

## **High Density Modular Video Router**

### **USER MANUAL**

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#### **EVERTZ MICROSYSTEMS LTD.**

5288 John Lucas Drive,  
Burlington, Ontario,  
Canada L7L 5Z9

Phone: 905-335-3700

Sales: sales@evertz.com Fax: 905-335-3573

Tech Support: service@evertz.com Fax: 905-335-7571



Web Page: <http://www.evertz.com>

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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 un-insulated, 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 (i.e.: servicing) instructions in the literature accompanying the product.

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Don't use this apparatus near water.
- Clean only with a dry cloth.
- Don't block any ventilation openings.
- Install in accordance with the manufacturer's instructions.
- Don't install near any heat sources such as radiators, heat registers, stoves, or other apparatuses (including amplifiers) that produce heat.
- Don't defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than other. A grounding-type plug has two blades and a third grounding prong. The wide blade or third prong is provided for your safety. If the plug provided does not fit into your outlet, consult an electrician to replace 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, such as damage to the power-supply cord or plug, contact with liquid (or any object small enough to enter the apparatus), exposure to rain or moisture, drop damage, or upon experiencing any abnormal operation.

**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, SUCH AS VASES, ARE PLACED ON THE EQUIPMENT

**WARNING:**

TO COMPLETELY DISCONNECT THIS EQUIPMENT FROM THE AC MAINS, DISCONNECT THE POWER SUPPLY CORD PLUG FROM THE AC RECEPTACLE

**WARNING:**

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

## **WARNING**



**Never look directly into an optical fiber. Irreversible eye damage can occur in a matter of milliseconds.**

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## NOTE

This equipment with the CE marking complies with both the EMC Directive (2004/108/EC) and the Low Voltage Directive (2006/95/EC) 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.

	EN60065	Safety
	EN55103-1: 1996	Emission
	EN55103-2: 1996	Immunity
		EN504192 2005 Waste electrical products should not be disposed of with household waste. Contact your Local Authority for recycling advice

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Evertz Microsystems Ltd		This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
 For Commercial Use		
Tested to comply with FCC Standards		This device may cause harmful interference, and this device must accept any interference received, including interference that may cause undesired operation.

## REVISION HISTORY

<u>REVISION</u>	<u>DESCRIPTION</u>	<u>DATE</u>
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1.4	Added Section 6.4 – EMR Frame Configuration with 4.11 RPC Firmware and Section 7 – <i>VistaLINK</i> ® Remote Monitoring/Control	Jan 2014

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## **1. OVERVIEW**

The EMR is a multi-format modular router that provides a high density solution without compromising functionality. The EMR provides a unified platform for routing video as well as other formats. The EMR uses a proprietary X-Link interface to produce a video router that is both cost effective and powerful.

A single 6RU frame can accommodate 128x128 video signals, and expansion beyond this is as easy as adding another frame. With two 6RU frames, the EMR can accommodate 288x288 video signals with full redundancy.

The modular design of the EMR means that there are no limitations to the signal formats that can be added to the router, or limitations to the size at which it can be expanded to. Other products that can be combined with the EMR are audio routing, master controllers, multi-viewers and more.

### **Configuration:**

The EMR allows any mix of formats within a frame. The inputs and outputs are scalable in blocks of 32. A system consists of the input stage, the crosspoint, and the output stage. Each input and output device is connected to the crosspoint through a proprietary X-Link connection. It is the use of this connection that provides the flexibility for the system to scale and evolve with changing needs.

### **Scalability:**

The EMR can be scaled well beyond a single frame. A single crosspoint module can support up to 9 input modules and 9 output modules, allowing a system to scale to 288x288 video signals.

### **Redundancy:**

Each input and output card in the EMR contains multiple X-Link interfaces that allow connections to multiple crosspoints. Each input card provides two X-Link outputs that can be used for redundant connections, and each output card provides two X-Link inputs that can be setup to automatically failover if the primary connection fails. The redundancy structure of the EMR minimizes the chances of any failure to the system.

### **Control:**

Control of the EMR is via two redundant frame controllers. When combined with the EQX server, the EMR can be controlled using a wide range of control panels and interfaces. The EMR also provides a SNMP interface to control various configuration options.

### **System Integration:**

When combined with MVPX and VIPX multi-viewers, the EMR provides an abundant of options to monitor the integrity of video signals. Each crosspoint module contains 9 X-Link outputs that are available to feed video signals directly to Evertz multi-viewers. This provides a cost effective, and implementation effective way to monitor router inputs without sacrificing router outputs.

## **1.1. FEATURES & BENEFITS**

### **Video Routing:**

- Support for 3G-SDI, HD-SDI, SD-SDI, DVB-ASI, SMPTE 310M and more
- Scalable to 128x128 in a single 6RU frame
- Scalable to 288x288 in two 6RU frames
- Input expansion in steps of 32
- Output expansion in steps of 32
- Source-by-source intelligent auto configuration
- Input equalization (on/off)
- Output reclocking (on/off)
- ASI mode (on/off)
- Variable switch point

### **Advanced System Control & Interfacing:**

- Supports the full range of Quartz remote control panels
- Full VistaLINK<sup>®</sup> PRO command & control, SNMP & AVM
- Supports a wide selection of control protocols
- Ethernet, Q-Link, and Serial RS-422/RS-232 connections
- Full integration with 3rd party automation systems

### **High Availability, 24/7 Design:**

- Full modular design
- All modules are hot swappable
- All components are front accessible
- Passive I/O
- External MI connection
- Redundant frame controller
- Redundant crosspoint
- Redundant power supply
- VistaLINK<sup>®</sup> PRO SNMP monitoring of I/O modules

## 2. COMPONENT OVERVIEW

### 2.1. EMR FRAME

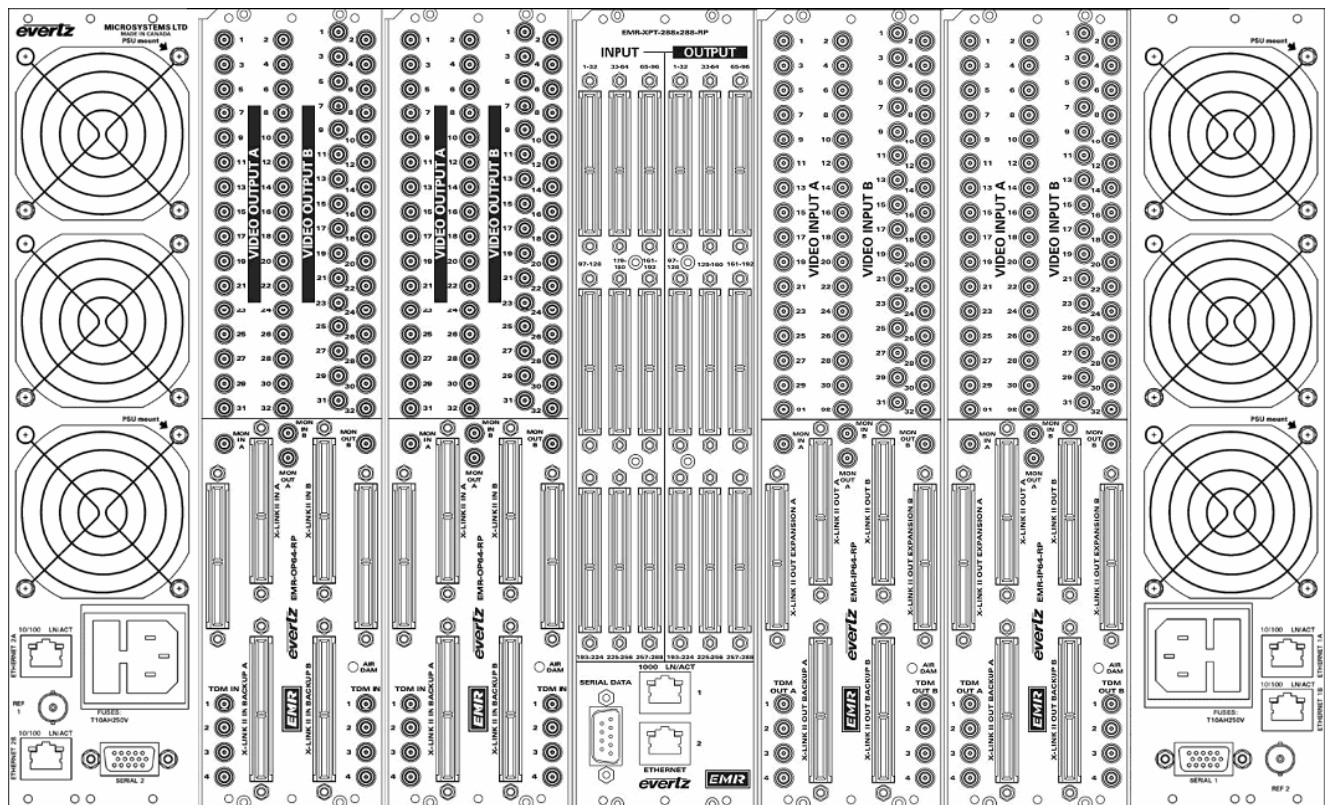
The EMR is housed in one of two rack-mountable frames. The two available frames are the EMX6-FR and the EMX3-FR. The EMX6-FR frame can accommodate up to 2 hot-swappable power supply units and up to 15 single-slot, hot-swappable I/O modules. The EMX3-FR frame can accommodate up to 2 hot-swappable power supply units and up to 5 single-slot, hot-swappable I/O modules. Each module has a corresponding passive rear plate, which is mounted via screws to the frame. It is important that all screws are used to fasten the rear plates to ensure proper connectivity with the I/O modules.



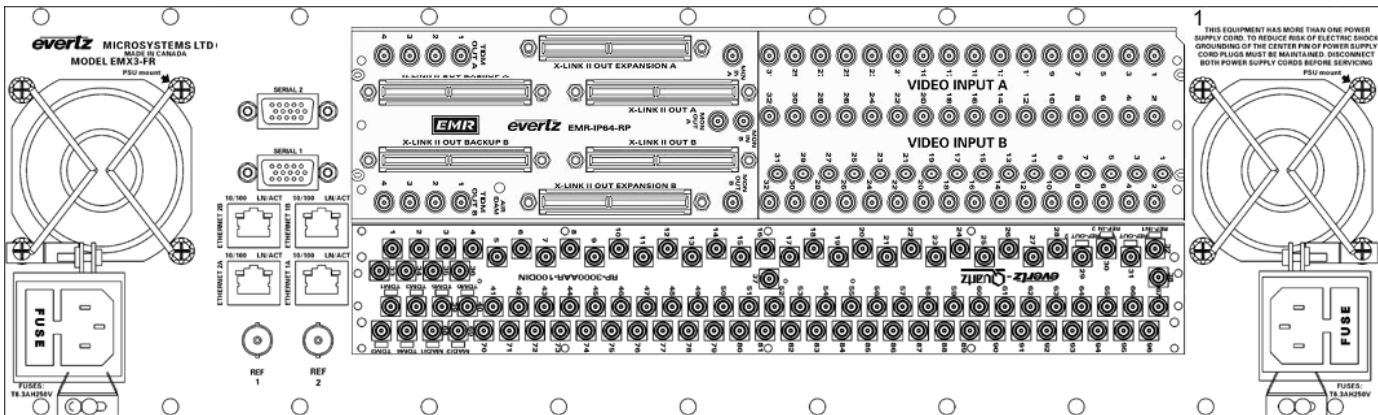
**Note:** The EMR-XPT-288X288 and EMR-XPT-160X160 are designed for the EMX6-FR only, they are not designed for use in the EMX3-FR. Do not attempt to install these modules in the EMX3-FR.

The EMR frame is also equipped with a frame controller unit used for facilitating network communications between the frame modules and the EQX Server. The EMX6-FR and EMX3-FR frames use an EMX-FC frame controller which provides two network connections via RJ-45 connectors and two references via BNC connectors. The BNC labeled Ref 1 is the main reference and the BNC labeled Ref 2 is the backup reference. Figure 2-1 and Figure 2-2 show the rear of the EMX6-FR and EMX3-FR frames respectively. There are also main and backup serial connections to the EMX-FC that are provided for future use.

The EMX6-FR and EMX3-FR frames have optional redundant frame controller configurations.



**Figure 2-1: EMX6-FR Rear View**



**Figure 2-2: EMX3-FR Rear View**

## 2.2. EMR I/O MODULES

The EMR system is built from a variety of input and output modules. All modules are hot-swappable and can reside in any one of the 15 slots of the EMX6-FR frame or 5 slots of the EMX3-FR frame.

Available I/O modules include:

- **EMR-IP32H** 32 HD/SD inputs with X-Link II outputs
- **EMR-IP32-3G** 32 3G/HD/SD inputs with X-Link II outputs
- **EMR-OP32H** 32 HD/SD outputs with X-Link II inputs
- **EMR-OP32-3G** 32 3G/HD/SD outputs with X-Link II inputs
- **EMR-XPT-160X160** Crosspoint with 5 X-Link II inputs and 5 X-Link II outputs
- **EMR-XPT-288X288** Crosspoint with 9 X-Link II inputs and 9 X-Link II outputs

Detailed module descriptions, module rear plate drawings, and specifications are provided in the following sections.

### 2.2.1. EMR Video Input Module

The EMR video input modules consist of 32 channels of adaptive cable equalization that feeds the incoming signal directly to 3 X-Link II outputs. On each input the cable equalization facility can be switched on/off as required.

Each EMR rear plate occupies 3 slots in a frame and has DIN 1.0/2.3 connectors for the video inputs and X-Link II outputs. Each rear plate accommodates 2 input cards with all connectors designated as A or B. The rear plate is passive so there are no active electronics on them. If any complications occur in the field, the front module can be repaired or replaced without the need to de-cable the system.

All 3 of the X-Link II outputs are identical, each carrying the 32 output signals from the card. The X-Link II outputs are used to drive the input signals to the crosspoint module. Only one connection is required per crosspoint.



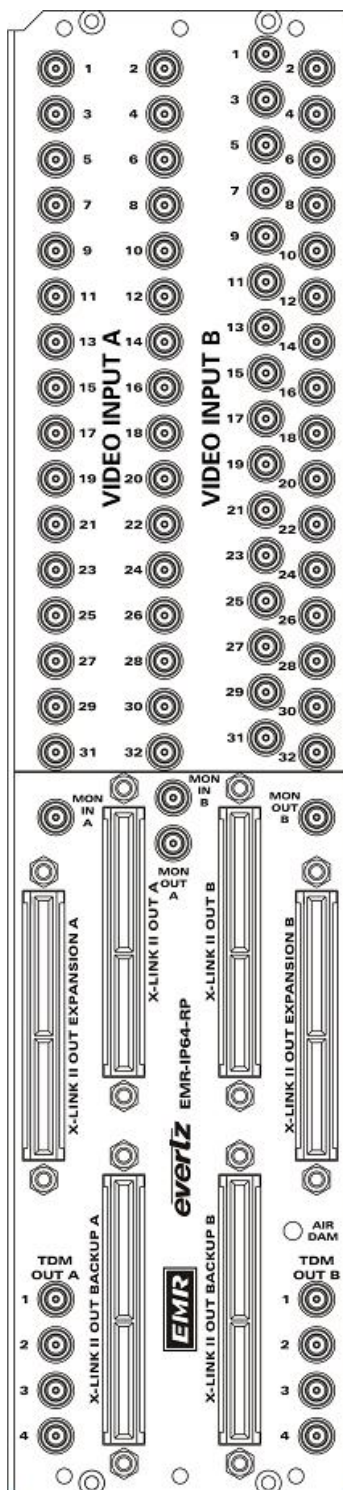


Figure 2-3: EMR-IP32H and EMR-IP32-3G Rear Plate

### 2.2.1.1. Front Card Edge Controls and LEDs

The EMR-IP32H and EMR-IP32-3G front card edge has some key controls and indicators that can help in the installation and debugging processes. Figure 2-4 and Table 2-1 show the card edge and describe the expected behavior of each component. If the status indicators do not behave as described it can be a sign of installation or configuration issues.

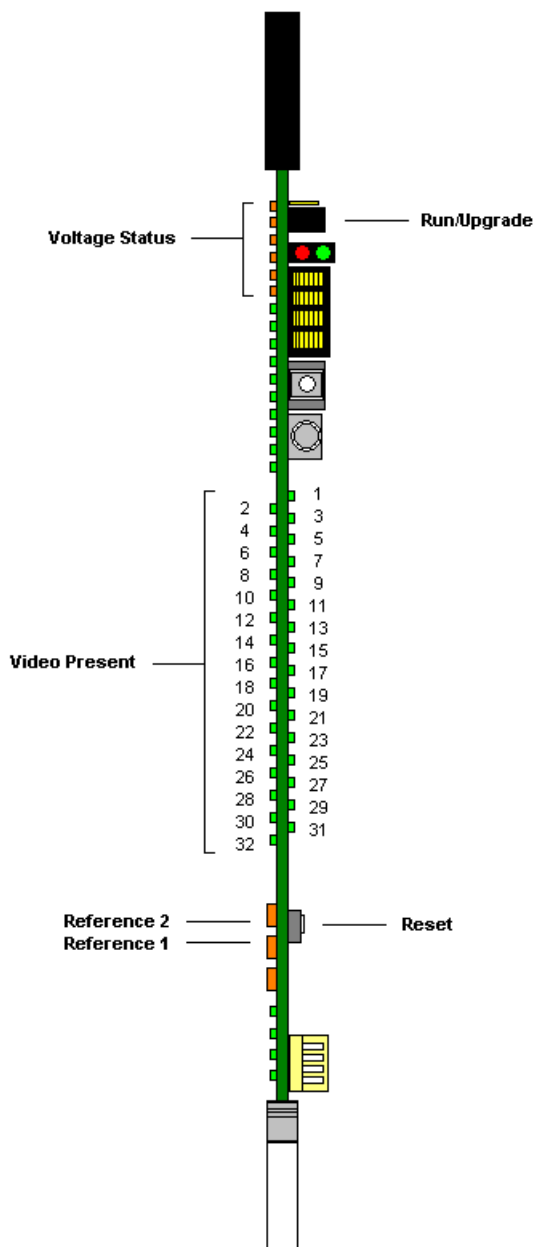


Figure 2-4: EMR Video Input Front Card Edge

Component	Description
<b>Voltage Status LEDs</b>	This set of LEDs is amber in color and should always be ON.
<b>Video Present LEDs</b>	This set of LEDs is green in color and indicate the presence of video on each respective input.
<b>Run/Upgrade Jumper</b>	This jumper is used to place the module in upgrade mode when upgrading the firmware
<b>Reference 1 LED</b>	This LED is amber in color and indicates the presence of a valid reference on input 1. It will be solid if reference is present.
<b>Reference 2 LED</b>	This LED is amber in color and indicates the presence of a valid reference on input 2. It will be solid if reference is present.
<b>Reset Button</b>	This button resets the module.

**Table 2-1: Description of EMR Video Input Card Edge**

### **2.2.2. EMR Video Output Module**

The EMR video output modules consist of 32 channels of re-clocked SD/HD/3G outputs that are sourced from one of 2 X-Link II inputs. The re-clocking function on each path can be switched on/off individually to facilitate the passing of ASI video signals.

Each EMR rear plate occupies 3 slots in a frame and has DIN 1.0/2.3 connectors for the video outputs and X-Link II inputs. Each rear plate accommodates 2 output cards with all connectors designated as A or B. The rear plate is passive so there are no active electronics on them. If any complications occur in the field, the front module can be repaired or replaced without the need to de-cable the system.

The 2 X-Link II outputs are designed to be selectable, each carrying the 32 input signals to the card. The X-Link II inputs are used to drive the output signals from the crosspoint module. Only one connection is required per crosspoint.

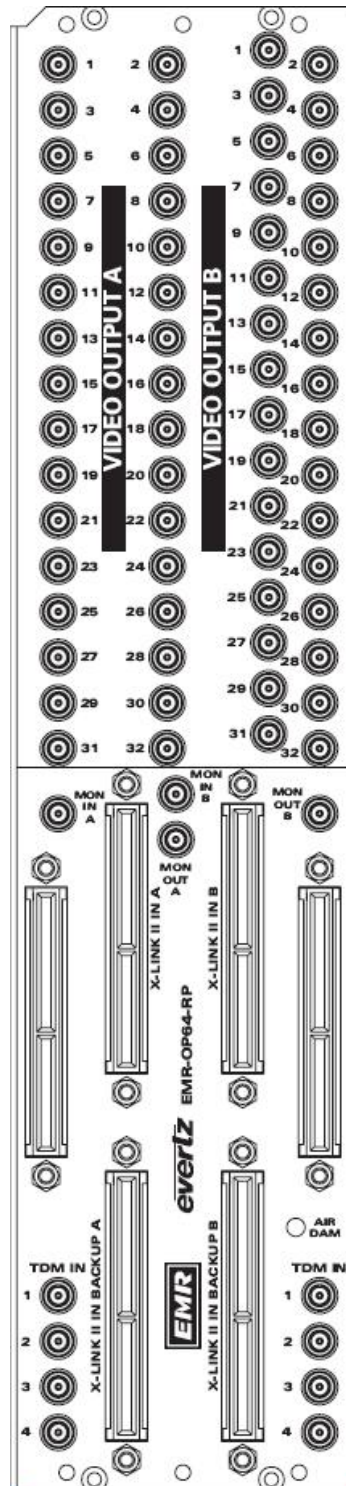


Figure 2-5: EMR-OP32H and EMR-OP32-3G Rear Plate

### 2.2.2.1. Front Card Edge Controls and LEDs

The EMR-OP32H and EMR-OP32-3G front card edge has some key controls and indicators that can help in the installation and debugging processes. Figure 2-6 and Table 2-2 show the card edge and describe the expected behavior of each component. If the status indicators do not behave as described it can be a sign of installation or configuration issues.

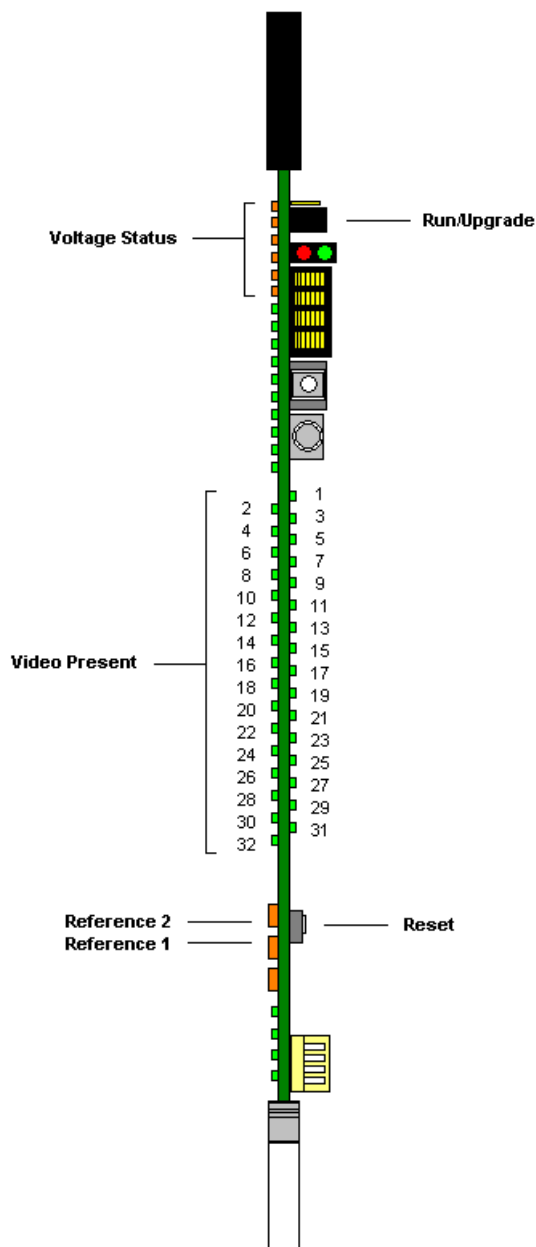


Figure 2-6: EMR Video Output Front Card Edge

Component	Description
Voltage Status LEDs	This set of LEDs is amber in color and should always be ON.
Video Present LEDs	<p>This set of LEDs is green in color and indicate the presence of video routed to each respective output.</p> <p>If the LED is solid then it indicates that the routed source is from the main crosspoint.</p> <p>If the LED is flashing then it indicates that the routed source is from the redundant crosspoint.</p>
Run/Upgrade Jumper	This jumper is used to place the module in upgrade mode when upgrading the firmware.
Reference 1 LED	This LED is amber in color and indicates the presence of a valid reference on input 1. It will be solid if reference is present.
Reference 2 LED	This LED is amber in color and indicates the presence of a valid reference on input 2. It will be solid if reference is present.
Reset Button	This button resets the module.

**Table 2-2: Description of EMR Video Output Card Edge**

### 2.2.3. EMR Video Crosspoint Module

The EMR-XPT-160X160 and EMR-XPT-288X288 are the crosspoint cards for the EMR video router. The EMR crosspoint utilizes the very latest technology to provide a very dense routing matrix, with the flexibility of a modular platform.

The EMR crosspoint modules use the X-LINK II interface to bring signals directly to the crosspoint and to supply signals directly from the crosspoint. This efficient use of a high density connector ensures that signal integrity is well maintained.

The rear plate for both crosspoints occupies 3 slots in a frame. The EMR-XPT-288X288 rear plate, as shown in Figure 2-7, has 9 X-Link II inputs and 9 X-Link II outputs, each carrying 32 video signals. The EMR-XPT-160X160 rear plate, as shown in Figure 2-8, has 5 X-Link II inputs and 5 X-Link II outputs, each carrying 32 video signals. Both rear plates have available Ethernet and serial control options that have yet to be implemented.



**Note:** The location of the input and output X-LINK II connectors on the rear plate (when viewed from the front) may not correspond to the left-to-right convention that is often used to place the I/O cards.

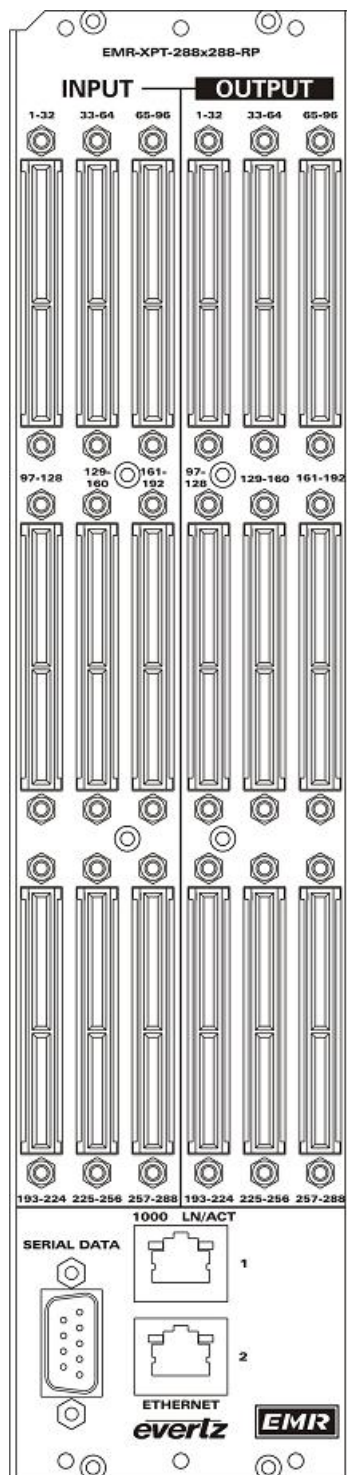


Figure 2-7: EMR-XPT-288X288 Rear Plate

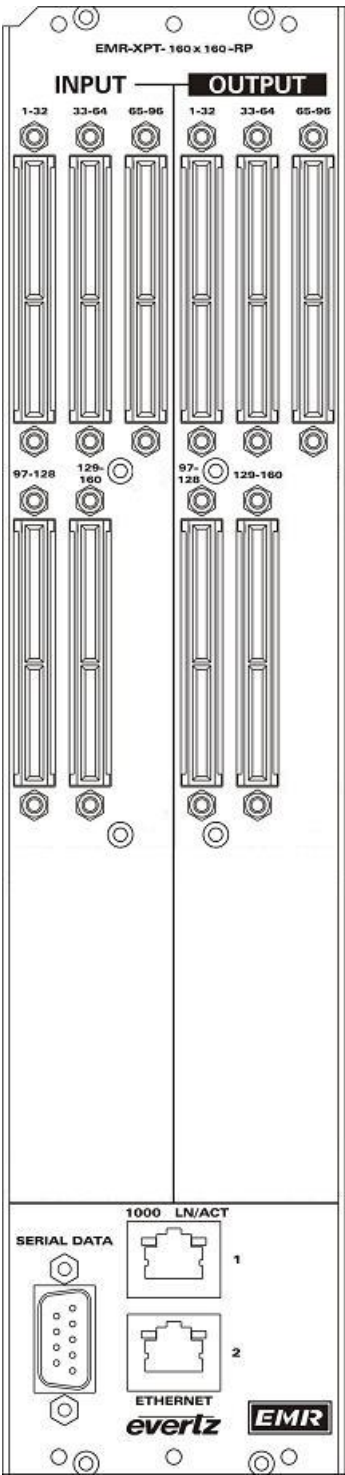
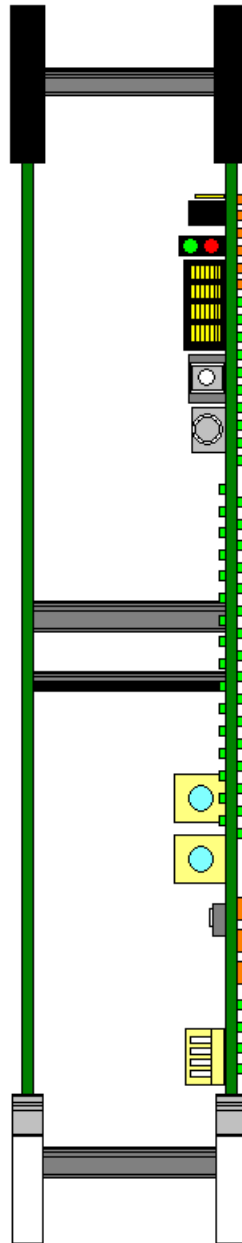


Figure 2-8: EMR-XPT-160X160 Rear Plate



### 2.2.3.1. Front Card Edge Controls and LEDs

The EMR-XPT-160X160 and EMR-XPT-288X288 front card edges have some key controls and indicators that can help in the installation and debugging process. Figure 2-9 and Table 2-3 show the card edge and describe the expected behavior of each component. If the status indicators do not behave as described it can be a sign of installation or configuration issues.



**Figure 2-9: EMR Crosspoint Front Card Edge**

Component	Description
Run/Upgrade Jumper	This jumper is used to place the module in upgrade mode when upgrading the firmware.

**Table 2-3: Description of EMR Crosspoint Card Edge**

## 2.3. EMX-FC FRAME CONTROLLER MODULE

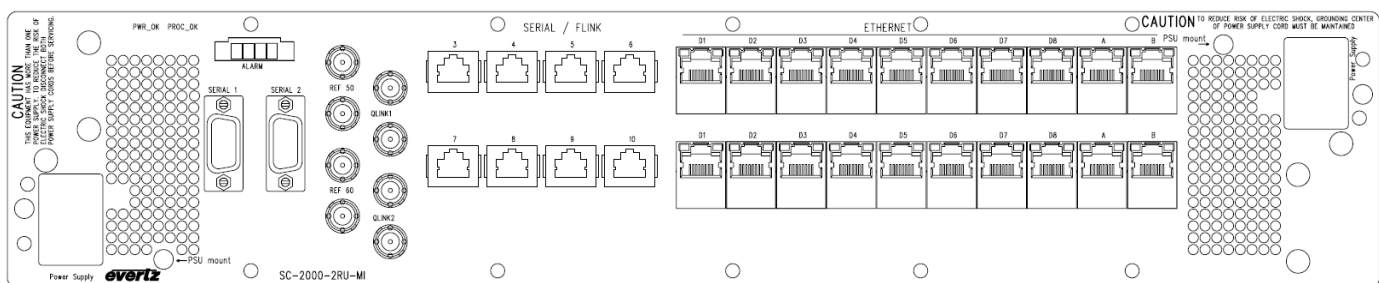
The EMX-FC Frame Controller module provides a single point of access to communicate with the EMR cards. The EMX-FC provides a 10Base-T/100Base-TX Ethernet port and handles all communications between the frame and the control system, and serves as a gateway to individual cards in the frame. The EMX-FC also provides an RS-232 serial port at the card edge to set up the network addresses.

The EMX-FC is housed in a narrow slot underneath the left side or right side power supply in the EMX6-FR frame, and to the left of the right side power supply in the EMX3-FR frame.

## 2.4. SC-2000 SYSTEM CONTROLLER

The SC-2000 system controller is used to unify the individual modular components of the EMR system and to provide a single interface for control and monitoring. The SC-2000 is a 2RU modular chassis that has dual hot-swappable redundant power supplies. The chassis is built to accommodate two SC-2000 modules, one for main operation and one for redundant operation. Both cards are hot-swappable from the front of the chassis. When a SC-2000 is ordered, a single controller card and a chassis are supplied. In addition, a SC-2000-R can be ordered to add a redundant controller card to the system. In a fully redundant system, the top control card is the main and the bottom control card is the redundant.

The rear of the SC-2000 chassis is shown in Figure 2-10.



**Figure 2-10: Rear View of SC-2000 Chassis**

The SC-2000 has several interfaces with various functions. Some of the interfaces are independent between the top and bottom controller cards, and some are shared between the two. Details on each connector are in the following section.

**2.4.1. SC-2000 Interfaces**

- Ethernet A:** This RJ45 connector is the control port for sending configurations to the EMR and for making crosspoint changes. This port is also used to interface with an external control system to connect remote control panels. Ethernet port A is independent for each controller card.
- Ethernet B:** This RJ45 connector is the control port for interfacing the EMR with an external SNMP system such as VistaLINK<sup>®</sup>. Ethernet port B is independent for each controller card.
- Ethernet D:** This set of eight RJ45 connectors are used to interface with each EMX-FC or each EMX frame that consists of the entire EMR system. The D ports are essentially ports of a switch to allow all of the modular components of the EMR system to communicate as a single unit. Ethernet ports D are independent for each controller card.
- Serial 1 & 2:** These D9 connectors are serial ports used to provide serial control of the SC-2000. The serial ports can be configured to be RS-232 or RS-422 using the configuration software. These serial ports are shared between the main and redundant controller cards.
- Serial/F-Link 3-10:** These RJ45 connectors are serial ports used to provide serial control of the SC-2000. The serial ports can be configured to be RS-232 or RS-422 using the configuration software. These serial ports are shared between the main and redundant controller cards.
- Q-Link 1 & 2:** These two Q-LINK 75Ω termination BNC connectors support Evertz control panels that have a Q-Link connection. The connectors allow connection to two terminated external Q-Links. Q-Link is a dedicated control system specific to Evertz brand of Quartz products. The Q-Link system works as a single transmission line with devices connected along the length of the cable. It must be terminated at either end in 75Ω. The two connectors on the rear of the SC-200 have a dedicated loop through so they must be terminated for them to operate properly. The Q-Link connectors are shared between the main and redundant controller cards, with the card in control being the master of the Q-Link.
- Ref 1 & 2:** These two 75Ω termination BNC connectors are used to provide a reference to the SC-2000. Each reference connector has a loop through that can be used to loop the reference through the SC-2000 to the EMR frames in the system. The reference connectors are shared between the main and redundant controller cards.

### 2.4.2. Serial Connections

The rear panel of the SC-2000 has two DB9 female serial connectors and 8 serial RJ-45 connectors. The pin-out for the DB-9 serial ports is shown in Table 2-4, while the pin-out for the RJ-45 serial ports is shown in Table 2-5.

PIN	RS-422	RS-232
1	0V	0V
2	Tx+	TXD
3	Rx+	RXD
4	0V	0V
5	-	-
6	0V	0V
7	Tx-	RTS
8	Rx-	CTS
9	-	-

**Table 2-4: DB-9 Serial Pin-Out**

PIN	RS-422	RS-232
1	-	-
2	-	-
3	Tx+	TXD
4	Rx-	CTS
5	Rx+	RXD
6	Tx-	RTS

**Table 2-5: RJ-45 Serial Pin-Out**

### 2.4.3. SC-2000 Power Supply

The SC-2000 power supplies operate on either 100 to 240 volts AC at 50 or 60 Hz and automatically senses the input voltage. Power should be applied by connecting a 3-wire grounding type power supply cord to the power entry module on the rear panel. The power cord should be a minimum 18 AWG wire size; type SVT marked VW-1, maximum 2.5 m in length.

The SC-2000 chassis is fitted with a power supply on one side, and an optional redundant supply on the opposite side. The supplies are hot swappable and can be removed for service or maintenance without removing the entire SC-2000 frame. Figure 2-11 shows an SC-2000 power supply module once it has been removed from the chassis.



**Figure 2-11: SC-2000 Power Supply**

Each power supply has two status indicator LEDs. The green PSU STATUS LED indicates the health of the local power supply. The red FRAME STATUS LED indicates the health of the entire frame and is operated by the frame status bus of the frame. The FRAME STATUS LED will be Off under normal conditions and On when there are Frame Status Fault conditions.

If one of the power supplies malfunctions, (i.e. power cord disconnected, the power switch is off, fuse is blown, rear fan is stopped, etc) then its PSU STATUS LED will go Off, and the red FRAME STATUS LED on both power supplies will turn On. The PSU STATUS LED on the power supply that is functioning will remain On.

## **2.5. INSTALLING AND REMOVING THE MODULES**

### **2.5.1. Installing the Module Rear Plate**

In most cases, the EMR frame will already have the modules and rear plates installed within the frame. However, when modules and rear plates need re-positioning, or when additional modules are purchased, proper module/rear plate installation is required.

Each EMR module is shipped with a matching rear panel plate that houses the appropriate connectors for that module.

#### **To Install the Rear Plate:**

1. Locate the specific slot in the frame and remove any filler plates.
2. Install the rear plate over the open slot by first fitting the plate then tightening the two lock-screws.
3. Tighten the screws after the main module is installed.



**CAUTION:** If any of the screws for the rear plate are missing, please contact Evertz immediately for the specification and/or replacement. Using the incorrect screw can cause thread stripping.

### **2.5.2. Opening and Closing the Front Panel**

In order to insert or remove modules you will have to open the front panel using the following procedure:

1. Turn the two captive screws located on the front panel counter clockwise several turns until they release completely from the front extrusions.
2. Carefully lower the front panel door so that the front edge of the door is lower than the rear of the door.

### **2.5.3. Installing a Module**

1. Orient the module vertically such that the smaller white card ejector is on the bottom, while the larger black card ejector is on the top.
2. Align the card with the card guide corresponding to the slot number where you installed the rear panel plate.
3. Carefully slide the module into the frame and press it completely into the rear panel connectors.
4. Use the upper card-ejector to latch the module into the slot.
5. Make sure that the connectors are fully seated in the rear panel.
6. When this is done, close the front panel and then tighten the screws that hold the rear panel in place.

#### 2.5.4. Removing a Module

1. Press the card ejector down to release the module.
2. Grasp the card using the upper card ejector and pull the module out from the frame.
3. Carefully place the module in a safe place, free from static discharge.

### 2.6. MOUNTING

The EMR frame is equipped with rack mounting rails and fits into a standard rack space. The EMX6-FR requires a 19" x 10.5" x 15.75" (483 mm x 260 mm x 400 mm) space and the EMX3-FR requires a 19" x 5.25" x 15.75" (483 mm x 133 mm x 400 mm) space. To securely fasten the frame to the equipment rack, make sure that all four mounting screws on each mounting rail are tightened securely.



**Note:** The EMX6-FR and EMX3-FR have front mounted cooling fans and require that the area below is flush so that there is sufficient room to open the frame completely to be able to remove the modules.

After the unit has been installed in a rack, all cards in the frame should be checked to ensure they are fully seated within the frame. This is best accomplished by simply pushing (simultaneously, with moderate force) on each card's top and bottom insertion/extraction levers. See section 2.5.3 for further information. This step should be repeated any time the frame is shipped, or relocated within a facility.

### 2.7. COOLING

The EMR frame is designed to ensure adequate cooling for up to 650 watts (EMX6-FR) or 360 watts (EMX3-FR) of processing power per frame. Fans at the front and rear of each power supply module accomplish forced air-cooling. Adjacent equipment may be mounted immediately to the top and bottom of the frame. Additional module cooling is provided by interior cooling channels to ensure that even fully loaded frames mounted adjacent to each other will operate within the normal temperature range.

The EMX6-FR and EMX3-FR frames have additional fans mounted to the front door of the frame to provide additional cooling.



**CAUTION:** For proper cooling, the frame must contain two EMX6-PS/EMX3-PS power supplies.

#### 2.7.1. Fan Exhaust

The cooling fans for the power supplies, located at the front of the frame, draw air in the front and exhaust out the sides of the frame. The cooling fans for the modules, located at the rear of the frame, draw air in the front and the exhaust out the rear of the frame.



**CAUTION:** To ensure adequate cooling, care should be taken to ensure that the fan inlets and exhaust openings are free of obstructions.

## **2.8. SERVICING INSTRUCTIONS**



**CAUTION:** These servicing instructions are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing instructions in this section of the manual unless you are qualified to do so.

### **2.8.1. Changing the Fuses**



**CAUTION:** For continued protection against the risk of fire, replace only with the same type and rating of fuse.

**ATTENTION:** Pour éviter les risques d'incendie, remplacer le fusible avec un fusible de même calibre.

The fuse holder is located inside the power entry module. To change the fuses, disconnect the line cord from the power entry module and pull the fuse holder out from the power entry module using a small screwdriver. The fuse holder contains two fuses, one for the line and one for the neutral side of the mains connection. Pull out the blown fuse and place a fuse of the correct value in its place.

For 100-120 VAC operation, use ceramic time delay 5 x 20 mm fuses rated for 250 Volts with a 10 amps current rating. For 220-240 VAC operation use ceramic time delay 5 x 20 mm fuses rated for 250 Volts with a 6.3 amps current rating.

For your convenience there are spare fuses located in the vinyl pouch in the front of this manual. Carefully reinsert the fuse holder into the power entry module.

### **2.8.2. Replacing the Power Supply**

Each power supply is a complete assembly, and includes the power supply cooling fan and one frame-cooling fan. In the event that the power supply or one of the fans malfunctions, you will need to replace the power supply assembly with a spare one while the failed assembly is being repaired.

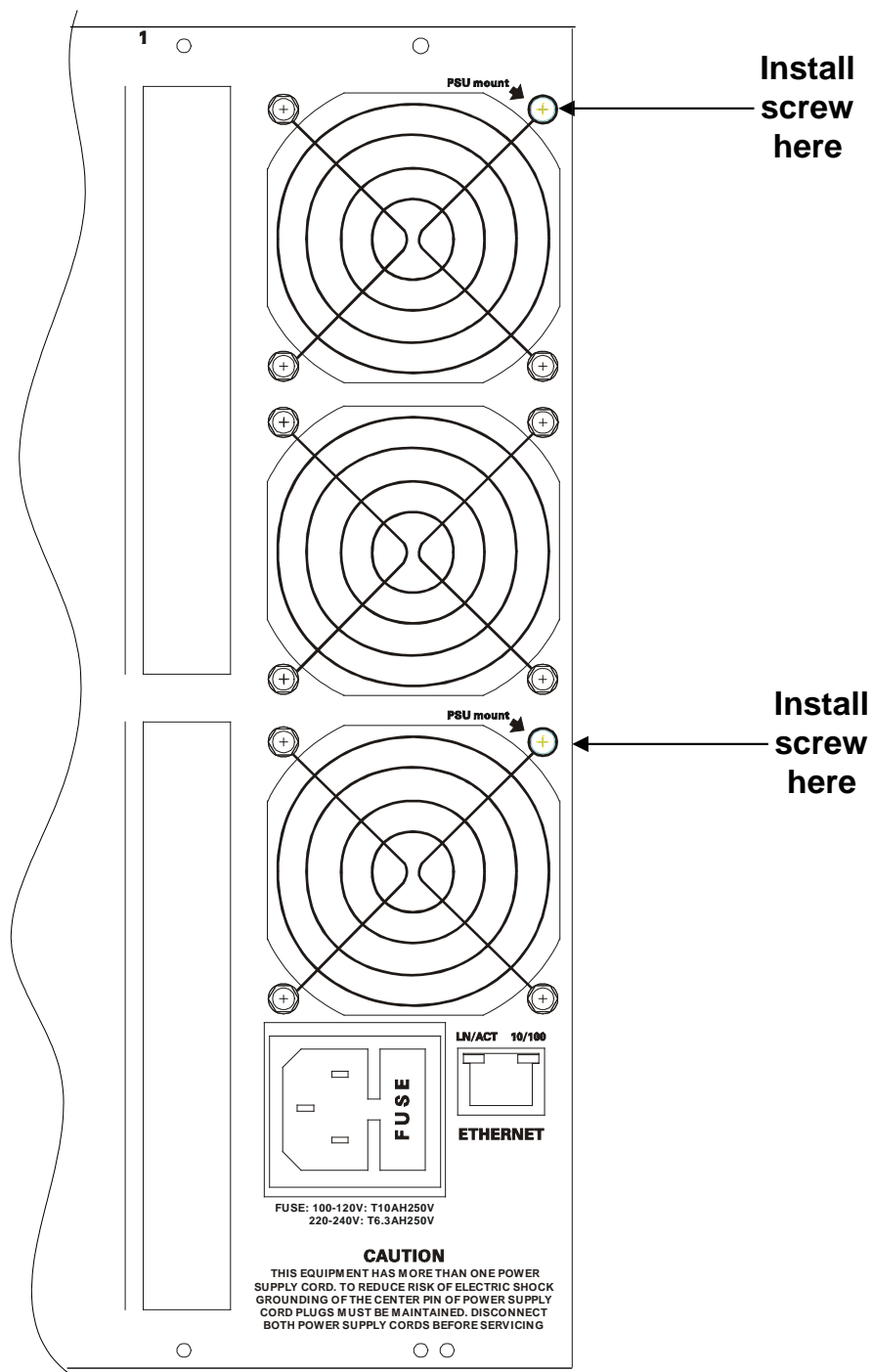


**CAUTION:** Do not run the frame for extended periods of time with one of the power supplies removed. Proper cooling of the frame requires both power supplies to be inserted into the frame, or one power supply and a power supply blank panel.

The EMX6-PS and EMX3-PS power supplies are hot swappable and can be easily replaced from the front without interrupting the signal integrity of the frame. Each power supply is capable of supplying full power to the frame by itself, however we recommend running with both supplies powered for power redundancy.



The power supply is secured into the frame by two machine screws through the rear panel (as shown in Figure 2-12). These screws must be removed before the power supply can be extracted from the front.



**Figure 2-12: Locating the Power Supply Mounting Screw**



**CAUTION:** To reduce the risk of electric shock, you must replace the mounting screw *after* replacing the power supply.

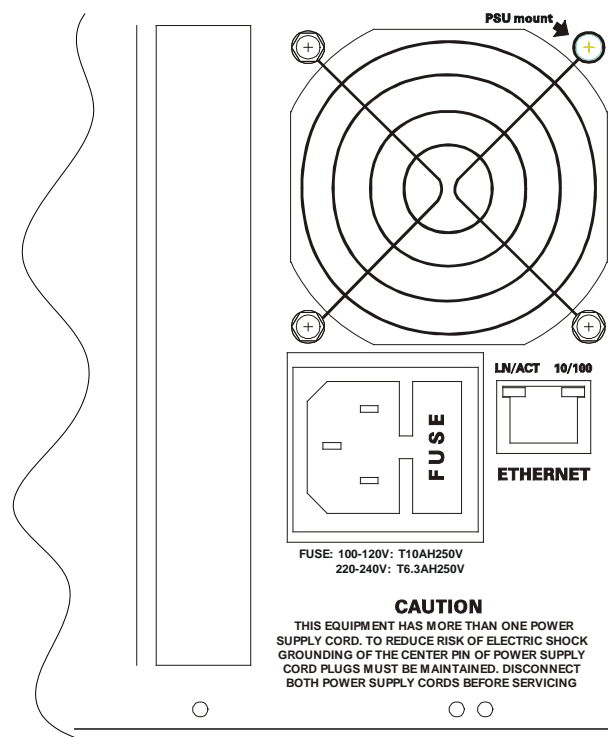
## 2.9. POWER

The power entry modules contain a standard IEC power inlet connector, two 5 x 20 mm fuse holders, and an EMI line filter.



**CAUTION:** The EMR frame is shipped with 10 Amp fuses rated for 100-120 VAC operation. If you are operating the EMR System in a country with nominal 220-240 VAC operation, replace the fuses with 6.3 Amp fuses rated for 220-240 VAC operation. See section 2.8.1 for information on changing fuses.

### 2.9.1. Connecting the Power



**Figure 2-13: Connecting the Power to the Frame**

The EMR frame comes standard with one auto-ranging power supply that automatically senses the input voltage over the range of 100 to 240 VAC. An additional power supply can be ordered to provide fully redundant powering of the frame. When only one power supply is fitted, the frame will be fitted with a fan module to ensure the thermal integrity of the frame cooling. In a frame that contains a redundant power supply module, each power supply may be powered from a different AC mains source, allowing complete AC supply redundancy.

Power should be applied by connecting a three-wire, grounding-type power supply cord to the power entry module on the rear panel of each power supply. For use in North America, the power cord should be a minimum 18 AWG wire size; type SVT marked VW-1, maximum 2.5 m in length. For use outside North America, use a power cord approved for the country of use with a minimum 1.00 mm<sup>2</sup> wire size.

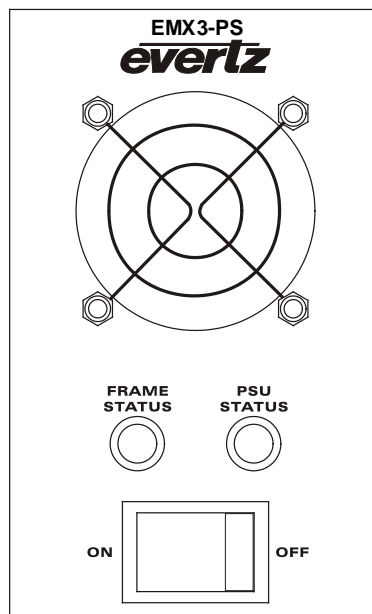


**CAUTION:** To reduce the risk of electric shock, grounding of the ground pin of the main plug must be maintained.

### 2.9.2. Turning the Power On and Off

Each power supply is fitted with its own power switch. When the switch is turned off, the remaining power supply will power the frame. To completely remove power from the frame, both power supplies must be turned off.

### 2.9.3. Power Supply Status Indicators



**Figure 2-14: Power Supply Status Indicators**

Each power supply has two status indicator LEDs. The green PSU STATUS LED indicates the health of the local power supply. The red FRAME STATUS LED indicates the health of the entire frame and is operated by the frame status buss of the frame. The FRAME STATUS LED will be Off under normal conditions and On when there are Frame Status Fault conditions. See section 2.10 for more information about the frame status buss fault conditions.

If one of the power supplies malfunctions, (power cord disconnected, power switch is off, fuse is blown, rear fan is stopped, etc.) then its PSU STATUS LED will go Off, and the red FRAME STATUS LED on both power supplies will turn On. (If the power supplies are fitted with green FRAME STATUS LEDs they will turn Off) The PSU STATUS LED on the power supply that is functioning will remain On. If the frame is connected to VistaLINK® then the power supply fault will send a trap message from the frame.



If there is a fuse failure, contact Evertz customer service regarding the power supply immediately. The power supplies are short circuit protected and should not blow the fuse under a short circuit condition.

## 2.10. FRAME STATUS FAULT CONDITIONS

The Frame is fitted with a global Frame Status monitoring buss that is connected to each of the power supplies and to each of the modules. When a fault condition occurs on one of the power supplies, or one of the modules, a Frame Status Fault condition is active on the frame status buss. When this occurs, the red FRAME STATUS LED on the power supply will come on and the relay on the Frame Status Tally terminal block will activate.

Power supplies, will assert a frame status fault when their PSU STATUS LED is off.

Each module has a large red LOCAL FAULT LED and a large green MODULE OK LED at the top of the card edge. This green LED indicates good module health while the red LED indicates that there is a fault condition on the module. Each module has its own criteria that determines when the red fault LED comes on. When the red LOCAL FAULT LED is On the module can also assert a fault condition on the Frame Status buss. On each module there is a jumper that disables sending local card fault information to the Frame Status Buss. For more information about fault conditions on individual modules, and for the location of the Frame Status Jumper on the module consult the individual chapter for the module. For example, if a module requires video or audio for its functionality and the video or audio is not present, the red LOCAL FAULT LED on the module will be On and the fault will be reported on the frame status buss if the FRAME STATUS jumper on the module is set to the On position (default).

## 2.11. CARE AND HANDLING OF OPTICAL FIBER

### 2.11.1. Safety

The **CLASS 1 LASER PRODUCT** sign will appear as the following image:



Background colour: Yellow  
Triangular band: Black  
Symbol: Black

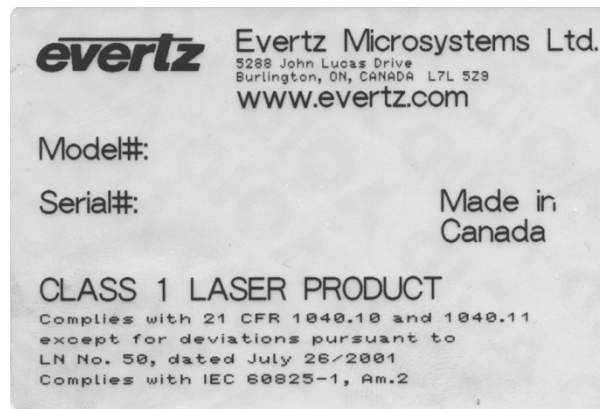
### 2.11.2. Assembly

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

### 2.11.3. 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 manual. (See Figure 2-15).

**Note:** There is not a 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.



**Figure 2-15: Reproduction of Laser Certification and Identification Label**

#### 2.11.4. Handling and Connecting Fibers



**CAUTION:** 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.

Since the transmission characteristics of the fiber depend on the shape of the optical core, care must be taken to prevent fiber damage caused by 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.

Dust particles on the ends of the optical fiber greatly increase the signal loss at interconnections, and large dust particles can even obscure light transmission altogether. To minimize the effects of dust contamination at the interconnections, the fiber should be cleaned each time it is mated or unmated. When using interconnection housings to mate two optical fibers, it is good practice to remove dust particles from the housing assembly with a blast of dry air. Alternatively, you can use the pre-moistened tissue that you should have received with the optical module. Remove this tissue from its package and wipe the end of the fiber connector before mating it to the module.

Whenever a fiber is unmated, it must be covered immediately. Most fiber manufacturers provide a plastic boot that fits over the ferrule body for this purpose.

Fiber interconnections must be made securely. The Evertz fiber optical transmitters and receivers come with SC interconnection housings built into the module. With this style of connector, the fiber assembly and the housing assembly can only be connected in one way and with very good repeatability. The rear fiber interconnect panel that is provided with each module can be ordered with optional SC/PC, ST/PC, or FC/PC connectors. The customer is required to provide the optical fiber with the correct connectors to connect the modules together. SC/PC, ST/PC, and FC/PC interconnection housing and connectors (as well as adapters) are industry standards with many available sources.

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### 3. SPECIFICATIONS

#### 3.1. EMR SPECIFICATIONS

##### 3.1.1. Configuration

**Inputs:** Selectable in blocks of 32

**Outputs:** Selectable in blocks of 32

##### 3.1.2. Video Inputs

**Formats:** SMPTE 259M, SMPTE 292M, SMPTE 310M, SMPTE 424M, ASI

**Signal Level:** 800mV p-p

**Impedance:** 75Ω terminating

**Return Loss:** > 15dB typical (5-1500MHz)

> 10dB typical (1.5-3GHz)

**Cable Equalization:** Belden 1694A, 190m @ 1.5GHz

Belden 1694A, 130m @ 3GHz

**Connectors:** DIN 1.0/2.3

##### 3.1.3. Video Outputs

**Formats:** Same as input

**Reclocking:** Configurable

**Non-Reclocking:** Configurable

**Signal Level:** 800mV p-p ±10%

**Impedance:** 75Ω terminating

**Return Loss:** > 15dB typical (5-1500MHz)

> 10dB typical (1.5-3GHz)

**DC Offset:** 0±0.5V

**Output Jitter:** 0.2UI

**Connectors:** DIN 1.0/2.3

##### 3.1.4. Switching Reference

**Reference Inputs:** 2x BNC, analog 525/625/tri-level HD

**Reference Timing:** 2 independent timing planes, programmable per output

**Signal Level:** 1V p-p ±3dB

**Impedance:** 75Ω terminating

**Connectors:** BNC per IEC 61169-8 Annex A

##### 3.1.5. Control

**Ethernet:** 2x RJ45

**Serial RS-232/RS-422:** 2x D9 female

### 3.1.6. Electrical

#### EMX6-FR:

<b>AC Mains Input:</b>	Auto ranging, 100 ⇔ 240 VAC, 50/60 Hz
<b>Max Operating Current:</b>	9.5 A (@ 115 VAC nominal), 4.0 A (@ 220 VAC nominal)
<b>Max Power Consumption:</b>	850 W
<b>Max Module Load:</b>	650 W (40 W per slot)
<b>Power Supply Configuration:</b>	1 supply standard, optional redundant supply requires separate inlet
<b>Connector:</b>	IEC 60320 - 1 per power supply

#### EMX3-FR:

<b>AC Mains Input:</b>	Auto ranging, 100 ⇔ 240 VAC, 50/60 Hz
<b>Max Operating Current:</b>	4.6 A (@ 100 V/60Hz), 1.85A (@ 240 V/50Hz)
<b>Max Power Consumption:</b>	450 W
<b>Max Module Load:</b>	360 W (24 W per slot)
<b>Power Supply Configuration:</b>	1 supply standard, optional redundant supply requires separate inlet
<b>Connector:</b>	IEC 60320 - 1 per power supply

### 3.1.7. Physical

#### EMX6-FR:

<b>Height:</b>	10.5" (266mm)
<b>Width:</b>	19.0" (483mm)
<b>Depth:</b>	15.75" (400mm)
<b>Module Capacity:</b>	15 single slot EMR series modules
<b>Weight Approx.:</b>	34.8lbs (15.8kg) with 2 power supplies, no slots occupied 64.0lbs (29kg) with 2 power supplies, all slots occupied

#### EMX3-FR:

<b>Height:</b>	5.25" (133mm)
<b>Width:</b>	19.0" (483mm)
<b>Depth:</b>	15.75" (400mm)
<b>Module Capacity:</b>	5 single slot EMR series modules
<b>Weight Approx.:</b>	17.4lbs (7.9kg) with 2 power supplies, no slots occupied 32.0lbs (14.5kg) with 2 power supplies, all slots occupied

### 3.1.8. Compliance

<b>Safety:</b>	CSA Listed to CSA C22.2 No. 60065-03, UL 60065-03 IEC 60065-(2001-12) 7th Edition Complies with CE Low voltage Directive 93/68/EEC
<b>EMC:</b>	Complies with FCC part 15, class A Complies with EU EMC directive 89/336/EEC



## **3.2. EMX-FC SPECIFICATIONS**

### **3.2.1. Ethernet**

**Network Type:** Fast Ethernet 100 Base-TX IEEE 802.3u standard for 100 Mbps baseband CSMA/CD local area network  
Ethernet 10 Base-T IEEE 802.3 standard for 10 Mbps baseband CSMA/CD local area network

**Connector:** RJ-45 (on rear panel of frame)

### **3.2.2. Serial Communications**

**Standard:** RS-232 or RS-422

**Connector:** 15-Pin Female D

**Baud Rate:** 57600 (configurable)

**Format:** 8 bits, no parity, 2 stop bits, no flow control

### **3.2.3. Electrical**

**Voltage:** + 12VDC

**Power:** 7 Watts

**EMI/RFI:** Complies with FCC Part 15  
Class A and EU EMC directive

## **3.3. SC-2000 SPECIFICATIONS**

### **3.3.1. Reference Timing**

**Switching Reference:** Analog 525/625/tri-level HD looping

**Connector:** BNC per IEC 60169-8 Amendment 2.

**Signal Level:** 1 V p-p  $\pm$  3dB

**Impedance:** 75 $\Omega$

**Switching Line:** Lines 6/319 (625), Lines 10/273 (525), Line 7 (HD)

### **3.3.2. Ethernet**

**Network Type:** Fast Ethernet 100 Base-TX IEEE 802.3u standard for 100 Mbps baseband CSMA/CD local area network  
Ethernet 10 Base-T IEEE 802.3 standard for 10 Mbps baseband CSMA/CD local area network

**Connector:** RJ-45

### **3.3.3. Q-Link**

**Connector:** 75 $\Omega$  video cable (max length 500m)

### **3.3.4. Serial Communications**

**Standard:** RS-232 or RS-422

**Connector:** 9-Pin Female D or RJ-45

**Baud Rate:** 57600 (configurable)

**Format:** 8 bits, no parity, 2 stop bits, no flow control

**3.3.5. Electrical**

**Input Voltage:** Auto ranging 100-240V AC, 50/60Hz  
**Input Power:** 200W

**3.3.6. Physical**

**Height:** 3.5" (89mm) 2RU  
**Width:** 19" (483mm) 19" Rack Mount  
**Depth:** 10.3" (262mm) over hinges and BNCs  
**Weight:** 6 kg Fully Loaded  
**Operating Temperature:** 0°C to 40°C  
**Cooling:** Fan cooled, front to rear

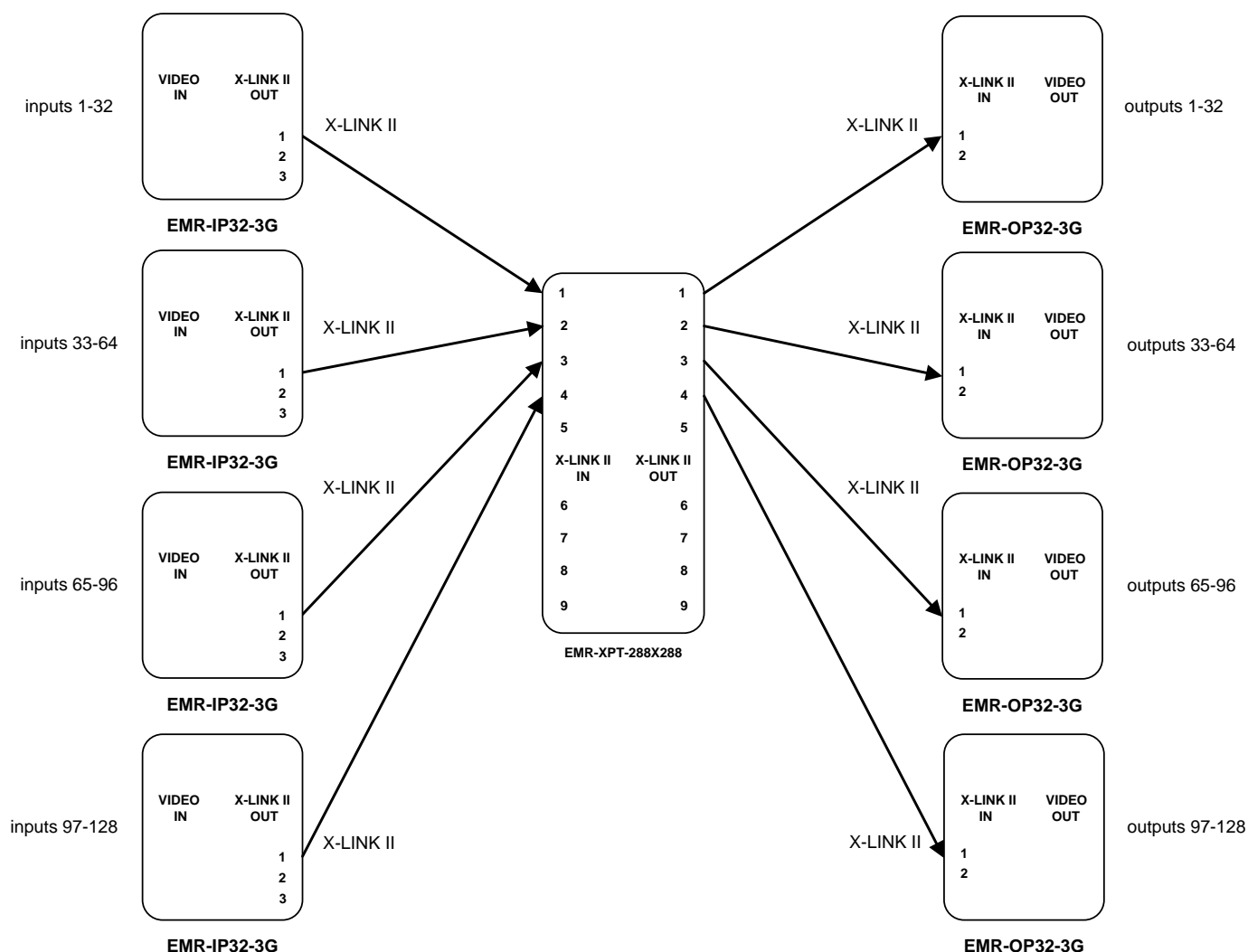
## 4. SYSTEM OVERVIEW

### 4.1. SYSTEM CONNECTIONS

The EMR video routing system provides a flexible and scalable interface that allows a system to be built for distributed applications. The EMR video input cards can be placed in locations that are closer to the video sources to limit the cable length runs. The same can be done with the EMR video output cards.

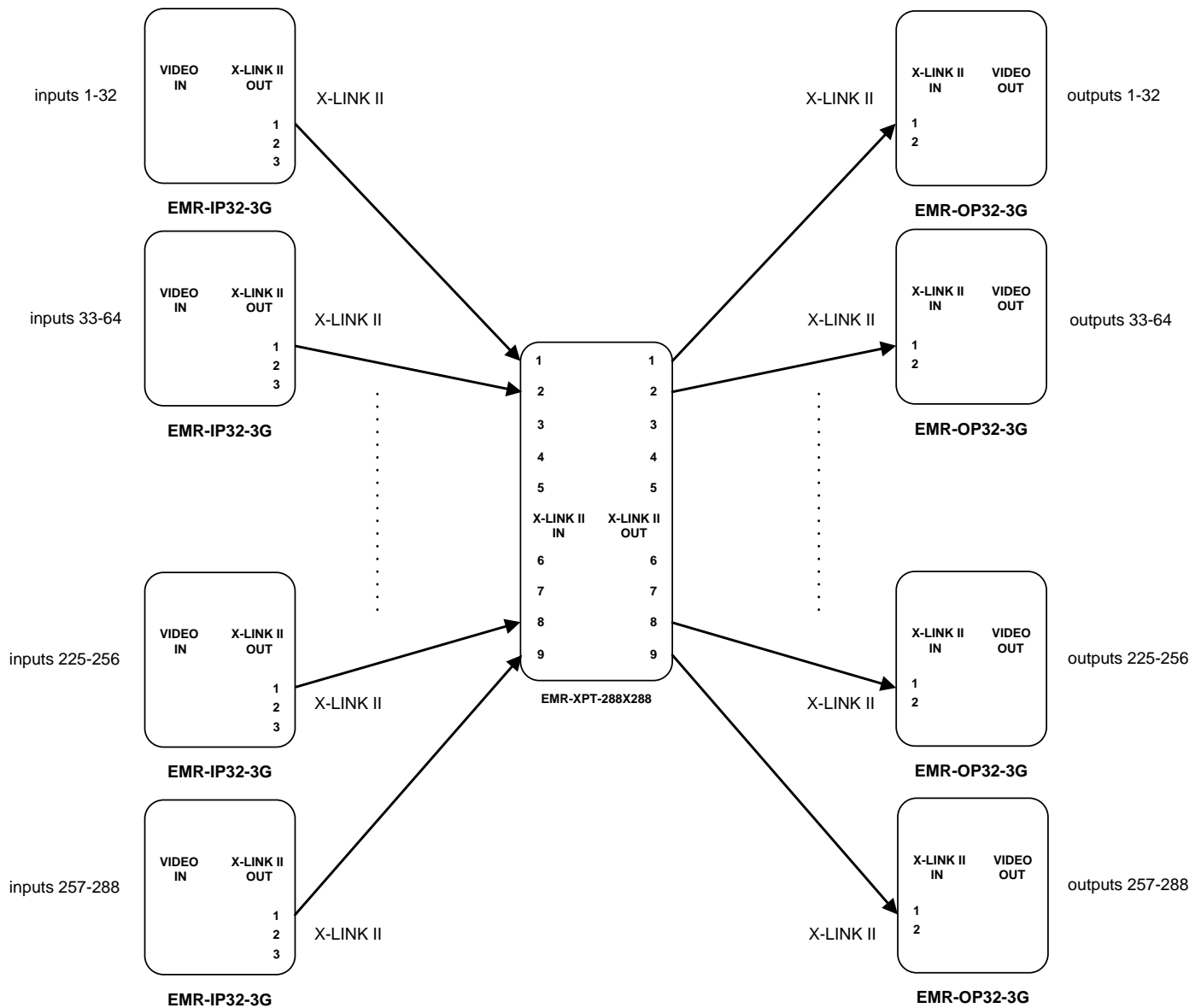
The interface for all of the EMR video modules is via an external X-LINK II connection. X-LINK II is a unique cable connection that is capable of carrying 32 baseband video signals with up to 3Gb/s data rates on each path. The X-LINK II cable is identified as a white or blue cable instead of the black one used for a standard X-LINK cable.

Figure 4-1 shows how a 128x128 system would be connected together. A system of 128 inputs and 128 outputs has 4 input cards and 4 output cards, which can be placed in a single 6RU EMX6-FR frame.



**Figure 4-1: EMR Configuration for 128X128**

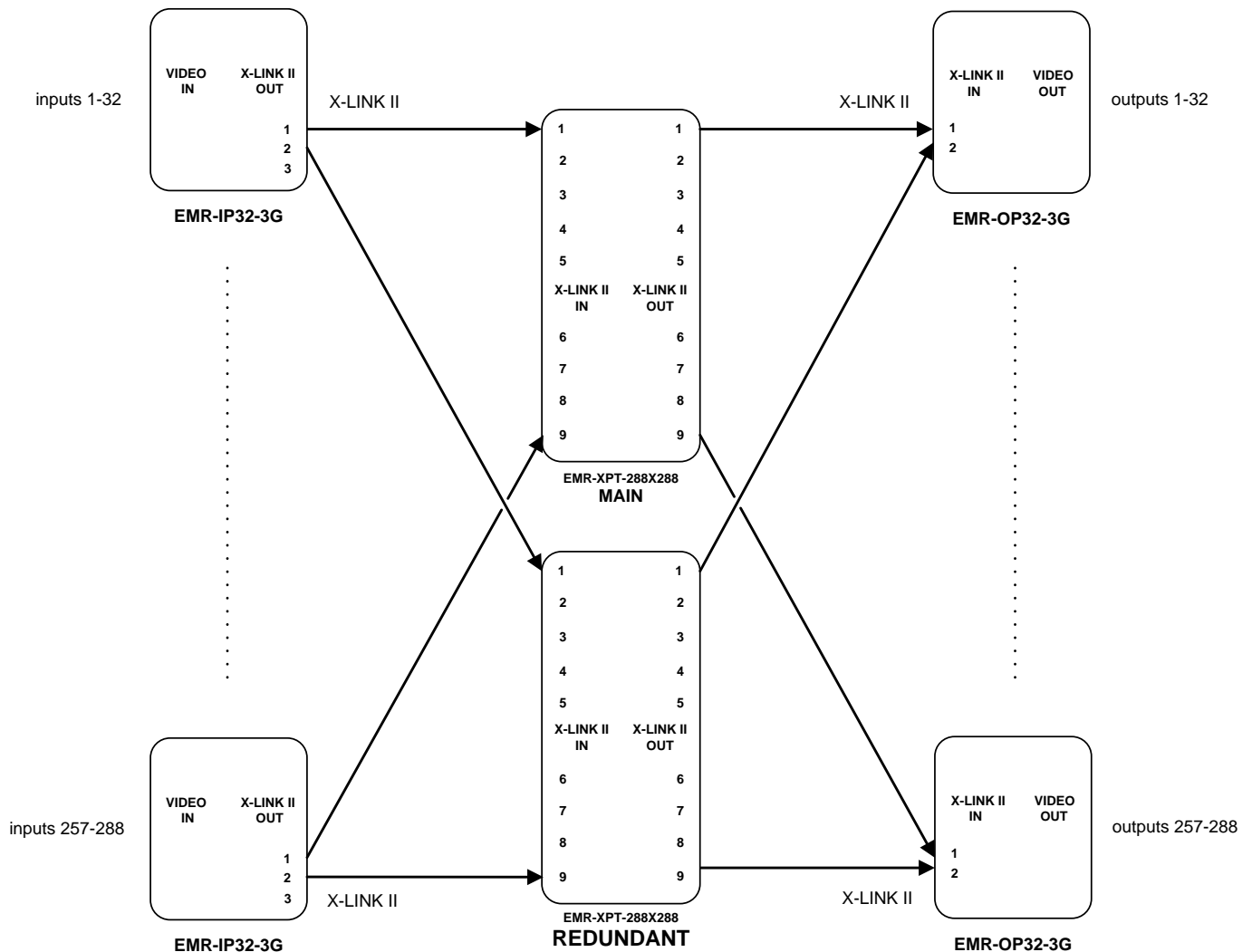
An EMR video system can grow to a full 288x288 router by combining two 6RU EMX6-FR frames. In this configuration, the crosspoint would reside in one frame with 4 input cards and 4 output cards, while the rest of the input and output cards would reside in a second frame. The connection between the cards in the second frame to the crosspoint in the first frame is via X-LINK II. Figure 4-2 shows the connections for a 288x288 EMR video router.



**Figure 4-2: EMR Configuration for 288X288**

The EMR system is built with a fully redundant architecture to ensure that it can handle mission critical applications. For systems that require this level of protection, the EMR system offers full path-by-path crosspoint redundancy.

The second redundant crosspoint can be added at any time, even while a system is live. To increase the resiliency of the system, the redundant crosspoint can be placed in a separate frame that is isolated from the primary crosspoint. Figure 4-3 shows the connections required for a fully redundant 288x288 EMR video router.



**Figure 4-3: EMR Configuration with Main and Redundant Crosspoints**

A fundamental feature of the EMR video router is the ability to interface with Evertz multi-viewers without requiring additional output modules. Since the interface to the EMR crosspoint is via X-LINK II connectors, it allows X-LINK equipped multi-viewers such as the VIPX to connect directly to the crosspoint.

These connections can be made directly off the main crosspoint, or if all 288 outputs are required, a third crosspoint module can be added to the system as shown in Figure 4-4.

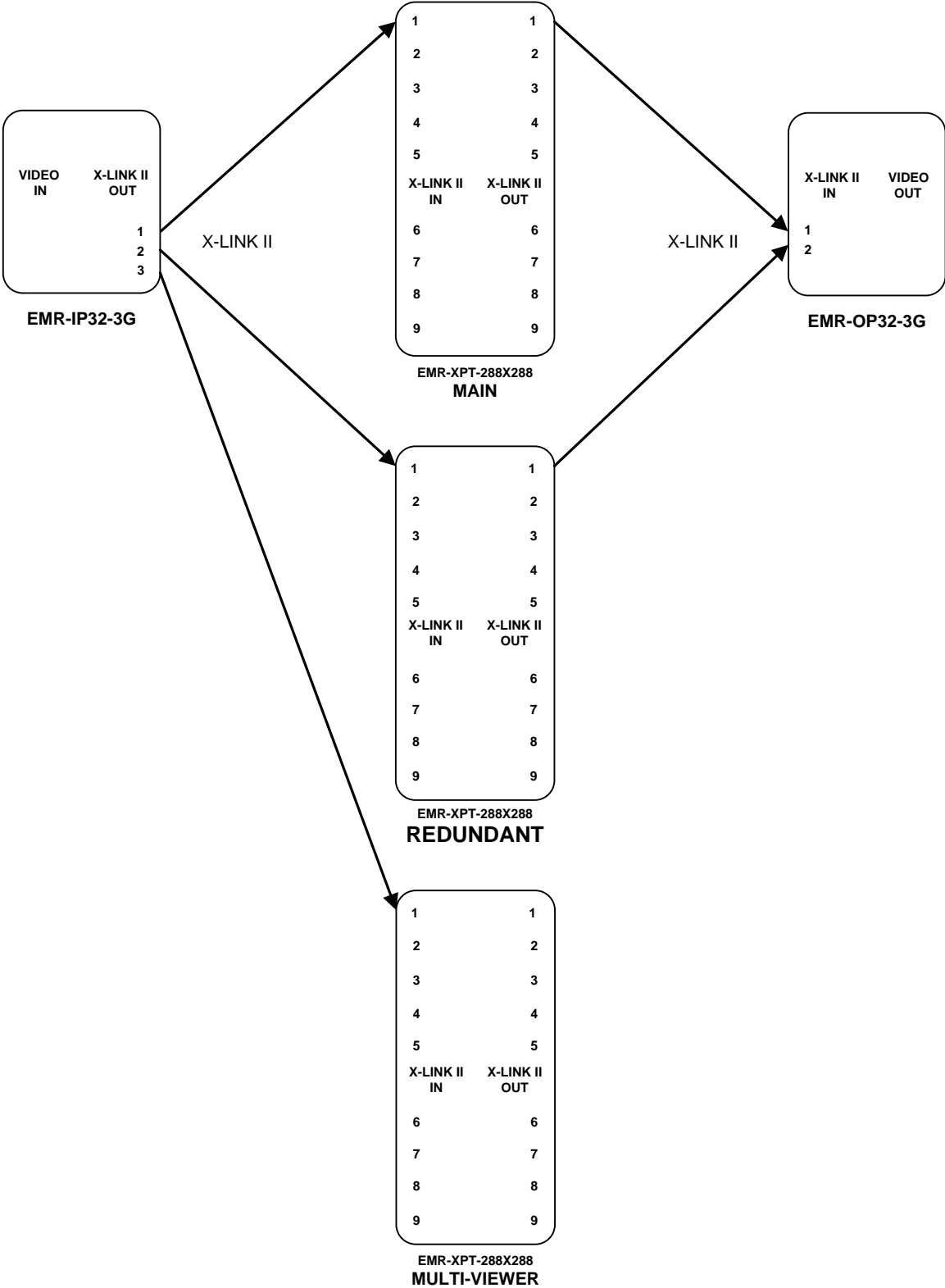


Figure 4-4: EMR Configuration with Main, Redundant and Multi-viewer Crosspoints

The third multi-viewer crosspoint is used exclusively to feed X-LINK enabled multi-viewers. This uses a standard X-LINK cable along with an X-LINK II to X-LINK converter. The X-LINK II to X-LINK converter is a passive device used to interface the two connectors.

There are two converters available. One is called an XLINK-II-S and is a drop down box that has an X-LINK-II cable on one end and a plug for a normal X-LINK cable at the other end. The other module is called an XLINK-II-ADPT. This module is a smaller device that attaches directly to the back of the multi-viewer and only requires a XLINK-II cable.



**Note: An XLINK-II-S or XLINK-II-ADPT module is required to interface the EMR video router with VIPX and MVPX multi-viewers.**



**Note: If redundant connections are required on the VIPX or MVPX, the XLINK-II-S module must be used.**

#### **4.1.1. Referencing**

A common video reference must be applied to all EMR and SC-2000 frames within a system. The reference is required to ensure that all devices have a common clock that is used to synchronize the system. Among other functions, this enables the router to switch on the appropriate switch line.



**Note: All EMR and SC-2000 frames must be locked to a common reference.**

#### **4.1.2. Inter-frame Cable Length Limitations**

Since the interface between the input, output and crosspoint devices is external to the frame, the location of the cards is not important. The only limiting factor is the length of the X-LINK II cable which is 1 meter long.

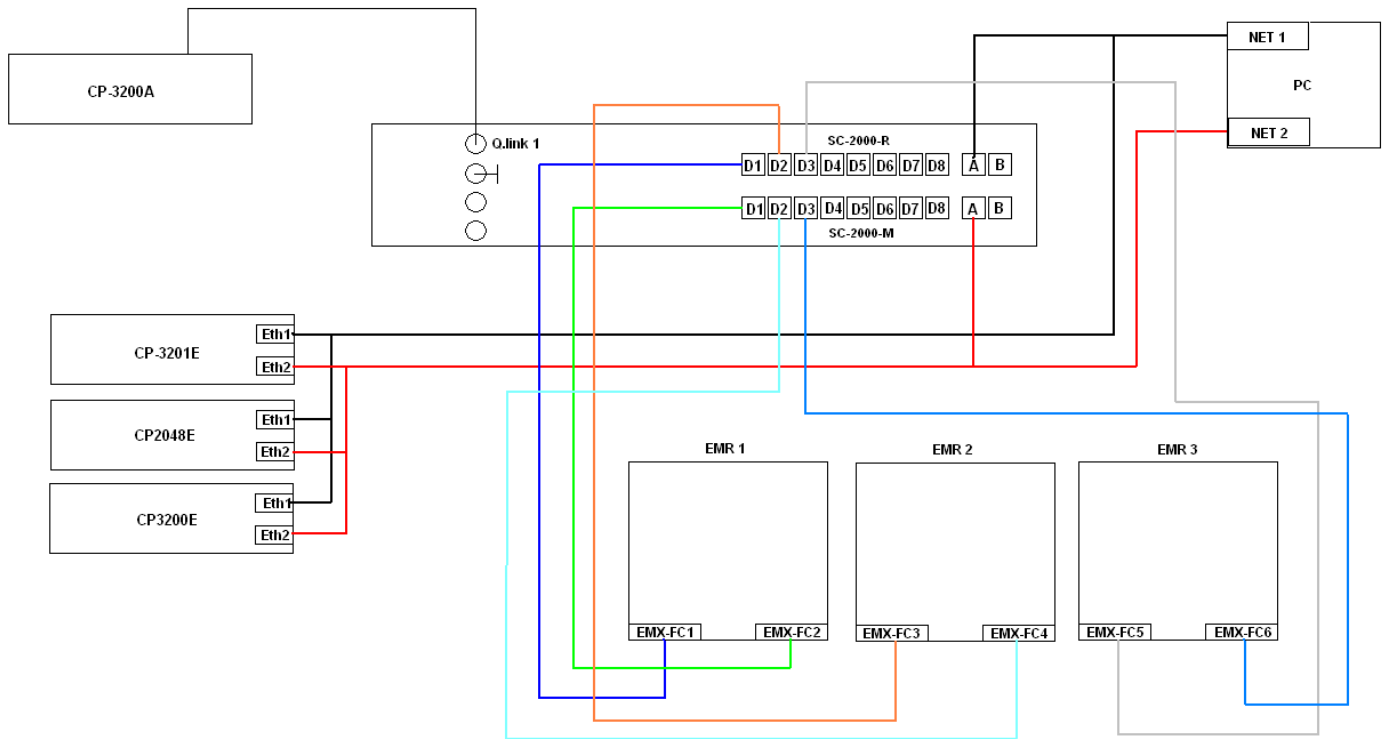
For connections between EMR components that need to exceed this limit, Evertz has a full lineup of fiber conversion gear that can be used to transport the video signals. Please contact the factory for more details.

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## 5. EMR AND SC-2000 NETWORK CONFIGURATION

The modular aspect of the EMR system requires the SC-2000 to provide a unified interface for router control and for system monitoring. The following describes the function of each network interface and how a typical system should be wired together. Figure 5-1 shows the network connections between the EMR system, the SC-2000 and remote control panels.



**Figure 5-1: EMR and SC-2000 Network Connection**

The architecture of the SC-2000 allows an EMR system to have complete network redundancy. When this is required, the EMR router and control panels should be connected in the manner shown in Figure 5-1. From a networking perspective, the top and bottom controller cards in the SC-2000 are completely separate. One can be considered the controller for the main network and one can be considered the controller for the redundant network.

For devices in which there are two network controllers, one should be connected to the main network and one should be connected to the redundant network. In the case of the EMR router, one EMX-FC should be connected to the main, and the other should be connected to the redundant. This is the same for any computer that will be used to interface with the SC-2000.

Remote control panels that are connected over Ethernet should also be put onto both networks if possible.

## 5.1. IP CONNECTION SETTINGS

The SC-2000 has 4 network ports so 4 IP addresses must be configured for the system to function properly. A fifth IP address is also configured for redundancy between the controllers.

The function of each network port is as follows:

- **Network A:** Control port for sending configurations, making crosspoint changes and connecting control panels. This will also be the port for any automation system that needs to control the router over IP.
- **Network B:** SNMP control and monitoring port.
- **Network C:** Interlink IP port used by the main and redundant controllers to communicate with each other to determine who is in control.
- **Network D:** Used to interface with the EMX-FC exclusively to provide a network switch for all of the individual EMR frames.
- **Remote IP:** Set to the C address of the other SC-2000 card (If fitted).

Each Ethernet port has to be on a different subnet (i.e. Port A: 192.168.5.210, Port B: 192.168.6.210, Port C: 192.168.7.210 and Port D: 192.168.8.210)

The first EMX-FC frame controller will match the A (network 1) address in the EMR cards and the D port on the top SC-2000 card.

The second EMX-FC frame controller will match the B (network 2) address in the EMR cards and the D port on the bottom SC-2000 card.

Setting the IP address in this manner will give full network redundancy between the SC-2000 card and the EMR frames. An example of how the IP addresses should be set for each port in the SC-2000 and each port in the EMR is shown in Table 5-1 and Table 5-2. Take note of the different subnets for each component in the system.



**Note:** The IP addresses are set using an Evertz ribbon cable connected to the 4-pin serial port on the front of each SC-2000 controller card.



**Note:** The Interlink IP address (PORT C) of one SC-2000 must be on the same subnet as PORT D of the other SC-2000.

SC-2000	Port A IP	Port B IP	Port C IP	Port D IP	Remote IP
Top (Main)	192.168.5.210	192.168.6.210	192.168.7.210	192.168.8.210	192.168.8.211
Bottom (Red)	192.168.5.211	192.168.6.211	192.168.8.211	192.168.7.211	192.168.7.210

**Table 5-1: IP Address Scheme for the SC-2000**

Component	Main IP	Redundant IP
EMX-FC (Main)	192.168.8.27	
EMR-IP32-3G	192.168.8.20	192.168.7.20
EMR-XPT-288X288	192.168.8.21	192.168.7.21
EMR-OP32-3G	192.168.8.22	192.168.7.22
EMX-FC (Red)		192.168.7.27

**Table 5-2: IP Address Scheme for EMR Components**

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## 6. CONFIGURING THE SYSTEM USING WINSETUP

The WinSetup program is used to configure most of the routing functions, including control panel operation. It allows such things as the number of signal levels to be defined, which control panels are connected to the system and the names of the inputs and outputs.

The configuration of the SC-2000 uses a special version of WinSetup. To ensure that the correct version is used, check the *Options, System Version* menu. The correct version has the SC-500E as the only system inside the Routing System Controller box.

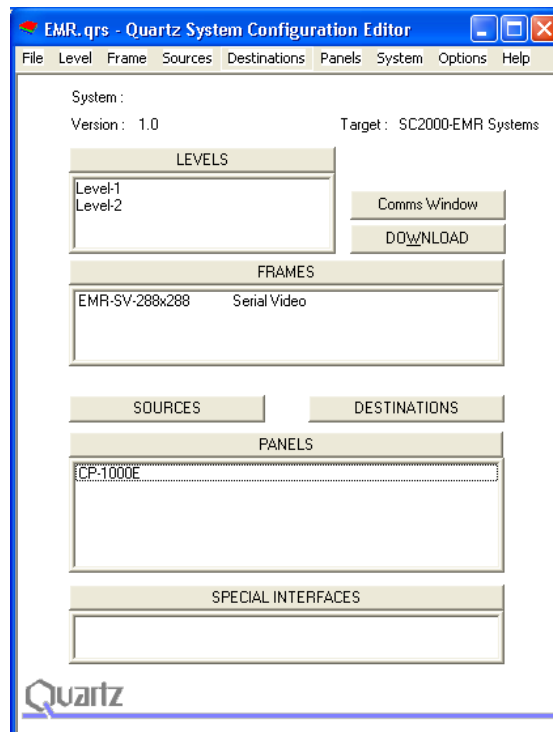


**Note: Configuration of the SC-2000 requires a specific version of WinSetup.**

WinSetup is supplied with a comprehensive help system that can be accessed by pressing **F1** (function key F1) from any screen (dialog). The help system can also be entered from the *Help, Index* menu. The following notes are a very brief guide to WinSetup intended for getting started.

### 6.1. CONFIGURATION OF 288X288 AND 288X288 WITH REDUNDANCY

Any part of the system can be configured from the menu at the top of the screen. The gray bars above each main section and the line items within the main sections can both be used for quick access to specific items. Figure 6-1 shows the configuration editor for 288x288 (with redundancy).



**Figure 6-1: WinSetup Configuration Editor**

When generating a new system configuration some of the menus and functions are grayed out (not available). This is deliberate to 'lead the user through' the functions that need to be set up. Carry out the following functions to configure the system.

- (1) **Levels:** Enter the level names for each of the signal levels you want to control. Do not tick the "Complex" box at this stage. For the EMR router, two levels should be entered: Video and Redundant.
- (2) **Frames:** Enter the frames dialog and use the new button. Select the appropriate router from the list available. Under the frame configuration, the frame must be sub-divided into two parts. This is required to setup the router for redundant operation.

The frame should be split into two parts, with one part being the Video level and the other part being the Redundant level. The sizes of the two parts should be 288x288 and 6x288 respectively. Figure 6-2 shows the configuration for the 288x288 router. Further details regarding the configuration of the EMR and the communication ports are described in section 6.3 and section 6.5.

Level	Name	Input Size	Output Size	Input Min.	Input Max.	Output Min.	Output Max.
Video		288	288	1	288	1	288
Redunda		6	288	1	6	1	288

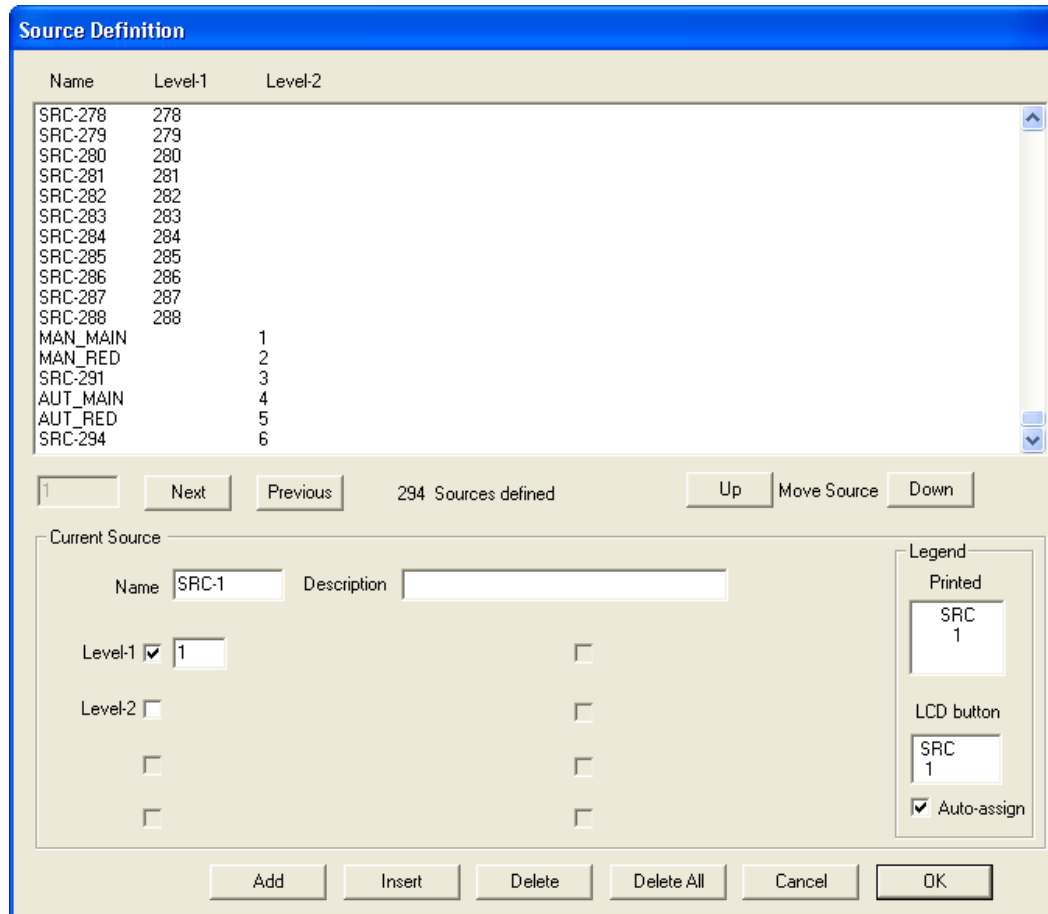
  

Control Level	Source Min.	Source Max.	Destination Min.	Destination Max.
Level-1	1	288	1	288
Level-2	1	6	1	288

**Figure 6-2: WinSetup Frame Editor for 288x288**

- (3) **Sources:** Enter the sources dialog and use the add button to fill the name table with SRC-1 to SRC-X. The names can be edited later when a few panels are configured and working. It is important to set the number of sources in Level-1 to be 288, even if the router will be smaller. This is required to correctly define the redundant control level.

As shown in Figure 6-3, 6 sources must be defined for Level-2. These 6 sources are called manual main, manual redundant, manual shadow, auto main, auto redundant, and auto shadow. Note that manual shadow (SRC-291) and auto shadow (SRC-294) are not used but must still be defined in the sequence as shown. These additional sources are used to control crosspoint redundancy.



The dialog box titled "Source Definition" contains a table with three columns: Name, Level-1, and Level-2. The table lists 24 sources. The first 20 sources (SRC-278 to SRC-288) are assigned to Level-1. The next 4 sources (MAN\_MAIN, MAN\_RED, SRC-291, AUT\_MAIN) are assigned to Level-2. The last 2 sources (AUT\_RED, SRC-294) are also assigned to Level-2. Below the table, there are buttons for "Next", "Previous", "Up", "Move Source", and "Down". A status bar indicates "294 Sources defined".

Name	Level-1	Level-2
SRC-278	278	
SRC-279	279	
SRC-280	280	
SRC-281	281	
SRC-282	282	
SRC-283	283	
SRC-284	284	
SRC-285	285	
SRC-286	286	
SRC-287	287	
SRC-288	288	
MAN_MAIN		1
MAN_RED		2
SRC-291		3
AUT_MAIN		4
AUT_RED		5
SRC-294		6

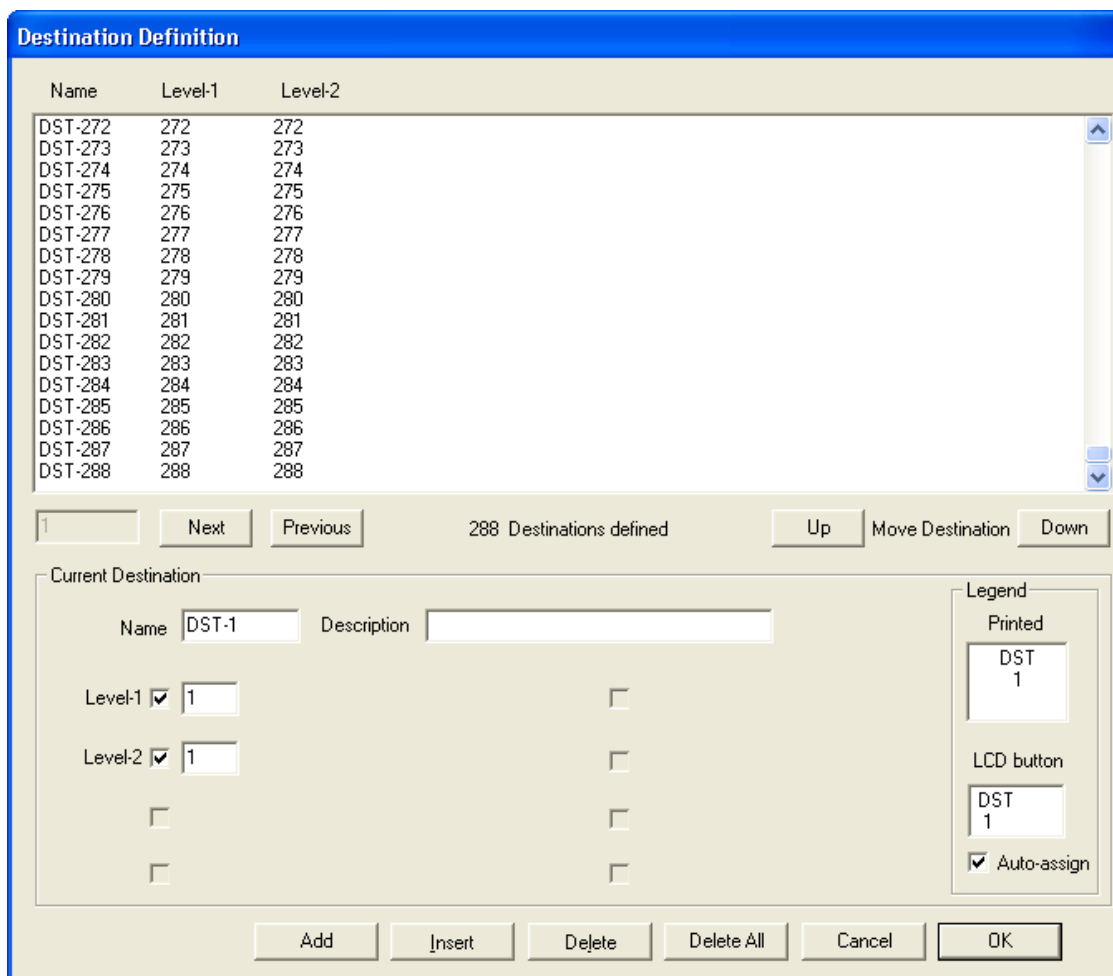
Current Source: Name: SRC-1, Description: [empty]  
 Level-1: ☒ 1  
 Level-2: ☐  
 Legend: Printed: SRC 1, LCD button: SRC 1, ☒ Auto-assign

Buttons: Add, Insert, Delete, Delete All, Cancel, OK

**Figure 6-3: WinSetup Source Definition**

If you want to edit a name now, select one row from the list of names in the upper part of the screen, the details appear in the lower part of the screen. From here you can edit the name and decide which signal levels that name will control when selected on a control panel.

- (4) **Destinations:** Enter the destination dialog and set up the destination names in the same way as used for the source names. Destinations must be defined for both Level-1 and Level-2 as shown in Figure 6-4.



The dialog box is titled "Destination Definition". It features a table with three columns: "Name", "Level-1", and "Level-2". The table lists destinations from DST-272 to DST-288. Below the table, there are navigation buttons: "Next", "Previous", "Up", "Move Destination", and "Down". A status bar indicates "288 Destinations defined".

Below the navigation buttons is the "Current Destination" section. It includes a "Name" field with "DST-1" and a "Description" field. There are checkboxes for "Level-1" and "Level-2", each followed by a "1" in a text box. To the right of these is a "Legend" section with a "Printed" checkbox, a "DST 1" label, an "LCD button" checkbox, another "DST 1" label, and an "Auto-assign" checkbox which is checked.

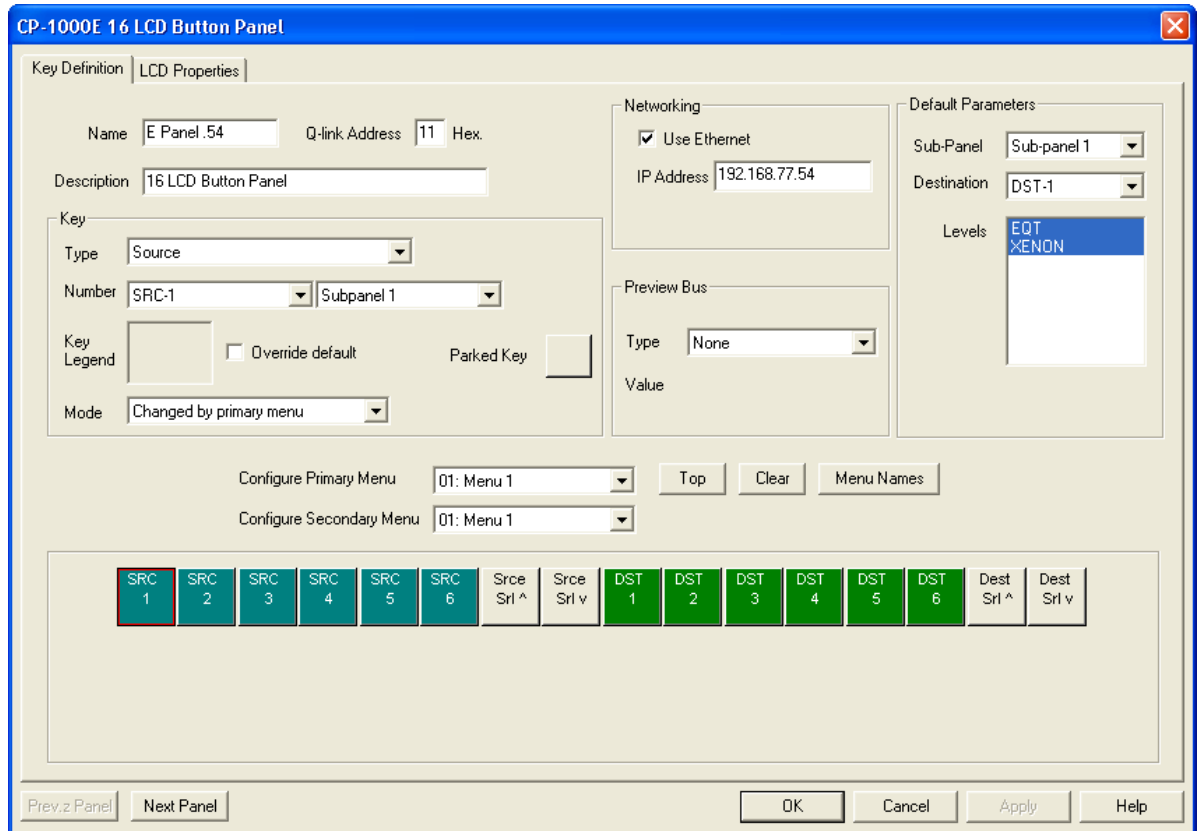
At the bottom of the dialog are buttons for "Add", "Insert", "Delete", "Delete All", "Cancel", and "OK".

Name	Level-1	Level-2
DST-272	272	272
DST-273	273	273
DST-274	274	274
DST-275	275	275
DST-276	276	276
DST-277	277	277
DST-278	278	278
DST-279	279	279
DST-280	280	280
DST-281	281	281
DST-282	282	282
DST-283	283	283
DST-284	284	284
DST-285	285	285
DST-286	286	286
DST-287	287	287
DST-288	288	288

**Figure 6-4: WinSetup Destination Definition**

- (5) **Panels:** Enter the panel's dialog and use the new button. This will show all Evertz panels listed by part number. Select the part number that matches the part number on the panel's serial number label. Ignore the A/E designation as the connection method for the panel will be defined in the panel configuration dialog. Once a part number is selected, a new dialog will appear showing a graphic of the panel as shown in Figure 6-5.





**Figure 6-5: WinSetup Panel Configuration**

Each button can be programmed by selecting the button and then editing the functions in the Key section of the dialog. Each panel should also be given a name for later identification, E Panel .54 in this example. The Q-Link address will be allocated automatically by the program but can be edited if required. In the above example the panel has 6 sources and 6 destinations with scrolling source and destination buttons. Now add any further panels that the system will need.



**Note:** An indication for the connection method used (Q-Link or Ethernet) must be made in the panel configuration of each panel.



**Note:** In both Q-Link and Ethernet panels the Q-Link address has to match the physical Q-Link address of the panel.

To differentiate between a panel that is connected via Q-Link and a panel that is connected via Ethernet, check the *Use Ethernet* box when appropriate. When checked, an IP address is required to be entered. This is the IP address of the control panel.

- (6) **Download:** Use the System menu, Download-to-Router to transfer the setup data to the router. Remember to save the setup as it **CANNOT** be retrieved from the router. The configuration for the SC-2000 can only be downloaded over Ethernet using port 25 or 3000



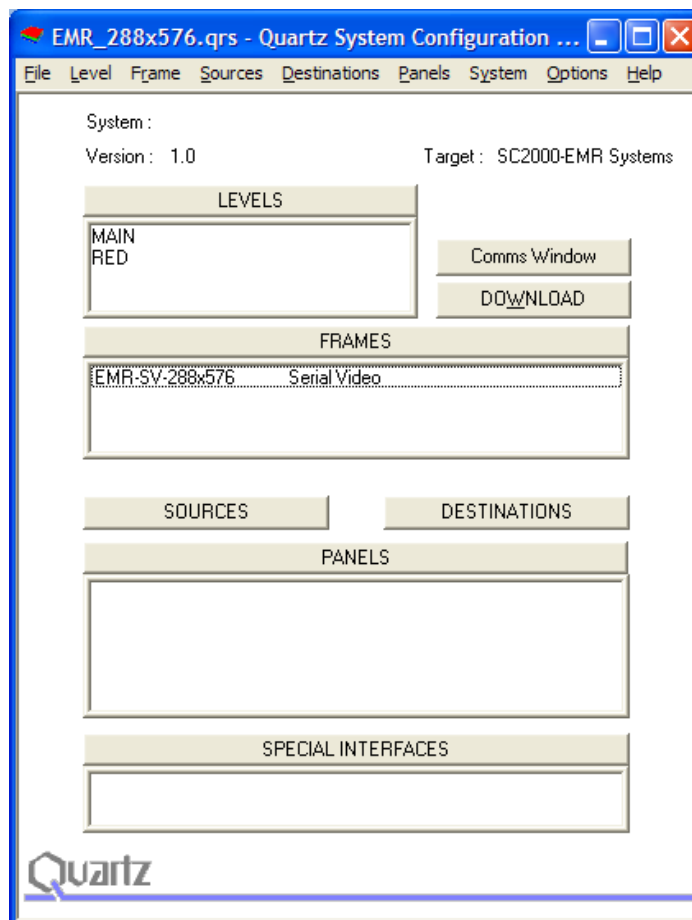
**Note:** The default port for download is 25 and if configuration is downloaded using port 3000, system has to be power-cycled.



**Note:** If there is no redundancy crosspoint on 288x288 Router after downloading the configuration, the crosspoint must be set to MANUAL MAIN.

## 6.2. CONFIGURATION OF 288X576 ROUTER

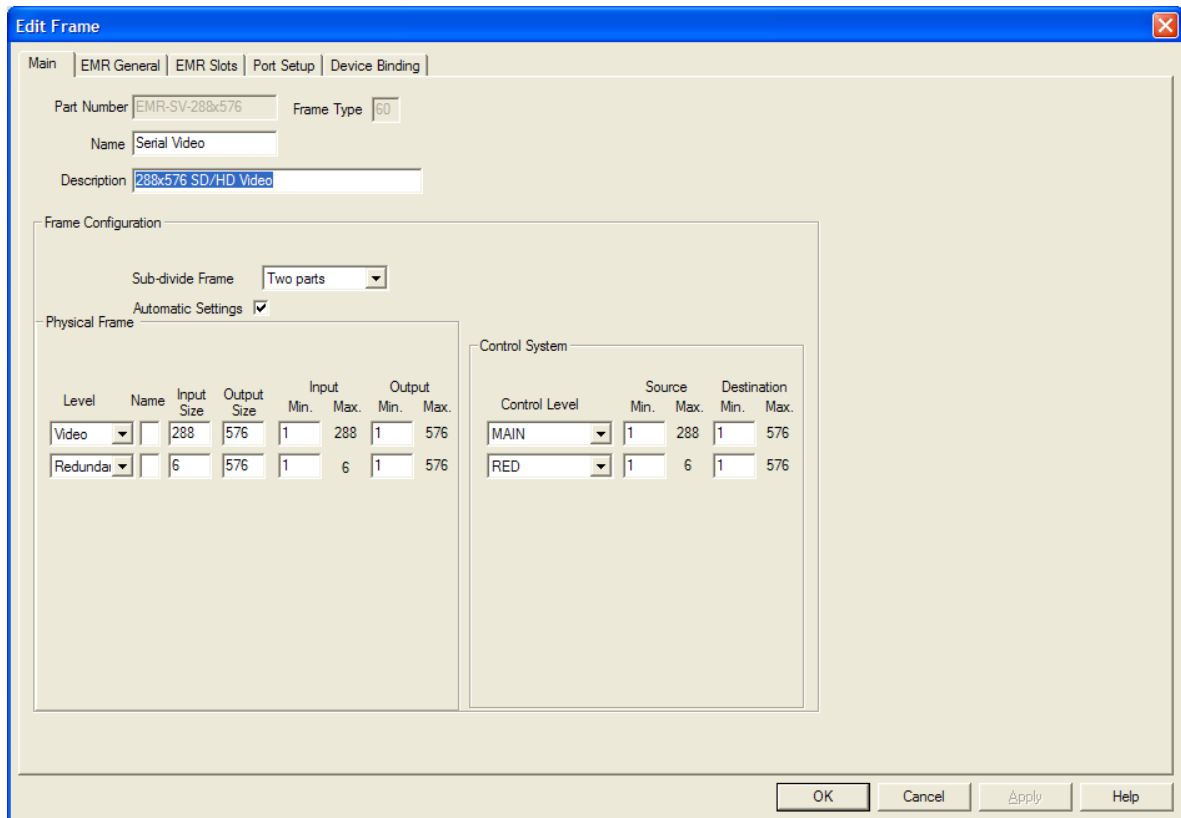
In 288x576 Router, there should be 9 input cards, 9 output cards and 3 crosspoints. First crosspoint is the main or primary crosspoint, the second one is used for redundancy (optional) and the third one is used for Multi-viewer. Figure 6-6 shows the system configuration editor for the 288x576 router.



**Figure 6-6: Win Setup Configuration Editor**

When generating a new system configuration some of the menus and functions are grayed out (not available). This is deliberate to 'lead the user through' the functions that need to be set up. Carry out the following functions to configure the system.

- (1) **Levels:** Enter the level names for each of the signal levels you want to control. Do not tick the "Complex" box at this stage. For the EMR router, two levels should be entered: Video and Redundant.
- (2) **Frames:** Enter the frames dialog and use the new button. Select the appropriate router from the list available. Under the frame configuration, the frame must be sub-divided into two parts. This is required to setup the router for redundant operation. One part being the Video level and the other part being the Redundant level. The sizes of the two parts should be 288x576 and 6x576 respectively. Figure 6-7 shows what the configuration should look like. Further details regarding the configuration of the EMR and the communication ports are described in section 6.3 and section 6.5.



Level	Name	Input Size	Output Size	Input Min.	Input Max.	Output Min.	Output Max.
Video		288	576	1	288	1	576
Redundant		6	576	1	6	1	576

Control Level	Source Min.	Source Max.	Destination Min.	Destination Max.
MAIN	1	288	1	576
RED	1	6	1	576

**Figure 6-7: WinSetup Frame Editor**

- (3) **Sources:** Enter the sources dialog and use the add button to fill the name table with SRC-1 to SRC-X. The names can be edited later when a few panels are configured and working. It is important to set the number of sources in Level-1 to be 288, even if the router will be smaller. This is required to correctly define the redundant control level.
- (4) **Destinations:** Enter the destination dialog and set up the destination names in the same way as used for the source names. Destinations must be defined for both Level-1 and Level-2 as shown in Figure 6-8.

**Destination Definition**

Name	MAIN	RED
DST-560	560	560
DST-561	561	561
DST-562	562	562
DST-563	563	563
DST-564	564	564
DST-565	565	565
DST-566	566	566
DST-567	567	567
DST-568	568	568
DST-569	569	569
DST-570	570	570
DST-571	571	571
DST-572	572	572
DST-573	573	573
DST-574	574	574
DST-575	575	575
DST-576	576	576

1   576 Destinations defined

**Current Destination**

Name:  Description:

MAIN ☒ 1 ☐

RED ☒ 1 ☐

☐ ☐

☐ ☐

**Legend**

Printed

DST 1

LCD button

DST 1

☒ Auto-assign

**Figure 6-8: WinSetup Destination Definition**

(5) **Panels:** Same as 288x288 Router Configuration

(6) **Downloads:** Same as 288x288 Router Configuration



**Note:** In a 288x576 system with 3 XPTs, 1-288 outputs must be set to AUTO MAIN and 289-576 outputs must be set to MANUAL MAIN.

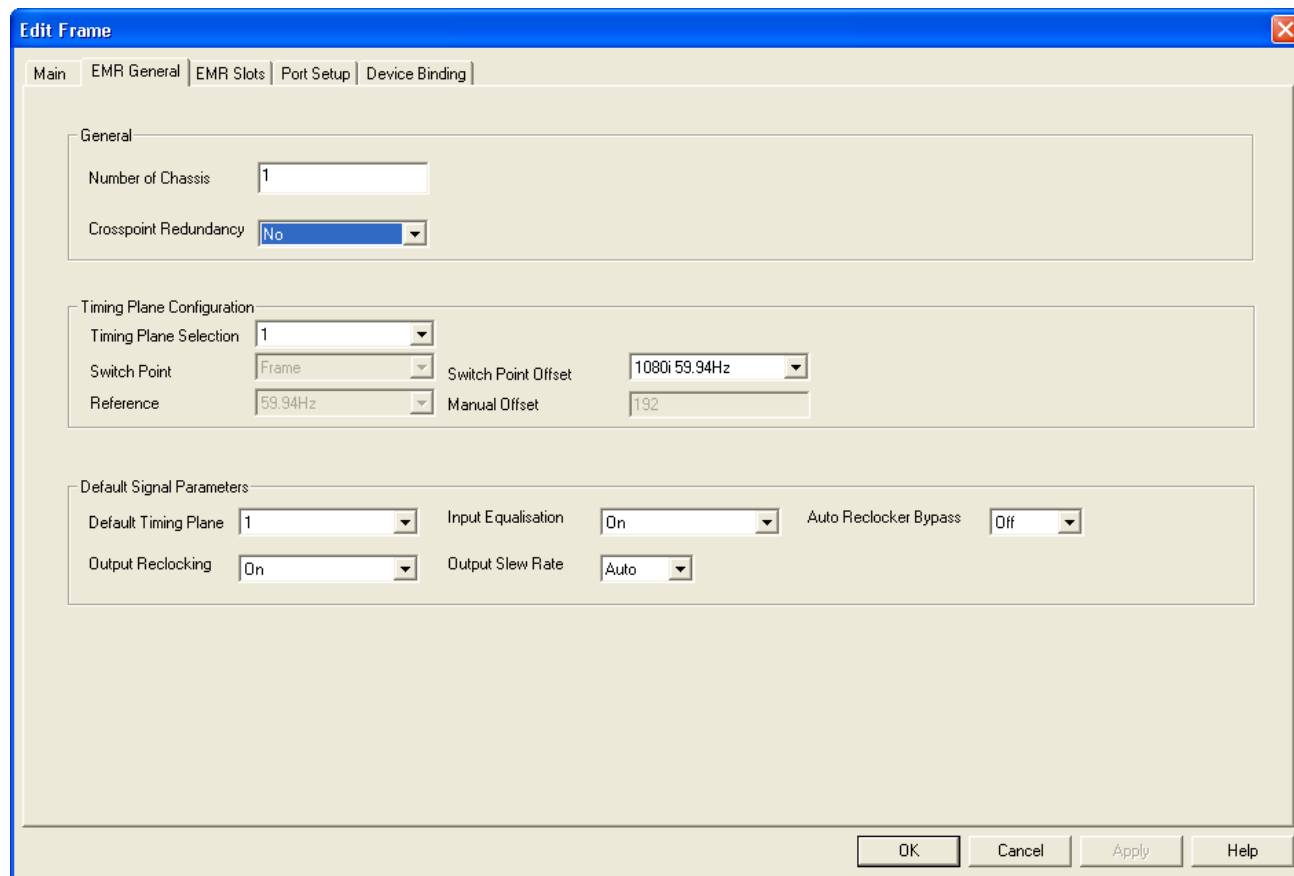
### 6.3. EMR FRAME CONFIGURATION

**EMR General** configuration tab for the EMR contains the controls necessary to configure the EMR router for redundancy, switch timing and some other functional controls. The EMR General tab is shown in Figure 6-9.

The *General* section is used to set the number of EMR chassis or frames in the system, and to select whether or not there is a redundant crosspoint.

The *Timing Plane Configuration* section allows 4 timing planes to be configured so that sources in the EMR router can be switched using different switch lines. The switch line that is used will depend on the video standard that is selected in the *Switch Point Offset* drop-down box.

The *Default Signal Parameters* section is used to select the default timing plan that is used by the router, along with functions to control input equalization, reclocking and the output slew rate. In most cases, all of these controls should be left in their default values.



**Edit Frame**

Main | **EMR General** | EMR Slots | Port Setup | Device Binding

**General**

Number of Chassis: 1

Crosspoint Redundancy: No

**Timing Plane Configuration**

Timing Plane Selection: 1

Switch Point: Frame      Switch Point Offset: 1080i 59.94Hz

Reference: 59.94Hz      Manual Offset: 132

**Default Signal Parameters**

Default Timing Plane: 1      Input Equalisation: On      Auto Reclocker Bypass: Off

Output Reclocking: On      Output Slew Rate: Auto

OK   Cancel   Apply   Help

**Figure 6-9: EMR General Frame Configuration**

The EMR slot configuration tab for the EMR contains the controls necessary to configure the SC-2000 so that it is aware of all of the components that consist of the EMR system. The EMR Slots tab is shown in Figure 6-10.

Slot	Card Type	Card Number	Inputs	Outputs	IPAddress(Main)	IPAddress(Redu)
01	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
02	EMR-IP-SV-32	0001	32	00	192.168.8.20	192.168.7.20
03	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
04	EMR-XPT-SV-288	0001	288	288	192.168.8.21	192.168.7.21
05	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
06	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
07	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
08	EMR-OP-SV-32	0001	00	32	192.168.8.22	192.168.7.22
09	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
10	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
11	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
12	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0

Frame No.  From Slot  To Slot

☒ Card Type
 ☐ Inputs
 ☒ Outputs
 ☒ Start IP AddressM
 ☒ Start IP AddressR

OK Cancel Apply Help

**Figure 6-10: EMR Slot Configuration**

The configuration of the EMR slots is very important for getting the EMR system to function properly. For each frame in the EMR system, each slot in the frame must be configured to point to the correct type of card and to contain the correct IP address. This information will be used by the SC-2000 to ensure that the EMR functions as a unified router.

The slot location for each frame can either be entered manually or by using the controls at the bottom of the dialog. To enter the information automatically, select the frame and slot that is to be configured. For example, if slot 2 is to be configured, select the Frame No. then set the *From Slot* and *To Slot* to 2. Once the slot is selected, select the appropriate *Card Type*, *Input*, *Output*, *Start IP AddressM* and *Start IP AddressR*. Once these items are selected, press the *Set* button. Once configured, the *Card Number* for each slot must also be defined. This determines the sequence for the input and output cards.



**Note:** The *Card Number* must be defined for all input and output cards as well as the crosspoint. If the *Card Number* is not defined, the system will not route.



**Note:** For the main crosspoint, the *Card Number* should be 1, for the redundant crosspoint, the *Card Number* should be 2 and for Multiviewer crosspoint the *Card Number* should be set to 3.

Where there is a blank slot in the frame, set the *Card Type* to *EMR-CARD-NONE*. Although the EMR-XPT-288X288 occupies 3 slots, only the first slot of the three should be identified in the system.

Figure 6-11 shows the configuration of the slots in detail. In this example, there is an EMR-IP32-3G card in slot 2, an EMR-XPT-288X288 card in slots 4-6, and an EMR-OP32-3G in slot 8.

Frame 1

Slot	Card Type	Card Number	Inputs	Outputs	IPAddress(Main)	IPAddress(Redu
01	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
02	EMR-IP-SV-32	0001	32	00	192.168.8.20	192.168.7.20
03	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
04	EMR-XPT-SV-288	0001	288	288	192.168.8.21	192.168.7.21
05	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
06	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
07	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
08	EMR-OP-SV-32	0001	00	32	192.168.8.22	192.168.7.22
09	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
10	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
11	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
12	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0

**Figure 6-11: EMR Slot Configuration Detailed**

The SC-2000 will only allow routes to be made on destinations that are defined in the system. Even if the crosspoint module has 288 destinations, if there are any outputs that are not defined in the system, then it will not allow any routes to take place on those outputs. Using the example in Figure 6-11, only routes to outputs 1-32 will be acknowledged.

For systems that have XLINK-II outputs connected to a multi-viewer or other device, the EMR slot configuration must be configured to use a *Card Type* of *EMR-EXT-OP*. This card should still have a *Card Number* defined so that it uses the proper sequence of destinations. Figure 6-12 provides an example of an external device that has the destination sequence of 33-64.

Frame 1

Slot	Card Type	Card Number	Inputs	Outputs	IPAddress(Main)	IPAddress(Redu
01	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
02	EMR-IP-SV-32	0001	32	00	192.168.8.20	192.168.7.20
03	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
04	EMR-XPT-SV-288	0001	288	288	192.168.8.21	192.168.7.21
05	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
06	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
07	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
08	EMR-OP-SV-32	0001	00	32	192.168.8.22	192.168.7.22
09	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
10	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
11	EMR-EXT-OP	0002	00	32	0.0.0.0	0.0.0.0
12	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0

**Figure 6-12: EMR Slot Configuration with External Device**

#### 6.4. EMR FRAME CONFIGURATION WITH 4.11 RPC FIRMWARE

RPC based firmware (4.11) will allow the user to update the IP addresses and SNMP parameters through Winsetup.



**Note:** Make sure all **SNMP** parameters are set to default (Public/Private) and there is no trap address set.



**Note:** In RPC based systems, SC-2000 requires a specific version of WinSetup.

In Winsetup the main differences between F-Link and RPC based are the EMR General tab and EMR Slots tab.

**EMR General** configuration tab for the EMR contains the controls necessary to configure the EMR router for redundancy, switch timing and some other functional controls. The EMR General tab is shown in Figure 6-13. The *General* section is used to set the number of EMR chassis or frames in the system, and to select whether or not there is a redundant crosspoint.

The *Timing Plane Configuration* section allows 4 timing planes to be configured so that sources in the EMR router can be switched using different switch lines. The switch line that is used will depend on the video standard that is selected in the *Switch Point Offset* drop-down box.

The *Default Signal Parameters* section is used to select the default timing plan that is used by the router, along with functions to control input equalization, reclocking and the output slew rate. In most cases, all of these controls should be left in their default values.

The *SC2000* section will allow the user to set the physical IP addresses of the Main and Redundant SC2000 and based on this configuration the IP addresses of the Inputs, Outputs and Crosspoints have to be set.

The *SC Network information* will give an over view of the SC 2000 network configurations.



**Note:** Then **Enable Multicast** option is for future use.



**New Frame**

Main | EMR General | EMR Slots | Port Setup | Device Binding

**General**

Number of Chassis: 2 | Crosspoint Redundancy: Yes-Automatic

Number of SC2000: 2

**Timing Plane Configuration**

Timing Plane Selection: 1 | Switch Point: Frame | Switch Point Offset: 625 | Reference: 50Hz | Manual Offset: 352

**Default Signal Parameters**

Default Timing Plane: 1 | Input Equalisation: On | Auto Reclocker Bypass: On | Output Reclocking: On | Output Slew Rate: Auto

**SC2000**

	IP A	IP B	IP C (Network 1)	IP D (Network 2)
Top Slot SC2000	192 . 168 . 5 . 210	192 . 168 . 6 . 210	192 . 168 . 7 . 210	192 . 168 . 8 . 211
Bottom Slot SC2000	192 . 168 . 5 . 211	192 . 168 . 6 . 211	192 . 168 . 8 . 211	192 . 168 . 7 . 210

☐ Enable Multicast

**Multicast IPs**

	IP C (Control Group Redundant)	IP D (Control Group Main)	IP C (IO Group Redundant)	IP D (IO Group Main)
Top Slot SC2000	0 . 0 . 0 . 0	0 . 0 . 0 . 0	0 . 0 . 0 . 0	0 . 0 . 0 . 0
Bottom Slot SC2000	0 . 0 . 0 . 0	0 . 0 . 0 . 0	0 . 0 . 0 . 0	0 . 0 . 0 . 0

SC Network Information

**SNMP**

Add SNMP Device

OK Cancel Apply Help

**Figure 6-13: EMR General Frame Configurations**

**Quartz System Configuration Editor**

IP A: Control port for sending configurations and making XPT and Panel connections, this will also be the port for automation over IP (Quartz protocol only)  
 IP B: SNMP control  
 IP C: Interlink IP address, (remote IP Address)  
 IP D: Talks to EMR Frame controller

Each Ethernet port has to be on a different Subnet

The first(left) EMX Frame controller must be on the same subnet as the Network 1 IP address of the EMR cards, and the D port of the Top SC-2000 card

The second(right) EMX Frame controller must be in the same subnet as the Network 2 IP address of the EMR cards, and the D port of the bottom SC-2000 card

For Example

SC-2000 frame	IP A	IP B	IP C	IP D
Top FC	192.168.5.210	192.168.6.210	192.168.7.210	192.168.8.210
Lower FC	192.168.5.211	192.168.6.211	192.168.8.211	192.168.7.211

EMR-frame	Network 1 Address	Network 2 Address
EMX-FC1	192.168.8.10	
EMR-card	192.168.8.20	192.168.7.20
EMR-card2	192.168.8.21	192.168.7.21
EMX-FC2		192.168.7.10

**Multicast Groups:**

The SC2000 should be configured with 4 multicast group ip addresses -

- 2 for Control Network (main & redundant) - for communication between FCs
- 2 for I/O Network (main & redundant) - for communication between FC & I/O Cards

Top Card Multicast Control IP Main should be same as Bottom Card Multicast Control IP Redundant. Similarly for the IO Network IPs

For Example

Top SC2000 -	IO Network
Control Network	NET C - 224.0.0.3
NET C - 224.0.0.1	NET D - 224.0.0.4
NET D - 224.0.0.2	

Bottom SC2000-	IO Network
Control Network	NET C - 224.0.0.4
NET C - 224.0.0.2	NET D - 224.0.0.3
NET D - 224.0.0.1	

OK

**Figure 6-14: SC Network information**

**EMR Slots** configuration tab for the EMR contains the controls necessary to configure the SC-2000 so that it is aware of all of the components that consist of the EMR system. The EMR Slots tab is shown in Figure 6-14.

Slot	Card Type	Card Number	Inputs	Outputs	Network 1 IP Address	Network 2 IP Address
05	EMR-OP-SV-32	0000	00	00	0.0.0.0	0.0.0.0
06	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
07	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
08	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
09	EMR-XPT-SV-288	0000	00	00	0.0.0.0	0.0.0.0
10	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
11	EMR-IP-SV-32	0000	00	00	0.0.0.0	0.0.0.0
12	EMR-IP-SV-32	0000	00	00	0.0.0.0	0.0.0.0
13	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
14	EMR-CARD-NONE	0000	00	00	0.0.0.0	0.0.0.0
15	EMR-IP-SV-32	000	00	00	0.0.0.0	0.0.0.0
16	EMX-FC	0000	00	00	192.168.8.27	0.0.0.0
17	EMX-FC	0000	00	00	0.0.0.0	192.168.7.27

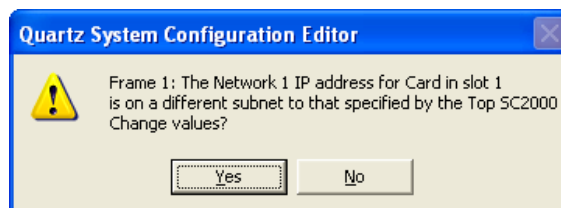
**Figure 6-15: EMR Slot Configuration**



**Note:** The **Card Number** must be defined for all input and output cards as well as the crosspoint. If the **Card Number** is not defined, the system will not route.

The configuration of the EMR slots is very important for getting the EMR system to function properly. For each frame in the EMR system, each slot in the frame must be configured to point to the correct type of card and to contain the correct IP address and much the physical slot number. This information will be used by the SC-2000 to ensure that the EMR functions as a unified router.

If the IP address for any of the modules is set on a different subnet than specified in SC2000, a warning widow will pop up addressing the issue. The warning window is shown in Figure 6-16.



**Figure 6-16: Incorrect IP warning window**

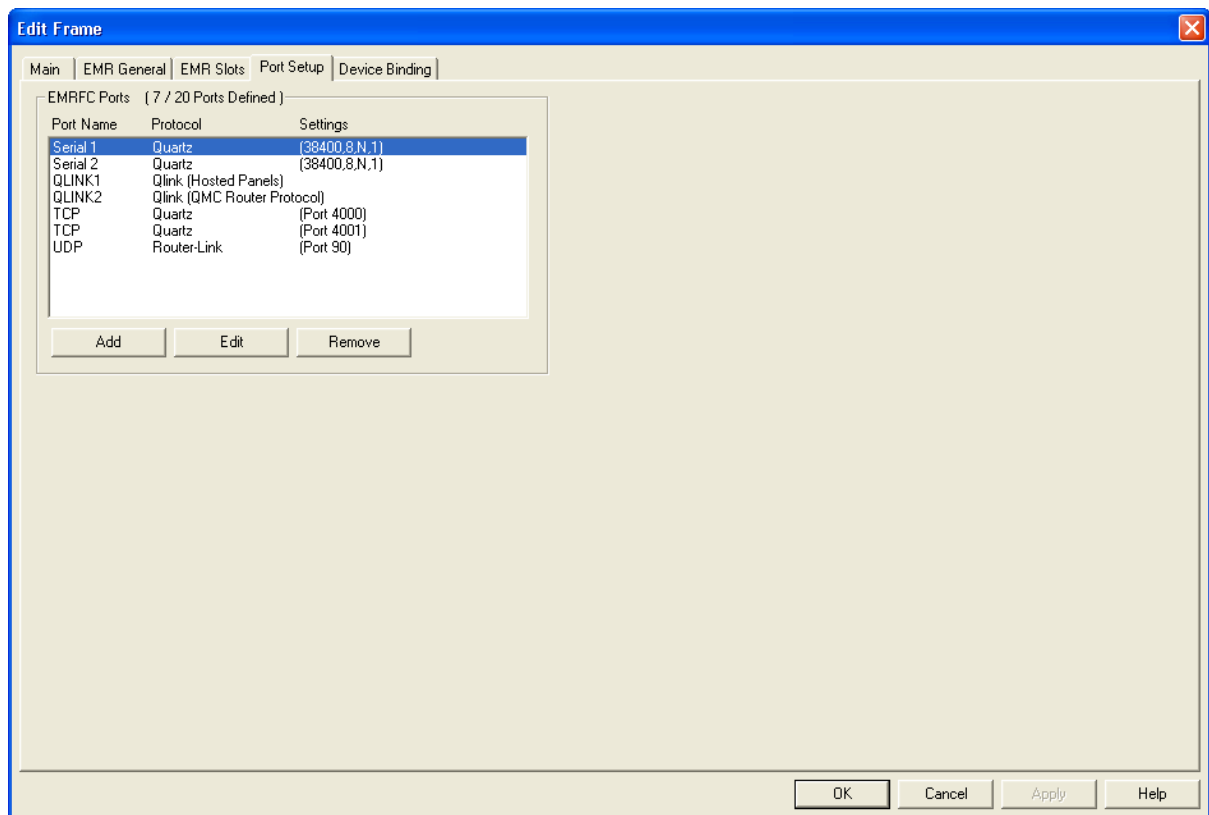
In RPC version the EMX-FC IP addresses have to be configured as well. As it is shown in Figure 6-14, the IP address of the frame controller located on the left slot of the frame, is set for slot 16 under Network1 and the IP address of the frame controller located on the right slot is set for slot 17 under Network2.



**Note:** Frame slot number has to match the physical location of the card in frame.

## 6.5. COMMUNICATION PORT SETUP

The SC-2000 has several communications ports that require additional setup. This section is used to define all of the interfaces that will be connected to the SC-2000. Enter the Edit Frame dialog and select the Port Setup tab. From this dialog, ports can be added for Ethernet or serial control, Ethernet panel hosting, and Q-Link panel hosting. This dialog is shown in Figure 6-15.



**Figure 6-17: Port Setup**

### 6.5.1. Control Panel Ethernet Interface

The control panel Ethernet port is a single interface that is defined to allow all properly equipped control panels to connect to the SC-2000 via Ethernet. The interface is defined as a *UDP* interface using the *RouterLink* protocol. The port is always defined as *90*. A properly configured setting is shown in Figure 6-16.

**Port Settings**

**General**

Interface: **UDP** Port: **90**

Protocol: **Router-Link**

**Advanced**

Source Offset: **0** Controlling Protocol: ☐

Dest. Offset: **0** Controlling Levels: **VABCDEFG**

Valid Start: **1** Use updates as takes: ☐

Valid Stop: **2048**

Valid Levels: **VABCDEFG**

☐ Periodic Poll: **1000** ms

☐ Periodic Interrogate: **1000** ms

☐ Interrogate routes on connection/startup

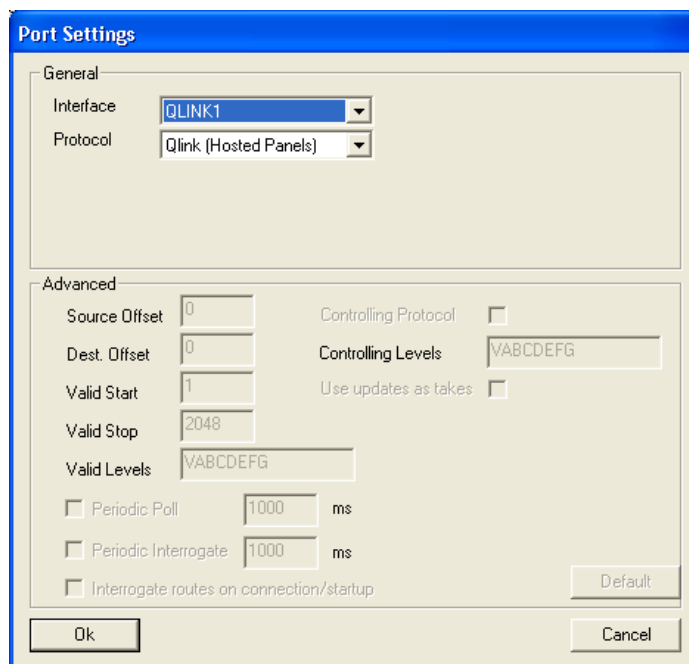
**Default**

**Ok** **Cancel**

**Figure 6-18: Ethernet Panels Port Settings**

### 6.5.2. Control Panel Q-Link Interface

The control panel Q-Link port is an interface that is defined to allow all properly equipped control panels to connect to the SC-2000 via Q-Link. The Q-Link port can be defined as a port to host panels using Q-Link. The interface is defined as a *QLINK1* interface using the *Qlink (Hosted Panels)* protocol. A properly configured setting is shown in Figure 6-17. In this configuration, control panels can be connected to the physical port that is labeled Q-Link 1 on the rear of the device.

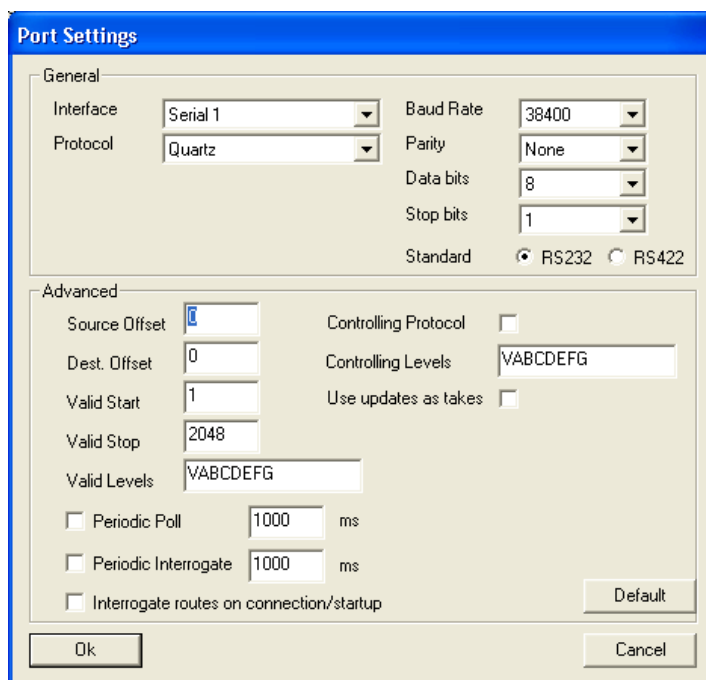


The 'Port Settings' dialog box has a blue title bar. It contains two main sections: 'General' and 'Advanced'. In the 'General' section, 'Interface' is set to 'QLINK1' and 'Protocol' is set to 'Qlink (Hosted Panels)'. The 'Advanced' section includes fields for 'Source Offset' (0), 'Dest. Offset' (0), 'Valid Start' (1), 'Valid Stop' (2048), and 'Valid Levels' (VABCDEF). It also has checkboxes for 'Controlling Protocol' (unchecked), 'Controlling Levels' (VABCDEF), and 'Use updates as takes' (unchecked). At the bottom of the 'Advanced' section, there are three checkboxes: 'Periodic Poll' (unchecked) with a value of 1000 ms, 'Periodic Interrogate' (unchecked) with a value of 1000 ms, and 'Interrogate routes on connection/startup' (unchecked). A 'Default' button is located at the bottom right of the 'Advanced' section. At the very bottom of the dialog are 'Ok' and 'Cancel' buttons.

Figure 6-19: Q-Link Hosted Panels Port Settings

### 6.5.3. Serial Interface

The serial port is an interface that is defined to provide external automation control of the SC-2000. The interface is defined as a *COM1* interface using the *Quartz* protocol. The format of the serial protocol is also defined in this dialog using the options that are provided for *Baud Rate*, *Parity*, *Data bits*, *Stop bits* and *Standard* (*RS232* or *RS422*). A properly configured serial port is shown in Figure 6-18.



The 'Port Settings' dialog box has a blue title bar. It contains two main sections: 'General' and 'Advanced'. In the 'General' section, 'Interface' is set to 'Serial 1' and 'Protocol' is set to 'Quartz'. To the right of these are 'Baud Rate' (38400), 'Parity' (None), 'Data bits' (8), and 'Stop bits' (1). At the bottom of the 'General' section, there are radio buttons for 'Standard', with 'RS232' selected and 'RS422' unselected. The 'Advanced' section includes fields for 'Source Offset' (0), 'Dest. Offset' (0), 'Valid Start' (1), 'Valid Stop' (2048), and 'Valid Levels' (VABCDEF). It also has checkboxes for 'Controlling Protocol' (unchecked), 'Controlling Levels' (VABCDEF), and 'Use updates as takes' (unchecked). At the bottom of the 'Advanced' section, there are three checkboxes: 'Periodic Poll' (unchecked) with a value of 1000 ms, 'Periodic Interrogate' (unchecked) with a value of 1000 ms, and 'Interrogate routes on connection/startup' (unchecked). A 'Default' button is located at the bottom right of the 'Advanced' section. At the very bottom of the dialog are 'Ok' and 'Cancel' buttons.

Figure 6-20: Serial Port Settings

#### 6.5.4. Ethernet Interface

The Ethernet interface is defined to provide access to the SC-2000 so that it can be controlled via Ethernet using Quartz protocol. Four ports can be added: 4000, 4001, 4002 and 4003. An example of a properly configured Ethernet port for external control is shown in Figure 6-19.

The screenshot shows a 'Port Settings' dialog box with two tabs: 'General' and 'Advanced'. The 'General' tab is active, showing 'Interface' set to 'TCP' and 'Port' set to '3737'. The 'Protocol' is set to 'Quartz' and 'Is client' is unchecked. The 'Advanced' tab is also visible, showing 'Source Offset' as 0, 'Dest. Offset' as 0, 'Valid Start' as 1, 'Valid Stop' as 2048, and 'Valid Levels' as 'VABCDEFG'. There are checkboxes for 'Controlling Protocol' and 'Use updates a takes', both of which are unchecked. A 'Periodic Poll' checkbox is also present, with a value of 1000 ms. At the bottom of the dialog are 'Ok', 'Cancel', and 'Default' buttons.

Tab	Field	Value
General	Interface	TCP
	Port	3737
	Protocol	Quartz
	Is client	<input type="checkbox"/>
Advanced	Source Offset	0
	Dest. Offset	0
	Valid Start	1
	Valid Stop	2048
	Valid Levels	VABCDEFG
	Controlling Protocol	<input type="checkbox"/>
	Use updates a takes	<input type="checkbox"/>
	Periodic Poll	<input type="checkbox"/> 1000 ms

**Figure 6-21: Ethernet Port Settings**

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

### **7.1. 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. A SNMP manager, also known as a Network Management System (NMS), is a computer running special software that communicates with the devices in the network. Evertz *VistaLINK®* Pro Manager graphical user interface (GUI), third party or custom manager software may be used to monitor and control Evertz *VistaLINK®* enabled fiber optic products.
2. Managed devices (such as EMR modules), each with a unique address (OID), communicate with the NMS through an SNMP Agent.
3. A virtual database, known as the Management Information Base (MIB) lists all the variables being monitored and which both the Manager and Agent understand. Please contact Evertz for further information about obtaining a copy of the MIB for interfacing to a third party Manager/NMS.

7.2. VISTALINK® REMOTE MONITORING/CONTROL FOR SC-2000-EMR

7.2.1. General Monitoring and Control Parameters for SC-2000-EMR

The following figure (Figure 7-1) shows the General Monitoring tab for SC-2000-EMR.

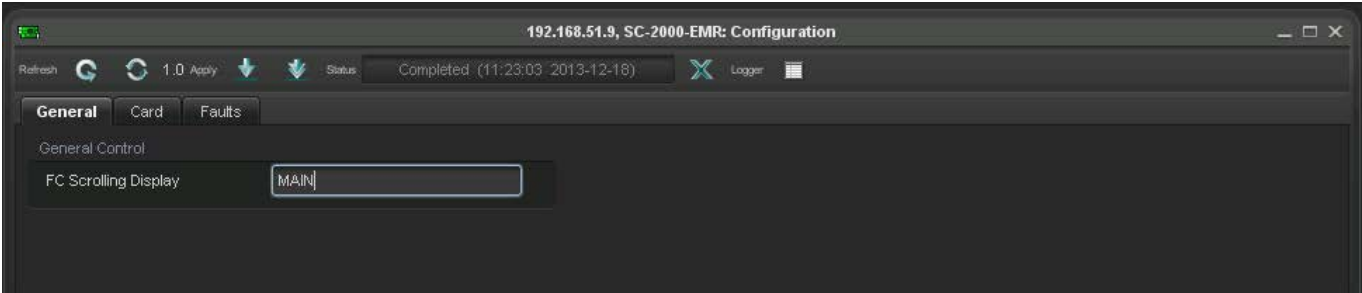


Figure 7-1: General Monitoring Tab for SC-2000-EMR

Table 7-1 below provides the further details about each control:

Parameter	Description
FC scrolling Display	Scrolling display text can be changed as per user

Table 7-1: General Monitoring Tab Parameters

7.2.2. Card Information Tab for SC-2000-EMR

This tab displays information about all the cards that are communicating with SC-2000 and it includes the primary and secondary IP Addresses, Card type and Frame number.

The following figure (Figure 7-2) shows the Card Information tab for SC-2000-EMR.



Slot No.	Frame	Type	Pri Address	Sec Address	Status	Departure Count	Product ID
1	1	Unknown	⌵ address Missing	⌵ address Missing	Not Fitted	0	
2	1	Output	192.168.100.11	192.168.101.11	Communicating	0	3MR-OP-VIDEO-32
3	1	Output	192.168.100.12	192.168.101.12	Communicating	0	3MR-OP-VIDEO-32
4	1	Unknown	⌵ address Missing	⌵ address Missing	Not Fitted	0	
5	1	Unknown	192.168.100.13	192.168.101.13	Not Fitted	0	
6	1	Unknown	⌵ address Missing	⌵ address Missing	Not Fitted	0	
7	1	Unknown	⌵ address Missing	⌵ address Missing	Not Fitted	0	
8	1	Unknown	⌵ address Missing	⌵ address Missing	Not Fitted	0	
9	1	XPT	192.168.100.14	192.168.101.14	Communicating	0	3MR-XPT-288x288
10	1	Unknown	⌵ address Missing	⌵ address Missing	Not Fitted	0	
11	1	Input	192.168.100.15	192.168.101.15	Communicating	0	EMR-IP-VIDEO-32
12	1	Input	192.168.100.16	192.168.101.16	Communicating	0	EMR-IP-VIDEO-32
13	1	Unknown	⌵ address Missing	⌵ address Missing	Not Fitted	0	
14	1	Input	192.168.100.17	192.168.101.17	Communicating	0	EMR-IP-VIDEO-32
15	1	Unknown	192.168.100.18	192.168.101.18	Not Fitted	0	
16	2	Output	⌵ address Missing	⌵ address Missing	Communicating	0	EXT-OUTPUT
17	2	Output	⌵ address Missing	⌵ address Missing	Communicating	0	EXT-OUTPUT
18	2	XPT	192.168.100.19	192.168.101.19	Communicating	1	3MR-XPT-288x288
19	2	Output	⌵ address Missing	⌵ address Missing	Communicating	0	EXT-OUTPUT

**Figure 7-2: Card Information Tab for SC-2000-EMR**

Table 7-2 below provides the further details about each control:

Parameter	Description
Slot number	Displays the Slot number of the each card in the frame
Frame	Displays the Frame number
Primary address	Displays Primary IP address of the card
Secondary address	Displays Secondary IP address of the card
Status	Displays the Status of the card in the frame
Departure Count	Displays the Departure count of the card
Product ID	Displays the Product ID of the card (eg:EMR-OP-VIDEO-32)

**Table 7-2: Card Information Tab Parameters**

7.2.3. Faults Tab for SC-2000-EMR

The following figure (Figure 7-3) shows the Faults tab for SC-2000-EMR.

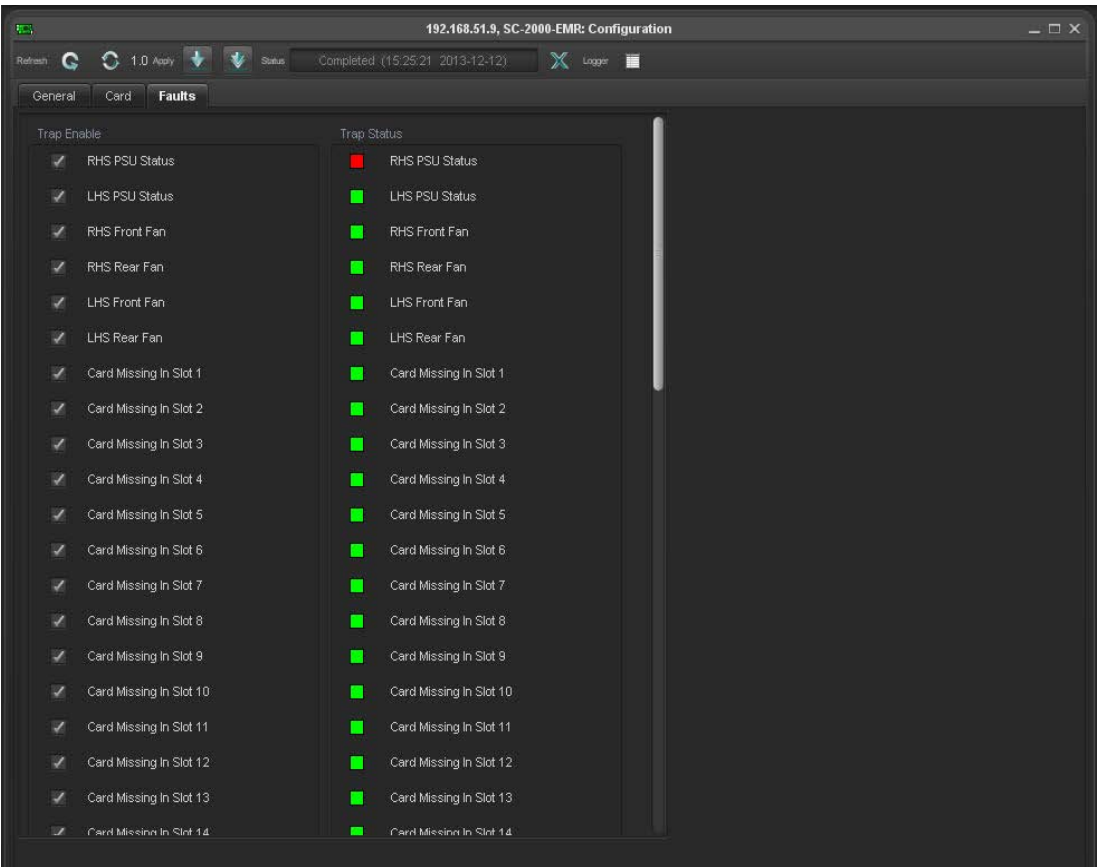


Figure 7-3: Faults Tab for SC-2000-EMR

Table 7-3 below provides the further details about each control:

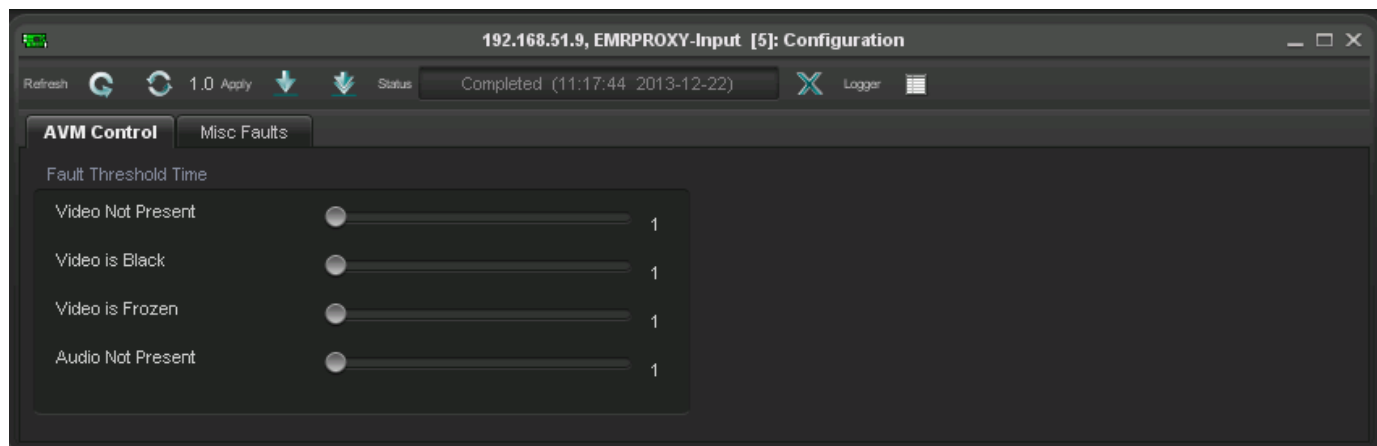
Parameter	Description
RHS PSU status	Enable or Disable Right hand side PSU status trap
LHS PSU Status	Enable or Disable Left hand side PSU status trap
RHS Front Fan	Enable or Disable Right hand side Front fan status trap
RHS Rear Fan	Enable or Disable Right hand side Rear fan status trap
LHS Front Fan	Enable or Disable Left hand side Front fan status trap
LHS rear Fan	Enable or Disable Left hand side Rear fan status trap
Card Missing Slot	Enables or Disables the Card missing slot# 1 to 15
Trap Status	Displays the status of the Trap Enabled by the user

Table 7-3: Faults Tab Parameters

## 7.3. VISTALINK® REMOTE MONITORING/CONTROL FOR EMR-IP32-3G

### 7.3.1. AVM Control Tab for EMR-IP32-3G

The following figure (Figure 7-4) shows the AVM Control tab for EMR-IP32-3G.



**Figure 7-4: AVM Control Tab for EMR-IP32-3G**

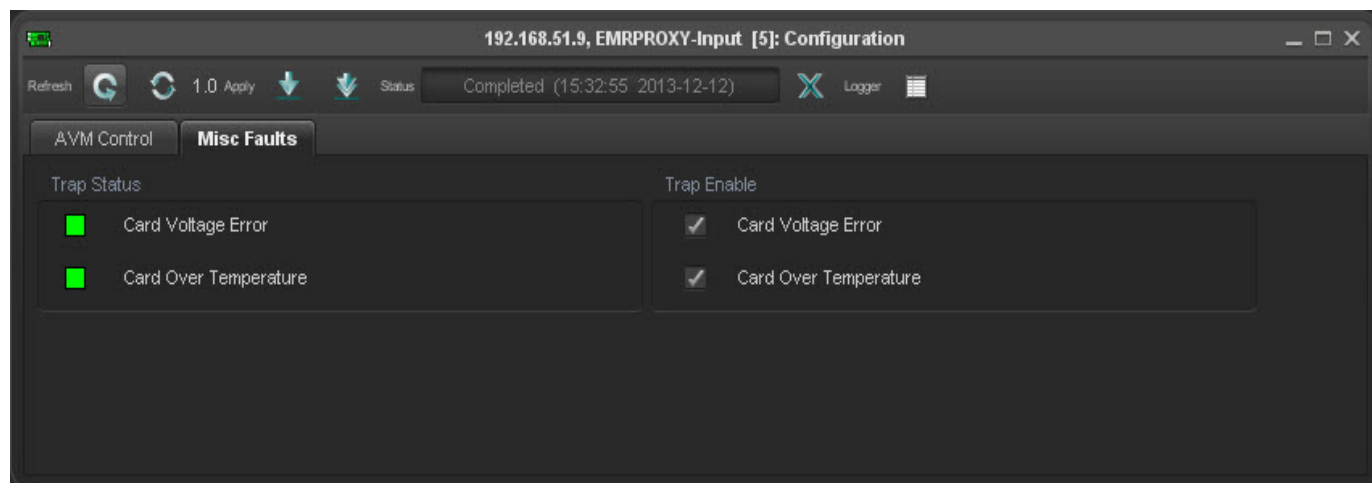
Table 7-4 below provides the further details about each control:

Parameter	Description
<b>Fault Threshold Time</b>	Adjusts the threshold trap time for video not present, video is black, video is frozen and audio no present trap. Adjusts in seconds (1-3600 sec)

**Table 7-4: AVM Control Tab Parameters**

### 7.3.2. Miscellaneous Faults Tab for EMR-IP32-3G

The following figure (Figure 7-5) shows the Miscellaneous Faults tab for EMR-IP32-3G.



**Figure 7-5: Miscellaneous Fault Tab for EMR-IP32-3G**

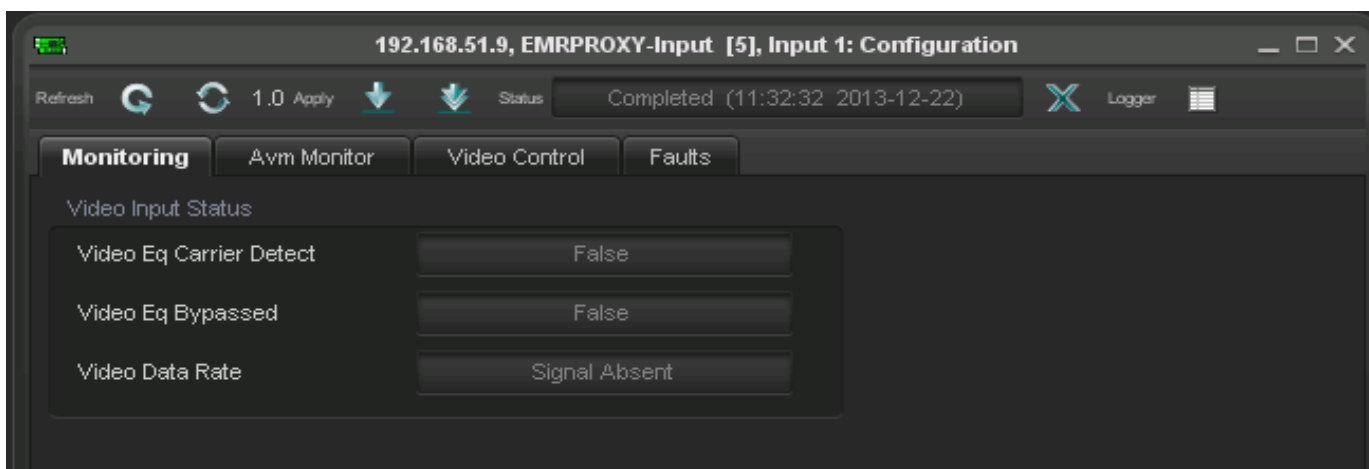
Table 7-5 below provides the further details about each control:

Parameter	Description
<b>Trap Status</b>	Displays the status of the Trap Enabled by the user
<b>Card Voltage Error</b>	Enables or Disables Card Voltage Error
<b>Card Over Temperature</b>	Enables or Disables the card over temperature

**Table 7-5: Miscellaneous Fault Tab Parameters**

### 7.3.3. Monitoring Tab for Input in EMR-IP32-3G

The following figure (Figure 7-6) shows the Monitoring tab for Input in EMR-IP32-3G.



**Figure 7-6: Monitoring Tab for Input in EMR-IP32-3G**

Table 7-6 below provides the further details about each control:

Parameter	Description
<b>Video Eq Carrier Detect</b>	Displays EQ Carried detection of the signal
<b>Video Eq Bypassed</b>	Displays EQ bypass status of the signal
<b>Video Data Rate</b>	Displays Data Rate status of the signal

**Table 7-6: Monitoring Tab Parameters**

### 7.3.4. AVM Monitor Tab for Input in EMR-IP32-3G

The following figure (Figure 7-7) shows the Monitoring tab for Input in EMR-IP32-3G.



Figure 7-7: AVM Monitor Tab for Input in EMR-IP32-3G

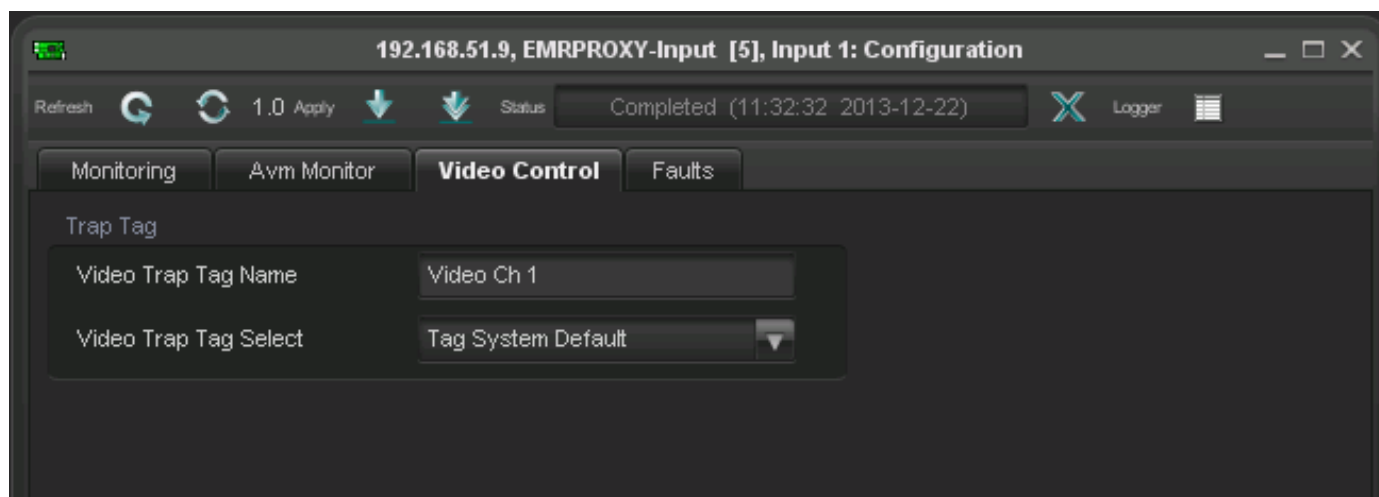
Table 7-7 below provides the further details about each control:

Parameter	Description
<b>AVM Video present</b>	Indicates the status of the Input Signal
<b>AVM Video Black</b>	Indicates the Input Signal is Black or Not
<b>AVM Video Standard</b>	Indicates the standard of the Input Signal
<b>AVM Video Freeze</b>	Indicates the Input Signal is Frozen or Not
<b>AVM Audio Present</b>	Indicates the presence and absence of Audio
<b>AVM Video CRC Errors</b>	Indicates the number of Video CRC errors

Table 7-7: AVM Monitor Tab Parameters

### 7.3.5. Video Control Tab for Input in EMR-IP32-3G

The following figure (Figure 7-8) shows the Video Control tab for Input in EMR-IP32-3G.



**Figure 7-8: Video Control Tab for Input in EMR-IP32-3G**

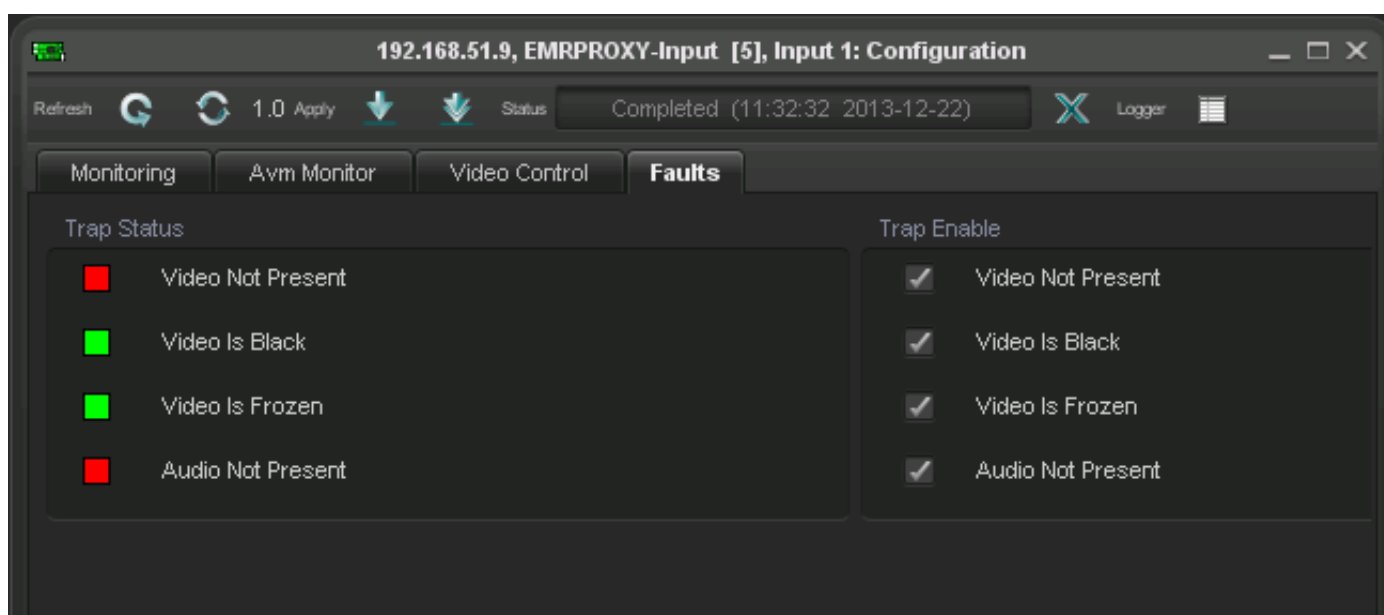
Table 7-8 below provides the further details about each control:

Parameter	Description
<b>Video Trap Tag Name</b>	Sets video trap tag name for input
<b>Video Trap Tag Select</b>	Selects the video trap tag

**Table 7-8: Video Control Tab Parameters**

### 7.3.6. Faults Tab for Input in EMR-IP32-3G

The following figure (Figure 7-9) shows the Faults tab for Input in EMR-IP32-3G.



**Figure 7-9: Faults Tab for Input in EMR-IP32-3G**

Table 7-9 below provides the further details about each control:

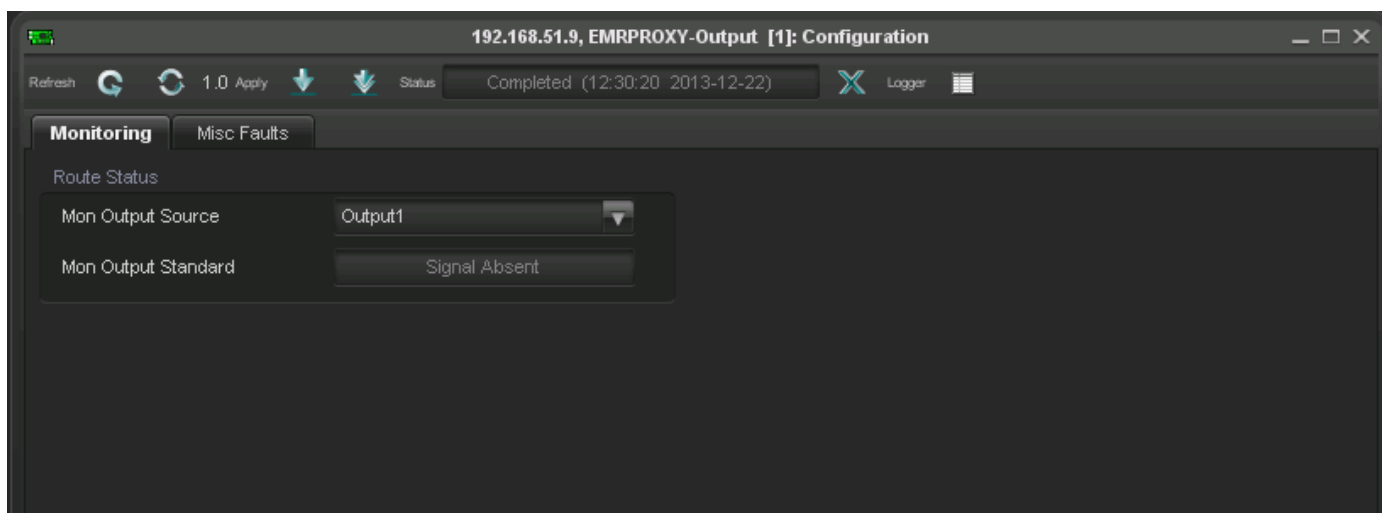
Parameter	Description
<b>Trap Status</b>	Indicates the status of the trap enabled by the user
<b>Video Not Present</b>	Enables or Disables the trap for the presence of Input video
<b>Video Is Black</b>	Enables or Disables the trap for the Input video is Black
<b>Video Is Frozen</b>	Enables or Disables the trap for the Input video is Frozen
<b>Audio Not Present</b>	Enables or Disables the trap for the presence of Audio

**Table 7-9: Faults Tab Parameters**

## 7.4. VISTALINK® REMOTE MONITORING/CONTROL FOR EMR-OP32-3G

### 7.4.1. Monitoring Tab for EMR-OP32-3G

The following figure (Figure 7-10) shows the Monitoring tab for EMR-OP32-3G.



**Figure 7-10: Monitoring Tab for EMR-OP32-3G**

Table 7-10 below provides the further details about each control:

Parameter	Description
<b>Mon Output Source</b>	Selects the Monitor Output Source
<b>Mon Output Standard</b>	Shows the output standard of selected Output Source

**Table 7-10: Monitoring Tab Parameters**

7.4.2. Miscellaneous Faults Tab for EMR-OP32-3G

The following figure (Figure 7-11) shows the Miscellaneous Faults tab for EMR-OP32-3G.

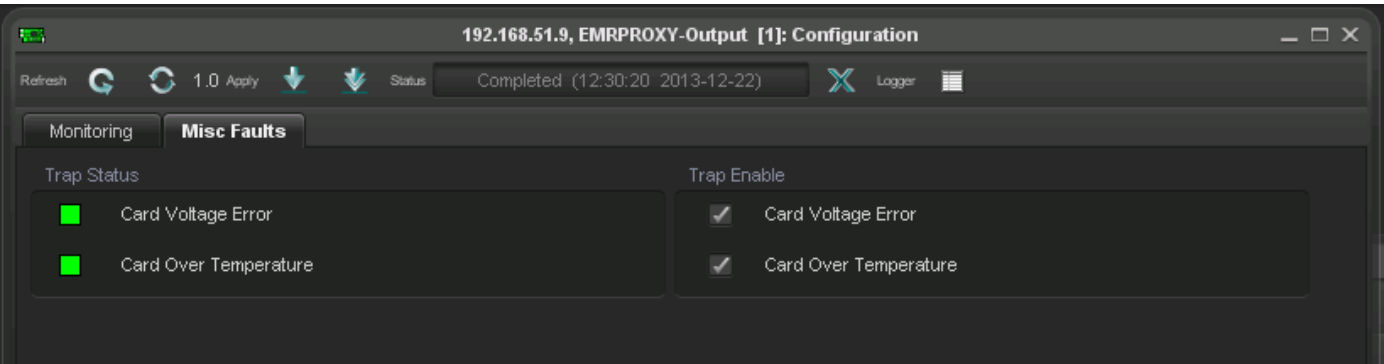


Figure 7-11: Miscellaneous Faults Tab for EMR-OP32-3G

Table 7-11 below provides the further details about each control:

Parameter	Description
Trap Status	Shows the status of the trap enabled by the user
Card Voltage Error	Enables or Disables the Card Voltage Error
Card Over Temperature	Enables or Disables the card over temperature

Table 7-11: Miscellaneous Faults Tab Parameters

7.4.3. Monitoring Tab for Output in EMR-OP32-3G

The following figure (Figure 7-12) shows the Monitoring Tab for Output in EMR-OP32-3G.

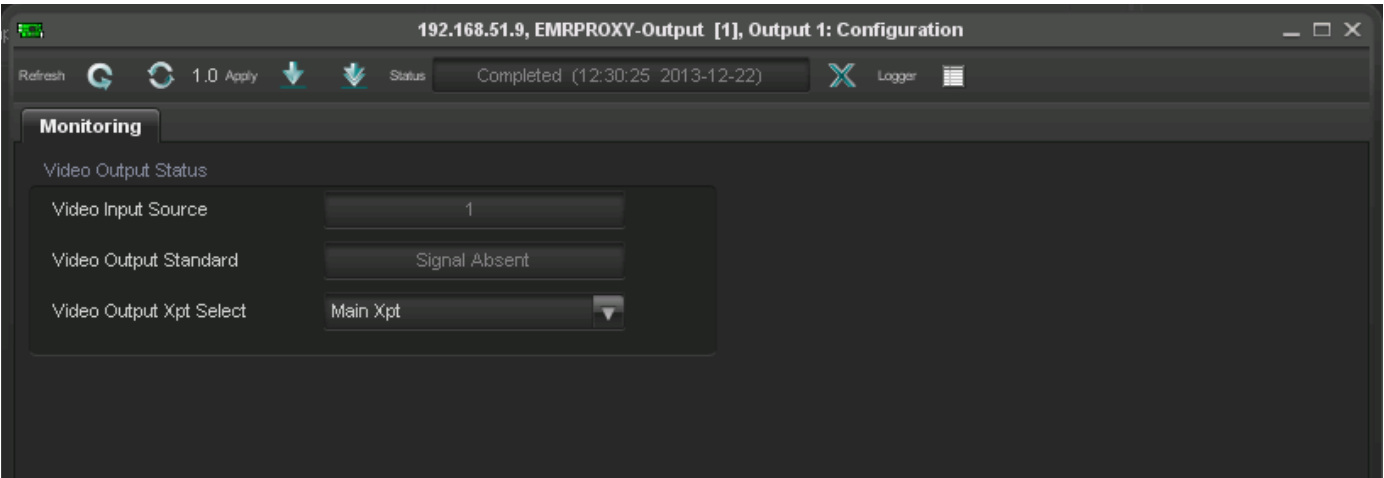


Figure 7-12: Monitoring Tab for Output in EMR-OP32-3G



Table 7-12 below provides the further details about each control:

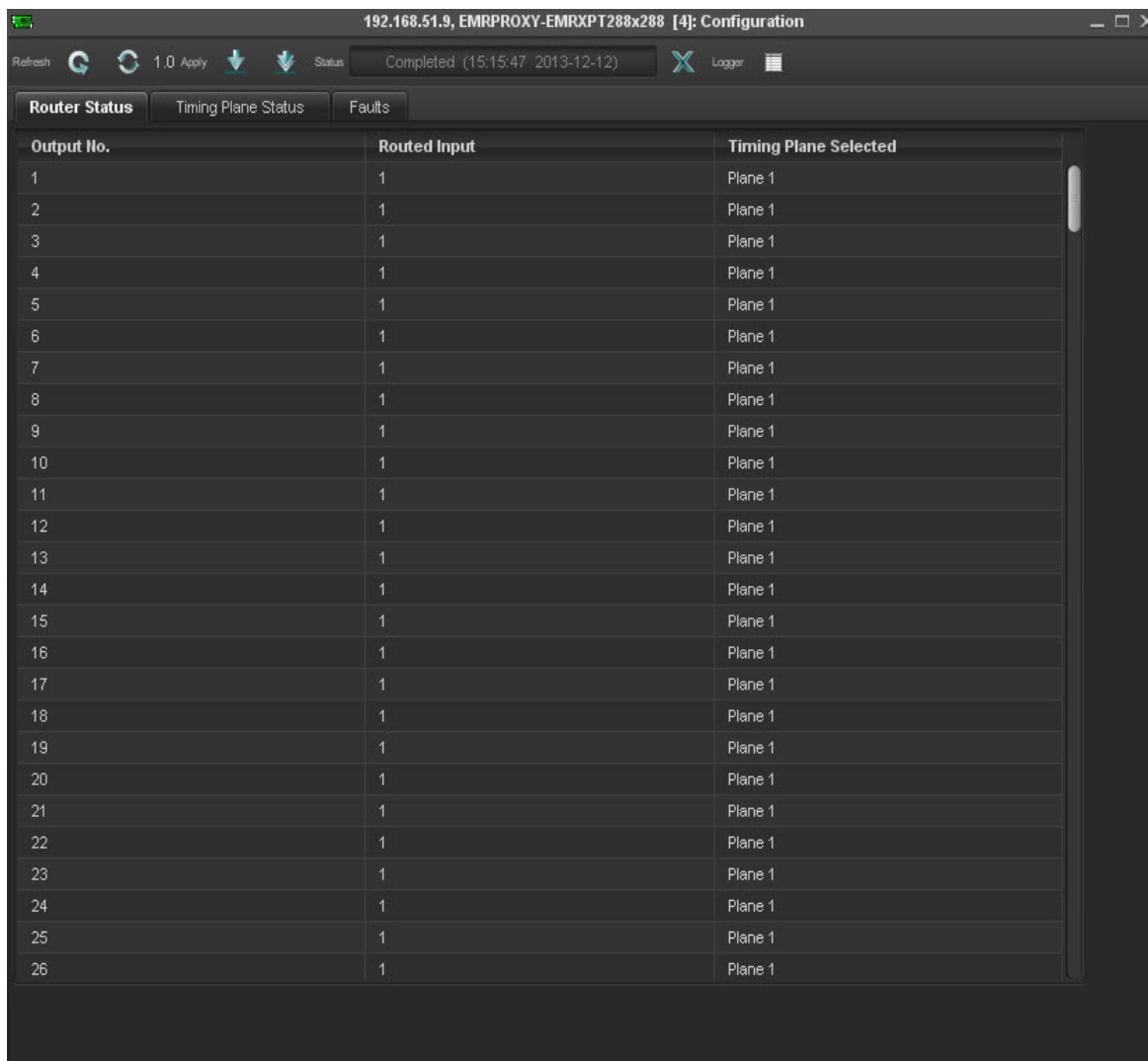
Parameter	Description
<b>Video Input Source</b>	Indicates the Input Number that routed to Outputs
<b>Video Output Standard</b>	Indicates the Output Standard
<b>Video Output XPT Select</b>	Selects between main and redundant crosspoint

**Table 7-12: Monitoring Tab Parameters**

## 7.5. VISTALINK® REMOTE MONITORING/CONTROL FOR EMR-XPT-288X288

### 7.5.1. Router Status Tab for EMR-XPT-288X288

The following figure (Figure 7-13) shows the Router Status Tab for EMR-XPT-288x288.



Output No.	Routed Input	Timing Plane Selected
1	1	Plane 1
2	1	Plane 1
3	1	Plane 1
4	1	Plane 1
5	1	Plane 1
6	1	Plane 1
7	1	Plane 1
8	1	Plane 1
9	1	Plane 1
10	1	Plane 1
11	1	Plane 1
12	1	Plane 1
13	1	Plane 1
14	1	Plane 1
15	1	Plane 1
16	1	Plane 1
17	1	Plane 1
18	1	Plane 1
19	1	Plane 1
20	1	Plane 1
21	1	Plane 1
22	1	Plane 1
23	1	Plane 1
24	1	Plane 1
25	1	Plane 1
26	1	Plane 1

**Figure 7-13: Router Status Tab for EMR-XPT-288X288**

Table 7-13 below provides the further details about each control:

Parameter	Description
Output No.	Indicates the output number (1-288)
Routed Input	Indicates the input number that routed to outputs
Timing Plane Selected	Indicates the selected timing plane

Table 7-13: Router Status Tab Parameters

7.5.2. Timing Plane Status Tab for EMR-XPT-288X288

The following figure (Figure 7-14) shows the Timing Plane Status Tab for EMR-XPT-2888x288.

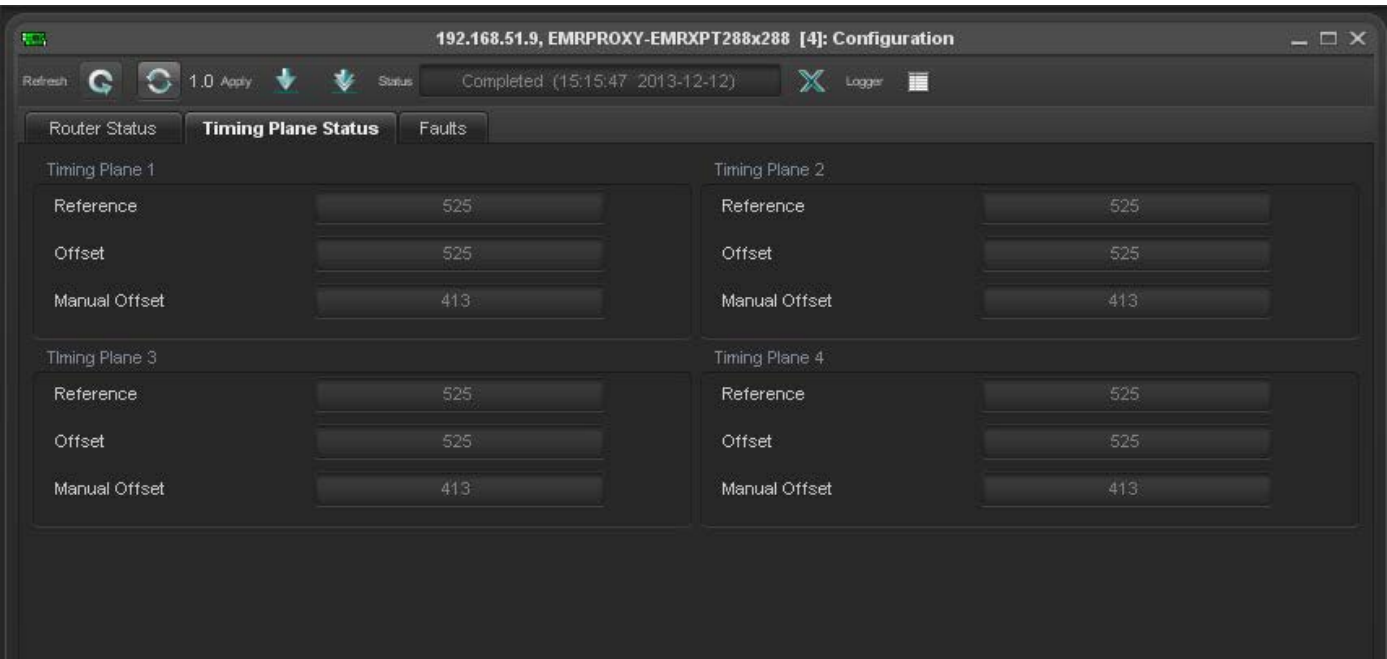


Figure 7-14: Timing Plane Status Tab for EMR-XPT-288X288

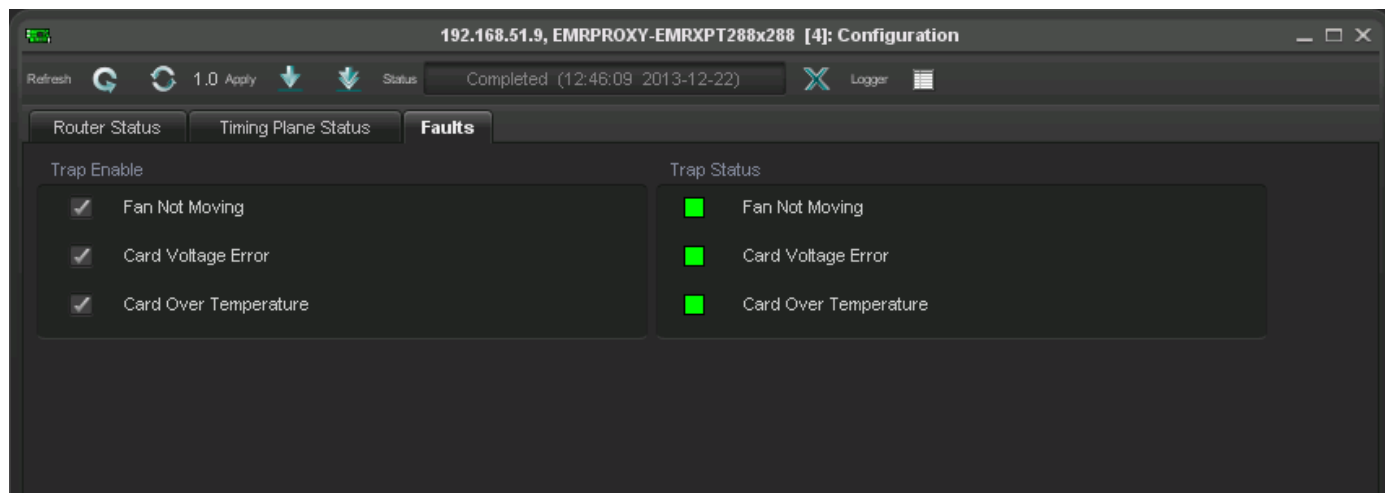
Table 7-14 below provides the further details about each control:

Parameter	Description
Timing Plane 1- 4	Displays the current configuration of each timing plane

Table 7-14: Timing Plane Status Tab Parameters

### 7.5.3. Faults Tab for EMR-XPT-288X288

The following figure (Figure 7-15) shows the Faults Tab for EMR-XPT-288x288.



**Figure 7-15: Faults Tab for EMR-XPT-288X288**

Table 7-15 below provides the further details about each control:

Parameter	Description
<b>Fan Not Moving</b>	Enables or Disables the Fan Not Moving trap
<b>Card Voltage Error</b>	Enables or Disables the Card Voltage Error trap
<b>Card Over Temperature</b>	Enables or Disables the Card Over Temperature trap
<b>Trap Status</b>	Shows the Status of the Trap enabled by the user

**Table 7-15: Faults Tab Parameters for EMR-XPT-288X288**

## 7.6. VISTALINK® REMOTE MONITORING/CONTROL FOR FRAME CONTROLLER

### 7.6.1. Faults Tab for EMX-FC

The following figure (Figure 7-16) shows the Faults Tab for EMX-FC (Frame Controller).

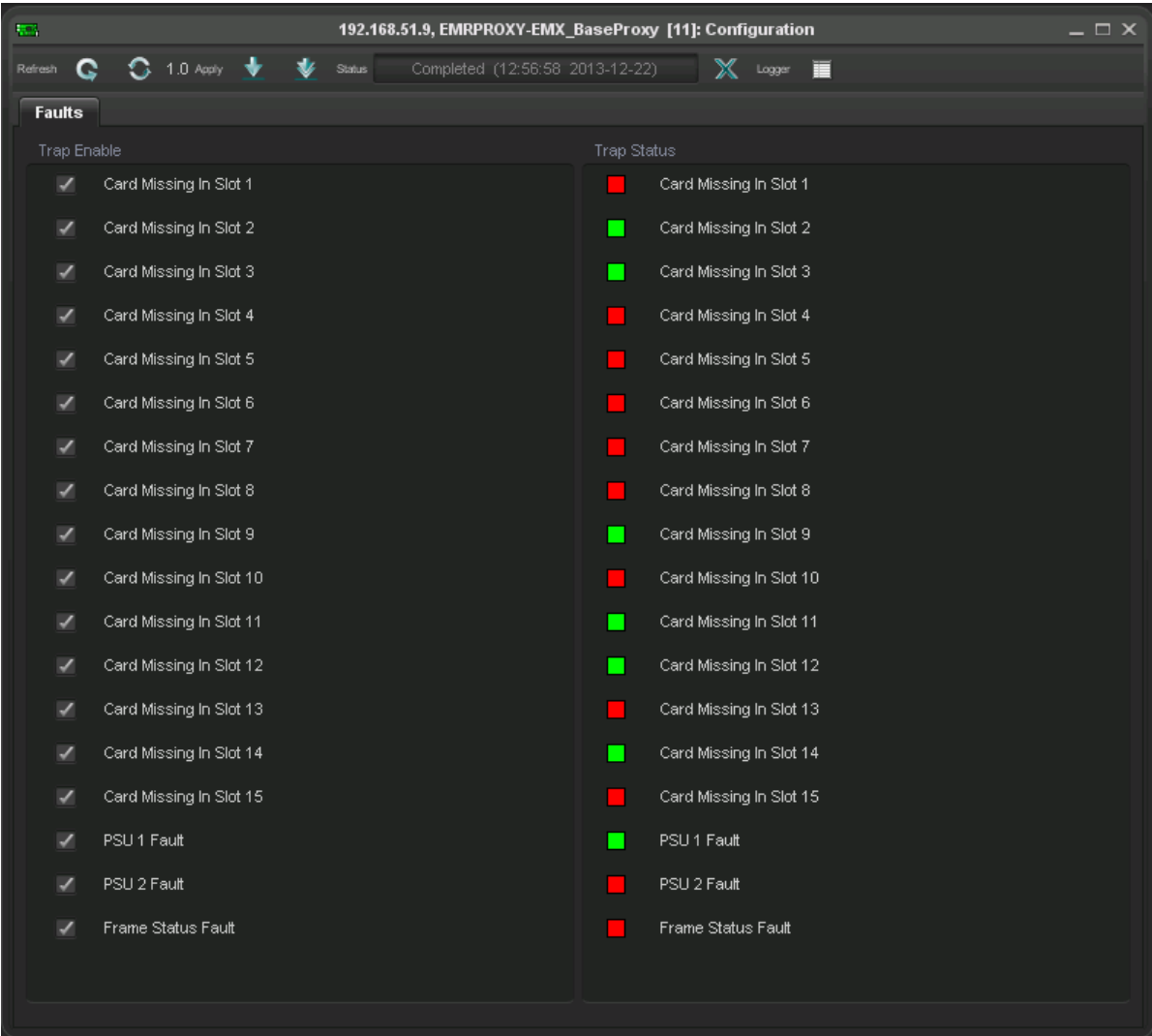


Figure 7-16: Faults Tab for EMX-FC

Table 7-16 below provides the further details about each control:

Parameter	Description
Card Missing in Slot# 1-15	Enables or Disables the Card Status in the Frame
PSU 1 Fault	Enables or Disables the Power Supply# 1 Fault
PSU 2 Fault	Enables or Disables the Power Supply# 2 Fault
Frame Status Fault	Enables or Disables the Frame Status Fault
Trap Status	Shows the status of the trap enabled by the user

Table 7-16: Faults Tab Parameters for EMX-FC

## **8. MODULE UPGRADES**

There are two primary upgrade processes available to the user: File Transfer Protocol (FTP) and Serial Upload. Both are described below for specific I/O modules.

### **8.1. NETWORKING FUNDAMENTALS (FTP UPGRADE PROCESS)**

Before any FTP (file transfer protocol) upgrades can be initiated:

- Modules must be pre-configured with IP addresses.
- The user must determine the IP address of the PC/laptop.
- All nodes must be on the same subnet for the FTP upgrade to work properly.

**To check if a proper network connection has been established:**

1. Connect the network cable from the PC/laptop to the EMR frame.
2. Open a Command Prompt window (**Start > Programs > Accessories > Command Prompt**) on the PC/laptop.
3. Ping the IP address of the module being upgraded. For example:

C:\ ping 192.168.9.100 <Enter>

If a proper network connection has been established, a “reply” is displayed on the DOS window

If the network connection is faulty, a “Destination Host Unreachable” message is provided. This means that either the IP addresses of the nodes should be verified or the network (Ethernet) cable is faulty.

### **8.2. UPGRADING THE APPLICATION CODE**

#### **8.2.1. FTP Upgrade Method**

1. Identify and confirm the IP addresses of the module and PC/laptop, and ensure that they are on the same subnet.
2. Power on the EMR system with the module installed in the EMR frame.
3. Obtain the new application code from the FTP site and place it on the PC's local drive.
4. Open a DOS window by selecting **Start > Run**, and typing “cmd” in the window that appears, as shown in Figure 8-1.

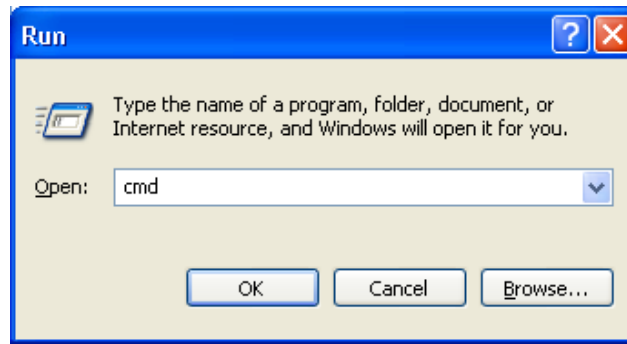


Figure 8-1: Run Window

5. In the DOS window type: **ftp xxx.xxx.xxx.xxx** (where the x's represent the module's IP address).
6. Press <ENTER> when prompted for a "Username", and again when prompted for a "Password".
7. At the "FTP>" prompt, type "cd /boot/app" ( **This line applies only for SC-2000 and EMX-FC**)
8. At the "FTP>" prompt, type "put x.bin", where x represents the name of the application (.bin) file.



**Note:** If the application file is not local to where you are performing the FTP, then include the path with the name or drag and drop the file to the FTP prompt:  
(e.g.: "put c:\temp\emr\firmware.bin")

9. Once the upgrade is complete, the card will reboot itself. Do not remove the card during this process or it could corrupt the application code.



**Note:** SC-2000 and EMX-FC require a manual reboot, while other IO cards will reboot automatically.

### 8.2.2. Serial Upload Method

This method transfers the new application code via the upgrade serial port on the front edge of the module.

1. Turn off the EMR frame containing the module that is to be upgraded.
2. Connect the factory-supplied 7700PB serial upgrade cable on the front edge of the card, and connect the other end of this cable to a serial port on a PC with a serial terminal program.
3. Place a jumper across pins 2 and 3 on (J2 on the SC-200 and J17 on EMR modules) ("Upgrade" mode).

4. Set up the serial communication properties for the COM port as follows:

<b>COM:</b>	Select the COM port
<b>Bits per second:</b>	115200
<b>Data bits:</b>	8
<b>Parity:</b>	None
<b>Stop bits:</b>	2
<b>Flow control:</b>	None

5. Power on the EMR frame with the module installed.
6. When the module boots-up, "PPCBOOT>" is displayed on the terminal screen.
7. At the prompt type "upgrade", then press <ENTER>
8. The following message will be displayed:

*Upload product firmware now*

9. Upload the application code by using the *send file* function in the terminal software. When prompted, use the "Xmodem" protocol for data transfer.

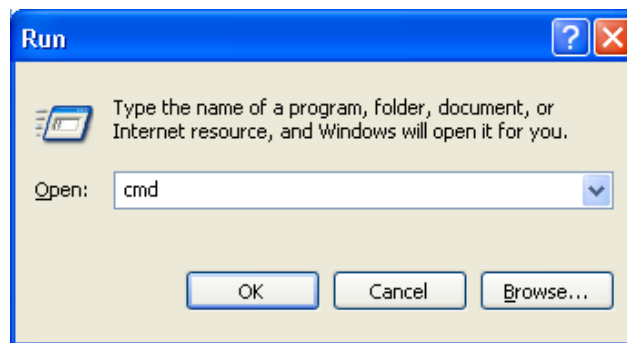
When the transfer is complete (which can take up to 30 minutes or more) the terminal will return to the PPCBOOT prompt. You should:

1. Turn off the SC-2000 or EMR frame.
2. Remove the module from the SC-2000 chassis or EMR frame and remove the upgrade serial cable.
3. Place a jumper across pins 1 and 2 on (J2 on SC-2000 modules and J17 on EMR modules) ("Run" mode).
4. Re-insert the module into the SC-2000 chassis or EMR frame.

### 8.2.3. Upgrading EMX-FC Application Code

#### 8.2.3.1. FTP Upgrade Method

1. Identify and confirm the IP addresses of the EMX-FC and PC/laptop, and ensure that they are on the same subnet.
2. Power on the EMR system with the EMX-FC installed in the EMR frame.
3. Obtain the new application code from the FTP site and place it on the PC's local drive.
4. Open a DOS window by selecting **Start > Run**, and typing "cmd" in the window that appears, as shown in Figure 8-2.



**Figure 8-2: Run Window**

5. In the DOS window type: **ftp xxx.xxx.xxx.xxx** (where the x's represent the EMX-FC's IP address).
6. Press <ENTER> when prompted for a "Username", and again when prompted for a "Password".
7. At the "FTP>" prompt, type "cd boot/app". (See Figure 8-3 below).

```
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\eng>ftp 10.10.15.21
Connected to 10.10.15.21.
220-Evertz FTP Server.
220-Copyright 2001 Evertz Microsystems Ltd. All rights reserved.
220 Type QUOTE HELP for information.
User (10.10.15.21:(none)):
331 User name okay, need password.
Password:
230 User logged in, proceed.
ftp> cd boot/app
250 Current working directory is now "/boot/app/".
ftp>
```

**Figure 8-3: FTP Window**



- At the "FTP>" prompt, type "put x.bin", where x represents the name of the application (.bin) file or drag and drop the file to FTP prompt.



**Note:** If the application file is not local to where you are performing the FTP, then include the path with the name or drag and drop the file to FTP prompt:

(e.g.: "put c:\temp\emr\firmware.bin")

- Once the upgrade is complete, the card needs to be rebooted manually. Do not remove the card during this process or it could corrupt the application code.

### 8.2.3.2. Serial Upload Method

The EMX-FC is upgraded via the configuration serial port (J7) near the front of the card.

- Turn off the EMR frame.
- Connect the 7700PB serial upgrade cable supplied with the EMR frame to the J7 on the front edge of the FC card and connect the other end of this cable to a serial port on a PC with a serial terminal program.
- Place a jumper across pins 1 and 2 on J7 ("Upgrade Mode").
- Set up the serial communication properties for the COM port as follows:

<b>COM:</b>	Select the COM port
<b>Bits per second:</b>	115200
<b>Data bits:</b>	8
<b>Parity:</b>	None
<b>Stop bits:</b>	2
<b>Flow control:</b>	None

- Power on the EMR frame with the FC card installed.
- When the FC card boots up, the following information will be printed on the terminal screen:

```
EVERTZ MCF5272 MONITOR 2.3 BUILD 3 (66 MHZ)
COPYRIGHT 1997, 1998, 1999, 2000, 2001, 2002 EVERTZ MICROSYSTEMS LTD.
28F160C3B FLASH DETECTED
BRD=3000FC
MODEL=BA3000FC
PROD=3000FC
FRAME=3000FR
UPGRADE JUMPER INSTALLED
```

- Upload file now or press *CTRL + X* to cancel.
- To upload the FC with the new application code, use the *send file* function in the terminal software.



**Note:** If prompted, use the “Xmodem” protocol for data transfer.

Execute the following steps when the download is complete:

1. Power down the EMR frame.
2. Remove the FC card from the frame.
3. Disconnect the upgrade serial cable, and place a jumper across pins 2 and 3 on J7.
4. Insert the FC card back into the EMR frame and power up the EMR frame.