

# **2408RGBR/DVIR**

## **DVI and RGB Video/Audio Portable SFP Fiber Receiver**

### **Instruction Manual**

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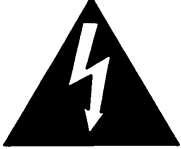

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## IMPORTANT SAFETY INSTRUCTIONS

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

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

**WARNING**

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

**WARNING**

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

**WARNING**

TO COMPLETELY DISCONNECT THIS EQUIPMENT FROM THE AC MAINS, DISCONNECT THE PLUG FROM THE DUAL POWER SUPPLIES AC RECEPTACLE.

**WARNING**

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

## **INFORMATION TO USERS IN EUROPE**

### **NOTE**

This equipment with the CE marking complies with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European standards:

- EN60065      Product Safety
- EN55103-1    Electromagnetic Interference Class A (Emission)
- EN55103-2    Electromagnetic Susceptibility (Immunity)

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

## **INFORMATION TO USERS IN THE U.S.A.**

### **NOTE**

#### **FCC CLASS A DIGITAL DEVICE OR PERIPHERAL**

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

### **WARNING**

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

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

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## REVISION HISTORY

<u>REVISION</u>	<u>DESCRIPTION</u>	<u>DATE</u>
1.0	First Release	Sept 09
1.1	Added 2408DVIR options	Oct 09
1.2	Updated Rear Plate Drawings	Nov 09

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## WARNING



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



## 1. OVERVIEW

The 2408RGBR SFP Fiber Receiver extends one digital (DVI) or analog (RGB) video display connection over a single fiber optic link with display resolutions up to WUXGA (1920 x 1200). The DVI-I connector combines analog and digital display technologies, promoting optimal compatibility with different display types. Two optional analog audio outputs are also available, as well as optional serial data, USB, keyboard, and mouse. These options facilitate complete remote computer control and display, including the ability to connect USB peripherals. The 2408RGBR is designed to operate with a companion 2408RGBT transmitter.

The 2408DVIR provides the same features listed above, however, it only accepts a digital (DVI) input.

Monitoring and control of card status and card parameters are provided locally at the card-edge, or remotely via *VistaLINK*® capability.

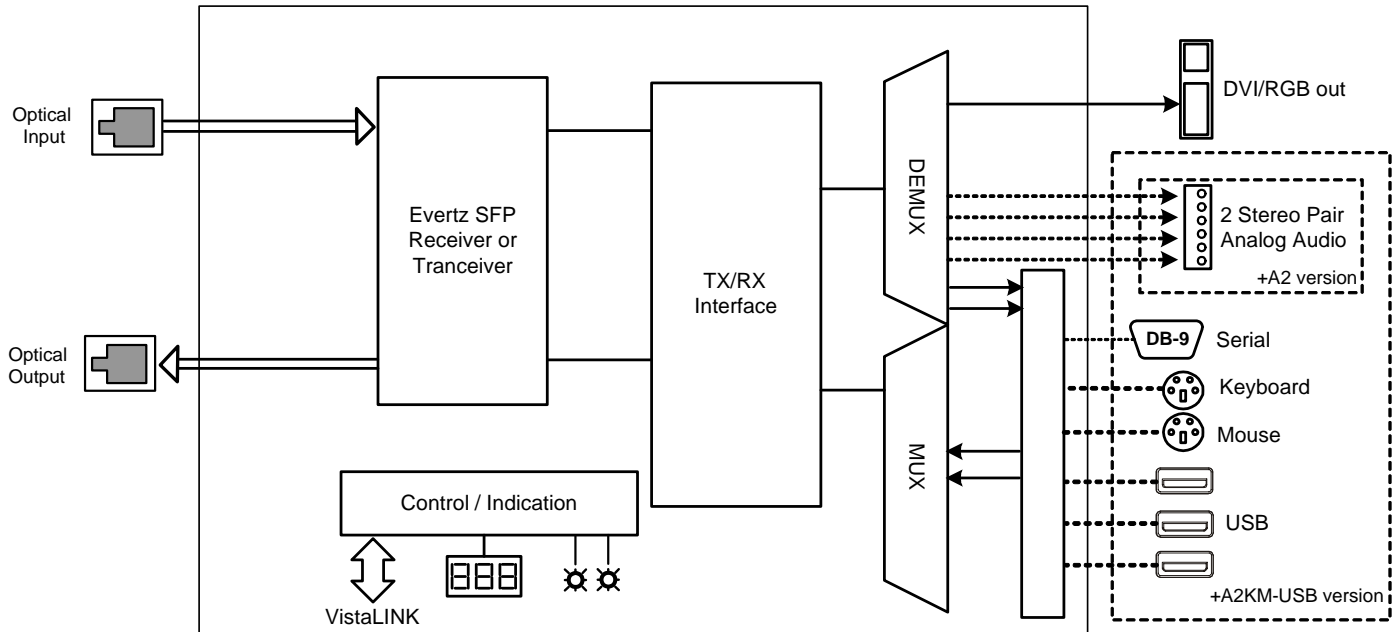
The 2408RGBR/DVIR uses Evertz SFP modules to interface to and from the fiber optic domain. SFP receivers and transceivers have wide-band optical input and can accept any wavelength between 1270nm and 1610nm.

### Features:

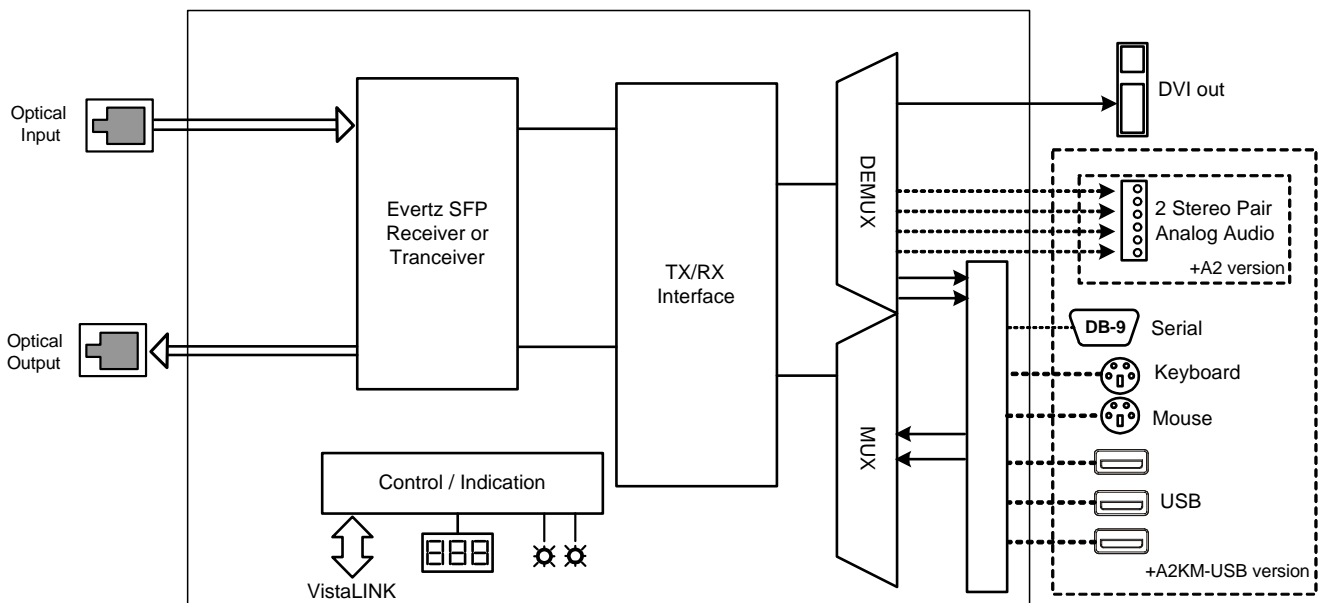
- Digital (DVI) and analog (RGB) display technologies are supported through one interface on the 2408RGBR
- VESA video resolutions supported up to WUXGA (1920x1200)
- Two optional analog audio channels
- Optional keyboard and mouse
- Optional USB 2.0 interface
- Full 24 bits per pixel colour resolution
- Convenient audio monitoring headphone jack with adjustable volume
- Full-bandwidth 3 Gb/s signal transport over fiber – no compression or sub-sampling
- Evertz SFP modules are fully hot swappable from rear plate
- Ideal for use with high resolution LCD, plasma or projection screens
- All configuration settings are controllable through the card-edge user interface, or *VistaLINK*®
- Comprehensive signal and card status monitoring via four-digit card-edge display, or *VistaLINK*®
- Wide-band optical input is compatible with standard, or CWDM transmission schemes
- Compatible with multi-mode and single-mode fiber

Fiber Type	Optical/Link Budget	Transmit Side		Receive Side		Description
		Ordering Product Info	TX Power	Ordering Product Info	RX Sensitivity	
Multi-Mode	< 500m	2408RGBT-A2+13	-1dBm	2408RGBR-A2	-20dBm	1310nm on Tx and Rx fibers
Single-Mode	14dB/40km	2408RGBT-A2+13	-1dBm	2408RGBR-A2	-20dBm	1310nm on Tx and Rx fibers
Single-Mode	18.5dB/53km**	2408RGBT-A2+Cxx	+2dBm	2408RGBR-A2	-20dBm	Different CWDM Wavelengths for Tx & Rx, with 8Ch CWDM Mux/Demux**
** Assumes 8Ch CWDM Mux/Demux loss of 3.5dB				Tx Power/Rx Sensitivity are nominal values Fiber loss =0.35/0.25dB per km @ 1310nm/1550nm		

**Table 1-1: Typical Application Configurations**



**Figure 1-1: 2408RGBR Block Diagram**

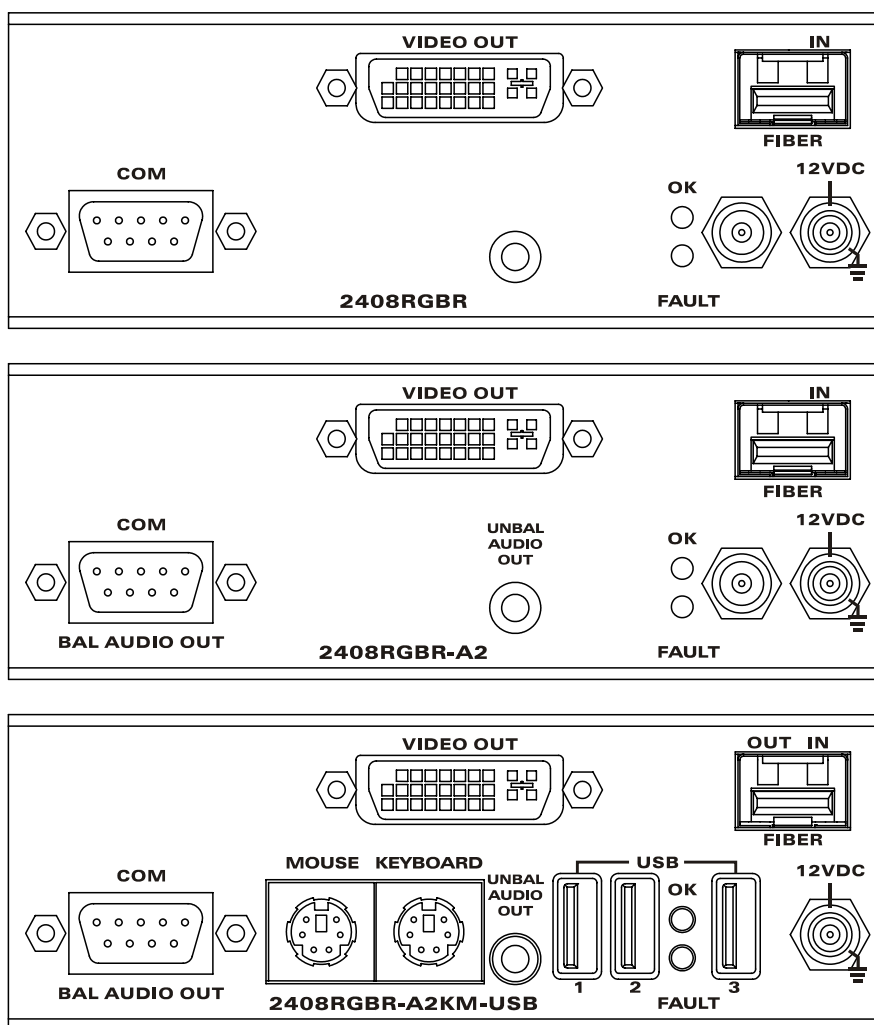


**Figure 1-2: 2408DVIR Block Diagram**

## 2. INSTALLATION

The 2408RGBR/DVIR modules are stand-alone units that have one DVI-I video connector and (depending on the options ordered) may also have analog audio terminals, PS2 keyboard and mouse connectors, a DB9 serial connector, and three type-A USB connectors. In addition, there is a dual channel LC/PC SFP slot to house an Evertz SFP receiver or an Evertz SFP transceiver. The DVI-I connector supports combined analog and digital video through a single interface. An industry-standard DB-15 connector adapter may be used for RGB. The following diagrams show all rear plate options for the 2408RGBR/DVIR.

When installing the Evertz SFP module into the rear plate SFP housing, align the transmit and receive arrow indicators UPWARD with the 2408RGBR module upright. Gently slide the SFP module into the rear plate SFP housing until it clicks into place.



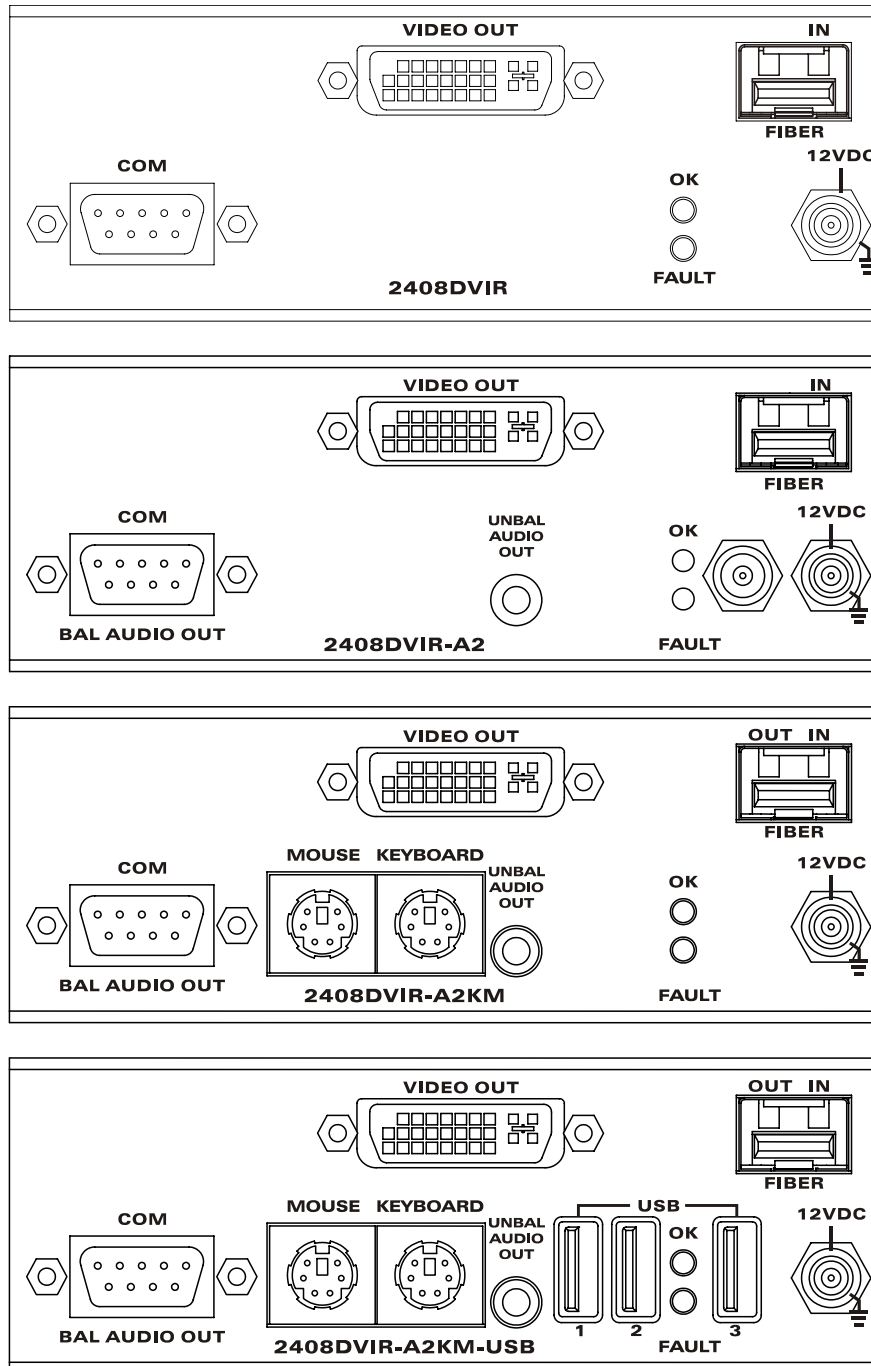


Figure 2-1: 2408RGBR &amp; 2408DVIR Rear Panels

## **2.1. OPTICAL CONNECTIONS**

**SFP FIBER INPUT:** There is one LC/PC female connector when the 2408RGBR/DVIR is equipped with an Evertz Receiver or Transceiver SFP module. This wide band optical input accepts optical wavelengths of 1270nm to 1610nm, accommodating standard or CWDM transmission schemes. This input is compatible with multimode fiber when connected directly to a companion 2408RGBT/DVIT transmitter.

**SFP FIBER OUTPUT:** There is one LC/PC female connector when the 2408RGBR/DVIR is equipped with an Evertz Transceiver SFP module. The optical output is available in 1310nm, 1550nm, and CWDM (ITU-T G.694.2 compliant) wavelengths. This connector is compatible with multimode fiber when connected directly to a companion 7708RGBT/DVIT receiver.

## **2.2. SIGNAL CONNECTIONS**

**VIDEO OUTPUT:** The 2408DVIR accommodates display devices with digital DVI connections only. The 2408RGBR DVI-I connector accommodates analog and digital display technologies, promoting optimal compatibility with different display types. Display devices with DVI connectors may be connected directly to this port. A DB-15 RGB connection may also be accommodated using an industry standard DB-15 to DVI-I adapter such as the Belkin F2E4162, or appropriately terminated cable assembly such as the Amp 16539332-1.



**Note:** When making digital DVI connections, Evertz recommends using only high quality DVI cables, no longer than 6 feet (1.8m).

**AUDIO OUTPUTS (A2 & A2KM-USB Versions):** The 2408RGBR/DVIR-A2 and 2408RGBR/DVIR-A2KM-USB modules provide a terminal block for output connections compatible with either balanced or unbalanced analog audio. Balanced audio signals should be connected to the positive (+) and negative (-) output terminals. Unbalanced audio signals should be connected to the positive (+) input terminal, and a jumper connection should be installed between the negative (-) input terminal and the ground terminal ( $\perp$ ).

**KEYBOARD (A2KM-USB Version):** The 2408RGBR/DVIR-A2KM-USB provides a PS2 port for a keyboard connection. Connect this port to a standard PS2 keyboard.

**MOUSE (A2KM-USB Version):** The 2408RGBR/DVIR-A2KM-USB provides a PS2 port for a mouse connection. Connect this port to a standard PS2 mouse.

**SERIAL (A2KM-USB Version):** Female DB9 RS-232 serial port with standard PC style layout. This port may be connected to serial peripherals. This port may also operate in RS-422 mode by changing a user-selectable menu item.

**USB PORTS (A2KM-USB Version):** When equipped with the USB option, the 2408RGBR/DVIR-A2KM-USB provides three type-A USB ports. These ports may be used to connect USB peripherals.

### 2.3. INTERFACING WITH 3G OPTICAL ROUTER

Figure 2-2 illustrates a typical setup using an optical router with a bidirectional 7708RGBT/DVIT transmitter and a compatible 2408RGBR/DVIR receiver. To ensure proper system operation in bidirectional configurations, it is important that the Tx OUT and Rx OUT are both switched at the same time. This should be taken into account when programming router salvo operations. Note that A2KM-USB transmitter versions can only be routed to A2KM-USB receiver versions and Non-A2KM-USB transmitter versions can only be routed to Non-A2KM-USB receivers.

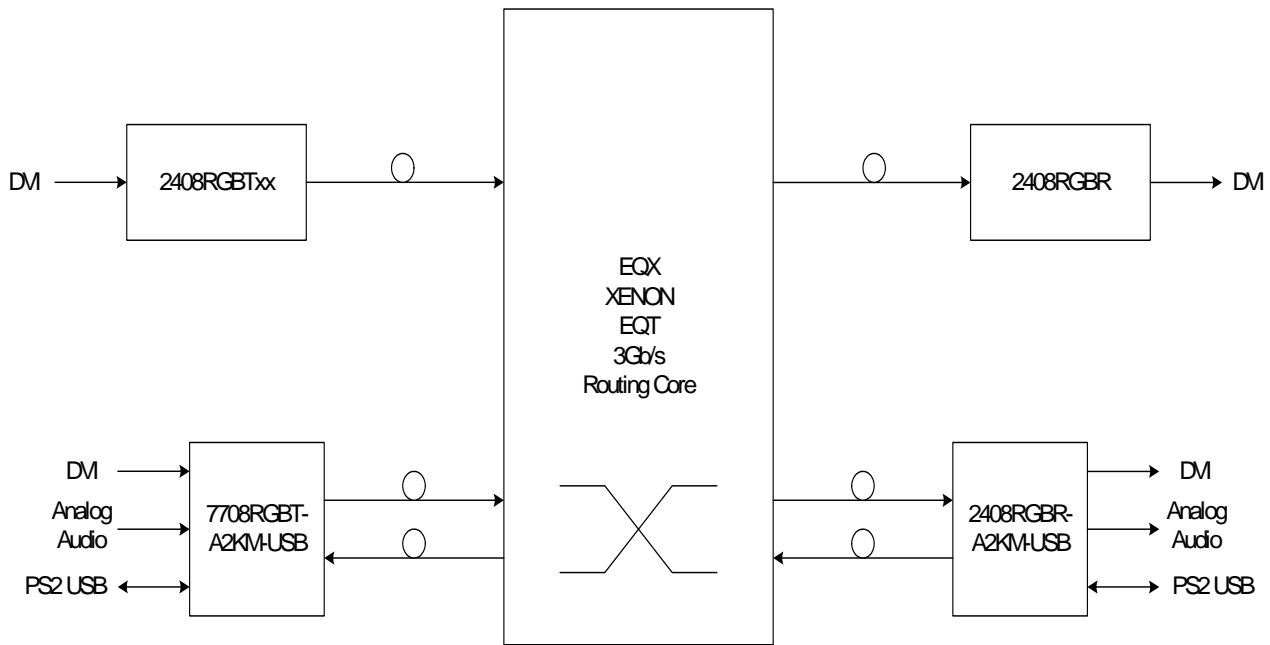


Figure 2-2: Setup Using an Optical Router

### 2.4. CARE AND HANDLING OF OPTICAL FIBER

#### 2.4.1. Safety



Background colour: yellow  
Triangular band: black  
Symbol: black

**CLASS 1 LASER PRODUCT**

#### 2.4.2. Assembly

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

### 2.4.3. 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: 2408RGR/DVIR, 2408RGR/DVIR-A2, 2408RGR/DVIR-A2KM-USB+13, 2408RGR/DVIR-A2KM-USB+Cxx (xx = 27, 29, 31, 33, 35, 37, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61)



**Figure 2-3: Reproduction of Laser Certification and Identification Label**

### 2.4.4. Handling and Connecting Fibers



**Never touch the end face of an optical fiber. Always keep dust caps on optical fiber connectors when not connected and 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 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. ANALOG VIDEO OUTPUTS

Number of Signals:	1
Signal Type:	RGB
Sync Type:	H and V, or Sync on Green
Connector:	DVI-1 with Analog, or 15-pin HD-15 VGA Analog (with adapter)
Display Resolution:	
Non-A2KM versions:	Up to WUXGA, 1920x1200 @ 75Hz
-A2KM versions:	Up to WUXGA, 1920x1200 @ 60Hz
Colour Depth:	24 Bit
Analog Bandwidth:	300MHz (min)
Impedance:	75 Ohm
Analog Output Level:	1.4Vp-p (max)
SNR:	>55dB
Linear Distortion:	2% (max)
Intensity Distortion:	2% (max)

#### 3.2. DIGITAL VIDEO OUTPUTS

Number of Signals:	1
Signal Type:	TMDS, per DVI specification
Connector:	DVI-I
Display Resolution:	
Non-A2KM versions:	Up to WUXGA, 1920x1200 @ 75Hz
-A2KM versions:	Up to WUXGA, 1920x1200 @ 60Hz
Colour Depth:	24-Bit

#### 3.3. DIGITAL VIDEO CONTROL

Number of Signals:	1
Signal Type:	DDC2B, per DVI specification
Connector:	DVI-I

#### 3.4. ANALOG AUDIO OUTPUTS (A2 & A2KM-USB VERSIONS)

Number of Signals:	2
Type:	Balanced or unbalanced analog audio
Connector:	12-pin Removable Terminal Block
Output Level:	
Into High Impedance:	+24dBu (max)
Into 600Ω:	+23dBu (max)
Level:	-20dB to +3dB
Frequency Response:	±0.1dB (max, 20Hz to 20KHz)
THD + Noise:	0.005% (max, 20Hz to 20KHz)
S/N Ratio:	>85dB (min)
Channel Phase:	±1° (max, 20Hz to 20KHz)
Output Impedance:	>20kΩ (nom, differential)



**3.5. KEYBOARD/MOUSE INPUT/OUTPUT (A2KM-USB VERSIONS)**

**Number:** 2  
**Connector:** 1 PS2 each for keyboard and mouse

**3.6. SERIAL PORT (A2KM-USB VERSIONS)**

**Standard:** RS232 or RS422 (user selectable)  
**Number:** 1  
**Connector:** DB9M

**3.7. USB PORT (A2KM-USB VERSIONS)**

**Standard:** USB 2.0  
**Number:** 3  
**Connector:** USB type-A

**3.8. OPTICAL INPUT**

**Connector:** LC/PC (female)  
**Input Wavelength:** 1270 to 1610nm (min)  
**Input Power:** 0dBm (max)  
**Input Optical Sensitivity:** -20dBm

**3.9. OPTICAL OUTPUT**

**Connector:** LC/PC (female)  
**Fiber Size and Type:** Single Fiber versions: 9  $\mu$ m core / single mode  
**Output Wavelengths:**  
    **Standard:** 1310nm, 1550nm (nominal)  
    **CWDM:** 1270nm to 1610nm (ITU-T G.694.2 compliant).  
**Output Power:**  
    **1310nm FP (Standard):** -1 dBm  $\pm$ 1dBm  
    **CWDM DFB:** +2 dBm  $\pm$ 1dBm

**3.10. ELECTRICAL**

**Voltage:** 12V DC (nom)  
**Power:**  
    **Non DWDM Laser:** 11 Watts (max)  
    **DWDM Laser:** 14 Watts (max)

**3.11. PHYSICAL**

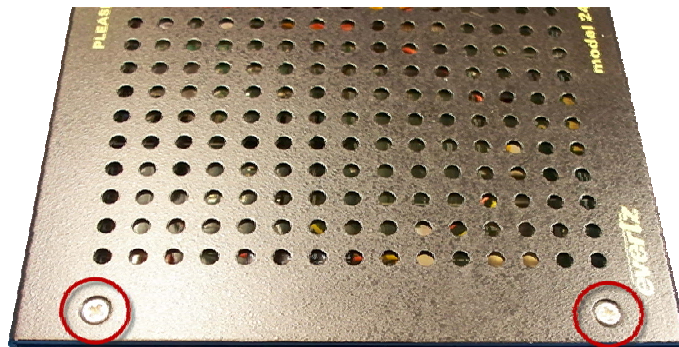
**Dimensions**  
    **With Flanges:** 7.81"Lx5.63"Wx1.75"H  
                          (199mm L x 143mm W x 45mm H)

## 4. CARD-EDGE MONITORING AND CONTROL

### 4.1. ACCESSING THE TOGGLE SWITCH AND PUSH BUTTON

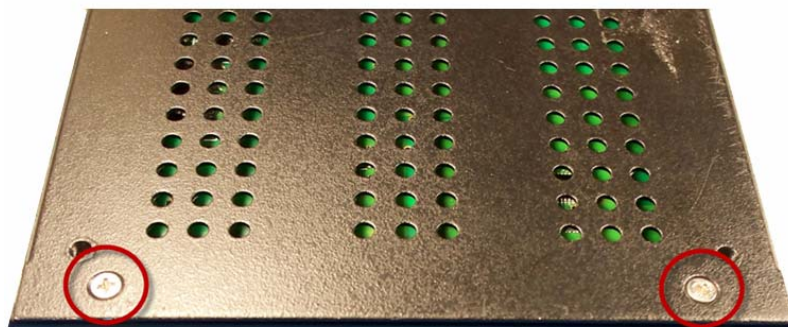
To expose the card edge controls you must remove the side panel. To do so, follow the instructions listed below:

1. Locate the two screws on the top (near the front) of the 2408 unit, as shown in Figure 4-1.
2. Remove these two screws (highlighted with red circles in Figure 4-1).



**Figure 4-1: Identifying Top Screws**

3. Flip the unit on its back and note the two screws at the bottom (near the front) of the 2408 unit, as shown in Figure 4-2.
4. Remove these two screws (highlighted with red circles in Figure 4-2).



**Figure 4-2: Screws on Bottom of Unit**

5. Gently pull the front panel outwards from the frame.
6. Now the toggle switch and push button are exposed to perform unit functions.

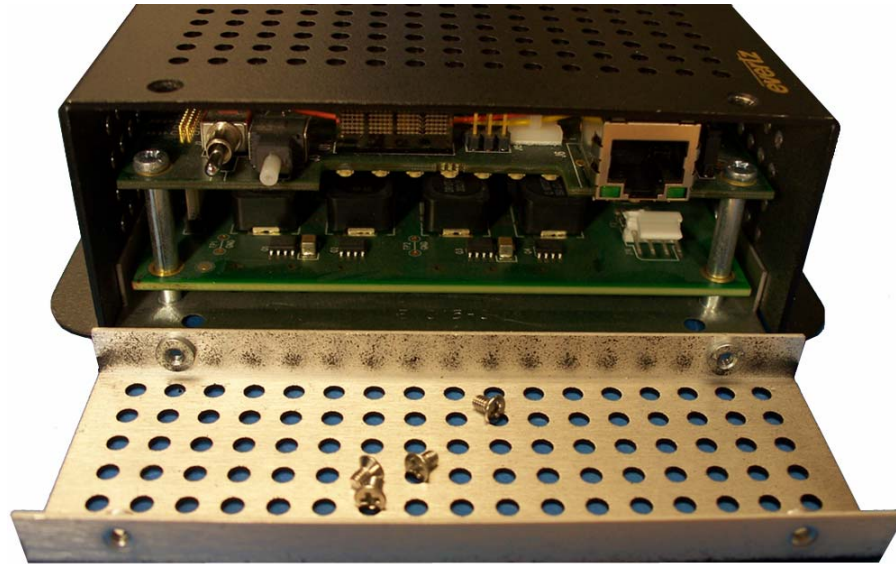


Figure 4-3: Inside View of Unit

## 4.2. CARD EDGE OPERATION

The 2408RGBR/DVIR has nine LED status indicators and a 4-digit dot-matrix 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 control and status indications to the dot-matrix display. Additionally, an audio monitoring headphone jack is provided at the card-edge, for verification of signal presence and content. Figure 4-4 shows the locations of the indicators and controls.

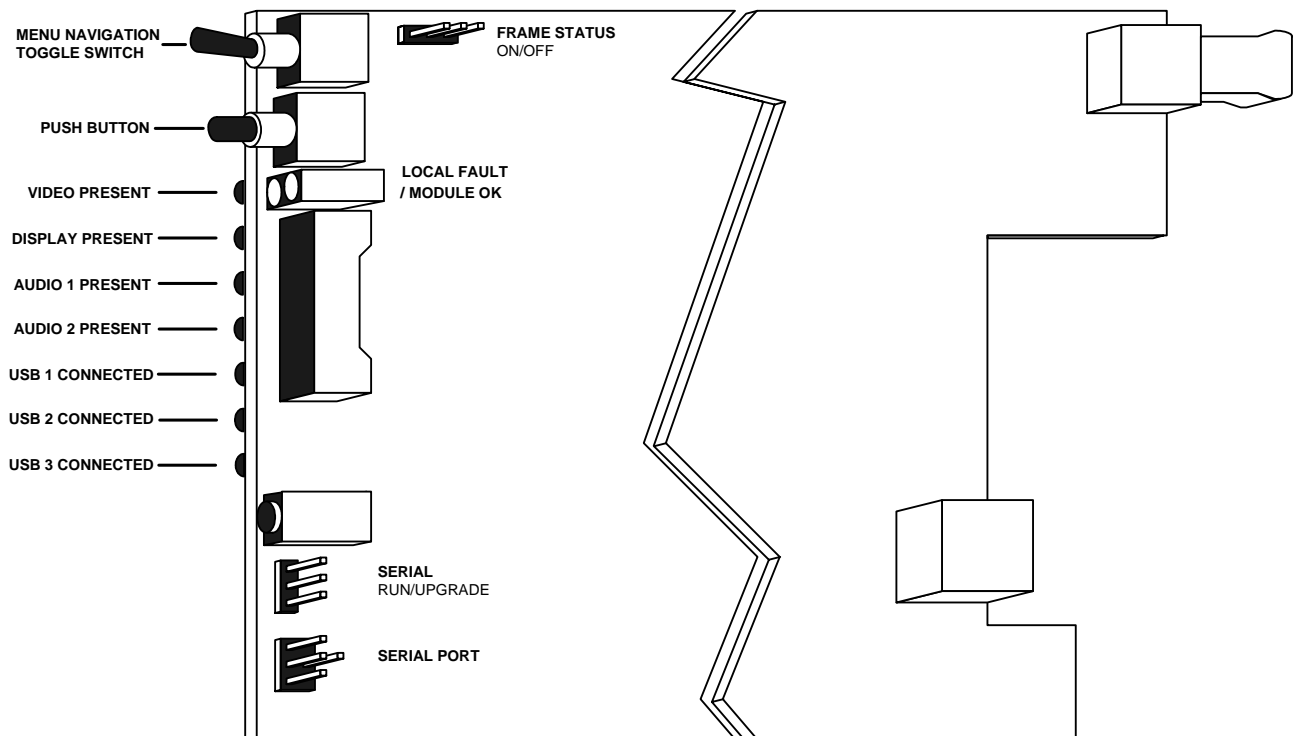


Figure 4-4: Location of Status Indicators and Jumpers

### 4.3. STATUS INDICATOR LEDS

**LOCAL FAULT:** This red LED indicates poor module health. Several conditions could cause this fault indication to be active:

- A link with a companion 2408RGBT/DVIT has not been achieved
- A card power fault exists (i.e. a blown fuse)
- Laser fault (-A2KM-USB version)

The LOCAL FAULT indication can also be reported to the frame by setting the FRAME STATUS jumper.

**MODULE OK:** This green LED indicates good module health. It will be on while a link is maintained with a companion 2408RGBT/DVIT, and the card power is good.

**VIDEO PRESENT:** When active, this green LED indicates that a video signal is present at the optical input, and is compatible with the connected video display. Video format compatibility is determined using DDC (Display Data Channel) information detected from the video display. If no DDC information is detected from the video display (Display Present LED is off), then any received video format will be considered valid.

**DISPLAY PRESENT:** This green LED indicates that DDC (Display Data Channel) control data is detected from the connected video display. If no DDC data is detected, then any received video signal will appear at the outputs without qualification of display compatibility.

**AUDIO PRESENT (A2 & A2KM-USB Versions):** These two green LED's indicate the signal presence of the two respective audio input channels. Signal presence indication considers the audio detection threshold set by the user on the transmitter card (Refer to the 2408RGBT/DVIT manual for more information).

**USB CONNECTED (USB Versions):** These three green LED's indicate that a USB connection is established on the respective port.

### 4.4. CARD-EDGE DISPLAY AND CONTROLS

Additional signal and status monitoring is provided via the 4-digit dot-matrix display located at the card-edge. The card-edge pushbutton and toggle-switch are used to navigate through the display menu. Figure 4-5 provides a quick reference to the display menu structure.

Pressing the pushbutton advances the display to the next menu level. The toggle-switch may then be used to move up or down through selections of that menu level. Select BACK to return to the top menu level.

CTRL menu items have user-adjustable configuration values associated with them. STAT menu items display operating conditions or configuration values, but do not allow adjustment.

If a specific menu selection has a configuration value associated with it, then this may be changed using the toggle switch. Pressing the pushbutton will apply the displayed value and return you to the previous menu level.

The most recent user selection will be maintained in non-volatile memory in the event of power loss to the module.

Level 1	Level 2	Level 3	Level 4	NOTES
LINK LOS OK	BACK			All
	CTRL	BACK		All
		OSNC	AUTO SOG HV	All
		HSFT	-10 to +10	All
		VSFT	-10 to +10	All
		LINK	2970 3125	All
		BRT	0 to 63	All
		OSET	NORM BLAK SUSP OFF	All
		OLOS	BLAK SUSP OFF	All
		LASR	CONT DISC	-A2KM-USB
		AUD/FADE	ON OFF	A2, and -A2KM-USB
		VOL	0 to 64	-A2, and -A2KM-USB
		DISP	VERT HORZ	All
	STAT	BACK		All
		RES	Detected Video Resolution	All
		TYPE	Detected Input Video Type (on RGBT) - DVI, RGB	All
		ISNC	Input Sync (on RGBT) - None, HV, SOG	All
		PWR	Optical Power	All
		LINK	Link Rate	All
		TID	Transmitter ID tag	All
		VER	Firmware version	All

Figure 4-5: 2408RGBR Card Edge Menu Flow Cart

#### 4.4.1. Card-Edge Display Warning Indications

There are flashing warning indications that might appear on the display of the 2408RGBR/DVIR. These warning indications can overwrite other display text, and supersede each other by order of priority. By pressing the pushbutton, a warning indication can be cleared from the display, and access to other menu items is maintained. Possible warning indications are:

LASR...ERR	Laser error - warns of laser (if equipped) end-of-life condition
LINK...LOSS	Optical link not established
OK	Optical link established, no video input or laser (if equipped) problems

#### 4.4.2. Selecting the Output Sync Type (2408RGBR Models Only)

The 2408RGBR is capable of producing different sync signals, depending on the requirements of the connected display equipment. The available sync types are sync on green and RGBHV. The 2408RGBR will choose an output sync type based on the sync type detected at the 2408RGBT (AUTO mode) or it may be forced to produce sync on green or RGBHV regardless of the sync type detected at the 2408RGBT.

CTRL
OSNC
SOG
HV
AUTO

To change the *Output Sync Type*, select the CTRL menu item in menu level 1. Use the toggle switch to select the OSNC menu item and press the pushbutton. Select from the following options:

SOG: Sync On Green

HV: RGBHV

AUTO: Output same sync type as detected at the input of the 7708RGBT

#### 4.4.3. Adjusting the Horizontal and Vertical Shift (2408RGBR Models Only)

The 2408RGBR module allows the user to adjust the vertical and horizontal position of the DVI output picture when RGB is applied.

CTRL
HSFT
-10 to 10

To adjust the *Horizontal Shift*, select the CTRL menu item in the first menu level. Use the toggle switch to select the HSFT menu item and press the pushbutton. The toggle switch may then be used to change the value. Press the pushbutton to apply the displayed value and return to the first menu level.

-10 to +10 Horizontal shift range

CTRL
VSFT
-10 to 10

To adjust the *Vertical Shift*, select the CTRL menu item in the first menu level. Use the toggle switch to select the VSFT menu item and press the pushbutton. The toggle switch may then be used to change the value. Press the pushbutton to apply the displayed value and return to the first menu level.

-10 to +10 Vertical shift range

#### 4.4.4. Setting the Link Rate

In applications with 3G routing, the *Link Rate* of the 2408RGBR/DVIR must be 2970Mb/s to be compatible with 3G routers. Two user selectable *Link Rates* may be chosen, 2970Mb/s for routing purposes and 3125Mb/s for normal operation.

CTRL
LINK
2970
3125

To configure the *Link Rate*, select the CTRL menu item in the first menu level. Use the toggle switch to select the LINK menu item and press the pushbutton. The toggle switch can then be used to change the mode of operation. Press the pushbutton to apply the displayed selection and return to the first menu level. The following selections are available for this menu item:

- 2970 Sets the Link Rate to 2970Mb/s for use with 3G routers.
- 3125 Sets the Link Rate to 3125Mb/s for normal operation.

#### 4.4.5. Adjusting the Output Brightness (2408RGBR Models only)

The 2408RGBR allows adjustment of the *Output Signal Brightness* to accommodate display devices with varying input sensitivities.

CTRL
BRT
0 to 63

To adjust the *Brightness*, select the CTRL menu item in the first menu level. Use the toggle switch to select the BRT menu item and press the pushbutton. The toggle switch may then be used to change the level. Press the pushbutton to apply the displayed value and return to the first menu level.

- 0 to 63 Range of brightness selection

#### 4.4.6. Adjusting the Output Setting

Adjusting the *Output Setting* forces the output video to NORMAL, BLACK, SUSPEND, or OUTPUT OFF. Adjusting this setting overrides the video input regardless of its status.

CTRL
OSET
NORM
BLAK
SUSP
OFF

To adjust the *Output Setting*, select the CTRL menu item in the first menu level. Use the toggle switch to select the OSET menu item and press the pushbutton. The toggle switch may then be used to change the output mode. Press the pushbutton to apply the displayed value and return to the first menu level. The following selections are available for this menu item:

- NORM Selecting this option sets the output setting to Normal.
- BLAK Selecting this option sets the output setting to Black.
- SUSP Selecting this option suspends the output setting.
- OFF Selecting this option turns the output off.

#### 4.4.7. Adjusting the Output on Loss

The *Output on Loss* setting determines what the output video is set to upon loss of video input.

CTRL
OLOS
BLAK
SUSP
OFF

To adjust the *Output on Loss*, select the CTRL menu item in the first menu level. Use the toggle switch to select the OLOS menu item and press the pushbutton. The toggle switch may then be used to change the mode. Press the pushbutton to apply the displayed value and return to the first menu level. The following selections are available for this menu item:

BLAK	Selecting this option sets the output setting to Black.
SUSP	Selecting this option suspends the output setting.
OFF	Selecting this option turns the output loss off.

#### 4.4.8. Selecting the Output Laser Enable Mode (A2KM-USB Version)

In some applications, it is beneficial to disable the laser output with no input signal present. Alternatively, it may be preferable to maintain an optical output signal, even with no input. The 2408RGBR/DVIR supports both modes of operation.

CTRL
LASR
CONT
DISC

To configure the mode *Laser Enable*, select the CTRL menu item in the first menu level. Use the toggle switch to select the LASR menu item and press the pushbutton. The toggle switch can then be used to change the mode of operation. Press the pushbutton to apply the displayed selection and return to the first menu level. The following selections are available for this menu item:

CONT	Continuous operation. Laser is always enabled, even without an active input signal.
DISC	Discontinuous operation. Laser is disabled when no active input signal is detected.

#### 4.4.9. Setting the Audio Soft Switch (A2 and A2KM-USB Versions)

The 2408RGBR/DVIR is capable of eliminating hot-switch audio pops on the analog output. Turn the *Soft Switch* feature ON to provide popless audio transitions from one audio source to another.

CTRL
AUD
FADE
ON
OFF

To change the *Audio Soft Switch Mode*, select the CTRL menu item in menu level 1. Use the toggle switch to select the AUD menu item and press the pushbutton. Select from the following options under the FADE menu item:

ON	Audio Soft Switch On
OFF	Audio Soft Switch Off



#### 4.4.10. Adjusting the Headphone Jack Volume (A2 & A2KM-USB Versions)

The 2408RGBR/DVIR provides a convenient audio monitoring headphone jack at the card-edge. This jack can be used to verify signal presence or content for each audio channel. The headphone jack volume can be adjusted via the card-edge interface.

CTRL
VOL
15 to 45

To configure the *Headphone Jack*, select the CTRL menu item in the first menu level. The 2408RGBR/DVIR allows the user to control the headphone monitoring jack volume. Use the toggle switch to select the VOL menu item and press the pushbutton. The toggle switch may then be used to change the volume. Press the pushbutton to apply the displayed value and return to the first menu level.

15 to 45 Range of volume selection for the headphone monitoring jack

#### 4.4.11. Adjusting the Orientation of the Text on the Card Edge Display

The DISP option allows the user to set a horizontal or vertical orientation for the card edge display.

CTRL
DISP
HORZ VERT

To set the *Display* orientation, select the CTRL menu item in the first menu level then use the toggle switch to show the DISP menu selection and use the pushbutton to select it. Use the toggle switch to change between HORZ and VERT. Press the pushbutton to make your selection. The following selections are available for this menu item:

HORZ Horizontally displayed

VERT Vertically displayed

#### 4.4.12. Displaying the Video Resolution and Refresh

The signal resolution option displays the video resolution detected at the input (i.e. 1920x1200/60). The resolution option will also indicate if no resolution is detected. To display the input signal resolution, select the STAT menu item in the first menu level, then use the toggle switch to display the RES option and press the pushbutton to select it. The display will show NONE if no input signal is detected. If an input video signal is present, the display will show the detected resolution and refresh rate.

STAT
RES
(Detected Video Resolution)

The resolution will be displayed similar to the following:

For example 1600X1200/60

#### 4.4.13. Displaying the Connected Display Type (2408RGBR Models Only)

The 2408RGBR will display the *Video Source Type* connected to the 2408RGBT.

STAT
TYPE
RGB
LCD

To indicate the *Video Source Type*, select the *STAT* menu item in the first menu level. Use the toggle switch to select the *TYPE* menu item and press the pushbutton. One of the following will be indicated:

**RGB**    RGBT input video is RGB  
**LCD**    RGBT input video is DVI

#### 4.4.14. Displaying the Input Video Sync Type (2408RGBR Models Only)

The 2408RGBR can display the type of sync signal that is present at the video input of the 2408RGBT transmitter.

STAT
ISNC
SOG
HV

To indicate the *Input Sync Type*, select the *STAT* menu item in the first menu level. Use the toggle switch to select the *ISNC* menu item and press the pushbutton. One of the following options will be indicated:

**SOG**    Sync signal at the RGBT input is Sync On Green  
**HV**      Sync signal at the RGBT input is RGB H and V

#### 4.4.15. Displaying the Input Optical Power

The 2408RGBR/DVIR can measure and display optical power over a range of  $-40$  to  $0$ dBm in 1dBm increments.

STAT
PWR
-40 to 0
LOW
OVR

To display the *Optical Power*, select the *STAT* menu item in the first menu level. Use the toggle switch to select the *PWR* menu item and press the pushbutton. The following list describes all possible indications for this menu selection:

**-40 to 0**    Optical input power in dBm units.  
**LOW**        Optical input power is below  $-40$ dBm.  
**OVR**        Optical input power is in excess of  $0$ dBm.

#### 4.4.16. Displaying the Link Rate

The 2408RGBR/DVIR can display the active *Link Rate*.

STAT
LINK
2970
3125

To display the *Optical Power*, select the **STAT** menu item in menu level 1. Use the toggle switch to select the **LINK** menu item and press the pushbutton. The following list describes all possible indications for this menu selection:

2970	Link Rate set to 2970Mb/s for 3G routing applications.
3125	Link Rate set to 3125Mb/s for normal operation.

#### 4.4.17. Displaying the Transmitter ID Tag

The 2408RGBR/DVIR can display the *ID Tag* of the fiber connected 2408RGBT/DVIT.

STAT
TID
00000 to 7FFFE

To display the 2408RGBT/DVIT *ID Tag*, select the **STAT** menu item in menu level 1. Use the toggle switch to select the **TID** menu item and press the pushbutton. The following list describes all possible indications for this menu selection:

00000 to 7FFFE	ID tag range for the 7708RGBT/DVIT connected to 7708RGBR/DVIR
----------------	---

#### 4.4.18. Displaying the Firmware Version

The **VER** option displays the card's current firmware version.

STAT
VER
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**

## 5. JUMPER CONTROLS

Several jumpers, located at the front of the module are used to preset various operating modes. Figure 4-4 shows the locations of the jumpers.

### 5.1. CONFIGURING THE MODULE FOR FIRMWARE UPGRADES

**RUN/UPGRADE:** The RUN/UPGRADE jumper 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* chapter in the front of the binder for more information.

To upgrade the firmware in the module unit pull it out of the frame. Move the RUN/UPGRADE jumper J16 into the *UPGRADE* position. Install the Upgrade cable provided (located in the vinyl pouch in the front of the binder) onto SERIAL header J7 at the card edge. Re-install the module into the frame. Run the upgrade as described in the *Upgrading Firmware* chapter in the front of the binder. Once the upgrade is complete, remove the module from the frame, move J16 into the *RUN* position, remove the upgrade cable and re-install the module. The module is now ready for normal operation.

## **6. VISTALINK® REMOTE MONITORING/CONTROL**

### **6.1. WHAT IS VISTALINK®?**

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

There are 3 components of SNMP:

1. An SNMP manager, also known as a Network Management System (NMS), is a computer running special software that communicates with the devices in the network. Evertz VL-Fiber demo Manager graphical user interface (GUI), third party or custom manager software may be used to monitor and control Evertz *VistaLINK®* enabled fiber optic products.
2. Managed devices (such as 2408RGBR/DVIR cards), each with a unique address (OID), communicate with the NMS through an SNMP Agent. Evertz *VistaLINK®* enabled 7700 series modules reside in the 3RU 7700FR-C MultiFrame and communicate with the manager via the 7700FC *VistaLINK®* frame controller module, which serves as the Agent.
3. A virtual database, known as the Management Information Base (MIB), lists all the variables being monitored, which both the Manager and Agent understand. Please contact Evertz for further information about obtaining a copy of the MIB for interfacing to a third party Manager/NMS.

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

## 6.2. VISTALINK® MONITORED PARAMETERS

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

Parameter Name	Description
Input Video Resolution	Input video resolution
Input Type	Input Type
Optical Power	Input optical power
Card Type	Card Type
Source Video Type	Source video type connected to RGBT (CRT=RGB, LCD=DVI)
Output Video Resolution	Resolution of video output at the receiver
RGBT Input Sync	Input video sync type
TID Status	Transmitter ID tag

Table 6-1: VistaLINK® Monitored Parameters

## 6.3. VISTALINK® CONTROLLED PARAMETERS

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

Parameter Name	Notes	Description
Laser	0 = discontinuous 1 = continuous	Laser continuous or discontinuous mode
Video Output on Link Loss	Black Suspend Off	Video output mode on optical link loss
Output Video Control	Normal Black Suspend Off	Control of video output – allows output of link video, black or DPMS modes
RGBR Output Sync	Auto RGBHV Sync on Green	Controls sync type on RGB output
V-Shift	-10 to +10	Adjusts the vertical position of the output picture
H-Shift	-10 to +10	Adjusts the horizontal position of the output picture
Link Rate	2970 3125	Sets Link Rate
Audio Soft Switch	ON OFF	Sets audio soft switch On or Off

Table 6-2: VistaLINK® Controlled Parameters

#### 6.4. VISTALINK<sup>®</sup> TRAPS

The following traps can be *VistaLINK*<sup>®</sup> enabled and monitored.

Trap	Description
Input Present	Triggers when valid optical input is lost
Optical Link	Triggers when valid optical link is lost
Optical Power	Triggers when input optical power is below threshold
Source Change Status	Triggers when input source is changed

**Table 6-3: *VistaLINK*<sup>®</sup> Traps**

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