

User's Manual



USP 507

Universal Signal Processor

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.

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

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

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

Sicherheitsanleitungen • Deutsch



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



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

Achtung

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

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

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

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

Instrucciones de seguridad • Español



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



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

Precaucion

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

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

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

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

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 remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

Vorsicht

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

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

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

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

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

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

Advertencia

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

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 • 为安全地从设备拔掉电源，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。不要有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。按照生产的建议处理废弃电池。

声明

所使用电源为 A 级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对其干扰采取切实可行的措施。

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.*

For more information on safety guidelines, regulatory compliances, EMI/EMF compliance, accessibility, and related topics, [click here](#).

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USP 507

1

Chapter One

Introduction

About this Manual

About the USP 507

Definitions

Features

Introduction

About this Manual

This manual contains installation, configuration, and operating information for the Extron USP 507 Universal Signal Processor. It covers basic installation, and configuring and operating the device using the front panel controls and Simple Instruction Set (SIS™) commands. It also describes how to load and start up the Windows®-based Signal Processing Products Control Program (SPPCP) and how to connect to the built-in HTML pages, for operating the processor.

About the USP 507

The Extron USP 507 is a high performance, hardware-based signal processor for video and computer-video sources. It supports all common analog and digital video and data formats, from composite video to high resolution DVI, RGBHV and optional SDI/HD-SDI format. Input video is scaled and made available in most output formats, including analog RGBHV and Extron MTP Twisted Pair, as well as optional DVI, HD-SDI, or scan-converted video. In addition the USP 507 can capture and store a displayed image for later recall. Ten default PIP window layouts presets come as standard, with the ability to store up to sixteen PIP window layouts for later use.

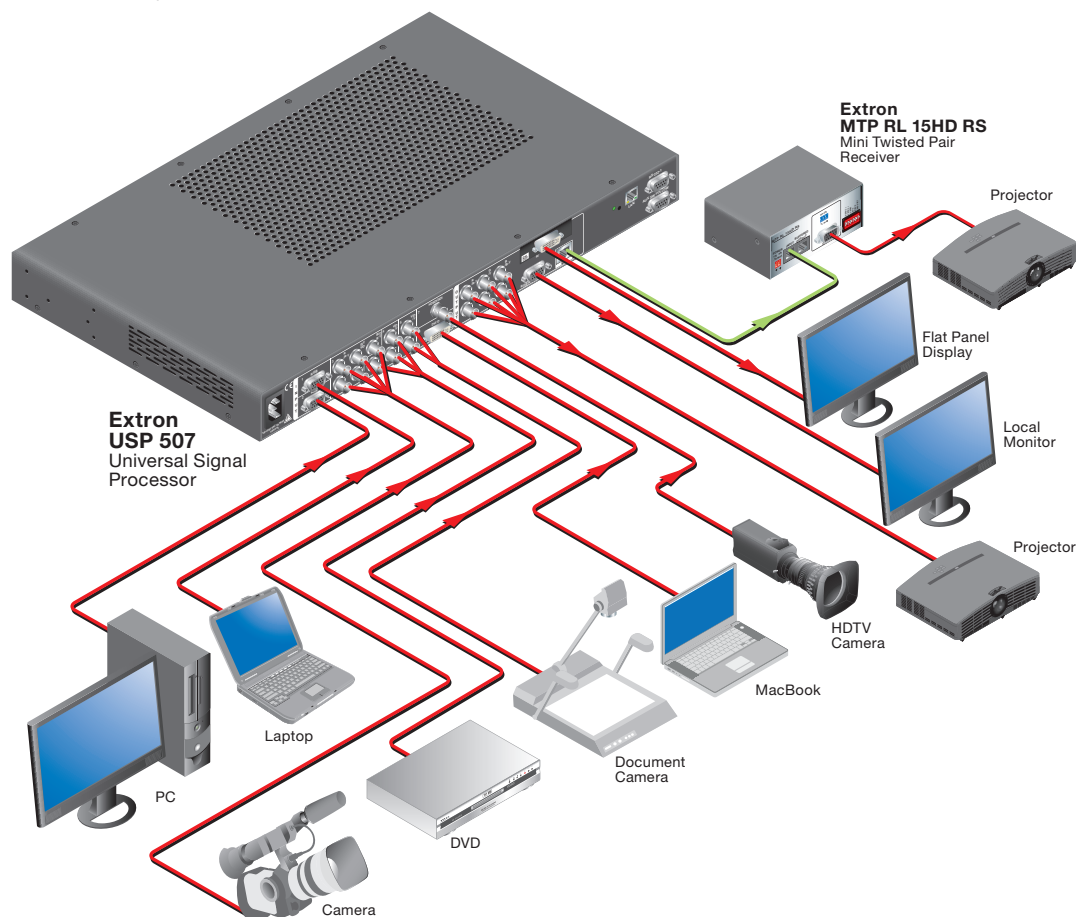


Figure 1-1 — Typical USP 507 application

Definitions

The following terms are used throughout this manual:

EDID — Extended Display Identification Data. A communications protocol or instruction set developed by VESA (Video Electronics Standards Association) for the identification of display devices to computers using the DDC (Display Data Channel) transmission standard.

DVI — Digital Visual Interface. The digital video connectivity standard that was developed by DDWG (Digital Display Working Group). This connection standard offers two different connectors: one with 24 pins that handles digital video signals only, and one with 29 pins that handles both digital and analog video. This standard uses TMDS (Transition Minimized Differential Signal) from Silicon Image and DDC (Display Data Channel) from VESA (Video Electronics Standards Association). DVI-D is a DVI connector that supports digital signals only, and DVI-I supports both digital and analog signals.

SDI — Serial Digital Interface. The standard based on a 270 Mbps transfer rate. This is a 10-bit, scrambled, polarity independent interface with common scrambling for both component ITU-R 601 and composite digital video and four channels of embedded digital audio.

HD-SDI — High-definition version of SDI specified in SMPTE 292M. This standard transmits audio and video over a single coaxial cable with a data rate of 1.485 Gbit/second.

Preset — A configuration that has been stored, allowing the setup and recall of recurring I/O configurations using either the front panel, RS-232/422, or Ethernet control.

Input: Up to 128 input presets (individual I/O configurations) may be saved and recalled. An input preset is a user-defined set of input and picture control settings that can be saved for each source within a system so that they can be recalled whenever the source is active. Input presets can be recalled on any input that supports the saved input's video format. This type of preset saves specific settings for size, centering, contrast, brightness, detail, zoom, and input configuration. Unlike user presets, input presets save parameters that can be recalled only on the source that was active when the preset was saved.

User: Up to 16 user presets per input are available. A user preset saves specific settings for color, brightness, detail, size, and centering. User presets are used when a shortcut is needed to quickly recall a group of settings that relate to the current content or current input. Each input has its own set of 16 user presets.

PIP: Up to 16 user defined PIP window layout presets can be stored, available for later use. Ten factory default PIP window layout presets come as standard and can be overwritten.

Auto Memory — The automatic saving and recall of input and picture controls for signals that have been previously applied.

Features

- Inputs:** Two RGB or HD component video on 15-pin HD connectors; configurable input on BNCs for RGB, HD/SD component video, S-video, or composite video; component video, S-video, or composite video on BNCs; S-video or composite video on BNCs; DVI-D; and optional SDI/HD-SDI.
- Outputs:** Simultaneous scaled outputs as RGB or HD component video on BNCs, 15-pin HD, and Extron MTP twisted pair output; optional fourth output for DVI-D, HD-SDI, or scan-converted component video, S-video, or composite video.
- Hardware-based graphics and video processing** — The USP 507 features a fully hardware-based system architecture designed to deliver the performance and operational reliability essential for mission-critical applications.
- Integrated seven-input presentation switcher** — The USP 507 allows for switching between DVI, RGBHV, component video, and S-video or composite video sources. An input for SDI/HD-SDI is available as an option.
- Auto input format detection** — Each input can be set to detect the incoming signal format, automatically reconfiguring itself to provide the appropriate decoding and signal processing. This feature can reduce the number of required outputs for a device, lowering system cost while improving manageability.
- RGB, HDTV, and video scaling** — RGB computer-video, high definition video, and standard definition video sources can be scaled to the desired output resolution.
- RGB upscaling and downscaling** — The USP 507 features an advanced scaling engine with high quality upscaling and downscaling of high resolution computer-video signals.
- Optional SDI/HD-SDI input** — SDI or HD-SDI signals from cameras or other professional video equipment can easily be integrated into presentations with the optional SDI/HD-SDI input board.
- Four simultaneous video outputs** — Two high resolution RGB or component video outputs are available, as well as Extron MTP twisted pair and an optional output that can be configured as DVI, HD-SDI, or scan-converted video.
- Extron MTP twisted pair output** — This provides built-in transmission of RGB or component video signals over twisted pair cables for long distance transmission to a remote display. A compatible Extron MTP Series twisted pair receiver is required.
- Optional DVI, HD-SDI, or scan-converted output** — A flexible output expansion port which can be populated to support optional DVI, HD-SDI, or scan converter output boards. These boards offer additional system capabilities, such as recording or digital signal transmission.
- Output rates** — A total of 81 output rates are available, including computer-video rates up to 1920x1200, and HDTV rates up to 1080p/60 Hz.
- Image freeze control** — A live image can be frozen using the freeze button on the front panel, or through RS-232 serial control and IP Link[®] Ethernet control.
- Image capture** — A snapshot of the live video output can be captured and stored as a BMP file on the USP 507 or downloaded to a PC for archiving. Up to 40 MB of space is available on the USP 507 for screen captures.
- Auto-Image[™]** — Using the front panel, the sizing, centering, and filtering can be automatically adjusted to optimize the output image.

Auto Input Memory — When activated, the USP 507 automatically stores size, position, and picture settings based on the incoming signal. When the same signal is detected again, these image settings are automatically recalled from memory.

EDID emulation — The USP 507 provides a means for specifying the rate of the incoming DVI or VGA signal through the RS-232 serial port. EDID emulation allows proper communication with the video source.

Glitch-free switching — Switching is glitch-free between RGB and video inputs with selectable cut (freeze), cut (blank), or fade to black transitions. Presentations can be enhanced by eliminating distracting visual jumps, glitches, and distortion commonly seen when switching between computer and video sources.

PIP (picture-in-picture) — Allows a video source to be displayed within an RGB image, or vice versa, with dynamic, fully adjustable window positioning for the PIP window. PIP mode is available through RS-232 serial control, or IP Link™ Ethernet control, and PIP presets can be recalled or saved via the front panel.

Picture controls — Adjustable for brightness, contrast, color, tint, detail, and horizontal and vertical positioning, sizing, and zoom. Sixteen memory presets are available for each input to store all image settings.

Aspect ratio conversion — Any video input can be adjusted horizontally and vertically to meet a specific aspect ratio requirement. Alternatively, the input aspect ratio may be specified as 4:3 or 16:9 and fixed.

Front panel security lockout — This locks out all front panel functions except for input selection; all functions however, are available through RS-232 control.

Automatic 3:2 and 2:2 pulldown detection — Advanced film mode processing techniques help maximize image detail and sharpness for NTSC, PAL, and HDTV 1080i sources that originated from film.

Motion adaptive 1080i to 1080p deinterlacing — High performance deinterlacing for 1080i signals from HD sources including broadcasts and Blu-ray Disc™, allows optimized image quality through advanced motion compensation.

Quad standard video decoding — This uses a digital, four-line adaptive comb filter to decode NTSC 3.58, NTSC 4.43, PAL, and SECAM video for integration into systems worldwide.

IP Link Ethernet monitoring and control — An IP integration technology developed by Extron. IP Link enables the USP 507 to be controlled and proactively monitored over a LAN, WAN, or the Internet.

RS-232 serial control port — Using serial commands, the USP 507 can be controlled and configured via the Extron Windows®-based control program (SPPCP), or integrated into third-party control systems. Extron products use the SIS (Simple Instruction Set) command protocol, a set of basic ASCII code commands that allow for quick and easy programming.

Rack-mountable — 1U, full rack width, metal enclosure.

Internal universal power supply — The 100-240 VAC, 50-60 Hz, international power supply provides worldwide power compatibility.



USP 507

2

Chapter Two

Installation

U/L Safety Requirements

Mounting the USP 507

Rear Panel Features and Connections

Powering Up

Resetting the Unit with the Reset Button

Installation

UL/Safety Requirements

The Underwriters Laboratories (UL) requirements listed below pertain to the safe installation and operation of this universal signal processor.

Important safety instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Mounting the USP 507

If the USP 507 is to be rack mounted, it is important to mount it before cabling it. Four rubber feet are included with the unit. Install the feet only if the unit is to be mounted on a tabletop (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 device.

UL guidelines for rack mounted devices

The following Underwriters Laboratories (UL) guidelines pertain to the safe installation of the USP 507 in a rack.

1. **Elevated operating ambient temperature** — If 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 device in an environment compatible with the maximum ambient temperature ($T_{ma} = +122\text{ }^{\circ}\text{F}$, $+50\text{ }^{\circ}\text{C}$) 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 (such as use of power strips).

Rack mounting

To rack mount the USP 507, insert screws under each opposite corner of the unit and secure it to the rack (see figure 2-1).

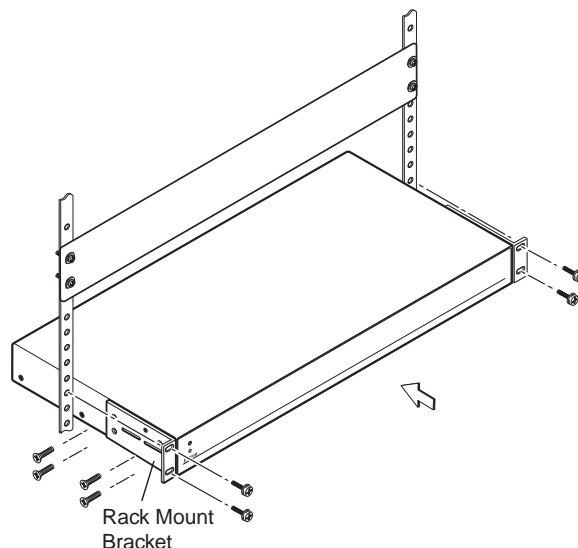


Figure 2-1 — Mounting the USP 507

Rear Panel Features and Connections

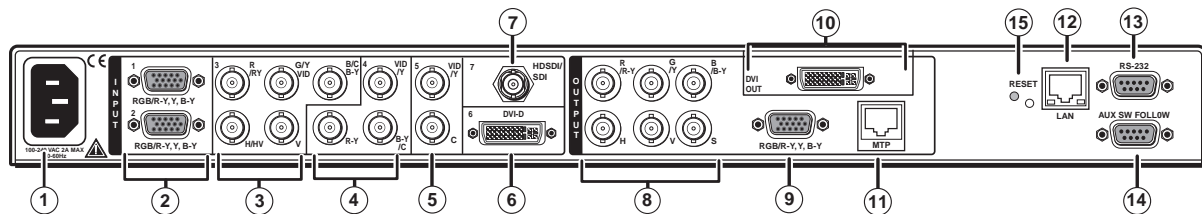
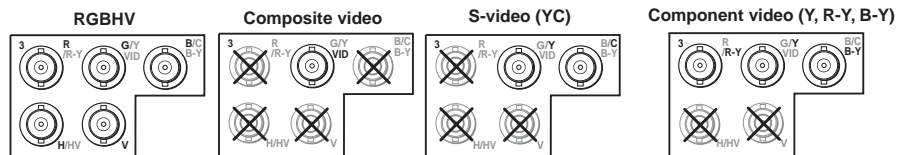


Figure 2-2 — USP 507 rear panel features

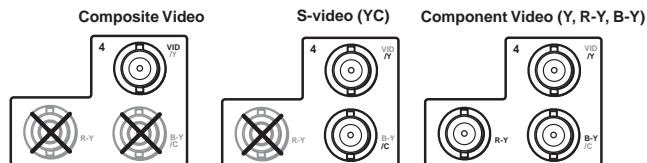
- | | |
|--|---|
| ① AC power connector | ⑧ RGB/YUV-HD BNC output connectors |
| ② RGB/YUV-HD VGA connectors (inputs 1 and 2) | ⑨ RGB/YUV-HD VGA output connector |
| ③ Universal BNC connectors (input 3) | ⑩ Optional output card (DVI shown) |
| ④ Component/S-video/composite BNC connectors (input 4) | ⑪ MTP twisted pair output connector |
| ⑤ S-video/composite BNC connectors (input 5) | ⑫ RJ-45 Ethernet LAN connector |
| ⑥ DVI connector (input 6) | ⑬ Control device 9-pin D-sub RS-232 connector |
| ⑦ Optional HD-SDI/SDI connector (input 7) | ⑭ Auxiliary switcher 9-pin D-sub RS-232 connector |
| | ⑮ Reset button and LED |

Power and video input connections

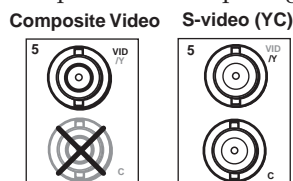
- ① **AC power connector** — After connecting all input and output cables, plug a standard IEC power cord from a 100 to 240 VAC, 50 Hz to 60 Hz power source into this receptacle.
- ② **RGB/YUV-HD VGA connectors (inputs 1 and 2)** — Connect high resolution computer-video input signals to either/both of the two 15-pin HD connectors.
- ③ **Universal BNC connectors (input 3)** — Connect high resolution computer-video, component, S-video, and composite input signals to these BNCs.




- ④ **Composite/S-video/component BNC connectors (input 4)** — Connect composite video, S-video, and component video signals to these BNC's.



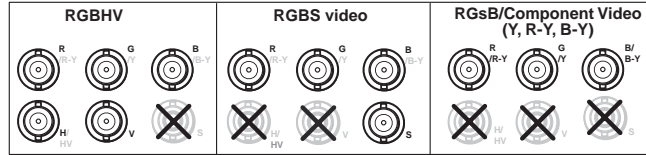
- ⑤ **S-video/composite video BNC connectors (input 5)** — Connect S-video or composite video input signals to this pair of female BNC connectors.



- ⑥ **DVI-D connector (input 6)** — Connect a high resolution digital input signal to this DVI-I connector. 
- ⑦ **Optional input board (HD-SDI/SDI with BNC shown) connector (input 7)** — Connect an appropriate input to the optional board connector.

Output, user interface, and control connections

- ⑧ **RGB/YUV-HD BNC connectors** — Connect a display to these for RGB or HD component video output.



- ⑨ **RGB/YUV-HD 15-pin VGA connector** — Connect a display to this for RGB or HD component video output.
- ⑩ **Optional output card (DVI connector shown)** — Connect a suitable display device to this optional format output connector (as shown, a DVI output).
- ⑪ **MTP output** — Connect an Extron twisted pair receiver to this port
- ⑫ **LAN Ethernet port** — Connect the USP 507 to an Ethernet LAN or WAN via this RJ-45 connector. Ethernet control allows the operator to control the processor from a remote location. When connected to an Ethernet LAN or WAN, the device can be accessed and operated from a computer running a standard Internet browser. The Link LED lights green when the USP 507 is connected to an Ethernet LAN, and the Act LED flickers amber, indicating data transmission as the devices communicate.

CAUTION Do not connect the MTP cable to the LAN port, or connect the LAN cable to the MTP port.

NOTE Do not use standard telephone cables, as they do not support Ethernet or Fast Ethernet. See Appendix B for correct cabling.

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

- ⑬ **Control device (RS-232) port** — The **upper** 9-pin D-sub connector provides for two-way RS-232 communication. Connect a host computer or control system to it for serial RS-232 or RS-422 control.
- The default protocol is 9600 baud, 1 stop bit, no parity, and no flow control.
- ⑭ **Auxiliary switcher follow port** — For auxiliary device switching, **using a NULL RS-232 cable only**, connect an Extron audio switcher/processor, such as the Extron SW 8A, to the **lower** 9-pin D-sub connector.
- When the USP 507 switches input via either a control device RS-232 command or front panel control, the USP 507 and the connected auxiliary device switch inputs. When video is muted or unmuted, frozen or unfrozen, a corresponding audio mute/unmute command is sent to the auxiliary switcher.
- ⑮ **Reset button and LED** — This button is used to reset the switcher to any one of four different states. The LED indicates the status during the resetting procedure. Refer to the “Resetting the Unit with the Reset Button” section, on page 2-7, for full details.

Installation, cont'd

Installation and cabling

Step 1 — Mount the unit

Turn off or disconnect all equipment power sources and rack mount the USP 507. [See page 2-3.](#)

Step 2 — Connect inputs

Connect inputs from video sources to the applicable connectors marked "Inputs" ([see page 2-4, ② to ⑦ for connector types](#)).

Step 3 — Connect outputs

Connect video output devices to the applicable connectors marked "Outputs" ([see page 2-5, ⑧ to ⑩ for connector types](#)).

Step 4 — Connect control devices

LAN Ethernet port — Connect to an Ethernet LAN or WAN via this RJ-45 connector ② to control the processor from a remote location, using a PC's Internet browser. [See Appendix B](#) for network cable termination method. Ethernet connection indicator LEDs marked indicate the status of the Ethernet connection. The green LED lights when connected to an Ethernet LAN, and the amber LED flickers as the devices communicate.

Control device port — For serial RS-232 or RS-422 control, connect a host computer or control system via the upper 9-pin D-sub connector ③.

RS-232 protocol (default values):

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

NOTE [See chapter 4, "SIS Programmer's Guide" for definitions of the SIS commands.](#)
[See chapter 5, "USP 507 Software" to install and use the control software.](#)

Step 5 — Connect auxiliary device

RS-232 port — Connect an auxiliary device, such as an Extron switcher, to the lower RS-232 port ④, **using a NULL RS-232 cable only.**

Step 6 — Connect power

AC power connector — Plug in a standard IEC power cord from a 100 to 240 VAC, 50 - 60 Hz power source into this receptacle ⑤.

Powering Up

When applying power to the USP 507, the unit undergoes a start-up self testing sequence (see image below) and then the LCD displays the default display cycle.

Default display cycle

When in use but not in any menu mode, the LCD screen defaults to cycling through the input/output configuration currently installed. The displayed content may vary, depending on the input video signal type. See figure 2-3 for a typical default display cycle.

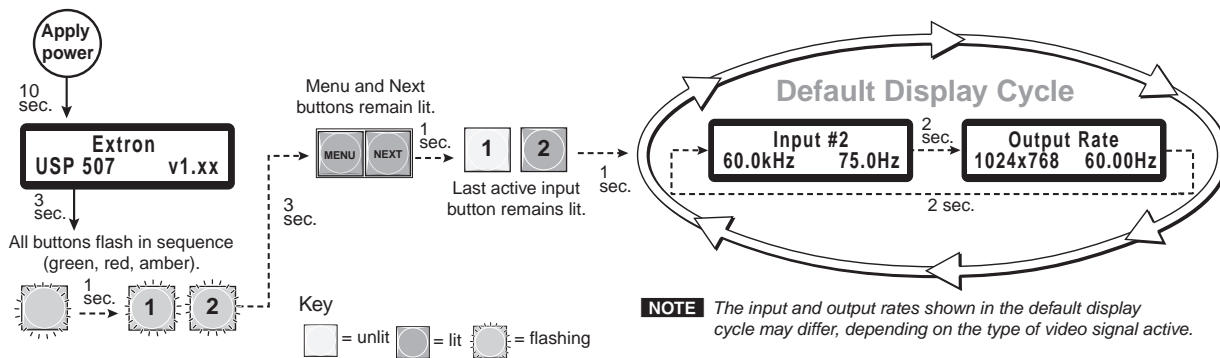


Figure 2-3 — Typical default display cycle

The default display cycle shows the output rate and the refresh rates for the currently selected input.

Resetting the Unit with the Reset Button

There are four reset modes (numbered 1, 3, 4, and 5 for the sake of comparison with Extron IPL products) that you can access by pressing the Reset button on the rear panel. The Reset button is recessed, so use a pointed stylus, ballpoint pen, or Extron Tweaker to press it. See the table on the next page for a summary of the reset modes.

CAUTION Review the reset modes carefully. Using the wrong reset mode may result in unintended loss of flash memory programming, port reassignment, or processor reboot.

NOTE The reset modes listed in the table close all open IP and Telnet connections and close all sockets. Also, each mode is a separate function, not a continuation from mode 1 to mode 5.

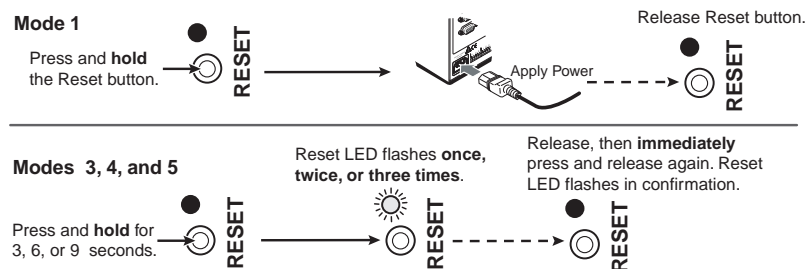


Figure 2-4 — Resetting the USP 507

Installation, cont'd

USP 507 Reset Mode Summary

	Mode Activation	Result	Purpose/Notes
Use Factory Firmware	<p>1 Hold down the recessed Reset button while applying power to the unit.</p> <p>NOTE After a mode 1 reset is performed, update the USP 507 firmware to the latest version. The reset to factory intsltd firmware is temporary. When power is cycled, the unit uses the last installed firmware. Do not operate the firmware version that results from this mode reset. If you want to use the factory default firmware, you must upload that version again. See page 6-10 for details on uploading firmware.</p>	<p>The USP 507 reverts to the factory default firmware. Event scripting does not start if the device is powered on in this mode. All user files and settings (drivers, adjustments, IP settings, etc.) are maintained.</p> <p>NOTE If you do not want to update firmware, or you performed a mode 1 reset by mistake, cycle power to the device to return to the firmware version that was running prior to the mode 1 reset. Use the OQ SIS command to confirm that the factory default firmware is no longer running (look for asterisks following the version number.)</p>	<p>This mode reverts to the factory default firmware version if incompatibility issues arise with user-loaded firmware.</p> <p>NOTE User-defined Web pages may not work correctly if using an earlier firmware version.</p>
Run/Stop Events	<p>3 Hold down the Reset button for about 3 sec. until the Power LED blinks once, then release and press Reset momentarily (<1 sec.) within 1 second.</p>	<p>This Mode turns events on or off.</p> <p>NOTE Nothing happens if the momentary press does not occur within 1 second. During resetting LED flashes twice if events are starting, and three times if events are stopping.</p>	<p>This mode is useful for troubleshooting.</p>
Reset all IP Settings	<p>4 Hold down the Reset button for about 6 sec. until the Power LED blinks twice (once at 3 sec., again at 6 sec.). Then release and press Reset momentarily (for <1 sec.) within 1 second.</p> <p>NOTE Nothing happens if the momentary press does not occur within 1 second.</p>	<p>This Mode:</p> <ul style="list-style-type: none"> • Enables ARP capability. • Sets the IP address back to factory default (192.168.254.254). • Sets the subnet back to factory default. • Sets the default gateway address to the factory default. • Sets port mapping back to factory default. • Turns DHCP off. • Turns events off. 	<p>This mode enables you to set IP address information using ARP and the MAC address.</p>
Reset to Factory Defaults	<p>5 Hold down the Reset button for about 9 sec. until the Power LED blinks three times (once at 3 sec., again at 6 sec., again at 9 sec.). Then release and press Reset momentarily (for <1 sec.) within 1 second.</p> <p>NOTE Nothing happens if the momentary press does not occur within 1 second.</p>	<p>This Mode performs a complete reset to factory defaults (except the firmware).</p> <ul style="list-style-type: none"> • Does everything mode 4 does. • Resets all IP options. • Removes scheduling settings. • Removes/clears all files from the USP 507. • Resets all user video settings. 	<p>This mode is useful if you want to start over with configuration and uploading, and also to replace events.</p>



USP 507

Chapter Three

Front Panel Operation

Front Panel Overview

Switching Inputs

Special Function Button Operation

Button Backlighting

The USP 507 Menu System

Setting the Front Panel Locks (Executive Modes)

Setting Up the USP 507 to Work with a Matrix Switcher

Setting Up the USP 507 to Work with an Auxiliary Audio Switcher

Front Panel Operation

Front Panel Overview

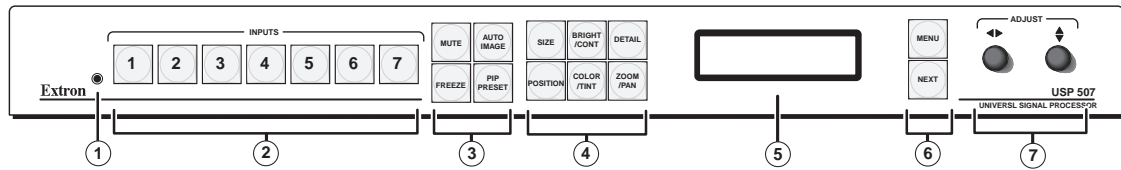


Figure 3-1 — Front panel features

- ① **Front panel configuration port** — Connect a control system or computer to this (RS-232) port, using an optional 9-pin D to 2.5 mm mini jack TRS RS-232 cable, part 70-335-01 (see below). RS-232 protocol (default values):
- 9600 baud
 - 1 stop bit
 - no parity
 - 8 data bits
 - no flow control

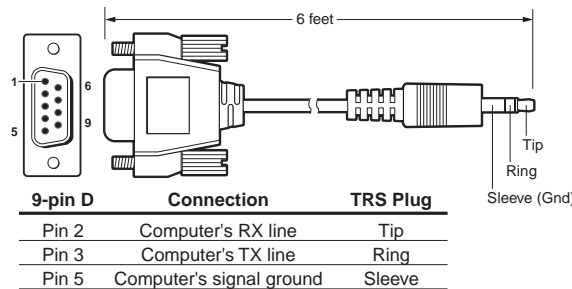


Figure 3-2 — Front 2.5 mm port configuration cable, part 70-335-01

- ② **Input selection buttons** — Select/switch inputs and indicate which input is active.
- ③ **Special function buttons** — These four buttons are:
- **Mute** — Allows the current displayed image to be muted or unmuted.
 - **Freeze** — Allows the current displayed image to be frozen or unfrozen as desired.
 - **Auto Image** — Initiates auto image adjustment on the selected input.
 - **PIP Preset** — Allows the current PIP layout to be saved as a preset, or recalls a saved PIP preset layout.
- ④ **Picture control buttons** — These six buttons are:
- **Size** — Allows adjustment to the displayed image size. Also used (when held down with Position button) to enable or disable front panel locking.
 - **Position** — Allows horizontal and/or vertical position adjustment of the displayed image. Also used (when held down with Size button) to enable or disable front panel locking.
 - **Bright/Cont** — Allows adjustment of the brightness and contrast settings for the displayed image.
 - **Color/Tint** — Allows adjustment of the color and tint settings for the displayed image.
 - **Detail** — Allows adjustment of the detail (sharpness) settings for the displayed image. Also used when saving an image for recall.
 - **Zoom/Pan** — Allows displayed image to be zoomed in or out, or panned horizontally and/or vertically.

NOTE Adjustments are made using either or both Adjust knobs.

- ⑤ **LCD display** — This LCD screen displays two rows of menu, control response, and configuration text.

- ⑥ **Menu navigation buttons** — These two buttons give access to menu commands. See “The USP 507 Menu System” section in this chapter.

Menu button — This button, always lit amber, gives direct access to a series of seven menus.

Next button — This button, always lit amber, allows page changes within each one of the menus, and to exit the menu cycle.

- ⑦ **Adjust knobs** — These two knobs are used with the picture control buttons and the menu navigation buttons to adjust settings.

Switching Inputs

To switch inputs, simply press the desired input button. The button lights amber with an active video signal. If the output is configured correctly for the display device, the image changes to the new input. An inactive signal gives no image.

Special Function Button Operation

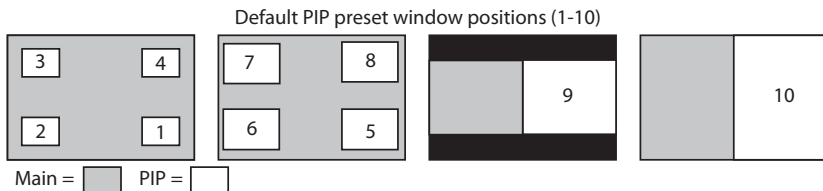
To use the four special function buttons:

Mute — To mute (blank) the on-screen video image, press the Mute button (lights green). Press it again to unmute the video (light extinguishes).

Freeze — To freeze the current on-screen image, press the Freeze button (lights green). Press it again to unfreeze the image (light extinguishes).

Auto Image — To perform an auto image (sizing, centering, filtering) on the active signal, press the Auto Image button once. The LCD displays “Confirm... Press Auto Image”. Press it again to initiate the auto image, the button lights green momentarily, then extinguishes when the auto image action is complete.

PIP Preset — To recall any one of 16 PIP layout presets, press and release the PIP Preset button. The LCD displays “Recall PIP preset: <N/A>”. Rotate either adjust knob to reach the desired PIP preset number (for example preset 02), then press Next. The LCD briefly displays “Preset 02 recalled!” (in this example), the layout is recalled to the current active display, and the PIP input button lights green. The LCD shortly reverts to the default display cycle.



To save a PIP layout preset, **press and hold** the PIP Preset button. The LCD displays “ Save to PIP preset: <N/A>”. Rotate either adjust knob to reach the desired PIP preset number (for example preset 05), then press Next. The LCD briefly displays “Preset 05 saved!” (this example), and the current active display layout is saved. The LCD reverts to the default display cycle.

NOTE *The Save PIP Preset function can be used only when the PIP feature is on.*

Button Backlighting

The buttons can be backlit a dimmed amber.

To turn the backlighting on or off, press and hold the Bright/Cont and Color/Tint buttons simultaneously until the buttons become lit or unlit.

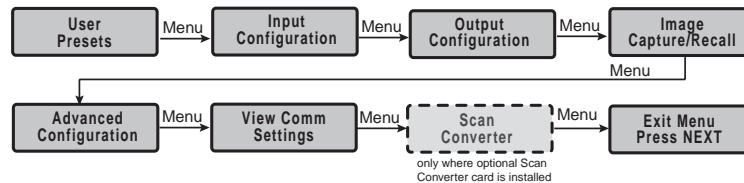
Front Panel Operation

The USP 507 Menu System

The USP 507 can be configured using the menu system, via the Extron Simple Instruction Set (SIS™) of commands through an RS-232 or LAN connected PC, or via the Extron software program, SPPCP.

NOTE For SIS commands and SPPCP configuration methods see chapters 4 and 5.

There are seven front panel configuration menus: User Presets, Input Configuration, Output Configuration, Image Capture/Recall, Advanced Configuration, and View Comm Settings. A hidden menu (Edit Comm Settings) is also accessible. If an optional Scan Converter board is installed, an eighth menu (scan converter menu) is available.



Overview of menus

User Presets

This menu allows the user to save the current image settings to a preset number (1-16 for each input), and recall any saved preset as the current image settings.

Input Configuration

This menu allows configuration of the following settings for any selected input: Input type, film detection, vertical and horizontal start points, pixel phase, the number of total and active pixels and the number of active lines.

Output Configuration

This menu allows configuration of the following settings for the active output: resolution and refresh rate (see page 3-8), output type, and sync polarity.

Image Capture/Recall

This menu allows any one of up to 16 stored images to be recalled to the display, as either a background to an active video signal, or in front of the active signal. It also allows the user to store the current displayed image on the device for later recall.

Advanced Configuration

This menu allows advanced configuration of the following USP 507 settings: auto image, input EDID, auto memories, RGB delay, switch effect, test pattern, MTP pre-peaking, internal temp (view only), and resetting to factory defaults.

View Comm Settings

This menu allows the user to view the following serial and IP settings for the unit: serial port baud rate, MAC address, DHCP (Dynamic Host Configuration Protocol) setting, IP address, subnet mask address, and gateway address.

NOTE These settings can not be edited from within this menu. See next section.

Edit Comm Settings (hidden)

To display and enter this menu, press and hold the Detail and Color/Tint buttons simultaneously and then press Next. The hidden menu appears.

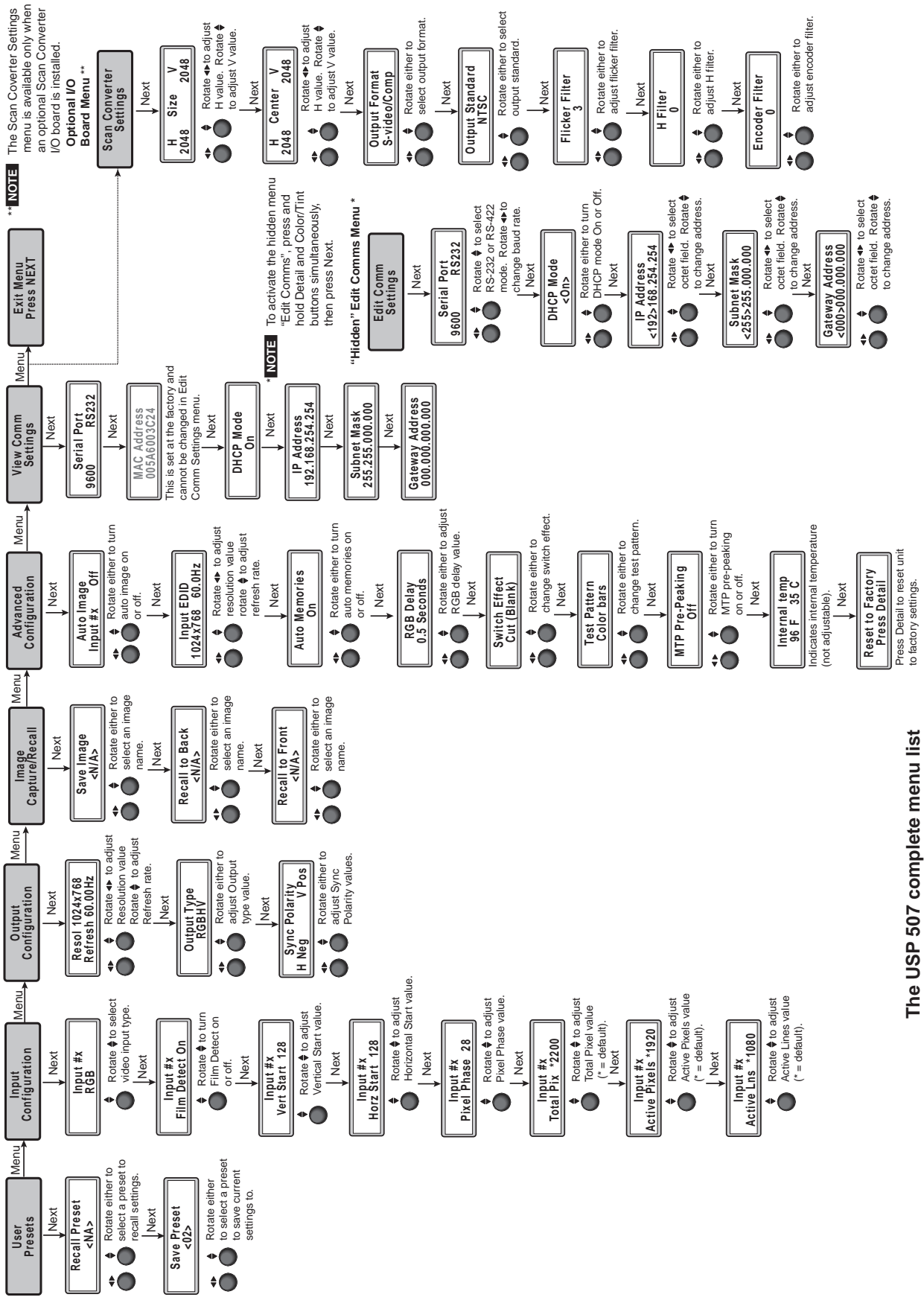
This menu allows the user to edit the following serial and IP settings: serial port baud rate, DHCP mode, IP address, subnet mask, and gateway address.

Scan Converter Configuration

This menu, displayed only when the optional scan-converter board is installed, allows the user to configure the settings for scan-converted outputs.

Exit Menu

At this menu pressing Next exits the menu system and returns to the default cycle.



The USP 507 complete menu list

Front Panel Operation, cont'd

Using the menus

To configure the USP 507 using any of the menus, do the following:

1. Press the Menu button repeatedly to get to the desired configuration menu.
2. Press the Next button repeatedly to go to the desired submenu.
3. The LCD shows the current values. Observe the LCD and rotate either (or both) Adjust knob to change the values as desired.

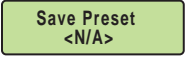
NOTE Pressing the Menu button within any level returns the user to the current top level menu.

When in any menu for approximately 25 seconds and no buttons have been pressed or adjust knobs rotated, the unit times out, returning to the default cycle.

User presets

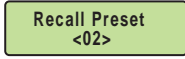
Within this menu up to 16 presets can be saved or recalled.

Save a user preset

1. From the default display cycle press Menu to enter the User Presets submenu.
2. Press Next twice to go to the Save Preset menu. 
3. Rotate either front panel encoder to select a preset (1 to 16) to save the current settings to. Default setting is <N/A>. Select <N/A> and press Next to move to the next submenu without saving.
4. Press Next to save the current image settings to the selected preset number. The preset is saved and the LCD goes back to the top level User Preset menu.

NOTE If an existing Preset is chosen to save to, the previous settings are overwritten in favor of the new (current) settings.

Recall a user preset

1. From the default display cycle press Menu to enter the User Presets submenu.
2. Press Next to go to the Recall Preset menu. 
3. Rotate either front panel Adjust knob (◀▶↕) to select a preset (1 to 16) to recall as the current settings. Default setting is N/A. Select <N/A> and press Next to move to the next submenu without recalling.
4. Press the Next button. The preset is recalled, the image changes to the recalled settings and the LCD goes back to the top level User Preset menu.

Input configuration

Within this menu any of the seven inputs can be configured. Each input has different settings depending on the signal format. Consult the tables below for signal formats per input and possible adjustments per signal format.

To configure inputs:

- From the top level Input Configuration menu press the Next button to bring up the input selection screen. The active input is displayed on the LCD with current signal format.

Input #2
YUVp/HDTV

NOTE If the input showing is not the one to be adjusted, press the desired input button.

- With the correct input displayed, rotate the right Adjust knob (↻) to change the signal format (refer to table below for signal type per input).

Input #1	Input #2	Input #3	Input #4	Input #5	Input #6	Input #7
*RGB	*RGB	*RGB	*YUVi	*S-Video	*DVI	*SDI
YUVp/HDTV	YUVp/HDTV	YUVp/HDTV	S-Video	Composite		HD-SDI
Auto Detect	Auto Detect	RGBcvs	Composite	Auto Detect		Auto Detect
		YUVi	Auto Detect			
		S-Video				
		Composite				
		Auto Detect				

Figure 3-3 — Signal formats per input (*= default value)

- Press the Next button to go to the next setting. If necessary repeat pressing Next until the desired level is attained. Refer to the table below for adjustable settings for each signal format.

Input Format	RGB	YUVp/ HDTV	RGBcvs	YUVi	S-vid	Composite Video	DVI	SDI	HD-SDI
Film Detect	X	X	X	X	X	X	X	X	X
H Start	X	X							
V Start	X	X							
Phase	X	X							
Total Pixels	X	X							
Active Pixels	X	X	X	X	X	X		X	X
Active Lines	X	X	X	X	X	X		X	X

Figure 3-4 — Adjustments possible per signal form

- At the desired setting (for example, Horizontal Start on input #2 with a YUVp/HDTV signal), rotate the right Adjust knob (↻) to adjust the settings value as desired (here to 122).
- Repeat steps 3 and 4 for each setting as desired.
- When complete press Menu once or Next repeatedly to return to the top level menu. Alternatively, allow to time out to return to the default cycle.

Front Panel Operation, cont'd

Output configuration

Within this menu an outputs resolution, refresh rate, output signal type, and sync polarity can be selected and adjusted. Refer to the table below for applicable resolution and refresh rates.

1. Press Next to bring up the Resolution submenu. In this submenu, the resolution and refresh rate can be adjusted.
2. Rotate the left front panel knob (◀▶) to adjust the resolution value, and rotate the right knob (⬇️) to adjust the refresh rate.

Resolution	23.98 Hz	24 Hz	25 Hz	29.97 Hz	30 Hz	50 Hz	59.94 Hz	*60 Hz	75 Hz
640x480						X		X	X
800x600						X		X	X
852x480						X		X	X
1024x768						X		X	X
1024x852						X		X	X
1024x1024						X		X	X
1280x768						X		X	X
1280x800						X		X	X
1280x1024						X		X	X
1360x765						X		X	X
1360x768						X		X	X
1365x768						X		X	X
1366x768						X		X	X
1365x1024						X		X	X
1440x900						X		X	X
1400x1050						X		X	
1680x1050						X		X	
1600x1200						X		X	
1920x1200						X		X	
480p							X	X	
576p						X			
720p			X	X	X	X	X	X	
1080i						X	X	X	
1080p	X	X	X	X	X	X	X	X	
2048x1080	X	X	X	X	X	X	X	X	

(* = default)

Figure 3-5 — Output resolution/refresh rate table

3. Press Next to enter the next submenu, Output Type. Within this submenu the output signal type (RGBHV, RGB, YUV Bi-Level, or YUV Tri-Level) can be selected.
4. Rotate either front panel Adjust knob (◀▶ ⬇️) to select the output signal type.
5. Press Next to enter the next submenu, Sync Polarity. Within this submenu, the Sync Polarity can be set (H- V-, H-V+, H+ V-, or H+ V+).
6. Rotate either front panel Adjust knob (◀▶ ⬇️) to select the sync polarity.

NOTE An incorrect sync polarity setting will result in the loss of the output image.

7. Press Next or Menu to return to the Output Configuration.

Image capture/recall

Within this menu, the currently displayed image can be captured and saved to the USP 507 memory. This image or any other saved image can then be recalled and output to the active display at a later time. The recalled image can be displayed at the front of or behind an active video signal.

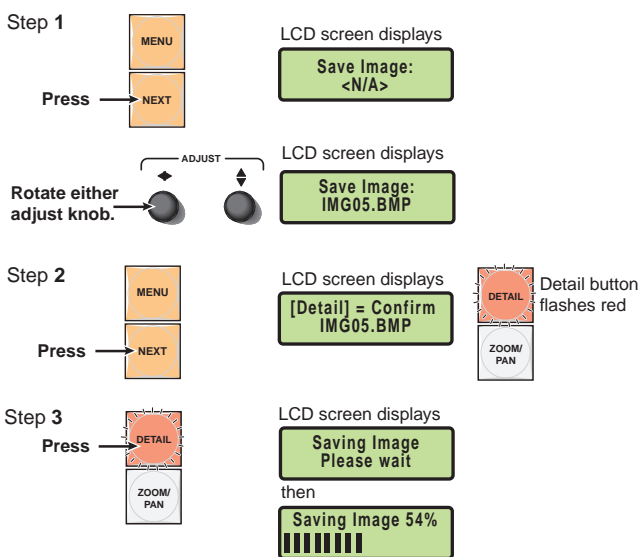
To capture an image:

1. Press Next to enter the save menu, the LCD displays "Save Image: <N/A>". Use either Adjust knob to scroll through 16 image names, (IMG01.bmp through IMG16.bmp) to select a suitable name.

NOTE When saving an image to a selected name, any image previously saved with that selected name is overwritten in favor of the newly saved image.

2. When the desired image name is reached, press Next. The LCD displays "[Detail] to Confirm", and the Detail button flashes red.
3. Press the detail button, the LCD changes to "Saving Image Please wait". The display then changes to "Saving Image" and a progress bar begins showing the progress of the image capture process. When the image is saved the LCD reverts to the default menu cycle.

NOTE Custom image names can be used when image captures are initiated using the appropriate SIS commands.



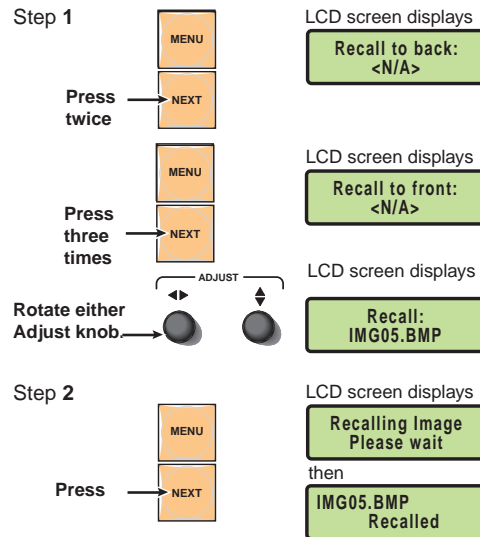
To recall an image:

1. Press Next twice to enter the first recall menu. The LCD displays "Recall to Back: <N/A>". To recall an image to the front of an active signal, press Next again, and the LCD displays "Recall to Front: <N/A>".

In either submenu (Recall to Back or Recall to Front), use either Adjust knob to scroll through the saved images, to the desired image.

2. Press Next to recall the image. The LCD displays "Recalling Image Please wait" while the image is downloaded to the display. When the image is fully downloaded, the LCD displays the name of the image and "Recalled", (for example, "IMG05.bmp Recalled"). The recalled image is displayed on the active display. Press Next to exit the Recall Image menu.

Front Panel Operation, cont'd



To remove an image from the display:

1. Press Next twice. The LCD displays "Recall to back: <N/A>". If the image is displayed at the front, press Next again so the LCD displays "Recall to Front: <N/A>".
2. With the appropriate "Recall to back: <N/A>" or "Recall to front: <N/A>" displayed, press Next. The current image is removed from the display, but not from the USP 507 memory. To recall the image follow the steps described in the "To recall an image" section, on this page.

Advanced configuration

Within this menu auto imaging and auto memory can be turned on or off, Input EDID can be set, RGB delay value adjusted, the switch effect chosen, a test pattern selected to aid setting up the display, and the MTP pre-peaking turned on or off. In addition the internal temperature can be read, and the unit can reset to factory default settings.

NOTE At any submenu, if the input is incorrect, press the desired input button, and then proceed with the setting adjustment.

1. Press Next to enter the first sublevel, Auto Image. The current active input and setting status is displayed. See the table below for a full description of the interaction between the auto image and auto memory settings.

Auto Image
Input #2 On

Auto Memory and Auto-Image Features		
Auto Memory	Auto Image	Information
ON	ON	"New" signals / rates that have not been previously detected by the USP 507 are initially set-up using default parameters, then auto image is automatically applied and values stored. The next time the same signal is detected, the values stored in the auto memory location are applied.
ON (Default)	OFF (Default)	"New" signals / rates that have not been previously detected by the USP 507 are set-up using default parameters. If manual input and/or picture settings are made to the input, an auto memory location is created and recalled each successive time the input is detected.
OFF	ON	Each change in input sync triggers an automatic auto image. When auto memory is disabled, each different signal is treated as a new signal and default picture controls and automatic auto image is applied. Any manual changes made to the image and picture controls are lost each time a new rate is detected.
OFF	OFF	Each change in input sync causes default values to be applied to the rate. Any manual changes made to the image and picture controls are lost each time a new rate is applied.

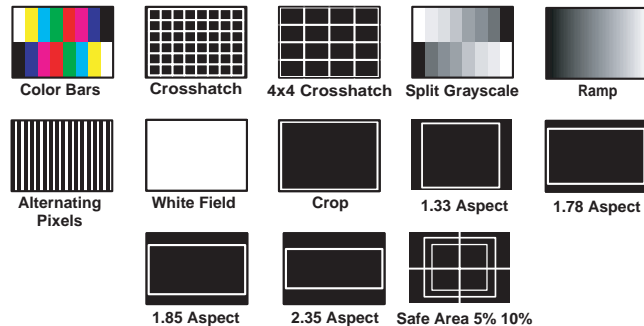
Figure 3-6 — Auto Memory and Auto-Image features table

2. With the applicable input showing, rotate the right Adjust knob (◄) to turn the Auto-Image on or off.
3. Press Next to go to the next sublevel (Input EDID), or press Next repeatedly to get to any applicable level. At each level, rotate the adjustment knobs (right only or both) as needed to change the settings to the desired value.

Input EDID
 1024x768 60.0Hz

NOTE *The Input EDID setting adjustment applies only to the VGA and DVI inputs. Refer to figure 3-5 for resolution and refresh rate details. For some settings follow any on-screen instructions. The internal temperature is a "read-only" screen. No adjustment is possible.*

4. Press Next to enter the next sublevel, Auto Memory, and rotate either Adjust knob (◄) to turn the Auto Memory on or off. See figure 3-6 for a description of the interaction between Auto-Image and Auto Memory settings.
5. Press Next to enter the next sublevel, RGB Delay. Rotate either Adjust knob (◄) to adjust the RGB delay from 0.0 seconds to a maximum of 5.0 seconds in 0.1 second increments.
6. Press Next to enter the next sublevel, Switch Effect. Rotate either Adjust knob (◄) to select the switch effect; Cut (Blank), Cut (Freeze), or Fade. Cut (Blank) blanks the screen before showing the new input image. Cut (Freeze) freezes the current image while switching to the selected input image. Fade effect fades the images through black during transition from the current input to the new selected input.
7. Press Next to enter the next sublevel, Test Pattern. Rotate either Adjust knob (◄) to select the Test Pattern. The following test patterns are available: None (default), Split Color Bars (8), Crosshatch, 4x4 Crosshatch, 32 Level Grayscale, Ramp, Alternating Pixels, White Field, Crop, 1.33 Aspect ratio, 1.78 Aspect ratio, 1.85 Aspect ratio, 2.35 Aspect ratio, Safe Area, Blue Mode.



NOTE *The test patterns may vary based on the output rate selected. For example if a 4:3 rate is selected, then the 4:3 crosshatch (32x24) and aspect ratio crop patterns appear. The raster border is independent of the aspect ratio, always surrounding the active area of the screen.*

8. Press Next to enter the next sublevel, MTP Pre-Peaking. Rotate either Adjust knob (◄) to turn Pre Peaking on or off.

NOTE *When using the MTP (mini twisted pair) output, the pre-peaking can be turned on or off to compensate for the poor image quality of video signals transmitted over long distance twisted pair cable runs to a remote display.*

9. Press Next to view the internal temperature (degrees Celsius and Fahrenheit).
10. Press Next to enter the device Reset to Factory settings mode. Press Detail to confirm and reset the device, or Next to exit the mode without resetting.

Front Panel Operation, cont'd

View comm settings

Within this menu the current IP settings are only viewable. To make any adjustments the "hidden" Edit Comm Settings menu must be accessed (see below).

1. Press Next to go through each sublevel to view the following: serial port (baud rate and communication type), MAC address (cannot be changed), DHCP status (on or off), IP address, subnet mask, and gateway address.
2. Press Next or Menu to return to the View Comm Settings menu.

To enter the "hidden" Edit Comms Settings menu, press and hold in the Detail and Color/Tint buttons simultaneously, and then press the Next button. The Edit Comms Settings menu appears.

Edit comm settings

1. Press Next to go through each sublevel to edit the following: serial port settings, DHCP (on or off), IP address, subnet mask, and gateway address.

NOTE *The hardware address (the MAC address) is hard coded and cannot be changed. In edit mode the MAC address is not displayed.*

2. At each level, use both Adjust knobs to set new values as desired. For example rotate the left front panel Adjust knob (◀▶) to adjust the baud rate (9600, 19200, 38400, or 115200), and rotate the right Adjust knob (⬇) to select the connection type (RS-232/RS-422).

NOTE *For IP address, subnet mask, and gateway address settings, the left Adjust knob moves between octets and the right Adjust knob changes the values. Where already connected to a remote PC via LAN, changing the IP address can result in the loss of connection. The device's default IP address is 198.162.254.254.*

3. Press Next or Menu to exit the Edit Comm Settings menu, keeping the new settings.

Exit menu

Within this menu press Next to exit the menu system and return to the default display cycle.

Scan converter configuration

This menu is available only when a scan converter board is installed.

Within this menu horizontal and vertical image size and centering can be configured, output format and output standard chosen, and flicker, horizontal, and encoder filters set.

1. Press Next to enter the first sublevel, Horizontal and Vertical size. The current settings are displayed. (2048 pixels is the default setting)
2. Rotate the left front panel Adjust knob (◀▶) to adjust the horizontal value, and rotate the right Adjust knob (⬆) to adjust the vertical value.
3. Press Next to go the second sublevel, Horizontal and Vertical centering.
4. Rotate the left front panel Adjust knob (◀▶) to adjust the horizontal value, and rotate the right Adjust knob (⬆) to adjust the vertical value.
5. Press Next to go to the next sublevel (Output Format), or press Next repeatedly to get to any level. At each level, rotate either Adjust knob as needed to change the settings to the desired values:
Output format (S-video/Comp, YUVi, or RGB)
Output standard (NTSC or PAL)
Flicker, Horizontal, and Encoder Filter values (0 to 3)
6. When complete press Menu once or Next repeatedly to return to the top level menu. Alternatively, allow to time out to return to the default cycle.

Setting the Front Panel Locks (Executive Modes)

The USP 507 has two levels of front panel security lock that limit the operation of the device from the front panel.

Executive mode 0 (disabled) — The front panel is fully unlocked. This is the default setting.

Executive mode 1 (enabled) — The front panel is locked except for input switching, video freeze, PIP preset (recall), and auto image.

Executive mode 2 (enabled) — The front panel is completely locked. This mode can only be enabled and disabled using SIS commands. See chapter 4, "SIS Programmers Guide", for further details.

Enabling or disabling Executive mode 1 from the front panel

NOTE *If the USP 507 is in Executive mode 0 (unlocked), this procedure selects mode 1 (locked).*

If it is in Executive mode 1, this procedure selects mode 0 (unlocks the unit).

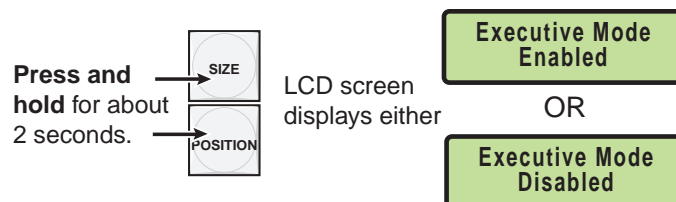


Figure 3-7 — Turning Executive mode on or off

When either Executive mode is enabled and a front panel action is attempted (other than input switching, video freeze, PIP preset recall, and auto image), the LCD displays the status for 2 seconds.

Lock mode 1 can also be enabled or disabled by SIS commands. See chapter 4 for SIS commands.

Front Panel Operation, cont'd

Setting Up the USP 507 to Work with a Matrix Switcher

The Sync to Matrix tool is a powerful software tool that can simplify the control system necessary when using an Extron matrix switcher and an USP 507.

The "Sync to Matrix" script can sense when a new tie that is made on the matrix is routed to the USP 507 and automatically recalls the input preset associated with the input on the matrix switcher. The input preset recalls all the settings for the input including the signal format, input sampling settings, and picture controls.

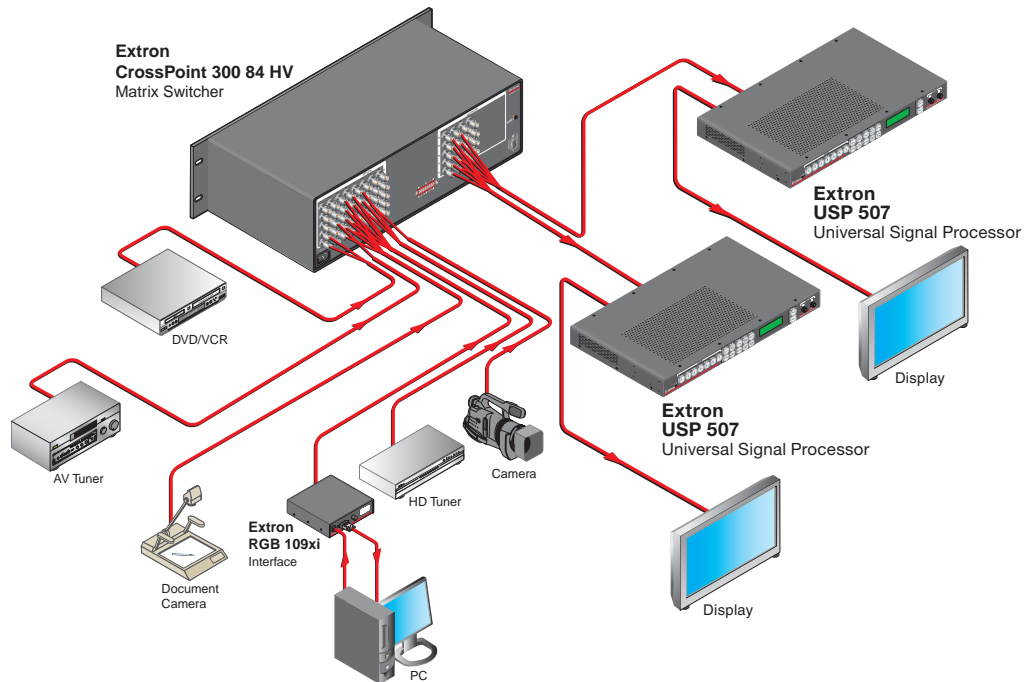


Figure 3-8 — USP 507 connected to a matrix switcher

To configure the input presets required using the Sync to Matrix tool, do the following:

1. Install and connect the USP 507 as described in the chapter two of this manual, but connect the USP 507 input 3 to one of the matrix switcher outputs.

NOTE *Multiple USP 507 units can be connected to a single matrix switcher.*

2. Tie input 1 of the matrix switcher to whichever matrix switcher output is connected to input 3 of the USP 507 (see figure 3-8).

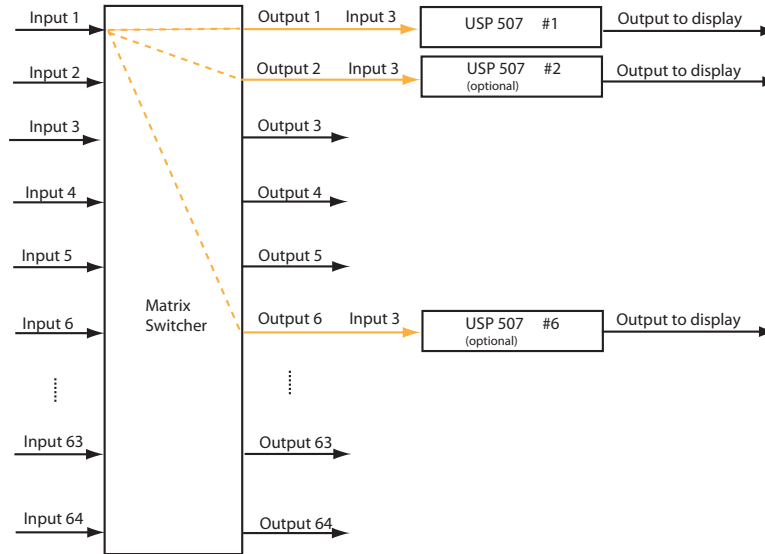


Figure 3-9 — Multiple USP 507's connected to a matrix switcher

3. On the USP 507, configure the input as follows:
 - a. Switch to input 3 on the USP 507.
 - b. Set the following input sampling settings as needed: signal type, horizontal and vertical start, pixel phase, total pixels, active pixels, and active lines.

NOTE Do not use the auto detect setting for the input type when using input presets.

- c. Set the following picture controls as needed: size, position, color, tint, brightness, contrast, and detail.
 - d. Save the adjusted settings as input preset 1. Refer to [chapter 4, "SIS Programmers Guide"](#), for the SIS commands to save the preset.

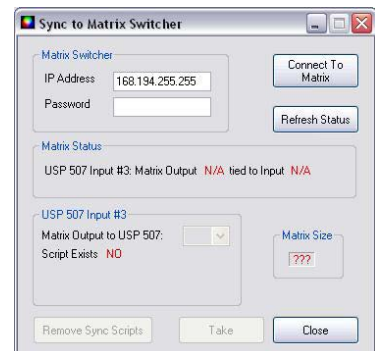
NOTE Each input preset must be saved with the same number as the input on the matrix switcher. For example, input 24 on the matrix will be associated with the input preset 24 on the USP 507.

- e. Repeat steps 2 and 3 for each matrix input that is used on the USP 507.
4. Synchronize the USP 507 to the matrix switcher as follows:

- a. Open the control program (SPPCP) and connect to the USP 507.

NOTE Connection must be via IP (not RS-232).

- b. From the Tools menu, select **Sync to Matrix Switcher...** . The Sync to Matrix Switcher window opens
 - c. In the IP Address field, enter the matrix switcher's IP address.
 - d. Click **Connect to Matrix** button. The matrix switcher's size is displayed.
 - e. From the drop-down menu next to **USP 507 Input #3** select the matrix output number that is connected to input 3 on the USP 507. Click **Take**. The devices now synchronize.



NOTE All other inputs on the USP 507 must not be used when it is synchronized to a matrix switcher.

Front Panel Operation, cont'd

Setting Up the USP 507 to Work with an Auxiliary Audio Switcher

An auxiliary switcher, such as an Extron SW 8A, can be connected to the USP 507 for audio routing, and controlled via the rear panel 9-pin D-sub Aux Sw Follow (RS-232) port (see ④ on figure 2-2). When the USP 507 switches inputs by RS-232, IP, or front panel, the USP 507 sends the corresponding switch command (SIS: [X]!) via the Aux Sw Follow port to the auxiliary switcher. The port can also transmit the audio mute command (1Z) to the auxiliary switcher when the USP 507 video is muted or frozen, and when the video is unmuted or unfrozen, a command is sent to unmute the audio.

NOTE This port cannot directly accept SIS commands nor report the status of the connected auxiliary switcher.

The auxiliary switcher must be connected to the Aux Sw Follow port using a NULL RS-232 cable only.

Connect the audio input sources to the auxiliary audio switcher, ensuring that the video input number matches the audio input number.

Connect the control host with the pinout as shown below.

Controller Pin	USP 507 Pin
2 (Rx)	3 (Tx)
3 (Tx)	2 (Rx)
5 (Gnd)	5 (Gnd)

Figure 3-10 — Controller to USP 507 pinout

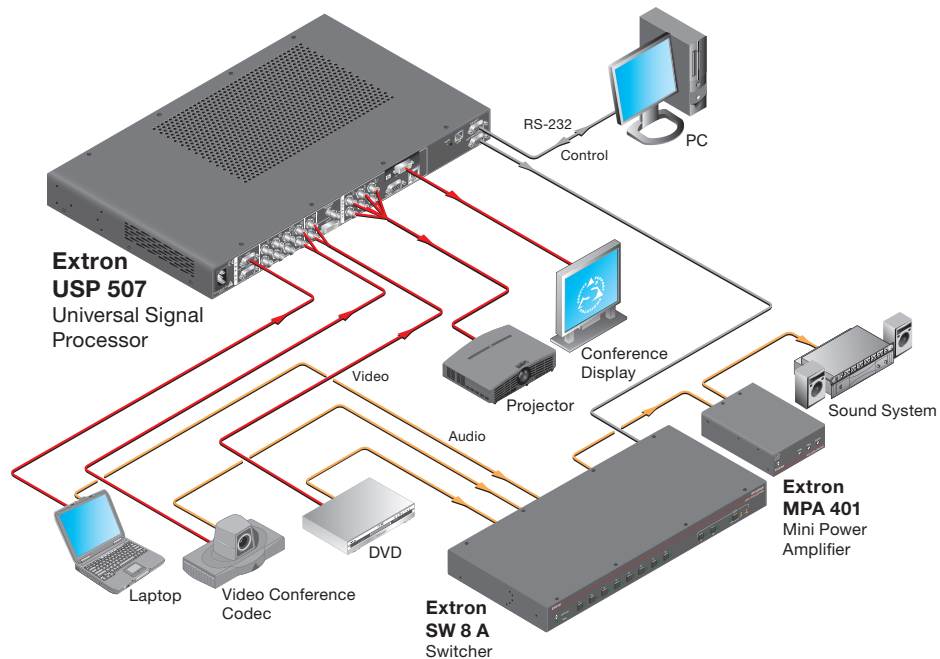


Figure 3-11 — Example auxiliary switcher connected to USP 507



USP 507

4 Chapter Four

SIS™ Programmer's Guide

RS-232/RS-422 Link

Ethernet (LAN) Port

Host-to-Processor Instructions

Processor-Initiated Messages

Processor Error Responses

Using the Command/Response Tables for SIS™ commands

Using the Command/Response Table for IP SIS Commands

SIS Programmer's Guide

The USP 507 can be operated and configured using Simple Instruction Set™ (SIS™) commands input via a PC connected to the top RS-232 port on the rear panel or the Ethernet port. See ③ on page 2-4, and Appendix B for wiring details.

RS-232/RS-422 Link

The USP 507 has one rear port (the upper serial port) and one front port (see ① on page 3-2) that can be used for serial control. All ports enable use of SIS commands and the Windows®-based control software. The default protocol for these ports is:

- 9600 baud,
- 1 stop bit,
- no parity,
- no flow control,
- 8-bit.

NOTE *The lower rear serial port (named Aux SW Follow) is for connection to an auxiliary device and should not be connected to a PC or control device.*

Ethernet (LAN) Port

The rear panel Ethernet connector on the unit can be connected to an Ethernet LAN or WAN. Communications between the unit and the controlling device is via Telnet (a TCP socket using port 23). The TCP port can be changed if necessary. This connection makes SIS control of the unit possible using a computer connected to the same LAN or WAN. The SIS commands and behavior of the unit are identical to that when communicating to it via RS-232.

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. See Appendix B for cable termination details.

Default IP addresses

To access the USP 507 via the Ethernet port, you need the Extron IP address and may need the subnet mask and the gateway address. If the IP address has been changed to an address comprised of words and characters, the actual numeric IP address can be determined using the ping (ICMP) utility (see Appendix B for more details). If the addresses have not been changed, the factory-specified defaults are: IP address: 192.168.254.254, subnet mask: 255.255.0.0, gateway address: 0.0.0.0.

Establishing a connection

Establish a network connection to the processor as follows:

1. Open a TCP socket to port 23 using the processor's IP address.

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.*

The processor responds with a copyright message including the date, the name of the product, firmware version, part number, and the current date/time.

NOTE *If the processor is not password-protected, the device is ready to accept SIS commands immediately after it sends the copyright message.*

If the processor is password-protected, a password prompt appears below the copyright message.

2. If the processor is password protected, enter the appropriate administrator or user password.

If the password is accepted, the processor responds with *Login User* or *Login Administrator*.

If the password is not accepted, the *Password* prompt reappears.

Connection timeouts

The Ethernet link times out after a designated period of time of no communications. By default, this timeout value is set to five minutes but the value can be changed.

NOTE *Extron recommends leaving the default timeout at five minutes and periodically issuing the Query (Q) command to keep the connection active. If there are long idle periods, Extron recommends disconnecting the socket and reopening the connection when another command must be sent.*

Number of connections

The USP 507 can have up to 200 simultaneous TCP connections, including all HTTP sockets and Telnet connections. When the connection limit is reached, the processor accepts no new connections until some have been closed. No error message or indication is given that the connection limit has been reached. To maximize performance of an IP Link® device, the number of connections should stay low and unnecessary open sockets should be closed.

Using verbose mode

Telnet connections to the processor can be used to monitor for changes that occur on the processor, such as front panel operations and SIS commands from other Telnet sockets or a serial port. For a Telnet session to receive change notices from the processor, the Telnet session must be in verbose mode 1 or 3. In verbose mode 1 or 3, the Telnet socket reports changes in messages that resemble SIS command responses.

Host-to-Processor Instructions

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 processor 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.

Processor-Initiated Messages

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

With an RS-232/422 connection (upon power up):

(c) Copyright 2009, Extron Electronics USP 507, V1.00, 60-1055-01↵

With an Ethernet connection:

(c) Copyright 2009, Extron Electronics USP 507, V1.00, 60-1055-01↵

Ddd, DD MMM YYYY HH:MM:SS (day, date, time. e.g. Tue, 14 Apr 2009 14:43:17)

The processor initiates the copyright message when powered on or when connection via Internet protocol (IP) is established. Vx.xx is the firmware version number.

↵Password:

The processor initiates the password message immediately after the copyright message when the controlling system is connected using TCP/IP or Telnet and the processor is password protected. The processor requires an administrator or user level password before performing the commands entered.

NOTE *Password prompt is re-displayed if an incorrect password is entered.*

↵Login Administrator↵ and ↵Login User↵

The processor initiates the login message when a correct administrator or user password has been entered. If the user and administrator passwords are the same, the processor defaults to administrator privileges.

SIS Programmer's Guide, cont'd

Reconfig ←

The processor sends the Reconfig message whenever a new resolution is applied.

NOTE Response given is seen via RS-232 connection only.

Exen ←

The processor initiates the Exe message when Executive mode is toggled on or off from the front panel. "n" is the Executive mode status: 1 = on, 0 = off.

Processor Error Responses

When the USP 507 receives an SIS command and determines that it is valid, it performs the command and sends a response to the host device. If the processor is unable to perform the command because the command is invalid or contains invalid parameters, the processor returns an error response to the host. The error response codes are:

- E01 — Invalid input channel number (out of range)
- E10 — Invalid command
- E11 — Invalid preset number
- E12 — Invalid output number/port number
- E13 — Invalid parameter (out of range)
- E14 — Command not available for this configuration
- E17 — Invalid command for this signal type
- E22 — Busy
- E24 — Privilege violation
- E25 — Device not present
- E26 — Maximum number of connections exceeded
- E27 — Invalid event number
- E28 — Bad filename/file not found

Using the Command/Response Table for SIS Commands

The command/response table begins on page 4-7. Lowercase letters are acceptable in the command field except where indicated. The table below shows the hexadecimal equivalent of ASCII characters used in the command/response tables.

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

ASCII to hexadecimal conversion

Symbols are used throughout the table to represent variables in the command/response fields. Command and response examples are shown throughout the table.

NOTE If unit does not support or recognize the entered commands, nothing happens and no response is issued.

Symbol definitions

- ↵ = Carriage return with line feed
- ␣ or ← = Carriage return with no line feed
- = Space
- Esc or W = Escape key
- X1 = Input selection, 1 to 7
- X3 = Input video format:
 - 1 = RGB (default)
 - 2 = YUVp/HDTV
 - 3 = RGBcvS
 - 4 = YUVi
 - 5 = S-video
 - 6 = Composite video
 - 7 = SDI
 - 8 = HD-SDI
 - 9 = DVI
 - 10 = Auto detect
- X4 = H/V start — 0 to 255 (default midpoint = 128)
- X6 = Pixel phase — 0 to 31 (default = 16)
- X7 = Total pixels — (±512 of the default value)
- X8 = Active pixels — (±512 of the default value)
- X9 = Active lines — (±512 of the default value)
- X10 = Off/disable/none (0) or on/enable/black (1)
- X11 = Input standard:
 - 0 = No signal
 - 1 = NTSC
 - 2 = PAL
 - 4 = SECAM
 - = N/A (occurs when input is set to a high resolution signal format)
- X12 = Internal temperature (in degrees Celsius)
- X13 = Horizontal and vertical frequencies (format is three digit with single decimal and leading zeros, such as, 075.3)
- X15 = Picture adjustment — 0 to 127 (default 64)
- X16 = H and V position (zero location is 2048, and limits are ± the output resolution)
- X17 = H and V size (0 to 200% of the output area, in single pixel increments)
- X18 = Zoom (100 to 500%)
 - Default for low resolution video = 111%
 - Default for high resolution video = 100%
- X19 = Pan — 0 to 200 (default = 100 center point)
- X20 = Test patterns:
 - 0 = Off (default)
 - 1 = Color bars
 - 2 = Crosshatch
 - 3 = 4x4 Crosshatch
 - 4 = Grayscale
 - 5 = Ramp
 - 6 = Alternating pixels
 - 7 = White field
 - 8 = Crop
 - 9 = 1.33 Aspect ratio
 - 10 = 1.78 Aspect ratio
 - 11 = 1.85 Aspect ratio
 - 12 = 2.35 Aspect ratio
 - 13 = Safe area
 - 14 = Blue mode

SIS Programmer's Guide, cont'd

X21 = Scaler resolution:

1 = 640 x 480	14 = 1365 x 1024
2 = 800 x 600	15 = 1440 x 900
3 = 852 x 480	16 = 1400 x 1050
4 = 1024 x 768	17 = 1680 x 1050
5 = 1024 x 852	18 = 1600 x 1200
6 = 1024 x 1024	19 = 1920 x 1200
7 = 1280 x 768	20 = 480p
8 = 1280 x 800	21 = 576p
9 = 1280 x 1024	22 = 720p
10 = 1360 x 765	23 = 1080i
11 = 1360 x 768	24 = 1080p
12 = 1365 x 768	25 = 2048 x 1080
13 = 1366 x 768	

X22 = Output refresh rate:

1 = 23.98 Hz
2 = 24 Hz
3 = 25 Hz
4 = 29.97 Hz
5 = 30 Hz
6 = 50 Hz
7 = 59.94 Hz
8 = 60 Hz (default)
9 = 75 Hz

X23 = Output polarity:

0 = H-/V- (default)
1 = H-/V+
2 = H+/V-
3 = H+/V+

X24 = Output sync format:

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

X25 = Memory/PIP presets — 1 to 16

X26 = Input presets — 1 to 128

X37 = RGB delay — 0 to 50, in 0.1 second increments (default is 05 = 0.5 seconds)

X38 = Recalled image location:

0 = Foreground
1 = Background

X56 = On-screen clock:

0 = Disabled (default)
1 = Date and time
2 = Time only
3 = Date only

X75 = Scan converter output format

0 = S-video/composite video
1 = YUVi
2 = RGsB

X76 = Scan converter output standard

0 = NTSC
1 = PAL

X77 = Scan converter filter level (encoder, horizontal, flicker) — 0 to 3

Command Response Table for SIS Commands

Command	ASCII command (host to processor)	Response (processor to host)	Additional description
Input Switching and Configuration			
Input selection			
Select input	[X1]!	In [X1] ↵	Select video from input [X1] .
View current input	!	[X1] ↵	View currently selected input source.
Input video format			
Set format	[X1]*[X3]\	Typ [X1]*[X3] ↵	Set input [X1] to video format [X3] .
View format	[X1]\	[X3] ↵	View video format of input [X1] .
View detected format	[X1]*\	Atyp [X1]*[X3] ↵	View actual video format auto detected on input [X1] .
Input EDID			
Specify an EDID value	[Esc] [X21]*[X22]EDID ←	Edid [X21]*[X22] ↵	Set EDID resolution and refresh for DVI and VGA inputs.
View EDID value	[Esc]EDID ←	[X21]*[X22] ↵	View EDID resolution and refresh for DVI and VGA inputs.
NOTE Default is to match output: [X21]=0 [X22]=0			
Auto image			
Enable auto image	[X1]*1A	Img [X1]*1 ↵	Auto image input [X1] when selected.
Disable auto image	[X1]*0A	Img [X1]*0 ↵	Turn off auto image for input [X1] .
Execute auto image	A	Img↵	Execute auto image for current input.
View auto image	[X1]A	[X10] ↵	View auto image setting.
Horizontal start			
Specify a value	[Esc] [X4]HSRT ←	Hsrt [X1]*[X4] ↵	Set horizontal location of first active pixel in active input.
Increment value	[Esc]+HSRT ←	Hsrt [X1]*[X4] ↵	Increase value.
Decrement value	[Esc]-HSRT ←	Hsrt [X1]*[X4] ↵	Decrease value.
View value	[Esc]HSRT ←	[X4] ↵	Show horizontal location of first active pixel in active input.
Vertical start			
Specify a value	[Esc] [X4]VSRT ←	Vsrt [X1]*[X4] ↵	Set vertical location of first active pixel in active input.
Increment value	[Esc]+VSRT ←	Vsrt [X1]*[X4] ↵	Increase value.
Decrement value	[Esc]-VSRT ←	Vsrt [X1]*[X4] ↵	Decrease value.
View value	[Esc]VSRT ←	[X4] ↵	Show vertical location of first active pixel in active input.

NOTE	[X1] = Input selection	1 - 7
	[X3] = Input video format	1 = RGB (default), 2 = YUVp/HDTV, 3 = RGBcvS, 4 = YUVi, 5 = S-video, 6 = composite video, 7 = SDI, 8 = HD-SDI, 9 = DVI, 10 = auto detect
	[X4] = H/V start	0 to 255 (default midpoint = 128)
	[X10] = Off/disable/none (0), on/enable (1)	
	[X21] = Scaler resolution	1 = 640 x 480, 2 = 800 x 600, 3 = 852 x 480, 4 = 1024 x 768, 5 = 1024 x 852, 6 = 1024 x 1024, 7 = 1280 x 768, 8 = 1280 x 800, 9 = 1280 x 1024, 10 = 1360 x 765, 11 = 1360 x 768, 12 = 1365 x 768, 13 = 1366 x 768, 14 = 1365 x 1024, 15 = 1440 x 900, 16 = 1400 x 1050, 17 = 1680 x 1050, 18 = 1600 x 1200, 19 = 1920 x 1200, 20 = 480p, 21 = 576p, 22 = 720p, 23 = 1080i, 24 = 1080p, 25 = 2048 x 1080,
	[X22] = Output refresh rate	1 = 23.98 Hz, 2 = 24 Hz, 3 = 25 Hz, 4 = 29.97 Hz, 5 = 30 Hz, 6 = 50 Hz, 7 = 59.94 Hz, 8 = 60 Hz (default), 9 = 75 Hz

SIS Programmer's Guide, cont'd

Command	ASCII command (host to processor)	Response (processor to host)	Additional description
Pixel phase			
Specify a value	Esc X6 PHAS ←	Phas X1 * X6 ↵	Set pixel phase to specified value for active input.
Increment value	Esc +PHAS ←	Phas X1 * X6 ↵	Increase value.
Decrement value	Esc -PHAS ←	Phas X1 * X6 ↵	Decrease value.
View value	Esc PHAS ←	X6 ↵	Show pixel phase.
Total pixels (RGB and YUVp/HDTV only)			
Specify a value	Esc X7 TPIX ←	Tpix X1 * X7 ↵	Set total pixels to specified value for active input.
Increment value	Esc +TPIX ←	Tpix X1 * X7 ↵	Increase value.
Decrement value	Esc -TPIX ←	Tpix X1 * X7 ↵	Decrease value.
View value	Esc TPIX ←	X7 ↵	Show total pixels.
Active pixels			
Specify a value	Esc X8 APIX ←	Apix X1 * X8 ↵	Set active pixels to specified value for active input.
Increment value	Esc +APIX ←	Apix X1 * X8 ↵	Increase value.
Decrement value	Esc -APIX ←	Apix X1 * X8 ↵	Decrease value.
View value	Esc APIX ←	X8 ↵	Show active pixels.
Active lines			
Specify a value	Esc X9 ALIN ←	Alin X1 * X9 ↵	Set active lines to specified value for active input.
Increment value	Esc +ALIN ←	Alin X1 * X9 ↵	Increase value.
Decrement value	Esc -ALIN ←	Alin X1 * X9 ↵	Decrease value.
View value	Esc ALIN ←	X9 ↵	Show active lines.
3:2:2:2 Film mode detect			
Enable film mode	Esc X1 *1FILM ←	Film X1 * X10 ↵	Turn film mode detection on.
Disable film mode	Esc X1 *0FILM ←	Film X1 * X10 ↵	Turn film mode detection off.
View setting	Esc X1 FILM ←	X10 ↵	View setting.
Picture Adjustments			
Video mute			
Mute video to black	1B	Vmt1 ↵	Mute video and display a black screen.
Unmute video	0B	Vmt0 ↵	Restore picture.
View mode	B	X10 ↵	Mute status is X10 .
Freeze			
Enable	1F	Frz1 ↵	Freeze selected input.
Disable	0F	Frz0 ↵	Unfreeze selected input.
View	F	X10 ↵	Freeze status is X10 .

NOTE **X1** = Input selection 1-7
X6 = Pixel phase 0-31 (default = 16)
X7 = Total pixels (±512 of the default value)
X8 = Active pixels (±512 of the default value)
X9 = Active lines (±512 of the default value)
X10 = Off/disable/none (0), on/enable/black (1)

Command	ASCII command (host to processor)	Response (processor to host)	Additional description
Color			
Specify a value	Esc X15 COLR ←	Colr X1 * X15 ←	Set color level to X15 .
Increment value	Esc +COLR ←	Colr X1 * X15 ←	Increase value.
Decrement value	Esc -COLR ←	Colr X1 * X15 ←	Decrease value.
View value	Esc COLR ←	X15 ←	Show color level.
Tint			
Specify a value	Esc X15 TINT ←	Tint X1 * X15 ←	Set tint level to X15 .
Increment value	Esc +TINT ←	Tint X1 * X15 ←	Increase value.
Decrement value	Esc -TINT ←	Tint X1 * X15 ←	Decrease value.
View value	Esc TINT ←	X15 ←	Show tint level.
Contrast			
Specify a value	Esc X15 CONT ←	Cont X1 * X15 ←	Set contrast level to X15 .
Increment value	Esc +CONT ←	Cont X1 * X15 ←	Increase value.
Decrement value	Esc -CONT ←	Cont X1 * X15 ←	Decrease value.
View value	Esc CONT ←	X15 ←	Show contrast level.
Brightness			
Specify a value	Esc X15 BRIT ←	Brit X1 * X15 ←	Set brightness level to X15 .
Increment value	Esc +BRIT ←	Brit X1 * X15 ←	Increase value.
Decrement value	Esc -BRIT ←	Brit X1 * X15 ←	Decrease value.
View value	Esc BRIT ←	X15 ←	Show brightness level.
Detail filter			
Specify a value	Esc X15 HDET ←	Hdet X1 * X15 ←	Set detail level to X15 .
Increment value	Esc +HDET ←	Hdet X1 * X15 ←	Increase value.
Decrement value	Esc -HDET ←	Hdet X1 * X15 ←	Decrease value.
View value	Esc HDET ←	X15 ←	Show detail level.
Horizontal shift			
Specify a value	Esc X16 HCTR ←	Hctr X1 * X16 ←	Set horizontal position to X16 .
Increment value	Esc +HCTR ←	Hctr X1 * X16 ←	Shift position right.
Decrement value	Esc -HCTR ←	Hctr X1 * X16 ←	Shift image left.
View value	Esc HCTR ←	X16 ←	Show horizontal position value.
Vertical shift			
Specify a value	Esc X16 VCTR ←	Vctr X1 * X16 ←	Set vertical position to X16 .
Increment value	Esc +VCTR ←	Vctr X1 * X16 ←	Shift image down.
Decrement value	Esc -VCTR ←	Vctr X1 * X16 ←	Shift image up.
View value	Esc VCTR ←	X16 ←	Show vertical position value.

NOTE **X1** = Input selection 1-7
X15 = Picture adjustment 0-127 (default 64)
X16 = H and V position (zero location is 2048, and limits are ± the output resolution)

SIS Programmer's Guide, cont'd

Command	ASCII command (host to processor)	Response (processor to host)	Additional description
Horizontal size			
Specify a value	Esc X17 HSIZ ←	Hsiz X1 * X17 ←	Set horizontal size to X17 .
Increment value	Esc +HSIZ ←	Hsiz X1 * X17 ←	Widen the image.
Decrement value	Esc -HSIZ ←	Hsiz X1 * X17 ←	Make image narrower.
View value	Esc HSIZ ←	X17 ←	Show horizontal size value.
Vertical size			
Specify a value	Esc X17 VSIZ ←	Vsiz X1 * X17 ←	Set vertical size to X17 .
Increment value	Esc +VSIZ ←	Vsiz X1 * X17 ←	Make the image taller.
Decrement value	Esc -VSIZ ←	Vsiz X1 * X17 ←	Make image shorter.
View value	Esc VSIZ ←	X17 ←	Show vertical size value.
View window details			
Main window	Esc 1XY ←	Wxy1,* X16 * X16 * X17 * X17 ←	View position and size of main window.
PIP window	Esc 2XY ←	Wxy2,* X16 * X16 * X17 * X17 ←	View position and size of PIP window.
NOTE The format of the response is: X-position x Y-position x X-size x Y-size.			
Zoom			
Specify a value	Esc X18 ZOOM ←	Zoom X1 * X18 ←	Set zoom percentage to X18 .
Increment value	Esc +ZOOM ←	Zoom X1 * X18 ←	Zoom in.
Decrement value	Esc -ZOOM ←	Zoom X1 * X18 ←	Zoom out.
View value	Esc ZOOM ←	X18 ←	Show zoom percentage.
Pan			
Specify a horizontal value	Esc X19 HPAN ←	Hpan X1 * X19 ←	Set horizontal pan value to X19 .
Pan left	Esc +HPAN ←	Hpan X1 * X19 ←	Pan left.
Pan right	Esc -HPAN ←	Hpan X1 * X19 ←	Pan right.
Specify a vertical value	Esc X19 VPAN ←	Vpan X1 * X19 ←	Set vertical pan value to X19 .
Pan down	Esc +VPAN ←	Vpan X1 * X19 ←	Pan down.
Pan up	Esc -VPAN ←	Vpan X1 * X19 ←	Pan up.

- NOTE** **X1** = Input selection 1 - 7
X16 = H and V position (zero location is 2048, and limits are ± the output resolution)
X17 = H and V size (0 to 200% of the output area in single pixel increments)
X18 = Zoom: 100 to 500%, (default for low resolution video = 111%, default for high resolution video = 100%)
X19 = Pan: 0 to 200 (default = 100 center point)

Command	ASCII command (host to processor)	Response (processor to host)	Additional description
Output Configuration			
Output scaler rate			
Set output rate	Esc X21 * X22 RATE ←	Rate X21 * X22 ←	Select output resolution and refresh rate.
View output rate	Esc RATE ←	X21 * X22 ←	Show selected output rate.
Output polarity			
Set polarity	Esc X23 OPOL ←	Opol X23 ←	Set output polarity for RGBHV output.
View polarity setting	Esc OPOL ←	X23 ←	Show current output polarity.
Output sync format			
Set format	Esc X24 OSYN ←	Osyn X24 ←	Set output sync format.
View sync setting	Esc OSYN ←	X24 ←	Show current output sync format.
Scan Converter Board			
Video output format			
Set output format	Esc X75 VTPO ←	Vtpo X75 ←	Select video output format to X75 .
View output format	Esc VTPO ←	X75 ←	View setting.
Video output standard			
Set output standard	Esc X76 VSTD ←	Vstd X76 ←	Select video output standard to X76 .
View output standard	Esc VSTD ←	X76 ←	View setting.
Scan converter horizontal position			
Specific value	Esc S X16 HCTR ←	HtcrS X16 ←	Set horizontal position to X16 .
Increment up	Esc S+HCTR ←	HtcrS X16 ←	Shift image right.
Increment down	Esc S-HCTR ←	HtcrS X16 ←	Shift image left.
View	Esc SHCTR ←	X16 ←	Horizontal position value is X16 .
Scan converter vertical position			
Specific value	Esc S X16 VCTR ←	VtcrS X16 ←	Set vertical position to X16 .
Increment up	Esc S+VCTR ←	VtcrS X16 ←	Shift image down.
Increment down	Esc S-VCTR ←	VtcrS X16 ←	Shift image up.
View	Esc SVCTR ←	X16 ←	Vertical position value is X16 .

NOTE **X16** = H and V position: zero location is 2048, limits are ± the output resolution

X21 = Scaler resolution: 1 = 640 x 480, 2 = 800 x 600, 3 = 852 x 480, 4 = 1024 x 768, 5 = 1024 x 852, 6 = 1024 x 1024, 7 = 1280 x 768, 8 = 1280 x 800, 9 = 1280 x 1024, 10 = 1360 x 765, 11 = 1360 x 768, 12 = 1365 x 768, 13 = 1366 x 768, 14 = 1365 x 1024, 15 = 1440 x 900, 16 = 1400 x 1050, 17 = 1680 x 1050, 18 = 1600 x 1200, 19 = 1920 x 1200, 20 = 480p, 21 = 576p, 22 = 720p, 23 = 1080i, 24 = 1080p, 25 = 2048 x 1080

X22 = Output refresh rate: 1 = 23.98 Hz, 2 = 24 Hz, 3 = 25 Hz, 4 = 29.97 Hz, 5 = 30 Hz, 6 = 50 Hz, 7 = 59.94 Hz, 8 = 60 Hz (default), 9 = 75 Hz

X23 = Output polarity: 0 = H-/V- (default), 1 = H-/V+, 2 = H+/V-, 3 = H+/V+

X24 = Output sync format: 0 = RGBHV (default), 1 = RGSB, 2 = YUV bi-level, 3 = YUV tri-level

X75 = Scan converter output format: 0 = S-video/composite video, 1 = YUVi, 2 = RGSB

X76 = Scan converter output standard: 0 = NTSC, 1 = PAL

SIS Programmer's Guide, cont'd

Command	ASCII command (host to processor)	Response (processor to host)	Additional description
Scan converter horizontal size			
Specific value	Esc S[X17]HSIZ ←	HsizS[X17] ←	Set horizontal size to [X17].
Increase size	Esc S+HSIZ ←	HsizS[X17] ←	Widen image.
Decrease size	Esc S-HSIZ ←	HsizS[X17] ←	Make image narrower.
View	Esc SHSIZ ←	[X17] ←	Horizontal size is [X17].
Scan converter vertical size			
Specific value	Esc S[X17]VSIZ ←	VsizS[X17] ←	Set vertical size to [X17].
Increase size	Esc S+VSIZ ←	VsizS[X17] ←	Make image taller.
Decrease size	Esc S-VSIZ ←	VsizS[X17] ←	Make image shorter.
View	Esc SVSIZ ←	[X17] ←	Vertical size is [X17].
Scan converter horizontal filter			
Set detail level	Esc S[X77]HDET ←	HdetS[X77] ←	Set H filter level to [X77].
Increment up	Esc S+HDET ←	HdetS[X77] ←	Increase H filter level.
Increment down	Esc S-HDET ←	HdetS[X77] ←	Decrease H filter level.
View detail value	Esc SHDET ←	[X77] ←	H filter level is [X77].
Scan converter flicker filter			
Set flicker filter level	Esc S[X77]VDET ←	VdetS[X77] ←	Specify the flicker filter level to [X77].
Increment up	Esc S+VDET ←	VdetS[X77] ←	Increase the flicker filter level.
Increment down	Esc S-VDET ←	VdetS[X77] ←	Decrease the flicker filter level.
View flicker filter level	Esc SVDET ←	[X77] ←	View the flicker filter level.
Scan converter encoder filter			
Set encoder filter level	Esc S[X77]VENC ←	VencS[X77] ←	Set video encoder filter level to [X77].
View	Esc VENC ←	[X77] ←	View the encoder filter level.
Presets			
User presets			
Recall presets	1*[X25].	1Rpr[X25] ←	Recalls user preset [X25] for selected input.
Save presets	1*[X25].	1Spr[X25] ←	Saves user preset [X25] for selected input.
Input presets			
Recall presets	2*[X26].	2Rpr[X26] ←	Recalls input preset [X26].
Save presets	2*[X26].	2Spr[X26] ←	Saves input parameters to preset [X26].
PIP presets			
Recall presets	3*[X25].	3Rpr[X25] ←	Recalls PIP preset [X25].
Save presets	3*[X25].	3Spr[X25] ←	Saves PIP layout to preset [X25].

NOTE [X17] = H and V size: 0 to 200% of the output area in single pixel increments
[X25] = Memory / PIP presets 1 to 16
[X26] = Input presets 1 to 128
[X77] = Filter level 0 to 3

Command	ASCII command (host to processor)	Response (processor to host)	Additional description
Auto Memory			
Enable	Esc 1AMEM ←	Amem1 ↵	Set auto memory on. Previous settings for incoming signal are auto recalled.
Disable	Esc 0AMEM ←	Amem0 ↵	Set auto memory off. Default settings are always used unless input preset is recalled manually.
View setting	Esc AMEM ←	X10 ↵	View auto memory status.
Advanced Configurations			
Test pattern			
Set test pattern	Esc X20 TEST ←	Test X20 ↵	Select test pattern X20 .
View test pattern	Esc TEST ←	X20 ↵	View selected test pattern.
Freeze			
Enable	1F	Frz1 ↵	Freeze selected input.
Disable	0F	Frz0 ↵	Unfreeze selected input.
View setting	F	X10 ↵	View freeze setting.
RGB delay time			
Set value	Esc X37 VDLY ←	Vdly X37 ↵	Set RGB delay.
View setting	Esc VDLY ←	X37 ↵	View RGB delay setting.
Switch effect			
Cut (Blank)	Esc 0SWEF ←	Swef0 ↵	Cuts to black between inputs to mask switch effect.
Cut (Freeze)	Esc 1SWEF ←	Swef1 ↵	Freezes image between inputs to mask switch effect.
Fade	Esc 2SWEF ←	Swef2 ↵	Fades through to black then fades in image.
View setting	Esc SWEF ←	0 ↵ (or 1 ↵) (or 2 ↵)	View effect setting.
MTP Pre-peaking			
Enable	Esc 1OPEK ←	Opek1 ↵	Enables pre-peaking on the MTP output.
Disable	Esc 0OPEK ←	Opek0 ↵	Disables pre-peaking on the MTP output.
View setting	Esc OPEK ←	X10 ↵	View pre-peaking setting.
Front panel lockout (executive mode)			
Enable mode 1	1X	Exe1 ↵	Limited front panel adjustments only.
Enable mode 2	2X	Exe2 ↵	Lock out entire front panel.
Disable	0X	Exe0 ↵	Adjustments and selections can be made from front panel.
View front panel lock status	X	0 ↵ (or 1 ↵) (or 2 ↵)	Show executive mode status.
NOTE For full lock mode details, refer to chapter 3, "Setting the Front Panel Locks (Executive Modes) .			

NOTE **X10** = Off/disable/none (0), on/enable (1)

X20 = Test patterns:

0 = off (default), 1 = color bars, 2 = crosshatch, 3 = 4x4 crosshatch, 4 = grayscale, 5 = ramp, 6 = alternating pixels, 7 = white field, 8 = crop, 9 = 1.33 aspect ratio, 10 = 1.78 aspect ratio, 11 = 1.85 aspect ratio, 12 = 2.35 aspect ratio, 13 = safe area, 14 = blue mode

X37 = RGB delay

0 to 50, in 0.1 second increments (default is 05 = 0.5 seconds)

SIS Programmer's Guide, cont'd

Command	ASCII command (host to processor)	Response (processor to host)	Additional description
Picture in Picture			
PIP on/off			
PIP input select	Esc X1 PIP ←	Pip X1 ↵	Turn PIP on and display input X1 .
PIP off	Esc 0 PIP ←	Pip 0 ↵	Turn PIP off.
View PIP status	Esc PIP ←	X1 ↵	View PIP window selection.
NOTE When PIP is enabled, all picture control commands apply to the image in the PIP window.			
Swap PIP			
Swap	%	Tke ↵	Swap content between main and PIP window.
On-screen clock			
Enable on-screen clock	Esc X56 TIME ←	Time X56 ↵	Display the time on the video output.
View settings	Esc TIME ←	X56 ↵	View setting.
On-screen clock horizontal position			
Specific value	Esc K X16 HCTR ←	HctrK X16 ↵	Set horizontal position to X16 .
Increment up	Esc K +HCTR ←	HctrK X16 ↵	Shift clock right.
Increment down	Esc K -HCTR ←	HctrK X16 ↵	Shift clock left.
View settings	Esc K HCTR ←	X16 ↵	Horizontal position is X16 .
On-screen clock vertical position			
Specific value	Esc K X16 VCTR ←	VctrK X16 ↵	Set vertical centering to X16 .
Increment up	Esc K +VCTR ←	VctrK X16 ↵	Shift clock down.
Increment down	Esc K -VCTR ←	VctrK X16 ↵	Shift clock up.
View settings	Esc K VCTR ←	X16 ↵	Vertical position value is X16 .

NOTE **X1** = Input selection 1 - 7
X16 = H and V position zero location is 2048, and limits are ± the output resolution
X56 = On-screen clock 0 = disabled (default), 1 = date and time, 2 = time only, 3 = date only.

Command	ASCII command (host to processor)	Response (processor to host)	Additional description
Image Capture/Recall			
Image capture/recall to USP 507 flash memory			
Save image	[Esc] 0*filenameMF←	Ims*filename←	Saves currently displayed image to memory under the designated name.
Recall image to foreground	[Esc] 0*filenameRF←	Imr0filename←	Recalls image to be displayed in foreground.
Recall image to background	[Esc] 1*filenameRF←	Imr1filename←	Recalls image to be displayed in background.
Mute image	[Esc] 0*0RF←	Imr0←	Mutes image on the output and reveals live input video
Current image	[Esc] RF←	[X38] filename←	View currently displayed image name.
NOTE The filename must be 16 characters or less, including the *.bmp extension.			
Resets			
Erase user-supplied Web pages and files	[Esc] filenameEF←	Del•filename←	
Erase current directory and files	[Esc] /EF←	Ddl←	
Erase current directory and subdirectories	[Esc] / /EF←	Ddl←	
Erase flash memory	[Esc] ZFFF←	Zpf←	
Reset all device settings to factory default settings	[Esc] ZXXX←	Zpx←	
Absolute system reset	[Esc] ZQQQ←	Zpq←	Includes resetting IP to 192.168.254.254 and subnet mask to 255.255.000.000.
Absolute system reset (but retain IP)	[Esc] ZY←	Zpy←	
NOTE This reset is similar to ZQQQ but excludes IP address, subnet mask, gateway addresses, unit name, DHCP setting, and port mapping (telnet/web/direct access) in order to maintain communications with device. Recommended after a firmware update.			
Information request			
General information	I/i	Vid [X1] •Typ [X3] •Std [X11] •Blk [X10] •Hrt [X13] •Vrt [X13] •Pip [X1] ←	
Query firmware version	Q/q	x.xx←	
Query part number	N/n	68-1055-xx←	View part number.
View internal temperature	[Esc] 20STAT←	STAT20• [X12] ←	Temperature in degrees Celsius.

- NOTE**
- [X1]** = Input selection 1 – 7
 - [X3]** = Input video format 1 = RGB (default), 2 = YUVp/HDTV, 3 = RGBcvS, 4 = YUVi, 5 = S-video, 6 = composite video, 7 = SDI, 8 = HD-SDI, 9 = DVI, 10 = auto detect
 - [X10]** = Off/Disable/none (0), on/enable/black (1)
 - [X11]** = Input standard 0 = No signal, 1 = NTSC, 2 = PAL, 4 = SECAM, - = N/A (occurs when input is set to a high resolution signal format)
 - [X12]** = Internal temperature Degrees Celsius
 - [X13]** = Horizontal/vertical frequencies, format is three digits (e.g., 075.3)
 - [X38]** = Recalled image location 0 = foreground, 1 = background

Using the Command/Response Table for IP SIS Commands

Symbol definitions

X100 = Switcher name, up to 240 alphanumeric characters.

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

X101 = Default name: (USP 507- + last 3 pairs of the MAC address)

X102 = 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

X104 = GMT offset: -12.0 through +14.0, hours and minutes removed from GMT

X105 = Daylight Saving Time: 0 = off/ignore, 1 = on (northern hemisphere), 2 = on (Europe),
3 = on (Brazil)

X106 = IP address: ###.###.###.###

X107 = Hardware (MAC) address: ##-##-##-##-##-##

X108 = Number of open connections: 0 - 255

X109 = Password: 12 alphanumeric characters (see note above)

X123 = Verbose mode: 0 = clear/none (default, Telnet), 1 = verbose mode (default, RS-232/RS-422),
2 = tagged responses for queries, 3 = verbose mode/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 `lpr•[X70]←`).

X124 = RAM status: 0 = RAM dirty (needs saving to flash), 1 = RAM saved (ok to power off/reset)

X125 = Specific port number or relay number: 01-03, 01 = COM1, 02 = COM2, 03 = COM3

X127 = Time in tens of milliseconds to wait until the first response character is received via a serial port before terminating the current receive operation, max. = 32767, (default = 10 = 100 ms).

NOTE For commands that use both **X127** and **X130**, both variables must be zero or both must be non-zero. In the RS (send data) command, **X127** may be omitted as long as **X130** is also missing.

X130 = Time in tens of milliseconds to wait between characters being received via a serial port before terminating the current command or receive operation. Response includes leading zeros, max. = 32767, (default = 2 = 20 ms).

NOTE For commands that use both **X127** and **X130**, both variables must be zero or both must be non-zero. In the RS (send data) command, **X127** may be omitted as long as **X130** is also missing.

X131 = Parameter (#L or #D) to set either the Length of message to receive or the Delimiter value.
= byte count (for L) or # = a single ASCII character expressed in decimal form (for D).

The parameter is case sensitive. Byte count # can be from 0 to 32767, (default = 0).

The ASCII decimal # can be from 0 to 00255, (default = 00000L).

X133 = Priority status for receiving timeouts: 0 = use send data string command parameters
(0 = default), 1 = use configure receive timeout command parameters

X135 = Baud rate: 300, 600, 1200, 1800, 2400, 3600, 4800, 7200, 9600 (default), 14400, 19200, 28800,
38400, 57600, or 115200

X136 = Parity (use only first letter): O = odd, E = even, N = none (default), M = mark, S = space

X137 = Data bits: 7, 8, (default = 8)

X138 = Stop bits: 1, 2, (default = 1)

X139 = Serial port type: 0 = RS-232, 1 = RS-422

X140 = Flow control (only the first letter is needed): H = hardware, S = software, N = none

X141 = Data pacing (time between bytes) in miliseconds, 0000 - 1000, (default = 0000 = 0 ms).

X142 = IP connection timeout period: 1 - 65000, in 10-second steps (default = 30 = 300 seconds).
If no data is received during the specified period, the Ethernet connection closes.

Responses are returned with leading zeros

X143 = Redirection status: 0 = no redirection, 1 - 3 = redirect serial communication from the
specified port (1 = COM1, 2 = COM2, or 3 = COM3) to allow a serial pass-through mode

X144 = Timeout period in tens of milliseconds for serial data pass-through mode, after which event
data can be inserted into the transmit buffer and the serial port is released to another source,
range = 1 - 32767, (default = 10 = 100 ms).

Command/Response Table for IP SIS Commands

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
IP control ports commands				
Set processor name	<code>Esc X100CN ←</code>	<code>W X100CN |</code>	<code>Ip n • X100 ←</code>	
Read processor name	<code>Esc CN ←</code>	<code>WCN |</code>	<code>X70 ←</code>	
Reset processor name to factory default	<code>Esc • CN ←</code>	<code>W • CN |</code>	<code>Ip n • X100 ←</code>	
Set time and date	<code>Esc X102CT ←</code>	<code>W X102CT |</code>	<code>Ip t X102 ←</code>	
Read time and date	<code>Esc CT ←</code>	<code>WCT |</code>	<code>X103 ←</code>	
Set GMT offset	<code>Esc X104CZ ←</code>	<code>W X104CZ |</code>	<code>Ip z X104 ←</code>	
View GMT offset	<code>Esc CZ ←</code>	<code>WCZ |</code>	<code>X104 ←</code>	
Set Daylight Saving Time	<code>Esc X105CX ←</code>	<code>W X105CX |</code>	<code>Ip x X105 ←</code>	
Read Daylight Saving Time	<code>Esc CX ←</code>	<code>WCX |</code>	<code>X105 ←</code>	
Set IP address	<code>Esc X106CI ←</code>	<code>W X106CI |</code>	<code>Ip i X106 ←</code>	
Read IP address	<code>Esc CI ←</code>	<code>WCI |</code>	<code>X106 ←</code>	
Read hardware address	<code>Esc CH ←</code>	<code>WCH |</code>	<code>X107 ←</code>	
Read number of open connections	<code>Esc CC ←</code>	<code>WCC |</code>	<code>X108 ←</code>	
Set subnet mask	<code>Esc X106CS ←</code>	<code>W X106CS |</code>	<code>Ip s X106 ←</code>	
Read subnet mask	<code>Esc CS ←</code>	<code>WCS |</code>	<code>X106 ←</code>	
Set gateway IP address	<code>Esc X106CG ←</code>	<code>W X106CG |</code>	<code>Ip g X106 ←</code>	
Read gateway IP address	<code>Esc CG ←</code>	<code>WCG |</code>	<code>X106 ←</code>	
Set administrator password	<code>Esc X109CA ←</code>	<code>W X109CA |</code>	<code>Ip a • X109 ←</code>	
Read administrator password	<code>Esc CA ←</code>	<code>WCA |</code>	<code>X109 ←</code>	
Reset (clear) administrator password	<code>Esc • CA ←</code>	<code>W • CA |</code>	<code>Ip a • ←</code>	
Set user password	<code>Esc X109CU ←</code>	<code>W X109CU |</code>	<code>Ip u • X109 ←</code>	
Read user password	<code>Esc CU ←</code>	<code>WCU |</code>	<code>X109 ←</code>	
Reset (clear) user password	<code>Esc • CU ←</code>	<code>W • CU |</code>	<code>Ip u • ←</code>	
Set DHCP on or off	<code>Esc X116DH ←</code>	<code>W X116DH |</code>	<code>Id h X116 ←</code>	
Read DHCP on/off status	<code>Esc DH ←</code>	<code>WDH |</code>	<code>X116 ←</code>	

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

NOTE X100 = Switcher name (up to 240 alphanumeric characters)
X102 = Time and date (MM/DD/YY • HH:MM:SS)
X104 = GMT offset
X105 = Daylight Savings Time
X106 = IP address
X107 = Hardware (MAC) address: ##-##-##-##-##-##
X108 = Number of open connections: 0 - 255
X109 = Password (12 alphanumeric characters)
X116 = DHCP, 0 = off, 1 = on

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
Set verbose mode	<code>Esc</code> <code>X123</code> <code>CV</code> ←	<code>W</code> <code>X123</code> <code>CV</code> |	<code>Vrb</code> <code>X123</code> ←	
Read verbose mode	<code>Esc</code> <code>CV</code> ←	<code>WCV</code> |	<code>X123</code> ←	
Commit RAM to flash memory	<code>Esc</code> <code>IFF</code> ←	<code>WIFF</code> |	<code>Nvr</code> <code>X124</code> ←	
Check RAM	<code>Esc</code> <code>FF</code> ←	<code>WFFI</code> |	<code>X124</code> ←	
Events control				
Start events	<code>Esc</code> <code>IAE</code> ←	<code>WIAE</code> |	<code>Ego</code> ←	
Stop events	<code>Esc</code> <code>OAE</code> ←	<code>WOAE</code> |	<code>Est</code> ←	
Read number of events running	<code>Esc</code> <code>AE</code> ←	<code>WAE</code> |	<code>####</code> ←	Returns a five-digit number.
	(tagged response in verbose mode 2 or 3)		<code>Emm</code> <code>####</code> ←	Verbose mode
Bidirectional serial data port				
Set parameters	<code>Esc</code> <code>X125</code> * <code>X135</code> , <code>X136</code> , <code>X137</code> / <code>X138</code> <code>CP</code> ←	<code>W</code> <code>X125</code> % <code>2A</code> <code>X135</code> % <code>2A</code> <code>X136</code> % <code>2A</code> <code>X137</code> % <code>2A</code> <code>X138</code> <code>CP</code> |	<code>Cpn</code> <code>X125</code> • <code>Cp</code> <code>X135</code> , <code>X136</code> , <code>X137</code> / <code>X138</code> ←	
Read parameters	<code>Esc</code> <code>X125</code> <code>CP</code> ←	<code>W</code> <code>X125</code> <code>CP</code> |	<code>X135</code> , <code>X136</code> , <code>X137</code> / <code>X138</code> ←	
Set mode	<code>Esc</code> <code>X125</code> * <code>X139</code> <code>CY</code> ←	<code>W</code> <code>X125</code> % <code>2A</code> <code>X139</code> <code>CY</code> |	<code>Cpn</code> <code>X125</code> • <code>Cy</code> <code>X139</code> ←	
Read mode	<code>Esc</code> <code>X125</code> <code>CY</code> ←	<code>W</code> <code>X125</code> <code>CY</code> |	<code>X139</code> ←	
Configure flow control	<code>Esc</code> <code>X125</code> * <code>X140</code> , <code>X141</code> <code>CF</code> ←	<code>W</code> <code>X125</code> % <code>2A</code> <code>X140</code> % <code>2C</code> <code>X141</code> <code>CF</code> |	<code>Cpn</code> <code>X125</code> • <code>Cfl</code> <code>X140</code> , <code>X141</code> ←	
Read flow control	<code>Esc</code> <code>X125</code> <code>CF</code> ←	<code>W</code> <code>X125</code> <code>CF</code> |	<code>X140</code> , <code>X141</code> ←	
Configure receive timeout	<code>Esc</code> <code>X125</code> * <code>X127</code> * <code>X130</code> * <code>X133</code> * <code>X131</code> <code>CE</code> ←	<code>W</code> <code>X125</code> % <code>2A</code> <code>X127</code> % <code>2A</code> <code>X130</code> % <code>2A</code> <code>X133</code> % <code>2A</code> <code>X131</code> <code>CE</code> |	<code>Cpn</code> <code>X125</code> • <code>Cce</code> <code>X127</code> / <code>X130</code> , <code>X133</code> , <code>X131</code> ←	
Read receive timeout	<code>Esc</code> <code>X125</code> <code>CE</code> ←	<code>W</code> <code>X125</code> <code>CE</code> |	<code>X127</code> / <code>X130</code> , <code>X133</code> , <code>X131</code> ←	

NOTE `X123` = Verbose mode: 0 = clear/none, 1 = verbose mode, 2 = tagged, 3 = verbose and tagged

`X124` = RAM: status, 0 = dirty (needs saving), 1 = saved

`X125` = Specific serial port number: 01-03, 01 = COM1, 02 = COM2, 03 = COM3

`X127` = Time in tens of milliseconds to wait until the first response character is received via a serial port before terminating the current receive operation.
(Default = 10 = 100 ms, max. = 32767.)

`X130` = Time in tens of milliseconds to wait between characters being received via a serial port before terminating the current command or receive operation.
(Default = 2 = 20 ms, max. = 32767)

`X131` = Parameter (#L or #D) to set either the Length of message to receive or the Delimiter value. # = byte count (for L) or # = a single ASCII character expressed in decimal form (for D). The parameter is case sensitive. Byte count is 0 to 32767, (default = 0).

`X133` = Priority status for receiving time-outs: 0 = use send data string command parameters (default), 1 = use configure receive timeout command parameters

`X135` = Baud rate: 300, 600, 1200, 1800, 2400, 3600, 4800, 7200, 9600 (default), 14400, 19200, 28800, 38400, 57600, or 115200

`X136` = Parity (only the first letter is needed): O = odd, E = even, N = none (default), M = mark, S = space,

`X137` = Data bits: 7, 8 (default = 8)

`X138` = Stop bits: 1, 2 (default = 1)

`X139` = Serial port type: 0 = RS-232, 1 = RS-422

`X140` = Flow control (only the first letter is needed): H = hardware, S = software, N = none

`X141` = Data pacing (time between bytes) in milliseconds (0000 - 1000) (default = 0000 = 0 ms).

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
Configure redirect mode	<code>Esc [X125]*[X143]*[X144]* [X131]CD ←</code>	<code>W[X125]%2A[X143]%2A[X144] %2A[X131]CD |</code>	<code>Cpn[X125]•Ccd[X143][X144][X131]←</code>	
Terminate redirect mode	<code>Esc [X125]*0CD ←</code>	<code>W[X125]%2A0CD |</code>	<code>Cpn[X125]•Ccd00000,00000, 00000L ←</code>	
Read redirect mode	<code>Esc [X125]CD ←</code>	<code>W[X125]CD |</code>	<code>[X143][X144][X131]←</code>	
Ethernet data port				
Set current conn port timeout	<code>Esc 0*[X142]TC ←</code>	<code>W0%2A[X142]TC |</code>	<code>Pti0*[X142]←</code>	
Read current conn port timeout	<code>Esc 0TC ←</code>	<code>W0TC |</code>	<code>[X142]←</code>	
Set global IP port timeout	<code>Esc 1*[X142]TC ←</code>	<code>W1%2A[X142]TC |</code>	<code>Pti1*[X142]←</code>	
Read global IP port timeout	<code>Esc 1TC ←</code>	<code>W1TC |</code>	<code>[X142]←</code>	
Directories				
Change/create directory	<code>Esc [path/directory/]CJ ←</code>	<code>W[path%2Edirectory%2FCJ |</code>	<code>Dir •[path/directory/]←</code>	
Back to root directory	<code>Esc /CJ ←</code>	<code>W%2FCJ |</code>	<code>Dir •/←</code>	
Up one directory	<code>Esc -CJ ←</code>	<code>W%2E%2ECJ |</code>	<code>Dir •[path/directory/]←</code>	
View current directory	<code>Esc CJ ←</code>	<code>WCJ |</code>	<code>[path/directory/]←</code>	
<i>directory</i> = A text string drawn from the alphabet (A-Z), digits (0-9), minus sign/hyphen (-), No blank or space characters are permitted as part of the name. No distinction is made between upper and lower case. The first character must be an alpha character.				
NOTE <i>A directory does not truly exist until a file has been copied into that path. Unlike various PC operating systems, a file and directory on the Extron product are allowed to have the same name. The current directory is a per-connection setting. It begins at the root for each IP session.</i>				

NOTE

[X125] = Specific serial port number: 01-03, 01 = COM1, 02 = COM2, 03 = COM3

[X131] = Parameter (#L or #D) to set either the Length of message to receive or the Delimiter value. # = byte count (for L) or # = a single ASCII character expressed in decimal form (for D). The parameter is case sensitive. Byte count is 0 to 32767, (default = 0).

[X142] = IP connection timeout period specified in 10-second steps, 1 - 65000, (default = 30 = 300 seconds). If no data is received in the specified period, the connection closes.

[X143] = Redirection status: 0 = no redirection, 1 - 3 = redirect serial communication

[X144] = Timeout period in tens of milliseconds for serial data pass-through mode, range = 1 - 32767, (default = 10 = 100 ms)

SIS Programmer's Guide, cont'd

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (host to processor)	Response (processor to host)	Additional description
File commands				
List files from current directory	[Esc] DF←←	WDF |	path / directory • date / time • path / directory • date / time, ... space remaining • bytes left	List all files in directory.
List selected files from current directory	[Esc] <i>first char in extension</i> DF←←	W <i>first char in extension</i> DF |		List selected files using file extension only.
List selected files from current directory	[Esc] <i>first char in filename</i> <i>first char in extension</i> DF←←	W <i>first char in filename</i> <i>first char in extension</i> DF |		List selected files using filename and extension.
List files from current directory and below	[Esc] LF←←	WLF |	directory / filename x • date / time • filesize, directory / filename x • date / time • filesize, ... space remaining • bytes left	List all files in directory and subdirectories.
List selected files from current directory and below	[Esc] <i>first char in extension</i> DF←←	W <i>first char in extension</i> DF |		List selected files in directory / subdirectories using file extension only.
List selected files from current directory and below	[Esc] <i>first char in filename</i> <i>first char in extension</i> DF←←	W <i>first char in filename</i> <i>first char in extension</i> DF |		List selected files in directory / subdirectories using filename and extension.



USP 507

5

Chapter Five

USP 507 Software

Installing and Starting the Signal Processing Products Control Program

Using the Program

Installing and Starting the Signal Processing Products Control Program

The USP 507 can be operated via the Windows®-based Signal Processing Products Control Program (SPPCP). This program is on the Extron Software Products DVD (included with the unit) or available at www.extron.com. Install and run this program on a Windows-based PC connected to either of the serial ports or the Ethernet port. See page 2-4 for connection information. The program cannot be run from the DVD.

Installing the program

1. Insert the DVD into the drive. The DVD self starts.

NOTE *The DVD starts only if you have a DVD drive on your PC.*

The Extron software window appears.



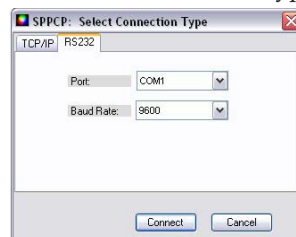
NOTE *If the disc does not self-start, run Launch.exe from the disc.*

2. Click the **Software** tab.
3. Scroll to the Signal Processing Products program and click **Install**.
4. Follow the on-screen instructions. The installation program creates a C:\Program Files\Extron\Signal Processing folder. Three icons are created:
 - Signal Processing program
 - Signal Processing Help
 - Uninstall Signal Processing Control program

Starting the program

1. Click **Start > Programs > Extron Electronics > Signal Processing > Signal Processing Products Control Program**.

The Select Connection Type window appears.



2. Either choose the comm (serial) port that is connected to the USP 507 or select the **TCP/IP** tab.

NOTE *For a comm port, check the baud rate displayed in the comm port selection window. To change the baud rate, click the **Baud** button, select the desired rate. To exit without starting the program, click **Cancel**.*

If you selected a serial port in step 2, click **Connect**. The control program is ready for operation.

3. If you selected TCP/IP tab in step 2, the TCP/IP Connection window appears.

- a. Examine the IP Address field, which displays the last IP address entered, or the drop-down box which lists the most recently used IP addresses.

If listed, select the applicable IP address, or enter the correct IP address in the field.

NOTE 192.168.254.254 is the factory-specified default IP address.

- b. If the unit is password protected, enter the appropriate administrator or user password in the Password field.

- c. Click **Connect**. The Control Program is ready for operation.



Using the Program

The Signal Processing Products Control Program (SPPCP) is used to configure and operate the USP 507 from the PC on which the program resides.

Orientation

The SPPCP main window (figure 5-1) has four tabs: Control, I/O Configuration, Advanced Settings, Image Capture. A fifth tab appears if an optional scan converter board is installed. Click on each tab as desired.

The menu bar on the main window shows File, Options, Tools, and Help. Click on each as desired.

At the bottom of the window is the status bar, indicating the status of the connection or any configuration error messages.

NOTE For detailed Signal Processing Product Control Program instructions when the program is open; press F1 or click on **Help, Contents**.

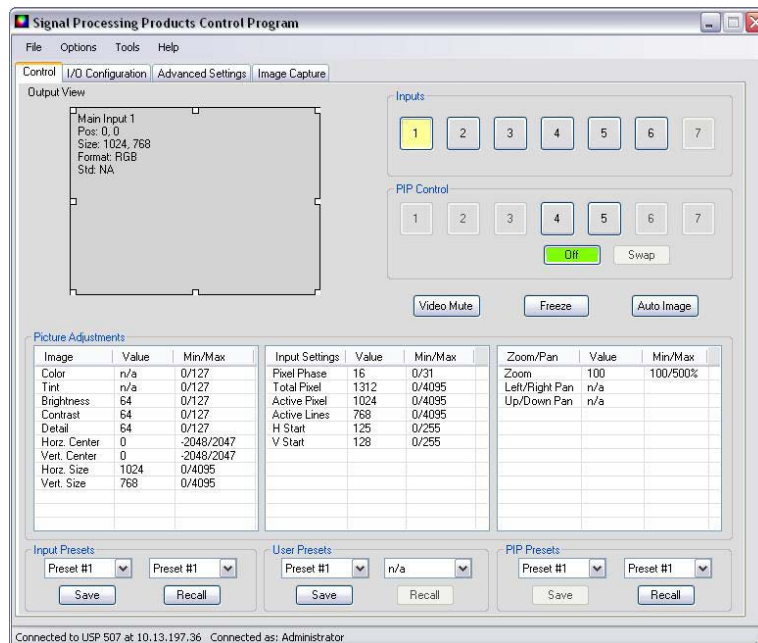
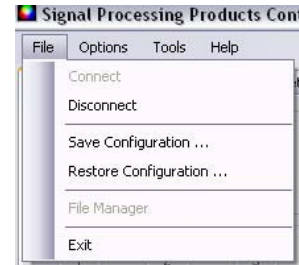


Figure 5-1 — The control program main window

Control program menus

File menu

Click on this to open a drop-down menu displaying six selectable options: Connect, Disconnect, Save Configuration..., Restore Configuration..., File Manager, and Exit.



- **Connect** — Select this to reconnect the USP 507 (or connect a new device) when it has been disconnected from the Signal Processing Products Control Program. Then follow the steps for “Starting the program” on page 5-2.
- **Disconnect** — Select this to disconnect the unit from the Signal Processing Products Control Program. The SPPCP remains open, but items on the main window are grayed out and configuration via the SPPCP is not available.
- **Save Configuration...** — Select this to save the current configuration. A secondary window opens allowing choice of items to save, and selecting a folder location for the saved xxx.cfg files.

NOTE *If these files are saved to the root directory of the USP 507, they are accessible at a later time.*

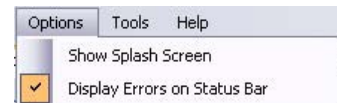
- **Restore Configuration...** — Select this to restore a saved configuration. A secondary window opens allowing a choice of which folder to restore the files from. A pop-up confirmation window opens allowing the action to be completed or cancelled.
- **File Manager** — Select this to load the Extron IP Link® File Manager application. This application is useful in uploading and downloading files to and from IP Link-enabled devices.

NOTE *This option becomes enabled when the File menu is accessed after installing File Manager. In order to use this option, download the IP Link File Manager application at www.extron.com.*

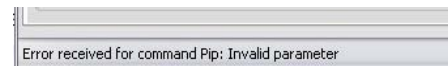
- **Exit** — Select this to exit the Control Program. This disconnects and closes the Signal Processing Products Control Program application.

Options menu

Click on this to open a drop-down menu displaying two selectable options: Show Splash Screen, and Display Errors on Status Bar.



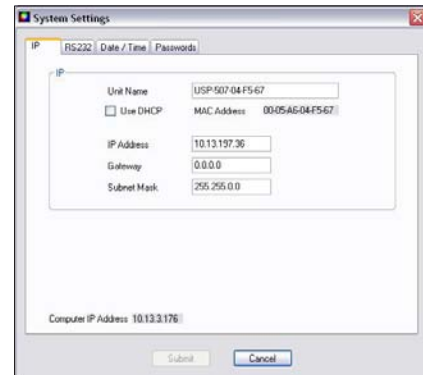
- **Show Splash Screen** — Select this to show the Extron Signal Processing Products Control Program splash screen upon startup. Deselected, the program opens immediately at the Select Connection Type window.
- **Display Errors on Status Bar** — Select this to display any operation errors on the status bar at the bottom of the window



USP 507 Software, cont'd

- **System Settings...** — Select this to open a secondary window. This allows changes to be made to various device settings: IP and RS-232 connections, date/time, and passwords. Select the applicable tab, change the settings as desired, and click **Submit** to make the changes effective.

NOTE *Changing the IP address may result in loss of connection to the LAN. Only the baud rate can be changed when selecting the RS-232 tab.*



Click **Cancel** or the X in the window's top right corner to exit without changes.

- **Reset** — If it is necessary to reset the USP 507, select this to open a secondary drop-down box. Two options are available: Reset to Factory Defaults and Reset to Absolute Defaults Except IP Settings.

Reset to Factory Defaults resets all settings on the device to their factory defaults, including all video and audio settings, and clears all configuration files from the device.

Reset to Absolute Defaults Except IP Settings resets all setting on the device to their defaults, including all captured images and the customized On Screen Display. IP settings are not reset.

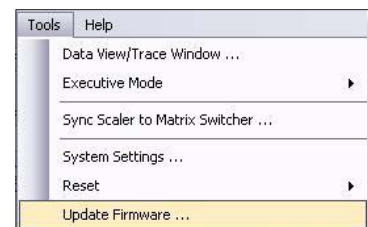
Select either option as desired.

- **Update Firmware...** — Selecting this opens the Firmware Loader application (where already installed on a connected PC). The Firmware Loader uploads new firmware to the device, through a serial port or TCP/IP connection.

In order for the Update Firmware function to work, the Firmware Loader application must be installed on the connected PC. If already installed, skip steps **1 through 4** below.

To download and install the Firmware Loader application:

1. Go to www.extron.com.
2. Enter "Firmware Loader" in the Search field and press Enter.
3. Locate the Firmware Loader application in the search results and click **Download Now!**
4. Follow the on-screen prompts to complete the download.



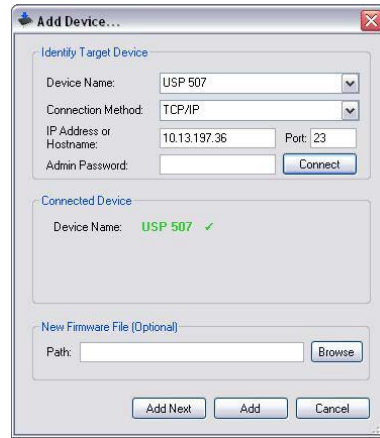
To update the device's firmware:

1. From the SPPCP Tools menu, select **Update Firmware**. The SPPCP minimizes and the Firmware Loader application opens.

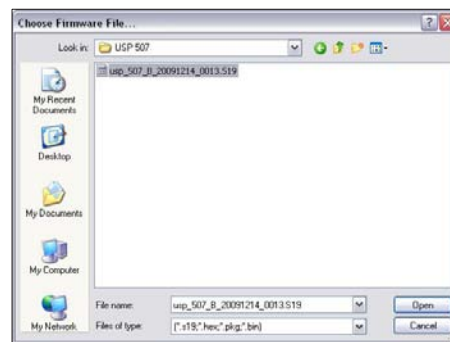
NOTE *For full instructions about using the Firmware Loader, click **Help > Help** (or F1) on the open Firmware Loader window.*

2. The Firmware Loader opens two windows; an Add Device window and the main Firmware Loader window. In the Add Device window, select the device name from the drop-down list.

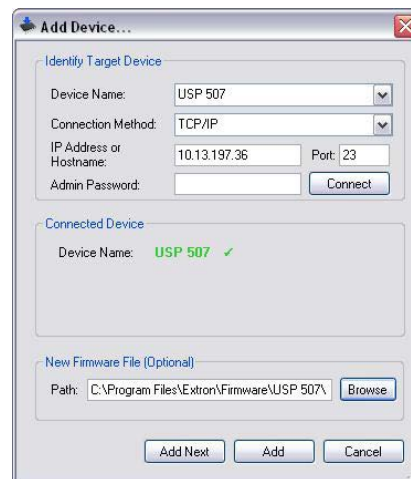
3. Select the connection method. If connecting by TCP/IP, enter the IP address and, if needed, the password. Click **Connect**. If the device connects correctly the device name will appear in green alongside a check mark.



4. Click **Browse**. A dialog box opens to enable a search for the device-specific firmware file (with the file extension “.S19”) previously saved to the connected PC.



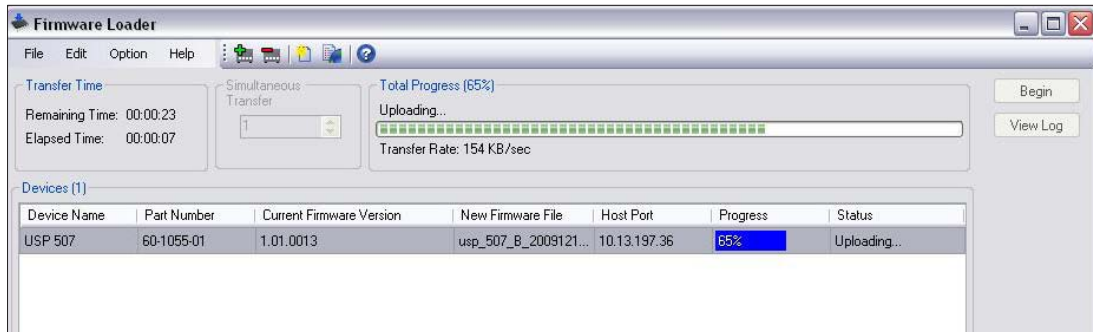
5. In the dialog box, browse to the file location. Click on the file then click **Open**. The dialog box closes and the file name appears in the Add Device window.



Click **Add**. The device name and file name appear in the Firmware Loader window.

USP 507 Software, cont'd

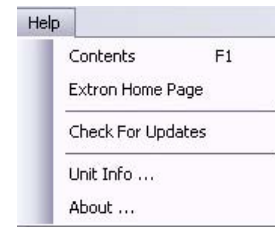
6. Click **Begin**. The file uploads to the USP 507 and the upload progress can be seen on the Total Progress bar.



7. When the file upload is complete (after file verification and the USP 507 restarting), click on the X at top right, or on **File > Exit** to exit the Firmware Loader. The SPPCP window restores itself.
8. Connection to the USP 507 must be reestablished since the connection is lost during firmware upload. Open the SPPCP Connect dialog box and re-enter the connection information to re-establish communication with the USP 507.

Help menu

Click on the SPPCP **Help** to open a drop-down menu displaying five selectable options: Contents, Extron Home Page, Check for Updates, Unit Info..., and About...



- **Contents** — Select this (or press F1) to bring up the Help file which gives step-by-step instructions to configure the USP 507 using the SPPCP program. The Help file opens in a separate window (see figure 5-2). Select the subject matter from the contents section at the left side of the window.

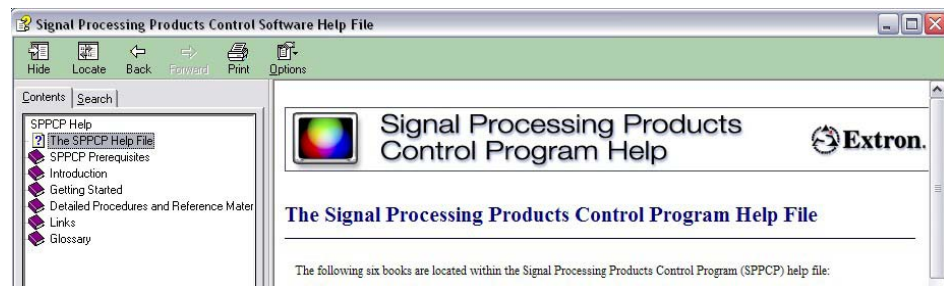
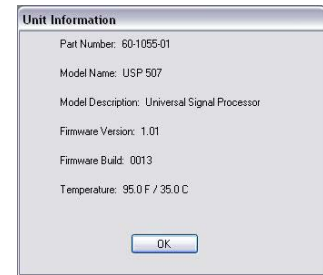


Figure 5-2 — The SPPCP Help file's main window

- **Extron Home Page** — Select this to open the Extron Web site (www.extron.com) home page. From this link, device firmware and necessary applications such as Firmware Loader and IP Link File Manager can be downloaded, and supporting documentation for Extron products can be viewed.
- **Check For Updates** — Select this to update the software control program (SPPCP). If an update is available follow any on-screen instructions to install it. A dialog box appears if no updates are currently available. Click **OK** or the X in the window's top right corner to close it.

- **Unit Info...** — Select this to open a dialog box with information about the connected device. The box shows the part number, the name, model description, currently installed firmware version and build, and the device's internal temperature.



Control tab

The Control tab displays the current configuration of the USP 507, with numbered boxes representing the video inputs. Also visible on the Control tab are: PIP control buttons, current picture adjustment values, input, user, and PIP presets, Video Mute, Freeze and Auto Image buttons. The output view thumbnail in the upper left of this screen shows the main window details and, when PIP is active, the PIP location and details.

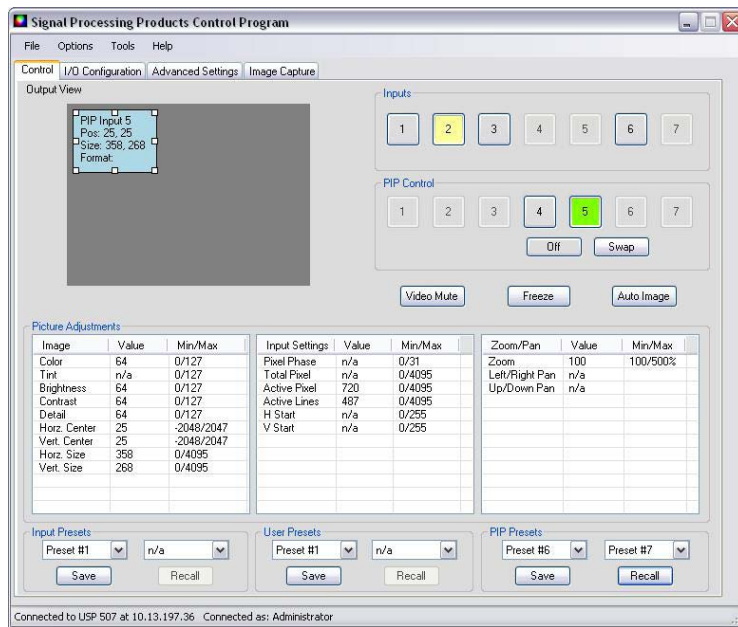


Figure 5-3 — The Control tab screen

- **Inputs** — The current active input is shown (yellow). Select a desired input button to change to that input.
- **PIP Control** — If the PIP feature is active (on) the PIP input is shown in green. To swap a selected PIP input for the main input, click **Swap**. To change to a different PIP input, click on that PIP input button. To turn the PIP feature off, click **Off**.
- **Video Mute**— Select this to mute or unmute the main video image. When selected, the button text turns red.
- **Freeze** — Select this to freeze an image. When selected, the button text turns red.
- **Auto Image** — Select this to perform an auto image on an input.
- **Picture Adjustments** — The Picture Adjustments section at the bottom of the Control tab has three tables: Image, Input Settings, and Zoom/Pan. Each table's value field can be adjusted as desired. Refer to the SPPCP Help File for details. When PIP is active all picture adjustments only affect the PIP image.
- **Input Presets** — The specific settings for size, centering, contrast, brightness, detail, zoom, and input configuration of an input can be saved to a preset. Up to 128 input presets can be saved. A saved preset can be recalled as desired. Select a preset number and click **Save** or **Recall** as applicable.

NOTE Saving to an existing preset overwrites the prior saved data in favor of the new.

USP 507 Software, cont'd

- **User Presets** — A user preset saves specific settings for color, brightness, detail, size, zoom and pan, and centering and up to 16 user presets per input are available. These settings can then be recalled and applied to an applicable input. Select a preset number and click **Save** or **Recall** as desired.
- **PIP Presets** — A PIP preset saves specific layout settings for location and size of the PIP and main windows. These settings can be recalled and applied to any applicable input. Select any one of up to 16 preset numbers and click **Save** or **Recall** as desired.

I/O Configuration tab

The I/O Configuration tab allows input and output configuration, as well as EDID emulation settings to be adjusted.

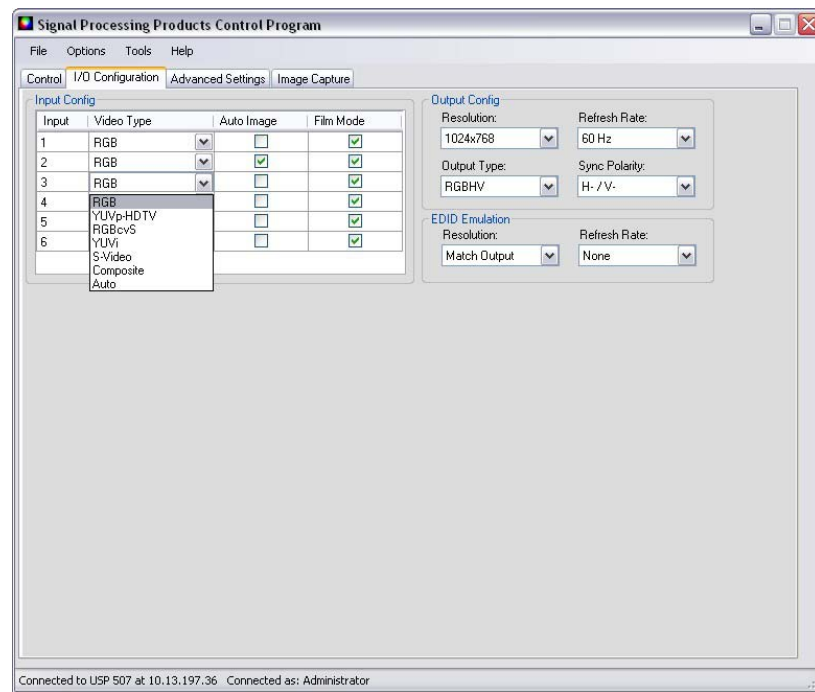


Figure 5-4 — The I/O Configuration tab screen

- **Input Config** — Set a suitable video type for an input by clicking on the drop-down box (see input 4 above) and selecting a listed video type. If Auto Image on an input is desired mark the check box. Check **Film Mode** if 3:2 pull down detection for NTSC and 2:2 film detection for PAL video sources is relevant.

NOTE *Input 7 is shown when an optional input card has been installed.*

- **Output Config** — To configure an output's resolution, refresh rate, output type, or sync polarity, select the desired values from the respective drop-down lists.
- **EDID Emulation** — To set resolution and refresh rates for EDID emulation on the VGA/DVI inputs, select the values from the drop-down list. Alternatively select Match Output to automatically set the EDID to match the output resolution and refresh rate.

Advanced Settings tab

The Advanced Settings tab allows advanced functions to be configured. These include test pattern selection and advanced features, used primarily during initial setup.

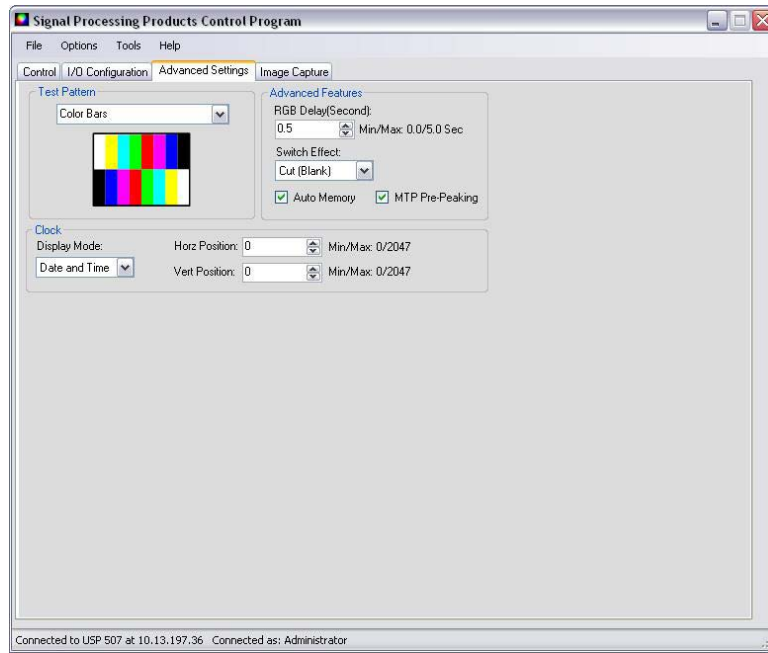


Figure 5-5 — The Advanced Settings tab screen

- **Test Pattern** — Select any of the 14 test patterns to aid setting up an output display device. A small thumbnail of the pattern is shown on the tab (see above). Select Off where a test pattern is not needed.
- **Advanced Features** — Within this section:
 - RGB delay can be adjusted (from 0 to 5.0 seconds) in 0.1 second intervals with each click of the scroll arrows.
 - A choice of three switch effects is available:
 - Cut (Blank) - image cuts to a black screen to mask the input switch,
 - Cut (Freeze) - image freezes to mask the input switch,
 - Fade - image fades out and the new input fades in.
 - Auto memory can be turned on or off.
 - If using MTP twisted pair devices, pre-peaking can be turned on to compensate for long cable runs.
- **Clock** — In this section the clock display mode can be set or disabled, and the on-screen horizontal and vertical position for the clock location can be adjusted.

Scan Converter tab

NOTE The Scan Converter tab appears only if the optional scan converter output board is installed in the USP 507.

The Scan Converter tab allows viewing and changing of the configuration settings for the optional scan converter output board.

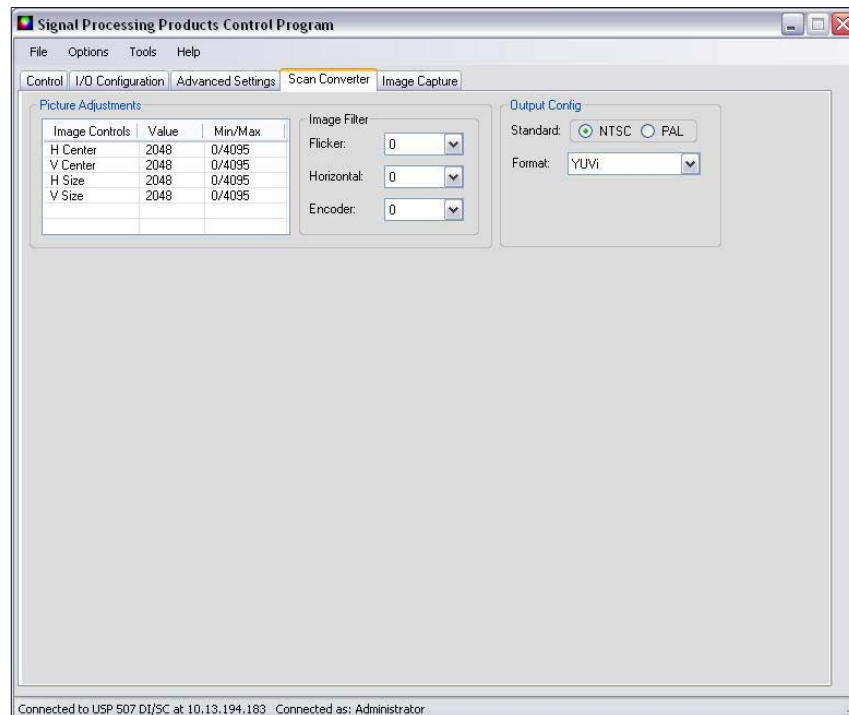


Figure 5-6 — The Scan Converter tab screen

- **Picture Adjustments** — The Picture Adjustments and Image Filter sections of the Scan Converter tab allow adjustments to be made to the image settings of the scan converted output. Adjustable image settings are: Horizontal Center, Vertical Center, Horizontal Size, and Vertical Size. Change the value field (from 0 to 4095) as required. In addition the image filter settings (flicker, horizontal detail, and encoder sharpness) can be set as desired from each drop-down list (settings are 0 through 3).
- **Output Config** — In this section the output standard (PAL or NTSC) and the format of the scan converted output (S-video/composite, YUVi, or RGB) can be set. Select the applicable standard and format as desired.

Image Capture tab

The Image Capture tab allows capturing, saving, recalling, and deletion of displayed images. Images can be recalled to the foreground or background as desired. The size of each saved image is shown, and the amount of free space (internal memory) on the USP 507 for saving images to is given. The status of the currently displayed image is also given.

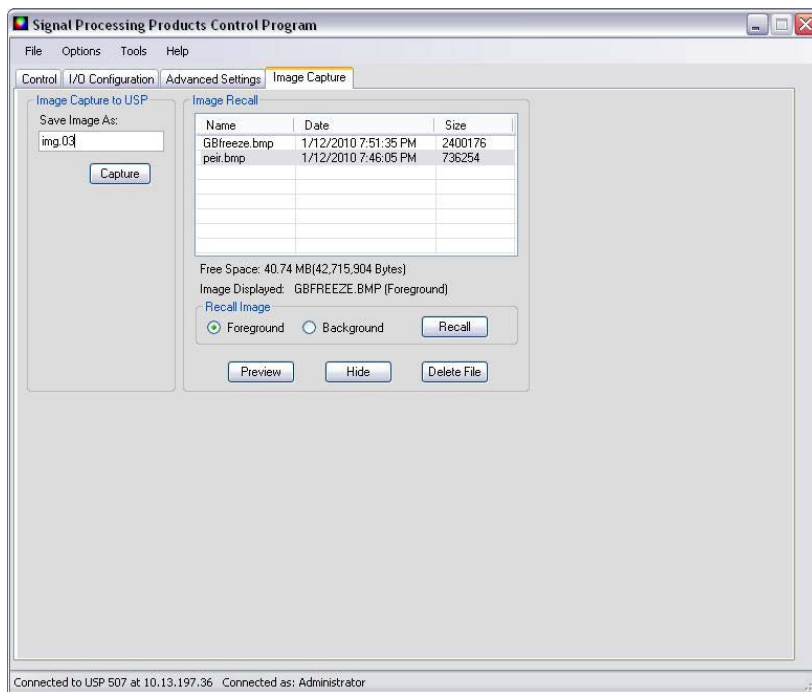


Figure 5-7 — The Image Capture tab screen

- **Image Capture to USP** — Use this section to capture a displayed image to the USP 507 internal memory. Enter a suitable name (maximum 12 characters) and click **Capture**.
- **Image Recall** — Use this section to recall a captured image. Select the desired image and click **Preview** to see a thumbnail image on the connected PC.
Select Foreground or Background as desired and click **Recall** to show the image on a connected display device.

In addition, within this section a displayed image can be hidden (select file and click **Hide**), and a captured image can be deleted (select file and click **Delete**).

For full details on the tabs and using the software, refer to the Help file within the SPPCP.

Status bar

The status bar appears at the bottom of the SPPCP screen. It displays information about the application's current status as well as that of the device.

It shows unit connection status, connection type (IP address or comm port), current user permission level (for example, Administrator), and any error information. If connected via Telnet, then the IP address or unit name of the device are displayed, and if connected via serial port, the baud rate and port number are displayed. Error information appears for 5 seconds in the status bar and then is replaced by connection and device information.



USP 507

6

Chapter Six

HTML Operation

Accessing the Web Pages

System Status Page

Configuration Pages

File Management Page

Control Pages

Images Page

HTML Operation

The USP 507 can be controlled and operated through its Ethernet port, connected via a LAN or WAN, using a Web browser such as Microsoft® Internet Explorer®. The browser displays the unit's factory-installed Web pages, which provide an alternative means of viewing and operating the device.

NOTE *If the Ethernet connection to the USP 507 is unstable, try turning off the proxy server in the Web browser. To do this in Microsoft Internet Explorer, click **Tools > Internet Options > Connections > LAN Settings**, and clear the "Use a proxy server..." check box. Click **OK**.*

Accessing the Web Pages

Access the HTML pages as follows:

1. Start the Web browser program.
2. Click in the browser's Address field and enter your USP 507's IP address.

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 name of the file 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: + ~ , @ = ' [] { } < > ' " ; : | \ and space.*

5. Press the keyboard's Enter key. The USP 507 checks to see if the unit is password protected.

If the unit is not password protected, the System Status Web page is displayed.

If the unit is password protected, the network password dialog box is displayed (figure 6-1).



Figure 6-1 — Example of a network password dialog box

6. In the Password field, enter the appropriate administrator or user password. If desired, select the check box to have the system input your password the next time you enter your USP 507's IP address. Click **OK**.

NOTE *A user name entry is not required.*

Some Web pages may not be available or may be viewable only when logged in as a user.

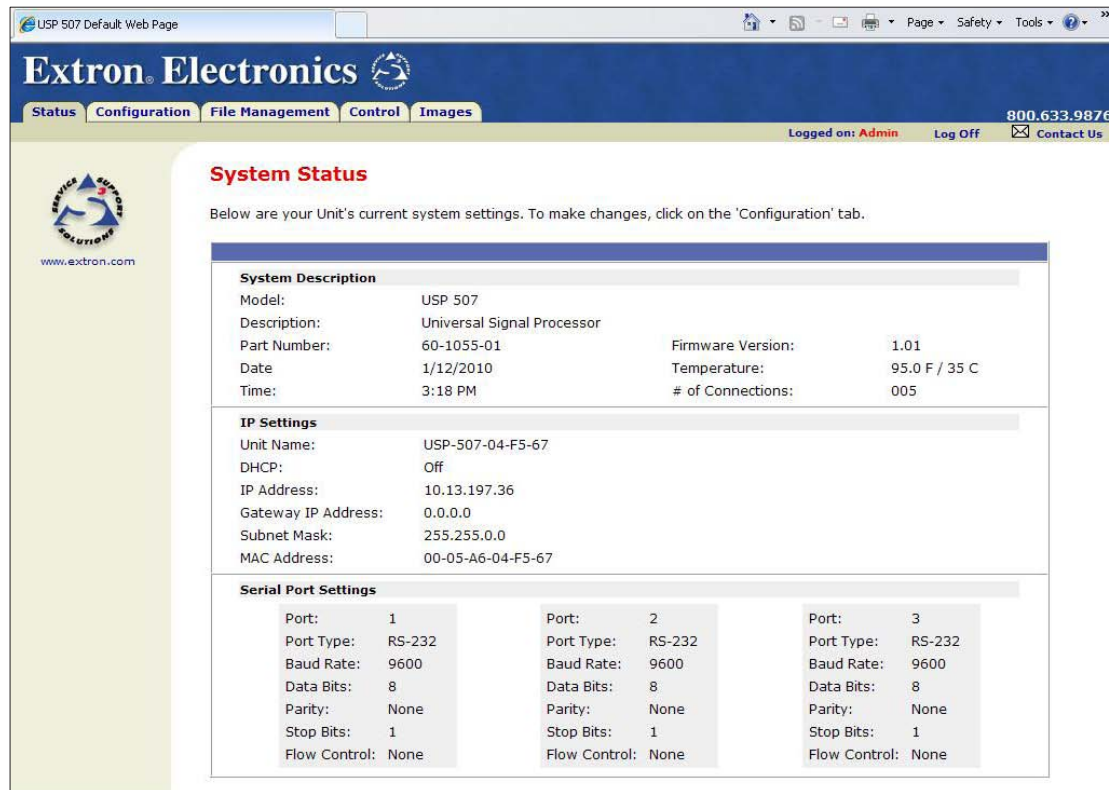
The USP 507 checks several possibilities, in the following order, and then responds accordingly:

- Does the address include a specific file name, such as “192.168.254.254/file_name.html”? **If so**, the unit downloads that HTML page.
- Is there a file in the device’s memory that is named “index.html”? **If so**, the device downloads “index.html” as the default startup page.
- **If neither of the above conditions is true**, the device downloads the factory-installed default startup page, “nortxe_index.html” (figure 6-2), also known as the System Status page.

Any of the five main pages (System Status, Configuration, File Management, Control, and Images) can be accessed at any time by clicking on the relevant tab. Some of the main pages have a series of subpages, accessible by clicking on the links in the sidebar menu.

System Status Page

The System Status page (figure 6-2) displays system information (unit name, model, firmware version, etc.), IP settings, and serial port settings. The page updates itself periodically to reflect the latest status of the USP 507 components. If a variable changes, the display shows the change in status the next time it updates.



The screenshot shows the Extron Electronics System Status page. The page is titled "System Status" and includes a navigation bar with tabs for Status, Configuration, File Management, Control, and Images. The main content area displays the following information:

System Description

Model:	USP 507		
Description:	Universal Signal Processor		
Part Number:	60-1055-01	Firmware Version:	1.01
Date:	1/12/2010	Temperature:	95.0 F / 35 C
Time:	3:18 PM	# of Connections:	005

IP Settings

Unit Name:	USP-507-04-F5-67		
DHCP:	Off		
IP Address:	10.13.197.36		
Gateway IP Address:	0.0.0.0		
Subnet Mask:	255.255.0.0		
MAC Address:	00-05-A6-04-F5-67		

Serial Port Settings

Port:	1	2	3
Port Type:	RS-232	RS-232	RS-232
Baud Rate:	9600	9600	9600
Data Bits:	8	8	8
Parity:	None	None	None
Stop Bits:	1	1	1
Flow Control:	None	None	None

Figure 6-2 — System Status page

Configuration Pages

The Configuration pages allow system settings (such as IP address, date/time), scaler settings (input, output, and advanced configurations), and passwords (admin and user), to be configured as desired. Also, by selecting the Firmware Upgrade link, the device firmware can be upgraded.

System Settings page

The USP 507 displays the System Settings 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 date and time settings. See [appendix B](#) for basic information about IP addresses and subnetting.

The screenshot shows the Extron Electronics System Settings page. The page has a blue header with the Extron logo and navigation tabs: Status, Configuration, File Management, Control, and Images. The user is logged in as Admin. The main content area is titled "System Settings" and contains two sections: "IP Settings" and "Date/Time Settings".

IP Settings

Unit Name:	<input type="text" value="USP-507-04-F5-67"/>	MAC Address:	00-05-A6-04-F5-67
DHCP:	<input type="radio"/> On <input checked="" type="radio"/> Off	Firmware:	1.01
IP Address:	<input type="text" value="10.13.197.36"/>	Model:	USP 507
Gateway IP Address:	<input type="text" value="0.0.0.0"/>	Part Number:	60-1055-01
Subnet Mask:	<input type="text" value="255.255.0.0"/>		

Date/Time Settings

Date:	<input type="text" value="1"/> <input type="text" value="12"/> <input type="text" value="2010"/>	<input type="button" value="Local Date/Time"/>
Time:	<input type="text" value="3"/> <input type="text" value="19"/> <input type="text" value="PM"/>	
Zone:	<input type="text" value="(GMT-08:00) Pacific Time (US & Canada), Tijuana"/>	
Daylight Saving:	<input checked="" type="radio"/> Off <input type="radio"/> USA <input type="radio"/> Europe <input type="radio"/> Brazil	

Figure 6-3 — System Configuration page

On password-protected connections, there are two levels of protection: administrator and user. Administrators have full access to all unit capabilities and editing functions. Users can change inputs, create and recall presets, change images, and view all settings with the exception of passwords.

- Ethernet connection to the unit, either entering SIS commands (see [chapter 4](#), "SIS Programmer's Guide") or using the Extron Signal Processing Products Control Program (see [chapter 5](#), "USP 507 Software") is password protected.
- Connection via the RS-232/RS-422 port is **not** password protected.

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 **Submit** at the bottom of the IP Settings section.

Unit Name field

The Unit Name field contains the name used as the "from" information when the USP 507 e-mails notification of its failed or repaired status. This name field can be changed to any valid name, up to 24 alphanumeric characters.

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

DHCP radio buttons

The DHCP On radio button directs the device 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 this control's setting.

IP Address field

The IP address field contains the IP address of the USP 507. This value is encoded in the unit's flash memory.

Valid IP addresses consist of four 1-, 2-, or 3-digit numeric subfields separated by dots (periods). Each field can be numbered from 000 through 255. Leading zeros, up to 3 digits total per field, 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 device 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 USP 507 is on the same subnet as the mail server when you are subnetting. For more information, see ["Subnetting — A Primer", in Appendix B, "Ethernet Connection"](#).

MAC Address field

The Media Access Control (MAC) address is hard coded in the device and cannot be changed.

Firmware field

This field shows the firmware version number. This field changes only when the firmware is updated.

Model field

This field shows the model (USP 507) and cannot be changed.

Part Number field

This field shows the USP 507 part number (60-1055-xx) and cannot be changed.

HTML Operation, cont'd

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.
2. Click and drag the slider or click the scroll up ▲ or down ▼ buttons until the desired variable is visible.
3. Click on 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).

The Zone field identifies the standard time zone that has been selected and displays the amount of time, in hours and minutes, that the local time varies from the GMT international time reference.

4. Repeat steps 1 through 3 for other variables that need to be changed.
5. Select the appropriate Daylight Saving radio button. To turn off daylight saving time, select Off.

NOTE When daylight saving time is enabled, the unit 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 United States of America and parts of Europe and Brazil. When daylight saving time is turned off, the unit does not adjust its time reference.

6. Click the **Submit** at the bottom of the Date/Time Settings section to implement your selections.

Scaler Settings page

Access the Scaler Settings page (figure 6-5) by clicking the Scaler Settings link on the sidebar menu on the Configuration page.

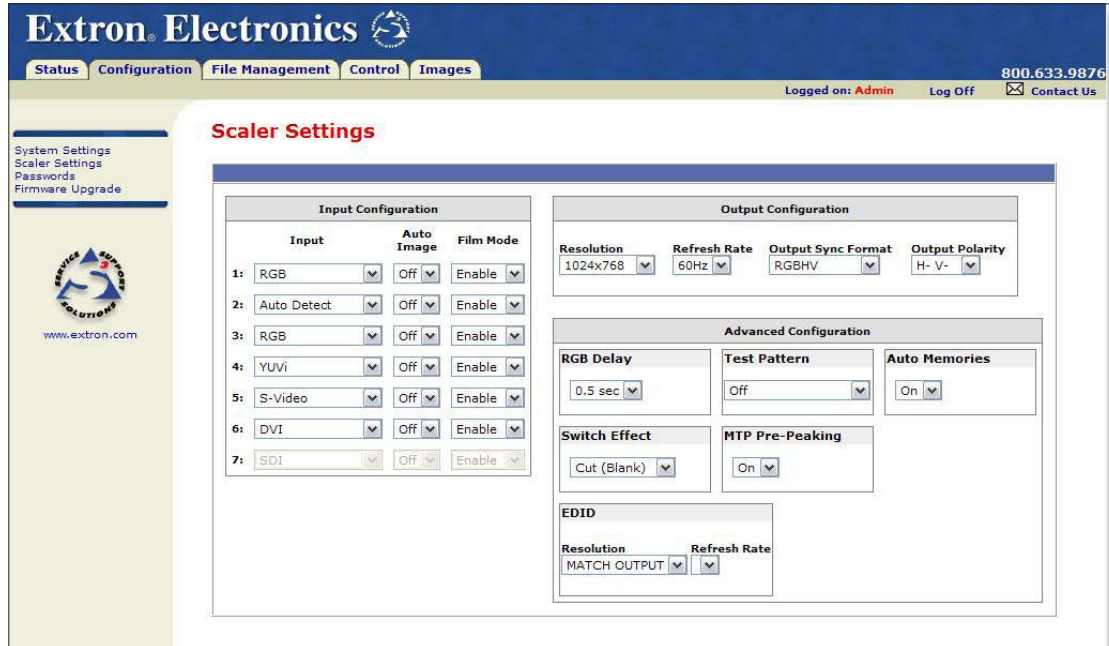


Figure 6-5 — Scaler settings page

The Scaler Status page displays input configuration settings (input signal format, Auto-Image and film mode status) and output configuration settings (resolution and refresh rates, output sync format, and polarity), and advanced configuration settings (RGB delay, test pattern selection, auto memory status, switch effect, and MTP pre-peaking setting, and EDID resolution and refresh rates). Any settings can be changed and the unit updated to the new settings. The page updates itself periodically to reflect the latest status of the USP 507 components. If a variable changes, the display shows the change in status the next time it updates.

Input configuration

For each of the seven inputs, the input format can be changed by clicking on the drop-down arrow and selecting the appropriate signal type:

NOTE Selecting *Auto Detect* allows the device to automatically set the input to the appropriate signal format.

- Input 1: RGB, YUV_p/HDTV, Auto Detect
- Input 2: RGB, YUV_p/HDTV, Auto Detect
- Input 3: RGB, YUV_p/HDTV, RGBcvs, YUV_i, S-video, composite, Auto Detect
- Input 4: YUV_i, S-video, composite, Auto Detect
- Input 5: S-video, composite, Auto Detect
- Input 6: DVI
- Input 7: SDI, HD-SDI, Auto Detect

For each input Auto-Image can be set on or off.

For each of the inputs Film mode can be enabled or disabled.

NOTE *Film mode processing helps maximize image detail and sharpness for NTSC, PAL, and HDTV 1080i sources that originated from film.*

HTML Operation, cont'd

Output configuration

Depending on the optional output card installed, the output connector and display device being used, the resolution and refresh rates can be set to one of 81 output rates from 640x480/50 Hz to 1920x1200/60, including HDTV 1080p/60 Hz. For a full table of output rates see page 3-8.

Output sync format can be chosen from RGBHV, RGsB, YUV bi- or tri-level sync.

Output polarity can be selected from H-/V- (default), H+/V-, H+/V+, or H-/V+.

Advanced configuration

Within this section, RGB delay can be set from a range of 0.0 seconds up to 5.0 seconds in 0.1 second steps. Use the drop-down box to select the desired setting. When switching inputs, the new input is displayed after the current RGB delay time, for example, 2.0 seconds.

If desired, an internal test pattern can be selected from the drop-down list of 14 patterns in order to aid in the setting up of a display device.

Switch effect can be chosen from Cut (Blank), Cut (Freeze), and Fade. Depending on the selected effect, the images go blank, freezes, or fades when inputs are switched.

Auto memories can be toggled on or off as desired.

When using the MTP (twisted pair) output, the pre-peaking setting can be turned on or off to compensate for the poor image quality of video signals transmitted over long distance twisted pair cable runs to a remote display. A compatible Extron MTP Series Twisted Pair Receiver is required for this output type.

Using EDID emulation, the USP 507 provides a means for specifying the rate of the incoming DVI or VGA signal, and allows proper communication with the video source. EDID settings can be selected from the drop-down resolution and refresh rate lists.

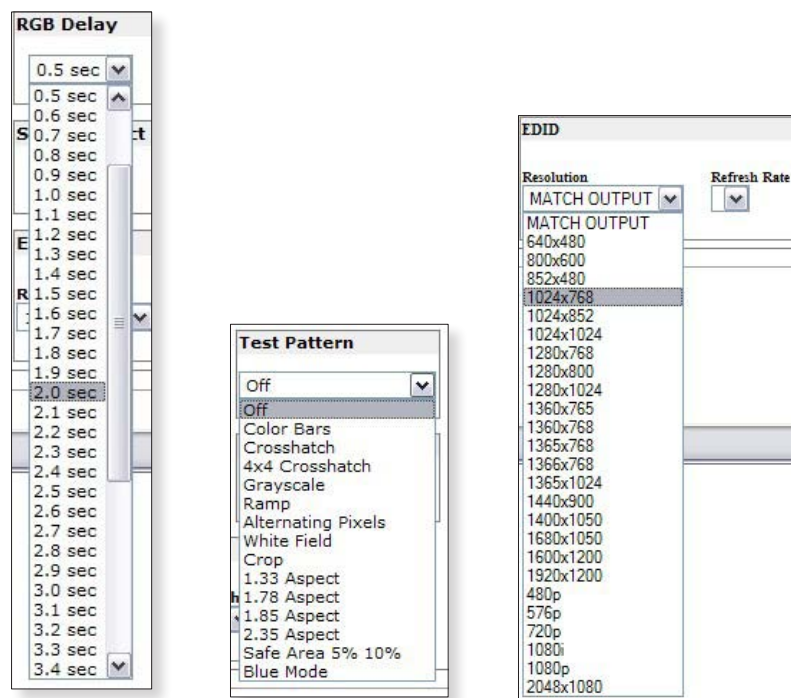


Figure 6-6 — RGB delay, test pattern, and EDID selections

Passwords page

Access the Passwords page (figure 6-7) by clicking the Passwords link on the sidebar menu on the Configuration page.

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 upper- and lowercase alphanumeric characters. Each password must be entered twice – once in the Password field and then again in the Re-enter Password field to the right. Characters in these fields are masked by four bullets (••••). If you do not want to password-protect an access level, leave the Password and the Re-Enter Password fields blank. After entering the desired password in both fields, click **Submit** at the bottom of the page.

NOTE *An administrator password must be created before a user password can be created.*

Some items may not be available or may be viewable only, when logged in as a user.

To clear an existing password so that no password is required, delete the bullets in the Password and Re-enter Password fields and enter a space in each field, then click **Submit** at the bottom of the page.

HTML Operation, cont'd

Firmware Upgrade page

The Firmware Upgrade page (figure 6-8) provides a way to replace the firmware that is coded on the USP 507's control board without needing to take the device out of service.

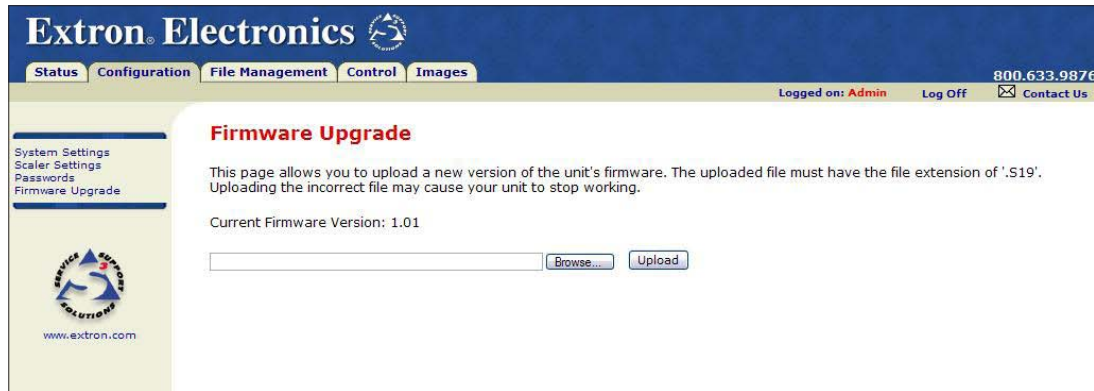


Figure 6-8 — Firmware Upgrade page

NOTE *The Firmware Upgrade page is **only** for replacing the firmware that controls all the device operation. To insert your own HTML pages, see File Management Page, later in this chapter.*

Update the USP 507 firmware as follows:

1. Visit the Extron Web site, www.extron.com, and download the latest firmware file to your computer.
 - a. On the Extron Web page, select the Downloads tab.
 - b. On the Download Center page, click the Firmware link on the left sidebar menu.
 - c. Click on the USP 507 name.
 - d. On the next screen, fill in the required information, then click the Download **product name_firmware version.exe** button.
 - e. On the File Download - Security Warning window, click **Save**.
 - f. On the Save As window, browse to the folder where you want to save the firmware file, and click **Save**. The firmware installation (.exe) file is placed on your hard drive.
 - g. Run the .exe file. This opens the Firmware Update program, creating a product named folder within which is placed the firmware file (x.S19).
2. Access the USP 507 internal Web pages.
3. Select the Configuration tab.
4. On the Configuration page, click the Firmware Upgrade link on the left sidebar menu.
5. Click **Browse**. A Choose File To Upload window opens.
6. Navigate to the folder (created in step **1g**) where the firmware upgrade file is saved. Select the file.

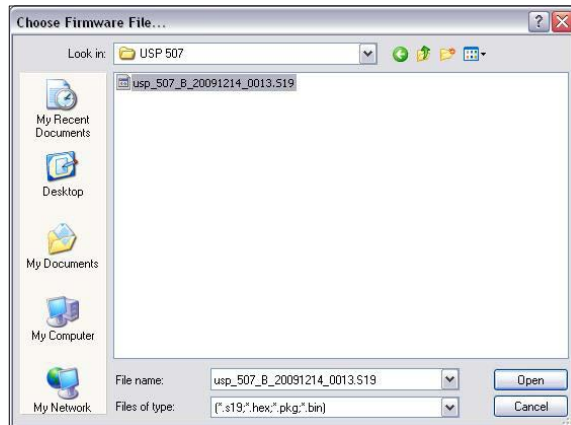


Figure 6-9 — Choose file window with a firmware file selected

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 USP 507. If the attempted firmware upload fails for any reason, the device reverts to the factory-installed firmware.

7. Click **Open**.
8. On the Firmware Upgrade page, click **Upload**.

While the firmware is uploading, the Upload button changes to Uploading... . When the uploading process is complete, the button changes back to Upload. The uploading may take a few minutes.

File Management Page

This page allows the user to upload or delete user files (such as HTML pages, or bitmaps) from the USP 507.



Figure 6-10 — File Management page

NOTE The files listed in figure 6-10 are shown for example only and may not be present on your unit.

HTML Operation, cont'd

Uploading files

Files to be uploaded to the USP 507 must contain only valid alphanumeric characters and underscores.

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

To upload files from the server, follow these steps:

1. Click **Browse** (to the right of the file name field).
2. Browse to locate the file that you want to upload, and open it. The file's name and directory path are displayed in the file name field on the File Management screen.
3. Click **Upload File**. The selected file name appears in the Files column on the File Management screen. (Files are listed separately under headings of their extensions.)

NOTE *If you want one of the pages that you create and upload to be the default startup page, name that file "index.html."*

Adding a directory

To add a directory or folder to the USP 507's file system, follow these steps:

1. Enter the directory name in the Dir: field, following the slash (/).
2. Click the **Add Dir** button.
3. With the directory name displayed, perform the uploading files procedure described in the previous section to add a file to the directory. The directory name appears at the top of the Files column, preceded by a slash.

To add more files to the directory, click the directory name to open it, then use the Uploading files procedure. To exit the directory, click (root) or (back).

Other file management activities

You can also perform the following tasks on the File Management screen:

Open a file — Click on the name of the file in the Files column.

Delete a file — Click **Delete** (at the right end of the line that contains the file you want to remove).

Delete all files — Click **Delete All**.

Display files by file extension — The Filter by File Extension menu lists the extensions of the files that have been uploaded to the USP 507. This menu lets you choose to display only files with the extension you select. Click **Select All** to display all uploaded files.

Control Pages

These three Control pages (User Control, Memory/Input Presets, and PIP Setup/PIP Presets) allow limited device configuration. From the User Control page, the selection and viewing of inputs, mute and freeze selection, and execution of Auto-Image is possible. Picture control and input sampling is also available on the User Control page. From the Memory/Input Presets page, up to 16 memory presets and up to 128 input presets can be saved and recalled. Using the PIP Setup/PIP Presets page an input can be selected and swapped to become either the main image or the secondary (PIP) image. In addition, the PIP can be turned off and Auto-Image can be performed on either input. Within PIP Setup limited picture control is possible. The Control pages initially open on the User Control page.

User Control page

The User Control page emulates some of the front panel features and displays the current picture control settings and input sampling data (see figure 6-11). In addition, image muting/unmuting, freezing/unfreezing and Auto-Image can be selected.

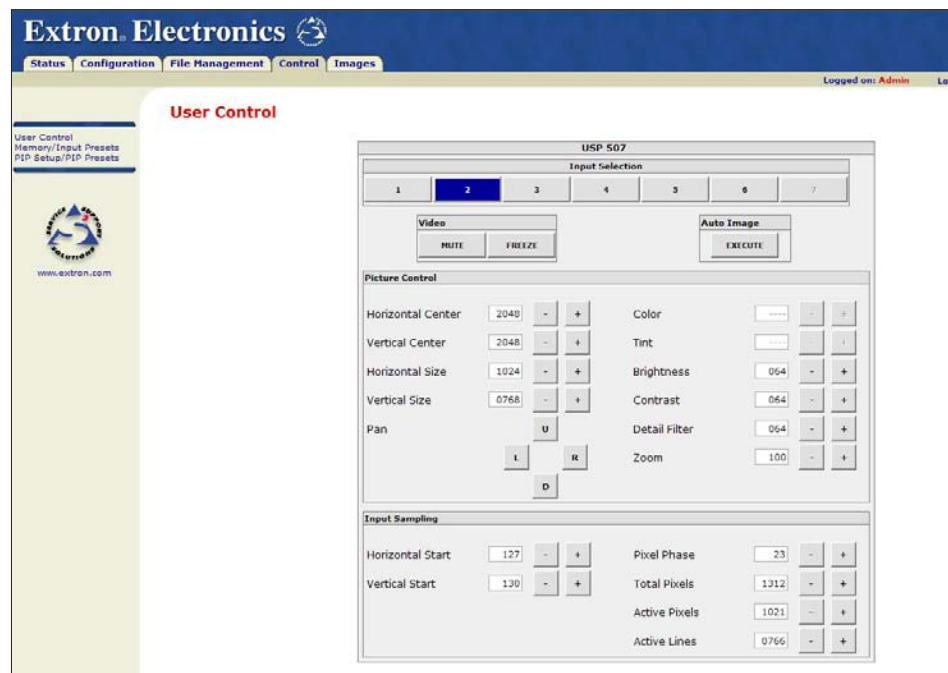


Figure 6-11 — User Control page

To select an input to be displayed, click on an input number. The selected input is displayed.

To mute or unmute, freeze or unfreeze the input image, click on the appropriate button. Muting the image blanks the display screen. Unmuting the image allows the image to be displayed.

Freezing the image keeps the same image displayed, even when the input is switched. Unfreezing the image allows images from switched inputs to be viewed.

Select Auto-Image to initiate an Auto-Image on the selected input.

For picture control, select and change the criteria in this section as desired.

The input sampling section allows adjustment to specific image settings (horizontal and vertical start, pixel phase, total pixels active pixels, and active lines). To view or adjust these, an active signal must be present and PIP must be turned off.

HTML Operation, cont'd

Memory/Input Presets page

From this page up to 16 memory or 128 input presets can be saved and recalled.

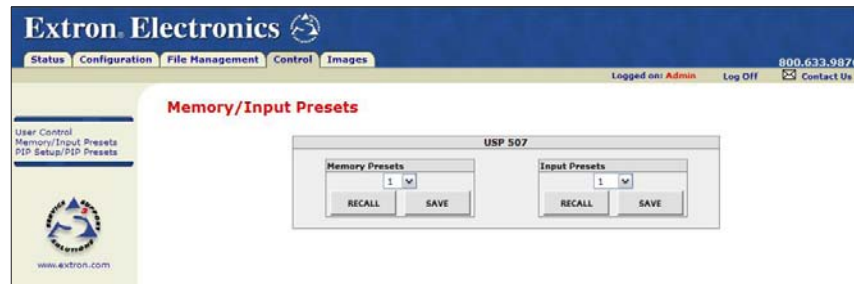


Figure 6-12 — Presets page

To save the current configuration to a memory or input preset, click on the applicable drop-down box, scroll to the desired preset number, and click **Save**.

To recall a memory or input preset as the current configuration, click on the applicable drop-down box, scroll to the desired preset number, and click **Recall**. The current configuration is then replaced by the recalled configuration.

PIP Setup/PIP Presets page

With this page, Picture-in-Picture setup is possible by selecting the main image and the secondary PIP image inputs. PIP layout presets can also be recalled or saved.

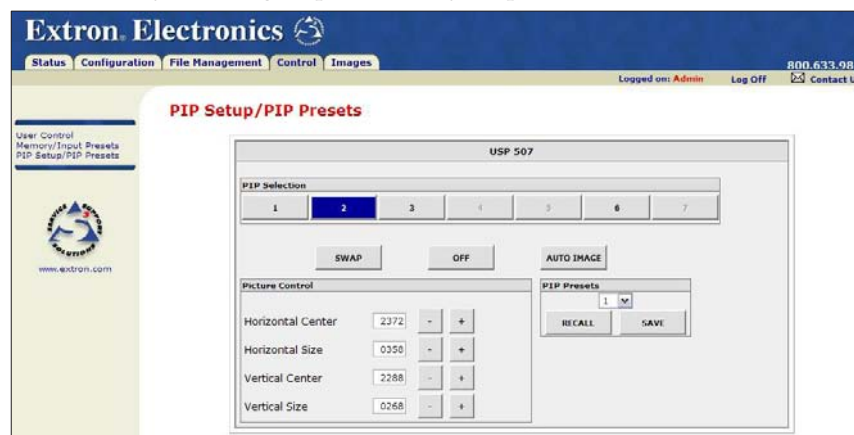


Figure 6-13 — PIP page

To toggle between two inputs click **Swap**.

To turn off the PIP format click **Off**.

To set the location and size of the PIP layout window on the screen adjust the Picture Control settings (horizontal center, horizontal size, vertical center, and vertical size) as desired.

Auto-Image is applied to any selected input when **Auto-Image** is clicked on.

To recall or save a PIP layout preset, select the preset number and click **Recall** or **Save** as needed.

Images Page

This page allows images (.bmp format) to be added to or deleted from the USP 507, previewed, and recalled to be shown on a connected display device, either in the foreground or background.

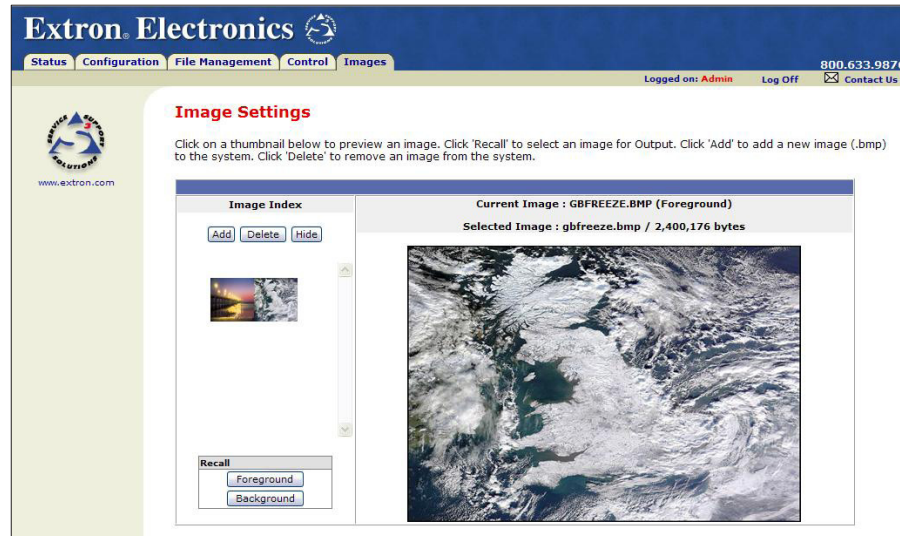


Figure 6-14 — Images page

To add an image, click **Add**, browse to the image location on the connected PC, and click **Upload Image**. The image is uploaded to the USP 507 and a thumbnail of the image is viewable on the Images Page (see figure 6-14).

NOTE *The image is not yet displayed.*

To preview an image without displaying it, click on the thumbnail.

To display an image click on a thumbnail image and then click **Foreground** or **Background Recall**. The image is displayed. If no image appears on the display device, check that the input selected and image format is correct.

To hide an image click on a thumbnail and then click **Hide**. The image is hidden but not deleted from the USP 507 files

To delete an image from the memory, click on a thumbnail and then click **Delete**. The image is deleted from the USP 507 files.



USP 507

A

Appendix A

Reference Information

Specifications

Part Numbers and Accessories

Reference Information

Specifications

Video input

Number/signal type.....	2 RGBHV, RGBS, RGsB, component video (Y, R-Y, B-Y; progressive or HD) 1 RGBHV, RGBS, RGsB, component (Y, R-Y, B-Y; interlaced, progressive, HD) S-video, composite video 1 component video (Y, R-Y, B-Y; interlaced), S-video, composite video 1 S-video, composite video 1 single link DVI-D 1 optional SDI, HD-SDI
Connectors	2 female 15-pin HD: RGBHV, RGBS, RGsB, component video 5 female BNC: RGBHV, RGBS, RGsB, component video, S-video, composite video 3 female BNC: component video, S-video, composite video 2 female BNC: S-video, composite video 1 female DVI-I: DVI-D 1 female BNC: optional SDI, HD-SDI
Nominal level	1 Vp-p for Y of component video and S-video, and for composite video 0.8 Vp-p for SDI 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
Impedance.....	75 ohms
Horizontal frequency.....	Autoscan 15 kHz to 100 kHz
Vertical frequency.....	Autoscan 24 Hz to 120 Hz
Resolution range	640x480 to 1920x1200*, 480p, 576p, 720p, 1080i, and 1080p, digitized pixel for pixel; higher resolutions are undersampled. *Reduced blanking
Return loss.....	<-30 dB @ 5 MHz
DC offset (max. allowable).....	0.5 V

Video processing

Digital sampling.....	30 bit, 10 bits per color; 13.5 MHz standard (video), 165 MHz standard (RGB, YUVp, DVI)
Colors.....	1 billion, 1024 per color channel
Encoder (for scan converted output)	10 bit digital
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 buffered scaled RGBHV, RGBS, RGsB, or scaled HD component video (Y, R-Y, B-Y) 1 MTP 1 optional single link DVI-D; HD-SDI; or interlaced component video, S-video, composite video
Connectors	6 female BNC: RGB or component video 1 female 15-pin HD: RGB or component video 1 female RJ-45: output to an MTP device 1 slot for an optional DVI-D, HD-SDI, or interlaced component, S-video, composite video output card

Nominal level	1 Vp-p for Y of component video and S-video, and for G of RGsB 0.8 Vp-p for SDI 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 1.0 Vp-p
Impedance.....	75 ohms
Scaled resolution	640x480 ^{6,8,9} , 800x600 ^{6,8,9} , 852x480 ^{6,8,9} , 1024x768 ^{6,8,9} , 1024x852 ^{6,8,9} , 1024x1024 ^{6,8,9} , 1280x768 ^{6,8,9} , 1280x800 ^{6,8,9} , 1280x1024 ^{6,8,9} , 1360x765 ^{6,8,9} , 1360x768 ^{6,8,9} , 1365x768 ^{6,8,9} , 1365x1024 ^{6,8,9} , 1366x768 ^{6,8,9} , 1400x1050 ^{6,8} , 1440x900 ^{6,8,9} , 1600x1200 ^{6,8} , 1680x1050 ^{6,8} , 1920x1200 ^{6,8} HDTV: 480p ^{7,8} , 576p ⁶ , 720p ^{3,4,5,6,7,8} , 1080i ^{6,7,8} , 1080p ^{1,2,3,4,5,6,7,8} , 2048x1080 ^{1,2,3,4,5,6,7,8} ¹ = 23.98 Hz, ² = 24 Hz, ³ = 25 Hz, ⁴ = 29.97 Hz, ⁵ = 30 Hz, ⁶ = 50 Hz, ⁷ = 59.94 Hz, ⁸ = 60 Hz, ⁹ = 75 Hz

Sync

Input type.....	RGBHV, RGBS, RGsB, RGBcvS, and component video (tri-level or bi-level)
Output type.....	RGBHV, RGBS, RGsB, and component video (tri-level or bi-level)
Standards.....	NTSC 3.58, PAL Optional SDI/HD-SDI 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	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
Input impedance	Horizontal: 75 ohms Vertical: 510 ohms
Output impedance	75 ohms
Polarity.....	Positive or negative (selectable)

Control/remote— signal processor

Serial control port.....	2 RS-232/RS-422 on female 9-pin D connectors (rear panel) 1 RS-232, 2.5 mm mini stereo jack (front panel)
Baud rate and protocol.....	9600 (default), 19200, 38400, 115200 baud, adjustable; 8 data bits, 1 stop bit, no parity
Serial control pin configurations	
9-pin D connector.....	RS-232: 2 = TX, 3 = RX, 5 = GND RS-422: 2 = TX-, 3 = RX-, 5 = GND, 7 = RX+, 8 = TX+
2.5 mm mini stereo jack....	Tip = TX, ring = RX, sleeve = GND
Ethernet control port.....	1 female RJ-45 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 40 MB nonvolatile user memory
Program control.....	Extron control/configuration program for Windows® Extron Simple Instruction Set (SIS™) Microsoft® Internet Explorer®, Telnet

Reference Information, cont'd

General

Power	100 VAC to 240 VAC, 50-60 Hz, 30 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
Cooling	Convection, vents on sides and top
Mounting	
Rack mount	Yes, with included brackets.
Furniture mount	Yes, with optional under-desk or through-desk mounting kit
Enclosure type	Metal
Enclosure dimensions	1.7" H x 17.5" W x 12.0" D (1U high, full rack wide) (4.3 cm H x 44.4 cm W x 30.5 cm D) (Depth excludes connectors and knobs.)
Product weight	6.8 lbs (3.1 kg)
Shipping weight	11 lbs (5 kg)
DIM weight	12 lbs (6 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 $\pm 10\%$.

NOTE Specifications are subject to change without notice.

Part Numbers and Accessories

Included parts

Included part	Replacement part number
USP 507	60-1055-01
US style IEC power cord	
Rubber feet, self-adhesive	
MBD 149, rack ears, 1U	70-077-03
<i>USP 507 Setup Guide</i>	
Tweezer (small screwdriver)	
Extron Software Products DVD	

Accessories

Cables	Part number
CFG 9-pin D female to 2.5 mm TRS configuration cable	70-335-01

NOTE For signal cable requirements, please check the latest Extron catalog or visit www.extron.com for a comprehensive list.
The cable listed above is for front panel RS-232 use.

Optional I/O boards

NOTE The following I/O boards are optional and can be ordered separately.

I/O board	Part number
SDI/HD-SDI input board	70-560-02
DVI output board	70-487-02
Scan Converter output board	70-486-02
HD-SDI output board	70-559-02



USP 507

Appendix B

Ethernet Connection

Ethernet Link

Subnetting — A Primer

Ethernet Connection

Ethernet Link

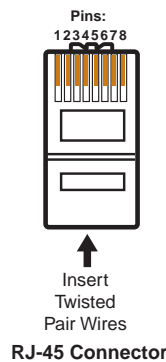
The rear panel Ethernet connector on the USP 507 can be connected to an Ethernet LAN or WAN. This connection makes SIS control of the unit possible using a computer connected to the same LAN.



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 B-1).

- **Crossover cable** — Direct connection between the computer and the USP 507.
- **Patch (straight) cable** — Connection of the USP 507 to an Ethernet LAN.



Straight-through Cable (for connection to a switch, hub, or router)			
End 1		End 2	
Pin	Wire Color	Pin	Wire Color
1	white-orange	1	white-orange
2	orange	2	orange
3	white-green	3	white-green
4	blue	4	blue
5	white-blue	5	white-blue
6	green	6	green
7	white-brown	7	white-brown
8	brown	8	brown

Crossover Cable (for direct connection to a PC)			
End 1		End 2	
Pin	Wire Color	Pin	Wire Color
1	white-orange	1	white-green
2	orange	2	green
3	white-green	3	white-orange
4	blue	4	blue
5	white-blue	5	white-blue
6	green	6	orange
7	white-brown	7	white-brown
8	brown	8	brown

Figure B-1 — RJ-45 connector pinout tables

Default address

To access the USP 507 via the Ethernet port, you need the unit'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 USP 507.

Ping to determine Extron IP address

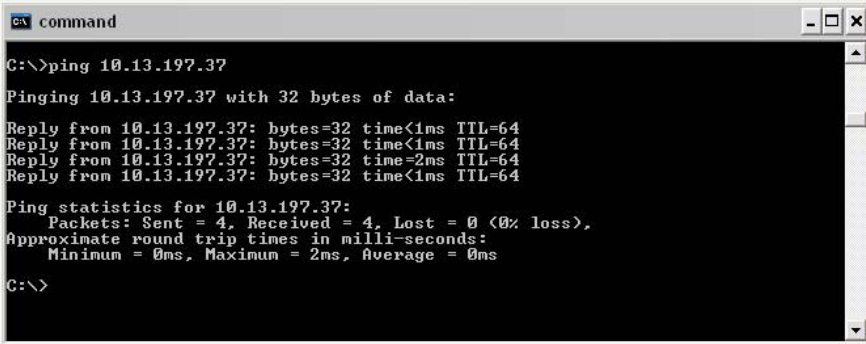
The ping utility is available at the command (Cmd) prompt. Ping tests the Ethernet interface between the computer and the USP 507. Ping can also be used to determine the actual numeric IP address from an alias and to determine the Web address.

Ping the device as follows:

1. From the Windows Start menu, select Run... . The Run window opens.
2. In the Open text field, enter *command*.

3. Click **OK**. A DOS command window opens.
4. At the DOS prompt, enter *ping IP address*. The computer returns a display similar to figure B-2.

The line **Pinging ...** reports the actual numeric IP address, regardless of whether you entered the actual numeric IP address or an alias name.



```
command
C:\>ping 10.13.197.37
Pinging 10.13.197.37 with 32 bytes of data:
Reply from 10.13.197.37: bytes=32 time<1ms TTL=64
Reply from 10.13.197.37: bytes=32 time<1ms TTL=64
Reply from 10.13.197.37: bytes=32 time=2ms TTL=64
Reply from 10.13.197.37: bytes=32 time<1ms TTL=64

Ping statistics for 10.13.197.37:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 2ms, Average = 0ms
C:\>
```

Figure B-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.

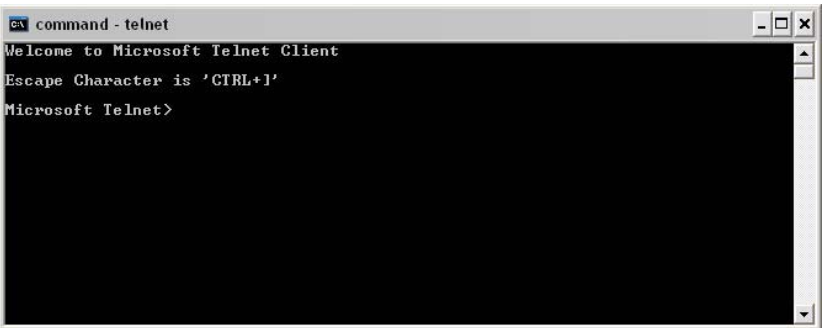
At the DOS prompt, enter *ping -a IP address*. The computer's return display is similar to the ping response shown in figure B-2, except that when you specify the *-a* modifier, the line **Pinging mail...** reports the Web IP address instead of the numeric IP address, regardless of whether you entered the actual numeric IP address or an alias name.

Connect as a Telnet client

The Telnet utility is available from the DOS prompt. Telnet allows you to input SIS commands to the USP 507 from the PC via the Ethernet link and the LAN.

Access the DOS prompt and start Telnet as follows:

1. From the Windows Start menu, select **Run...**. The Run window opens.
2. In the Open text field, enter *command*.
3. Click **OK**. A DOS command window opens.
4. At the DOS prompt, enter *Telnet*. The computer returns a display similar to figure B-3.



```
command - telnet
Welcome to Microsoft Telnet Client
Escape Character is 'CTRL+I'
Microsoft Telnet>
```

Figure B-3 — Telnet screen

Ethernet Connection, cont'd

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 USP 507 via Telnet.

Connecting to the USP 507 (Open command)

You connect to the USP 507 using the Open command. Once your computer is connected to the unit you can enter the SIS commands the same as you would if you were using the RS-232 link.

Connect to the device as follows:

1. At the Telnet prompt, enter *open IP address*.

If the processor is not password protected, no further prompts are displayed until you disconnect from the USP 507.

If the processor is password protected, Telnet displays the password prompt.

2. If necessary, enter the password at the password prompt.

Connection to the processor 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 the processing capabilities and editing functions.

Users can select test patterns, mute or unmute the output, select a blue screen, and view all settings with the exception of passwords. By default, the processor is delivered with both passwords set to *carriage return*.

Once you are logged in, the processor returns either **Login Administrator** or **Login User**. No further prompts are displayed until you disconnect from the USP 507.

Escape character and Esc key

When Telnet is first started, the utility advises that the **Escape character is 'Ctrl+J'**. Many SIS commands include the keyboard Esc key. Consequently, some confusion may exist between the Escape character and the Esc key.

The Telnet Escape character is a key combination: the Ctrl key and the] key pressed simultaneously. Pressing these keys displays the Telnet prompt while leaving the connection to the USP 507 intact.

The Escape key is the Esc key on the computer keyboard.

Local echo

Once your computer is connected to the USP 507, by default Telnet does not display your keystrokes on the screen. SIS commands are entered blindly, and only the SIS responses are displayed on the screen. To command Telnet to show all keystrokes, enter *set local echo* at the Telnet prompt before you open the connection to the processor.

With local echo turned on, keystrokes and the processor's responses are displayed on the same line. Example: *!*!*!01Out01 In01 All where !*!*!* is the SIS command and *01Out01 In01 All* is the response.

Note that 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 see a display such as *a*d*m*i*n**, where *admin* is the keyed-in password and ******* is the masked response.

Ethernet Connection, cont'd

Subnet masks and octets

The subnet mask (figure B-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 zeros, 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.

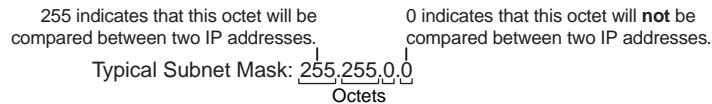


Figure B-5 — Subnet mask and octets

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 B-6 below). Each address's octets are compared or not, 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 B-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 B-6).

If the unmasked octets of the two IP addresses **match** (indicated by = in figure B-6, example 1), the two addresses **are on the same subnet**.

If the two unmasked fields **do not match** (indicated by an unequal sign in figure B-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 (Same subnet)	≠.X.X — No match (Different subnet)	≠.X.X — No match (Different subnet)

Figure B-6 — Comparing the IP addresses

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 modifications, not authorized by Extron, having been made 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.

Extron USA - West Headquarters +800.633.9876 <small>Inside USA / Canada Only</small> +1.714.491.1500 +1.714.491.1517 FAX	Extron USA - East +800.633.9876 <small>Inside USA / Canada Only</small> +1.919.863.1794 +1.919.863.1797 FAX	Extron Europe +800.3987.6673 <small>Inside Europe Only</small> +31.33.453.4040 +31.33.453.4050 FAX	Extron Asia +800.7339.8766 <small>Inside Asia Only</small> +65.6383.4400 +65.6383.4664 FAX	Extron Japan +81.3.3511.7655 +81.3.3511.7656 FAX	Extron China +400.883.1568 <small>Inside China Only</small> +86.21.3760.1568 +86.21.3760.1566 FAX	Extron Middle East +971.4.2991800 +971.4.2991880 FAX
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