

# Annotator


Annotation Graphics Processor



**Extron® Electronics**  
INTERFACING, SWITCHING AND CONTROL

# Precautions

## Safety Instructions • English

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

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

### Caution


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

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

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

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

## Consignes de Sécurité • Français

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

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

### Attention


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


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

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

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

## Sicherheitsanleitungen • Deutsch

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

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

### Achtung


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


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

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

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

## Instrucciones de seguridad • Español

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

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

### Precaucion


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


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

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

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

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

### Vorsicht

**Stromquellen** • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden.

Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

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

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

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

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

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

### Advertencia

**Alimentación eléctrica** • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no 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。 不要用什么东西挡住通风孔。

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

## FCC Class A Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
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.

## Conventions Used in this Guide

In this user guide, the following are used:

**NOTE:** A note draws attention to important information.

**TIP:** A tip provides a suggestion to make working with the application easier.

**CAUTION:** A caution indicates a potential hazard to equipment or data.

**WARNING:** A warning warns of things or actions that might cause injury, death, or other severe consequences.

Commands are written in the fonts shown here:

```
^ARMerge Scene,,Op1 scene 1,1 ^B51 ^W^C  
[01] R000400300004000080000600 [02] 35 [17] [03]  
Esc [X1] * [X17] * [X20] * [X23] * [X21] CE ←
```

**NOTE:** For commands and examples of computer or device responses mentioned in this guide, the character “0” is used for the number zero and “O” represents the capital letter “o.”

Computer responses and directory paths that do not have variables are written in the font shown here:

```
Reply from 208.132.180.48: bytes=32 times=2ms TTL=32  
C:\Program Files\Extron
```

Variables are written in slanted form as shown here:

```
ping xxx.xxx.xxx.xxx -t  
SOH R Data STX Command ETB ETX
```

Selectable items, such as menu names, menu options, buttons, tabs, and field names are written in the font shown here:

```
From the File menu, select New.  
Click the OK button.
```

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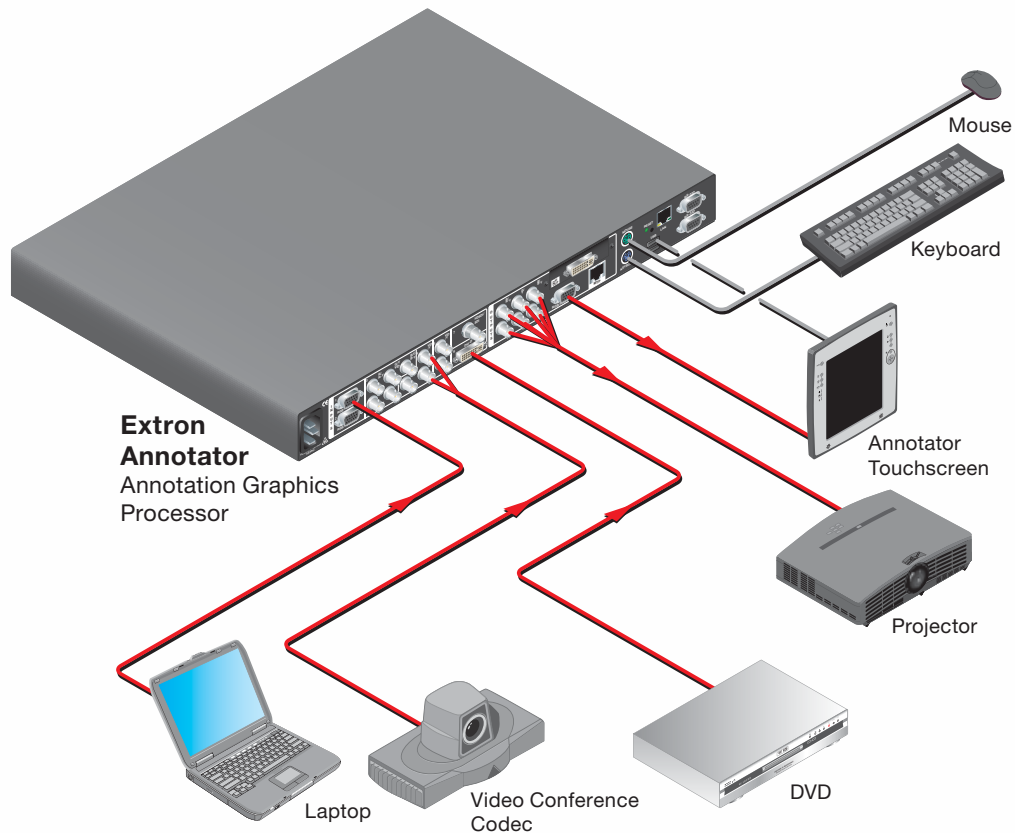
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# Introduction

This manual contains installation, configuration, and operating information for the Extron Annotator. It covers configuring and operating the device using the front panel controls and Simple Instruction Set (SIS™) commands, and how to annotate the displayed image. 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 Annotator

The Annotator is a high performance, hardware-based annotation processor for video and computer-video sources. It allows the presenter to draw, point, or add text to electronic presentation materials using a touchscreen and/or a keyboard and mouse. The Annotator supports all common analog and digital video and data formats, from composite video to high resolution DVI, RGBHV and optional SDI/HD-SDI. Input video is scaled and made available in a variety of output formats, including analog RGBHV and Extron MTP twisted pair, as well as optional DVI, HD-SDI, or scan-converted video. The Annotator is ideal for applications that require the overlay of graphics and text within AV presentations, including schools, law enforcement, medicine, telepresence, and live events.



**Figure 1.** Typical Annotator 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 Signaling) from Silicon Image and DDC from VESA. DVI-D is a DVI connector that supports digital signals only, and DVI-I supports both digital and analog signals.

**SDI** — Serial Digital Interface. A standard definition video transmission 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 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.

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

## Features

- **Real time annotations over high resolution PC and video graphics** — This allows a presenter to draw, point, or add text in real time over live video and computer-video presentations.
- **Inputs:** Two RGB or HD component video on 15-pin HD connectors; configurable input on BNC connectors 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; an optional fourth output for DVI-D, HD-SDI, or scan-converted component video, S-video, or composite video.
- **Configurable Preview and Program outputs** — The outputs can be configured as separate Preview and Program outputs. The Preview output allows a presenter or system operator to view the annotation GUI, while the audience sees the video and annotation through the Program outputs. This can also be used by the system operator to preview annotations before making them live.
- **Hardware-based graphics and video processing** — The Annotator features a fully hardware-based system architecture designed to deliver the performance and operational reliability essential for mission-critical applications.
- **Intuitive graphical user interface** — A user friendly on-screen display enables quick and easy annotation. Essential annotation tools are available for drawing freehand or straight lines, adding rectangular or elliptical shapes, typing in text, highlighting an area of an image, and pointing to an object on-screen. Customizing options are available for text and graphics including point size and color.
- **Integrated seven-input presentation switcher** — The Annotator 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.
- **Automatic 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 Annotator features an advanced scaling engine with high quality upscaling and downscaling of high resolution computer-video signals.
- **Compatibility with popular touchscreen displays** — The Annotator supports touchscreen displays from third-party manufacturers and also can be used with a standard keyboard and mouse.
- **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 annotated 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 serve as a third Program output and 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 annotation GUI, 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, including annotations, can be captured and stored as a BMP file on the Annotator or downloaded to a PC for archiving. Up to 40 MB of space is available for screen captures.
- **Auto-Image™** — Using the annotation GUI or the front panel, the sizing, centering, and filtering can be automatically adjusted to optimize the output image.
- **Auto Input Memory** — When activated, the Annotator 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 Annotator 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 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.
- **Picture controls** — 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 Annotator to be controlled and proactively monitored over a LAN, WAN, or the Internet.

- **RS-232 serial control port** — Using serial commands, the Annotator 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.

# Installation

This section contains installation information for the Extron Annotator. It covers the following subjects:

- **UL/Safety Requirements**
- **Mounting the Annotator**

## UL/Safety Requirements

The Underwriters Laboratories (UL) requirements listed below pertain to the safe installation and operation of this Annotation Graphics 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 Annotator

If the Annotator 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 table top (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.

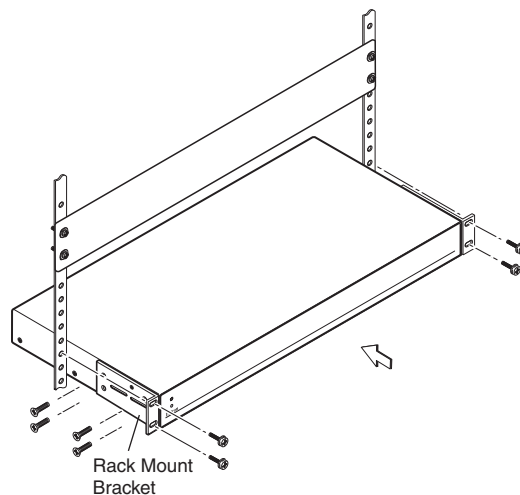
### UL Guidelines for Rack Mounted Devices

The following Underwriters Laboratories (UL) guidelines pertain to the safe installation of the Annotator 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 ( $T_{ma} = +122\text{ }^{\circ}\text{F}$ ,  $+50\text{ }^{\circ}\text{C}$ ) as 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 (for example, use of power strips).

### Rack Mounting

To rack mount the Annotator, attach brackets to the side of the unit, as shown below, and secure it to the rack. See figure below.



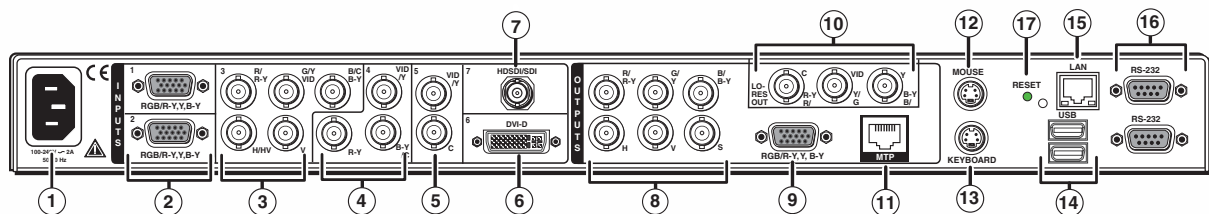
**Figure 2. Mounting the Annotator**

# Rear Panel Features and Connections

This section describes the rear panel features and how to connect the cables.

## Rear Panel Features

The illustration below shows the rear panel features of the Annotator.



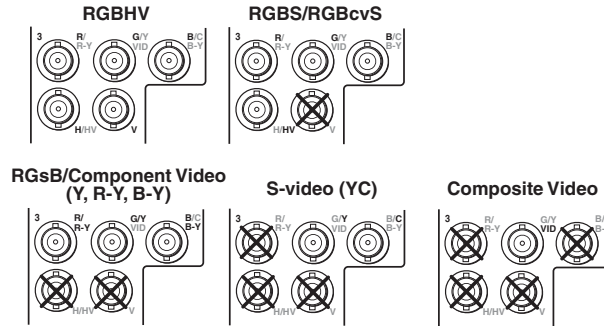
**Figure 3. Annotator Rear Panel Features**

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>① AC power connector</li> <li>② RGB/YUV-HD VGA connectors (inputs 1 and 2)</li> <li>③ Universal BNC connectors (input 3)</li> <li>④ Component/S-video/composite BNC connectors (input 4)</li> <li>⑤ S-video/composite BNC connectors (input 5)</li> <li>⑥ DVI connector (input 6)</li> <li>⑦ (Optional) HD-SDI/SDI connector (input 7)</li> <li>⑧ RGB/YUV-HD BNC output connectors</li> <li>⑨ RGB/YUV-HD VGA output connector</li> </ul> | <ul style="list-style-type: none"> <li>⑩ (Optional) output card (scan converter shown)</li> <li>⑪ MTP twisted pair output connector</li> <li>⑫ PS/2 mouse port</li> <li>⑬ PS/2 keyboard port</li> <li>⑭ USB A ports</li> <li>⑮ RJ-45 Ethernet LAN connector</li> <li>⑯ 9-pin RS-232 connectors</li> <li>⑰ Reset button and LED</li> </ul> |
|---|---|

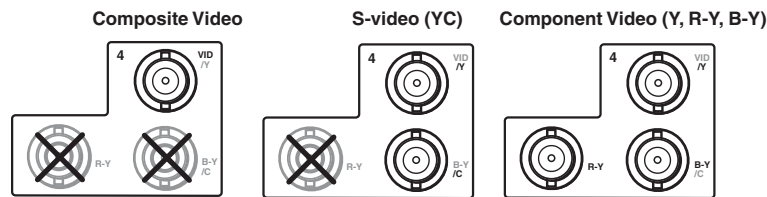
## Power and Video Input Connections

- 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 of the two 15-pin HD connectors.

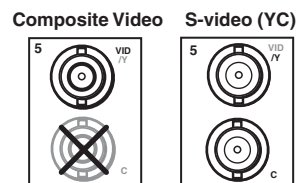
- ③ **Universal BNC connectors (input 3)** — Connect a high resolution computer-video, component, S-video, or composite input signal to this group of female BNC connectors.



- ④ **Composite/S-video/component BNC connectors (input 4)** — Connect a composite video, S-video, or SD component video signal. Connect cables as shown below.



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



- 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 (scan converter with BNC connectors shown)** — Connect a display to this for composite, S-video, or component video output.
- ⑪ **MTP output** — Connect a mini twisted pair receiver to this port

**NOTE:** MTP output supports only RGBHV and RGBS video formats.

- ⑫ **PS/2 mouse port** — Connect a PS/2 mouse to this port for annotation use.
- ⑬ **Keyboard port** — Connect a Microsoft® compatible keyboard to this port for annotation use.
- ⑭ **USB A ports** — Connect up to twenty touch panel devices (using USB hubs), or a USB mouse and keyboard to these ports.
- ⑮ **LAN Ethernet port** — Connect the Annotator 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 Annotator 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 the **"Ethernet Connection" section**, for correct cabling.  
Do not stretch or bend cables. Transmission errors can occur. See the **"SIS Communication and Control" section** for definitions of the SIS commands, and the **"Signal Processing Products Control Program" section** to install and use the control software.

- ⑯ **RS-232 9-pin ports** — These connectors provides for two-way RS-232 communication. Connect a host computer or control system via a 9-pin D connector ⑯ for serial RS-232 or RS-422 control.  
  
For touch panels, using a null RS-232 cable only, connect the touchscreen to the Annotator via either of the RS-232 ports. RS-232 driver configuration is necessary and can be done using the Signal Processing Products Control Program. Within the SPPCP program click **Help > Contents** for configuration instructions.  
The default protocol is 9600 baud, 1 stop bit, no parity, and no flow control.
- ⑰ **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**, for details.

## Installation and Cabling

### Step 1 — Mount the unit

Turn off or disconnect all equipment power sources and rack mount the Annotator (see page 7).

### Step 2 — Connect inputs

Connect inputs from video sources to the applicable connectors marked "Inputs" (see pages 8 and 9, ② to ⑦ for connector types).

### Step 3 — Connect outputs

Connect video output devices to the applicable I/O board connectors marked "Outputs" (see page 9, ⑧ to ⑪ for connector types).

### Step 4 — Connect user interface devices

PS2 mouse and keyboard ports (⑫ and ⑬) — Connect a mouse and/or a keyboard for annotation use.

## Step 5 — Connect touch panel devices

**Via USB A ports** — Connect a touchpanel device to either port as desired. For most devices no configuration is needed.

**Via RS-232 ports** — Connect a touchpanel device to either port as desired. RS-232 driver configuration is necessary and can be done using the Signal Processing Products Control Program. See the **“Signal Processing Products Control Program”** section for details.

## Step 6 — Connect control devices

**LAN Ethernet port** — Connect to an Ethernet LAN or WAN via this RJ-45 connector ⑮ to control the processor from a remote location, using a PC’s Internet browser. See the **“Ethernet Connections”** section 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.

**Remote ports** — For serial RS-232 or RS-422 control, connect a host computer or control system via the 9-pin D connector p. RS-232 protocol (default values):  
• 9600 baud • 1 stop bit • no parity • 8 data bits • no flow control.

**NOTE:** See **“SIS Communication and Control”** section for definitions of the SIS commands and **“Signal Processing Products Control Program”** section to install and use the control software.

## Step 7 — Connect power

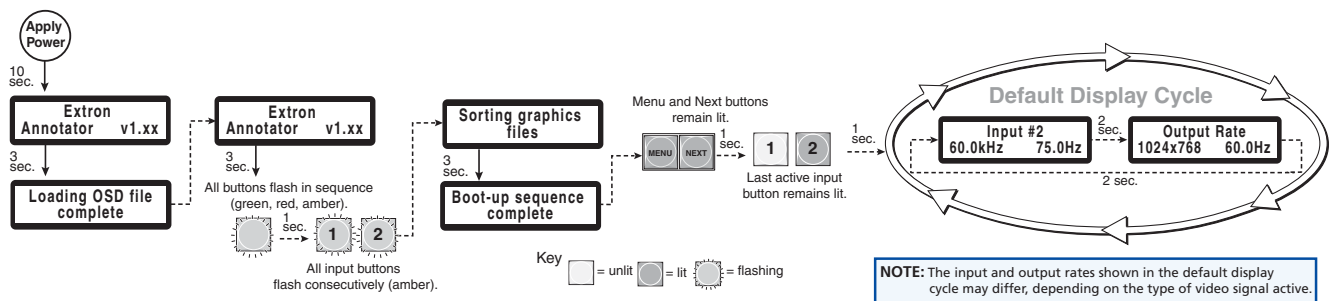
**AC power connector** — Plug in a standard IEC power cord from a 100 to 240 VAC, 50 - 60 Hz power source into this receptacle ①.

## Powering Up

When applying power to the Annotator, 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 the figure below for a typical default display cycle.



**Figure 4. Typical Default Cycle**

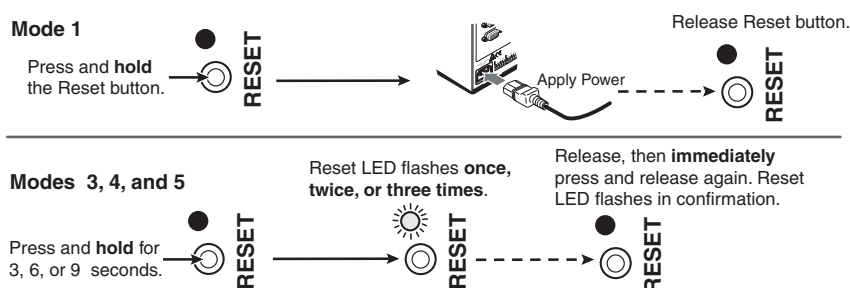
The default display cycle shows the output resolution and the refresh rates for the currently selected input.

## 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 Tweezer to press it. [See the table](#) on page 13 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 5.** Resetting the Annotator

**NOTE:** After a mode 1 reset is performed, update the Annotator's firmware to the latest version. Do not operate the firmware version that results from the mode 1 reset. If the factory default firmware is to be used, that version must be uploaded again.

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 before the mode 1 reset. Use the `ØQ SIS` command to confirm that the factory default firmware is no longer running (look for the asterisk [\*] following the version number).

[See the table](#) on next page for a summary of the reset modes.

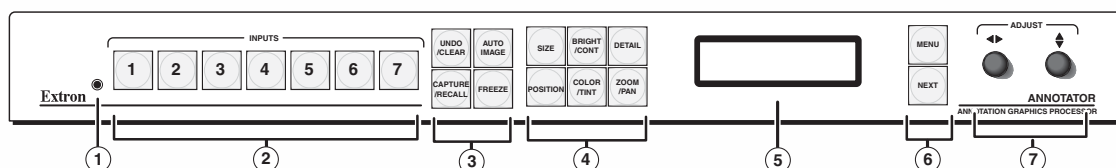
Annotator Reset Mode Summary				
	Mode	Activation	Result	Purpose/Notes
Use Factory Firmware	1	Hold down the recessed Reset button while applying power to the unit	The Annotator reverts to the factory default firmware. Event scripting does not start if the device is powered in this mode. All user files and settings (drivers, adjustments, IP settings) are maintained.	This mode reverts to the factory default firmware version if incompatibility issues arise with user-loaded firmware.
		<b>NOTE:</b> After a mode 1 reset is performed, update the Annotator firmware to the latest version. 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 69 or 87 for details on uploading firmware.	<b>NOTE:</b> If you do not want to update firmware, or you performed a mode 1 reset by mistake, cycle power to the Annotator to return to the firmware version that was running prior to the mode 1 reset. Use the 00 SIS command to confirm that the factory default firmware is no longer running (look for asterisks following the version number.)	<b>NOTE:</b> User-defined web pages may not work correctly if using an earlier firmware version.
Run/Stop Events	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.	This mode turns events on or off.  <b>NOTE:</b> Nothing happens if the momentary press does not occur within 1 second.	This mode is useful for troubleshooting.
Reset all IP Settings	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.  <b>NOTE:</b> Nothing happens if the momentary press does not occur within 1 second.	<b>This mode does the following:</b> <ul style="list-style-type: none"> <li>• Enables ARP capability.</li> <li>• Sets the IP address back to factory default (192.168.254.254).</li> <li>• Sets the subnet back to factory default.</li> <li>• Sets the default gateway address to the factory default.</li> <li>• Sets port mapping back to factory default.</li> <li>• Turns DHCP off.</li> <li>• Turns events off.</li> </ul>	This mode enables you to set IP address information using ARP and the MAC address.
Reset to Factory Defaults	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.  <b>NOTE:</b> Nothing happens if the momentary press does not occur within 1 second.	<b>This mode performs a complete reset to factory defaults (except the firmware).</b> <ul style="list-style-type: none"> <li>• Does everything mode 4 does.</li> <li>• Removes button/touchpanel configurations.</li> <li>• Resets all IP options.</li> <li>• Removes scheduling settings.</li> <li>• Removes/clears all files from the unit.</li> </ul>	This mode is useful if you want to start over with configuration and uploading, and also to replace events.

# Operation

This section of the manual discusses the operation of an Annotator unit and is divided into four sections:

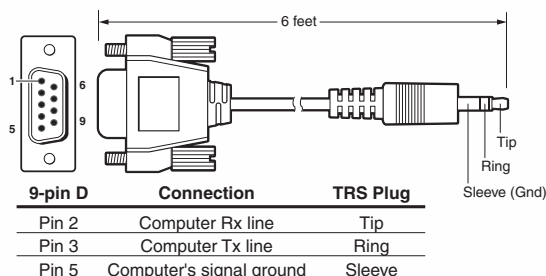
- **Front Panel Overview**
- **The Annotator Menu System**
- **Setting the Front Panel Locks (Executive Modes)**
- **Setting up the Annotator to Work with a Matrix Switcher**

## Front Panel Overview



**Figure 6. 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 7. 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:
- **Undo/Clear** — Allows a reversal of up to seven of the last annotation points or clears selected annotations.

**NOTE:** See the **"On Screen Annotation"** section for an overview of image annotation.

- **Auto Image** — Initiates auto image adjustment on the selected input.
- **Capture/Recall** — Allows the capture and saving of the current image, or the recall of a saved image.

- **Freeze** — Allows the current displayed image to be frozen or unfrozen as desired.

④ **Picture control buttons** — These six buttons are:

- **Size** — Allows adjustment to the displayed image size.
- **Bright/Cont** — Allows adjustment of the brightness and contrast settings for the displayed image.
- **Detail** — Allows adjustment of the detail (sharpness) settings for the displayed image.
- **Position** — Allows horizontal and/or vertical position adjustment of the displayed image.
- **Color/Tint** — Allows adjustment of the color and tint settings for the displayed image.
- **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 Annotator Menu System](#)” section in this chapter.

- **Menu button** — This button, always lit amber, gives direct access to a series of five menus.
- **Next button** — This button, always lit amber, allows page changes within each one of the menus, and to exit the menu cycle.

⑦ **Adjustment 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 when an active video signal is detected. If the output is configured correctly for the display device, the image changes to the new input. An inactive signal gives no image.

## Button Backlighting

The buttons can be backlit a dimmed amber.

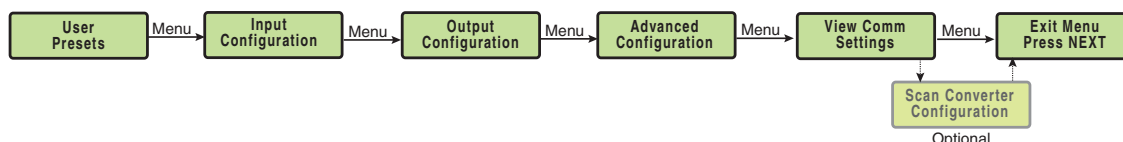
To turn the backlighting on or off, press and hold the Bright/Cont and Color/Tint buttons simultaneously until the buttons become lit or unlit.

## The Annotator Menu System

The Annotator can be configured using the menu system, via the Extron Simple Instruction Set (SIS) of commands, or via the Extron Signal Processing Products Control Program (SPPCP) software program, through an RS-232 or LAN connected PC.

**NOTE:** For methods see **“SIS Communication and Control”** and **“Signal Processing Products Control Program”** section.

The Annotator has six front panel configuration menus: User Presets, Input Configuration, Output Configuration, Advanced Configuration, View Comm Settings. A hidden menu (Edit Comm Settings) is also accessible. If the optional Scan Converter board is installed a scan converter configuration menu becomes available.



**Figure 8.** The Annotator Front Panel Configuration Menus

### Overview of Menus

See image on next page.

#### User Presets

This menu allows unnecessary the user to save the current image settings to a preset number (1-16), and recall any saved preset to become the current image settings. Each input has sixteen user selectable presets.

#### Input Configuration

This menu allows configuration of the following setting 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 table on page 20](#)), output type, and sync polarity (where applicable).

#### Advanced Configuration

This menu allows advanced configuration of the following Annotator settings:

Auto Image, Auto Memories, Aspect Ratio, Input EDID ([see table on page 20](#)), RGB Delay, Switch Effect, Test Pattern, MTP Pre-Peaking, Internal Temp (view only), Calibrate Panels, and Reset 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 “Edit Comm Settings \(hidden\)” on next page.](#)

## 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.

## Exit Menu

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

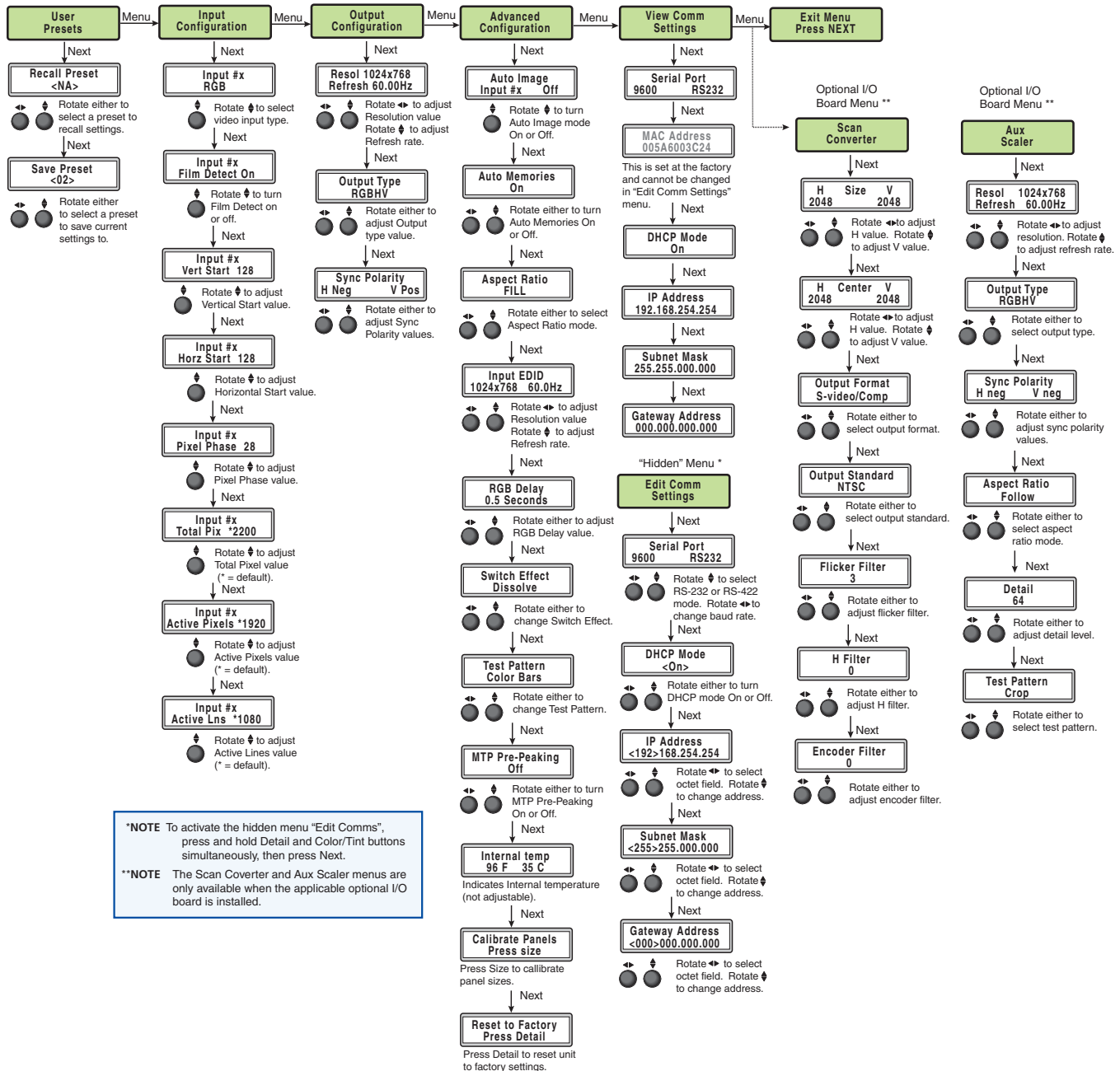


Figure 9. Annotator Menu System Overview

## 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.

## Aux Scaler Configuration

This menu, displayed only when the optional aux scaler board is installed, allows the user to configure the settings for aux scaler outputs.

## Using the Menus

To configure the Annotator using any of the menus, do the following:

1. Press the Menu button repeatedly to reach 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.

**NOTES:** Pressing the Menu button within any level takes the user back 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 and returns 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 Adjust knob 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.

Save Preset  
<N/A>

**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 knobs (◀▶) 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.

Recall Preset  
<02>

## 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:

1. 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.

**NOTE:** If the input shown is not the one to be adjusted, press the desired input button.

2. 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 10. Signal Formats per Input (\*= Default Value)**

3. 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	DVI	SDI	HD-SDI
Film Detect	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
Active Lines	X	X	X	X	X		X	X

**Figure 11. Adjustments Possible per Signal Format**

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

Input #2  
Horz Start 122

## Output Configuration

Using this menu, resolutions, refresh rates, output signal types, and sync polarity can be selected and adjusted for an output. See the table below for 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 Adjust knob (◀▶) to adjust the resolution value, and rotate the right Adjust 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	
1080p CVT								X	

**Figure 12. Output Resolution/Refresh Rate Table**

3. Press Next to enter the next submenu, Output Type. Within this submenu the output signal type (RGBHV, RGsB, 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.


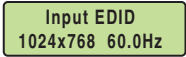
7. Press Next or Menu to return to the Output Configuration.

## 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, the touch panel display can be calibrated, and the unit can be reset to factory default settings.

1. Press Next to enter the first sublevel, Auto Image. The current active input and setting status is displayed.

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

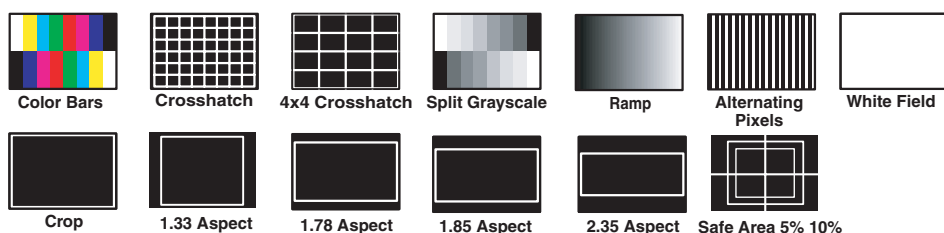
2. With the applicable input showing, rotate the right Adjust knob (◀▶) to turn the Auto Image on or off. 
3. Press Next to enter the next sublevel, Auto Memories, and rotate either Adjust knob (◀▶) to turn the Auto Memory on or off.
4. Press Next to enter the next sublevel, Aspect Ratio, and rotate either Adjust knob (◀▶) to select Fill or Follow.
5. 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 Adjust knobs (right only or both) as needed to change the settings to the desired value. 

**NOTES:**

- The Input EDID setting adjustment applies only to the VGA and DVI inputs. See figure 12 for resolution and refresh rate details.
- For some settings (such as panel calibration) follow on-screen instructions.
- The internal temperature is a “read-only” screen. No adjustment is possible.

The following test pattern settings are available:

None (default), Split Color Bars (8), Crosshatch 4x4, 32 Level Grayscale, Ramp, Alternating Pixels, Whitefield, 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.

If a touchpanel screen is attached to the Annotator, the touch accuracy can be calibrated using the Calibrate Panels setting in the Advanced configuration menu.

1. Within the Advanced Configuration menu press Next repeatedly to cycle to the Calibrate Panels submenu.
2. Press the Size button and observe the touchpanel screen. A cross appears in the upper left corner. Tap the screen at the cross, and repeat at each cross.

3. After tapping the fourth cross, the unit saves the calibration data and restarts the sequence. Repeat the process for each connected touchscreen.
4. Press any front panel button to exit the sequence and save the data.

**NOTE:** See page 32 for detailed touchscreen setup instructions.

## Capture/Recall Settings (front panel activated)

A snapshot of the currently displayed image (including annotations) can be captured and saved to the Annotator memory using the front panel Capture/Recall button, the Next button, and the two Adjust knobs. This image or any other saved image can then be recalled and output to the active display at a later time.

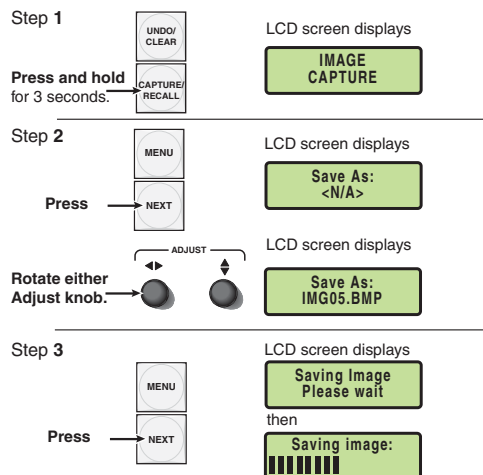
### To capture an image:

1. Press and hold the Capture/Recall button for 3 seconds. The LCD displays "IMAGE CAPTURE".
2. Press Next to enter the Save As menu, the LCD displays "Save As: <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.

3. When the desired image name is reached, press Next. The LCD displays "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.

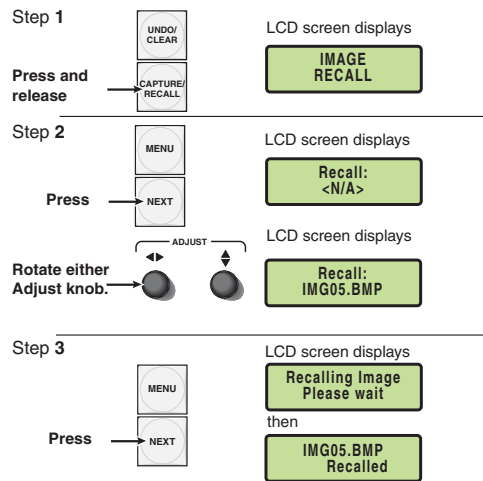
**NOTE:** Custom image names can be used when image captures are initiated using the appropriate SIS commands.



**Figure 13.** Sequence for Capturing an Image

### To recall an image:

1. Press and release the Capture/Recall button. The LCD displays "IMAGE RECALL".
2. Press Next to enter the Recall menu. The LCD displays "Recall: <N/A>". Use either Adjust knob to scroll through the saved images, to the desired image.
3. 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 Image Recall menu.



**Figure 14. Sequence for Recalling an Image**

### To remove an image from the display:

1. Press and release the Capture/Recall button. The LCD displays "IMAGE RECALL".
2. Press Next. The LCD displays "Recall: <N/A>".
3. With "Recall: <N/A>" displayed, press Next. The current image is removed from the display, but not from the Annotator memory. To recall the image follow the steps described in the "To recall an image" section on this page.

## 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

**NOTES:**

- When entering this mode, the LCD menu displays the setting from comm port 1. Changes made to the comm settings via the front panel affects all the comm ports.
- The lower rear panel RS-232 port is designated as Comm 1, the upper port is Comm 3, and the front panel config port is Comm 2.

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).

**NOTES:**

- 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 Annotator 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 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 go to any level. At each level, rotate either Adjust knobs as needed to change the settings to the desired values:  
Output format (S-video/Comp, YUVi, or RGsB)  
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 the unit to time out to return to the default cycle.

## Aux Scaler Configuration

This menu is available only when an aux scaler board is installed.

Within this menu resolution and refresh rates, output type, sync polarity, aspect ratio, detail, and test pattern selections can be made.

1. Press Next to enter the first sublevel, resolution and refresh rate. The current settings are displayed.
2. Rotate the left front panel Adjust knob (◀▶) to select a different resolution value, and rotate the right Adjust knob (⬥) to adjust the refresh rate.
3. Press Next to go the second sublevel, output type.
4. Rotate either Adjust knob (◀▶⬥) to select the applicable output type.
5. Press Next to go to the next sublevel (Sync polarity).
6. Rotate either Adjust knob as needed to change the sync polarity values.
7. Press Next to go to the next sublevel (aspect ratio).
8. Rotate either Adjust knob to change the aspect ratio setting to Fill or Follow.
9. Press Next to go to the next sublevel (detail).
10. Rotate either Adjust knob to change the detail level.
11. Press Next to go to the next sublevel (test pattern).
12. Rotate either Adjust knob to select a suitable test pattern to aid in the setup of a display device.
13. When complete press Menu once or Next repeatedly to return to the top level menu. Alternatively, allow the unit to time out to return to the default cycle.

## Setting the Front Panel Locks (Executive Modes)

The Annotator 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.

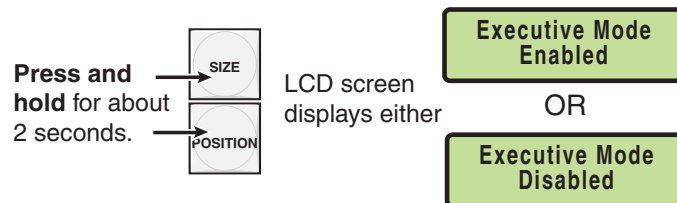
**Executive mode 1 (enabled)** — The front panel is locked except for input switching, video freeze, and Auto Image.

**Executive mode 2 (enabled)** — The front panel is completely locked. This mode can only be enabled and disabled using SIS commands. [See the “SIS Communication and Control” section](#) for further details.

### Enabling or Disabling Executive Mode 1 from the Front Panel

**NOTES:**

- If the Annotator 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 15. Turning Executive Mode On or Off**

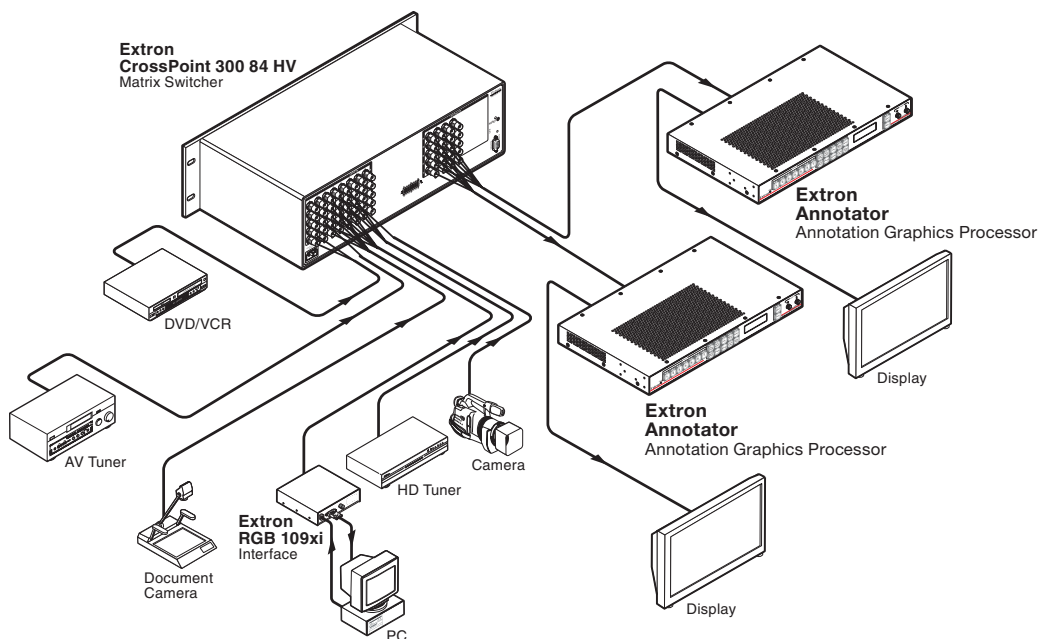
When either Executive mode is enabled and a front panel action is attempted (other than input switching, video freeze, and Auto Image), the LCD displays the status for 2 seconds.

Executive mode 1 can also be enabled or disabled by SIS commands. See the section on SIS commands.

## Setting up the Annotator to Work with a Matrix Switcher

The Sync to Matrix tool is a powerful tool which can simplify the control system necessary when using an Extron matrix switcher and an Annotator.

The “Sync to Matrix” script can sense when a new tie that is made on the matrix is routed to the Annotator 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.



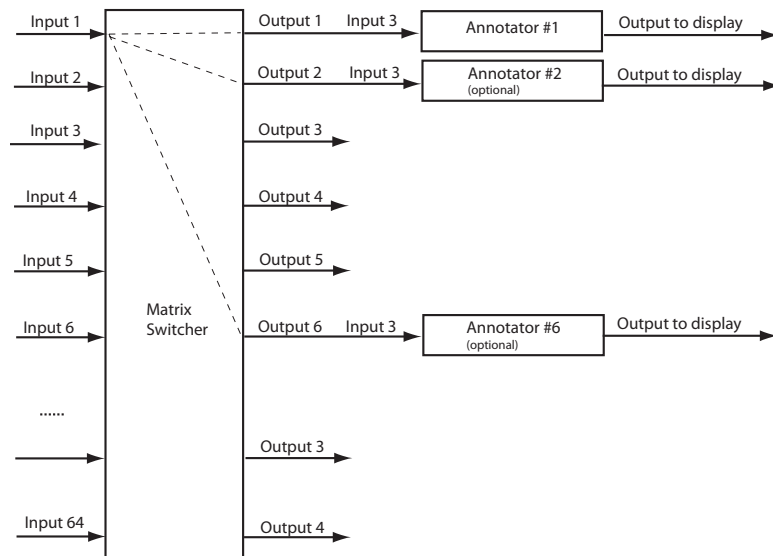
**Figure 16. Annotators Connected to a Matrix Switcher**

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

1. Install and connect the Annotator as described in the **“Rear Panel Features and Connections”** section of this guide, but connect the Annotator input 3 to an output on the matrix switcher.

**NOTE:** Multiple Annotators 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 Annotator (see figure 17).



**Figure 17. Multiple Annotators Connected to a Matrix Switcher**

**3.** On the Annotator, configure the input as follows:

- a.** Switch to input 3 on the Annotator.
- 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. **See the “SIS Communication and Control” section**, 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 Annotator.

- e.** Repeat steps 2 and 3 for each matrix input that is used on the Annotator.

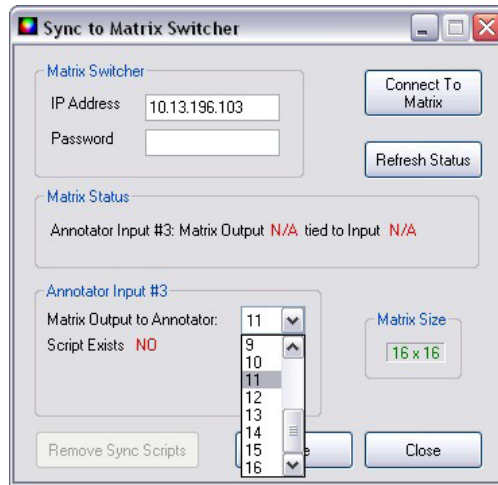
**4.** Synchronize the Annotator to the matrix switcher as follows:

- a.** Open the control program (SPPCP) and connect to the Annotator.

**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 IP address for the matrix switcher.

- d. Click **Connect to Matrix** button. The matrix switcher size is displayed.
- e. From the drop-down menu next to **Annotator Input #3**, select the matrix output number that is connected to Input 3 on the Annotator. Click **Take**. The devices now sync.



**Figure 18.** The Sync to Matrix Window

**NOTE:** All other inputs on the Annotator must not be used when it is synchronized to a matrix switcher.

# On Screen Annotation

This section of the manual discusses on screen annotation and is in four sections:

- **USB and RS-232 Driver Configuration**
- **USB Port Connections**
- **Touchscreen Calibration**
- **Annotation Overview**

The Annotator is a high performance, hardware-based annotation processor for video and computer-video sources. Annotating over motion video or still images is possible using common touchscreen panels, and a standard keyboard and/or mouse. The touchscreen panels can be connected by RS-232 or USB, and device drivers can be uploaded to ensure compatibility with the Annotator. For a full list of compatible panels visit [www.extron.com](http://www.extron.com). Contact Extron if the device you wish to use is not listed.

## USB and RS-232 Driver Configuration

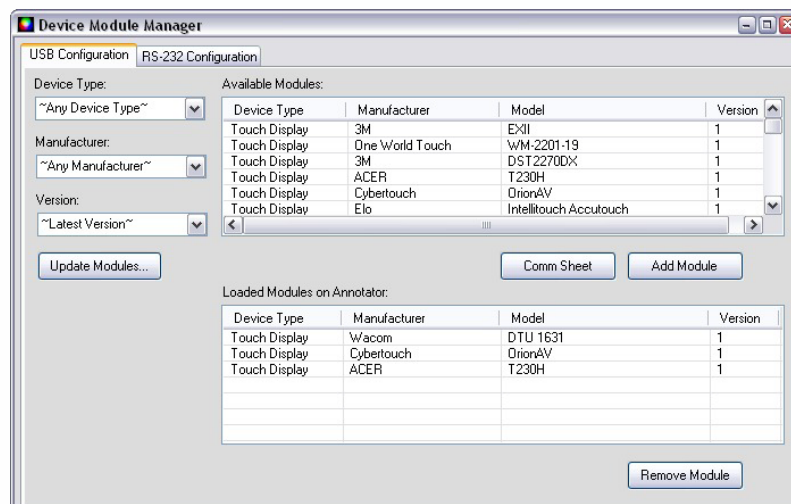
USB and RS-232 driver configuration is possible using the Signal Processing Products Control Program. The Device Module Configuration option allows you to configure a touchpanel so that it can be used with the Annotator.

Connect a touchpanel device to either of the USB ports or, **using a NULL RS-232 cable only**, connecting the touchscreen to either of the two rear panel RS-232 ports.

### USB Driver Configuration

To load a touchpanel driver:

1. Open the SPPCP program on a PC connected to the Annotator by an IP connection.
2. From the Tools menu, select Device Module Configuration.... This opens the Device Module Manager window.



**Figure 19.** Device Module Manager Window

3. Select the **USB Configuration** tab and sort by device type, manufacturer, and version.
4. Click **Update Modules** to locate a device module in the Available Modules section
5. Select a module and click **Add Module**. The added module appears in the Loaded Modules on Annotator section.

**NOTE:** Click **Comm Sheet** after selecting a device in the Available Modules section to see communication information for the selected device driver.

#### To delete a touchpanel driver:

1. From the **Tools** menu, select **Device Module Configuration**.
2. In the Loaded Modules on Annotator section, select the device module to be deleted.
3. Click **Remove Module**. This removes the device module from the Annotator.

## RS-232 Driver Configuration

#### To load a touchpanel driver:

4. Select the **RS-232 Configuration** tab. Sort by device type, manufacturer, and version.
5. Click **Update Modules** to locate a device module in the Available Modules section
6. Click **Load to Top Port** or **Load to Bottom Port** to load the driver to the RS-232 port with the connected touchpanel.

**NOTE:** Click **Comm Sheet** after selecting a device in the Available Modules section to see communication information for the selected device driver.

#### To delete a touchpanel driver:

1. From the **Tools** menu, select **Device Module Configuration**.
2. In the Loaded Modules on Annotator section, select the module to be deleted.
3. Click **Remove Module**. This removes the device module from the Annotator.

## USB Port Connections

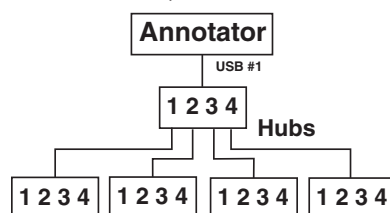
Touchpanels can be connected via the two rear panel USB ports. By connecting multiple USB hubs (see figure 20), up to 20 devices can be connected.

A number of common touchpanels are automatically supported. A mix of size and vendor types can be connected simultaneously, but unsupported devices may cause adverse affects. For a full list of compatible panels visit [www.extron.com](http://www.extron.com).

The USB ports also support standard USB keyboards and mice.

Before use, panel calibration is advised (see **"Touchscreen Calibration"** in this section).

Using a suitable USB A cable, connect a touchscreen device or hubs to the either of the two USB A ports on the rear panel of the Annotator. Do not connect more than three hubs in line (three deep).



**Figure 20.** Connect USB Hubs for Multiple Devices

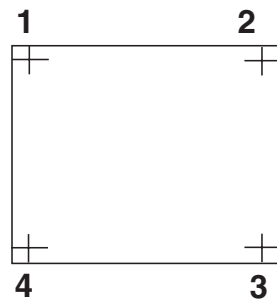
## Touchscreen Calibration

If a touchscreen is attached to the Annotator, the touch accuracy should be calibrated using the Calibrate Panels setting in the Advanced configuration menu.

Both RS-232 and USB connected touchscreens require calibration.

**To calibrate a connected and powered-on panel, do the following:**

1. Press the Menu button on the front panel of the Annotator repeatedly until reaching the Advanced Configuration menu.
2. Within the Advanced configuration menu press Next repeatedly to cycle to Calibrate Panels Press Size.
3. Press Size and observe the touchpanel screen. A cross appears in the upper left corner.
4. Tap the screen at the cross, and the cross then moves to the top right corner.
5. Tap the cross in the top right corner. This moves the cross to the bottom right corner.
6. Tap the cross in the bottom right corner. This moves the cross to the bottom left corner.
7. Tap the cross in the bottom left corner. The unit now saves the calibration data and restarts the sequence.
8. Repeat the process for each connected touchscreen.
9. Press any Annotator front panel button to exit the sequence and save the data.



**Figure 21.** Sequence of Cross Positions for Setting the Touch Accuracy of a Screen


## Annotation Overview

The Annotator output has the capability to include a graphical tool bar which is used for annotation. The tool bar can be enabled or disabled as desired. When enabled, the tool bar is visible down the right side of the display and allows selection of the following:

Inputs selection, Pointer, Auto Image, Freehand, Line, Arrow, Rectangle, Ellipse, Text, Highlighter, Size select, Eraser, Color, Fill, Undo, Redo, Clear, Tools - Capture, Freeze, Mute, Whiteboard, Spotlight, Zoom, and Pan.



**Figure 22. Annotation Menu Examples**

When clicking on the tool bar arrow , the tool bar slides in from the right side, and can be accessed through a touch screen, or by using a standard mouse and/or keyboard attached to the rear PS/2 ports.

The tool bar disappears (hides) after a user-specified time-out.

If the time-out is set to zero, the tool bar remains on-screen indefinitely.

**NOTE:** All on screen annotations are lost when power to the Annotator is recycled.

## Default Annotation Buttons



**Input selection** — Selecting this button opens a pop-up palette displaying the Annotator's six inputs. Selecting any input button switches the display to that input.

**NOTE:** A seventh input button (shown at right) is also displayed if an optional HD-SDI input board is installed.



**Pointer** — Selecting this button changes the cursor to an extra-large arrow of the currently selected color.



**Auto-Image** — On selection of this button, the unit performs an auto image (automatic sizing, centering, and filtering to optimize the output image on the currently selected input). A secondary button appears to the left of the Auto Image button to confirm the action is desired.



**Freehand** — Selecting this button allows the user to draw freely on the display screen.

**NOTE:** For Freehand, Line, Arrow, and Highlighter functions, the start point is where the screen is touched (by finger or stylus), or where the cursor starts when holding down the primary mouse button. The finish point is where the stylus or finger is lifted from the screen, or at the point where the mouse button is released.  
For all drawn annotations, line color and weight are adjustable.



**Line** — Selecting this button allows the user to create a straight line between two points.



**Arrow** — Selecting this button allows the user to create a straight line between two points with an arrow at the end point.



**Rectangle** — Selecting this button allows the user to create a rectangle with edges parallel to the raster.

**NOTE:** For Rectangle and Ellipse functions, the primary corner is where the screen is first touched (by finger or stylus), or where the cursor starts when holding down the primary mouse button. The opposite corner is where the stylus or finger is lifted from the screen, or at the point where the mouse button is released.  
Unless the fill option is also selected, only the rectangle or ellipse outline is drawn.



**Ellipse** — Selecting this button allows the user to create an ellipse between the primary and the opposite corners of a non-drawn rectangle.



**Text** — Selecting this button allows the user to create on-screen text with a keyboard connected to the rear USB or PS/2 port. Text insertion begins either at the mouse operated cursor point, or where the screen is touched. If no insertion point is defined, then text is inserted at the previous active function's end point.



**Highlighter** — Selecting this button allows the user to highlight the video information, not the annotation.





**Size** — Select this button to adjust size of text and/or line weight (not linked), after selecting a drawing or text function, such as line, rectangle, or text. A secondary palette opens displaying either line weight or text point size depending on the active function. From the secondary palette select the desired size button. Functions this applies to are Text, Line, Arrow, Freehand, Highlighter, Arrows, Rectangle, Ellipse, and Eraser.

**NOTE:** Eraser and Highlighter size, text size, and line weight have discrete size settings.



**Eraser** — Select this to erase any non saved annotations on the screen.



**Color** — Select this button to choose the color of any drawing function (fill or outline), text, or pointer color. On selection, a secondary palette opens with 16 color swatches. Select a color as desired. The active function now uses the selected color.



**Fill** — Selecting this button in conjunction with selecting the rectangle or ellipse button, allows the user to draw a solid shape filled with the currently selected color.

**NOTE:** A drawn, unfilled shape cannot be filled afterwards, and vice versa.



**Undo** — Selecting this allows the user to undo the last 7 completed annotations or undo a Clear action.

**NOTE:** A completed annotation is defined by lifting the finger or stylus from the touchscreen, pressing the keyboard Enter key, or releasing the primary mouse button.



**Redo** — If selected while using the Undo function, it recreates the last undone annotation.



**Clear** — Selecting this clears the screen of all unsaved annotations, and can be undone with the Undo function.



**Tools** — Selecting the Tools button opens a secondary palette containing the following advanced tools: Capture, Freeze, Mute, Whiteboard, Spotlight, Zoom, and Pan. On selection of any tool, the secondary palette closes. To reopen the palette, click on the Tools button.



**Capture** — Select this to take a snapshot image of the current program output, including annotations (but not any open On-Screen Display palettes). This captured image can be saved to the Annotator memory for later recall.

**NOTE:** Using SIS commands the Capture tool can be customized to send out an unsolicited response, indicating an image is ready to be streamed directly to an external PC



**Freeze** — Select this to freeze the live video. To unfreeze the video, reselect this button or switch inputs.



**Mute** — Select this to mute the video input and display a black screen. Annotations and menus are still visible. To unmute the video, reselect the Mute button, or select the Whiteboard tool, or switch inputs.



**Whiteboard** — Select this to create a white canvas for annotations. No input video image is visible. To remove the white canvas, reselect the Whiteboard button, select mute, or switch inputs.



**Spotlight** — Select this to create an ellipse to focus on a specific area of the screen, while the outer area's brightness is greatly reduced. The shape and size of the ellipse is adjustable by dragging the cursor while outside of it, to any point. The ellipse can be moved to any point by dragging the cursor while within the ellipse.



**Zoom** — Select this to zoom in to a specific area of the screen. Using the cursor, create a rectangle at the desired area and the Annotator zooms in to view that area. If the boundaries of the area are beyond the zoom capabilities, then the view will not change. To zoom out draw a small rectangle (<100 pixels, ~1 inch x 1 inch) and the normal view is restored.



**Pan** — Selecting this while in zoom mode, allows the user to move the focus to a new area. Place the cursor on a zoomed image and drag to the desired area

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# SIS Communication and Control

The Annotator can be operated and configured using Simple Instruction Set (SIS) commands input via a PC connected to either of the processor's serial ports or the Ethernet port. See ⑮ and ⑯ on pages 8 and 10, and “Ethernet Connection” section for wiring details.

## RS-232/RS-422 Link

The Annotator has two rear ports and one front port 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 data bits.

**NOTE:** The lower rear panel RS-232 port is designated as Comm1, the upper port is Comm 3, and the front panel config port is Comm 2.

See ⑯ on page 10 for connection details.

## Ethernet Connection

### 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 Cabling

The Ethernet cable can be terminated as a straight-through cable or a crossover cable and must be properly terminated for your application. See “Ethernet Connection” section for cable termination details.

### Default IP Addresses

To access the Annotator 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 “Ethernet Connection” section 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 Time-outs

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

**NOTE:** Extron recommends leaving the default time-out 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 Annotator 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 Annotator, Vx.xx, 60-968-14↵

### With an Internet connection:

(c) Copyright 2009, Extron Electronics Annotator, Vx.xx, 60-968-14↵

Ddd, DD MMM YYYY HH:MM:SS (day, date time. for example. 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.

### Reconfig↵

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

**NOTE:** Response 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 Annotator 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 follows this section. 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															
space	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

**Figure 23. 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.

## Symbol Definitions

↵ = Carriage return with line feed

| or ← = Carriage return with no line feed

• = Space

[Esc] or W = Escape key

**NOTE:** If unit does not support or recognize the entered commands, nothing will happen and no response is issued..

[X1] = Input selection, 1 to 7

[X2] = Output selection:

- 0 = All outputs (default)
- 1 = Program only (BNC, MTP, optional output card)
- 2 = Preview only (VGA)
- 3 = None

[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 (0) or on/enable (1)

[X11] = Input standard:

- 0 = No signal
- 1 = NTSC
- 2 = PAL
- 4 = SECAM
- = N/A (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 for example, 075.3)
- X14** = Disable (0), or enabled mode 1 (1) or enabled mode 2 (2)
- X15** = Picture adjustment — 0 to 127 (default 64)
- X16** = H or V position (zero location is 2048, and limits are  $\pm$  the output resolution)
- X17** = H or 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) 8 = Crop 7 = white field  
 1 = color bars 9 = 1.33 aspect ratio  
 2 = crosshatch 10 = 1.78 aspect ratio  
 3 = 4x4 crosshatch 11 = 1.85 aspect ratio  
 4 = grayscale 12 = 2.35 aspect ratio  
 5 = ramp 13 = safe area  
 6 = alternating pixels 14 = blue mode
- X21** = Scaler resolution:  
 1 = 640x480 14 = 1365x1024  
 2 = 800x600 15 = 1440x900  
 3 = 852x480 16 = 1400x1050  
 4 = 1024x768 17 = 1680x1050  
 5 = 1024x852 18 = 1600x1200  
 6 = 1024x1024 19 = 1920x1200  
 7 = 1280x768 20 = 480p  
 8 = 1280x800 21 = 576p  
 9 = 1280x1024 22 = 720p  
 10 = 1360x765 23 = 1080i  
 11 = 1360x768 24 = 1080p  
 12 = 1365x768 25 = 2048x1080  
 13 = 1366x768 26 = 1080p CVT
- X22** = Output refresh rate:  
 1 = 23.98 Hz 6 = 50 Hz  
 2 = 24 Hz 7 = 59.94 Hz  
 3 = 25 Hz 8 = 60 Hz (default)  
 4 = 29.97 Hz 9 = 75 Hz  
 5 = 30 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** = User presets — 1 to 16

**X26** = Input presets — 1 to 128

**X28** = On-screen menu time-out — 1 to 64, in 1 second increments,  
0 = always displayed (default = 10)

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

**X40** = Video mute — 01 = mute to black, 02 = mute to white,  
00 = unmute (restore image)

**X50** = Annotation type:

- |  |                |
|--|----------------|
| 0 = eraser   | 7 = rectangle  |
| 1 = pointer  | 8 = text tool  |
| 2 = freehand   | 9 = spotlight  |
| 3 = highlighter  | 10 = zoom tool |
| 4 = vector line  | 11 = pan tool  |
| 5 = arrow line (arrow appears at the endpoint of the vector) |                |
| 6 = ellipse  |                |

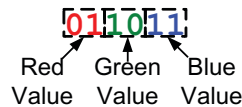
**X51** = Font selection — 16 character file name including \*.FNT extension,  
0 = default font (Arial)

**X52** = Font size — 8 to 63 point font (default = 8 pt)

**X53** = Line color — 6 bit RGB, 64 total colors

- 000000 = Black
- 010000 = Dark red (33%)
- 100000 = Medium red (66%)
- 110000 = Bright red (100%)
- 001100 = Bright green (66%)
- 000011 = Bright blue (default)
- 111111 = White
- 010101 = Dark gray (33%)

Format:



**X54** = Line weight, eraser, or highlighter width — 1 to 63 pixels wide (default = 8)

**X55** = Aspect ratio 1 = Follow, 2 = Fill

**X56** = On-screen clock:

- 0 = disabled (default)
- 1 = date and time
- 2 = time only
- 3 = date only

**X57** = Annotation coordinates — 8 digit number with first four being the X coordinate,  
the last four the Y coordinate, limits = 1000,1000. Fixed for any output rate.  
Example, (0,0) = 00000000 = top left; (500,500) = 05000500 = screen center.

**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	ASCII command (host to processor)	Response (processor to host)	Additional description
<b>Input Switching and Configuration</b>			
<b>Input selection</b>			
Select input	<b>[X1]!</b>	In <b>[X1]</b> ↵	Select video from input <b>[X1]</b> .
View current input	<b>!</b>	<b>[X1]</b> ↵	View currently selected input source.
<b>Input video format</b>			
Set format	<b>[X1]*[X3]\</b>	Typ <b>[X1]*[X3]</b> ↵	Set input <b>[X1]</b> to video format <b>[X3]</b> .
View format	<b>[X1]\</b>	<b>[X3]</b> ↵	View video format of input <b>[X1]</b> .
View detected format	<b>[X1]*\</b>	Atyp <b>[X1]*[X3]</b> ↵	View actual video format auto detected on input <b>[X1]</b> .
<b>Input EDID</b>			
Specify an EDID value	<b>[Esc][X21]*[X22]EDID</b> ↵	Edid <b>[X21]*[X22]</b> ↵	Set EDID resolution and refresh for DVI and VGA inputs.
View EDID value	<b>[Esc]EDID</b> ↵	<b>[X21]*[X22]</b> ↵	View EDID resolution and refresh for DVI and VGA inputs.
<b>NOTE:</b> Default is to match output: <b>[X21]=0 [X22]=0</b>			
<b>Auto image</b>			
Enable auto image	<b>[X1]*1A</b>	Img <b>[X1]*1</b> ↵	Auto image input <b>[X1]</b> when selected.
Disable auto image	<b>[X1]*0A</b>	Img <b>[X1]*0</b> ↵	Turn off auto image for input <b>[X1]</b> .
Execute auto image	<b>A</b>	Img↵	Execute auto image for current input.
View auto image	<b>[X1]A</b>	<b>[X10]</b> ↵	View auto image setting.
<b>Horizontal start</b>			
Specify a value	<b>[Esc][X4]HSRT</b> ↵	Hsrt <b>[X1]*[X4]</b> ↵	Set horizontal location of first active pixel in active input.
Increment value	<b>[Esc]+HSRT</b> ↵	Hsrt <b>[X1]*[X4]</b> ↵	Increase value.
Decrement value	<b>[Esc]-HSRT</b> ↵	Hsrt <b>[X1]*[X4]</b> ↵	Decrease value.
View value	<b>[Esc]HSRT</b> ↵	<b>[X4]</b> ↵	Show horizontal location of first active pixel in active input.
<b>Vertical start</b>			
Specify a value	<b>[Esc][X4]VSRT</b> ↵	Vsrt <b>[X1]*[X4]</b> ↵	Set vertical location of first active line in active input.
Increment value	<b>[Esc]+VSRT</b> ↵	Vsrt <b>[X1]*[X4]</b> ↵	Increase value.
Decrement value	<b>[Esc]-VSRT</b> ↵	Vsrt <b>[X1]*[X4]</b> ↵	Decrease value.
View value	<b>[Esc]VSRT</b> ↵	<b>[X4]</b> ↵	Show vertical location of first active line 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)  
**[X21]** = Scaler resolution; 1 = 640x480, 2 = 800x600, 3 = 852x480, 4 = 1024x768, 5 = 1024x852, 6 = 1024x1024, 7 = 1280x768, 8 = 1280x800, 9 = 1280x1024, 10 = 1360x765, 11 = 1360x768, 12 = 1365x768, 13 = 1366x768, 14 = 1365x1024, 15 = 1440x900, 16 = 1400x1050, 17 = 1680x1050, 18 = 1600x1200, 19 = 1920x1200, 20 = 480p, 21 = 576p, 22 = 720p, 23 = 1080i, 24 = 1080p, 25 = 2048x1080, 26 = 1080p CVT  
**[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.

## Command/Response Table for SIS Commands

Command	ASCII command (host to processor)	Response (processor to host)	Additional description
<b>Pixel phase</b>			
Specify a value	<b>[Esc][X6]PHAS←</b>	Phas[X1]*[X6]↵	Set pixel phase to specified value for active input.
Increment value	<b>[Esc]+PHAS←</b>	Phas[X1]*[X6]↵	Increase value.
Decrement value	<b>[Esc]-PHAS←</b>	Phas[X1]*[X6]↵	Decrease value.
View value	<b>[Esc]PHAS←</b>	[X6]↵	Show pixel phase.
<b>Total pixels (RGB and YUVp/HDTV only)</b>			
Specify a value	<b>[Esc][X7]TPIX←</b>	Tpix[X1]*[X7]↵	Set total pixels to specified value for active input.
Increment value	<b>[Esc]+TPIX←</b>	Tpix[X1]*[X7]↵	Increase value.
Decrement value	<b>[Esc]-TPIX←</b>	Tpix[X1]*[X7]↵	Decrease value.
View value	<b>[Esc]TPIX←</b>	[X7]↵	Show total pixels.
<b>Active pixels</b>			
Specify a value	<b>[Esc][X8]APIX←</b>	Apix[X1]*[X8]↵	Set active pixels to specified value for active input.
Increment value	<b>[Esc]+APIX←</b>	Apix[X1]*[X8]↵	Increase value.
Decrement value	<b>[Esc]-APIX←</b>	Apix[X1]*[X8]↵	Decrease value.
View value	<b>[Esc]APIX←</b>	[X8]↵	Show active pixels.
<b>Active lines</b>			
Specify a value	<b>[Esc][X9]ALIN←</b>	Alin[X1]*[X9]↵	Set active lines to specified value for active input.
Increment value	<b>[Esc]+ALIN←</b>	Alin[X1]*[X9]↵	Increase value.
Decrement value	<b>[Esc]-ALIN←</b>	Alin[X1]*[X9]↵	Decrease value.
View value	<b>[Esc]ALIN←</b>	[X9]↵	Show active lines.
<b>3:2/2:2 Film mode detect</b>			
Enable film mode	<b>[Esc][X1]*1FILM←</b>	Film[X1]*[X10]↵	Turn film mode detection on.
Disable film mode	<b>[Esc][X1]*0FILM←</b>	Film[X1]*[X10]↵	Turn film mode detection off.
View setting	<b>[Esc][X1]FILM←</b>	[X10]↵	View setting.

**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] = 0 (off/disable), 1 (on/enable)

Command	ASCII command (host to processor)	Response (processor to host)	Additional description
<b>Picture Adjustments</b>			
<b>Video mute</b>			
Mute video to black	1B	Vmt1↵	Mute video and display a black screen.
Mute video to white	2B	Vmt2↵	Mute video and display a white screen.
Unmute video	0B	Vmt0↵	Restore picture.
View mode	B	X40↵	Mute status is X40.
<b>Freeze</b>			
Enable	1F	Frz1↵	Freeze selected input.
Disable	0F	Frz0↵	Unfreeze selected input.
View	F	X10↵	Freeze status is X10.
<b>Color</b>			
Specify a value	EscX15COLR↵	ColrX1*X15↵	Set color level to X15.
Increment value	Esc+COLR↵	ColrX1*X15↵	Increase value.
Decrement value	Esc-COLR↵	ColrX1*X15↵	Decrease value.
View value	EscCOLR↵	X15↵	Show color level.
<b>Tint</b>			
Specify a value	EscX15TINT↵	TintX1*X15↵	Set tint level to X15.
Increment value	Esc+TINT↵	TintX1*X15↵	Increase value.
Decrement value	Esc-TINT↵	TintX1*X15↵	Decrease value.
View value	EscTINT↵	X15↵	Show tint level.
<b>Contrast</b>			
Specify a value	EscX15CONT↵	ContX1*X15↵	Set contrast level to X15.
Increment value	Esc+CONT↵	ContX1*X15↵	Increase value.
Decrement value	Esc-CONT↵	ContX1*X15↵	Decrease value.
View value	EscCONT↵	X15↵	Show contrast level.
<b>Brightness</b>			
Specify a value	EscX15BRIT↵	BritX1*X15↵	Set brightness level to X15.
Increment value	Esc+BRIT↵	BritX1*X15↵	Increase value.
Decrement value	Esc-BRIT↵	BritX1*X15↵	Decrease value.
View value	EscBRIT↵	X15↵	Show brightness level.
<b>Detail filter</b>			
Specify a value	EscX15HDET↵	HdetX1*X15↵	Set detail level to X15.
Increment value	Esc+HDET↵	HdetX1*X15↵	Increase value.
Decrement value	Esc-HDET↵	HdetX1*X15↵	Decrease value.
View value	EscHDET↵	X15↵	Show detail level.

**NOTE:** X1 = Input selection; 1 – 7  
X10 = 0 (off/disable), 1 (on/enable)  
X15 = Picture adjustment; 0 to 127 (default 64)  
X40 = 00 (none), 01 (black), or 02 (white)

Command	ASCII command (host to processor)	Response (processor to host)	Additional description
<b>Horizontal shift</b>			
Specify a value	<b>[Esc][X16]HCTR←</b>	Hctr[X1]*[X16]↵	Set horizontal position to [X16].
Increment value	<b>[Esc]+HCTR←</b>	Hctr[X1]*[X16]↵	Shift position right.
Decrement value	<b>[Esc]-HCTR←</b>	Hctr[X1]*[X16]↵	Shift image left.
View value	<b>[Esc]HCTR←</b>	[X16]↵	Show horizontal position value.
<b>Vertical shift</b>			
Specify a value	<b>[Esc][X16]VCTR←</b>	Vctr[X1]*[X16]↵	Set vertical position to [X16].
Increment value	<b>[Esc]+VCTR←</b>	Vctr[X1]*[X16]↵	Shift image down.
Decrement value	<b>[Esc]-VCTR←</b>	Vctr[X1]*[X16]↵	Shift image up.
View value	<b>[Esc]VCTR←</b>	[X16]↵	Show vertical position value.
<b>Horizontal size</b>			
Specify a value	<b>[Esc][X17]HSIZ←</b>	Hsiz[X1]*[X17]↵	Set horizontal size to [X17].
Increment value	<b>[Esc]+HSIZ←</b>	Hsiz[X1]*[X17]↵	Widen the image.
Decrement value	<b>[Esc]-HSIZ←</b>	Hsiz[X1]*[X17]↵	Make image narrower.
View value	<b>[Esc]HSIZ←</b>	[X17]↵	Show horizontal size value.
<b>Vertical size</b>			
Specify a value	<b>[Esc][X17]VSIZ←</b>	Vsiz[X1]*[X17]↵	Set vertical size to [X17].
Increment value	<b>[Esc]+VSIZ←</b>	Vsiz[X1]*[X17]↵	Make the image taller.
Decrement value	<b>[Esc]-VSIZ←</b>	Vsiz[X1]*[X17]↵	Make image shorter.
View value	<b>[Esc]VSIZ←</b>	[X17]↵	Show vertical size value.
<b>Zoom</b>			
Specify a value	<b>[Esc][X18]ZOOM←</b>	Zoom[X1]*[X18]↵	Set zoom percentage to [X18].
Increment value	<b>[Esc]+ZOOM←</b>	Zoom[X1]*[X18]↵	Zoom in.
Decrement value	<b>[Esc]-ZOOM←</b>	Zoom[X1]*[X18]↵	Zoom out.
View value	<b>[Esc]ZOOM←</b>	[X18]↵	Show zoom percentage.
<b>Pan</b>			
Specify a horizontal value	<b>[Esc][X19]HPAN←</b>	Hpan[X1]*[X19]↵	Set horizontal pan value to [X19].
Pan left	<b>[Esc]+HPAN←</b>	Hpan[X1]*[X19]↵	Pan left.
Pan right	<b>[Esc]-HPAN←</b>	Hpan[X1]*[X19]↵	Pan right.
Specify a vertical value	<b>[Esc][X19]VPAN←</b>	Vpan[X1]*[X19]↵	Set vertical pan value to [X19].
Pan down	<b>[Esc]+VPAN←</b>	Vpan[X1]*[X19]↵	Pan down.
Pan up	<b>[Esc]-VPAN←</b>	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
<b>Output Configuration</b>			
<b>Output scaler rate</b>			
Set output rate	<b>[Esc][X21]*[X22]RATE←</b>	Rate[X21]*[X22]↵	Select output resolution and refresh rate.
View output rate	<b>[Esc]RATE←</b>	[X21]*[X22]↵	Show selected output rate.
<b>Output polarity</b>			
Set polarity	<b>[Esc][X23]OPOL←</b>	Opo1[X23]↵	Set polarity for RGBHV output.
View polarity setting	<b>[Esc]OPOL←</b>	[X23]↵	Show current output polarity.
<b>Output sync format</b>			
Set format	<b>[Esc][X24]OSYN←</b>	Osyn[X24]↵	Set output sync format.
View sync setting	<b>[Esc]OSYN←</b>	[X24]↵	Show current output sync format.
<b>Scan Converter Board</b>			
<b>Video output format</b>			
Set output format	<b>[Esc][X75]VTP0←</b>	Vtpo[X75]↵	Select video output format to [X75].
View output format	<b>[Esc]VTP0←</b>	[X75]↵	View setting.
<b>Video output standard</b>			
Set output standard	<b>[Esc][X76]VSTD←</b>	Vstd[X76]↵	Select video output standard to [X76].
View output standard	<b>[Esc]VSTD←</b>	[X76]↵	View setting.
<b>Scan converter horizontal position</b>			
Specific value	<b>[Esc]S[X16]HCTR←</b>	HctrS[X16]↵	Set horizontal position to [X16].
Increment up	<b>[Esc]S+HCTR←</b>	HctrS[X16]↵	Shift image right.
Increment down	<b>[Esc]S-HCTR←</b>	HctrS[X16]↵	Shift image left.
View	<b>[Esc]SHCTR←</b>	[X16]↵	Horizontal position value is [X16].
<b>Scan converter vertical position</b>			
Specific value	<b>[Esc]S[X16]VCTR←</b>	VctrS[X16]↵	Set vertical position to [X16].
Increment up	<b>[Esc]S+VCTR←</b>	VctrS[X16]↵	Shift image down.
Increment down	<b>[Esc]S-VCTR←</b>	VctrS[X16]↵	Shift image up.
View	<b>[Esc]SVCTR←</b>	[X16]↵	Vertical position value is [X16].

**NOTE:** [X16] = H and V position; zero location is 2048, and limits are ± the output resolution  
[X21] = Scaler resolution; 1 = 640x480, 2 = 800x600, 3 = 852x480, 4 = 1024x768, 5 = 1024x852, 6 = 1024x1024, 7 = 1280x768, 8 = 1280x800, 9 = 1280x1024, 10 = 1360x765, 11 = 1360x768, 12 = 1365x768, 13 = 1366x768, 14 = 1365x1024, 15 = 1440x900, 16 = 1400x1050, 17 = 1680x1050, 18 = 1600x1200, 19 = 1920x1200, 20 = 480p, 21 = 576p, 22 = 720p, 23 = 1080i, 24 = 1080p, 25 = 2048x1080, 26 = 1080p CVT  
[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

Command	ASCII command (host to processor)	Response (processor to host)	Additional description
<b>Scan converter horizontal size</b>			
Specific value	<b>[Esc]S[X17]HSIZ←</b>	HsizS[X17]↵	Set horizontal size to [X17].
Increase size	<b>[Esc]S+HSIZ←</b>	HsizS[X17]↵	Widen image.
Decrease size	<b>[Esc]S-HSIZ←</b>	HsizS[X17]↵	Make image narrower.
View	<b>[Esc]SHSIZ←</b>	[X17]↵	Horizontal size is [X17].
<b>Scan converter vertical size</b>			
Specific value	<b>[Esc]S[X17]VSIZ←</b>	VsizS[X17]↵	Set vertical size to [X17].
Increase size	<b>[Esc]S+VSIZ←</b>	VsizS[X17]↵	Make image taller.
Decrease size	<b>[Esc]S-VSIZ←</b>	VsizS[X17]↵	Make image shorter.
View	<b>[Esc]SVSIZ←</b>	[X17]↵	Vertical size is [X17].
<b>Scan converter horizontal filter</b>			
Set detail level	<b>[Esc]S[X77]HDET←</b>	Hdets[X77]↵	Set H filter level to [X77].
Increment up	<b>[Esc]S+HDET←</b>	Hdets[X77]↵	Increase H filter level.
Increment down	<b>[Esc]S-HDET←</b>	Hdets[X77]↵	Decrease H filter level.
View detail value	<b>[Esc]SHDET←</b>	[X77]↵	H filter level is [X77].
<b>Scan converter flicker filter</b>			
Set flicker filter level	<b>[Esc]S[X77]VDET←</b>	Vdets[X77]↵	Specify the flicker filter level to [X77].
Increment up	<b>[Esc]S+VDET←</b>	Vdets[X77]↵	Increase the flicker filter level.
Increment down	<b>[Esc]S-VDET←</b>	Vdets[X77]↵	Decrease the flicker filter level.
View flicker filter level	<b>[Esc]SVDET←</b>	[X77]↵	View the flicker filter level.
<b>Scan converter encoder filter</b>			
Set encoder filter level	<b>[Esc]S[X77]VENC←</b>	Vencs[X77]↵	Set video encoder filter level to [X77].
View	<b>[Esc]VENC←</b>	[X77]↵	View the encoder filter level.
<b>Presets</b>			
<b>User presets</b>			
Recall presets	<b>1*[X25].</b>	1Rpr[X25]↵	Recalls user preset [X25] for selected input.
Save presets	<b>1*[X25],</b>	1Spr[X25]↵	Saves user preset [X25] for selected input.
<b>Input presets</b>			
Recall presets	<b>2*[X26].</b>	2Rpr[X26]↵	Recalls input preset [X26].
Save presets	<b>2*[X26],</b>	2Spr[X26]↵	Saves input parameters to preset [X26].
<b>Auto Memory</b>			
Enable	<b>[Esc]1AMEM←</b>	Amem1↵	Set auto memory on. Previous settings for incoming signal are auto recalled.
Disable	<b>[Esc]0AMEM←</b>	Amem0↵	Set auto memory off. Default settings are always used unless input preset is recalled manually.
View setting	<b>[Esc]AMEM←</b>	[X10]↵	View auto memory status.

**NOTE:** [X10] = off/disable (0), on/enable (1)  
[X17] = H and V size, 0 to 200% of the output area in single pixel increments  
[X25] = Memory 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
<b>Aux Scaler Board</b>			
<b>Output scaler rate</b>			
Set output rate	<b>[Esc]</b> X <b>[X21]</b> * <b>[X22]</b> Rate <b>←</b>	RateX <b>[X21]</b> * <b>[X22]</b> <b>↵</b>	Select output resolution and refresh rate.
View output rate	<b>[Esc]</b> XRate <b>←</b>	<b>[X21]</b> * <b>[X22]</b> <b>↵</b>	Show selected output rate.
<b>Output sync polarity</b>			
Set polarity	<b>[Esc]</b> X <b>[X23]</b> OPOL <b>←</b>	OpolX <b>[X23]</b> <b>↵</b>	Set polarity for scaler ouput.
View polarity setting	<b>[Esc]</b> XOPOL <b>←</b>	<b>[X23]</b> <b>↵</b>	Show current output polarity.
<b>Output sync format</b>			
Set format	<b>[Esc]</b> X <b>[X24]</b> OSYN <b>←</b>	OsynX <b>[X24]</b> <b>↵</b>	Set output sync format.
View sync setting	<b>[Esc]</b> XOSYN <b>←</b>	<b>[X24]</b> <b>↵</b>	Show current output sync format.
<b>Aspect Ratio mode</b>			
Enable Fill mode	<b>[Esc]</b> X1Aspr <b>←</b>	AsprX1 <b>↵</b>	Set aspect ratio to Fill.
Enable Follow mode	<b>[Esc]</b> X2Aspr <b>←</b>	AsprX2 <b>↵</b>	Set aspect ratio to Follow (default).
View aspect ratio setting	<b>[Esc]</b> XAspr <b>←</b>	<b>[X55]</b> <b>↵</b>	Show current aspect ratio.
<b>Detail filter</b>			
Set detail level	<b>[Esc]</b> X <b>[X15]</b> HDET <b>←</b>	HdetX <b>[X15]</b> <b>↵</b>	Specify the detail (sharpness) level to <b>[X15]</b> .
Increment up	<b>[Esc]</b> X+HDET <b>←</b>	HdetX <b>[X15]</b> <b>↵</b>	Increase the detail level.
Increment down	<b>[Esc]</b> X-HDET <b>←</b>	HdetX <b>[X15]</b> <b>↵</b>	Decrease the detail level.
View detail value	<b>[Esc]</b> XHDET <b>←</b>	<b>[X15]</b> <b>↵</b>	Show the detail setting.
<b>Test pattern</b>			
<b>NOTE:</b> Test pattern on aux scaler board are color bars, 4x4 crosshatch, grayscale, ramp, alternating pixels, and crop.			
Set the test pattern	<b>[Esc]</b> XTest <b>[X20]</b> <b>←</b>	TestX <b>[X20]</b> <b>↵</b>	Set test pattern to <b>[X20]</b> .
View test pattern	<b>[Esc]</b> XTest <b>←</b>	<b>[X20]</b> <b>↵</b>	View the test pattern.

**NOTE:** **[X15]** = Detail filter level, 0 to 127  
**[X20]** = Test patterns for Scaler board: 0 = Off (default), 1 = Color bars, 2 = Crosshatch, 3 = 4x4 Crosshatch, 4 = Grayscale, 5 = Ramp, 6 = Alternating Pixels, 8 = Crop  
**[X21]** = Aux scaler resolution,  
1 = 640x480      8 = 1280x1024      14 = 1600x1200      20 = 1440x900  
2 = 800x600      9 = 1360x765      15 = 480p      21 = 1680x1050  
3 = 852x480      10 = 1365x768      16 = 576p      22 = 1280x800  
4 = 1024x768      11 = 1365x1024      17 = 720p      23 = 1080p Sharp  
5 = 1024x852      12 = 1366x768      18 = 1080i      24 = 1920x1200  
6 = 1024x1024      13 = 1400x1050      19 = 1080p      25 = 1080p CVT  
7 = 1280x768  
**[X22]** = Aux scaler refresh rate, 1 = 50 Hz, 2 = 60 Hz, 3 = 72 Hz (75 Hz for 1440x900, 24 Hz for 1080p), 4 = 96 Hz, 5 = 100 Hz, 6 = 120 Hz, 7 = 59.94 Hz  
**[X23]** = Output polarity; 0 = H-/V- (default), 1 = H-/V+, 2 = H+/V-, 3 = H+/V+  
**[X24]** = Aux scaler output sync format, 0 = RGBHV, 1 = RGsB, 2 = YUV bi-level, 3 = YUV tri-level  
**[X55]** = Aspect ratio, 1 = Follow, 2 = Fill

Command	ASCII command (host to processor)	Response (processor to host)	Additional description
<b>Advanced Configurations</b>			
<b>Test pattern</b>			
Set test pattern	<b>[Esc]</b> <b>[X20]</b> TEST ←	Test <b>[X20]</b> ↵	Select test pattern <b>[X20]</b> .
View test pattern	<b>[Esc]</b> TEST ←	<b>[X20]</b> ↵	View which test pattern is used.
<b>RGB delay time</b>			
Set value	<b>[Esc]</b> <b>[X37]</b> VDLY ←	Vdly <b>[X37]</b> ↵	Set RGB delay.
View setting	<b>[Esc]</b> VDLY ←	<b>[X37]</b> ↵	View RGB delay setting.
<b>Switch effect</b>			
Cut	<b>[Esc]</b> ØSWEF ←	SwefØ↵	Sets the switch effect to cut.
Fade	<b>[Esc]</b> 1SWEF ←	Swef1↵	Sets the switch effect to fade through to black.
View setting	<b>[Esc]</b> SWEF ←	Ø↵ (or 1↵)	View effect setting.
<b>Aspect Ratio mode</b>			
Enable Fill mode	<b>[Esc]</b> 1Aspr ←	Aspr1↵	Set aspect ratio to Fill.
Enable Follow mode	<b>[Esc]</b> 2Aspr ←	Aspr2↵	Set aspect ratio to Follow (default).
View aspect ratio setting	<b>[Esc]</b> Aspr ←	<b>[X55]</b> ↵	Show current aspect ratio
<b>MTP Pre-peaking</b>			
Enable	<b>[Esc]</b> 1OPEK ←	Opek1↵	Enables pre-peaking on the MTP output.
Disable	<b>[Esc]</b> ØOPEK ←	OpekØ↵	Disables pre-peaking.
View setting	<b>[Esc]</b> OPEK ←	<b>[X10]</b> ↵	View pre-peaking setting.
<b>Front panel lockout (executive mode)</b>			
Enable Mode 1	1X	Exe1↵	Limited front panel adjustments.
Enable Mode 2	2X	Exe2↵	Lock out entire front panel.
Disable	ØX	ExeØ↵	Adjustments and selections can be made from front panel.
View front panel lock status	X	<b>[X14]</b> ↵	Show executive mode status.
<b>NOTE:</b> For full lock mode details see the “Setting the Front Panel Locks (Executive Modes)” section.			
<b>Picture in Picture</b>			
<b>PIP on/off</b>			
PIP on	<b>[Esc]</b> <b>[X1]</b> PIP ←	Pip <b>[X1]</b> ↵	Turn PIP on and display input <b>[X1]</b> .
PIP off	<b>[Esc]</b> ØPIP ←	PipØ↵	Turn PIP off.
View PIP status	<b>[Esc]</b> PIP ←	<b>[X1]</b> ↵	View PIP window selection.
<b>NOTE:</b> When PIP is enabled, all picture control commands apply to the image in the PIP window.			
<b>Swap PIP</b>			
Swap	%	Tke↵	Swap PIP/main window content.

**NOTE:** **[X1]** = Input selection 1 – 7  
**[X10]** = off/disable (0), on/enable (1)  
**[X14]** = Disabled (0), or enabled mode 1 (1) or enabled mode 2 (2)  
**[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)  
**[X55]** = Aspect ratio, 1 = Follow, 2 = Fill

Command	ASCII command (host to processor)	Response (processor to host)	Additional description
<b>Annotation</b>			
<b>Annotation type</b>			
Set type	<b>Esc</b> <b>X50</b> DRAW←	Draw <b>X50</b> ↵	Sets current annotation to <b>X50</b> .
View type	<b>Esc</b> DRAW←	Draw <b>X50</b> ↵	View current annotation type.
<b>Annotation coordinates</b>			
Location	<b>Esc</b> <b>X57</b> APNT←	(no response)	Places the annotation location at <b>X57</b> .
Complete annotation	<b>Esc</b> ASTP←	Astp↵	Indicates the end of an annotation function.
<b>NOTE:</b> All coordinate values sent to the Annotator are interpreted according to the guidelines for the current annotation type.  Example: Draw a square Esc 00000000APNT ← Esc 00100010APNT ← Esc 00200020APNT ← Esc 00300030APNT ← Esc ASTP ←			
<b>Annotation color</b>			
Set color	<b>Esc</b> <b>X53</b> ACOL←	Acol <b>X53</b> ↵	Sets the color to <b>X53</b> .
View color	<b>Esc</b> ACOL←	<b>X53</b> ↵	View current annotation color.
<b>NOTE:</b> The color setting applies to all annotations.			
<b>Annotation object fill</b>			
Enable object fill	<b>Esc</b> 1FILL←	Fill1↵	Enable fill for new objects drawn.
Disable object fill	<b>Esc</b> 0FILL←	Fill0↵	Disable fill for new objects drawn.
View setting	<b>Esc</b> FILL←	<b>X10</b> ↵	View current fill setting.
<b>NOTE:</b> The fill setting applies to rectangles and ellipses drawn after the setting has been modified.			
<b>Text configuration</b>			
Set text font	<b>Esc</b> <b>X51</b> FONT←	Font <b>X51</b> ↵	Set annotation font to <b>X51</b> .
View font	<b>Esc</b> FONT←	<b>X51</b> ↵	View current font file name.
<b>NOTE:</b> Font files must be stored on the hardware in the nortxe-font folder.			
Set text size	<b>Esc</b> <b>X52</b> TXSZ←	TxsZ <b>X52</b> ↵	Set annotation text size to <b>X52</b> .
View text size	<b>Esc</b> TXSZ←	<b>X52</b> ↵	View current text size.
<b>Line configuration</b>			
Set line weight	<b>Esc</b> <b>X54</b> LNWT←	Lnwt <b>X54</b> ↵	Set line weight to <b>X54</b> pixels.
View size	<b>Esc</b> LNWT←	<b>X54</b> ↵	View current line weight setting.

**NOTE:**

- X10** = off/disable (0), on/enable (1)
- X50** = Annotation type: 0 = Eraser, 1 = Pointer, 2 = Freehand, 3 = Highlighter, 4 = Vector line, 5 = Arrow line (arrow at the endpoint of the vector), 6 = Ellipse, 7 = Rectangle, 8 = Text tool, 9 = Spotlight, 10 = Zoom tool, 11 = Pan tool
- X51** = Font selection; 16 character file name including \*.FNT extension, 0 = default font (Arial)
- X52** = Font size; 8 to 63 point font (default = 8 pt)
- X53** = Line color; 6 bit RGB, 64 total colors, e.g. 000000 = black, 010000 = dark red (33%), 100000 = medium red (66%), 110000 = bright red (100%), 001100 = bright green (66%), 000011 = bright blue (default), 111111 = white, 010101 = Dark gray (33%)
- X54** = Line weight; 1 to 63 pixels wide (default = 8)
- X57** = Annotation coordinates; 8 digit number with first four being the X-coordinate, last four is the Y-coordinate, limits = 1000,1000. Fixed for any output rate. Example, (0,0) = 00000000 = top left; (500,500) = 05000500 = screen center.

Command	ASCII command (host to processor)	Response (processor to host)	Additional description
<b>Drop shadow</b>			
Enable drop shadow	<b>[Esc]</b> 1SHDW←	Shdw1↵	Enable a drop shadow.
Disable drop shadow	<b>[Esc]</b> 0SHDW←	Shdw0↵	Disable drop shadow.
View setting	<b>[Esc]</b> SHDW←	<b>[X10]</b> ↵	View current fill setting.
<b>Eraser/highlighter size</b>			
Set eraser/highlighter size	<b>[Esc]</b> <b>[X54]</b> ERSR←	Ersr <b>[X54]</b> ↵	Set the eraser/highlighter size to <b>[X54]</b> .
View size	<b>[Esc]</b> ERSR←	<b>[X54]</b> ↵	View current eraser/highlighter size.
<b>Annotation edit functions</b>			
Clear all annotations	<b>[Esc]</b> 0EDIT←	Edit0↵	Clears all annotations on the output. Cannot be undone.
Undo last annotation	<b>[Esc]</b> 1EDIT←	Edit1↵	Undoes the last annotation. Seven states are held in memory.
Redo annotation	<b>[Esc]</b> 2EDIT←	Edit2↵	Previously removed annotation is placed on the output.
<b>Annotation display</b>			
Set output to show annotation	<b>[Esc]</b> <b>[X2]</b> ASHW←	Ashw <b>[X2]</b> ↵	Set which video outputs display annotations.
View font	<b>[Esc]</b> ASHW←	<b>[X2]</b> ↵	View setting.
<b>Cursor display</b>			
Set output to show cursor	<b>[Esc]</b> <b>[X2]</b> CSHW←	Cshw <b>[X2]</b> ↵	Set which video outputs display the cursor.
View font	<b>[Esc]</b> CSHW←	<b>[X2]</b> ↵	View setting.
<b>On-screen clock</b>			
Enable on-screen clock	<b>[Esc]</b> <b>[X56]</b> TIME←	Time <b>[X56]</b> ↵	Display the time on the video output.
View settings	<b>[Esc]</b> TIME←	<b>[X56]</b> ↵	View setting.
<b>On-screen clock horizontal position</b>			
Specific value	<b>[Esc]</b> K <b>[X16]</b> HCTR←	HctrK <b>[X16]</b> ↵	Set horizontal position to <b>[X16]</b> .
Increment to right	<b>[Esc]</b> K+HCTR←	HctrK <b>[X16]</b> ↵	Shift clock right.
Increment to left	<b>[Esc]</b> K-HCTR←	HctrK <b>[X16]</b> ↵	Shift clock left.
View settings	<b>[Esc]</b> KHCTR←	<b>[X16]</b> ↵	Horizontal position value is <b>[X16]</b> .
<b>On-screen clock vertical position</b>			
Specific value	<b>[Esc]</b> K <b>[X16]</b> VCTR←	VctrK <b>[X16]</b> ↵	Set vertical centering to <b>[X16]</b> .
Increment up	<b>[Esc]</b> K+VCTR←	VctrK <b>[X16]</b> ↵	Shift clock down.
Increment down	<b>[Esc]</b> K-VCTR←	VctrK <b>[X16]</b> ↵	Shift clock up.
View settings	<b>[Esc]</b> KVCTR←	<b>[X16]</b> ↵	Vertical position value is <b>[X16]</b> .

**NOTE:** **[X2]** = Output selection: 0 = all outputs (default), 1 = program only (BNC, MTP, optional output card), 2 = preview only (VGA), 3 = none  
**[X10]** = off/disable (0), on/enable (1)  
**[X16]** = H or V position: (zero location is 2048, and limits are ± the output resolution)  
**[X54]** = Line weight/eraser/highlighter width: 1 to 63 pixels wide (default = 8)  
**[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
<b>On-Screen Menu Configuration</b>			
<b>Menu time-out</b>			
Set menu time-out period	<b>[Esc]</b> <b>[X28]</b> MDUR←	Mdur <b>[X28]</b> ↵	Sets the menu duration to <b>[X28]</b> seconds.
View time-out	<b>[Esc]</b> MDUR←	Mdur <b>[X28]</b> ↵	View setting.
<b>NOTE:</b> Setting the time-out to zero disables the On-screen display (OSD) time-out.			
<b>Menu display</b>			
Set output to show menu	<b>[Esc]</b> <b>[X2]</b> MSHW←	Mshw <b>[X2]</b> ↵	Sets which video outputs display the OSD.
View setting	<b>[Esc]</b> MSHW←	<b>[X2]</b> ↵	View setting.
<b>NOTE:</b> If the menu is being displayed on one output, annotating in the menu area on outputs not showing the menu still affects the menu. The area is safe for annotation on any screen after the menu times out and docks away.			
<b>OSD capture button mode</b>			
Save to internal memory	<b>[Esc]</b> 0MCAP←	Mcap0↵	Sets the OSD image capture button to capture the image and save it to internal flash memory.
Save to external location	<b>[Esc]</b> 1MCAP←	Mcap1↵	Sets the OSD image capture button to send the image to internal RAM memory. This mode allows images to be streamed to an external PC for archiving/printing.
View setting	<b>[Esc]</b> MCAP←	1↵ (or 0↵)	View setting.
<b>Image capture/recall</b>			
<b>Image capture/recall to Annotator flash memory</b>			
Save image	<b>[Esc]</b> 0* <u>filename</u> MF←	Ims* <u>filename</u> ↵	Saves currently displayed image to memory under designated name.
Recall image	<b>[Esc]</b> 0* <u>filename</u> RF←	Imr* <u>filename</u> ↵	Recalls displayed image.
Mute image	<b>[Esc]</b> 0*0RF←	Imr0↵	Mutes image on the output and reveals live input video
Current image	<b>[Esc]</b> RF←	<u>filename</u> ↵	View currently displayed image name.
<b>NOTE:</b> The filename must be 16 characters or fewer, including the *.bmp extension.			
<b>Image quick capture</b>			
Save image to RAM	<b>[Esc]</b> QCAP←	Qcap↵	Saves currently displayed image to Annotator RAM.
<b>NOTE:</b> Qcap response invokes Quick Capture software running on a PC to request image data.			

**NOTE:** **[X2]** = Output selection: 0 = all outputs (default), 1 = program only (BNC, MTP, optional output card), 2 = preview only (VGA), 3 = none  
**[X28]** = On-screen menu time-out — 1 to 64, in 1 second increments, 0 = always displayed (default = 10))

Command	ASCII command (host to processor)	Response (processor to host)	Additional description
<b>Resets</b>			
Erase user-supplied web pages and files	<b>[Esc]</b> <i>filename</i> EF ←	Del• <i>filename</i> ←	
Erase current directory and files	<b>[Esc]</b> / EF ←	Dd1 ←	
Erase current directory and subdirectories	<b>[Esc]</b> / / EF ←	Dd1 ←	
Erase flash memory	<b>[Esc]</b> ZFFF ←	Zpf ←	
Reset all device settings to factory default settings	<b>[Esc]</b> ZXXX ←	Zpx ←	
Absolute system reset	<b>[Esc]</b> ZQQQ ←	Zpq ←	Includes resetting IP to 192.168.254.254 and subnet mask to 255.255.000.000.
Absolute system reset (but retain IP)	<b>[Esc]</b> ZY ←	Zpy ←	
<b>NOTE:</b> 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.			
<b>Information request</b>			
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	60-968-xx ←	View part number.
View internal temperature	<b>[Esc]</b> 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 (0), on/enable (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 (for example, 075.3)

# 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, (Annotator- + 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 are enabled, all read commands return the constant string and the value as the set command does (for example, the read processor name command `[Esc]CN←`, returns `lpr•X100←`).

**X125** = Specific serial port number (01-03), 01 = COM1 (rear panel, bottom port), 02 = COM2 (front panel config port), 03 = COM3 (rear panel, top port)

**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 **L**ength of message to receive or the **D**elimiter 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 time-outs: 0 = use *send data string* command parameters (0 = default), 1 = use *configure receive time-out* 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 milliseconds, 0000 - 1000 (default = 0000 = 0 ms).
- X142** = IP connection time-out 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.

**NOTE:** COM1 is rear panel bottom port, COM2 is front panel config port, COM3 is rear panel top port.

- X144** = Time-out 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
<b>IP control ports commands</b>				
Set processor name	<b>Esc</b> X100 CN ←	W X100 CN	Ipn • X100 ↓	
Read processor name	<b>Esc</b> CN ←	WCN	X100 ↓	
Reset processor name to factory default	<b>Esc</b> • CN ←	W • CN	Ipn • X100 ↓	
Set time and date	<b>Esc</b> X102 CT ←	W X102 CT	Ipt X102 ↓	
Read time and date	<b>Esc</b> CT ←	WCT	X102 ↓	
Set GMT offset	<b>Esc</b> X104 CZ ←	W X104 CZ	Ipz X104 ↓	
View GMT offset	<b>Esc</b> CZ ←	WCZ	X104 ↓	
Set Daylight Saving Time	<b>Esc</b> X105 CX ←	W X105 CX	IpX X105 ↓	
Read Daylight Saving Time	<b>Esc</b> CX ←	WCX	X105 ↓	
Set IP address	<b>Esc</b> X106 CI ←	W X106 CI	Ipi X106 ↓	
Read IP address	<b>Esc</b> CI ←	WCI	X106 ↓	
Read hardware address	<b>Esc</b> CH ←	WCH	X107 ↓	
Read number of open connections	<b>Esc</b> CC ←	WCC	X108 ↓	
Set subnet mask	<b>Esc</b> X106 CS ←	W X106 CS	Ips X106 ↓	
Read subnet mask	<b>Esc</b> CS ←	WCS	X106 ↓	
Set gateway IP address	<b>Esc</b> X106 CG ←	W X106 CG	Ipg X106 ↓	
Read gateway IP address	<b>Esc</b> CG ←	WCG	X106 ↓	
Set administrator password	<b>Esc</b> X109 CA ←	W X109 CA	Ipa • X109 ↓	
Read administrator password	<b>Esc</b> CA ←	WCA	X109 ↓	
Reset (clear) administrator password	<b>Esc</b> • CA ←	W • CA	Ipa • ↓	
Set user password	<b>Esc</b> X109 CU ←	W X109 CU	Ipu • X109 ↓	
Read user password	<b>Esc</b> CU ←	WCU	X109 ↓	
Reset (clear) user password	<b>Esc</b> • CU ←	W • CU	Ipu • ↓	
Set DHCP on or off	<b>Esc</b> X116 DH ←	W X116 DH	I dh X116 ↓	
Read DHCP on/off status	<b>Esc</b> DH ←	WDH	X116 ↓	

### NOTE:

X100 = Switcher name (up to 240 alphanumeric characters)

X102 = Time and Date (MM/DD/YY • HH:MM:SS)

X104 = GMT offset (-12 to +14 hours)

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 - 200

X109 = Password (12 alphanumeric characters)

X116 = DHCP, 0 = off, 1 = on

Command	ASCII (Telnet) (host to processor)	URL Encoded (Web) (processor to host)	Response (processor to host)	Additional description
Set verbose mode	<b>[Esc]</b> X123CV←	W[X123]CV	Vrb[X123]←	
Read verbose mode	<b>[Esc]</b> CV←	WCV	X123←	
<b>Event control</b>				
Start events	<b>[Esc]</b> 1AE←	W1AE	Ego←	
Stop events	<b>[Esc]</b> 0AE←	W0AE	Est←	
Read number of events running	<b>[Esc]</b> AE←	WAE	#####←	Returns a five-digit number.
		(tagged response in verbose mode 2/3)	Emm #####←	Verbose mode
<b>Bidirectional serial data port</b>				
Set parameters	<b>[Esc]</b> X125* <b>[X135]</b> X136, <b>[X137]</b> X138CP←	W[X125%2AX135%2CX136 %2CX137%2CX138]CP	Cpn[X125]Ccp[X135]X136, X137 X138←	
Read parameters	<b>[Esc]</b> X125CP←	W[X125]CP	X135 X136 X137 X138←	
Set mode	<b>[Esc]</b> X125* <b>[X139]</b> CY←	W[X125%2AX139]CY	Cpn[X125]Cty[X139]←	
Read mode	<b>[Esc]</b> X125CY←	W[X125]CY	X139←	
Configure flow control	<b>[Esc]</b> X125* <b>[X140]</b> X141CF←	W[X125%2AX140%2CX141]CF	Cpn[X125]CfL[X140]X141←	
Read flow control	<b>[Esc]</b> X125CF←	W[X125]CF	X140 X141←	
Configure receive time-out	<b>[Esc]</b> X125* <b>[X127]</b> * <b>[X130]</b> * <b>[X133]</b> * <b>[X131]</b> CE←	W[X125%2AX127%2AX130 %2AX133%2AX131]CE	Cpn[X125]Coe[X127]X130 X133, X131←	
Read receive time-out	<b>[Esc]</b> X125CE←	W[X125]CE	X127 X130 X133 X131←	

#### 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 (rear panel, bottom port), 02 = COM2 (front panel config port), 03 = COM3 (rear panel, top port)  
**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 time-out 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	<u>Esc</u> <u>X125</u> * <u>X143</u> * <u>X144</u> * <u>X131</u> CD←	<u>W</u> <u>X125</u> %2A <u>X143</u> %2A <u>X144</u> %2A <u>X131</u> CD	Cpn <u>X125</u> ●Ccd <u>X143</u> <u>X144</u> <u>X131</u> ←	
Terminate redirect mode	<u>Esc</u> <u>X125</u> *ØCD←	<u>W</u> <u>X125</u> %2AØCD	Cpn <u>X125</u> ●Ccd00000,00000, 00000L←	
Read redirect mode	<u>Esc</u> <u>X125</u> CD←	<u>W</u> <u>X125</u> CD	<u>X143</u> <u>X144</u> <u>X131</u> ←	
<b>Ethernet data port</b>				
Set current conn port time-out	<u>Esc</u> Ø* <u>X142</u> TC←	<u>W</u> Ø%2A <u>X142</u> TC	PtiØ* <u>X142</u> ←	
Read current conn port time-out	<u>Esc</u> ØTC←	WØTC	<u>X142</u> ←	
Set global IP port time-out	<u>Esc</u> 1* <u>X142</u> TC←	<u>W</u> 1%2A <u>X142</u> TC	Pti1* <u>X142</u> ←	
Read global IP port time-out	<u>Esc</u> 1TC←	W1TC	<u>X142</u> ←	
<b>Directories</b>				
Change/create directory	<u>Esc</u> path/directory/CJ←	Wpath/directory/%2FCJ	Dir●path/directory/←	
Back to root directory	<u>Esc</u> /CJ←	W%2FCJ	Dir●/←	
Up one directory	<u>Esc</u> _CJ←	W%2E%2ECJ	Dir●path/directory/←	
View current directory	<u>Esc</u> CJ←	WCJ	path/directory/←	
<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.				
<b>NOTE:</b> 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.				

<b>NOTE:</b> <u>X125</u> = specific serial port number (01-03), 01 = COM1 (rear panel, bottom port), 02 = COM2 (front panel config port), 03 = COM3 (rear panel, top port) <u>X131</u> = 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.) <u>X142</u> = IP connection time-out period specified in 10-second steps, 1 - 65000 (default = 30 = 300 seconds). If no data is received in the specified period, the connection closes. <u>X143</u> = Redirection status: 0 = no redirection, 1 - 3 = redirect serial communication to COM1, COM2, or COM3 <u>X144</u> = Time-out period in tens of milliseconds for serial data pass-through mode, range = 1 - 32767 (default = 10 = 100 ms)
--

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

# Signal Processing Products Control Program

The Extron Signal Processing Products Control Program (SPPCP) offers another way to control the Annotator via RS-232 connection in addition to the SIS commands.

This section describes SPPCP installation, communication, and control. Topics that are covered, include:

- **Installing the Software**
- **Starting the SPPCP**
- **Using the SPPCP**

The graphical interface of the program includes the same functions as those on the front panel of the scaler with additional features that are only available through the software.

The control software is compatible with Windows 98, Windows NT, Windows 2000, and Windows XP. The Signal Processing Products Control Program is included on the Extron DVD, and updates can be downloaded from the Extron website ([www.extron.com](http://www.extron.com)).

**NOTE:** The control program requires approximately 32 MB of hard disk space.

## Installing the Software

The SPPCP software can be installed onto the hard drive of a connected PC either directly from the supplied DVD, or downloaded from the Extron website.

### Installation From the DVD

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

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

The Extron software window appears.



**Figure 24.** Opening Window on Extron DVD

2. If the disc does not start automatically, run LAUNCH.EXE from the disc.
3. Follow the instructions that appear on the screen.

By default, the installation creates a C:\Program Files\Extron\Signal Processing directory and places a shortcut icon in it.

## Installation from the Website

1. On the Extron website ([www.extron.com](http://www.extron.com)), select the Download tab.
2. On the Download Center screen, select **Software** from the side-bar menu on the left.
3. Locate the Signal Processing Products Control Program file from the list and double click on it.
4. Follow the on-screen instructions to download the program to your PC.

## Starting the SPPCP

1. Click **Start > Programs > Extron Electronics > Signal Processing > Signal Processing Products Control Program**. Alternatively, if an icon was installed on the desktop, the SPPCP can be started by double clicking on the icon. The Select Connection Type window appears.



**Figure 25.** SPPCP Connection Type Selection Screen

Either choose the comm (serial) port that is connected to the Annotator 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 **OK**. The control program is ready for operation.

2. 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.

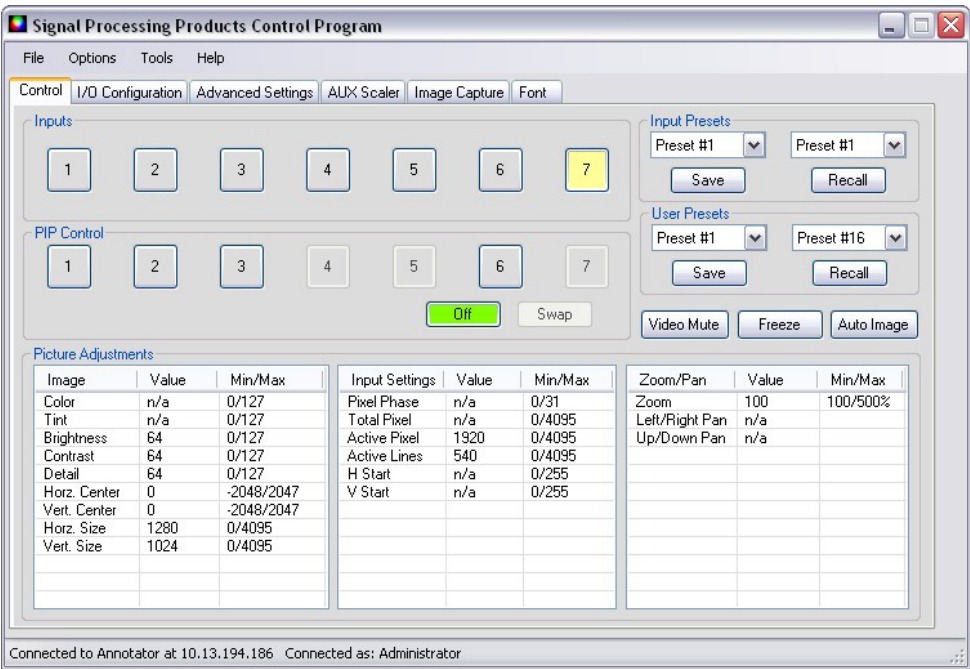
- b. If the unit is password protected, enter the appropriate administrator or user password in the **Password** field.
- c. Click **Connect**. The Signal Processing Products Control Program is now ready for operation.

# Using the SPPCP

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

## Orientation

The SPPCP main window has 5 main tabs: **Control**, **I/O Configuration**, **Advanced Settings**, **Image Capture**, **Font**. A sixth tab appears only if a scan converter or an auxiliary scaler board is installed (**aux scaler** tab shown in figure 25). Click on each as desired.



**Figure 26.** The Control Program Main Window

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

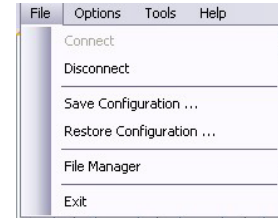
At the bottom of the window is the status bar, indicating the status of the connection or any configuration error messages.

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

## SPPCP 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 Annotator (or connect a new device) when it has been disconnected from the Signal Processing Products Control Program. Follow the steps in the section “[Starting the SPPCP](#).”
- **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 inactive (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:** Save these files to the root directory of the Annotator to be accessible later.

- **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 is used in uploading and downloading files to and from IP Link-enabled devices.

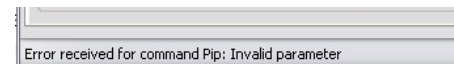
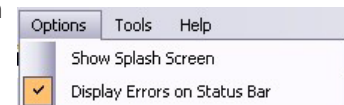
**NOTE:** This option becomes enabled when the File menu is accessed after installing File Manager. In order to use this option, download the IP Link File Manager application at [www.extron.com](http://www.extron.com).

- **Exit** — Select this to exit the control program. This disconnects and closes the SPPCP.

### 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 to 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.

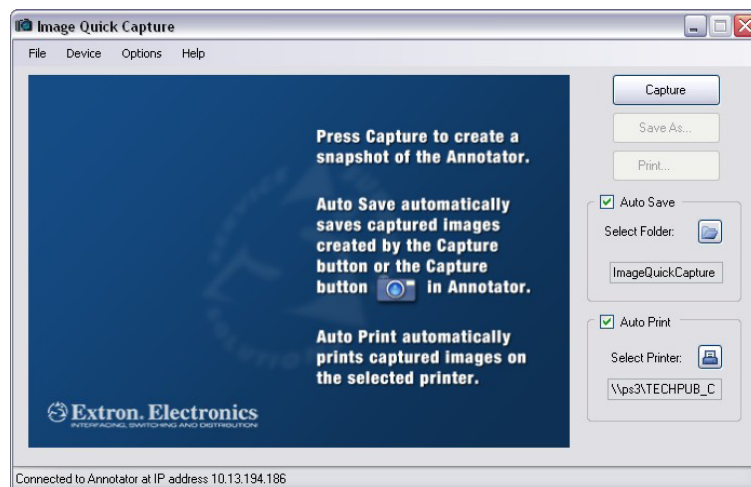
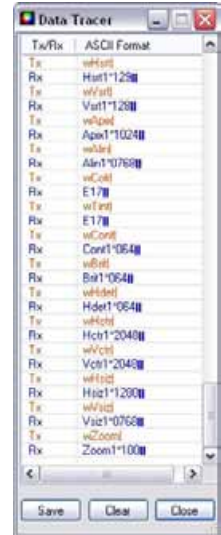
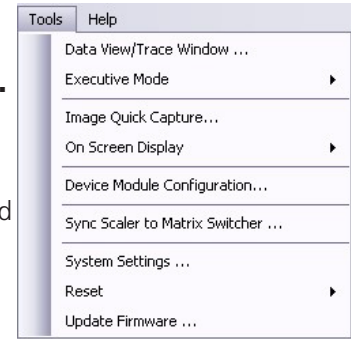


## Tools menu

Click on this to open a drop-down box displaying nine selectable options: **Data View/Trace Window...**, **Executive Mode**, **Image Quick Capture...**, **On Screen Display**, **Device Module Configuration...**, **Sync Scaler to Matrix Switcher...**, **System Settings...**, **Reset**, and **Update Firmware...**

- **Data View/Trace Window...** — Select this to open a separate window in which the transmit and receive (Tx/Rx) data between the control software on the host PC and the Annotator can be viewed in ASCII format (see figure at right). During data transmission and receipt, the data tracer window is constantly updated. Click **Save** to save the Data trace in a log file format. Click **Clear** to erase all the data in the data tracer window. To close the window, click **Close** or the **X** in the top right corner of the window.

- **Executive Mode** — Select this to open a secondary drop-down box, allowing selection between Input Switch/Freeze only, On, or Off. Select as desired.
- **Image Quick Capture** — Select this to open a secondary window that gives access to the Image Quick Capture program. The Image Quick Capture program is a separate software program for capturing and storing the output images from the Annotator. Within the open window select the image to capture, where to save the image to if desired, and/or to print the image (after capture). Images may be auto-saved or auto-printed as desired, by selecting the appropriate check boxes.



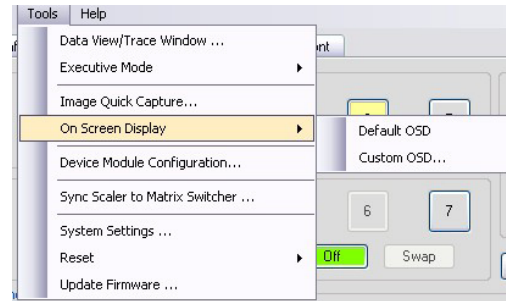
**Figure 27. The Image Quick Capture Window**

There are four menus for the Image Quick Capture program: **File**, **Device**, **Options** and **Help**.

For full details and information on using the Image Quick Capture program, click on **Help** > **Help** or press <F1> to access the *Image Quick Capture Help* file.

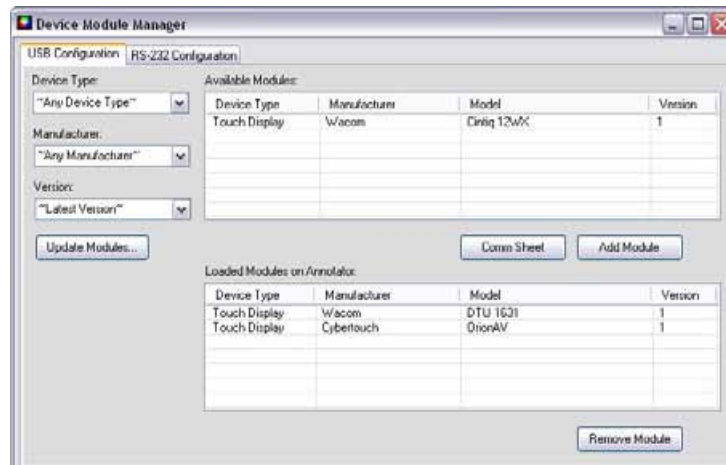
- On Screen Display** — Use this menu for a choice of two types of OSD: **Default OSD** and **Custom OSD**. Select as applicable. The **Default OSD** option is used to view the default On-Screen Display. The **Custom OSD** screen has two separate screens, **Button OSD** and **Input OSD**, which allow the user to customize the buttons and input names shown on the display.

For complete instructions on how to customize the OSD, press <F1>, or click **Help > Help**.

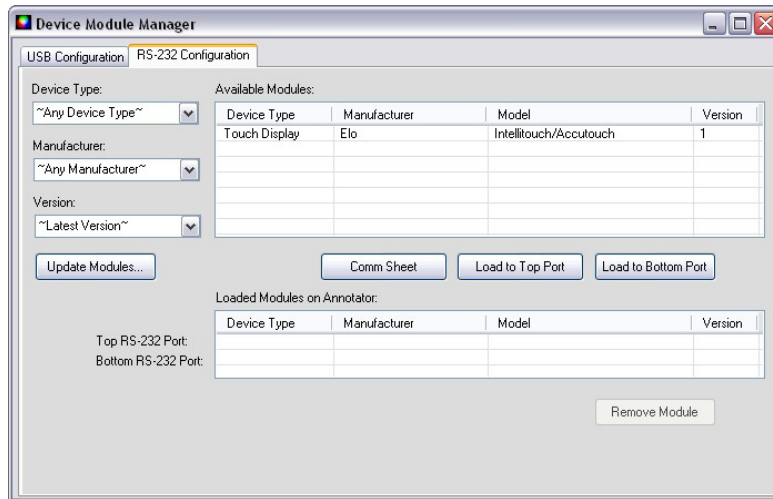


**Figure 28.** The On Screen Display Window

- Device Module Configuration** — This option allows you to configure a connected touchpanel so that it can be used with the Annotator and the Signal Processing Products Control Program. The touchpanel must be connected via the USB port or the RS-232 port. To begin configuration, select the applicable connection tab on the screen, and select the correct touchpanel. For complete instructions on how to configure the touchpanel, press <F1>, or click **Help > Help**.

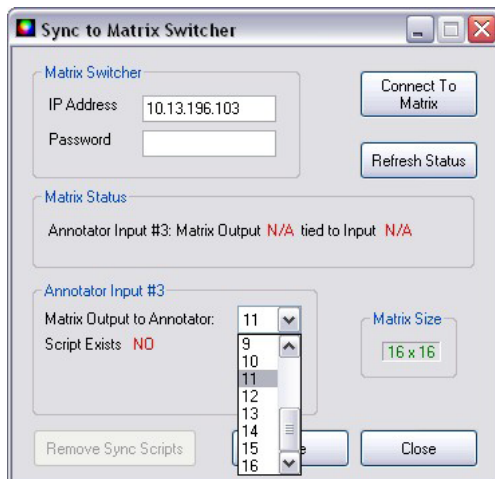


**Figure 29.** The Device Module Manager Window: USB Tab



**Figure 30. The Device Module Manager Window: RS-232 Tab**

- **Sync Scaler to Matrix Switcher** — Select this to open a secondary window. Within that window enter the IP address of the matrix switcher that is connected to the Annotator. If required enter the password, then click **Connect to Matrix**. Select the output number from the **Matrix Output to Annotator** drop-down list and click **Take**. The Matrix Status section displays the matrix output that is being monitored and the tied input. The Matrix Size section displays the current Matrix size (for example a 16 x 16 I/O unit) being used.



**Figure 31. Sync to Matrix Switcher Window**

**NOTE:** The matrix switcher must be connected to via a configured input on the Annotator. See page 26 for information. The matrix and the Annotator must to be connected to an active network at all times to allow the products to remain synchronized. If the connection is lost, the script needs to be restarted by either sending the SIS command (**Esc**1AE←) or by power cycling the Annotator.

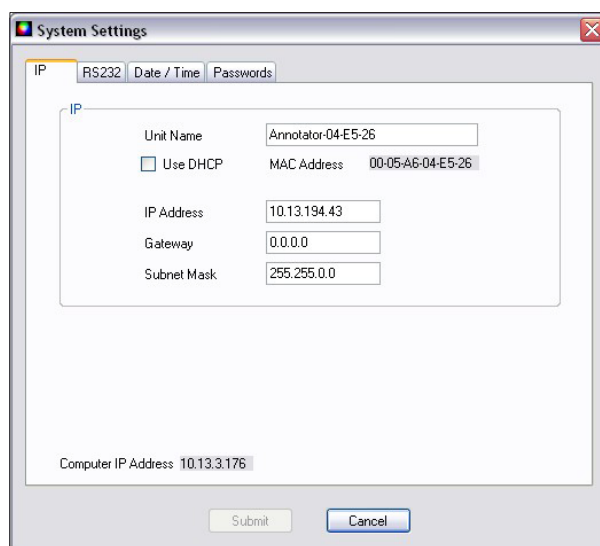
Click **Refresh Status** to update the status of the matrix switcher. Refreshing the status returns updated information about which Annotator input is tied to a particular matrix output.

If the matrix IP address needs to be changed or which output of the matrix the Annotator is connected to, click **Remove Sync Scripts**.

- **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.



**Figure 32. System Settings Window**

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

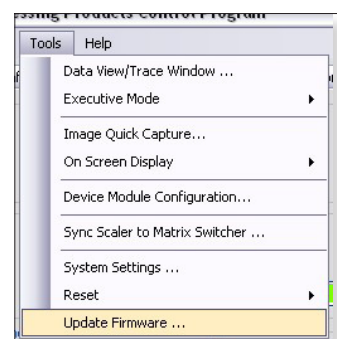
- **Reset** — If it is necessary to reset the Annotator, select this to open a secondary drop-down box. Two options are available: Reset to Factory Defaults and Reset to Absolute Defaults Except IP Settings.
  - **Reset to Factory Defaults** resets all settings on the device to their factory defaults, 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**.



### ***To download and install the Firmware Loader application:***

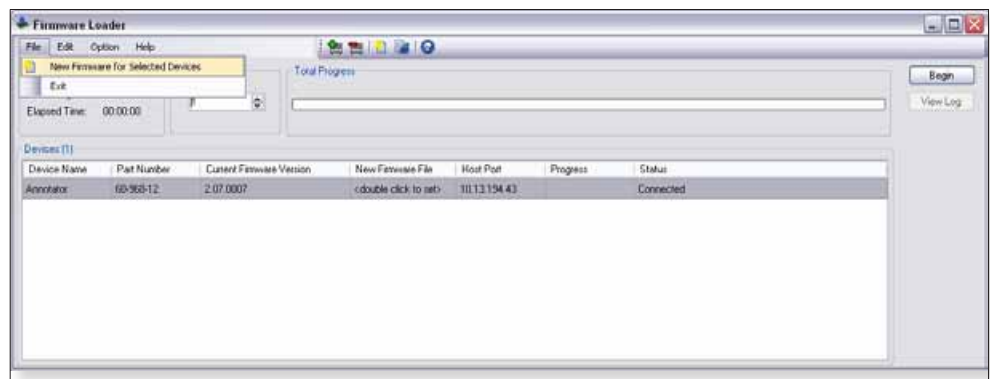
1. Go to [www.extron.com](http://www.extron.com).
2. Enter "Firmware Loader" in the Search field and press Enter.
3. Locate the Firmware Loader application in the results and click **Download Now!**
4. Follow the on-screen prompts to complete the download.

### ***To update the firmware:***

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

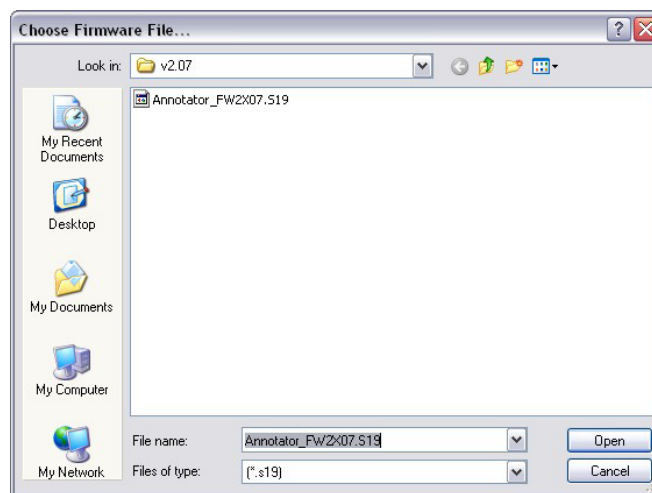
**NOTE:** For full instructions about using the Firmware Loader, click **Help > Help** (or <F1>) on the open Firmware Loader window

2. In the Firmware loader window, click **File > New Firmware for Selected Devices**. A dialog box opens to enable a search for the device-specific firmware file (with the file extension ".S19") that has been downloaded to the connected PC.



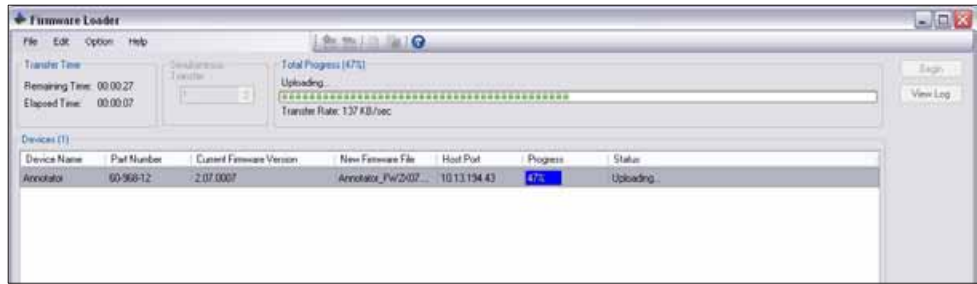
**Figure 33. Firmware Loader Main Window**

3. 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 Firmware Loader window.



**Figure 34. Choosing Firmware File Window**

4. Click **Begin**. The file uploads to the Annotator and the upload progress can be seen on the Total Progress bar.



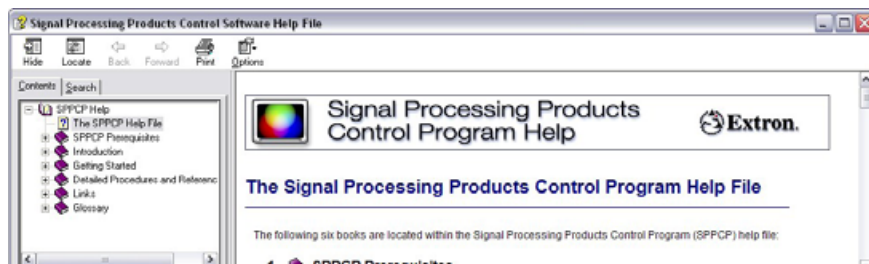
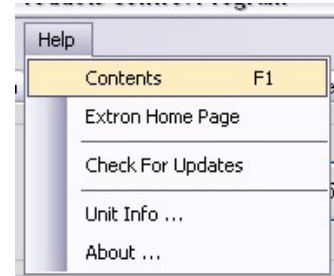
**Figure 35. Firmware Loading Progress Window**

5. When the file upload is complete (*after* file verification and the device restarting), click on the **X** at top right, or on **File > Exit** to exit the Firmware Loader. The SPPCP window restores itself.
6. Connection to the unit 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 Annotator.

### Help menu

Click on this 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 Annotator using the SPPCP program. The help file opens a separate window. Select the subject matter from the contents section at the left side of the window.

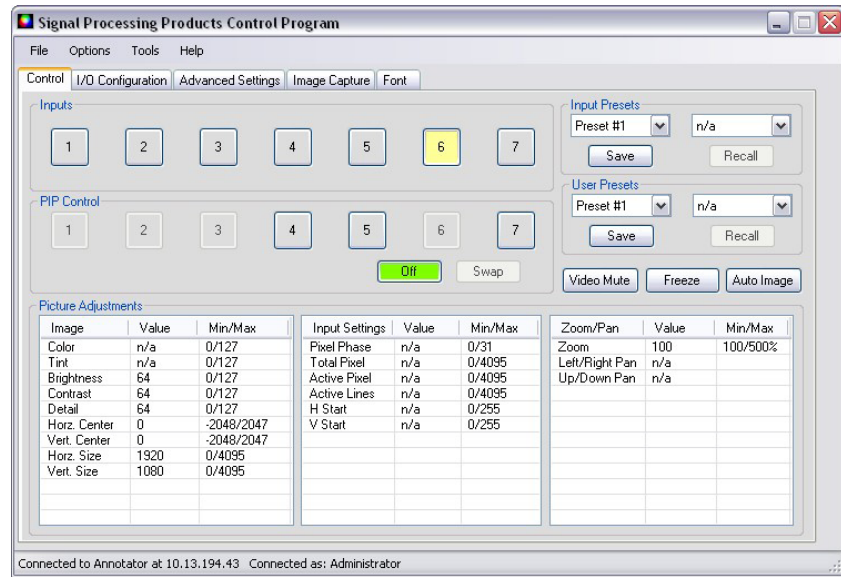


**Figure 36. The Main Window of the Help File for Control Program**

- **Extron Home Page** — This opens the Extron website ([www.extron.com](http://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...** — Selecting this opens 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.
- **About...** — Select this for details (version/build number, for example) of the SPPCP.

## Control Tab

The **Control** tab displays the current configuration of the Annotator, with numbered boxes representing the video inputs. Also shown on the **Control** tab are the PIP control buttons, current picture adjustment values, input and user presets, as well as **Video Mute**, **Freeze** and **Auto Image** buttons..



**Figure 37. The Control Tab Screen**

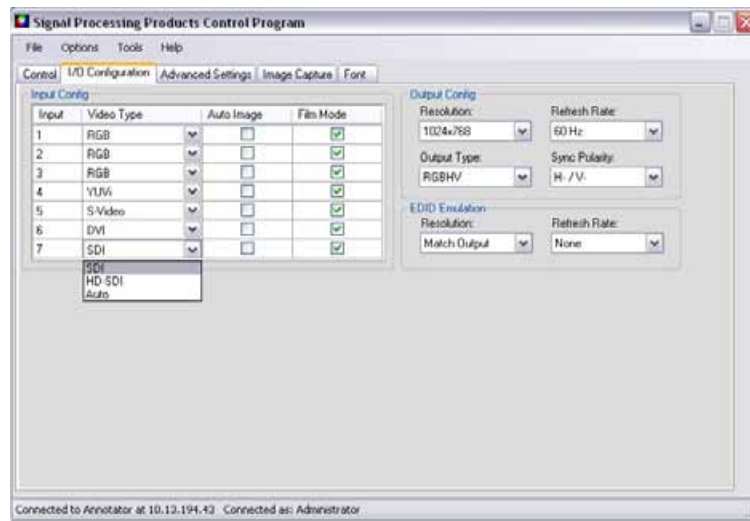
- **Inputs** — The current active input is shown (yellow). Select a desired input button to change to that input.
- **PIP Control** — To swap a selected picture-in-picture input for the main input as desired, click **Swap**. To select a different PIP input click on that PIP input button, then click **Swap**. To turn the PIP feature off, click **Off**.
- **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 affect only 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.

- **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.
- **Video Mute** — Select this to mute or unmute the video image. When selected, the button text turns red.
- **Freeze** — Select this to freeze an image for use as a logo or for annotation.
- **Auto Image** — Select this to perform an **auto image** on an input.

## I/O Configuration Tab

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

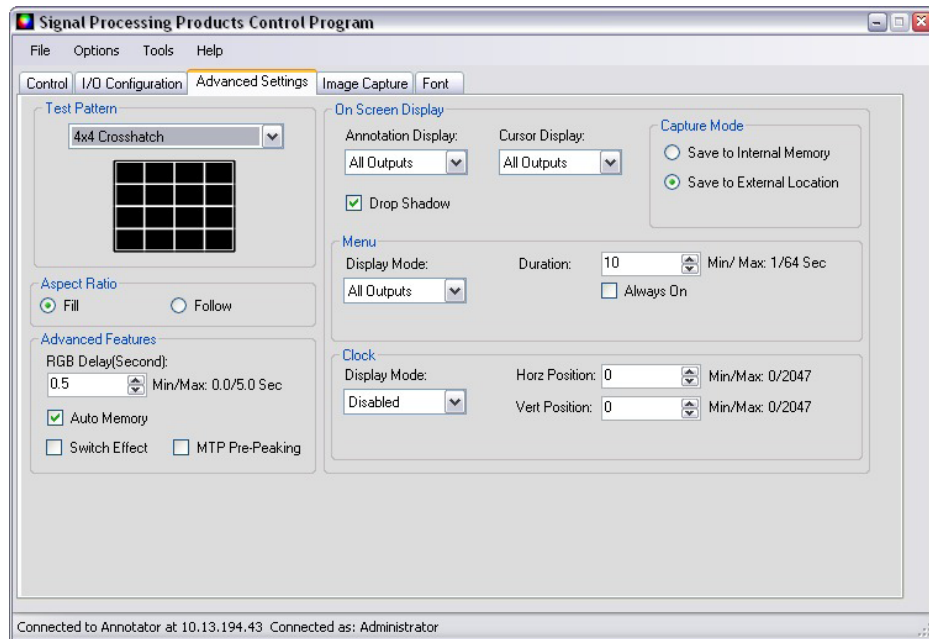


**Figure 38.** The I/O Configuration Tab Screen

- **Input Config** — Set a suitable video type for an input by clicking on the drop-down box (see input 7 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.
- **Output Config** — To configure an output resolution, refresh rate, output type, or sync polarity, select the desired values from the respective drop-down list.
- **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.



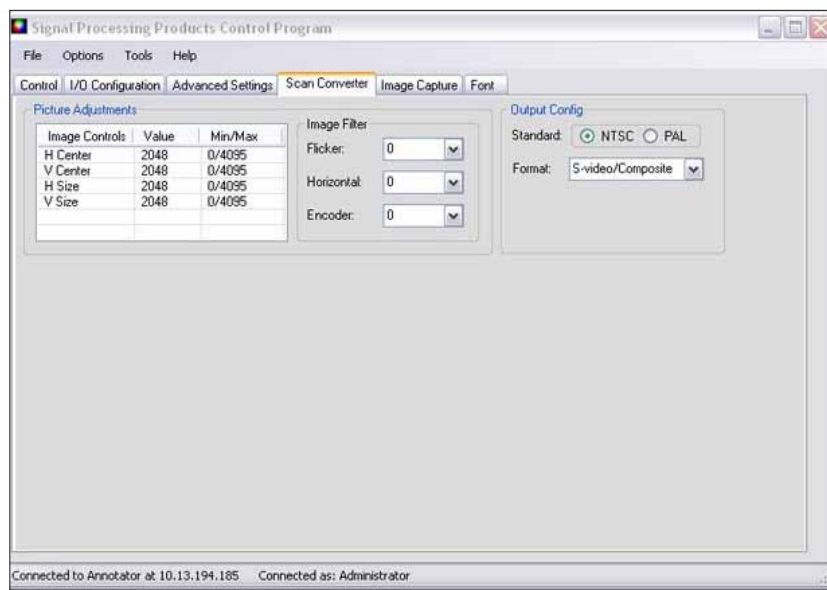
**Figure 39.** The Advanced Settings Tab Screen

- **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.
- **Aspect Ratio** — Aspect ratio mode adjusts the aspect ratio of the output. The available options are **Fill**, which fills the output raster, and **Follow**, which follows the aspect ratio of the selected input signal. Black bars remain on either the top and bottom or the sides. Click the radio button for the desired option (**Fill** or **Follow**).
- **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. In addition, auto memory can be turned on or off, and switch effect can be activated. If using mini twisted pair devices, pre-peaking can be turned on to compensate for long cable runs.
- **On Screen Display** — Within this section selections can be made to how annotation display and cursor display is handled by choosing from each drop-down list. In addition by selecting or deselecting a check box, drop shadow on annotations can be turned on or off.
- **Capture Mode** — These two selectable radio buttons allow a choice of locations for saving Quick Capture captured images to either internal or external memory.
- **Menu** — The menu section allows a choice of display modes (all outputs, program only, preview only, or none) and the display duration, either from 1 to 64 seconds (adjustable in 1 second intervals) or always on. Select as desired.
- **Clock** — In this section the clock display mode can be set or disabled, and the on-screen horizontal and vertical position can be adjusted.

## Scan Converter Tab

**NOTE:** The **Scan Converter** tab appears only if the optional scan converter output board is installed in the Annotator.

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



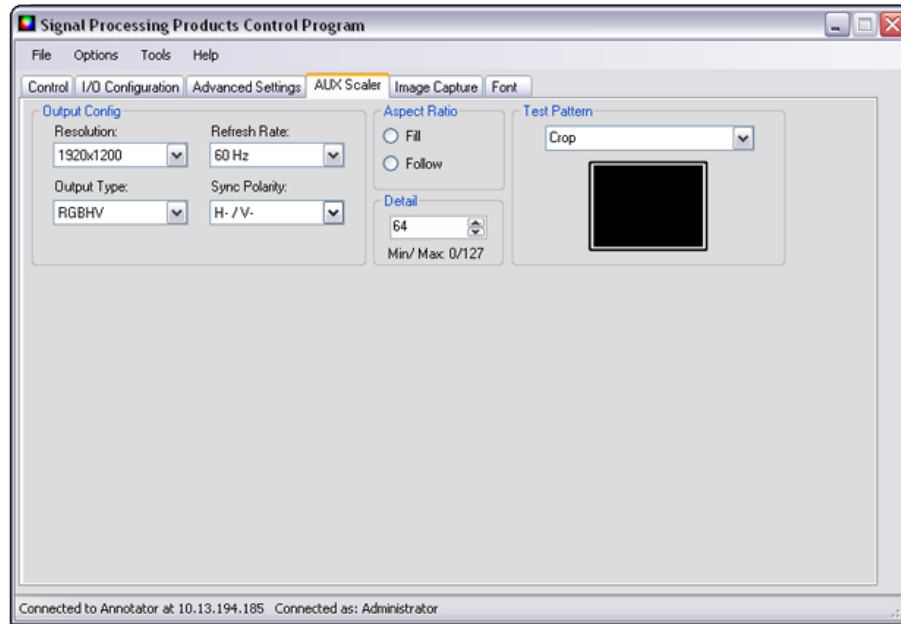
**Figure 40.** The Scan Converter Tab Screen

- **Picture Adjustments** — The Picture Adjustments and Image Filter sections of the **Scan Converter** tab allows 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.
- **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.

## Aux Scaler Tab

**NOTE:** The **Aux Scaler** tab appears only if the optional aux scaler output board is installed in the Annotator.

The **Aux Scaler** tab allows you to view and change the configuration settings of the optional Aux scaler output board.

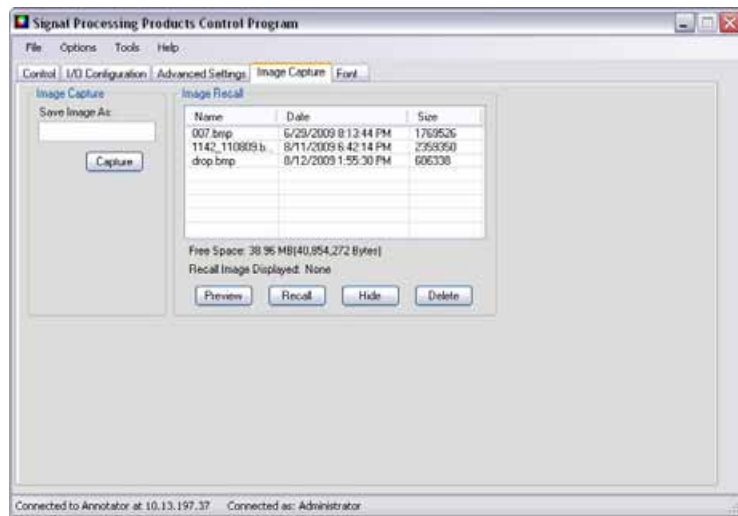


**Figure 41. The Aux Scaler Tab Screen**

- **Output Config** — In this section the resolution, refresh rate, output type, and sync polarity can be set. The refresh rate selection is dependent on the resolution rate chosen. Click on the respective drop-down menu and select the desired option.
- **Aspect Ratio** — From this section, adjustments can be made to the aspect ratio, where the aspect of the main output does not match that of the scaler board output. The available options include **Fill** (fills the output raster) and **Follow** (follows the aspect ratio of the main output). Black bars remain on either the top and bottom or the sides.
- **Detail** — Use this section to adjust the sharpness of the image output of the scaler output board. Click the **Up** and **Down** arrows to incrementally increase or decrease the value, or enter a value (0 to 127) in the value field.
- **Test Pattern** — This option allows for the selection of a test pattern to output to the display device connected to the scaler board output. These test patterns are unique to the scaler board output and do not affect the other outputs of the Annotator. Available test patterns include: **Color bars**, **4 X 4 Crosshatch**, **Grayscale**, **Ramp**, **Alternating Pixels**, and **Crop**. Select a test pattern from the drop-down list. A preview of the selected test pattern appears below the list.

## Image Capture Tab

The **Image Capture** tab allows capturing, saving, recalling, and deletion of displayed images.

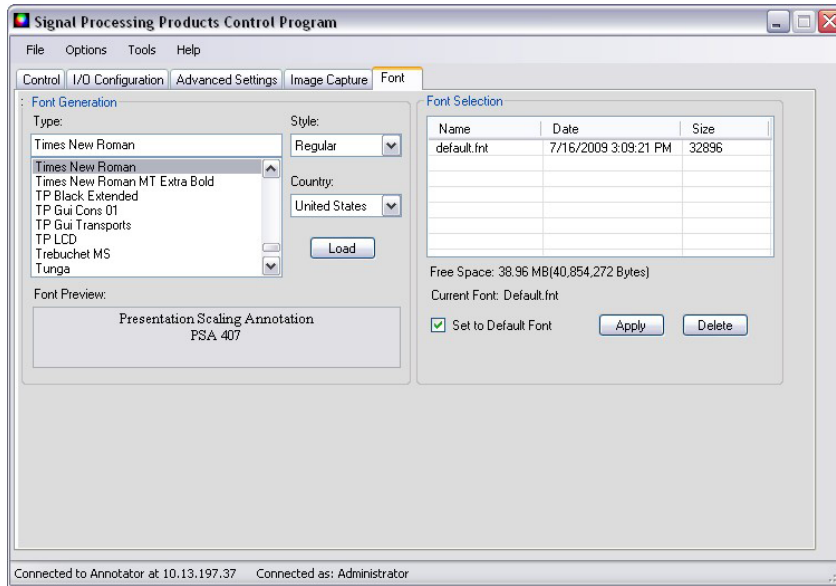


**Figure 42.** The Image Capture Tab Screen

- **Image Capture** — Use this section to capture a displayed image to the Annotator 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, or **Recall** to show the image on a connected display device. In addition, a displayed image can be hidden and a captured image can be deleted within this section.

## Font Tab

The **Font** tab allows generation and selection of font type used by the Annotator.



**Figure 43. The Font Tab Screen**

- **Font Generation** — Use this to generate a font type to use by selecting from the font Type drop-down list and font style (regular or bold). Select the country whose font characters are to be used (United States, France, or Germany) and click **Load**. Enter a file name for the saved font file in the Save As dialog box and click **Save**.
- **Font Selection** — Within this section select a font to use from the list and click **Apply**. If so desired check the Set to Default Font box. To delete a font select it 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 connected, 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.

# HTML Operation

This section describes these default web pages, which are always available and cannot be erased or overwritten. Topics that are covered include:

- [Accessing the Default Web Pages](#)
- [Navigating the Default Web Pages](#)

## Accessing the Default Web Pages

Access the Annotator through the on-board web server pages as follows:

1. Double click the web browser icon on the PC desktop to launch the web browser.
2. Click in the browser's **Address** field.
3. Enter the unit's IP address in the browser's **Address** field.

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

4. To have the browser to display a page other than the default page (such as a custom page that you have created and uploaded), enter a slash (/) and the file name to open.

**NOTE:** The browser **Address** field should display the address in the following format: `xxx.xxx.xxx.xxx/{optional_file_name.html}`  
The following characters are invalid in file names: {space} ~ @ = ' [ ] { } < > ' " ; : | \ and ?.

5. Press the keyboard <Enter key>. The device checks to see if it is password protected. If password protected, the Annotator downloads the **Connect to (IP address)** page. If it is not password protected, proceed to step 7.

**NOTE:** A user name entry is not required.

6. Click in the **Password** field and type in the appropriate administrator or user password.
7. Click **OK**.

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

- Does the address include a specific file name, such as `10.13.156.10/file_name.html`? If so, the Annotator downloads that HTML page.
- Is there a file in the device memory that is named "index.html"? If so, the device downloads "index.html" as the default start-up page.
- If neither of the above conditions is true, the device downloads the factory-installed default start-up page, "nortxe\_index.html", also known as the **System Status** page.



## Navigating the Default Web Pages

The Annotator default web pages include five main tabs or pages (**Status**, **Configuration**, **File Management**, **Control**, and **Images**). These pages can be accessed at any time by clicking on the relevant tab. Some of the main pages have a series of sub-pages, accessible by clicking on the links in the sidebar menu allowing easy navigation of several administrative options including system settings, password control, file management, and device settings.

### Status Tab

The **Status** tab displays the **System Status** page for the Annotator.

#### System Status page

The **System Status** page displays system information (for example, unit name, model, firmware version), IP settings, and serial port settings. It provides immediate system information, power status and serial port settings for the Annotator unit. The page updates itself periodically to reflect the latest status of the Annotator components. If a variable changes, the display shows the change in status the next time it updates.




**Figure 44.** System Status Page

## Configuration Tab

The **Configuration** tab includes pages that allow System settings (such as IP address, date/time, and so forth), scaler settings, and passwords (admin and user), to be configured as desired. Additionally by selecting the Firmware Upgrade link the current firmware can be upgraded. If an optional board such as the Aux Scaler board has been installed a configuration page for the board will also be available.

### System Settings page

The Annotator displays the **System Settings** page when you click on the **Configuration** tab. The screen consists of fields in which you can view and edit IP administration and system date and time settings. See the “Ethernet Connection” section at the end of this guide for basic information about IP addresses and subnetting.



**Figure 45. System Settings 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 “SIS Communication and Control” section) or using the Extron Signal Processing Products Control Program (see the “Signal Processing Products Control Program” section) 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**. Explanations for some of these fields follow.

#### Unit Name

This name field can be changed to any valid name, up to 12 alphanumeric characters.

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

### IP Address

The **IP Address** field contains the IP address of the Annotator. 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:** Editing the Extron IP address while connected via the Ethernet port can immediately disconnect the user from the scaler. Extron recommends editing this field using the RS-232 link and protecting the Ethernet access to this screen by assigning an administrator password to qualified and knowledgeable personnel only.

Edit this field as follows:

1. Click in the device **IP address** field. The graphic cursor becomes a text cursor.
2. Edit the address as desired.
3. Press the <Tab> key on the keyboard or click in another field to exit the **IP Address** field.
4. Click on the **Submit** button to make the address change take effect.

### Gateway IP Address

The **Gateway IP Address** field identifies the address of the gateway to the mail server to be used if the Annotator 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 Annotator is on the same subnet as the controlling PC or the mail server when you are subnetting.

### 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 (Annotator) and cannot be changed.

### Part Number field

This field shows the Annotator part number (60-968-xx) and cannot be changed.

## Date/Time Settings fields

The Date/Time Settings fields provide a location for viewing and setting the time functions.

The screenshot shows a 'Date/Time Settings' dialog box. It has four main sections: 'Date' with dropdowns for month (9), day (14), and year (2009); 'Time' with dropdowns for hour (9), minute (42), and AM/PM; 'Zone' with a dropdown menu showing '(GMT-08:00) Pacific Time (US & Canada), Tijuana'; and 'Daylight Saving' with radio buttons for 'Off', 'USA' (selected), 'Europe', and 'Brazil'. At the bottom right are 'Submit' and 'Cancel' buttons. A 'Local Date/Time' button is located next to the date and time dropdowns.

**Figure 46.** Date/Time Settings fields

Change the date and time settings as follows:

1. Click the desired variable's drop-down 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** 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 savings 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 **Submit** at the bottom of the Date/Time Settings section to implement your selections.

**NOTE:** Click **Cancel** at any point before submitting to exit any field changes. The unit is not updated with those changes. The screen refreshes and shows the current device settings.

## Scaler Settings page

Access the **Scaler Settings** page by clicking the Scaler Settings link on the sidebar menu on the **Configuration** page.

The screenshot shows the 'Scaler Settings' page. On the left is a sidebar with a logo and links: 'System Settings', 'Scaler Settings', 'Passwords', and 'Firmware Upgrade'. The top navigation bar has 'Status', 'Configuration', 'File Management', 'Control', and 'Images'. The main content area is titled 'Scaler Settings' and contains four main sections: 'Input Configuration', 'Output Configuration', 'Advanced Configuration', and 'On Screen Display'. 'Input Configuration' is a table with 7 rows for different input types, each with 'Input', 'Auto Image', and 'Film Mode' settings. 'Output Configuration' includes 'Resolution', 'Refresh Rate', 'Output Sync Format', and 'Output Polarity'. 'Advanced Configuration' includes 'RGB Delay', 'Test Pattern', 'Auto Memories', 'Switch Effect', 'MTP Pre-Peaking', 'Aspect Ratio', and 'EDID'. 'On Screen Display' includes 'Annotation Display', 'Cursor Display', and 'Menu'.

**Figure 47. Scaler Settings Page**

The **Scaler Settings** page displays Input Configuration settings (input signal format, auto image and film mode status), Output Configuration settings (resolution and refresh rates, output sync format, and polarity), Advanced Configuration settings (RGB delay, test pattern selection, auto memory status, aspect ratio mode, switch effect, MTP pre-peaking settings, and EDID resolution and refresh rates), and On Screen Display settings. 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 Annotator 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 list 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, YUVp/HDTV, Auto Detect
- Input 2: RGB, YUVp/HDTV, Auto Detect
- Input 3: RGB, YUVp/HDTV, RGBcvS, YUVi, S-video, Composite, Auto Detect
- Input 4: YUVi, 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.

## 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 various output rates from 640x480/50 Hz to 1920x1200, including HDTV 1080p/60 Hz. For a full table of output rates [see page 20](#).

The 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 the setting up a display device.

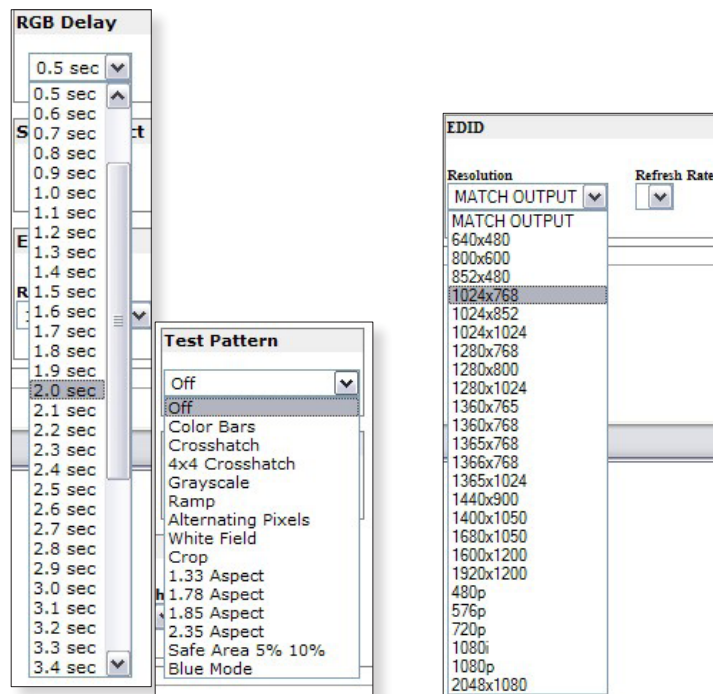
Switch effect can be toggled between **Cut** and **Fade**. The selected effect is seen on the connected display when inputs are switched.

Auto memories can be toggled on or off as desired.

Aspect ratio can be set to either **Fill** or **Follow**.

When using the MTP (mini 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 Annotator 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 48.** RGB Delay, Test Pattern, and EDID Selections

## On Screen Display

Within this section, some aspects of the on screen display can be set. The annotation, cursor display can be set to be seen on all outputs, or where used, either group 1 or group 2 only, or on no outputs at all. The annotation menu display can also be set to be seen on all outputs, or where used, either group 1 or group 2 only, or on no outputs at all. In addition where the menu is to be displayed, the length of time the menu is visible can be set, the range being from 1.0 seconds up to 64.0 seconds (in 1 second steps), or can be set to always on.

## Aux Scaler page

The **Aux Scaler** page, available only if the Aux Scaler board is installed, can be accessed by clicking the Aux Scaler link on the sidebar menu on **Configuration** page.

**Aux Scaler**

**Output Configuration**

Resolution: 1024x768

Refresh Rate: 60Hz

Output Type: RGBHV

Sync Polarity: H- V-

**Aspect Ratio**

☒ Fill ☐ Follow

**Detail**

64 - +

**Test Pattern**

Off

**Figure 49. Aux Scaler Page**

### Output configuration

Depending on display device being used, the resolution and refresh rates can be set to one of various output rates from 640x480/50 Hz to 1920x1200, including HDTV 1080p/60 Hz. For a full table of output rates see page 19.

The 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+.

### Aspect ratio

Aspect ratio can be set to either **Fill** or **Follow** (default).

### Detail

The detail setting can be adjusted for 0 to 127. 64 is the default.

### Test pattern

A test pattern, useful when setting up a display, can be selected for the drop-down list.

**Test Pattern**

Off

Off

Color Bars

4x4 Crosshatch

Grayscale

Ramp

Alternating Pixels

Crop

## Passwords page

Access the **Passwords** page by clicking the Passwords link on the sidebar menu on **Configuration** page.

The screenshot shows the 'Passwords' page within the Extron configuration interface. The top navigation bar includes 'Status', 'Configuration', 'File Management', 'Control', and 'Images'. The 'Configuration' tab is active. On the right, it shows 'Logged on: Admin', 'Log Off', and 'Contact Us'. The left sidebar menu lists 'System Settings', 'Scaler Settings', 'Passwords', and 'Firmware Upgrade', with 'Passwords' selected. The main content area is titled 'Passwords' and contains instructions: 'To update the Administration Password, enter the desired password, repeat the entry, and press 'Submit'. To update the User Password, enter the desired password, repeat the entry, and press 'Submit'. To clear a password, enter a single space, repeat the entry, and press 'Submit'. Minimum password length is 4 characters. Maximum password length is 12 characters. Passwords are case sensitive and special characters are not allowed.' Below the instructions is a form with four input fields: 'Administrator Password', 'Re-enter Admin Password', 'User Password', and 'Re-enter User Password'. At the bottom of the form are 'Submit' and 'Cancel' buttons. The Extron logo and website URL 'www.extron.com' are visible in the bottom left corner of the interface.

**Figure 50. 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.

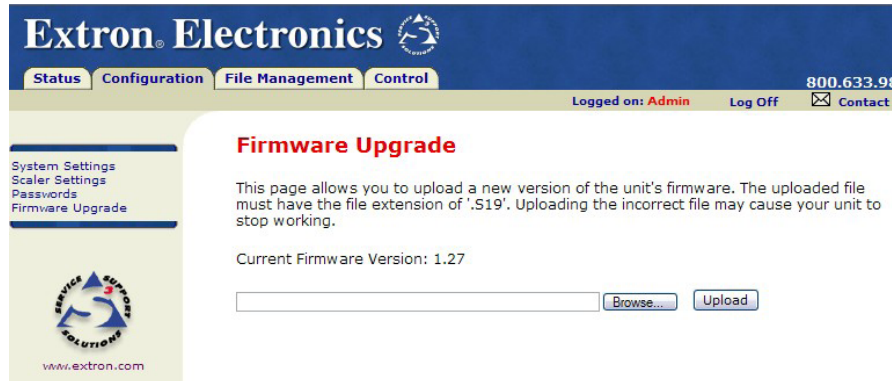
- NOTE:**
- An administrator password must be created before a user password can be created.
  - Some items may not be available or may be viewable only, when logged in as a user.

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.

## Firmware Upgrade page

Access the **Firmware Upgrade** page by clicking the **Passwords** link on the sidebar menu on **Configuration** page.

The **Firmware Upgrade** page provides a way to replace the firmware that is coded on the Annotator control board without taking the processor out of service.

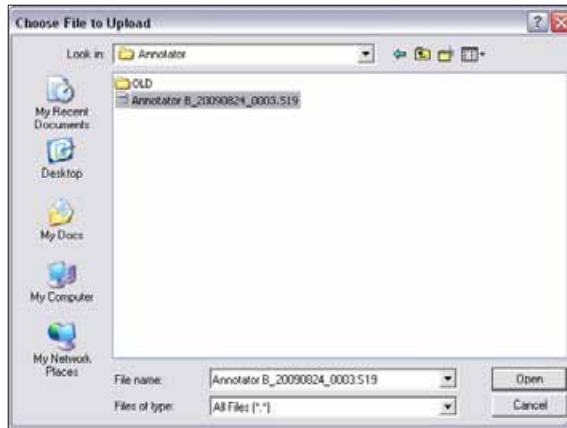


**Figure 51. Firmware Upgrade Page**

**NOTE:** The Firmware Upgrade page is only for replacing the firmware that controls all processor operation. To insert your own HTML pages, see “File Management” later.

Ensure that your PC is connected to the Annotator via the scaler’s Ethernet port. Update the scaler firmware as follows:

1. Visit the Extron website, [www.extron.com](http://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 Annotator 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 Annotator internal web pages.
3. Select the **Configuration** tab.
4. On the Configuration page, click **Firmware Upgrade** on the left sidebar menu.
5. Click **Browse**. A Choose File window opens.
6. Navigate to the folder (created in 1g) where the firmware upgrade file is saved and select the file.



**Figure 52.** Choose File to Upload Window with a Firmware File Selected

- NOTES:**
- Valid firmware files must have the file extension “.S19”. Any other file extension is not a firmware upgrade.
  - The original factory-installed firmware is permanently available on the scaler. If the attempted firmware upload fails for any reason, the scaler automatically reverts to the factory-installed firmware.

7. Click **Open**.
8. 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 Tab

This tab shows the **File Management** page, and allows the user to upload or delete user files (such as HTML pages, or bitmaps) from the Annotator.

To add or update files:

1. Select the **File Management** tab. The File Management screen is displayed.



**Figure 53.** File Management Page

**NOTE:** The files listed above are shown for example only.

2. Click the **Browse** button to locate the file(s) you want to upload.

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

3. Click the **Upload File** button to upload the file.
4. The file is added to the list of files under the Files column. After ten files have been loaded, additional file management pages appears in the page navigation area.

To add a directory:

1. Enter the directory name in the **Dir** field.
2. Click the **Add Dir** button.
3. Click the **Browse** button, and locate your chosen directory.
4. Upload a file to the new directory.

To delete unwanted files:

1. Select the **File Management** tab. The File Management screen is displayed.
2. Find the file you wish to delete under the Files list.
3. Click the **Delete** button of the file to be deleted. If you wish to delete additional files, wait for the screen to refresh before clicking the **Delete** button of the next file.

To delete all files, click **Delete All**. File count reverts to zero and all pages are deleted.

**Display files by file extension** — The Filter by File Extension menu lists the extensions of the uploaded files. The user can choose to display only files with the selected extension. Click **Select All** to display all uploaded files.

## Control Tab

The three pages on the **Control** tab are User Control, Presets, and PIP Setup, and they 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 Presets page, up to 16 memory presets and up to 30 input presets can be saved and recalled.

Using the PIP (picture-in-picture) 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

This page emulates some of the front panel features and displays the current picture control settings and input sampling data. In addition, image muting or unmuting, image freezing or unfreezing and Auto Image can be selected.

**Figure 54.** User Control Page

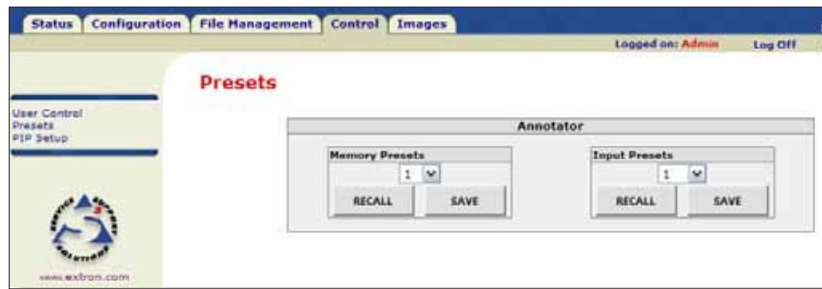
To select an input to be displayed, click on an input number. The selected input is displayed.

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.

## Presets page

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



**Figure 55. Presets Page**

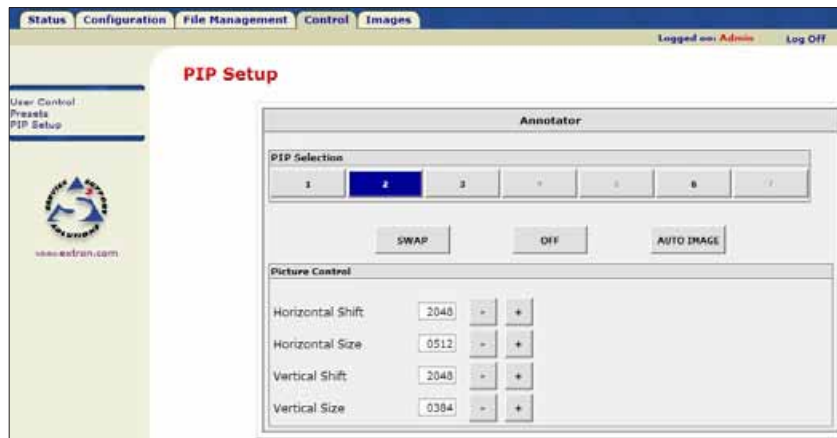
To save the current configuration to a memory or input preset, click on the applicable drop-down box, scroll to the desired preset number and click **Save**.

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 Page

With this page, picture-in-picture setup is possible by selecting the main image and the secondary PIP image inputs.



**Figure 56. PIP Page**

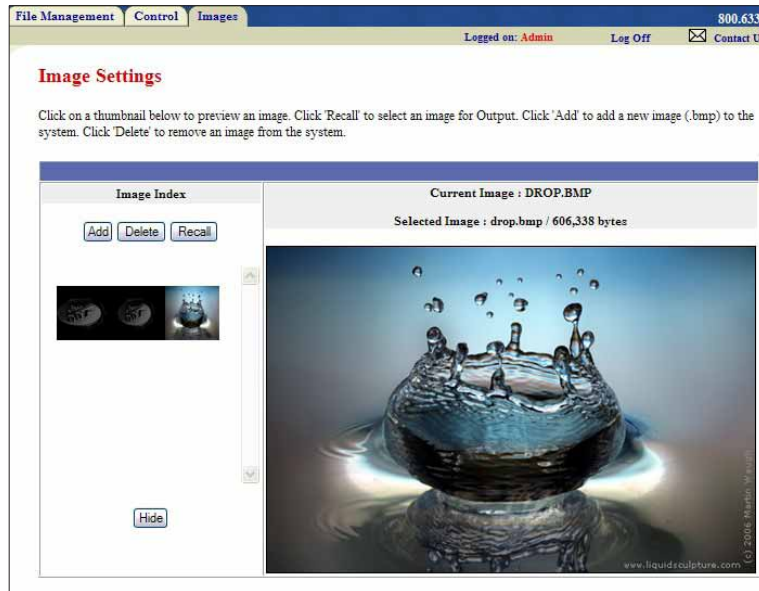
To toggle between two inputs click **Swap**.

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

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

## Images page

This page allows images (.bmp format) to be added to or deleted from the Annotator, previewed, and recalled to be shown on a connected display device.



**Figure 57. 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 Annotator and a thumbnail of the image is viewable on the Images page (see the figure above).

**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 **Recall**. The image is displayed. If no image appears on the display device, check the input selected and image format is correct.

To delete an image click on a thumbnail and then click **Delete**. The image is deleted from the Annotator files.

# Reference Material

This section provides information about:

- [Specifications](#)
- [Part Numbers and Accessories](#)

## 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 video (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*, 480i, 480p, 576i, 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 HD component video (Y, R-Y, B-Y) 1 MTP 1 optional single link DVI-I (for unique scaled output); DVI-D; HD-SDI; or interlaced RGsB, 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 output card with one of the following options: <ul style="list-style-type: none"><li>· 1 female DVI-I (analog and digital, unique scaled output)</li><li>· 1 female DVI-I (digital output)</li><li>· 1 female BNC (HD-SDI output)</li><li>· 3 female BNC (interlaced RGsB, component, S-video, composite video output)</li></ul>
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 <sup>6,8,9</sup> , 800x600 <sup>6,8,9</sup> , 852x480 <sup>6,8,9</sup> , 1024x768 <sup>6,8,9</sup> , 1024x852 <sup>6,8,9</sup> , 1024x1024 <sup>6,8,9</sup> , 1280x768 <sup>6,8,9</sup> , 1280x800 <sup>6,8,9</sup> , 1280x1024 <sup>6,8,9</sup> , 1360x765 <sup>6,8,9</sup> , 1360x768 <sup>6,8,9</sup> , 1365x768 <sup>6,8,9</sup> , 1365x1024 <sup>6,8,9</sup> , 1366x768 <sup>6,8,9</sup> , 1400x1050 <sup>6,8</sup> , 1440x900 <sup>6,8,9</sup> , 1600x1200 <sup>6,8</sup> , 1680x1050 <sup>6,8</sup> , 1920x1200 <sup>6,8</sup> HDTV: 480p <sup>7,8</sup> , 576p <sup>6</sup> , 720p <sup>3,4,5,6,7,8</sup> , 1080i <sup>6,7,8</sup> , 1080p <sup>1,2,3,4,5,6,7,8</sup> , 1080p CVT <sup>8</sup> , 2048x1080 <sup>1,2,3,4,5,6,7,8</sup> SDTV: NTSC, PAL (with optional scan converter output card) <sup>1</sup> = 23.98 Hz, <sup>2</sup> = 24 Hz, <sup>3</sup> = 25 Hz, <sup>4</sup> = 29.97 Hz, <sup>5</sup> = 30 Hz, <sup>6</sup> = 50 Hz, <sup>7</sup> = 59.94 Hz, <sup>8</sup> = 60 Hz, <sup>9</sup> = 75 Hz
Formats.....	For DVI output: RGB and YCbCr digital video

## 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, NTSC 4.43, PAL, SECAM 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, 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 RJ-45 female connector
Ethernet data rate .....	10/100Base-T, half/full duplex with autodetect
Ethernet protocol .....	ARP, ICMP (ping), IP, TCP, UDP, DHCP, HTTP, SMTP, Telnet
Ethernet default settings .....	Link speed and duplex level = autodetected IP address = 192.168.254.254 Subnet mask = 255.255.0.0 Gateway = 0.0.0.0 DHCP = off

Web server.....	Up to 200 simultaneous sessions 40 MB nonvolatile user memory
Program control .....	Extron control/configuration program for Windows® Extron Simple Instruction Set (SIS™) Microsoft® Internet Explorer®, Telnet

### Control/remote — annotation

Number/signal type .....	20 USB devices (via hubs) 2 serial devices 1 PS/2 mouse 1 PS/2 keyboard
Connectors .....	2 USB type A 2 RS-232, female 9-pin D (shared with standard control) 2 female PS/2

### General

Power supply.....	Internal Input: 100-240 VAC, 50-60 Hz
Power consumption .....	30 watts
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, vented on sides and top
Thermal dissipation .....	97 BTU/hr
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

Description	Part Number
Annotator	60-968-xx
Rubber feet (not attached) (4)	
IEC power cord (1)	
Extron Software Products DVD	
Setup guide	

### Cables

The cable listed below is for front panel RS-232 use.

Description	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](http://www.extron.com) for a comprehensive list.

### Optional Parts

These items can be ordered separately:

Description	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
Aux Scaler output board	70-832-01

# Ethernet Connection

This section describes connection to the Ethernet.

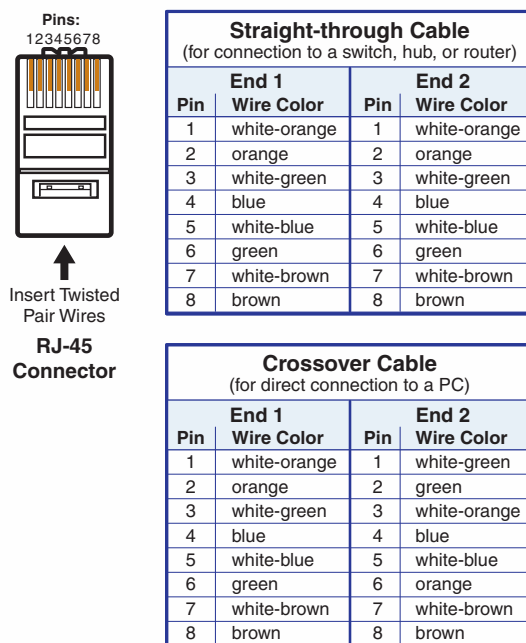
## Ethernet Link

The rear panel Ethernet connector on the Annotator can be connected to an Ethernet LAN or WAN. This connection makes SIS or software 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.

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



**Figure 58. RJ-45 Connector Pinout Tables**

## Default Address

To access the Annotator 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 Annotator.

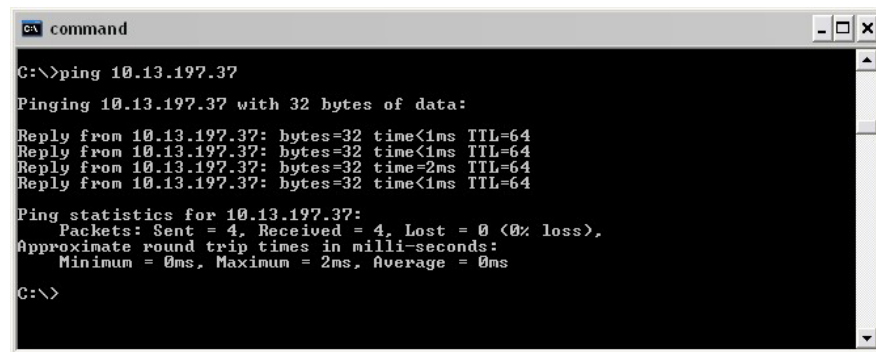
## Ping to determine Extron IP address

The ping utility is available at the command (Cmd) prompt. Ping tests the Ethernet interface between the computer and the Annotator. 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` (for example, `10.13.197.37`). The computer returns a display similar to the figure below.

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 59.** 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 above, 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 command prompt. Telnet allows you to input SIS commands to the Annotator from the PC via the Ethernet link and the LAN.

Access the 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 command window opens.

4. At the prompt, enter `Telnet`. The computer returns a display similar to the figure below.



**Figure 60.** Telnet Screen

## Telnet Tips

It is not the intention of this manual to detail all of the operations and functionality of Telnet; however, some basic level of understanding is necessary for operating the Annotator via Telnet.

Connecting to the Annotator (Open command)

You connect to the Annotator 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 Annotator.

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 the from the Annotator.

## Escape character and Esc key

When Telnet is first started, the utility advises that the Escape character is `<Ctrl> +<I>`. 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 `<I>` key pressed simultaneously. Pressing these keys displays the Telnet prompt while leaving the connection to the Annotator intact.

The Escape key is the `<Esc>` key on the computer keyboard.

## Local echo

Once your computer is connected to the Annotator, 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: **1\*1\*1!01Out01 In01 All** where **1\*1\*1!** 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.

Local echo can be turned off by entering `unset local_echo` at the Telnet prompt. If your computer is connected to the Annotator, and you need to access the Telnet prompt to turn local echo off, enter the escape sequence (Ctrl + J).

## Setting carriage return-line feed

Unless commanded otherwise, Telnet transmits a line feed character only (no carriage return) to the connected processor when you press the <Enter> key. This is the correct setting for SIS communication with the processor. The Telnet `set crlf` command forces Telnet to transmit carriage return and line feed characters when <Enter> is pressed; however, if `crlf` is set, the SIS link with the processor does not function properly.

## Closing the link to the processor

To close the link to the processor, access the Telnet prompt by entering the escape sequence (<Ctrl> + <J>). At the Telnet prompt, enter `close`.

## Help

For Telnet command definitions, enter `?` at the Telnet prompt.

## Exiting Telnet (Quit command)

Exit the Telnet utility by entering `quit` at the Telnet prompt. If you are connected to the Annotator, access the Telnet prompt by entering the escape sequence (<Ctrl> + <J>).

# Subnetting Basics

A subnet is a subset of a network — a set of IP devices that have portions of their IP addresses in common. It is not the purpose of this manual to describe TCP/IP protocol in detail. However, some understanding of TCP/IP subnetting is necessary in order to understand the interaction of the Annotator and the mail server gateway. To understand subnetting at the level required to install and operate the Annotator, you must understand the concepts of a gateway, local and remote devices, IP addresses and octets, and subnet masks and octets.

## Gateways

The Annotator can communicate with the e-mail server that it uses for e-mail notification directly (if they are on the same subnet), or the communication can be routed via a gateway (a computer that provides a link between different subnets).

## Local and remote devices

The local and remote devices are defined from the point of view of the function being described. In this manual, subnetting is an issue when you are using the controlling PC to set TCP/IP values in the Annotator.

### IP addresses and octets

Valid IP addresses consist of four 1-, 2-, or 3-digit numeric subfields, properly called octets, which are separated by dots (periods) (figure 61). Each octet can be numbered from 000 through 255. Leading zeros, up to 3 digits total per octet, are optional. Values of 256 and above are invalid.

Typical IP Address: 192,168,254,254  
Octets

Figure 61. IP Address and Octets

### Subnet masks and octets

The subnet mask (figure 62) 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.

255 indicates that this octet will be compared between two IP addresses.      0 indicates that this octet will **not** be compared between two IP addresses.

Typical Subnet Mask: 255,255,0,0  
Octets

Figure 62. 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 63 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 the figure below).
- 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 the figure below).

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

If the two unmasked fields do not match (indicated by an unequal sign in the figure below, 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 — <b>Match</b> (Same subnet)	≠.X.X — <b>No match</b> (Different subnet)	≠.X.X — <b>No match</b> (Different subnet)

Figure 63. 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:

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1001 East Ball Road  
Anaheim, CA 92805  
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Chiyoda-ku, Tokyo 102-0082  
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3825 PH Amersfoort  
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Songjiang District  
Shanghai 201611  
China

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135 Joo Seng Road, #04-01  
PM Industrial Bldg.  
Singapore 368363  
Singapore

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F12, PO Box 293666  
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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 if modifications were made to the product that were not authorized by Extron.

**NOTE:** If a product is defective, please call Extron and ask for an Application Engineer to receive an RA (Return Authorization) number. This will begin the repair process.

**USA:** (714) 491-1500

**Asia:** +65.6383.4400

**Europe:** +31.33.453.4040

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