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REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	First release	May 08
1.1	Updated Card Edge Menu Items and Firmware Upgrade Instructions	Sept 09

WARNING

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

1. OVERVIEW

The 7707VB-8-OC48 is a *Vista*LINK® enabled fiber transceiver for SD-SDI, DVB-ASI or SDTi video signal that transports signals at OC-48/STM-16 data rates (2488.32 Mb/s) and interfaces directly to SONET/SDH infrastructure. The card also has a built-in Ethernet transceiver with a 10/100/1000 Base-T port. This dual fiber single card combines 8 asynchronous SDI, DVB-ASI or SDTi signals using Time Domain Multiplex (TDM) technology. A companion 7707VB-8-OC48 card acts as a demultiplexer for the incoming signal and converts them back to separate SDI video feeds, while utilizing a separate fiber for the outgoing signal.

The 7707VB-8-OC48 will transparently pass incoming SD-SDI video feeds with embedded AES audio or any other data in the horizontal or vertical ancillary data space. Monitoring and control of card status and parameters is provided locally at the card edge or remotely via *Vista*LINK®.

The fiber output is available in an assortment of optical wavelengths, accommodating standard, CWDM or DWDM transmission schemes.

7707VB13-8-OC48	1310 nm FP	-7dBm output, suitable for distances up to 50 Km
7707VB15-8-OC48	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.

7707VB27-8-OC48	1270 nm DFB
7707VB29-8-OC48	1290 nm DFB
7707VB31-8-OC48	1310 nm DFB
7707VB33-8-OC48	1330 nm DFB
7707VB35-8-OC48	1350 nm DFB
7707VB37-8-OC48	1370 nm DFB
7707VB43-8-OC48	1430 nm DFB
7707VB45-8-OC48	1450 nm DFB
7707VB47-8-OC48	1470 nm DFB
7707VB49-8-OC48	1490 nm DFB
7707VB51-8-OC48	1510 nm DFB
7707VB53-8-OC48	1530 nm DFB
7707VB55-8-OC48	1550 nm DFB
7707VB57-8-OC48	1570 nm DFB
7707VB59-8-OC48	1590 nm DFB
7707VB61-8-OC48	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 the factory).

7707VBDyyy-8-OC48	DWDM DFB laser output, yyy – ITU channel number

The 7707VB-8-OC48 occupies two card slots in the 3 RU frame, which will hold up to 7 modules or one card slot in the 1RU frame, which will hold up to three modules. One 7707VB-8-OC48 module can also be installed in the S7701 stand-alone enclosure.

Features:

- Transports signals over OC-48/STM-16 data rates (2488.32 Mb/s)
- Single card TDM multiplexer and demultiplexer for eight bi-directional asynchronous SD-SDI, SDTi and DVB-ASI signals
- Built-in Ethernet transceiver with one 10/100/1000 Base-T port with FBM (Fiber Bandwidth Management)
- Interfaces directly to SONET/SDH infrastructure
- Uncompressed, full-rate video transport
- Signal transport uninterrupted by loss of any SD-SDI, DVB-ASI or SDTi input feed
- Transparently passes embedded AES or any other data in the horizontal or vertical ancillary data space
- Stratum 3 wander/holdover/jitter compliance
- Wide input frequency range tolerance (±50ppm)
- Comprehensive signal and card status monitoring via four character card-edge display
- *Vista*LINK® – enabled offering remote monitoring, control and configuration capabilities via SNMP. *Vista*LINK® is available when modules are used with the 3RU 7700FR-C frame, a 7700FC *Vista*LINK® Frame Controller module in slot 1 of the frame using the 9000NCP Network Control Panel or Evertz *Vista*LINK® PRO or other third party SNMP manager software.
- Automatic coaxial equalization up to 250m at 270Mb/s (Belden 1694A or equivalent cable)
- Fully hot-swappable from front of frame with no fiber/coax disconnect/reconnect required
- Supports single-mode and multi-mode fiber optic cable
- Optical output wavelengths of 1310nm, 1550nm and up to 16 CWDM wavelengths
- DWDM wavelengths also available
- SC/PC, ST/PC, FC/PC fiber connectors available

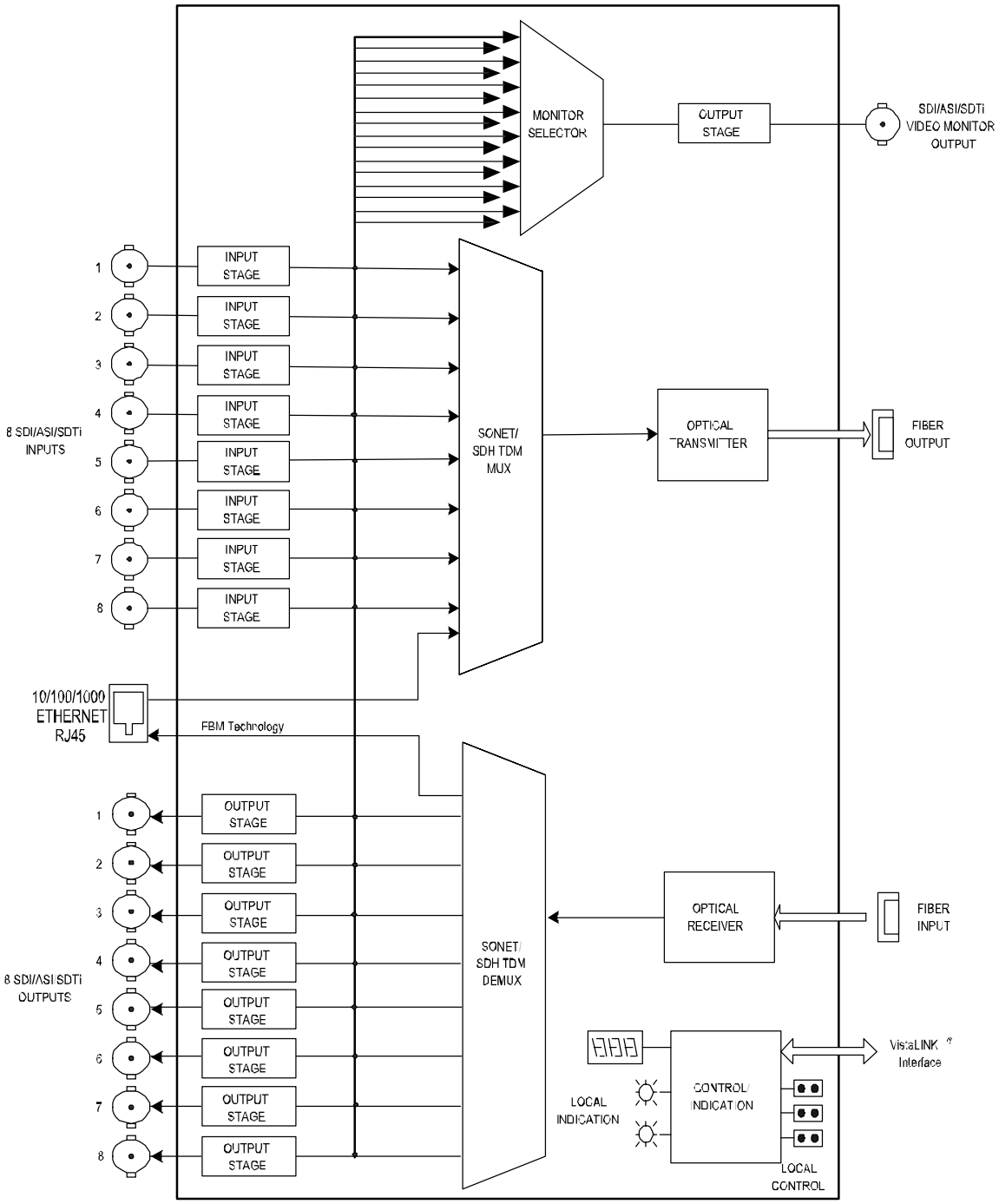


Figure 1-1: 7707VB-8-OC48 Block Diagram

2. INSTALLATION

The 7707VB-8-OC48 comes with a companion rear plate that has 17 BNC connectors and two SC/PC (shown), ST/PC or FC/PC optical connector. For information on mounting the rear plate and inserting the module into the frame see section 3 of the 7700FR chapter.

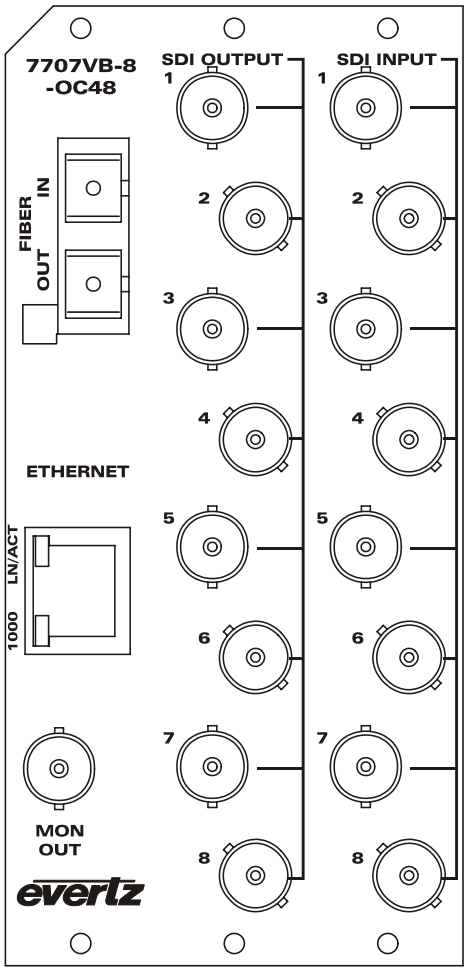


Figure 2-1: 7707VB-8-OC48 Rear Panel

SDI IN 1-8: Eight independent BNC input connectors for 10-bit serial digital video signals compatible with the SMPTE 259M, DVB-ASI or SMPTE 305M standards. These inputs provide adaptive compensation for up to 250m of industry standard Belden 8281 cable, at 270Mb/s.

SD OUT 1-8: Eight independent BNC output connectors for 10-bit serial digital video signals compatible with the SMPTE 259M, DVB-ASI or SMPTE 305M standards.

MON OUT: User selectable video loopback output. Any of the inputs or the outputs can source this port for reclocked loop back functionality. Selection is controlled via the card edge menu or *Vista*LINK®. If EDH correction is activated, the selected output will be EDH corrected.

OPTICAL INPUT: SC/PC, SC/PC with cover (shown), ST/PC or FC/PC female connector. This wide range input accepts optical wavelengths of 1270nm to 1610nm, accommodating standard or CWDM transmission schemes.

OPTICAL OUTPUT: Output SC/PC, SC/PC with cover (shown), ST/PC or FC/PC female connector. This optical output contains the two input SDI video signals. 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 fiber output.

2.1. CARE AND HANDLING OF OPTICAL FIBER

2.1.1. Safety

CLASS 1 LASER PRODUCT

Background colour: yellow
Triangular band: black
Symbol: black

2.1.2. Assembly

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

2.1.3. Labeling

The 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 the bar code label placed on the printed circuit board of each Evertz plug-in module
- The Model number is one of: 7707VB13-8-OC48, 7707VB15-8-OC48,
  7707VBxx-8-OC48, (xx = 27, 29, 31, 33, 35, 37, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61)
  7707VBDyyy-8 (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)

Figure 2-2: Reproduction of Laser Certification and Identification Label

2.1.4. Handling and Connecting Fibers

Never touch the end face of an optical fiber. Always keep dust caps on optical fiber connectors when not connected. Always remember to properly clean the optical end face of a connector before making a connection.

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 5 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 the care and handling of fiber optic cable see section 3 of the Fiber Optics System Design section of this manual binder.

3. SPECIFICATIONS

3.1. SERIAL VIDEO INPUT

Standards:
- **HD/SDI Inputs:** SMPTE 259-C, SMPTE305.2M, DVB-ASI
- **SDI Inputs:** SMPTE 259M-C, SMPTE 305M(SDTi), DVB-ASI

Number of Inputs: 8 independent SDI, SDTi or DVB-ASI 270Mb/s signals
Connector: 8 BNC input per IEC 61169-8 Annex A
Equalization: Automatic 250m (min) @ 270 Mb/s with Belden 1694 or equivalent cable
Return Loss: > 15 dB up to 1.5Gb/s
Frequency Offset Tolerance: ±50ppm

3.2. SERIAL VIDEO OUTPUTS

Standards:
- **HD/SDI Inputs:** SMPTE 259-C, SMPTE305.2M, DVB-ASI
- **SDI Inputs:** SMPTE 259M-C, SMPTE 305M(SDTi), DVB-ASI

Number of Outputs: 8 independent SDI, SDTi or DVB-ASI @ 270Mb/s signals
Connectors: 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: > 12dB
Wide Band Jitter: < 0.2UI

3.3. SERIAL VIDEO MONITOR OUTPUTS

Standards:
- **HD/SDI Inputs:** SMPTE 259-C, SMPTE305.2M, DVB-ASI
- **SDI Inputs:** SMPTE 259M-C, SMPTE 305M(SDTi), DVB-ASI

Number of Outputs: 1 signals user-selectable from the 8 inputs and 8 outputs
Connectors: 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: > 14dB
Wide Band Jitter: < 0.2UI

3.4. OPTICAL OUTPUT

Standards: OC-48/STM-16
Number of Outputs: 1
Connector: Female SC/PC, ST/PC or FC/PC
Return Loss: > 14 dB
Wide Band Jitter: < 0.2UI
Fiber Size: 9 μm core / 125 μm overall
Wavelengths:
- **Standard:** 1310nm, 1550nm (nominal)

CWDM:	1270nm to 1610nm (See ordering information)
DWDM:	C-Band channel 20 to 60, 100GHz spacing (ITU-T G.694.1 compliant)
Output Power:	
1310nm FP:	-7dBm ± 1dBm
1550nm & CWDM:	0 dBm ± 1dBm
DWDM:	+7dBm ± 1dBm

3.5. OPTICAL INPUT

Number of Inputs:	1
Standards:	OC-48/STM-16
Connector:	Female SC/PC, ST/PC or FC/PC
Return Loss:	> 25dB
Wavelength:	1270nm to 1610nm
Maximum Input Power:	
Standard:	-1dBm
Optical Sensitivity:	
Standard:	-23dBm

3.6. ELECTRICAL

Voltage:	+12VDC
Power:	13 Watts (Non DWDM) 15 Watts (DWDM)

3.7. PHYSICAL

Number of slots:	3

3.8. COMPLIANCE

Electrical Safety:	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
Laser Safety:	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 89/336/EEC.

4. STATUS INDICATORS AND DISPLAYS

The 7707VB-8-OC48 has 20 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 and toggle switch are used to select various displays on the alphanumeric display. Figure 5-1 shows the locations of the indicators, pushbutton and toggle switch.

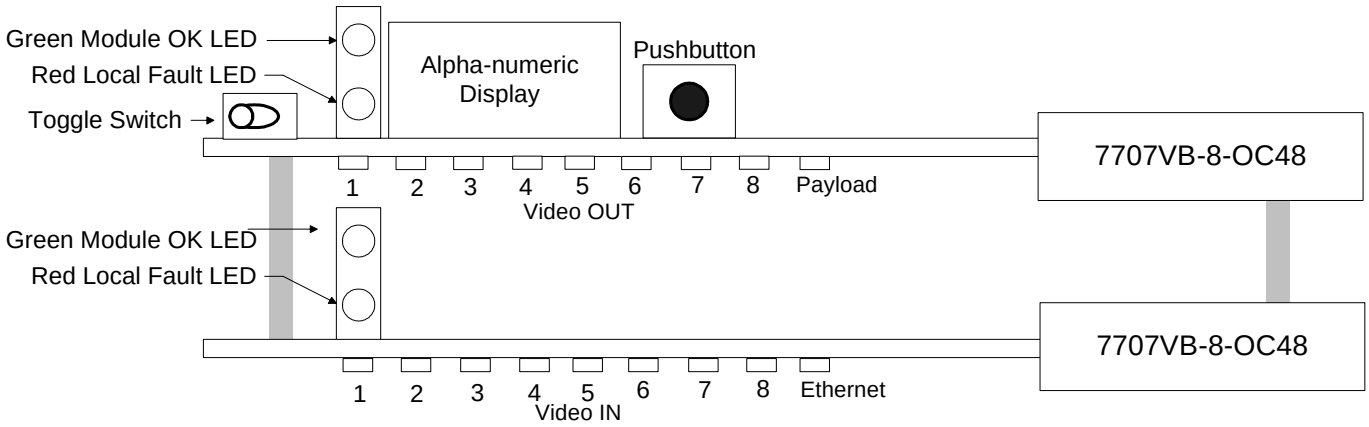


Figure 4-1: Location of Status Indicators and Controls

4.1. STATUS INDICATOR LEDS

LOCAL FAULT: On the 7707VB-8-OC48 board this Red LED will be ON if a laser fault exists, or if the laser is set to Discontinuous mode with no valid inputs present, or if a local input power fault exists (i.e.: a blown fuse).

The LOCAL FAULT indications can also be reported to the frame through the FRAME STATUS jumper.

MODULE OK: This Green LED indicates good module health. It will be ON when a valid input signal is present, and the laser and board power are good.

VIDEO IN STATUS LED:

GREEN	Valid signal input. No errors.
RED	Valid signal input. Errors detected.
OFF	No valid input detected.
YELLOW	Input is blocked by the user from being transported through fiber.
BLINKING YELLOW	Input is blocked by Ethernet FBM (Flexible Bandwidth Management)

VIDEO OUT STATUS LED:

GREEN	Valid signal at output. No errors.
RED	Valid signal at output. Errors detected.
OFF	No valid output detected.
YELLOW	Output is blocked by the user from being transported through fiber.

ETHERNET STATUS LED:

GREEN	Connection established.
BLINK	Sending or receiving data.
OFF	No valid connection.

PAYLOAD STATUS LED:

GREEN	Payload OK.
RED	Errors detected.

4.2. CARD EDGE DISPLAY

Additional signal and status monitoring is provided via the 4-digit dot-matrix display located at 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). Press the toggle switch to select 'monitor mode' (STAT) or 'control mode' (CTRL).

4.2.1. STAT Menu

When in monitoring 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 option. The card-edge pushbutton and toggle switch are used to navigate through the display menu. Figure 4-2 provides a quick reference to the monitoring mode display. The details of the each of the displays are described in the sections 4.2.1.1 to 4.2.1.20. For information on setting up the module in control mode (CTRL) see section 4.2.2.

Pushbutton ⇨					
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**	**Level 6**
STAT (Status)	**FIBR** (Fiber)	**STD** (optical link data standard)	**OC** (Sonet) **STM** (SDH Transmission)		
		PWR (Optical Power)	**-40** to 0 **dB**		
		REF (Reference Clock Source)	**OUT** (Output Reference)	**REF ERR** (Reference Error) **XO** (Oscillator) **HOLD** (Hold Over) **LINK** (Link Input)	
			IN (Input Reference)	**LOS** (Link Lost) **FOS** (Frequency Offset) **OK** (Link Valid)	
		CIC (Current Interval Counter)	**15M** (15 minute counter)	**TIME**	**0** to **899**
				ESL (Errored Seconds Line) **SESL** (Sever Errored Seconds Line) **ESS** (Errored Seconds Section) **SESS** (Sever Errored Seconds Section) **ESP** (Errored Seconds Path) **SESP** (Sever Errored Seconds Path) **SEFS** (Sever Errored Framing Seconds)	**0** to **9999**
			24H (24 hour counter)	**TIME**	**0** to 1**439**
				ESL (Errored Seconds Line) **SESL** (Sever Errored Seconds Line) **ESS** (Errored Seconds Section) **SESS** (Sever Errored Seconds Section) **ESP** (Errored Seconds Path) **SESP** (Sever Errored Seconds Path) **SEFS** (Sever Errored Framing Seconds	**0** to **9999**

		LIC (Last Interval Counter)	**15M** (15 minute counter) **24H** (24 hour counter)	**ESL** (Errored Seconds Line) **SESL** (Sever Errored Seconds Line) **ESS** (Errored Seconds Section) **SESS** (Sever Errored Seconds Section) **ESP** (Errored Seconds Path) **SESP** (Sever Errored Seconds Path) **SEFS** (Sever Errored Framing Seconds	**0** to **9999**
		ESR (Errored Seconds Ratio)	**SECT** (Ratio for Section) **LINE** (Ratio for Line) **PATH** (Ratio for Path)	**0.0%** - **100%**	
		LOSL (Loss of Signal Seconds)	**0** to **9999**		
	TDMD (TDM Data)	**LOS** (Not TDM Data) **ERR** (TDM Errors) **OK** (TDM Data Present)			
	VOUT (Video Output)	**VO1** (Video Output 1) **VO2** (Video Output 2) **VO3** (Video Output 3) **VO4** (Video Output 4) **VO5** (Video Output 5) **VO6** (Video Output 6) **VO7** (Video Output 7) **VO8** (Video Output 8)	**STD** (Video Standard)	**ASI** (DVB-ASI) **N270** (DSMPTE 259-C, 525 Line) **P270** (DSMPTE 259-C, 625 Line) **SDTI-N270** (SDTi-N270, 525 Line) **SDTI-P270** (SDTI-P270, 625 Line) **LOSS** (Loss of Input)	
			EDH (EDH Packets)	**PRES** (Video Present) **LOSS** (Video Missing)	
			SDTI (SDTi video signal)	**PRES** (Video Present) **LOSS** (Video Missing)	
	VINP (Video Input)	**VI1** (Video Input 1) **VI2** (Video Input 2) **VI3** (Video Input 3) **VI4** (Video Input 4) **VI5** (Video Input 5) **VI6** (Video Input 6) **VI7** (Video Input 7) **VI8** (Video Input 8)	**STD** (Video Standard)	**ASI** (DVB-ASI) **N270** (DSMPTE 259-C, 525 Line) **P270** (DSMPTE 259-C, 625 Line) **SDTI-N270** (SDTi-N270, 525 Line) **SDTI-P270** (SDTI-P270, 625 Line) **LOSS** (Loss of Input)	
			EDH (EDH Packets)	**PRES** (Video Present) **LOSS** (Video Missing)	
			SDTI (SDTi video signal)	**PRES** (Video Present) **LOSS** (Video Missing)	
	ETH (Ethernet)	**PORT** (Ethernet Connection)	**LINK** (Ethernet Presence)	**UP** (Connection Present) **DOWN** (Connection Not Present)	
			SPD (Ethernet Speed)	**10** (10 Base-TX) **100** (100 Base-TX) **1000** (1000 Base-TX) **DOWN** (No Connection)	
		FBM (Flexible Bandwidth Management)	**OFF** (0Mb/s bandwidth) **100** (100Mb/s bandwidth) **400** (400Mb/s bandwidth) **625** (625Mb/s bandwidth) **850** (850Mb/s bandwidth) **1000** (1000Mb/s bandwidth) **AUTO** (Automatic)		
	VER (Version)	*Firmware Version*			

Figure 4-2: STAT Menu Structure

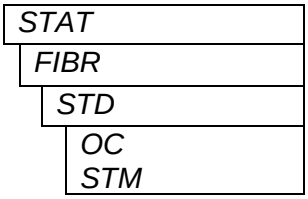
4.2.1.1. Displaying of Warning Status Indications

The top level, default display indicates overall card status and warnings:

OK	Card is functioning properly
LINK…ERR	No valid optical link established between the 7707VB-8-OC48 cards Flashing alternates between LINK and ERR
LASR…ERR	Laser error warning. Flashing alternates between LASR and ERR

4.2.1.2. Displaying the Optical Link Data Standard

The 7707VB-8-OC48 detects the current transmission standard implemented by the card. To display the optical link data standard, select the **STAT** menu item in menu level 1, select **FIBR** from menu level 2, then use the toggle switch to display the **STD** option and press the pushbutton to select it.

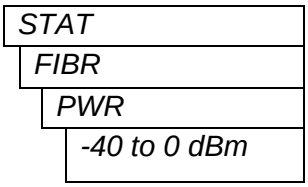


The display will show one of the following:

OC	Displayed for SONET transmission.
STM	Displayed for SDH transmission. These modes can be set through the control menu, see section 4.2.2.

4.2.1.3. Displaying Optical Power

The 7707VB-8-OC48 module can measure and display the input optical power over a range of 0dBm to –40dBm in increments of 1dBm. To display the input optical power, select the STAT menu item in menu level 1, select **FIBR** from menu level 2, then use the toggle switch to display the PWR option and press the pushbutton to select it.



The display will show one of the following:

OVER	Indicates optical input power exceeding 0dBm
0 to –40	Optical input power within this range
LOW	Input optical power low

4.2.1.4. Displaying the Link Output Reference Clock Source

The 7707VB-8-OC48 module can detect the Link Output Reference Clock Source. To display the Link Output Reference Clock Source, select the STAT menu item in menu level 1, select **FIBR** from menu level 2, select **REF** from menu level 3, then use the toggle switch to display the **OUT** option and press the pushbutton to select it.

- *STAT*
  - *FIBR*
    - *REF*
      - *OUT*
        - *REF ERR*
        - *XO*
        - *HOLD*
        - *LINK*

The display will show one of the following:

REF ERR	Indicates a Reference Error.
XO	Indicates the Oscillator.
HOLD	Indicates the Hold Over.
LINK	Indicates the Link Input.

4.2.1.5. Displaying the Current Time Interval and the Current Interval Counter

The 7707VB-8-OC48 module can display the current 15 minute or 24 hour time interval counters, useful for monitoring network integrity. To display these performance counters, select the **STAT** menu item in menu level 1, select **FIBR** from menu level 2, select **CIC** from menu level 3, select 15m or 24h from menu level 4, then use the toggle switch to display the **TIME** option and press the pushbutton to select it.

- *STAT*
  - *FIBR*
    - *CIC*
      - *15m, 24h*
        - TIME

The display will show one of the following:

0 to **899**	Timer value in seconds for 15 minute counter
0 to **1440**	Timer value in minutes for 24 hour counter

The Current Interval Counter menu provides the user with an option to monitor 15m or 24h counters to detect errored transmission.

The 7707VB-8-OC48 module enables the user to proactively monitor the performance parameters of three physical layers within the current 15-minute or 24-hour time interval. To display the current interval counter errors, select the **STAT** menu item in menu level 1, select **FIBR** from menu level 2, select **CIC** from menu level 3, select 15m or 24h from menu level 4, then use the toggle switch to display the desired performance parameter to monitor and press the pushbutton to select it.

- *STAT*
  - *FIBR*
    - *CIC*
      - *15m, 24h*
        - TIME
        - ESL
        - SESL
        - ESS
        - SESS
        - ESP
        - SESP
        - SEFS

The display will show one of the following:

ESL	Errored Seconds Line
SESL	Severe Errored Seconds Line
ESS	Errored Seconds Section
SESS	Severe Errored Seconds Section
ESP	Errored Seconds Path
SESP	Severe Errored Seconds Path
SESF	Severe Errored Seconds Frame

Please note to clear all timers and counters, select CTRL/FIBR/CIC/ALL/CLR.

Line Layer Performance Parameters

- *ESL (Errored Seconds – Line)* shows the number of seconds during which a line Bit Interleaved Parity (BIP) error or an alarm signal was detected.
- *SESL (Severely Errored Seconds – Line)* displays the number of seconds during which H, line BIP, or alarm signal error was detected. H can be set by the user through the CTRL/SETH/SESL menu.

Section Layer Performance Parameters

- *ESL (Errored Seconds – Section)* shows the number of seconds during which a signal Bit Interleaved Parity (BIP) error or an alarm signal was detected.
- *SESL (Severely Errored Second – Section)* shows the number of seconds during which H, section BIP, or alarm signal error was detected. H can be set by the user through the CTRL/SETH/SESS menu.

Path Layer Performance Parameters

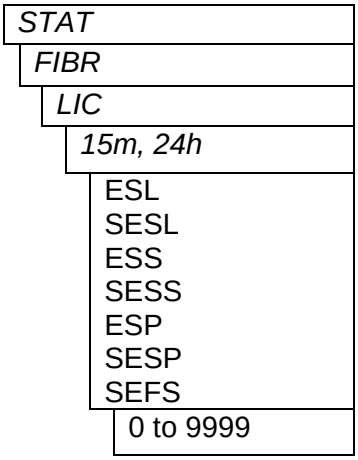
- *ESL (Errored Seconds – Path)* shows the number of seconds during which a path Bit Interleaved Parity (BIP) error or an alarm signal was detected.
- *SESL (Severely Errored Seconds – Path)* shows the number of seconds during which H, more path BIP, or alarm signal error was detected. H can be set by the user using the CTRL/SETH/SESP menu.

Frame Errors

- *SEFS (Severe Errored Seconds – Frame)* shows the number of seconds during which H or more Frame errors were detected. H can be set by the user in the CTRL/SETH/SEFS menu.

4.2.1.6. Displaying the Last Interval Counter

The 7707VB-8-OC48 modules can display the last interval performance counts recorded each time the current interval counters expire. To display the last current interval counter errors, select the **STAT** menu item in menu level 1, select **FIBR** from menu level 2, select **LIC** from menu level 3, select 15m or 24h from menu level 4, then use the toggle switch to display the desired performance parameter to monitor and press the pushbutton to select it.

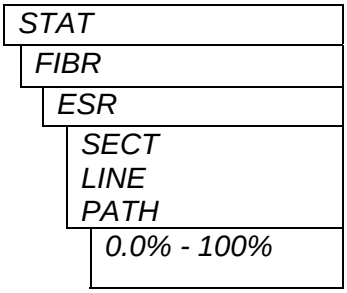


The display will show one of the following:

ESL	Errored Seconds Line
SESL	Severe Errored Seconds Line
ESS	Errored Seconds Section
SESS	Severe Errored Seconds Section
ESP	Errored Seconds Path
SESP	Severe Errored Seconds Path
SESF	Severe Errored Seconds Frame

4.2.1.7. Displaying the Errored Seconds Ratio

The 7707VB-8-OC48 module can display the Errored Seconds Ratio calculated over the duration since the CIC errors was last cleared. To display the errored seconds ratio, select the **STAT** menu item in menu level 1, select **FIBR** from menu level 2, select **ESR** from menu level 3, then use the toggle switch to display the desired performance parameter to monitor and press the pushbutton to select it.

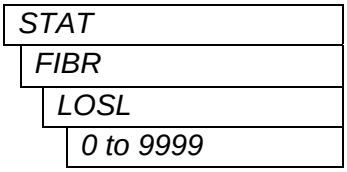


The display will show one of the following:

SECT	Errored Seconds Ratio for Section (%). Based on B1 error detection.
ESL	Errored Seconds Ratio for Line (%). Based on B2 error detection.
ESP	Errored Seconds Ratio for Path (%). Based on B3 error detection

4.2.1.8. Displaying the Loss of Signal Seconds in Line Layer

The 7707VB-8-OC48 module can display the Loss of Signal Seconds Line counter recorded over the duration since it was last cleared to 0. To display Loss of Signal Seconds Line counter, select the **STAT** menu item in menu level 1, select **FIBR** from menu level 2, then use the toggle switch to display the **LOSL** option and press the pushbutton to select it.

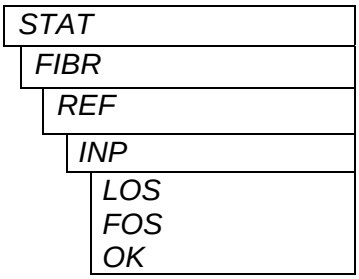


The display will show one of the following:

LOSL	Loss of Signal Seconds in Line Layer in seconds

4.2.1.9. Displaying the Link Input Status

The 7707VB-8-OC48 module can display a Link Input Status. To display Link Input Status, select the **STAT** menu item in menu level 1, select **FIBR** from menu level 2, select **REF** from menu level 3, then use the toggle switch to display the **INP** option and press the pushbutton to select it.



The display will show one of the following:

LOS	Link Lost
FOS	Frequency Offset
OK	Link Valid

4.2.1.10. Displaying the TDM Data Errors

The 7707VB-8-OC48 module can detect if there are errors in the clear channel TDM data. This allows the user to monitor if transmission errors are occurring at the SONET network or at the TDM stream. To display TDM Data Status, select the **STAT** menu item in menu level 1, then use the toggle switch to display the **TDMD** option and press the pushbutton to select it.

- *STAT*
  - *TDMD*
    - *LOSS*
    - *ERR*
    - *OK*

The display will show one of the following:

LOSS	TDM data not detected
ERR	TDM errors detected
OK	TDM data present with no errors detected

4.2.1.11. Displaying the Video Standard at Output Ports

The 7707VB-8-OC48 module can detect the video standard at any output port. To display output video standard, select the **STAT** menu item in menu level 1, select the **VOUT** menu item in menu level 2, select the **VOT1** to **VOT8** menu item in menu level 3, then use the toggle switch to display the **STD** option and press the pushbutton to select it.

- *STAT*
  - *VOUT*
    - *VO1, VO2, VO3, VO4, VO5, VO6, VO7, VO8*
      - *STD*
        - *ASI*
        - *N270*
        - *P270*
        - *SDTI-N270*
        - *SDTI-P270*
        - *LOSS*

The display will show one of the following:

ASI	DVB-ASI detected
N270	DSMPTE 259-C, 270 Mb/s 4:2:2 Component 525 line, 4:3
P270	DSMPTE 259-C, 270 Mb/s 4:2:2 Component 625 line, 4:3
SDTI-N270	SDTi-N270, component 525 line, SMPTE 305M at 270Mb/s
SDTI-P270	SDTi-P270, component 625 line, SMPTE 305M at 270Mb/s
LOSS	Loss of valid input

4.2.1.12. Detecting the EDH Presence in a Compatible Signal at Output Ports

The 7707VB-8-OC48 module can detect the presence of EDH packets at the output video ports. To display the presence of EDH packets at a video output port, select the **STAT** menu item in menu level 1, select the **VO1** to **VO8** menu item in menu level 2, then use the toggle switch to display the **EDH** option and press the pushbutton to select it.

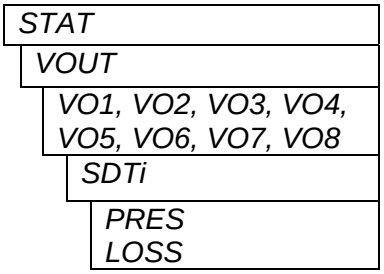
- *STAT*
  - *VOUT*
    - *VO1, VO2, VO3, VO4, VO5, VO6, VO7, VO8*
      - *EDH*
        - *PRES*
        - *LOSS*

The display will show one of the following:

PRES	EDH packets present at the selected output port
LOSS	EDH packets missing from the selected output port

4.2.1.13. Displaying the SDTi Status at Output Ports

The 7707VB-8-OC48 module can detect the presence of a SDTi video signal at the output video ports. To display the presence of SDTi video at a video output port, select the **STAT** menu item in menu level 1, select the **VO1** to **VO8** menu item in menu level 2, then use the toggle switch to display the **SDTi** option and press the pushbutton to select it.

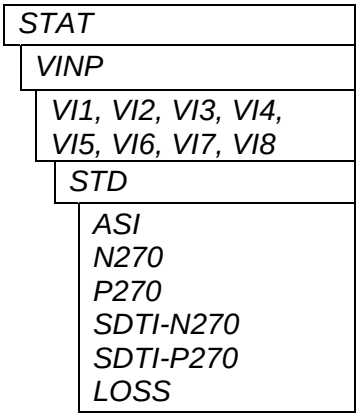


The display will show one of the following:

PRES	SDTi video present at the selected output port
LOSS	SDTi video missing from the selected output port

4.2.1.14. Displaying the Video Standard at Input Ports

The 7707VB-8-OC48 module can detect the video standard at the input video ports. To display input video standard, select the **STAT** menu item in menu level 1, select the **VINP** menu item in menu level 2, select the **VI1** to **VI8** menu item in menu level 3, then use the toggle switch to display the **STD** option and press the pushbutton to select it.

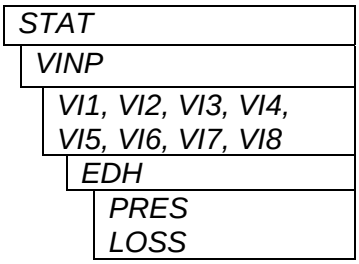


The display will show one of the following:

ASI	DVB-ASI detected
N270	DSMPTE 259-C, 270 Mb/s 4:2:2 Component 525 line, 4:3
P270	DSMPTE 259-C, 270 Mb/s 4:2:2 Component 625 line, 4:3
SDTI-N270	SDTi-N270, component 525 line, SMPTE 305M at 270Mb/s
SDTI-P270	SDTi-P270, component 625 line, SMPTE 305M at 270Mb/s
LOSS	Loss of valid input

4.2.1.15. Detecting the EDH Presence in a Compatible Signal at Input Ports

The 7707VB-8-OC48 module can detect the presence of EDH packets at the input video ports. To display the presence of EDH packets at a video input port, select the **STAT** menu item in menu level 1, select the **VI1** to **VI8** menu item in menu level 2, then use the toggle switch to display the **EDH** option and press the pushbutton to select it.

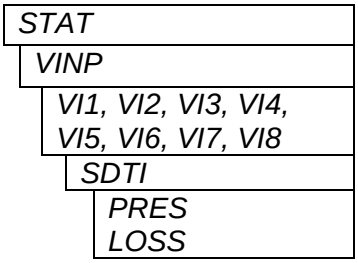


The display will show one of the following:

PRES	EDH packets present at the selected input port
LOSS	EDH packets missing from the selected input port

4.2.1.16. Displaying the SDTI Status at Input Ports

The 7707VB-8-OC48 module can detect the presence of a SDTi video signal at the input video ports. To display the presence of SDTi video at a video input port, select the **STAT** menu item in menu level 1, select the **VO1** to **VO8** menu item in menu level 2, then use the toggle switch to display the **SDTi** option and press the pushbutton to select it.

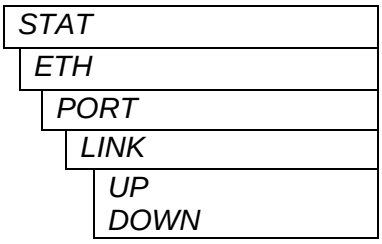


The display will show one of the following:

PRES	SDTi video present at the selected input port
LOSS	SDTi video missing from the selected input port

4.2.1.17. Displaying the Ethernet Status

The 7707VB-8-OC48 module can detect the presence of a valid Ethernet connection. To display the presence of an Ethernet connection, select the **STAT** menu item in menu level 1, select the **ETH** menu item in menu level 2, select the **PORT** menu item in menu level 3, then use the toggle switch to display the **LINK** option and press the pushbutton to select it.

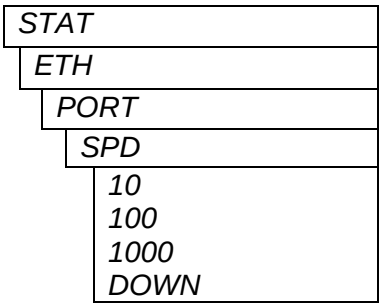


The display will show one of the following:

UP	Valid Ethernet connection present
DOWN	Ethernet connection not present

4.2.1.18. Displaying the Ethernet Speed

The 7707VB-8-OC48 module can detect the speed of a valid Ethernet connection. To display the Ethernet connection speed, select the **STAT** menu item in menu level 1, select the **ETH** menu item in menu level 2, select the **PORT** menu item in menu level 3, then use the toggle switch to display the **SPD** option and press the pushbutton to select it.

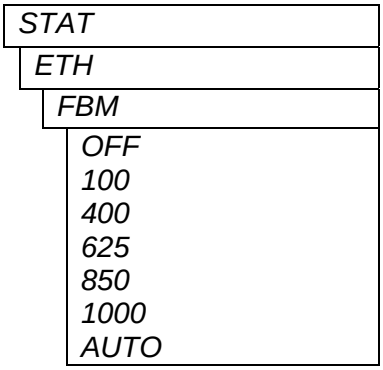


The display will show one of the following:

10	10 Base-TX Ethernet link established
100	100 Base-TX Ethernet link established
1000	1000 Base-TX Ethernet link established
DOWN	Ethernet connection not present

4.2.1.19. Flexible Bandwidth Management Monitoring

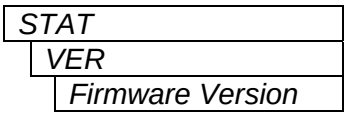
The 7707VB-8-OC48 module can display Flexible Bandwidth Management (FBM) setting. To display the current FBM setting, select the **STAT** menu item in menu level 1, select the **ETH** menu item in menu level 2, then use the toggle switch to display the **FBM** option and press the pushbutton to select it.



The display will show one of the following:

OFF	0Mb/s bandwidth allocated for Ethernet
100	100Mb/s bandwidth allocated for Ethernet
400	400Mb/s bandwidth allocated for Ethernet
625	625Mb/s bandwidth allocated for Ethernet
850	850Mb/s bandwidth allocated for Ethernet
1000	1000Mb/s bandwidth allocated for Ethernet
AUTO	FBM set to automatically utilize the remaining bandwidth over OC-48/STM16

4.2.1.20. Displaying the Firmware Version



The VER option displays the card's current firmware version. To display the firmware version, select the STAT menu item in the first menu level then use the toggle switch to display the VER option and press the pushbutton to select it. The firmware version will scroll across the display.

For example: **VER 1.0 BLD 067**

4.2.2. Control Menu

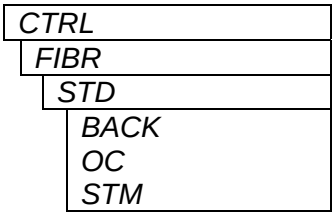
The Control menu enables the user to control and set different parameters on 7707VB-8-OC48 cards.

Pushbutton ⇨				
Level 1	**Level 2**	**Level 3**	**Level 4**	**Level 5**
CTRL (Control)	**FIBR** (optical link)	**STD** (Optical Link Data Standard)	**BACK** **OC** (Sonet) **STM** (SDH Transmission)	
		LASR (Laser Mode)	**BACK** **CONT** (continuous) **DISC** (discontinuous)	
		REF (Clock Settings)	**LINK** (POS Link clock) **XO** (Stratum 3 oscillator)	
		CIC (Current Interval Counters)	**ALL** (Clear All) **15M** (15 minute counter) **24H** (24 hour counter)	**CLR** (Clear) **BACK**
		LOSL (Loss of Link)	**CLR** (Clear) **BACK**	
		CESR (Clear all Errored Seconds Ratios)	**CLR** (Clear) **BACK**	
		SETH (Severe Errored Second Threshold)	**SESS** (Severe Errored Seconds Section **SESL** (Severe Errored Seconds Line) **SESP** (Severe Errored Seconds Path) **SEFS** (Severe Errored Framing Seconds)	**1** to **9999**
	VINP (Video Input Status)	**VI1, VI2, VI3, VI4, VI5, VI6, VI7, VI8**	**BACK** **EDH** (EDH Processing)	**OFF** **ON**
	VOUT (Video Output Status)	**VO1, VO2, VO3, VO4, VO5, VO6, VO7, VO8**	**BACK** **EDH** (EDH Processing)	**OFF** **ON**
			OSTD (Video Standard on Loss)	**ASI** **N270** **P270** **OFF**
	VMON (Video Monitor)	**BACK, VO1, VO2, VO3, VO4, VO5, VO6, VO7, VO8, VI1, VI2, VI3, VI4, VI5, VI6, VI7, VI8**		
	PSWD (Pascode)	**0** to **9999**		
	This area visible only if correct password is entered	**PWSL** (Password)	**0** to **9999**	
		VOUT (Video Output)	**VO1, VO2, VO3, VO4, VO5, VO6, VO7, VO8**	**DIS** (Disable) **EN** (Enable)
		VIN (Video Input)	**VI1, VI2, VI3, Vi4, VI5, VI6, VI7, VI8**	**DIS** (Disable) **EN** (Enable)
		ETH (Ethernet bandwidth)	**OFF, 100, 400, 625, 850, 1000, AUTO**	
	DISP (Card Edge Display)	**HORZ** (Horizontal) **VERT** (Vertical)		

Figure 4-3: Control Menu

4.2.2.1. Setting the Optical Link Standard

The optical link data standard can be selected between SONET or SDH Transmission. To configure the desired optical link standard, select the **CTRL** menu item in menu level 1, select the **FIBR** menu item in menu level 2, then use the toggle switch and pushbutton to select the desired optical link standard.

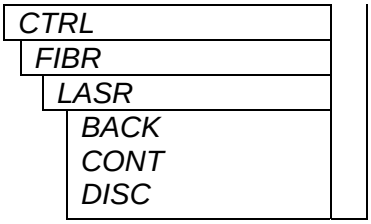


The user may select one of the following:

OC	SONET
STM	SDH Transmission

4.2.2.2. Setting the Behavior of Laser When there is No Applied Video

The behavior of the laser transmitter when no video or Ethernet data is applied to the input ports of the module may be set. To configure the laser transmitter mode, select the **CTRL** menu item in menu level 1, select the **FIBR** menu item in menu level 2, select the LASR menu item in menu level 3, then use the toggle switch and pushbutton to select the desired laser transmitter mode.

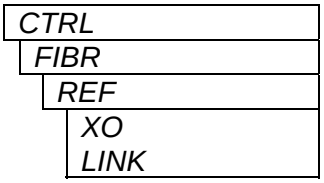


The user may select one of the following:

CONT	The laser will transmit continuously regardless of whether there are input or Ethernet signals present
DISC	The laser will turn off when there is no recognizable video or Ethernet signals present

4.2.2.3. Setting the Clock Source

Two different clock settings are available for serial fiber output. To configure the clock source, select the **CTRL** menu item in menu level 1, select the **FIBR** menu item in menu level 2, select the **REF** menu item in menu level 3, then use the toggle switch and pushbutton to select the desired clock source mode.

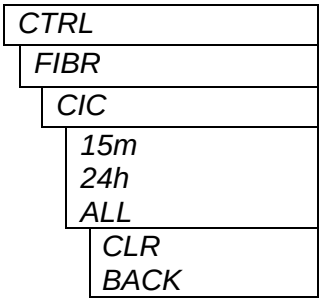


The user may select one of the following:

XO	Set the Stratum 3 oscillator as the clock source
LINK	Set the POS Link clock as the clock source

4.2.2.4. Clearing the Error Counters

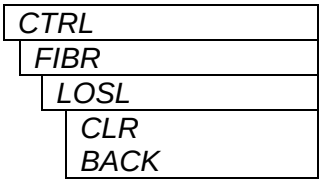
Current and last 15-minute and/or 24-hour time interval error counters can be cleared to 0. To clear interval error counters, select the **CTRL** menu item in menu level 1, select the **FIBR** menu item in menu level 2, select the **CIC** menu item in menu level 3, then use the toggle switch and pushbutton to select the desired interval error counter to be cleared followed by **CLR.**



The user may select one of the following:

15m	CLR to clear the 15 minute error counters
24h	CLR to clear the 24 hour error counters.
ALL	CLR to clear all error counters

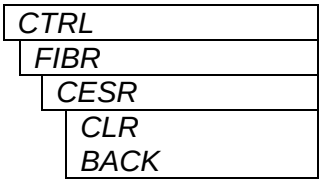
To clear the loss of link counter, select the **CTRL** menu item in menu level 1, select the **FIBR** menu item in menu level 2, select the **LOSL** menu item in menu level 3, then use the toggle switch and pushbutton to select **CLR.**



The user may select one of the following:

LOSL	CLR to clear the loss of link counter

To clear the errored seconds ratios (ESR SECT, LINE and PATH), select the **FIBR** menu item in menu level 2, select the **CESR** menu item in menu level 3, then use the toggle switch and pushbutton to select **CLR.**



The user may select one of the following:

CESR	CLR to clear all errored seconds ratios

4.2.2.5. Setting the Severe Errored Second Threshold

The Severe Errored Second (SES) threshold can be controlled. The user can set the value of the BIP errors occurring in one second at or above which it is considered a severely errored second. These threshold limits can be set for Line, Section or Path layers. Threshold values are from 1 to 9999. To set the SES threshold, select the **CTRL** menu item in menu level 1, select the **FIBR** menu item in menu level 2, select the **SETH** menu item in menu level 3, then use the toggle switch and pushbutton to select the desired SES threshold followed by a numerical value**.**

- *CTRL*
  - *FIBR*
    - *SETH*
      - *SESS*
      - *SESL*
      - *SESP*
      - *SEFS*
        - *1 to 9999*

The user may select one of the following:

SESS	Severe Errored Seconds Section (1-9999)
SESL	Severe Errored Seconds Line (1-9999)
SESP	Severe Errored Seconds Path (1-9999)
SEFS	Severe Errored Framing Seconds (1-9999)

4.2.2.6. Activating or Deactivating EDH Processing at the Output Video Ports

EDH processing of compatible signals on the video output ports can be enabled or disabled. When enabled, output video signals will be EDH monitored and recalculated EDH packets will be embedded into the video signal. Flags are also updated. When disabled, EDH recalculation and reinsertion is disabled. To enable EDH processing of the output video, select the **CTRL** menu item in menu level 1, select the **VOUT** menu item in menu level 2, select the **VO1 to VO8** menu item in menu level 3, select the **EDH** menu item in the menu level 4, then use the toggle switch and pushbutton to select the desired EDH processing mode for the desired output port.

- *CTRL*
  - *VOUT*
    - *VO1, VO2, VO3, VO4, VO5, VO6, VO7, VO8*
      - *EDH*
        - *ON*
        - *OFF*

The user may select one of the following:

ON	Output signals will be EDH monitored, recalculated EDH packets will be inserted, and flags are updated
OFF	EDH recalculation and reinsertion is disabled. EDH errors are still reported when present

If input signal has EDH packets, EDH Insert will always be forced to ON.

4.2.2.7. Setting Video Standard on Loss

The video output ports of 7707VB-8-OC48 can be individually configured to output gray video with a user set video standard if an input video signal is lost. To set the output video standard on loss, select the **CTRL** menu item in menu level 1, select the **VOUT** menu item in menu level 2, select the **VO1 to VO8** menu item in menu level 3, select the **OSTD** menu item in the menu level 4, then use the toggle switch and pushbutton to select the desired output video standard on loss for the desired output port.

CTRL
VOUT
VO1, VO2, VO3, VO4, VO5, VO6, VO7, VO8
OSTD
N270
P270
ASI
OFF

The user may select one of the following:

ASI	DVB-ASI
N270	DSMPTE 259-C, 270 Mb/s 4:2:2 Component 525 line, 4:3
P270	DSMPTE 259-C, 270 Mb/s 4:2:2 Component 625 line, 4:3
OFF	No output

4.2.2.8. Activating or Deactivating EDH Processing at the Input Video Ports

EDH processing of compatible signals on the video input ports can be enabled or disabled. When enabled, input video signals will be EDH monitored and recalculated EDH packets will be embedded into the video signal. Flags are also updated. When disabled, EDH recalculation and reinsertion is disabled. To enable EDH processing of the input video, select the **CTRL** menu item in menu level 1, select the **VOUT** menu item in menu level 2, select the **VO1 to VO8** menu item in menu level 3, select the **EDH** menu item in the menu level 4, then use the toggle switch and pushbutton to select the desired EDH processing mode for the desired input port.

CTRL
VINP
VI1, VI2, VI3, VI4, VI5, VI6, VI7, VI8
EDH
ON
OFF

The user may select one of the following:

ON	Input signals will be EDH monitored, recalculated EDH packets will be inserted, and flag are updated
OFF	EDH recalculation and reinsertion is disabled. EDH errors are still reported when present

4.2.2.9. Monitoring a Specific Channel

The 7707VB-8-OC48 provides the user with an output port to monitor any input or output video signals. This enables the user to monitor any incoming or outgoing video channels without having to switch the BNC connectors. To select the desired video channel to be monitored, select the **CTRL** menu item in menu level 1, select the **VMON** menu item in menu level 2, then use the toggle switch and pushbutton to select the desired video channel to be monitored.

- *CTRL*
  - *VMON*
    - *BACK*
    - *VI1*
    - *VI2*
    - *VI3*
    - *VI4*
    - *VI5*
    - *VI6*
    - *VI7*
    - *VI8*
    - *VO1*
    - *VO2*
    - *VO3*
    - *VO4*
    - *VO5*
    - *VO6*
    - *VO7*
    - *VO8*

The user may select one of the following:

VI1	Selects SDI Input 1
VI2	Selects SDI Input 2
VI3	Selects SDI Input 3
VI4	Selects SDI Input 4
VI5	Selects SDI Input 5
VI6	Selects SDI Input 6
VI7	Selects SDI Input 7
VI8	Selects SDI Input 8
VO1	Selects SDI Output 1
VO2	Selects SDI Output 2
VO3	Selects SDI Output 3
VO4	Selects SDI Output 4
VO5	Selects SDI Output 5
VO6	Selects SDI Output 6
VO7	Selects SDI Output 7
VO8	Selects SDI Output 8

4.2.2.10. Signal BLOCK Configuration

To enter this menu item, the correct passcode must be entered. Select the **CTRL** menu item in menu level 1, select the **PSWD** menu item in menu level 2, then use the toggle switch and pushbutton to enter the correct passcode. The Factory Default passcode is 7154. Once you have entered the correct passcode, you will be able to reset the password and/or block channels. Without the correct passcode, this option would not be visible.

To store a new passcode, select the **CTRL** menu item in menu level 1, select the **PSWD** menu item in menu level 2, select the **PWSL** menu item in menu level 3, then use the toggle switch and pushbutton to enter the a new passcode.

- *CTRL*
  - *PSWD*
    - *PWSL*
      - *0 to 9999*

The user may select one of the following:

PWSL	User selectable passcode (0 to 9999)

This menu is not available without entering the correct passcode.

To disable specific output video ports, select the **CTRL** menu item in menu level 1, select the **PSWD** menu item in menu level 2, select the **VOUT** menu item in menu level 3, then use the toggle switch and pushbutton to disable the desired output port.

- *CTRL*
  - *PSWD*
    - *VOUT*
      - *VO1, VO2, VO3, VO4, VO5, VO6, VO7, VO8*
        - *EN*
        - *DIS*

The user may select one of the following:

EN	Enable selected output port
DIS	Disable selected output port

This menu is not available without entering the correct passcode.

To disable specific input video ports, select the **CTRL** menu item in menu level 1, select the **PSWD** menu item in menu level 2, select the **VIN** menu item in menu level 3, then use the toggle switch and pushbutton to disable desired input port.

- *CTRL*
  - *PSWD*
    - *VIN*
      - *VI1, VI2, VI3, VI4, VI5, VI6, VI7, VI8*
        - *EN*
        - *DIS*

The user may select one of the following:

EN	Enable selected input port
DIS	Disable selected input port

This menu is not available without entering the correct passcode.

When Disabled, the data input on the selected signal is not placed on the fiber link data stream.

To allocate Ethernet bandwidth, select the **CTRL** menu item in menu level 1, select the **PSWD** menu item in menu level 2, select the **ETH** menu item in menu level 3, then use the toggle switch and pushbutton to allocate the desired Ethernet bandwidth.

- *CTRL*
  - *PSWD*
    - *ETH*
      - *OFF*
      - *100*
      - *400*
      - *625*
      - *850*
      - *1000*
      - *AUTO*

The user may select one of the following:

OFF	0Mb/s bandwidth allocated for Ethernet
100	100Mb/s bandwidth allocated for Ethernet
400	400Mb/s bandwidth allocated for Ethernet
625	625Mb/s bandwidth allocated for Ethernet
850	850Mb/s bandwidth allocated for Ethernet
1000	1000Mb/s bandwidth allocated for Ethernet
AUTO	FBM set to automatically utilize the remaining bandwidth over OC-48/STM16

This menu item cannot be modified without entering the correct passcode, though its current state is viewable.

4.2.2.11. Setting the Orientation of the Text on the Card Edge Display

The orientation of the card edge display messages can be either vertical or horizontal. To set the orientation of the card edge display messages, select the **CTRL** menu item in menu level 1, select the **DISP** menu item in menu level 2, then use the toggle switch and pushbutton to select vertical or horizontal orientation.

- *CTRL*
  - *DISP*
    - *HORZ*
    - *VERT*

The user may select one of the following:

HORZ	Horizontal display is used when the module is housed in the 1 rack unit 7701FR frame or the stand-alone enclosure.
VERT	Vertical display is used when the module is housed in the 3 rack unit frame.

5. JUMPERS

Several jumpers, located at the front of the module, are used to preset various operating modes. Figure 5-1 shows the locations of the jumpers on the board.

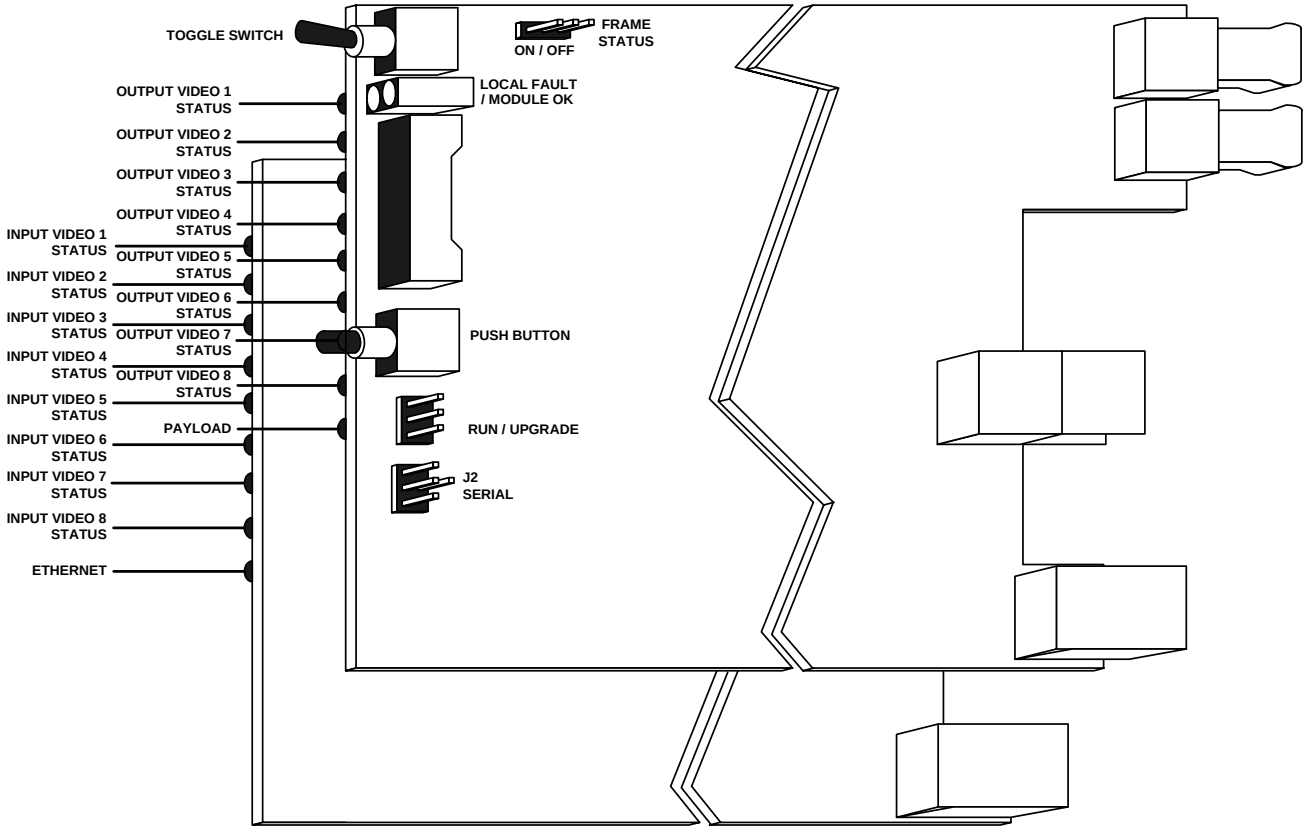


Figure 5-1: Location of Status Indicators and Jumpers

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

The FRAME STATUS jumper determines whether local faults (as shown by the Local Fault indicator) will be connected to the 7700FR frame's global status bus. Each of the cards of the module pair has a frame status jumper. Be sure to change both jumpers to the same state.

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.

5.2. CONFIGURING THE MODULE FOR FIRMWARE UPGRADES

The 7707VB-8-OC48 card can be configured for firmware upgrades using the UPGRADE jumpers, with the serial port 'u' command as described below, or with VistaLINK® PRO software.

5.2.1. Using the Upgrade Jumper

UPGRADE: The UPGRADE jumper is used when firmware upgrades are being done to the top and bottom cards of the module. For normal operation it should be installed in the *RUN* position. See the *Upgrading Firmware* section of this manual for more information.

The following applies to both the top and bottom cards of the module. To upgrade the firmware in the module unit, pull it out of the frame. Move the UPGRADE jumper into the *UPGRADE* 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 in the front of this manual binder. Once the upgrade is complete, remove the module from the frame, move the UPGRADE jumper into the *RUN* position, remove the upgrade cable and re-install the module. The card module is now ready for normal operation. Note that the top and bottom card of the module are independent from each other and require separate firmware upgrades.

Please note that the baud rate for a firmware upgrade is 115200 baud.

5.2.2. Upgrade Serial Port Command

The following applies to both the top and bottom cards of the module. Install the Upgrade cable provided (located in the vinyl pouch in the front of this manual) onto the SERIAL header at the card edge of the card to be upgraded. Connect this cable to your computer and run a terminal program as described in the *Upgrading Firmware* section in the front of this manual binder. Type in "u" without the quotes and hit the enter key. Follow the prompts that are presented on your terminal screen and proceed to download the new firmware specified for this card. Note that the top and bottom cards of the module are independent from each other and require separate firmware upgrades.

5.2.3. Upgrade using *VISTA*LINK®

VistaLINK® PRO supports module and standalone firmware monitoring and upgrading. This process is handled through the *Version Information* Dialog. The *Version Information* provides a great way for inventorying hardware. It can display firmware information, device IP information and provide an upgrade system for the module and standalone devices.

To access the version information dialog, follow the steps outlined below:

1. From the VistaLINK® PRO client select *Help -> Version Information.*
2. Once the dialog opens, adjust the *List* control at the bottom left from *Supported* to *Active.*

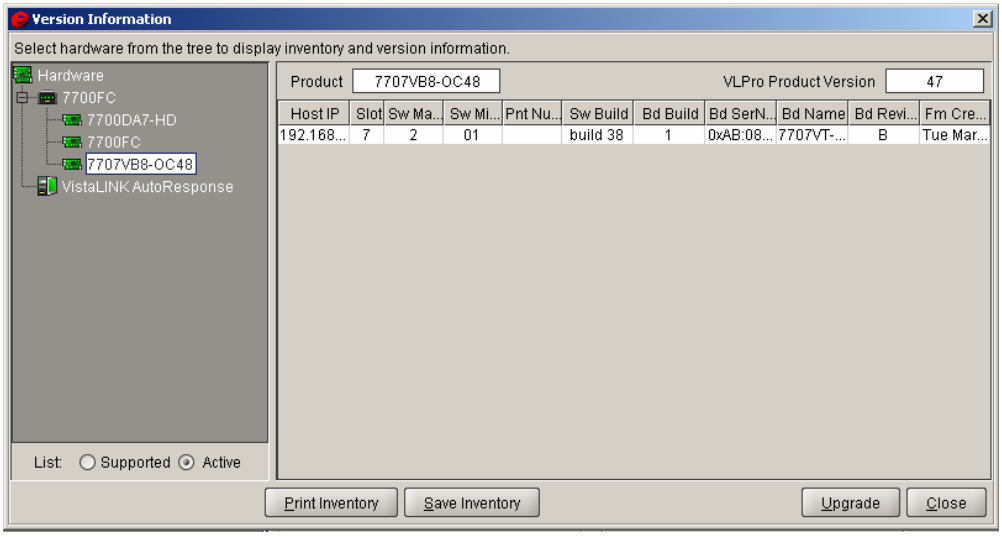


Figure 5-2: Version Information

When the *Active List* mode is used, the tree on the left resembles the available hardware on the network. Selecting a device from the tree will update the table view on the right. The table view provides the following information:

Host IP: IP address used to access the device.
Slot: If the device is a modular card, the slot location will be reported.
Sw Major: The firmware major number release.
Sw Minor: The firmware minor number release.
Sw Build: The firmware build number.
Hw Build: Hardware revision information.

It is important to note that if the table does not display any information about the firmware version, it is because it is a limitation of the module not supporting it.

To upgrade modules or standalone devices, first select a device from the left tree of the *Version Information* dialog then click the *Upgrade* button. The Upgrade Firmware dialog is shown in Figure 5-3.

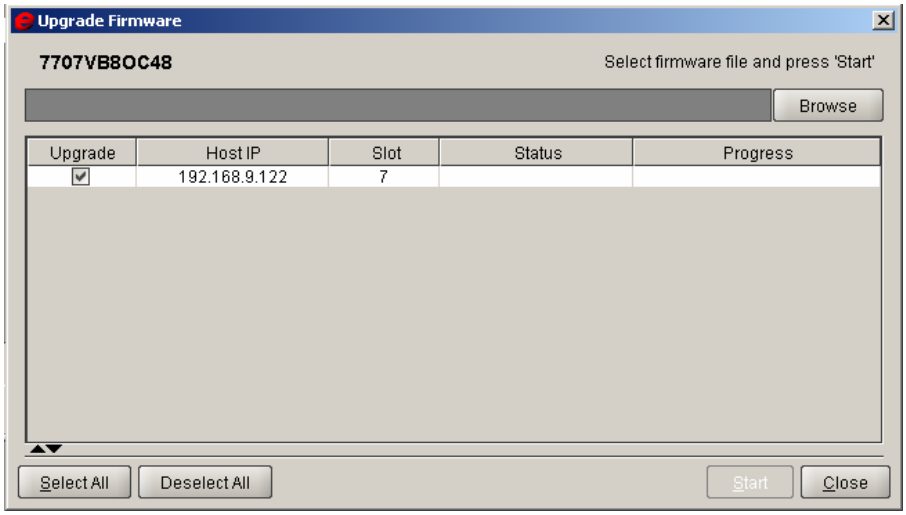


Figure 5-3: Upgrade Firmware Screen

It is possible to upgrade more than one module at a time. The Upgrade checkboxes allow the exclusion and inclusion of modules or devices to be included in the upgrade process. The *Browse* button allows for the firmware file to be selected from the file system. Once the file is selected, the *Start* button can be pressed to start the upgrade process.

6. VISTALINK® REMOTE MONITORING/CONTROL

6.1. WHAT IS *VISTA*LINK®?

*Vista*LINK® 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. *Vista*LINK® provides centralized alarm management, which monitors, reports, and logs all incoming alarm events and dispatches alerts to all the VLPro Clients connected to the server. Card configuration through *Vista*LINK® PRO can be performed on an individual or multi-card basis using simple copy and paste routines, which reduces the time to configure each module separately. Finally, *Vista*LINK® enables the user to configure devices in the network from a central station and receive feedback that the configuration has been carried out.

There are 3 components of SNMP:

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

2. Managed devices (such as 7707VB-8-OC48 cards), each with a unique address (OID), communicate with the NMS through an SNMP Agent. Evertz *Vista*LINK® enabled 7700 series modules reside in the 3RU 7700FR-C MultiFrame and communicate with the manager via the 7700FC *Vista*LINK® frame controller module, which serves as the Agent.

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

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

6.2. *VISTA*LINK® MONITORED PARAMETERS

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

Parameter	Description
Card Type	Indicates Card Type.
Optical Standard and Power	Indicates the current transmission standard implemented by the card (SONET or SDH) and the optical power detected on the card.
Input and Output Video Status	Indicates Input and Output Video Standard, EDH Status, and SDTi Status.
Link Input Status	Indicates Link Input Status.
Clock Reference	Indicates the current clock reference set as source.
Errored Seconds – Current and Last	Indicates the errored seconds occurred in 15 min and 24 hr time intervals.
Severe Errored Seconds	Indicates the severe errored seconds occurred in 15 min and 24 hr time interval.
Interval Elapsed Time	Indicates the current timer on 15 minutes and 24 hours counter.
Ethernet	Indicates Ethernet Speed and Link status.
TDMD Status	Indicates TDMD Status.
Signal Loss Seconds	Indicates Signal Loss Seconds.
Firmware Version	Indicates current Firmware Version.
Hardware Revision	Indicates Hardware Revision Build

Table 6-1: *Vista*LINK® Monitored Parameters

6.3. *VISTA*LINK® CONTROLLED PARAMETERS

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

Parameter	Description
Optical Standard	Allows user to set Optical Link Standard.
Laser	Allows the user to control the laser behavior when no video is present on coaxial inputs. In Discontinuous mode the laser will be shut off with no valid input signals. In Continuous mode the laser will continuously transmit and maintain the link to the companion 7707VB-4-ASI-OC3.
Reference	Allows the user to select Oscillator or Link mode for clock settings.
Change Password	Setup the Password used to access the Video Blocking features.
Optical Threshold	Allows the user to set Optical Level Threshold.
Errored Seconds Threshold	Allows the user to set Errored Seconds Threshold.
Video Block	Allows the user to enable/disable specific input or output video paths.
Vmon Channel	Allows the user to set the Output Monitoring Port.
Ethernet Bandwidth	Allows the user to set the Ethernet Bandwidth.
EDH Enable	Allows the user to set Input and Output EDH mode
Output Standard on Loss	Allows the user to set the Out Standard on Loss
Clear Counters	Allows the user to Clear Interval Counters, Error Ratios, and reset Signal Loss Seconds.

Table 6-2: *Vista*LINK® Controlled Parameters

6.4. *VISTA*LINK® TRAPS

The following traps can be *Vista*LINK® enabled and monitored.

Trap	Description
Input and Output Video Status	Triggers when there is a loss of a valid video signal on channels 1-8.
Input and Output Video Error	Triggers when there are errors present on the video inputs or outputs of channels 1-8.
Laser Fault	Triggers when laser fault is detected.
Link Loss	Triggers when a link loss is detected.
Severe Errored Second	Triggers when one or all of severe errored thresholds are crossed.
Errored Second	Triggers when Line, Path or Section errored second is present.
Ethernet Link	Triggers when Ethernet Link is lost.
Optical Power Threshold	Triggered when optical threshold exceeds Optical Power Input.

Table 6-3: *Vista*LINK® Traps