Extron® Electronics

INTERFACING, SWITCHING AND CONTROL

User's Manual

ISS 506

Integration Seamless Switcher

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

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

Achtung

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

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

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

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

Instrucciones de seguridad • Español

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

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

Precaucion

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

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

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

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

安全须知 • 中文

⚠ 这个符号提示用户该设备用户手册中有重要的操作和维护说明。

⚡ 这个符号警告用户该设备机壳内有暴露的危险电压，有触电危险。

注意

阅读说明书 •用户使用该设备前必须阅读并理解所有安全和使用说明。

保存说明书 •用户应保存安全说明书以备将来使用。

遵守警告 •用户应遵守产品和用户指南上的所有安全和操作说明。

避免追加 •不要使用该产品厂商没有推荐的工具或追加设备，以避免危险。

Warning

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

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

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

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

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

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

Avertissement

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

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

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

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

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

Lithium Batterie • Il a danger d'explosion s'Il y a 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 Kontakt ist für einen Erdanschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

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

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

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

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

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

Advertencia

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

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

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

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

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

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

警告

电源 •该设备只能使用产品上标明的电源。 设备必须使用有地线的供电系统供电。 第三条线（地线）是安全设施，不能不用或跳过。

拔掉电源 •为安全地从设备拔接电源，请拔掉所有设备后或桌面电源的电源线，或任何接到市电系统的电源线。

电源线保护 •妥善布线，避免被踩踏，或重物挤压。

维护 •所有维修必须由认证的维修人员进行。 设备内部没有用户可以更换的零件。为避免出现触电危险不要自己试图打开设备盖子维修该设备。

通风孔 •有些设备机壳上有通风槽或孔，它们是用来防止机内敏感元件过热。 不要用任何东西挡住通风孔。

锂电池 •不正确的更换电池会有爆炸的危险。必须使用与厂家推荐的相同或相近型号的电池。按照生产厂的建议处理废弃电池。

FCC Class A Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. The Class A limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

NOTE   *This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance with FCC emissions limits.*

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Chapter One

Introduction

About this Manual

About the Integration Seamless Switchers

Features

Introduction

About this Manual

This manual contains installation, configuration, and operating information for the Extron ISS 506 family of 6-input Integration Seamless Switchers with audio.

About the Integration Seamless Switchers

The Extron ISS 506 is a family of scaling, video and stereo audio seamless switchers. The ISS 506 family consists of the following five models:

- **ISS 506** — Six-input seamless video switcher with audio

- **ISS 506 DI/DVI** — Six-input seamless video switcher with audio, SDI/HD-SDI video input, and digital visual interface (DVI) video output

- **ISS 506 SC** — Six-input seamless video switcher with audio and scan-converted output

- **ISS 506 DI/SC** — Six-input seamless video switcher with audio, SDI/HD-SDI video input, and scan-converted output

- **ISS 506 DI/HD-SDI** — Six-input seamless video switcher with audio, SDI/HD-SDI video input, and HD-SDI output

NOTE *In this manual, the terms "ISS 506" and "switcher" refer to any of the above models unless otherwise stated.*

Figure 1-1 on the next page shows a typical ISS 506 application. The switchers accept up to six video and stereo inputs of various resolutions, scale the video inputs, and output RGB or YUV video and audio. The scaler can input high resolution video and/or low resolution video in the following formats:

- RGB (RGBHV, RGBS, RGBcvS) video

- YUV-HD (HDTV) video

- Progressive YUV component video

- Interlaced YUV component video

- S-video (Y/C)

- Composite (NTSC, PAL, SECAM) video

- SDI/HD-SDI video (scalers with an optional SDI board only)

The ISS seamlessly switches between the program and preview inputs without a loss of sync. The ISS can also mask the switch between sources with a dissolve or one of a variety of other transition effects for a professional look. The audio transition can also be accompanied by either a cut or a cross fading effect.

Each video input is individually configurable to allow for different video formats. The ISS allows the various high-resolution and low-resolution video formats to be displayed on a device with a fixed resolution and aspect ratio, such as a liquid crystal display (LCD) projector, a digital light processor (DLP) projector, a plasma display, or, optionally, a DVI or HD-SDI device.

The ISS provides two separate outputs: the *program* output and the *preview* output. The program output is the picture the audience sees. The preview output allows the switcher operator to view the image before it is sent to the program output for the audience to see. With an optional HD-SDI, DVI, or scan converter output board, the ISS converts the scaled image to digital video or low resolution video as an additional program output.
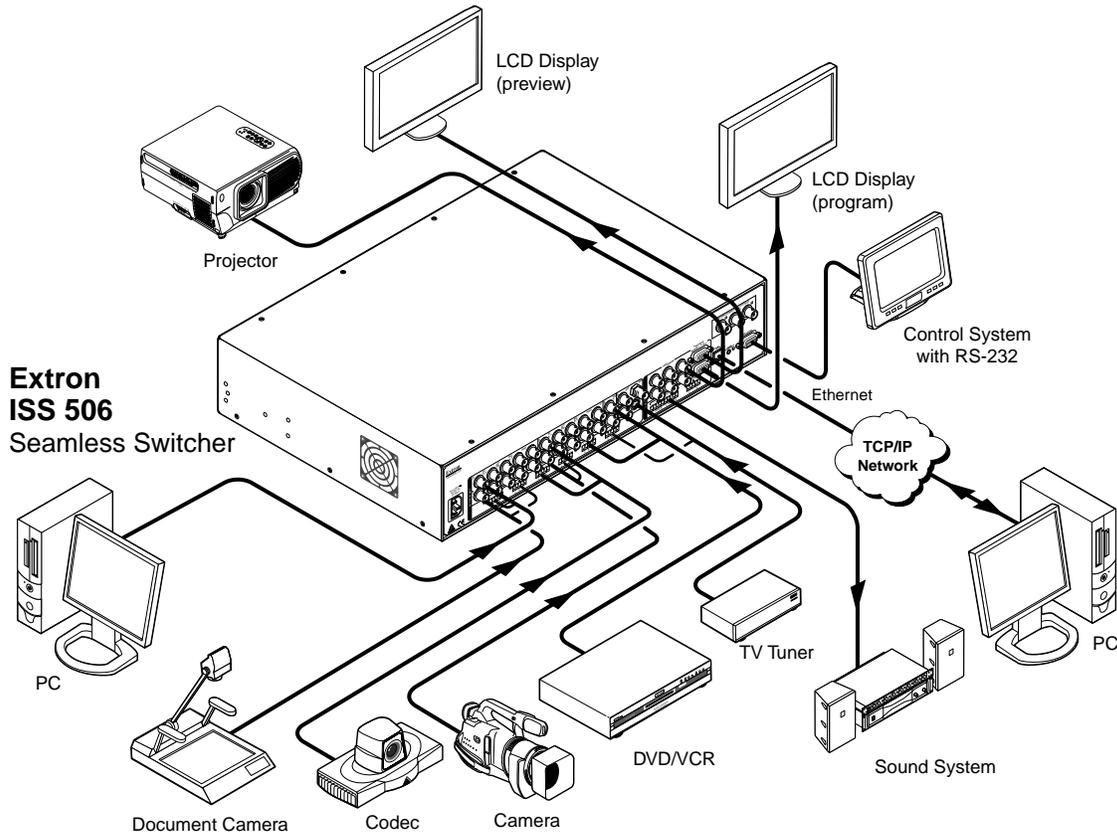
Figure 1-1 — Typical ISS 506 Integration Seamless Switcher application

The switcher inputs all video signal formats on a combination of connectors as follows:

- **Inputs 1 through 4** — Four sets of five BNC connectors that can input RGBHV, RGBS, YUV-HD, YUVp, RGBcvS, YUVi, S-video, or composite video

- **Input 5** — Three BNC connectors that can input YUVi, S-video, or composite video

- **Input 6** — Either a BNC connector that receives composite video or a 4-pin mini DIN connector that receives S-video

- **Optional input 6** — With an optional board, an optional BNC connector can receive SDI or HD-SDI video.

The ISS 506 scales the input up or down to any of a wide variety of output resolutions and rates. The scaler outputs the scaled video as RGBHV, RGBS, or component video on two sets of program connectors (five BNC connectors and a 15-pin HD connector) and one 15-pin HD preview connector. The program output BNC connectors and 15-pin HD connector share identical outputs. With one of three optional output boards, the scaler can also have a third program output, either:

- DVI video on a DVI connector

- Scan converted video on three BNC connectors

- HD-SDI digital video on a BNC connector (720p and 1080i)

The ISS 506 features HDTV 480p, 576p, 720p, 1080i, and 1080p outputs.

Introduction, cont'd

The ISS receives and outputs the stereo audio on 5-pole captive screw connectors. The audio can be switched with cross fading (that is, the previous audio channel fades out and then the new audio channel fades in).

For upscaling, the ISS 506 converts the horizontal and vertical sync timing and the number of lines of the lower-resolution video input to match the native resolution of the display. This produces an undistorted, brighter picture than an unscaled input would.

For downscaling, the ISS 506 accepts any computer resolution up to 1600 x 1200, with horizontal scan rates up to 100 kHz and vertical scan rates up to 120 Hz. The ISS converts the input to match the native resolution of the display.

The switcher is ideal for displaying images on projectors with limited display resolutions, such as LCD projectors, DLP projectors, plasma projectors, and (with an optional DVI board) a DVI display or projector.

The switcher features built-in test patterns to aid in monitor or projector setup and evaluation.

The switcher is housed in a rack-mountable, 2U high, 17.5" wide, metal enclosure. The ISS has an internal 100 VAC to 240 VAC, 50-60 Hz, 45 watts internal power supply that provides worldwide power compatibility.

Features

Inputs —

   Video inputs — The ISS switches among six configurable RGB, HDTV component video, component video, S-video, and composite video inputs.

   Optional video input board — With an optional SDI/HD-SDI input board, an HD-SDI or SDI video signal can be applied to input 6, in place of the S-video or composite video input.

   Audio inputs — The ISS switches among six balanced or unbalanced stereo or mono audio inputs on 5-pole captive screw connectors.

Outputs —

   Standard video outputs — The ISS outputs individually scaled video signals as RGBHV, RGBS, or component video. One set of BNC connectors and one 15-pin HD connector are provided for the program output. One 15-pin HD connector is provided for the preview output.

   Optional video output daughterboards — With an optional DVI, HD-SDI, or scan converter output board, an additional program video output is available, based on the board installed:

   • **DVI board —** The ISS outputs a single loop of DVI-D on a DVI connector. The DVI output resolution follows the program output.

   • **HD-SDI board —** The ISS outputs an HD-SDI video signal, 1080i or 720p, on a BNC connector.

   NOTE *You must set the output rate to 720p (at 25, 30, 50, 59.94, or 60 Hz), 1080i (at 50, 59.94 or 60 Hz), or 1080p (at 24, 25, or 30 Hz) to activate the HD-SDI output.*

   • **Scan converter board —** The ISS outputs a scan-converted video signal (low resolution RGsB, component video, S-video, or composite video) on three BNC connectors.

   NOTE *The scan converter output board can output S-video and composite video simultaneously.*

Audio outputs — The ISS outputs the selected unamplified, line level, balanced or unbalanced stereo or mono audio on 5-pole captive screw connectors.

Operational flexibility — Operations such as input selection, transitions, and picture adjustments, and volume control can be performed on the front panel or via the Ethernet or serial link. The serial links allow remote control via a PC or control system. The Ethernet link allows multiple remote links with two levels of password protection.

- **Front Panel Controller** — The front panel controller supports all ISS 506 functions. The input buttons can be labeled with text or graphics.

- **Windows-based control program —** For serial port or Ethernet remote control from a PC, the Extron Windows-based control software provides a graphical interface and drag-and-drop/point-and-click operation.

- **Simple Instruction Set (SIS™) —** The remote control protocol uses Extron's SIS for easy programming and operation.

- **Remote control panels —** The switcher is are remote controllable, using the optional RCP 2000 Remote Control panel.

3:2 pulldown detection for NTSC and 2:2 film detection for PAL video sources — These advanced film mode processing features help maximize image detail and sharpness for video sources that originated from film. When film is converted to NTSC video, the film frame rate has to be matched to the video frame rate in a process called 3:2 pulldown. Jaggies and other image artifacts can result if conventional de-interlacing techniques are used on film-source video. The ISS's advanced film mode processing recognizes signals that originated from film. The ISS then applies video processing algorithms that optimize the conversion of video that was made with the 3:2 pulldown process. This results in richly detailed images with sharply defined lines.

A similar 2:2 pulldown process is used for PAL film-source video.

Audio follow and breakaway — Audio switching can follow its corresponding video input signal or it can be broken away from the video input. Audio breakaway switching can be done under RS-232/RS-422 or Ethernet remote control.

Audio gain/attenuation — Users can set the input level of audio gain or attenuation (-18 dB to +24 dB) via the RS-232/RS-422 or Ethernet link, or from the front panel. Individual input audio levels can be adjusted so there are no noticeable volume differences between sources.

Audio cross-fading — A transition technique that is applied during the switches. It lowers the audio level of the switched out source while simultaneously raising the audio level of the activated source.

Logos — The ISS can display one or two logos on the preview and program outputs. The ISS can store up to 16 MB of bimapped logos.

Image (logo) save and recall — The ISS can capture an input image and save it for use as a logo.

Picture-in-picture and title — The ISS can display the preview input on top of the program output as either a picture-in-picture (PIP) window or a title.

LAN port — Supports connection to an Ethernet LAN so that the switcher can be accessed and operated anywhere in the world from a computer running a standard Internet browser.

Quad-standard video decoder — The switcher uses a digital, four-line adaptive comb filter that can decode NTSC 3.58, NTSC 4.43, PAL, and SECAM signals.

Introduction, cont'd

Transitions — Control the type of switch that occurs between the preview and program outputs. The Cut button creates an instant switch between the preview and program outputs. The Wipe and Dissolve buttons switch with a masking effect.

Test patterns — The switcher features built-in test patterns to aid in monitor or projector setup and evaluation.

Blue mode — The switcher can be set to output the blue video signal only, to help installers calibrate the monitor or projector.

Triple-Action Switching™ (RGB delay) — RGB delay mutes the R, G, and B video planes to blank the screen while the scaler locks to the new sync, so that a noise-filled scramble is not shown on the monitor during the transition. The time delay between the RGB and sync signals is user adjustable up to 5 seconds under front panel, SIS, and program control.

Auto memories — The six inputs support 16 auto-recall memories each, based on the incoming frequency. Information on sizing, centering, detail, contrast, and brightness is saved. Auto memories can be turned off under advanced configuration.

Auto Image™ — The auto imaging feature automatically sizes and centers the selected input to fill the screen. You can select auto imaging for individual inputs as desired or set to automatically size and center each new input selection.

Input presets — The ISS 506 has memory for up to 128 presets that allow the user to use SIS commands to save and recall color, tint, contrast, brightness, centering, sizing, and filtering information.

User presets — Three presets for each input save different settings for color, tint, contrast, brightness, detail, size, centering, and input configurations.

Freeze mode — Locks the output display to the selected image. Once the display is frozen, you can remove an input without losing the output image. This feature lets the ISS function as a still store.

Rack mountable — The 2U high switcher can be mounted in any conventional 19" wide rack.

Chapter Two

Installation

Mounting the Switcher

Cabling and Rear Panel Views

Front Panel Configuration Port

Configuration

Installation

Mounting the Switcher

Four uninstalled rubber feet are included with the seamless switcher. If you are going to rack mount the switcher, mount it before you cable it (see "Rack mounting", below), and do not install the rubber feet. If you are not rack mounting the seamless switcher, see "Tabletop placement", below.

Tabletop placement

For tabletop placement, install the self-adhesive rubber feet/pads (provided) onto the four corners of the bottom of the seamless switcher.

Rack mounting

UL guidelines

The following Underwriters Laboratories (UL) guidelines pertain to the installation of the ISS 506 into a rack (figure 2-1).

1. **Elevated operating ambient temperature** — If the equipment installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, install the ISS in an environment compatible with the maximum ambient temperature (Tma = +122 °F, +50 °C) specified by Extron.

2. **Reduced air flow** — Install the equipment in a rack so that the amount of air flow required for safe operation of the equipment is not compromised.

3. **Mechanical loading** — Mount the equipment in the rack so that a hazardous condition is not achieved due to uneven mechanical loading.

4. **Circuit overloading** — Connect the equipment to the supply circuit and consider the effect that circuit overloading might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

5. **Reliable earthing (grounding)** — Maintain reliable grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

Mounting instructions

For optional rack mounting, do not install the rubber feet. Mount the ISS 506 in a rack as follows:

1. Attach the included MBD 249 rack/through-desk mounting brackets to the unit, using eight machine screws supplied with the mounting kit (figure 2-1). Use the lower screw holes in the brackets.

MBD 249
2-U Rack Mount
Bracket (use four
lower holes)
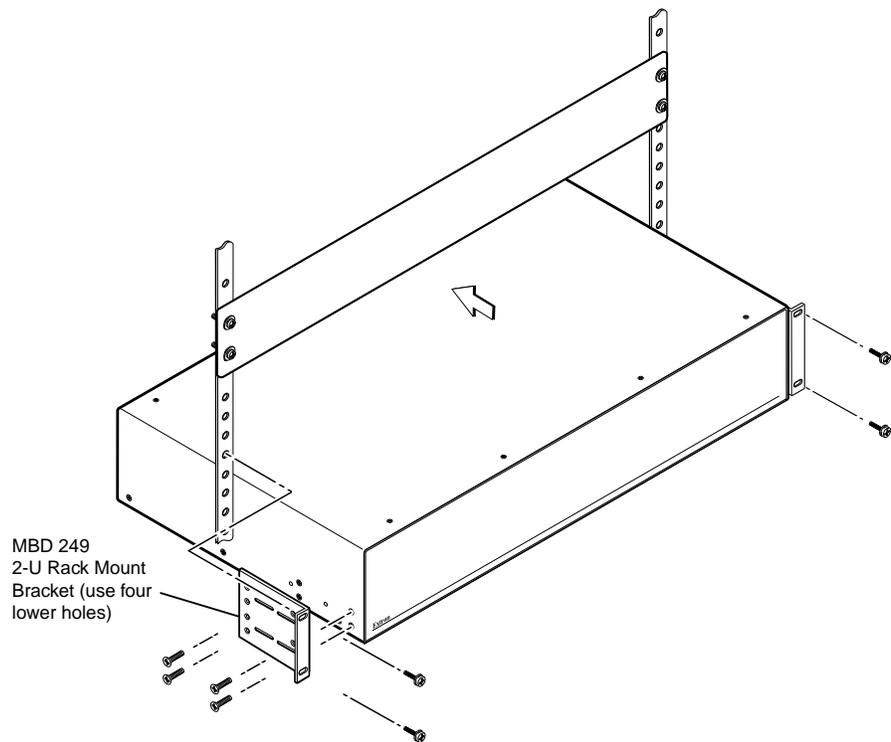
Figure 2-1 — Mounting the seamless switcher

2. Insert the unit into the rack and align the holes in the mounting brackets with the holes in the rack. Use four machine screws to attach the brackets to the rack.

Installation, cont'd

Cabling and Rear Panel Views

All connectors are on the rear panel (figure 2-2).
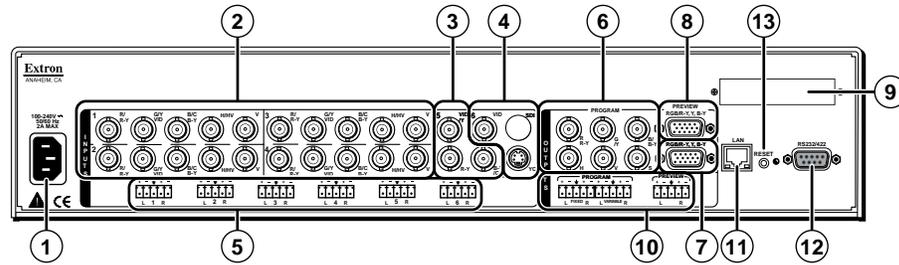
Figure 2-2 — ISS 506 rear panel connectors

Input connections

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

Video input connections

2. **Input 1 through Input 4 video connectors** — Connect computer or RGB video, component video, S-video, or composite video sources to these female BNC connectors. Figure 2-3 shows how to connect the various video formats.
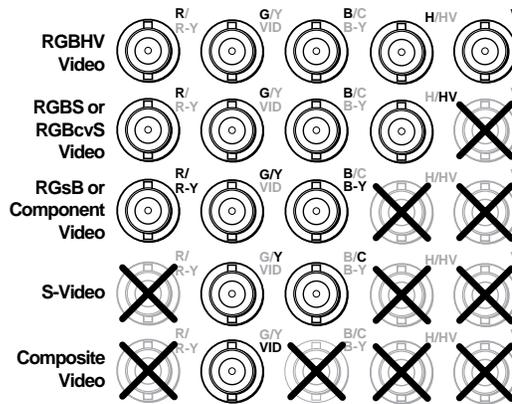
Figure 2-3 — Connections for various input video formats

3. **Input 5 video connectors** — Connect a component video, S-video, or composite video source to these female BNC connectors. Figure 2-4 shows how to connect the various video formats.
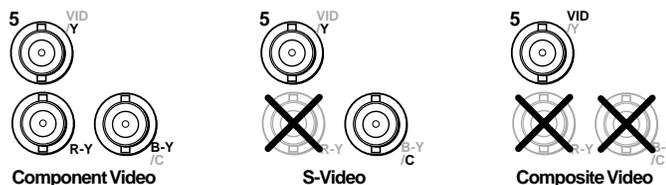
Figure 2-4 — Connections for input 5 video formats

④ **Input 6 video connectors** — Connect **either** an S-video, a composite video, **or** an SDI/HD-SDI video source to these connectors (figure 2-5).

S-Video **Composite Video** **SDI or HD-SDI Video**
(Optional SDI/HDSDI Input Board Only)
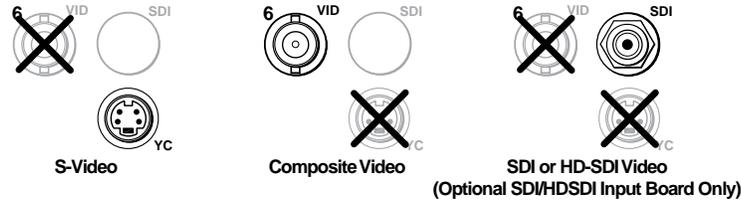
Figure 2-5 — Connections for input 6 video formats

NOTE *The SDI/HD-SDI video input is available **only** on the ISS 506 DI/DVI, the ISS 506 DI/SC, and the ISS 506 DI/HD-SDI.*

NOTE *Although all video formats can be physically connected, input 6 **cannot** accept multiple video inputs simultaneously.*

Audio input connections

⑤ **Input audio connectors** — Connect balanced or unbalanced stereo or mono audio to these 3.5 mm, 5-pole captive screw connectors. Connectors are included with the seamless switcher, but you must supply the audio cable. Figure 2-6 shows how to wire a connector for the appropriate input type. Use the supplied tie-wrap to strap the audio cable to the extended tail of the connector. High impedance is generally over 800 ohms.

$\frac{3}{16}$ " MAX.
(5 mm)

Do not tin the wires!

Unbalanced Stereo Input
(high impedance)

Balanced Stereo Input
(high impedance)
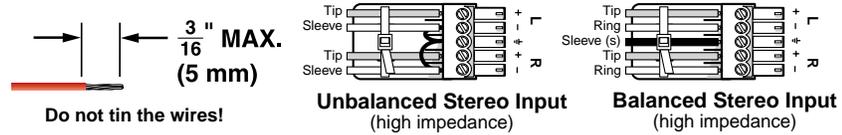
Figure 2-6 — Captive screw connector wiring for inputs

CAUTION *The length of the exposed (stripped) portion of the copper wires is important. **The ideal length is 3/16" (5 mm)**. Longer bare wires can short together. Shorter bare wires are not secure enough in the direct insertion connectors and could be pulled out.*

NOTE *When making connections for the seamless switcher from existing audio cables, see figure 2-7. A mono audio connector consists of the tip and sleeve. A stereo audio connector consists of the tip, ring, and sleeve. The tip, ring, and sleeve wires are also shown on the captive screw audio connector diagram, figure 2-6.*

RCA Connector

3.5 mm Stereo Plug Connector
(balanced)
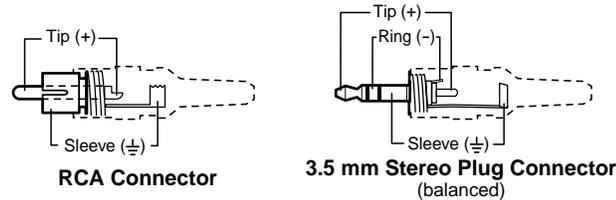
Figure 2-7 — Typical audio connectors

The audio level for each input can be individually set via the front panel, the Ethernet link, or the RS-232/RS-422 link, to ensure that the level on the output does not vary from input to input. See chapter 3, "Operation", chapter 4, "SIS Programming and Control"; and chapter 5, "Scaler Software", for details.

Installation, cont'd

Output connections

Video output connections

NOTE *The two Program Video outputs, consisting of one set of five BNC connectors and a 15-pin HD connector, output identical video signals at the same resolution, refresh rate, and sync format.*

The Program connectors (⑥ and ⑦) output the video image for the program monitor or projector. The Preview connectors (⑧) output the video image for the local monitor.

⑥ **Program video output BNC connectors** — Connect an RGB or component video display to these female BNC connectors. Figure 2-8 shows how to connect the various video formats.
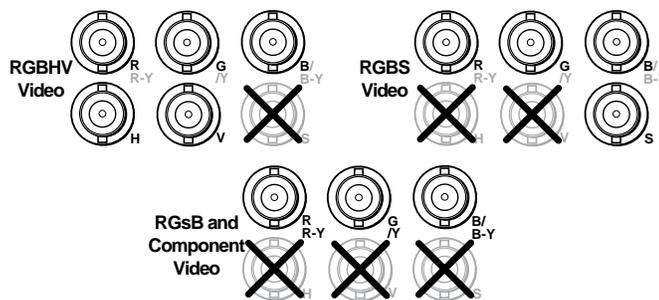
Figure 2-8 — BNC output connections for RGBHV, RGBS, RGsB, and component video

⑦ **Program video output 15-pin HD connector** — Connect an RGB or component video display to this female 15-pin HD connector.

⑧ **Preview video output 15-pin HD connector** — Connect an RGB or component video display to this female 15-pin HD connector.

Optional video output connections

One of three possible output expansion boards can be installed in this location. The expansion board receives the program output. The available output boards are:

• A DVI output board

• A scan converter (low resolution) output board

• An HD-SDI output board

9a **DVI output connector (optional) —** If the optional DVI output board (figure 2-9) is installed, connect a DVI/HDMI-compatible video display to this DVI connector. This connector outputs the program image only. For an HDMI-compatible display, connect the display through a DVI-to-HDMI adapter, part #**26-497-01** (DVI [male] to HDMI [female] adapter) or **26-498-01** (DVI [female] to HDMI [male] adapter).
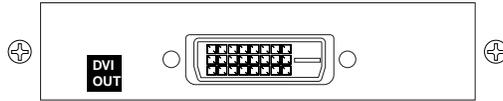
Figure 2-9 — Optional DVI output board

9b **Scan converter output connectors (optional) —** If the optional scan converter output board is installed, connect a low resolution video (RGsB video, interlaced component video, S-video, or composite video) display to these female BNC connectors. These connectors output the program image only. Figure 2-10 shows how to connect the various video formats.

NOTE *The scan converter board can output S-video and composite video simultaneously.*
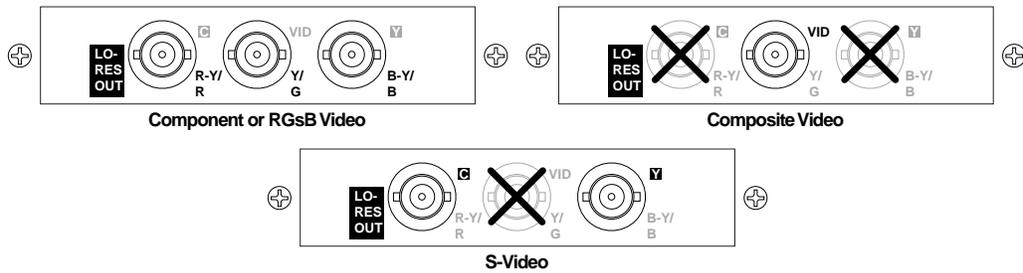
Figure 2-10 — Optional scan converter output board

9c **HD-SDI output connectors (optional) —** If the optional HD-SDI output board is installed, connect an HD-SDI display to this female BNC connector (figure 2-11). This connector outputs the program image only.

NOTE *You must set the scaler's output rate to 720p (at 25, 30, 50, 59.94, or 60 Hz), 1080i (at 50, 59.94 or 60 Hz), or 1080p (at 24, 25, or 30 Hz) for the HD-SDI board to produce an output. See "Resolution and refresh rate submenu" in chapter 3, "Operation".*
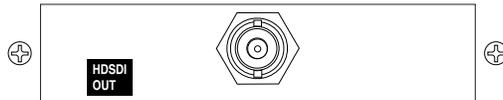
Figure 2-11 — Optional HD-SDI output board

Installation, cont'd

Audio output connections

(10) **Preview and Program audio output connectors** — Connect audio devices, such as an audio amplifier or powered speakers, to these 3.5 mm, 5-pole captive screw connectors. The connectors output the selected unamplified, line level audio. See figure 2-12 to properly wire an output connector. Use the supplied tie-wrap to strap the audio cable to the extended tail of the connector.

Figure 2-12 — Captive screw connector wiring for audio output

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

CAUTION *The length of the exposed (stripped) portion of the copper wires is important. **The ideal length is 3/16" (5 mm)**. Longer bare wires can short together. Shorter bare wires are not secure enough in the direct insertion connectors and could be pulled out.*

NOTE *The level of the audio output on the Variable Program output connector can be adjusted using the front panel Volume control.*

The Preview Output and the Fixed Program output connectors are not affected by the front panel Volume control.

By default, the audio output follows the video switch. Audio breakaway, commanded via the Ethernet link or the RS-232/RS-422 link, allows you to select from any one of the audio input sources. See chapter 4, "SIS Programming and Control"; chapter 5, "Scaler Software"; and chapter 6, "Ethernet Operation", for details.

Control connections

Ethernet connection

(11) **LAN port** — If desired, connect the seamless switcher to an Ethernet LAN or WAN via this RJ-45 connector. Ethernet control allows the operator to control the seamless switcher from a remote location. When connected to an Ethernet LAN or WAN, the seamless switcher can be accessed and operated from a computer running a standard Internet browser.

Ethernet connection indicators — The Link and Activity LEDs indicate the status of the Ethernet connection.
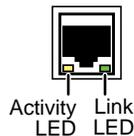
The Link LED indicates that the seamless switcher is properly connected to an Ethernet LAN. This LED should light steadily.

The Activity LED indicates transmission of data packets on the RJ-45 connector. This LED should flicker as the seamless switcher communicates.

Cabling and RJ-45 connector wiring

It is vital that your Ethernet cables be the correct cables, and properly terminated with the correct pinout.

Choosing a network cable

Ethernet links use Category (CAT) 3, 4, 5, 5e, or 6, unshielded twisted pair (UTP) or shielded twisted pair (STP) cables, terminated with RJ-45 connectors. Ethernet cables are limited to 328' (100 m).

NOTE *Do not use standard telephone cables. Telephone cables do not support Ethernet or Fast Ethernet.*

NOTE *Do not stretch or bend cables. Transmission errors can occur.*

The cable used depends on your network speed. The ISS supports both 10 Mbps (10Base-T — Ethernet) and 100 Mbps (100Base-T — Fast Ethernet), half-duplex and full-duplex Ethernet connections.

- 10Base-T Ethernet requires at a minimum CAT 3 UTP or STP cable.

- 100Base-T Fast Ethernet requires at a minimum CAT 5 UTP or STP cable.

Wiring the network cable

The cable can be terminated as either a patch cable or a crossover cable (figure 2-13) and must be properly terminated for your application:

- **Patch (straight) cable —** Connection of the ISS to an Ethernet hub, router, or switch that also hosts a controlling computer

- **Crossover cable —** Direct connection between the ISS and a controlling computer

Pins:
12345678

Insert Twisted Pair Wires

RJ-45 Connector

Crossover Cable

Pin	End 1 Wire color	End 2 Wire color
1	White-green	White-orange
2	Green	Orange
3	White-orange	White-green
4	Blue	Blue
5	White-blue	White-blue
6	Orange	Green
7	White-brown	White-brown
8	Brown	Brown

T568A   **T568B**

A cable that is wired as T568A at one end and T568B at the other (Tx and Rx pairs reversed) is a "crossover" cable.

Straight-through Cable

Pin	End 1 Wire color	End 2 Wire color
1	White-orange	White-orange
2	Orange	Orange
3	White-green	White-green
4	Blue	Blue
5	White-blue	White-blue
6	Green	Green
7	White-brown	White-brown
8	Brown	Brown

T568B   **T568B**

A cable wired the same at both ends is called a "straight-through" cable, because no pin/pair assignments are swapped.

Figure 2-13 — RJ-45 connector pinout table

Serial port connection

⑫ **RS-232/422 port** — Connect a host device, such as a computer or touch panel control, to the ISS 506 Integration Seamless Switcher via this 9-pin D connector for serial RS-232 or RS-422 control (figure 2-14).

RS232/422

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

Figure 2-14 — Remote port pin assignments

See chapter 4, "SIS Programming and Control", for definitions of the SIS commands and chapter 5, "Scaler Software", to install and use the control software.

Reset button

⑬ **Reset button** — The Reset button initiates four levels of reset to the matrix switcher. Use and Extron Tweeker or small screwdriver to press and hold the button while the switcher is running or while you power up the switcher, for different reset levels.

LAN

RESET

See "Rear Panel Reset Button" in chapter 3, "Operation", for details.

- **Events (mode 3) reset —** Hold Reset for 3 seconds, then release it and push it again to toggle events monitoring on and off.

- **IP settings (mode 4) reset —** Hold Reset for 6 seconds, then release it and push it again to reset the switcher's IP functions.

NOTE *IP settings reset does not replace any user-installed firmware.*

- **Absolute (mode 5) reset —** Hold Reset for 9 seconds, then release it and push it again to restore the switcher to the default factory conditions (without resetting the firmware).

- **Hard reset —** Hold Reset while powering up the switcher to revert to the factory default firmware (in the event that firmware incompatibility issues occur).

Front Panel Configuration Port
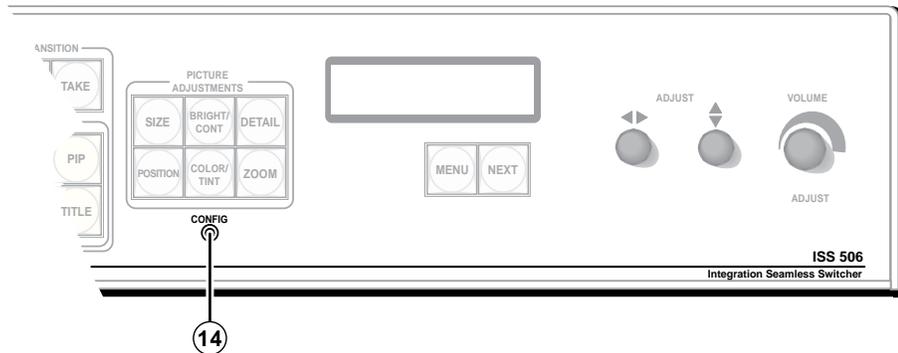
Figure 2-15 — Front panel configuration port

(14) **Configuration port** — This 2.5 mm mini stereo jack serves the same serial communications function as the rear panel Remote port, but it is easier to access than the rear port after the matrix switcher has been installed and cabled. The optional 9-pin D to 2.5 mm mini jack TRS RS-232 cable, part **#70-335-01** (figure 2-16), can be used for this connection.

9-pin D	Connection	TRS Plug
Pin 2	Computer's RX line	Tip
Pin 3	Computer's TX line	Ring
Pin 5	Computer's signal ground	Sleeve
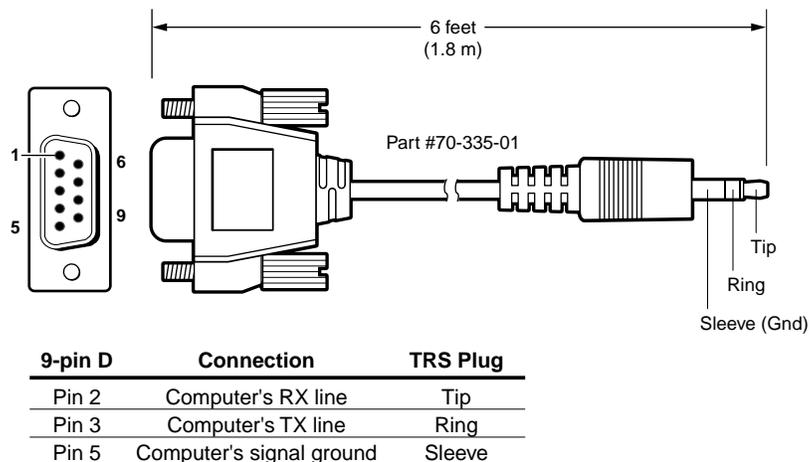
Figure 2-16 — Optional 9-pin TRS RS-232 cable

NOTE *This port is independent of the rear panel RS-232/RS-422 port. A front panel Configuration port connection and a rear panel RS-232/RS-422 port connection can both be active at the same time.*

This port is RS-232 only, with its default protocols as follows:

- 9600 baud
- 1 stop bit
- no parity
- no flow control
- 8 data bits

NOTE *The maximum distance from the seamless switcher to the controlling device can vary up to 200 feet (61 m). Factors such as cable gauge, baud rates, environment, and output levels (from the switcher and the controlling device) all affect transmission distance. Distances of about 50 feet (15 m) are typically not a problem. In some cases the matrix switcher may be capable of serial communications via RS-232 up to 250 feet (76 m) away.*

Installation, cont'd

Configuration

The ISS can be configured using either the front panel controls, the SIS, the HTML pages, or the Windows-based Control program. See chapter 3, "Operation"; chapter 4, "SIS Programming and Control"; chapter 5, "Scaler Software", and chapter 6, "HTML Operation".

Chapter Three

Operation

Operation

Front Panel Controls and Indicators

All of the switcher's controls and indicators, with the exception of the Reset button, are on the front panel (figure 3-1). The buttons can be set to provide amber background illumination all the time or the background illumination can be turned off (see "Toggling background illumination on and off", on page 3-37. The program and preview input selection buttons can be labeled with text and/or graphics. The 16 x 2 LCD window indicates the switcher status, menu selections, the data rate, and the status of additional system features.
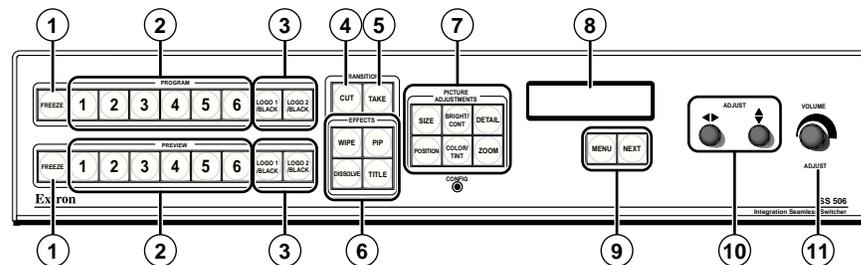
Figure 3-1 — ISS 506 front panel

Freeze, input selection, Logo/Black, and Cut/Dissolve controls

① **Freeze buttons —** The two Freeze buttons lock the program output or preview output display to the currently selected input image. When the freeze function is enabled, these buttons light green. Press the Freeze button again to unfreeze the image.

NOTE *The freeze function has no effect on the audio output.*

② **Input selection buttons —** The two sets of Input 1 through 6 buttons select the associated input to scale and display on the program and preview monitors. The input buttons light amber when video and audio are selected.

NOTE *Input selections can be made with audio broken away under RS-232/RS-422 or Ethernet control **only**. See chapter 4, "SIS Programming and Control"; chapter 5, "Switcher Software"; and chapter 6, "HTML Operation".*

The input button lights green when video only is selected.

The input button lights red when audio only is selected.

NOTE *Video and audio outputs can be muted under RS-232/RS-422 or Ethernet control **only**. See chapter 4, "SIS Programming and Control"; chapter 5, "Switcher Software"; and chapter 6, "HTML Operation".*

The Input button blinks, alternating between red and amber when video is muted.

The input button blinks, alternating between green and amber when audio is muted.

The input button blinks amber when both video and audio are muted.

③ **Logo/Black buttons —** The four Logo/Black buttons (two buttons, Logo 1 and Logo 2, for both the program output and the preview output) switch the program output or preview output to a black screen or superimpose one of two stored logos on top of the selected input.

④ **Cut button —** Pressing the Cut button causes the ISS to immediately switch the input selected as the preview output to the program output, with no switching effects added. The Cut button flashes when selected to indicate the switch taking place.

⑤ **Take button —** Pressing the Take button causes the ISS to switch the input that was selected as the preview output with the program output, using the effect that was selected by the lit Effect button (⑥).

The Take button blinks for the duration of the switching effect. For the PIP and Title effect, Take blinks as long as the PIP window or title is displayed on top of the program output

NOTE *Take blinks when the PIP window or title is displayed on the program output even if the effect was commanded using the Cut button.*

⑥ **Effects buttons —** Press one of these Effects buttons - Wipe, Dissolve, PIP, or Title, to select that effect to use when you press the Take button (⑤). See "Effects configuration menu", later in this chapter, for more details.

Picture adjustment and menu system controls

⑦ **Picture Adjustment buttons —** The picture adjustment buttons select individual image adjustments for the preview output or program output. Pushing a button toggles between the preview and program outputs. The selected picture adjustment is made using the Adjust ◄► and Adjust ⬍ knobs (⑩).

NOTE *If the PIP mode is selected, the preview output is shown and adjusted in the picture-in-picture window and the program output is shown and adjusted in the main (full-size) window.*

NOTE *For more information on these buttons and adjustments, see "Adjusting the picture", later in this chapter..*

Size control button — The Size button selects the display size adjustment. The adjustment range depends on the output resolution that was selected.

Brightness/Contrast control button — The Brightness/Contrast button selects the display brightness and contrast adjustments. The adjustment range for both brightness and contrast is from 0 to 127.

Filter control (Detail) button — The Detail button selects the display image detail (sharpness) adjustment. The sharpness adjustment compensates for long cable runs. The adjustment range for the filter is from 0 to 127.

Position control button — The Position button selects the display centering adjustment. The adjustment range depends on the output resolution that was selected.

Color/Tint control button — The Color/Tint button selects the display color and tint adjustments. The adjustment range for both color and tint is from 0 to 127.

NOTE *Color adjustments are available only for component video, S-video, and composite video inputs.*

Tint adjustments are available only for S-video and composite NTSC video inputs.

Zoom button — The Zoom button selects the zoom adjustments (allowing you to make the image or the window larger).

⑧ **Status display —** The 16-column by 2-line LCD window displays configuration menus and status information. See "Menu system overview", below, and "Front Panel Operations", later in this chapter, for details.

⑨ **Menu button —** The Menu button enters and moves through the main menu system in the ISS. See "Menu system overview", below, and "Front Panel Operations", later in this chapter, for details.

Next button — The Next button steps through the submenus in the ISS menu system. See "Menu system overview", below, and "Front Panel Operations", later in this chapter, for details.

⑩ **Adjust ◄► (horizontal) and Adjust ↕ (vertical) knobs —** The Adjust ◄► and Adjust ↕ knobs change settings when used in conjunction with the menu system or the picture adjustment buttons.

⑪ **Volume knob —** The Volume knob changes the attenuation of the audio output on the Program Variable audio output.

NOTE *The Preview Output and the Fixed Program audio output connectors are not affected by the front panel Volume control.*

Menu system overview

Figure 3-2 shows a flowchart of the main menus in the menu system.

NOTE *On figure 3-2 and all other flowcharts in this chapter, solid lines indicate screen changes initiated by the operator. Dashed lines indicate screen changes that are the result of a timeout function.*

Menu button — Press the Menu button to activate the menu system and to scroll through the nine or ten main menus.

Next button — Press the Next button to move between the submenus of a selected main menu, to activate a submenu for viewing or configuration, and to save a selection. Pressing the Next button during input configuration causes the current input's number and format type to be displayed on the LCD window.

Adjust ◄► and Adjust ↕ knobs — When a submenu is active, rotate the Adjust ◄► knob and Adjust ↕ knob to scroll through the submenu options and select a setting.

When one of the picture adjustment buttons is selected, rotate these knobs to change picture settings.

Refer to the flowcharts in this chapter and to specific sections for explanations of the knob adjustments.

NOTE *If you press the Menu button while a main menu is active, the next main menu becomes active.*

If you press the Menu button while a submenu is active, the LCD window backs up to display that submenu's main menu.

NOTE *To return to the default screens, let the switcher remain idle for 30 seconds until the selected screen times out; or press the Menu button until the Exit Menu appears, then press the Next button.*

NOTE *From any menu or submenu, after 30 seconds of inactivity, the ISS saves all adjustment settings and times out to the default LCD display cycle.*
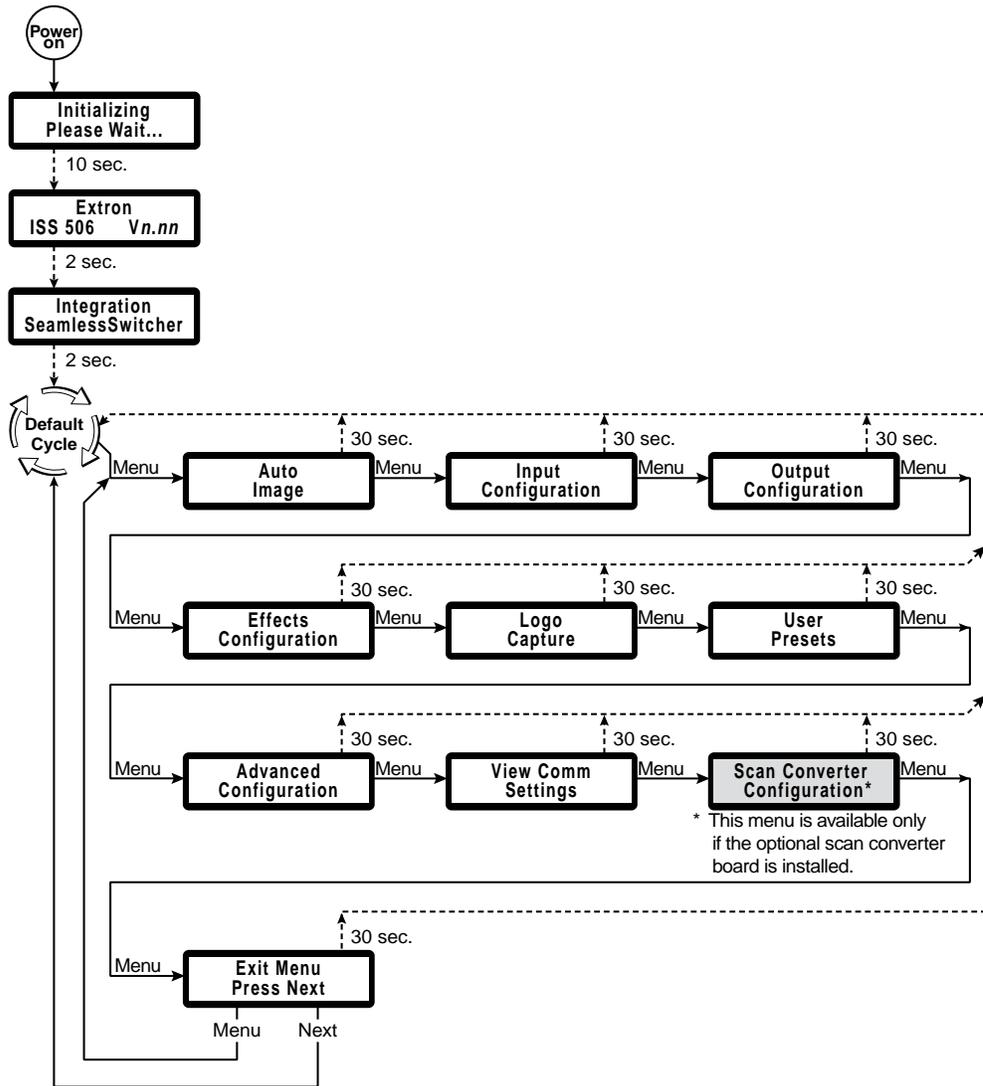
Figure 3-2 — Menu system flowchart

Operation, cont'd

Auto Image menu

Figure 3-3 shows an overview of the Auto Image menu, the Select output submenu, and the available settings.
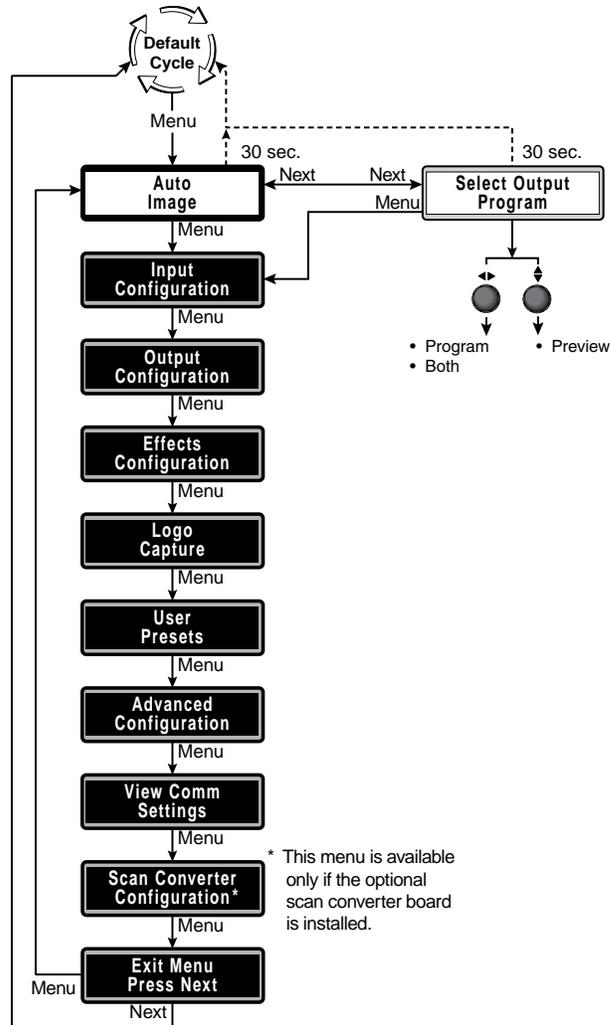
Figure 3-3 — Auto Image menu flowchart

Select Output submenu

The auto imaging feature automatically sizes and centers the selected input to fill the screen. Command the auto imaging adjustment for a specific input by rotating either Adjust knob to select either the program output, preview output, or both outputs, and pressing the Next button to apply the auto image correction.

Alternatively, using the menu system, you can set this feature to apply the Auto Image adjustments to every input as it is selected (see "Auto Image submenu" on page 3-20).

Input Configuration menu

Figure 3-4, on the next page, shows an overview of the Input Configuration menu and the available settings.
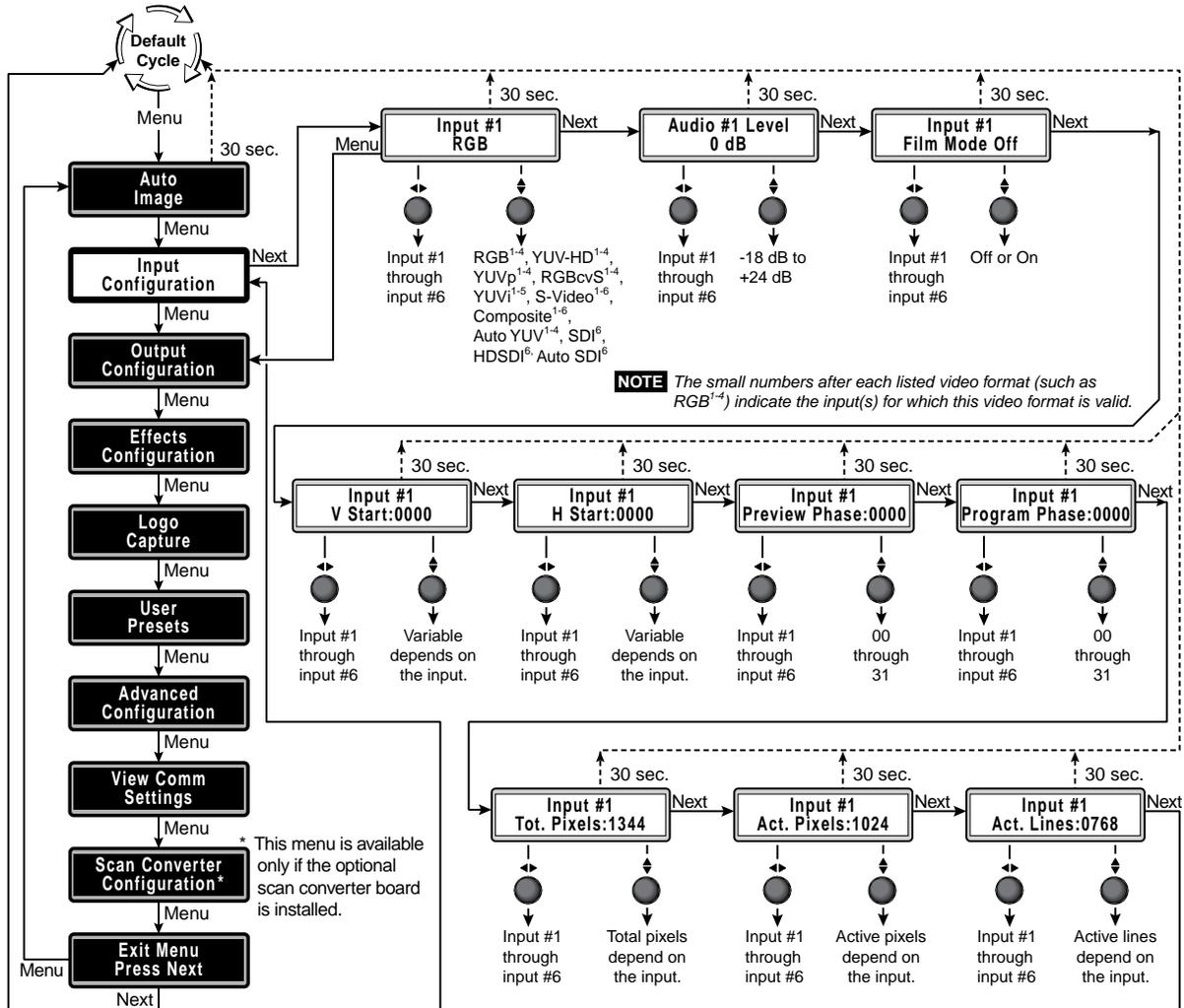
Figure 3-4 — Input Configuration menu flowchart

Input format submenu

Rotate the Adjust ◄► knob while the Input format submenu is active to select an input to configure. Rotate the Adjust ◆ knob to select the correct video format (RGB, HDTV component video, progressive component video [YUVp], RGBcvS, low resolution component video [YUVi], S-video, composite video, or SDI/HD-SDI) for the selected input.

NOTE *The RGB, HDTV and progressive component video, and RGcvS formats are displayed for inputs 1 through 4 only.*

The low resolution component video format is displayed for inputs 1 through 5 only.

The S-video and composite video formats are displayed for all inputs.

The SDI video input and HD-SDI video input are displayed for input 6 only, and only if the optional SDI input board is installed.

The Auto YUV selection detects between YUVi, YUVp, and YUV-HD as the input format.

The Auto SDI selection measures the input frequency and automatically sets the scaler to either SDI or HD-SDI.

Operation, cont'd

Audio Level submenu

Rotate the Adjust ◄► knob while the Input format submenu is active to select an input to configure. Rotate the Adjust ↕ knob to select the audio gain or attenuation value, from -18 dB to +24 dB. The default for each input is a 0 dB audio level.

Film Mode submenu

The Film Mode submenu lets you turn PAL film mode (2:2 pulldown detection) on and off for each input. The PAL film mode should be used for a PAL video source that originated from film. PAL film mode applies video processing algorithms that optimize the conversion of video that was made with the 2:2 pulldown (PAL video from film) process.

Rotate the Adjust ◄► knob while the Input format submenu is active to select an input to configure. Rotate the Adjust ↕ knob to select On or Off.

Vertical Start and Horizontal Start submenus

The Vertical Start submenu defines the number of lines per frame that are inside the blanking area above the active area (figure 3-5). The Horizontal Start submenu defines the number of pixels per line that are inside the blanking area to the left of the active area.
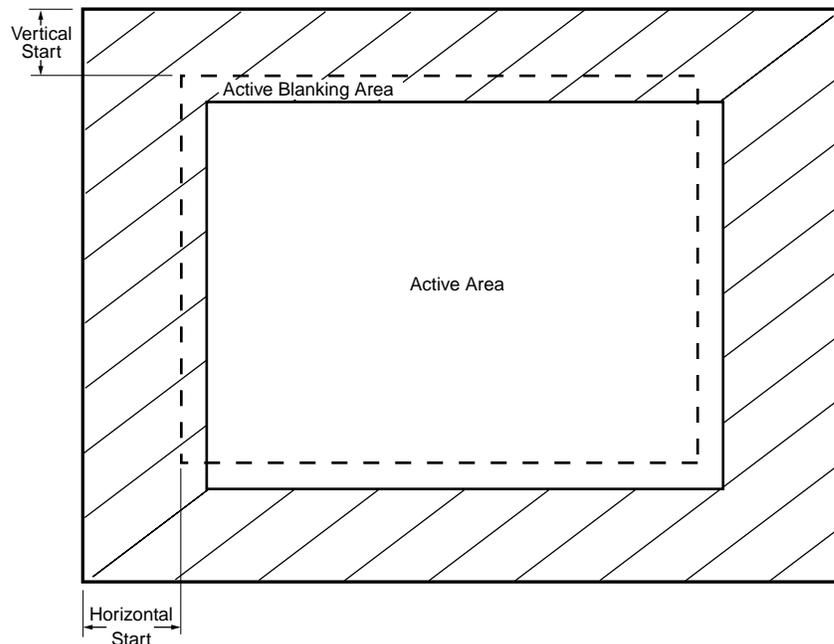
Figure 3-5 — Incorrectly started image

Both submenus adjust where the electronic scaling process takes effect. The input starting point and active area should be manually adjusted, if necessary, to match the input video signal, framing the active area of the input signal. If the start point is set incorrectly, the scaler may add blank borders on the leading edges (top or left side) or it may crop the active area on the trailing edges (bottom or right side).

Select the appropriate submenu. Rotate the Adjust ◄► knob while the Input format submenu is active to select an input to configure. Rotate the Adjust ↕ knob to set the start variable.

NOTE *Figure 3-5 shows an image that is improperly started (as indicated by the dashed lines). If the horizontal start adjustment is set to less than the amount of actual blanking, the ISS starts scaling the input before the start of the active image.*

This early scaling results in a blank border on the left side and cropping on the right side, and looks as if the image is shifted to the right.

Similarly, if the vertical start adjustment is set to less than the amount of actual blanking, the ISS starts scaling before the first line of the active image. This early scaling results in a blank border on the top and cropping on the bottom, and looks as if the image is shifted down.

Adjust the Vertical Start variable to shift the starting period vertically on the screen. Adjust the Horizontal Start variable to shift the scaler's starting point horizontally on the screen.

If improperly adjusted, the output position variable can result in an image similar to figure 3-5. The position adjustment only moves the image on the monitor. It does not add blank borders or crop any part of the image. However, the apparent effect of blank borders and a cropped image can be caused by the image being improperly positioned on the monitor.

Preview and Program Phase submenus

The Preview and Program Phase submenus display and let you set the pixel phase, which is the timing of the digital scaler's sampling. Sampling at the optimum pixel phase results in a brighter scaled output.

Select the desired submenu. Rotate the Adjust ◄► knob while the Input format submenu is active to select an input to configure. Rotate the Adjust ◆ knob to set the phase variable from 0 to 31. The default is 16.

Total Pixels submenu

The total pixels variable (RGB and progressive/HDTV component only) defines the total number of pixels per line, including the blanking on both sides of the input active area (active, horizontal sync width, back porch, and front porch).

There are several methods to determine the correct value to use in the total pixels variable. Usually, the best method is to use the input signal specifications. For some input sampling rates, the scaler's setting can result in fine vertical lines (figure 3-6).
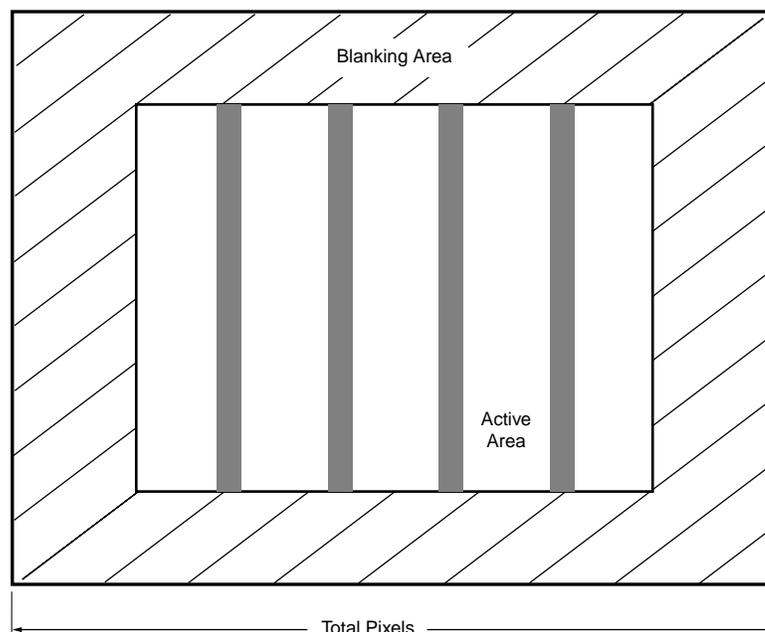
Figure 3-6 — Incorrect total pixels variable

Operation, cont'd

These lines appear as fuzzy vertical bars when an alternating pixels pattern is applied. When the total pixels setting is improperly adjusted, the entire image can have a noisy or darkened appearance. Adjusting the phase corrects this.

As an approximate setting, multiply the active pixels setting (see "Active Pixels and Active Lines submenus", below) by a factor of 1.3.

If the input pixel clock rate is known, the input total pixels setting can be calculated with this equation: **total pixels = input pixels clock ÷ input horizontal scan rate**. Once a preliminary setting is saved, some faint vertical lines may remain. Adjust the total pixels variable as necessary until the lines are completely out of view or as far apart as you can make them. If one line remains, it can be moved out of view using the Phase submenu (see "Preview and Program Phase submenus" on page 3-9).

| NOTE | *The active pixels and total pixels adjustments are interactive. Setting one of these variables may require adjusting the other.* |

Active Pixels and Active Lines submenus

Two submenus define the active (image) area of the input (figure 3-7):

- **Active pixels** — The number of pixels per line that are inside the input active area. The baseline for the active pixels adjustment is the right edge of the image. This value is often referred to as "horizontal resolution".

- **Active lines** — The number of lines per frame that are inside the input active area. The baseline for the active lines adjustment is the bottom edge of the image. This value is often referred to as "vertical resolution".

  For interlaced input signals, this variable refers to the total number of lines per frame after de-interlacing, not the number of lines per field.
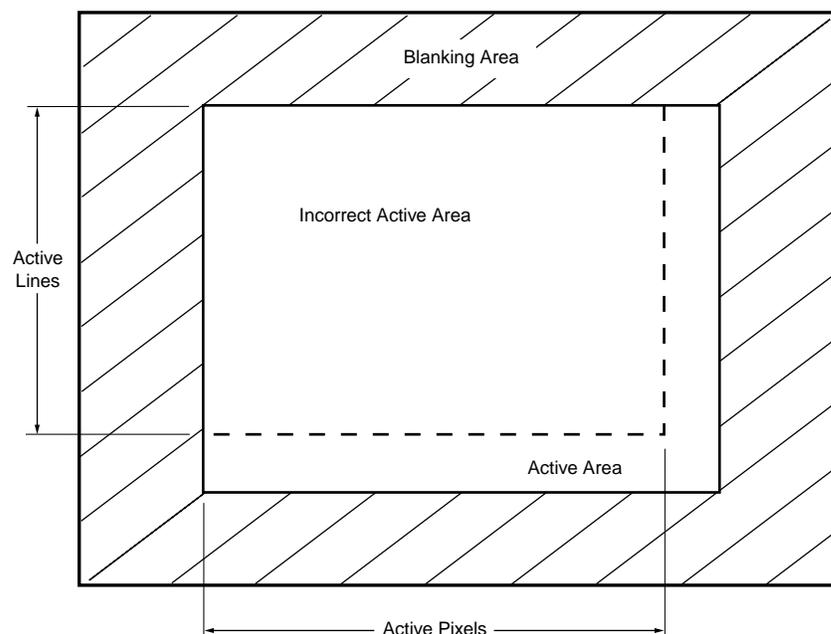
Figure 3-7 — Incorrect active area setting

Select the desired submenu. Rotate the Adjust ◄► knob while the Input format submenu is active to select an input to configure. Rotate the Adjust ⬍ knob to set the Active Pixels or Active Lines variable.

Adjust the Active Pixels variable to increase and decrease the number of active pixels, shifting the starting period horizontally on the screen. Adjust the Active Lines variable to increase and decrease the number of lines.

NOTE *Figure 3-7 shows an image whose active area is improperly set, as indicated by the dashed lines. If the number of active image pixels that the scaler is set to scale is less than the amount of actual active pixels that are input, the ISS scales only the set active area and skips some of the input pixels. This early end to the scaling process results in an output with fewer pixels than it should, and looks as if the image is stretched horizontally.*

Similarly, if the number of active image lines that the ISS is set to scale is less than the amount of actual active lines that are input, the ISS scales only the set active area and skips some of the input lines. This early end to the scaling process results in an output that has fewer lines than it should, and looks as if the image is stretched vertically.

Output Configuration menu

Figure 3-8 is a flowchart that shows an overview of the Output Configuration menu, the submenus, and the available settings.
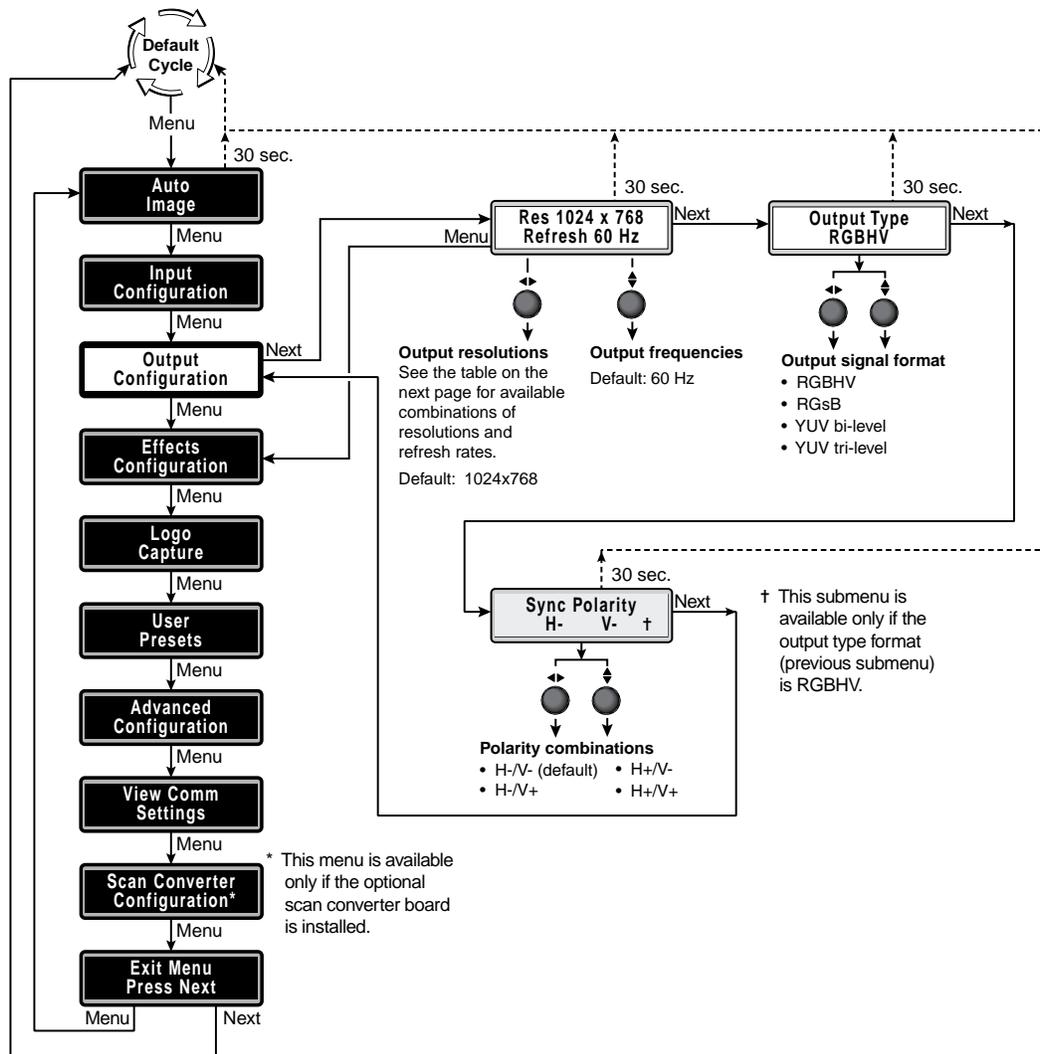
Figure 3-8 — Output Configuration menu flowchart

Operation, cont'd

Resolution and refresh rate submenu

Rotate the Adjust ◄► knob while this submenu is active to select one of the available output resolutions. See the table below.

Rotate the Adjust ◆ knob while this submenu is active to select one of the available refresh (vertical scanning) rates. See the table below.

Resolution	Frequency (Hz)									
	24	25	30	50	59.94	60	72	96	100	120
640 x 480				•		•	•	•	•	•
800 x 600				•		•	•	•	•	•
852 x 480				•		•	•	•	•	
1024 x 768				•		•	•	•		
1024 x 852				•		•	•	•		
1024 x 1024				•		•	•			
1280 x 768				•		•	•	•		
1280 x 1024				•		•	•			
1360 x 765				•		•	•			
1365 x 768				•		•	•			
1366 x 768				•		•	•			
1365 x 1024				•		•				
1400 x 1050				•		•				
1600 x 1200				•		•				
480p					•	•				
576p				•					•	
720p		•	•	•	•	•				
1080i				•	•	•				
1080p	•	•	•	•	•	•				
1864 x 1050				•		•				
1280 x 800				•		•	•			
1440 x 900				•		•	•			
1680 x 1050				•		•				
1080p Sharp						•				
1920 x 1200*						•				

* 1920 x 1200 is available only in units that shipped after the first quarter of 2009.

The default resolution and rate is 1024 x 768 @ 60 Hz.

NOTE *1080p Sharp is an HDTV 1080p rate specifically tailored to Sharp® Professional displays (such as the G655u).*

Changing the output resolution sets any assigned logos to black.

User presets are associated with an output resolution. Once you change the output resolution, the previously saved presets have no effect.

Output Type submenu

Rotate either Adjust knob while this submenu is active to select the output video type (RGBHV, RGsB, component [YUV] with tri-level sync, or component [YUV] with bi-level sync).

Sync Polarity submenu

The display or projector may require a particular combination of horizontal (H) and vertical (V) sync signal polarities. Select the appropriate combination of positive or negative H and V sync by rotating either Adjust knob.

Effects Configuration menu

Figure 3-9 is a flowchart that shows an overview of the Effects Configuration menu, the submenus, and the available settings.
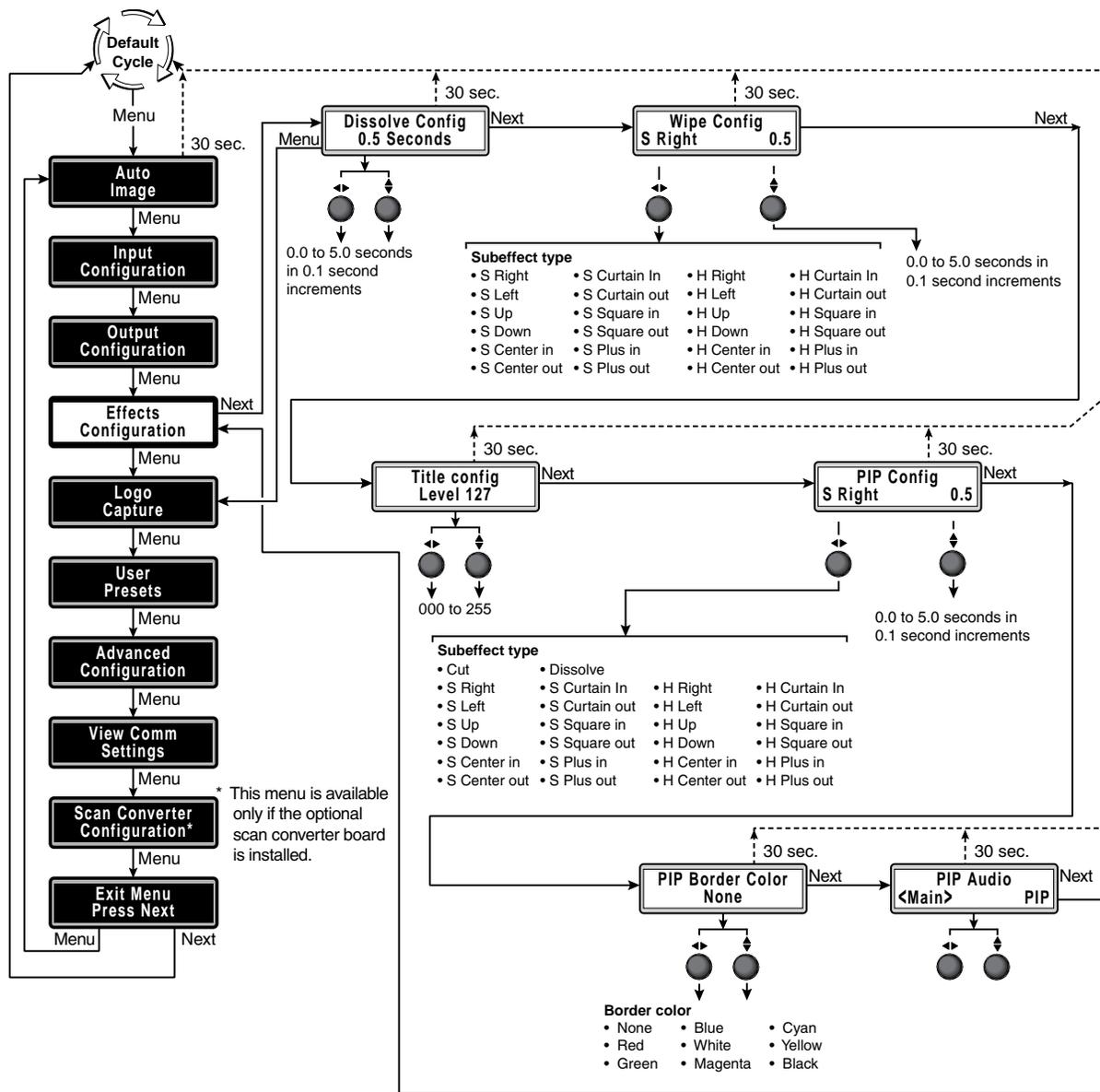
Figure 3-9 — Effects Configuration menu flowchart

Operation, cont'd

Dissolve Configuration submenu

The Dissolve Duration submenu displays and allows you to set the duration of the dissolve effect that is applied when you are switching the preview output to the program output or switching among picture-in-picture window inputs.

Use either Adjust knob to select the effect duration from 0.1 seconds to 5.0 seconds in 0.1 second steps. The default is 0.5 seconds.

Wipe Configuration submenu

The Wipe Configuration submenu displays and allows you to set the type of wipe that is applied (if the wipe effect is selected) and the duration of the wipe when you are switching the preview output to the program output. (Select a wipe effect by pressing the Transition Take button when the Effects Wipe button is lit.) A wipe causes the new image to appear to unroll over the old image. Each wipe has hard and soft variations. A soft wipe has a fuzzy leading edge; a hard wipe has a sharp edge.

NOTE *You can directly access the Wipe Configuration submenu by pressing the Effects Wipe button.*

Figure 3-10 shows the types of wipe effects that are programmed into the ISS.

Rotate the Adjust ◄► knob while this submenu is active to select soft (S) and hard (H) edges for the transition effect and the wipe effect. Rotate the Adjust ↕ knob to select the duration of the wipe effect. The default effect is soft right.

Title Key submenu

The Title Key submenu displays and allows you to set the intensity level of the preview image for use in the title key effect. Rotate either Adjust knob while this submenu is active to select the title level, from 0 to 255.

PIP Configuration submenu

The PIP Configuration submenu displays and allows you to set the type of effect (cut, dissolve, or a variety of wipes) that is applied when you open or close a picture-in-picture window (the preview output) over the main window (the program output).

Cut — The PIP window instantly appears or disappears. No transition effect occurs.

Dissolve — The PIP window fades in and fades out.

Wipe — The PIP window appears to unroll over the main image. The new image can roll in from the top, bottom, left, right, or center of the window. A soft wipe has a fuzzy leading edge; a hard wipe has a sharp edge.

NOTE *You can directly access the PIP Configuration submenu by pressing the Effects PIP button.*

Figure 3-10 also shows the types of wipe effects that the ISS can perform when a PIP window is opened or closed. Although the figure shows the effects for a whole image, the PIP window opens or closes with the same effect.

Rotate the Adjust ◄► knob while this submenu is active to select a cut, dissolve, or a variety of soft (S) and hard (H) edged wipe effects. Rotate the Adjust ↕ knob to select the duration of the dissolve or wipe effect (cut is immediate, with no duration). The default effect is soft right.

WIPE RIGHT SOFT	WIPE CURTAIN IN SOFT	WIPE RIGHT HARD	WIPE CURTAIN IN HARD
WIPE LEFT SOFT	WIPE CURTAIN OUT SOFT	WIPE LEFT HARD	WIPE CURTAIN OUT HARD
WIPE UP SOFT	WIPE SQUARE IN SOFT	WIPE UP HARD	WIPE SQUARE IN HARD
WIPE DOWN SOFT	WIPE SQUARE OUT SOFT	WIPE DOWN HARD	WIPE SQUARE OUT HARD
WIPE CENTER IN SOFT	WIPE PLUS IN SOFT	WIPE CENTER IN HARD	WIPE PLUS IN HARD
WIPE CENTER OUT SOFT	WIPE PLUS OUT SOFT	WIPE CENTER OUT HARD	WIPE PLUS OUT HARD

Figure 3-10 — Wipe effects

PIP Border Color submenu

The PIP Border Color submenu displays and allows you to set the color of the border, if any, of the PIP window. Rotate either Adjust knob while this submenu is active to select the desired color. Select among none (no border), red, green, blue, white, magenta, cyan, yellow, and black.

PIP Audio submenu

The PIP Audio submenu displays and allows you to define the audio input (the audio associated with the PIP window and the audio that is associated with the main window) that is routed to the output when the PIP mode is turned on. Rotate either Adjust knob while this submenu is active to select either main or PIP.

Operation, cont'd

Logo Capture menu

Figure 3-11 is a flowchart that shows an overview of the Logo Capture menu, the submenus, and the available settings. See "Capturing a logo" on page 3-30 for more details on using this menu.
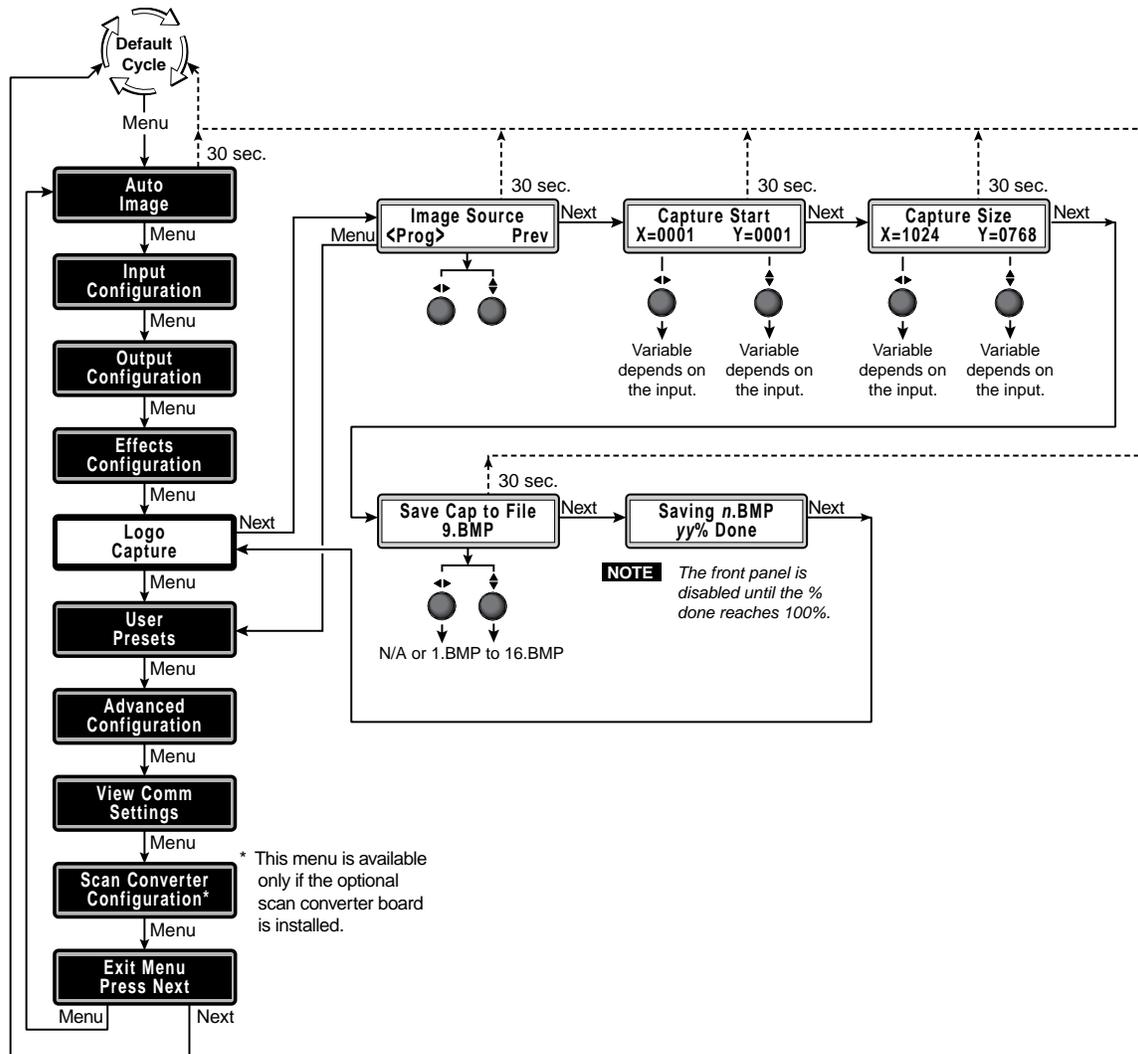
Figure 3-11 — Logo Capture menu flowchart

Image Source submenu

The Image Source submenu displays and allows you to select either the preview output or the program output as the source of the logo that will be captured. Rotate either Adjust knob while this submenu is active to select the output as the source of the logo.

NOTE   *For best results, freeze the input with the image that you want to capture.*

Capture Start submenu

The Capture Start submenu displays and allows you to set the starting point of the logo to be captured. Use this submenu, along with the Capture Size submenu to define the area to be saved as a logo. Rotate the Adjust ◄► knob while this submenu is active to position a line in the X (horizontal) axis. Rotate the Adjust ⬍ knob to position a line in the Y (vertical) axis. The point where the two lines intersect is the starting point of the logo.

Capture Size submenu

The Capture Size submenu displays and allows you to set outer boundaries (opposite the starting point) of the logo to be captured. Use this submenu, along with the Capture Start submenu to define the area to be saved as a logo. Rotate the Adjust ◄► knob while this submenu is active to position a line in the X (horizontal) axis. Rotate the Adjust ⬍ knob to position a line in the Y (vertical) axis. The point where the two lines intersect is the outer boundary of the logo.

Save Capture to File submenu

The Save Capture to File submenu provides a control for saving the logo that you have defined with the Capture Start and Capture Size submenus. Rotate either Adjust knob while this submenu is active to select one of the available file names (*01.bmp* through *16.bmp*) or N/A (to abandon the logo) and press the Next button.

NOTE *The switcher **does not check** to see if the file name that you selected already exists. If you select a file name that already exists, the switcher overwrites the existing file.*

NOTE *Changing the output resolution sets any assigned logos to black.*

The LCD window displays a counter that shows the progress of the save operation until it reaches 100 percent. Press the Next button to return to the Logo Capture menu.

NOTE *Saving a bitmap image can take a few minutes. The ISS is unresponsive to front panel operations, RCP 2000 commands, and SIS commands while it saves the file.*

Operation, cont'd

User Presets menu

Figure 3-12 is a flowchart that shows an overview of the User Presets menu, the Save User Preset and Erase User Preset submenus, and the available settings.

Values and parameters saved as a User Preset:

• Film mode	• Total pixels
• Program phase	• Preview phase
• Horizontal start	• Vertical start
• Horizontal active pixels	• Vertical active pixels
• Horizontal size	• Vertical size
• Brightness and contrast	• Detail
• Horizontal position	• Vertical position
• Color	• Tint

* This menu is available only if the optional scan converter board is installed.
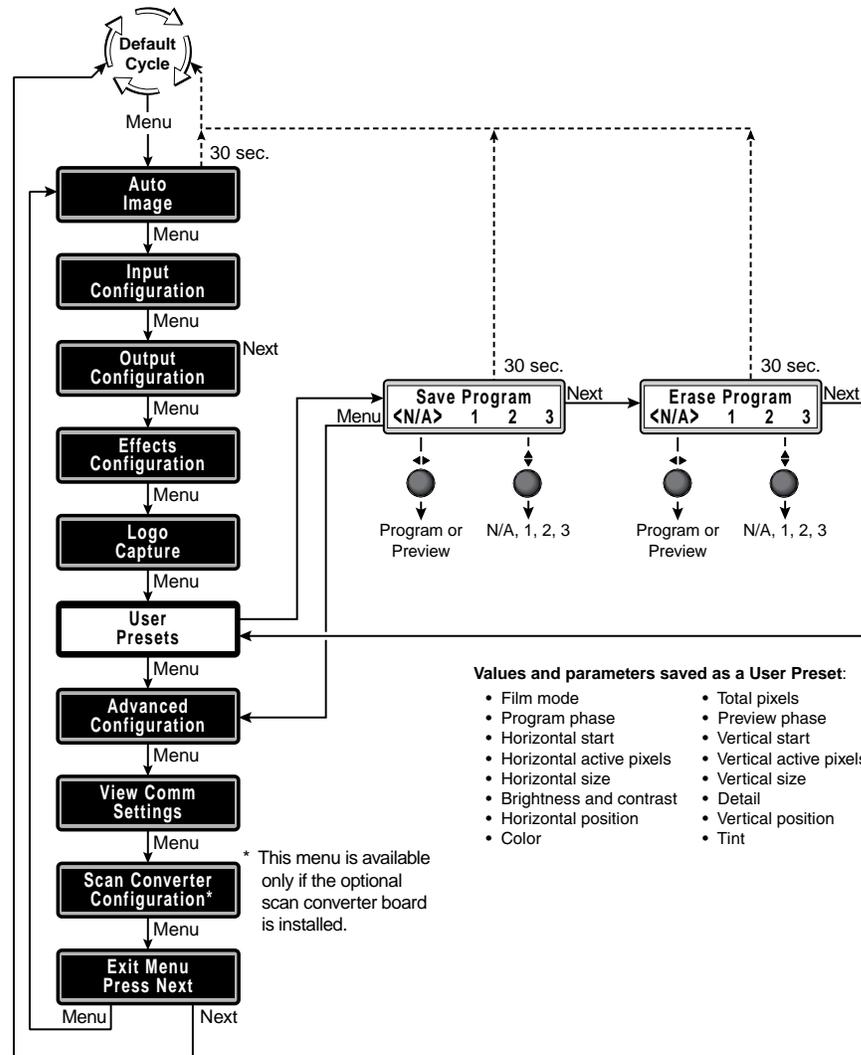
Figure 3-12 — User Presets menu flowchart

Save submenu

Rotate the Adjust ◄► knob while the Save submenu is active to select Program or Preview. Rotate the Adjust ◆ knob to highlight (< >) one of three memory presets for the selected output or highlight N/A for no preset. Press the Next button to save the current settings to the selected preset. Select N/A and press the Next button to exit without saving the settings.

User presets are saved in nonvolatile memory; when the ISS is powered down and later powered back up, the settings are available for selection. Saving the settings to a preset overwrites the settings previously written to that preset.

The User Preset is tailored for the selected output rate. If you change the output rate and then recall a preset for the earlier rate, the adjustments recalled in the preset have no effect on the video output. However, if you then change back to the earlier output rate, the effects of the adjustments appear on the screen if they were not overwritten for the old output rate.

User presets are recalled using the Input buttons. See "Recalling a user preset", later in this chapter.

Erase submenu

Rotate the Adjust ◄► knob while the Erase submenu is active to select Program or Preview. Rotate the Adjust ↕ knob to highlight (< >) one of three memory presets for the selected output or highlight N/A for no preset Press the Next button to erase the user preset. Highlight N/A and press the Next button to exit without erasing.

Advanced Configuration menu

Figure 3-13 is a flowchart that shows an overview of the Advanced Configuration menu, the submenus, and the available settings.
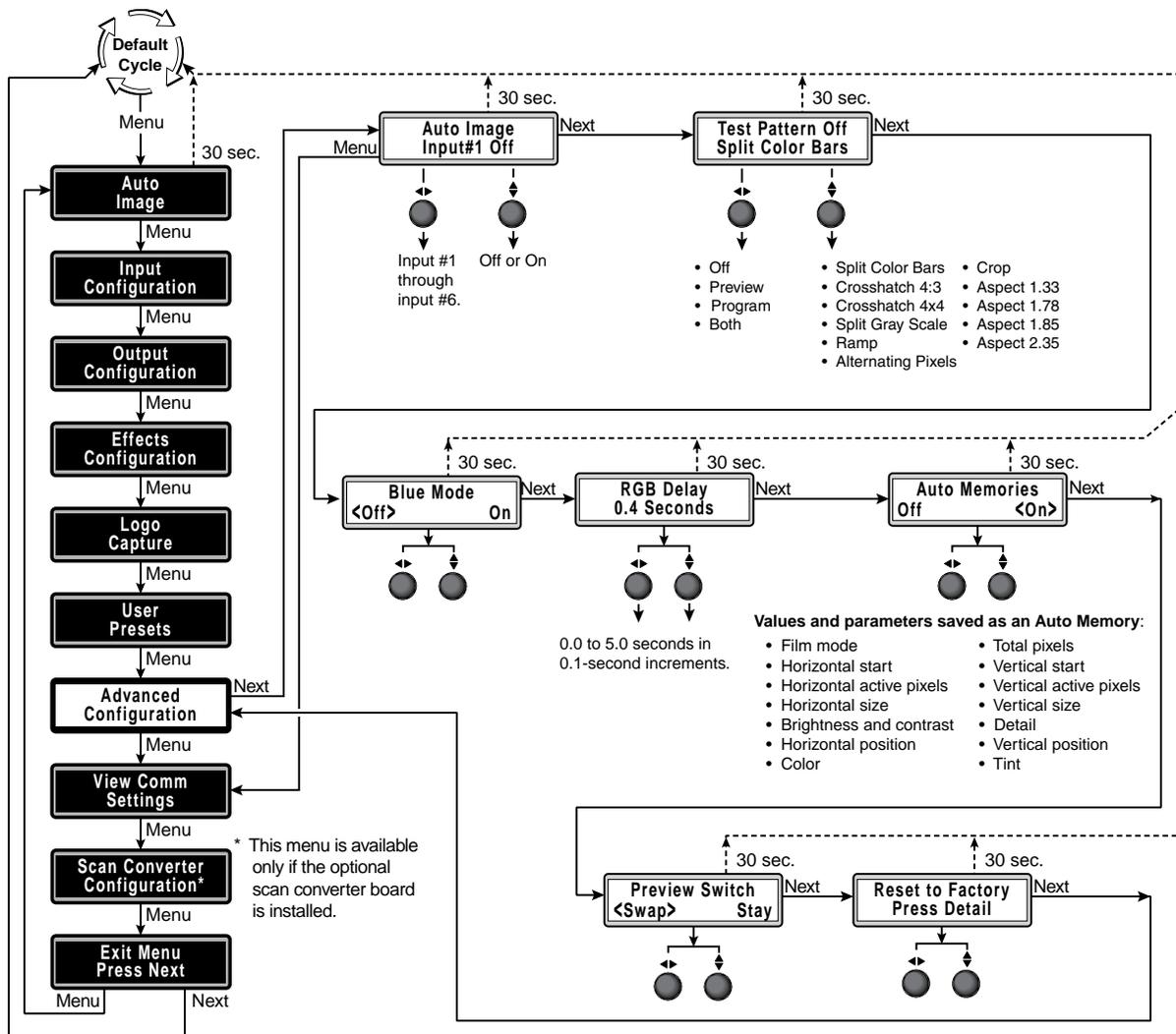
Figure 3-13 — Advanced Configuration menu flowchart

Operation, cont'd

Auto Image submenu

The Auto Image submenu provides a means to turn the auto imaging on or off for individual input selections.

If auto imaging is set to on, the ISS always sizes and centers the selected input to fill the screen when a new frequency is input. If auto imaging is set off, the ISS sizes and centers the selected input only when it is commanded using the Auto Image main menu (a different menu path). See "Auto Image menu", on page 3-6. Rotate the Adjust ◄► knob while this submenu is active to select an input. Rotate the Adjust ↕ knob to toggle auto imaging on or off for the displayed input.

NOTE *The Auto Image function and the Auto Memories function (see "Auto Memories submenu", on the next page) work interactively. Each function can be on or off, giving four possible combinations, as follows:*

- *Auto Image on and Auto Memories on — The output signal is sized and centered to fill the screen and these Auto Image parameters are saved as an auto memory. The next time the unit encounters the same input signal, the saved parameters are aplied automatically. When all 16 auto memories are filled, the the oldest is overwritten by the newest.*

- *Auto Image off and Auto Memories on — The unit applies the default values for the detected input resolution. If no further adjustments are made, the Auto Memories function does not save an entry (all parameters remain at their default settings). If you adjust the input manually or manually execute an Auto Image, the Auto Memories functions automatically store the new parameters.*

- *Auto Image on and Auto Memories off — An Auto Image function is performed for each new input selected, but the parameters are not saved. The next time the unit encounters the same input signal, Auto Image function is repeated.*

- *Auto Image off and Auto Memories off — The unit takes no automatic action when it detects a new input signal. Only Input Preset parameters are applied, when recalled via an SIS command (see the Command/Response Table for SIS commands, in chapter 4, "SIS Programming and Control").*

Test Pattern submenu

The Test Pattern submenu lets you select from among several test patterns and assigns the selected pattern to either or both outputs. The test patterns are helpful when you are adjusting the connected displays for color, convergence, focus, resolution, contrast, grayscale, and aspect ratio.

Rotate the Adjust ↕ knob while this submenu is active to select a test pattern. Rotate the Adjust ◄► knob to assign the test patter to the program output, the preview output, both outputs or to turn the test pattern off. The available test patterns are: Color Bars, crosshatch, 4 x 4 crosshatch, split grayscale, ramp, alternating pixels, crop, and film aspect ratios 1.33, 1.78, 1.85, and 2.35 (figure 3-14). The side-by-side crop and aspect ratio patterns available from the submenu vary depending on the aspect ratio of the output rate.

Split Color Bars (8) Crosshatch Crosshatch 4x4 Split Grayscale

Ramp Alt Pixels Crop 1.33 Aspect Ratio

1.78 Aspect Ratio 1.85 Aspect Ratio 2.35 Aspect Ratio
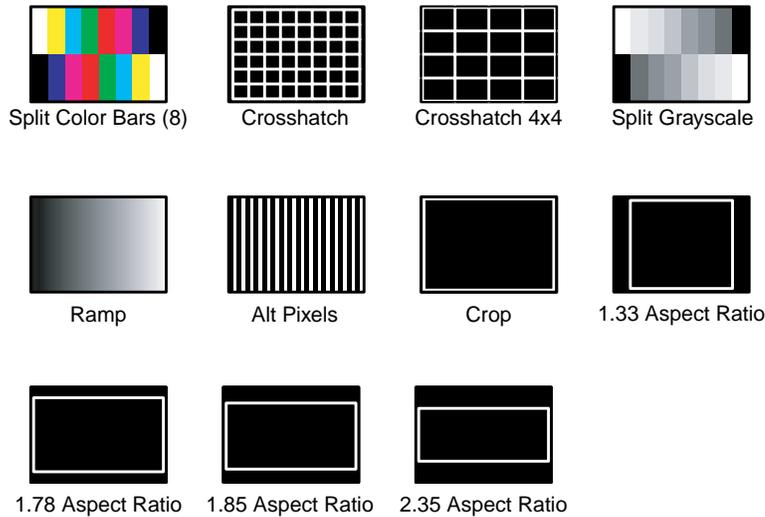
Figure 3-14 — Test patterns

Blue Mode submenu

The Blue Mode submenu lets you turn the blue-only mode feature on and off. Blue-only mode helps in the setup of the color and tint of the incoming video signal. In the blue-only mode, only the sync and blue video signals are passed to the display.

Use either Adjust knob to turn blue-only mode On or Off. The default is Off.

RGB Delay submenu

The RGB Delay submenu displays and lets you set the RGB delay when you are switching among inputs. With RGB delay, sync is never removed from the preview display. Rather, the ISS blanks the RGB (video) outputs while the scaler locks to the new sync, and then switches the RGB signals. This allows a brief delay for the displays to adjust to the new sync timing before displaying the new picture, which appears without glitches. RGB delay is also known as Triple-Action Switching™ or video mute switching.

Use either Adjust knob to select the blanking period (RGB delay time) from 0 seconds to 5 seconds in 0.1 second steps. The default is 0.4 seconds.

Auto Memories submenu

The Auto Memories submenu provides a means to turn the auto presets features on or off for all input selections.

The auto memories feature saves and recalls centering, sizing, and filtering information, based on the input frequency. Auto memory settings may conflict with user preset settings. When you use a control system to switch inputs and then recall a user memory, the delay in recalling the auto memory settings could result in the recalled auto memory settings overwriting the recalled user memory settings. To prevent this conflict, turn auto memories off. Rotate either Adjust knob to toggle auto memories on or off

Preview Switch Mode submenu

The Preview Switch Mode submenu lets you set the way the preview output responds to the cut or take operation.

- **Stay mode** — For either a cut or take operation, the video and audio signals on the preview output are applied to the program output (figure 3-15) and also continue on the preview output until another input is selected.

    The video input switches between the switcher's two internal scalers.

- **Swap mode** — For either a cut or a take operation, the preview and program outputs are swapped (figure 3-15). The video and audio signals on the preview output are applied to the program output. The video and audio signals that had been applied to the program output are applied to the preview output.

    Each of the switcher's two internal scalers retains the same video inputs; only the outputs are swapped.

Use either Adjust knob to select Stay or Swap.

Stay Mode
Scaler A changes inputs.

Swap Mode
Neither scaler changes inputs.
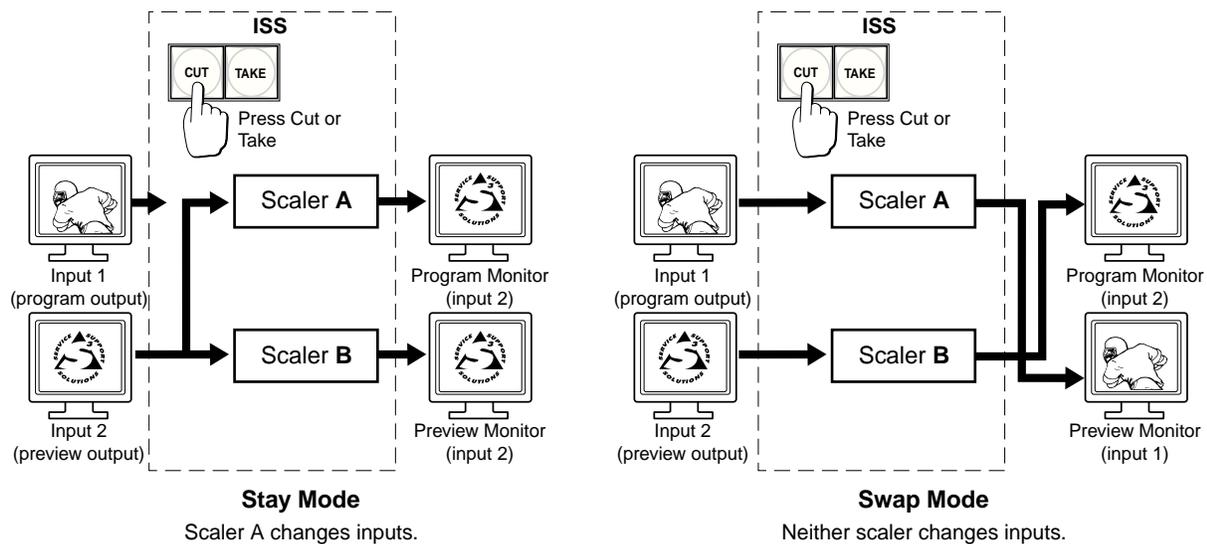
Figure 3-15 — Stay mode and swap mode

Reset submenu

The Reset submenu resets the ISS 506 to the default values. Reset the switcher by pressing and **holding** the Detail button while this submenu is active. The LCD window displays **Unit Reset to Factory Defaults** when the reset is complete. Release the Detail button.

View and Edit Communications Settings menu

Figure 3-16 is a flowchart that shows an overview of both the View User Communications Settings and the Edit User Communications Settings menus, the submenus, and the available settings.
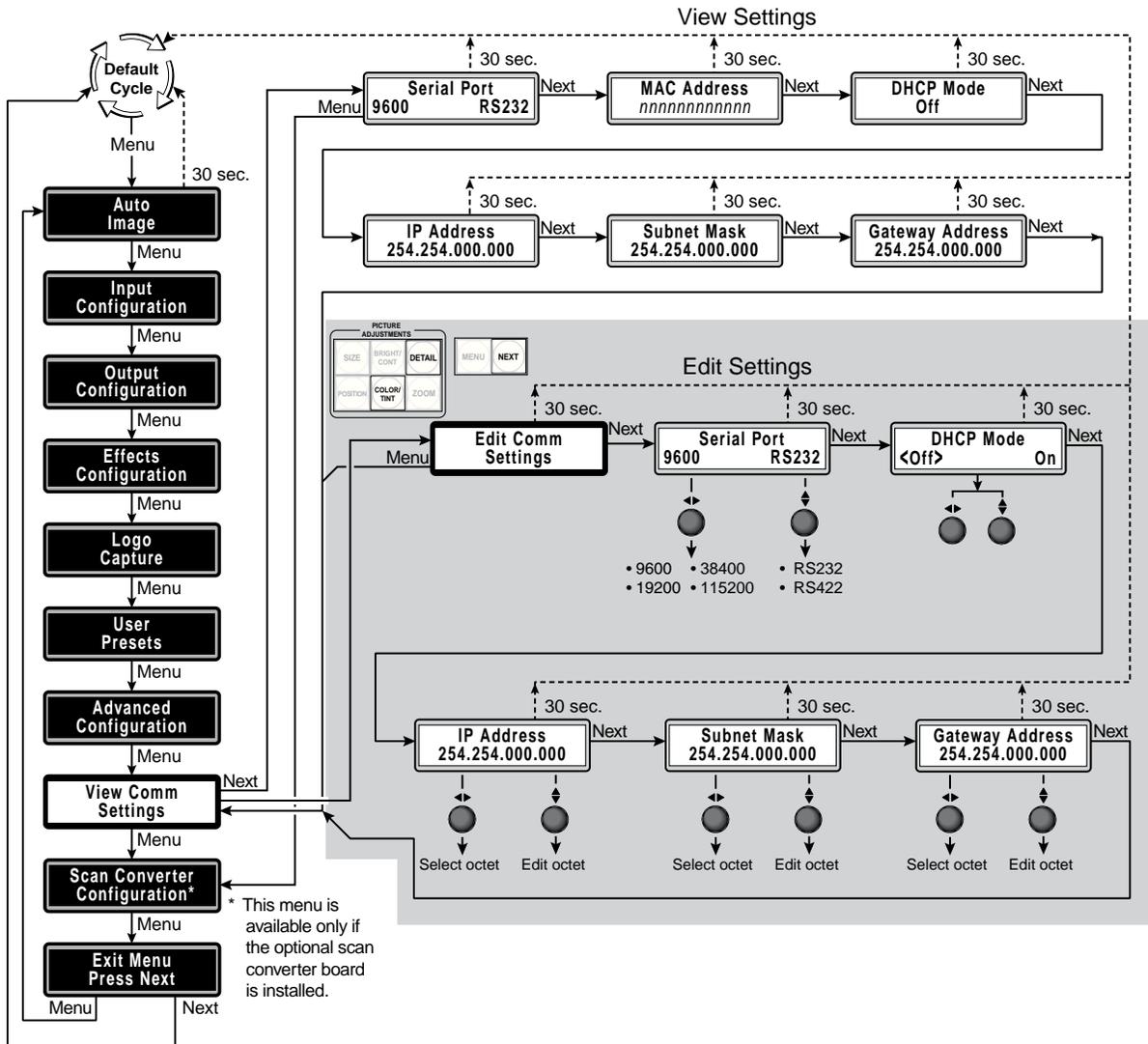
Figure 3-16 — View and Edit Communication Settings menu flowchart

The default menu is View Communications Settings and all of its submenus are display only, unable to be edited. To view the Edit Communications menu and its submenus, and to be able to edit the settings, press and **hold** the Next button while you press and release the Detail and Color/Tint buttons. Release the Next button.

Serial Port submenu

The Serial Port submenu displays the baud rate of the ISS 506's rear panel RS-232/RS-422 port.

When this submenu is selected from the Edit Communications Settings menu, rotate the Adjust ◄► knob to select a different baud rate. Rotate the Adjust ⬍ knob to select between RS-232 and RS-422 protocol.

Operation, cont'd

MAC Address display

The read-only MAC Address display shows the hardcoded, factory assigned hardware address.

DHCP Mode submenu

The DHCP Mode submenu displays the on or off status of the Dynamic Host Configuration Protocol (DHCP) method of IP addressing. If DHCP is on, the switcher ignores any entered IP addresses and obtains its IP address from a DHCP server (if the network is DHCP capable).

When this submenu is selected from the Edit Communications Settings menu, rotate either Adjust knob to select (< >) DHCP Mode On or Off. Contact the local system administrator.

IP Address, Subnet Mask, and Gateway Address submenus

These submenus display the ISS's IP address, the subnet mask, and the gateway server address (if any).

Valid IP addresses consist of four 1-, 2-, or 3-digit numeric subfields, properly called octets, separated by dots (periods). Each octet can be numbered from 000 through 255. Leading zeroes, up to 3 digits total per octet, are optional. Values of 256 and above are invalid. Contact the local system administrator for these addresses.

NOTE *If the local system administrators have not changed the value, the factory-specified default address, 192.168.254.254, is the correct value for this field.*

When these submenus are selected from the Edit Communications Settings menu, rotate the Adjust ◄► knob to select an octet to edit and rotate the Adjust ♦ knob to change the value of the selected octet.

Scan Converter Configuration menu

Figure 3-17 is a flowchart that shows an overview of the Scan Converter Configuration menu, the submenus, and the available settings. The Scan Converter Configuration menu is displayed **only** if an optional scan converter output board is installed.

NOTE *If no scan converter output board is installed, the main menu sequences directly from the View Communications Settings menu to the Exit menu.*
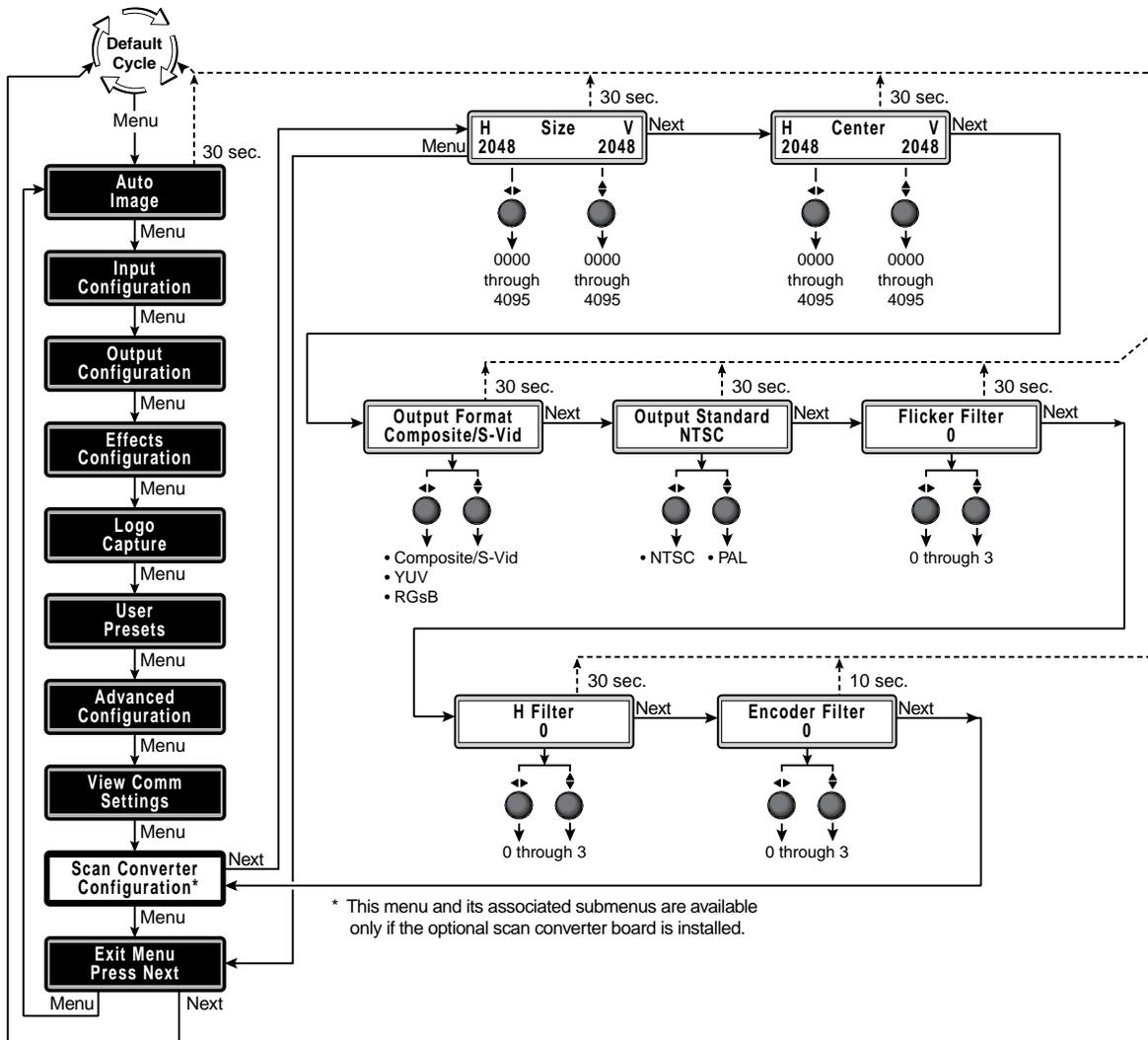
Figure 3-17 — Scan Converter Configuration Settings menu flowchart

Size submenu

The Size submenu displays and allows you to change the output size of the scan converted output. When this submenu is active, rotate the Adjust ◄► knob to set the horizontal size and rotate the Adjust ♦ knob to set the vertical size.

Center submenu

The Center submenu displays and allows you to set the position of the scan converted output. When this submenu is active, rotate the Adjust ◄► knob to set the horizontal position and rotate the Adjust ♦ knob to set the vertical position.

Operation, cont'd

Output Format submenu

The Output Format submenu displays and allows you to change the format of the scan converted output. When this submenu is active, rotate either Adjust knob to select among RGsB, low resolution component video (YUV), or composite video and S-video.

NOTE *The scan converter output board outputs S-video and composite video simultaneously when Composite/S-video is selected.*

Output Standard submenu

The Output Standard submenu displays and allows you to change the output standard. When this submenu is active, rotate either Adjust knob to select between NTSC and PAL.

Flicker Filter submenu

The Flicker Filter submenu displays and allows you to set the flicker filter. The flicker filter reduces the flicker in the connected output display. When this submenu is active, rotate either Adjust knob to set the filter value.

Horizontal Filter submenu

The Horizontal Filter submenu displays and allows you to set the horizontal filter. The horizontal filter reduces the loss of detail in the connected output display. When this submenu is active, rotate either Adjust knob to set the filter value.

Encoder Filter submenu

The Encoder Filter submenu displays and allows you to set the encoder filter. The Encoder filter maintains the sharpness of the connected output display. When this submenu is active, rotate either Adjust knob to set the filter value.

Exit menu

From the Exit menu (figure 3-18), press the Next button to return to the default display cycle, or press the Menu button to return to the Auto Image menu.
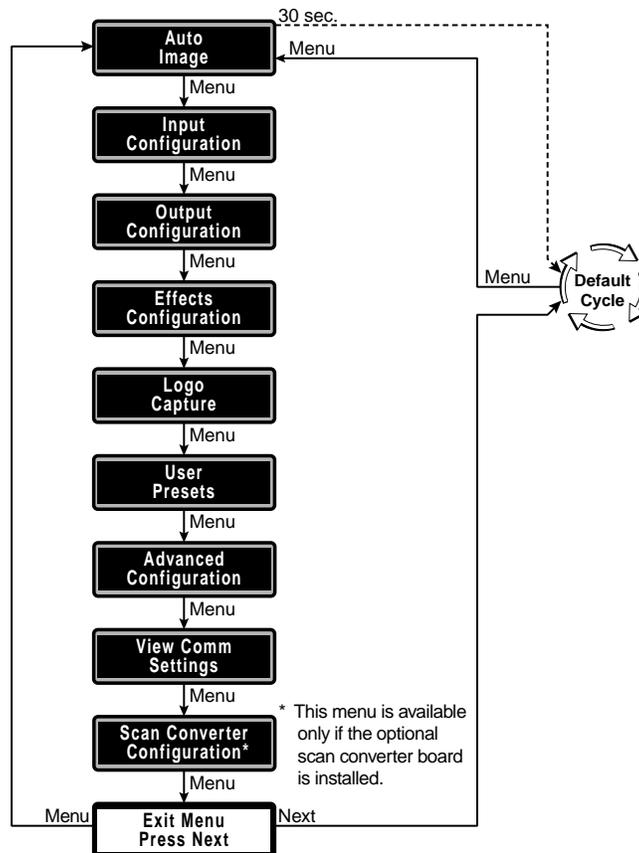
Figure 3-18 — Exit menu flowchart

Front Panel Operations

The following paragraphs detail the power-up process and then describe input selection, switching between the preview and program outputs, preset selection, capturing and configuring a logo, and using the title function.

Power-on indications

Power is automatically applied when the power cord is connected to an AC source. When AC power is applied, the switcher performs a self-test that dimly blinks all of the front panel buttons twice, and then lights only the buttons for the selected inputs, the selected effect, and the Menu and Next buttons. The self-test also displays the model name and the firmware version in the LCD window. After approximately 2 seconds, the LCD window reverts to its default display cycle, alternating between three displays: two showing the selected program and preview inputs and their rates, and the third showing the selected output rate (figure 3-19). An error-free power up self-test sequence leaves all of the buttons off, with the exception of the selected inputs' buttons and the selected transition effect's button, and the LCD window displaying the default display cycle.

The selected preview and program inputs, the picture adjustments, and other current settings are saved in nonvolatile memory. When power is applied, the latest configuration is retrieved.

NOTE *The ISS requires some time to save any new settings. Wait at least 5 minutes before removing power from the switcher or the settings may be lost.*
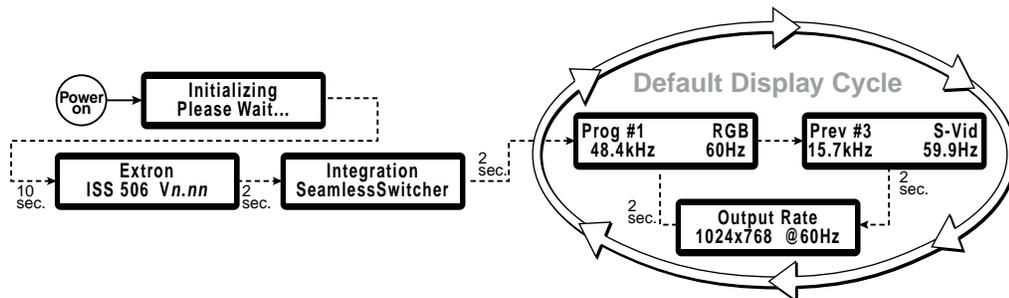
Figure 3-19 — LCD power up and default display cycle

Selecting an input to be the program output

To select an input to scale and display as the program output, press and release the desired program input button. The selected input button lights green.

NOTE *Input selections can be made with the audio broken away under RS-232/RS-422 or Ethernet control **only**. See chapter 4, "SIS Programming and Control"; chapter 5, "Switcher Software"; and chapter 6, "HTML Operation".*

The input button lights green when video only is selected.

The input button lights red when audio only is selected.

NOTE *Video and audio outputs can be muted under RS-232/RS-422 or Ethernet control **only**. See chapter 4, "SIS Programming and Control"; chapter 5, "Switcher Software" and chapter 6, "HTML Operation".*

The Input button blinks, alternating between red and amber when video is muted.

The input button blinks, alternating between green and amber when audio is muted.

The input button blinks amber when both video and audio are muted.

Selecting an input to be the preview output and switching it to the program output

NOTE *In this example, the switcher is set to Swap mode. See "Preview Switch Mode submenu", earlier in this chapter.*

1. Press and release a preview input button (figure 3-20).

Press and release the Preview 3 button.
The Preview 3 button lights to indicate that input 3 is selected and the video is scaled and output as the preview output.

NOTE *The Program 6 button indicates that input 6 is selected as the program output.*
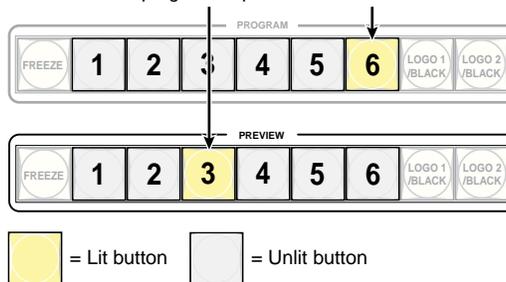
Figure 3-20 — Selecting an input

2. Press and release either the Cut or Take button.

Cut button — The ISS immediately switches the input selected as the preview output to the program output and the input selected as the program output to the preview output (figure 3-21). No switching effects are added.

Press and release the Cut button. Cut flashes once.
If the Wipe or Dissolve effect is selected (lit):
The Preview 3 button goes out and the Program 3 button lights.
The Program 6 button goes out and the Preview 6 button lights.

If the PIP or Title effect is selected (lit):
The Preview 3 button and the Program 6 button remain lit.
The Take button blinks until you press Cut or Take to turn off the PIP or title effect.

Figure 3-21 — Cutting to the selected input in Swap mode

Operation, cont'd

Take button — The ISS switches the input selected as the preview output to the program output using the effect selected by one of the Effect buttons (figure 3-22).

Press and release the Take button.
If the Wipe or Dissolve effect is selected (lit):
The Preview 3 button goes out and the Program 3 button lights.
The Program 6 button goes out and the Preview 6 button lights.
On the program monitor the switch is accompanied by either the wipe or dissolve effect (selected using the Effects buttons). The duration of the effect, from 0 to 5 seconds, is set using the menu controls. The Take button blinks for the duration of the effect.

If the PIP or Title effect is selected (lit):
The Preview 3 button and the Program 6 button remain lit.
The Take button blinks until you press Cut or Take to turn off the PIP or title effect.

Figure 3-22 — Dissolving to the selected input

NOTE | *Input selections can be made with the audio broken away under RS-232/RS-422 or Ethernet control **only**. See chapter 4, "SIS Programming and Control"; chapter 5, "Switcher Software"; and chapter 6, "HTML Operation".*

The input button lights green when video only is selected.

The input button lights red when audio only is selected.

NOTE | *Video and audio outputs can be muted under RS-232/RS-422 or Ethernet control **only**. See chapter 4, "SIS Programming and Control"; chapter 5, "Switcher Software" and chapter 6, "HTML Operation".*

The Input button blinks, alternating between red and amber when video is muted.

The input button blinks, alternating between green and amber when audio is muted.

The input button blinks amber when both video and audio are muted.

Recalling a user preset

There are three user presets per input. The presets save color, tint, contrast, brightness, detail, sizing, and centering settings. See "User Presets menu", earlier in this chapter, to save and erase presets. Cycle through and recall these memories by repeatedly pressing the appropriate input button. The LCD window identifies the recalled preset (figure 3-23).
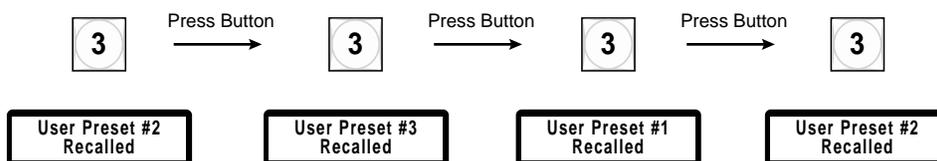
Figure 3-23 — Recalling user presets

Capturing a logo

The ISS can capture an on-screen image to use as a logo.

NOTE *A logo is a bitmap image that can be superimposed on top of the preview and/or program output.*

Capture a displayed image as a logo as follows:

1. Press the Menu button until the LCD window displays the Logo Capture Menu (figure 3-24).
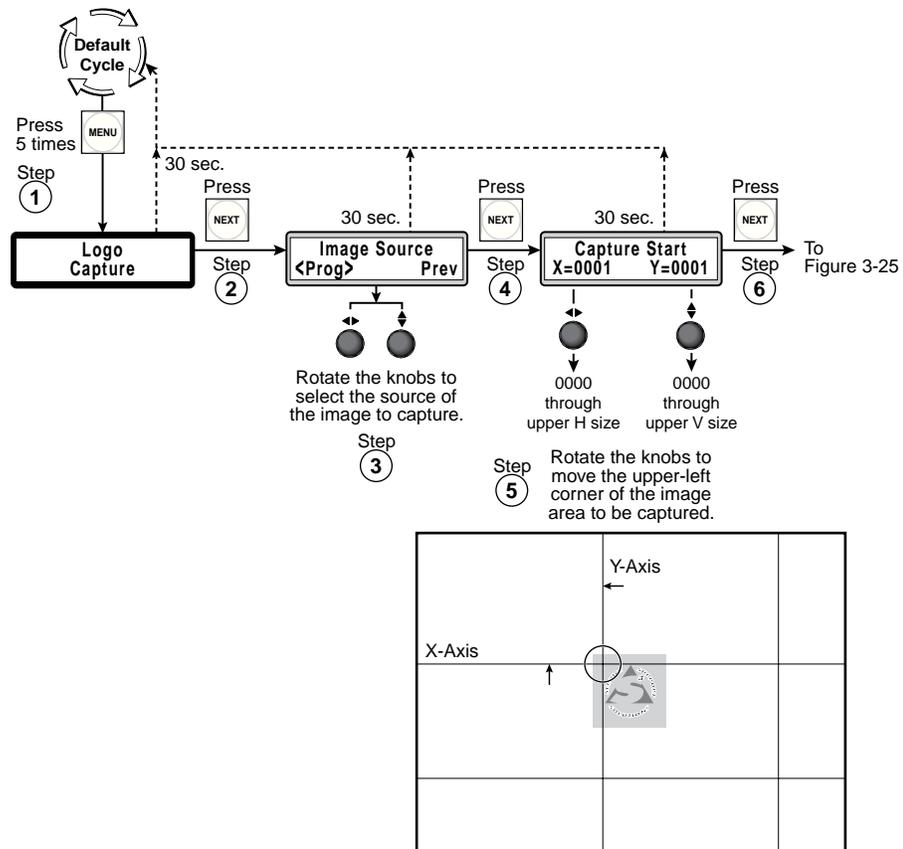
Figure 3-24 — Capturing a logo

2. Press the Next button. The Image Source submenu appears.

3. Rotate the Adjust ⬍ knob to select (< >) the output with the image that you want to capture.

4. Press the Next button. The Capture Start submenu appears on the LCD window. Yellow crop marks appear on the selected output video display.

5. Use the Adjust knobs to shift the starting point (upper-left corner) of the capture area.

NOTE *Rotate the Adjust ◄► knob to shift the starting point on the X axis (horizontally). Rotate the Adjust ⬍ knob to shift the starting point on the Y axis (vertically).*

6. Press the Next button (figure 3-25). The Capture Size submenu appears.
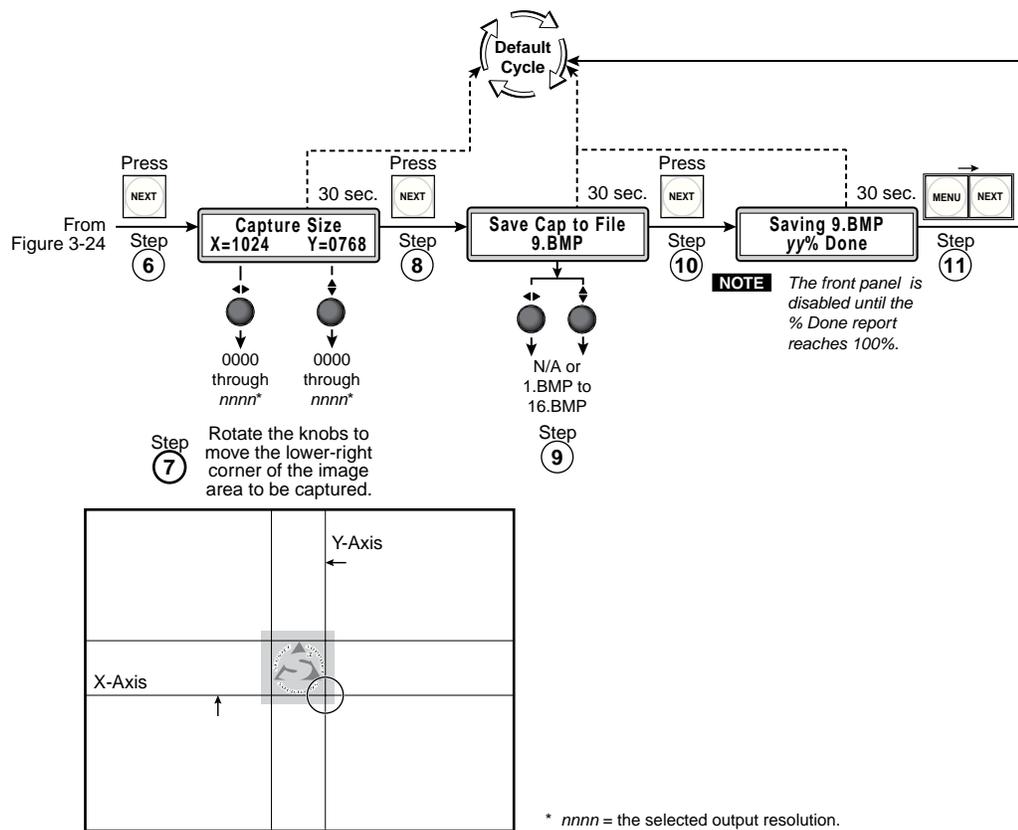
Figure 3-25 — Capturing a logo, continued

7. Use the Adjust knobs to shift the end point (lower-right corner) of the capture area.

NOTE *Rotate the Adjust ◄► knob to shift the end point on the X axis (horizontally). Rotate the Adjust ▼ knob to shift the end point on the Y axis (vertically).*

8. Press the Next button. The Save Capture to File submenu appears.

9. Rotate either Adjust knob to select one of the available file names (*01.bmp* through *16.bmp*) or N/A (to abandon the logo).

10. Press the Next button. The LCD window displays a counter that shows the progress of the save operation until it reaches 100 percent.

NOTE *Saving a bitmap image can take a couple of minutes. The ISS is unresponsive to front panel operations and SIS commands while it saves the file.*

11. Press the Next button and Menu buttons as necessary to return to the default display cycle.

Configuring a logo

Once a bitmap is captured or uploaded via the LAN port, you can assign it to one of the two logo locations. After it is assigned, you can position it and remove (key out) unwanted portions of the image (such as backgrounds).

Assign the bitmap to a logo and configure the logo as follows:

1. Press and **hold** the Next button (figure 3-26). While **holding** Next, press and release the Logo 1/Black or Logo 2/Black button (the logo to which you want to assign a bitmap). Release the Next button.

Default Cycle

Press and hold Next
Press and release Logo.
Release Next.

LOGO 1 /BLACK   NEXT

Step 1

30 sec.

Press NEXT   Step 3

Press NEXT   Step 5

Press NEXT   Step 7

30 sec.   30 sec.

Logo #1 Select
9.BMP

Logo #1 Pre Pos
X=0001   Y=0001

Logo #1 Pre Type
<Level>   RGB

To Figure 3-27

Rotate the knobs to select the bitmap image to assign to this logo button.

Step 2

0000 through upper H size

0000 through upper V size

Rotate the knobs to move the upper-left corner of the logo into the desired position.

Step 4

Rotate the knobs to select the method — luminance or color (RGB) — of keying out the backround.

Step 6

Starting point of logo

Figure 3-26 — Configuring a logo

2. Rotate the Adjust ⬍ knob to display, one at a time, all of the bitmap images available for selection and the Black Screen selection.

3. Press the Next button. The Logo Position submenu appears.

NOTE *Depending on the size of the bitmap image, the Logo Position submenu may take a few seconds to appear.*

NOTE *If you selected Black Screen in step 3, the PIP skips the Logo Position submenu and proceeds straight to the Logo Type screen (step 6).*

4. Use the Adjust knobs to shift the starting point (upper-left corner) of the logo.

NOTE *Rotate the Adjust ◄► knob to shift the starting point on the X axis (horizontally). Rotate the Adjust ⬍ knob to shift the starting point on the Y axis (vertically).*

5. Press the Next button. The Logo Type submenu appears.

6. Rotate the Adjust ⬍ knob to select (< >) how you will remove (key out) unwanted portions of the bitmap.

    Level — The ISS keys out all material whose luminance level is below a variable threshold.

    RGB — The ISS keys out all material of a specific color (red, green, and/or blue) that is below a variable threshold.

7. Press the Next button. The Key submenu appears (figure 3-27).
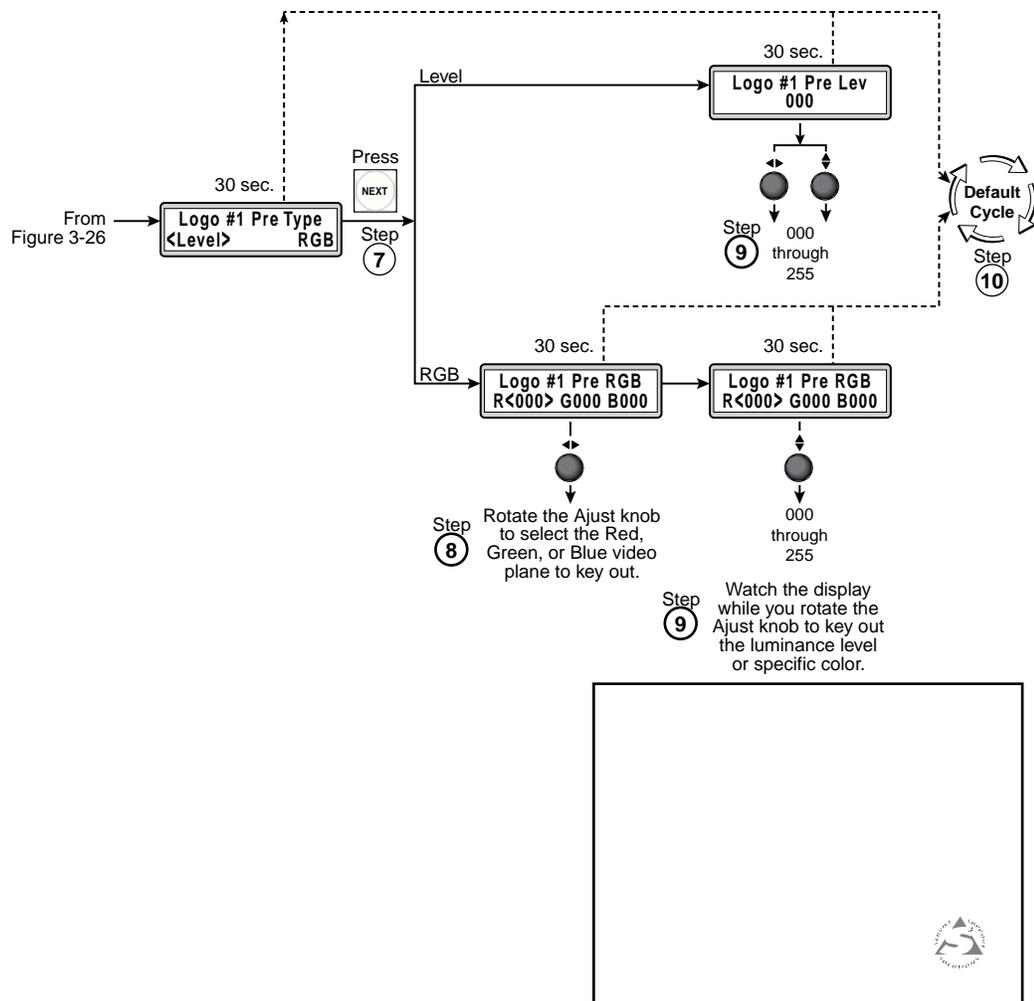
Figure 3-27 — Configuring a logo, continued

8. **If you selected RGB in step 6**, rotate the Adjust ◂▸ knob to select (< >) the video plane to key.

9. Watch the connected program or preview display while you **slowly** rotate the Adjust ⬍ knob to remove the unwanted material from the logo. As soon as the unwanted material is removed from the screen, **stop** turning the knob.

10. Allow the 30-second time delay to expire. The ISS returns to the default display.

Configuring a title

The ISS can display the input that is selected to be the preview output as a title.

NOTE *A title is preview output superimposed over the program output.*

Remove (key out) unwanted portions of the title (such as backgrounds) as follows:

1. Ensure that the video that you want to be the title is connected to one of the inputs.

2. Press the Preview Input button for the input that has the desired title video. The title video appears on the preview output (figure 3-28).
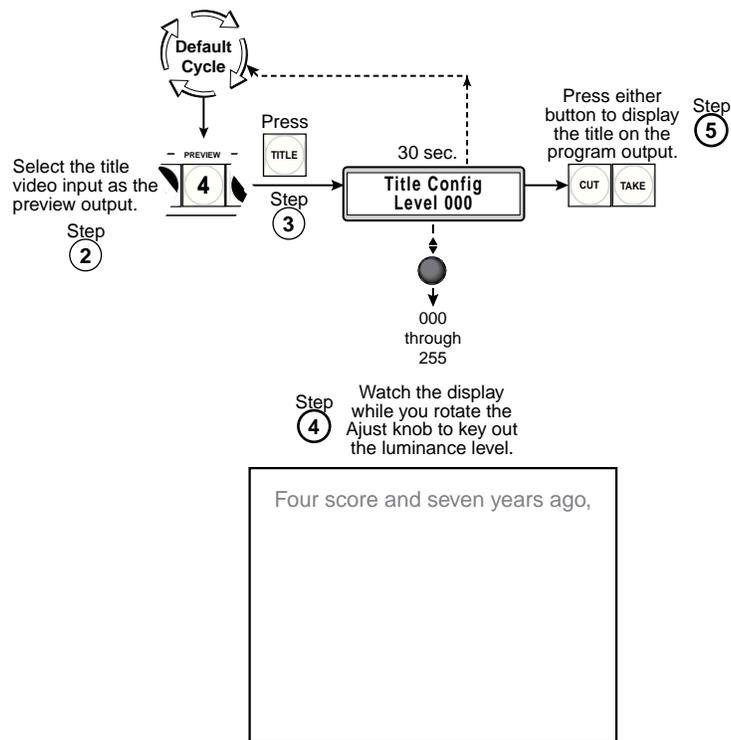
Figure 3-28 — Configuring a title

3. Press the Title button. The Title Configuration submenu appears.

4. Watch the connected preview display while you **slowly** rotate the Adjust ⬍ knob to remove the unwanted material from the title. As soon as the unwanted material is removed from the screen, **stop** turning the knob.

5. Press either the Cut or Take button to display the title on the program output.

Operation, cont'd

Adjusting the picture

The picture adjustments allow you to fine tune the image quality of the selected input. When you press one of the Picture Adjustment buttons (Color/Tint, Brightness/Contrast, Size, Position, or Detail) once, the corresponding image adjustment menu appears on the LCD screen. Press the button again to cycle though the available menus for that adjustment, the preview and program outputs, and selected effect, if applicable. Adjustments can then be made by rotating the Adjust ◄► knob or the Adjust ♦ knob. Picture adjustment settings are stored in nonvolatile memory; when the switcher is powered down and then powered up, the settings are restored.
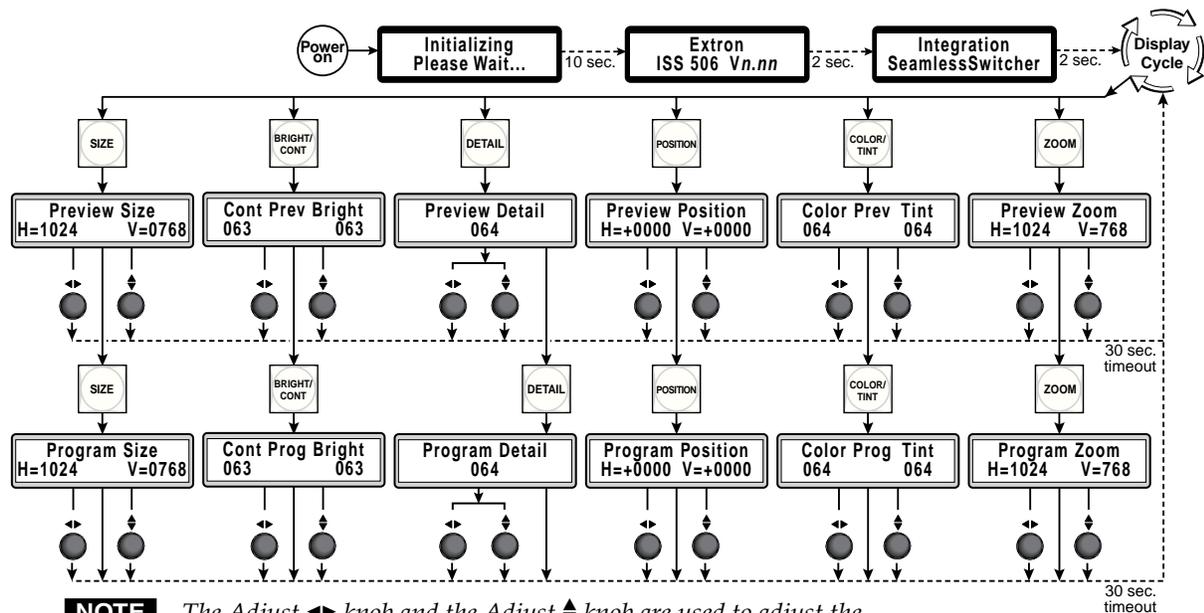
NOTE *The Adjust ◄► knob and the Adjust ♦ knob are used to adjust the image settings on the left and right sides of the LCD screen, respectively.*

NOTE *If the PIP effect is selected, the Size, Position, and Zoom buttons cycle through Preview/PIP window >Preview/PIP image > Program/Main.*
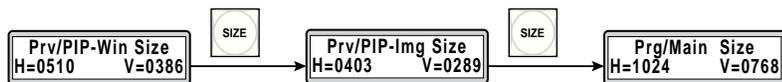
If the PIP effect is selected, the Brightness/Contrast, Color/Tint, and Detail buttons cycle through Preview/PIP window > Program/Main.
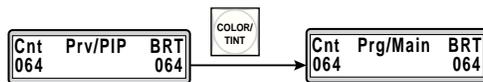
Figure 3-29 — Picture adjustments flowchart

Adjust an image as follows (figure 3-29).

1. Press the desired input button to select the input to adjust.

    NOTE *The adjustments are made to the input signal that is switched to the output (preview or program) shown in the LCD window.*

    NOTE *Color adjustments are available only for component video, S-video, and composite video inputs.*

    Tint adjustments are available only for S-video and composite NTSC video inputs.

2. Press the appropriate picture adjustment button: Size, brightness and contrast (Brt/Cont), Detail, Position, color and tint (Col/Tnt), or Zoom. The LCD window shows the name of the adjustment and the current setting value.

3. Rotate the Adjust ◄► knob or the Adjust ♦ knob to vary the settings within the following adjustment ranges:

    NOTE *The Adjust knobs have no mechanical limits to their rotation.*

    *   **Size**: Observe the display and turn the Adjust ◄► knob to increase or decrease the horizontal size of the image. Turn the Adjust ♦ knob to increase or decrease the vertical size of the image. The adjustment range depends on the output resolution that was selected.

    *   **Brightness/Contrast**: The range for both adjustments is 0 to 127.

    *   **Detail Filter**: Either knob adjusts within a range of 0 to 127.

    *   **Position**: Observe the display and turn the Adjust ◄► knob to center the image horizontally or the Adjust ♦ knob to center the image vertically. The adjustment range depends on the output resolution that was selected.

    *   **Color/Tint**: The range for both adjustments is 0 to 127.

    *   **Zoom**: Observe the display and turn either the Adjust ◄► or the Adjust ♦ knob to zoom in or out on the image. The adjustment range depends on the output resolution that was selected.

4. Repeat steps **2** and **3** for each image adjustment to be made for that input.

Toggling background illumination on and off

The buttons on the front panel can be set to provide amber background illumination (green for the Freeze buttons) at all times or the background illumination can be turned off. To toggle the background illumination on or off, press and hold the Color/Tint and Brightness/Contrast buttons simultaneously for approximately 2 seconds (figure 3-30).

Press and **hold** the Color/Tint and
Brightness/Contrast buttons simultaneously to
toggle background illumination mode on or off.
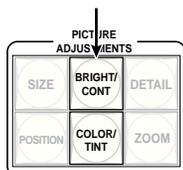
After approximately 2 seconds,
release the buttons.

Figure 3-30 — Toggle background illumination on or off

Operation, cont'd

Using front panel security lockouts (executive modes)

There are four levels of front panel security lockout that limit the various aspects of the operation of the ISS 506 Integration Seamless Switcher from the front panel.

- **Complete —** All front panel functions locked.

- **Volume only —** Locks all front panel functions except the Volume control knob.

- **Switching only —** Allows input selection, Logo/Black selection, Freeze, Cut, Take, and volume control. All other controls are locked.

- **Program lockout —** Locks all **Program** Input selection, Freeze, and Logo/Black buttons.

NOTE   *In Program lockout mode, the **Preview** input selection, Freeze, Logo/Black, and all other controls remain unlocked.*

Change the level of the front panel lock as follows:

1.   Press and hold the Size and Position buttons until the LCD displays **Exec Mode Select** and **Complete** (approximately 2 seconds) (figure 3-31). Release the buttons.
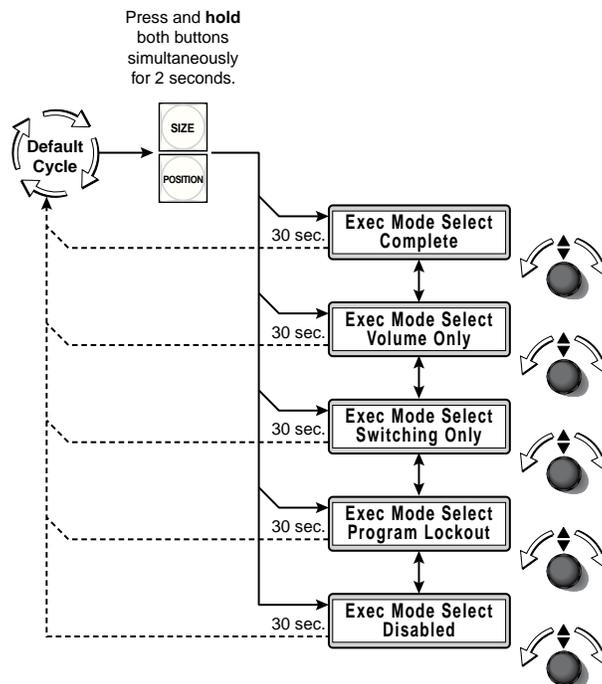
Figure 3-31 — Front panel security lockout flowchart

2.   Rotate the Adjust ⬍ button to select a different lock mode or to disable the front panel lock.

The LCD window also displays **Executive Mode** and the level of the lock if you attempt operate a locked front panel control when the switcher's front panel is locked.

Rear Panel Reset Button

The switcher's Reset button is on the rear panel (figure 3-32).
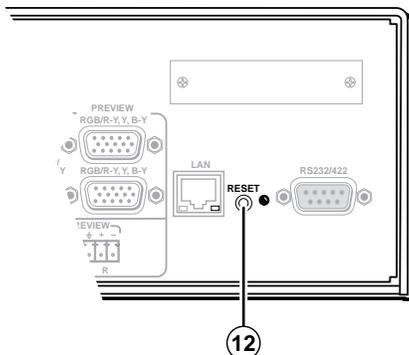
Figure 3-32 — ISS 506 rear panel Reset button

⑫ **Reset button and LED —** Use the Reset button and LED to perform four levels of system resets. See below.

Performing soft system resets

The ISS 506 has three soft resets available that restore various tiers of switcher settings to their default settings.

- **Events (mode 3) reset —** This function toggles the monitoring of events on or off (if events monitoring was on, this function turns it off; if it was off, it is turned on).

- **IP settings (mode 4) reset —** The IP settings reset performs the following functions:
  - ❍ Enables Arp program capability.
  - ❍ Resets the IP address to the factory default (192.168.254.254).
  - ❍ Resets the subnet mask to the factory default (255.255.0.0).
  - ❍ Resets the gateway address to its factory default (0.0.0.0).
  - ❍ Resets port mapping to the factory default.
  - ❍ Turn DHCP off.
  - ❍ Turn events off.

  NOTE *IP settings reset does not replace any user-installed firmware.*

- **Absolute (mode 5) reset —** Absolute reset restores the switcher to the default factory conditions. This function is identical to the Esc ZQQQ← SIS command, see chapter 4, "SIS Programming and Control".

Operation, cont'd

Perform a soft reset of the switcher as follows:

1. Use an Extron tweeker or other small screwdriver to press and hold the Reset button until the Reset LED blinks once (for events reset), twice (for IP settings), or three times (for absolute reset) (figure 3-33).

2. Release the Reset button and then immediately press and release the Reset button again. Nothing happens if the second momentary press does not occur within 1 second.
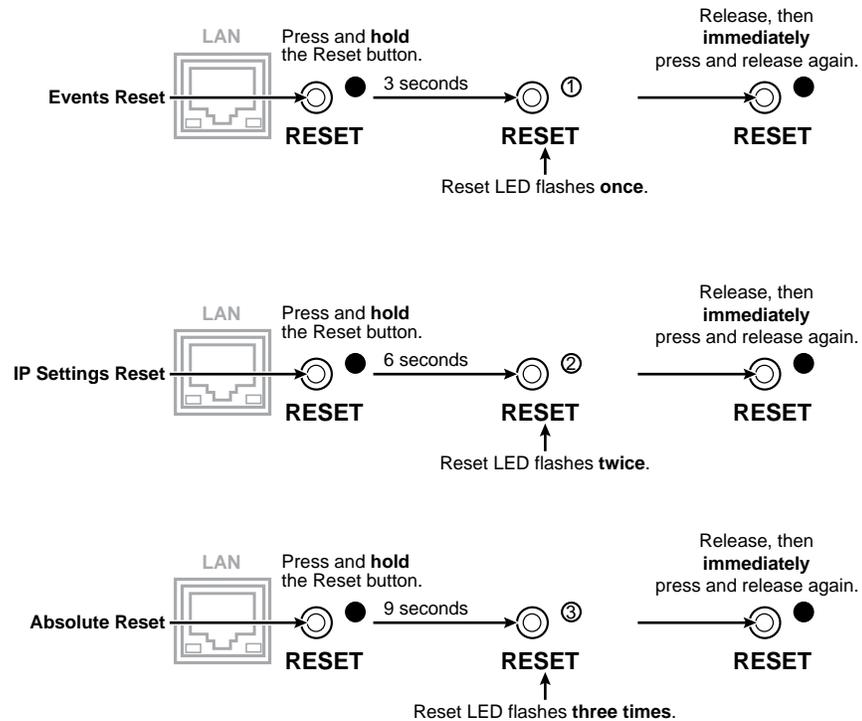
Figure 3-33 — Whole switcher and absolute resets

Performing a hard reset

The hard reset function restores the switcher to the base firmware that it was shipped with. After a hard reset, events do not automatically start, but user settings and files are restored. Perform a hard reset as follows:

NOTE *The hard reset restores the factory-installed firmware for a single power cycle. The switcher reverts to the current firmware the next time power is cycled off and on __unless__ a firmware update is performed before the power cycle.*

1. If necessary, turn off power to the switcher.

2. Press and **hold** the Reset button on the rear panel **while** you apply AC power to the switcher (figure 3-34).

Press and **hold** the Reset button while you apply power to the switcher.

LAN

RESET

The switcher initializes. The LCD window shows the model name and the firmware version and then the default display cycle.

Power

RESET

Release the Reset button.
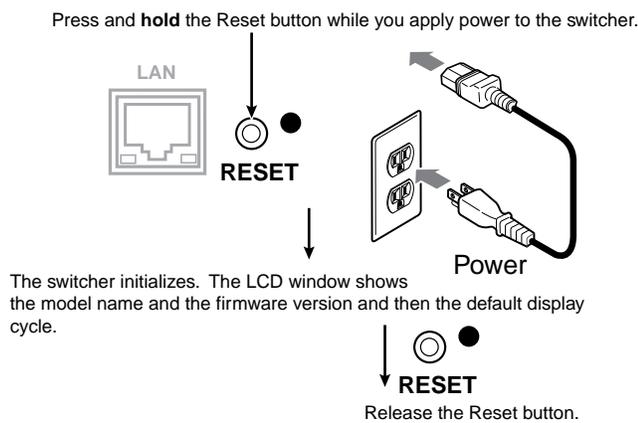
Figure 3-34 — Hard reset

Optimizing the Video

Perform the following steps, in sequence, after you have installed the ISS. This procedure will help you to configure the switcher for the best settings for your display environment. In a multi-screen environment, perform this procedure for each display.

See "Advanced Configuration menu", earlier in this chapter, to select and output a test pattern and to select and output blue-only video.

See "Adjusting the picture", earlier in this chapter, to make adjustments to the picture quality.

See "User Presets menu", earlier in this chapter, to save presets.

1. **If you are using a digital display**, such as an LCD or DLP projector, use the alternating pixels test pattern as a reference to adjust the phase and dot clock on the display devices.

    If you are using a CRT display, use the cross hatch test pattern as a reference to converge the display.

2. Set the ISS to output either the crop test pattern for 4:3 video or the appropriate aspect ratio test pattern. Use the display's positioning controls to position the image so that you can see all sides of the test pattern on the display.

NOTE *For the best results of this optimizing procedure, do not use the ISS's center controls to position the image.*

Operation, cont'd

3. Select an input. Use the ISS's size and center functions to adust the crop or aspect ratio output to fill the screen.

NOTE *If the input source is a DVD, set the DVD player to output a 16:9 aspect ratio before sizing the image using the ISS's size function to correct the aspect ratio. See "Setting up a DVD source", below.*

NOTE *When you are sizing and centering a letterbox movie video source, increasing the brightness on the ISS makes it easier to see the top and bottom of the active video.*

4. If the input source is RGB, use the horizontal and vertical detail adjustments to increase the sharpness.

5. **For S-video and composite video inputs**, set the ISS to output blue-only video and to output the Color Bars test pattern. Using the blue Color Bars as a reference, use the ISS's color and tint controls to adjust the video's color and tint.

6. **For RGB video inputs**, set brightness and contrast levels. See "Adjusting the picture", earlier in this chapter.

6. Save this setting into one of the user memories using the User Presets menu.

Setting up a DVD source

To get the best results when using a DVD as a video source, Extron recommends that the DVD player itself be set up to output an aspect ratio of 16:9 and not 4:3. Because all DVDs are mastered as 16:9, having them set up for anything else causes the player to internally scale and compress the signal. The DVD player's scaling and compression defeats the advantage of having 3:2 pulldown detection in the ISS.

All sizing adjustments to correct aspect ratio should be done using the ISS.

To change the output aspect ratio of most DVD players:

1. Enter the DVD player's setup or action menu while the disc is stopped.

2. Select the 16:9 aspect ratio.

Optimizing the Audio

Each individual input audio level can be adjusted within a range of -18 dB to +24 dB, so that there are no noticeable volume differences between sources and for the best headroom and signal-to-noise ratio. Adjust the audio gain and attenuation as follows:

1. Connect audio sources to all desired inputs and connect the audio outputs to output devices such as audio players. See "Audio input connections" and "Audio output connections" in chapter 2, "Installation." For best results, wire all of the inputs and the outputs unbalanced.

2. Power on the audio sources, the switcher, and the audio players.

3. Switch among the inputs (see "Selecting an input to be the preview output and switching it to the program output", earlier in this chapter), listening to the audio with a critical ear or measuring the output audio level with test equipment, such as a VU meter.

4. As necessary, adjust the audio level of each input (see "Audio Level submenu", earlier in this chapter) so that the approximate output level is the same for all selected inputs.

Troubleshooting

The following tips may help you in troubleshooting.

- Some symptoms may resemble others, so you may want to look through all of the examples before attempting to solve the problem.

- Be prepared to backtrack in case the action taken does not solve the problem.

- It may help to keep notes and sketches in case the troubleshooting process gets lengthy. This will also give you something to discuss if you call for technical support.

- Try simplifying the system by eliminating components that may have introduced the problem or made it more complicated.

- **For sync-related problems**: Portable digital projectors are designed to operate close to the video source. Sync problems may result from using long cables or from improper termination. A sync adapter, such as Extron's ASTA (Active Sync Termination Adapter), may help solve these problems.

- **For LCD and DLP projectors and plasma displays**: In addition to the sync-related information above, check the user's manual that came with the projector for troubleshooting tips, as well as for settings and adjustments. Each manufacturer may have its own terms, so look for terms like "auto setup", "auto sync", "pixel phase", and "tracking".

General checks

1. Ensure that all devices are plugged in and powered on. The switcher is receiving power if the LCD window is displaying the default display cycle.

2. Ensure an active input is selected on the switcher.

3. Ensure that the proper signal format is supplied.

4. Check the cabling and make corrections as necessary.

5. Call the Extron S3 Sales & Technical Support Hotline if necessary. See the rear cover of this manual for the phone number in your region of the world.

Operation, cont'd

Specific problems

The table below shows some common operating problems and their solutions.

Problem	Cause	Solution
No image appears.	The input signal is incompatible.	Connect an input device that is compatible with the ISS.
	The input is improperly configured.	Use the Input Format submenu to select the correct input format.
	Freeze mode was entered via an SIS command when the image was black.	Deactivate freeze mode via an SIS command.
	The scaled output rate is too high for the display.	Change the scaled output to a compatible resolution.
The image is flashing.	The scaled output rate is too high for the display. The detail level needs to be changed.	Change the scaled output to a compatible resolution. The image is too soft. Use the Filter button to change the detail level.

Chapter Four

SIS Programming and Control

SIS Programming and Control

Serial Links

The switcher has two serial ports that can be connected to a host device such as a computer running the HyperTerminal utility, an RS-232 capable PDA, or a control system. These ports make serial control of the switcher possible. The serial ports are:

- A rear panel RS-232/RS-422 port on a 9-pin D female connector
- A front panel Configuration (RS-232) port on a 2.5 mm mini stereo jack

The default protocol for all ports is as follows:

- 9600 baud
- no parity
- 8 data bits
- 1 stop bit
- no flow control

The ports can be configured to operate at the 9600, 19200, 38400, or 115200 baud rate.

NOTE *The switcher can operate at 9600, 19200, 38400, or 115200 baud rates,* **but Extron recommends leaving these ports at 9600 baud.** *See "View and Edit Communications Settings menu" in chapter 3, "Operation", to configure the rear panel RS-232/422 port from the front panel.*

Rear panel RS-232/RS-422 port

RS232/422

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

Figure 4-1 — Remote connector pin arrangement

Front panel Configuration port

> **NOTE** *This port is hardwired for RS-232 only.*

> **NOTE** *This port is independent of the rear panel RS-232/RS-422 port. A front panel Configuration port connection and a rear panel RS-232/RS-422 port connection can both be active at the same time.*

The optional 9-pin D to 2.5 mm mini jack TRS RS-232 cable, part **#70-335-01** (figure 4-2) can be used for connection to the Configuration port.

9-pin D	Connection	TRS Plug
Pin 2	Computer's RX line	Tip
Pin 3	Computer's TX line	Ring
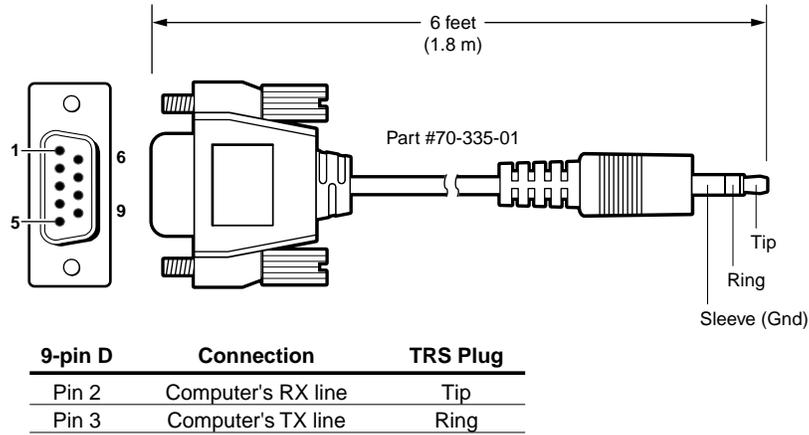
Figure 4-2 — Optional 9-pin TRS RS-232 cable

Ethernet Link

The rear panel Ethernet connector on the switcher (figure 4-3) can be connected to an Ethernet LAN or WAN. This connection makes SIS control of the switcher possible using a computer connected to the same LAN or WAN.

Pins:
12345678

Insert Twisted Pair Wires

RJ-45 Connector

Crossover Cable

Pin	End 1 Wire color	End 2 Wire color
1	White-green	White-orange
2	Green	Orange
3	White-orange	White-green
4	Blue	Blue
5	White-blue	White-blue
6	Orange	Green
7	White-brown	White-brown
8	Brown	Brown
	T568A	**T568B**

A cable that is wired as T568A at one end and T568B at the other (Tx and Rx pairs reversed) is a "crossover" cable.

Straight-through Cable

Pin	End 1 Wire color	End 2 Wire color
1	White-orange	White-orange
2	Orange	Orange
3	White-green	White-green
4	Blue	Blue
5	White-blue	White-blue
6	Green	Green
7	White-brown	White-brown
8	Brown	Brown
	T568B	**T568B**

A cable wired the same at both ends is called a "straight-through" cable, because no pin/pair assignments are swapped.

Figure 4-3 — RJ-45 connector pinout table

Ethernet connection

The cable can be terminated as either a patch cable or a crossover cable (figure 4-3) and must be properly terminated for your application:

- **Patch (straight) cable** — Connection of the ISS to an Ethernet hub, router, or switch that also hosts a controlling computer

- **Crossover cable** — Direct connection between the ISS and a computer

Default address

To access the switcher via the LAN port, you need the switcher's IP address. If the address has been changed to an address comprised of words and characters, the actual numeric IP address can be determined using the front panel (see "View and Edit Communications Settings menu" in chapter 3, "Operation") or the Ping utility (see "Ping to determine the switcher's IP address" or "Ping to determine the Web IP address" in appendix A, "Ethernet Connection", for more details). If the address has not been changed, the factory-specified default is 192.168.254.254.

Symbols

Symbols (x̄n values), defined below, are used throughout the discussions of the switcher-initiated messages that begin on the next page and the command/response table that begins on page 4-12. The symbols represent variables in the switcher-initiated messages and the command/response table fields.

↵ = CR/LF (carriage return/line feed) (hex 0D 0A)

← = CR (no line feed)

• = Space

Esc = Escape key

X1 = Input number 1 through 6

X2 = Output number

1	= Program	3	= PIP window
2	= Preview	4	= PIP image

X3 = RGB delay/effect duration
(00 [RGB delay] or 01 [effect] to 50) in 0.1 second increments

X4 = Effect status   1 = selected   0 = deselected

X5 = Subeffect:

00	= Cut (PIP only)	13	= Soft plus out
01	= Dissolve (PIP only)	14	= Hard right
02	= Soft right	15	= Hard left
03	= Soft left	16	= Hard up
04	= Soft up	17	= Hard down
05	= Soft down	18	= Hard center in
06	= Soft center in	19	= Hard center out
07	= Soft center out	20	= Hard curtain in
08	= Soft curtain in	21	= Hard curtain out
09	= Soft curtain out	22	= Hard square in
10	= Soft square in	23	= Hard square out
11	= Soft square out	24	= Hard plus in
12	= Soft plus in	25	= Hard plus out

X6 = Luma and color key level threshold   000 - 255

X7 = PIP or Title status   1 = on (displayed)
    0 = off (not displayed)

X8 = "Take" effect:

00	= Cut	03	= Title key
01	= Dissolve	04	= PIP
02	= Wipe		

X9 = Preview switch mode: 0 = swap mode, 1 = stay mode

X10 = Video type:

1	= RGB	7	= Composite
2	= YUV-HD	8	= SDI (input 6 only)
3	= YUVp	9	= HD-SDI (input 6 only)
4	= RGBcvS	10	= Auto SDI (input 6 only)
5	= YUVi	11	= Auto YUV
6	= S-video		

X11 = Switcher resolution:

01	= 640x480	14	= 1600x1200
02	= 800x600	15	= 480p
03	= 852x480	16	= 576p
04	= 1024x768	17	= 720p
05	= 1024x852	18	= 1080i
06	= 1024x1024	19	= 1080p
07	= 1280x768	20	= 1864x1050
08	= 1280x1024	21	= 1280x800
09	= 1360x765	22	= 1440x900
10	= 1365x768	23	= 1680x1050
11	= 1366x768	24	= 1080p Sharp
12	= 1365x1024	25	= 1920x1200*
13	= 1400x1050		

* 1920 x 1200 is available only in units that shipped after the first quarter of 2009.

X12 = Video refresh rate:

1	= 50 Hz	6	= 120 Hz
2	= 60 Hz	7	= 24 Hz
3	= 72 Hz	8	= 25 Hz
4	= 96 Hz	9	= 30 Hz
5	= 100 Hz	10	= 59.94 Hz

X13 = Output video type:

0	= RGBHV	2	= YUV bi-level
1	= RGsB	3	= YUV tri-level

X14 = Output sync polarity:

0	= H–/V–	2	= H+/V–
1	= H–/V+	3	= H+/V+

X15 = 0 = off, 1 = on

X16 = Size value (up to 4095)

X17 = Position value (up to 4095)

X18 = Vertical start   Range depends on the input format

X19 = Horizontal start   Range depends on the input format

X20 = Pixel sampling phase (000 thru 031)

X21 = Total pixels   Range depends on the input format

X22 = Active pixels   Range depends on the input format

X23 = Active lines   Range depends on the input format

X24 = Preset number   01 thru 03

X25 = Input preset   1 - 128

X26 = Execute Auto Image   **Program output** / **Preview Output**

	Program output	Preview Output
01 = yes	/ no	
02 = no	/ yes	
03 = yes	/ yes	

X27 = Picture adjustments   (000 through 127)
(Color, tint, brightness, contrast, detail)

X28 = Program/preview output selection

Prog/Prev		**Prog/Prev**	
0	= Off/Off	2	= Off/On
1	= On/Off	3	= On/On

X29 = Test pattern type (1 through 10)

00	= Color Bars	06	= Crop
01	= crosshatch 4:3	07	= Aspect ratio 1.33
02	= 4x4 crosshatch	08	= Aspect ratio 1.78
03	= Split grayscale	09	= Aspect ratio 1.85
04	= Ramp	10	= Aspect ratio 2.35
05	= Alternating pixels		

X30 = Gain value   Numeric dB value, 00 to +24

X31 = Gain/attenuation   -18 dB to +24 dB, each step = 1 dB

X32 = Attenuation value   Numeric dB value, -01 to -18

X33 = Volume adjustment range   000 - 100 (percent)

X34 = Logo filename   *nnnn*.bmp

NOTE   *Logo filenames can be up to 16 alphanumeric characters, including the ".bmp" extension. You must include the ".bmp" extension for the ISS to recognized the file as a logo.*

The blank (space bar) character as the value of **X34** *switches the logo to a black screen.*

X35 = Logo number   1 or 2

X36 = Logo recall key type   0 = level   1 = color

X37 = PIP audio setting 1 = follow main window
            2 = follow PIP window

X38 = Border color:

0	= None	5	= Magenta
1	= Red	6	= Cyan
2	= Green	7	= Yellow
3	= Blue	8	= Black
4	= White		

X39 = Scan converter board output type:

0 = Composite/S-video
1 = YUV
2 = RGsB

X40 = Scan converter board output standard:

0 = NTSC   1 = PAL

X41 = Horizontal and flicker filter value (0 thru 3)

X42 = Encoder filter level 0 to 3

X43 = Detected input signal standard (0 through 4)

0	= none	3	= NTSC 4.43
1	= NTSC 3.58	4	= SECAM
2	= PAL		

NOTE *Dash (–) = not applicable (occurs when the input is set for RGB or progressive YUV).*

X44 = Frequency: *nnn.nn* (kHz [horizontal] or Hz [vertical])

X45 = Lockout mode:

0 = Unlocked
1 = Program lock — Lock Program buttons
2 = Switch free lock — Lock Picture Adjustments, menu controls, and effect selection
3 = Volume free lock — Lock all controls except Volume
4 = Complete

NOTE *See "Using front panel security lockouts (executive modes)", in chapter 3, "Operation", for definitions of these lockout modes.*

X46 = Firmware version

X47 = Degrees Celsius

Switcher-Initiated Messages

When a local event such as power-up or a front panel operation occurs, the switcher responds by sending a message to the host. The switcher-initiated messages are listed on the following pages. The messages are underlined.

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

Power-up

<u>(c) Copyright 2009, Extron Electronics, ISS 506 Series, V*x.xx*, 60-742-*nn*↵</u>

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

Input selection

<u>Out**X2**•In**X1**•All↵</u>

A front panel video and audio switching operation has occurred. **X2** is the output number and **X1** is the input number.

Effect selection

Dissolve

<u>Eff1***X3***nnn*1*n↵</u>

The operator has pressed the Effect Dissolve button on the front panel. Eff1 indicates "dissolve". The second "1" indicates that this effect is selected. **X3** is the dissolve duration. "*nnn*" and "*n*" have no meaning in this response.

Wipe

<u>Eff2***X3*****X5***1*n↵</u>

The operator has pressed the Effect Wipe button on the front panel. Eff2 indicates "wipe". The second "1" indicates that this effect is selected. **X3** is the wipe duration. **X5** is the wipe subeffect. "*n*" have no meaning in this response.

Title

Eff3*X6*nnn*1*X7↵

The operator has pressed the Effect Title button on the front panel. Eff3 indicates "title". X6 is the key threshold. "*nnn*" has no meaning in this response. The "1" after *nnn* indicates that this effect is selected. X7 is the title status (displayed or not displayed).

PIP

Eff4*X3*X5*1*X7↵

The operator has pressed the Effect PIP button on the front panel. Eff4 indicates "PIP". X5 is the PIP switching subeffect. The "1" after X5 indicates that this effect is selected. X3 is the PIP switching duration. X7 is the PIP status (PIP displayed or not displayed).

Take and busy

Tke1*X8↵

Bsy*n*↵

A switching operation involving an effect (wipe, dissolve, PIP, or title) has been initiated (Tke) and the switcher is reporting the effect's status (Bsy*n*). The switcher issues a series of messages, the number and sequence of which depend on the effect type and, for wipes or dissolves, the switch mode (swap or stay). See "Preview Switch Mode submenu" in chapter 3, "Installation", for more information on swap and stay mode.

Wiping or dissolving in stay mode

The switcher issues the following messages when you switch the input that is applied to the preview output to the program output in stay mode with a wipe or dissolve effect:

NOTE *The sequence of commands **may** vary, but you should see all of the listed commands.*

Tke1*X8↵	The switcher has received the front panel Take command.
Bsy1↵	The switcher is performing the selected effect (wipe or dissolve).
Reconfig1↵ Reconfig2↵	The input to the program output has changed (to the input that **had been switched** to preview output).
Bsy0↵	The switcher is finished performing the selected effect (wipe or dissolve).

SIS Programming and Control, cont'd

Cutting or dissolving in swap mode

The switcher issues the following reports when you swap the preview and program outputs in stay mode:

Tke1*X8↵	The switcher has received the front panel Take command.
Bsy1↵	The switcher is performing the selected effect (wipe or dissolve).
Reconfig1↵	The input to the program output has changed (to the input that **had been switched** to preview output).
Reconfig2↵	The input to the preview output has changed (to the input that **had been switched** to program output).
Bsy0↵	The switcher is finished performing the selected effect (wipe or dissolve).

Switching in a PIP window or title

The switcher issues the following reports when you switch a title or a PIP window on:

Tke1*X8↵	The switcher has received the front panel Take command.
Bsy1↵	The switcher is performing the selected effect (PIP or title).

The switcher issues the following reports when you switch a title or a PIP window off:

Bsy1↵	The switcher is still performing the selected effect (PIP or title).
Bsy0↵	The switcher has turned off the selected effect (PIP or title).

Input and output video type

X1 Typ X10 ↵

A front panel input video type selection has occurred. X1 is the input number and X10 is the input video type.

Rte X11 X12 ↵

A front panel output video format selection has occurred. X11 is the output resolution and X12 is the output refresh rate.

Syn X13 ↵

A front panel output video type selection has occurred. X13 is the output video format (RGBHV or RGBS).

Pol X14 ↵

A front panel output video polarity selection has occurred. X14 is the output sync polarity.

Picture adjustments

[X2]Col[X27]↵

A front panel color adjustment has occurred. [X2] is the output (program or preview) switched to the adjusted input and [X27] is the color variable.

[X2]Tin[X27]↵

A front panel tint adjustment has occurred. [X2] is the output (program or preview) switched to the adjusted input and [X27] is the tint variable.

[X2]Brt[X27]↵

A front panel color brightness adjustment has occurred. [X2] is the output (program or preview) switched to the adjusted input and [X27] is the brightness variable.

[X2]Con[X27]↵

A front panel contrast adjustment has occurred. [X2] is the output (program or preview) switched to the adjusted input and [X27] is the contrast variable.

[X2]Hsz[X16]↵

A front panel horizontal size adjustment has occurred. [X2] is the output (program or preview) and [X16] is the size variable.

[X2]Vsz[X16]↵

A front panel vertical size adjustment has occurred. [X2] is the output (program or preview) and [X16] is the size variable.

[X2]Hph[X17]↵

A front panel horizontal centering adjustment has occurred. [X2] is the output (program or preview) and [X17] is the centering variable.

[X2]Vph[X17]↵

A front panel vertical centering adjustment has occurred. [X2] is the output (program or preview) and [X17] is the centering variable.

[X2]Phs[X1]*[X20]↵

A front panel pixel phase adjustment has occurred. [X2] is the output (program or preview). [X1] is the input. [X20] is the pixel phase variable.

[X2]Det[X27]↵

A front panel horizontal detail filter adjustment has occurred on the input switched to output [X2]. [X27] is the filter variable.

7Dvz[X41]↵

A front panel flicker (vertical) filter adjustment has occurred for the optional scan converter output board. [X41] is the filter variable.

7Dhz[X41]↵

A front panel horizontal filter adjustment has occurred for the optional scan converter output board. [X41] is the filter variable.

7Enc[X42]↵

A front panel encoder filter adjustment has occurred for the optional scan converter output board. [X42] is the filter variable.

Blu[X15]↵

The blue-only mode has been turned on or off from the front panel for one or both outputs. [X15] is the on/off status for the two outputs.

RGB delay

Dly X3 ↵

A front panel RGB delay adjustment has occurred. RGB delay affects input selections for the preview output only. X3 is the delay value, in 0.1 second steps. X3 can be as much as 50 = 5.0 seconds.

Test pattern

Tst X28 * X29 ↵

A test pattern has been turned on or off from the front panel for one or both outputs. X28 is the on/off status for either or both outputs and X29 is the test pattern selected.

Audio gain and attenuation

In X1 • Aud X31 ↵

A front panel audio input level adjustment has occurred. X1 is input number and X31 is the audio gain or attenuation level.

Preview switch mode

Psm X9 ↵

A front panel audio input level adjustment has occurred. X9 is the stay or swap status for preview switch mode. See "Preview Switch Mode submenu" in chapter 3, "Operation", for more information on swap and stay mode.

PAL film mode

Flm X1 * X15 ↵

The PAL film mode has been selected or deselected from the front panel for the selected input. X1 is input number and X15 is the on/off status for PAL film mode.

Automated adjustments

Img X1 * X15 ↵

The Auto Image feature has been turned on or off from the front panel for all input selections. X1 is input number and X15 is the on/off status.

Aut X15 ↵

The auto memory feature has been turned on or off from the front panel for all input selections. X15 is the on/off status.

Reconfig X2 ↵

The input selected for the X2 output has been adjusted using the Auto Image feature or a user preset.

Host-to-Switcher Instructions

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

Switcher Error Responses

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

E01 — Invalid input channel number (too large)
E10 — Invalid command
E11 — Invalid preset number (too large)
E12 — Invalid output number (too large)
E13 — Invalid value (out of range)
E14 — Invalid for this configuration

Using the Command/Response Tables

The command/response table begins on the next page. Except for the gain and attenuation settings and the filter settings, upper or lowercase letters are acceptable in the command field. The table below shows the hexadecimal equivalent of each ASCII command.

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

NOTE *With the exception of the audio gain (G) and attenuation (g) and horizontal filtering (D) and vertical filtering (d) commands, the SIS commands are __not__ case sensitive.*

Command/response table for SIS commands

NOTE _Links are presented in some of the commands below to redirect you to take you to descriptions of comparable front panel operations for more details about the operation._

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Input selection				
Select video and audio	X2*X1!	X2*X1!	OutX2•InX1•All⏎	Select video and audio input X1 to the X2 output.
Example:	1*2!	1*2!	Out1•In2•All⏎	Input 2 video and audio selected to the program output.
Select video only	X2*X1&	X2*X1&	OutX2•InX1•RGB⏎	Select video input X1 to the X2 output.
Example:	2*5&	2*5&	Out2•In5•RGB⏎	Input 5 video only selected to the preview output.
Select audio only	X2*X1$	X2*X1$	OutX2•InX1•Aud⏎	Select audio input X1 to the X2 output.
Transition effects				

NOTE _The function and variables associated with the various Effect commands (4*1#, 4*2#, 4*3#, and 4*4#) differ, depending on the effect selected._

Dissolve effect and duration

NOTE _The "nnn" and "n" variables in the dissolve effect and duration responses below have no meaning._
Although they look similar, the set dissolve effect command (4*1*#) and set dissolve duration command (4*1*X3#) **must** be sent separately for them to make the desired change.

Set the dissolve effect	4*1*#	4*1*#	Eff1*X3*nnn*1*n⏎	Set the switching effect to dissolve for "take" operations.

NOTE _The set dissolve command (4*1*#) **cannot** include the duration (X3) value. The duration can be added in a separate command (see below)._
The command **does not work** without the trailing asterisk (4*1*#).

Set dissolve duration	4*1*X3#	4*1*X3#	Eff1*X3*nnn*X4*n⏎	Set the dissolve duration to X3.

NOTE _The set dissolve duration command (4*1*X3#) **must** include the leading "1" variable to specify that the X3 value is to be applied to the dissolve effect._
If a different effect is selected (an effect button other than Dissolve is lit on the front panel), this command sets the duration, but does not select the dissolve effect.

Example:	4*1*25#	4*1*25#	Eff1*025*nnn*1*n⏎	Set the dissolve switching effect duration to 2.5 seconds. In this example, the "1" in the response indicates that dissolve is the selected effect.
View dissolve status	4*1#	4*1#	X3*nnn*X4*n⏎	

NOTE X1 = Input number   1 – 6
X2 = Output number   1 = Program   2 = Preview   3 = PIP window   4 = PIP image
X3 = Effect duration   00 – 50 (5.0 seconds in 0.1-second increments)
X4 = Effect status   1 = selected   2 = deselected

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Wipe effect, duration, and subeffect				
NOTE *The "n" variable in the wipe effect and wipe subeffect and duration responses below has no meaning.* *Although they look similar, the set wipe effect command (4*2*#) and set dissolve subeffect and duration command (4*2*X3*X5#) **must** be sent separately for them to make the desired change.*				
Set the wipe effect	4*2*#	4*2*#	Eff2*X3*X5*1*n↵	Set the switch effect to wipe for "take" operations.
Set wipe duration and subeffect	4*2*X3*X5#	4*2*X3*X5#	Eff2*X3*X5*X4*n↵	Set the wipe duration to X3, and set the subeffect to X5.
NOTE *The set wipe duration and subeffect command (4*2*X3#) **must** include the leading "2" variable to specify that the X3 and X5 values are to be applied to the wipe effect.* *If a different effect is selected (an effect button other than Wipe is lit on the front panel), this command sets the duration and subeffect, but does not select the wipe effect.* *An X5 variable of 00 (cut) or 01 (dissolve) is an invalid value for the wipe subeffect.*				
Example:	4*2*15*8#	4*1*15*8#	Eff2*015*008*0*n↵	Set the wipe switching duration to 1.5 seconds and the subeffect to soft curtain in. In this example, the "0" in the response indicates that wipe is **not** the selected effect.
View wipe effect status	4*2#	4*2#	X3*X5*X4*n↵	
Title effect and title key threshold				
NOTE *The "nnn" variable in the title key effect and duration responses below has no meaning.* *Although they look similar, the set title effect command (4*3*#) and set threshold command (4*3*X3*X5#) **must** be sent separately for them to make the desired change.*				
Set the title effect	4*3*#	4*3*#	Eff3*X6*nnn*1*X7↵	Select the title effect for "cut" and "take" operations.
Set the title key threshold	4*3*X6#	4*3*X6#	Eff3*X6*nnn*X4*X7↵	Set the title key threshold to X6.
NOTE *The set title key threshold command (4*3*X6#) **must** include the leading "3" variable to specify that the X6 value is to be applied to the title effect.* *If a different effect is selected (an effect button other than Title is lit on the front panel), this command sets the threshold, but does not select the title effect.*				
Example:	4*3*177#	4*3*177#	Eff3*177*nnn*1*1↵	Set the title key threshold to 177. In this example's response, "1*1" indicates that the title effect is set and the title is displayed on the program output.
View title effect status	4*3#	4*3#	X6*nnn*X4*X7↵	

NOTE
X3 = Effect duration   00 – 50 (5.0 seconds in 0.1-second increments)
X4 = Effect status   1 = selected   2 = deselected
X5 = Subeffect:

00 = Cut (PIP)	01 = Dissolve (PIP)	02 = Soft right	03 = Soft left	04 = Soft up
05 = Soft down	06 = Soft center in	07 = Soft center out	08 = Soft curtain in	09 = Soft curtain out
10 = Soft square in	11 = Soft square out	13 = Soft plus out	12 = Soft plus in	14 = Hard right
15 = Hard left	16 = Hard up	17 = Hard down	18 = Hard center in	19 = Hard center out
20 = Hard curtain in	21 = Hard curtain out	22 = Hard square in	23 = Hard square out	24 = Hard plus in
25 = Hard plus out				

X6 = Luma and color key level   000 – 255
X7 = PIP or title status   0 = off (not displayed)   1 = on (displayed)

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
PIP effect configuration				
Set the PIP effect	4*4*#	4*4*#	Eff4*X3*X5*1*X7↵	Select the PIP effect for "cut" and "take" operations.
Set PIP switching subeffect and duration	4*4*X3*X5#	4*4*X3*X5#	Eff4*X3*X5*X4*X7↵	Set the effect duration to X3, and set the PIP subeffect to X5.
NOTE *The set PIP switching subeffect and duration command (4*4*X3*X5#)* ***must*** *include the leading "4" variable to specify that the X3 and X5 values are to be applied to the PIP switching effect.*				
If a different effect is selected (an effect button other than PIP is lit on the front panel), this command sets the duration and subeffect, but does not select the PIP effect.				
An X5 variable of 00 (cut) is a valid value for the PIP subeffect. If cut is specified, the PIP accepts the duration value X3, but this value is ignored when the take command (a cut) is issued.				
Example:	4*4*35*0#	4*4*35*0#	Eff4*035*000*0*0↵	Set the PIP switching duration to 3.5 seconds and the subeffect to "cut". The subeffect is "cut", so the duration is ignored when the take command is issued. In this example, "0" in the response indicates that PIP is **not** the selected effect.
View effect and configuration				
NOTE *The response to the view effect and configuration command (4*0#) varies, depending on the effect selected (the selected effect's button is lit on the PIP's front panel). See the detailed descriptions associated with the dissolve, wipe, title, and PIP effect and configuration commands on the preceding pages and the example for each effect shown below:*				
View effect and configuration	4*0#	4*0#	EffX8*variable values↵	See below for examples.
Example (Dissolve selected):	4*0#	4*0#	Eff1*015*nnn*1*n↵	The dissolve effect is selected and the duration is set to 1.5 seconds. The "nnn" and "n" variables have no meaning in this response.
Example (Wipe selected):	4*0#	4*0#	Eff2*020*010*1*n↵ "020" is X3 "011" is X5 (see page 4-13)	The wipe effect is selected, the duration is set to 2 seconds, and the subeffect is set to soft square in. The "n" variable has no meaning in this response.
Example (Title selected):	4*0#	4*0#	Eff3*085*nnn*1*1↵ "085" is X6	The title effect is selected, the threshold is set to 85, and the title is displayed on the program output. The "nnn" variable has no meaning in this response.
Example (PIP selected):	4*0#	4*0#	Eff4*025*015*1*0↵ "015" is X5 (see page 4-13)	The PIP effect is selected, the duration is set to 2.5 seconds, the subeffect is set to hard left, and the PIP window is **not** displayed on the program output.

NOTE
X3 = Effect duration	00 – 50 (5.0 seconds in 0.1-second increments)			
X4 = Effect status	1 = selected	2 = deselected		
X5 = Subeffect (see previous page)				
X6 = Threshold	000 - 255			
X7 = PIP or title status	0 = off (not displayed)	1 = on (displayed)		
X8 = "Take" effect	00 = Cut	01 = Dissolve	02 = Wipe	03 = Title key 04 = PIP

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Preview switch mode				
Set preview switch "stay" mode	20*1#	20*1#	Psm1⏎	Set preview monitor output to remain unchanged when you issue the cut or take command.
Set preview switch "swap" mode	20*0#	20*0#	Psm0⏎	Set preview monitor output and program output to swap inputs on the cut or take command.
View preview switch mode	20#	20#	[X9]⏎	View preview switch mode.
Take command and associated responses				

Take (switch preview to program, with or without an effect)

> **NOTE** *The switch mode, **stay** or **swap**, determines the preview output after the take dissolve (0*01%) or take wipe (0*02%) command.*
> - *In stay mode, the preview output remains unchanged (both outputs share the same input).*
> - *In swap mode, the program input switches to the preview outputs (the two outputs swap inputs).*

Command	ASCII (Telnet)	URL Encoded (Web)	Response	Additional description
Switch video and audio	1*[X8]%	1*[X8]%	Tke1*[X8]⏎	Switch the preview video output to the program output.

> **NOTE** *The response (Tke0*[X8]⏎) indicates that the switcher has received, and is responding to, the "Take" command. A larger series of switcher-initiated messages follows the Tke response during a wipe or dissolve operation. The following examples show the sequence of responses to a "Take" command in several different situations. See "Take and busy", earlier in this chapter, for more details about the responses after the Tke command.*

Command	ASCII (Telnet)	URL Encoded (Web)	Response	Additional description
*Example — **wipe or dissolve** effect selected, switcher in **stay** switch mode (20*1#):*	1*[X8]%	1*[X8]%	Tke1*[X8]⏎	Take command.
			Bsy1⏎	Effect is on.
			Reconfig1⏎	Switch input to program scaler.
			Reconfig2⏎	
			Bsy 0⏎	Effect is off.
*Example — **wipe or dissolve** effect selected, switcher in **swap** switch mode (20*0#):*	1*[X8]%	1*[X8]%	Tke1*[X8]⏎	Take command.
			Bsy1⏎	Effect is on.
			Reconfig1⏎	Switch input to program scaler.
			Reconfig2⏎	Switch input to preview scaler.
			Bsy0⏎	Effect is off.
*Example — **PIP or title effect** selected (regardless of switch mode)*	1*[X8]%	1*[X8]%	Tke1*3⏎	Take command.
			Bsy1⏎	Effect is on.
*Example — **PIP or title effect** deselected (regardless of switch mode)*	1*[X8]%	1*[X8]%	Tke1*3⏎	Take command.
			Bsy1⏎	Effect is on.
			Bsy0⏎	Effect is off.

> **NOTE** [X8] = "Take" effect   00 = Cut   01 = Dissolve   02 = Wipe   03 = Title key   04 = PIP
> [X9] = Preview switch mode   0 = swap   1 = stay

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
View selected input				
View selected video and audio input	X2!	X2!	X1↵	Input X1 video and audio are selected for the X2 output.
View selected video input	X2&	X2&	X1↵	Input X1 video is selected for the X2 output.
View selected audio input	X2$	X2$	X1↵	Input X1 audio is selected for the X2 output.
Input video type				
Set input video type	X1*X10\	X1*X10\	TypX1*X10↵	Specify input X1 video type.
Example:	4*5\	4*5\	Typ4*5↵	Specify input 4 video type as YUVi.
NOTE	To set input 6 to SDI video on a scaler equipped with an optional SDI/HD-SDI input board, enter the command 6*8\, to which the switcher responds Typ8↵. To set input 6 to HD-SDI video on a scaler equipped with an optional SDI/HD-SDI input board, enter the command 6*9\, to which the switcher responds Typ9↵.			
View input video type	X1\	X1\	X10↵	Input X1 video type is X10.
Output video settings				
Set resolution and refresh rate	X11*X12=	X11*X12=	RteX11*X12↵	Command character is "equals".
Example:	4*4=	4*4=	Rte04*4↵	Set output to 1024x768 at 96 Hz.
View resolution and refresh rate	=	=	X11*X12↵	
Set output sync format	6*X13#	6*X13#	SynX13↵	
Example:	6*0#	6*0#	Syn0↵	Set output sync format to RGBHV.
View output sync format	6#	6#	X13↵	
Set output sync polarity	7*X14#	7*X14#	PolX14↵	
Example:	7*0#	7*0#	Pol0↵	Set output sync polarity to H-/V-.
View output sync polarity	7#	7#	X14↵	

NOTE

X1 = Input number	1 – 6				
X2 = Output number	1 = Program	2 = Preview	3 = PIP window	4 = PIP image	
X10 = Video type	1 = RGB	4 = RGBcvS	7 = Composite	10 = Auto SDI (input 6 only)	
	2 = YUV-HD	5 = YUVi	8 = SDI (input 6 only)	11 = Auto YUV	
	3 = YUVp	6 = S-video	9 = HD-SDI (input 6 only)		
X11 = Switcher resolution	01 = 640x480	06 = 1024x1024	11 = 1366x768	16 = 576p	21 = 1280x800
	02 = 800x600	07 = 1280x768	12 = 1365x1024	17 = 720p	22 = 1440x900
	03 = 852x480	08 = 1280x1024	13 = 1400x1050	18 = 1080i	23 = 1680x1050
	04 = 1024x768	09 = 1360x765	14 = 1600x1200	19 = 1080p	24 = 1080p Sharp
	05 = 1024x852	10 = 1365x768	15 = 480p	20 = 1864x1050	5 = 1920x1200.
X12 = Video refresh rate	1 = 50 Hz	3 = 72 Hz	5 = 100 Hz	7 = 24 Hz	9 = 30 Hz
	2 = 60 Hz	4 = 96 Hz	6 = 120 Hz	8 = 25 Hz	10 = 59.94 Hz
X13 = Output video type	0 = RGBHV	1 = RGsB	2 = YUV bi-level	3 = YUV tri-level	
X14 = Output sync polarity	0 = H-/V-	1 = H-/V+	2 = H+/V-	3 = H+/V+	

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Video mute				
Video mute on	X2*1B	X2*1B	X2Vmt1↵	Set the X2 video output to black. The button for the input selected for the X2 output blinks red and amber.
Video mute off	X2*0B	X2*0B	X2Vmt0↵	Set the X2 video output to the selected input.
View video mute status	X2*B	X2*B	X15↵	Video mute is X15 for the X2 output.
Freeze				
Freeze the output	X2*1F	X2*1F	X2Frz1↵	Output a "frozen" video image.
Unfreeze the output	X2*0F	X2*0F	X2Frz0↵	Turn off freeze (output motion video).
View freeze status	X2F	X2F	X15↵	
RGB delay				
Set delay	3*X3#	3*X3#	DlyX3↵	Set RGB delay.
View RGB delay setting	3#	3#	X3↵	View RGB delay setting.
Horizontal size				
Set a specific horizontal size	X2*X16:	X2*X16:	X2HszX16↵	Set output X2 horizontal width to X16.
Increment horizontal size	X2+:	X2+:	X2HszX16↵	Make the X2 picture one pixel wider.
Decrement horizontal size	X2-:	X2-:	X2HszX16↵	Make the X2 picture one pixel narrower.
View the horizontal size value	X2:	X2:	X16↵	Show the horizontal size of the X2 output.
Vertical size				
Set a specific vertical size	X2*X16;	X2*X16;	X2VszX16↵	Set output X2 vertical height to X16.
Increment vertical size	X2+;	X2+;	X2VszX16↵	Make the X2 picture one pixel taller.
Decrement vertical size	X2-;	X2-;	X2VszX16↵	Make the X2 picture one pixel shorter.
View the vertical size value	X2;	X2;	X16↵	Show the vertical size of the X2 output.
Horizontal shift				
Set a specific horizontal position	X2*X17H	X2*X17H	X2HphX17↵	Specify the horizontal position of the X2 output.
Increment up	X2+H	X2+H	X2HphX17↵	Shift the X2 picture one pixel to the right.
Decrement down	X2-H	X2-H	X2HphX17↵	Shift the X2 picture one pixel to the left.
View the horizontal position	X2H	X2H	X17↵	Show the horizontal position of the X2 output.

NOTE
X2 = Output number 1 = Program 2 = Preview 3 = PIP window 4 = PIP image
X3 = RGB delay 00 – 50 (5.0 seconds in 0.1-second increments)
X15 = Mute and freeze status 0 = off (video or motion) 1 = on (video is muted or frozen)
X16 = Size Up to 4095
X17 = Position value Up to 4095

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Vertical shift				
Set a specific vertical position	X2*X17/	X2*X17/	X2VphX17←	Specify the vertical position of the X2 output.
Increment	X2+/	X2+/	X2VphX17←	Shift the X2 picture down by one line.
Decrement	X2-/	X2-/	X2VphX17←	Shift the X2 picture up by one line.
View the vertical shift position	X2/	X2/	X17←	Show the vertical position of the X2 output.
Program and preview output configuration				
Set output's size and position	Esc X2,X17*X17*X16*X16XY←			Sets the size and position of the X2 output with a single command.
		WX2,X17*X17*X16*X16XY |	X2WinX17*X17*X16*X16←	
NOTE *The variables must be entered, and are returned, in the following order: horizontal position*vertical position*horizontal size*vertical size.*				
View output's size and position	Esc X2XY←	WX2XY |	X17*X17*X16*X16←	Show the X2 output's size and position.
Vertical start				
Set the vertical starting point	X1*X18(	X1*X18(	VstX1*X18←	Set the vertical position of the first active line in the active window
Example	1*2(	1*2(	Vst1*2←	
Increment the vertical starting point	X1+(	X1+(	VstX1*X18←	Lower the starting point by one line.
Decrement the vertical starting point	X1-(	X1-(	VstX1*X18←	Raise the starting point by one line.
View the vertical starting point	X1(	X1(	X18←	
Horizontal start				
Set the horizontal starting point	X1*X19)	X1*X19)	HstX1*X19←	Set the horizontal location of the first active pixel in the active window.
Example	2*5)	2*5)	Hst2*5←	
Increment the horizontal starting point	X1+)	X1+)	HstX1*X19←	Shift the starting point one pixel to the right.
Decrement the horizontal starting point	X1-)	X1-)	HstX1*X19←	Shift the starting point one pixel to the left.
View the horizontal starting point	X1)	X1)	X19←	

NOTE
X1 = Input number — 1 – 6
X2 = Output number — 1 = Program　　2 = Preview　　3 = PIP window　　4 = PIP image
X16 = Size — Up to 4095
X17 = Position value — Up to 4095
X18 = Vertical start — Range depends on the input format.
X19 = Position value — Range depends on the input format.

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Pixel phase				
NOTE *The pixel phase adjustment is available only for RGB, YUV-HD, and YUVp inputs.*				
Set a specific pixel sampling phase	X2*X1*X20U	X2*X1*X20U	X2Phs X1*X20↵	Specify the pixel sampling phase.
Increment sampling value	X2*X1+U	X2*X1+U	X2Phs X1*X20↵	Increase the phase value.
Decrement sampling value	X2*X1-U	X2*X1-U	X2Phs X1*X20↵	Decrease the phase value.
View the sampling value	X2*X1U	X2*X1U	X20↵	Show the pixel sampling phase.
Total pixels				
NOTE *The pixel phase adjustment is available only for RGB, YUV-HD, and YUVp inputs.*				
Set a specific total pixels value	11*X1*X21#	X1*X21#	Tpx X1*X21↵	Specify the number of total pixels.
Increment total pixels value	11*X1+#	11*X1+#	Tpx X1*X21↵	Increase the total number of pixels value.
Decrement total pixels value	11*X1-#	11*X1-#	Tpx X1*X21↵	Decrease the total number of pixels value.
View the total pixels value	11*X1#	11*X1#	X21↵	Show the total number of pixels.
Active pixels				
Set a specific active pixels value	12*X1*X22#	12*X1*X22#	Apx X1*X22↵	Specify the number of active pixels.
Increment active pixels value	12*X1+#	12*X1+#	Apx X1*X22↵	Increase the number of active pixels value.
Decrement active pixels value	12*X1-#	12*X1-#	Apx X1*X22↵	Decrease the number of active pixels value.
View the active pixels value	12*X1#	12*X1#	X22↵	Show the number of active pixels.
Active lines				
Set a specific active lines value	13*X1*X23#	13*X1*X23#	Aln X1*X23↵	Specify the number of active lines.
Increment active lines value	13*X1+#	13*X1+#	Aln X1*X23↵	Increase the number of active lines value.
Decrement active lines value	13*X1-#	13*X1-#	Aln X1*X23↵	Decrease the number of active lines value.
View the active lines value	13*X1#	13*X1#	X23↵	Show the number of active lines.

NOTE X1 = Input number   1 – 6
X2 = Output number   1 = Program   2 = Preview   3 = PIP window   4 = PIP image
X20 = Pixel sampling phase   000 – 031
X21 = Total pixels   Range depends on the input format.
X22 = Active pixels   Range depends on the input format.
X23 = Active lines   Range depends on the input format.

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Film mode (PAL 2:2 pulldown)				
NOTE *The film mode selection is only available for RGBcvS, YUVi, S-video, composite video, and SDI inputs.*				
Enable film mode	18*[X1]*1#	18*[X1]*1#	Flm[X1]*1↵	Auto sense for 3:2 or 2:2 film mode.
Disable film mode	18*[X1]*0#	18*[X1]*0#	Flm[X1]*0↵	Lock de-interlacer to 2:2 pulldown.
View file mode	18*[X1]#	18*[X1]#	[X15]↵	Show the current film mode.
Zoom				
Zoom in	[X2]+{	[X2]+{	[X2]Zom[X16]*[X16]↵	Zoom in (make the image larger while maintaining the aspect ratio).
Zoom out	[X2]-{	[X2]-{	[X2]Zom[X16]*[X16]↵	Zoom out (make the image smaller while maintaining the aspect ratio).
View zoom level	[X2]{	[X2]{	[X16]*[X16]↵	
User presets				
NOTE *User presets consist of:*				

- Film mode
- Horizontal start
- Horizontal size
- Horizontal position
- Total pixels
- Vertical start
- Vertical size
- Vertical position
- Program phase
- Horizontal active pixels
- Brightnesss and contrast
- Color
- Preview phase
- Vertical active pixels
- Detail
- Tint

Command	ASCII (Telnet)	URL Encoded (Web)	Response	Additional description
Save user preset	[X2]*[X24],	[X2]*[X24],	[X2]Spr0*[X24]↵	Save user preset [X24] for the [X2] output.
Recall a user preset	[X2]*[X24].	[X2]*[X24].	[X2]Rpr0*[X24]↵	Recall user preset [X24] for the [X2] output.
Input presets				
NOTE *Input presets consist of:*				

- Input type
- Film mode
- Horizontal start
- Horizontal size
- Horizontal position
- Audio gain and attenuation
- Total pixels
- Vertical start
- Vertical size
- Vertical position
- Program phase
- Horizontal active pixels
- Brightnesss and contrast
- Color
- Preview phase
- Vertical active pixels
- Detail
- Tint

Command	ASCII (Telnet)	URL Encoded (Web)	Response	Additional description
Save an input preset	1*[X2]*[X25],	1*[X2]*[X25],	[X2]Spr1*[X25]↵	Save input preset [X25] for the [X2] output.
Recall an input preset	1*[X2]*[X25].	1*[X2]*[X25].	[X2]Rpr1*[X25]↵	Recall input preset [X25] for the [X2] output.

NOTE
[X1] = Input number   1 – 6
[X2] = Output number   1 = Program   2 = Preview   3 = PIP window   4 = PIP image
[X15] = Film mode   0 = off   1 = on
[X16] = Size   Up to 4095
[X24] = Preset number   0 – 3
[X25] = Input preset   000 – 128

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Auto Image				
Enable Auto Image	55*X1*1#	55*X1*1#	ImgX1*1↵	Auto Image input X1 when selected.
Disable Auto Image	55*X1*0#	55*X1*0#	ImgX1*0↵	Do not Auto Image input X1 selections.
View Auto Image status	55*X1#	55*X1#	X15↵	View Auto Image on/off status.
Execute Auto Image	14*X26#	14*X26#	ImgX26↵	Execute a one-time Auto Image on the X26 output(s).
Auto memory				

NOTE *Auto memories consist of:*
- *Film mode*
- *Horizontal start*
- *Horizontal size*
- *Horizontal position*

- *Total pixels*
- *Vertical start*
- *Vertical size*
- *Vertical position*

- *Horizontal active pixels*
- *Brightnesss and contrast*
- *Color*

- *Vertical active pixels*
- *Detail*
- *Tint*

Command	ASCII (Telnet)	URL Encoded (Web)	Response	Additional description
Enable auto-memory	1M	1M	Aut1↵	
Disable auto-memory	0M	0M	Aut0↵	
View auto-memory status	M	M	X15↵	

Picture Adjustments

Command	ASCII (Telnet)	URL Encoded (Web)	Response	Additional description
Color				

NOTE **Color** *adjustments are available for interlaced component video (YUVi), S-video, and composite video inputs.*

Command	ASCII (Telnet)	URL Encoded (Web)	Response	Additional description
Set a specific color value	X2*X27C	X2*X27C	X2ColX27↵	Set X2 output color value to X27.
Increment color value	X2+C	X2+C	X2ColX27↵	Increase the X2 output color setting by one.
Decrement color value	X2-C	X2-C	X2ColX27↵	Decrease the X2 output color setting by one.
View the color value	X2C	X2C	X27↵	Show the color setting.
Tint				

NOTE **Tint** *adjustments are available for S-video and composite NTSC video inputs.*

Command	ASCII (Telnet)	URL Encoded (Web)	Response	Additional description
Set a specific tint value	X2*X27T	X2*X27T	X2TinX27↵	Set X2 output tint value to X27.
Increment tint value	X2+T	X2+T	X2TinX27↵	Increase the X2 output tint setting by one.
Decrement tint value	X2-T	X2-T	X2TinX27↵	Decrease the X2 output tint setting by one.
View the tint value	X2T	X2T	X27↵	Show the tint setting.

NOTE
X1 = Input number	1 – 6			
X2 = Output number	1 = Program	2 = Preview	3 = PIP window	4 = PIP image
X15 = Auto image status	0 = off	1 = on		
X26 = Execute Auto Image	01 = prog yes / prev no	02 = prog no / prev yes	03 = prog yes / prev yes	
X27 = Picture adjustments (color, tint, brightness, detail)	000 – 127			

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Contrast				
Set a specific contrast value	X2*X27^	X2*X27^	X2ConX27↵	Set the X2 output contrast value to X27.
Increment contrast value	X2+^	X2+^	X2ConX27↵	Increase the X2 output contrast setting by one.
Decrement contrast value	X2-^	X2-^	X2ConX27↵	Decrease the X2 output contrast setting by one.
View the contrast value	X2^	X2^	X27↵	Show the contrast setting.
Brightness				
Set a specific brightness value	X2*X27Y	X2*X27Y	X2BrtX27↵	Set the X2 output brightness value to X27.
Increment brightness value	X2+Y	X2+Y	X2BrtX27↵	Increase the X2 output brighness setting by one.
Decrement brightness value	X2-Y	X2-Y	X2BrtX27↵	Decrease the X2 output brightness setting by one.
View the brightness value	X2Y	X2Y	X27↵	Show the brightness setting.
Detail filter				

NOTE *The command (D or d) is **not** case sensitive **except** when used in conjunction with the optional scan converter output board. See the Optional Scan converter board commands, on page 4-30.*

Command	ASCII (Telnet)	URL Encoded (Web)	Response	Additional description
Set detail level	X2*X27D	X2*X27D	X2DetX27↵	Specify the X2 output detail level.
Increment detail level	X2+D	X2+D	X2DetX27↵	Increase the detail level by one step.
Decrement detail level	X2-D	X2-D	X2DetX27↵	Decrease the detail level by one step.
View detail level	X2D	X2D	X27↵	Show the detail level.

Display Setup Tools

Command	ASCII (Telnet)	URL Encoded (Web)	Response	Additional description
Test pattern				
Turn on test pattern	X28*X29J	X28*X29J	TstX28*X29↵	Select test pattern X29 for the preview and/or program output.
Example:	1*0J	1*0J	Tst01*00↵	Select the Color Bars test pattern for the program output only.
Turn off test pattern	0*X29J	0*X29J	Tst0*X29↵	Turn off test pattern for both outputs.
View test pattern on/off status	J	J	X28*X29↵	

NOTE X2 = Output number   1 = Program   2 = Preview   3 = PIP window   4 = PIP image

X27 = Picture adjustments   000 – 127
(color, tint, brightness, detail)

X28 = Prog/prev output selection   0 = prog off / prev off   1 = prog on / prev off   2 = prog off / prev on   3 = prog on / prev on

X29 = Test pattern type
- 00 = Color Bars   01 = crosshatch 4:3   02 = 4x4 crosshatch   03 = Split grayscale
- 04 = Ramp   05 = Alternating pixels   06 = Crop   07 = Aspect ratio 1.33
- 08 = Aspect ratio 1.7   09 = Aspect ratio 1.85   10 = Aspect ratio 2.35

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Blue screen				
Turn blue screen mode on	8*1#	8*1#	Blu1↵	Output sync and blue video only on both outputs.
Turn blue screen mode off	8*0#	8*0#	Blu0↵	Output red, green, and blue video and sync.
View blue screen mode status	8#	8#	[X15]↵	Check blue screen mode on/off status.
Audio configuration				
Audio gain and attenuation				
NOTE *The set gain (G) and set attenuation (g) commands **are** case sensitive. The increment audio level, decrement audio level, and view audio level commands **are not** case sensitive.*				
Set input audio gain to + dB value	[X1]*[X30]G	[X1]*[X30]G	In[X1]●Aud[X31]↵	
Example:	1*2G	1*2G	In01●Aud+02↵	Set input 1 audio level to +2 dB.
Set input audio attenuation to - dB value	[X1]*[X32]g	[X1]*[X32]g	In[X1]●Aud[X31]↵	
Increment level	[X1]+G	[X1]+G	In[X1]●Aud[X31]↵	Increase audio level by 1 dB.
Example:	5+G	5+G	In05●Aud+03↵	Input 5 audio level is incremented from +2 dB to +3 dB.
Decrement level	[X1]-G	[X1]-G	In[X1]●Aud[X31]↵	Decrease audio level by 1 dB.
Example:	6-G	6-G	In06●Aud-09↵	Input 6 audio level is decremented from -8 dB to -9 dB.
View input audio level	[X1]G	[X1]G	[X31]↵	
Audio output volume				
Set the audio output volume to a specific value	[X33]V	[X33]V	Vol[X33]↵	
Example:	45V	45V	Vol45↵	Set the output volume to 45%.
Increment volume	+V	+V	Vol[X33]↵	Increase the volume by one percent.
Decrement volume	-V	-V	Vol[X33]↵	
View volume level	V	V	[X33]↵	

NOTE
[X1] = Input number   1 – 6
[X15] = Blue screen   0 = off   1 = on
[X30] = Gain value   Numeric dB value, 00 through +24
[X31] = Gain or attenuation value   -28 dB through +24 dB, each step = 1.0 dB
[X32] = Attenuation value   Numeric dB value, -01 through -28
[X33] = volume adjustment range   000 through 100 (percent)

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Audio mute				
Audio mute on	[X2]*1Z	[X2]*1Z	Amt[X2]*1↵	Silence the [X2] audio output.
Audio mute off	[X2]*0Z	[X2]*0Z	Amt[X2]*0↵	Enable the [X2] audio output.
View audio mute status	[X2]*Z	[X2]*Z	[X15]↵	Audio mute is [X15] for the [X2] output.
Logo Image Capture				
Select logo capture source				
Capture from program output	34*1#	34*1#	Lcb1↵	Select the program output for logo capture.
Capture from preview output	34*2#	34*2#	Lcb2↵	Select the preview output for logo capture.
View capture source	34#	34#	[X2]↵	
Logo capture window (yellow border)				
Enable window	40*1#	40*1#	Lbr1↵	Turn on logo capture window.
Disable window	40*0#	40*0#	Lbr0↵	Turn off logo capture window.
View logo capture window status	40#	40#	[X15]↵	1 = enabled, 0 = disabled.
Horizontal shift capture logo start				
Set a specific horizontal position	6*[X17]H	6*[X17]H	6Hph[X17]↵ 6Hsz[X16]↵	Specify the horizontal position of the logo. The response shows the size ([X17]) and position ([X16]).
Increment up	6+H	6+H	6Hph[X17]↵ 6Hsz[X16]↵	Shift the logo one pixel to the right.
Decrement down	6-H	6-H	6Hph[X17]↵ 6Hsz[X16]↵	Shift the logo one pixel to the left.
View horizontal position	6H	6H	[X17]↵	View the logo's horizontal setting.
Vertical shift capture logo start				
Set a specific vertical position	6*[X17]/	6*[X17]/	6Vph[X17]↵ 6Vsz[X16]↵	Specify the vertical position of the logo. The response shows the size ([X17]) and position ([X16]).
Increment	6+/	6+/	6Vph[X17]↵ 6Vsz[X16]↵	Shift the logo down one line.
Decrement	6-/	6-/	6Vph[X17]↵ 6Vsz[X16]↵	Shift the logo up one line.
View vertical position	6/	6/	[X17]↵	View the logo's vertical setting.

NOTE
[X2] = Output number	1 = Program	2 = Preview	3 = PIP window 4 = PIP image
[X15] = Mute / yellow border status	0 = off (unmute / border off)	1 = on (audio is muted / border is on)	
[X16] = Size	Up to 4095		
[X17] = Position value	Up to 4095		

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Horizontal logo capture size				
Set a specific horizontal size	6*[X16]:	6*[X16]:	6Hsz[X16]↵	Set the logo's horizontal width to [X16].
Increment horizontal size	6+:	6+:	6Hsz[X16]↵	Make the logo one pixel wider.
Decrement horizontal size	6-:	6-:	6Hsz[X16]↵	Make the logo one pixel narrower.
View the horizontal size value	6:	6:	[X16]↵	Show the horizontal size of the logo.
Vertical logo capture size				
Set a specific vertical size	6*[X16];	6*[X16];	6Vsz[X16]↵	Set the logo's vertical height to [X16].
Increment vertical size	6+;	6+;	6Vsz[X16]↵	Make the logo one pixel taller.
Decrement vertical size	6-;	6-;	6Vsz[X16]↵	Make the logo one pixel shorter.
View the vertical size value	6;	6;	[X16]↵	Show the vertical size of the logo.
Logo window configuration				
NOTE *The variables must be entered, and are returned, in the following order: horizontal position*vertical position*horizontal size*vertical size.*				
Set logo window's size and position	[Esc]7,[X17]*[X17]*[X16]*[X16]XY←	W7,[X17]*[X17]*[X16]*[X16]XY |	7Win[X17]*[X17]*[X16]*[X16]↵	Sets the size and position of the logo window output with a single command.
View logo window's size and position	[Esc]7XY←	W7XY |	[X17]*[X17]*[X16]*[X16]↵	Show the logo window's size and position.
Logo image capture				
Save logo/background	[Esc][X34]MF←	W[X34]MF |	Ims[X34]↵	Save the captured image.
NOTE *Saving a bitmap image can take several of minutes. The ISS is unresponsive to SIS commands and front panel operations while it saves the file. The file name ([X34]) is case sensitive.*				
Image recall				
NOTE *The file name ([X34]) is case sensitive, and must be entered in its exact form. For example, the logo file 01.BMP must include the leading 0 and the file extension (.BMP) must be capitalized.*				
Assign a logo to the Logo 1 buttons	[Esc]1*[X34]RF←	W1[X34]*RF |	Imr1*[X34]↵	Assign logo [X34] to the front panel Program Logo 1 and Preview Logo 1 buttons.
Assign a logo to the Logo 2 buttons	[Esc]2*[X34]RF←	W2[X34]*RF |	Imr2*[X34]↵	Assign logo [X34] to the front panel Program Logo 2 and Preview Logo 2 buttons.
Assign black screen to the Logo 1 buttons	[Esc]1*●RF←	W1●*RF |	Imr1*↵	Assign a black screen to the front panel Program Logo 1 and Preview Logo 1 buttons.

NOTE   [X16] = Size   Up to 4095
[X17] = Position value   Up to 4095
[X34] = Logo file name   *nnn*.bmp (up to 16 alphanumeric characters , which must include ".bmp" file extension). Blank (space bar) = black screen

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Image recall (continued)				
Assign black screen to the Logo 2 buttons	Esc 2*●RF←	W2•*RF |	Imr2*↵	Assign a black screen to the front panel Program Logo 2 and Preview Logo 2 buttons.
View the logo button setting	Esc X35 RF←	W X35 RF |	X34 ↵	
NOTE *If a black fill is assigned to a logo button, X34 is replaced with •.*				
Logo on/off				
Logo on	39* X2 * X35 *1#	39* X2 * X35 *1#	X2 Lbu X35 *1↵	Display logo X35 on the X2 output. The front panel logo button lights.
Example:	39*1*1*1#	39*1*1*1#	1Lbu1*1↵	Display logo 1 on the program output.
Logo off	39* X2 * X35 *0#	39* X2 * X35 *0#	X2 Lbu X35 *0↵	Do not display logo X35 on the X2 output. The front panel logo button goes out.
View logo on/off status	39* X2 * X35 #	39* X2 * X35 #	X15 ↵	
Logo image key type				
Set key type	32* X35 * X36 #	32* X35 * X36 #	Ktp X35 * X36 ↵	Set the key type for the logo assigned to logo button X35 to X36.
View key type	32* X35 #	32* X35 #	X36 ↵	
Logo image color and luma key levels				
NOTE *When the ISS receives three X6 values in the set logo image recall command (35#), it interprets the command as "set color (RGB) level". When the ISS receives only one X6 value, it interprets the command as "set luma level". The ISS always returns all four (luma and RGB) X6 values.*				
Set color key level	35* X35 * X6 * X6 * X6 #	35* X35 * X6 * X6 * X6 #	Klv X35 * X6 * X6 * X6 * X6 ↵	Set the color key level for the logo assigned t o button X35 to X6, X6, and X6 (in RGB order). The X6 response values are in "*luma*red*green*blue* order.
Set luma key level	35* X35 * X6 #	35* X35 * X6 #	Klv X35 * X6 * X6 * X6 * X6 ↵	Set the luma key level for the logo assigned to button X35 to X6. The X6 response values are in "*luma*red*green*blue* order.
View level	35* X35 #	35* X35 #	X6 * X6 * X6 * X6 ↵	The X6 response values are in "*luma*red*green*blue* order.

NOTE   X2 = Output number   1 = Program   2 = Preview   3 = PIP window   4 = PIP image
        X6 = Luma and color key level 000 – 255
        X15 = Logo status   0 = log off   1 = logo on
        X34 = Logo file name   *nnn*.bmp (up to 16 alphanumeric characters , which must include ".bmp" file extension). Blank (space bar) = black screen
        X35 = Logo name   1 or 2
        X36 = Logo recall key type   0 = level   1 = color

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Horizontal shift logo				
Set a specific horizontal position	5*[X35]*[X17]H	5*[X35]*[X17]H	5Hph[X35]*[X17]↵	Specify the horizontal position of logo [X35].
Increment right	5*[X35]+H	5*[X35]+H	5Hph[X35]*[X17]↵	Shift logo [X35] one pixel to the right.
Decrement left	5*[X35]-H	5*[X35]-H	5Hph[X35]*[X17]↵	Shift logo [X35] one pixel to the left.
View horizontal position	5*[X35]H	5*[X35]H	[X17]↵	View logo [X35]'s horizontal setting.
Vertical shift logo				
Set a specific vertical position	5*[X35]*[X17]/	5*[X35]*[X17]/	5Vph[X35]*[X17]↵	Specify the vertical position of logo [X35].
Increment	5*[X35]+/	5*[X35]+/	5Vph[X35]*[X17]↵	Shift logo [X35] down one line.
Decrement	5*[X35]-/	5*[X35]-/	5Vph[X35]*[X17]↵	Shift logo [X35] up one line.
View vertical position	5*[X35]/	5*[X35]/	[X17]↵	View logo [X35]'s vertical setting.
Logo size				
View horizontal size	5*[X35]:	5*[X35]:	5Hsz[X16]↵	View the horizontal width of logo [X35].
View vertical size	5*;[X35]	5*[X35];	5Hsz[X16]↵	View the vertical height of logo [X35].
Picture-in-Picture				
PIP detail filter				

NOTE *The command (D or d) is **not** case sensitive **except** when used in conjunction with the optional scan converter output board. See the Optional Scan converter board commands, on page 4-30.*

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Set detail level	4*[X27]D	4*[X27]D	4Det[X27]↵	Specify the detail level.
Increment detail level	4*+D	4*+D	4Det[X27]↵	Increase the detail level by one step.
Decrement detail level	4*-D	4*-D	4Det[X27]↵	Decrease the detail level by one step.
View detail level	4D	4D	[X27]↵	Show the detail level.
PIP window horizontal shift				
Set a specific horizontal position	3*[X17]H	3*[X17]H	3Hph[X17]↵	Specify the horizontal position of the PIP window.
Increment right	3+H	3+H	3Hph[X17]↵	Shift the PIP window one pixel to the right.
Decrement left	3-H	3-H	3Hph[X17]↵	Shift the PIP window one pixel to the left.
View horizontal position	3H	3H	[X17]↵	View the PIP window's position setting.

NOTE
[X16] = Size   Up to 4095
[X17] = Position value   Up to 4095
[X27] = Picture adjustments   000 – 127
    (color, tint, brightness, detail)
[X35] = Logo name   1 or 2

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
PIP window vertical shift				
Set a specific vertical position	3*[X17]/	3*[X17]/	3Vph[X17]↵	Specify the vertical position of the PIP window.
Increment	3+/	3+/	3Vph[X17]↵	Shift the PIP window down one line.
Decrement	3-/	3-/	3Vph[X17]↵	Shift the PIP window up one line.
View vertical position	3/	3/	[X17]↵	View the PIP window's position setting.
PIP window horizontal size				
Set a specific horizontal size	3*[X16]:	3*[X16]:	3Hsz[X16]↵	Set the PIP window's horizontal width to [X16].
Increment horizontal size	3+:	3+:	3Hsz[X16]↵	Make the PIP window one pixel wider.
Decrement horizontal size	3-:	3-:	3Hsz[X16]↵	Make the PIP window one pixel narrower.
View the horizontal size value	3:	3:	[X16]↵	Show the horizontal size of the PIP window.
PIP window vertical size				
Set a specific vertical size	3*[X16];	3*[X16];	3Vsz[X16]↵	Set the PIP window's vertical height to [X16].
Increment vertical size	3+;	3+;	3Vsz[X16]↵	Make the PIP window one pixel taller.
Decrement vertical size	3-;	3-;	3Vsz[X16]↵	Make the PIP window one pixel shorter.
View the vertical size value	3;	3;	[X16]↵	Show the vertical size of the PIP window.
PIP image horizontal shift				
Set a specific horizontal position	4*[X17]H	4*[X17]H	4Hph[X17]↵	Specify the horizontal position of the PIP image within the window.
Increment	4+H	4+H	4Hph[X17]↵	Shift the PIP image down one line.
Decrement	4-H	4-H	4Hph[X17]↵	Shift the PIP image up one line.
View horizontal position	4H	4H	[X17]↵	View the PIP image's position setting.
PIP image vertical shift				
Set a specific vertical position	4*[X17]/	4*[X17]/	4Vph[X17]↵	Specify the vertical position of the PIP image within the window.
Increment	4+/	4+/	4Vph[X17]↵	Shift the PIP image down one line.
Decrement	4-/	4-/	4Vph[X17]↵	Shift the PIP image up one line.
View vertical position	4/	4/	[X17]↵	View the PIP image's position setting.

NOTE [X16] = Size   Up to 4095
[X17] = Position value   Up to 4095

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
PIP image horizontal size				
Set a specific horizontal size	4*[X16]:	4*[X16]:	4Hsz[X16]↵	Set the PIP image's horizontal size to [X16].
Increment horizontal size	4+:	4+:	4Hsz[X16]↵	Make the PIP image one pixel wider.
Decrement horizontal size	4-:	4-:	4Hsz[X16]↵	Make the PIP image one pixel narrower.
View the horizontal size value	4:	4:	[X16]↵	Show the horizontal size of the PIP image.
PIP image vertical size				
Set a specific vertical size	4*[X16];	4*[X16];	4Vsz[X16]↵	Set the PIP image's vertical size to [X16].
Increment vertical size	4+;	4+;	4Vsz[X16]↵	Make the PIP image one pixel taller.
Decrement vertical size	4-;	4-;	4Vsz[X16]↵	Make the PIP image one pixel shorter.
View the vertical size value	4;	4;	[X16]↵	Show the vertical size of the PIP image.
Zoom PIP window				
NOTE *For all Zoom PIP window (3{) commands, the returned value is stated as* horizontal size * vertical size.				
Zoom in	3+{	3+{	3Zom[X16]*[X16]↵	Zoom in (make the PIP window larger, while maintaining the aspect ratio).
Zoom out	3-{	3-{	3Zom[X16]*[X16]↵	Zoom out (make the PIP window smaller, while maintaining the aspect ratio).
View zoom values	3{	3{	[X16]*[X16]↵	
Zoom PIP image				
NOTE *For all Zoom PIP image (4{) commands, the returned value is stated as* horizontal size * vertical size.				
Zoom in	4+{	4+{	4Zom[X16]*[X16]↵	Zoom in (make the PIP image larger within the window, while maintaining the aspect ratio).
Zoom out	4-{	4-{	4Zom[X16]*[X16]↵	Zoom out (make the PIP image smaller within the window, while maintaining the aspect ratio).
View zoom values	4{	4{	[X16]*[X16]↵	
PIP audio follow				
Set PIP audio follow	19*[X37]#	19*[X37]#	Ald[X37]↵	Select PIP audio follow target.
View PIP audio follow setting	19#	19#	[X37]↵	View PIP audio follow target.
PIP border color				
Set PIP border color	9*[X38]#	9*[X38]#	Pbr[X38]↵	Select PIP border color.
View PIP border color	9#	9#	[X38]↵	

NOTE [X16] = Size   Up to 4095
      [X37] = PIP audio setting   1 = follow main window   2 = follow PIP window
      [X38] = Border color   0 = none   1 = red   2 = green   3 = blue   4 = white
                                   5 = magenta   6 = cyan   7 = yellow   8 = black

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
PIP window configuration				
NOTE *The variables must be entered, and are returned, in the following order: horizontal position*vertical position*horizontal size*vertical size.*				
Set PIP window's size and position	[Esc]3,[X17]*[X17]*[X16]*[X16]XY←			Set the size and position of the PIP window output with a single command.
		W3,[X17]*[X17]*[X16]*[X16]XY |		
			3Win[X17]*[X17]*[X16]*[X16]←	
View PIP window's size and position	[Esc]3XY←	W3XY |	[X17]*[X17]*[X16]*[X16]←	Show the PIP window's size and position.
PIP image configuration				
NOTE *The variables must be entered, and are returned, in the following order: horizontal position*vertical position*horizontal size*vertical size.*				
Set PIP image's size and position	[Esc]4,[X17]*[X17]*[X16]*[X16]XY←			Set the size and position of the PIP image output with a single command.
		W4,[X17]*[X17]*[X16]*[X16]XY |		
			4Win[X17]*[X17]*[X16]*[X16]←	
View PIP image's size and position	[Esc]4XY←	W4XY |	[X17]*[X17]*[X16]*[X16]←	Show the PIP image's size and position.
Optional Scan converter board				
Output format				
Set scan converter output format	36*[X39]#		Tpo[X39]←	Set the output format for the optional scan converter.
View scan converter output format	36#		[X39]←	View the scan converter output format.
Output standard				
Set scan converter output standard	37*[X40]#		Std[X40]←	Set the output standard for the optional scan converter.
View scan converter output standard	37#		[X40]←	View the scan converter output standard.
Horizontal position				
Specify horizontal position	7*[X17]H	7*[X17]H	7Hph[X17]←	Specify the horizontal position of the scan converted output.
Increment right	7+H	7+H	7Hph[X17]←	Move the scan converted output one pixel right.
Increment left	7-H	7-H	7Hph[X17]←	Move the scan converted output one pixel left.
View the horizontal position	7H	7H	[X17]←	Show the horizontal position of the first pixel.

NOTE [X16] = Size — Up to 4095
[X17] = Position value — Up to 4095
[X39] = Scan converter board type — 0 = composite/S-video — 1 = YUV — 2 = RGsB
[X40] = Scan converted output type — 0 = NTSC — 1 = PAL

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Vertical position				
Specify a vertical position	7*X17/	7*X17/	7VphX17⏎	Specify the vertical position of the scan converted output.
Increment up	7+/	7*/	7VphX17⏎	Move the scan converted output up one pixel.
Increment down	7-/	7-/	7VphX17⏎	Move the scan converted output down one pixel.
View the vertical position	7/	7/	X17⏎	Show the vertical position of the first line.
Horizontal size				
Set a specific horizontal size	7*X16:	7*X16:	7HszX16⏎	Set the scan converted output's horizontal size to X16.
Increment horizontal size	7+:	7+:	7HszX16⏎	Make the scan converted output one pixel wider.
Decrement horizontal size	7-:	7-:	7HszX16⏎	Make the scan converted output one pixel narrower.
View the horizontal size value	7:	7:	X16⏎	Show the horizontal size of the scan converted output.
Vertical size				
Set a specific vertical size	7*X16;	7*X16;	7VszX16⏎	Set the scan converted output's vertical size to X16.
Increment vertical size	7+;	7+;	7VszX16⏎	Make the scan converted output one pixel taller.
Decrement vertical size	7-;	7-;	7VszX16⏎	Make the scan converted output one pixel shorter.
View the vertical size value	7;	7;	X16⏎	Show the vertical size of the scan converted output.
Scan converter horizontal filter **NOTE** *The command (D) is **case sensitive**.*				
Set detail level	7*X41D	7*X41D	7DhzX41⏎	Specify the horizontal detail level.
Increment detail level	7*+D	7*+D	7DhzX41⏎	Increase horizontal detail level by one step.
Decrement detail level	7*-D	7*-D	7DhzX41⏎	Decrease horizontal detail level by one step.
View detail level	7D	7D	X41⏎	Show the horizontal detail level.

NOTE   X16 = Size   Up to 4095
                X17 = Position value   Up to 4095
                X41 = Scan converter horzontal filter / flicker filter value   0 – 3

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Scan converter flicker filter				
NOTE *The command (d) is* ***case sensitive***.				
Set flicker filter level	7*X41d	7*X41d	7DvzX41↵	Specify the flicker filter level.
Increment flicker filter level	7+d	7+d	7DvzX41↵	Increase flicker filter level by one step.
Decrement flicker filter level	7-d	7-d	7DvzX41↵	Decrease flicker filter level by one step.
View flicker filter level	7d	7d	X41↵	Show the flicker filter level.
Scan converter encoder filter				
Set encoder filter level	24*X42#	24*X42#	EncX42↵	Specify the encoder filter level.
View encoder filter level	24#	24#	X42↵	Show the encoder filter level.
Miscellaneous Commands				
Front panel security lockout (executive mode)				
Enable a front panel lock mode	X45X	X45X	ExeX45↵	
Unlock front panel	0X	0X	Exe0↵	
View front panel lock	X	X	X45↵	

NOTE X41 = Scan converter horzontal filter / flicker filter value   0 – 3
X42 = Scan converter encoder filter   0 – 3
X45 = Lockout mode   0 = unlocked   1 = Program lock   2 = Switch free lock   3 = Volume free lock   4 = Complete lock

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Information requests				
Request product name	I	I	Integration Seamless Switcher↵	
	1I	1I	ISS 506 Series↵	
General information	X2*0I	X2*0I		
			VidX1•AudX1•TypX10•StdX43•BlkX15•HrtX44•VrtX44•PreX15 X15 X15•ExeX45↵	
Response description:	VidX1 •Aud X1 = input selected. TypX10 = input video format. StdX43 = detected input video standard. BlkX15 = video mute status. HrtX44•VrtX44 = input resolution. PreX15 X15 X15 = saved (1) or not saved (0) status of the three user presets. ExeX45 = the lock status.			
Example:	1*0I	1*0I	Vid1•Aud1•Typ7•Std1•Blk0•Hrt015.7•Vrt059.8•Pre000•Exe0↵	
				Input 1 video and audio are selected for the program output. The video input is NTSC 3.58 S-video. The output is unmuted. The resolution is 15.7 kHz x 59.8 Hz. No presets are saved and the front panel is unlocked.
Controller firmware version	Q	Q	X46↵	
Example:	Q	Q	1.23	Firmware version is 1.23 (sample value only).
Query software version (verbose)	0Q	0Q	X46 - X46 - X46↵	Provide a detailed status of the Ethernet protocol firmware, the ISS 506 controller firmware, and any firmware upgrade. The firmware that is running is marked by asterisk (*). A caret (^) indicates that the firmware has a bad checksum or an invalid load. ?.?? indicates that firmware is not loaded.
Response description: Ethernet protocol firmware version - controller firmware version - updated firmware version				
Example:	0Q	0Q		

Description   * indicates the version running   Upload date and time

Response: 1.23-1.00(1.34-ISS_506   -Tue, 12 Dec 2006 00:00:00 GMT)-1.00*(1.43-ISS_506   -Sat, 20 Jan 2006 16:39:21 GMT)↵

Ethernet protocol firmware   ISS 506 firmware version   Updated firmware version

NOTE X1 = Input number   1 – 6

X2 = Output   1 = Program   2 = Preview   3 = PIP window   4 = PIP image

X10 = Video type (see page 4-5).

X15 = Mute / Preset status   0 = off (video unmuted)/ not saved   1 = on (video muted) / saved

X43 = Detected input standard   0 = none   1 = NTSC 3.58   2 = PAL   3 = NTSC 4.43   4 = SECAM

NOTE *Dash (–) = not applicable (occurs when the input is set for RGB or progressive YUV).*

X44 = Frequency   *nnn.nn* (kHz [horizontal] or Hz [vertical])

X45 = Lockout mode   0 = unlocked   1 = Program lock   2 = Switch free lock   3 = Volume free lock   4 = Complete lock

X46 = Firmware version   *n.nn*

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Information requests (continued)				
Query part number	N	N	60-742-*xx*⏎	See appendix B for part numbers.
View internal temperature	20S	20S	X47 ⏎	Display temperature in degrees Fahrenheit.
File directory				
NOTE *The response to the ViewFile Directory command differs, depending on whether the command is sent via an RS-232/RS-422 or a Telnet connection or is sent via a Web browser connection.*				
View file directory RS-232/RS-422 port and Telnet	Esc DF ←		*filename*1,*date/time,length*⏎ *filename*2,*date/time,length*⏎ *filename*3,*date/time,length*⏎ • • • • *filename*n,*date/time,length*⏎ # of Bytes•Left⏎⏎	List user-supplied files.
View file directory Web browser	Esc DF ←		Var file = new array (); File [1] = '*filename*1,*date*1,*filesize*1'; File [2] = '*filename*2,*date*2,*filesize*2'; • • • • File [*n*] = '*filename*n,*date*n,*filesize*n'; File [*n+1*] = # of Bytes•Left	List user-supplied files.
Erase user-supplied Web pages/files	Esc *filename*EF ←		Del*filename*⏎	
Resets				
Reset all audio adjustments	Esc ZA ←	WZA |	Zpa⏎	
Reset all ISS settings to factory defaults	Esc ZXXX ←	WZXXX |	Zpx⏎	
NOTE *The reset all command (Esc ZXXX ←) can take a few seconds.*				
Absolute reset	Esc ZQQQ ←	WZQQQ |	Zpq⏎	Same as reset all (Esc ZXXX ←), plus reset the IP address to 192.168.254.254 and delete user and administrator passwords.

NOTE   X47 = Degrees Celsius   1 – 6
        X45 = Lockout mode   0 = unlocked   1 = Program lock   2 = Switch free lock   3 = Volume free lock   4 = Complete lock

Command/Response Table for IP SIS Commands

Symbol definitions

X70 = Switcher name		(Up to 240 alphanumeric characters)

NOTE *The following characters are invalid in the name: {space} ~ , _ @ = ` [ ] { } < > ' " ; : | \ and ?.*

X71 = Default name   ISS-506-Series- + last 3 pairs of the MAC address

X72 = Time and date (for set)   In the format: MM/DD/YY•HH:MM:SS *where*:
MM = month: 01 (January) through 12 (December)
DD = 01 through 31
YY = 00 through 99
HH = 00 through 24
MM = 00 through 59
SS = 00 through 59

X73 = Time and date (for read)   In the format: Day,•DD•Mmm•YYYY•HH:MM:SS *where*:
Day = weekday: Mon through Sun
DD = 01 through 31
Mmm = month: Jan through Dec
YYYY = 2000 through 2099
HH = 00 through 24
MM = 00 through 59
SS = 00 through 59

X74 = GMT offset   –12.0 through +14.0. Hours and minutes removed from GMT

X75 = Daylight Savings Time   0 = Daylight Savings Time off/ignore
1 = Daylight Savings Time on (northern hemisphere)
2 = Daylight Savings Time on (Europe)
3 = Daylight Savings Time on (Brazil)

X76 = IP address   ###.###.###.###

X77 = Hardware (MAC) address   ##-##-##-##-##-##

X78 = Number of open connections   0 - 255

X79 = Password   12 alphanumeric characters

NOTE *The following characters are invalid in passwords: {space} + ~ , @ = ` [ ] { } < > ' " ; : | \ and ?.*

X80 = Domain name   Standard domain name rules apply (for example: *nnnnn@xxx.com*)

NOTE *The following characters are invalid in a domain name: {space} + ~ , = ` [ ] { } < > ' " ; : | \ and ?. The @ character is only acceptable as the lead-in to the domain name (such as @extron.com).*

X81 = E-mail account   65 - 72. 65 = e-mail recipient 1, 66 = 2, 67 = 3, ... 72 = recipient #8

X82 = E-mail address   Typical e-mail address format (for example: *nnnn@xxx.com*)

X83 = Notify when?	0 = no response	2 = fixed/restored
	1 = fail/missing	3 = both 1 & 2

X84 = Notification selections   01 through 12 = input 1 through input 12
13 through 16 = not used
17 = power supply

X85 = Notify status (for read)   17-digit number. For each digit: 0 = do not notify, 1 = notify

X86 = DHCP   0 = off, 1 = on

X87 = Port #   00 through 99 (00 = all ports)

X88 = Baud rate   9600, 19200, 38400, 115200

X89 = Parity   **o**dd, **e**ven, **n**one, **m**ark, **s**pace (only first letter required)

X90 = Data bits   7, 8

X91 = Stop bits   1, 2

X92 = Port type	0 = RS-232	1 = RS-422

X93 = Verbose mode   0 = clear/none (default for Telnet connection)
1 = verbose mode (default for RS-232/RS-422 connection)
2 = tagged responses for queries
3 = verbose mode and tagged for queries

NOTE *If tagged responses is enabled, all read commands return the constant string and the value as the set command does (for example, the read matrix name command* **Esc** *CN◄─, returns Ipn•* **X70** *◄┘).*

X94 = RAM status   0 = RAM dirty (needs saving to flash)
1 = RAM has been saved (ok to power off/reset)

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Interface ports configuration				
Set switcher name	Esc [X70]CN ←	W[X70]CN |	Ipn•[X70] ↵	
Read switcher name	Esc CN ←	WCN |	[X70] ↵	
Reset switcher name to factory default	Esc •CN ←	W•CN |	Ipn•[X70] ↵	
Set time and date	Esc [X72]CT ←	W[X72]CT |	Ipt[X72] ↵	
Read time and date	Esc CT ←	WCT |	[X73] ↵	
Set GMT offset	Esc [X74]CZ ←	W[X74]CZ |	Ipz[X74] ↵	
View GMT offset	Esc CZ ←	WCZ |	[X74] ↵	
Set Daylight Savings Time	Esc [X75]CX ←	W[X75]CX |	Ipx[X75] ↵	
Read Daylight Savings Time	Esc CX ←	WCX |	[X75] ↵	
Set IP address	Esc [X76]CI ←	W[X76]CI |	Ipi[X76] ↵	
Read IP address	Esc CI ←	WCI |	[X76] ↵	
Read hardware address	Esc CH ←	WCH |	[X77] ↵	
Read # of open connections	Esc CC ←	WCC |	[X78] ↵	
Set subnet mask	Esc [X76]CS ←	W[X76]CS |	Ips[X76] ↵	
Read subnet mask	Esc CS ←	WCS |	[X76] ↵	
Set gateway IP address	Esc [X76]CG ←	W[X76]CG |	Ipg[X76] ↵	
Read gateway IP address	Esc CG ←	WCG |	[X76] ↵	
Set administrator password	Esc [X79]CA ←	W[X79]CA |	Ipa•[X79] ↵	
Read administrator password	Esc CA ←	WCA |	[X79] ↵	
Reset (clear) administrator password	Esc •CA ←	W•CA |	Ipa• ↵	
Set user password	Esc [X79]CU ←	W[X79]CU |	Ipu•[X79] ↵	
Read user password	Esc CU ←	WCU |	[X79] ↵	
Reset (clear) user password	Esc •CU ←	W•CU |	Ipu• ↵	
Set mail server, domainname	Esc [X76],[X80],[X79]CM ←			
		W[X76],[X80],[X79]CM |	Ipm[X76],[X80],[X79] ↵	
Read mail server, domainname	Esc CM ←	WCM |	[X76],[X80],[X79] ↵	
Set e-mail recipient	Esc [X81],[X82]CR ←	W[X81],[X82]CR |	Ipr[X81],[X82], ↵	This command sets the recipient. To receive e-mail notifications, you must then set the events that the switcher reports, using one or more separate *Set e-mail events (EM)* commands (see next page).
Example:	Esc 72,Jsmith@folklore.netCR ←		Ipr72,Jsmith@folklore.net,]	
		W72,Jsmith@folklore.netCR |		

Command/response table for SIS commands (continued)

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Read e-mail recipient	`Esc` `X81` CR ←	W `X81` CR |	`X82` , ←	You must first have set an e-mail recipient for the e-mail account number (`X81`), using the separate Set e-mail recipient (CR) command.
Set e-mail events for recipient	`Esc` `X81` , `X83` , `X84` , `X84` , ... `X84` Em ←	W `X81` , `X83` , `X84` , `X84` , ... `X84` Em |		
			`X83` , `X84` ←	
Example:	`Esc` 72,3,1,2,8,17EM ←		See below	E-mail account #72, JSmith, will receive fail/missing and fixed/restored messages for inputs signals 1, 2, and 8 and the power supply.
Response description	*Notify when?, inputs 1 - 16 (13 through 16 not present on this model) PS* ←			

Notify failed and fixed   E-mail input 8 status

Response: 3, 1 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 ←

Input: 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 16 Power Supply

Inputs not present

Command	ASCII (Telnet) (host to switcher)	URL Encoded (Web) (host to switcher)	Response (switcher to host)	Additional description
Read e-mail events for recipients	`Esc` 72EM ←	W72EM |	`X84` ←	
Set DHCP on or off	`Esc` `X86` DH ←	W `X86` DH |	Idh `X86` ←	
Read DHCP on/off status	`Esc` DH ←	WDH |	`X86` ←	
Read parameters	`Esc` `X87` CP ←	W `X87` CP |	`X88` , `X89` , `X90` , `X91` ←	
Set mode	`Esc` `X87` * `X92` CY ←	W `X87` * `X92` CY |	Cpn `X87` •Cty `X92` ←	
Read mode	`Esc` `X87` CY ←	W `X87` CY |	`X92` ←	
Set verbose mode	`Esc` `X93` CV ←	W `X93` CV |	Vrb `X93` ←	
Read verbose mode	`Esc` CV ←	WCV |	`X93` ←	
Commit RAM to flash memory	`Esc` 1FF ←	W1FF |	Nvr `X94` ←	
Check RAM	`Esc` FF ←	WFF |	`X94` ←	

SIS Programming and Control, cont'd

Special Characters

The HTML language reserves certain characters for specific functions. The switcher does not accept these characters as part of preset names, the switcher's name, passwords, or locally created file names.

The switcher rejects the following characters:
{space (spaces **are** accepted in names)} + ~ , @ = ' [ ] { } < > ' " ; (semicolon) : (colon) | \ and ?.

Chapter Five

Switcher Software

ISS 506 Control Program

Button Label Generator

Special Characters

Switcher Software

ISS 506 Control Program

The Windows-based Extron ISS 506 Control Program, which communicates with the switcher via the RS-232/RS-422 port, the Configuration port, and the LAN port, provides an easy way to configure and operate the ISS 506 Integration Seamless Switcher. The program is compatible with Windows 2000 and Windows XP. Updates to this program can be downloaded from the Extron Web site (www.extron.com).

Installing the software

The program is contained on the Extron Software Products disk. Install the software as follows:

NOTE *For full functionality, download and install all of the following programs:*

  - *The ISS 506 Control Program*

  - *The Firmware Loader*

  - *The IP Link File Manager*

1. Insert the disk into the drive. The installation program should start automatically. If it does not self-start, run `Launch.exe` from the disk.

The Extron software diskwindow appears (figure 5-1).
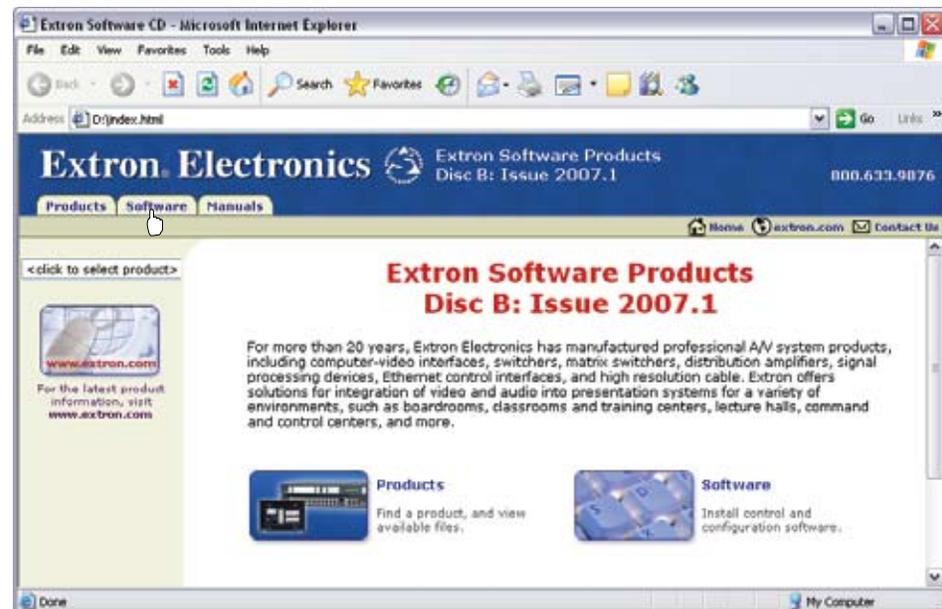
Figure 5-1 — Software disk window

2. Click the **Software** tab (figure 5-1).

3. Scroll to the desired program and click Install (figure 5-2).
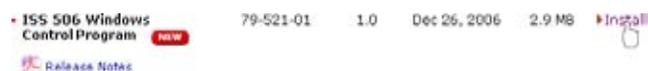
Figure 5-2 — Software installation

4. Follow the on-screen instructions. By default, the Windows installation of the Matrix Switchers Control Program creates a C:\Program Files\ Extron\ ISS506, and it places four icons into a group folder named "Extron Electronics\Matrix Switchers." The four installed icons are:

- ISS 506 Control Pgm

- Uninstall ISS 506

- Check for ISS Updates

- ISS 506 Help

NOTE *The ISS 506 can support remote control via the front panel Configuration port, the rear panel RS-232/RS-422 port, and/or the LAN port. For serial port control, the program can operate at 9600, 19200, 38400, and 115200 baud rates. See "View and Edit Communications Settings menu" in chapter 3, "Operation", to configure the rear panel RS-232/RS-422 port and LAN port from the front panel.*

Software operation via Ethernet

When an ISS 506 is connected to an Ethernet WAN or LAN, any number of users can operate it, locally or remotely, using the ISS 506 Control Program. See "Ethernet connection" in chapter 2, "Installation", for installation details.

Connection to the switcher via the Ethernet is password protected. There are two levels of password protection: administrator and user. Administrators have full access to all ISS 506 switching capabilities and editing functions. Users can select inputs and outputs, set and recall presets, and view all settings with the exception of passwords. If the same password or no password is required for logging on, all personnel log on with administrator privileges. Fields and functions that exceed user privileges are unavailable in the ISS 506 Control Program when the operator is logged on as a user.

Ethernet protocol settings

The ISS 506 System Settings IP tab screen (figure 5-15 on page 5-13) provides a location for viewing and, if it is connected via the RS-232 link or if you are logged on via the LAN port as an administrator, editing settings unique to the Ethernet interface. See "System Settings IP settings window", later in this chapter, for more details. See "System Settings Passwords window" to set passwords.

Switcher Software, cont'd

Using the software

Many items found in the ISS 506 Control Program are also accessible via front panel controls (see chapter 3, "Operation") and under SIS control (see chapter 4, "SIS Programming and Control"). The ISS 506 Help Program provides information on settings and on how to use the control program itself. Use the software as follow:

1. To run the ISS 506 Control Program, select **Start** > **Programs** > **Extron Electronics** > **ISS 506** > **ISS 506 Control Pgm**.

    Either of the Communication Type Selection windows (figure 5-3) appears.
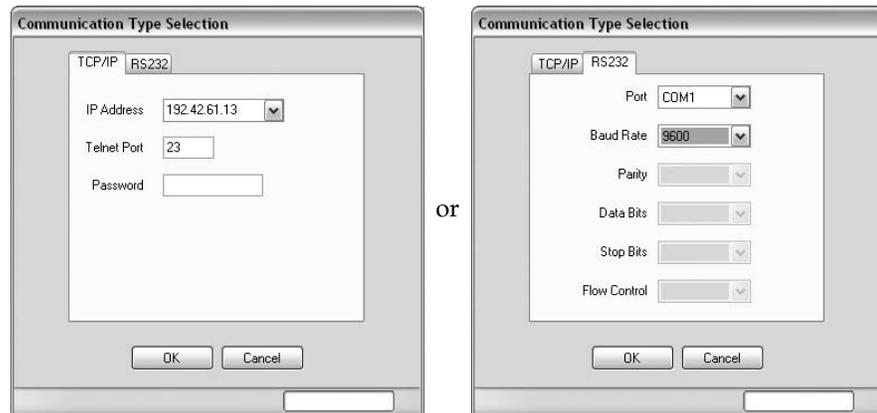
Figure 5-3 — Comm port selection windows

2. If necessary, click either the:

    *   **TCP/IP tab** (for connection via the LAN port — proceed to step **3**), **or**

    *   **RS-232 tab** (for connection via the rear panel RS-232/422 port or front panel Configuration port — proceed to step **4**).

3. **If you selected TCP/IP in step 2**:

    a. Observe the Extron IP Address field in the IP Connection window. The field displays the last Extron IP address entered.

    If the IP Address field is correct: Proceed to step **3b**.

    If the address is not correct: Either click in the IP Address field and enter the IP address or click on the scroll down button (⌄) and select from among the recently used addresses. Proceed to step **3b**.

    NOTE *If the local system administrators have not changed the value, the factory-specified default, 192.168.254.254, is the correct value for this field.*

    b. If the switcher is password protected, click in the Password field and enter the enter the appropriate administrator or user password.

    c. Click **Ok**.

    If you logged on using the administrator password, the Windows program connects you to the ISS 506 switcher with all of the administrator rights and privileges.

    If you logged on using the user password, the Windows program connects you to the ISS 506 switcher with only user capabilities.

    If a password was required and not entered or if an incorrect password was entered, the program prompts for the password.

When the program starts satisfactorily, the Extron ISS 506 Control Program Control window (figure 5-4) appears.

Password Required

Enter Password

| |

[Ok] [Cancel]

4. **If you selected RS-232 in step 2**, click the Port drop box and select the comm port that is connected to the ISS 506 switcher's front panel Configuration port or rear panel RS-232/RS-422 port.

   a. Check the baud rate displayed in the comm port selection window. If you need to change the baud rate, click on the Baud button and double-click on the desired baud rate.

Baud Rate | 9600 |

9600
19200
38400
115200

     Available rates are 9600, 19200, 38400, and 115200. The default is 9600.

   b. Click **Ok**.

The Extron ISS 506 Control Program Control window (figure 5-4) appears.

Control window

Extron ISS 506 Control Program Control window (figure 5-4) emulates the front panel of the ISS and displays the current input selections and other settings available through the menu system. See chapter 3, "Operations" for description of these settings. Additional functions (audio breakaway and output mutes) are not available from the front panel.
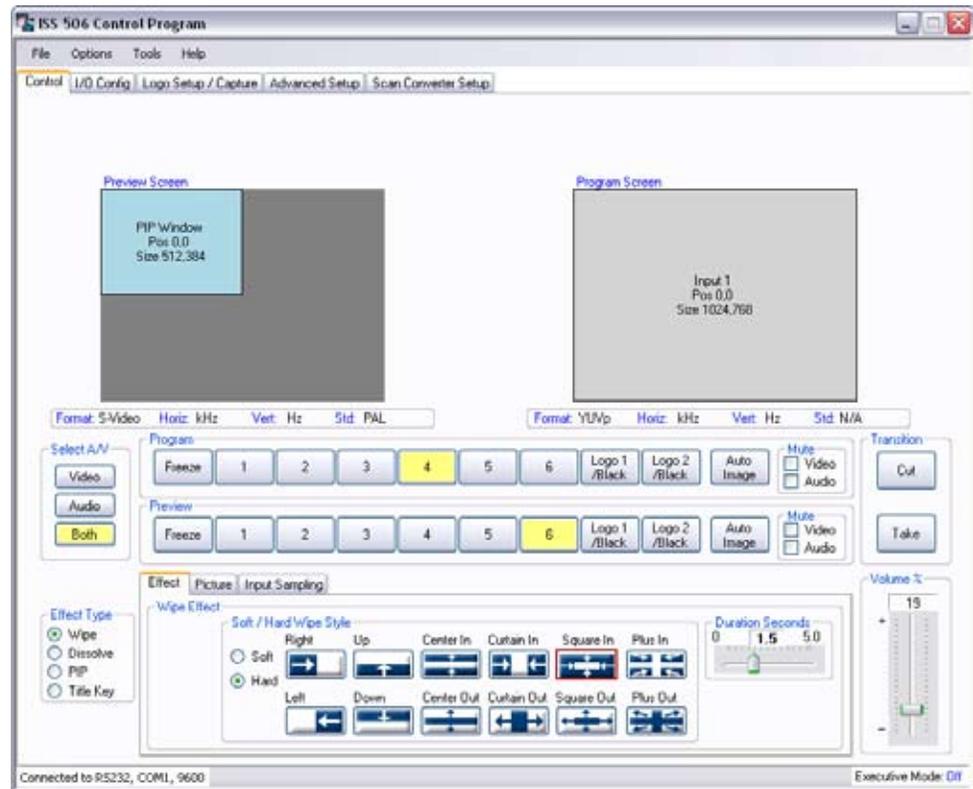
Figure 5-4 — Extron ISS 506 Control Program window

- • The Program and Preview Freeze, input selection, and Logo/Black buttons work exactly as similar buttons on the front panel.

  - ❍ For audio breakaway switching (audio or video switched separately from each other), click the desired Select A/V button (Video, Audio, or Both).

- • The Auto Image buttons perform the same function as selecting the Auto Image function in the menu system.

- • The Effect Type radio buttons work the same way as the Effects buttons on the front panel.

- • The Wipe Effect selections work similarly to wipe effect selections made through the menu system, and these selections differ depending on the Effect Type radio button that was selected (figure 5-5).
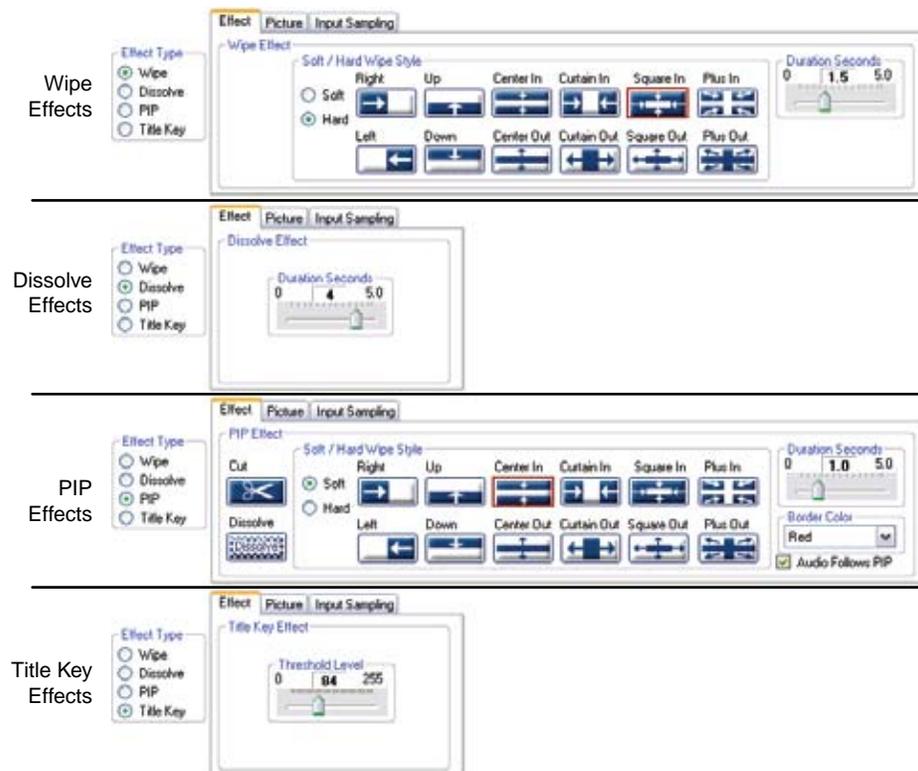
Figure 5-5 — Effects selections

- The Picture radio button selects picture control adjustments that provide the same functions as the Picture Adjustment buttons on the front panel (figure 5-6). See chapter 3, "Operations" for more information about these settings.

Picture
Controls

Input
Sampling

Figure 5-6 — Picture control and Input Sampling buttons

- The Input Sampling radio buttons (figure 5-6) select input sampling controls that provide the same functions as the Input Configuration menu. See chapter 3, "Operations" for more information about these settings.

- The Cut and Take buttons work exactly as similar buttons on the front panel. See chapter 3, "Operations" for more information about Cut and Take.

- Mute the preview or program video or audio output by clicking in the Video Mute or Audio Mute check box.

- The Duration Seconds slider (figure 5-5) works similarly to the Duration selection made through the menus system.

- The Volume % fader works similarly to the Volume knob on the front panel.

I/O Configuration window

The I/O Configuration window (figure 5-7) provides a location for viewing and changing input and output configuration settings. The input configuration settings work similar to selections made on the front panel via the Input Configuration menu. The output configuration settings work similar to selection made via the Output Configuration menu. See chapter 3, "Operations" for more information about these settings.
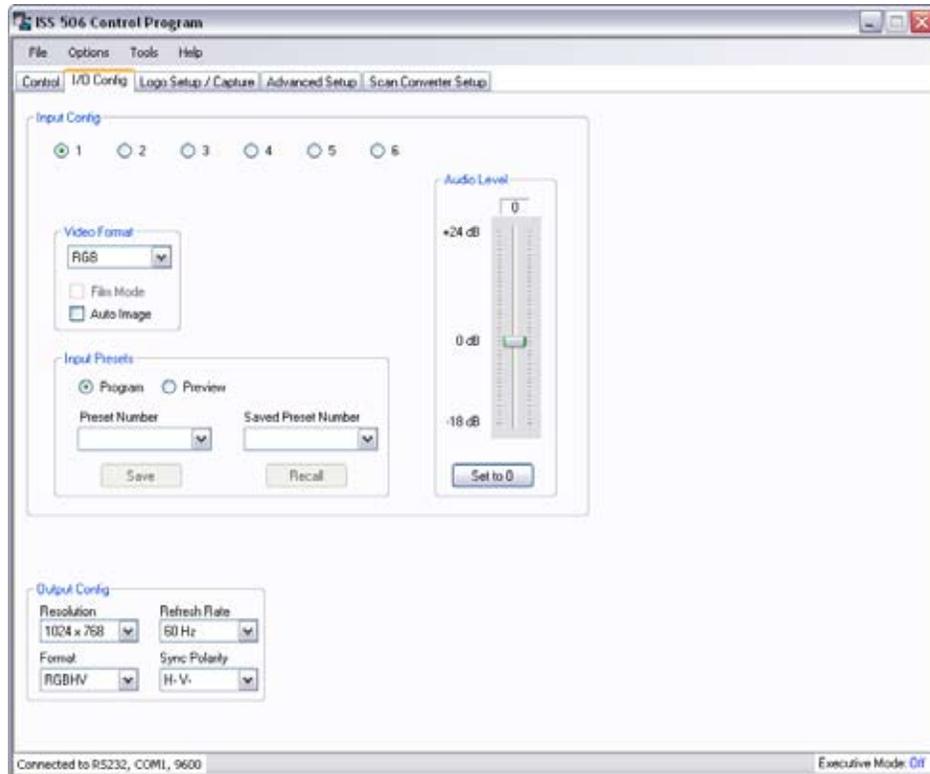
Figure 5-7 — I/O Configuration window

Logo Setup/Capture window

The Logo Setup/Capture window (figure 5-8) consists of two areas: the logo capture area (on the right) and the logo setup area (on the left). See chapter 3, "Operation".

Logo Setup Area   Logo Capture Area
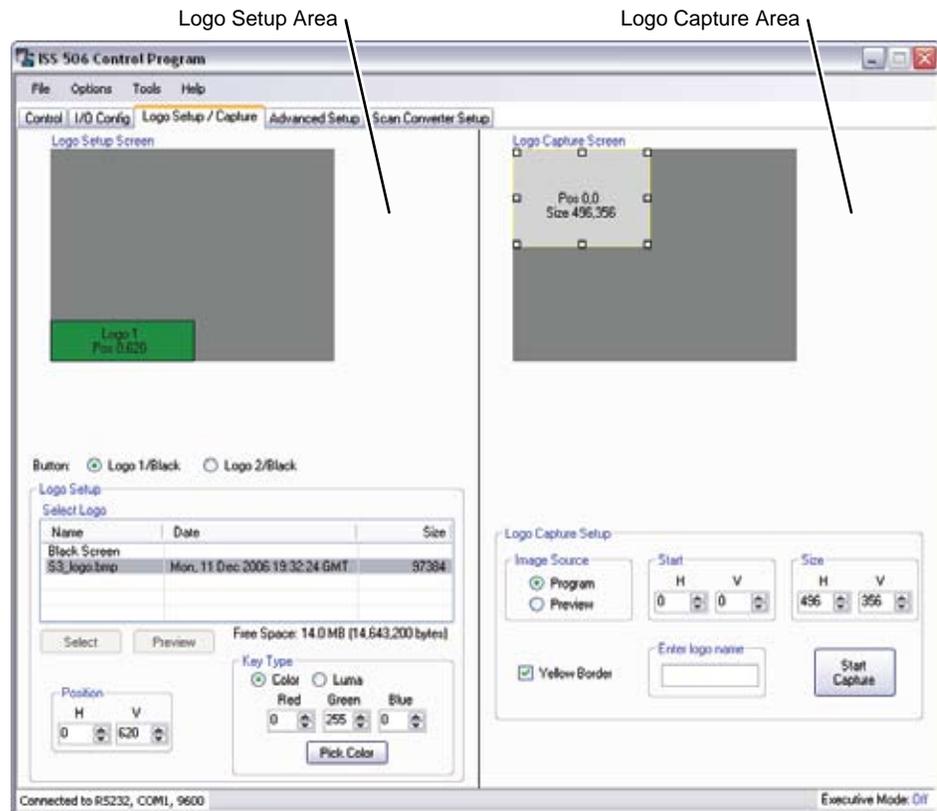
Figure 5-8 — Logo Setup/Capture window

Capturing a logo

Capture a logo as follows:

NOTE   *For best results, freeze the input with the image that you want to capture.*

1. Click the appropriate Image Source Radio button in the Logo Capture area to select the source (preview output or program output) that has the image that you want to capture.

2. If necessary, click (select) the Yellow Border checkbox to display yellow crop marks on the display with the desired image:

3. Watch the display with the desired image. On the logo capture area:

    a. Click and drag the center of the selection window to center the window over the image.

    b. Click and drag the anchor points (□) of the selection window to crop the image you want to save as a logo.

4. Click in the Enter logo name field, type in a name for you logo, and click the Start Capture button. The program displays a window that shows the progress of the capture (figure 5-9). Depending on the size of the logo, this can take a few minutes.

Figure 5-9 — Capturing Logo window

> **NOTE** *The program does not allow you to enter a dot (period) and automatically assigns the *.bmp extension.*

5. If necessary, click (deselect) the Yellow Border checkbox to turn off the crop marks:

Recalling and configuring a logo

Recall and configure a logo as follows:

1. Click the appropriate Logo radio button in the Logo Setup area to select a logo to which to assign the image.

2. Click on the desired image's file name in the Select Logo field. Click the Select Logo button to load the image to the Logo button. The program displays a window that shows the progress of the selection (figure 5-10). Depending on the size of the logo, this can take a few minutes.

Figure 5-10 — Selecting Logo window

When the selection is complete:

•   The image assigned to the logo button is shown in blue in the Select Logo field.

•   The logo is displayed on the selected output.

•   The Logo Setup Screen shows the logo's relative size and location (the logo is in green).

3. Click and drag the center of the logo in the Logo Setup Screen to center the position the logo as desired.

4. Click the desired method (Color or Luma) for keying out the unwanted material from the logo in the Key Type field.

5. Watch the logo on the connected output device while you click the up arrows (▲) and down arrows (▼) in the Key Type field to key out unwanted material, such as the background, from the logo.

NOTE *As a simpler alternative, if you selected the Key Type Color radio button, you can click the Pick Color button. The program pops up a window containing the logo and a color picker cursor (figure 5-11).*

Click the color picker cursor on the area that has the color that you want to key out. The ISS 506 Control Program automatically sets the R, G, and B values for the key color to match the selection.

Color Picker Cursor
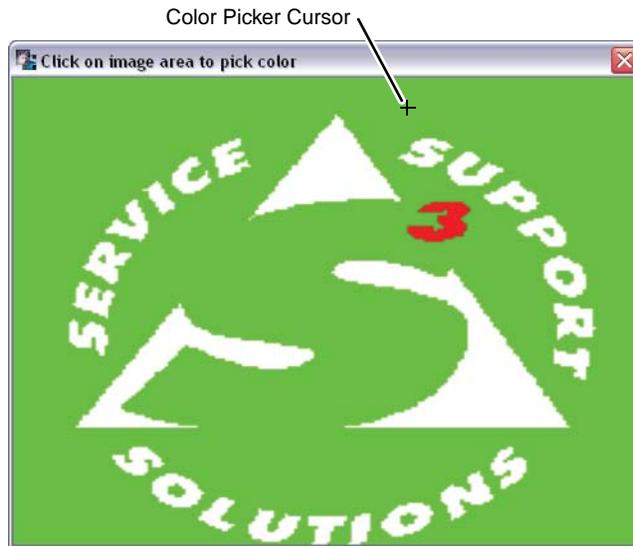
Figure 5-11 — Color Picker window

Switcher Software, cont'd

Advanced Setup window

The Advanced Setup window (figure 5-12) provides a location for viewing and changing most advanced configuration settings. The advanced settings work similar to selections made on the front panel via the Advanced Configuration menu. See chapter 3, "Operation".
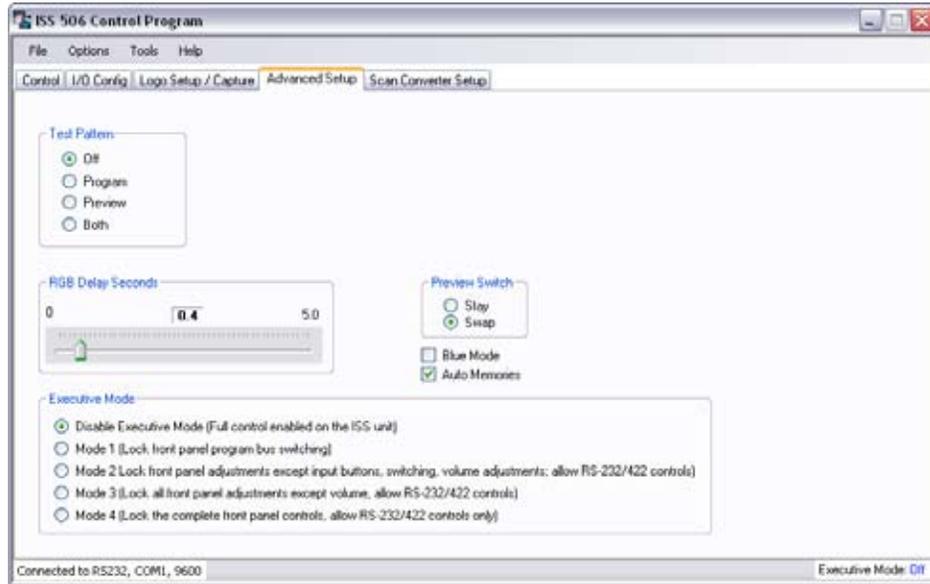
Figure 5-12 — Advanced Setup window

- The portion of the screen to the right of the Test Pattern area is blank when the Test Pattern Off radio button is selected. When you select a different radio button, that portion changes to show a dropdown box of the various test pattern selections and a representation of the test pattern (figure 5-13).

Figure 5-13 — Test Pattern area

Scan Converter Setup window

NOTE *The Scan Converter Setup tab and window are available only if your ISS has the optional scan converter output board installed (either included as delivered [ISS 506 SC or ISS 506 DI/SC] or installed after purchase [part #**70-486-01**].*

The Scan Converter Setup window (figure 5-14) provides a location for viewing and changing the optional scan converter output board's configuration settings. The scan converter settings work similar to selections made on the front panel via the Scan Converter menu. See chapter 3, "Operation".

Figure 5-14 — Scan Converter Setup window

System Settings windows

Several windows that allow you to configure the remote access and associated settings are available via the Tools dropdown menu. Click **Tools** > **System Settings**. The System Settings IP settings window appears (figure 5-15). Click the various tabs as necessary to change RS-232, date and time, or password settings.
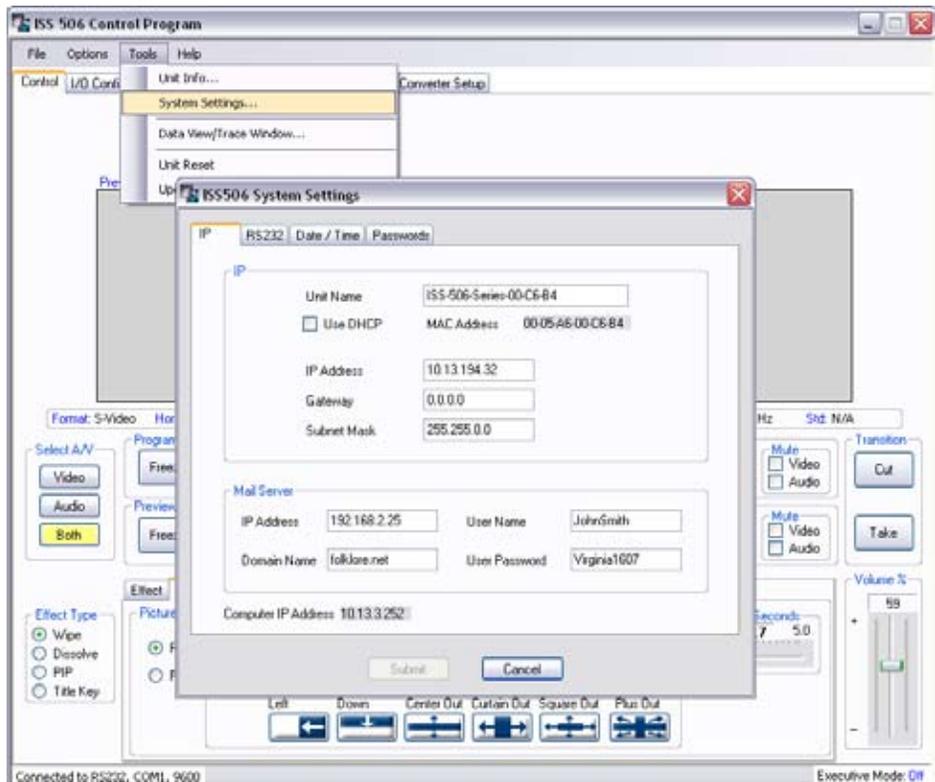
Figure 5-15 — System Settings IP settings window

Switcher Software, cont'd

System Settings IP settings window

The IP settings window (figure 5-15) provides a location for viewing and, if it is connected via the RS-232/RS-422 link or if you are logged on via the LAN port as an administrator, editing settings unique to the Ethernet interface. See appendix A, "Ethernet Connection", for basic information about IP addresses. None of the fields on this screen can be edited while you are logged on as a user.

NOTE *Editing variables in the IP settings window while connected via the LAN port can immediately disconnect the user from the switcher. Extron recommends editing the settings on this screen using the RS-232 link and protecting the Ethernet access to this screen by assigning an administrator's password to qualified and knowledgeable personnel only.*

NOTE *When the control program is connected to the switcher via the RS-232 link, the Administrator and User Password fields are not masked. If a password has been inadvertently changed to an unknown value, you can look up and, if desired, change a password in this window without knowing the current password.*

Edit all editable fields (all except the MAC address) in this window as follows:

1. Click in the field to be edited.

2. Edit the new data as desired.

3. Click the **Submit** button to make the change take effect.

Unit Name field

The Unit Name field contains the switcher's name. This descriptor can be changed to any valid name, up to 12 alphanumeric characters.

NOTE *The following characters are invalid in the Unit Name field: {space} + ~ , @ = ' [ ] { } < > ' " ; : | \ and ?.*

Use DHCP checkbox

The Use DHCP checkbox directs the switcher to ignore any entered IP addresses and to obtain its IP address from a Dynamic Host Configuration Protocol (DHCP) server (if the network is DHCP capable). Contact the local system administrator to see if DHCP is the correct choice.

MAC Address field

The MAC address is hardcoded in the switcher and cannot be changed.

IP Address field

The IP Address field contains the IP address of the connected seamless switcher. This value is encoded in the flash memory in the switcher.

Valid IP addresses consist of four 1-, 2-, or 3-digit numeric subfields, properly called octets, separated by dots (periods). Each octet can be numbered from 000 through 255. Leading zeroes, up to 3 digits total per octet, are optional. Values of 256 and above are invalid.

The default address is 192.168.254.254, but if this conflicts with other equipment at your installation, you can change the IP address to any valid value.

NOTE *Editing the Extron IP address while connected via the LAN port can immediately disconnect the user from the seamless switcher. Extron recommends editing this field using either serial port and protecting the Ethernet access to this screen by assigning an administrator's password to qualified and knowledgeable personnel only.*

Gateway field

The Gateway field identifies the address of the gateway to the mail server to be used if the switcher and the mail server are not on the same subnet.

Valid IP addresses consist of four 1-, 2-, or 3-digit octets separated by dots (periods). Each octet can be numbered from 000 through 255. Leading zeroes, up to 3 digits total per octet, are optional. Values of 256 and above are invalid.

Subnet Mask field

The Subnet Mask field is used to determine whether the switcher is on the same subnet as the controlling PC or the mail server when you are subnetting. For more information, see "Subnetting — A Primer", in Appendix A, "Ethernet Connection".

Mail Server IP Address field

The Mail Server IP Address field displays the IP address of the mail server that handles the e-mail for the facility in which the switcher is installed.

Valid IP addresses consist of four 1-, 2-, or 3-digit numeric octets separated by dots (periods). Each field can be numbered from 000 through 255. Leading zeroes, up to 3 digits total per field, are optional. Values of 256 and above are invalid.

Mail Server User Name field

The User Name field contains the name used as the "from" information when the switcher e-mails notification of its failed or repaired status. This descriptor can be changed to any valid name, up to 12 alphanumeric characters.

NOTE *The following characters are invalid in the User Name field:*
{space} + ~ , @ = ' [ ] { } < > ' " ; : | \ and ?.

Mail Server Domain Name field

The Mail Server Domain Name field displays the domain name that the switcher uses to log on to the e-mail server. Standard domain conventions (such as nnnnn@xxx.com) apply.

NOTE *The following characters are invalid in a domain name:*
{space} + ~ , = ' [ ] { } < > ' " ; : | \ and ?. The @ character is acceptable only as the lead-in to the domain name (such as @folklore.net).

Mail Server User Password field

The Mail Server User Password field displays the password required to log on to the mail server. Passwords are case sensitive and are limited to 12 lowercase and lowercase alphanumeric characters.

While you are logged on as a user, this field is masked with asterisks (****) as a security measure.

NOTE *The following characters are invalid in passwords:*
{space} + ~ , @ = ' [ ] { } < > ' " ; : | \ and ?.

Switcher Software, cont'd

System Settings RS-232 window
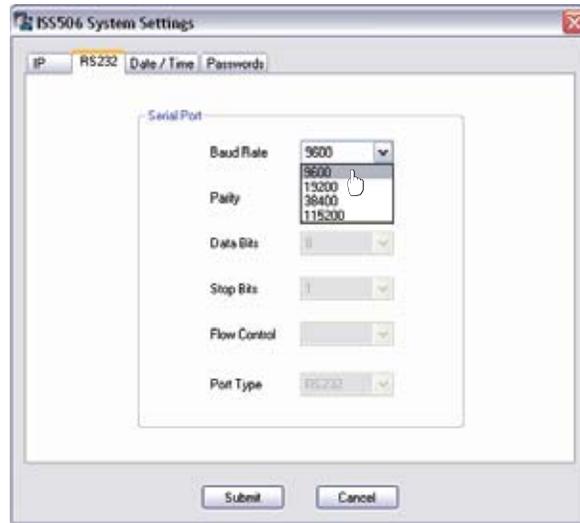
Figure 5-16 — System Settings RS-232 window

Only the baud rate can be changed in the ISS 506 Control Program System Settings window; all other settings - Parity, Data Bits, Stop Bits, Flow Control, and Port Type, are displayed only. The port type variable for the rear panel RS-232/RS-422 port can be changed from the front panel, using the menu system. See "View and Edit Communications Settings menu", in chapter 3, "Operation".

Baud Rate dropbox

Click the Baud Rate dropbox and then select the baud rate for serial communications with the controlling PC.

NOTE *Changing the baud rate while connected via either serial port results in a loss of communications with the ISS. Change the baud rate on the computer and then reconnect.*

System Settings Date/Time window
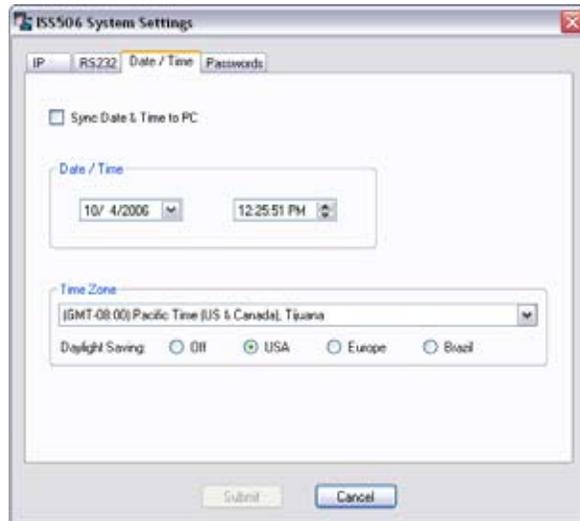
Figure 5-17 — System Settings Date/Time window

Sync Date & Time to PC button

Click in the Sync Date & Time to PC check box and then the Submit button to have the computer you are operating send its internal time to the switcher in a set time command.

Date field

The Date field displays the current date in the Greenwich Mean Time zone. If necessary, adjust the date as follows:

1. Click in the date field and highlight the desired portion (month, day, and/or year)

2. Edit the field as desired to set the proper date. Leading zeroes are optional.

NOTE *Alternatively, click the down (▾) button and select the date using the calendar tool (figure 5-18).*

Figure 5-18 — Calendar tool

3. Click the **Submit** button to make the date change take affect.

Time (local) field

The Time (local) field displays the current time in the local time zone. If necessary, click on the Sync Date & Time to PC button to set the switcher to your computer's internal time or else adjust the time manually as follows:

1. Click in the time field and highlight the desired portion (hours:minutes:seconds [HH:MM:SS] (00:00:00 to 23:59:59). The graphic cursor becomes a text cursor in the set time field.

2. Edit the field as desired to set the proper time. Remember to use 24-hour time. Leading zeroes are optional.

3. Press the Tab key on the keyboard or click in another field to exit the set time field.

4. Click the **Take** button to make the time change take affect.

Daylight Savings check box

Click one of the Daylight Saving radio buttons to turn Daylight Saving Time on or off. When Daylight Saving Time is on, the switcher automatically updates its internal clock between Standard Time and Daylight Saving Time in the spring and fall on the date that the time change occurs in the nation or region selected. When Daylight Saving is turned off, the switcher does not adjust its time reference.

System Settings Passwords window

Figure 5-19 — System Settings Passwords window

The Password fields let you password-protect the ISS 506, so that a password is required to log on via the LAN port and operate the switcher. Two levels of password protection are available: administrator and user.

- The administrator level grants you the ability to see and edit most settings, including sensitive system setup variables.

- The user level grants you basic operational capabilities, without all of the administrator's rights and privileges.

Passwords are case sensitive and are limited to 12 uppercase and/or lowercase alphanumeric characters. These fields are masked with asterisks (****) as a security measure.

NOTE *Editing the Administrator Password field while connected via the LAN port does not affect your current login. The administrator password requirement takes affect at the next login. Extron recommends assigning an administrator's password to qualified and knowledgeable personnel only.*

NOTE *An administrator password must be created before a user password can be created.*

NOTE *The following characters are invalid in passwords:*
{space} + ~ , @ = ' [ ] { } < > ' " ; : | \ and ?.

Edit this field as follows:

1. Click in the Administrator or User Password field.

2. Edit the case-sensitive password as desired.

3. Repeat steps **1** and **2** in the Administrator Confirm Password field.

4. Press the Tab key on the keyboard or click in another field to exit the Password field.

5. Click the **Submit** button to make the password change take effect.

NOTE *To delete a password, access this screen using the RS-232/RS-422 link or the Ethernet link logged on as an administrator, and delete the password in both fields. Click the **Submit** button.*

Updating firmware

The firmware upgrade utility provides a way to replace the firmware that is coded on the switcher's control board without taking the switcher out of service.

NOTE *The Firmware Loader must be installed on your computer to perform this operation. Extron recommends that you install this program when you install the ISS 506 Control Program. If you did not, you can be download it from the Extron Web site, www.extron.com, and install it separately.*

Update the switcher firmware as follows:

1. Visit the Extron web site, www.extron.com, and click the **Download** tab (figure 5-20).

Figure 5-20 — Location of firmware upgrade files

2. Click the **Firmware** link.

3. Select the appropriate firmware file to download and save it to your computer. Note the folder to which you save the firmware file.

4. In the Windows Explorer or other file browser, double-click the downloaded executable (*.exe) file to self-extract the firmware file.

5. Connect a Windows-based computer to either ISS serial port or the ISS LAN port. See chapter 2, "Installation", for more details.

NOTE *The Ethernet connection is much faster than the RS-232/RS-422 connection. Extron recommends using the Ethernet connection rather than the serial port for firmware uploads.*

6. Start the ISS 506 Control Program. See "Using the software", steps **1** through **4**, starting on page 5-4.

7. Click **Tools** > **Update firmware**. The Extron Firmware Loader port configuration window appears (figure 5-21).
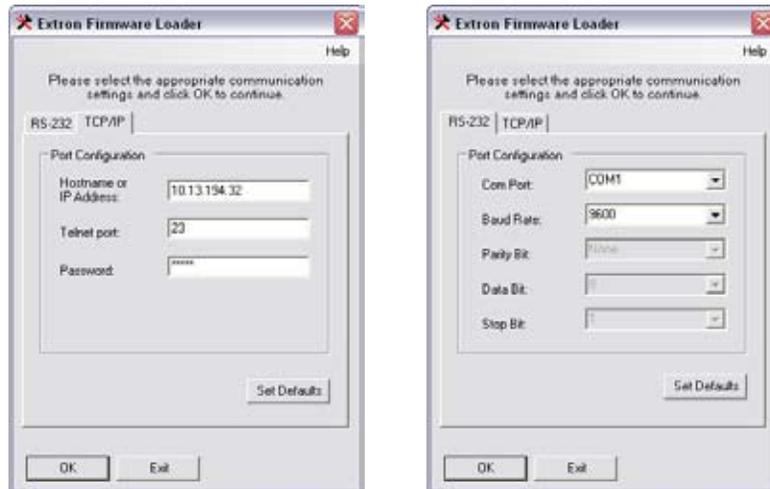
Figure 5-21 — Firmware Loader port selection and configuration

8. If necessary, click either the RS-232 or TCP/IP tab to select the type of interface you are using.

9. Enter the appropriate parameters for the type of interface that you are using.

    •   For an RS-232 port connection, select the Comm port to which the ISS is connected and the baud rate.

    •   For an Ethernet (TCP/IP) connection, enter the ISS's IP address and (if the switcher is protected) the administrator password.

10. Click the **OK** button. The Extron Firmware Loader appears (figure 5-22).
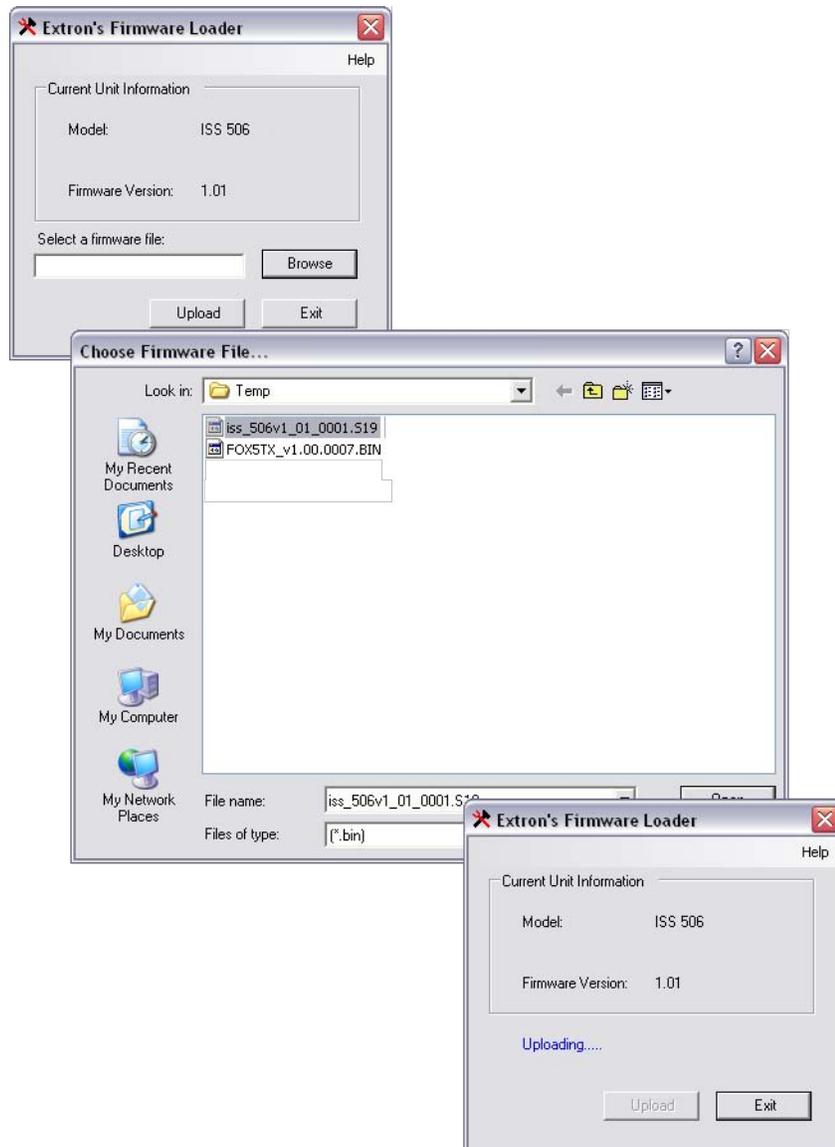
*Figure 5-22 — **Firmware loading***

11. Click **Browse**. The open file window appears.

12. Navigate to the folder where you saved the firmware upgrade file. Select the file and click **Open**. The Firmware Loader returns to the top.

NOTE *Valid firmware files must have the file extension ".S19". Any other file extension is not a firmware upgrade for your ISS.*

13. Click **Upload**. The File Loader reports, "*Uploading*", then "*Unit resetting, this can take some time, please wait. ...*", and then "*Transfer complete!*".

14. When the Firmware Loader reports, "*Transfer complete*!", click the **Exit** button on the Firmware Loader and then again on the port configuration window. The Firmware Loader and the ISS 506 Control Program exit.

Switcher Software, cont'd

Uploading images

NOTE *The IP Link File Manager must be installed on your computer to perform this operation. Extron recommends that you install this program when you install the ISS 506 Control Program. If you did not, you can downloaded it from the Extron Web site, www.extron.com, and installed it separately.*

You can upload your own images to use as logos. Upload image files to the ISS as follows:

1. In the ISS 506 control Program, click **File** > **File Manager** to start the IPL File Manager program.

NOTE *The File Manger selection is not available if any of the following conditions is true:*

- *The Firmware Loader program is not installed on the PC.*

- *Your PC is connected to the ISS via a serial port link.*

- *The ISS is password protected and you are logged on with a user password.*

If the Select Startup Mode window (figure 5-23) **does not** appear, proceed to step **4**:

2. If the Select Startup Mode window (figure 5-23) appears:

    And you have <u>not</u> used this program while connected to this ISS before, click **Manually Add IP Link Device(s)** and proceed to step **3**.

    And you have used this program while connected to this ISS before, click **Use Previous Setup** and proceed to step **4**.

NOTE *Select the **Never ask again** checkbox to skip the Select Startup Mode Window step from now on.*

Figure 5-23 — Select Startup Mode window

3. Type the ISS's IP address and, if the ISS is password protected, the password into the Add IP Link Interface box. Click **OK**.

4. The IP Link File Manager program window appears (figure 5-24). The window contains two major sections.

    - Computer System (left section) — Displays your computer's file system. In this section you can browse to locate files on your PC hard drive or a server to which you have access.

    - IP Link Interfaces (right section) — Displays the files that are loaded in the ISS.
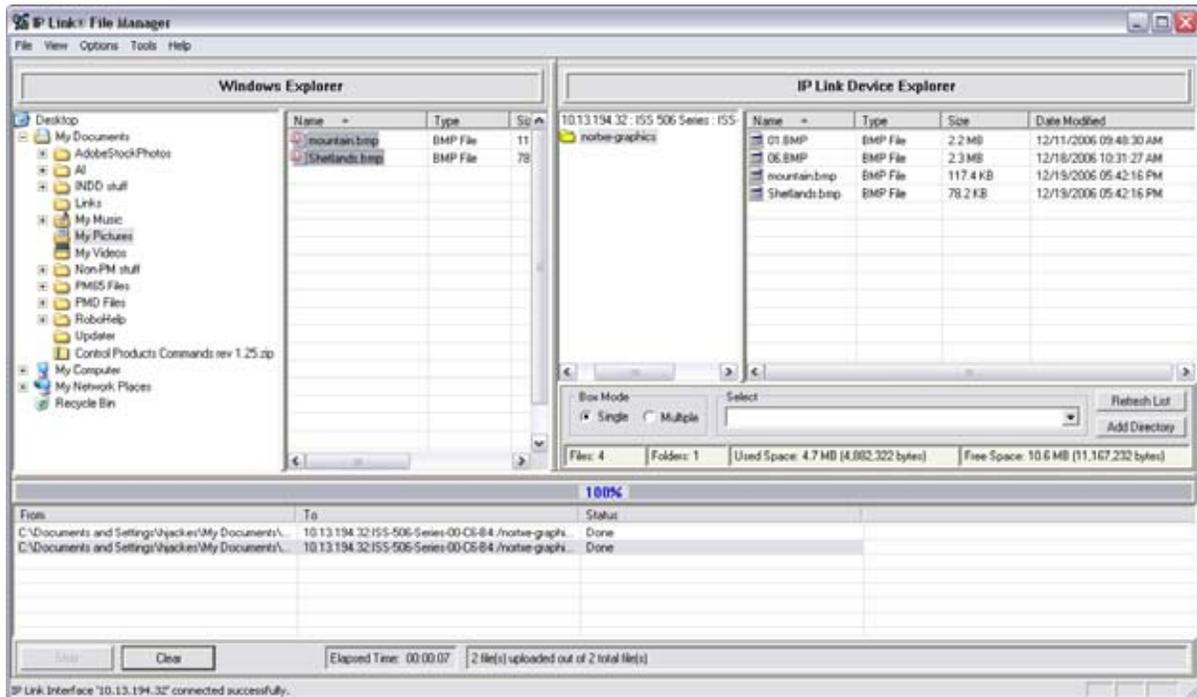
Figure 5-24 — IP Link File Manager program window

5. Check to see that the ISS contents include the directory "nortxe-graphics".

    If the "nortxe-graphics" directory is present in the ISS, proceed to step **6**.

    If the "nortxe-graphics" directory is not present in the ISS, create the folder as follows:

    a. Right-click the ISS's IP address in the IP Link Interfaces (right) section of the window.

    b. Click **Add Directory**.

    c. Type the name `nortxe-graphics` and then press the PC's Enter key

6. Upload images to the ISS as follows:

    NOTE *The only valid file format for uploaded image files is *.bmp.*

    Valid file names are up to 240 alphanumeric characters with no spaces.

    Bitmap (*.bmp) images must be formatted as 24-bit RGB.

    a. In the Computer System (left) section of the IP Link File Manager window, navigate to the folder that contains the file(s) that you want to upload to the ISS.

    b. Select the file(s) that you want to upload.

    c. Drag the file(s) to the "nortxe-graphics" directory in the IP Link Interfaces (right) section.

        The file upload queue at the bottom of the IP Link File Manager program window shows the files that you have dragged to the ISS and the status of the upload.

        After a few seconds, the name(s) of the dragged file(s) appears in the interface file list.

Switcher Software, cont'd

7. Delete images from the ISS by clicking on them, pressing the PC's Delete key, and clicking **Yes** in the advisory box that appears.

Windows menus

File menu

Reselect Connection ... — Disconnects computer from the ISS without closing the ISS 506 Control Program. The Communication Type Selection windows (figure 5-3) reappears.

File Manager ... — Calls the IPL File Manager program, with which you can upload or delete image files. See "Uploading images", on page 5-22.

Save/Restore Configuration ... (connected via the LAN [Ethernet] port only) — Opens a window (figure 5-25) that lets you save and recall the following system settings into files named "ip.cfg" and "box.cfg" in a folder that you select.

•   IP address and all other communication settings

•   Auto memories, user memories, and input presets

•   Output configuration, logo assignments, and all advanced settings

•   The current effect, sub-effect, and duration

•   All audio settings
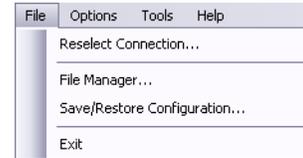
Figure 5-25 — Save/Restore Configuration window

A separate selection in the window lets you to save all external files (such as HTML pages, scripts, and images that you have created).

Exit — Closes the ISS 506 Control Program.

Options menu

Show Splash Screen — Allows you to select (check) or deselect (uncheck) whether the ISS 506 Control Program displays the startup picture when you launch the program.

Display Errors on Status Bar — Allows you to select (check) or deselect (uncheck) whether the ISS 506 Control Program shows errors on the status bar on the bottom of the window.
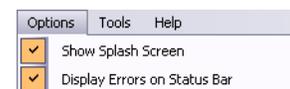
Tools menu

Unit Info ... — Opens a window (figure 5-26) that provides basic information about the status of the ISS, including the model name and number, the installed daughterboards, the firmware version and build, and the internal temperature.

Unit Information

Model Number: 60-742-03

Model Name: ISS506

Model Description: Integration Seamless Switcher

Installed Options: Scan Converter

Firmware Version: 1.01

Firmware Build: 0001

Temperature: 131.0 F / 55.0 C

OK
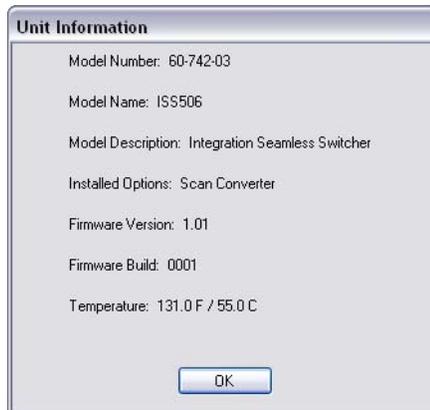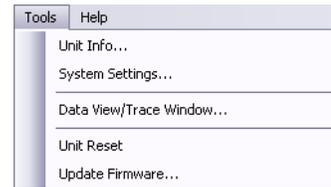
Figure 5-26 — Unit Information window

System Settings ... — Opens the System Settings IP Settings window. See "System Settings windows", on page 5-13.

Data View/Trace Window ... — Calls the trace log window (figure 5-26), which shows the serial communications, in ASCII and Hex, between the controller and the ISS. Reference to this window can be helpful when writing your own control scripts.

Figure 5-26 — Trace log window

Unit reset — Resets the ISS 506 to factory default values.

NOTE *This unit reset does not change IP settings.*

Update firmware ... — Calls the Extron Firmware Loader. See "Updating firmware", on page 5-19.

Help menu

Contents — Calls the ISS 506 Control Program help file.

Extron Home Page — Directs your computer's Web browser to the Extron home page, www.extron.com.

Check For Updates — Directs your computer's Web browser to check the Extron Web site to see if any Windows-based control program update (software of a version newer than the version running) is available for the ISS. If a newer software version is available, the program prompts you to download and install the software.

About ... — Provides an overview of the installed version of the ISS 506 Control Program.
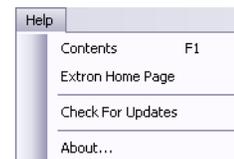
Using the help system

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

- From the Extron Electronics program folder or group, double-click on the ISS 506 Help icon (shown at right).

- From within the ISS 506 Control Program, click **Help** > **Contents** on the menu bar.

- From within the ISS 506 Control Program, press the F1 key.

Button Label Generator

The Button Label Generator software creates labels that you can place in the translucent covers of the input select buttons. You can create labels with names, alphanumeric characters, or even color bitmaps for easy and intuitive input and output selection. See chapter 7, "Modifications", for blank labels and the procedure for removing and replacing the translucent covers.

The Extron Button Label Generator is available on the Extron Web site, www.extron.com, under the Download tab. Click the Software link (figure 5-28), and download and install the program.

Figure 5-28 — Location of Software on the web site.

By default, the Windows installation creates a C:\Program Files\Extron\ ButtonLabelGenerator directory and places the Button Label Generator icon into a group or folder named "Extron Electronics".

Using the Button Label Generator software

1. To run the Button Label Generator program, select **Start** > **Programs** > **Extron Electronics** > **Button Label Generator** > **Button Label Generator**. The Button Label Generator window appears (figure 5-29).

Switcher Software, cont'd

Figure 5-29 — Extron's Button Label Generator window

2. Under System selection, choose **SGS 408** (this selection matches the button size of the ISS 506).

3. Using normal Windows controls, create and print the labels that are placed in the label windows on the front panel of the switcher.

4. Press the **Clear All** button to create new labels as many times as necessary to make all of the button labels that you need.

Special Characters

The HTML language reserves certain characters for specific functions. The switcher does not accept these characters as part of preset names, the switcher's name, passwords, or locally created file names.

The switcher rejects the following characters:
{space (spaces **are** permitted for names)} + ~ , @ = ' [ ] { } < > ' "
; (semicolon) : (colon) | \ and ?.

Chapter 6

HTML Operation

HTML Operation

The switcher can be controlled and operated through its LAN port, connected via a LAN or WAN, using a web browser such as Microsoft's Internet Explorer. The browser's display of the switcher's status or operation has the appearance of web pages. This chapter describes the factory-installed HTML pages, which are always available and cannot be erased or overwritten.

> **NOTE** *If your Ethernet connection to the seamless switcher is unstable, try turning off the proxy server in your Web browser. In Microsoft's Internet Explore, click* **Tools** > **Internet Options** > **Connections** > **LAN Settings**, *uncheck the "Use a proxy server..." box, and then click* **Ok**.

Downloading the Startup Page

Access the switcher using HTML pages as follows:

1. Start the Web browser program.

2. Click in the browser's Address field.

3. Enter the unit's IP address in the browser's Address field.

> **NOTE** *If the local system administrators have not changed the value, the factory-specified default, 192.168.254.254, is the correct value for this field.*

4. If you want the browser to display a page other than the default page (such as a custom page that you have uploaded), enter a slash (/) and the file name to open.

> **NOTE** *The browser's Address field should display the address in the following format:* xxx.xxx.xxx.xxx/{**optional_file_name.html**}

> **NOTE** *The following characters are invalid in file names:* {space} + ~ , @ = ' [ ] { } < > ' " ; : | \ and ?.

5. Press the keyboard Enter key. The switcher checks to see if it is password protected.

   If the switcher is not password protected, proceed to step **7**.

   If the switcher is password protected, the switcher downloads the Enter Network Password page (figure 6-1).

Figure 6-1 — Enter Network Password page

> **NOTE** *A User name entry is not required.*

6. Click in the Password field and type in the appropriate administrator or user password. Click the **OK** button.

7. The switcher checks several possibilities, in the following order, and then responds accordingly:

- Does the address include a specific file name, such as 10.13.156.10/file_name.html? **If so**, the switcher downloads that HTML page.

- If not, is there a file in the switcher's memory that is named "index.html"? **If so**, the switcher downloads "index.html" as the default startup page.

- **If neither of the above conditions is true**, the switcher downloads the factory-installed default startup page, "nortxe_index.html" (figure 6-2), also known as the System Status page.

NOTE *On password-protected connections, there are two levels of protection: administrator and user.*

Administrators have full access to all pages described in this chapter and all switching capabilities and editing functions.

When you are logged on as a user, only the Status and Control tabs are shown on the Web pages. Users have access only to the User Control, Presets, PIP Setup, and Logos pages.

System Status Tab

The System Status page (figure 6-2) provides an overall, read-only view of the status of the seamless switcher, including individual voltages, and serial port status (if applicable). The System Status page is the default page that the switcher downloads when you connect to the switcher. Access the System Status page from other pages by clicking the **Status** tab.

Figure 6-2 — System Status page

The status web page does not automatically update. If you want to see an update, click the **Refresh** button on your Web browser.

HTML Operation, cont'd

Configuration Tab

System Configuration page

The ISS 506 switcher downloads the System Configuration page (figure 6-3) when you click the **Configuration tab**. The screen consists of fields in which you can view and edit IP administration and system settings. The Email Alerts and Passwords pages can be accessed by clicking the appropriate link. See appendix A, "Ethernet Connection", for basic information about IP addresses and subnetting.
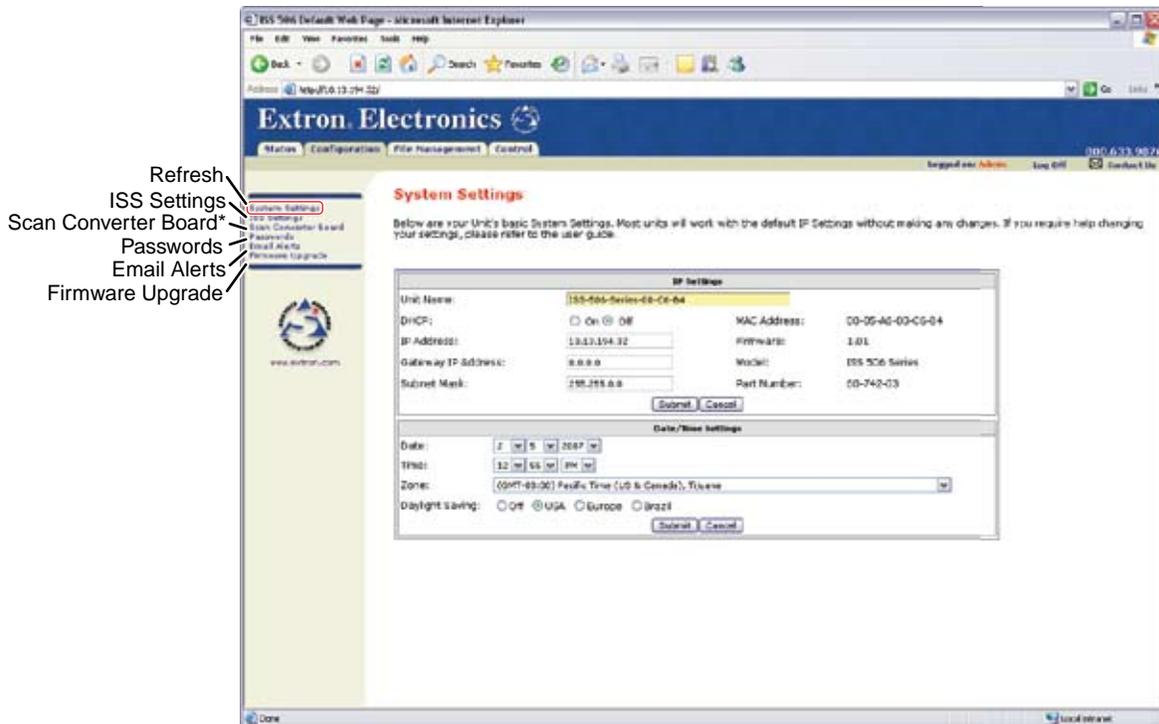
* The **Scan Converter Board** link is available only if the optional scan converter output board is installed.

Figure 6-3 — System Configuration page

IP Settings fields

The IP Settings fields provide a location for viewing and editing settings unique to the Ethernet interface. After editing any of the settings on this page, click the Submit button at the bottom of the page.

Unit Name field

The Unit Name field contains the name used as the "from" information when the switcher e-mails alerts. This name field can be changed to any valid name, up to 24 alphanumeric characters.

NOTE *The following characters are invalid in the name:*
+ ~ , @ = ' [ ] { } < > ' " ; : | \ and ?.

DHCP radio buttons

The DHCP On radio button directs the switcher to ignore any entered IP addresses and to obtain its IP address from a Dynamic Host Configuration Protocol (DHCP) server (if the network is DHCP capable). The DHCP Off radio button turns DHCP off. Contact the local system administrator to determine the correct setting.

IP Address field

The IP Address field contains the IP address of the connected switcher. This value is encoded in the switcher's flash memory.

Valid IP addresses consist of four 1-, 2-, or 3-digit numeric subfields, properly called octets, separated by dots (periods). Each octet can be numbered from 000 through 255. Leading zeroes, up to 3 digits total per octet, are optional. Values of 256 and above are invalid.

The factory-installed default address is 192.168.254.254, but if this conflicts with other equipment at your installation, you can change the IP address to any valid value.

NOTE *IP address changes can cause conflicts with other equipment. Only local system administrators should change IP addresses.*

Gateway IP Address field

The Gateway IP Address field identifies the address of the gateway to the mail server to be used if the switcher and the mail server are not on the same subnet.

The gateway IP address has the same validity rules as the system IP address.

Subnet Mask field

The Subnet Mask field is used to determine whether the switcher is on the same subnet as the mail server when you are subnetting. For more information, see "Subnetting — A Primer", in appendix A, "Ethernet Connection".

MAC Address field

The Media Access Control (MAC) Address is hardcoded in the switcher and cannot be changed.

Date/Time Settings fields

The Date/Time Settings fields (figure 6-4) provide a location for viewing and setting the time functions.

Figure 6-4** — **Date/Time Settings fields

Change the date and time settings as follows:

1. Click the desired variable's drop box. The adjustable variables are month, day, year, hours, minutes, AM/PM, and (time) zone. A drop down scroll box appears (the year dropbox is selected in figure 6-4).

2. Click the desired variable.

NOTE *If setting the time, set the local time. The Zone variable allows you to then enter the offset from Greenwich Mean Time (GMT).*

NOTE *The Zone field identifies the standard time zone selected and displays the amount of time, in hours and minutes, that the local time varies from the GMT international time reference.*

3.   Repeat steps **1** and **2** for other variables that need to be changed.

4.   If appropriate, select the Daylight Saving radio button to turn on the daylight savings time feature.

NOTE   *When daylight saving time is turned on, the switcher automatically updates its internal clock between Standard Time and Daylight Saving Time in the spring and fall on the date that the time change occurs in the country or region selected. When Daylight Saving Time is turned off, the switcher does not adjust its time reference.*

5.   Click the **Submit** button.

ISS Settings page

Access the ISS Settings page (figure 6-5) by clicking the **ISS Settings** link on the System Settings page. See chapter 3, "Operation," for descriptions of the settings on this page.

*   The **Scan Converter Board** link is available only if the optional scan converter output board is installed.

Figure 6-5 — ISS Settings page

The fields on the ISS Settings page allow you to configure the six inputs, the preview and program output, and select advanced configuration options.

The dropboxes associated with each input permit you to specify the input video format (RGB, YUV-HD, YUV-P, RGBcvS, YUVi, S-video, and composite) and the input audio gain or attenuation level (-18 dB to + 24 dB). You can also use the ⊞ and ⊟ buttons to increment and decrement the level 1 dB at a time. Use the check boxes to turn the Auto Image function and film mode on and off.

The dropboxes in the Output Configuration area let you select the output resolution, the output refresh rate, output sync format (RGBHV, RGsB, YUV bi-level, and YUV tri-level) and output sync polarity.

To select and output a test pattern, use the Test Pattern dropbox in the Advanced Configuration area to select the desired pattern (Color Bars; crosshatch; 4 x 4 crosshatch; split grayscale; ramp; alternating pixels; crop; or film aspect ratios of 1.78, 1.85, and 2.35), and then click the radio button that specifies the output (Off [no test pattern is output], program output, preview output, or both outputs).

Use the RGB Delay drop box in the Advanced Configuration area to set the RGB delay when switching among inputs for the same output, from 0 seconds to 5 seconds in 0.1 second steps. With RGB delay, sync is never removed from the output. Rather, the ISS blanks the RGB (video) outputs while the scaler locks to the new sync, and then switches the RGB signals. This allows a brief delay for the displays to adjust to the new sync timing before displaying the new picture, which will appear without glitches. RGB delay is also known as Triple-Action Switching™ or video mute switching.

Use the appropriate radio buttons in the Advanced Configuration area to select the Stay or Swap Preview Switch mode and to select among the various front panel locks (executive modes).

Select the Blue Screen check box in the Advanced Configuration area to turn on the blue mode, in which the switcher outputs the blue video and the sync signals only.

Select the Program Lockout Mode check box and the various Executive Mode radio buttons to select among the front panel and software locks.

Scan converter board page

NOTE *The **Scan Converter Board** link and page are available only if your ISS has the optional scan converter output board installed (either included as delivered [ISS 506 SC or ISS 506 DI/SC] or installed after purchase [part #**70-486-01**].*

Reach the Scan converter board page (figure 6-6) by clicking the **Scan Converter Board** link on the System Configuration page. See chapter 3, "Operation," for descriptions of the settings on this page.
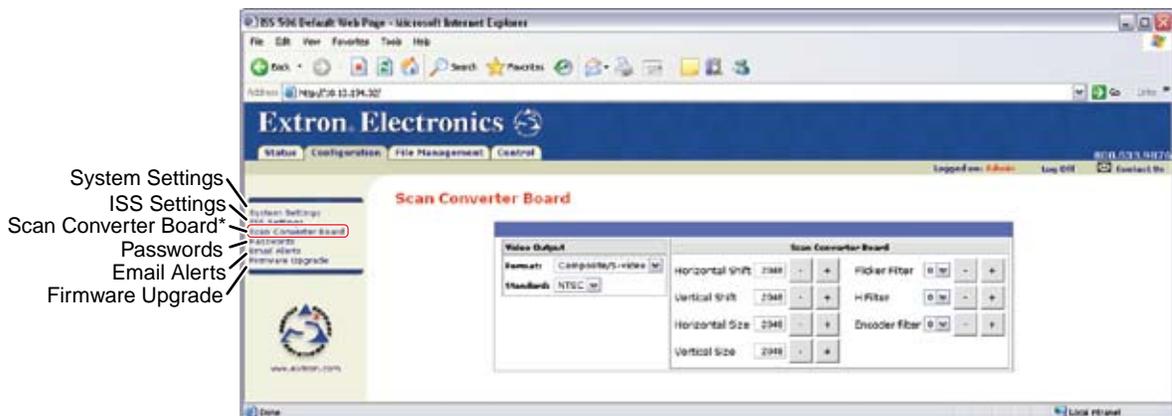
System Settings
ISS Settings
Scan Converter Board*
Passwords
Email Alerts
Firmware Upgrade

* The **Scan Converter Board** link is available only if the optional scan converter output board is installed.

Figure 6-6 — Scan converter board page

Use the dropboxes to select the optional scan converter board's output video format (composite/S-video, YUV, or RGsB) and standard (NTSC or PAL).

NOTE *The scan converter board can output S-video and composite video simultaneously.*

Use the ➕ and ➖ buttons to increment and decrement the horizontal and vertical shift; horizontal and vertical size; and the flicker, horizontal, and encoder filters (or use the dropboxes for the filters).

Passwords page

Access the Passwords page (figure 6-7) by clicking the **Passwords** link on the System Settings page.

System Settings
Refresh
Scan Converter Board*
Passwords
Email Alerts
Firmware Upgrade

* The **Scan Converter Board** link is available only if the optional scan converter output board is installed.

Figure 6-7 — Passwords page

The fields on the Passwords page are for entering and verifying administrator and user passwords. Passwords are case sensitive and are limited to 12 uppercase and lowercase alphanumeric characters. Each password must be entered twice; once in the Password field and then again in the Re-enter Password field. Characters in these fields are masked by asterisks (*****). If you do not want to password protect an access level, leave the Password field and the Re-Enter password field blank. After entering the desired password in both fields, click the Submit button.

NOTE *An administrator password must be created before a user password can be created.*

To clear an existing password so that no password is required, delete the asterisks, enter a single space in the Password and Re-enter Password fields, and click the Submit button.

Email Alerts page

Reach the Email Alerts page (figure 6-8) by clicking the **Email Alerts** link on the System Configuration page. The Email Alerts screen enables you to set up the ISS 506 to automatically send e-mail alert messages when settings are changed on the ISS 506. You may enter up to 64 e-mail addresses to alert recipients that an event has occurred.

You can also specify that SMTP (Simple Mail Transfer Protocol) authorization is needed for the ISS to accept incoming e-mail. This prevents spam from taking up space in the ISS's e-mail system.

For the e-mail settings and for each row of the e-mail notification settings, click the **Edit** button to make the fields available for editing. The button changes to **Save**. After editing the settings associated with the **Edit**/**Save** button, click the **Save** button.
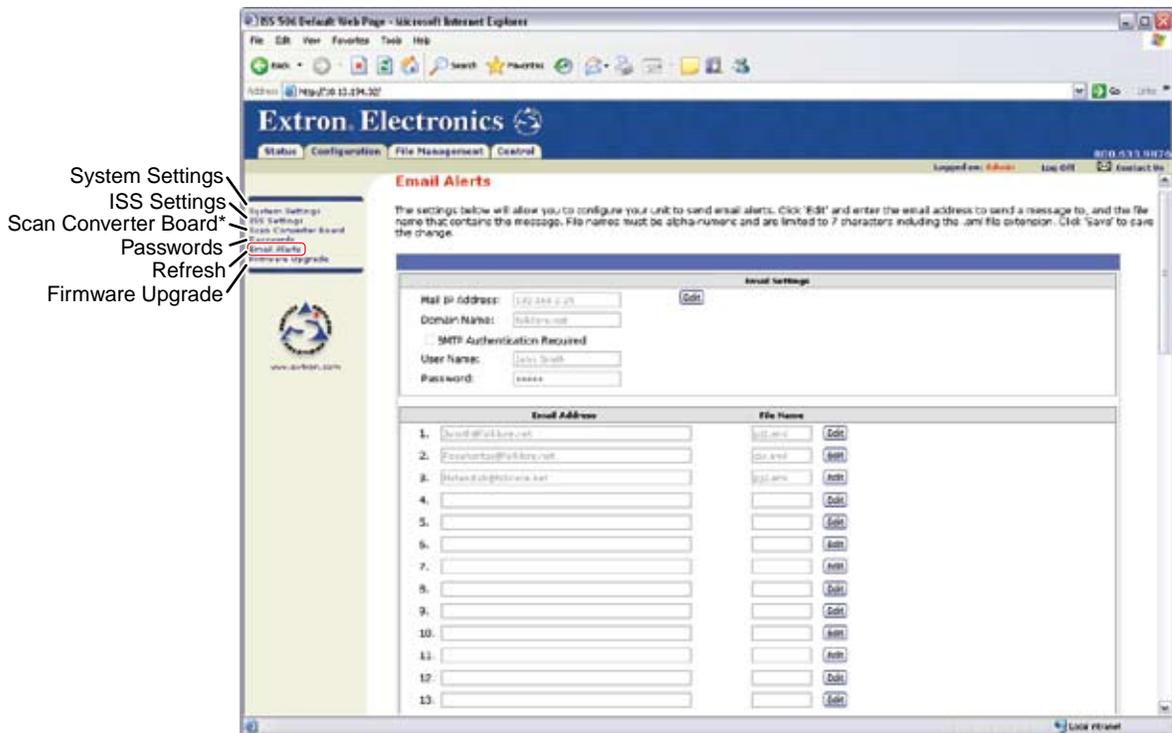
* The **Scan Converter Board** link is available only if the optional scan converter output board is installed.

Figure 6-8 — Email Alerts page

Setting up e-mail alerts

Set the ISS to send e-mail alerts when settings are changed as follows:

1. On the Email Alerts screen, click the **Edit** button located to the right of the Mail IP Address and Domain Name fields. The button changes to **Save**.

2. Enter your ISS 506's IP address and your domain name in the appropriate fields. (This information is available from your network administrator.)

3. If your ISS has password(s) assigned, enter them.

4. Click the **Save** button.

To set up e-mail addresses for notification, do the following for each recipient of e-mail alerts:

1. Click the **Edit** button at the end of the address row. The **Edit** button changes to **Save**.

2. Enter the e-mail address of the recipient, and the file name on your PC (*.eml extension) that contains the message.

3. Click the **Save** button to save the changes. The **Save** button changes back to **Edit**.

Setting up SMTP authorization

Set the ISS to require SMTP authorization before accepting any e-mail as follows:

1. To enable the SMTP authorization fields, click the Edit button at the right of the Mail IP Address field. The **Edit** button changes to **Save**.

2. Select the SMTP Authorization Required check box, located below the Domain Name field. This enables the User Name and Password fields below the check box.

3. In the User Name and Password fields, enter a user name and a password that senders must enter in order for the ISS to accept their e-mail messages.

> **NOTE** *For the User name, you can use any combination of letters, numerals, spaces, and symbols* **except** *the comma (**,**) and the single and double quotation marks (**'** and **"**). For the password, you can use all characters except the comma. The user name and password can each be from 1 to 30 characters.*

> **NOTE** *You must specify* **both** *a user name and a password.*

4. Click the **Save** button next to the Mail IP Address field to save your user name and password.

To remove SMTP authorization, click **Edit**, click (deselect) the SMTP Authorization Required check box, then click **Save**.

Firmware Upgrade page

The Firmware Upgrade page provides a way to replace the firmware that is coded on the switcher's control board without taking the switcher out of service, opening the switcher enclosure, and replacing the firmware chip. Access the Firmware Upgrade page (figure 6-9) by clicking the **Firmware Upgrade** link on the System Configuration page.
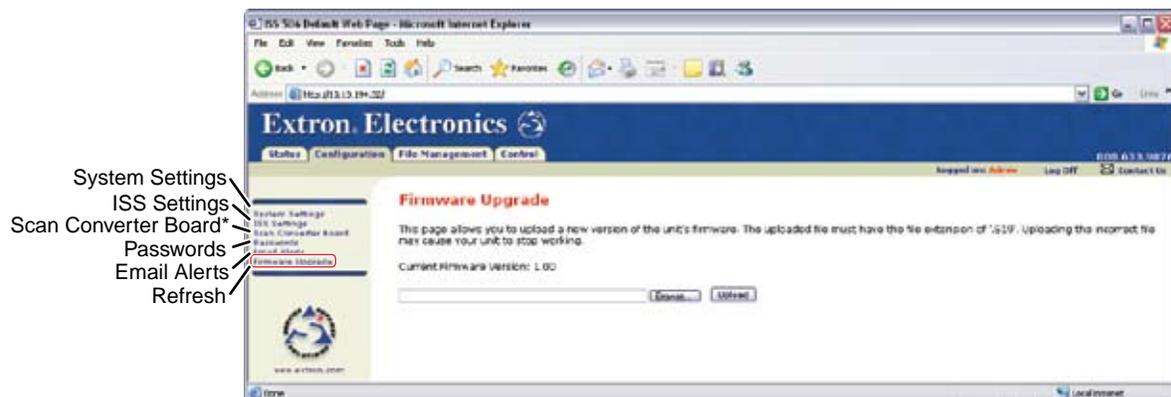
* The **Scan Converter Board** link is available only if the optional scan converter output board is installed.

Figure 6-9 — Firmware Upgrade page

Update the switcher firmware as follows:

NOTE *The Firmware Upgrade page is **only** for replacing the firmware that controls all switcher operation. To insert your own HTML pages, see "File Management Page", on page 6-12.*

1. Visit the Extron web site, www.extron.com, and click the **Download** tab (figure 6-10).

Figure 6-10 — Location of firmware upgrade files

2. Click the Firmware link.

3. Select the appropriate firmware file to download and save it to your computer. Note the folder to which you save the firmware file.

4. In the Windows Explorer or other file browser, double-click the downloaded executable (*.exe) file) to self-extract the firmware file.

5. Connect the PC to the ISS 506 switcher via the switcher's LAN port.

6. Access the ISS 506 switcher using HTML pages.

7. Click the **Configuration** tab.

8. Click the **Firmware Upgrade** link.

9. Click the **Browse** button. An open file window appears.

10. Navigate to the folder where you saved the firmware upgrade file. Select the file.

NOTE *Valid firmware files must have the file extension ".S19". Any other file extension is **not** a firmware upgrade.*

NOTE *The original factory-installed firmware is permanently available on the ISS 506 switcher. If the attempted firmware upload fails for any reason, the switcher automatically reverts to the factory-installed firmware.*

11. Click the **Open** button.

12. Click the **Upload** button. The firmware upload to the ISS 506 switcher may take a few minutes.

File Management Tab

File Management page

To delete files such as logo bitmaps from the switcher or to upload your own HTML files to the switcher, click the **File Management** tab. The switcher downloads the File Management HTML page (figure 6-11).
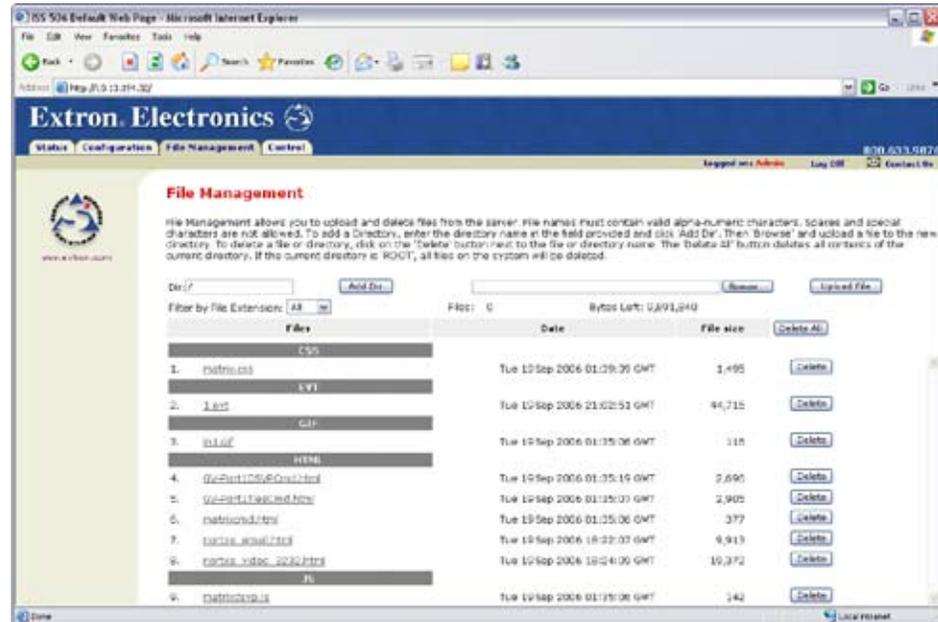
Figure 6-11 — File Management page

NOTE *The files listed in figure 6-11 are shown for example only and may not be present on your switcher.*

To delete a file, check the associated **Delete** button.

Upload your own files as follows:

NOTE *The following characters are invalid in file names:*
{space} + ~ , @ = ' [ ] { } < > ' " ; : | \ and ?.

1. Click the **Browse** button.

2. Browse through your system and select the desired file(s).

NOTE *If you want one of the pages that you create and upload to be the default startup page, name that file "index.html".*

3. Click the **Upload File** button. The file(s) that you selected appear in the list.

Control Tab

User Control page

You can perform most of the front panel operations on the User Control page (figure 6-12). Access the User Control page by clicking the **Control** tab.

The User Control page emulates the front panel of the ISS and displays the current input selections and other settings available through the menu system. Additional functions (audio breakaway and output mutes) are not available from the front panel. See chapter 3, "Operation," for descriptions of most of the settings on this page.
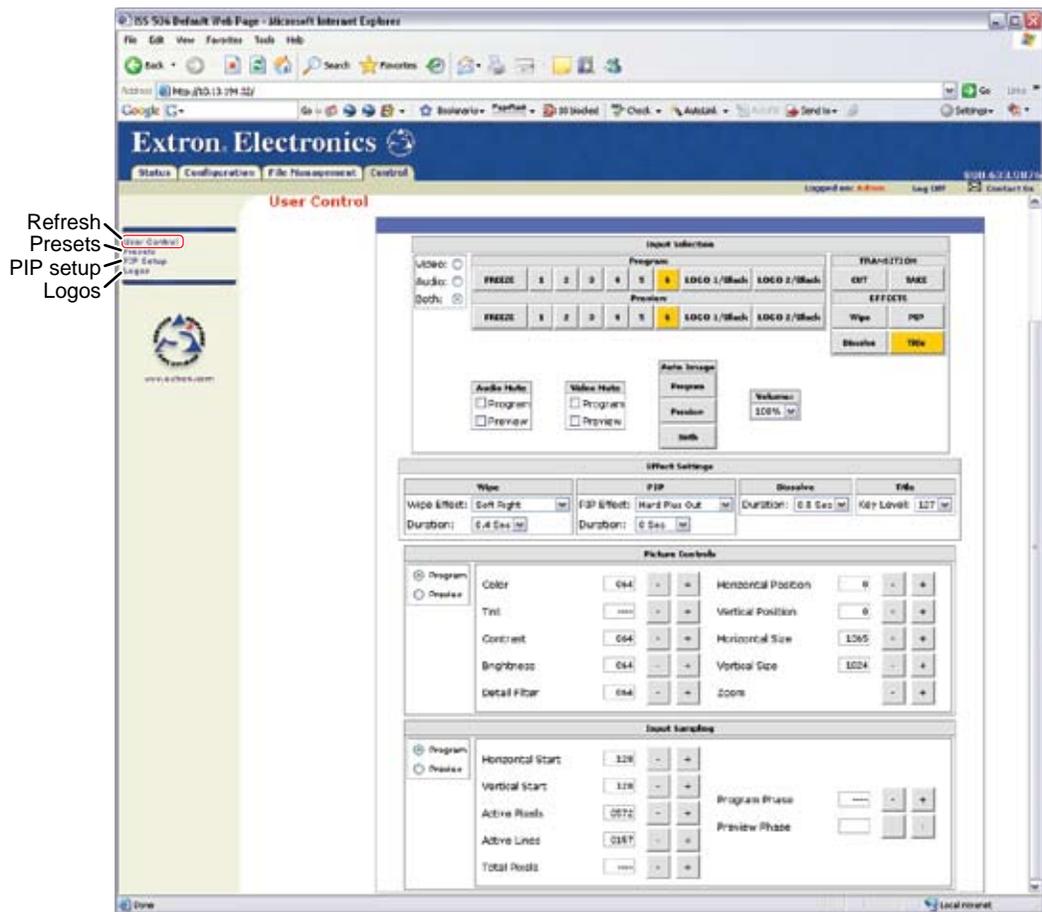
Figure 6-12 — User Control page

Preset page

You can save and recall user presets and input presets from the Presets page (figure 6-13). Access the Presets page by clicking the **Presets** link on the User Control page.

User Control
Refresh
PIP setup
Logos
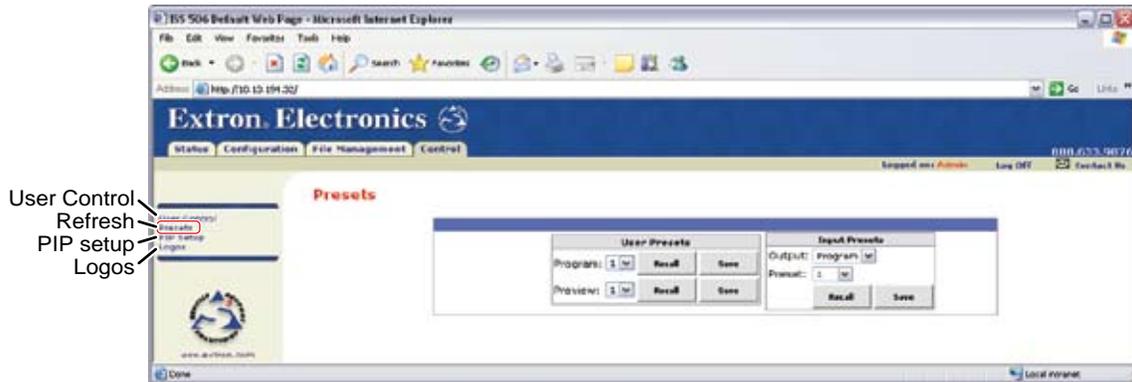
Figure 6-13 — Presets page

User presets

NOTE *User presets consist of:*

- *Film mode*
- *Program phase*
- *Horizontal start*
- *Horizontal active pixels*
- *Horizontal size*
- *Brightnesss and contrast*
- *Horizontal position*
- *Color*

- *Total pixels*
- *Preview phase*
- *Vertical start*
- *Vertical active pixels*
- *Vertical size*
- *Detail*
- *Vertical position*
- *Tint*

There are three user presets for each output (preview and program). The user presets define a set of picture adjustment settings, listed above, for the associated output. Save or recall a user preset as follows:

1. Click the Program or Preview preset number dropbox.

2. Select the desired preset number.

3. Click either the **Save** or **Recall** button.

Input presets

NOTE *User presets consist of:*

- *Film mode*
- *Program phase*
- *Horizontal start*
- *Horizontal active pixels*
- *Horizontal size*
- *Brightnesss and contrast*
- *Horizontal position*
- *Color*

- *Total pixels*
- *Preview phase*
- *Vertical start*
- *Vertical active pixels*
- *Vertical size*
- *Detail*
- *Vertical position*
- *Tint*

There are 128 presets associated with each input. These presets, ideal for use when the associated input is an Extron matrix switcher, contain the entire range of adjustments, listed above, available for that input. If the input is from a matrix switcher, you can tailor a preset for each possible video signal that the matrix switcher can tie to the ISS. Save or recall an input preset as follows:

1. Click the Output dropbox.

2. Select the Program or Preview output.

3. Click the Preset number dropbox.

4. Select the desired preset number.

5. Click either the **Save** or **Recall** button.
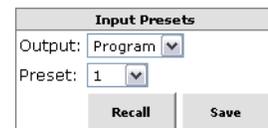
PIP settings page

You can set variables associated with the picture-in-picture function from the PIP Setup page (figure 6-14). Access the PIP setup page by clicking the **PIP Setup** link on the User Control page. See chapter 3, "Operation" for descriptions of the settings on this page.
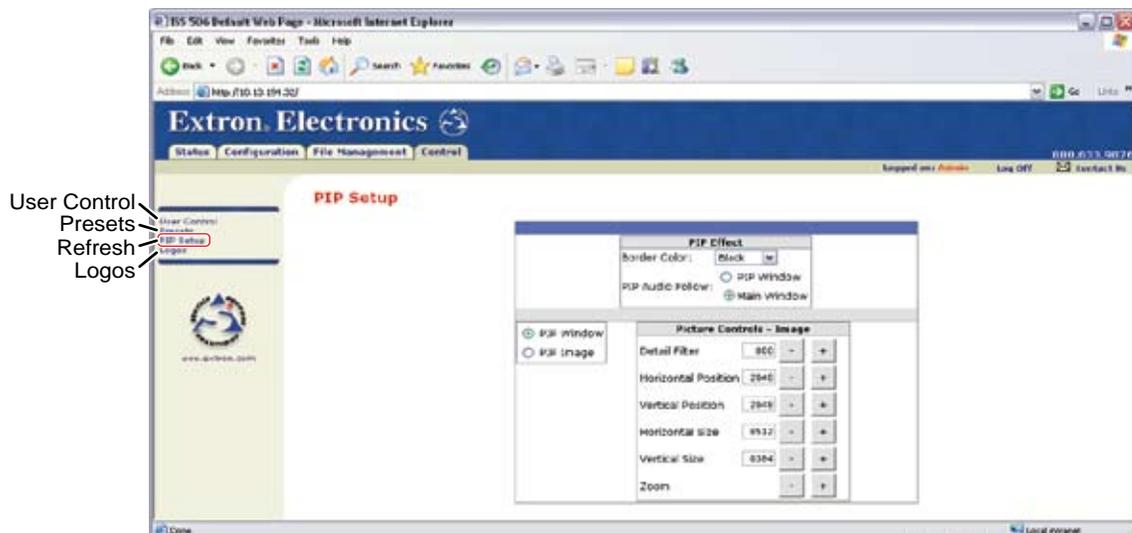
Figure 6-14 — PIP Settings page

Select the PIP Window or PIP Image radio button to assign the setting that you make to the window or to the image.

Logos page

You can assign images to either logo and set the variables associated with the logo function from the Logos page (figure 6-15). You can also upload your own images to serve as logos and delete unwanted images. Access the Logos page by clicking the **Logos** link on the User Control page.
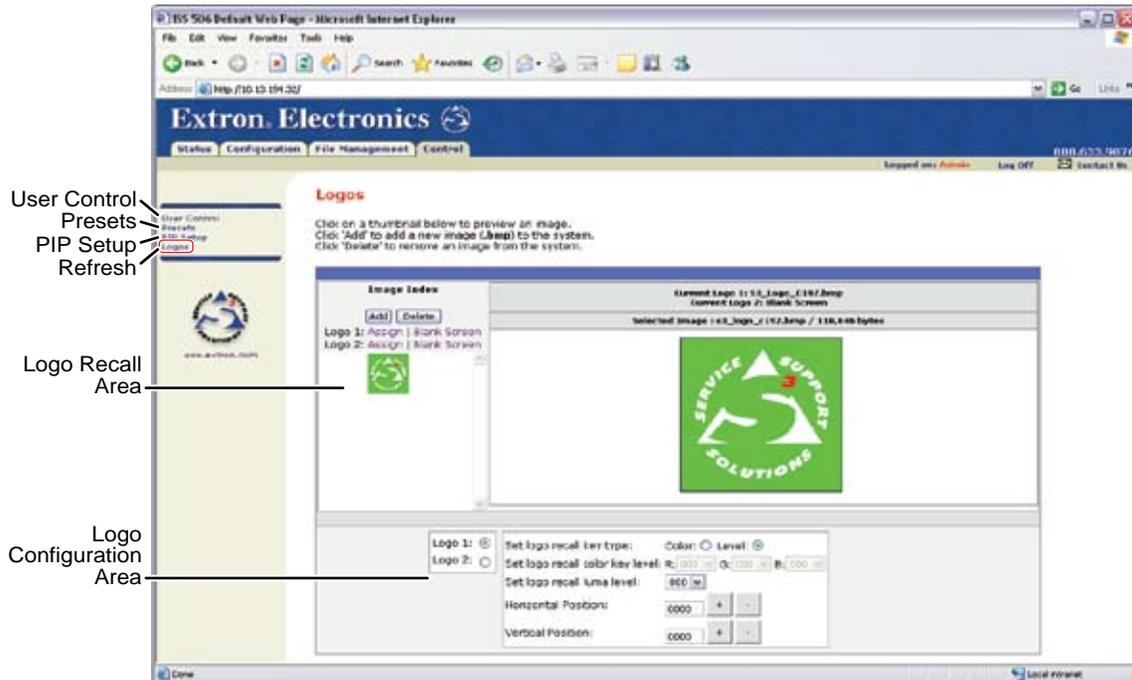
Figure 6-15 — Logos page

Uploading an image

NOTE   *For best results, freeze the input with the image that you want to capture.*

NOTE   *The only valid file format for uploaded image files is *.bmp.*

Valid file names are up to 240 alphanumeric characters with no spaces.

Bitmap (*.bmp) images must be formatted as 24-bit RGB.

Upload a bitmap image as follows:

1.   Click the **Add** button. The center of the page becomes the Add Image field (figure 6-16).

2.   Click the **Browse** button. The Choose File window opens.

3.   Navigate to the folder where you saved the firmware upgrade file. Select the file and click **Open**. The Add Image fields return to the top.

4.   Click the **Upload Image** button. The computer uploads the image to the ISS. The uploaded image's file name appears in the Image Index field.
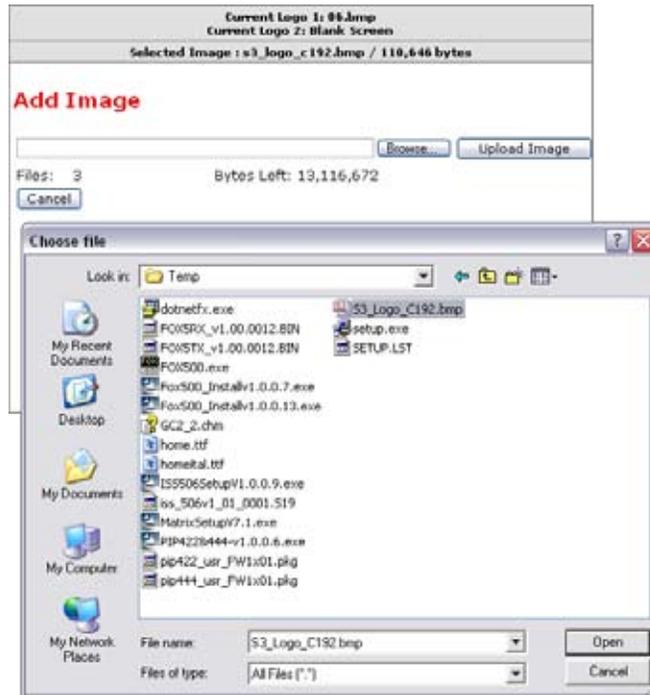
Figure 6-16 — Add Image field

Deleting an image

Delete an unwanted image as follows:

1.   In the Image Index Field, click the unwanted image.

2.   Click the **Delete** button. The computer deletes the selected image from the ISS.

Assigning (recall) a logo

Assign a bitmap image to one of two logos as follows:

1.   In the Image Index field, click the desired image.

2.   Click the **Logo 1: Assign** or **Logo 2: Assign** link to assign the selected image to the selected logo.

NOTE   *To assign a black screen to the logo, click the* **Black Screen** *link.*

Configuring a logo

Configure the logo as follows:

1.   In the logo configuration area, click the radio button for the desired logo (Logo 1 or Logo 2).

2.   Click the radio button for the desired method (Color [RGB] or Level [luma]) for keying out the unwanted material.

   Color — The ISS keys out all material of a specific color (red, green, and/or blue) that is below a variable threshold.

   Level — The ISS keys out all material whose luminance level is below a variable threshold.

3.   Click in the appropriate color or luma dropbox.

4. Watch the logo on the connected output device while you slowly drag the slider up and down (figure 6-17) to key out unwanted material, such as the background, from the logo.
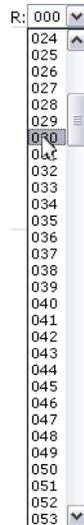
Figure 6-17 — Set Logo Recall slider

5. Watch the logo on the connected output device while you click the Horizontal Position and Vertical Position + (+) and minus (-) buttons to move the logo into the desired position on the screen.

NOTE *See chapter 3, "Operation," for descriptions of the settings on this page.*

Special Characters

The HTML language reserves certain characters for specific functions. The switcher does not accept these characters as part of preset names, the switcher's name, passwords, or locally created file names.

The switcher rejects the following characters:
{space} + ~ , @ = ' [ ] { } < > ' " ; (semicolon) : (colon) | \ and ?.

Chapter 7

Modifications

Modifications

The ISS 506 can be modified to install or remove optional boards that change the input and/or output formats that the switcher can process. The following optional I/O boards are available:

- **SDI/HD-SDI input**
- **Scan converter (low resolution) output**
- **HD-SDI output**
- **DVI output**

Modify the ISS by performing the procedures in the following sections, as applicable:

1. Opening the Switcher
2. Installing an Optional SDI/HD-SDI Input Board
3. Installing an Optional Output Board
4. Closing the switcher

Opening the Switcher

NOTE *Extron recommends that you send the unit to Extron for service and updates.*

To replace or install an optional input or output board, you will to open the ISS's case. Open the switcher as follows:

1. Disconnect the AC power cord from the ISS to remove power from the unit.

WARNING *To prevent electric shock, always unplug the ISS from the AC power source before opening the enclosure.*

2. If the ISS is installed in a rack, disconnect all signal and control cables and remove the ISS from the rack.

3. Remove and retain the 14 screws, 8 on the top and 3 on each side of the ISS cover (figure 7-1).
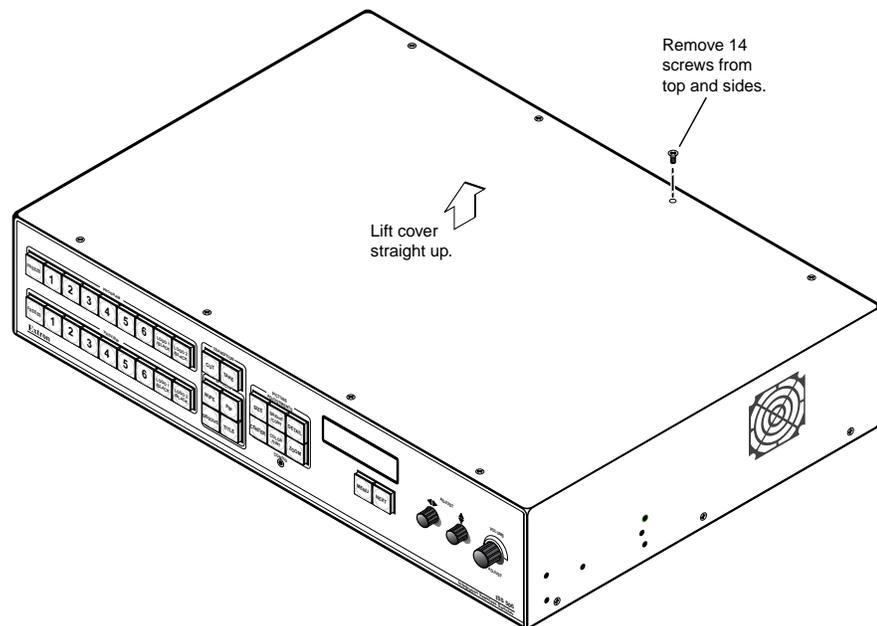
Figure 7-1 — Removing the ISS cover

4. Lift the top cover straight up approximately 5 inches until you can access the fan power cord.

CAUTION *Do not touch any electronic components inside the ISS. Doing so could damage the switcher. Electrostatic discharge (ESD) can damage IC chips even though you cannot feel it. You must be electrically grounded before proceeding with maintenance. A grounding wrist strap is recommended.*

5. Disconnect the fan power cord from connector J46 on the main board.

6. Lift the top cover out of the way.

7. Perform the desired maintenance procedure. See "Installing an SDI/HD-SDI Input Board", below, or "Installing an Optional Output Board", later in this chapter.

Installing an Optional SDI/HD-SDI Input Board

You can install an optional SDI/HD-SDI input board in the ISS. With the board installed, the switcher can input SDI or HD-SDI video on input 6. Extron recommends that you send the unit to Extron for service and updates.

Install an optional SDI/HD-SDI input board in the ISS as follows:

WARNING *Changes to electronic components must be performed by authorized service personnel only.*

WARNING *To prevent electric shock, always unplug the ISS from the AC power source before opening the enclosure.*

1. Open the switcher. See "Opening the Switcher," on page 7-2.

CAUTION *Do not touch any switches or other electronic components inside the ISS. Doing so could damage the ISS. Electrostatic discharge (ESD) can damage IC chips even though you cannot feel it. You must be electrically grounded before proceeding with any electronic component replacement. A grounding wrist strap is recommended.*

2. On the main board (figure 7-2), locate connectors J26, J43, and J44 (①); the three standoffs (②); and the rear panel connector port (③).
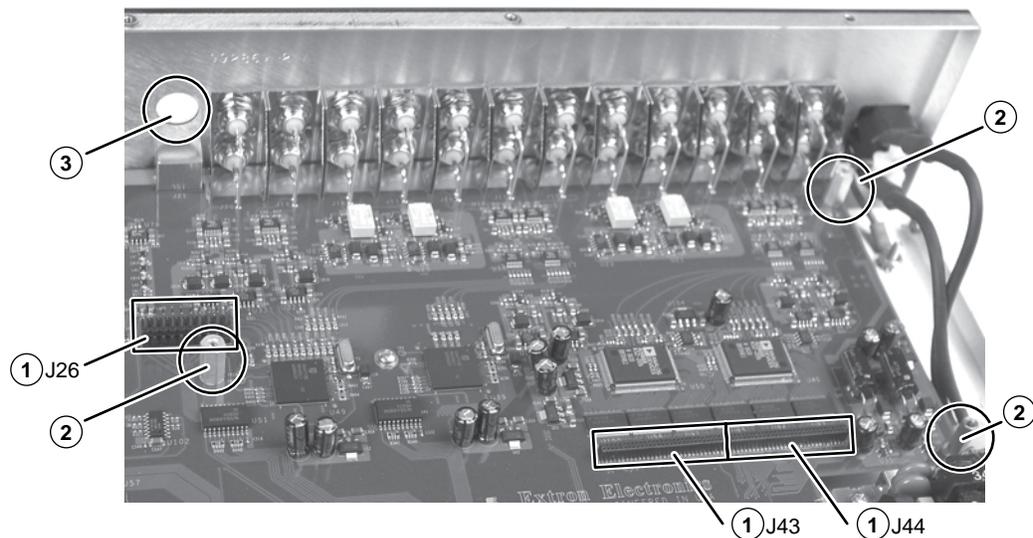
Figure 7-2 — Input board installation location

3. From the inside of the switcher, pop the cover out of the rear panel connector port (③).

4. See figure 7-3. Tip the input board up and guide its output connector through the rear panel connector port (④).
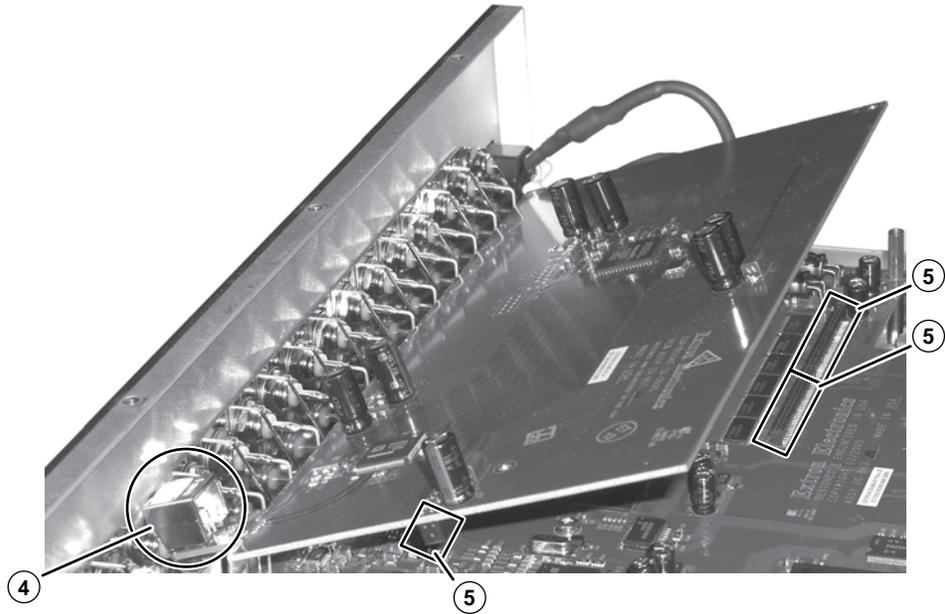
Figure 7-3 — Input board installation

5. See figure 7-3. Align the connectors on the main board and input board (⑤). Gently apply pressure to carefully mate the board with the main board.

6. See figure 7-4. Secure the input board to the standoffs on the main board with the three included screws (⑥).
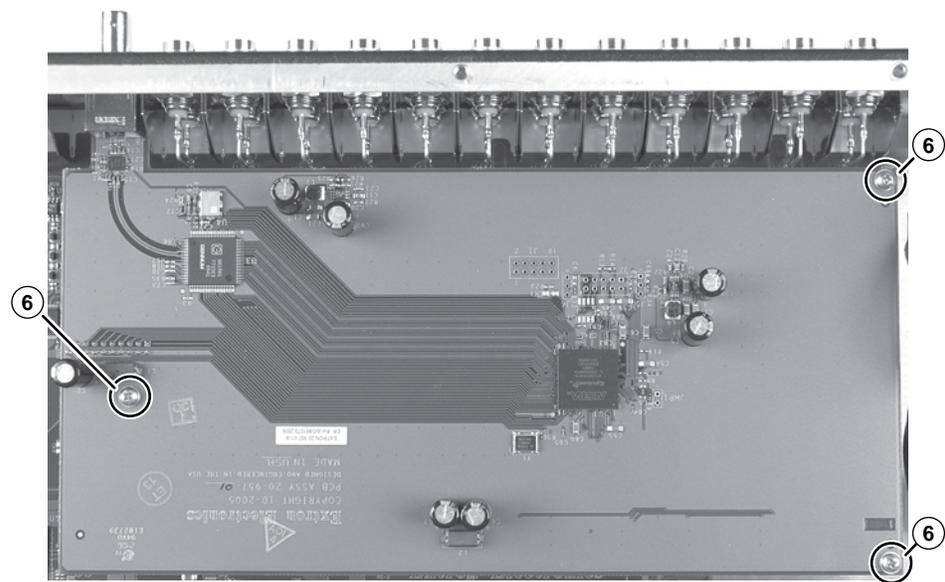
Figure 7-4 — Secure the input board to the standoffs

7. Secure the input board to the back panel with the included hex nut (figure 7-5).
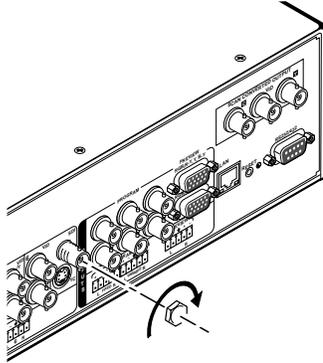
Figure 7-5 — Secure the input board to the rear panel

8. Close and reinstall the switcher. See "Closing the switcher", on page 7-10.

Modifications, cont'd

Installing an Optional Output Board

You can install one of three optional output boards in the ISS. With the board installed, the switcher outputs low resolution (scan converted) video, HD-SDI video, or DVI video on the appropriate connectors in parallel with the program output. Extron recommends that you send the unit to Extron for service and updates.

Install an optional output board in the ISS as follows:

WARNING *Changes to electronic components must be performed by authorized service personnel only.*

WARNING *To prevent electric shock, always unplug the ISS from the AC power source before opening the enclosure.*

1. Open the switcher. See "Opening the Switcher", on page 7-2.

CAUTION *Do not touch any switches or other electronic components inside the ISS. Doing so could damage the ISS. Electrostatic discharge (ESD) can damage IC chips even though you cannot feel it. You must be electrically grounded before proceeding with any electronic component replacement. A grounding wrist strap is recommended.*

2. On the rear panel (figure 7-6), remove and retain the two screws (①) that secure the blank panel to the ISS panel. Remove and discard the panel.
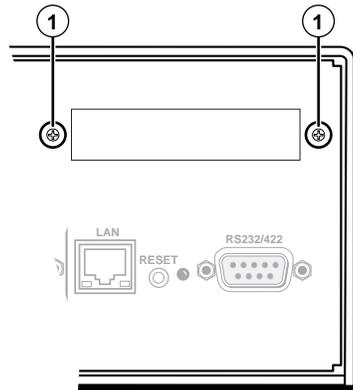
Figure 7-6 — Blank panel removal

3. On the main board (figure 7-7), locate connectors J1, J2A, and J2B (②); the standoff (③); and the rear panel connector port (④).
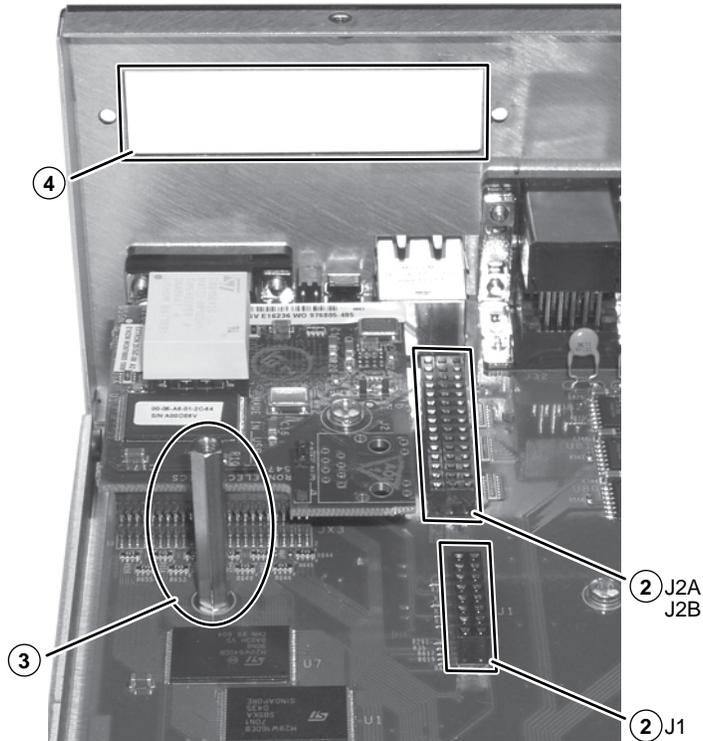
Figure 7-7 — Output board installation location

NOTE *The HD-SDI and low resolution (scan converter) output daughterboards use connectors J2A/J2B and J1. The DVI output board uses J2A/J2B **only**.*

4. Align one or both connector extension(s) with J1 and J2A/J2B on the main board (⑤). Gently apply pressure to carefully mate the extension(s) with the main board (figure 7-8).

NOTE *To make installation of the output board easier, angle the extensions slightly away from the rear of the ISS as shown.*
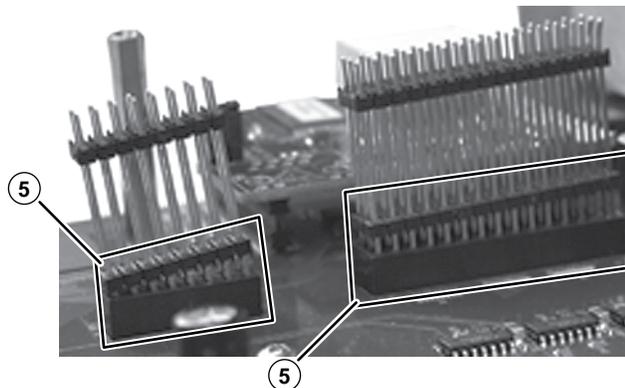
'Figure 7-8 — Connector extensions

Modifications, cont'd

5. See figure 7-9. Align the connector(s) on the output board with those on the extension(s) (⑥). Gently apply pressure to carefully mate the output board with the extension(s).
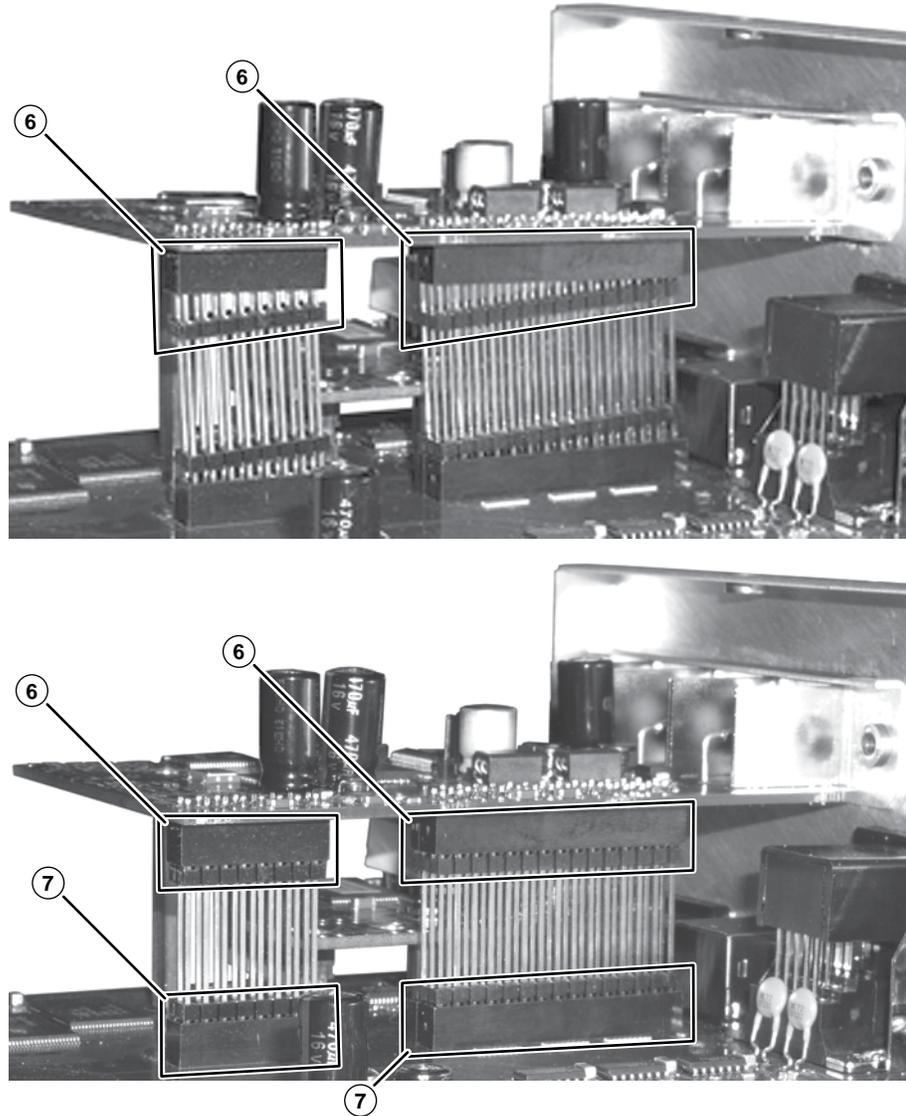
Figure 7-9 — Output board installation

Continue to apply pressure until the connector extension(s) are fully mated with the main board (⑦). Mated connectors are straight on the top and bottom of the connector extension.

NOTE *Ensure that each contact on the connector extension(s) is properly mated with the output board, and not shifted to the front or rear. If the output board's rear panel is not flush with the ISS's rear panel, the board is probably not properly mated.*

6. See figure 7-10. Secure the output board to the standoff on the main board with the included screw (⑧).
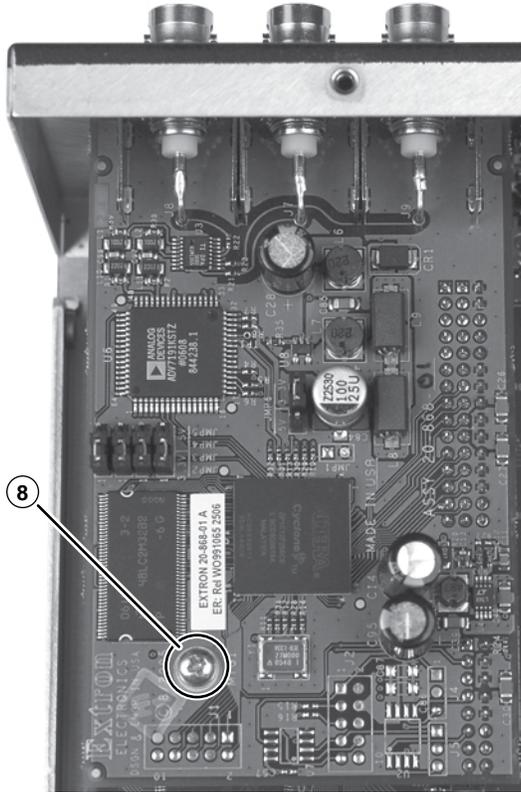
Figure 7-10 — Secure the output board to the standoff

7. Secure the output board to the back panel with the two screws (⑨) removed in step **2** (figure 7-11).
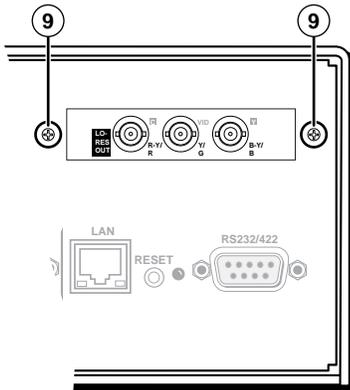
Figure 7-11 — Secure the output board to the rear panel

8. Close and reinstall the switcher. See "Closing the switcher", on page 7-10.

Modifications, cont'd

Closing the Switcher

1. Reconnect the fan power cord to connector J46 on the main board.

2. Replace the top cover on the ISS.

3. Fasten it with the screws that were removed in "Opening the Switcher", step **3**.

4. Rack mount the switcher if desired and reconnect all cables.

Button Labels

Page 7-11 provides strips of blank button labels. If desired, photocopy them or cut them out of the manual, write button information in each button area as desired, and put them in the switcher's input or output buttons' windows.

NOTE *You can also create labels using the Button-Label Generator software (see chapter 5, "Switcher Software").*

Installing labels in the switcher's buttons

Use the following procedure to install new labels in the seamless switcher's front panel buttons.

1. Make new labels using the blanks on page 7-11. Cut them out.

2. Remove the button from the switcher by grasping the button firmly and pulling it away from the front panel (figure 7-12).

NOTE *There are different button models available. Your buttons **may** appear different.*
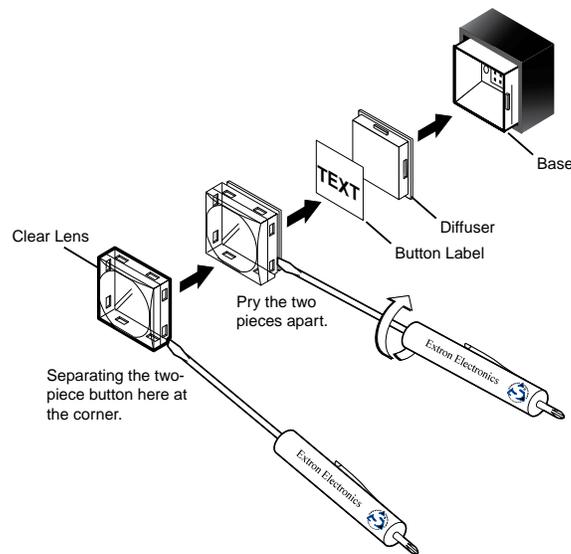
Figure 7-12

3. Use a small screwdriver or Extron Tweeker to gently lever the button cap off of the white backing plate.

4. Insert a button label into the cap and gently but firmly press the cap onto the white backing plate.

5. Press the button into place in the seamless switcher.
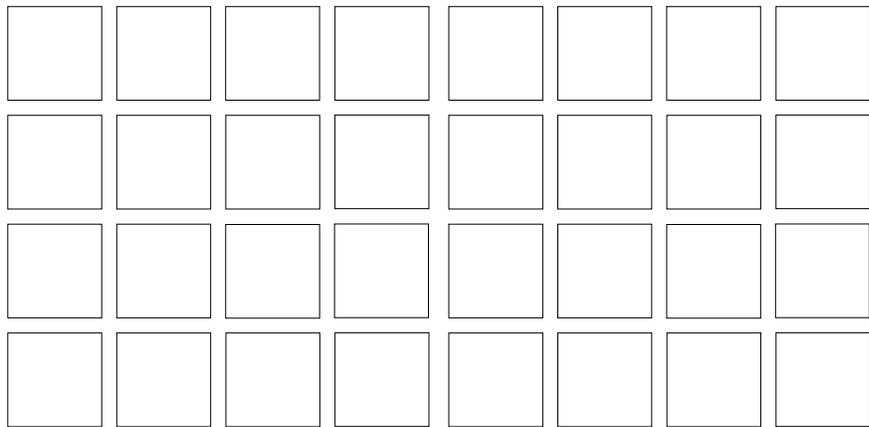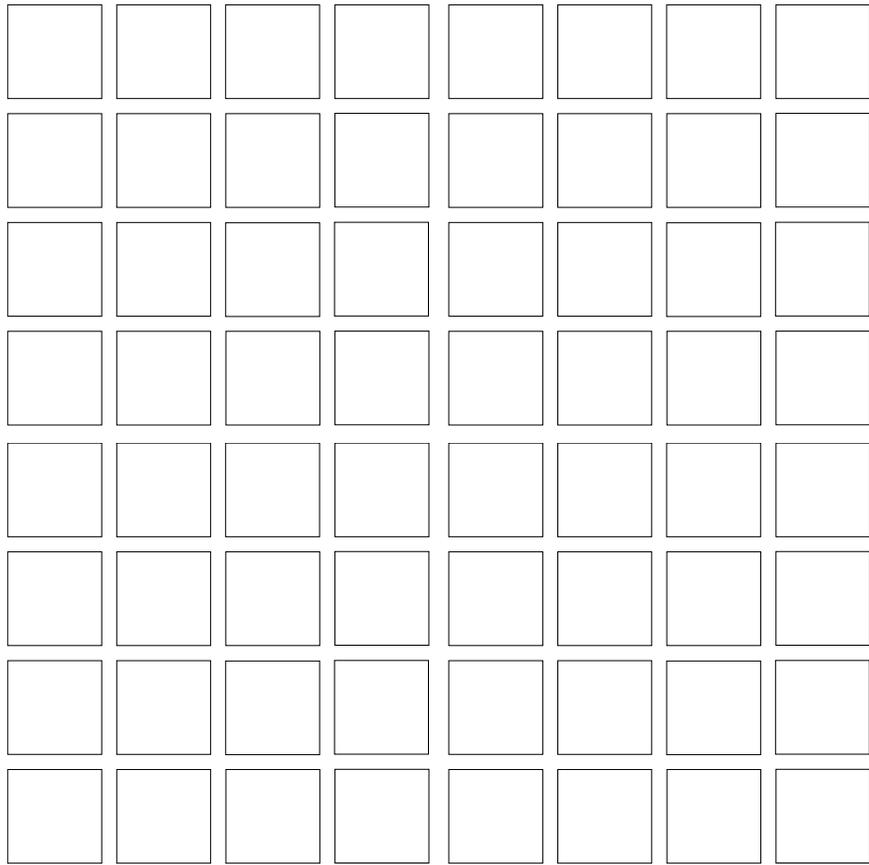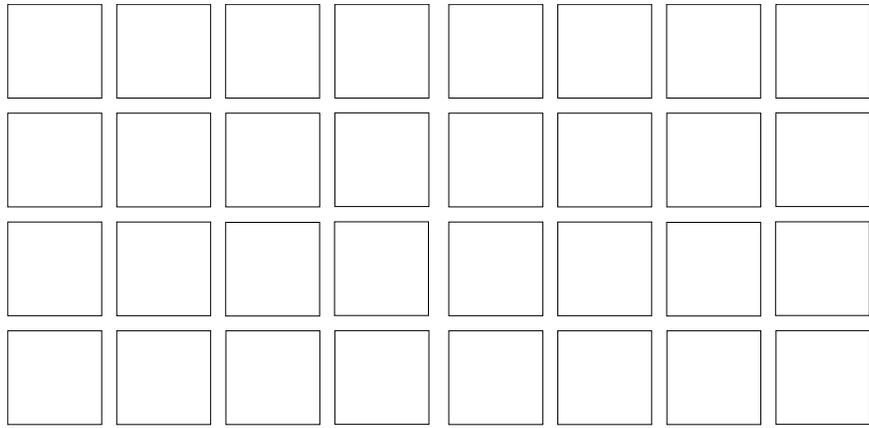
Button label blanks

Modifications, cont'd

Appendix A

Ethernet Connection

Ethernet Link

Subnetting — A Primer

Ethernet Connection

Ethernet Link

The rear panel Ethernet connector on the ISS 506 can be connected to an Ethernet LAN or WAN. This connection makes SIS control of the switcher possible using a computer connected to the same LAN.

Ethernet connection

The Ethernet cable can be terminated as a straight-through cable or a crossover cable and must be properly terminated for your application (figure A-1).

- **Crossover cable** — Direct connection between the computer and the ISS 506.

- **Patch (straight) cable** — Connection of the ISS 506 to an Ethernet LAN.

Pins:
12345678

Insert Twisted Pair Wires

RJ-45 Connector

Crossover Cable

Pin	End 1 Wire color	End 2 Wire color
1	White-green	White-orange
2	Green	Orange
3	White-orange	White-green
4	Blue	Blue
5	White-blue	White-blue
6	Orange	Green
7	White-brown	White-brown
8	Brown	Brown
	T568A	**T568B**

A cable that is wired as T568A at one end and T568B at the other (Tx and Rx pairs reversed) is a "crossover" cable.

Straight-through Cable

Pin	End 1 Wire color	End 2 Wire color
1	White-orange	White-orange
2	Orange	Orange
3	White-green	White-green
4	Blue	Blue
5	White-blue	White-blue
6	Green	Green
7	White-brown	White-brown
8	Brown	Brown
	T568B	**T568B**

A cable wired the same at both ends is called a "straight-through" cable, because no pin/pair assignments are swapped.

Figure A-1 — RJ-45 connector pinout tables

Default address

To access the ISS 506 via the LAN port, you need the switcher's IP address. If the address has been changed to an address comprised of words and characters, the actual numeric IP address can be determined using the Ping utility. If the address has not been changed, the factory-specified default is 192.168.254.254.

Ping can also be used to test the Ethernet link to the ISS 506.

Ping to determine Extron IP address

The Microsoft Ping utility is available at the DOS prompt. Ping tests the Ethernet interface between the computer and the ISS 506. Ping can also be used to determine the actual numeric IP address from an alias and to determine the Web address.

Ping the switcher as follows:

1. On the Windows task bar, click Start > Run.

2. At the Open prompt, type *command.*

3. Click the OK button.

4. At the DOS prompt, type *ping {IP address}* and then press Enter. The computer returns a display similar to figure A-2.

    The line **Pinging ...** reports the actual numeric IP address, regardless of whether you entered the actual numeric IP address or an alias name.

```
C:\>ping 192.168.254.254

Pinging 192.168.254.254 with 32 bytes of data:

Reply from 192.168.254.254: bytes=32 time<10ms TTL=128
Reply from 192.168.254.254: bytes=32 time<10ms TTL=128
Reply from 192.168.254.254: bytes=32 time<10ms TTL=128
Reply from 192.168.254.254: bytes=32 time<10ms TTL=128

Ping statistics for 192.168.254.254:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

Figure A-2 — Ping response

Ping to determine Web IP address

The Ping utility has a modifier, *-a*, that directs the command to return the Web address rather than the numeric IP address.

At the DOS prompt, type *ping -a {IP address}* and then press Enter. The computer's return display is similar to the Ping response shown in figure A-2, except that when you specify the *-a* modifier, the line **Pinging mail...** reports the web IP address rather than the numeric IP address, regardless of whether you entered the actual numeric IP address or an alias name.

Connect as a Telnet client

The Microsoft Telnet utility is available from the DOS prompt. Telnet allows you to input SIS commands to the ISS 506 from the PC via the Ethernet link and the LAN.

Access the DOS prompt and start Telnet as follows:

1. On the Windows task bar, click Start > Run.

2. At the Open prompt, type *command*.

3. Click on the OK button.

4. At the DOS prompt, type *telnet* and then press Enter. The computer returns a display similar to figure A-3.

Ethernet Connection, cont'd

```
Microsoft (R) windows 2000 (TM) Version 5.0 (Build 2195)
Welcome to Microsoft Telnet Client
Telnet Client Build 5.00.99203.1

Escape Character is 'CTRL+]'

Microsoft Telnet>
```

Figure A-3 — Telnet screen

Telnet tips

It is not the intention of this manual to detail all of the operations and functionality of Telnet; however, some basic level of understanding is necessary for operating the ISS 506 via Telnet.

Open

Connect to the ISS 506 using the Open command. Once your computer is connected to the switcher, you can enter the SIS commands the same as you would if you were using the RS-232 link.

Connect to the ISS 506 as follows:

1. At the Telnet prompt, type *open {IP address}* and then press Enter.

    If the switcher is not password protected, no further prompts are displayed until you break or disconnect the connection to the ISS 506.

    If the switcher is password protected, Telnet displays the password prompt.

2. If necessary, at the password prompt, type in your password and then press Enter.

    Connection to the switcher via the Ethernet can be password protected. There are two levels of password protection: administrator and user. A person logged on as an administrator has full access to all ISS 506 switching capabilities and editing functions. Users can select video and/or audio for output, select test patterns, set RGB and audio mutes, select a blue screen, and view all settings with the exception of passwords. By default, the ISS 506 ships with both passwords set to {carriage return}.

    Once you are logged in, the switcher returns either **Login Administrator** or **Login User**. No further prompts are displayed until you break or disconnect the connection to the ISS 506.

Escape character and Esc key

When Telnet is first started, the utility advises that the **Escape character is 'Ctrl+]'**. Many SIS commands include the keyboard Esc key. Consequently, some confusion may exist between the Escape character and the Escape key.

The Telnet Escape character is a key combination, the Ctrl key and the] key pressed simultaneously, that returns you to the Telnet prompt while leaving the connection to the ISS 506 intact.

The Escape key is the Esc key on the computer keyboard.

Local echo

Once connected to the ISS 506, by default, Telnet does not display your keystrokes on the screen. SIS commands are typed in blindly and only the SIS responses are displayed on the screen. To command Telnet to show keystrokes, at the Telnet prompt, type *set local_echo* and then press Enter before you open the connection to the switcher.

With local echo turned on, keystrokes and the switcher's responses are displayed on the same line. For example: **1*1!In1 Out1 All,** where **1*1!** is the SIS command and **In1 Out1 All** is the response.

With local echo turned on, all keystrokes are displayed, even those that should be masked, such as the password entry. For example, when entering a password with local echo turned on, you will see a display such as **a*d*m*i*n***, where **admin** is the keyed in password and ********* is the masked response.

Local echo can be turned off by typing *unset local_echo* and then pressing Enter at the Telnet prompt. If you are connected to the ISS 506 and need to access the Telnet prompt to turn local echo off, type the Escape character (Ctrl+]).

Set carriage return-line feed

Unless commanded otherwise, Telnet transmits a line feed character only (no carriage return) to the connected switcher when you press the Enter key. This is the correct setting for SIS communication with the switcher. The Telnet *set crlf* command forces Telnet to transmit carriage return and line feed characters when Enter is pressed, but if crlf is set, the SIS link with the switcher will not function properly.

Close

To close the link to the switcher, access the Telnet prompt by typing the Escape character (Ctrl+]). At the Telnet prompt, type *close* and then press Enter.

Help

For Telnet command definitions, at the Telnet prompt, type *?* and then press Enter.

Quit

Exit the Telnet utility by typing *quit* and then press Enter at the Telnet prompt. If you are connected to the ISS 506 switcher, access the Telnet prompt by typing the Escape character (Ctrl+]).

Subnetting — A Primer

It is not the purpose of this manual to describe TCP/IP protocol in detail. However, some understanding of TCP/IP subnetting (a subnet is a **sub**set of a **net**work — a set of IP devices that have portions of their IP addresses in common) is necessary in order to understand the interaction of the ISS 506 and the mail server gateway. To understand subnetting at the level required to install and operate the ISS 506, you must understand the concepts of a gateway, local and remote devices, IP addresses and octets, and subnet masks and octets.

Gateways

The ISS 506 can communicate with the e-mail server that the switcher uses for e-mail notification directly (if they are on the same subnet) or the communication can be routed via a gateway (a computer that provides a link between different subnets).

Local and remote devices

The local and remote devices are defined from the point of view of the function being described. In this manual, subnetting is an issue when you are using the controlling PC to set TCP/IP and e-mail values in the ISS 506 (see "System Settings IP settings window" in chapter 5, "Switcher Software", and "System Configuration page " and "Email Alerts page", in chapter 6, "HTML Operation"). When you are setting up the variables for e-mail notification, which may include subnetting, the seamless switcher is the local device and the e-mail server is the remote device.

IP addresses and octets

Valid IP addresses consist of four 1-, 2-, or 3-digit numeric subfields, properly called octets, separated by dots (periods) (figure A-4). Each octet can be numbered from 000 through 255. Leading zeroes, up to 3 digits total per octet, are optional. Values of 256 and above are invalid.

Typical IP Address: 192.168.254.254
Octets

Figure A-4 — IP address and octets

Subnet masks and octets

The subnet mask (figure A-5) is used to determine whether the local and remote devices are on the same subnet or different subnets. The subnet mask consists of four numeric octets separated by dots. Each octet can be numbered from 000 through 255. Leading zeroes, up to 3 digits total per octet, are optional. Each octet typically contains either 255 or 0. The octets determine whether or not the same octets of two IP addresses will be compared when determining if two devices are on the same subnet.

255 indicates that this octet will be compared between two IP addresses.　　0 indicates that this octet will **not** be compared between two IP addresses.

Typical Subnet Mask: 255.255.0.0
Octets

Figure A-5 — Subnet mask and octets

Determining whether devices are on the same subnet

To determine the subnet, the local device's IP address is **compared** to the remote device's IP address (figure A-6). Each address's octets are **compared** or **not compared**, depending on the value in the related subnet mask octet.

- If a subnet mask octet contains the value 255, the related octets of the local device's address and the remote device's IP address are unmasked.

   Unmasked octets are compared (indicated by *?* in figure A-6).

- If the subnet mask octet contains the value 0, the related octets of the local device's and remote device's IP addresses are masked.

   Masked octets are not compared (indicated by *X* in figure A-6).

If the unmasked octets of the two IP addresses **match** (indicated by **=** in figure A-6) (example 1), the two addresses **are on the same subnet**.

If the two unmasked fields **do not match** (indicated by ≠ in figure A-6) (example 2 and example 3), the addresses **are not on the same subnet**.

	Example 1	Example 2	Example 3
Local IP Address:	192.168.254.254	192.168.254.254	192.168.254.254
Subnet Mask:	255.255.0.0 (*?.?.X.X*)	255.255.0.0 (*?.?.X.X*)	255.255.0.0 (*?.?.X.X*)
Remote IP Address:	192.168.2.25	190.190.2.25	192.190.2.25
Match?:	=.=.*X.X* — **Match**	≠.≠.*X.X* — **No match**	=.≠.*X.X* — **No match**
	(Same subnet)	(Different subnet)	(Different subnet)

Figure A-6 — ***Comparing the IP addresses***

Ethernet Connection, cont'd

Appendix B

Reference Information

Specifications

Part Numbers and Accessories

Reference Information

Specifications

Video input

Number/signal type.....................	4 RGBHV, RGBS, RGsB, RGBcvS, component video (interlaced or progressive), S-video, composite video
	1 component video (interlaced), S-video, composite video
	1 S-video, composite video, or optional digital component video (SDI or HDSDI)
Connectors	4 x 5 female BNC
	1 x 3 female BNC, 1 female BNC, 1 female 4-pin mini DIN
	1 optional BNC for SDI/HDSDI
Nominal level	1 Vp-p for Y of component video and S-video, and for composite video
	0.7 Vp-p for RGB and for R-Y and B-Y of component video
	0.3 Vp-p for C of S-video
Minimum/maximum levels........	Analog: 0.0 V to 2.0 Vp-p with no offset at unity gain
Impedance.....................................	75 ohms
Horizontal frequency...................	Autoscan 15 kHz to 100 kHz
Vertical frequency.........................	Autoscan 50 Hz to 120 Hz
Resolution range	Autoscan 640x480 to 1920x1200, 480p, 576p, 720p, 1080i, 1080p
Return loss....................................	-30 dB @ 5 MHz
DC offset (max. allowable)...........	0.5 V

Video processing

Encoder (for scan converted output)
   10 bit digital
Digital sampling (for program and preview outputs)
   24 bit, 8 bits per color; 13.5 MHz standard (video), 194 MHz standard (RGB)
Colors (for program and preview outputs)
   16.78 million
Horizontal filtering (for scan converted output)
   3 levels
Vertical filtering (for scan converted output)
   3 levels
Encoder filtering (for scan converted output)
   3 levels

Video output

Number/signal type.....................	2 scaled RGBHV, RGBS, RGsB, HD YUV component video program outputs
	1 scaled RGBHV, RGBS, RGsB, HD YUV component video preview output
	1 optional DVI, HDSDI (SMPTE 292 M), or scan converted output (interlaced component video, S-video, composite video)
Connectors	(2) 15-pin HD (1 for preview output, 1 for program output)
	5 BNC female (for program output)
Nominal level	1 Vp-p for Y of component video and S-video, and for composite video
	0.7 Vp-p for RGB and for R-Y and B-Y of component video
	0.3 Vp-p for C of S-video
Minimum/maximum levels........	0.0 V to 0.7 Vp-p (RGB)
	0.0 V to 1.0 Vp-p (component video, G of RGsB)
Impedance.....................................	75 ohms

Scaled resolution .... 640x480[1,2,3,4,5,6], 800x600[1,2,3,4,5,6], 852x480[1,2,3,4,5], 1024x768[1,2,3,4],
1024x852[1,2,3,4],1024x1024[1,2,3], 1280x768[1,2,3,4], 1280x1024[1,2,3], 1360x765[1,2,3],
1365x768[1,2,3], 1365x1024[1,2], 1366x768[1,2,3], 1400x1050[1,2], 1600x1200[1,2],
HDTV 480p[2,10], 576p[1,5], 720p[1,2,8,9,10], 1080p[1,2,7,8,9,10], 1080i[1,2,10],
1864x1050[1,2], 1280x800[1,2,3], 1440x900[1,2,3], 1680x1050[1,2], 1080p Sharp[1,2], and
1920x1200[2]*

[1] = at 50 Hz ; [2] = at 60 Hz; [3] = at 72 Hz ; [4] = 96 Hz; [5] = 100 Hz; [6] = 120 Hz;
[7] = 24 Hz; [8] = 25 Hz; [9] = 30 Hz; [10] = 59.94 Hz

* 1920 x 1200 is available only in units that shipped after the first quarter of 2009.

Return loss..................................... -30 dB @ 5 MHz
DC offset.. ±25 mV with input at 0 offset (except for RGsB and component video)
Switching type .... Seamless switching (cut or dissolve)

Sync

Input type...................................... Autodetect (RGBHV, RGBS, RGsB), and component
Output type.................................... RGBHV, RGBS, RGsB
Tri-level on Y, R-Y, B-Y channels of component video or bi-level on Y channel
of component video (selectable)
Standards....................................... NTSC 3.58, NTSC 4.43, PAL, SECAM
Optional SDI/HDSDI input: SMPTE 259M-C, SMPTE 292M
Input level .... 2.75 V to 5.0 Vp-p for RGBHV or RGBS
0.6 Vp-p for component video tri-level sync
0.3 Vp-p for component video bi-level sync or RGsB
Output level .... TTL: 5.0 V p-p, unterminated
Input impedance .... 510 ohms, vertical; 75 ohms, horizontal
Output impedance .... 75 ohms
Max. input voltage .... 5.0 Vp-p
Polarity.. Positive or negative (selectable)

Audio

Gain.. Unbalanced output: -6 dB; balanced output: 0 dB
Frequency response .... 20 Hz to 20 kHz, ±0.05 dB
THD + Noise.................................. 0.05% @ 1 kHz at +4 dBu and 0 dB gain
S/N... >83 dB (typical) at maximum output (unweighted)
Crosstalk.. <-80 dB @ 1 kHz, fully loaded
Stereo channel separation .... >90 dB @ 1 kHz
CMRR... >75 dB @ 1 kHz

Audio input

Number/signal type...................... 6 stereo, balanced/unbalanced
Connectors .... (6) 3.5 mm captive screw connectors, 5 pole
Impedance...................................... >10k ohms unbalanced/balanced, DC coupled
Nominal level .... +4 dBu (1.23 Vrms), -10 dBV (316 mVrms)
Maximum level.............................. +19.5 dBu, (balanced or unbalanced) at 1% THD+N
Input gain adjustment .... –18 dB to +24 dB
Audio delay compensation (automatic)
20 ms when scaling RGB computer video or HDTV component video
75 ms when scaling NTSC component video, S-video, or composite video
90 ms when scaling PAL component video, S-video, or composite video

NOTE   *0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu*

Reference Information, cont'd

Audio output

Number/signal type..................... 3 stereo, balanced/unbalanced (2 program, 1 preview)

Connectors .... (3) 3.5 mm captive screw connector, 5 pole

Impedance..................................... 50 ohms unbalanced, 100 ohms balanced

Gain error .... ±0.5 dB channel to channel

Maximum level (Hi-Z) .... >+21 dBu, balanced or unbalanced at 1% THD+N

Maximum level (600 ohm).......... >+15 dBm, balanced or unbalanced at 1% THD+N

Control/remote — switcher

Serial control ports....................... 1 RS-232/RS-422: 1 rear panel 9-pin female D connector
1 RS-232: 1 front panel 2.5 mm mini stereo jack

Baud rate and protocol................. 9600 (default), 19200, 38400, 115200 baud; 8 data bits; 1 stop bit; no parity

Serial control pin configurations

    9-pin female D connector . RS-232: 2 = TX, 3 = RX, 5 = GND
RS-422: 2 = TX-, 3 = RX-, 5 = GND, 7 = RX+, 8 = Tx+

    Mini stereo jack.................. RS-232: tip = TX, ring = RX, sleeve = GND

Ethernet control port.................... 1 RJ-45 female connector

Ethernet data rate......................... 10/100Base-T, half/full duplex with autodetect

Ethernet protocol........................... ARP, ICMP (ping), IP, TCP, UDP, DHCP, HTTP, SMTP, Telnet

Ethernet default settings .... Link speed and duplex level = autodetected
IP address = 192.168.254.254   Subnet mask = 255.255.0.0
Gateway = 0.0.0.0   DHCP = off

Web server..................................... Up to 200 simultaneous sessions
16 MB nonvolatile user memory

Program control............................ Extron's control/configuration program for Windows®
Extron's Simple Instruction Set (SIS™)
Microsoft® Internet Explorer® ver. 6 or higher, Netscape® Navigator®, Telnet

General

Power .... 100 VAC to 240 VAC, 50-60 Hz, 45 watts, internal

Temperature/humidity................ Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing
Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing

Mounting

    Rack mount .... Yes, with included brackets

Enclosure type .... Metal

Enclosure dimensions................... 3.5" H x 17.5" W x 12.0" D (2U high, full rack wide)
(8.9 cm H x 44.4 cm W x 30.5 cm D)
(Depth excludes connectors and knobs. Width excludes rack ears.)

Product weight .... 8.5 lbs (3.9 kg)

Shipping weight .... 18 lbs (9 kg)

DIM weight

    USA/Canada .... 15 lbs (7 kg)

    International....................... 18 lbs (8 kg)

Vibration... ISTA 1A in carton (International Safe Transit Association)

Regulatory compliance

    Safety................................... CE, c-UL, UL

    EMI/EMC .... CE, C-tick, FCC Class A, ICES, VCCI

MTBF... 30,000 hours

Warranty.. 3 years parts and labor

NOTE   *All nominal levels are at ±10%.*

NOTE   *Specifications are subject to change without notice.*

Part Numbers and Accessories

ISS 506 part numbers

The following ISS 506 models are available:

Switcher model	Part number
ISS 506	60-742-01
ISS 506 DI/DVI (SDI/HD-SDI input and DVI output)	60-742-12
ISS 506 SC (scan converted output)	60-742-03
ISS 506 DI/SC (SDI/HD-SDI input and scan converted output)	60-742-13
ISS 506 DI/HD-SDI (SDI/HD-SDI input and HD-SDI output)	60-742-14

Included parts

These items are included in each order for an ISS 506:

Included parts	Replacement part number
IEC power cord	
MBD 249 through-desk and rack mounting kit	
Tweeker (small screwdriver)	
ISS 506 user's manual	
Captive screw audio connectors (9)	
Extron Software Products Disk	

Accessories

The following optional daughterboards can be ordered separately:

Adapters, power supplies, labels	Part number
SDI/HD-SDI input board	70-560-01
Scan converter output board	70-486-01
DVI output board	70-487-01
HD-SDI output board	70-559-01

Reference Information, cont'd

Extron Warranty

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

**USA, Canada, South America,
and Central America:**
Extron Electronics
1001 East Ball Road
Anaheim, CA 92805
U.S.A.

Japan: Extron Electronics, Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

Europe, Africa, and the Middle East:
Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

China:
Extron China
686 Ronghua Road, Songjiang
District
Shanghai 201611
China

Asia:
Extron Asia
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363
Singapore

Middle East:
Extron Middle East
Dubai Airport Free Zone
F12, PO Box 293666
United Arab Emirates, Dubai

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

If it has been determined that the product is defective, please call Extron and ask for an Applications Engineer at (714) 491-1500 (USA), 31.33.453.4040 (Europe), 65.383.4400 (Asia), or 81.3.3511.7655 (Japan) to receive an RA# (Return Authorization number). This will begin the repair process as quickly as possible.

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

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

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

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+1.919.863.1797 FAX

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+800.3987.6673
Inside Europe Only

+31.33.453.4040
+31.33.453.4050 FAX

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+65.6383.4400
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