X- Series Optical Routers

Instruction Manual

EVERTZ MICROSYSTEMS LTD.
5288 John Lucas Drive,
Burlington, Ontario,
Canada,
L7L 5Z9
Phone: 905-335-3700
Sales Fax: 905-335-3573
Service Fax: 905-335-0909

Internet: Sales: sales@evertz.com
Tech Support: service@evertz.com
Web Page: http://www.evertz.com

Version 1.1 May 2007

INFORMATION TO USERS IN EUROPE

NOTE

CISPR 22 CLASS A DIGITAL DEVICE OR PERIPHERAL

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

INFORMATION TO USERS IN THE U.S.A.

NOTE

FCC CLASS A DIGITAL DEVICE OR PERIPHERAL

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

WARNING

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

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

REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	First released version	Dec 05
1.1	Added VistaLINK®, FTP Upload and X-NCP Configuration Information	May 07

This page left intentionally blank

TABLE OF CONTENTS

Figures

Tables

WARNING

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

Do not hook up the X-series optical router outputs that output more than -7dBm of power (see specifications for output power of various laser types) and high sensitivity receiver cards (with a – H suffix after part number) directly with a short fiber optic cable. The transmitters that produce more than -7dBm of power will damage the receiver if connected directly.

This page left intentionally blank

1. OVERVIEW

The X-3232-EO is a VistaLINK® capable electrical/optical router for digital electrical or optical signals with rates up to 3Gb/s. The X-3232-EO can accept signals on any of its 16 optical or 16 electrical inputs and route them to any number of its 16 optical and 16 electrical outputs. The X-3232-EO is ideal for signal regeneration, routing and wavelength management in your optical system.

The X-1616-OO is a VistaLINK® capable optical router for digital optical signals with rates up to 3Gb/s. The X-1616-OO can accept signals on any of its 16 optical inputs and route them to any number of its 16 optical outputs. The X-1616-OO is ideal for signal regeneration, routing and wavelength management in your optical system.

The X-0808-OO is a VistaLINK® capable optical router for digital optical signals with rates up to 3Gb/s. The X-0808-OO can accept signals on any of its 8 optical inputs and route them to any number of its 8 optical outputs. The X-0808-OO is ideal for signal regeneration, routing and wavelength management in your optical system.

All Optical outputs are available in 1310nm or CWDM wavelengths. The X-series optical routers each occupy a 2RU frame.

X-3232-EO Electrical/Optical Router Features:
- 16 fiber optic inputs and outputs
- 16 coaxial inputs and outputs
- Provides optical regeneration (amplification, reshaping), routing and wavelength management
- Data rate independent to 3Gb/s
- Handles video, audio, datacom and telecom signals
- Fully non-blocking architecture
- Allows EO/OE conversion in one platform
- Provides ADD and DROP capabilities
- Accepts any input wavelength (1270nm to 1610nm)
- Outputs available with 1310nm or CWDM (ITU G.694.2) wavelengths
- SNMP monitoring and remote router control via model XNCP2 control panel
- Compatible with single-mode or multi-mode fiber optic cable
- Compact 2RU size

X-1616-OO Optical Router Features:
- 16 fiber optic inputs and outputs
- Provides optical routing, regeneration (amplification, reshaping) and wavelength management
- Data rate independent to 3Gb/s
- Handles video, audio, datacom and telecom signals
- Fully non-blocking architecture
- Provides ADD and DROP capabilities
- Broadcast mode capability (any input to any number of outputs)
- Accepts any input wavelength (1270nm to 1610nm)
- Outputs available with 1310nm or CWDM (ITU G.694.2) wavelengths
- SNMP monitoring and remote router control via model XNCP2 control panel
- Compatible with single-mode or multi-mode fiber optic cable
- Compact 2RU size

X-0808-OO Optical Router Features:

- 8 fiber optic inputs and outputs
- Provides optical routing, regeneration (amplification, reshaping) and wavelength management
- Data rate independent to 3Gb/s
- Handles video, audio, datacom and telecom signals
- Fully non-blocking architecture
- Broadcast mode capability (any input to any number of outputs)
- Accepts any input wavelength (1270nm to 1610nm)
- Outputs available with 1310nm or CWDM (ITU G.694.2) wavelengths
- SNMP monitoring and remote router control via model 9000NCP control panels
- Compatible with single-mode or multi-mode fiber optic cable
- Compact 2RU size

The optical outputs of the Routers are available in 1310nm, 1550nm, or any of up to sixteen CWDM wavelengths.

1270 nm DFB
1290 nm DFB
1310 nm DFB
1330 nm DFB
1350 nm DFB
1370 nm DFB
1430 nm DFB
1450 nm DFB
1470 nm DFB
1490 nm DFB
1510 nm DFB
1530 nm DFB
1550 nm DFB
1570 nm DFB
1590 nm DFB
1610 nm DFB

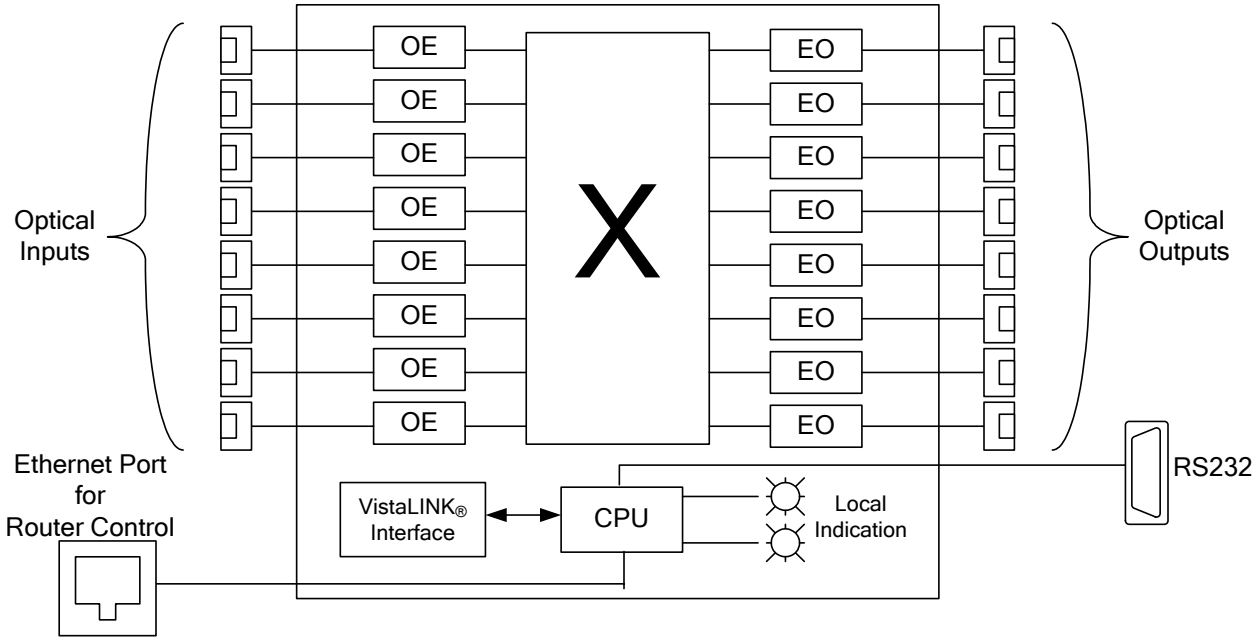


Figure 1-1: X-0808-OO Block Diagram

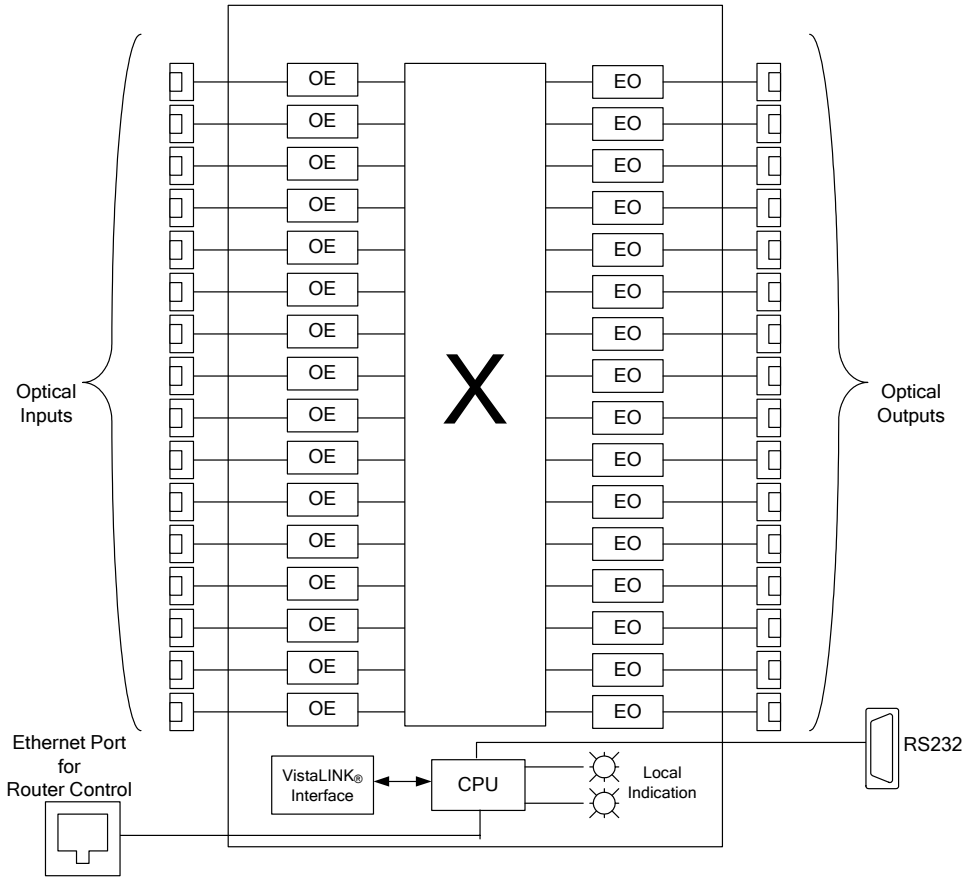


Figure 1-2: X-1616-OO Block Diagram

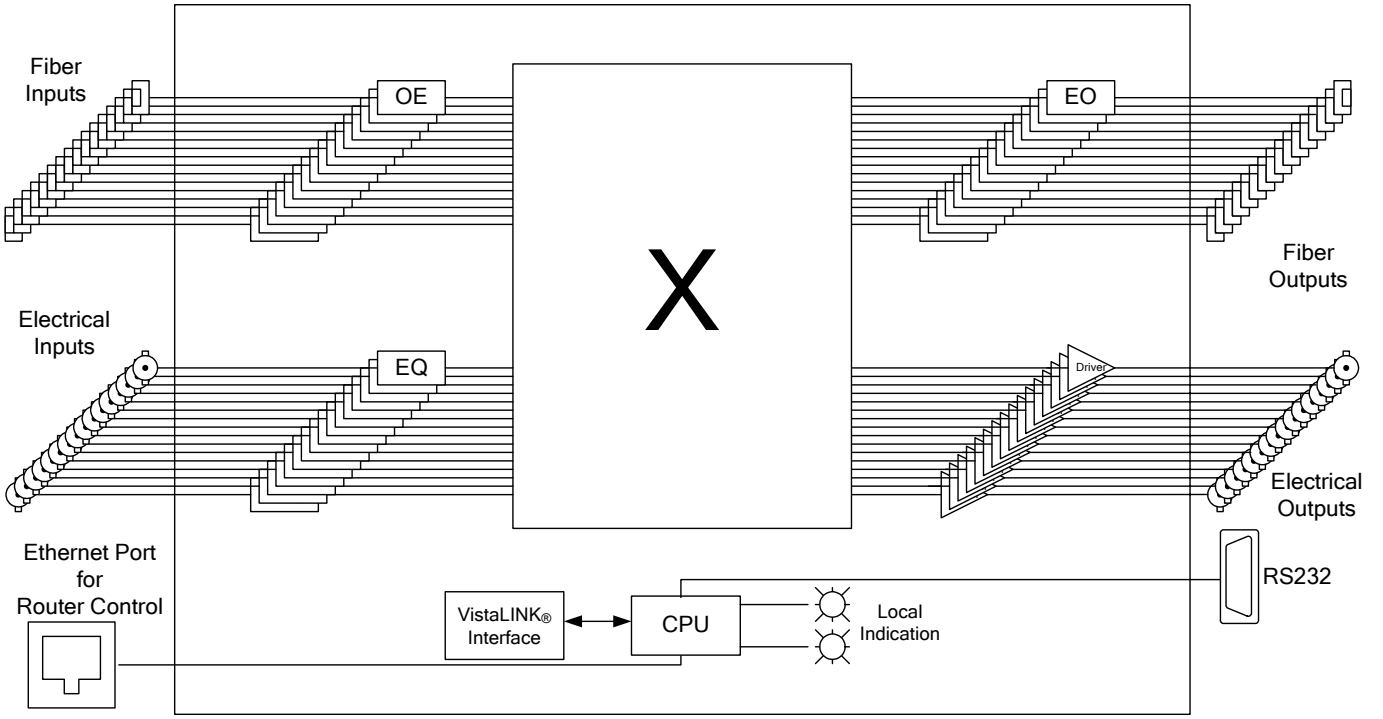


Figure 1-3: X-3232-EO Block Diagram

2. INSTALLATION

Figure 2-1 to Figure 2-3 shows the rear panels of the X-series optical routers. Sections 2.1.1 to 2.1.5 describe the specific coaxial, optical, control signals and power connections that should be connected to the optical router units.

2.1. REAR PANEL OVERVIEW

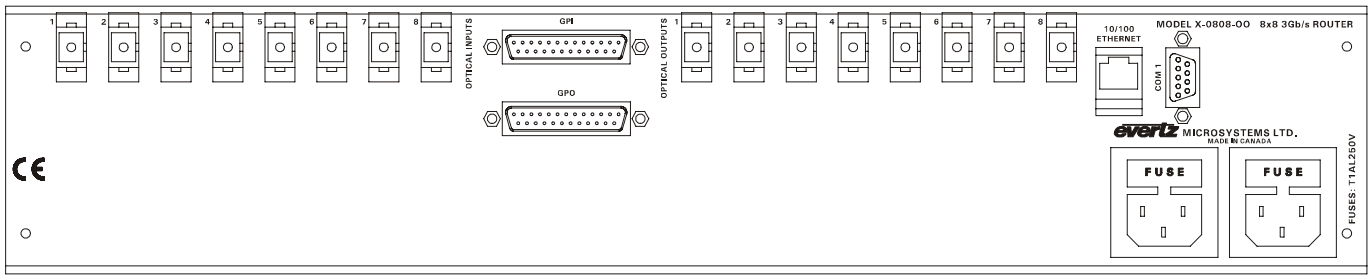


Figure 2-1: X-0808-OO Rear Panel

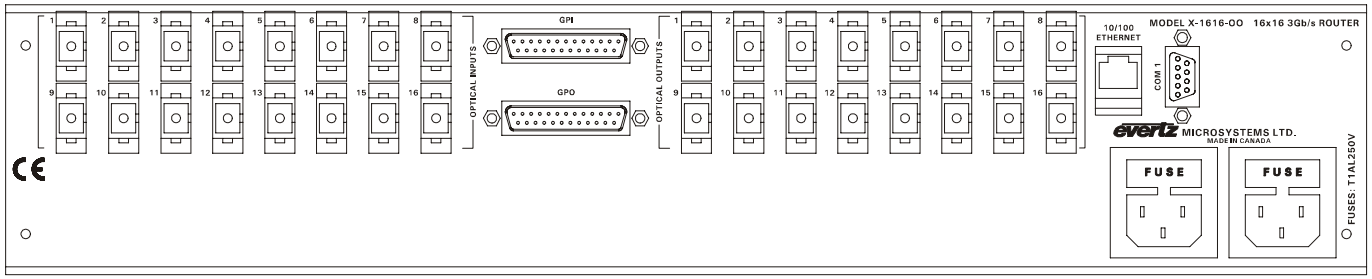


Figure 2-2: X-1616-OO Rear Panel

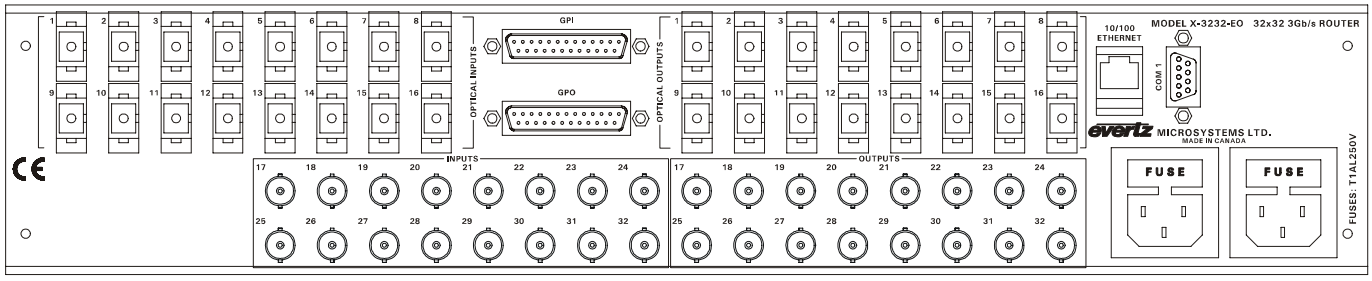


Figure 2-3: X-3232-EO Rear Panel

2.1.1. Optical Connections

FIBER INPUTS The X-series optical routers are available with female SC/PC (shown), ST/PC or FC/PC type optical input connectors.

FIBER OUTPUTS The X-series optical routers are available with a female SC/PC (shown), ST/PC or FC/PC type optical output connectors.

2.1.2. Coaxial Connections

COAXIAL INPUTS The X-series Electrical/Optical router has 16 BNC inputs accepting any scrambled 8b/10b or similarly encoded signal from 155Mb/s to 3.125Gb/s with a nominal 800mV amplitude.

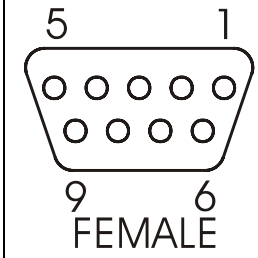
COAXIAL OUTPUTS The X-series Electrical/Optical router has 16 BNC outputs accepting any scrambled 8b/10b or similarly encoded signal from 155Mb/s to 3.125Gb/s with a nominal 800mV amplitude.

2.1.3. Ethernet Network Connections

ETHERNET This RJ-45 connector is an Ethernet port used connection to VistaLINK® for crosspoint routing. See section 4.2.3 for information on configuring the connection to an Ethernet network

2.1.4. Serial I/O Connections

COM 1 This 9 pin female D connector provides an RS-232 serial interface used for updating the firmware or router configuration.



Pin #	Name	Description
1		
2	TxD	RS-232 Transmit Output
3	RxD	RS-232 Receive Input
4		
5	GND	Chassis ground
6		
7		
8		
9		

Table 2-1: Com 1 Pin Definitions

2.1.5. Power Connections

All units come with two universal voltage power supplies that operate on 100 to 240 Volts 50/60 Hz AC.

2.2. MOUNTING

The X-series optical routers are each equipped with rack mounting angles and fit into a standard 19 inches by 3.5 inches (483 mm x 89 mm) rack space.

2.3. CARE AND HANDLING OF OPTICAL FIBER

2.3.1. Safety

Background colour: yellow
Triangular band: black
Symbol: black

CLASS 1 LASER PRODUCT

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

2.3.2. Assembly

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

2.3.3. Labeling

Certification and Identification labels are combined into one label (see Figure 2-4). As there is not enough room on the product to place the label it is reproduced here in the manuals.

- There is no date of manufacture on this label as it can be traced by bar code label placed on the bottom of each router.
- The Model number is one of:

8 X 8 OPTICAL ROUTER

X-0808-OO13	1310nm optical outputs
X-0808-OOCWDM	CWDM (1270nm - 1610nm) optical outputs

16 X 16 OPTICAL ROUTER

X-1616-OO13	1310nm optical outputs
X-1616-OOCWDM	CWDM (1270nm - 1610nm) optical outputs

32 X 32 ELECTRICAL/OPTICAL ROUTER

X-3232-EO13	1310nm optical outputs
X-3232-EOCWDM	CWDM (1270nm - 1610nm) optical outputs

Figure 2-4: Reproduction of Laser Certification and Identification Label

2.3.4. Handling and Connecting Fibers

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

The transmission characteristics of the fiber are dependent on the shape of the optical core and therefore care must be taken to prevent fiber damage due to heavy objects or abrupt fiber bending. Evertz® recommends that you maintain a minimum bending radius of 5 cm to avoid fiber-bending loss that will decrease the maximum attainable distance of the fiber cable. For further information about care and handling of fiber optic cable see section 3 of the Fiber Optics System Design chapter of this manual.

3. SPECIFICATIONS

3.1. ELECTRICAL OUTPUT

Number of Inputs: 16 on X-3232-EO
Standards: Any scrambled, 8b/10b or similarly encoded signal from 155Mb/s to 3.125Gb/s
Connector: BNC per IEC 60169-8 Amendment 2
Return Loss: > 12dB
Signal Level: 800mV nominal

3.2. ELECTRICAL INPUT

Number of Inputs: 16 on X-3232-EO
Standards: Any scrambled, 8b/10b or similarly encoded signal from 155Mb/s to 3.125Gb/s
Connector: BNC per IEC 60169-8 Amendment 2
Return Loss: > 12dB
Signal Level: 800mV nominal

3.3. OPTICAL OUTPUT

Number: 16 on X-3232-EO and X-1616-OO, 8 on X-0808-OO
Connector: SC/PC, ST/PC, FC/PC female housing
Return Loss: > 14 dB
Wavelengths:
X-3232-EO13: 1310nm
X-3232-EOCWDM: 1270nm to 1610nm
Output Power:
X-3232-EO13 -7 dBm ±1dBm
X-3232-EOCWDM: 0 dBm ±1dBm
Fiber Size: 9 μm core / 125 μm overall

3.4. OPTICAL INPUT

Number of Inputs: 16 on X-3232-EO and X-1616-OO, 8 on X-0808-OO
Connector: SC/PC, ST/PC, FC/PC female housing
Operating Wavelength: 1270nm to 1610nm
Maximum Input Power: -1dBm
Optical Sensitivity: -21dBm

3.5. ELECTRICAL

Voltage: 110-230V AC, 50/60Hz
Fuse: 250V, 1A time delay
Power: 100 Watts

3.6. COMPLIANCE

Electrical Safety:	CSA Listed to CSA C22.2 No. 60065-03, UL 60065-03 IEC 60065-(2001-12) 7th Edition Complies with CE Low voltage directive 93/68/EEC
EMI/RFI:	Complies with FCC regulations for class A devices. Complies with EU EMC directive 89/336/EEC.

3.7. PHYSICAL

Dimensions:	19" W x 3.5" H x 18" D (483mm W x 90mm H x 457mm D)
Weight:	8 lbs. (3.5Kg)

4. OPERATION

4.1. STATUS INDICATOR LEDs

The X-series optical routers have 4 LED Status indicators on the front panel to show operational status of the unit at a glance.

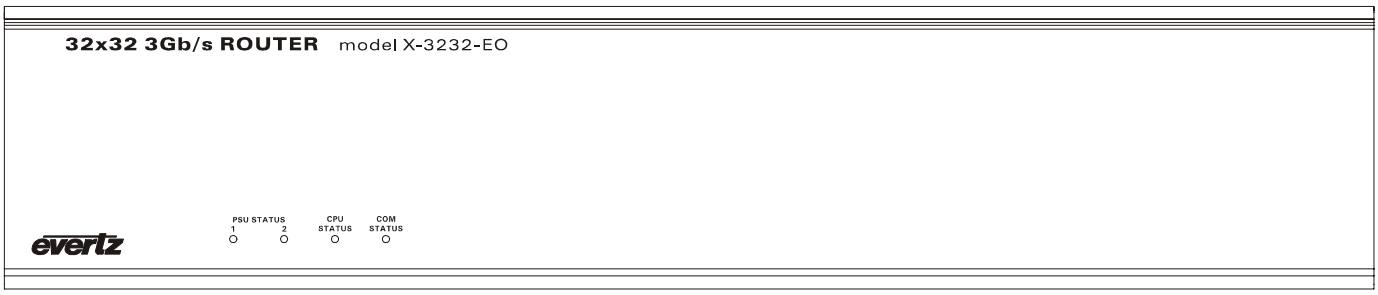


Figure 4-1: X-Series Optical Router Status Indicators

PSU STATUS 1	GREEN	Power Supply 1 functioning properly
	OFF	Power Supply 1 functioning properly
PSU STATUS 2	GREEN	Power Supply 2 functioning properly
	OFF	Power Supply 2 functioning properly
CPU STATUS	GREEN	Processor is functional
	OFF	Processor is not functional
COM STATUS	GREEN	Ethernet link is active
	OFF	Ethernet link is not active

4.2. SERIAL MENU CONTROL

Control functions are implemented via the COM 1 serial port. Controllable parameters are organized in a menu structure and selected by entering a number via a terminal program.

The main menu contains three sub-menus. Each sub-menu is entered by typing the number associated with it followed by <Enter>. Each sub-menu has various parameters that may be configured. To enter or modify an existing parameter, type the number associated with it followed by <Enter>. The value of the parameter may then be entered followed by <Enter>. Once all necessary parameters have been entered in a sub-menu, type ‘s’ (without quotes) and then <enter> to save the settings to the non-volatile memory or to disregard recent changes, type x followed by <Enter>.

To view the available options of a menu, type <Enter>.

4.2.1. Terminal Program Setup

1. Start the terminal program and configure the port settings of the terminal program as follows:

Baud	**115200**
Data bits	**8**
Parity	**None**
Stop bits	**2**
Flow Control	**None**

2. Install a straight-through serial cable from a PC serial port onto Com 1 of the router. To view the main menu, type <Enter>.

4.2.2. Main Menu

The following options are available from the router Main Menu:

```
 ------------------------------------------------
|                   Main Menu                    |
|               (X-3232-EO v1.02 b103)           |
 ------------------------------------------------
(1) Network Configuration
(2) SNMP Configuration
(3) Audio Configuration
(4) Engineering Debug Utility
(5) XNCP

(X) Exit
>
```

Network Configuration	Used to set network IP addresses as well as broadcasting and routing instructions
SNMP Configuration	Used to identify up to five trap destination IP addresses - Not Applicable
Audio Configuration	Used to configure audio routing tables - Not Applicable
Engineering Debug Utility	Miscellaneous debugging tools. (Recommended factory use only)
XNCP	Router NCP settings and debugging tools. (Recommended factory use only)
Exit	Exit the Menu

4.2.3. Network Configuration

The router must be configured to be on the same subnet as the PC running the VistaLINK® client or a 9000NCP in order to control router crosspoints.

The *Network Configuration* menu has four network parameters that need to be configured. If the network is using a **DHCP** server, set the ***DHCP*** parameter to *yes* before proceeding to change the other parameters. When the **DHCP** setting is set to *yes*, the *IP Address, Netmask, Route,* and *Broadcast* addresses are automatically assigned and their corresponding menu items are disabled.

If the network is not using a DHCP server, set the *DHCP* parameter to *No* before proceeding to change the *IP Address, Netmask, Route,* and *Broadcast* addresses.

```
---------------------------------
ip address:         192.168.1.4
netmask address:    255.255.255.0
gateway:            0.0.0.0
broadcast address:  192.168.1.255
DHCP enabled: False
---------------------------------
(1) Set IP Address
(2) Set Netmask
(3) Set Gateway
(4) Set Broadcast Address
(5) Use DHCP

(S) Save and Exit
(X) Exit
>
```

The chart below gives a brief description of each menu item and the function of the parameter. To select one of the menu options, press the letter or number shown on the left and then press <Enter>. You will be prompted to enter the required parameter value. When you are done configuring the *Network Configuration* menu items press 's' (without quotes) to save and return to the main menu. If you are unclear about how to configure your network, consult your network administrator.

Use DHCP	This setting allows the router to be automatically assigned an IP address for the parameters below from a DHCP server during boot-up. If not running a DHCP server set this parameter to "No" first before making any changes to other parameters.
Set IP Address	This control sets the unique IP address of the router within the network. 192.168.1.XXX is an example of an IP address in a private (internal) network. If connecting multiple devices in a network, take care to use a different IP address for each.
Set Netmask	This menu item defines the "subnet mask" of the network. Specifically, this parameter outlines all the IP addresses that can communicate with the router. This parameter can be set to 255.255.255.0 for a private network.
Set Route	The "Route" menu item identifies the IP address of the "gateway. In its simplest sense the gateway is a device that routes packets to different networks. If configured, the IP address of the gateway must reside in the router local subnet that was defined by the subnet mask. In a private network, this gateway could be identified as 192.168.1.1.
Set Broadcast Address	This menu item sets the "broadcast" IP address. For example, in a private network with a subnet mask configured as 255.255.255.0, this parameter can be set to 192.168.1.255.

4.2.4. SNMP Configuration

The SNMP Configuration menu is not used at this time.

4.2.5. Audio Configuration

The Audio Configuration menu is not used at this time.

4.2.6. Engineering Debug Utility

The Engineering Debug Utility is used by Evertz® Technicians during debug and analysis of the router. It is not recommended for use by customers.

4.3. CROSSPOINT CONFIGURATION

All crosspoint control is facilitated via VistaLINK® or a Network Control Panel (X-NCP2). The router must be configured to be on the same subnet as the PC running the VistaLINK® client or X-NCP2 in order to control router crosspoints. Please refer to the VistaLINK® manual for details regarding the installation and setup of VistaLINK®. Refer to section 4.4 for VistaLINK® and section 4.7 for details on using Network Control Panel (X-NCP2) to control the source to destination crosspoints.

4.4. VistaLINK® CONTROL VIEW

Figure 4-2 shows the VistaLINK® interface on a X-1616-OO Router to view and adjust the routing of each of the optical crosspoints. The crosspoint routing is indicated in a grid format where the selected route will be indicated by a blue rectangle. For setting new crosspoints using VistaLINK® refer to section 4.5.

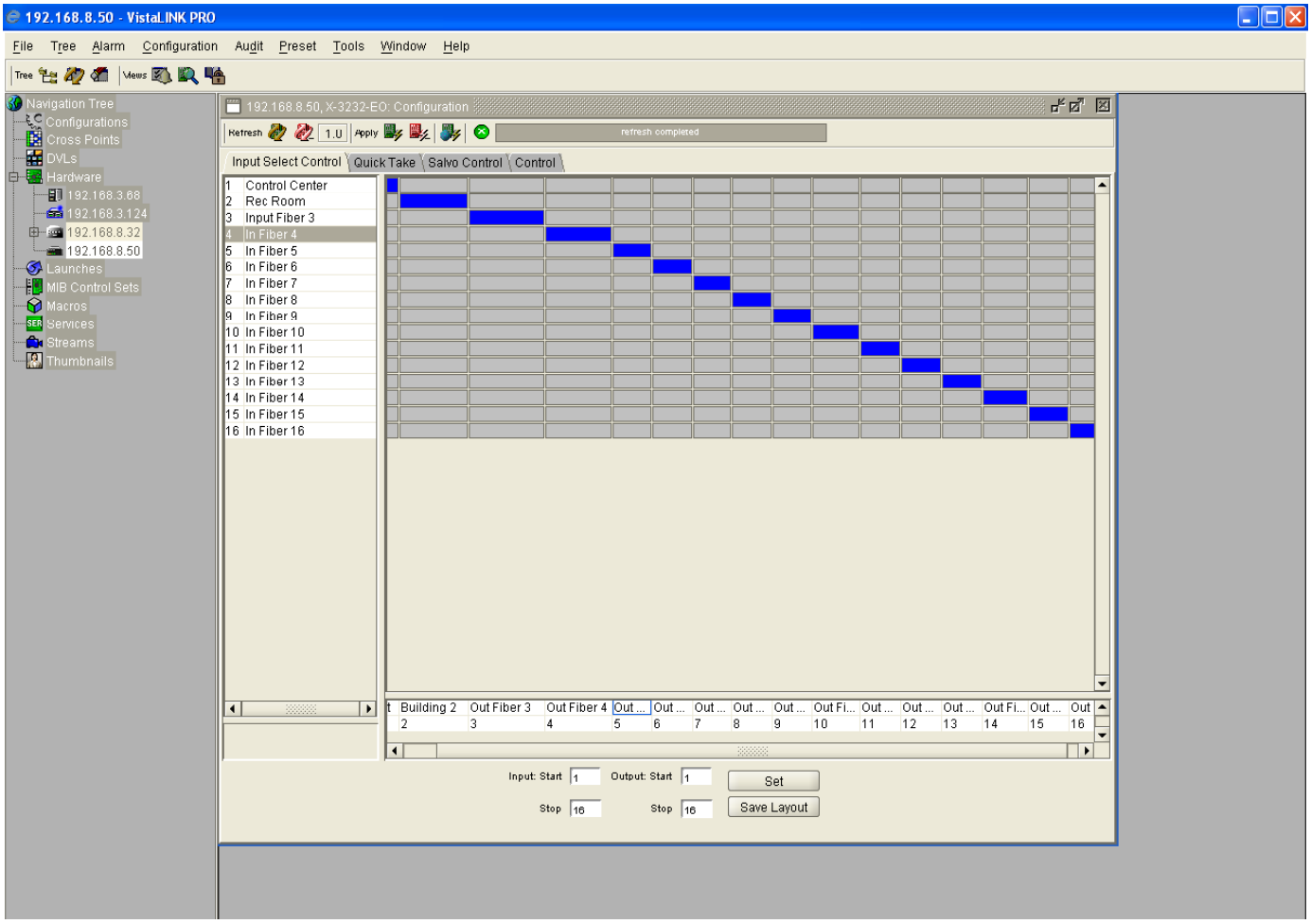


Figure 4-2: VistaLINK® Grid View of the X-1616-OO Optical Routers

VistaLINK® provides you with an intuitive setup for easy control and monitoring of the crosspoints. Commonly used options are provided on the top bar while other specialized commands are sectioned under different tabs. These tabs and buttons are explained below:

Figure 4-3: VistaLINK® Screen Top Edge

4.4.1. IP Address

The top of the screen displays the IP Address of the connected device, for example, 192.168.8.51 in Figure 4-3. To set the IP Address of the Router, refer to section 4.2.

4.4.2. Card Type

This field reports the type of router that is connected to the above mentioned IP Address, for example, X-3232-EO in Figure 4-3.

4.4.3. Refresh

This button is used to get the current status of the crosspoints. 'Refresh' will perform a single, real-time update and display which sources are routed to each destination.

4.4.4. Automatic Refresh

An alternate method would be to select the button on the toolbar. VistaLINK® PRO can automatically refresh an open configuration view. This is useful if you want to monitor a crosspoint that changes frequently.

You can change the refresh interval by right clicking on the auto refresh button and moving the slider up and down. The box next to the auto refresh button shows your currently selected interval.

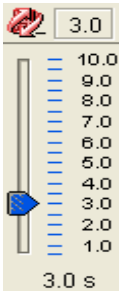


Figure 4-4: Automatic Refresh Interval Setting

4.4.5. Apply

This button will send a single update to the router to apply any crosspoint changes in VistaLINK® that have been made since the last refresh.

4.4.6. Dynamic Apply

This button will enable real-time updates to the router to instantly apply all crosspoint changes.

4.4.7. Global Apply

 This button will send a single update to all routers of the same type to apply any crosspoint changes in VistaLINK® that have been made since the last refresh.

4.5. SETTING THE CROSSPOINTS THROUGH VistaLINK®

Setting new crosspoints through VistaLINK® is extremely simple. VistaLINK® provides you with three different ways to set the crosspoints.

4.5.1. Input Selection Control Tab

To set the crosspoints in an easy graphical interface, select the *Input Selection Control* tab. The grid view shows you the current configuration set on the X-Series router.

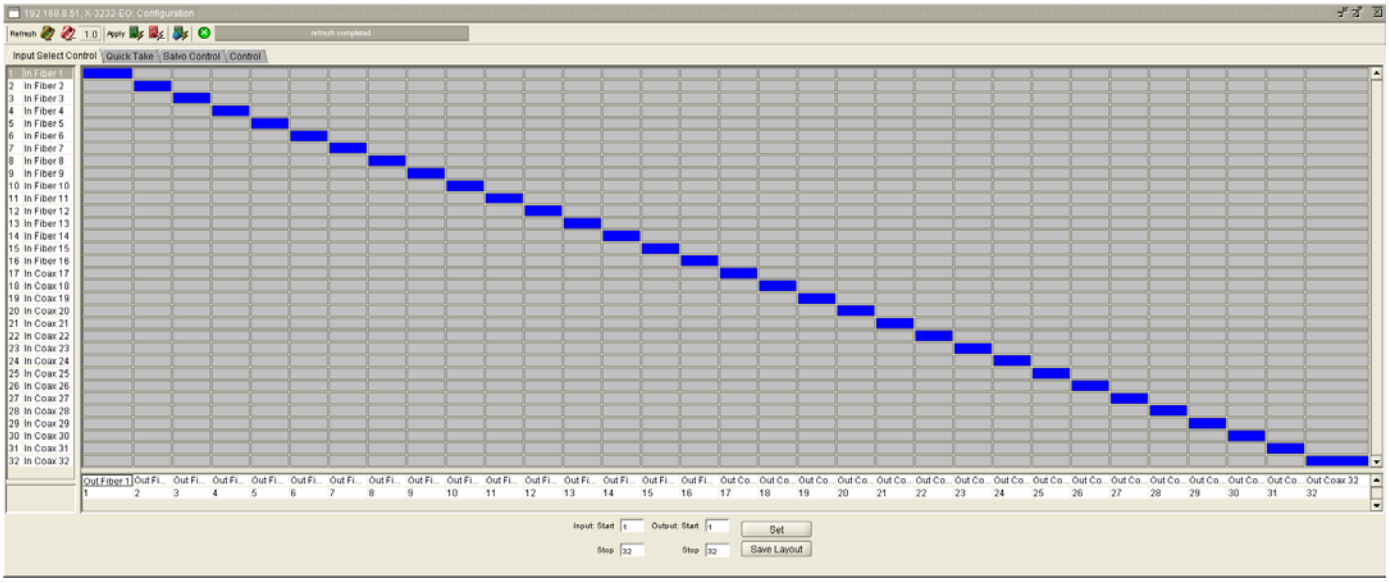


Figure 4-5: VistaLINK® Grid View of the X-3232-EO Electrical and Optical Router

4.5.1.1. Inputs

Each of the available sources to the router are shown in the column labeled Inputs. They will each be numbered and have a default name beside them. Inputs 1 to 16 are Optical inputs and 17 to 32 (when available) are Coaxial ports. Any of these inputs can be mapped to any of the available outputs, as described in section 4.5.1.4.

You can rename these Inputs by double clicking on the input names, and typing in the appropriate filename.

After entering the name, make sure to press  **Apply** button to save the changes.

4.5.1.2. Outputs

Each of the available destinations from the router are shown in the row labeled Outputs. They will each be numbered and have a default name beside them. Outputs 1 to 16 are Optical outputs and 17 to 32 (when available) are Coaxial ports.

You can rename these Outputs by double clicking on the output names, and typing in the appropriate filename.

After renaming the outputs, make sure to press **Apply** button to save the changes.

4.5.1.3. Display Settings

You can set the number of inputs and outputs that are currently visible on the grid view. This enables you to closely monitor specific crosspoints while hiding others.

Enter the start and stop count for inputs and outputs to be viewed in the space provided below the grid, and press **SET** to see the updated grid. You can also save this layout by pressing **SAVE LAYOUT** button for the next time that you log on.

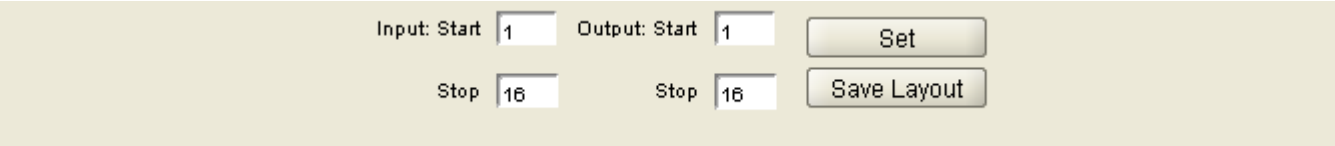


Figure 4-6: Display Settings

4.5.1.4. Configuring New Crosspoints in Grid View

To make changes to the current configuration, simply match the input to the new corresponding output by left clicking on the box. Single or multiple changes can be made at the same time in this view. When a new crosspoint is selected the corresponding box will be highlighted green to show your selection.

To implement this change, press **Apply** button when you are complete. You can also leave the **Dynamic Apply** button depressed to make changes instantaneous. After successfully implementing the new crosspoint, the box will turn blue and the grid will be updated to show the new configuration.

These steps are shown in the figures below:

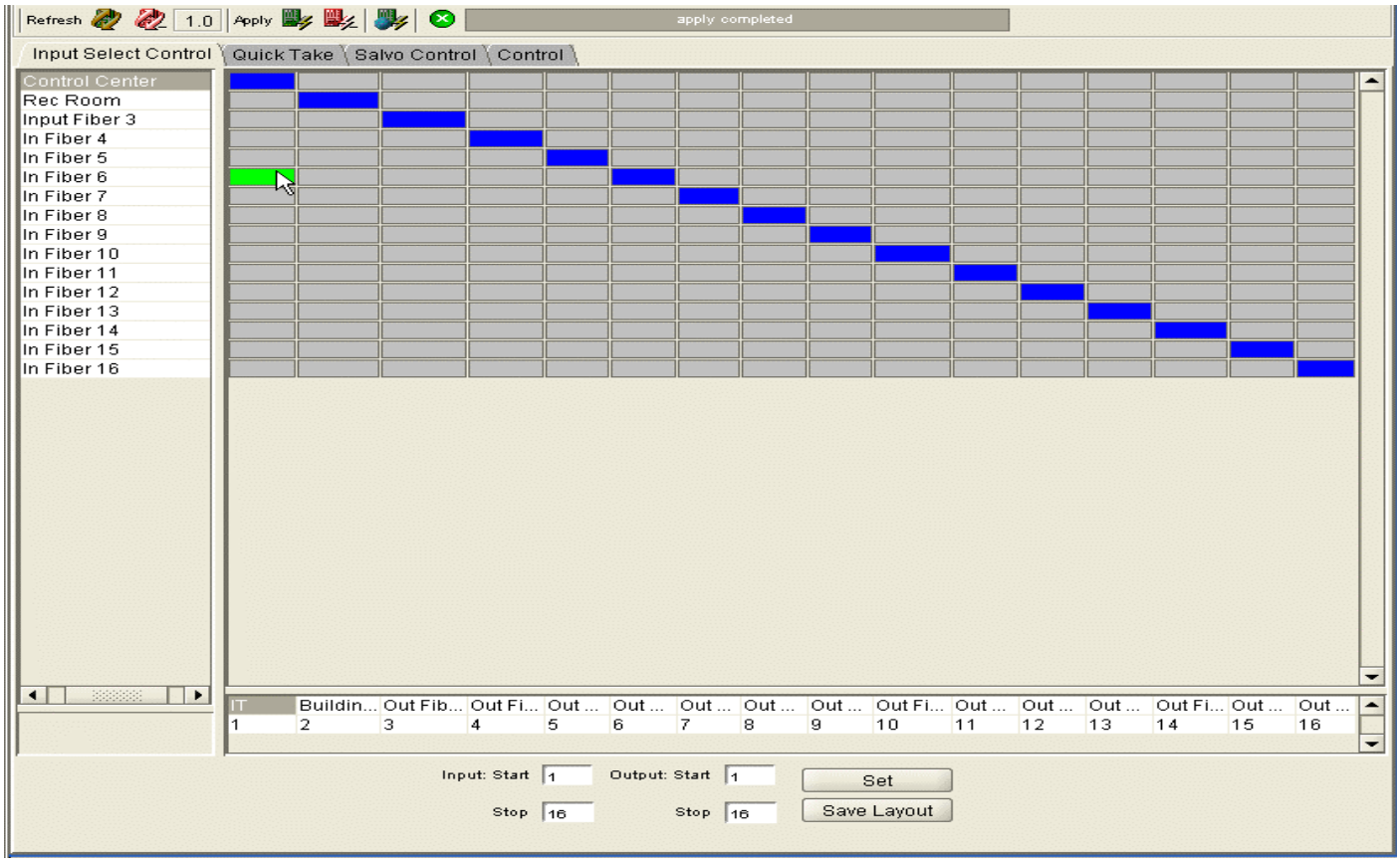


Figure 4-7: Step 1 – Select the new crosspoint by clicking on it

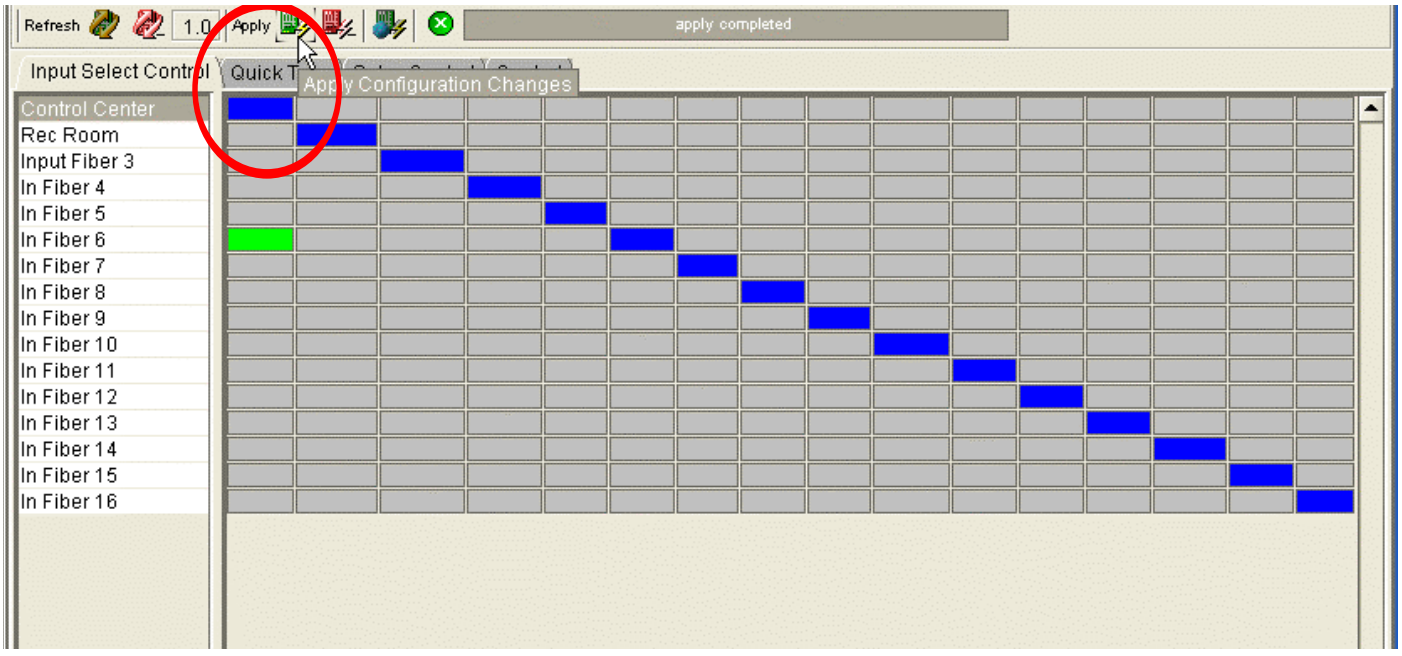


Figure 4-8: Step 2 – Press the Apply button

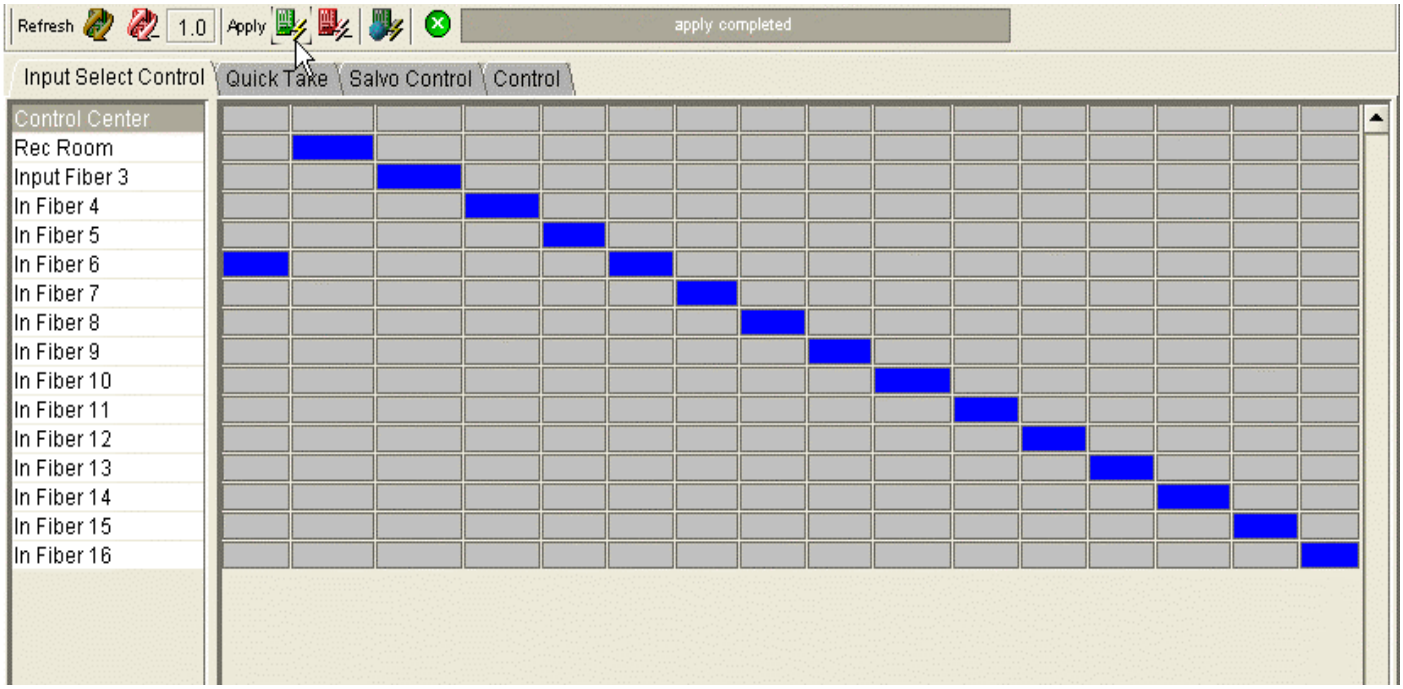


Figure 4-9: Grid view updates to show newly implemented changes

4.5.2. Quick Take Tab

The **Quick Take** tab allows you to quickly assign an input to an output from a dropdown menu. This comes in handy when your input and output selection list is large. Quick Take saves you the time of scrolling the grid, and allows you to make a selection from the drop down menu. Selection can be made either by numerical crosspoint reference (Figure 4-10) or by selecting a descriptive name (Figure 4-11) for both inputs and outputs. After making your selection, press **TAKE** to assign the configuration.

You do not need to press  **Apply** button for changes to take effect when in Quick Take tab.

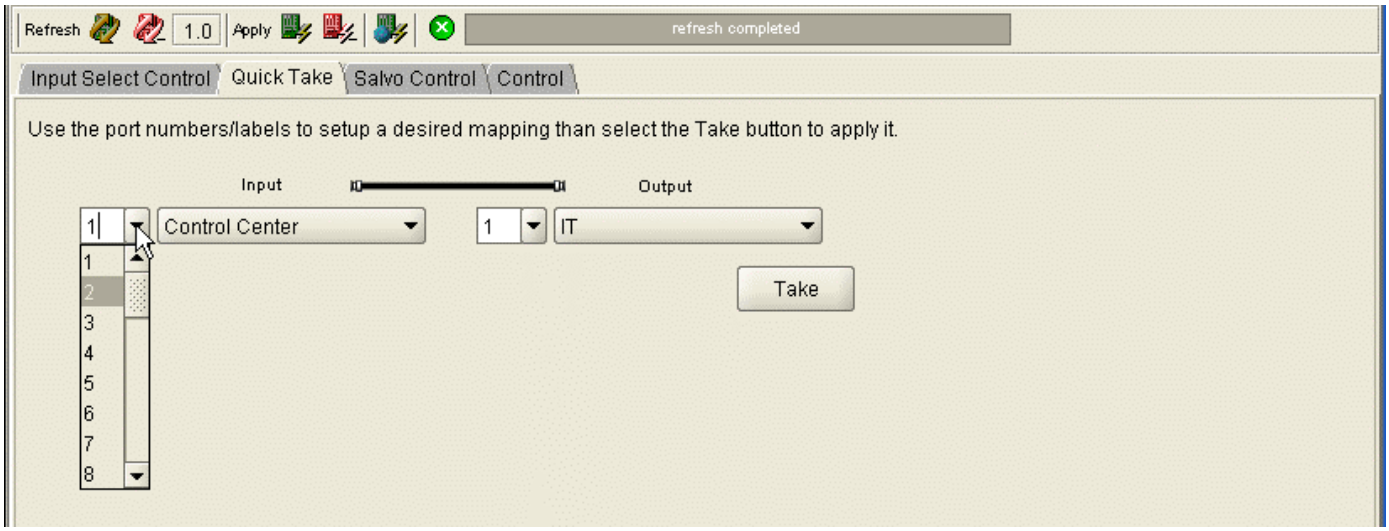


Figure 4-10: Quick Take Tab - Selecting an Input (Method 1)

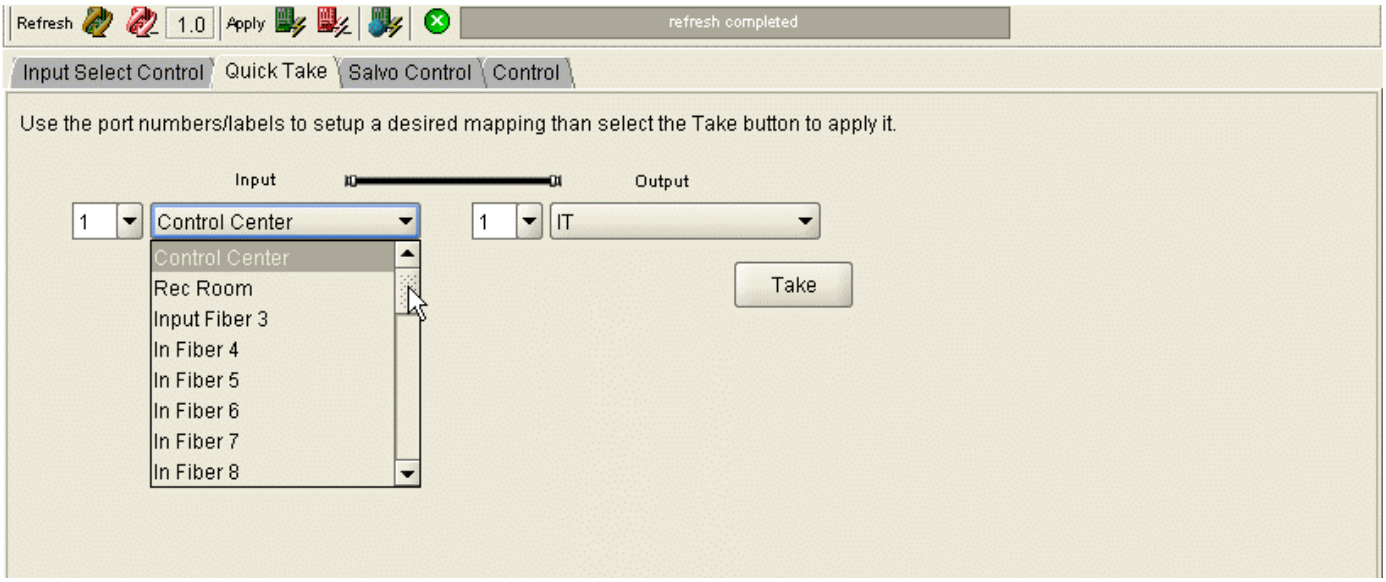


Figure 4-11: Quick Take Tab - Selecting an Input (Method 2)

4.5.3. Salvo Control

Salvo Control provides the ability to save the configuration of the crosspoints so that the *saved* configuration can be loaded at a later date. This is useful if you want to create a backup of your router configuration settings or if you want to use the saved configuration file as a template and *rubber stamp* the configuration settings to all *like* router types by loading the configuration file into those routers. Salvo Control gives you an option to save up to 8 different configuration maps.

You can see the current configuration setting on the router by pressing the **Retrieve Mapping** button. The map is displayed on the grid.

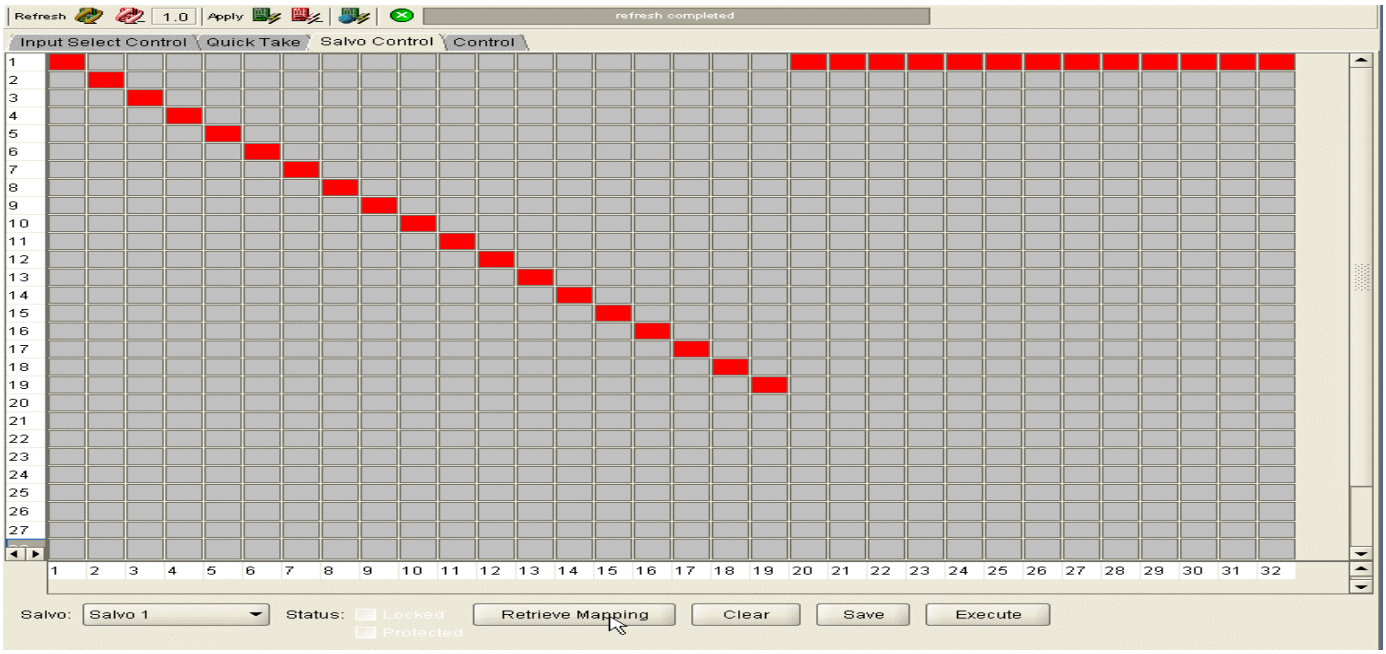


Figure 4-12: Retrieving Current Crosspoint Settings

4.5.3.1. Storing a New Crosspoint Map

To save a new configuration map select, from the drop down menu (Figure 4-14), an empty Salvo slot or a pre-configured slot that you want to overwrite.

Set the new crosspoints that you want to save by clicking on the grid and match the corresponding inputs to outputs. After you are done, press **SAVE**.

Note that you do not have to select all the crosspoints. You can set any number of crosspoints. Crosspoints that are not selected will not be mapped and will keep their configuration when this Salvo setting is later executed.

VistaLINK® gives you an option to rename your new setting for easy reference. After you press SAVE, you will be prompted to enter a name. You can keep the same name as the slot you select or enter a new name and click **OK**. Your crosspoint map will now be saved.

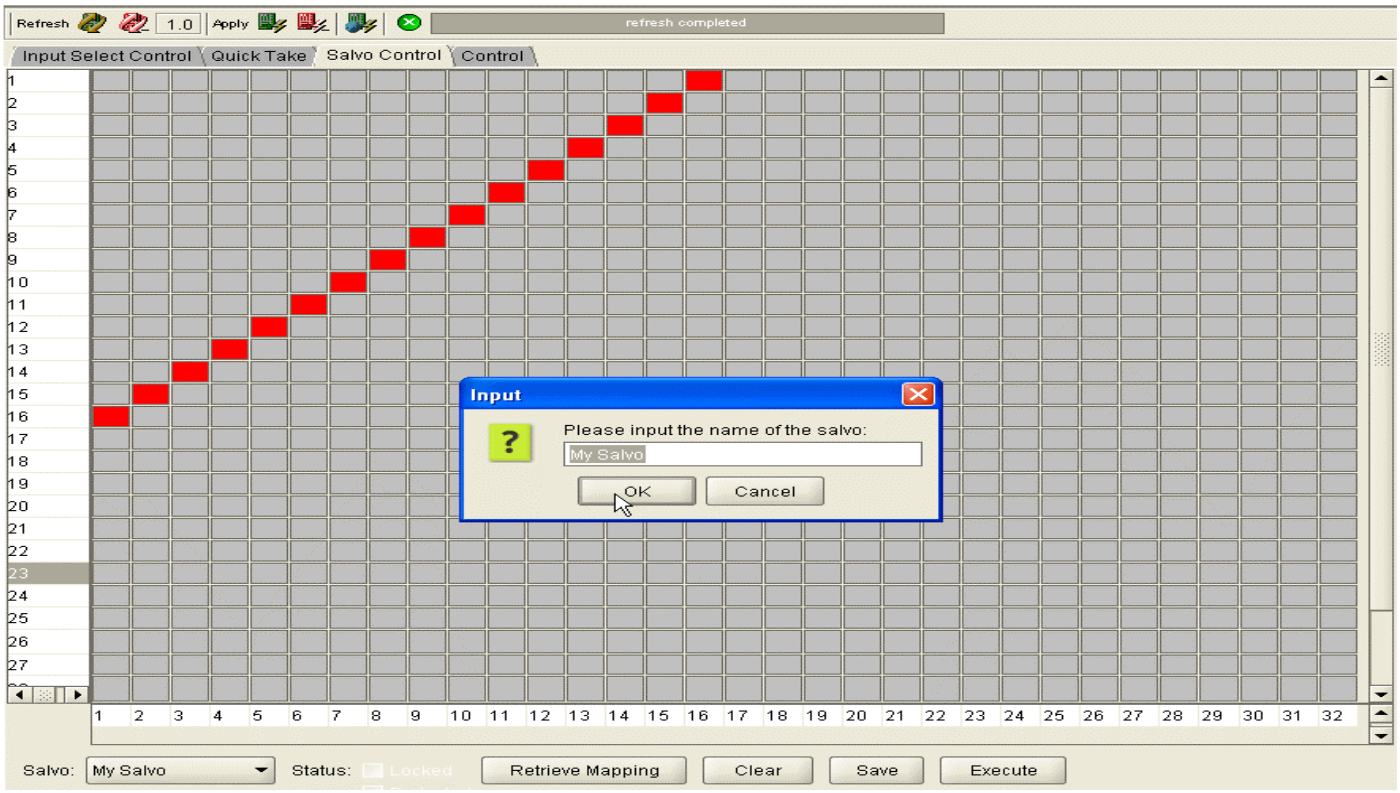


Figure 4-13: Saving a new crosspoint map into a Salvo slot

4.5.3.2. Restoring a Saved Crosspoint Map

Retrieve a previously saved crosspoint map, by selecting the corresponding slot from the drop down menu (Figure 4-14). The previously saved configuration is automatically displayed on the grid.

To implement this crosspoint configuration, press the **Execute** button. This will overwrite the current mapping of the crosspoints. Note that while restoring a Salvo setting, inputs that are not mapped to any output will keep their current mapping.

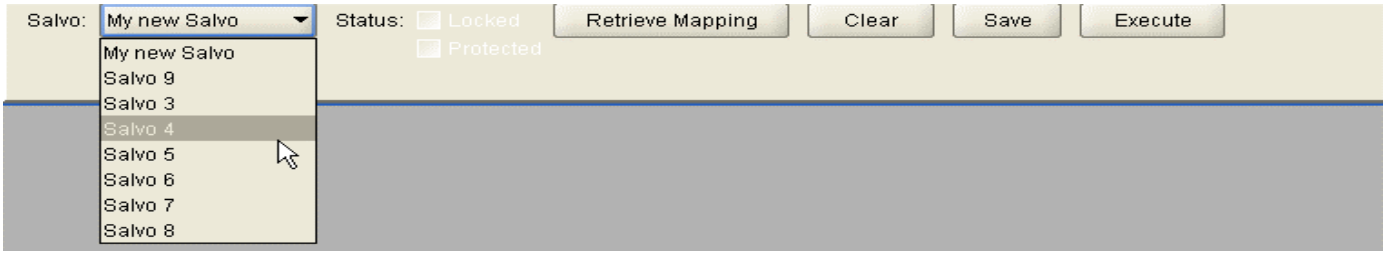


Figure 4-14: Selecting a Salvo Slot to Save or Implement Crosspoints

4.6. CONTROL TAB AND PASSWORD SETTINGS IN VistaLINK®

The X-Series Router user has the option to enable password protection through VistaLINK®, limiting user access when using Network Control Panel [NCP]. A system administrator may assign both “operator” and “administrator” password types. For usage on how these password settings can protect the Configuration Menu, Destination Lock and Salvo Lock on NCP, please refer to NCP manual.

To set the password for the Operator or the Administrator, click on the Control Tab and enter the new password in the space provided. Entering 0 for a password disables password protection.

When the password protection has been enabled, the user will be prompted to enter a password when making changes through NCP. If no password protection has been setup no prompting will occur and the user will be free to directly access all the menus.

4.7. X-NCP2 ROUTER CONTROL PANEL

The router matrix may be controlled via SNMP over the Ethernet port, or by RS232/422 over the frame’s serial port. The Evertz X-NCP2 control panel uses SNMP over Ethernet, while many third party monitoring and control systems use the RS232/422 port.

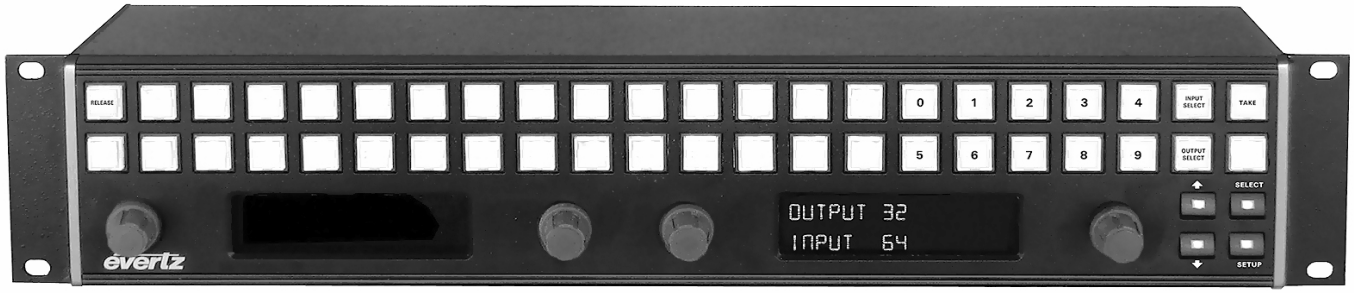


Figure 4-15: X-NCP2 Router Control Panel

The Evertz X-NCP2 control panel is a multi-function control panel used to control the X-Series router, as well as other Evertz products. The control panel may be connected directly to the router’s Ethernet port (using a crossover Ethernet cable) or to a hub or switch, which is connected to the router’s Ethernet port (using a standard Ethernet cable). A hub or switch is required to connect multiple control panels to a frame controller. The panel communicates with the router’s frame controller using SNMP.

To connect an XNCP2 control panel directly to an X-Series router Ethernet port, a crossover Ethernet cable is required.

To control the X-Series router via the XNCP2 panel, the IP address of each frame controller must be added to the XNCP2 list of controlled devices on the network. This is detailed in section 4.7.1.

4.7.1. Adding X-Series Router Frame Controller to XNCP2 Control List

The addition of X-Series router frame controllers can be performed once the XNCP2 panel and X-Series frame controllers are on the same IP subnet.

Follow this procedure to add a frame:

1. Enter the <setup> menu at the top level menu of the XNCP2.
2. Enter the <add frame> item in the list.
3. Select the frame type as <NON-SNMP>.
4. Enter the IP address of the X-Series frame controller using the scroll knob and [SETUP] key.
5. The XNCP2 will update and display the IP address of the added frame controller.

The same procedure can be followed to remove a FC from the XNCP2 list, except in step 2 the user must select <remove frame> instead of <add frame>. The panel will not require specification of frame type to remove the frame address.

4.7.2. Controlling the X-Series Router via the XNCP2

To control the router matrix, a panel session with the frame controller must first be initiated. This is accomplished by scrolling to the IP address of the X-Series frame controller and pressing the [SETUP] button on the panel. The XNCP2 will display the input and output range of the router on the left hand side display and the output destination selection mode on the right hand side display facing the panel.

A session may be terminated by pressing the [↑] and [↓] buttons simultaneously.

To release a session with the X-NCP2 panel (return to the list of IP address selections), press the [↑] and [↓] buttons simultaneously.

If there is more than one device on the network, the panel will show multiple IP addresses (or names, if configured) in the display. Use the rotary knob to highlight the desired device, then press [SETUP] to initiate a session with that device.

Once a session is initiated, crosspoint changes may be made by using the [Output Select] and [Input Select] buttons, followed by the [TAKE] button. As an alternative to using the pushbuttons for input and output selection, the scroll knobs on either side of the display may be used for output and input selection, followed by the [TAKE] button.

The examples listed below illustrate two different methods of initiating a crosspoint take with the router. Both examples illustrate how to make a connection between output 5 and input 2.

4.7.3. Example 1: Pushbutton control to switch input 2 to output 5

1. Initiate a panel session by highlighting the IP address (or router name) of the router in the display area of the panel. This is done using the leftmost scroll knob. When the frame IP address (or name) is highlighted, press [SELECT].
2. Press [OUTPUT SELECT] to put the panel into output selection mode. The numeric buttons 0-9 will illuminate.
3. Use the numeric buttons to select the desired output (i.e. 5) by pressing [5], followed by [ENTER] to exit output selection mode.

4. Press [INPUT SELECT] to put the panel into input selection mode. The numeric buttons 0-9 will illuminate.
5. Use the numeric buttons to select the desired input (i.e. 2) by pressing [2], followed by [ENTER] to exit the input selection mode.
6. Press [TAKE]. The panel display will display the input and output selected, plus a "take successful" message. The router does not perform the input to output connection until the [TAKE] button is pressed.

In short, the steps are [SELECT], [OUTPUT SELECT], [5], [ENTER], [INPUT SELECT], [2], [ENTER], [TAKE].

4.7.4. Example 2: Rotary knob control to switch input 2 to output 5

1. Initiate a panel session by highlighting the IP address (or router name) of the router in the display area of the panel. This is done using the leftmost scroll knob. When the frame IP address (or name) is highlighted, press [SELECT].
2. Use the left scroll knob (of the right side display area) to select an output (output 5). As you scroll through the system outputs, the current input connection is displayed.
3. Use the right knob to select the desired input (input 2).
4. To make the crosspoint selection, press [TAKE]. A "take successful" message should appear in the display.

5. UPGRADING THE FIRMWARE

The X-series optical routers contain firmware that is contained in a flash EPROM device. From time to time firmware updates will be provided to add additional features to the unit. The COM 1 connector can be connected to a PC using a straight through cable. The following procedure will allow you to upload new firmware from your computer.

5.1. REQUIREMENTS

You will need the following equipment in order to update the Firmware:

- PC with available communications port. The communication speed is 115200 baud, therefore a 486 PC or better with a 16550 UART based communications port is recommended.
- "Straight-thru" serial extension cable (DB9 female to DB9 male).
- Terminal program that is capable of X-modem file transfer protocol (such as HyperTerminal).
- New firmware supplied by Evertz®.

5.2. UPDATE PROCEDURE

There are two ways to upgrade the X-Series Router firmware:

1. Using FTP to perform the upgrade via TCP/IP (*recommended procedure*).
2. Using a terminal application such as *HyperTerminal* to perform the upgrade via a serial connection.

5.2.1. FTP

1. Open a command prompt window (in Windows: Start/Programs/Accessories/Command Prompt)
2. Enter the location of the firmware file. For example, type *cd c:\temp*.
3. Enter the command *ftp* followed by the X-Series Router IP address.
   For example, type *ftp –A 192.168.8.50*.
4. Enter the FTP command *put* followed by the firmware filename. For example, *put 3232oeeo_1v2.bin*. This begins the transfer of the file to cache.
5. When the transfer is complete enter the FTP command: *bye*.
6. Step 5 begins the process of saving the firmware to the non-volatile flash of the X-Series Router from the cache that the file was saved in. The save process is displayed as a percentage on the Hyperterminal if it is being monitored by the user.

	***Take care when not monitoring the upload process in Hyperterminal. If the router is restarted before the upload could complete, you will corrupt the boot file and would have to use the Serial port method described below to upload it again.***

7. Allow between 45 seconds to 1 minute to save the file in flash and restart the router.

5.2.2. Serial Port

1. Disconnect power to the unit.
2. Connect the 9 pin male connector on the straight through serial extension cable to the COM 1 port on the rear panel of the router. Connect the 9 pin female connector to the PCs' RS-232 communications port.
3. Start the terminal program.
4. Configure the port settings of the terminal program as follows:

Baud	**115200**
Data bits	**8**
Parity	**None**
Stop bits	**2**
Flow Control	**None**

5. Apply power to the router. After the unit powers up, a banner with the boot code version information should appear in the terminal window. The cursor should be spinning for about 5 seconds then the unit will continue to boot.

For example:

```
Evertz PPCBoot 2.05 build 28
8270 rev 1.3, 67 MHz bus, 200 MHz core
0=1 1=0 2=1 3=1 4=2 5=1
boot flash: manufacturer 89008900, device CD88CD88, 16777216 bytes
LLLLlllluuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuu
uuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuu
/_
```

6. If you do not see the above screen, one of the following problems could have occurred:
   - Wrong communications port selected in the terminal program.
   - Improper port settings in the terminal program (Refer to step 3 for settings).
   - Defective serial cable.
7. While the cursor is spinning press CTRL+X to interrupt the boot sequence.
8. A “PPCBOOT>” cursor should appear. Type the word “upload”, without quotes, and hit the <Enter> key once.
9. You should now see a prompt asking you to upload the file.
10. Upload the “*.bin” file supplied, using the *X-Modem* transfer protocol of your terminal program (on Hyperterminal you can send the file by right clicking anywhere on the Hyperterminal window). If you do not start the upload within 10 minutes the router boot code will time out. You can restart the upgrade process by cycling the power to the unit.
11. The boot code will indicate when the operation was successful upon completion of the upload. Type the word “BOOT” without quotes, to reboot the router.

For example:

```
§ UPLOAD OKAY
PPCBOOT> BOOT_
```