Extron Electronics

INTERFACING, SWITCHING AND DISTRIBUTION

User's Manual

System 4xi Series

System 4LQxi • Switcher/Line Quadrupler
System 4LDxi • Switcher/Line Doubler

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.

Conserver 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 den Benutzer auf wichtige Anleitungen zur Bedienung und Wartung (Instandhaltung) in der Dokumentation hinweisen, die im Lieferumfang dieses Gerätes enthalten ist.

⚡ 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 Sicherheitsanleitungen sollten aufbewahrt werden, damit Sie später 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 especificamente recomendados por el fabricante, ya que podrian 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'll y a remplacment incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un ype equivalent recommande par le constructeur. Mettre au reut les batteries usagees conformement 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 Stift oder Kontakt ist für einen Erdschluß, und stellt eine Sicherheitsfunktion dar und 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 oder aus dem Desktop-Strommodul (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. Im Inneren des Gerätes sind keine Teile enthalten, die vom Benutzer gewartet werden können. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst zu warten, da beim Öffnen oder Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags 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.

Litium-Batterie • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie nur durch die gleiche oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgung der verbrauchten 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.

◄◄ *Step 1* ►►

If the System 4xi is already configured for your model of projector, go to *Step 4*. If it is not set up correctly, it will be necessary to change switch settings on the System 4xi's Main Controller Board. Continue with *Step 2* below to verify the correct configuration.

◄◄ *Step 2* ►►

Apply power to the System 4xi. Use the front panel to display the Information Menu (Menu 8). If the configuration is correct, go to *Step 4*. If it is not correct, continue with *Step 3*.

◄◄ *Step 3* ►►

Go to the procedure on page 2-3 of the *System 4xi User's Manual* to remove the System 4xi cover. Then go to page 2-4 for instructions on configuring the Main Controller board. The following table and diagram are to be used only as examples of a typical configuration. Please consult either the label inside the System 4xi top cover or the *System 4xi Projector Communications Kit* instructions for the correct configuration settings. Continue with *Step 4* below when your configuration is correct.

Config as	Projector	SW1: 1-2-3-4	SW2	SW3	SW4	SW5	SW6	Prj Cable	Comm Adapter
✔	Your Model	off-on-off-on	0	1	0	5	0	J15	26-467-01
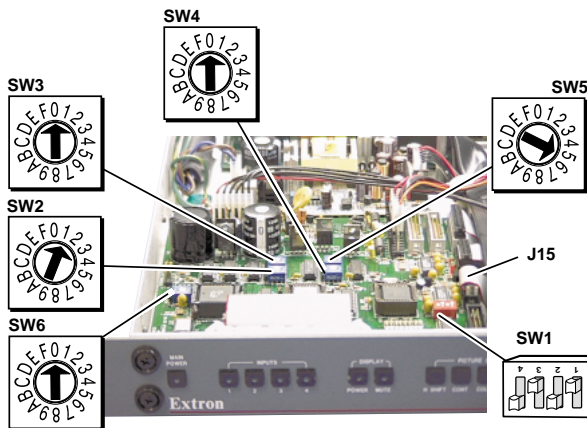
◄◄ *Step 4* ►►

Double-check your work and be sure the System 4xi cover is back on securely.

◄◄ *Step 5* ►►

Please refer to the appropriate connection diagram for your projector (see your *System 4xi Projector Communications Kit* instructions). Using the appropriate Communications Adapter included in your Communications Kit, connect the Comm extension cable from the PJ Comm port of the System 4xi to the Comm Adapter. Secure the Comm Adapter to the appropriate projector port.

◄◄ *Step 6* ►►

Connect the RGBS/HV cable from the System 4xi output BNC connectors to the projector's matching RGBS/HV input connectors.   Verify that all your connections are correct. If in doubt, please refer to the specific installation instructions which were included in your Communications Kit.

CONTENTS

Chapter Four - Connecting Multiple Switchers

Chapter Five – Using Windows® Control Software

Appendix A - RS-232 Programming Guide

Appendix B - General Reference Information

Legend of Icons

⚠ _____ *Important information – for example, an action or a step that must be done before proceeding.*

⚠ _____ *A Warning – possible dangerous voltage present.*

△ _____ *A Warning – possible damage could occur.*

✍ _____ *A Note, a Hint, or a Tip that may be helpful.*

⊘ _____ *Possible Electrostatic Discharge (ESD) damage could result from touching electronic components.*

📖 _____ *Indicates word definitions. Additional information may be referenced in another section, or in another document.*

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New format without projectors

System 4*xi* Switcher Series
User's Manual

1

Chapter One

Introduction and Features

Introduction to System 4xi

EXTRON'S System 4xi Series of switchers (henceforth to be referred to as System 4xi) combines the features of a projector-controlling switcher and a line-doubler or line-quadrupler into a rack-mountable enclosure with an internal power supply. The System 4xi's four video inputs can be any combination of the formats listed below and the output will always be RGB. Four stereo audio inputs are also available and can be selected following or separated from the selected video input.

- *Composite Video (NTSC/PAL)*
- *S-video/S-VHS (YC)*
- *RGBS (NTSC/PAL)*
- *RGBS (RGB w/separate composite sync)*
- *RGsB (RGB w/sync on green)*
- *RGBHV (RGB w/separate H&V sync)*
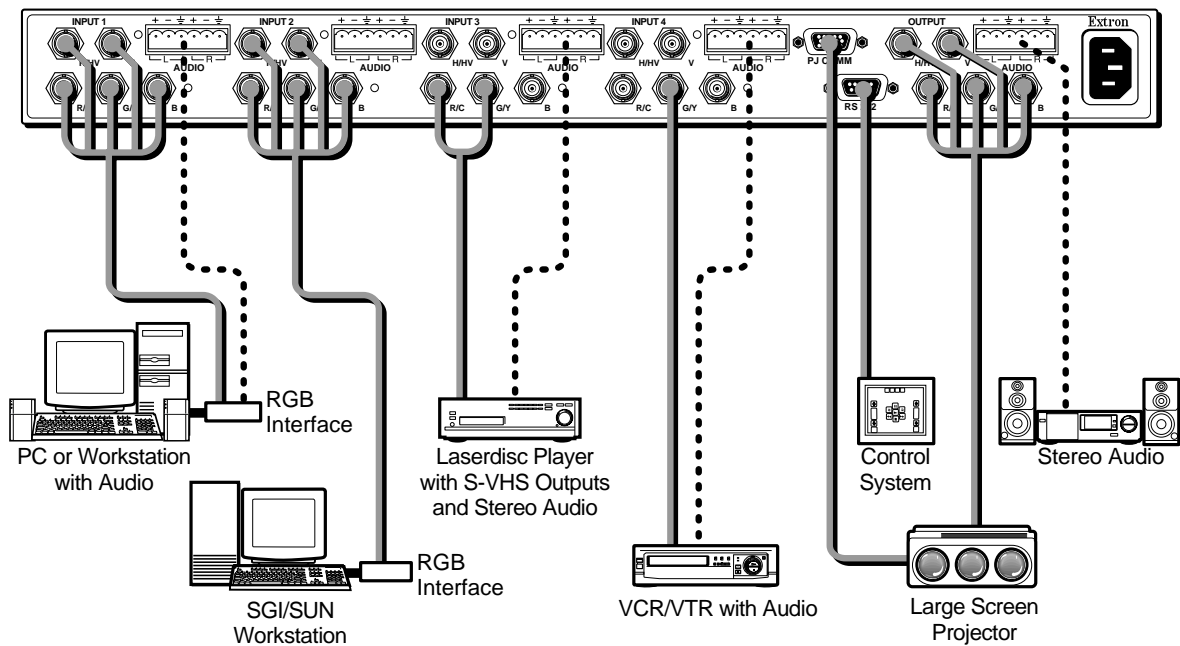
Figure 1-1. Example of a System 4LDxi Switcher with Input and Output Devices

The System 4xi has a built-in communications interface that allows it to control projectors made by companies listed below through their switcher control port. Please consult Extron for projector manufacturers not listed here.

- *Ampro*
- *Barco*
- *Digital Projection*
- *Eiki*
- *Electrohome*
- *Hughes/JVC*
- *Infocus*
- *Mitsubishi*

- *NEC/Runco*
- *Panasonic*
- *Sanyo*
- *Seleco*
- *Sharp*
- *Sony*
- *Toshiba*
- *Zenith*

System 4$_{xi}$ Features

Universal Video Inputs

The System 4$_{xi}$ has four universal inputs, each capable of accepting all computer RGB signals from 15 kHz to 150 kHz, any composite video standard signals (NTSC or PAL) and S-video (S-VHS) signals. There are no optional modules to purchase for each input signal type.

Quad-standard Decoder

The System 4$_{xi}$ is compatible with all standard video formats including NTSC 3.58, NTSC 4.43, PAL and SECAM.

Balanced/Unbalanced Audio Inputs

Every System 4$_{xi}$ is capable of switching up to four balanced or unbalanced, left and right stereo audio signals. Audio, input through professional-style captive screw connectors, can be switched to follow any video or RGB input signal, or it may be switched separately for added flexibility (see "Breakaway" below).

Audio Follow/Breakaway

When switching inputs, the System 4$_{xi}$ can either select audio and video from the same source (Audio Follow) or select audio from one source and video from another (Breakaway).

Three-line Adaptive Comb Filter

A built-in, three-line adaptive comb filter helps to provide a crisp, stable output from the System 4LD$_{xi}$ and 4LQ$_{xi}$.

Built-In Line Doubler/Quadrupler (scan doubler/quadrupler)

The System 4LD$_{xi}$ and 4LQ$_{xi}$ include a built-in NTSC or PAL compatible line doubler or line quadrupler (4LQ$_{xi}$ only) that is capable of line-doubling/ quadrupling composite video, S-video or RGB video (Targa or document camera) signals. The signal also passes through a digital noise filter to improve the picture. The line-doubled/quadrupled output results in a sharper image with less noticeable scan lines and "video noise."

300 MHz RGB Video Bandwidth

The 300 MHz RGB video bandwidth of the System 4$_{xi}$ makes it two to three times the performance of any other presentation switcher.

LCD Menu-Driven Picture and Programming Controls

The System 4LD$_{xi}$'s LCD menu makes setup and programming of its features and functions easy and flawless. An alphanumeric display allows for any of the line-doubler/quadrupler controls such as color, hue and contrast to be adjusted to exact specifications for each input.

RGB Output

The System 4$_{xi}$ video output will be RGBS or RGBHV if the selected input is configured to be line-doubled or line-quadrupled. If the selected input is not configured to be line-doubled/quadrupled, the output video format will be the same as the input.

RS-232 Control

The System 4$_{xi}$ has built-in RS-232 control for external/third party control of any of its features or functions.

Triple-Action Switching™ RGB Delay Switching

Triple-Action Switching makes it possible to have "seamless" picture switching. The System 4$_{xi}$ may be programmed to switch the RGB signals to the projector at a specified time after the sync is switched (0 to 5 seconds, in 1/2 second increments). The audience will briefly see a blank screen while the projector "locks on" to the input signal.

Multiple Switcher Applications

The features of the System 4xi can be further expanded by connecting the output from another switcher to Input #4. The System 4xi then functions as the "master", communicating with the projector and providing it with a signal improved by any of the features described in this section and, if required, can even control the connected projector using their IR (Infra-Red) remote control, RS-232 control, or the built-in LCD menu-driven System 4xi front panel control.

Picture Control Memory

All inputs, including those in multiple switcher applications, have a separate memory block for all picture controls of video or RGB and audio signals. When a different video input is selected, the picture controls are updated automatically from the information stored in the Picture Control Memory. RGB inputs in pass-through mode have no stored picture control information.

Internal Power Supply with Automatic Switching

The System 4xi is equipped with an internal auto-switching power supply that operates from any input voltage in the 100-240 VAC range, at 50/60Hz.

Universal Projector Control

The EXTRON System 4xi and the projector operate as a system that can be controlled several ways:

- *through existing projector controls*
- *through the System 4xi panel*
- *through a host system using the RS-232 port*
- *using Extron's Windows® Control software*

Using the projector-brand remote control, the System 4xi can be made to control the following operations:

- *switch inputs*
- *control projector power*
- *mute the audio or video signals*
- *switch input memory blocks (in projector) for convergence*
- *setup saved configurations within the connected projector by input selection*
- *monitor the projector for update changes, feature changes, or input selection changes by the user*

The above operations can also be accomplished by using the System 4xi front panel controls or through a PC or other control system. The System 4xi switcher will communicate with the projector and pass it the desired command.

When a projector manufacturer introduces a new model, the System 4xi can be upgraded to accommodate it by a simple EPROM change (free during the warranty period of two years). When a totally new projector brand and model is introduced, Extron will either add it to the compatibility list for EPROM upgrades, or make it an available "standard" with all future System 4xi switchers. Call Extron with details of your requirements.

The unique control features of the System 4xi make using its switcher functions exactly the same as using the projector-brand switcher, but with a 300 MHz bandwidth performance — nearly three times that of most projector- brand switchers.

Some projector IR remotes do not communicate with the System 4xi. Also, all projectors have different methods for source and memory recall of source inputs. Please refer to your specific installation instructions for further details.

Specifications

Video input

Number/type	4 universal inputs (RGBHV, RGBS, RGsB, RsGsBs, S-video, composite video)
Connectors	4 x 5 BNC female
Nominal level(s)	Analog — 0.3V to 1.45V p-p
Maximum level(s)	Analog — 2V p-p
Impedance	75 ohms (deselected inputs)
Horizontal frequency	15 kHz to 150 kHz
Vertical frequency	30 Hz to 150 Hz
Return loss	-30dB @ 5 MHz

Video throughput

Gain	Unity
Bandwidth	300 MHz (-3dB)
Crosstalk	-80dB @ 3.58 MHz
Switching speed	5 mS (max.)

Video output

Number/type/format	System 4LDxi .... 1 RGBHV, RGBS, RGsB, line-doubled video
	System 4LQxi .... 1 RGBHV, RGBS, RGsB, line-quadrupled video
Connectors	5 BNC female
Nominal level	1V p-p
Impedance	75 ohms
Return loss	-25dB @ 10 MHz
DC offset	±5 mV maximum
Switching type	Triple action, 0 S to 5 S, adjustable

Sync

Input type	RGBHV, RGBS, RGsB, RsGsBs
Output type	RGBHV, RGBS, RGsB, RsGsBs
Standards	NTSC 3.58, NTSC 4.43, PAL, SECAM
Input level	0.5V to 5V p-p
Output level	0.5V to 5V p-p
Input impedance	510 ohms (deselected inputs)
Output impedance	75 ohms
Max input voltage	5V p-p
Max. propagation delay	5 nS
Max. rise/fall time	5 nS
Polarity	Positive or negative (follows input)

Audio input

Number/type	4 stereo, balanced/unbalanced
Connectors	4 5 mm captive screw terminals, 6 conductor
Impedance	Unbalanced .... 10 kohms, AC coupled
	Balanced .... 20 kohms, AC coupled
Maximum level	+11.2dBu, (balanced or unbalanced) @ stated %THD+N
Input gain adjustment	−95.5dB to +31.5dB, adjustable per input

Audio throughput

Frequency response	±0.05dB @ 20 Hz to 20 kHz
THD + Noise	0.002% @ 1 kHz at rated maximum output drive
S/N	>95dB
Adjacent input crosstalk	>85dB @ 20 Hz to 20 kHz
Stereo channel separation	>60dB @ 20 Hz to 20 kHz
CMRR	>60dB @ 20 Hz to 20 kHz

Audio output

Number/type	1 stereo, balanced/unbalanced
Connectors	5 mm captive screw terminal, 6 conductor
Impedance	50 ohms, unbalanced; 100 ohms, balanced
Gain error	±0.2dB channel to channel
Drive (HI-Z)	> +17.2dBu, balanced or unbalanced at stated %THD+N
Drive (600 ohm)	> +17.2dBu, balanced or unbalanced at stated %THD+N

Control/Remote — switcher

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

Control — projector

Projector control port	1 15-pin HD female connector

General

Power	100VAC to 240VAC, 50/60 Hz, 20 Watts, internal, auto-switchable
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
Rack mount	Yes, with attached rack ears
Enclosure type	Metal
Enclosure dimensions	1.75" H x 19" W x 16.2" D
	4.4 cm H x 48.3 cm W x 41.2 cm D
Shipping weight	17 lbs (7.7 kg)
	DIM weight 21
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.*
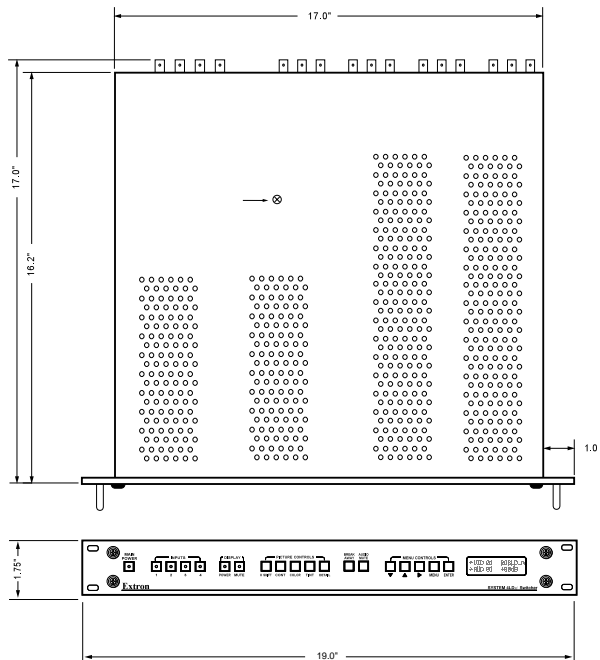
Chapter Two

Configuration and Installation

Rear Panel Connectors and Indicators

Use the diagram below to locate the connectors and indicators on the back of the System 4*xi*.

All models of the System 4*xi* Series have the same rear panel layout.
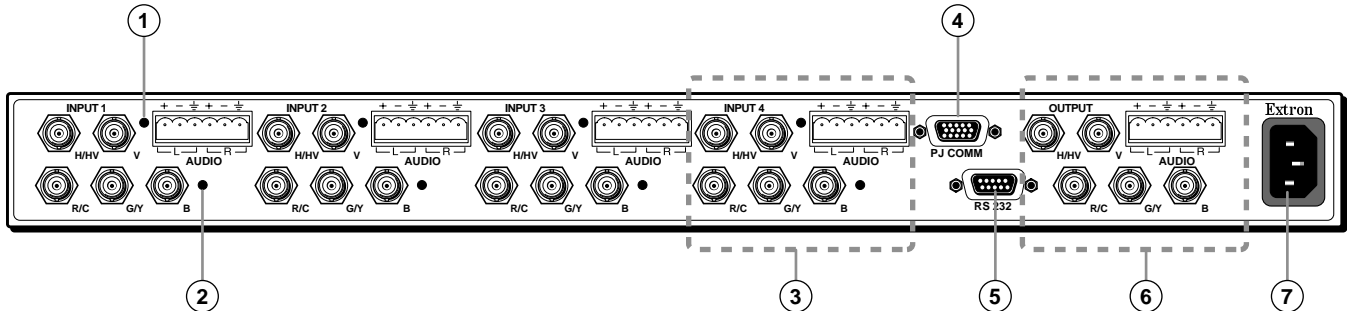
Figure 2-1. System 4xi Rear Panel Identification

(1) Indicates this Audio Input is selected

(2) Indicates this Video Input is selected

(3) Audio (left & right) and Video Input #4 (also used for Slave input in a multiswitcher system)

    Video Input formats: Composite Video — use G connector

                                S-video — use C & Y connectors

                                RGsB — use R, G & B connectors

                                RGBS — use R, G, B & HV connectors

                                RGBHV — use R, G, B, H & V connectors

(4) Projector Communications

(5) RS-232 port for control by host system

(6) Audio and Video Output to projector/monitor

(7) AC Power input to Autoswitching power supply

Projector/Monitor Applications

The System 4xi can be configured for most projectors. Some of the projector manufacturers that Extron supports are:

- Ampro
- Barco
- Digital Projection
- Eiki
- Electrohome
- Epson
- Digital Projection
- Hughes/JVC
- Infocus

- Mitsubishi
- NEC
- Panasonic
- Seleco
- Sharp
- Sony
- Toshiba
- Zenith

If your projector manufacturer is not on the above list, please consult your Extron representative.

Because this manual is for the System 4xi Series switchers, the name "System 4xi" will be used except when referring to a specific model.

The following diagram is a typical example of System 4xi-to-projector cabling. However, before connecting the cables, verify that the System 4xi is already configured for your projector/monitor.

System 4 LDxi Rear Panel

2-Channel Stereo Audio

Projector Communication Extension Cable

BNC Cable

Projector Comm Adapter
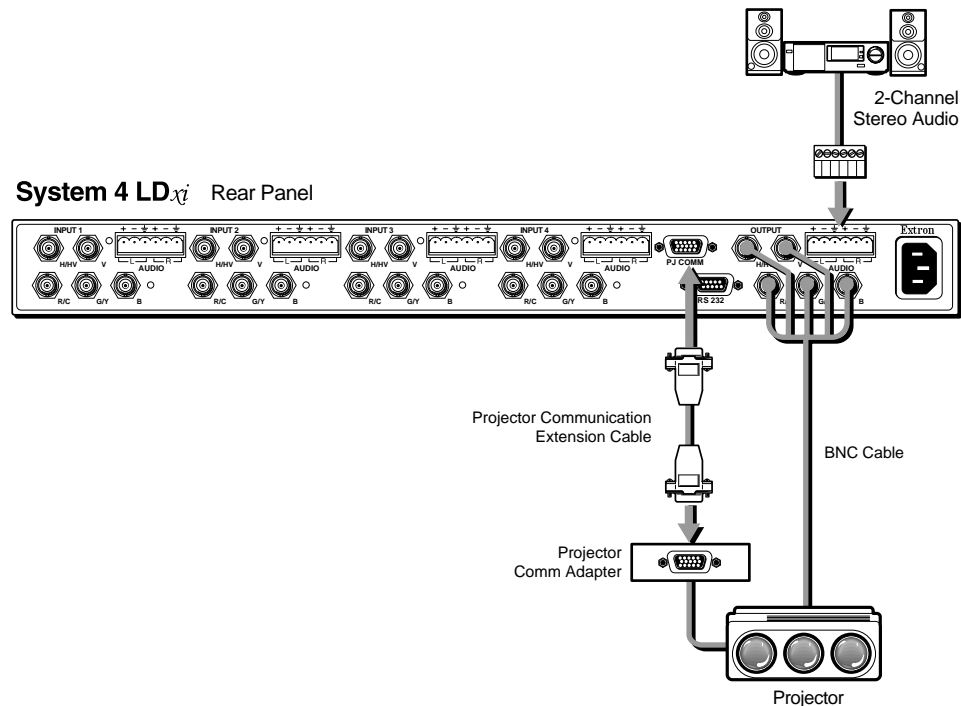
Projector

Figure 2-2. System 4xi Outputs. A factory label identifies the configuration.

Configuring the System 4xi for your application requires the following major steps using the *System 4xi Projector Communications Kit* instructions for your specific projector or monitor:

1. The System 4xi must be configured internally for the projector/monitor to be used. This is done at the factory when the unit is ordered, and a label is placed on the rear panel to identify the configuration. However, there may be times when the configuration must be changed for a different application.

2. Place, or mount, each piece of equipment in the location where it will be used.

3. Connect the cables and adapter between the System 4xi and the projector.

4. Connect other equipment, such as audio or various controlling devices.

5. Set up the projector, using the manual(s) provided by the manufacturer.
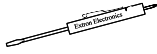
There are procedures in this chapter for installation of specific projectors to the System 4xi. Use the appropriate procedure for your application.

Communications Adapters and Cables

Because there are projector differences, Extron makes communication adapters for the projector types listed on the previous page.

Each System 4xi package includes the following:

- *1 System 4xi (factory-configured for the customer)*
- *1 Comm Adapter (specified by the customer)*
- *1 CC 50' Projector Communications Extension cable*
- *5 Audio connectors with captive screws (audio cables not included)*
- *1 AC Power Cord*
- *1 Tweaker (combination screwdriver)*

User-Supplied Cables

For custom installations, you may choose to make your own Projector Communication cables (CC-xx'). Refer to the cable wiring diagram below for pin connections. Cables may be up to 200' in length.
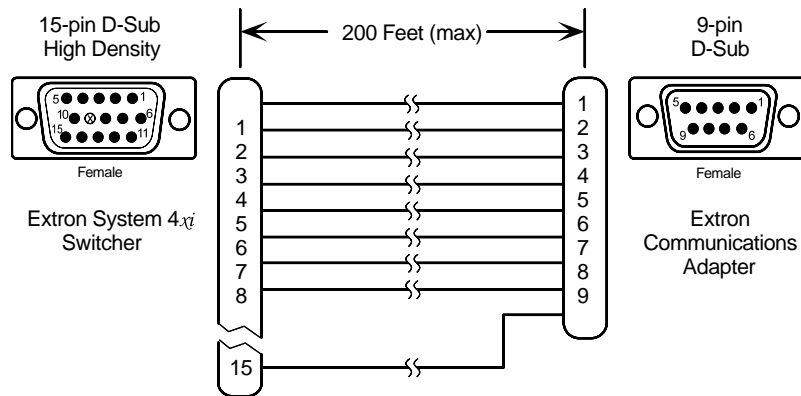
Figure 2-3. Communications Cable Wiring Diagram

Removing the System 4xi Cover

If the System 4xi must be reconfigured for a different display device, it is necessary to access the Main Controller board. Also, if the main power fuse needs to be changed, you will need to access the inside of the unit. To do either of these two things, you must first remove the top cover of the System 4xi, as follows:

1. Unplug the AC power cord.

2. If rack-mounted, remove the System 4xi from the mounting rack.

3. Label the input and output cables and remove them.

4. Place the System 4*xi* on a clean work space and remove eight (8) screws shown in Figure 2-4.

5. Lift the cover straight up.

6. Go to the procedure for which you have opened the cover (projector configuration or changing the fuse).

   Do NOT touch any switches or electronic components, other than those specified. This could seriously affect the operation of the system.

7. Reverse this procedure when finished working inside the System 4*xi*.
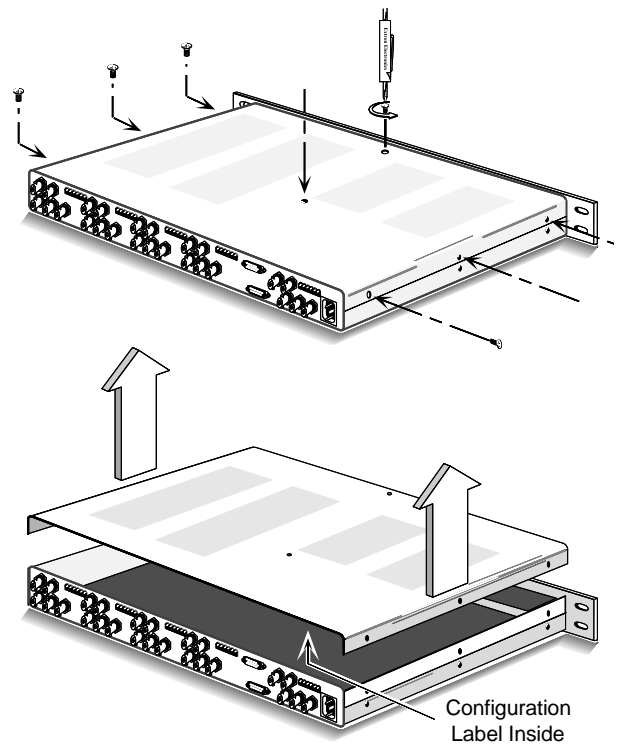
(French) *Enlever le couvercle du Système 4xi - page B-3*

(German) *Entfernung der System 4xi Abdeckung - seite B-5*

Configuration Label Inside

Figure 2-4. Removing the System 4xi Cover

Setting the Main Controller Board for the Projector

Before each System 4*xi* ships, it is set for the application specified by the customer. The projector name is on a label on the rear panel (see Figure 2-1). However, if there is a need to change these settings (e.g. using a different projector/monitor), switch settings must be changed on the Main Controller board.
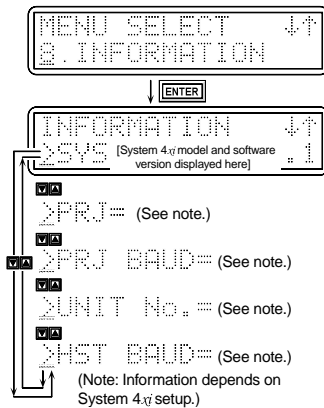
1. If you are not sure if the System 4*xi* is set for your projector/monitor, use the Front Panel to select the Information Menu (#8), and then display the System 4*xi* settings (see page 3-10). A general example is shown to the left. Refer to Figure 2-5 below as an example only to locate the switches and projector cable. Configuration information is located on a label inside the System 4*xi* top cover. If the projector cable is on the wrong connector, or if DIP switches (1-4) are incorrect, this error will not be seen in Menu 8.
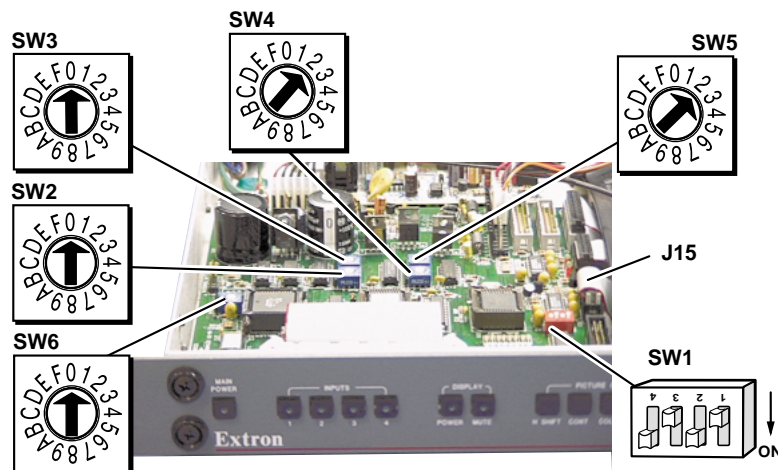
Figure 2-5. Example of Setup Switches on the Main Controller Board

2. If your unit is not set up correctly, remove the System 4xi cover (page 2-3) and locate the switches and projector connectors. Note the orientation of the SW1 switches in the picture. "On" is marked on the DIP switch block.

3. Set the switches as indicated by the label or the instructions included with the projector communications kit and verify that the Projector cable is on the correct connector (J9/J15).

Extron continues to support new projectors. If you have questions about using the System 4xi with a device for which you cannot find configuration settings, please consult with your Extron representative.

4. Refer to the appropriate cabling procedure included with the projector communications kit to continue the installation.

Cabling a System 4xi in a Rack

When routing cables from one unit to another in a rack, do NOT allow the cables to be supported by the System 4xi (see Figure 2-7). Use "Tie Wraps", "Rip-Ties" or other devices, to secure the cables at some point in the rack that is above the rear panel connectors. Loosely hanging cables may be stepped upon, resulting in damage to cables and equipment, as well as injury to personnel.

The example shown in Figure 2-6 has the cables tied to the rack above the connections to the equipment. This allows an unobstructed view of the rear panel connectors, and prevents the cable weight from pulling down on the equipment.
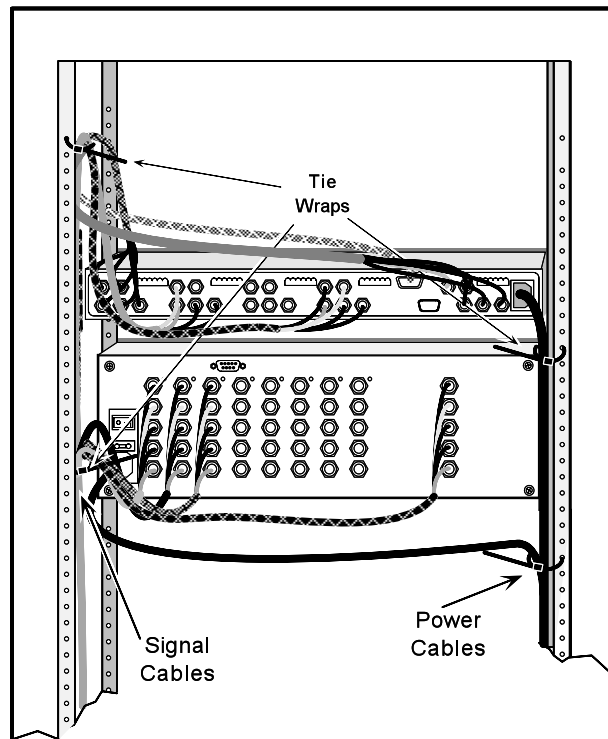
Figure 2-6. Route the Signal Cables on the Left and Power Cables on the Right
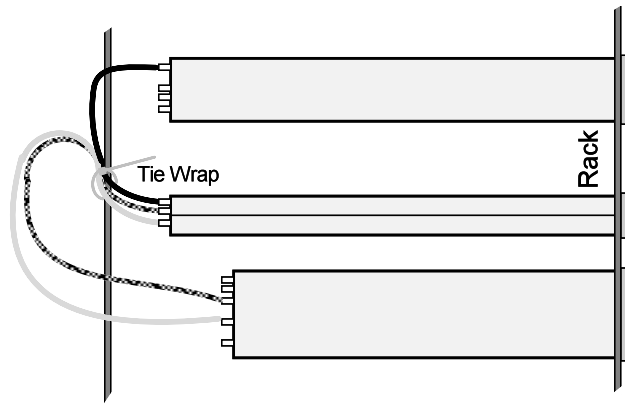
Figure 2-7. Tie Cables to Prevent Pulling Down on the Units

⚠ _____ *Be sure that no weight is added to the System 4xi in excess of 10 lbs (3.73 kg).*

⚠ _____ *The holes in the top and bottom of the System 4xi enclosure are for cooling. Do NOT cover these holes. This could cause overheating of vital components.*

⚠ _____ *Maximum ambient operating temperature must not exceed 104° F (40° C).*

⚠ _____ *The mounting rack, and all equipment mounted in it, must be grounded according to national and local electrical codes.*

✎ _____ *Keep power and signal cables separate (power cables on the right and signal cables on the left.)*

(French)
   Câbler un Système 4xi sur un rack - page B-4

(German)
   Verkabelung vom System 4xi innerhalb eines Gestells - seite B-6

Audio Terminal Connections
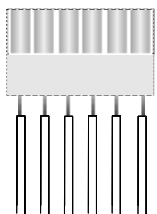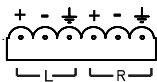
The rear of the System 4xi has five audio connectors (four input and one output). Each connector has six pins for a left and a right audio channel. One example is shown here in Figure 2-8.

The 6-terminal, captive screw connectors are supplied with the switcher for wiring the audio cables. The connectors are then plugged into the appropriate position in the audio terminal strip on the rear panel. The audio area of the back panel is labeled "R" (right) and "L" (left) for each channel.

When wiring the connectors and plugging them into the System 4xi switcher, the screw heads (see figure right) must face **down**.
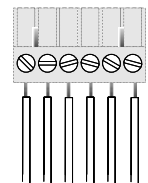
Figure 2-8. Captive Screw Audio Connectors (above and right)

Audio Wiring Applications

Three methods of wiring the connectors for input and output are listed here, and illustrated in Figure 2-10. (The connector screws do not show in Figure 2-10 because they are on the other side.)

- *Unbalanced High Impedance (High Z) Stereo Tip, Ring, Ground (Left & Right)*
- *Balanced High Impedance (High Z) Stereo Tip, Ring (Left & Right)*
- *Balanced 600Ω input Impedance Stereo Tip, Ring (Left & Right)*
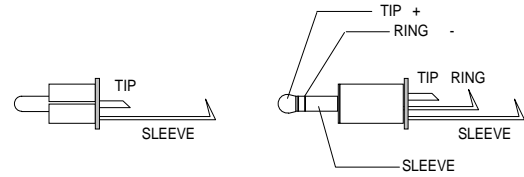
Figure 2-9. The Audio Cable Equivalent Connections
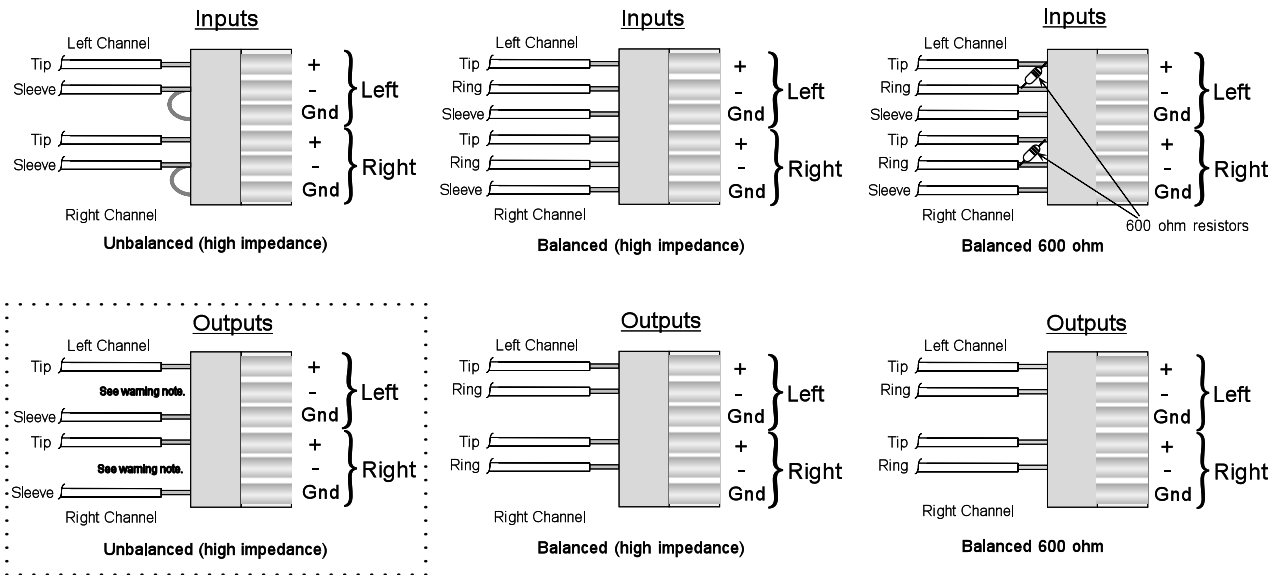
Figure 2-10. Three ways to Wire the Input and Output Audio Connectors

⚠ _____ *If using unbalanced audio output, use lower-left connector as an example, and connect the sleeve to Gnd. Connecting it to the negative (-) terminal will damage audio output circuits.*

📝 _____ *Use captive-screw audio connectors, Extron part number 10-163-01*

Chapter Three

Using the System 4xi Front Panel

Front Panel (4LDxi model shown) Controls are described beginning from the left side.

Figure 3-1. System 4LDxi Front Panel (other System 4xi Series front panels are very similar)
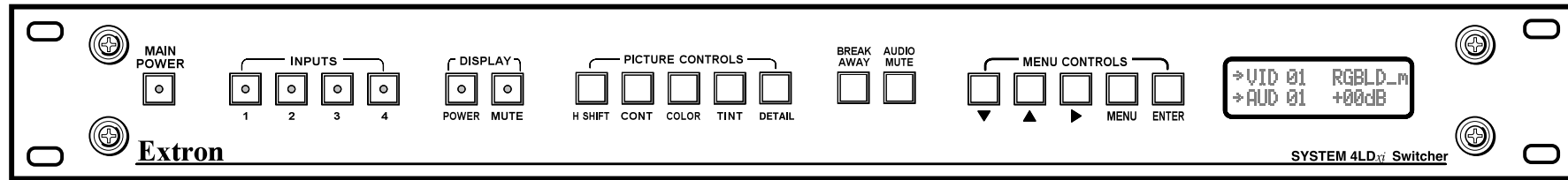
MAIN POWER

This button turns the System 4xi power On or Off. The light indicates when power is On.

INPUTS

Inputs (1 thru 4) buttons are used to select which of the four possible inputs will go to the output (projector or monitor).

DISPLAY CONTROLS

POWER - allows the connected display power to be turned On or Off from the System 4xi. The LED lights when power is On.

MUTE - commands the attached display picture to be muted (blanked). The LED is lighted when the picture is being muted.

PICTURE CONTROLS (depends upon the System 4xi model)

These buttons only affect line-doubled/quadrupled signals, as well as decoded composite and S-video signals. (Functions marked with ‡ do not affect line-doubled/quadrupled RGB.) When pressed, each button brings up an LCD display which is used with Menu Controls to make adjustments.

H SHIFT - brings up an LCD display for Horizontal Shift adjustment. This allows the picture to be adjusted left or right.

CONT - (‡) brings up an LCD display for adjusting the picture Contrast.

COLOR - (‡) brings up an LCD display for adjusting the Color level.

TINT - (‡) brings up an LCD display for adjusting the Tint or Hue.

DETAIL - (‡) (only on 4LDxi/ex and 4LQxi/ex models) brings up an LCD display to adjust up to 4 levels of picture Detail (sharpness).

_ After making an adjustment, press the same Picture Control button to save the setting and exit from the display.

BREAKAWAY

The Breakaway button allows the audio and video signals to be separated from (Breakaway) or combined with (Follow) each other to the output. There are three choices: Video & Audio, Video only or Audio only. The current condition is displayed in the LCD panel by arrows on the left side.

_ In Executive mode (explained later) audio always follows video.

AUDIO MUTE

This button allows the audio to be muted (temporarily turned off). When Audio is muted, the LCD panel alternately displays the word "Muting" and then the current dB level.

MENU CONTROLS

The Menu Control buttons are used with the LCD screen to display and make changes to system settings.

_ The Up and Down buttons are used to change a selection or a value in the LCD display.

_ The Tab button is used to step from one selection point to the next on the LCD display.

(Button combinations are used for special functions – explained later.)

MENU _ The Menu button is used to display a Select menu, which is used to select other control menus.

ENTER   The Enter button is used to enter a menu sequence, save a setting and/or complete an operation.

LCD DISPLAY

The LCD screen displays System 4xi status and is used interactively with front panel buttons when making changes to settings.

Default LCD Screen

```
┌─────────────────────┐
│  SYSTEM 4LDxi       │
│ EXTRON       V3.11  │
└─────────────────────┘
```

```
┌─────────────────────┐
│  SYSTEM 4LQxi       │
│ EXTRON       V4.11  │
└─────────────────────┘
```
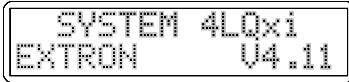
When the System 4$_{xi}$ is powered up, a Title screen appears briefly, followed by the Default display. Examples are shown to the left. This manual covers different System 4$_{xi}$ models; an appropriate screen will appear displaying your model and software version.

The Default screen (shown to the right) will continue to display whenever the panel is not being used. It displays the current status of the input(s), with the following information:

```
┌─────────────────────┐
│→VID 01 RGBS         │
│→AUD 01 +00dB        │
└─────────────────────┘
```

Video Configuration
The top line displays which video input channel is selected and its Video Mode. The example shows that Video input #1 is selected, with RGB and Sync. Other modes are explained later. The Arrow to the left ($\rightarrow$ VID) indicates that video is being switched (not Breakaway).

Audio Configuration
The second line provides the current audio configuration. The example shows that Audio input #1 is selected and the arrow ($\rightarrow$ AUD) indicates that audio is being switched (Audio Follow). The gain/attenuation is set at 0 dB for that input.

BREAK AWAY   AUDIO MUTE
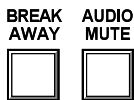
Breakaway
As mentioned earlier, the Breakaway button allows Audio and Video to be separated. The three breakaway steps are: Video and Audio (both), Video only, and Audio only. The Default Display indicates this condition by turning off the arrow for the signal that is not being sent to the output.

Audio Mute
As stated on the previous page, the Audio Mute button temporarily turns the audio Off. The Default Display indicates this condition by alternately displaying the word "Muting" and the dB level.

When the default menu is being displayed, pressing a Front Panel button will then change the screen to display appropriate information. These LCD screens, or menus, are explained later.

System 4$_{xi}$ Model Differences

This chapter covers all both System 4$_{xi}$ models. Each model has different features, and a different Front Panel. Because the System 4LD$_{xi}$ and 4LQ$_{xi}$ have the most features, page 3-1 shows a 4LD$_{xi}$ front panel; all System 4$_{xi}$ panels are shown below. The most obvious differences are in the number of Picture Control buttons. Other differences will appear when using the LCD menus.
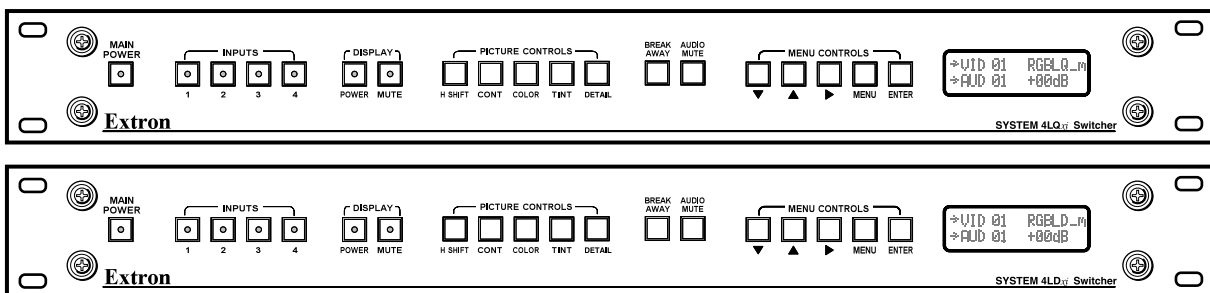
Figure 3-2. System 4$_{xi}$ Front Panel Differences

Menu Controls and Navigation

▼　▲　▶　MENU　ENTER
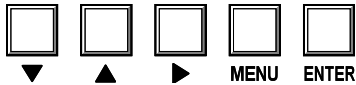
Figure 3-7 on page 3-12 shows a flowchart of all the menus. Use it as a road map or guide to get to a specific one.

There are two groups of menus. There is a menu for each of the Picture Control buttons on the front panel. These are explained on page 3-12 . The larger portion of the flow diagram is a network of menus for setting up (or displaying) the System 4xi input and output configuration, and are selected from the five Menu Control buttons on the Front Panel (shown above). The text and diagrams in this section include symbols that represent these panel buttons. They are: ▼, ▲, ▶, MENU and ENTER

The Menu Control buttons are used with the LCD screen for viewing status, changing settings, and making adjustments to the System 4xi configuration. Each menu is described later. The Menu button (MENU) is the starting point.

Press MENU at any time to leave a menu and return to the Select/Exit menu.

The LCD menus include "Help" symbols to indicate how to use them. An example of these symbols can be seen in the menus to the left. Their descriptions are as follows:

```
MENU SELECT    ↓↑
6.LD SYNC CFG
        ↓ ENTER
LD SYNC CFG   →↓↑
>H/HVOUT=>H ONLY
        →↓↑
        >CSYNC
LD SYNC CFG   →↓↑
>SERRA.=>PRESENT
        →↓↑
        >REMOVE
```
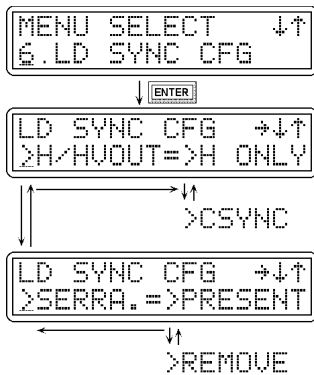
- *The arrows in the upper-right corner (→ ↓ ↑) of the display indicate which of the direction buttons, ▶ ▼ ▲, may be used with this menu. These buttons allow the user to step forward, backward, or loop through menu choices.*

- *The character "**>**" marks a selection point where the user may choose between two or more options. For menus that have more than one selection point, use the ▶ button to step from one selection point to the next (and then loop back to the first).*

- *The character "_" is the cursor position. Use ▼ or ▲ to change the display to the right of the cursor and make a different selection. When a function blinks, that indicates a tentative decision. That is, you have displayed something, but have not yet made the selection. Press ENTER to select and save it. If a function does not blink, it is already selected, or active.*

To exit a Control Menu at any time, without saving changes, press any of the four input buttons to return to the Default menu. (If you don't want to change input selections, press the button for the input that is already selected.)

Terms used in LCD Menus

AUD = Audio
CHL = Input channel (used in Menu #9). It includes both Audio and Video.
CFG = Configuration, as in setup
H = Horizontal, as in horizontal sync
H/V = Horizontal and Vertical, as in composite sync (H and V)
LD = Line-doubled output (LQ = Line-quadrupled output)
RGB = Red, Green and Blue colors or video signals
RGsB = Red, Green and Blue, and the sync included with the Green signal
RGBS = Red, Green and Blue, and the Sync (H and V) on a 4th line
Slave = Another switcher whose output serves as an input to a System 4xi.
_m = Motion - use this for video with action.
_s = Still - use this for text or still pictures (slide presentations)
VID = Video
YC = S-Video, for the chrominance (C) and the luminance (Y)
V = Vertical, as in vertical sync

The following pages have examples for using some of the menus, as well as details on the function of each menu. Page 3-12 (Figure 3-7) has a flowchart of the LCD menus. You may use it as a road map to go from one menu to another.

Example of Using the Menu Controls

Suppose we have a System 4LD*xi* and want to set up Input #2 for line-doubled, motion video in a VGA format with separate horizontal and vertical sync, negative polarity and serration pulses. Follow the numbered steps below as you refer to the corresponding numbers in the flowchart in Figure 3-3 for Menu #1, in Figure 3-4 for Menu #6, and in Figure 3-5 for Menu #7.

Menu #1 is used to configure the type of output you want from each input.

❶ Press MENU Enter Menu Select Options (Menu #0).

❷ Press ▼ or ▲ to get Menu #1 (Vid Mode CFG).

❸ Press ENTER to select this menu.

❹ With the cursor (_) at the left position (>), the display shows VID01 selected. Press ▼ or ▲ to display Input #2 (VID02).

❺ Press ▶ to step to the next selection point (>).

❻ Press ▼ or ▲ to display RGBLD_m. (Output will be line-doubled, motion video for Input #2.)

❼ Press ENTER to save this setting for Input #2. Press MENU to exit this menu and go to Menu #0.

❽ From Menu #0 you may start your next setup procedure, or press ENTER to return to the Default Menu.

✎ ——— *A detailed explanation of each menu follows, beginning with Menu #0 on page 3-7.*

SYSTEM 4LD*xi*
EXTRON V3.11   Power Up Display

After 2-3 second delay   Displayed information depends upon video type, audio level and breakaway setting.

MENU CONTROLS
▼ ▲ ▶ MENU ENTER

Default Screen
->VID 01 RGBS
->AUD 01 +00dB

❶ MENU

Change Entry Point ▶
Change Selection ▼ ▲
Accept/Save Selection ENTER
Exit to Menu 0 MENU

Go to Menu 9

MENU SELECT
0.EXIT

❽ ENTER

❷ ▼ ▲

MENU SELECT
1.VID MODE CFG

❸ ENTER

VID MODE CFG
>VID02=>RGBLD_m

❼ MENU / ENTER

❹ Select Video Input #2.

❺ Move cursor.

❻ This example is for System 4LD*xi*.

Select Video Type
>RGBLD_m

MENU SELECT
2.AUD LEVEL CFG

MENU SELECT
3.HOST BAUDRATE

MENU SELECT
4.RGB DELAY

MENU SELECT
5.SLAVE CFG

MENU SELECT
6.LD SYNC CFG

MENU SELECT
7.LD CFG

MENU SELECT
8.INFORMATION

MENU SELECT
9.SWITCH SLAVE   *Only if configured as a Slave switcher

Go to Menu 0

Figure 3-3. Example: Configuring System 4 Inputs

Menu #6 is used to set up composite or separate horizontal and vertical sync for line-doubled/quadrupled images. Follow the numbers in the diagram and continue.

❶ Press ⌸MENU⌸ to get the Menu Select Options (Menu #0).

❷ Press ▾ or ▴ to get Menu #6 (LD Sync CFG).

❸ Press ⌸ENTER⌸ to select this menu. There are four functions in this menu as displayed from the left selection point. They are listed in the diagram. Use ▸ to move between the two selection points, and then use ▾ or ▴ to show the choices, and leave your choice displayed before going to the next function.

❹ From the left selection point, press ▾ or ▴ to choose one of the four functions.

❺ Press ▸ to step to the second selection point and press ▾ or ▴ to change the selection for that function. If the display already shows what you want, leave it and go on. The choices made for this example are circled.

❹ Press ▸ to step back to the left selection point. Repeat steps ❹ and ❺ until you have made all of your changes to this menu.

❻ Press ⌸ENTER⌸ to save these settings and press ⌸MENU⌸ to go to Menu #0. From there you may step to another menu and start your next setup procedure, or exit.

❼ Press ⌸ENTER⌸ to exit Menu #0 and go to the Default Menu.

Diagram:

SYSTEM 4LD₍ᵪᵢ₎ EXTRON V3.11 — Power Up Display

After 2-3 second delay — Displayed information depends upon video type, audio level and breakaway setting.

MENU CONTROLS: ▾ ▴ ▸ MENU ENTER

Change Entry Point (▸)
Change Selection (▾ ▴)
Accept/Save Selection (ENTER)
Exit to Menu 0 (MENU)

Default:
->VID 01 RGBS
->AUD 01 +00dB

❶ MENU

Go to Menu 9

MENU SELECT
0.EXIT — ❼ ENTER

MENU SELECT
1.VID MODE CFG

MENU SELECT
2.AUD LEVEL CFG

MENU SELECT
3.HOST BAUDRATE — Screen

MENU SELECT
4.RGB DELAY

MENU SELECT
5.SLAVE CFG

❷ MENU SELECT
6. LD SYNC CFG — ❸ ENTER — LD SYNC CFG >H/HVOUT=>CSYNC — ❻ ENTER

❹ Select function and move cursor
4 functions, 2 choices each
❺ Make selection

❹a - Select H/HVOUT = ❺ Select H Only
❹b - Select SERRA. = ❺ Select PRESENT
❹c - Select HOUT POL = ❺ Select NEG
❹d - Select VOUT POL = ❺ Select NEG

MENU SELECT
7.LD CFG

MENU SELECT
8.INFORMATION

MENU SELECT
9.SWITCH SLAVE — *Only if configured as a Slave switcher

Go to Menu 0

MENU

Figure 3-4. Example: Configuring System 4 Output Sync for Line Doubled/Quadrupled Sources

A detailed explanation of each menu follows, beginning with Menu #0 .

Menu #7 is used to set up Demo and VGA modes.

❶ Press [MENU] to get the Menu Select LCD (Menu #0).

❷ From Menu #0, press ▼ or ▲ to go to Menu #7.

❸ Press [ENTER] to select this menu. There are two functions in this menu as displayed from the left selection point. They are listed in the diagram. Use ▶ to move between the two selection points, and then use ▼ or ▲ to show the choices, and leave your choice displayed before going to the next function.

❹ From the left selection point, press ▼ or ▲ to choose one of the two functions.

❺ Press ▶ to step to the second selection point and press ▼ or ▲ to change the selection. If the display already shows what you want, leave it and go on. Repeat ❹ and ❺ to make other changes to this menu. The choices for this example are circled.

❻ Press [ENTER] to save these settings and press [MENU] to go to Menu #0. From here you may step to another menu and start your next setup procedure, or exit.

❼ Press [ENTER] to exit Menu #0 and go to the Default Menu.

✍ _____ *VGA mode is only available on System 4LD$_{\chi i}$.*

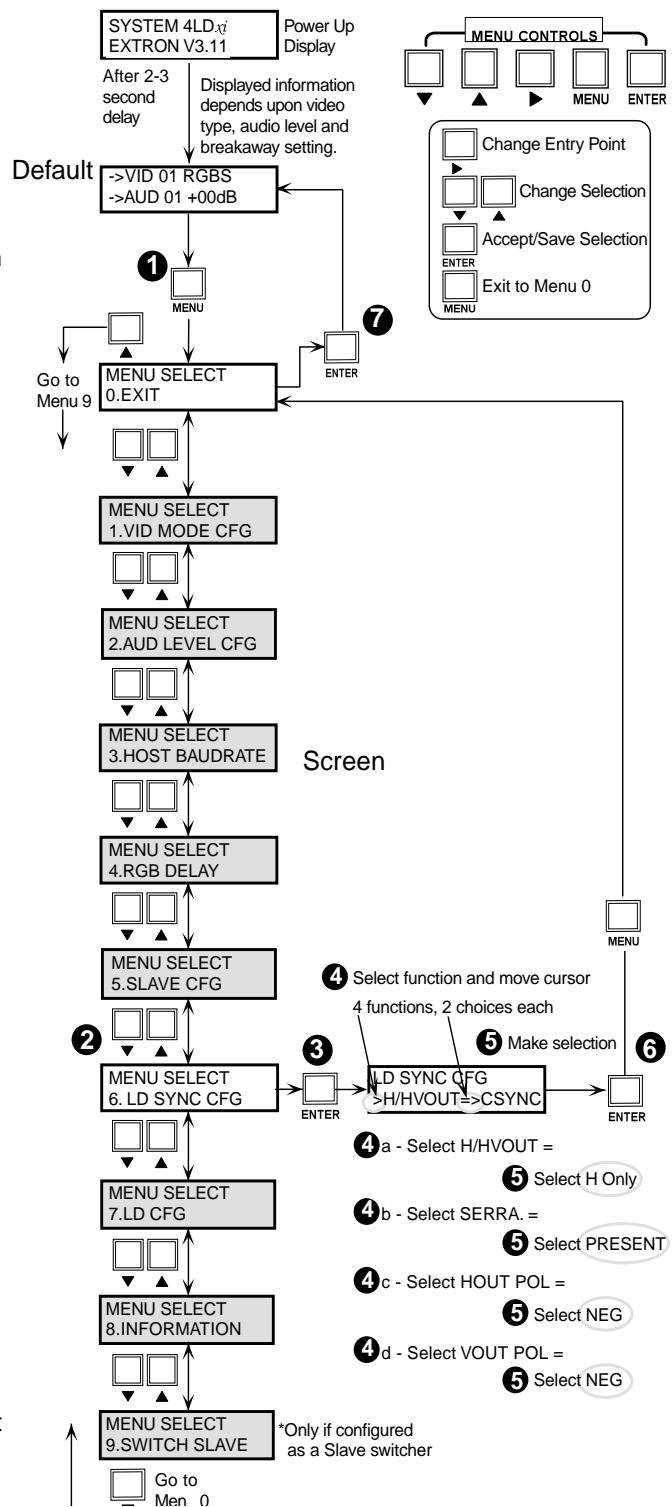✍ _____ *A detailed explanation of each menu follows, beginning with Menu #0 on page 3-7.*
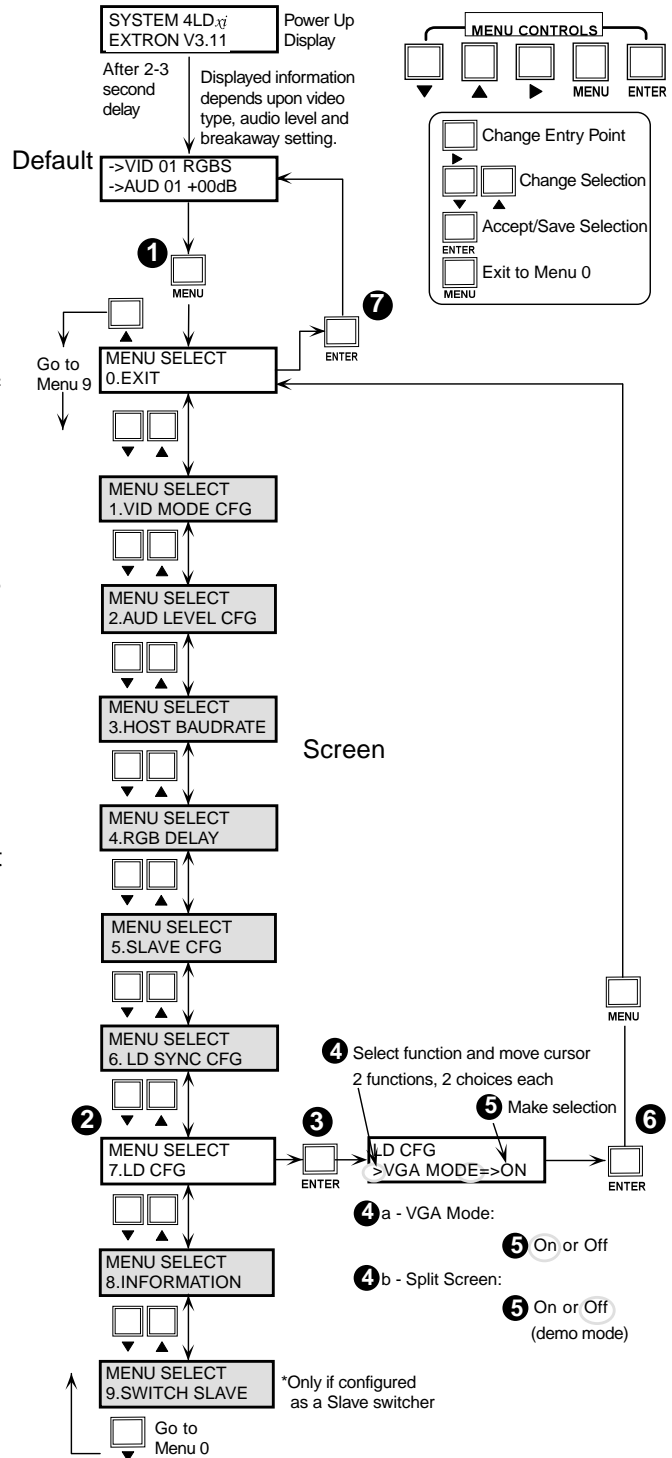
Figure 3-5. Example: Configuring the System 4$_{\chi i}$ Line-Doubled Output to be exactly 640 x 480, standard VGA mode

0. Menu Select/Exit Menu

```
┌─────────────────────┐
│ MENU SELECT     ↓↑  │
│ 0.EXIT              │
└─────────────────────┘
    ▼▲
  1.VID MODE CFG
    ▼▲    ▼▲
  2.AUD LEVEL CFG
    ▼▲    ▼▲
  3.HOST BAUDRATE
    ▼▲    ▼▲
  4.RGB DELAY
    ▼▲
  5.SLAVE CFG
    ▼▲
  6.LD SYNC CFG
    ▼▲
  7.LD CFG
    ▼▲
  8.INFORMATION
    ▼▲ (If no slave switcher, skip #9.)
  9.SWITCH SLAVE
```

The Menu button ([MENU])brings up the Menu Select/Exit screen. This is the starting point to get into any of the Control Menus. Some menus in this chapter have more than one example. This is because of the different System 4$_{\chi i}$ models. Be sure to use the example for the System 4$_{\chi i}$ model you are using.
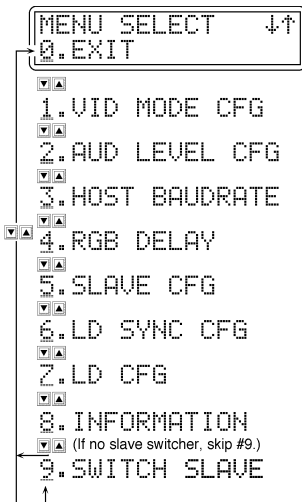
The example here is for the System 4LD$_{\chi i}$ model (4LQ$_{\chi i}$ is very similar except for references to line quadrupler).

Press ▼ or ▲ to select from the following menus.
0. Select/Exit Menu - Press [ENTER] to return to the default screen.
1. VID MODE CFG - Configure a video input channel.
2. AUD LEVEL CFG - Configure an audio input channel.
3. HOST BAUDRATE - Set the RS-232 baudrate for the host system.
4. RGB DELAY - Set the time delay for switching the RGB signals (after Sync).
5. SLAVE CFG - Set the System 4$_{\chi i}$ for use with a slave switcher.
6. Change Line-doubler Sync output configuration.
7. Change Line-doubler display to VGA mode or Split Screen (demo).
8. Display Information (of internal switch settings).
9. Switch Slave - (only appears if the System 4$_{\chi i}$ has slave configuration)
   Select slave channels from System 4$_{\chi i}$ front panel. See Chapter 4.

Press [ENTER] to select the menu being displayed.

Each of the menu choices listed in Menu #0 is explained later in this chapter.

1. Video Mode Configuration

The next two pages show three different versions of Menu #1 to cover the different models in the System 4$_{\chi i}$ Series of products. Use the one that is appropriate for your model.

Use the Video Mode Configuration Menu (Menu #1) to match the type of video with the signal coming into each input and choose how it will output. For example, if Input #3 has S-video coming in and you want it line-doubled when it goes to your projector, select VID03 and select YCLD (_m or _s for $_{\chi i}$ models)

The System 4LD$_{\chi i}$ and 4LQ$_{\chi i}$ models can have line-doubled (or quadrupled) output with the *motion* or *still* attribute. If the application includes action video (movies, etc.) use the *motion* attribute; if it is a slide presentation (still pictures and text), use the *still* attribute. Each setup done in Menu #1 is stored with its respective channel.

1a. Video Mode Configuration Menu (System 4LD$_{\chi i}$*/4LQ$_{\chi i}$ format options)

```
┌─────────────────────┐
│ MENU SELECT     ↓↑  │
│ 1.VID MODE CFG      │
└─────────────────────┘
        │ ENTER
        ▼
┌─────────────────────┐
│ VID MODE CFG →↓↑    │
│ >VID01=>RGBLD_m     │
└─────────────────────┘
  ▼▲  ◄─►  ▼▲
  >VID02      >RGBLD_s
  ▼▲          ▼▲
  >VID03      >RGsB
  ▼▲          ▼▲
  >VID04      >RGBS
  ▼▲          ▼▲
(to maximum channel #,   >VIDLD_m
  including slaves)       ▼▲
                        >VIDLD_s
                  ▼▲    ▼▲
            loop  >YCLD_m
                        ▼▲
                  >YCLD_s
```

Use [MENU] ▼ ▲ to get to this menu, and then press [ENTER] to select it.
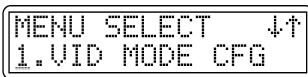
The two cursor points in the Video Configuration menu are indicated by the character ">".

With the cursor in the left position, use ▼ or ▲ to select a video input channel. Only the available channel numbers (System 4$_{\chi i}$ plus slave inputs) will display.
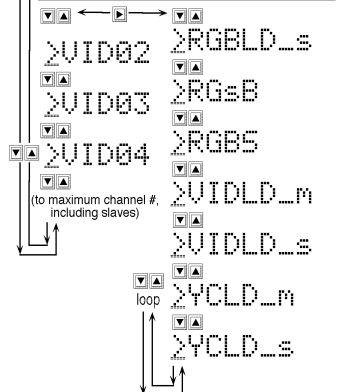
Use ► to step between the two positions. Use ▼ or ▲ to select the video format to assign to this channel number.

- RGBLD_m = Input is RGB** and Sync and output will be line-doubled, motion.
- RGBLD_s = Input is RGB** and Sync and output will be line-doubled, still.
- RGsB = Input is RGB with Sync on Green and will pass to output.
- RGBS = Input is RGB and Sync (composite or H&V) and will pass to output.
- VIDLD_m = Input is Composite Video and output will be line-doubled, motion.
- VIDLD_s = Input is Composite Video and output will be line-doubled, still.
- YCLD_m = Input is S-video/S-VHS and output will be line-doubled, motion.
- YCLD_s = Input is S-video/S-VHS and output will be line-doubled, still.

When a change is selected, but not yet saved, the selection blinks.

Press [ENTER] to save the selection to memory.
Repeat the above for other input channel numbers.

Press [MENU], [ENTER] to go back to the Default Menu.

If the change is made for the input that is currently selected, the projector won't display the change until the next time the input number is selected.

*4LD$_{xi}$ shown here

**Only NTSC (15.75 kHz) RGB signals can be line-doubled or line-quadrupled

2. Audio Level Configuration Menu

```
MENU SELECT    ↓↑
2.AUD LEVEL CFG
```
↓ ENTER
```
AUD LEVEL CFG→↓↑
>AUD01=>+00dB
```
▼▲ —— ▶ —→ ▼▲
```
>AUD02 >+01dB
```
▼▲   ▼▲
(to maximum channel #) (to maximum/minimum level)
Loop   Loop
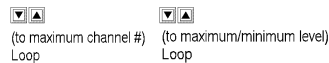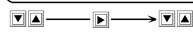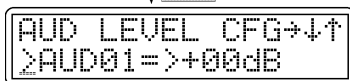
Use [MENU] [▼] [▲] to get to this menu, and then press [ENTER] to select it.

There are two cursor points in the Audio Configuration menu, indicated by the character ">". Use [▶] to step between the two positions.

With the cursor in the left position, use [▼] or [▲] to select a audio input channel. Only available channel numbers will display.

With the cursor at the right position, use [▼] or [▲] to set the audio gain/attenuation level for the selected input channel. The range is from -31dB to +31dB.

When a change is selected, but not yet saved, the dB value blinks.

When an audio input is selected, it is connected to the output (except when muted). This menu allows each audio input to be set to match the others.

Press [ENTER] to save the selection to memory.

Press [MENU] or any input button at any time to exit.

3. Host Baudrate Menu

```
MENU SELECT    ↓↑
3.HOST BAUDRATE
```
↓ ENTER
```
HOST BAUDRATE ↓↑
> 9600
```
▼▲
```
> 19200
```
▼▲
```
> 2400
```
▼▲
```
> 4800
```
↓↑
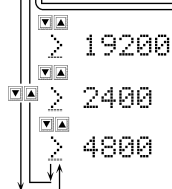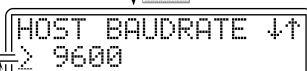
Use [MENU] [▼] [▲] to get to this menu, and then press [ENTER] to select it.

Only the baudrate can be changed; the protocol remains the same.

Use [▼] or [▲] to select the baudrate for the host system on the RS-232 port. The choices are listed in the illustration.

• *The default baudrate is 9600.*
• *The fixed protocol is 8-bits, 1 stop bit, no parity.*

When a change is selected, but not yet saved, the value blinks.

Press [ENTER] to save the selection to memory.

Press [MENU] to go to Menu #0 and then [ENTER] to go back to the Default Menu.

4. RGB Delay Menu

```
MENU SELECT    ↓↑
4.RGB DELAY
```
↓ ENTER
```
RGB DELAY      ↓↑
> 0.0 SECOND(S)
```
▼▲
```
> 0.5
```
half second increments
5.0 = maximum
```
> 5.0
```
↓↑
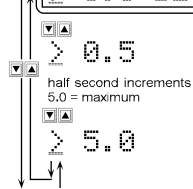
Press [MENU] [▼] [▲] to get to this menu, and then press [ENTER] to select it.

Use this menu to set the time delay for switching the RGB on after the sync has switched. Use [▼] or [▲] to select the number of seconds (0 to 5 in half-second increments).

When a change is selected, but not yet saved, the value blinks.

Press [ENTER] to save the selection to memory.

Press [MENU] to go to Menu #0 and then [ENTER] to go back to the Default Menu.

If audio is being switched with the video, the audio will also be delayed.

Press [MENU], [ENTER] to go back to the Default Menu.

5. Slave Configuration Menu

```
MENU SELECT    ↓↑
5.SLAVE CFG
```
↓ ENTER
```
SLAVE CFG      ↓↑
>NONE
```
↓↑
```
 >SYSTEM 8+
```
↓↑
```
 >SYSTEM 10+
```
↓↑
```
 >SW6ARMX
```
↓↑
```
 >SW4ARMX
```
↓↑
```
 >MULTI SYS8/10
```
↓↑
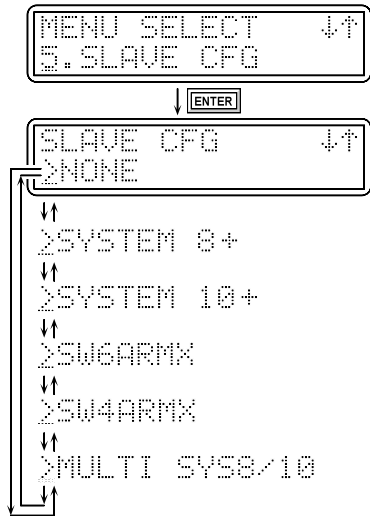
Use ⬚MENU ▼ ▲ to get to this menu, and then press ⬚ENTER to select it.

Menu 5 is used **only** to set up the System 4χi for use with a slave switcher. The default setting is "None".

Press ▼ or ▲ to select from the following options:
-   None = The System 4χi has no slave inputs.
-   System 8+ = The slave is a System 8 Plus.
-   System 10+ = The slave is a System 10 Plus.
-   SW6ARMX = The slave is an SW6 ARMX switcher.
-   SW4ARMX = The slave is an SW4 ARMX switcher.
-   MULTI SYS8/10 Plus = More than one System 8/10 switcher.

Press ⬚ENTER to save the selection to memory.

Once set for a slave, an 8th menu will become available for selecting slave channels. See Chapter 4 for details on slave configurations.

Press ⬚MENU to go to Menu #0 and then ⬚ENTER to go back to the Default Menu.

✎ ———— *When looped with other switchers, the System 4χi is **always** the Master. System 4χi switchers cannot be looped together.*

6. LD Sync Configuration Menu*

```
MENU SELECT    ↓↑
6.LD SYNC CFG
```
↓ ENTER
```
LD SYNC CFG   →↓↑
>H/HVOUT=>H ONLY
```
```
        >CSYNC
```
```
LD SYNC CFG   →↓↑
>SERRA.=>PRESENT
```
```
        >REMOVE
```
```
LD SYNC CFG   →↓↑
>HOUT  POL=>NEG.
```
```
        >POS.
```
```
LD SYNC CFG   →↓↑
>VOUT  POL=>NEG.
```
```
        >POS.
```
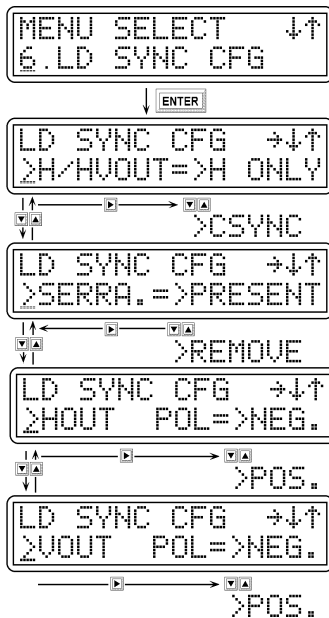
This menu specifies line-doubled/quadrupled sync output format.

Use ⬚MENU ▼ ▲ to get menu 6, and then press ⬚ENTER to select it.

There are four submenus for menu 6. Each submenu has two selection points, indicated by the character ">". Use ▶ to step between the two selection points, and then use ▼ or ▲ to change the choices.

H/HVOUT => H Only for separate H & V out or CSync for composite sync out.
SERRA.=> set for Serration Pulses Present or Removed.
HOUT POL=> to set Horizontal Sync for Positive or Negative Polarity.
VOUT POL=> to set Vertical Sync for Positive or Negative Polarity.

If a change is selected, the new selection blinks until it is saved.

Press ⬚ENTER to save the new setting.

Press ⬚MENU or any input button at any time to exit.

Press ⬚MENU to go to Menu #0 and then ⬚ENTER to go back to the Default Menu.

*LDχi is shown here

7. Sync Configuration Menu

```
MENU SELECT    ↓↑
7.VGA MODE
```
↓ ENTER
```
LD CFG        →↓↑
>VGA MODE =>ON
```
```
        >OFF
```
```
LD CFG        →↓↑
>SPLIT SCRN=>ON
```
```
        >OFF
```
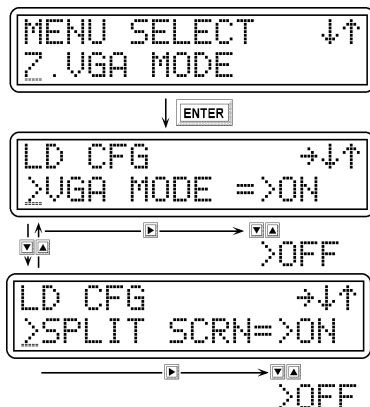
This Menu 7 will set up Line-Doubler/Line Quadrupler display mode for System 4LDχi/4LQχi (see flowchart in Figure 3-7 for menu differences).

Press ⬚MENU ▼ ▲ to access this menu, and then press ⬚ENTER to select it.

With the cursor in the left position, use ▼ or ▲ to select VGA Mode or Split Screen (also called "Demo mode").

With the cursor at the right position, use ▼ or ▲ to turn the selected function On or Off.

Press ⬚ENTER to accept/save the change.

Press ⬚MENU to go to Menu #0 and then ⬚ENTER to go back to the Default Menu.

8. Information Menu

```
MENU SELECT    ↓↑
8.INFORMATION
```
↓ ENTER
```
INFORMATION    ↓↑
>SYSTEM4 LD,V1.1
```
▼▲
```
>PRJ= SONY
```
▼▲
```
>PRJ BAUD= n/a
```
▼▲
```
>UNIT No.= 001
```
▼▲
```
>HST BAUD= 9600
```
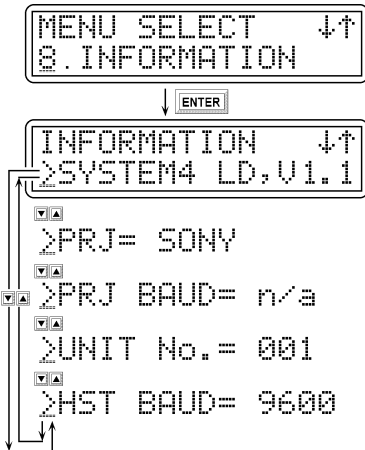
Use MENU ▼ ▲ to get this menu, and then press ENTER to select it.

Menu 8 allows the internal system information to be displayed on the LCD screen, eliminating the need to open the System 4χi cover to see the switch settings. The Information Menu is for **display only**; no changes can be made from here.

Press ENTER to select this menu set.

The five submenus are shown in the example to the left.
Press ▼ or ▲ to step through and display the information choices.
The diagram to the left shows some examples of what the settings could be.

Press MENU or any input button at any time to exit.

Press MENU to go to Menu #0 and then ENTER to go back to the Default Menu.

9. Slave Switcher Input Selection

```
MENU SELECT    ↓↑
9.SWITCH SLAVE
```
↓ ENTER
```
SWITCH SLAVE   ↓↑
>CHL 04= RGBS
```
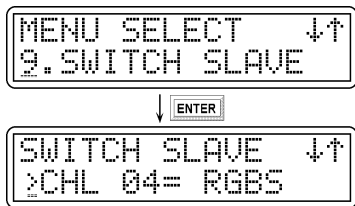
If the System 4χi is not set up for a Slave input, this menu will not appear.

Because the System 4χi has four input buttons, if it uses a slave switcher, Menu 9 is used to select a Slave input from the Front Panel. Use the ▼ or ▲ buttons to select from Input 4 through the highest input number available. (e.g. If a System 8 PLUS switcher is used as a slave, the input channels available in Menu 9 will be 4 through 11.)

When the input is selected, its video format is also displayed.

Press ENTER to select the displayed channel.

Press MENU to go to Menu #0 and then ENTER to go back to the Default Menu.

✍ _____ *CHL represents the input channel number (CHL04). In menus 1 and 2, VID (VID04) and AUD (AUD04) are used because in those menus video and audio are handled separately.*

Picture Controls (line doubler/line quadrupler converter)
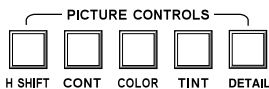
The number of Picture Controls depends upon the System 4χi model. (See Figure 3-2.) Each Picture Control button will display its current setting. From this display, adjustments can be made and saved.

✍ _____ *There are three ways to exit a display at any time, without saving new settings.*
1. Press the same Picture Control button.
2. Press any input button (1 thru 4).
3. Press MENU to go to Menu #0 and then ENTER to go to the Default screen.

✍ _____ *Picture Controls for CONT, COLOR, and TINT are not available for RGBLD/RGBLQ inputs.*
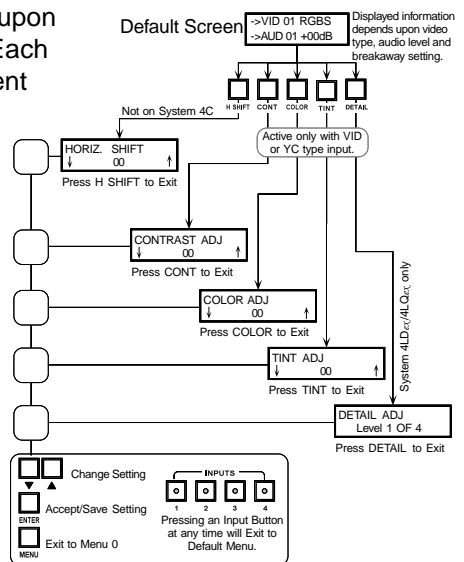
Figure 3-6. System 4χi Picture Controls Display Menu Flowchart

Horizontal Shift Control

```
HORIZ. SHIFT
↓      00        ↑
```

This is for line doubled/line quadrupled signals only.
Press **H S**ʜɪꜰᴛ to bring up this menu. The current Horizontal Shift setting will be displayed. Use ▼ or ▲ to change the setting, while observing the projector/ monitor screen. (Range: -62 to +62).

Press ⌜ENTER⌝ to save the new setting.
Press **H S**ʜɪꜰᴛ again to exit and return to the default screen.

To exit without saving, press **H S**ʜɪꜰᴛ again (without pressing ⌜ENTER⌝), or use one of the other procedures above.

Contrast Control

```
CONTRAST ADJ
↓      00        ↑
```

Press **C**ᴏɴᴛ to display this menu. The current Contrast setting will be displayed. Use ▼ or ▲ to change the setting, while observing the projector/monitor screen. (Range: -62 to +62).

Press ⌜ENTER⌝ to save the new setting.
Press **C**ᴏɴᴛ again to exit and go to the default screen.

Color Control

```
COLOR ADJ
↓      00        ↑
```

Press **C**ᴏʟᴏʀ to display this menu. The current Color level will be displayed. Use ▼ or ▲ to change the setting, while observing the projector/monitor screen. (Range: -62 to +62).

Press ⌜ENTER⌝ to save the new setting.
Press **C**ᴏʟᴏʀ again to exit and go to the default screen.

Tint Control

```
TINT ADJ
↓      00        ↑
```

Press **T**ɪɴᴛ to display this menu. The current Tint (Hue) level will be displayed. Use ▼ or ▲ to change the setting, while observing the projector/monitor screen. (Range: -62 to +62).

Press ⌜ENTER⌝ to save the new setting.
Press **T**ɪɴᴛ again to exit and go to the default screen.

Detail Control

```
DETAIL ADJ.
↓ Level 1 OF 4 ↑
        ▼▲
        2
        3
        4
```

This control is only on the System 4LD𝒳𝒾 and 4LQ𝒳𝒾

Press **D**ᴇᴛᴀɪʟ to display this menu. The current Detail (Sharpness) setting will be displayed. Use ▼ or ▲ to change the setting, while observing the projector/ monitor screen. (Range: 1 to 4).

Press ⌜ENTER⌝ to save the new setting.
Press **D**ᴇᴛᴀɪʟ again to exit and go to the default screen.

System 4$\mathcal{X}i$ Series LCD Menus

Title Menu

```
SYSTEM 4LDxi
EXTRON V3.11
```

```
SYSTEM 4LQxi
EXTRON V4.11 *
```

*4LQ$\mathcal{X}i$ menus will not appear exactly as shown here, i.e. LQ will replace LD, etc.

PICTURE CONTROLS

H SHIFT   CONT   COLOR   TINT   DETAIL

After 2-3 second delay

MENU CONTROLS

▼   ▲   ▶   MENU   ENTER

Displayed information depends upon video type, audio level and breakaway setting.

Default Menu

```
->VID 01 RGBS
->AUD 01 +00dB
```

▶ Change Entry Point

Change Selection

ENTER Accept/Save Selection

MENU Exit to Menu 0

H SHIFT   CONT   COLOR   TINT   DETAIL   MENU

Not on System 4C

Active only with VID or YC type input.

Go to Menu 9

```
MENU SELECT
0.EXIT
```

```
HORIZ. SHIFT
    00
```
Press H SHIFT to Exit

```
MENU SELECT
1.VID MODE CFG
```

ENTER

```
VID MODE CFG
>VID01=>RGBLD_m
```
Select Video Input #.
Select Video Type.

```
CONTRAST ADJ
    00
```
Press CONT to Exit

```
MENU SELECT
2.AUD LEVEL CFG
```

ENTER

```
AUD LEVEL CFG
>AUD01=>+00dB
```
Select Audio Input #.
Select dB Level.

```
COLOR ADJ
    00
```
Press COLOR to Exit

```
MENU SELECT
3.HOST BAUDRATE
```

ENTER

```
HOST BAUDRATE
>9600
```
Select Baud rate for Communication with Host.

```
TINT ADJ
    00
```
Press TINT to Exit

```
MENU SELECT
4.RGB DELAY
```

ENTER

```
RGB DELAY
>0.5 SECONDS
```
Select Time delay for switching RGB after Sync.

```
DETAIL ADJ
Level 1 OF 4
```
Press DETAIL to Exit

```
MENU SELECT
5.SLAVE CFG
```

ENTER

```
SLAVE CFG
>SW 6-MX
```
Select type of switching device used as a Slave (or None).

```
MENU SELECT
6.LD SYNC CFG
```

ENTER

```
LD SYNC CFG
>H/HVOUT=>CSYNC
```
Select type of Sync output.
Select Serrations:
Present or Remove

Change Setting

ENTER Accept/Save Setting

MENU Exit to Menu 0

INPUTS
1   2   3   4

Pressing an Input Button at any time will Exit to Default Menu.

```
MENU SELECT
7.LD CFG
```

ENTER

```
LD CFG
>VGA MODE =>ON
```
Turn VGA Mode (for LD only) and/or Split Screen Mode On/Off

```
MENU SELECT
8.INFORMATION
```

ENTER

```
INFORMATION
>SYS 4 LDxi, V3.11
```
Display System 4 Information:
Projector type
Prj baud Rate
Host Baud Rate...

```
MENU SELECT
9.SWITCH SLAVE
```

ENTER

```
SWITCH SLAVE
>CHL 4= RGBS
```
Select Slave Channels,
Chl 4 thru highest available

Go to Menu 0

*Only if configured as a Slave switcher

Figure 3-7. System 4$\mathcal{X}i$ Display Menu Flow Chart

Special Functions

Other functions that can be accessed, using the Front Panel, are described below.

System Reset

The System 4$_{xi}$ can be restored to factory settings at any time from the default menu. To do this from the default menu, press and hold ▼ and ▲ and ▶ at the same time until a reset display message appears in the LCD screen. See the example below. When finished, the Default screen reappears.

⚠ ————— *This operation destroys all settings that were saved to memory, including all slave configuration settings.*

The restored settings include:

```
Resetting SYSTEM
Please Wait.....
```

```
Resetting MODE
Please Wait.....
```

```
Resetting VALUE
Please Wait.....
```

- *Video configuration = RGBS*
- *Audio = 0.0 dB*
- *H Shift = midpoint (0)*
- *Cont = midpoint (0)*
- *Color = midpoint (0)*
- *Tint = midpoint (0)*
- *Host baud rate = 9600*
- *RGB delay = 0.0 seconds*
- *LD-Sync Cfg:*
    Out = Composite Sync
    Serration = Present
- *Number of channels = 4 (no slaves)*

Toggle Executive Mode

```
*VID 01  RGBS
*AUD 01  +00dB
```

Executive Mode allows certain settings to be protected by locking out the Front Panel. To toggle Executive Mode On from the default menu, press ENTER and ▶ at the same time. Hold the keys until the LCD display indicates the mode change. The second line of the LCD display will temporarily change to show "Executive ON".

When the System 4$_{xi}$ is in the Executive Mode, panel operation is limited to Channel Input keys and Audio Mute keys. The Default LCD screen will change, showing "∗" instead of "→". The VID and AUD information will be the same as the standard Default display.

✍ ———— *One of the benefits of Executive Mode is that it stays in effect when power is turned Off.*

```
→VID 01  RGBS
→AUD 01  +00dB
```

The same procedure toggles Executive Mode Off. From the default menu, hold the keys until the LCD display indicates the mode change. The second line will temporarily change to show "Executive OFF". The Default display changes the symbols "∗" back to "→".

Chapter Four

Connecting Multiple Switchers

Looping the System 4$_{xi}$ (Master/Slave)

Input Channel Addressing

SW4 ARMX or SW6 ARMX as Slave to System 4$_{xi}$

System 8/10 P$_{LUS}$ as Slave to System 4$_{xi}$

Multiple System 8/10 P$_{LUS}$ Switchers

Looping the System 4xi with Other Switchers

The System 4xi can be interconnected, or "looped" with other switchers to allow for a greater number of inputs to be switched to the projector. With each of these configurations, the System 4xi acts as the "Master", to communicate with the projector and supply the video signal. The switcher that provides input to the System 4xi is the "Slave". If two switchers are looped with the System 4xi, the second switcher is a "Slave" to the first, and the first is a "Slave" to the System 4xi.

- *The slave switcher is always connected to the highest master input (input #4 on a System 4xi; input #10 on a System 10 and input #8 on a System 8, etc.).*
- *Input numbering always starts at input #1 of the System 4xi and input #4 will become the first input from the "slave" switcher.*
- *The System 4xi **cannot** be used as a slave switcher.*
- *The only switchers that can be looped with the System 4xi are: Extron's SW4 ARMX, SW6 ARMX, System 8 PLus and System 10 PLus.*
- *In any master/slave arrangement, the System 4xi acts as if it is one large switcher. That is, each slave input can be selected and set up from the System 4xi Front Panel. Any Slave input can be configured for any signal type.*
  For example, a System 4LDxi with a System 8 PLus as a slave is seen by PC software as a line-doubling, 11-input switcher.

Input Channel Addressing

The System 4xi must be set up to recognize input that is from another switcher unit. The Front Panel operation in Chapter 3 explains how this is done. In a master/slave configuration, input channel numbers of 4 or higher are translated and sent to the appropriate slave input number. For example, selecting input #9 will select input #4 on the System 4xi, and then tell the slave switcher to select its input #6. See shaded table entry below.

Channel	Sys4	SW4	SW6	SW8+	SW10+	Multiple SW8+/SW10+
Ch #1	Ch #1					
Ch #2	Ch #2					
Ch #3	Ch #3					
Ch #4	Ch #4	Ch #1	Ch #1	Ch #1	Ch #1	Ch #1 (1st SW10)
Ch #5	Ch #4	Ch #2	Ch #2	Ch #2	Ch #2	Ch #2
Ch #6	Ch #4	Ch #3	Ch #3	Ch #3	Ch #3	Ch #3
Ch #7	Ch #4	Ch #4	Ch #4	Ch #4	Ch #4	Ch #4
Ch #8	Ch #4		Ch #5	Ch #5	Ch #5	Ch #5
Ch #9	Ch #4		Ch #6	Ch #6	Ch #6	Ch #6
Ch #10	Ch #4			Ch #7	Ch #7	Ch #7
Ch #11	Ch #4			Ch #8	Ch #8	Ch #8
Ch #12	Ch #4				Ch #9	Ch #9
Ch #13	Ch #4				Ch #10	Ch #10
Ch #14	Ch #4					Ch #2 (2nd SW10)
Ch #15-22*	Ch #4					Ch #3 - 10

* Channel numbers continue if multiple switchers are used as slaves. The highest number of channels is 22, using two System 10 PLus units as slaves.

The following pages show configurations for looping the System 4xi with other Extron-approved switchers. Looping the System 4xi will not work with all switchers; call Extron Electronics if you have any questions.

Controlling Master/Slave Switchers

When a host system is controlling a System 4xi with a switcher as a slave, a special 9-pin T-Connector cable, called a "System 4xi Slave Adapter" is necessary. Pictured below, in Figure 4-1, the connector marked "Slave" is a 9-pin male connector designed to work with the switchers described in this section.

Communications between the System 4xi (master) and the slave is done through a second port on the same connector. The adapter puts this second set of signals on the "normal" transmit/receive lines (pins 2 and 3) on the slave connector. Because Host devices tend to use pins 4 and 8 for CTS and DTR signaling, those pins must be disabled.

⚠ ———— *Referred to as Rx2 and Tx2, on pins 4 and 8, these pins* must not be used for other signals in the Host System. It may be necessary to disconnect pins 4 and 8 at the Host side.*

The J1 connector connects to the J2 connector which connects to the J3 connector.

J1 Pins (System 4xi)	J2 Pins (Host)	J3 Pins (Slave Switcher)
1 - n/c	1 - n/c	1 - n/c
2 - Tx	2 - Rx	2 - Tx2 (slave to host)
3 - Rx	3 - Tx	3 - Rx2 (host to slave)
4 - Tx2	4 - *Tx2	4 - n/c
5 - Gnd	5 - Gnd	5 - Gnd
6 - n/c	6 - n/c	6 - n/c
7 - n/c	7 - n/c	7 - n/c
8 - Rx2	8 - *Rx2	8 - n/c
9 - n/c	9 - n/c	9 - n/c

Extron makes this cable (Extron part # 26-386-01), however, if you choose to make your own, the pin requirements are specified in the above table.

The System 4xi Slave Adapter is shown in the appropriate application diagrams that follow.
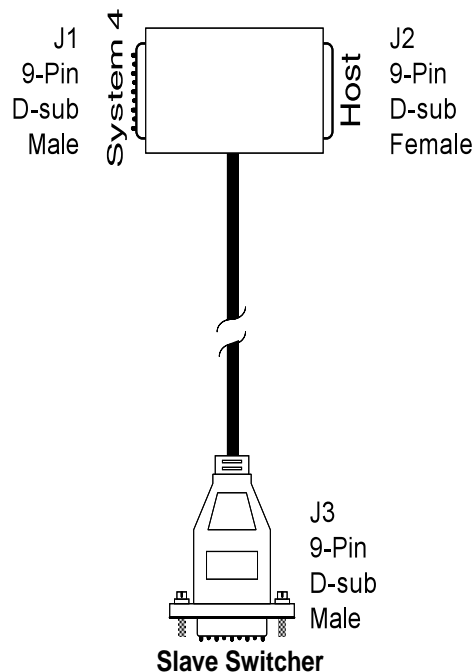
Figure 4-1. System 4xi Slave Adapter

System 4xi with SW4/6 ARMX Switchers

The picture in Figure 4-2 shows an SW6 ARMX as an example, although it would also apply to an SW4 ARMX. Connect the video output of the ARMX switcher (SW4 or SW6) to the last (4th) input of the System 4xi.

Regardless of how the slave switcher input connectors are marked, they must conform to the inputs of the System 4xi. They are: R/C, G/Y/Video, B, H/HV & V. Note that composite video uses the G/Y connector.

The System 4xi will control the ARMX switcher through the secondary RS-232 port, by way of a System 4xi Slave Adapter described on page 4-2.

Jumper E2 inside the SW4/6 must be moved from "Normal" to "Slave Sys4" position to allow it to act as a slave. (See SW4/6 documentation.)

After making all the cable connections, go to page 4-7 to configure the master/slave as a system.
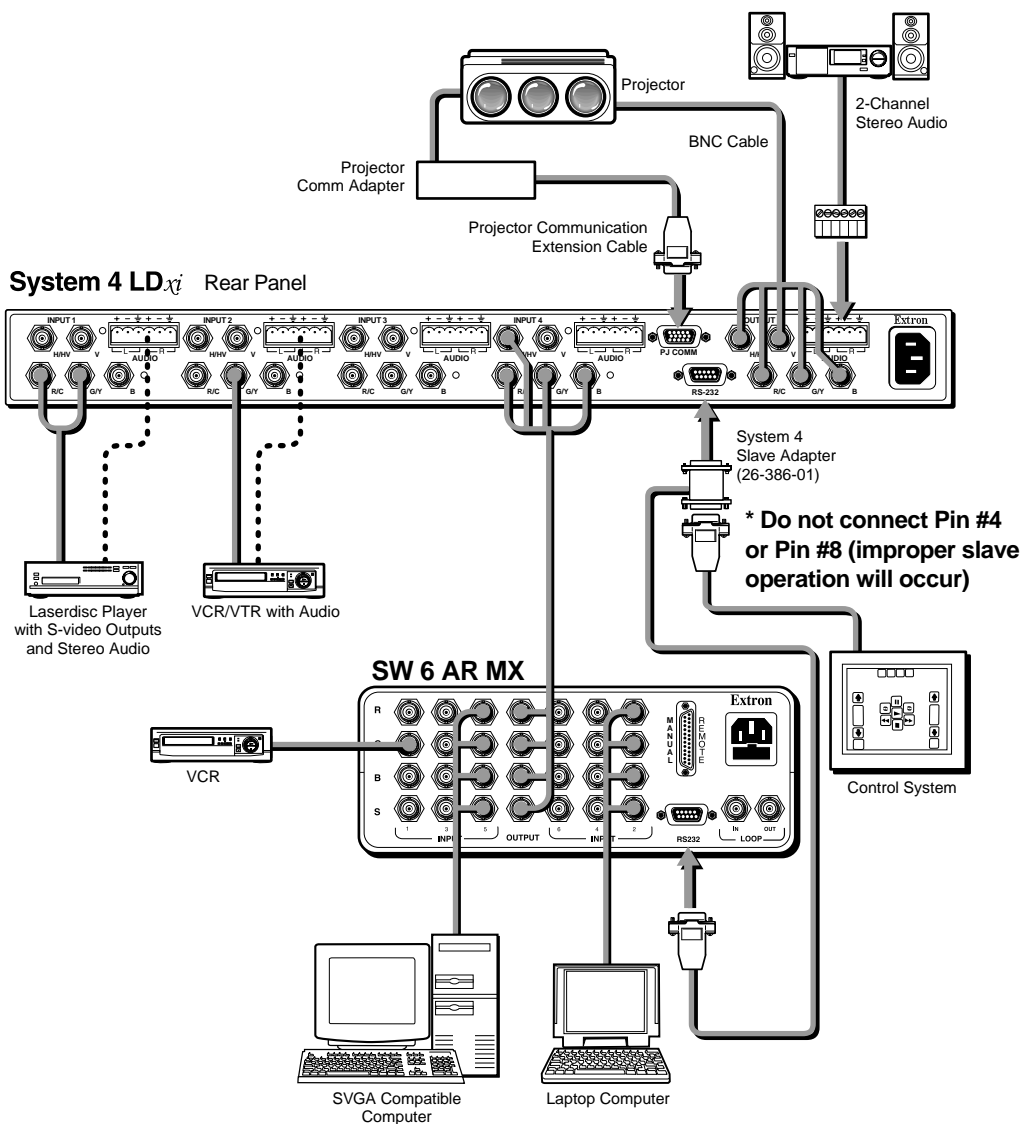
Figure 4-2. System 4xi Master with an SW6 ARMX Slave Switcher

System 4xi with One System 8/10 PLUS Switcher

The System 8/10 PLUS must be configured as a Slave. Connect the RGBHV and Audio output of the System 8/10 PLUS switcher to the last (4th) input of the System 4xi. Use the figure below as an example.

The System 4xi will control the System 8/10 PLUS Switcher through the secondary RS-232 port, by way of a System 4xi Slave Adapter described on page 4-2.

Go to page 4-6 to set up the System 8/10 PLUS switches.

After making all the cable connections, go to page 4-7 to configure the master/slave as a system.
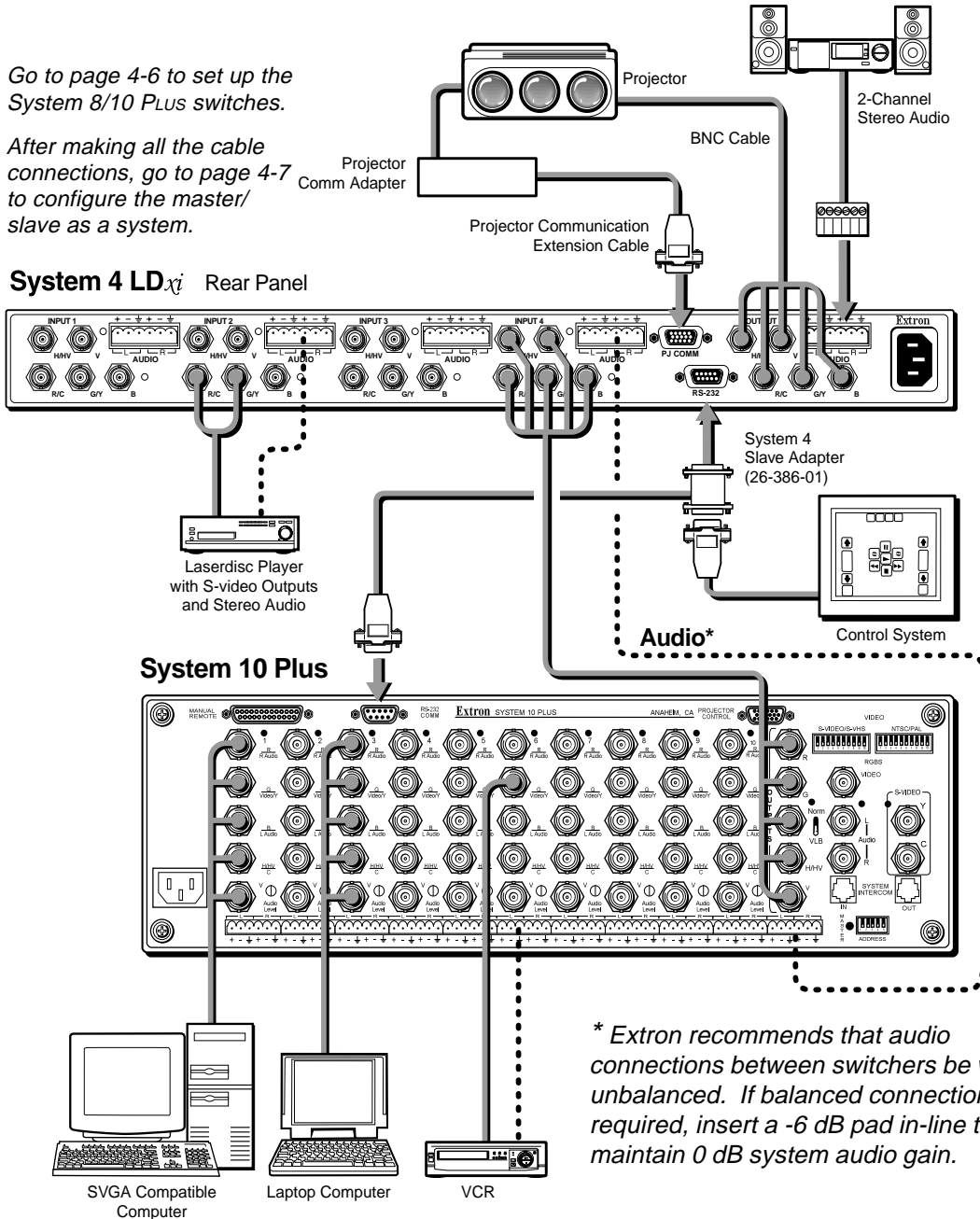
Figure 4-3. System 4xi Master with a System 10 Plus Slave Switcher

Regardless of how the slave switcher input connectors are marked, they must conform to the inputs of the System 4xi. They are: R/C, G/Y/Video, B, H/HV & V. Note that composite video uses the G/Y connector.

System 4xi with Multiple System 8/10 PLUS Switchers

This configuration will work only with System 8/10 PLUS switchers in a daisy chain configuration. (See the System 8/10 User's Manual for details.) The master of the System 8/10 PLUS chain must be configured in the "RS-232 only" projector communications mode. The System 4xi will control the System 8/10 PLUS Switcher through the secondary RS-232 port by way of a System 4xi Slave Adapter described on page 4-2. The System 4xi communicates with the first System 8/10 PLUS, which in turn communicates with the second System 8/10 PLUS.

A. Use the Slave Adapter to connect the controlling device to the System 4xi and to the first System 8/10 PLUS.

B. Connect a cable from Intercom Out connector (RJ11) on the first System 8/10 PLUS and the other end into Intercom In connector (RJ11) of the second System 8/10 PLUS.

C. Connect the RGBHV and Audio outputs from the System 8/10 PLUS master to the last input of the System 4xi. Likewise, connect the output of the second slave to the last input of the first slave.

Go to page 4-6 to set up the System 8/10 PLUS switches.

Regardless of how the slave switcher input connectors are marked, they must conform to the inputs of the System 4xi. They are: R/C, G/Y/Video, B, H/HV & V. Note that composite video uses the G/Y connector.

After making all the cable connections, go to page 4-7 to configure the master/slave as a system.

* Extron recommends that audio connections between switchers be wired unbalanced. If balanced connections are required, insert a -6 dB pad in-line to maintain 0 dB system audio gain.
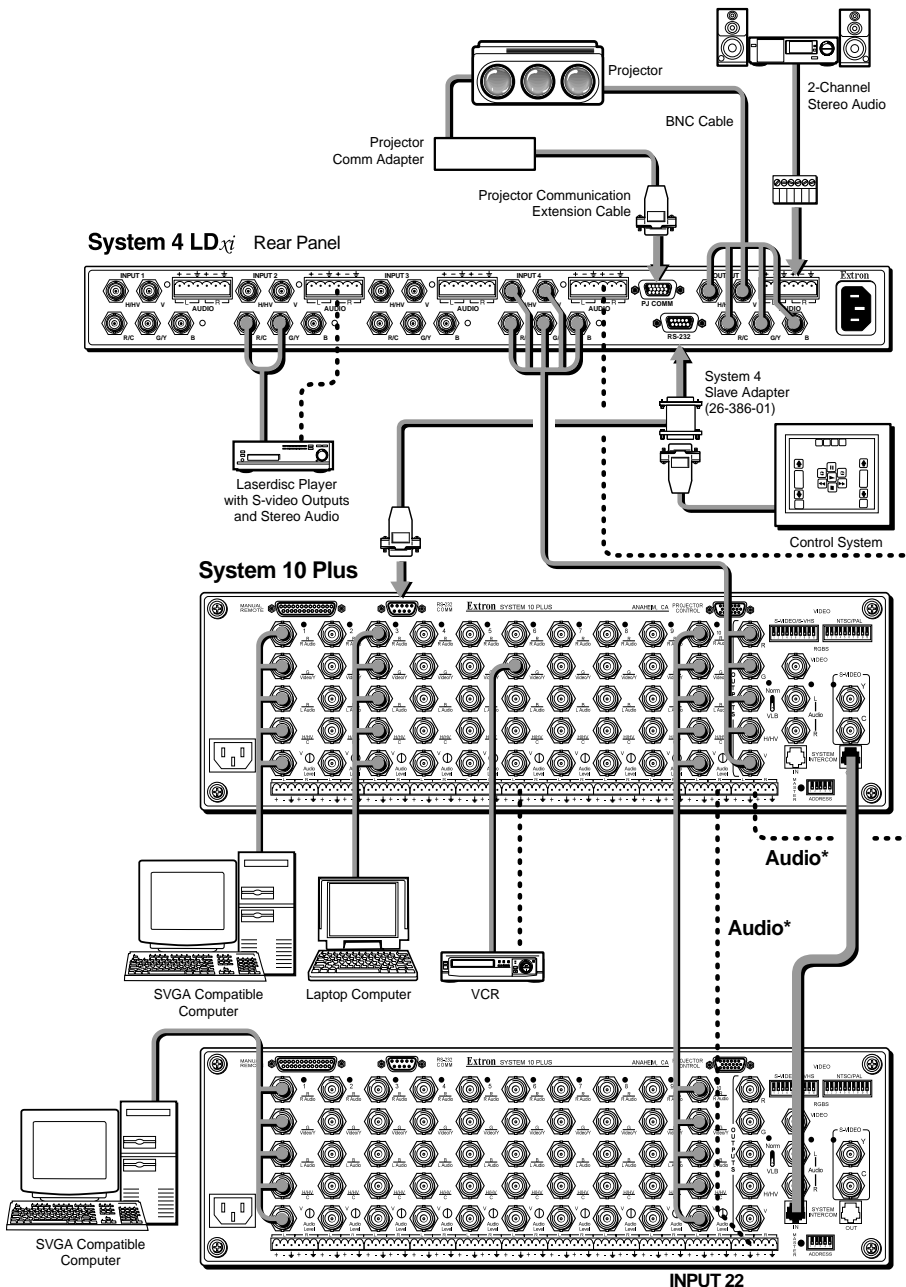
Figure 4-4. System 4xi Master with multiple System 10 Plus Slave Switchers

System 8/10 PLUS Switch Settings

From the front access panel on the System 8/10 PLUS, do the following:

1. On DIP switch block SW15, set switches #6 and #8 ON.
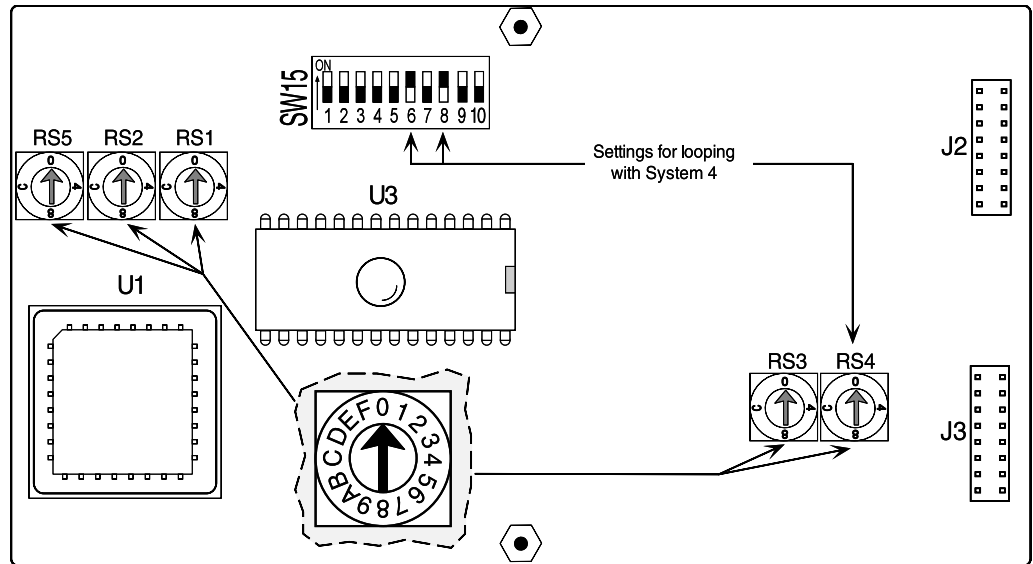
Figure 4-5. System 8/10 Plus Front Access Panel Switches

2. Set rotary switch RS4 to the "0" position.

On the rear panel of the System 8/10 PLUS, do the following:

3. Set the Norm/VLB switch on the back of the 8/10 PLUS set to "Norm".

4. Set the Address switches for "master". (If looping two 8/10 PLUS systems to the System 4$_{xi}$, the second one must be set as a "slave".)

5. Set the Video/RGBS switches to match the type of video to be used by each input and do the configuration setup.

Go to page 4-7 to configure the master/ slave as a system.

Refer to the System 8/10 PLUS User's Manual for other switch settings.
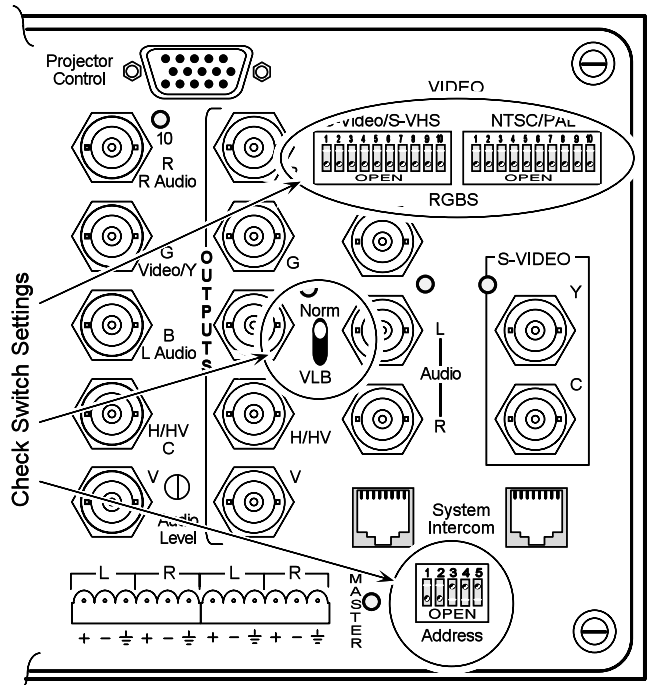
Figure 4-6. System 8/10 Plus Setup Switches

Programming the System 4$_{xi}$ Looping Configuration

After making all the connections for a master/slave system, turn power on for all the units involved and access Menu 5 (Slave Cfg). Use the ▼ or ▲ to step to the correct configuration, and then press ENTER to save the setting to memory.

```
MENU SELECT    ↓↑
5.SLAVE CFG
```

```
        ↓ ENTER
```

```
SLAVE CFG      ↓↑
>NONE
```

✎ ——————— *This procedure may be done before connecting the slave(s) to the System 4$_{xi}$, if that is more convenient.*

```
   ▼▲
  >SYSTEM 8
   ▼▲
  >SYSTEM 10
   ▼▲
 ▼▲ >SW 6-MX
   ▼▲
  >SW 4-MX
   ▼▲
  >MULTI SYS8/10
```
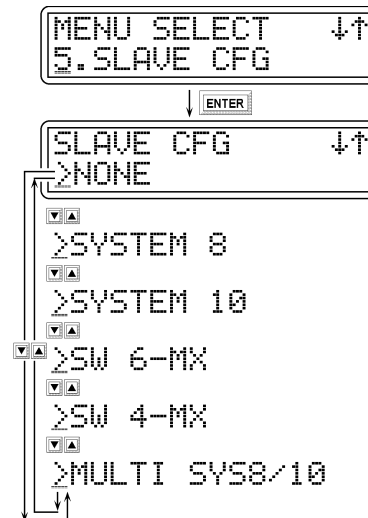
Testing the Master/Slave Communications

Press MENU to go back to the menu selection again. Step to the Switch Slave menu (Menu 9 if System 4LD$_{xi}$/4LQ$_{xi}$ – otherwise Menu 8). This menu will only appear if there is a slave configured.

```
MENU SELECT    ↓↑
9.SWITCH SLAVE
```

```
      ↓ ENTER
```

```
SWITCH SLAVE   ↓↑
>CHL 04= RGBS
```
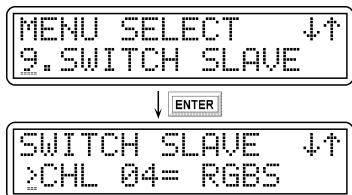
Press ENTER to get the Switch Slave Menu (shown below). The display will show Channel 4 because that is the first slave channel.

Use the ▼ and ▲ to step to a slave channel and press ENTER to select it. Once selected, look at the front panel of the slave unit to see that the correct channel has been selected. Using the table on page 4-1, select channel #6 and channel #3 will light on the slave switcher. Repeat this procedure for each available slave channel. (Only the available channels will show in the LCD display.)

Now test the switcher communications in reverse by pressing a channel switch on the slave and see that its system channel number appears in the LCD display. Again, use the table on page 4-1 as a reference.

Once the master/slave system is checked out, all of the available channels can be accessed and set up from the System 4$_{xi}$ front panel with Menus 1 and 2. The channel numbers will be as listed in the left column of the table on page 4-1.

△ ——————— *Resetting the system (described on page 3-7) will remove all slave channels from memory. If that happens, Menu 5 must be used to reconfigure the system.*

Chapter Five

Using Windows® Control Software

Installing the Windows Software

Using Help Examples

System 4ₓᵢ Stand-alone

System 4ₓᵢ with Slave

Executive Mode

Extron System Switcher Control Software

This chapter is dedicated to using Extron's "Windows Control Program for System Switchers via RS-232" software. Extron supplies this software that runs in the Windows® operating system, version 3.1 or later (Windows95® and Windows98®). It works with several Extron system switchers, including the System 4xi series. Communication between the computer software and the switcher is established after connecting the computer to the RS-232 Port on the rear panel of the System 4xi, as follows:

1. Connect the PC's Comm port to the RS-232 on the back of the System 4xi.

2. Power up the System 4xi and the PC and start Windows.
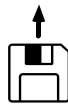
The floppy disk has instructions printed on the label. The software can be run from the floppy drive, or loaded onto the PC's hard drive.

3. Install the software from the 3.5" floppy disk onto the hard disk like any other Windows application. (Run Setup.exe from the floppy disk.)

Although this software was designed to control any System 4xi switcher, its operation will be restricted to the features and configuration of your unit.

RS-232

System 4 Switcher

PC with Windows® Operating System
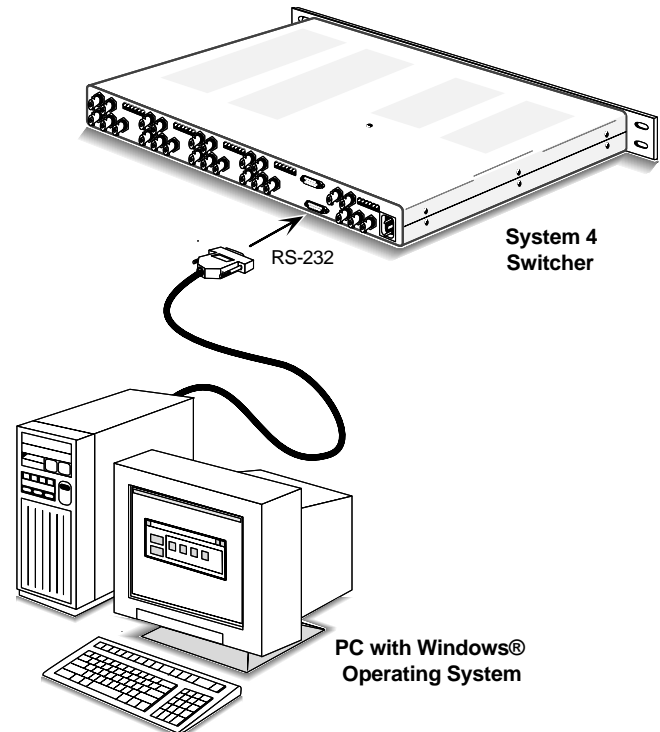
Figure 5-1. Connect the PC to the System 4xi.

SYSTEM 4/8/10+

SYSTEM SWITCHER Control Pgm
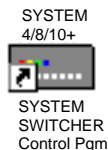
4. To run the System Switcher Control program, double-click on the SYSTEM SWITCHER Control Pgm icon in the Extron Electronics group or folder. The Comm menu appears on the display.

Figure 5-2. System Switcher Control Program icon

SYSTEM SWITCHER Help

Double-clicking the Help icon will present detailed examples of the screens and menus prior to running the Control program.

5. After you have selected the Comm Port, the software looks for the System 4xi, "reads" its configuration, and then displays that information in a window called "Extron's System Switcher Control program". (see Figures 5-4 through 5-7)

System 4*xi* Help

The fastest way to learn what each Windows® function does is through the Help menus. At any time, help is available by double-clicking the Help icon (previous section), pulling down the Help menu or by pressing F1. This will bring up the Help menu (like the example shown below) to allow you to step through the screen examples. Click on the items on each screen to display a description.

☞ _____ *As with all Windows® Help menus, clicking on the underlined words will give more detailed help.*
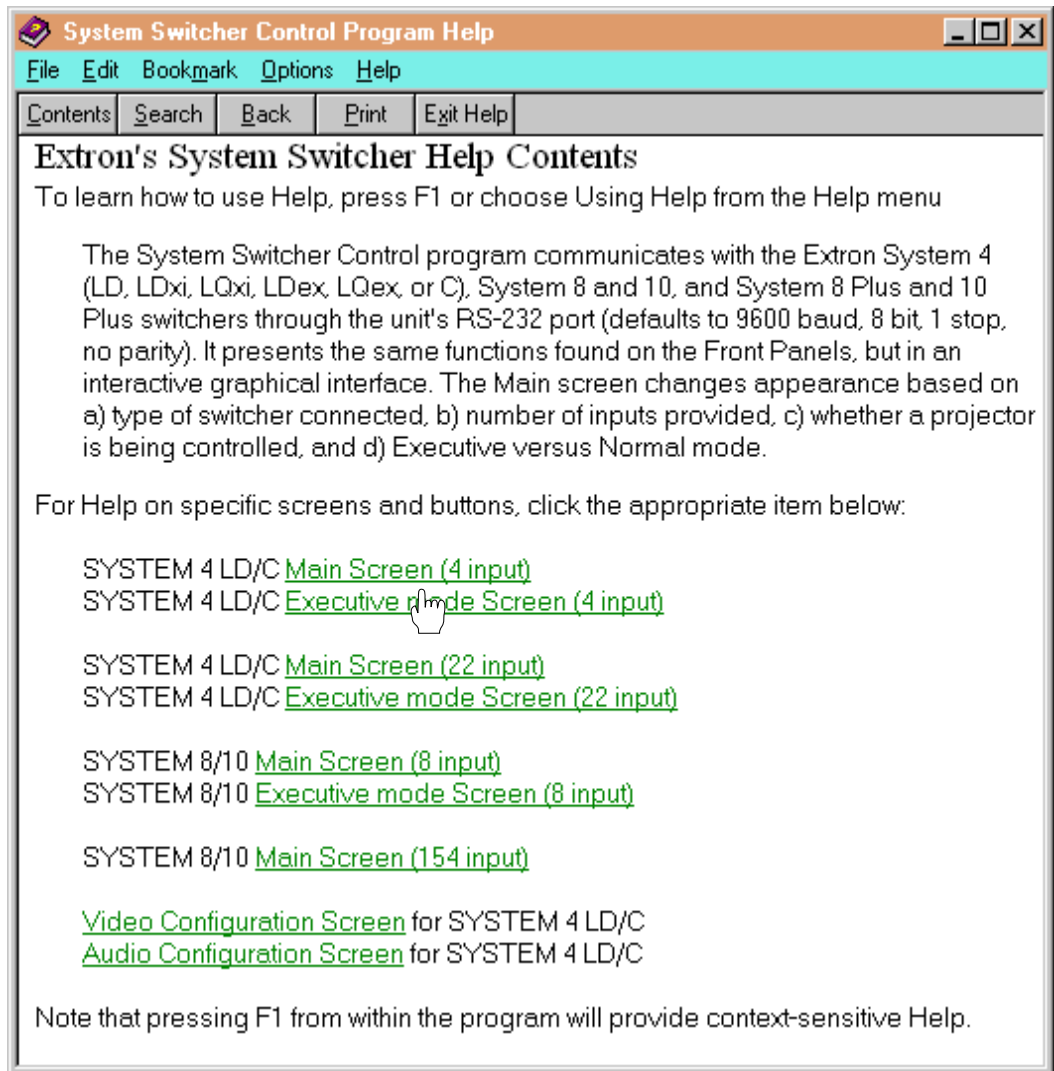
Figure 5-3. Example of the first Help menu, Help Contents

After viewing the Help menus, use the software to setup your System 4*xi*. Specific examples are given below.

Each function on the front panel of your System 4*xi* is emulated in the software panel in the window. Also, the software was written to operate with different models of switchers. Therefore, any function that is not available on your model will be inactive in the window. A function is inactive when it appears dull, or gray, and does not respond to the mouse cursor.

Windows Control Panel Examples:

As mentioned earlier, the window panels have the same functions as the System 4*xi* front panel. Figure 5-4 shows four input buttons for the System 4*xi*, while Figure 5-5 shows 11 inputs. This is an example of a System 4*xi*, with a System 8 Plus switcher as a slave unit. Inputs 1, 2 and 3 may each have a video device connected. However, Inputs 4 through 11 are actually Inputs 1 through 8 of the slave switcher connected to the System 4*xi* (8 + 3 = 11 inputs).

Although the Help menus have detailed information on the software functions, here are some brief descriptions.

MAIN POWER – in the upper-left corner, is the same as the Power button on the System 4*xi* front panel. It turns the switcher off or on.

*When this button is in the off position, power is still present inside the System 4*xi* *enclosure.*

INPUTS – Click to select an input. Settings associated with that input will also be displayed in the window panel. If both the Video (green) and Audio (blue) boxes are selected (X), the audio and video will switch together (Audio Follow); if not, they may be switched separately (Breakaway).

The Video type (example VIDLD_s) and Audio level (example +14 dB) are displayed to the right of the buttons.

AUDIO MUTE – This button mutes the Audio temporarily.

DISPLAY POWER – This button is the same as the Display Power button on the System 4*xi* front panel. If available, it turns the display (projector) off or on.

DISPLAY MUTE – This button, if available, turns the display (picture) off temporarily.

FREEZE – Freeze Frame Mode is active if this LED is on. While in this mode, the output will be a single frame of video until the Freeze button is pressed.
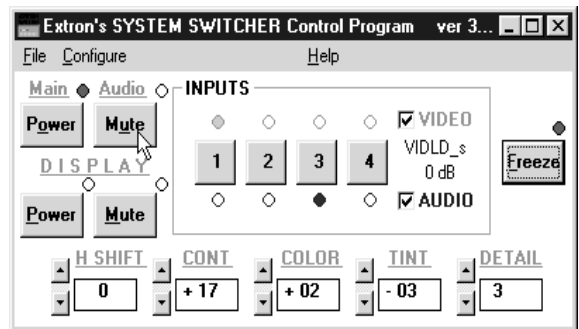
Figure 5-4. Example of a System 4*xi* (LD/LQ) Panel with no Slave Switchers
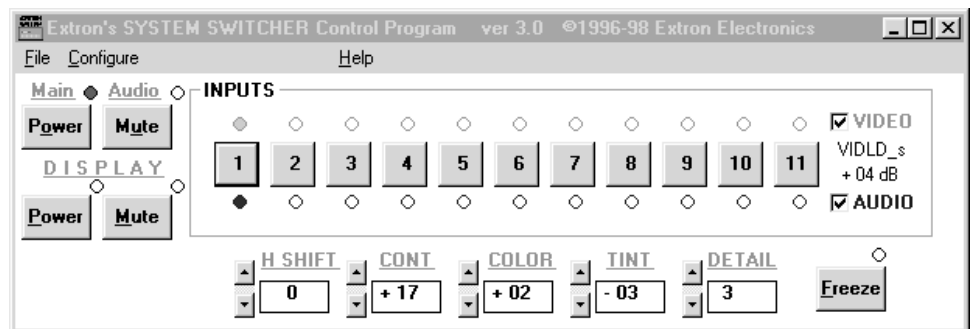
Figure 5-5. Example of a System 4*xi* (LD/LQ) Panel with a System 8 Plus as a Slave Switcher

PICTURE CONTROLS – Depending upon the model of your System 4*xi*, there are three, four or five controls that correspond to the Picture Controls on the System 4*xi* front panel. Each control is clearly marked and has a "nudge" button for increasing and another for decreasing the setting. (These controls are also available through the Configure Video pull-down menu.

✍ _____ *The actual window panel controls will depend upon your System 4xi model, as well as the projector, or display device that is connected to it.*

Executive Mode

This section shows examples of System 4*xi* panels when in Executive Mode. After setting up the audio and video controls, the System 4*xi* may be put in Executive Mode. This simplifies switcher operation by disabling most of the audio and video setup controls and not displaying them. This mode also "locks" configuration settings by not allowing access to them.
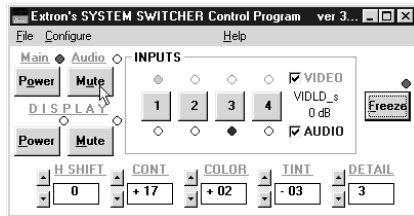
Figure 5-6. Example of a System 4xi (LD/LQ) Panel in Executive Mode with no Slave Switchers

Enter Executive Mode from the Configure Menu; leave by clicking on the Normal button.

Executive Mode takes up less space on the computer screen, allowing space for other applications.
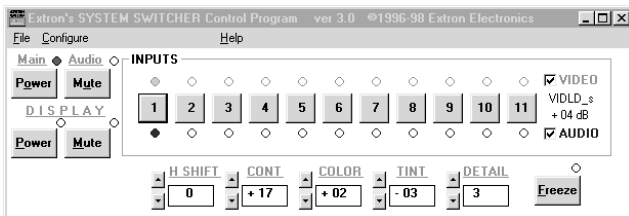
Figure 5-7. Example of a System 4xi (LD/LQ) Panel in Executive Mode with a System 8 Plus as a Slave Switcher

Use the Normal button to get out of Executive Mode and return to the type of menus shown on page 5-3. Use the Exit button to close and exit the Windows® Control Software.

Window Pull-Down Menus

The following menus are not available in Executive Mode:

FILE MENU – Use the Help menu for descriptions. Selections include:

• *Initialize Unit – Reset the System 4xi to factory settings.*
• *Test/Cycle Inputs – Automatically steps through input selection one time.*
• *Exit – Leave the Windows® Control Program.*

CONFIGURE MENU – Use the Help menu for descriptions. Selections include:

• *Video Modes – Choose video type, picture controls, etc. for each input. To see an example of this Control Panel Window, select "Video Configuration Screen" from the first Help Screen.*
• *Audio Inputs – Set/view audio levels for each input. To see an example of this Control Panel, select "Audio Configuration Screen" from the first Help Screen.*

- *Slaves – Choose the type of slave switcher input.*
- *Sync Configuration – Choose sync on green, separate sync, etc.*
- *RGB Delay – Set/view time delay value for switching RGB signals after sync.*
- *Executive Mode – Change Windows display to smaller version which locks most controls but allows input switching and on/off control.*

HELP MENU – Selections include:

- *Contents – Starts Windows Help.*
- *About this program – Display software version and copyright information.*
- *Model – Identify detected hardware (e.g. System 4LD$_{xi}$).*
- *SC Firmware Version – Identify Switcher Control firmware version number.*
- *PC Firmware Version – Identify Projector Control firmware version number.*
- *Projector – Identify the projector for which the switcher is set (e.g. Sony).*

Appendix A

RS-232 Programming Guide

Programming the System 4$_{xi}$ Series Switchers

This section covers the commands for a host to setup and control a System 4$_{xi}$ series switcher through the RS-232 port. The material included covers the System 4LD$_{xi}$ and the System 4LQ$_{xi}$ switchers. Commands or parameters that apply to specific models will be pointed out, otherwise, all references will simply say "System 4$_{xi}$".

RS-232 Connections

A standard RS-232 port is available on the back of the System 4$_{xi}$ for use by a host system. The connections are as follows:
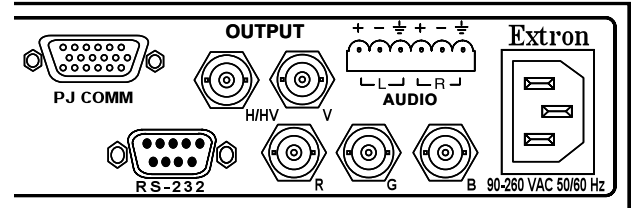
Figure A-1. The RS-232, 9-pin D Connector on the Rear Panel

RS-232 Pin Connections

Pin	Signal	Pin	Signal	Pin	Signal
1	n/c	4	Tx2	7	n/c
2	Tx	5	Gnd	8	Rx2
3	Rx	6	n/c	9	n/c

Rx2 and Tx2 are used to communicate with a slave switcher (do not connect to or use these pins)

RS-232 Protocol

The default protocol is:
9600 baud, 8-bits, no parity, 1 stop bit and no flow-control.
The baud rate can be changed through a front panel menu. (See Chapter 3.)

Program Instruction Levels

The System 4$_{xi}$ recognizes any character that comes in on the RS-232 port as a possible command. Commands can be from either of two groups, or instruction sets. They are as follows:

1. **The Simple Instruction Set** *can be any ASCII character that is recognized by the System 4$_{xi}$ as a command. For this set, there are no codes required to say that a command is coming, or that a command has ended. Simple commands could come from a terminal, or any other controlling device. After the System 4$_{xi}$ gets the command, it will execute it and send an appropriate response to the controlling device.*

2. **The Advanced Instruction Set** *consists of more complex instruction strings. Advanced instructions are used when a complete command cannot be defined within one character. Each instruction string must begin with an Escape code (ESC) and end with an End Of Transmission code (EOT). Advanced commands could come from any controlling device capable of composing a command and sending it as a string. The System 4$_{xi}$ will execute any legal command string and send a response string back to the host.*

Because of this "open recognition", commands from the two instruction sets can be intermixed. Both instruction sets are listed and defined on pages that follow.

RS-232 control can also be established from a computer using the Windows® operating system and Extron's software. This is covered separately in Chapter 5.

System 4$_{xi}$-Initiated Messages

When AC power is initially applied to the System 4$_{xi}$, the following System 4$_{xi}$-initiated messages (underlined) are sent to the Host:

↵(C)COPYRIGHT 1997, EXTRON ELECTRONICS SYSTEM4LQxi, V4.0↵   *

↵SYS 1↵   System 4$_{xi}$ power is ON

↵ Ax↵   x = the Audio channel number selected

↵Vx↵   x = the Video channel number selected

* *This message will vary depending on the System 4$_{xi}$ model.*

When the Main power from the front panel is applied to the System 4$_{xi}$, the following System 4$_{xi}$-initiated messages are sent to the Host:

↵SYS x↵ (as described above)

↵Ax↵   (as described above)

↵Vx↵   (as described above)

When audio and/or video settings are changed using the front panel, the following messages or message combinations are sent to the Host:

↵Ax↵   (as described above)

↵Vx↵   (as described above)

↵Cx↵   Both video and audio settings for channel number x have been changed

When there is a change in the audio gain setting from the front panel, the following message is sent to the Host:

↵RECONFIG↵

Simple Instruction Set

A simple command may be a single character typed on a keyboard and does not require any special characters before or after. (i.e. It is not necessary to press "enter" from the keyboard.) However, some command characters may be followed by a "delimiter" character which further defines a specific request.

Related Terms

The following terms may be helpful in understanding information in the tables and examples that follow.

Delimiter:

A delimiter character may specify audio and not video, the switcher and not the projector, etc. For commands that have more than one character, the delimiter is always the last character for that command.

Line Feed/Carriage Return:

General – On most keyboards, pressing "enter" creates a line feed (lf) and a carriage return (cr). The screen cursor moves down one line (lf) and to the left margin (cr). This is done to prevent stringing unrelated information together. Because these are separate functions, the programmer may send them at any time, and in either sequence (lf/cr or cr/lf). Also, some applications may issue these commands at the beginning of a sequence, at the end of a sequence, or both. Each response (as seen on a terminal display) will use it in one form or another.

System 4xi – The System 4xi uses lf/cr before and after each response and is symbolized as (↵) in examples that follow.

Discrete Command:

A "discrete" command can do only one thing. For example, if projector power is already On, sending a "discrete power on" command does nothing. See toggle.

Display, or Display Device:

"Display" refers to the video output device (projector, monitor, etc.)

Host:

Any device capable of talking to the switcher through an RS-232 port.

Space:

When writing programs, it is critical to know when to insert a space and when to leave it out. If not done correctly, the command will not work. Examples in this chapter use a dot (·) to represent a space. This should eliminate any confusion.

Switcher:

"Switcher" refers to the System 4xi or any slave inputs from other sources.

Terminal:

Any device that includes a keyboard and a display. This could be a "dumb" terminal, a "smart" terminal, a PC operating in "terminal" mode, etc.

Toggle:

A "toggle" command changes the state of the function. This can be either of two things: If the function was Off, the command turns it On; if the function was On, the command turns it Off. A toggle command character may be either upper or lower case.

Zero:

The number zero may be shown as Ø to distinguish it from the letter "O".

The codes discussed in this section include any character that may be part of a command or part of a response. This includes delimiter characters, data characters, etc. Some functions may have more than one command. For example, Power has a "turn on", a "turn off" and a "toggle" command.

Simple Instruction List

The table below lists the Simple Instruction Set commands, as well as response and data characters recognized by the System 4$_{xi}$. Examples of their use are given later. The "Cmd/Rsp" column indicates how the character is used:
Cmd - indicates a host command (or part of a command) to the switcher.
Rsp - indicates a switcher response to the host.

Character	Cmd/Rsp	Dec	Hex	Function
lf	Rsp	1Ø	ØA	Line feed
cr	Rsp	13	ØD	Carriage return
ESC	Cmd	27	1B	Initiates an Advanced Instruction Set command (Page A-6)
!	Cmd	33	21	Delimiter to specify video and audio selection
$	Cmd	36	24	Delimiter to specify audio selection only
&	Cmd	38	26	Delimiter to specify video selection only
(	Cmd	4Ø	28	Turn the Display mute On
)	Cmd	41	29	Turn the Display mute Off
+	Cmd	43	2B	Turn the Switcher Audio mute On
-	Cmd	45	2D	Turn the Switcher Audio mute Off
Ø	Cmd/Rsp	48	3Ø	Numeric value of Ø
1	Cmd/Rsp	49	31	Numeric value of 1
2	Cmd/Rsp	5Ø	32	Numeric value of 2
3	Cmd/Rsp	51	33	Numeric value of 3
4	Cmd/Rsp	52	34	Numeric value of 4
5	Cmd/Rsp	53	35	Numeric value of 5
6	Cmd/Rsp	54	36	Numeric value of 6
7	Cmd/Rsp	55	37	Numeric value of 7
8	Cmd/Rsp	56	38	Numeric value of 8
9	Cmd/Rsp	57	39	Numeric value of 9
:	Cmd	58	3A	Turn Executive Mode On (discrete)
;	Cmd	59	3B	Turn Executive Mode Off (discrete)
<	Cmd	6Ø	3C	Turn Switcher Main power On (discrete)
>	Cmd	62	3E	Turn Switcher Main power Off (discrete)
@	Cmd	64	4Ø	Delimiter to specify audio & video for the Switcher only
A	Rsp	65	41	An audio channel character follows
B	Cmd	66	42	Turn RGB mute On for the Switcher only
b	Cmd	98	62	Turn RGB mute Off for the Switcher only
C/c	Cmd	67/97	43/63	Request projector configuration
C	Rsp	67	43	A Channel character follows (audio & video)
E	Rsp	69	45	An Error code character follows
F/f	Cmd	70/102	46/66	Freeze Mode (On/Off)
I/i	Cmd	73/105	49/69	Request for Information
J/j	Cmd	74/106	4A/6A	Demo On/Demo Off
M	Rsp	77	4D	Maximum number of inputs
N/n	Cmd	78/110	4E/6E	Request part number
O/o	Cmd	79/111	4F/6F	Toggle the Display power (On/Off)
P	Rsp	8Ø	5Ø	A character for power status of the Display device follows
Q/q	Cmd	81/113	51/71	Query Software Version - show PC & SC version numbers
R/r	Cmd	82/114	52/72	Toggle the RGB mute for the Switcher only
S/s	Cmd	83/115	53/73	Toggle the Display mute (On/Off)
S	Rsp	83	53	A character for mute status of the Display device follows
T	Rsp	84	54	A character for video signal Type follows
V	Rsp	86	56	A character for the Video channel follows
X	Cmd	88	58	Executive Mode On
x	Cmd	120	78	Executive Mode Off
Z	Cmd	9Ø	5A	Audio mute On
z	Cmd	122	7A	Audio mute Off
[	Cmd	91	5B	Turn the Display power On
]	Cmd	93	5D	Turn the Display power Off

Simple Instruction Examples

The tables that follow give examples of some of the ASCII codes that may be entered from a host device. The Switcher Response column shows what will be seen on the host's screen. Appropriate response messages are also displayed on the System 4xi's LCD screen.

The resultant changes made by these commands will also show on the System 4xi Front Panel. Errors may occur under certain conditions, such as when trying to select a nonexistent channel, or trying to mute the projector when it is turned off, etc. Error codes are on the next page.

The first group lists commands for the display device (projector/monitor) and the second group lists commands for the switcher (System 4xi). The Hex column gives hexadecimal equivalents for cases where the codes will be generated by another source.

Display Commands	ASCII	Hex	Switcher Response	Result Description
Display Power (toggle On)	O/o	4F/6F	↵PR·1↵	Display Power is On
(If switcher was Off,			↵PW·I↵	Please Wait, Initializing
it will also turn On.)			↵PW·E↵	Please Wait, End
Display Power (toggle Off)	O/o	4F/6F	↵PR·Ø↵	Display Power is Off
Display Power On (discrete)	[	5B	↵PR·1↵	Display Power is On
(If switcher was Off,			↵PW·I↵	Please Wait, Initializing
it will also turn On.)			↵PW·E↵	Please Wait, End
Display Power Off (discrete)	]	5D	↵PR·Ø↵	Display Power is Off
Display Mute (toggle)	S/s	53/73	↵MUT·1↵	Display Mute turned On
			↵MUT·Ø↵	Display Mute turned Off
Display Mute On (discrete)	(	28	↵MUT·1↵	Display Mute is On
Display Mute Off (discrete)	)	29	↵MUT·Ø↵	Display Mute turned Off

Switcher Commands	ASCII	Hex	Switcher Response	Result Description
Switcher Power On (discrete)	<	3C	↵SYS·1↵	Switcher (System) power is On
(does not affect display device)			Vn↵	n = the Video channel number selected
			An↵	n = the Audio channel number selected
Switcher Power Off (discrete)	>	3E	↵SYS·Ø↵	Switcher (System) power is Off
(also turns display Off)			↵PR·Ø↵	Display power is Off
Switcher RGB Mute (toggle)	R/r	52/72	↵BLK1↵	Switcher RGB mute On (Blanked)
or			↵BLKØ↵	Switcher RGB mute Off
Switcher RGB Mute On (discrete)	B	42	↵BLK1↵	Switcher RGB mute is On (Blanked)
Switcher RGB Mute Off (discrete)	b	62	↵BLKØ↵	Switcher RGB mute is Off
Switcher Audio Mute (discrete)	Z	5A	↵AMUT·1↵	Switcher Audio Mute is On
Switcher Audio Mute (discrete)	z	7A	↵AMUT·Ø↵	Switcher Audio Mute is Off
Audio Mute On (discrete)	+	2B	↵AMUT·1↵	Switcher Audio Mute is On
Audio Mute Off (discrete)	-	2D	↵AMUT·Ø↵	Switcher Audio Mute is Off
Executive Mode (discrete)	X	58	↵EXE·1↵Vn↵An↵	Switcher is in Executive Mode
Executive Mode (discrete)	x	78	↵EXE·Ø↵Vn↵An↵	Switcher **not** in Executive Mode
Executive Mode On (discrete)	:	3A	↵EXE·1↵Vn↵An↵	Switcher is in Executive Mode
Executive Mode Off (discrete)	;	3B	↵EXE·Ø↵Vn↵An↵	Switcher **not** in Executive Mode
			(Where n = Video channel and/or Audio channel selected)	
Request Projector Configuration	C/c	43/63	↵CONFIG·FOR·SONY······↵	
			(Total of 24 information/space characters)	
				Display internal setting for projector type
Request Part Number	N/n	4E/6E	↵60-155-01↵	Part number for the System 4xi model.
				(Example is for System 4LDxi)

Switcher Commands	ASCII	Hex	Switcher Response	Result Description
Freeze On	F	46	↵Frz1·↵	Freeze video frame
Freeze Off	f	66	↵Frz0·↵	Release Freeze mode
Demo On	J	4A	↵Dmo1↵	Demo Mode status = On
Demo Off	j	6A	↵Dmo0↵	Demo Mode status = Off
Information Request	I/i	49/69	↵V3·A2·T8·P1·SØ·ZØ·RØ·QPC3.Ø·QSC3.Ø·M4↵	

This example says: Video channel selected is #3 (V3), Audio channel is #2 (A2), selected input is RGBLD-still (T8), Projector is On (P1), all Mutes {Display (SØ), Audio (ZØ) & RGB (RØ)} are Off, both the Projector software and the Switcher software are version 3.Ø (QPC3.Ø·QSC3.Ø), and the system has four input channels (M4).

Information Request, example #2:	I/i	49/69	↵VØ·AØ·TØ·PØ·SØ·ZØ·RØ·QPC3.Ø·QSC3.Ø·M4↵

This example says that this is a System 4xi with four inputs and its power is turned Off.

Information	ASCII	Hex	Switcher Response	Result (See below)
Request Info	I	49/69	↵V⬚X1·A⬚X2·T⬚X3·P⬚X4·S⬚X5·Z⬚X6·R⬚X7·QPC⬚X8.⬚X9·QSC⬚Xa.⬚Xb·M⬚Xc↵	

The response on the screen will consist of ten sets of characters with a space (·) between each set. Each set is made up of a letter (or letters) that define a function, followed by a number (or numbers) that define the status of that function. Numbers are represented by ⬚X1, ⬚X2, etc. Examples follow.

Function Character(s)	Status Character(s)		
V = Video Channel	⬚X1 = Video channel # (Ø = System power is off)		
A = Audio Channel	⬚X2 = Audio channel # (Ø = System power is off)		

T = Video Type	System 4xi:	LDxi	LQxi
⬚X3 = 1 = RGBS		x	x
2 = Sync on Green (RGsB)		x	x
3 = VID		-	-
4 = YC		-	-
5 = RGBLD (line-doubled RGB)		-	-
6 = VIDLD (line-doubled composite video)		-	-
7 = YCLD (line-doubled S-video)		-	-
8 = RGBLD -still		x	-
9 = RGBLD - motion		x	-
10 = YCLD - still		x	-
11 = YCLD - motion		x	-
12 = VIDLD - still		x	-
13 = VIDLD - motion		x	-
14 = RGBLQ -still		-	x
15 = RGBLQ - motion		-	x
16 = YCLQ - still		-	x
17 = YCLQ - motion		-	x
18 = VIDLQ - still		-	x
19 = VIDLQ - motion		-	x

P = Display Power	⬚X4 = Ø = Power is Off; 1 = Power is On.
S = Display Mute	⬚X5 = Ø = Display Mute is Off; 1 = Display Mute is On.
Z = Audio Mute	⬚X6 = Ø = Audio Mute is Off; 1 = Audio Mute is On.
R = RGB Mute	⬚X7 = Ø = RGB Mute is Off; 1 = RGB Mute is On.
QPC = Query Projector Comm	⬚X8.⬚X9 = Projector Communications software version (example: 3.0)
QSC = Query Switcher	⬚Xa.⬚Xb = Switcher Communications software version (example: 3.0)
M = System Max Channel	⬚Xc = Maximum channel number

Error Codes	Description
↵EØ1↵	Invalid Channel # (may be too high)
↵EØ4↵	Projector Comm error (projector may be off)
↵EØ5↵	Switcher is Off, can't execute command.
↵E1Ø↵	Invalid command

Selecting Inputs Using Delimiters

When selecting inputs to the projector, or display (Dsp) and/or the System 4_{xi} switcher (Sw), audio and video can be switched together (follow) or separately (breakaway). An input is selected by its ASCII number, followed by a delimiter character. The delimiter ends the command and also determines which inputs (audio/video) are affected. System 4_{xi} delimiters are listed and explained below. There are four delimiters that affect the System 4_{xi}. They are:

! Affects Audio & Video (Aud/Vid) for the switcher (Sw) and affects only video for the projector (Dsp/Sw)
@ Affects Audio and Video (Aud/Vid) for switcher only (Sw)
$ Affects Audio only (Aud) for the switcher (Sw)
& Affects Video only (Vid) for both projector and switcher (Dsp/Sw)

Examples:	Aud/Vid	Dsp/Sw	ASCII	Hex	Response	Result Description
Select Input 2	Aud,Vid	*Dsp,Sw	2!	32,21	↵C2↵	Channel 2 selected
Select Input 16	Aud,Vid	*Dsp,Sw	16!	31,36,21	↵C16↵	Channel16 selected
Select Input 2	Aud,Vid	*Sw	2@	32,4Ø	↵C2↵	Channel 2 selected
Select Input 16	Aud,Vid	*Sw	16@	31,36,4Ø	↵C16↵	Channel 16 selected
Select Input 2	Aud	*Sw	2$	32,24	↵A2↵	Audio Ch 2 selected
Select Input 16	Aud	*Sw	16$	31,36,24	↵A16↵	Audio Ch 16 selected
Select Input 3	Vid	Dsp,Sw	3&	33,26	↵V3↵	Video Ch 3 selected
Select Input 15	Vid	Dsp,Sw	15&	31,35,26	↵V15↵	Video Ch 15 selected

* Audio switching affects only the System 4_{xi} and not the display device.

Advanced Instruction Set

The Advanced Instruction Set uses commands that are longer than one character because they are more complex than the Simple Instructions described earlier. Advanced Instructions can be used in programs that may be stored and executed as needed.

The system sees the RS-232 information in two general categories:
If bit 7 = 0 (00h - 7Fh), this byte is an instruction.
If bit 7=1 (80h - FFh), it is considered to be data, or information.
However, only certain codes are used by the System 4$_{xi}$.

The components of an Advanced Instruction are:
Escape Code (ESC) - to indicate the start of command
Command Code - to tell the switcher what to do
Subcom - Data (if required) – as many bytes as required for parameters to supplement the Command Code
End Of Transmission (EOT) - to indicate the end of this command

Switcher response to the command:
Escape Code (ESC) - to indicate the start of a response
Command Code - repeated to identify what the response is for
Error Code (ERC) - to indicate no error, or what type of error
Data (if required) - to give the host what was requested
End Of Transmission (EOT) - to indicate the end of the response

The command protocol is as follows:
ESC, Command1, Subcommand1.1, Subcommand1.2, etc... EOT

Advanced Instruction List

The commands listed here are Advanced Instructions, however, they can be intermixed with commands from the Simple Instruction Set.

Command	Hex	Description
CMD4	34h	Select input channels (audio and video)
CMD5	35h	Request system status
CMD6	36h	Adjust settings (incremental)
CMD8	38h	Set up System 4$_{xi}$ for slave configuration
CMD9	39h	Configure an input channel
CMD10	3Ah	Request input channel configuration
CMD11	3Bh	Configure system
CMD12	3Ch	Request system configuration

(These are command characters, because they are in the range of 00h - 7Fh.)

Error Codes (ERC)

An ERC character is included with each response from the System 4$_{xi}$.
Here are the codes for the ERC character used by the System 4$_{xi}$:
80h = No error
81h = Invalid channel
82h = Command not recognized (illegal command)
84h = Projector communication error
85h = Switcher is Off, cannot execute the command
8Ah = Invalid command
8Dh = Invalid parameter value
(These are data characters, because they are in the range of 80h - FFh.)

Hex, Decimal and Binary Examples for Converting Range Values

1. The Audio range is C1h to FFh for -31dB to +31dB and 31dec = 1Fh.
   To calculate the mid-range (zero dB) add 31d to the low number.
   C1h = 1100 0001bin = -31dec = low end of range
   1Fh = <u>0001 1111</u>bin = 31dec = half of range
   E0h = 1110 0000bin = 00dec = mid-range (zero) value

   To set Audio to +10dB, add 10d (0Ah) to the mid-range (zero) value.
   E0h = 1110 0000bin = 00dB
   0Ah = <u>0000 1010</u>bin = 10dec
   EAh = 1110 1010bin = +10dB

2. The picture control range is 81h to FFh for -63 to +63 and 63dec = 3Fh.
   To calculate the mid-range (zero setting) add 31dec to the low number.
   81h = 1000 0001bin = -63dec = low end of range
   3Fh = <u>0011 1111</u>bin = 63dec = half of range
   C0h = 1100 0000bin = 00dec = mid-range value (zero)

   To set a picture control to -10, add 53d (63d - 10d) to the low end.
   81h = 1000 0001bin = -63 = low end of range
   0Ah = <u>0011 0101</u>bin = 53 = 63 - 10dec
   B6h = 1011 0110bin = -10 = new setting

This is one example of how it can be done. You could also subtract 10d (0Ah) from the mid-range value.

Select Input - CMD4 (34h)

CMD4 is for selecting video and audio input channels. The flexibility of this command is that it allows for selection of audio and video from separate channels (Breakaway mode) or from the same channel (Audio Follow).

By using a "no change" parameter it can be used to select either audio or video, without changing the other. The command can also specify System 4xi only, or System 4xi and the display device. The range of channel numbers is 1 thru 22.

Format: ESC, CMD4, Subcom4.1, Vid#, Aud#, EOT

Where: ESC, CMD4 = 1Bh, 34h
Subcom4.1   80h = System 4xi affected
               81h = System 4xi and Projector affected
      Vid#   80h = No changes
               81h = Video input #1
               82h = Video input #2
               83h = Video input #3
               etc.
               96h = Video input #22 (highest number)
      Aud#   80h = No changes
               81h = Audio input #1
               82h = Audio input #2
               83h = Audio input #3
               etc.
               96h = Audio input #22 (highest number)
      EOT = 04h = End of transmission

Example: Select Switcher Video input #17 and Audio input #3
         1Bh, 34h, 80h, 91h, 83, 04h

Note: Input numbers are in hexadecimal (91h = 1001 0001bin = 145d).

Response: ESC, CMD4, ERC, EOT

Request Status - CMD5 (35h)

To get Video Mode information for another channel, do a CMD4 to change input channels, and then do CMD5 again, or use CMD10.

This command requests the current system status. Because the command is asking for something, there is no need for any other parameters. The channel-related information is only for the channel that is currently selected.

Format: ESC, CMD5, EOT

Example: 1Bh, 35h, 04h

Response: ESC, CMD5, ERC, Vid#, Aud#, Vid Mode, Dsp Type, Dsp Pwr, Dsp Mute, Sys Pwr, Max Chnl, Dly Time, EOT

Where: ESC, CMD5 = 1Bh, 35h
ERC   (See list.)
Vid#   81h - 96h = currently selected video channel
Aud#   81h - 96h = currently selected audio channel

Vid Mode on System 4xi:	LDxi	LQxi
80h = RGBS (composite sync)	x	x
81h = RGsB (sync on green)	x	x
82h = RGBLD (line-doubled RGB video)	-	-
83h = YC (S-video)	-	-
84h = VID (composite video)	-	-
85h = YCLD (line-doubled S-video)	-	-
86h = VIDLD (line-doubled composite video)	-	-
87h = RGBLD - still	x	-
88h = RGBLD - motion	x	-
89h = YCLD - still	x	-
8Ah = YCLD - motion	x	-
8Bh = VIDLD - still	x	-
8Ch = VIDLD - motion	x	-
8Dh = RGBLQ - still	-	x
8Eh = RGBLQ - motion	-	x
8Fh = YCLQ - still	-	x
90h = YCLQ - motion	-	x
91h = VIDLQ - still	-	x
92h = VIDLQ - motion	-	x

Dsp Type   80h = Ampro
                81h = RS-232 only (no display device)
                82h = Barco
                83h = Sony (or Mitsubishi XC monitor)
                84h = ECP (3100 & 4100)
                85h = Hughes/JVC
                86h = Marquee
                87h = NEC/Runco
                88h = Mitsubishi VS
                89h = Panasonic 1083U/1085U
                8Ah = Toshiba
                8Bh = Ampro LCD 150
                8Ch = Seleco
                8Dh = Digital Projection
                8Eh = Zenith Pro Series
                8Fh = Ampro Exe mode
                90h = NEC LCD (MT)
                92h = Panasonic 1083UN/1085UN
                93h = Sharp LCD
                94h = NEC XG
                96h = Mitsubishi LCD 100/200
                97h = Infocus (CLI RS-232)
                98h = Hughes/JVC G1000
                99h = Sharp LCD, RS-232
                9Eh = Electrohome 1024

Dsp Power   80h = Display device power is Off
            81h = Display device power is On
Dsp Mute   80h = Mute Off (picture on)
            81h = Mute On (picture off)
Sys Pwr   80h = System 4xi power is Off
            81h = System 4xi power is On
Max Chnl   80h - 96h (maximum number of inputs on system)
Dly Time   80h - 8Ah (RGB time delay in half seconds)
EOT   04h = End of transmission

Response example:
1Bh, 35h, 80h, 82h, 81h, 83h, 85h, 81h, 80h, 81h, 84h, 85h, 04h
Translates to:
ESC, CMD5, ERC, Video Channel #2, Audio Channel #1, S-Video mode,
Hughes projector, Dsp Power is On, Dsp Mute is Off, System Power is On, Max
channel # is 4, and the RGB time delay is 2.5 seconds.

Change System Settings - CMD6 (36h)

Change settings, and/or make adjustments to the system. This command allows
incremental adjustments to be made to System 4xi settings, for the currently-
selected input channel.

Format: ESC, CMD6, Subcom6.1, Subcom6.2, EOT

Where: ESC, CMD6 =   1Bh, 36h
Subcom6.1 =   Function to adjust
               80h = Horizontal Shift
               81h = Contrast
               82h = Color
               83h = Tint (Hue)
               84h = Audio level
               85h = RGB time delay (0.5 second steps)
Subcom6.2 =   How much to adjust
               80h = Adjust up 1 step
               81h = Adjust down 1 step

Example: Adjust Audio level down = 1Bh, 36h, 84h, 81h, 04h

Response: ESC, CMD6, ERC, EOT

*This command is optimized to be used as an audio fader control for systems
which require this feature.*

Set Slave Configuration - CMD8 (38h)

Set up the System 4xi for slave configuration. The System 4xi can have another
type of switcher connected to input channel 4 as a slave. In order to
communicate with the slave, the System 4xi must know what type of switcher is
being used.

Format: ESC, CMD8, Slave, EOT

Where: ESC, CMD8 =   1Bh, 38h
Slave   80h = No slave connected
               84h = SW4MX switcher connected
               86h = SW6MX switcher connected
               88h = System 8 Plus switcher connected
               8Ah = System 10 Plus switcher connected
               8Fh = Multiple System 8/10 Plus switchers

Response: ESC, CMD8, ERC, EOT

Configure an Input Channel - CMD9 (39h)

Send a preset configuration to the System 4_{xi} to set up an input channel.

Format:
ESC, CMD9, Inp#, Vid Mode, Aud Lvl, H Shift, Cont, Color, Tint, Chroma Det, Luma Det, reserved, EOT

Where: ESC, CMD9 = 1Bh, 39h
Inp#   80h = current channel
             81h - 96h = Input channel 1-22

Vid Mode on System 4_{xi} :

Vid Mode	LD$_{xi}$	LQ$_{xi}$
FFh = No change	x	x
80h = RGBS (composite sync)	x	x
81h = RGsB (sync on green)	x	x
82h = RGBLD (line-doubled RGB video)	-	-
83h = YC (S-video)	-	-
84h = VID (composite video)	-	-
85h = YCLD (line-doubled S-video)	-	-
86h = VIDLD (line-doubled composite video)	-	-
87h = RGBLD - still	x	-
88h = RGBLD - motion	x	-
89h = YCLD - still	x	-
8Ah = YCLD - motion	x	-
8Bh = VIDLD - still	x	-
8Ch = VIDLD - motion	x	-
8Dh = RGBLQ - still	-	x
8Eh = RGBLQ - motion	-	x
8Fh = YCLQ - still	-	x
90h = YCLQ - motion	-	x
91h = VIDLQ - still	-	x
92h = VIDLQ - motion	-	x

Aud Lvl[2]   C1h - FFh = Audio level (-31dB to +31dB)
H Shift[2]   81h - FFh = Horizontal shift (-63 to +63 in steps of 2)
Cont[2]   81h - FFh = Contrast level (-63 to +63 in steps of 2)
Color[2]   81h - FFh = Color level (-63 to +63 in steps of 2)
Tint[2]   81h - FFh = Tint level (-63 to +63 in steps of 2)
Chroma Det[4] 80h = No change
                  81h = On
                  82h = Off
Luma Det[5]   80h = No change
                  81h-84h = Decoded-modes Sharpness levels 1 - 4
reserved   80h = reserved
EOT   04h = End Of Transmission

Notes:

2. For Audio Level and Picture Control settings, 80h = no change.
See page A-8 for examples for calculating these values.

4. Only available in System 4_{xi} units with the following firmware revision levels, or higher:

5. Only available on System 4LD$_{xi}$ and 4LQ$_{xi}$

Request Input Channel Configuration - CMD10 (3Ah)[4]

Request the configuration for a specific input channel in the System 4xi.

Format:
ESC, CMD10, Inp#, EOT

Response: ESC, CMD10, ERC, Vid Mode, Aud Lvl, H Shift, Cont, Color, Tint, Chroma Det, Luma Det, reserved, EOT

Where: ESC, CMD10 = 1Bh, 3Ah
Inp#   80h = Request current channel
                 81h - 96h = Input channel requested (1-22)

Vid Mode on System 4xi:	LDxi	LQxi
80h = RGBS (composite sync)	x	x
81h = RGsB (sync on green)	x	x
82h = RGBLD (line-doubled RGB video)	-	-
83h = YC (S-video)	-	-
84h = VID (composite video)	-	-
85h = YCLD (line-doubled S-video)	-	-
86h = VIDLD (line-doubled composite video)	-	-
87h = RGBLD - still	x	-
88h = RGBLD - motion	x	-
89h = YCLD - still	x	-
8Ah = YCLD - motion	x	-
8Bh = VIDLD - still	x	-
8Ch = VIDLD - motion	x	-
8Dh = RGBLQ - still	-	x
8Eh = RGBLQ - motion	-	x
8Fh = YCLQ - still	-	x
90h = YCLQ - motion	-	x
91h = VIDLQ - still	-	x
92h = VIDLQ - motion	-	x

Aud Lvl   C1h - FFh = Audio level (-31dB to +31dB)
H Shift   81h - FFh = Horizontal shift (-63 to +63 in steps of 2)
Cont   81h - FFh = Contrast level (-63 to +63 in steps of 2)
Color   81h - FFh = Color level (-63 to +63 in steps of 2)
Tint   81h - FFh = Tint level (-63 to +63 in steps of 2)
Chroma Det 81h = On
                  82h = Off
                  83h = not supported
Luma Det[6]   81h-84h = Decoded-modes Sharpness levels 1 - 4
                  80h = not supported
reserved   80h = reserved

EOT   04h = End Of Transmission

Notes:

4. This command is only available in System 4xi units with the following firmware revision levels, or higher:
System 4LDxi – revision 3.0
System 4LQxi – revision 4.0

6. Only available on System 4LDxi and 4LQxi.

Example:
Request Configuration for Input Channel #4:
1Bh, 3Ah, 84h, 04h

Response example:
Input #4 is configured for line-doubled S-video (motion), Audio at 0dB and all picture controls (H Shift, Contrast, Color and Tint) at mid-range (zero), Chroma Detail (not applicable), Luma Detail at level 1.

This would be:
1Bh, 3Ah, 80h, 8Ah, E0h, C0h, C0h, C0h, C0h, 82h, 81h, 80h 04h

Configure System - CMD11 (3Bh)[4]

Configure the System 4xi

Format:
ESC, CMD11, LD Sync, RGB Delay, Aud Mute, reserved, LDxi Misc, reserved, EOT

Where: ESC, CMD11 = 1Bh, 3Bh
LD Sync   80h = no change
                        81h = Composite Sync with no serrations
                        82h = Sync negative (horizontal & vertical)
                        83h = Composite Sync with serrations
                        84h = [6]Sync positive (horizontal & vertical)
                        85h = [6]Sync positive horizontal, negative vertical
                        86h = [6]Sync negative horizontal, positive vertical
RGB Delay   FFh = no change
                        80h - 8Ah = RGB Delay in 0.5 second steps
                                   (values range from 0 to 5 seconds)
Audio Mute   80h = Turn Audio Mute Off
                        81h = Turn Audio Mute On
                        FFh = No change
LDxi Misc[6]   80h - AAh (see table)

	Bit #s	76	54	32	10	
Function:		–	Demo	Freeze	VGA	
No changes		10	00	00	00	80h
Demo, no change		10	00	xx	xx	8xh
Demo mode On		10	01	xx	xx	9xh
Demo mode Off		10	10	xx	xx	Axh
Freeze no change		10	xx	00	xx	
Freeze On		10	xx	01	xx	
Freeze Off		10	xx	10	xx	
VGA no change		10	xx	xx	00	
Not VGA resolution		10	xx	xx	01	
Force VGA resolution		10	xx	xx	10	

reserved   80h = reserved

EOT   04h = End Of transmission

Example:
Configure a System 4xi for the following:
Sync = No change, RGB Delay = No change, Audio Mute = On, Demo Mode = No change, Freeze = No change and Force VGA Resolution = No change.

That is: 1Bh, 3Bh, 80h, FFh, 81h, 80h, 80h, 80h, 04h

Normal response:
ESC, CMD11, ERC, EOT
1Bh, 3Bh, 80h, 04h

Notes:

4. This command is only available in System 4xi units with the following firmware revision levels, or higher:
System 4LDxi – revision 3.0
System 4LQxi – revision 4.0

6. Only available on System 4LDxi and 4LQxi

Request System Configuration - CMD12 (3Ch)[4]

Request the System 4$_{xi}$ Configuration.

Format:
ESC, CMD12, EOT

Response:
ESC, CMD12, ERC, LD Sync, RGB Delay, Aud Mute, Status 1, LD$_{xi}$ Misc, reserved, EOT

Where: ESC, CMD12 = 1Bh, 3Ch
LD Sync   81h = Composite Sync with no serration pulses
                 82h = Sync negative (horizontal & vertical)
                 83h = Composite Sync with serration pulses
                 84h = [6]Sync positive (horizontal & vertical)
                 85h = [6]Sync positive horizontal, negative vertical
                 86h = [6]Sync negative horizontal, positive vertical
RGB Delay   80h - 8Ah = RGB Delay in 0.5 second steps
                           (values range from 0 to 5 seconds)
Aud Mute   80h = Audio is not Muted
                 81h = Audio is Muted
Status 1   80h - 83h (See table below.)

Bit #	7·6·5·4·3·2	1	0
Function:		Sys Power	Model
Power is Off	1·0·0·0·0·0	0	x
Power is On	1·0·0·0·0·0	1	x
Sys 4C	1·0·0·0·0·0	x	1
Sys 4LD$_{ex}$, 4LQ$_{ex}$	1·0·0·0·0·1	x	0
Sys 4LD$_{xi}$, 4LQ$_{xi}$	1·0·0·0·0·1	x	0

LD$_{xi}$ Misc[6]   80h - AAh (See table.)

Bit #s	76	54	32	10
Function:	–	Demo	Freeze	VGA
Demo mode On	10	01	xx	xx
Demo mode Off	10	10	xx	xx
Freeze On	10	xx	01	xx
Freeze Off	10	xx	10	xx
Not VGA resolution	10	xx	xx	01
Force VGA resolution	10	xx	xx	10

reserved   80h = reserved

EOT   04h = End Of transmission

Example: (Request System Configuration)
1Bh, 3Ch, 04h

Response:
1Bh, 3Ch, 80h, 83h, 80h, 81h, 82h, A9h, 80h, 04h

Says: LD Sync = Composite with serration pulses, RGB Delay = none, Audio is Muted, Model = System 4LD$_{xi}$, 4LQ$_{xi}$, Switcher Power = On, Demo Mode = Off, Freeze = Off and VGA Resolution is not forced.

4. This command is only available in System 4$_{xi}$ units with the following firmware revision levels, or higher:
System 4LD$_{xi}$ – revision 3.0
System 4LQ$_{xi}$ – revision 4.0

6. Only available on System 4LD$_{xi}$ and System 4LQ$_{xi}$

Appendix B

Reference Information

System 4xi Related Parts List

Changing the Main Fuse

Upgrading the Software

Backup Battery

System 4$_{xi}$ Related Parts List

As illustrated below, the System 4$_{xi}$ needs two additional parts to control a projector.

       1. A Projector Communications Extension Cable (CC Cable)

       2. A Communications Adapter (Comm Adapter)

The Communications Extension Cable is the same for all applications, other than the choice of length.

The Projector Comm Adapter connects between the Communications Extension Cable and the projector. It is designed specifically for the projector being used. The connectors used by the Comm Adapter depend on what is required by the projector.
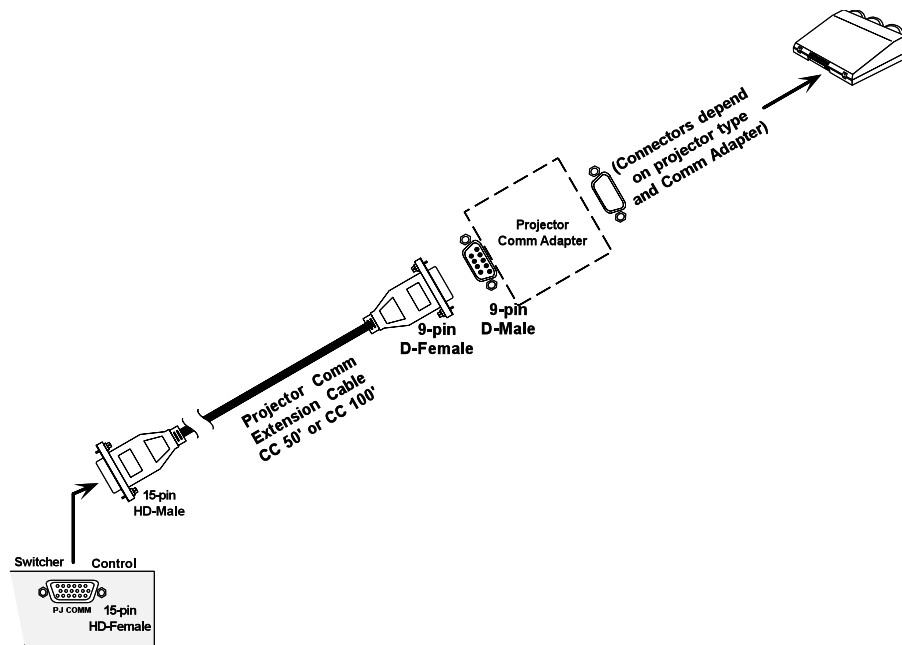
Figure B-1. System 4$_{xi}$-to-Projector Cables and Adapters

Projector Communication Extension Cables	Connectors	Part #
CC 50' (50 ft.)	15/HD/M to 9/D/F	26-305-01
CC 50' Type II (50 ft.)	15/D/M to 15/D/F	26-323-01
CC 100' (100 ft.)	15/HD/M to 9/D/F	26-305-02
CC 100' Type II (100 ft.)	15/D/M to 15/D/F	26-323-02
CC 200' (200 ft.)	15/HD/M to 9/D/F	26-305-03
CC 200' Type II (200 ft.)	15/D/M to 15/D/F	26-323-03

S-Video Adapter Cables		Part #
S-VHS 6' (male-to-male, 6 feet)		26-316-02
S-VHS M20' (male-to-male, 20 feet)		26-316-01
S-VHS BNC (male-to-male, S-video to BNC, 6")		26-353-01

Connectors		Part #
Captive Screw Phoenix Connectors (6-pin, Audio)		10-163-01

Documentation		Part #
System 4xi User's Manual		68-162-01
System 4xi Label		33-151-01

Changing the Main Fuse

⚠ _____ *The Main Fuse is located on the Power Supply board. To replace the fuse, remove the AC Power cord and remove the top cover of the System 4xi (procedure on page 2-3).*

The picture below shows the left-rear corner of the System 4xi chassis. Locate the fuse on the Power Supply board.

Remove the fuse from its holder and test it with an ohm meter or other testing device. Replace a bad fuse with a 2 amp, 250v fuse.

If the fuse is not bad, and the unit has no indication of having power, call Extron for instructions on service.
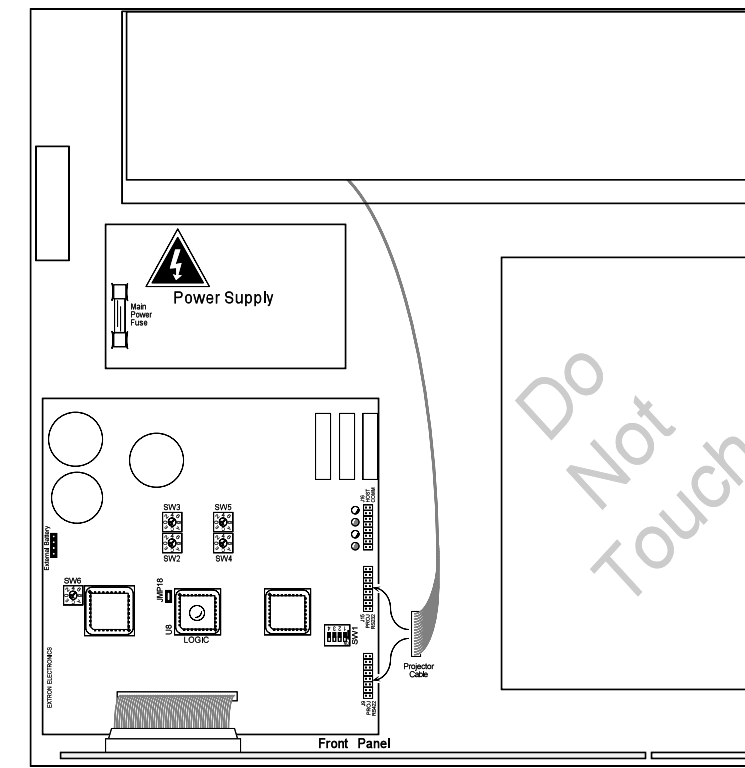

Figure B-2. Locate the Fuse on the Power Supply.

Les câbles fournis à l'utillsasteur

Pour vos installations spécifiques, il vous est possible de choisir vos propres Câbles de Communication pour Projecteur (CC xx). Utilisez la figure ci-dessous pour réaliser le branchement des Pin. La longueur des câbles peut atteindre 61 mètres (200 feet).
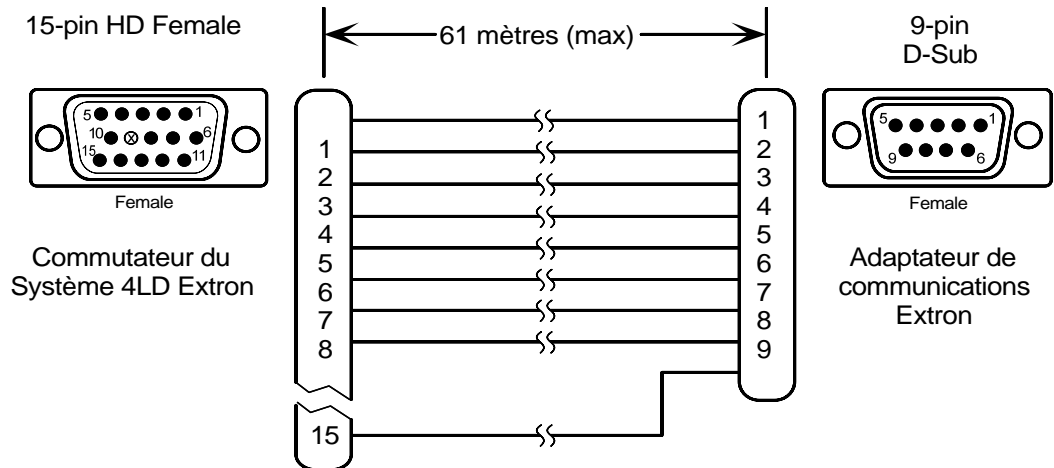
15-pin HD Female

61 mètres (max)

9-pin D-Sub

Female

Commutateur du Système 4LD Extron

Female

Adaptateur de communications Extron

Figure B-3.

Enlever le couvercle du Système 4xi

Si la configuration du Système 4xi doit être modifiée pour un différent projecteur, il est nécessaire d'accéder à la carte du Contrôleur Principal. De même, si le fusible de l'alimentation secteur doit être changé, on devra ouvrir l'appareil. Dans les deux cas, vous devez dans un premier temps enlever le couvercle supérieur du Système 4xi.

1/ Débrancher le cordon d'alimentation.

2/ Si le Système 4xi est monté en rack, détachez-le.

3/ Ôter les câbles d'entrée et de sortie.

4/ Mettre le Système 4xi sur une surface propre et enlever les 7 vis comme représenté sur la figure.

5/ Procéder à l'opération (configuration du système ou changement des fusibles).
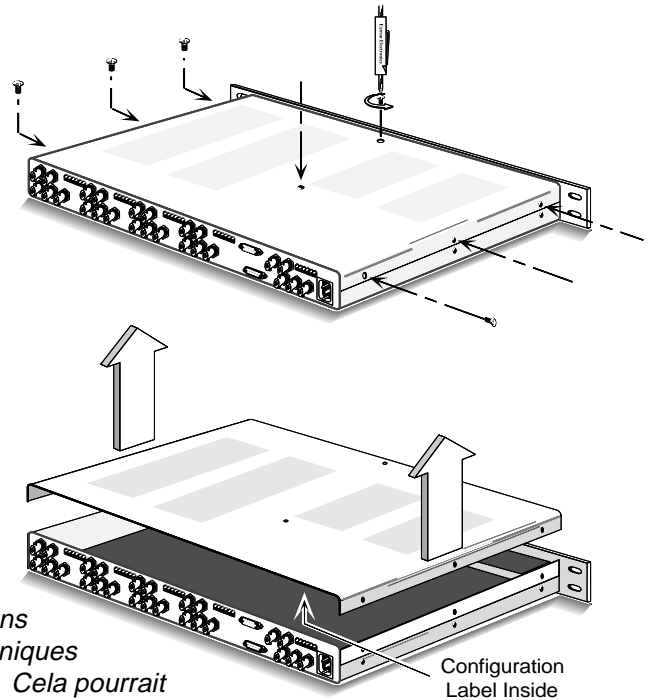
NE PAS toucher les boutons ou les composants électroniques autres que ceux spécifiés. Cela pourrait sérieusement affecter l'opération du système.

Configuration Label Inside

Figure B-4. Enlever le couvercle du Système 4xi

6/ Quand le travail à l'intérieur du système 4xi est terminé, effectuer les opérations dans l'ordre inverse.

Câbler un Système 4$_{xi}$ sur un rack
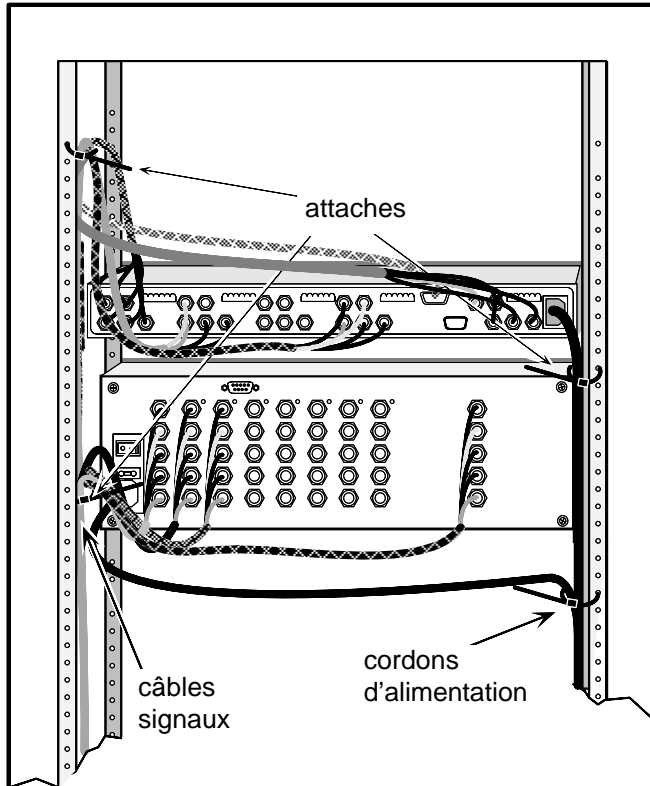
Quand vous fixez les câbles d'une unité à l'autre, veillez à ce que ces câbles ne soient pas "supportés" par le système 4$_{xi}$. Utilisez des attaches de manière à ce que les câbles soient fixés au dessus du panneau de branchement arrière. Tous les câbles non attachés peuvent provoquer des dommages aux utilisateurs, à l'équipement, et également aux câbles eux-mêmes.

L'illustration montre la vue arrière d'un système sur rack. Les câbles sur notre exemple sont fixés sur support aux dessus des branchements de l'équipement. Cela permet une vue dégagée des panneaux arrières et évite que les câbles ne tombent sur l'équipement.

Figure B-5. Les cordons d'alimentation peuvent être mis sur la droite et les câbles signaux sur la gauche.

△ ————— *Assurez-vous qu'aucun poids sur l'arrière du Système 4$_{xi}$ ne dépasse 3.73 Kg. (10 lbs).*

△ ————— *Les trous au-dessus et au-dessous du boîtier du Système 4$_{xi}$ sont destinés au refroidissement. NE PAS COUVRIR ces trous car cela pourrait endommager des composants vitaux.*

△ ————— *La température ambiante maximale ne doit pas dépasser 40°C.*

△ ————— *Le rack et tout équipement monté sur ce support doivent être branchés selon les normes électriques en vigueur.*

✍ ————— *Si possible, essayer de séparer les cordons de secteur et les câbles signaux.*
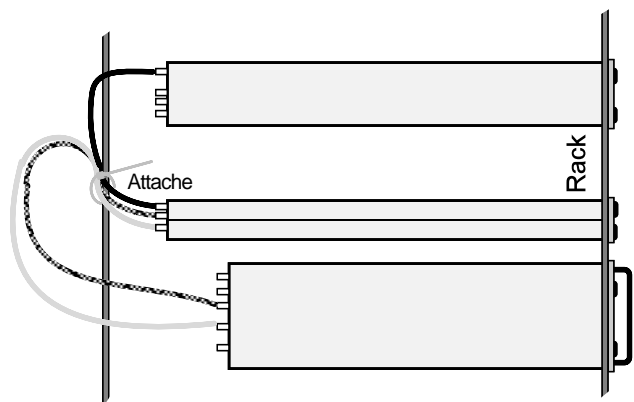
Figure B-6. Attaches évite que les câbles ne tombent sur l'équipement.

Entfernung der System 4*xi* Abdeckung

Die Abdeckung des *System 4xi* muß entfernt werden wenn für eine andere VDU eingerichtet, und dadurch Zugang zum Hauptcontroller benötigt wird, oder wenn die Hauptsicherung ausgetauscht wird.

1. Ziehen Sie den Netzstecker.

2. Falls eingebaut, entfernen Sie *System 4xi* aus dem Gestell.

3. Eingangs- und Ausgangskabel entfernen.

4. Stellen Sie *System 4xi* auf einen sauberen Untergrund und entfernen Sie die acht (8) Schrauben, siehe Abbildung.

5. Arbeiten erledigen.

    (Entweder Projektor Konfigurieren oder Sicherung ersetzen.)

    Berühren Sie keine Schalter oder Bauteile außer die, die angegeben wurden. Es könnte sonst ernsthafte Auswirkungen auf das System haben.

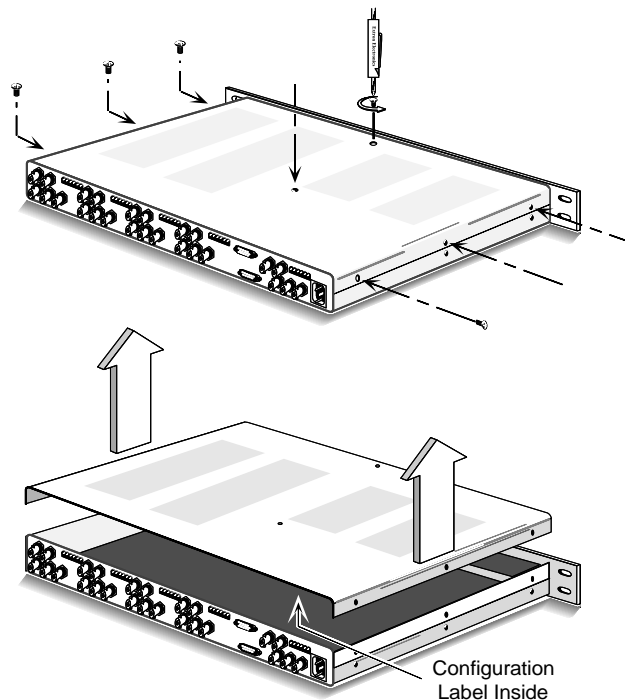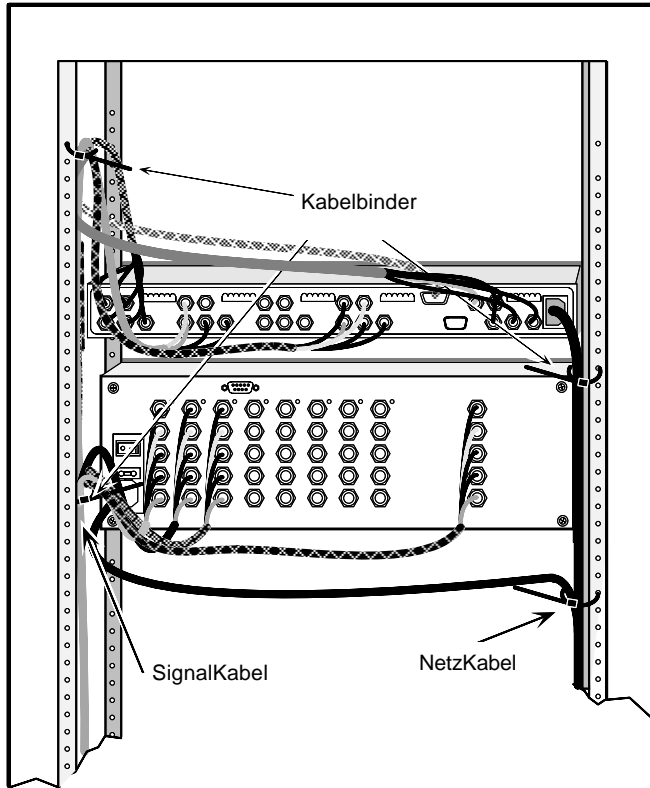6. Wiederholen Sie die Schritte 1-5 in umgekehrter Reihenfolge um die Abdeckung wieder zu befestigen.

Configuration
Label Inside

Figure B-7. Entfernung der System 4*xi* Abdeckung

Verkabelung vom System 4$_{xi}$ innerhalb eines Gestells

Wenn Sie Kabel innerhalb eines Gestells von einem Gerät zum anderen verlegen, sollen diese Kabel nicht vom *System 4*$_{xi}$ gehalten werden. (Siche Figure B-6.)

Verwenden Sie Kabelbinder oder ähnliches um die Kabel an einem Punkt zu befestigen der höher liegt als die Anschlüße an der Rückseite des Gerätes.

Kabel die lose herabhängen stellen eine Gefahrenquelle für Mensch und Gerät dar.

Die Abbildung zeigt die Rückansicht eines Systemgestells.

Das Beispiel zeigt, daß die Kabel an einem Punkt befestigt sind, der höher liegt als die Anschlüße an der Rückseite des Gerätes.

Dies ermöglicht eine freie Übersicht der Rückseite und verhindert, daß das Gewicht der Kabel das Gerät belastet.

Figure B-8. Netzkabel an der rechten Seite und Signalkabel an der linken Seite.

△ ————— *Vermeiden Sie eine Belastung der* System 4$_{xi}$ *Rückseite von mehr als 3,73 kg.*

△ ————— *Die Löcher an der Ober- und Unterseite des* System 4$_{xi}$ *dienen der Kühlung. Bedecken Sie diese Löcher nicht da eine Überhitzung der wichtigen Bauteile erfolgen kann.*

△ ————— *Die maximale Umgebungstemperatur beim Betrieb liegt bei 40 Grad °C (104 °F).*

△ ————— *Das Gestell, und die sich darin befindlichen Geräte müssen den landesüblichen Bestimmungen entsprechend geerdet werden.*

✐ ——— *Wenn möglich, verlegen Sie die Netz- und Signalkabel getrennt.*
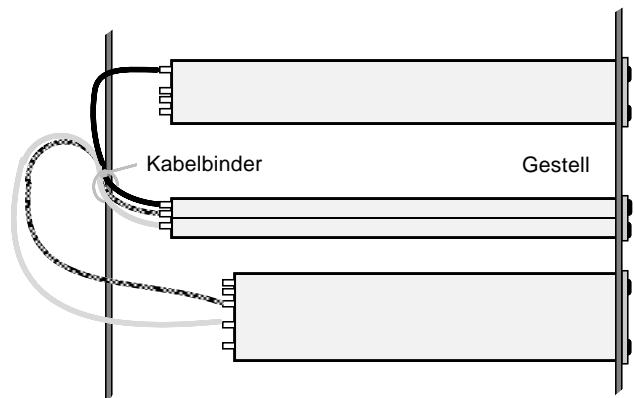
Figure B-9. Kabelbinder verhinderendaß das Gewicht der Kabel das Gerät belastet.

Upgrading Main Controller Board Software and Battery Replacement

⚠ ——— *This procedure requires removing both AC power as well as the battery backup. If your System 4xi software is version 1.3 or greater, it may not have a backup battery. For earlier versions with a battery backup, all programs stored in the System 4xi will be lost.*
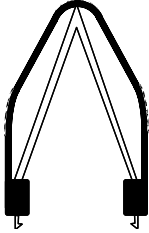
1. With the System 4xi cover removed and AC power disconnected, unplug the red/black backup battery cable at the Main Controller board. If there is no backup battery, please disregard this step.

2. **Be sure you are electrically grounded!** Use the PLCC IC puller to remove the old Software chip. Squeeze the tool to align the hooks with the slots provided in opposite corners of chip socket U8. Insert the hooks, squeeze gently and pull the IC straight out of the socket. Set the chip aside.

3. Take the **new** software chip and note the location of the angled corner. Orient this to match the angled corner of the socket U8 and carefully press it into place.

4. For systems with a backup battery, please reconnect the red/black cable to the Main Controller board.
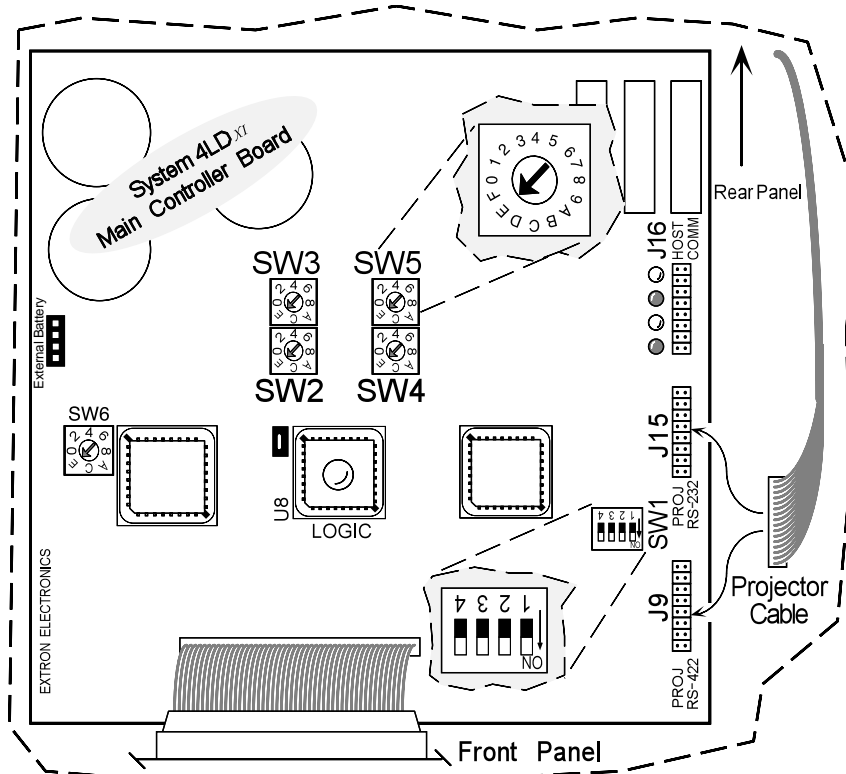

Figure B-10. System 4xi Main Controller Board

✎ ——— *The new software version does not require a backup battery.*

5. Reinstall the cover.

6. Connect the AC power cord and apply power to the System 4xi.

⚠ ——— **System 4xi Lithium Backup Battery • Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.**

Extron's Warranty

Extron Electronics warrants the product against defects in materials for a period of two years and defect in 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:

Extron Electronics
1230 South Lewis Street
Anaheim, CA 92805, U.S.A.

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 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 that some provisions of this warranty may not apply to you.