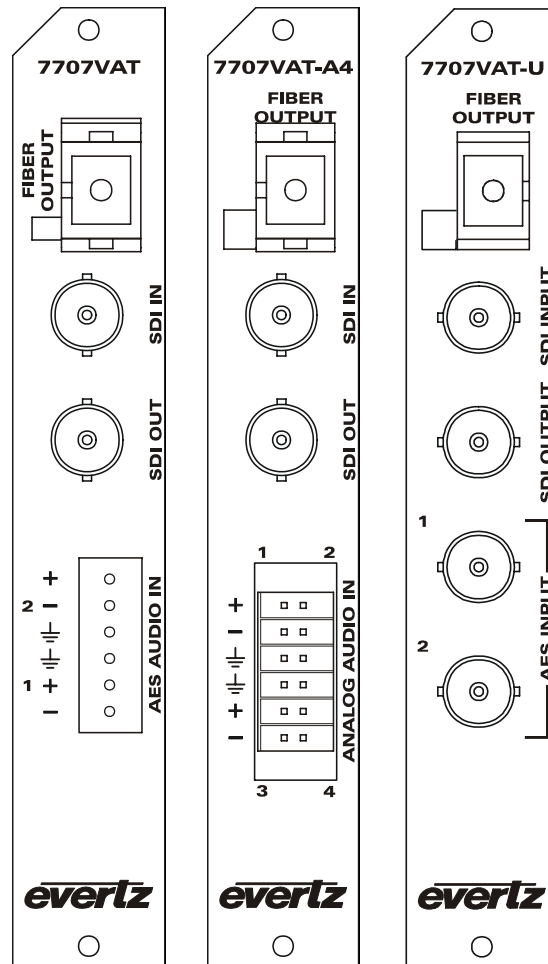


Figure 2-1: 7707VAT Series Rear Panels

### 2.1. VIDEO SIGNAL CONNECTIONS

**SDI IN:** Input BNC connector for 10-bit serial digital video signals compatible with the SMPTE 259M, or SMPTE 305M standards. Optional support for DVB-ASI signals. This input provides adaptive equalization compensation for up to 300m of industry standard Belden 1694 cable, at 270Mb/s.

**SDI OUT:** Output BNC connector for relocked serial digital component video signal, compatible with the SMPTE 259M, or SMPTE 305M standards. Optional support for DVB-ASI signals.

## **2.2. AES AUDIO CONNECTIONS (MODEL 7707VAT)**

**AES AUDIO IN:** Balanced or unbalanced AES audio inputs for channel 1&2 (AES 1) and 3&4 (AES 2) of an audio group. Each input (+, -, GND) is on three of six pins on six pin terminal header. AES inputs can be synchronous or asynchronous to each other and/or input SDI video.

For Balanced AES signals connect the + and – signals to the respective input pins. The AES TERM Jumpers J26 and J27 must be set to the *110* position for proper termination of the balanced AES inputs. The AES LEVEL jumpers J24 and J25 are normally set to the *HI* position for balanced AES signal levels of 2 to 7 volts. For signal levels below 2 volts, move the AES LEVEL jumpers to the *LO* position. (See section 7.4 and 7.5)

Unbalanced AES signals should be connected to the AES+ input pins with the ground connected to the AES- input pin. The AES TERM Jumpers J26 and J27 must be set to the *75* position for proper termination of the unbalanced AES inputs. The AES LEVEL jumpers J24 and J25 do not have any effect when the TERM jumpers are in the *75* position. (See section 7.4 and 7.5)

## **2.3. AES AUDIO CONNECTIONS (MODEL 7707VAT-U)**

**AES AUDIO IN:** Unbalanced AES audio inputs for channel 1&2 (AES 1) and 3&4 (AES 2) of an audio group are available on two BNC connectors. AES inputs can be synchronous or asynchronous to each other and/or input SDI video. The AES inputs on the card should be configured at the factory for use with unbalanced outputs. (See section 7.4)

## **2.4. ANALOG AUDIO CONNECTIONS (MODEL 7707VAT-A4)**

**ANALOG AUDIO IN:** Balanced analog audio inputs for 4 channels. Each input (+, -, GND) is on three of twelve pins on twelve pin terminal header.

## **2.5. OPTICAL SIGNAL CONNECTIONS**

**OPTICAL OUTPUT:** Output SC/PC, SC/PC with cover (shown), ST/PC or FC/PC female connector. This output contains the input SDI video signal combined with the AES audio present at the AES1 and AES2 inputs. Any ancillary data (e.g. embedded audio, closed captioning, etc) present in the input SDI video stream prior to multiplexing, is transparently passed through to the output. This optical output is available in 1310nm, 1550nm, up to sixteen CWDM wavelengths (ITU-T G.694.2 compliant) and up to 40 DWDM wavelengths in the 1530nm to 1560nm range.(ITU-T G.694.1 compliant). The output wavelength is marked on the rear panel of each module. When connected directly to a companion module, the output is compatible with multi-mode fiber optic cable. If not connected directly (i.e. connected through CWDM, DWDM, WDM, or splitter/combiner) the output is compatible only with single-mode fiber optic cable.



Do not hook up the 7707VAT DWDM cards and 7707VAR cards directly with a short fiber optic cable. The 7707VAT DWDM card produces +7dBm of power which will damage the receiver if connected directly.

## 2.6. CARE AND HANDLING OF OPTICAL FIBER

### 2.6.1. Safety



Background colour: yellow  
Triangular band: black  
Symbol: black

**CLASS 1 LASER PRODUCT**

### 2.6.2. Assembly

Assembly or repair of the laser sub-module is done only at Evertz facility and performed only by qualified Evertz technical personnel.

### 2.6.3. Labeling

Certification and Identification labels are combined into one label. As there is not enough room on the product to place the label it is reproduced here in the manuals.

- There is no date of manufacture on this label as it can be traced by bar code label placed on the Printed circuit board of each Evertz plug-in module
- The Model number is one of: 7707VAT13, 7707VAT13-U, 7707VAT13-A4, 7707VAT13M, 7707VAT13M-U, 7707VAT13M-A4, 7707VAT15, 7707VAT15-U, 7707VAT15-A4, 7707VATxx, 7707VATxx-U, 7707VATxx-A4, (xx = 27, 29, 31, 33, 35, 37, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61) 7707VATDyyy, 7707VATDyyy-U, 7707VATDyyy-A4, (Dyyy represents ITU Grid Channel: D200, D210, D220, D230, D240, D250, D260, D270, D280, D290, D300, D310, D320, D330, D340, D350, D360, D370, D380, D390, D400, D410, D420, D430, D440, D450, D460, D470, D480, D490, D500, D510, D520, D530, D540, D550, D570, D580, D590, D600)



### 3. SPECIFICATIONS

#### 3.1. SERIAL VIDEO INPUT

**Standards:** SMPTE 259M-C, 525 or 625 line component, SMPTE 305M SDTi.  
**Connector:** 1 BNC input per IEC 61169-8 Annex A  
**Equalization:** Automatic to 300m @ 270 Mb/s with Belden 1694 or equivalent cable  
**Return Loss:** > 15 dB up to 270 Mb/s

#### 3.2. SERIAL VIDEO OUTPUT

**Number of Outputs:** 1 Per Card reclocked  
**Connector:** BNC per IEC 61169-8 Annex A  
**Signal Level:** 800mV nominal  
**DC Offset:** 0V  $\pm$ 0.5V  
**Rise and Fall Time:** 900ps nominal  
**Overshoot:** <10% of amplitude  
**Return Loss:** > 15dB at 270 Mb/s  
**High Freq. Jitter:** < 0.15UI

#### 3.3. AES AUDIO INPUTS (MODEL 7707VAT AND 7707VAT-U)

**Number of Inputs:** 2  
**Standard:** Jumper selectable for balanced or unbalanced input  
**Unbalanced AES:** SMPTE 276M,  
**Balanced AES:** AES3-1992  
**Connector:**  
**7707VAT-U:** BNC per IEC 61169-8 Annex A  
**7707VAT:** 6 pin removable terminal strip  
**Signal Level:**  
**Unbalanced:** 1V p-p  $\pm$ 0.1V  
**Balanced:** 2 to 7Vp-p with Level Jumper set to HI,  
1 to 2V p-p with level jumper set to LO  
**Equalization:**  
**Balanced:** 500m @ 48kHz with Belden 1800B or equivalent cable  
**Unbalanced:** 2200m @ 48kHz with Belden 8281 or equivalent cable  
**Resolution:** up to 24 bits  
**Sampling Rate:** 32, 44.1, 48 kHz  
**Intrinsic Jitter:** < 20ns  
**Impedance:**  
**Unbalanced:** 75  $\Omega$   
**Balanced:** 110  $\Omega$

### 3.4. ANALOG AUDIO INPUTS (MODEL 7707VAT-A4 ONLY)

<b>Number of Inputs:</b>	4
<b>Type:</b>	Balanced analog audio
<b>Connector:</b>	12 pin removal terminal block
<b>Input impedance:</b>	High Impedance (>20 KOhm)
<b>Freq. Response:</b>	+/-0.1 dB, 20Hz to 20 kHz
<b>THD 20Hz–20Khz:</b>	< 0.005%
<b>Channel Phase Diff.:</b>	+/- 1 deg
<b>SNR (weighted):</b>	> 85 dB
<b>Max. Audio Input Level:</b>	+24 dBu
<b>Signal Quantization:</b>	24 Bits

### 3.5. OPTICAL OUTPUT

<b>Number:</b>	1
<b>Connector:</b>	Female SC/PC, SC/PC with cover, ST/PC or FC/PC
<b>Return Loss:</b>	> 14 dB
<b>Rise and Fall Time:</b>	200ps nominal
<b>Wavelengths:</b>	
<b>Standard:</b>	1310nm, 1550nm (nominal)
<b>CWDM:</b>	1270nm to 1610nm (ITU-T G.694.2 compliant)
<b>DWDM:</b>	ITU channel 20 to 60, 100GHz spacing, (ITU-T G.694.1 compliant)
<b>Output Power:</b>	
<b>1310nm FP (Standard)</b>	-7dBm ± 1dBm
<b>1310nm FP (M Version)</b>	0dBm ± 1dBm
<b>1550nm &amp; CWDM DFB</b>	0dBm ± 1dBm
<b>DWDM DFB</b>	+7dBm ± 1dB
<b>Fiber Size:</b>	9 μm core / 125 μm overall

### 3.6. SYSTEM PERFORMANCE

<b>Video Input to Output Delay:</b>	< 1.5μs
<b>Audio to Video delay:</b>	< 1μs with SoftSwitch™ disabled on 7707VAR < 2ms with SoftSwitch™ enabled on 7707VAR

### 3.7. ELECTRICAL

<b>Voltage:</b>	+12VDC
<b>Power:</b>	10 Watts

### 3.8. COMPLIANCE

<b>Electrical Safety:</b>	CSA Listed to CSA C22.2 No. 60065-03, UL 60065-03 IEC 60065-(2001-12) 7th Edition Complies with CE Low voltage Directive 93/68/EEC
<b>Laser Safety:</b>	Complies with 24 CFR 1040.10 and 1040.11 except for deviations pursuant to LN No. 50, dated July 26, 2001 Complies with IEC 60825-1, Am. 2

**EMI/RFI:** Complies with FCC regulations for class A devices  
Complies with EU EMC directive

### **3.9. PHYSICAL**

**7700 or 7701 frame mounting:**  
**Number of slots: 1**



## 4. STATUS INDICATORS AND DISPLAYS

The 7707VAT series modules have 5 LED Status indicators and a 4 digit alphanumeric display on the front card edge to show operational status of the card at a glance. The card edge pushbutton is used to select various displays on the alphanumeric display. Figure 7-1 and Figure 7-2 show the location of the LEDs and card edge controls.

### 4.1. STATUS INDICATOR LEDs

Two large LEDs on the front of the board indicate the general health of the module

**LOCAL FAULT:** This Red LED indicates poor module health and will be On if a laser fault exists, or if a local input power fault exists (i.e.: a blown fuse). The LOCAL FAULT indication can also be reported to the frame through the FRAME STATUS jumper.

**MODULE OK:** This Green LED indicates good module health. It will be On when the laser and board power are good.

On the 7707VAT and 7707VAT-U there are three small LEDs on the back of the board that indicate the presence of video and audio signals.

**VIDEO PRESENT:** This Green LED indicates the presence of a valid input video signal.

**AES1 PRESENT:** This Green LED indicates the presence of a valid AES1 signal.

**AES2 PRESENT:** This Green LED indicates the presence of a valid AES2 signal.

On the 7707VAT-A4 there are four small LEDs on the back side of the board that indicate the presence of audio signals above the detection level (see section 5.3.1 for information about configuring the audio detection).

**AUDIO 1 PRESENT:** This Green LED indicates the presence of a valid signal on the Audio 1 input.

**AUDIO 2 PRESENT:** This Green LED indicates the presence of a valid signal on the Audio 2 input.

**AUDIO 3 PRESENT:** This Green LED indicates the presence of a valid signal on the Audio 3 input.

**AUDIO 4 PRESENT:** This Green LED indicates the presence of a valid signal on the Audio 4 input.

### 4.2. DOT-MATRIX DISPLAY

#### 4.2.1. Using the Dot Matrix Display - Model 7707VAT and 7707VAT-U

Additional signal and status monitoring is provided via the 4-digit dot-matrix display located on the card edge. The card edge toggle switch is used to select which data is being displayed in the alphanumeric display. Each time the toggle switch is pressed up/down, the display advances to the next/previous display. A message indicating what display mode is active is shown for one second. After one second without the toggle switch being pressed, the selected display data is shown. The card edge pushbutton is used to select sub-items where applicable.

The following display messages on the 7707VAT indicate what is being displayed. The details of each of the displays are described in the sections 4.2.4 to 4.2.8.

- EQ:** Input equalization strength.
- VSTD:** Video standard in use.
- A1S:** AES clock rate in use on AES1.
- A2S:** AES clock rate in use on AES2.
- DISP:** Set orientation of text in the card edge display.
- S/W:** Display firmware version.

#### **4.2.2. Using the Dot Matrix Display – Model 7707VAT-A4**

Additional signal and status monitoring and control over the card's parameters is provided via the 4-digit alphanumeric display located on the card edge. The card edge toggle switch is used to select whether you are displaying status from the card (monitoring mode) or setting control parameters for the card (control mode). To select one of the display modes, press the pushbutton one or more times to exit the current display mode and return to the mode select display (The display will show **MON** or **SET**). Press the toggle switch to select monitor mode (**MON**) or control mode (**SET**). Once you have selected the desired mode press the pushbutton to enter that mode. For information about setting up the module in control mode see section 5.

When you are in monitor mode, the toggle switch determines what data is being displayed on the alphanumeric display. Each time the toggle switch is pressed up/down, the display advances to the next/previous display. A message indicating what display mode is active is shown for one second. After one second without the toggle switch being pressed, the selected display data is shown. The card edge pushbutton is used to return to the mode select menu item. The following display messages indicate what is being displayed.

The following display messages on the 7707VAT-A4 indicate what is being displayed. The details of the each of the displays are described in the sections 4.2.3 to 4.2.5.

- AJCK:** Set Headphone Jack Audio Channel.
- EQ:** input equalization strength.
- VSTD:** Video standard in use.

#### **4.2.3. Setting the Headphone Jack Channel (7707VAT-A4 only)**

On the 7707VAT-A4 the **AJCK** display allows you to set a whether audio channels 1/2 or 3/4 will be monitored on the card edge headphone jack. After one second the display will show a message indicating the current audio channel being monitored at the headphone jack. When this message is showing, press the pushbutton to change the audio channel being monitored.

<b>AJCK</b>	<b>A1 / 2</b>	Audio channels 1 and 2 will be monitored at the headphone jack.
A1/2	<b>A3 / 4</b>	Audio channels 3 and 4 will be monitored at the headphone jack.
A3/4		

#### 4.2.4. Displaying the Equalization Strength

To display the Equalization strength, press the toggle switch one or more times until the EQ message is shown on the display. After one second the applied equalization strength will be shown represented as a percentage of the maximum equalizer capability. (100% is equivalent to 300m of Belden 1694 cable)

EQ	0% to 100%	Indicates applied equalization.
0% to 100%	LOS:	Indicates that no valid input signal is present.
LOS		

#### 4.2.5. Displaying the Video Standard

The 7707VAT series modules detect the Video standard of the input signal and display this on the four-digit card edge display. The following list describes possible displays and their meaning.

VSTD	<b>N270:</b>	SMPTE 259M-C, 270 Mb/s 4:2:2 Component 525 line
N270	<b>P270:</b>	SMPTE 259M-C, 270 Mb/s 4:2:2 Component 625 line
P270	<b>LSV:</b>	Indicates that no valid video signal is present on the input. This message overrides the normal video standard message.
LSV	<b>EDH:</b>	Indicates that there is an EDH error. This message overrides the normal video standard message.
EDH		

On the 7707VAT or 7707VAT-U, when you are displaying one of the Video Standard messages, pressing and holding the pushbutton for 3 seconds will turn off the card edge EDH error indication. The display will show **EDH↓** momentarily to indicate that EDH local reporting has been turned off and then the normal video standard message will be displayed. This does not affect the monitoring of EDH errors and reporting through SNMP over the VistaLink® interface. Pressing and holding the pushbutton for 3 seconds will turn on the card edge EDH error indication. The display will show **EDH↑** momentarily to indicate that EDH local reporting has been turned on.

On the 7707VAT-A4, the *EDH* menu item is used to turn off the card edge EDH error indication. See section 5.5.

#### 4.2.6. Displaying the Audio Sample Rate (7707VAT and 7707VAT-U only)

The 7707VAT and 7707VAT-U detect the Audio sample rate of the audio on the AES inputs and displays this on the four-digit card edge display. For brevity sake, only AS1 will be discussed in the manual.

A1S	<b>32K</b>	AES Audio with 32 kHz sample rate is being received and output
LSA2	<b>44K</b>	AES Audio with 44.1 kHz sample rate is being received and output
32K	<b>48K</b>	AES Audio with 48 kHz sample rate is being received and output
44K	<b>LSA1</b>	Indicates that no valid AES1 signal is being received. This message overrides the normal audio sample rate message.
48K	<b>LSA2</b>	Indicates that no valid AES2 signal is being received. This message overrides the normal audio sample rate message.
LSA1		
LSA2		

#### **4.2.7. Setting the Orientation of the LED Display (7707VAT and 7707VAT-U only)**

The **DISP** display allows you to set a horizontal or vertical orientation for the card edge display messages. After one second the display will show a message indicating the current orientation of the display. When this message is showing, press the pushbutton to change the orientation of the display.

<i>DISP</i>	<b>HOR</b>	Horizontal display used when the module is housed in the 1 rack unit 7701FR frame or the stand alone enclosure.
<i>HOR</i>	<b>VERT</b>	Vertical display used when the module is housed in the 3 rack unit 7700FR frame.
<i>VERT</i>		

#### **4.2.8. Displaying the Firmware Version (7707VAT and 7707VAT-U only)**

The **s/w** display shows the firmware version and build number of the firmware. The message will scroll across the display.

For example: **VER 1.0 BLD 067**

## 5. CARD EDGE MENU SYSTEM (7707VAT-A4 ONLY)

### 5.1. NAVIGATING THE MENU SYSTEM

When you are in control mode, the toggle switch and pushbutton are used to navigate through a menu system to set various parameters for the module. To enter the menu system, press the pushbutton one or more times to exit the current display mode and return to the mode select menu item. The display will show *MON* or *SET*. Press the toggle switch to select control mode (*SET*) and then press the pushbutton to enter the control mode main setup menu. You can use the toggle switch to move up and down the list of available sub menus. Once the desired submenu name is displayed, press the pushbutton to select the next menu level.

Once you are in the sub menu, there will be a list of parameters to adjust. To adjust any parameter, use the toggle switch to move up or down to the desired parameter and press the pushbutton. Using the toggle switch, adjust the parameter to its desired value. If the parameter is a numerical value, the number will increase if you lift the toggle switch and decrease if you push down on the toggle switch. If the parameter contains a list of choices, you can cycle through the list by pressing the toggle switch in either direction.

When you have stopped at the desired value, depress the pushbutton. This will update the parameter to the selected value and return to the mode select menu item (the display shows *SET*). To change another parameter, press the pushbutton to enter the main menu system again and continue selecting and adjusting other parameters.

Throughout the descriptions of the Menu items, default values are shown in underlined text.

Each time the toggle switch is pressed up/down, the display advances to the next/previous display. A message indicating what display mode is active is shown for one second. After one second without the toggle switch being pressed, the selected display data is shown. The card edge pushbutton is used to select sub-items where applicable.

### 5.2. TOP LEVEL MENU STRUCTURE

The following is a brief description of the top level of the menu tree that appears when you enter the Control menu. Selecting one of these items will take you down into the next menu level. The details of the each of the displays are described in the sections 5.3 to 5.4.

<b><i>ADET</i></b>	Sub menu allows you to set parameters relating to the Audio detection
<b><i>DISP</i></b>	Allows you to set the orientation of the front panel display
<b><i>EDH</i></b>	Allows you to turn the EDH indication on an off
<b><i>FRST</i></b>	Resets the module to its factory reset values

### 5.3. SETTING THE AUDIO CONTROLS

The first group of menu items are used to configure the control items relating to the Audio. The menu items for each channel are identical so for the sake of simplicity, only the menu items for *A1* channel are shown.

### 5.3.1. Configuring Audio Presence Detection

The ADET sub menu contains 3 menu items (for each audio channel) relating to the Audio detection. The menu items for each channel are identical so for the sake of simplicity, only the menu items for A1 channel are shown.

<i>DET1</i>
<i>OFF</i>
<i>ON</i>

The *DET* controls enable audio presence detection on each of the channels.

The *LVL* and *DUR* controls are used to detect when the audio is considered to be missing. The *LVL* control sets the audio level under which the audio is considered to be missing. The audio must be under the *LVL* level for the duration set by the *DUR* control before the audio is considered missing. When audio is missing, the audio must be over the *LVL* level for 1 sec. before the audio will be considered present.

<i>LVL1</i>
<i>-67 to 0</i>
<i>-40</i>

The *LVL* control sets the audio level under which audio is considered to be missing. This value is expressed in dBu.

<i>DUR1</i>
<i>1 to 20</i>
<i>10</i>

The *DUR* control sets the amount of time (in seconds) the audio is below the level set by the *LVL* control before the audio is considered missing.

#### 5.3.1.1. Procedure to Calibrate Audio Presence Detection

1. Supply the 7707VAT-A4 module that is being calibrated with your plant's noisiest audio feed without any audio program material present. This will be a baseline noise level to calibrate the audio-missing detector.
2. Set the *DUR* control to 1 sec so that you can see the results of adjusting the *LVL* parameter without getting confused with the detection time.
3. Adjust the audio *LVL* control upward from its minimum value until the corresponding *AUDIO PRESENT* LED on the card edge goes Off. This will be the noise floor level. Raise the *LVL* a few dB to make the detector insensitive to this noise level.
4. Set the *DUR* control to a time appropriate to your application. This should be set to a value longer than your worst case acceptable quiet period.

### 5.4. CHANGING THE ORIENTATION OF THE TEXT ON THE DISPLAY

<i>DISP</i>
<i>VERT</i>
<i>HOR</i>

The *DISP* control allows the user to select a horizontal or vertical orientation for the displays to accommodate mounting the module in the 3RU or 1RU frames.

### 5.5. CONFIGURING EDH ERROR DETECTION

<i>EDH</i>
<i>OFF</i>
<i>ON</i>

The *EDH* control enables the EDH (error detection and handling) error display on the Dot matrix display.

## 5.6. RESTORING THE FACTORY SETTINGS

<i>FRST</i>
<u>NO</u>
YES

The *FRST* control allows the user to restore the factory values (those underlined) for the module's parameters described in sections 5.3 and 5.5.

## **6. CARD EDGE CONTROLS**

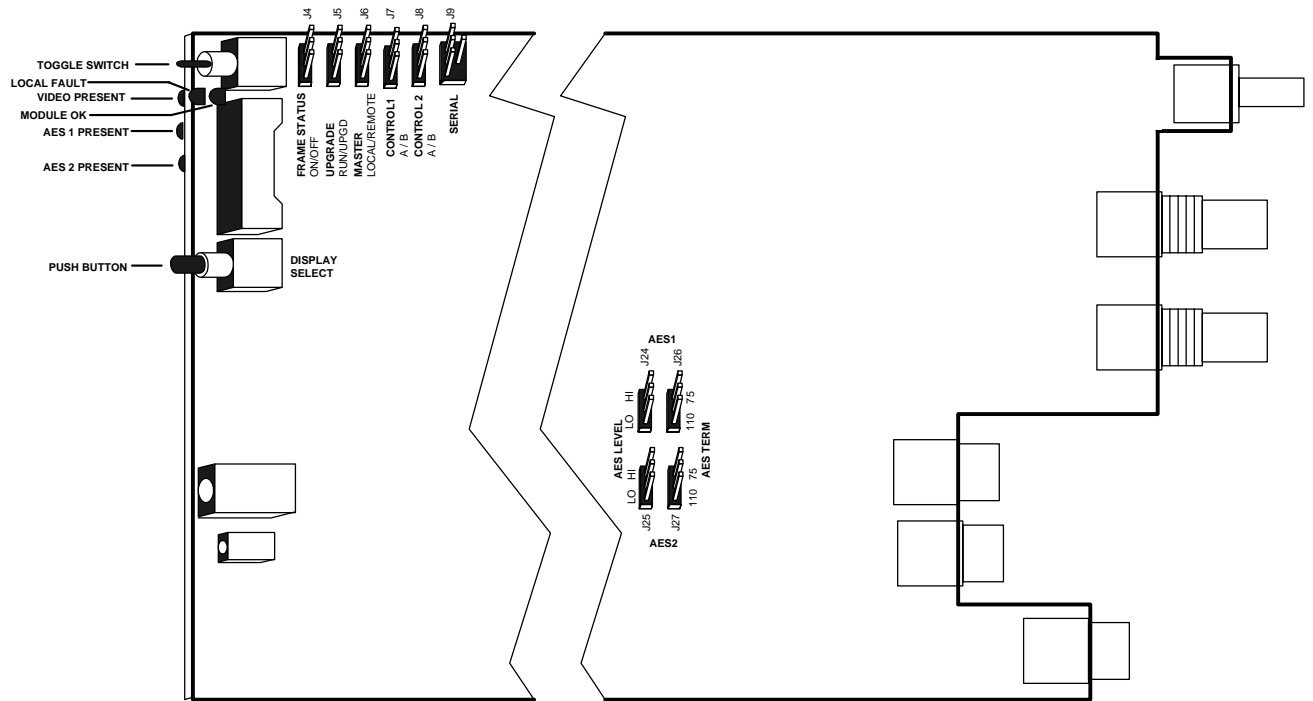
The 7707VAT series modules are equipped with a three position, return to center, toggle switch which is used to select the various card-edge displays and menu items and is also used in conjunction with a momentary pushbutton to select some sub-items of the menu system. See sections 4.2 and 5 for information about the card edge displays and menu system.

### **6.1. MONITORING THE AUDIO (7707VAT-A4 ONLY)**

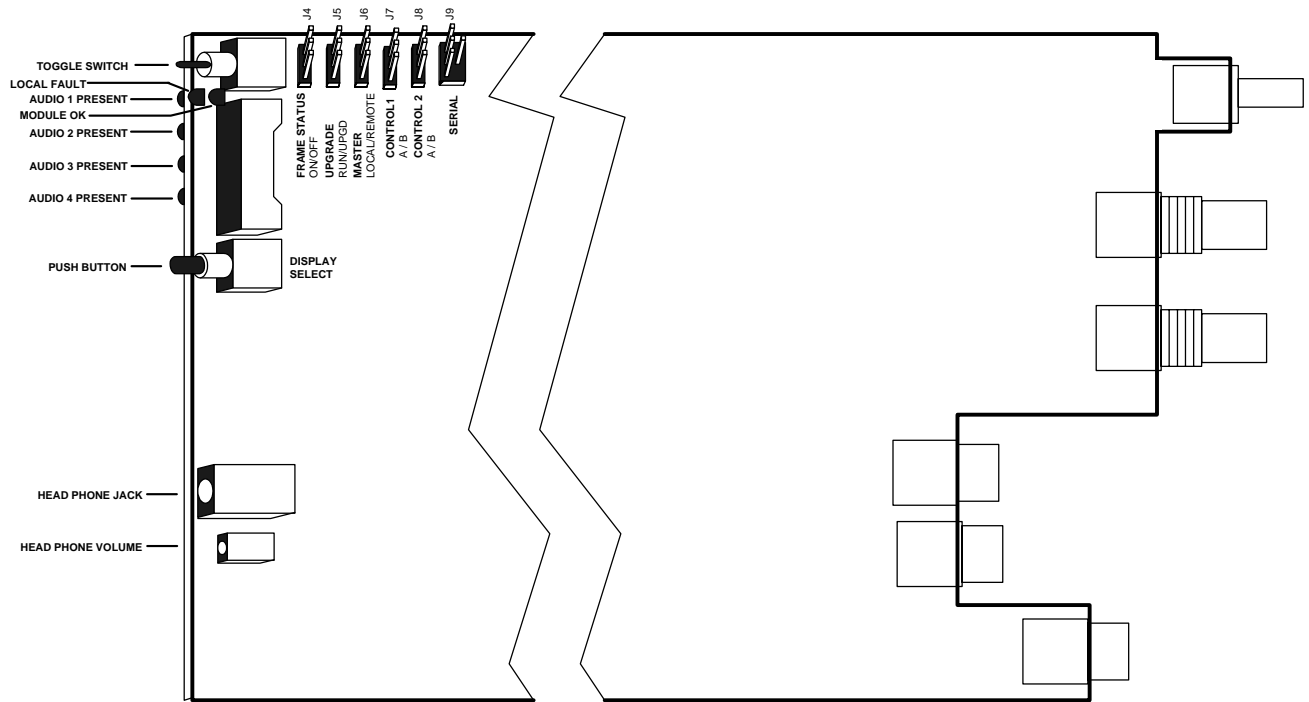
On the 7707VAT-A4 module a stereo headphone jack located at the front of the module is used to monitor the individual audio channel pairs. The *AJCK* menu item is used to select the audio channels currently being monitored. (See section 4.2.2) The monitoring volume level can be adjusted but turning the level potentiometer located beside the headphone jack.



**7. JUMPERS**



**Figure 7-1: Location of Jumpers and Card Edge Controls – 7707VAT and 7707VAT-U**



**Figure 7-2: Location of Jumpers and Card Edge Controls – 7707VAT-A4**

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

The FRAME STATUS jumper J4 determines whether local faults (as shown by the Local Fault indicator) will be connected to the 7700FR frame's global status bus.

**FRAME STATUS:** 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.

## **7.2. SELECTING WHETHER MODULE WILL BE CONTROLLED FROM THE LOCAL CONTROLS OR THROUGH THE VISTALINK® INTERFACE**

The MASTER jumper J6 selects whether the module will be controlled from the local user controls or through the VistaLINK® interface.

**MASTER:** When this jumper is installed in the LOCAL position, the card functions are controlled through the local controls.

When this jumper is installed in the REMOTE position, the card functions are controlled through the VistaLINK® interface.

## **7.3. CONFIGURING THE MODULE FOR FIRMWARE UPGRADES**

**UPGRADE:** The UPGRADE jumper J5 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 the UPGRADE jumper into the *UPGD* position. Install the Upgrade cable provided (located in the vinyl pouch in the front of this manual) onto the SERIAL header 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 the UPGRADE jumper into the *RUN* position, remove the upgrade cable and re-install the module. The module is now ready for normal operation.

#### **7.4. SELECTING THE AES INPUT CONFIGURATION - BALANCED OR UNBALANCED (7707VAT and 7707VAT-U)**

The AES TERM jumpers J26 and J27 located near the rear of the module are used to configure whether AES inputs are balanced (110 ohm) or unbalanced (75 ohm).

**AES TERM:** To configure the AES inputs for use with balanced AES signals which conform to AES3-1992 set the jumpers to the 110 position.

To configure the AES inputs for use with unbalanced AES signals conforming to SMPTE 276M set the jumpers to the 75 position.



**The AES TERM jumper should always be set to the 75 position on the 7707VAT-U**

#### **7.5. SETTING THE BALANCED AES INPUT LEVEL SENSITIVITY (7707VAT and 7707VAT-U)**

When the jumper is in the 110 position the AES LEVEL jumpers J24 and J25 control the sensitivity of the inputs. When the AES TERM jumpers are in the 75 position the AES LEVEL jumpers do not have any effect.

**AES LEVEL:** These jumpers are normally set to the HI position for use with 2 to 7 volts balanced signal levels. For signals levels in the 1 to 2 volt range, set these jumpers to the LO position.



**The AES LEVEL jumper should always be set to the LO position on the 7707VAT-U**

## **8. VISTALINK<sup>®</sup> REMOTE MONITORING/CONTROL**

### **8.1. WHAT IS VISTALINK<sup>®</sup>?**

VistaLINK<sup>®</sup> 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<sup>®</sup> 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<sup>®</sup> 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<sup>®</sup> 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 VistaLINK<sup>®</sup> enabled fiber optic products.
2. Managed devices (such as 7707VAT and 7707VAR series cards) each with a unique address (OID) communicate with the NMS through an SNMP Agent. Evertz VistaLINK<sup>®</sup> enabled 7700 series modules reside in the 3RU 7700FR-C MultiFrame and communicate with the manager via the 7700FC VistaLINK<sup>®</sup> frame controller module, which serves as the Agent.
3. A virtual database, known as the Management information Base (MIB), lists all the variables being monitored, which both the Manager and Agent understand. Please contact Evertz for further information about obtaining a copy of the MIB for interfacing to a third party Manager/NMS.

For more information on connecting and configuring the VistaLINK<sup>®</sup> 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
<b>Cable Length</b>	A range of values describing equalization strength at the SDI Video input.
<b>Master Jumper</b>	Indicates whether card is in local or VistaLINK® control (the state of the MASTER jumper)
<b>Module OK</b>	Indicates if card is operating in good condition (the state of the MODULE OK LED).
<b>Signal Valid</b>	Indicates the presence of a valid video input signal. (the state of the VIDEO PRESENT LED)
<b>Video Standard</b>	A range of values describing the detected video standard.
<b>Audio signal 1</b>	Indicates the presence of an AES1 input signal. (the state of the AES1 PRESENT LED)
<b>Audio signal 2</b>	Indicates the presence of an AES2 input signal. (the state of the AES2 PRESENT LED)
<b>Rate Detect 1</b>	Indicates the AES1 Sample Rate
<b>Rate Detect 2</b>	Indicates the AES2 Sample Rate

**Table 8-1: 7707VAT and 7707VAT-U VistaLINK® Monitored Parameters**

Parameter	Description
<b>Master Jumper</b>	Indicates whether card is in local or <i>VistaLINK®</i> control (the state of the MASTER jumper)
<b>Cable Length</b>	A range of values describing equalization strength at the SDI Video input.
<b>Video Standard</b>	A range of values describing the detected video standard.

**Table 8-2: 7707VAT-A4 VistaLINK® Monitored Parameters**

### 8.3. VISTALINK® CONTROLLED PARAMETERS

On the 7707VAT and 7707VAT-U there are currently no parameters that can be remotely controlled through the VistaLINK® interface.

On the 7707VAT-A4 the following parameters can be remotely controlled through the VistaLINK® interface.

Parameter	Description
<b>Audio 1 Silence Level</b>	Sets the Audio 1 Presence Detect Level
<b>Audio 1 Silence Duration</b>	Sets the Audio 1 Presence Detect Duration
<b>Audio 1 Silence Detect</b>	Sets the Audio 1 Presence Detect Mode
<b>Audio 2 Silence Level</b>	Sets the Audio 2 Presence Detect Level
<b>Audio 2 Silence Duration</b>	Sets the Audio 2 Presence Detect Duration
<b>Audio 2 Silence Detect</b>	Sets the Audio 2 Presence Detect Mode
<b>Audio 3 Silence Level</b>	Sets the Audio 3 Presence Detect Level
<b>Audio 3 Silence Duration</b>	Sets the Audio 3 Presence Detect Duration
<b>Audio 3 Silence Detect</b>	Sets the Audio 3 Presence Detect Mode
<b>Audio 4 Silence Level</b>	Sets the Audio 4 Presence Detect Level
<b>Audio 4 Silence Duration</b>	Sets the Audio 4 Presence Detect Duration
<b>Audio 4 Silence Detect</b>	Sets the Audio 4 Presence Detect Mode

**Table 8-3: VistaLINK® Controlled Parameters (7707VAT-A4 only)**

#### 8.4. VISTALINK® FAULT STATUS PARAMETERS – TRAPS

The following parameters can be remotely monitored through the VistaLINK® interface as trap statuses in the Configuration View and traps in the Alarm View.

Parameter	Description
<b>AES audio signal 1</b>	Indicates whether AES 1 signal is present or not. <u>Loss of AES 1 will trigger the “No AES 1” trap in the VistaLINK Alarm View.</u>
<b>AES audio signal 2</b>	Indicates whether AES 2 signal is present or not. <u>Loss of AES 2 will trigger the “No AES 2” trap in the VistaLINK Alarm View.</u>
<b>Carrier weak</b>	Indicates whether input video signal is weak or not. <u>When signal becomes weak it will trigger the “Carrier Strength Weak” trap in the VistaLINK Alarm View.</u>
<b>EDH error</b>	Indicates there are EDH errors present in input video signal. <u>The EDH Error will trigger the “EDH Error Present” trap in the VistaLINK Alarm View.</u>
<b>Laser OK</b>	Indicates whether laser is in good condition or not. <u>If there is a laser fault it will trigger the “Laser Not OK” trap in the VistaLINK Alarm View.</u>
<b>Module OK</b>	Indicates whether card is in good operating condition or not. <u>If there is a module fault it will trigger the “Module Fault Alert” trap in the VistaLINK Alarm View.</u>
<b>Signal present</b>	Indicates if there’s valid video signal present at the input. <u>Loss of valid video signal will trigger the “Signal Not Present” trap in the VistaLINK Alarm View.</u>
<b>Not In Local Control Mode (trap only)</b>	This trap in VistaLINK Alarm View triggers every time card is switched to Remote mode.
<b>Local Control Mode (trap only)</b>	This trap in VistaLINK Alarm View triggers every time card is switched to Local mode.
<b>Not In remote Control Mode (trap only)</b>	This trap in VistaLINK Alarm View triggers every time card is switched to Local mode.
<b>Remote Control Mode (trap only)</b>	This trap in VistaLINK Alarm View triggers every time card is switched to Remote mode.

**Table 8-4: 7707VAT and 7707VAT-U VistaLINK® Fault Status Parameters – Traps**

Parameter	Description
<b>SDI Video Not Present</b>	Indicates if there's valid video signal present at the input. <u>Loss of valid video signal will trigger the "SDI Video Not Present" trap in the VistaLINK Alarm View.</u>
<b>EDH Errors</b>	Indicates there are EDH errors present in input video signal. <u>The EDH Error will trigger the "EDH Errors" trap in the VistaLINK Alarm View.</u>
<b>Audio 1 Silence</b>	Indicates whether Audio 1 signal is present or not. <u>Loss of Audio 1 will trigger the "Audio 1 Silent" trap in the VistaLINK Alarm View.</u>
<b>Audio 2 Silence</b>	Indicates whether Audio 2 signal is present or not. <u>Loss of Audio 2 will trigger the "Audio 2 Silent" trap in the VistaLINK Alarm View.</u>
<b>Audio 3 Silence</b>	Indicates whether Audio 3 signal is present or not. <u>Loss of Audio 3 will trigger the "Audio 3 Silent" trap in the VistaLINK Alarm View.</u>
<b>Audio 4 Silence</b>	Indicates whether Audio 4 signal is present or not. <u>Loss of Audio 4 will trigger the "Audio 4 Silent" trap in the VistaLINK Alarm View.</u>
<b>Carrier Weak</b>	Indicates whether input video signal is weak or not. <u>When signal becomes weak it will trigger the "Carrier Weak" trap in the VistaLINK Alarm View.</u>
<b>Laser Not OK</b>	Indicates whether laser is in good condition or not. <u>If there is a laser fault it will trigger the "Laser Not OK" trap in the VistaLINK Alarm View.</u>

**Table 8-5: 7707VAT-A4 VistaLINK® Fault Status Parameters – Traps**