

User's Manual



CrossPoint Matrix Switchers

CrossPoint 84, 88, 124, 128, 168, and 1616 HV and HVA

Precautions

Safety Instructions • English



This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.



This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

Caution

Read Instructions • Read and understand all safety and operating instructions before using the equipment.

Retain Instructions • The safety instructions should be kept for future reference.

Follow Warnings • Follow all warnings and instructions marked on the equipment or in the user information.

Avoid Attachments • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

Consignes de Sécurité • Français



Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).



Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.

Attention

Lire les instructions • Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.

Conservier les instructions • Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

Respecter les avertissements • Observer tous les avertissements et consignes marqués sur le matériel ou présentés dans la documentation utilisateur.

Eviter les pièces de fixation • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

Sicherheitsanleitungen • Deutsch



Dieses Symbol soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.



Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.

Achtung

Lesen der Anleitungen • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits- und Bedienungsanleitungen genau durchlesen und verstehen.

Aufbewahren der Anleitungen • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.

Befolgen der Warnhinweise • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.

Keine Zusatzgeräte • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

Instrucciones de seguridad • Español



Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.



Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.

Precaucion

Leer las instrucciones • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

Conservar las instrucciones • Conservar las instrucciones de seguridad para futura consulta.

Obedecer las advertencias • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean específicamente recomendados por el fabricante, ya que podrían implicar riesgos.

Warning

Power sources • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

Power disconnection • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

Power cord protection • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

Servicing • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

Slots and openings • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

Lithium battery • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Avertissement

Alimentations • Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de la contourner ni de la désactiver.

Déconnexion de l'alimentation • Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

Protection du cordon d'alimentation • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

Réparation-maintenance • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

Fentes et orifices • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

Lithium Batterie • Il a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

Vorsicht

Stromquellen • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

Stromunterbrechung • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stromversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

Schutz des Netzkabels • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar dagegengestellt werden können.

Wartung • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.

Schlitze und Öffnungen • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.

Lithium-Batterie • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

Advertencia

Alimentación eléctrica • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearia ni eliminaria.

Desconexión de alimentación eléctrica • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.

Protección del cables de alimentación • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

Reparaciones/mantenimiento • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.

Ranuras y aberturas • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el sobrecalentamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

Batería de litio • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterías usadas siguiendo las instrucciones del fabricante.

Quick Start — CrossPoint Matrix Switchers

Installation

Step 1

Mount the switcher in a rack.

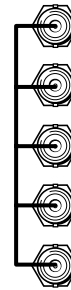
Step 2

Turn off power to the input and output devices, and remove the power cords from them.

Step 3

Cable the switcher for RGBHV, RGBS, RGsB, RsGsBs, component video, S-video, or composite video input and output (3). See page 2-3 in this manual for details.

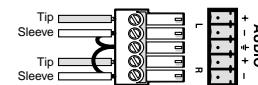
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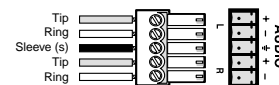
Step 4

Cable the switcher for stereo audio input (HVA models). Each input has a 3.5 mm, 5-pole captive screw connector for balanced or unbalanced stereo audio input (4). Connectors are included with each switcher, but you must supply the audio cable. High impedance is generally over 800 ohms.

4



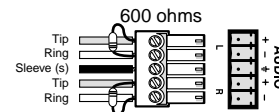
Unbalanced Input
(high impedance)



Balanced Input
(high impedance)

Step 5

Cable the switcher for stereo audio output (HVA models). Each output has a 3.5 mm, 5-pole captive screw connector that outputs the selected unamplified, line level audio. Connect an audio device, such as an audio amplifier or powered speakers (5).

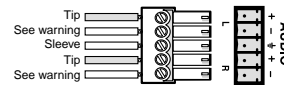


Balanced Input
(600 ohms)

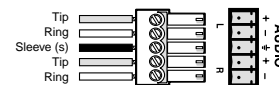
Step 6

Plug the switcher, input devices, and output devices into a grounded AC source, and turn on the input and output devices.

5



Unbalanced Output



Balanced Output

Definitions

The following terms are used throughout this manual:

Tie — An input-to-output connection.

Set of ties — An input **typed** to two or more outputs. (An output can never be **typed** to multiple inputs.)

Configuration — One or more **ties** or **sets of ties**.

Current configuration — The currently active **configuration** (also called **configuration 0**).

Preset — A **configuration** that has been stored.

One **preset** can be assigned to each input button. When a **preset** is retrieved from memory, it becomes the **current configuration**.

Quick Start — CrossPoint Matrix Switchers, cont'd

Front Panel Controls

Input and output buttons and LEDs select and identify inputs and outputs. Input buttons also select presets. On HVA models, the output LEDs also display the audio level of the selected input.

Enter button saves changes when you change the configuration.

Preset button saves a configuration as a preset or recalls a previously-defined preset.

View button selects a view-only mode that prevents inadvertent configuration changes. On HVA models, the View button decrements the audio level of the selected input. The View LED indicates a negative (-) attenuation value.

Esc button cancels selections in progress and resets the front panel LEDs. The Esc button does **not** reset the current configuration, the RGBHV and Audio LEDs, any presets, or any audio gain/attenuation settings. On HVA models, the Esc button increments the audio level of the selected input. The Esc LED indicates a positive (+) gain value.

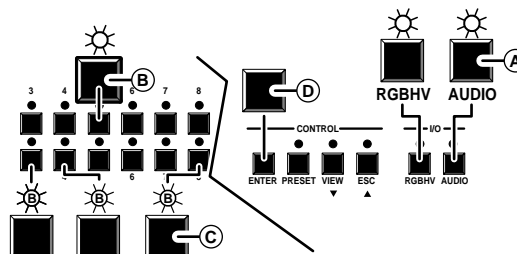
RGBHV and Audio buttons select/deselect video and/or audio. The Audio LED blinks to indicate audio breakaway. The Audio button also selects the audio level/adjust mode.

Input and output label windows hold labels that can be created easily with Extron's label software or with any Brother® P-Touch™ labeler.

LED key: ● = off, ☀ = on, ⚡ = blinking.

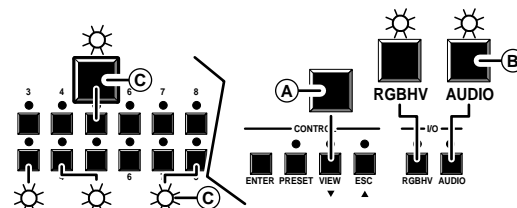
Create a tie

- Press and release the RGBHV and/or Audio button(s) to select audio and/or video.
- Press and release the desired input button.
- Press and release the desired output button(s).
- Press and release the Enter button.



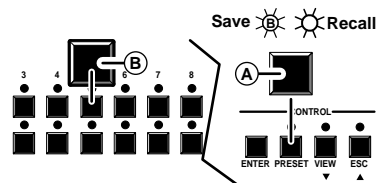
View ties

- Press and release the View button.
- Press and release the RGBHV and/or Audio button(s) to select audio and/or video.
- Press and release the desired input button. The selected input and tied output LEDs light.



Save or recall a preset

- To **save** a preset, press and **hold** the Preset button until the Preset LED begins to blink. To **recall** a preset, press and release the Preset button. The Preset LED turns on steadily.
- Press and release the input button associated with the desired preset number.



View and adjust audio level

- Press and **hold** the Audio button until the Audio LED begins to blink.
- Press and release the desired input button. The level is displayed by the output LEDs, (+) by the Esc LED, and (-) by the View LED.
- Increment and decrement the level by pressing the Esc (▲) and View (▼) buttons.
- Press and release the Audio button to exit.

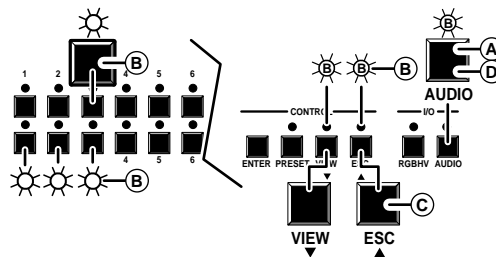


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CrossPoint Matrix Switchers

Chapter One

Introduction

About the CrossPoint Matrix Switchers

Features

Introduction

About the CrossPoint Series Matrix Switchers

Extron's CrossPoint Series Matrix Switchers are analog RGBHV matrix switchers that distribute any input to any combination of outputs. The matrix switchers can route multiple input/output configurations simultaneously. There are six series available that offer a variety of matrix sizes:

- CrossPoint 84 (eight inputs by four outputs)
- CrossPoint 88 (eight inputs by eight outputs)
- CrossPoint 124 (twelve inputs by four outputs)
- CrossPoint 128 (twelve inputs by eight outputs)
- CrossPoint 168 (sixteen inputs by eight outputs)
- CrossPoint 1616 (sixteen inputs by sixteen outputs)

Each series offers two models: HV for switching RGBHV signals, and HVA models for switching RGBHV and two-channel stereo audio (balanced and unbalanced). All models also switch RGBS, RGsB, RsGsBs, HDTV, component video, S-video, and composite video (figure 1). The audio switching can either be linked with the video (audio follow) or independent of the video (audio breakaway). Adjustable audio gain and attenuation compensates for level differences between audio inputs.

The CrossPoint Series are single box solutions to simple 200 MHz (-3dB) routing applications. Each input and output is individually isolated and buffered, and any input(s) can be switched to any one or all outputs with virtually no crosstalk or signal noise between channels.

The CrossPoint 84, 88, 124, and 128 Matrix Switchers are housed in rack-mountable, 3U high, 19" wide metal enclosures. The CrossPoint 168 and 1616 are in a 6U high enclosure. The appropriate rack mounting kit is included with each switcher. Each model has an internal 100VAC to 240VAC, 50/60 Hz, 30 watts (CrossPoint 84, 88, 124, and 128) or 36 watts (CrossPoint 168 and 1616), auto-switchable power supply that provides worldwide power compatibility.

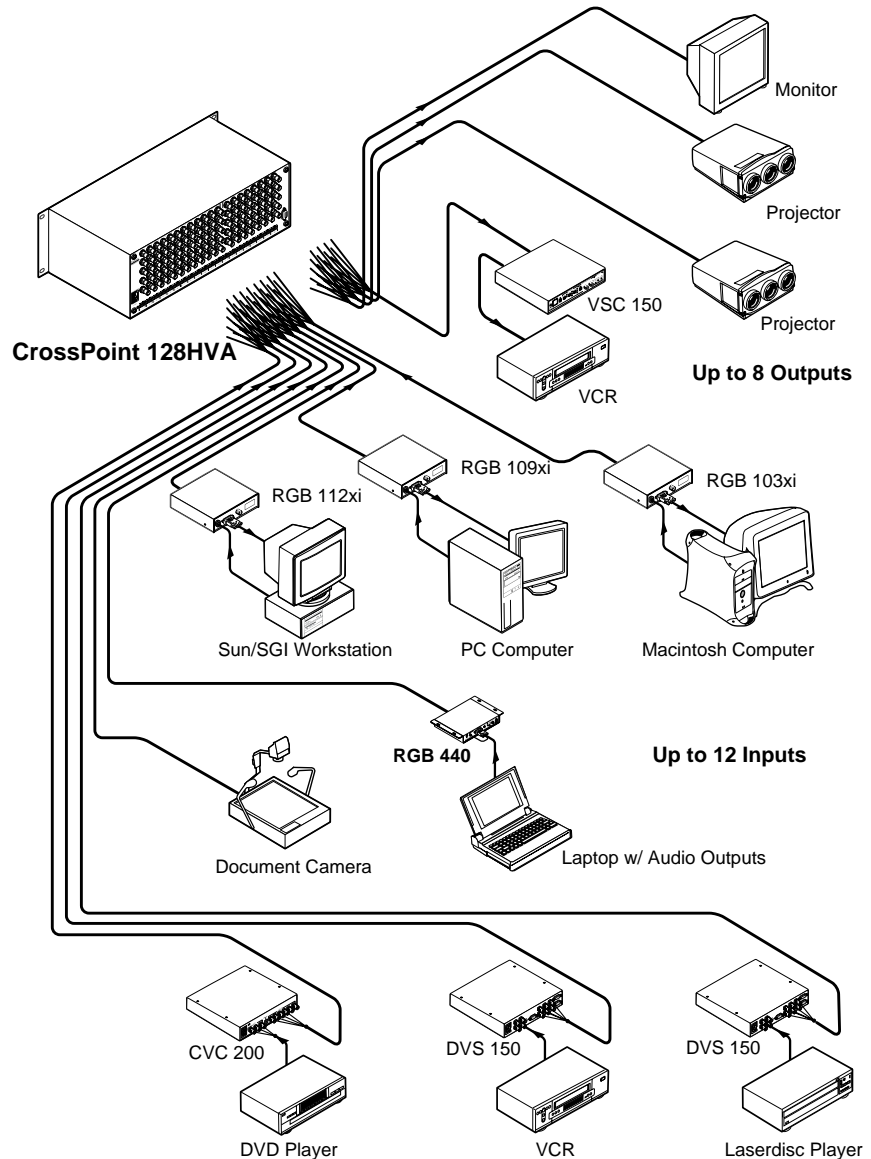


Figure 1 — A typical CrossPoint Matrix Switcher application

Features

- Inputs** — These switchers offer 8, 12, or 16 RGBHV, RGBS, RGsB, RsGsBs, HDTV, component video, S-video, or composite video inputs on BNC connectors
- Stereo audio can be balanced or unbalanced, on 3.5 mm, 5-pole captive screw terminals (HVA models)
- Outputs** — 4, 8, or 16 RGBHV, RGBS, RGsB, RsGsBs, HDTV, component video, S-video, or composite video inputs are available on BNC connectors
- Stereo audio, balanced or unbalanced, on 3.5 mm, 5-pole captive screw terminals (HVA models)
- Bandwidth** — Bandwidth is a minimum of 200 MHz (-3dB), fully loaded. This high bandwidth allows Extron's switchers to switch everything from NTSC video to high-resolution computer displays.

Introduction, cont'd

Operation — QuickSwitch Front Panel Controller (QS-FPC™), Simple Instruction Set (SIS™), and Extron's Windows®-based control program provide a versatile range of operational options. Operations such as input/output selection, setting of presets, and adjustment of audio levels can be performed on the front panel or over the RS-232/RS-422 link. The CrossPoint series QS-FPC feature supports touch-of-a-button input and output selection. The RS-232/RS-422 link allows remote control via a control system. The remote control protocol uses Extron's SIS for easy programming and operation. The switchers also ship with Extron's Windows-based control program with its graphical interface and drag-and-drop/point-and-click operation. The Windows-based control program also has an emulation mode that lets you create a switcher configuration file at the home office and then download it for use by the switcher on site.

Audio gain/attenuation — Users can set the level of audio gain or attenuation (-15dB to +9dB) via the RS-232/RS-422 link or from the front panel. Individual input audio levels can be adjusted so there are no noticeable volume differences between sources.

Memory presets — 12 (CrossPoint 84, 88, 124, and 128) or 16 (CrossPoint 168 and 1616) memory presets are a time-saving feature that lets you set up and store input/output configurations for simple one-touch switching.

Switching — Individually buffered, independent matrix switched outputs with, for HVA versions, audio follow and audio breakaway

- **Audio follow** — Audio can be switched with the corresponding video input. This feature allows any audio signal to be selected with any video signal simultaneously to one or all outputs in any combination. Audio follow switching can be done via front panel control or under RS-232/RS-422 remote control.
- **Audio breakaway** — Audio can be broken away from its corresponding video signal. Audio breakaway switching can be done via front panel control or under RS-232/RS-422 control.

Remote control — The CrossPoint switchers are remote controllable, using the MKP 1000 master control keypad and any combination of MCP 1000 slave control panels and/or MKP 1000 slave control keypads. The remote control devices are easy to use and provide tactile buttons for quick selection. Each MCP 1000 can be used for one-touch switching for a particular output and selecting global presets. Each MKP 1000 can be used to select a different input or select a preset.

Labeling — Extron's label software ships with every Extron matrix switcher. You can create labels to place alongside the front panel input buttons and output buttons, with names, alphanumeric characters, or color bitmaps for easy and intuitive input and output selection. Alternatively, labels can be made with any Brother® P-Touch™ or comparable labeler.

Rack mount — The switchers are mountable in any conventional 19" wide rack.

Power — The internal 100VAC to 240VAC, 50/60 Hz, 30 watts (CrossPoint 84, 88, 124, and 128) or 36 watts (CrossPoint 168 and 1616), auto-switchable power supply of the CrossPoint Series provides worldwide power compatibility.



CrossPoint Matrix Switchers

Chapter Two

Installation

Rack Mounting the Switcher

Cabling and Rear Panel Views

Installation

Rack Mounting the Switcher

The CrossPoint 84, 88, 124, and 128 Matrix Switchers are housed in rack-mountable, 3U high, 19" wide metal enclosures. The CrossPoint 168 and 1616 are in 6U high enclosures. The appropriate rack mount kit is included with each switcher. Rack mount the switcher as follows:

1. Insert the switcher into the rack, align the holes in the mounting bracket with those of the rack.
2. Secure the switcher to the rack using the supplied machine screws.

Cabling and Rear Panel Views

All connectors are on the rear panel. Figure 2 shows the CrossPoint 128HVA. The CrossPoint 84, 88, and 124 are housed in the same 3U enclosure, but have fewer input and/or output connectors to accommodate the different matrix sizes each provides. Figure 3 shows the CrossPoint 1616HVA. The CrossPoint 168 is housed in the same 6U enclosure, but has fewer output connectors to accommodate its 16x8 matrix.

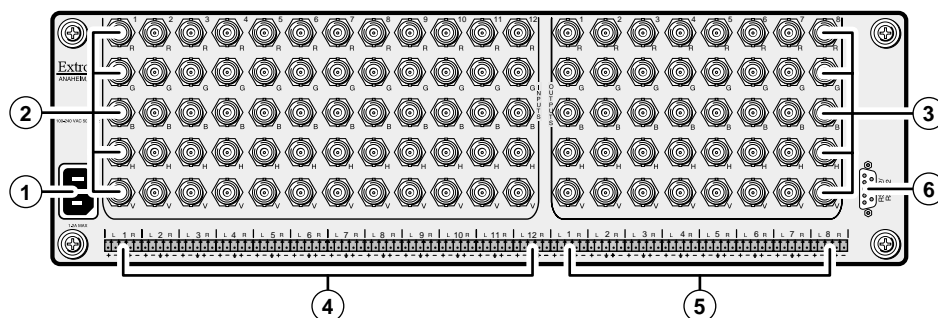


Figure 2 — Rear panel connectors, CrossPoint 128HVA

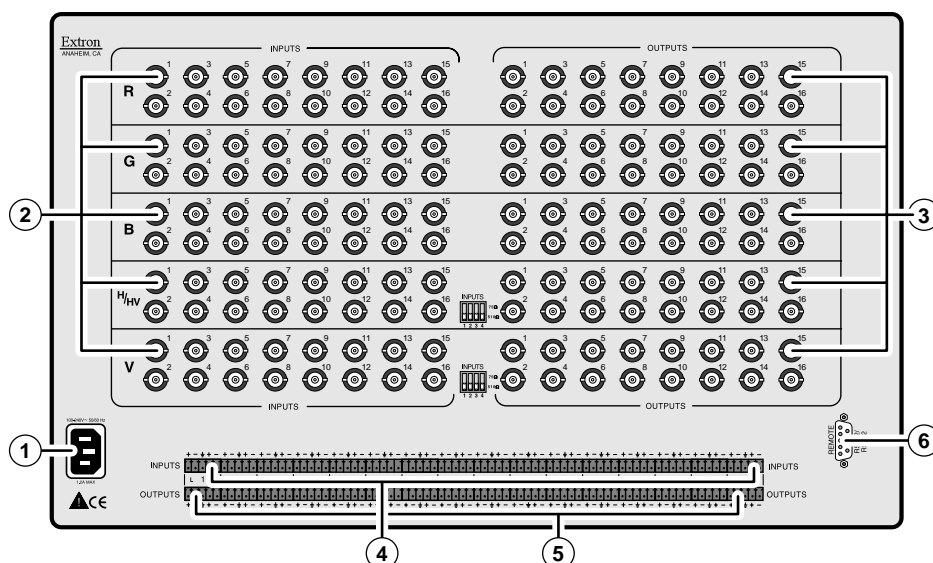


Figure 3 — Rear panel connectors, CrossPoint 1616HVA

Power connection

- ① **AC power connector** — Plug a standard IEC power cord into this connector to connect the switcher to a 100 to 240VAC, 50 Hz or 60 Hz power source.

Video input and output connections

NOTE All video input and output connections to the CrossPoint switchers are made with BNC connectors. Some types of video output devices do not have BNC video output connectors. For these cases, a suitable adapter is necessary between the device output connector and the BNC input connector of the CrossPoint.

- ② **RGBHV video inputs** — Connect RGBHV video inputs to these BNC connectors for each input.
- ③ **RGBHV video outputs** — Connect RGBHV video outputs to these BNC connectors for each output.

NOTE The CrossPoint Series switchers can also switch RGBS, RGsB, RsGsBs, component video, S-video, or composite video by using four, three, two, or one BNC. If switching a video format other than RGBHV, ensure that the same video planes (R, G, B, H/HV, and/or V) are used on the switcher output as on the input.

NOTE The CrossPoint Series Matrix Switchers do not alter the video signal in any way. The signal output by the switcher is in the same format as the input.

Audio input and output connections (HVA models only)

WARNING The captive screw connector can easily be inadvertently plugged partially into one receptacle and partially into an adjacent receptacle. This misconnection could damage the audio output circuits. Exercise care to ensure the captive screw connector is plugged into the desired input or output.

- ④ **Connections for balanced and unbalanced audio inputs** — Each input has a 3.5 mm, 5-pole captive screw connector for balanced or unbalanced stereo audio input. Connectors are included with each CrossPoint switcher, but you must supply the audio cable. See figure 4 to wire a connector for the appropriate input type and impedance level. High impedance is generally over 800 ohms.

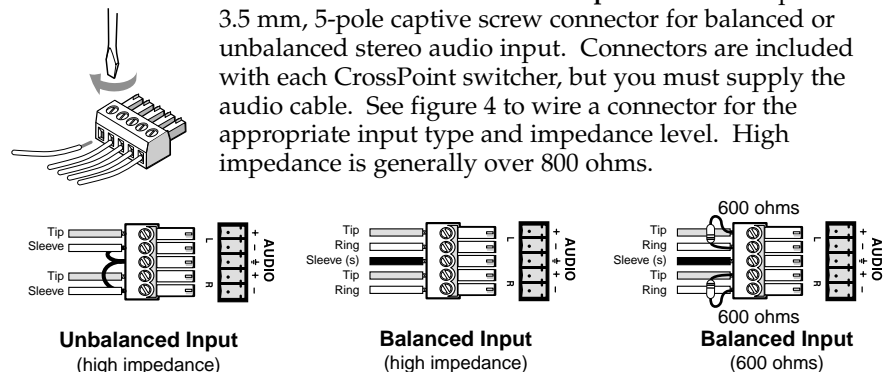


Figure 4 — Captive screw connector wiring for inputs

NOTE When making connections for the CrossPoint Series Switcher from existing audio cables, see figure 5. A mono audio connector consists of the tip and sleeve. A stereo audio connector consists of the tip, ring and sleeve. The ring, tip, and sleeve wires are also shown on the captive screw audio connector diagrams, figure 4 and figure 6.

Installation, cont'd

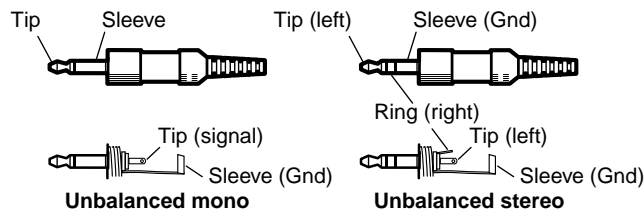


Figure 5 — Phono audio connectors

The audio level for each input can be individually set, via the front panel or RS-232/422, to ensure that the level on the output does not vary from input to input. See chapter 3, Operation, chapter 4, Programmer's Guide, and chapter 5, Matrix Software for details.

- ⑤ **Connections for audio outputs** — These 3.5 mm, 5-pole captive screw connectors output the selected unamplified, line level audio. Connect audio devices, such as an audio amplifier or powered speakers. See figure 6 to properly wire an output connector.

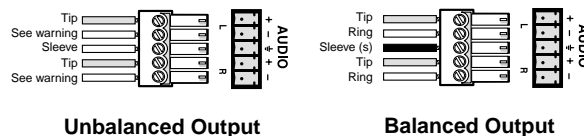
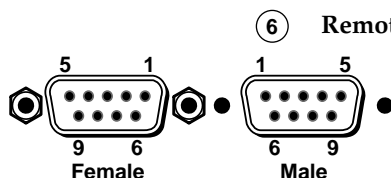


Figure 6 — Captive screw connector wiring for audio output

WARNING Connect the sleeve to ground (Gnd). Connecting the sleeve to a negative (-) terminal will damage the audio output circuits.

By default, the audio output follows the video switch. Audio breakaway, commanded via the front panel, under RS-232/422 control, or Windows-based control program, allows you to select from any one of the audio input sources. See chapter 3, Operation, chapter 4, Programmer's Guide, and chapter 5, Matrix Software for details.

RS-232/422 connection



- ⑥ **Remote/RS-232/422 port** — Connect a host device, such as a computer or touch panel control, to the CrossPoint via this 9-pin D connector for serial RS-232/422 control.

If desired, attach an MCP 1000 remote control panel master unit to the switcher's RS-232/422 connector. You can also attach an MKP 1000 remote keypad or MCP 1000 slave unit to the MCP 1000 master unit.

Refer to the "MCP 1000 Remote Control Panel User's Manual" and the "MKP 1000 User's Manual" for details.

See chapter 4, Programmer's Guide, for definitions of the SIS commands and chapter 5, Matrix Software for details on how to install and use the control software.

NOTE The CrossPoint Series Matrix Switchers are factory configured for RS-232 control. To use the switcher under RS-422 control, an internal cable must be moved. See Appendix B for the procedure for shifting the cable.

Additional rear panel views

The following figures show the rear panels of all CrossPoint switchers, except for the CrossPoint 128HVA, which is shown in figure 2, and the CrossPoint 1616HVA, which is shown in figure 3.

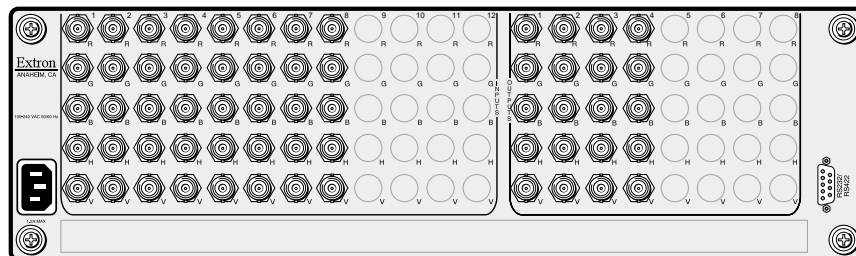


Figure 7 — Rear panel view, CrossPoint 84HV

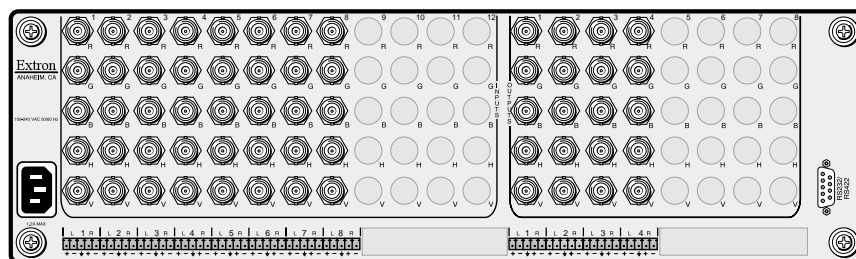


Figure 8 — Rear panel view, CrossPoint 84HVA

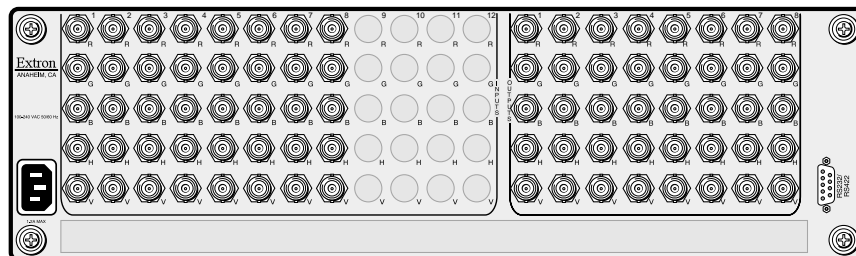


Figure 9 — Rear panel view, CrossPoint 88HV

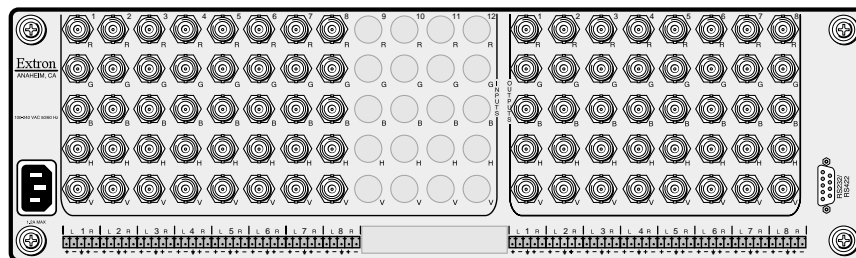


Figure 10 — Rear panel view, CrossPoint 88HVA

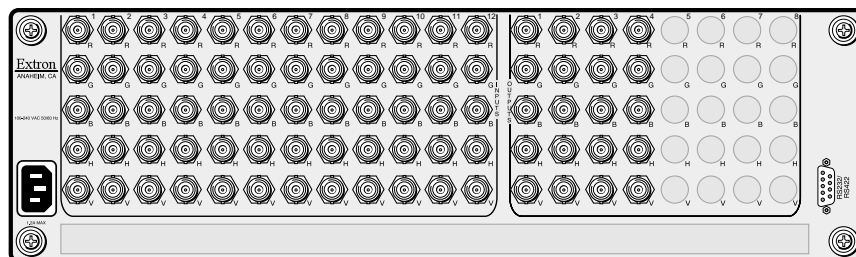


Figure 11 — Rear panel view, CrossPoint 124HV

Installation, cont'd

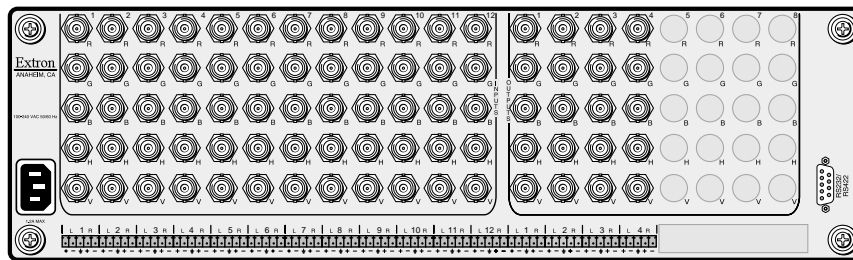


Figure 12 — Rear panel view, CrossPoint 124HVA

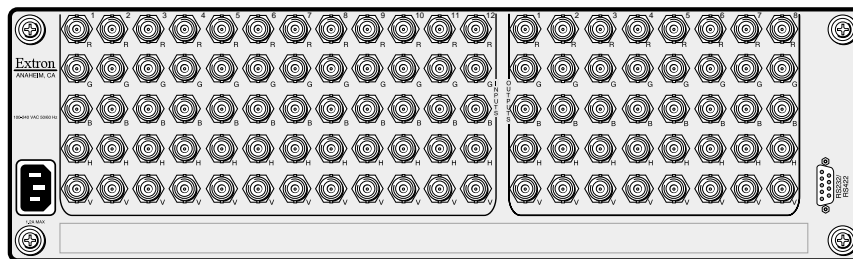


Figure 13 — Rear panel view, CrossPoint 128HV

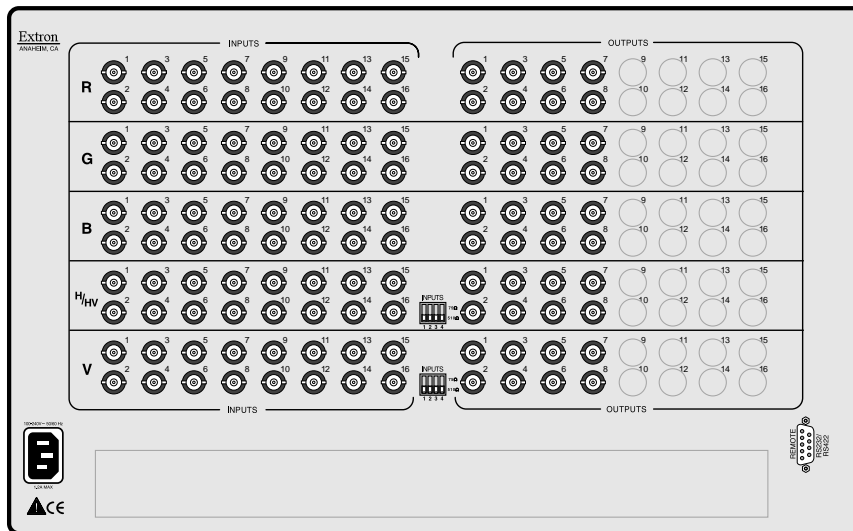


Figure 14 — Rear panel view, CrossPoint 168HV

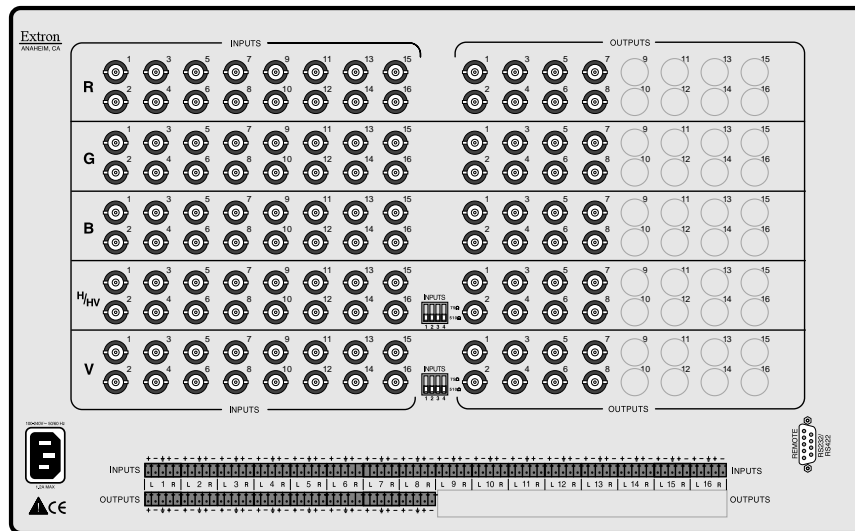


Figure 15 — Rear panel view, CrossPoint 168HVA

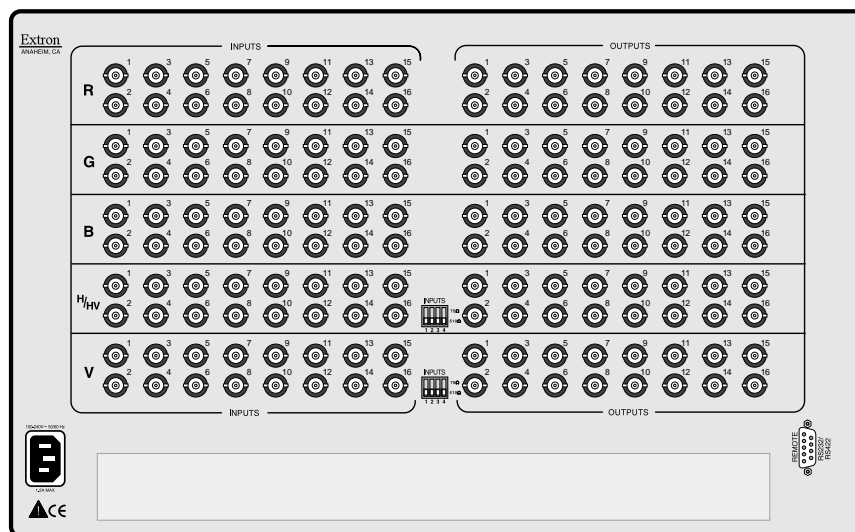


Figure 16 — Rear panel view, CrossPoint 1616HV

Installation, cont'd



CrossPoint Matrix Switchers

Chapter Three

Operation

Front Panel Controls and Indicators

Front Panel Operations

Rear Panel Controls

Worksheets

Operation

Front Panel Controls and Indicators

The front panel controls (figure 17 and figure 18) are grouped into two sets. The input and output buttons and LED indicators are grouped on the left side of the control panel. The control buttons and input/output (I/O) selection buttons and indicators are grouped on the right side of the panel.

NOTE While the number of inputs and outputs varies depending on the size of the matrix, there are only two front panel arrangements. The CrossPoint 84, 88, 124, and 128 have 12 input buttons and 8 output buttons (figure 17). The CrossPoint 168 and 1616 have 16 input buttons and 16 output buttons (figure 18).

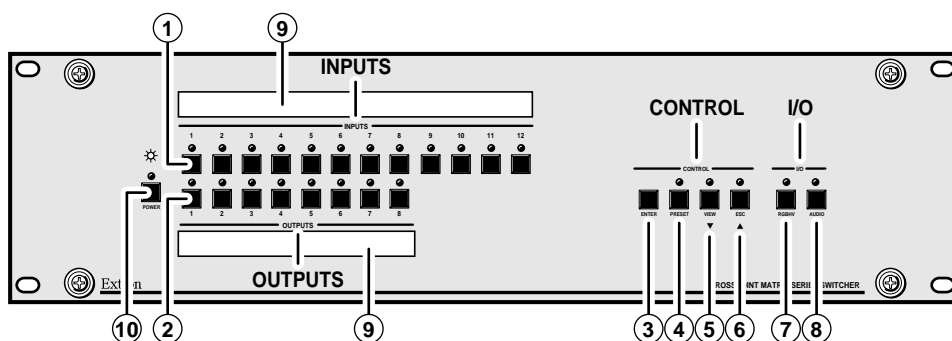


Figure 17 — Front panel, CrossPoint 128 HVA

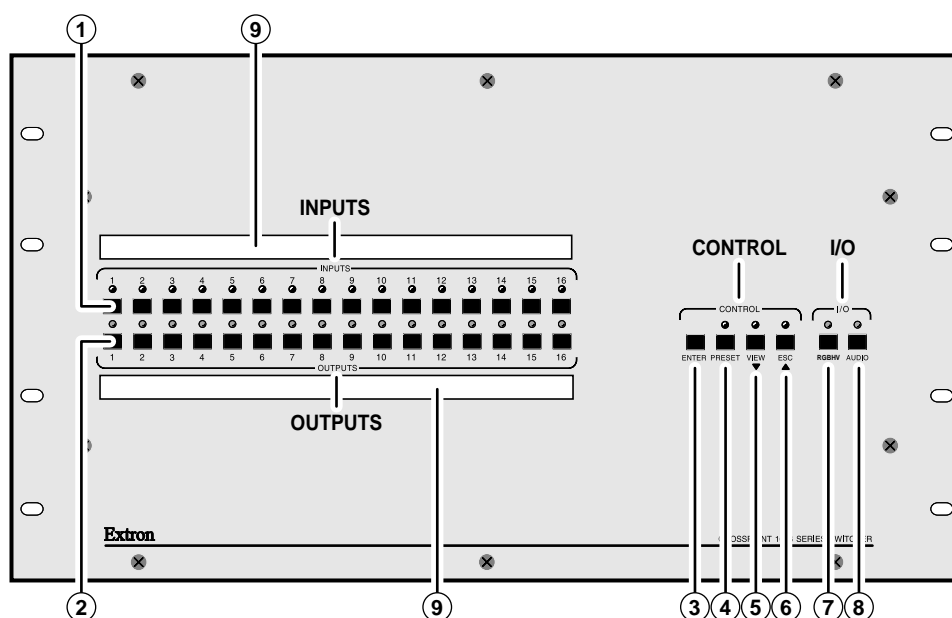


Figure 18 — Front Panel, CrossPoint 1616 HVA

Definitions

The following terms apply to Extron Matrix Switchers, and are used throughout this manual:

Tie — An input-to-output connection.

Set of ties — An input tied to two or more outputs. (An output can never be tied to more than one input.)

Configuration — May consist of one tie or one or more sets of ties.

Current configuration — The **configuration** that is currently being used (also called **configuration 0**).

Preset — A **configuration** that has been stored. Up to twelve **presets** (CrossPoint 84, 88, 124, and 128) or sixteen **presets** (CrossPoint 168 and 1616) can be stored in memory. The input buttons select the desired **preset** memory location to load or retrieve a **preset**. When a **preset** is retrieved from memory, it becomes the **current configuration**. One **preset** can be assigned to each input button.

Input buttons, output buttons, and LEDs

NOTE *If the switcher has fewer inputs and outputs than input and output buttons and LEDs, only the applicable buttons and LEDs perform the function of selecting and identifying an input or output.*

- ① **Input 1 through 12 (16) buttons and LEDs** — The input buttons have two independent functions: to select an input and to select a preset. The input LEDs identify selected inputs. A more detailed explanation of the two functions is included in “Front Panel Operations” beginning on page 3-5.
- ② **Output 1 through 8 (16) buttons and LEDs** — The output buttons and LEDs select and identify outputs. On HVA models, the output LEDs also display the user-adjustable audio level of the selected input. A more detailed explanation of audio level adjustment is included in “Viewing and adjusting the audio level (HVA models only)” on page 3-12.

Control buttons and LEDs

- ③ **Enter button** — The Enter button saves changes when you set up a new configuration. To create a simple configuration, specify video, audio, or both (see controls (7) and (8)); press the desired input button (1); press the desired output button(s) (2); and press the Enter button.
- ④ **Preset button and LED** — The Preset button saves a configuration as a preset or recalls and makes current a previously defined preset. The Preset LED indicates save mode when it is blinking and recall mode when it lights steadily.
- ⑤ **View button and LED** — The View button selects a view-only mode that allows the display of the current CrossPoint configurations. The view-only mode helps prevent changing configurations by accident. The View LED indicates that the CrossPoint is in view-only mode.

In view-only mode, pressing any input button (1) or output (2) button lights the LEDs for the input and all outputs that are a part of that set of ties. Pressing the button for any unassigned output lights only the output LEDs for all of the unassigned outputs. No input LED is lit.

As a secondary function on HVA models, the View button decrements the audio level of the selected input. In audio adjustment mode, the View LED indicates a negative (-) attenuation value. A more detailed explanation of audio level adjustment is included in “Viewing and adjusting the audio level (HVA models only)” on page 3-12.

- ⑥ **Esc button and LED** — The Esc button cancels operations or selections in progress and resets the front panel LEDs. The Esc button does **not** reset the current configuration, the RGBHV and Audio LEDs, any presets, or any audio gain/attenuation settings. The Esc LED lights for two seconds after the Esc button is pressed and released to indicate the escape function.

As a secondary function on HVA models, the Esc button increments the audio level of the selected input. In audio adjust mode, the Esc LED indicates a

Operation, cont'd

positive (+) gain value. A more detailed explanation of audio level adjustment is included in “Viewing and adjusting the audio level (HVA models only)” on page 3-12.

I/O controls

When creating or viewing a configuration, you must specify whether the configuration applies to video, audio, or both. This is done with the RGBHV (7) and Audio (8) buttons.

NOTE *Although present, the RGBHV and Audio buttons have no function on HV models.*

- ⑦ **RGBHV button and LED** — The RGBHV button selects and deselects video for a configuration being created or viewed. The RGBHV LED lights to indicate that video is available for configuration or viewing.
- ⑧ **Audio button and LED** — The Audio button selects and deselects audio for a configuration that is being created or viewed. The Audio LED lights to indicate that the audio configuration follows the video configuration. The Audio LED blinks to indicate that the audio configuration is broken away from the video configuration.

As a secondary function, the Audio button selects the audio level display/adjust mode. Press and hold the Audio button until the Audio LED begins to blink. If the RGBHV LED was lit, it turns off. Select an input. The current audio level setting for the selected input is displayed in the output LEDs. The audio level for the selected input can be incremented and decremented by pressing the View (5) and Esc (6) buttons. A more detailed explanation of audio level adjustment is included in “Viewing and adjusting the audio level (HVA models only)” on page 3-12.

Label windows

- ⑨ **Input and output label windows** — These translucent panels can be removed and replaced to insert labels behind the panels. To remove a panel, insert the Phillips-head end of an Extron tweaker or small Phillips-head screwdriver into the hole in one end of the panel, and gently slide the tab on the edge of the panel out of the recess in the switcher housing.

Input and output labels can be created easily with Extron’s label software, which ships with every Extron Matrix Switcher, or with any Brother P-Touch labeler. Each input and output can be labeled with names, alphanumeric characters, or even color bitmaps for easy and intuitive input and output selection. See chapter 5, Matrix Software, for details on using the label software.

Power

On all models, power is automatically applied when the power cord is connected to an AC source. When AC power is applied, the switcher performs a self-test that blinks the front panel LEDs during the test. An error-free power up self-test sequence leaves the RGBHV and/or the Audio LED(s) on, depending on the model, and all other LEDs off. For descriptions of the self-test and error messages, see “Powering Up the Switcher” on page 3-14.

The current configuration and all presets are saved in non-volatile memory. When power is applied, the last current configuration is retrieved. The previous presets remain intact.

- ⑩ **Power button and LED (CrossPoint 84, 88, 124, and 128 only)** — Pressing and releasing the Power button toggles the switching and front panel functions on

and off. The LED lights when the switching and front panel functions are powered on. When the LED is off, switching is disabled.

WARNING *Power is still present inside the case when power is connected, even when the Power LED is off. Exercise caution when working inside the switcher.*

The front panels of the CrossPoint 168 and 1616 do not have a Power button and LED.

Front Panel Operations

The following paragraphs provide sample procedures for creating ties, sets of ties, and configurations; changing a configuration; viewing ties, sets of ties, and configurations; saving a preset; recalling a preset; and viewing and adjusting the audio level.

Creating a configuration

The current configuration can be changed using the front panel buttons. To change the current configuration, do the following:

1. Press the Esc button to clear any input LEDs, output LEDs, or control LEDs that may be on.
2. Select to configure video, audio, or both by pressing the RGBHV and/or Audio buttons.
3. Select the desired input and output(s) by pressing the input and output buttons.
4. Press and release the Enter button.
5. Repeat steps 1 through 4 to create additional ties until the desired configuration is complete.

- NOTE**
1. *Only one video input and one audio input can be tied to an output.*
 2. *If a tie is made between an input and an output, and the selected output was previously tied to another input, the older tie is broken in favor of the newer tie.*
 3. *To indicate current ties, output LEDs light when an input is selected. To clear unwanted outputs press and release the associated output buttons.*
 4. *If, when configuring video and audio ties, the Audio LED blinks and the RGBHV LED is on after selecting an input or output, the LEDs indicate audio breakaway, meaning that the audio ties are not the same as the video ties for that input.*
 5. *If an input with no tie is selected, only that input's LED lights.*
 6. *When the RGBHV and Audio LEDs are on, if an input with an audio tie but no video tie is selected, the input's LED lights and the Audio LED blinks.*
 7. *As each output is selected, the associated output LED blinks to indicate a tentative tie. LEDs for output(s) that were already tied to the input light steadily. Outputs that are already tied can be left on, along with new blinking selections, or toggled off by pressing the associated output button.*

Example 1: Create a set of video and audio ties

See figure 19 and the following steps for an example in which input 5 is tied to outputs 3, 4, and 8.

NOTE *This example assumes that there are no ties in the current configuration.*

Operation, cont'd

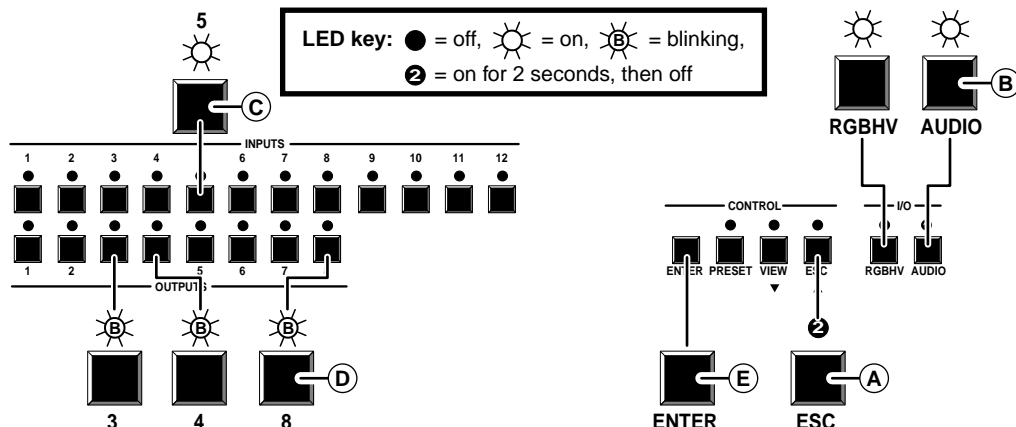


Figure 19 — Example 1: Creating a tie

- (A) Press and release the Esc button. The Esc LED turns on for approximately 2 seconds and turns off.
- (B) If necessary to select video and audio for the tie, press and release the RGBHV and Audio buttons until the RGBHV and Audio LEDs light.
- (C) Press and release the input 5 button. The input 5 LED lights.
- (D) Press and release the output 3, output 4, and output 8 buttons. The output 3, output 4, and output 8 LEDs blink to indicate a tentative tie.

NOTE The entire set of ties can be aborted at this point by pressing and releasing the Esc button. The Esc LED turns on for approximately 2 seconds and turns off.

- (E) Press and release the Enter button. The input and output LEDs turn off. The current configuration is now defined as video and audio input 5 tied to video and audio output 3, output 4, and output 8.

Example 2: Add a tie to a set of video and audio ties

See figure 20 and the following steps for an example in which a new video tie is added to the current configuration.

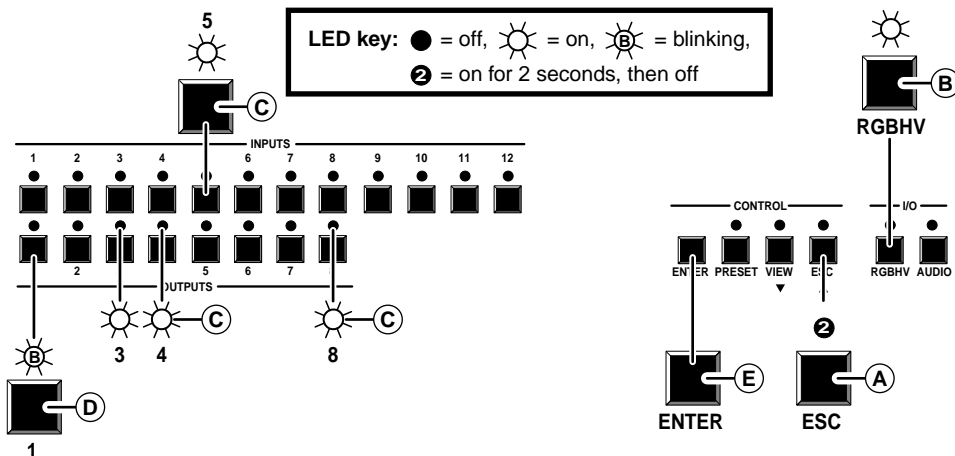


Figure 20 — Example 2: Adding a video tie

- (A) Press and release the Esc button. The Esc LED turns on for approximately 2 seconds and turns off.

- (B) If it is necessary to select video-only for the tie, press and release the RGBHV and Audio buttons until the RGBHV LED lights and the Audio LED is off.
- (C) Press and release the input 5 button. The input 5 LED lights. If the steps in Example 1 have been completed, the output 3, output 4, and output 8 LEDs light to indicate ties created in Example 1.
- (D) Press and release the output 1 button. The output 1 LED blinks to indicate a tentative tie.
- (E) Press and release the Enter button. The input and output LEDs turn off. The current configuration is now defined as video input 5 tied to video output 1, output 3, output 4, and output 8; and audio input 5 tied to audio output 3, output 4, and output 8.

Example 3: Remove a tie from a set of video and audio ties

See figure 21 and the following steps for an example in which an existing audio tie is removed from the current configuration.

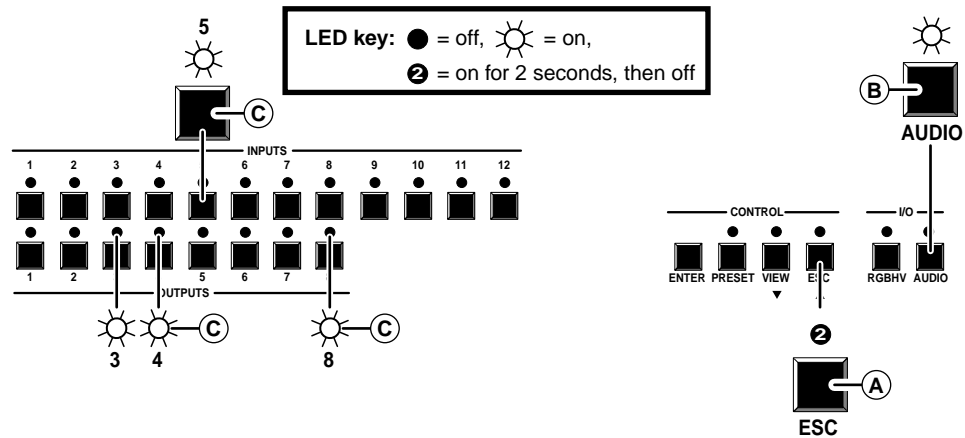


Figure 21 — Example 3: Selecting audio, selecting input 5

- (A) Press and release the Esc button. The Esc LED turns on for approximately 2 seconds and turns off.
- (B) If necessary to select audio-only for the tie, press and release the RGBHV and Audio buttons until the RGBHV LED is off and the Audio LED lights.
- (C) Press and release the input 5 button. The input 5 LED lights. If the steps in Example 1 have been completed, the output 3, output 4, and output 8 LEDs light to indicate ties created in Example 1.

NOTE The output 1 LED does not light even if the steps in Example 2 were completed because Example 2 added a video tie only.

- (D) Press and release the output 4 button (figure 22). The output 4 LED turns off, while the output 3 and output 8 LEDs remain lit.

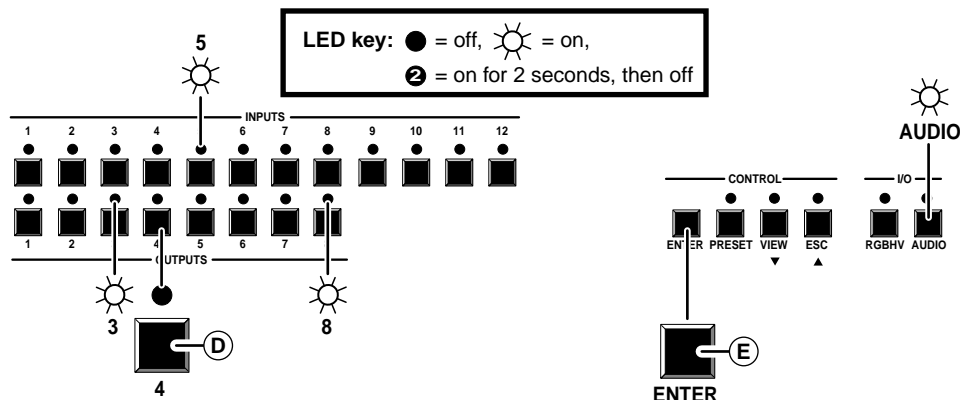


Figure 22 — Example 3d: Removing an audio tie

- (E) Press and release the Enter button. The input and output LEDs turn off. The current configuration is now defined as video input 5 tied to video output 1, output 3, output 4, and output 8; and audio input 5 tied to audio output 3 and output 8.

Viewing a configuration

The current configuration can be viewed using the front panel buttons. The view-only mode prevents inadvertent changes to the current configuration.

To view the current configuration, do the following:

1. Press the Esc button to clear any input LEDs, output LEDs, or control LEDs that may be on.
2. Press and release the View button.
3. Select video, audio, or both to view by pressing the RGBHV and Audio buttons.
4. Select the desired input or output(s) for which ties need to be viewed by pressing the input and output buttons.

- NOTE**
1. To see all ties of the current configuration, press and release each input and output button, one at a time, with the RGBHV and Audio LEDs on.
 2. In view-only mode, you can view video and audio, video-only, or audio-only ties. Pressing and releasing the RGBHV and Audio buttons toggles each on and off.
 3. If, when you view video and audio ties, the Audio LED blinks and the RGBHV LED is on after selecting an input or output, the LEDs indicate that the audio ties are not the same as the video ties for that input (audio breakaway is active). Toggle the RGBHV LED off by pressing and releasing the RGBHV button.
 4. When you enter view-only mode, the output LEDs turn on for all outputs without ties. Likewise, when an output button is pushed for which there are no ties, the output LEDs turn on for all outputs without ties. The blinking Audio LED indicates audio breakaway for one or more of those outputs.

Example 4: View video and audio, audio-only, and video-only ties

See figure 23, figure 24, and figure 25, and the following steps for an example of viewing the video and audio, audio-only, and video-only ties in the current configuration.

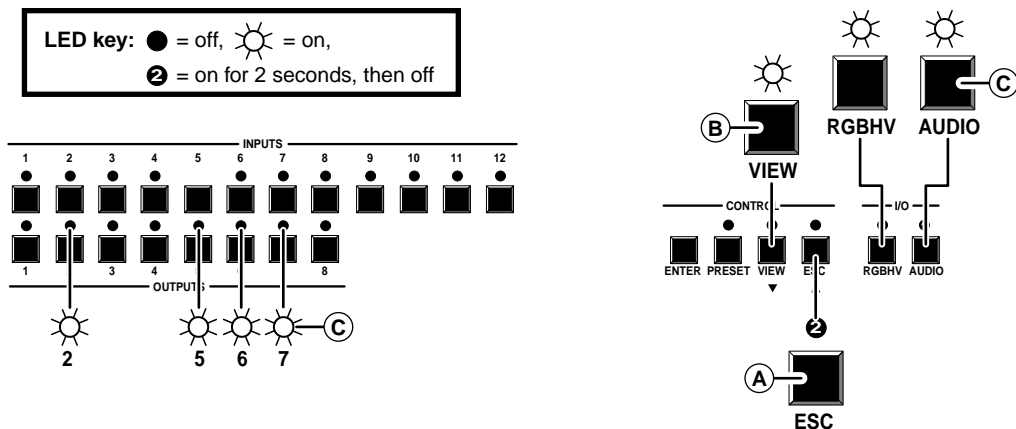


Figure 23 — Example 4: Viewing the current configuration, no input selected

NOTE Example 4 shows the process of viewing the current configuration after the steps in Examples 1, 2, and 3 have been performed.

- (A) Press and release the Esc button. The Esc LED turns on for approximately 2 seconds and turns off.
- (B) Press and release the View button to enter view-only mode. The View LED lights.
- (C) If necessary to select both video and audio for viewing, press and release the RGBHV and Audio buttons until the RGBHV LED and Audio LED light. With no input LED selected, all output LEDs that have no established ties light.
- (D) Press and release the input 5 button (figure 24). The input 5 LED lights.
If ties are established for input 5, all output LEDs toggle; outputs with no ties turn off and the LEDs associated with all outputs tied to input 5 (audio, video, or audio and video ties) light. If no ties are established for input 5, all output LEDs turn off.

If audio is broken away, the Audio LED blinks.

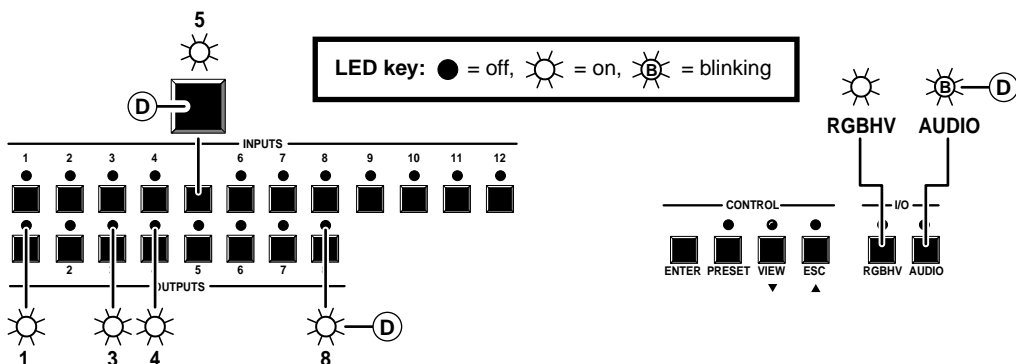


Figure 24 — Example 4d: Viewing the current configuration, video and audio

NOTE A set of ties can also be viewed by selecting a tied output. To demonstrate this, note the number of a lit output LED and press and release the output button for an unlit (untied) output LED. Observe that all of the untied outputs light.

Operation, cont'd

Then press the output button for the output LED noted previously and observe that the selected output LED, the tied input LED (input 5), and the output LEDs light for all of the outputs that are tied to the input.

- (E) Press and release the RGBHV button to toggle the Video LED off (figure 25). If audio is broken away, the Audio LED stops blinking and lights.

If audio ties are established for input 5, the output LEDs for all audio outputs tied to input 5 light. If no ties are established for input 5, all output LEDs turn off.

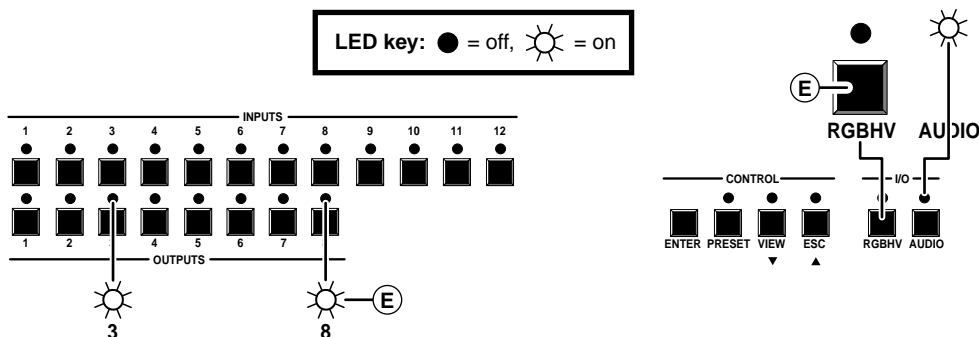


Figure 25 — Example 4e: Viewing the current configuration, audio-only

- (F) Press and release the RGBHV and Audio buttons to toggle the Video LED on and the Audio LED off (figure 26).

If video ties are established for input 5, the output LEDs for all video outputs tied to input 5 light. If no ties are established for input 5, all output LEDs turn off.

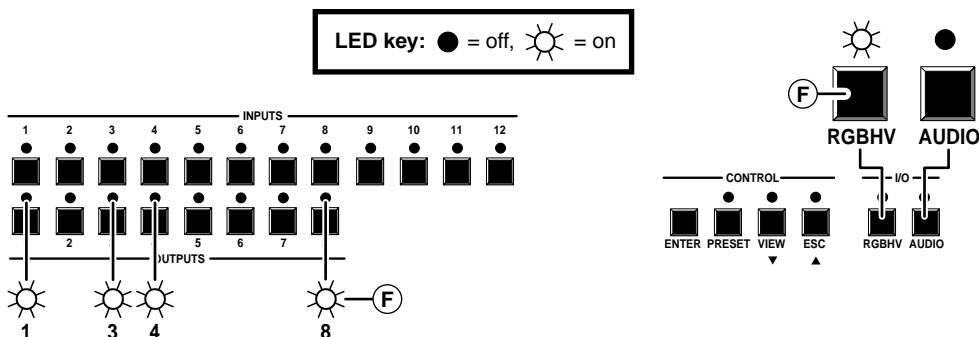


Figure 26 — Example 4f: Viewing the current configuration, video-only

Using presets

The current configuration (configuration 0) can be saved as a preset in any one of 12 preset memory addresses (CrossPoint 84, 88, 124, and 128) or 16 preset memory addresses (CrossPoint 168 and 1616). Each CrossPoint switcher has as many presets as input buttons.

- NOTE**
1. Only the audio and video ties are stored and recalled; audio gain settings are not saved, and do not change when a preset is recalled.
 2. Presets cannot be viewed from the front panel unless recalled as the current configuration. Presets can be viewed using Extron's Windows-based control program, see chapter 5, *Matrix Software*, for more details.

3. The current configuration and all presets are stored in non-volatile memory. When power is removed and restored, the current configuration is still active and all presets are retained.
4. When a preset is recalled, it replaces the current configuration, which is lost unless it is also stored as a preset. The recalled preset overwrites all of the current configuration ties in favor of the preset configuration ties.

Example 5: Save a preset

Refer to figure 27 and the following steps for an example of saving the current configuration as a preset.

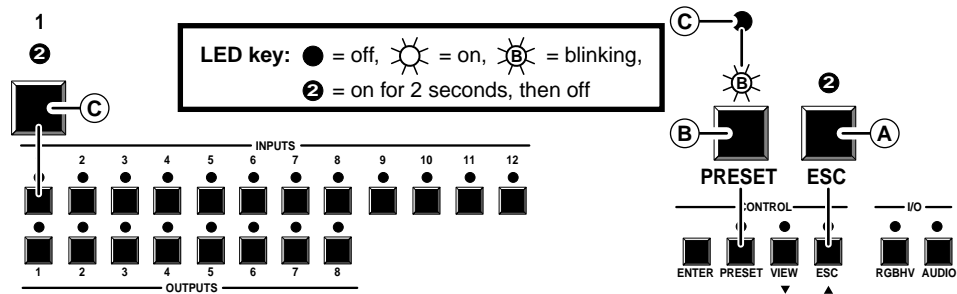


Figure 27 — Example 5: Saving the current configuration as preset 1

- (A) Press and release the Esc button. The Esc LED turns on for approximately 2 seconds and turns off.
- (B) Press and **hold** the Preset button for approximately 2 seconds until the Preset LED begins to blink, then release the Preset button.
- (C) Press and release the input 1 button. The input 1 LED turns on for approximately 2 seconds and turns off. The Preset LED turns off.

Example 6: Recall a preset

Refer to figure 28 and the following steps for an example of recalling the current configuration as a preset.

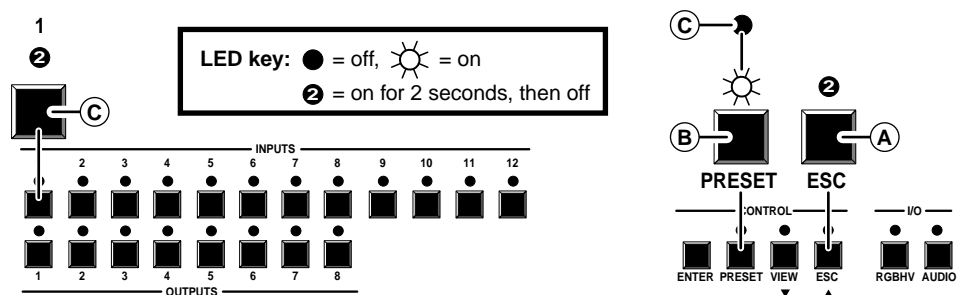


Figure 28 — Example 6: Recalling preset 1

- (A) Press and release the Esc button. The Esc LED turns on for approximately 2 seconds and turns off.
- (B) Press and release the Preset button. The Preset LED lights.
- (C) Press and release the input 1 button. The input 1 LED turns on for approximately 2 seconds and turns off. The Preset LED turns off. The configuration stored in memory location 1 is now the current configuration and can be viewed in the view-only mode (Example 4).

Operation, cont'd

Viewing and adjusting the audio level (HVA models only)

On HVA models, the audio level of each input can be displayed and adjusted through a range of -15dB to +9dB to ensure that there is no noticeable volume difference among sources. The audio level can be adjusted from the front panel or by using Extron's Windows-based control program.

1. Press and **hold** the Audio button until the Preset LED begins to blink, then release the Audio button.
2. Press and release an input button to select an input. The audio level for the selected input is displayed in the output LEDs and the polarity (+ or -) is displayed in the View or Esc LEDs.
3. Press and release the Esc (▲) and View (▼) buttons to increase and decrease the audio level.
4. Press and release the Audio button to exit the audio display and adjust mode. The Audio LED stops blinking and turns off.

- NOTE**
1. There is one audio level setting per input. The audio level setting is shared by the left and right audio inputs.
 2. The audio level settings are stored in non-volatile memory. When power is removed and restored, the audio level settings are retained.

Example 7: View and adjust an audio level

Refer to figure 29, figure 31, and the following steps for an example of viewing and adjusting the audio level. Audio gain and attenuation is displayed differently on the CrossPoint 168 and 1616, but the steps for displaying the value are the same. For this reason, figure 30 and figure 32 show the indications displayed on the CrossPoint 168 and 1616 without duplicating all of the actions shown in figure 29 and figure 31.

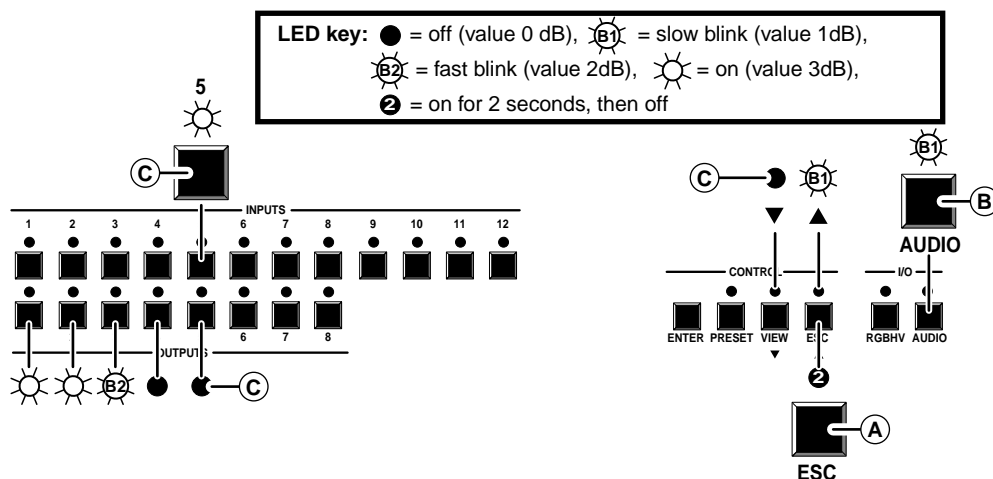


Figure 29 — Example 7: Viewing the audio level, CrossPoint 84, 88, 124, and 128

- (A) Press and release the Esc button. The Esc LED turns on for approximately 2 seconds and turns off.
- (B) Press and **hold** the Audio button for approximately 2 seconds until the Audio LED begins to blink, then release the Audio button.
- (C) Press and release the input 5 button. The input 5 LED lights. The audio level for the selected input is displayed in the output LEDs. The polarity is indicated by either the Esc (▲) or View (▼) LED blinking.

On the CrossPoint 84, 88, 124, and 128, each output LED indicates 1dB when blinking slowly, 2dB when blinking quickly, and 3dB when lit. On the CrossPoint 168 and 1616, each output LED indicates 1dB when lit.

The blinking Esc (▲) LED indicates a positive (gain) level. The blinking View (▼) LED indicates a negative (attenuation) level.

Figure 29 and figure 30 show an audio level of +8dB displayed in the output LEDs on the two different CrossPoint front panels.

CrossPoint 84, 88, 124, 128

| dB | Output LED | | | | | View Esc |
|-----|------------|------|------|------|------|----------|
| | 1 | 2 | 3 | 4 | 5 | ▼ ▲ |
| +9 | ● | ● | ● | ● | ● | ● (B) ▲ |
| +8 | ● | ● | (B2) | ● | ● | ● (B) ▲ |
| +7 | ● | ● | (B1) | ● | ● | ● (B) ▲ |
| +6 | ● | ● | ● | ● | ● | ● (B) ▲ |
| +5 | ● | (B2) | ● | ● | ● | ● (B) ▲ |
| +4 | ● | (B1) | ● | ● | ● | ● (B) ▲ |
| +3 | ● | ● | ● | ● | ● | ● (B) ▲ |
| +2 | (B2) | ● | ● | ● | ● | ● (B) ▲ |
| +1 | (B1) | ● | ● | ● | ● | ● (B) ▲ |
| 0 | ● | ● | ● | ● | ● | ● (B) ▲ |
| -1 | (B1) | ● | ● | ● | ● | (B) ● |
| -2 | (B2) | ● | ● | ● | ● | (B) ● |
| -3 | ● | ● | ● | ● | ● | (B) ● |
| -4 | ● | (B1) | ● | ● | ● | (B) ● |
| -5 | ● | (B2) | ● | ● | ● | (B) ● |
| -6 | ● | ● | ● | ● | ● | (B) ● |
| -7 | ● | ● | (B1) | ● | ● | (B) ● |
| -8 | ● | ● | (B2) | ● | ● | (B) ● |
| -9 | ● | ● | ● | ● | ● | (B) ● |
| -10 | ● | ● | ● | (B1) | ● | (B) ● |
| -11 | ● | ● | ● | (B2) | ● | (B) ● |
| -12 | ● | ● | ● | ● | (B1) | (B) ● |
| -13 | ● | ● | ● | ● | (B1) | (B) ● |
| -14 | ● | ● | ● | ● | (B2) | (B) ● |
| -15 | ● | ● | ● | ● | ● | (B) ● |

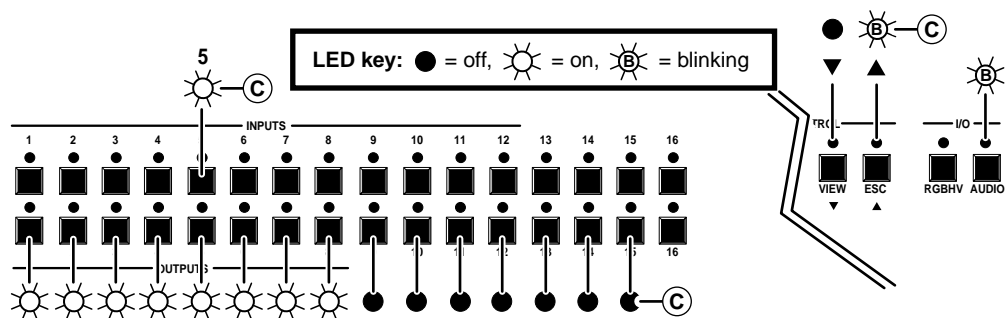


Figure 30 — +8dB displayed, CrossPoint 168 and 1616

- (D) Press and release the View (▼) button once to decrease the audio level displayed in the output LEDs by 1dB. Press and release the View (▼) button several more times to decrease the audio level displayed in the output LEDs by an additional 1dB per button push. Note the output LED, View LED, and Esc LED changes that occur each time the View (▼) LED is pressed and released. Figure 31 and figure 32 show the result of pressing the View (▼) button a total of 9 times. Both figures show an audio level of -1dB. Note that

Operation, cont'd

the Esc (▲) LED has turned off and that the View (▼) LED is blinking to indicate a negative level.

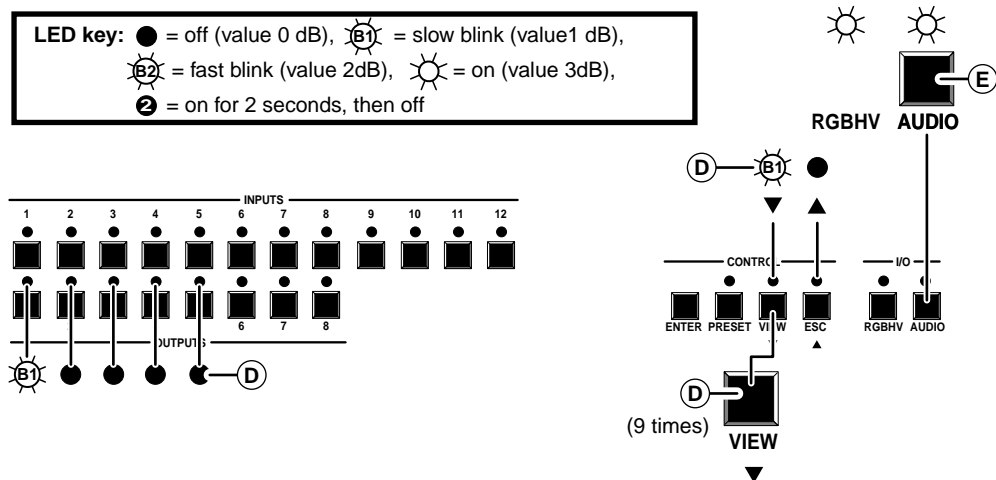


Figure 31 — Example 7d: Adjusting the audio level, CrossPoint 84, 88, 124, and 128

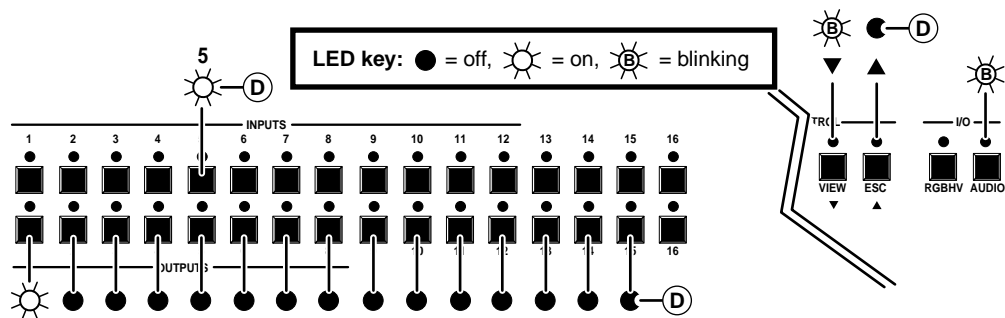


Figure 32 — -1dB displayed, CrossPoint 168 and CrossPoint 1616

NOTE If another input button is pressed and released, the level value for the current input is saved and level value for the newly selected input is displayed.

(E) Press and release the Audio button. The Audio LED stops blinking and the View (▼) LED (if lit), the Esc (▲) LED (if lit), the selected input LED, and all output LEDs turn off.

NOTE Both the RGBHV and Audio LEDs light.

Powering up the switcher

All CrossPoint models perform a self-test when power is applied. The way the error message is displayed varies depending on the model of the switcher.

Power-up sequence (CrossPoint 84, 88, 124, and 128)

When power is applied to the switcher by plugging in the AC connector, the switcher performs a self-test. The self-test sequence is as follows:

1. The self-test tests the microprocessor and RAM.

If the test detects an error, the error message is displayed by the Power LED. See "Power-up errors (CrossPoint 84, 88, 124, and 128)" below if the Power LED blinks continuously.

NOTE In steps 2 and 3 the Audio LED blinks and lights for HVA models only.

-
2. The LED test is performed. Ensure that all LEDs blink, with the exception of the Audio LED for HV models.
 3. The Power, RGBHV, and Audio LEDs turn on. The switcher is now ready to operate.

Power-up errors (CrossPoint 84, 88, 124, and 128)

If an error occurs during the power-up sequence, the Power LED blinks a sequence that indicates the error code as follows:

Power LED blinks *once*, pauses, blinks *once* — Error in primary RAM

Call the Extron S³ customer support hotline.

Power LED blinks *twice*, pauses, blinks *twice* — Error in secondary RAM

Call the Extron S³ customer support hotline.

Power LED blinks *three times*, pauses, blinks *three times* — Error in PROM

Call the Extron S³ customer support hotline.

Power LED blinks *four times*, pauses, blinks *four times* — Jumper error

The front panel board is jumpered incorrectly. See “Setting the front panel jumper” in Appendix B, Reference Information.

Power-up sequence (CrossPoint 168 and 1616)

When power is applied to the switcher by plugging in the AC connector, the switcher performs a self-test. The self-test sequence is as follows:

1. The self-test tests the following items: microprocessor, primary RAM, PROM, current configuration memory, preset memory, and jumper setup.

If the test detects an error, all input LEDs blink continuously and the output LEDs, control LEDs, and I/O LEDs identify the error type. See “Power-up errors (CrossPoint 168 and 1616)” below if the input LEDs blink continuously.

NOTE *In steps 2 and 3, the Audio LED blinks and turns on for HVA models only.*

2. The LED test is performed. Ensure that all LEDs blink, with the exception of the Audio LED for HV models.
3. The RGBHV and Audio LEDs turn on. The switcher is now ready to operate.

Power-up errors (CrossPoint 168 and 1616)

If an error occurs during the power-up sequence tests, all input LEDs blink continuously, and the error type is indicated by other front panel LEDs as follows:

Output LEDs 1 – 8 blink — Primary RAM test failure

The switcher locks up. Remove AC power. Call the Extron S³ customer support hotline.

Output LEDs 9 – 16 blink — PROM test failure

The switcher locks up. Remove AC power. Call the Extron S³ customer support hotline.

RGBHV and Audio LEDs blink — Current configuration memory test failure

The current configuration memory is cleared, and the switcher continues to indicate the error while waiting for user intervention. Pressing any front panel button causes testing to resume, however, configuration memory must be reloaded. Call the Extron S³ customer support hotline if this problem persists.

Preset, View and Esc LEDs blink — Preset memory test failure

All preset memory and audio gain settings are cleared, and the switcher continues to indicate the error while waiting for user intervention. Pressing any front panel button causes testing to resume, however, preset memory

Operation, cont'd

needs to be reloaded. Call the Extron S³ customer support hotline if this problem persists.

Preset, View, Esc, Video, Audio, and output #1 LEDs are all off — Jumper error

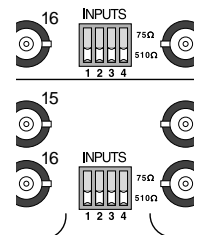
The front panel board is jumpered incorrectly. See “Setting the front panel jumper” in Appendix B, Reference Information.

System reset

To reset the switcher to the factory default settings, press and hold the Esc button on the front panel while AC power is being applied. Continue to hold the Esc button until the power up sequence is completed (all LEDs turn off, the Video and Audio LEDs turn on, the Esc LED blinks, and the Power LED (if equipped) turns on). System reset clears all ties and presets and sets all audio gain levels to unity gain (+0dB).

Rear Panel Controls

The CrossPoint 168 and 1616 have sync termination switches on the rear panel for inputs 1 through 4. The switches provide a way to condition non-TTL sync levels greater than 5 Vp-p, enabling the sync to be properly passed from input to selected output(s). The CrossPoints have two sets of sync termination switches; one for horizontal or combined sync and a second set for vertical sync. Each switch provides the option of selecting either 510 ohms or 75 ohms. The 75 ohms position is required only for an input with non-TTL sync, greater than 5V p-p. The normal position is 510 ohms.



NOTE An input that produces an out of sync display, a display that is rolling vertically and/or tearing horizontally, could indicate a non-TTL sync input. A device is known to output non-TTL sync levels (greater than 5V p-p) should be connected to one of the first four inputs, and the termination switches for that input should be set to the 75 ohm position. If you're not sure, check the specifications in the user's manual for the input device.

Worksheets

Rather than trying to remember the configuration for each preset, use worksheets to record this information. Make copies of the blank worksheets on page 3-19 and use one for each preset configuration. The forms accommodate all of the CrossPoint models. Cross off all unused or inactive inputs and outputs. Use different colors for video and audio.

Worksheet example 1: Entering system equipment

Figure 33 shows a worksheet for a CrossPoint 128 HVA in a fictional organization with the system hardware annotated. Inputs 10 and 11 and output 7 have no connections in this organization, so they have been crossed out on the worksheet. On this example, preset 3 is used for the weekly status meeting. Choose your own method of notation.

| Input sources | | | | | | | | | | | | |
|---------------------------------|--------------|-----------------|-----------------|---------------|---------------------------------|---------------------------------|-------------------|-----------------------|----|----|------------|----|
| Camera/ mic - Main Podium | Camera #2 | PC 1 RGB 202 | PC 2 RGB 202 | Audio Tape | Classroom #1 VCR (Lancia) | Classroom #2 VCR (Lancia) | Laptop RGB 202 | Rack DVD (DVS 100) | X | X | VTG 200 | X |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |

| | | | | | | | | | | |
|-------------------|--------------------|-------------------|-----------------------|-----------------------|-----------------|---|-----|---|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Main hall FP 1 | Main hall FP #2 | Podium monitor | Sound system #1 | Sound system #2 | VCR (VSC 75) | X | ADA | X | X | X |

Output destinations

Preset # 3 Title: Weekly status mtg Video: Audio:

Fill in the preset number and use colors, or dashes, etc. to make connecting lines.
Indicate if the configuration is for Video, Audio, or both.

Figure 33 — Worksheet example 1: System equipment

Worksheet example 2: Drawing ties

Figure 34 continues from worksheet example 1 by showing the video and audio ties that make up the configuration of preset 3, a solid ink line shows video ties, and a dashed pencil line shows the audio ties. In this example, the image of the presenter, from the main podium camera (input 1), is displayed in the main hall (output 1), to the overflow crowd in the conference room (output 4), and in the lobby (output 8). The image is also tied to the VCR (output 6). The presenter has a presentation on her laptop computer (input 4) that is displayed in the main hall (output 2) and locally on the podium (output 3). The audio from her microphone (input 3) is played in the hall (output 1), in the conference room (output 4), and sent to the VCR. Classical music from the CD player (input 5) is being played in the background in the main hall on sound system #2 (output 5), and in the lobby (output 8).

| Input sources | | | | | | | | | | | | |
|--------------------------|--------------|---------------|-------------------|-------------|---------------------------------|---------------------------------|-----------------|-----------------------|----|----|------------|----|
| Camera Main Podium | Camera #2 | Podium mic | Laptop RGB 202 | Audio CD | Classroom #1 VCR (Lancia) | Classroom #2 VCR (Lancia) | PC 1 RGB 202 | Rack DVD (DVS 100) | X | X | VTG 200 | X |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |

| | | | | | | | | | | |
|-------------------|--------------------|-------------------|--------------|-----------------------|-----------------|---|------------------|---|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Main hall FP 1 | Main hall FP #2 | Podium monitor | Conf room | Sound system #2 | VCR (VSC 75) | X | Lobby monitor | X | X | X |

Output destinations

Preset # 3 Title: Weekly status mtg Video: Audio:

Fill in the preset number and use colors, or dashes, etc. to make connecting lines.
Indicate if the configuration is for Video, Audio, or both.

Figure 34 — Worksheet example 2: Status meeting configuration

Worksheet example 3: Test configuration

The A/V system in our fictional organization needs to be fine tuned on a regular basis. Figure 35 shows a typical test configuration, with an Extron video test generator (input 12) generating a test pattern to all monitors (outputs 1, 2, 3, 4, and 8). Sound checks are run from the CD player (input 5) to all audio systems (outputs 1, 2, 4, 5, and 8).

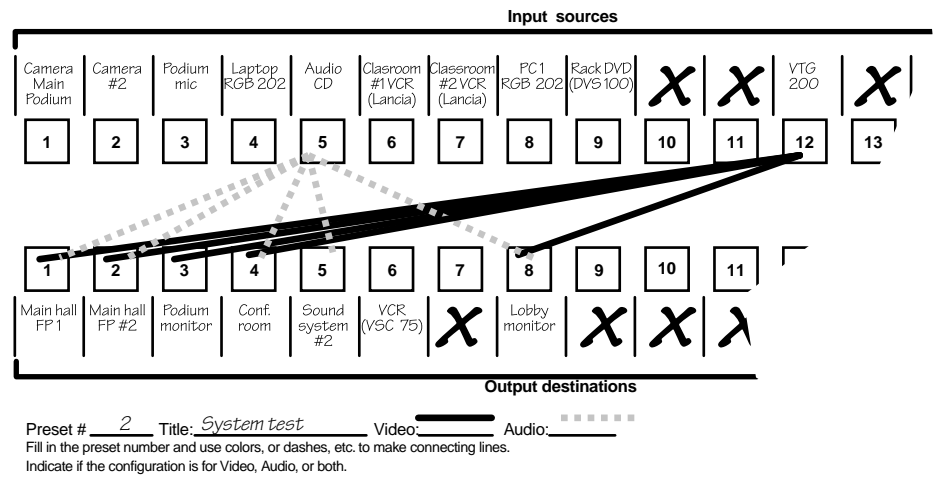


Figure 35 — Worksheet example 3: Test configuration

Matrix Switchers Configuration Worksheet

Input sources

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|

Output destinations

Preset # _____ Title: _____ Video: _____ Audio: _____
Fill in the preset number and use colors, or dashes, etc. to make connecting lines.
Indicate if the configuration is for Video, Audio, or both.

Operation, cont'd



CrossPoint Matrix Switchers

4

Chapter Four

Programmer's Guide

Host-to-Switcher Instructions

Switcher-Initiated Messages

Switcher Error Responses

Using the Command/Response Table

Command/Response Table

Programmer's Guide

The switcher's rear panel RS-232/RS-422 connector (figure 36) can be connected to the serial port output of a host device such as a computer or control system. This connection makes software control of the switcher possible.

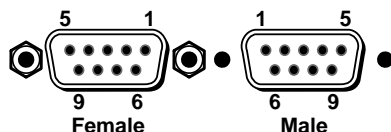


Figure 36 — RS-232/RS-422 connector pin arrangement

NOTE The CrossPoint Series Matrix Switchers are factory configured for RS-232 control. To use the switcher under RS-422 control, an internal cable must be moved. Refer to Appendix B for the procedure for moving the cable.

The RS-232/RS-422 connector on the CrossPoint Series switcher is a 9-pin D female connector with the following pin assignments.

| Pin | RS-232 | Function | RS-422 | Function |
|-----|--------|---------------|--------|-------------------|
| 1 | — | Not used | TX- | Transmit data (+) |
| 2 | TX | Transmit data | TX+ | Transmit data (-) |
| 3 | RX | Receive data | RX+ | Receive data (+) |
| 4 | — | Not used | RX- | Receive data (-) |
| 5 | Gnd | Signal ground | Gnd | Signal ground |
| 6 | — | Not used | — | Not used |
| 7 | — | Not used | — | Not used |
| 8 | — | Not used | — | Not used |
| 9 | — | Not used | — | Not used |

The protocol is 9600 baud, 8-bit, 1 stop bit, no parity, and no flow control.

Host-to-Switcher Instructions

The switcher accepts SIS (Simple Instruction Set) commands through the RS-232/RS-422 port. SIS commands consist of one or more characters per command field. They do not require any special characters to begin or end the command character sequence. Each switcher response to an SIS command ends with a carriage return and a line feed (CR/LF = ↵), which signals the end of the response character string. A string is one or more characters.

Switcher-Initiated Messages

When a local event such as a front panel operation occurs, the switcher responds by sending a message to the host. The switcher-initiated messages are listed below (underlined).

(C) Copyright 2000, Extron Electronics CrossPoint, Vx.xx ↵

The copyright message is initiated by the switcher when it is first powered on. Vx.xx is the firmware version number.

Reconfig ↵

The reconfig message is initiated by the switcher when a front panel operation has occurred, an audio gain adjustment has been completed, or a memory preset has been recalled.

RAM Test Failed ↵

ROM Checksum Failed ↵

EEPROM Reset (Presets/Attenuators) ↵

Serial EEPROM Reset (Current Settings) ↵

Invalid Jumpers ↵

If an error occurs during power-up, the switcher initiates one or more of the messages listed above.

RS-232-Overrun ↵

RS-232-Noise ↵

RS-232-Framing ↵

RS-232-Overflow ↵

If an RS-232 line problem occurs, the switcher initiates one of the messages listed above.

All Configuration Memory Cleared ↵

The memory cleared message is initiated by the switcher when a system reset has occurred. See “System reset” on page 3-16.

The switcher does not expect a response from the host, but, for example, the host program might request a new status.

Switcher Error Responses

When the switcher receives an SIS command and determines that it is valid, it performs the command and sends a response to the host device. If the switcher is unable to perform the command because the command is invalid or contains invalid parameters, the switcher returns an error response to the host. The error response codes are:

E01 — Invalid input channel number (too large)

E10 — Invalid command

E11 — Invalid preset number (too large)

E12 — Invalid output number (too large)

E13 — Invalid value (out of range)

E14 — Illegal command for this configuration

Using the Command/Response Table

The command/response table begins on the next page. Lower case letters are acceptable in the command field only where indicated. Symbols are used throughout the table to represent variables in the command/response fields. Command and response examples are shown throughout the table.

| ASCII to HEX Conversion Table | | | | | | | | | | | | | | | | Esc 1B | CR 0D | LF 0A |
|-------------------------------|------|------|------|-------|------|------|------|------|------|------|------|------|------|------|------|--------|-------|-------|
| · 20 | ! 21 | “ 22 | # 23 | \$ 24 | % 25 | & 26 | ' 27 | (28 |) 29 | * 2A | + 2B | , 2C | - 2D | 2E | / 2F | | | |
| 0 30 | 1 31 | 2 32 | 3 33 | 4 34 | 5 35 | 6 36 | 7 37 | 8 38 | 9 39 | : 3A | ; 3B | < 3C | = 3D | > 3E | ? 3F | | | |
| @ 40 | A 41 | B 42 | C 43 | D 44 | E 45 | F 46 | G 47 | H 48 | I 49 | J 4A | K 4B | L 4C | M 4D | N 4E | O 4F | | | |
| P 50 | Q 51 | R 52 | S 53 | T 54 | U 55 | V 56 | W 57 | X 58 | Y 59 | Z 5A | [5B | \ 5C |] 5D | ^ 5E | _ 5F | | | |
| · 60 | a 61 | b 62 | c 63 | d 64 | e 65 | f 66 | g 67 | h 68 | i 69 | j 6A | k 6B | l 6C | m 6D | n 6E | o 6F | | | |
| p 70 | q 71 | r 72 | s 73 | t 74 | u 75 | v 76 | w 77 | x 78 | y 79 | z 7A | { 7B | 7C | } | 7D | ~ 7E | DEL 7F | | |

Programmer's Guide, cont'd

Command/Response Table

Symbol Definitions:

| | | |
|------|--|--|
| ↵ | = Carriage return/line feed, | |
| • | = space | |
| [x1] | = Input number | 1 – 8 (CrossPoint 84, 88); 1 – 12 (CrossPoint 124, 128); 1 – 16 (CrossPoint 168, 1616) |
| [x2] | = Output number | 1 – 4 (CrossPoint 84, 124); 1 – 8 (CrossPoint 88, 128, 168); 1 – 16 (CrossPoint 1616) |
| [x3] | = Input number (for tie) | 0 – maximum number of inputs (0=muted) |
| [x4] | = Audio gain | 0 – 9 (1dB/step) |
| [x5] | = Audio attenuation | 1 – 15 (1dB/step) |
| [x6] | = Numeric dB value | -15 to +9 |
| [x7] | = Preset number (0 = current configuration) | 0 – 12 (CrossPoint 84, 88, 124, 128); 0 – 16 (CrossPoint 168, 1616) |
| [x8] | = Preset number | 1 – 16 (CrossPoint 84, 88, 124, 128); 1 – 16 (CrossPoint 168, 1616) |
| [x9] | = Controller software version number to second decimal place | |

| Command Description | Host Code | CrossPoint-to-Host Response | Notes |
|---|--------------------------|--|--|
| Tie input [x3] to output [x2], audio & video Example: | [x3] * [x2] ! 1*3! | OUT[x2]•IN[x3]•ALL↵ OUT3 •IN1•ALL↵ | Tie input #1 A & V to output #3 |
| Tie input [x3] to output [x2], audio only Example: | [x3] * [x2] \$ 12*8\$ | OUT[x2] •IN[x3] AUD↵ OUT8•IN12•AUD↵ | Tie input #12 audio to output #8 |
| Tie input [x3] to output [x2], video only Example: | [x3] * [x2] % 7*4% | OUT[x2] IN[x3] VID↵ OUT4•IN7•VID↵ | Tie input #7 video to output #4 |
| Set gain for audio input [x1] to +dB value [x4] Example: | [x1] * [x4] G 1*2G | IN[x1]•AUD=[x6]↵ IN1•AUD=+2↵ | Set input #1 audio gain to +2dB |
| Set attenuation for audio input [x1] to -dB value [x5] Example: | [x1] * [x5] g 7*10g | IN[x1]•AUD=[x6]↵ IN7•AUD=-10↵ | Set input #7 audio gain to -10dB |
| Save current configuration as preset Example: | [x8] , 9, | SPRE[x8]↵ SPRE9↵ | Command character is a comma Save current ties as preset #9 |
| Recall a preset Example: | [x8] . 5. | RPRE[x8]↵ RPRE5↵ | Command character is a period Recall preset #5; preset #5 becomes the current configuration |
| Information request Example: | I/i i | V[x1]X[x2]•A[x1]X[x2]•↵ V16X16•A16X16•↵ | V[x1]X[x2]= Vid. size, A[x1]X[x2]= Aud. Size 16 Video & 16 Audio inputs and outputs |
| Request part number Example: | N/n N | Nxx-xxx-xx↵ N60-242-04↵ | See Appendix B for PNs CrossPoint 1616HVA part # is 60-242-04 |
| Query software version Example: | Q/q Q | QVER[x9]↵ QVER2.00↵ | |
| View video output tie Example: | V/v [x2] % v7% | OUT[x2]•IN[x3]•VID↵ OUT7•IN2•VID↵ | Output 7 video tied to Input 2 video |
| View audio output tie Example: | V/v [x2] \$ V3\$ | OUT[x2]•IN[x3]•AUD↵ OUT3•IN6•AUD↵ | Output 3 audio tied to Input 6 audio |

| | | | |
|--|-------------------|---|--|
| View gain for input | V/v [x1] G | IN [x1] •AUD= [x6] ↵ | |
| Example: | v4G | IN4•AUD=-2↵ | Gain for Input #4 is -2dB |
| View preset configuration | V/v [x7] . | [x3] •(16 total)• [x3] •VID• [x3] •(16 total)• [x3] •AUD↵ (Each position is an output, left=#1, right=#16) | Preset #0 is current configuration |
| Example ¹ : | V0. | 8•8•8•8•14•9•11•16•8•1•1•1•8•8•8•8•VID | |
| Response (video & audio) normally reported on the same line ¹ | | •5•5•5•5•14•9•11•16•8•1•1•1•5•5•5•5•AUD↵ | |
| Video = Input (I) #8 is tied to Outputs (O) #1-4 & 13-16; I#14 — O#5; I#9 — O#6; I#11 — O#7; I#16 — O#8; I#8 — O#9; I#1 — O#10-12. | | | |
| Audio = The same as video except that Input #5 is tied to Outputs #1-4 & 13-16. | | | |
| ¹ HV models will not display audio configuration | | | |
| System reset (CrossPoint 168 and 1616 only) | [Esc] Z | Zap↵ | Clears all ties and presets, and resets all audio gains to 0dB |



CrossPoint Matrix Switchers

Chapter Five

Matrix Software

Matrix Switchers Control Program

Button-Label Generator

Matrix Software

Two software programs accompany the CrossPoint Series switchers:

- The Extron Matrix Switchers Control Program (Extron part number 29-015-01), which communicates with the switcher via the RS-232/RS-422 port, provides an easy way for you to set up ties and sets of ties.

NOTE *If your CrossPoint Series switcher was previously set up for RS-232, and your computer comm port uses RS-422, you must change the switcher cabling to match the computer interface. See page B-3 for details.*

- The Extron Button-Label Generator (Extron part number 29-044-01), which allows you to design and print labels for the CrossPoint front panel buttons.

Both programs are compatible with Windows 3.1, 3.11, 95/98, and NT.

This chapter describes both programs.

Matrix Switchers Control Program

Installing the software

The program is contained on a single 3.5-inch diskette, and you can run it from the floppy drive. However, it is usually more convenient to load and run the program from the hard drive.

To install the program from the floppy disk to the hard drive, run SETUP.EXE from the floppy disk and follow the instructions that appear on the screen. The program occupies approximately 1 MB (megabyte) of hard-drive space.

By default, the Windows installation creates a C:\MTRX50 directory, and it places two icons (Matrix Switcher Control Program and Matrix Switcher Help) into a group or folder named "Extron Electronics".

NOTE *The program was designed to control most Extron matrix switchers, but its operation is limited to the features and configuration of your CrossPoint Series switcher.*

Using the software

Overview

This section is an overview of the Extron Matrix Control Program. Online help contains additional information. See "Using the help system" for details.

1. To run the Matrix Switchers Control Program, double-click on the Matrix Switchers Control Program icon (shown at left) in the Extron Electronics group or folder.



2. Click on the comm port that is connected to the RS-232/RS-422 port of the switcher. To set up the software without attaching the switcher to the computer, see "Using emulation mode" on page 5-4.

The Extron Matrix Switchers Control Program window (figure 37) displays the current configuration of the attached matrix.

3. To set up audio in follow mode (audio and video have the same tie configuration), select the Group box at the bottom of the window. To set up audio in breakaway mode (audio and video have different tie configurations), deselect the Group box.

4. To make the control program easier to use, assign a device icon to each input and output. Click on a box that represents an input or output, and drag the desired icon onto the box from the icon palette that appears.
5. To create a tie, drag an input box to one or more output boxes. To remove a tie, drag the output box to its tied input box.

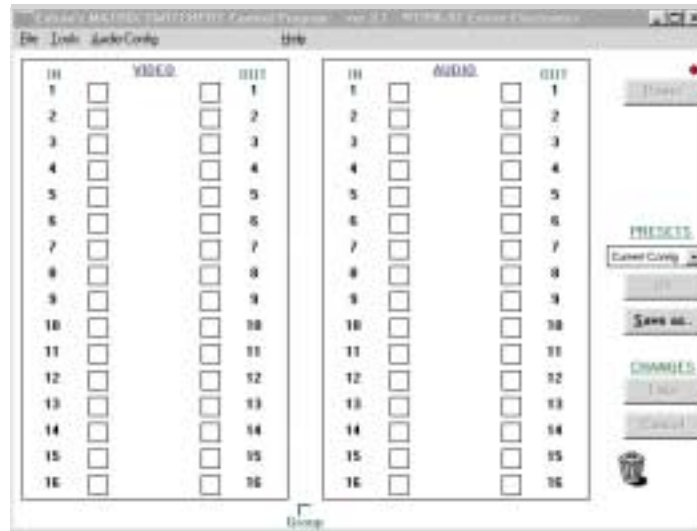


Figure 37 — Extron Matrix Switchers Control Program window (blank)

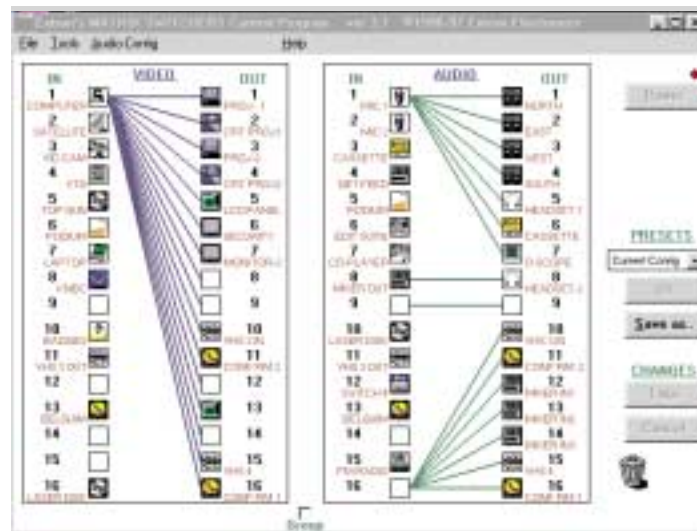


Figure 38 — Sample program window (complete)

Windows buttons

The buttons on the right side of the window perform the following functions:

Power — Unavailable for CrossPoint Series switchers, because the switcher power cannot be controlled via software.

Presets menu — Displays a list of up to 16 presets. You can select a preset from the list to display it in the window.

Go — Activates the selected preset as the current configuration.

Matrix Software, cont'd

Save as — Allows the current set of ties to be saved as a preset. Enter the preset number when prompted to do so.

Changes – Take — Allows you to save to file any changes made to the displayed configuration.

Changes – Cancel — Returns to the previous screen, undoing any changes you have made.

Windows menus

File menu —

Save matrix settings as — Saves a complete set of up to 16 presets, plus the last active setting (preset #0), to a file. Saved settings include audio gain settings (if specified), assigned icons, and icon captions.

Restore matrix settings from — Loads and activates a previously saved setting file.

Save this-session's settings — Saves the current assigned icons and icon captions.

Restore last-session's settings — Loads the icons and icon captions that were saved during the last session. The last time you exited the program, if you clicked Yes to save the sessions changes to disk, the ties from the last session are also loaded.

Print tie map — Prints the tie set that is displayed on the screen.

Exit — Closes the Extron Matrix Control Program.

Tools menu —

Assign device icons — Displays the complete set of input and output device icons. You can drag any of these icons to the input and output boxes.

Edit device palette — Allows you to add your own device icon graphics.

Name presets — Allows you to assign a name to each of the 16 memory presets.

Show RS-232 strings — Displays the ASCII tie commands that are used by the current configuration. You can refer to these for RS-232 programming.

Initialize — Initializes and clears any of the following: ties, presets, audio configuration, preset titles, icon names, and icons.

Immediate changes — Causes changes to take effect immediately.

Hold/verify changes — Delays implementation of changes until the Changes – Take button is pressed.

Audio-config — Displays the audio gain level settings and allows you to change them.

Using emulation mode

Emulation mode allows you to set up the software without attaching the switcher to the computer. To use emulation mode, do the following:

1. Start the program as described in step 1 on page 5-2.
2. Choose Emulate, and click OK.
3. Choose an emulation file to open, and click OK. The file DEMO.MTX provides a sample of a completed matrix setup. The file NEW.INI provides a blank setup to get you started.

-
4. Enter the file name under which you want to save any changes to the file, and click OK.
 5. Select the number of video boards, audio boards, and matrix model for which you are preparing a configuration, and click OK.
 6. Continue using the program as described in steps 3 through 5, beginning on page 5-2.

Using the help system

For information about program features, you can access the help program in any of the following ways:

- From the Extron Electronics program folder or group, double-click on the Matrix Switcher Help icon (shown at left).



MATRIX Switcher
Help

- From within the Matrix Switcher Control Program, click on the Help menu on the main screen.
- From within the Matrix Switcher Control Program, press the F1 key.

Button-Label Generator

Installing the software

The program is contained on a single 3.5-inch diskette, and you can run it from the floppy drive. However, it is usually more convenient to load and run the program from the hard drive.

To install the program from the floppy disk to the hard drive, run SETUP.EXE from the floppy disk and follow the instructions that appear on the screen. The program occupies approximately 0.5 MB of hard-drive space.

By default, the Windows installation creates a C:\BUTTONS directory, and it will place an icon (Button-Label Generator) into a group or folder named "Extron Electronics".

Using the software

1. To run the Button-Label Generator program, double-click on the Button-Label Generator icon (shown at left) in the Extron Electronics group or folder, and click OK when prompted.



Button-Label
Generator

2. Under System selection, choose Mtrx50/MAV/XPoint. The Extron's Button-Label Generator window appears (figure 39).
3. Using normal Windows controls, you can create and print labels that can be placed in the label windows on the front panel of the switcher.

For information about using the program, you can access online help by clicking on the Help menu on the main screen and choosing Show Help.

You can also see an example of a completed Extron's Button-Label Generator window by clicking on the Help menu on the main screen, choosing Show Help, and clicking on the Load Demo button.

Matrix Software, cont'd

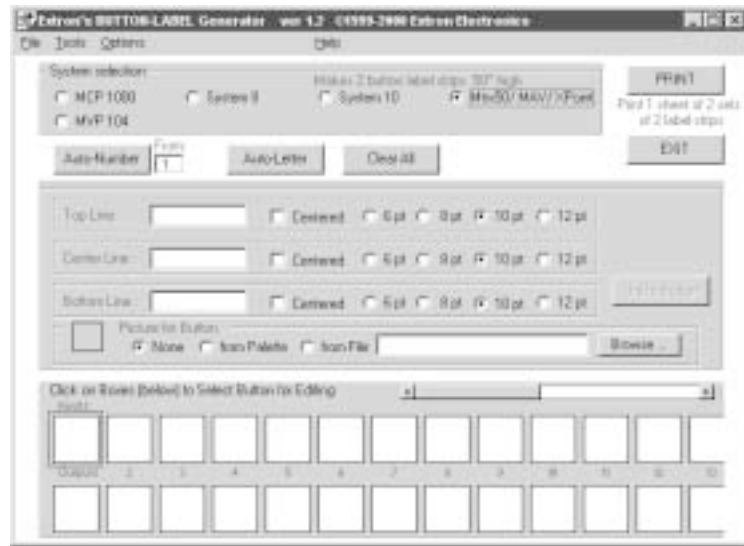


Figure 39 — Extron's Button-Label Generator window



CrossPoint Matrix Switchers

Appendix A

Specifications

Specifications

Part Numbers

Specifications

Video input

| | |
|-------------------------------|--|
| Number/signal type | 8, 12, or 16 RGBHV, RGBS, RGSB, RsGsBs, HDTV, component video, S-video, composite video |
| Connectors | 84/88 series 8 x 5 BNC female 124/128 series 12 x 5 BNC female 168/1616 series 16 x 5 BNC female |
| Nominal level | Analog 1.0V p-p |
| Minimum/maximum level(s) | Analog 0.5V to 2.0V p-p |
| Impedance | 75 ohms |
| Return loss | -30dB @ 5 MHz |
| Maximum DC offset | 1.5V |

Video throughput

| | |
|------------------------------|--|
| Routing | 84 series 8 x 4 matrix 88 series 8 x 8 matrix 124 series 12 x 4 matrix 128 series 12 x 8 matrix 168 series 16 x 8 matrix 1616 series 16 x 16 matrix |
| Gain | Unity |
| Bandwidth | |
| CrossPoint 84/88/124/128 ... | Minimum 200 MHz (-3dB), fully loaded Maximum 230 MHz (-3dB), fully loaded 0 - 10 MHz no more than +0.1dB to -0.1dB 0 - 130 MHz no more than +4dB to -0.5dB |
| CrossPoint 168/1616 | Minimum 200 MHz (-3dB), fully loaded Maximum 210 MHz (-3dB), fully loaded 0 - 10 MHz no more than +0.1dB to -0.1dB 0 - 130 MHz no more than +0.8dB to -0.5dB |
| Crosstalk | -50dB @ 5 MHz, -45dB @ 10 MHz |
| Switching speed | 200 nS (max.) |

Video output

| | |
|-----------------------------|--|
| Number/signal type | 4, 8, or 16 RGBHV, RGBS, RGSB, RsGsBs, HDTV, component video, S-video, composite video |
| Connectors | 84/124 series 4 x 5 BNC female 88/128 series 8 x 5 BNC female 168 series 8 x 5 BNC female 1616 series 16 x 5 BNC female |
| Nominal level | 1V p-p |
| Minimum/maximum level | 2V p-p |
| Impedance | 75 ohms |
| Return loss | -30dB @ 5 MHz |
| DC offset | ±5mV maximum |

Sync

| | |
|--------------------|-----------------------------------|
| Input type | RGBHV, RGBS, RGSB, RsGsBs |
| Output type | RGBHV, RGBS, RGSB, RsGsBs |
| Input level | 0.5V to 5.0V p-p, 4.0V p-p normal |
| Output level | AGC to TTL 4V to 5V p-p |

| | |
|----------------------------|--|
| Input impedance | |
| 84/88/124/128 Series | All inputs 510 ohms |
| 168/1616 Series | Inputs 1 to 4 75 or 510 ohms, switchable |
| | Inputs 5 to 16 510 ohms |
| Output impedance | 75 ohms |
| Polarity | Positive or negative (follows input) |

Audio input — audio models only

| | |
|-----------------------------|--|
| Number/signal type | 8, 12, or 16 stereo, balanced/unbalanced |
| Connectors | 8, 12, or 16 3.5 mm captive screw terminals, 5 pole |
| Impedance | 12.5 kohm, DC coupled, balanced |
| | 25 kohm, DC coupled, unbalanced |
| Maximum input level | +19.5dBu, (balanced or unbalanced) @ stated %THD+N |
| Input gain adjustment | -15dB to +9dB, adjustable per input by RS-232 or front panel |
| CMRR | >75dB @ 20 Hz to 20 kHz |

Audio throughput — audio models only

| | |
|---------------------------------|---|
| Routing | 84 series 8 x 4 stereo matrix |
| | 88 series 8 x 8 stereo matrix |
| | 124 series 12 x 4 stereo matrix |
| | 128 series 12 x 8 stereo matrix |
| | 168 series 16 x 8 stereo matrix |
| | 1616 series 16 x 16 stereo matrix |
| Gain | Unity |
| Frequency response | ±0.05dB @ 20 Hz to 20 kHz |
| THD + Noise | 0.03% @ 1 kHz at rated maximum output drive |
| S/N | >90dB, output 21dBu, balanced |
| Adjacent input crosstalk | >80dB @ 1 kHz |
| Stereo channel separation | >90dB @ 1 kHz |

Audio output — audio models only

| | |
|--------------------------|--|
| Number/signal type | 4, 8, or 16 stereo, balanced/unbalanced |
| Connectors | 4, 8, or 16 3.5 mm captive screw terminals, 5 pole |
| Impedance | 50 ohms unbalanced, 100 ohms balanced |
| Gain | Unbalanced 0dB, balanced +6dB |
| Gain error | ±0.1dB channel to channel |
| Drive (Hi-Z) | > +21dBu, balanced or unbalanced at stated %THD+N |
| Drive (600 ohm) | > +15dBm, balanced or unbalanced at stated %THD+N |

Control/remote — switcher

| | |
|--|--|
| Serial control port | 1 RS-232 or RS-422, 9-pin female D connector |
| Baud rate and protocol | 9600, 8-bit, 1 stop bit, no parity |
| Serial control pin configurations | 2 = TX, 3 = RX, 5 = GND |
| Program control | Extron's control program for Windows® |
| | Extron's Simple Instruction Set™ – SIS™ |

General

| | |
|----------------------------|---|
| Power | 100VAC to 240VAC, 50/60 Hz, internal, auto-switchable |
| | 84/88/124/128 30 watts |
| | 168/1616 36 watts |
| Temperature/humidity | Storage -40° to +158°F (-40° to +70°C) / 10% to 90%, non-condensing |
| | Operating +32° to +122°F (0° to +50°C) / 10% to 90%, non-condensing |

Specifications, cont'd

| | |
|----------------------------|---|
| Rack mount | Yes, with included parts |
| | 84/88/124/128 series 3U high |
| | 168/1616 series 6U high |
| Enclosure type | Metal |
| Enclosure dimensions | |
| 84/88/124/128 series | 5.25" H x 17.0" W x 9.5" D (excluding connectors) |
| | 13.3 cm H x 43.2 cm W x 24.1 cm D |
| 168/1616 series | 10.5" H x 17.0" W x 10.1" D |
| | 26.7 cm H x 43.2 cm W x 25.7 cm D |
| Shipping weight | |
| 84/88/124/128 series | 17 lbs (7.7 kg) |
| | DIM weight 25 |
| 168/1616 series | 24 lbs (10.8 kg) |
| | DIM weight 34 |
| Vibration | NSTA 1A in carton (National Safe Transit Association) |
| Approvals | UL, CUL, CE |
| MTBF | 30,000 hours |
| Warranty | 2 years parts and labor |

NOTE Specifications are subject to change without notice.

Part Numbers

CrossPoint part numbers

| Extron Part | Part # |
|----------------------------------|-----------|
| CrossPoint 84HV | 60-219-02 |
| CrossPoint 84HVA | 60-219-03 |
| CrossPoint 88HV | 60-325-02 |
| CrossPoint 88HVA | 60-325-03 |
| CrossPoint 124HV | 60-326-02 |
| CrossPoint 124HVA | 60-326-03 |
| CrossPoint 128HV | 60-220-02 |
| CrossPoint 128HVA | 60-220-03 |
| CrossPoint 168HV | 60-330-02 |
| CrossPoint 168HVA | 60-330-03 |
| CrossPoint 1616HV | 60-242-03 |
| CrossPoint 1616HVA | 60-242-04 |
| Matrix Switchers Control Program | 29-015-01 |
| Button-Label Generator | 29-044-01 |
| CrossPoint Matrix Switchers | 68-353-02 |
| User's Manual | |

Optional accessories

| Extron Part | Part # |
|-------------------------------|-----------|
| Rack/desk mounting kit | 70-077-03 |
| MKP 1000 | |
| Grey kit with audio | 60-239-01 |
| Black | 60-239-02 |
| White | 60-239-03 |
| MCP 1000M (master) | 60-298-01 |
| MCP 1000S (slave) | 60-298-02 |
| Captive screw audio connector | 10-319-10 |
| RCA-to-BNC adapter | 10-264-01 |
| SVHS - BNC adapter | 26-353-01 |

Cables

When using signals with a scanning frequency of 15-125 kHz and running distances of 100 feet or more, use high resolution BNC cables to achieve maximum performance.

Bulk cable

| Extron Part | Part # |
|--|------------|
| Super High Resolution Cable | |
| Bulk SHR-1, 500' | 22-098-02 |
| Bulk SHR-1, 1000' | 22-098-03 |
| Bulk SHR-4, 500' | 22-099-02 |
| Bulk SHR-5, 500' | 22-100-02 |
| BNC SHR crimp connectors, qty. 50 | 100-075-51 |
| BNC-4 Mini HR Cable | |
| Bulk BNC 4-500' HR | 22-032-02 |
| Bulk BNC 4-1000' HR | 22-032-03 |
| BNC-5 Mini HR Cable | |
| Bulk BNC 5-500' HR | 22-020-02 |
| Bulk BNC 5-1000' HR | 22-020-03 |
| Plenum BNC-5 Mini HR Cable | |
| Bulk BNC 5-500' HRP | 22-103-02 |
| Bulk BNC 5-1000' HRP | 22-103-03 |
| Plenum Seventeen Conductor Installation Cable | |
| Bulk install plenum, 500' | 22-111-03 |
| Bulk install plenum, 1000' | 22-111-04 |

Assorted connectors

| | |
|---|------------|
| BNC connectors | |
| BNC Mini HR crimp connectors, qty. 50 | 100-074-51 |
| BNC Super High Resolution crimp connectors, qty. 50 | 100-075-51 |
| BNC bulkhead connectors, qty. 50 (for custom wall plates) | 100-076-51 |

Pre-cut cables

BNC-4 Mini HR cable is used for RGBS cable runs, and BNC-5 Mini HR cable is used for RGBHV cable runs. Either type can also be used for composite video, S-video, or RGsB. All Extron BNC cables have male gender connectors on both ends. A plenum version of the BNC-5 Mini HR cable is also available.

| | |
|-------------------------------------|-----------|
| BNC-4 Mini HR Cable | |
| BNC-4-25'HR (25 feet/7.5 meters) | 26-210-04 |
| BNC-4-50'HR (50 feet/15.0 meters) | 26-210-05 |
| BNC-4-75'HR (75 feet/23.0 meters) | 26-210-06 |
| BNC-4-100'HR (100 feet/30.0 meters) | 26-210-07 |
| BNC-4-150'HR (150 feet/45.0 meters) | 26-210-08 |
| BNC-4-200'HR (200 feet/60.0 meters) | 26-210-09 |
| BNC-4-250'HR (250 feet/75.0 meters) | 26-210-54 |
| BNC-4-300'HR (300 feet/90.0 meters) | 26-210-53 |

Specifications, cont'd

| Extron Part BNC-5 Mini HR Cable | Part # |
|-------------------------------------|-----------|
| BNC-5-25'HR (25 feet/7.5 meters) | 26-260-03 |
| BNC-5-50'HR (50 feet/15.0 meters) | 26-260-04 |
| BNC-5-75'HR (75 feet/23.0 meters) | 26-260-16 |
| BNC-5-100'HR (100 feet/30.0 meters) | 26-260-05 |
| BNC-5-150'HR (150 feet/45.0 meters) | 26-260-12 |
| BNC-5-200'HR (200 feet/60.0 meters) | 26-260-06 |
| BNC-5-250'HR (250 feet/75.0 meters) | 26-260-18 |
| BNC-5-300'HR (300 feet/90.0 meters) | 26-260-14 |

NOTE Bulk cable in lengths up to 5000' rolls is available with or without connectors.



CrossPoint Matrix Switchers

Appendix B

Reference Information

Hardware Upgrades

Button Labels

Reference Information

Hardware Upgrades

This appendix contains procedures for performing hardware maintenance procedures such as swapping the RS-232 and RS-422 ports, installing a new firmware update, and replacing the fuse.

Opening the switcher

Before you can perform any of the hardware upgrade procedures, you must open the switcher. The interior of the CrossPoint 84, 88, 124, and 188 switchers is accessed by removing the top cover. The interior of the CrossPoint 168 and 1616 is accessed by removing the front cover.

Opening the CrossPoint 84, 88, 124, and 128

To open the CrossPoint 84, 88, 124, or 128 switcher, do the following:

1. Disconnect the power cord from the switcher.
2. If the switcher is rack mounted, remove the switcher from the rack and place it on a clean workspace.
3. Remove the eight screws that secure the switcher's top cover as shown in figure 40.

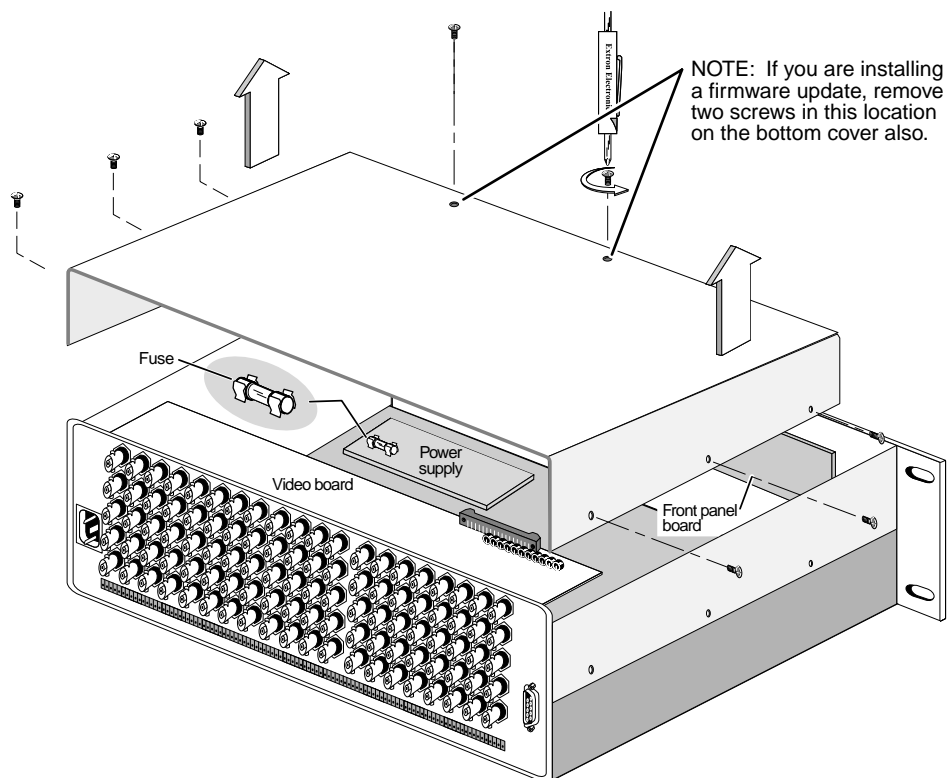
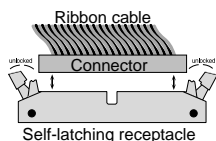


Figure 40 — Removing the top cover

4. Lift the top cover straight up as shown in figure 40. Lift the cover evenly to clear the grooves at the edge of the rear panel.
5. If you are updating the firmware, remove the two screws at the front edge of the bottom cover, press the two receptacle tabs on the top cable outward as shown at the left, and pull back gently on the cable connector to remove it from the receptacle. Lay the front panel down in front of the switcher.



Opening the CrossPoint 168 and 1616

To open the CrossPoint 168 or 1616 switcher, do the following:

1. Disconnect the power cord from the switcher.
2. Remove the ten screws that secure the switcher's front cover as shown in figure 41. Three internal cables connected to the front panel can be damaged if strained. Carefully tilt the front panel away from the main body of the switcher.

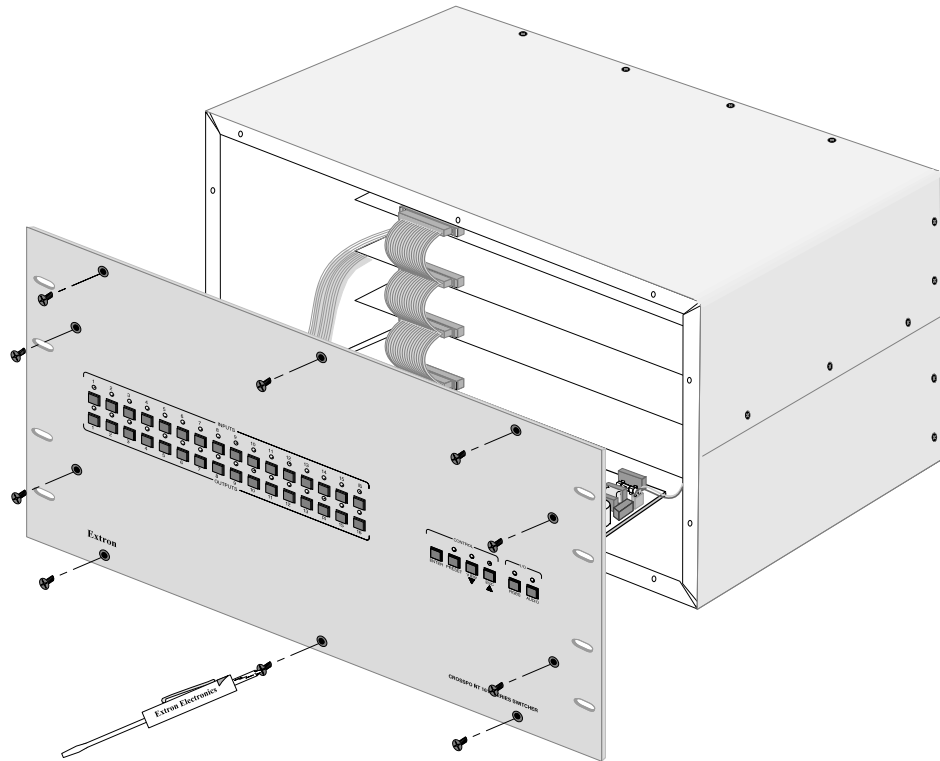
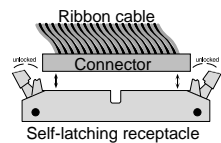


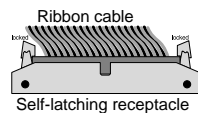
Figure 41 — Removing the front cover

3. Press the two receptacle tabs on the top cable outward as shown at the left, and pull back gently on the cable connector to remove it from the receptacle. Lay the front panel down in front of the switcher.



Closing the switcher

1. Reinstall any cables removed. To plug a self latching cable into the desired receptacle, align the holes in the connector with the pins in the receptacle, and press evenly until the receptacle tabs lock into place.
2. Place the top cover (CrossPoint 84, 88, 124, and 128) and/or front cover (all models) in place and replace all the screws removed in "Opening the switcher" on page B-2.



Swapping the serial ports

The CrossPoint switchers are factory configured for RS-232 use. If you want to use RS-422 and the switcher is configured for RS-232, or if you want to use RS-232 and the switcher is configured for RS-422, do the following:

Reference Information, cont'd

1. Follow the appropriate instructions in "Opening the Switcher" on page B-2 to gain access to the interior of your switcher.
2. Locate the switcher's front panel board (figure 42 (CrossPoint 84, 88, 124, and 128) or figure 43 (CrossPoint 168 or 1616)).

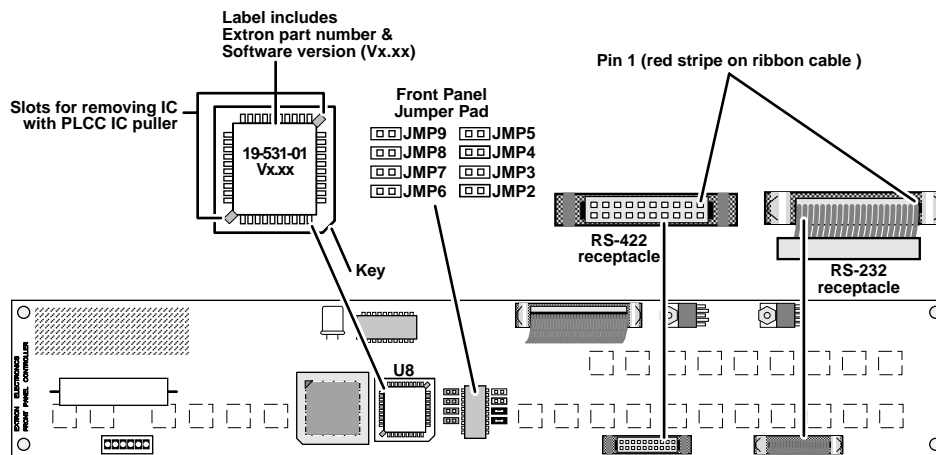


Figure 42 — Front panel board, CrossPoint 84, 88, 124, and 128

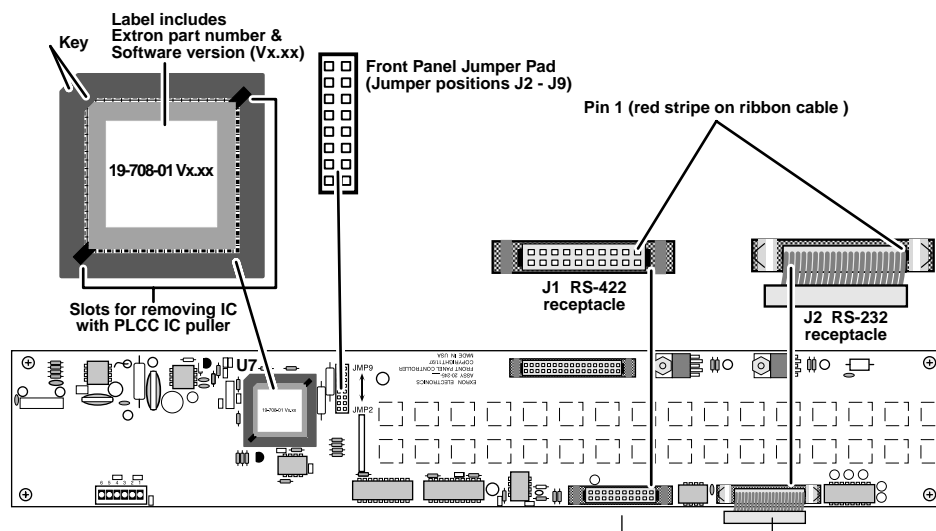
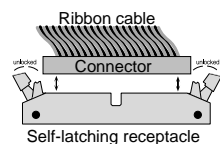
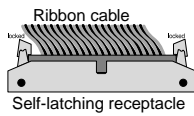


Figure 43 — Front panel board, CrossPoint 168 and 1616

3. On the side of the front panel board that faces the rear of the switcher, locate the RS-232 ribbon cable. On any CrossPoint model, the RS-422 ribbon cable receptacle, which is normally empty, is located to the left of the RS-232 ribbon cable receptacle.
4. To remove the cable from the current receptacle, press the two receptacle tabs outward as shown at the left, and pull up gently on the cable connector to remove it from the receptacle.



5. To plug the cable into the desired receptacle, align the holes in the connector with the pins in the receptacle, and press evenly until the receptacle tabs lock into place.



6. Reinstall the switcher's cover. See "Closing the switcher" on page B-3.
7. Attach the power cord to the switcher and to the AC power source. Make sure the switcher is working properly.
8. If the switcher was removed from a rack, remove its power cord, reattach the switcher to the rack, and reconnect the power cord.
9. Reconnect the input and output cables.

Installing a firmware update

NOTE The IC that contains the firmware for the matrix switcher also contains the memory in which presets and audio levels are saved. When you replace the IC, these settings will be lost. You may want to record the presets and audio levels before you replace the IC.

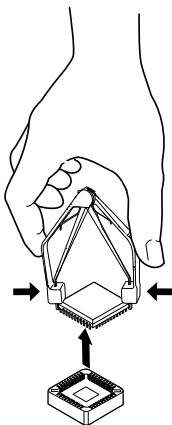
To replace the firmware, do the following:

1. Follow the appropriate instructions in "Opening the Switcher" on page B-2 to gain access to the interior of your switcher, including the instructions for removing the front panel.
2. Locate the RS-232/RS-422 ribbon cable that connects the front panel board to the rear panel RS-232/422 port (figure 42 (CrossPoint 84, 88, 124, and 128) or figure 43 (CrossPoint 168 or 1616)). Note which receptacle on the front panel board that the RS-232/RS-422 cable plugs into, and remove the cable from its receptacle (see step 4 in "Swapping the serial ports").

NOTE Do not touch the components inside the switcher without being electrically grounded. Electrostatic discharge (ESD) can damage ICs, even if you cannot feel, see, or hear it.

3. Unplug the power cable from the front panel board.
4. Place the front panel board, button side down, on a suitable workspace.
5. Locate IC U8 (CrossPoint 84, 88, 124, and 128) (figure 42) or IC U7 (CrossPoint 168 or 1616) (figure 43).

6. Use the PLCC IC puller to remove the existing firmware IC. Squeeze the tool to align its hooks with the slots in opposite corners of socket U8 or U7. Insert the hooks, squeeze gently, and pull the IC straight out of the socket. Set the IC aside.



7. Note the key (angled corner) of the new firmware IC and the dot on the underside that indicates pin 1 (figure 44). Orient the IC to match the key and pin 1 (indicated by arrow) on the socket, and carefully press the IC in place.
8. Reinstall the power cable that was removed in step 3.
9. Reinstall the RS-232/RS-422 cable removed in step 2. Ensure the RS-232/RS-422 ribbon cable is plugged back into the proper receptacle for the communications format desired (RS-232 or RS-422).
10. Reinstall the switcher's front panel and cover. See "Closing the switcher" on page B-3.

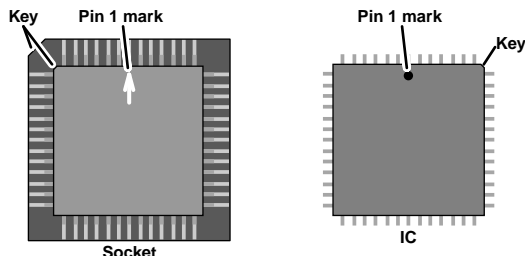


Figure 44 — Key and pin 1 mark

WARNING *If you choose to check for proper operation before putting the cover back on, ensure that tools and hands are outside the switcher, and then connect the power cord to the unit and to an AC source. The switcher should power up normally. Unplug the AC power cord, and reinstall the switcher.*

11. Attach the power cord to the switcher and to the AC power source. Make sure the switcher is working properly.
12. If the switcher was removed from a rack, remove its power cord, reattach the switcher to the rack, and reconnect the power cord.
13. Reconnect the input and output cables.

Replacing the AC fuse (CrossPoint 84, 88, 124, and 128 only)

The AC fuse on the power supply board is a user-replaceable component of the CrossPoint 84, 88, 124, and 128. To replace the AC fuse, do the following:

1. Follow the instructions in “Opening the CrossPoint 84, 88, 124, and 128” on page B-2 to remove the top cover.
2. Locate the fuse on the power supply board (see figure 40), and remove it from its retaining clips.
3. If test equipment is available, you can check the fuse.
4. Place a new fuse in the retaining clips.
5. Reinstall the switcher’s cover. See “Closing the switcher” on page B-3.









WARNING *If you choose to check the switcher for proper operation before putting the cover back on, ensure that tools and hands are outside the switcher, and then connect the power cord to the unit and to an AC source. The switcher should power up normally. Unplug the AC power cord, and reinstall the switcher.*

6. Attach the power cord to the switcher and to the AC power source. Make sure the switcher is working properly.
7. If the switcher was removed from a rack, remove its power cord, reattach the switcher to the rack, and reconnect the power cord.
8. Reconnect the input and output cables.

Setting the front panel jumper









If the front panel jumper is set incorrectly, the switcher displays an error message when powered up, see “Powering up the switcher” in chapter 3. Check the setting of the jumper as follows:

1. Follow the appropriate instructions in “Opening the Switcher” on page B-2 to gain access to the interior of your switcher, including the instructions for removing the front panel.
2. Locate the front panel jumper (figure 42 (CrossPoint 84, 88, 124, and 128) or figure 43 (CrossPoint 168 or 1616)).
3. Install the jumpers as appropriate to your CrossPoint model (figure 45 (CrossPoint 84, 88, 124, or 128) or figure 46 (CrossPoint 168 or 1616)).
4. Reinstall the switcher’s cover. See “Closing the switcher” on page B-3.
5. Attach the power cord to the switcher and to the AC power source. Make sure the switcher is working properly.
6. If the switcher was removed from a rack, remove its power cord, reattach the switcher to the rack, and reconnect the power cord.
7. Reconnect the input and output cables.

| CrossPoint | | JMP2 | JMP3 | JMP4 | JMP5 | JMP6 | JMP7 | JMP8 | JMP9 |
|---|--------------------|------|------|------|------|------|------|------|------|
| CrossPoint 84 HV | | 0 | X | 0 | X | 0 | 0 | X | X |
| CrossPoint 84 HVA | | X | X | X | X | X | X | X | X |
| JMP9   JMP5 | CrossPoint 88 HV | 0 | X | 0 | X | 0 | 0 | X | 0 |
| JMP8   JMP4 | CrossPoint 88 HVA | X | X | X | X | X | 0 | X | 0 |
| JMP7   JMP3 | CrossPoint 124 HV | 0 | X | 0 | X | 0 | 0 | 0 | X |
| JMP6   JMP2 | CrossPoint 124 HVA | X | X | X | X | 0 | X | 0 | X |
| | CrossPoint 128 HV | 0 | X | 0 | X | 0 | 0 | 0 | 0 |
| | CrossPoint 128 HVA | X | X | X | X | 0 | 0 | 0 | 0 |

X = jumper installed, 0 = jumper removed

Figure 45 — Jumper settings, CrossPoint 84, 88, 124, and 128

| CrossPoint | | JMP2 | JMP3 | JMP4 | JMP5 | JMP6 | JMP7 | JMP8 | JMP9 |
|--|---------------------|------|------|------|------|------|------|------|------|
| JMP9   | CrossPoint 168 HV | 0 | 0 | 0 | 0 | 0 | X | 0 | X |
|   | CrossPoint 168 HVA | 0 | 0 | 0 | 0 | 0 | 0 | X | X |
|   | CrossPoint 1616 HV | 0 | 0 | 0 | 0 | 0 | X | 0 | 0 |
| JMP2   | CrossPoint 1616 HVA | 0 | 0 | 0 | 0 | 0 | 0 | X | 0 |

X = jumper installed, 0 = jumper removed

Figure 46 — Jumper settings, CrossPoint 168 and 1616

Button Labels

Figure 47 provides blanks of a 16-button strip of button labels. Feel free to photocopy them or cut them out of the manual, write button information in each button area as desired, and put them in the switcher’s label window. For 8-button strips and 12-button strips, use scissors to trim the blank to the appropriate length.

Reference Information, cont'd

Blank

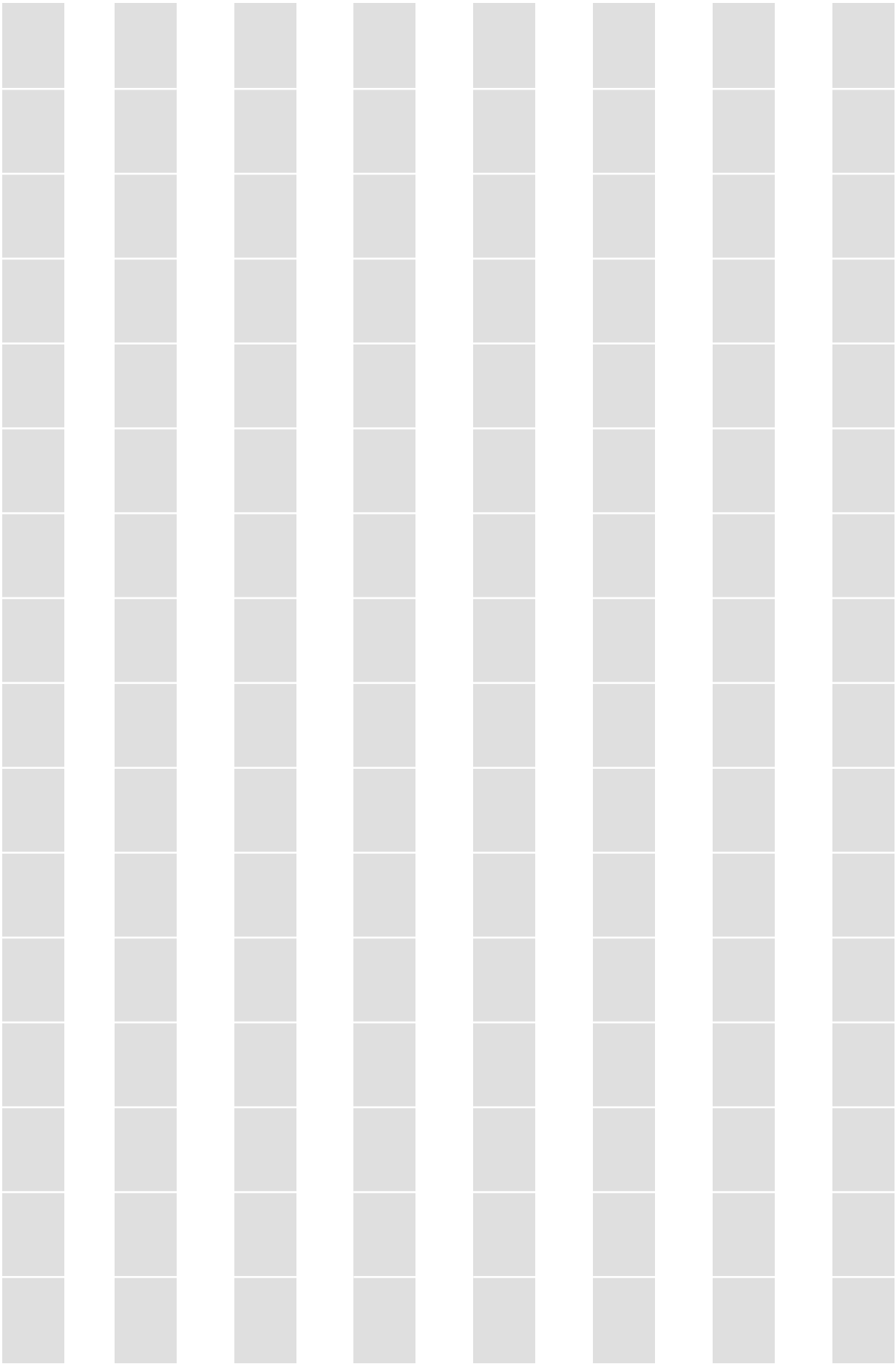


Figure 47 — Button label blanks, 16-button strip

Reference Information, cont'd

Extron's Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of two years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

**USA, Canada, South America,
and Central America:**

Extron Electronics
1230 South Lewis Street
Anaheim, CA 92805
United States of America

**Europe, Africa, and
the Middle East:**

Extron Electronics, Europe
Beeldschermweg 6C
3821 AH Amersfoort
The Netherlands

Asia:

Extron Electronics, Asia
135 Joo Seng Road, #04-01
PM Industrial Building
Singapore 368363

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions or non-Extron authorized modification to the product.

If it has been determined that the product is defective, please call Extron and ask for an Applications Engineer at (714) 491-1500 (USA), 31.33.453.4040 (Europe), or 65.383.4400 (Asia) to receive an RA# (Return Authorization number). This will begin the repair process as quickly as possible.

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.



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