

User Guide

Streaming AV Product

SMP 300 Series

Streaming Media Processor



Extron

Safety Instructions

Safety Instructions • English

WARNING: This symbol, , when used on the product, 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.

ATTENTION: This symbol, , when used on the product, is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

For information on safety guidelines, regulatory compliances, EMI/EMF compatibility, accessibility, and related topics, see the Extron Safety and Regulatory Compliance Guide, part number 68-290-01, on the Extron website, www.extron.com.

تعليمات السلامة • العربية

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Sicherheitsanweisungen • Deutsch

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

Weitere Informationen über die Sicherheitsrichtlinien, Produkthandhabung, EMI/EMF-Kompatibilität, Zugänglichkeit und verwandte Themen finden Sie in den Extron-Richtlinien für Sicherheit und Handhabung (Artikelnummer 68-290-01) auf der Extron-Website, www.extron.com.

Instrucciones de seguridad • Español

ADVERTENCIA: Este símbolo, , cuando se utiliza en el producto, avisa al usuario de la presencia de voltaje peligroso sin aislar dentro del producto, lo que puede representar un riesgo de descarga eléctrica.

ATENCIÓN: Este símbolo, , cuando se utiliza en el producto, avisa al usuario de la presencia de importantes instrucciones de uso y mantenimiento estas están incluidas en la documentación proporcionada con el equipo.

Para obtener información sobre directrices de seguridad, cumplimiento de normativas, compatibilidad electromagnética, accesibilidad y temas relacionados, consulte la Guía de cumplimiento de normativas y seguridad de Extron, referencia 68-290-01, en el sitio Web de Extron, www.extron.com.

Instructions de sécurité • Français

AVERTISSEMENT : Ce pictogramme, , lorsqu'il est utilisé sur le produit, signale à l'utilisateur la présence à l'intérieur du boîtier du produit d'une tension électrique dangereuse susceptible de provoquer un choc électrique.

ATTENTION : Ce pictogramme, , lorsqu'il est utilisé sur le produit, signale à l'utilisateur des instructions d'utilisation ou de maintenance importantes qui se trouvent dans la documentation fournie avec l'équipement.

Pour en savoir plus sur les règles de sécurité, la conformité à la réglementation, la compatibilité EMI/EMF, l'accessibilité, et autres sujets connexes, lisez les informations de sécurité et de conformité Extron, réf. 68-290-01, sur le site Extron, www.extron.com.

Istruzioni di sicurezza • Italiano

AVVERTENZA: Il simbolo, , se usato sul prodotto, serve ad avvertire l'utente della presenza di tensione non isolata pericolosa all'interno del contenitore del prodotto che può costituire un rischio di scosse elettriche.

ATTENZIONE: Il simbolo, , se usato sul prodotto, serve ad avvertire l'utente della presenza di importanti istruzioni di funzionamento e manutenzione nella documentazione fornita con l'apparecchio.

Per informazioni su parametri di sicurezza, conformità alle normative, compatibilità EMI/EMF, accessibilità e argomenti simili, fare riferimento alla Guida alla conformità normativa e di sicurezza di Extron, cod. articolo 68-290-01, sul sito web di Extron, www.extron.com.

Instrukcje bezpieczeństwa • Polska

OSTRZEŻENIE: Ten symbol, , gdy używany na produkcie, ma na celu poinformować użytkownika o obecności izolowanego i niebezpiecznego napięcia wewnętrz obudowy produktu, który może stanowić zagrożenie porażenia prądem elektrycznym.

UWAGI: Ten symbol, , gdy używany na produkcie, jest przeznaczony do ostrzegania użytkownika ważne operacyjne oraz instrukcje konserwacji (obsługi) w literaturze, wyposażone w sprzęt.

Informacji na temat wytycznych w sprawie bezpieczeństwa, regulacji wzajemnej zgodności, zgodność EMI/EMF, dostępności i Tematy pokrewne, zobacz Extron bezpieczeństwa i regulacyjnego zgodności przewodnik, część numer 68-290-01, na stronie internetowej Extron, www.extron.com.

Инструкция по технике безопасности • Русский

ПРЕДУПРЕЖДЕНИЕ: Данный символ, , если указан на продукте, предупреждает пользователя о наличии неизолированного опасного напряжения внутри корпуса продукта, которое может привести к поражению электрическим током.

ВНИМАНИЕ: Данный символ, , если указан на продукте, предупреждает пользователя о наличии важных инструкций по эксплуатации и обслуживанию в руководстве, прилагаемом к данному оборудованию.

Для получения информации о правилах техники безопасности, соблюдении нормативных требований, электромагнитной совместимости (ЭМП/ЭДС), возможности доступа и других вопросах см. руководство по безопасности и соблюдению нормативных требований Extron на сайте Extron: , www.extron.com, номер по каталогу - 68-290-01.

安全说明 • 简体中文

警告:  产品上的这个标志意在警告用户，该产品机壳内有暴露的危险电压，有触电危险。

注意:  产品上的这个标志意在提示用户，设备随附的用户手册中有重要的操作和维护(维修)说明。

关于我们产品的安全指南、遵循的规范、EMI/EMF 的兼容性、无障碍使用的特性等相关内容，敬请访问 Extron 网站，www.extron.com，参见 Extron 安全规范指南，产品编号 68-290-01。

安全記事 • 繁體中文

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注意:  若產品上使用此符號，是為了提醒使用者，設備隨附的用戶手冊中有重要的操作和維護(維修)說明。

有關安全性指導方針、法規遵守、EMI/EMF 相容性、存取範圍和相關主題的詳細資訊，請瀏覽 Extron 網站：www.extron.com，然後參閱《Extron 安全性與法規遵守手冊》，準則編號 68-290-01。

安全上のご注意 • 日本語

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安全上のご注意、法規厳守、EMI/EMF適合性、その他の関連項目については、エクストロンのウェブサイト www.extron.com より『Extron Safety and Regulatory Compliance Guide』(P/N 68-290-01) をご覧ください。

안전 지침 • 한국어

경고: 이 기호  가 제품에 사용될 경우, 제품의 인클로저 내에 있는 접지되지 않은 위험한 전류로 인해 사용자가 감전될 위험이 있음을 경고합니다.

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안전 가이드라인, 규제 준수, EMI/EMF 호환성, 접근성, 그리고 관련 항목에 대한 자세한 내용은 Extron 웹 사이트(www.extron.com)의 Extron 안전 및 규제 준수 안내서, 68-290-01 조항을 참조하십시오.

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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. The Class A limits 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 interference. This interference must be corrected at the expense of the user.

NOTE: For more information on safety guidelines, regulatory compliances, EMI/EMF compatibility, accessibility, and related topics, see the [Extron Safety and Regulatory Compliance Guide](#) on the Extron website.

Battery Notice

This product contains a battery. **Do not open the unit to replace the battery.** If the battery needs replacing, return the entire unit to Extron (for the correct address, see the Extron Warranty section on the last page of this guide).

CAUTION: Risk of explosion. Do not replace the battery with an incorrect type.
Dispose of used batteries according to the instructions.

ATTENTION : Risque d'explosion. Ne pas remplacer la pile par le mauvais type de pile. Débarrassez-vous des piles usagées selon le mode d'emploi.

VCCI-A Notice

この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると、電波妨害を引き起こすことがあります。その場合には使用者が適切な対策を講ずるよう要求されることがあります。

VCCI-A

Conventions Used in this Guide

Notifications

The following notifications are used in this guide:

ATTENTION:

- Risk of property damage.
- Risque de dommages matériels.

NOTE: A note draws attention to important information.

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

Software Commands

Commands are written in the fonts shown here:

```
^AR Merge Scene,,0p1 scene 1,1 ^B 51 ^W^C.0
[01] R 0004 00300 00400 00800 00600 [02] 35 [17] [03]
Esc X1 * X17 * X20 * X23 * X21 CE ←
```

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

Specifications Availability

Product specifications are available on the Extron website, www.extron.com.

Extron Glossary of Terms

A glossary of terms is available at <http://www.extron.com/technology/glossary.aspx>.



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Introduction

This section gives an overview of the user guide and describes the SMP 300 Series and its features. Topics that are covered include:

- [About this Guide](#)
- [About the SMP 300 Series](#)
- [PC Requirements](#)
- [Licensed Third-party Software](#)
- [Extron LinkLicense](#)
- [General Product Overview](#)
- [Features](#)

About this Guide

This guide contains installation, configuration, and operating information for the SMP 351, SMP 351 3G-SDI, SMP 352, and SMP 352 3G-SDI. In this guide:

- “SMP 300 Series”, “SMP models”, or “the SMP” refer to the SMP 351, SMP 351 3G-SDI, SMP 352, SMP 352 3G-SDI models.
- “Codec” refers to the H.264 / MPEG-4 AVC codec.
- “Stream” can refer to audio, video, or both that is transmitted by the SMP.
- “UI” and “web UI” refer to the web-based User Interface.

About the SMP 300 Series

The Extron SMP 300 Series is a compact, high performance H.264 recording and streaming processor that provides the ability to record a presentation and output an HDMI signal to a local display, and, if needed, stream the AV content live while recording.

Six versions of the SMP models, with varying internal file storage capacity, are available:

- SMP 351 (150 GB and 480 GB)
- SMP 351 3G-SDI (150 GB and 480 GB)
- SMP 352 (480 GB)
- SMP 352 3G-SDI (480 GB)

NOTE: The SMP models have similar front and rear panel features and function exactly the same. The SMP 351 3G-SDI and SMP 352 3G-SDI support a 3G-SDI video input.

Figure 1 on page 2 shows an SMP 351 application that utilizes Channel A HDMI and an audio loop-out for local display of the computer input. The presentation is then streamed to an SMD 101.

Figure 2 on page 2 shows a typical SMP 352 application featuring a computer input with embedded audio, an SDI camera input, and a wireless microphone for audio. The presentation is streamed to a SMD 101 and the SMP 352 records both channels and publishes to the Kaltura cloud hosted service. The SMP 351 models can be upgraded to support SMP 352 features through a LinkLicense upgrade.

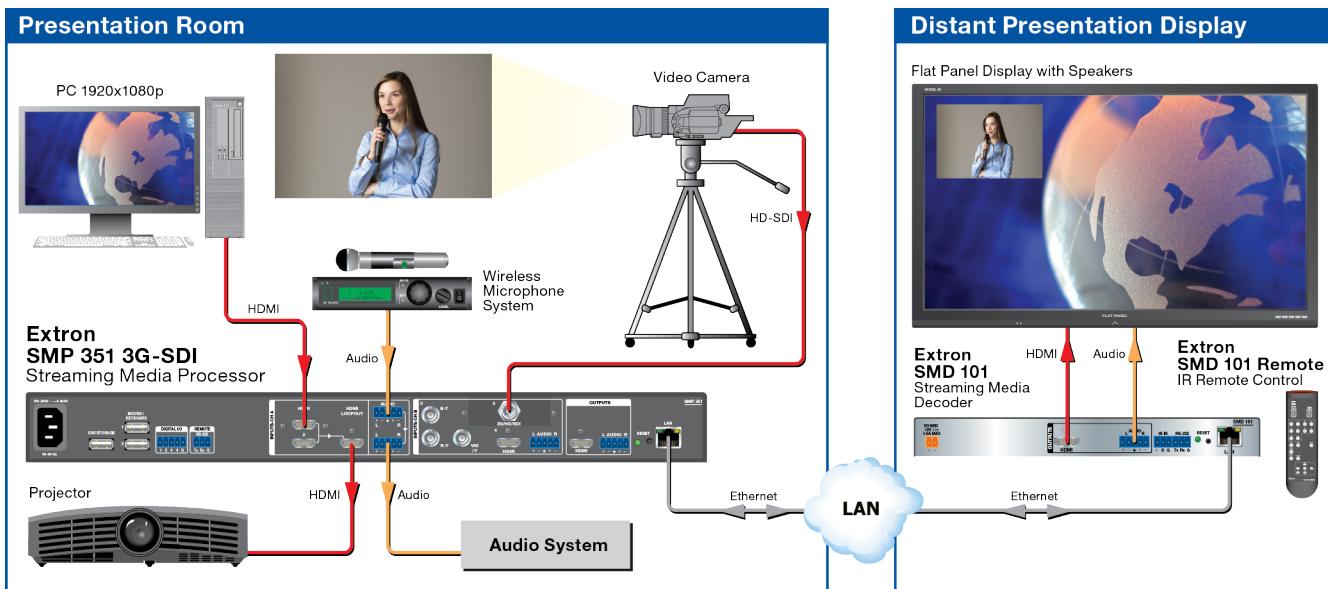


Figure 1. Typical SMP 351 Application

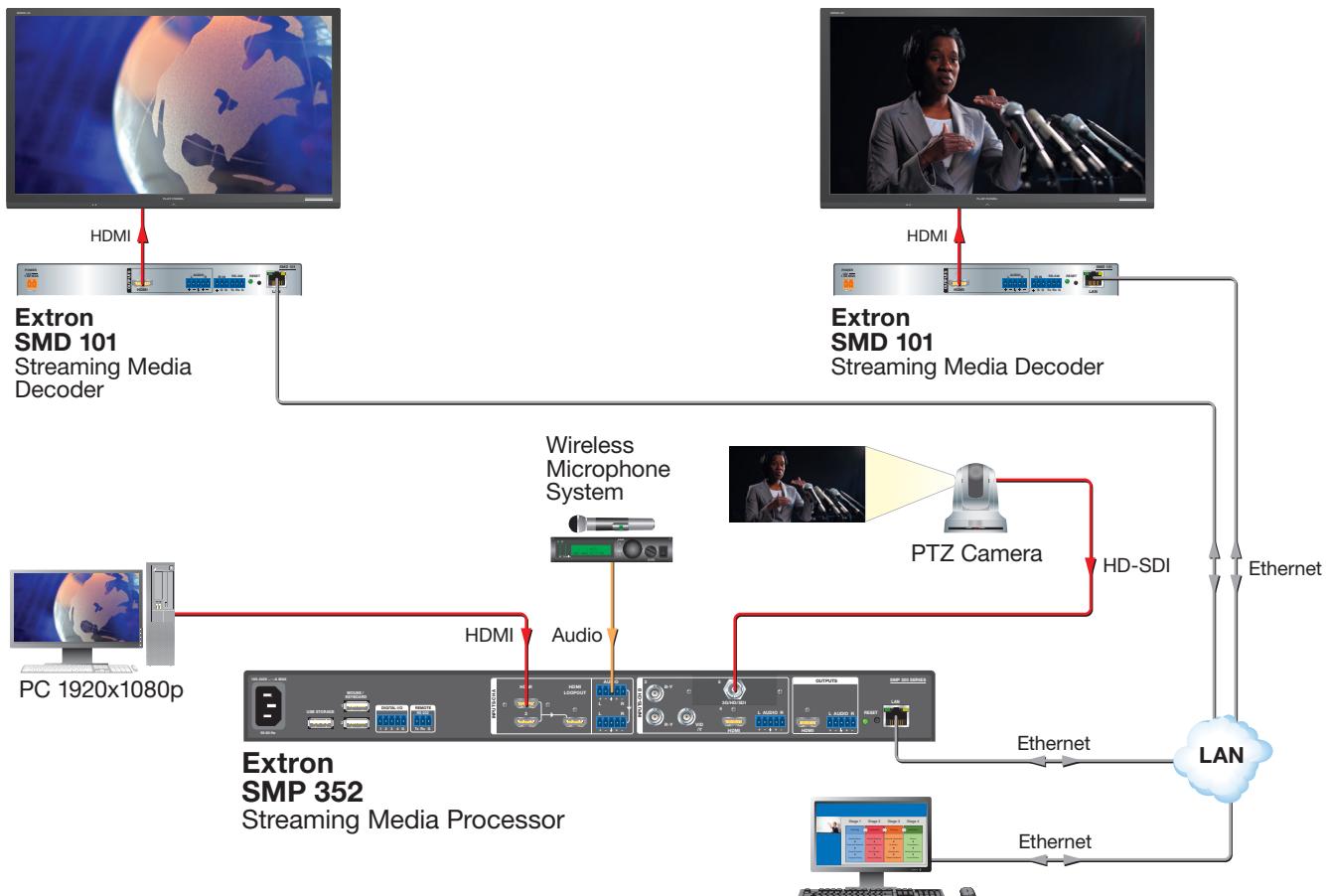


Figure 2. Typical SMP 352 Application

PC Requirements

The PC requirements to access the default web pages of the SMP are listed below.

- **Hardware**
 - 2.0 GHz dual-core processor
- **Operating Systems**
 - Microsoft® Windows® XP or higher
 - Mac® OS® X® 10.6 or higher
- **Web Browsers**

NOTE: The preview video in the AV Controls panel of the SMP uses an HTML5 player and is not supported by Microsoft Edge™ or Apple® Safari®. To see a preview of the current stream either:

- Use a different browser or
- Open a standalone, third-party video player (such as VideoLAN opensource VLC media player) and connect to the stream from the SMP.

- Google® Chrome™ version 48 or higher
- Mozilla® Firefox® version 44 or higher
- Microsoft Edge™
- Apple® Safari® version 9 or higher (for macOS® operating systems)

NOTE: Safari is the preferred browser for macOS operating systems.

- Additionally, the device web UI is compliant, but not fully featured, with the internal browser client: **QTWeb v4.x**

Extron LinkLicense

An Extron LinkLicense unlocks features that add convenience, expand system options, and enhance the capabilities of Extron products. Each LinkLicense can be purchased separately from the SMP and activated as the need arises.

LinkLicense upgrades available for the SMP 300 Series include the following:

- **Dual Recording Upgrade** — This LinkLicense upgrades an SMP 351 or SMP 351 3G-SDI into the corresponding SMP 352 model.
 - This license is enabled once and lasts for the life of the product.
 - Enables the SMP 351 to create independent recordings and two streams from two different video sources. The upgrade provides independent archive and confidence stream settings for each channel. Users have the choice of creating a single layout for simultaneous streaming and recording (composite recording mode) or enabling the dual recording feature to create synchronized recordings and streams with the two video channels (dual channel mode).
 - Unlocks advanced audio DSP capabilities for channel B dual mono inputs, bass and treble controls, filtering, and dynamics.
 - Enables streaming presets that increase functionality and provide a simplified workflow.
- **Enhanced Kaltura Features Upgrade** —
 - An annually-renewable support license.
 - Enables the ability to schedule recordings directly from Kaltura.
 - Enables the unit to stream live media to Kaltura using RTMP.

- **Horizontal Video Mirroring Upgrade —**
 - Enables the feature that flips the video horizontally before the encoding, allowing a presenter to stand behind a glass marker board and face the camera, while writing on the board. The image is flipped to allow the writing to be displayed correctly.
 - Enables the user to adjust the minimum available recording time.
 - Enables the user to set a delay to start recording after the record command is issued.
- **Enhanced Panopto Features Upgrade —**
 - An annually-renewable support license.
 - Enables the ability to schedule recordings directly from Panopto.
 - Enables the unit to stream live media to Panopto using RTMP or RTMPS.

For more information on each LinkLicense, see the *SMP 300 Series Embedded Web Pages Help File*.

Licensed Third-party Software

The following table lists the licensed third-party software used by the SMP models.

NOTE: Licensed third-party software used by the SMP models is subject to change without notice.

Licensed Third-party Software Used in the SMP 300 Series			
Package	License	Package	License
ExtJS 4	Sencha Commercial License	logrotate	GPLv2
alsa-lib	GPLv2.1	lshw	GPLv2
alsa-utils	GPLv2	lsof	lsof license
aufs2-util	GPLv2	ltrace	GPLv2
aws-sdk-cpp	GPLv2	lua	MIT
busybox	GPLv2	luabitop	MIT
bzip2	bzip2 license	lua-cjson	MIT
cjson	MIT	luacrypto	MIT
cracklib	LGPLv2.1	luaexpat	MIT
dbus	AFLv2.1 or GPLv2	luaposix	MIT
dosfstools	GPLv2	luasocket	MIT
e2fsprogs	GPLv2, libuuid BSD-3c, libss and libet MIT-like with advertising clause	luastruct	MIT
ethtool	GPLv2	lvm2	GPLv2 LGPLv2.1
eudev	GPLv2	lzo	GPLv2
eventlog	BSD-3c	mtd	GPLv2
expat	MIT	mxml	LGPLv2 with exceptions
fbset	GPLv2	ncurses	MIT with advertising clause
file	BSD-2c, one file BSD-4c, one file BSD-3c	neon	LGPLv2 (library), GPLv2 (manual and tests)
flex	FLEX	netcat	GPLv2
fontconfig	fontconfig license	netsnmp	Various BSD-like

Licensed Third-party Software Used in the SMP 300 Series			
Package	License	Package	License
freetype	Dual FTL/GPLv2	nfs-utils	GPLv2
gnupg	GPLv2	nginx	BSD-2c
heirloom-mailx	BSD-4c, Bellcore (base64), OpenVision (imap_gssapi), RSA Data Security (md5), Network Working Group (hmac), MPLv1.1 (nss)	nmap	GPLv2
i2c-tools	GPLv2, GPLv2 (py-smbus)	ntp	ntp license
ifplugd	GPLv2	openssh	BSD-3c, BSD-2c, Public Domain
iostat	GPL	openssl	OpenSSL or SSLeay
iproute2	GPLv2	pcre	BSD-3c
iptables	GPLv2	popt	MIT
jpeg-turbo	jpeg-license (BSD-3c-like)	procps	GPLv2, libproc and libps LGPLv2
kmod	LGPLv2.1	psmisc	GPLv2
libassuan	LGPLv2.1 (Library only)	pv	Artistic-2.0
libcgicc	LGPLv2.1	cJSON	LGPLv2.1
libcurl	ISC	qt	LGPLv2.1 with exceptions
libdaemon	LGPLv2.1	qwt	Unknown
libdnet	BSD-3c	rapidjson	MIT
libelf	LGPLv2	rpcbind	BSD-3c
libevent	BSD-3c, OpenBSD	smartmontools	GPLv2
libfcgi	fcgi license	socat	GPLv2
libffi	MIT	spawn-fcgi	BSD-3c
libglib2	LGPLv2	sqlite	Public domain
libgpg-error	LGPLv2.1	strace	BSD-3c
libgpgme	LGPLv2.1	syslog-ng	LGPLv2.1 (syslog-ng core), GPLv2 (modules)
libpcap	BSD-3c	sysstat	GPLv2
libpng	libpng license	tcpdump	BSD-3c
libssh2	BSD	tzdata	Public domain
libtirpc	BSD-3c	usbutils	GPLv2
libusb	LGPLv2.1	util-linux	GPLv2, BSD-4c, libblkid and libmount LGPLv2.1, libuuid BSD-3c
libv4l	Unknown	vsftpd	GPLv2
libxml2	MIT	xinetd	xinetd license
Linux-PAM	BSD-3c	zlib	zlib license
lm-sensors	libsensors LGPLv2.1, programs GPLv2		

General Product Overview

Input

The **SMP 300 Series** can accept up to three HDMI inputs and one component or composite video input. The **SMP 351 3G-SDI** and **SMP 352 3G-SDI** are identical to the SMP 351 and SMP 352 with the addition of the 3G/HD/SDI input (input 5). All models accept digital audio embedded on HDMI signals or analog audio input via captive screw connectors.

- Input 1 (HDMI) and input 2 (HDMI) are grouped as channel A.
- Input 3 (component or composite video), input 4 (HDMI), and optional input 5 (3G/HD/SDI) are grouped as channel B.
- One video and one audio input can be selected and active per input channel.

With firmware v3.04 or higher, two additional virtual inputs are available, allowing the SMP to record up to four inputs. A virtual input must be selected before recording starts and cannot be changed until the recording is completed (see the *SMP 300 Series Embedded Web Pages Help File* to configure the virtual inputs).

NOTES:

- The SMP accepts up to two RTSP or Push ES/RTP multicast streams. It records the two virtual inputs at its native resolution into m4v/mp4 files, and allows re-streaming. In Dual channel mode, the SMP can record up to 4 files plus an audio-only file.
- The SMP does not decode and composite virtual inputs into a layout.
- For this initial release of the virtual inputs, the SMP cannot connect to a virtual input stream that requires password authentication.
- Once the virtual input is turned on, the SMP connects with the incoming streams. The virtual input status can be monitored from the web UI.
- Some RTSP IP camera streams do not include RTCP packets and its packet received or dropped status is always shown as zero on web UI.

Encoding and Output

The SMP models support multiple simultaneous stream encoders. Additionally, the SMP 352 supports channel A and channel B archive streaming. Each can have a different resolution, frame rate, bit rate, and independent streaming protocol methods. The output defaults to both record and stream the selected input.

- **Archive** (channel A and channel B in dual channel mode) — Highest quality for both recording and streaming.
 - Channel A default: Pull, unicast RTP/UDP
 - Channel B default: Not enabled
- **Confidence** — For streaming only (default: Pull, unicast RTP/UDP).

In composite mode, signals from the two input channels, a background image, and metadata (descriptive information about data content) are combined in a user-configurable layout and encoded into streams. The SMP 300 Series has two encoding types (see **Encoding & Layout** on page 81). The SMP can encode on archive encoding mode for high quality streams (for recording and optional live streaming), and on Confidence encoding mode for lower resolution streams (for preview within its embedded web pages and optional live streaming). The video output can be scaled and its aspect ratio modified. The SMP 300 Series also outputs high quality encoded HDMI video with embedded audio on a single output for display on any HDMI display, supporting resolutions up to 1920x1080 at 60 Hz.

NOTE: Signal flow for both channel A and channel B can be followed from input to output in the block diagram in **figure 3** on page 7.

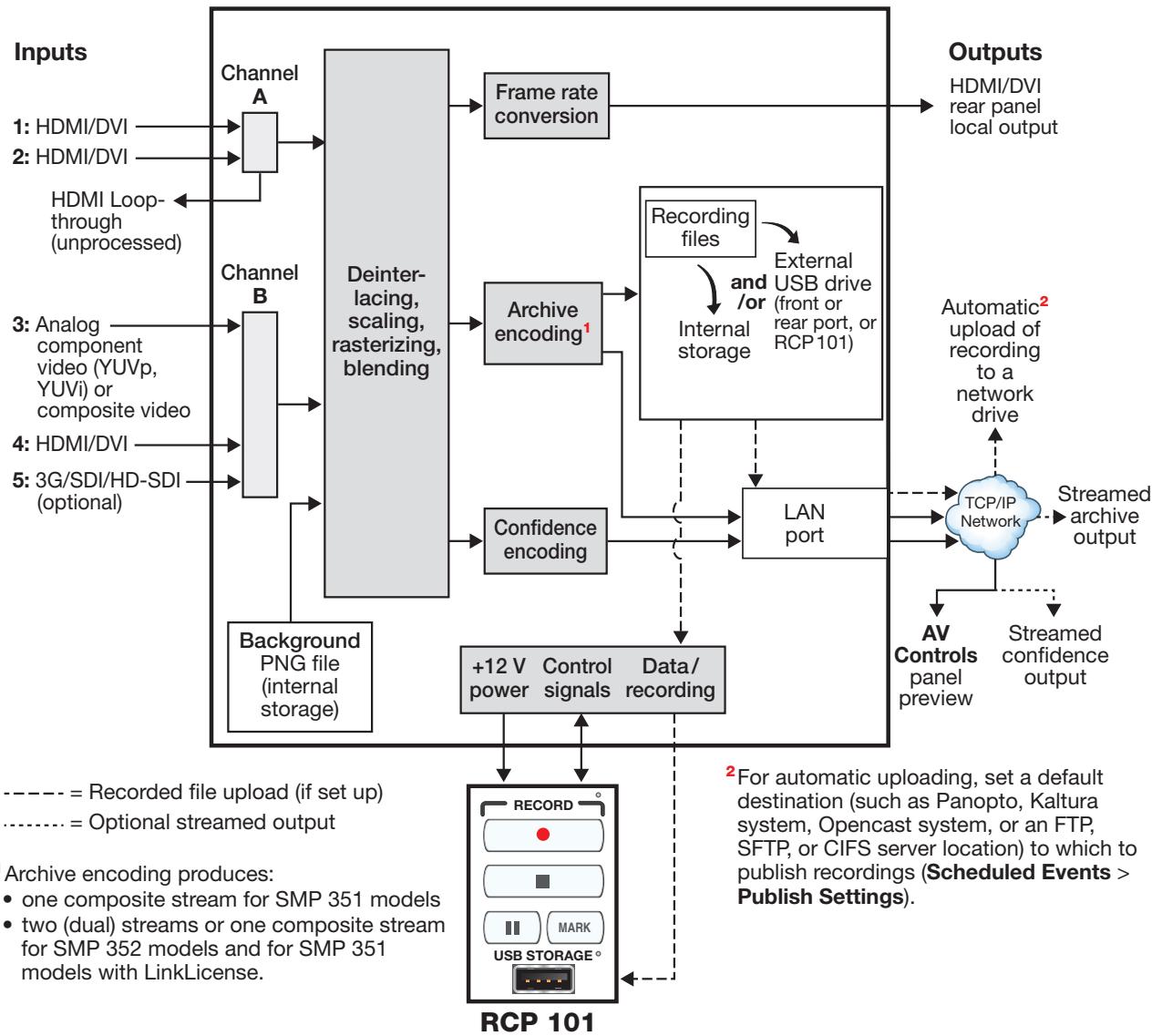


Figure 3. SMP 300 Series Block Diagram

File Storage

Internal storage is available for storing background image files and recordings to be uploaded to a file server. Some models have 150 GB internal, solid state storage. Other models have 480 GB internal, solid state storage. View the total storage size for a model in the storage information table found on the **Recording Controls** embedded web page (see *Storage Information* in the *SMP 300 Series Embedded Web Pages Help File*) or by checking the part number (**Configuration > System Settings > Unit Identification**). From the front panel of the device, use the **STATUS** menu (see **Status Menu** on page 48) and scroll down to the **Drive Space** sub-menu to determine the total drive space and remaining space.

Two USB ports (one on the front panel, one on the rear panel) provide a connection for portable, user-provided USB drives for storing recordings. The optional RCP 101 also has a USB port to connect a user-provided USB drive for storing recordings.

If the unit is connected to a LAN (see **Add a Network Share** on page 96), background image files provided by a user can be uploaded to the SMP or imported from a network attached storage drive. To use background images in composite mode, the files must reside in internal storage.

Control Options

The SMP 300 Series can be controlled using the following:

- Front panel menus and controls
- Simple Instruction Set (SIS) commands sent over Ethernet via the LAN connection, RS-232 via the rear panel Remote captive screw connector, or USB via the front panel Config port.
- SMP 300 Series embedded web pages over Ethernet connection.
- USB mouse and keyboard ports provide direct connection of a keyboard and mouse to permit the use of an internal browser client. This allows limited web page configuration of the network settings for the device.
- Four digital I/O ports can be configured (using a FlexOS application) as digital inputs to receive status from other devices like push-button controls and projector lifts. Alternatively, they can be configured as digital outputs to drive LEDs or devices that accept a TTL input signal for local device control.
- The optional Extron RCP 101 remote control panel connected through either the keyboard or mouse port on the rear panel.

Recordings

The core function of the SMP 300 Series is to create recording files from connected audio and video input sources or virtual inputs.

NOTES:

- Secondary recording must be turned off in order to record virtual input into files.
- The SMP does not create chapter marks or capture thumbnails on virtual input recordings.

Start a recording

Recordings are initiated in one of several ways:

- **Unscheduled (ad hoc) recordings** — Require manual configuration. To use this method, perform one of the following:
 - Press the **Record** () button on the front panel of the SMP 300 Series or RCP 101 remote control panel.
 - Click the **Record** () button in the AV Controls panel of the SMP 300 Series embedded web pages (see [Start an Ad Hoc Recording](#) on page 61) and set the options in the **Start an Ad hoc Recording** window
 - Tap a control button on a configured touchpanel (such as an Extron TLP Pro Series touchpanel with a custom script).
- **Scheduled recordings** — Recordings start automatically at the date and time specified in a calendar schedule. Schedules can be imported on a one-time basis, on a periodic basis (updated on a fixed interval), or an ongoing basis (using a compatible scheduling server such as Opencast or Microsoft Exchange) (see [System Settings](#) on page 89 for details on how to set up recording schedules).

Make a recording

The SMP 300 Series creates recordings by:

- **Composite mode** — Scaling and arranging the content from one or both AV inputs, channel A and channel B, and the optional background .png file as defined by the selected layout preset (see [Layout presets \(for composite mode only\)](#) on page 84).
- **Dual mode** — Scaling channel A and channel B in full screen with no background and no metadata.
- Encoding the content into up to three encoding streams (two encoding streams [archive and confidence] in composite mode, three encoding streams [ChA archive, ChB archive and confidence] in dual channel mode (see [Encoding & Layout](#) on page 81).
- SMP 351 models encode the content and layout into two encoding streams, archive and confidence.
- SMP 352 models and SMP 351 models, with LinkLicense, encode the content and layout into three encoder streams that include archive channel A, archive channel B, and confidence.
- **Creating a set of files** — One or more .m4v or .mp4 files and other files containing metadata, thumbnail images, and optional chapter markers. These files are stored either within the unit (the internal, default location), or on an optional USB drive (see [Encoding & Layout](#) for instructions on how to set the default recording storage location).

The SMP 300 Series creates a set of the same types of files for every recording, regardless of how a recording is initiated. Default file names are specified within the [System Settings](#) page (see [Setting the Default Recording Media](#) on page 90 for details).

Output and share recordings

Recording files can be saved in the SMP 300 Series internal memory and on an optional connected USB drive. Recordings stored internally (not on a USB drive) can also be automatically uploaded to a network server folder.

NOTES:

- When integrated with an Opencast or Kaltura, server, both ad hoc and scheduled recordings are automatically uploaded to the server location defined during the scheduling setup.
- To upload recordings for other scheduling or integration methods, specify a publishing destination during system setup (FTP, SFTP, or CIFS/Windows Net Share server folder).

Uploading recordings to a server allows the user to archive or share files with others who are authorized to access that folder or to use tools such as Opencast.

- Opencast is an end-to-end software solution that facilitates the capture, management, and playback of media files from meetings, lectures, and other live events. Current, previously recorded, or archived media files can be added to Opencast, making everything accessible from a single point. Opencast ensures recordings with metadata are packaged for playback within the player environment.

Features

- **Process two high resolution AV sources from up to five available input signals**
 - Size and position two AV source signals in layouts that maximize the viewing experience.
- **Record and stream simultaneously** — Document presentations, view confidence streaming, or extend live media to overflow destinations without the need for a computer or additional equipment.
- **High quality scaling with flexible two-window management** — Display one or two high resolution sources in various window arrangements, including picture-in-picture and picture-by-picture arrangements for optimal interpretation.
- **Produce MP4 media or M4A audio files that are compatible with virtually any media player** — Use recordings produced by the SMP directly with any software media player, computer, or mobile device.
- **Stream concurrently at two resolutions and bit rates from the same source**
 - High resolutions and high bit rates deliver superior quality images for overflow applications, and lower bit rates and resolutions are more efficient for streaming distribution and confidence viewing applications.
- **Dual channel recording and streaming with confidence stream (SMP 352)** — The SMP 352 can simultaneously record and stream from two different video sources with independent stream settings for each channel. A confidence stream is also available for remote preview of recorded or streamed content.
- **Flexible dual channel layout for confidence output (SMP 352)** — Choose between ten different layouts for confidence stream and local HDMI confidence output to preview both video channels in different PiP or Side by Side modes.
- **LinkLicense for dual channel recording and streaming** — The LinkLicense upgrade enables simultaneous recording and streaming from two different video sources with independent stream settings for each channel. A confidence stream will also be available for remote preview of recorded or streamed content.
- **Internal Solid State Storage** — Save recorded data to reliable, internal storage, before transferring it to external destinations. Capacity of 128 GB (110 GB for recording files) or 480 GB (440 GB for recording files). Up to 40 hours of material can be saved to the 128 GB version, or 150 hours to the optional 480 GB version, encoded at 10 Mbps.
- **Audio mixing and advanced DSP functionality** — Advanced audio DSP features offer control over audio levels, filtering, and dynamics for a quality audio experience without requiring the use of external mixing and DSP equipment.
- **RTMP and RTMPS streaming protocols support popular third party hosting services** — Supports RTMP push streaming with stream name or key, and user authentication for services like YouTube Live, Wowza, Twitch, IBM Cloud, and more. Supports streaming to Facebook Live using the RTMPS streaming protocol.
- **Flexible I/O ports for advanced AV system management** — Install Extron FlexOS applications onto the SMP that interface with control ports and automate system operation.
- **License-free operation contributes to a low cost of ownership** — With no required licensing or recurring support fees, the SMP is a cost-effective solution for AV recording and streaming.
- **Save recordings to internal solid state drive, external USB storage, or a defined network storage directory** — Recordings can be saved to pre-defined locations most convenient to users.

- **Chapter and event marking with thumbnails** — Chapters or events can be marked, and JPEG image thumbnails in user defined resolutions are produced to promote efficient searching and scanning.
- **Record at 480p, 720p, 1080p, 1024x768, 1280x1024, or custom resolution** — Use standard video resolutions or computer resolutions and user-defined custom rates based on content or viewing requirements.
- **Stream at resolutions from 512x288 to 1080p/30** — High resolutions deliver superior quality images for overflow applications and lower resolutions are more efficient for streaming distribution and confidence viewing applications.
- **HDMI, component, composite, and optional 3G SDI input** — Provides compatibility with common AV signal formats at resolutions up to 1920x1200 including 1080p/60. The SMP 3G SDI models offer an additional 3G SDI input connection.
- **Easy to configure and operate from the front panel or external control system** — Ensure that presentations will be recorded and streamed, and valuable information will be documented and repurposed.
- **Define specific storage destinations for recorded data** — Configure the SMP to save recordings to specific storage directories based on the user environment or application requirements.
- **Recording folder playback from SMD-series decoders** — Recording folders on SMP can now be mounted as network shares on SMD-series decoders for immediate playback of recordings.
- **HDMI-embedded stereo audio or analog stereo input and output signal support** — Digital and analog audio signals are supported on the input channels and the output channel.
- **SDI audio de-embedding** — Audio from an SDI source can be decoded and included in the audio mix along with either HDMI or analog sources.
- **Supports the latest SMBv2 and SMBv3 protocols for secure file sharing in Windows environments.**
- **Record audio as separate m4a file** — In addition to storing video with included audio as m4p or m4v, the SMP can also record and store audio as a separate m4a file.
- **Direct compatibility with hosted video platforms** — Integrate publishing of recorded media directly to third party platforms such as Panopto, Kaltura, and Opencast.
- **USB remote control port** — Configure communication settings of the SMP processor using a keyboard and mouse viewing the embedded webpage. Connect the optional RCP 101 Series remote control panel for extended front panel operation and convenient thumb drive access, or the vRCP FlexOS App to remotely control the SMP processor on any device, using any browser.
- **Virtual Inputs** — The additional virtual input allows the SMP to record up to 4 inputs. It also enables SMP to accept IP camera and other encoder inputs directly for recording and re-streaming. Virtual Input feature, available with firmware v3.04 or higher, will enable new applications in lecture capture and medical training where more than 2 input sources are desired.
- **LinkLicense for Enhanced Panopto Features** — This annual support license brings enhanced integration with the Panopto enterprise video platform to enable the SMP to receive recording schedules from the Panopto video platform as well as streaming live video using RTMP and RTMPS to Panopto. Basic ad-hoc recording and publishing to Panopto and automating the system operation does not require a LinkLicense, but does require installation of the complimentary FlexOS application framework.

- **LinkLicense for Enhanced Kaltura Features** — This annual support license enables enhanced integration with the Kaltura hosted video platform including scheduling, RTMP, and RTMPS streaming.
- **LinkLicense for Horizontal Video Mirroring Upgrade** — Streamlines recording by automatically flipping video horizontally to support lightboard or other applications that require reversal of the video image.
- **iCalendar FlexOS App for ingesting iCalendar schedules** — The iCalendar FlexOS App supports manual .ics file ingest and periodic schedule ingest from Outlook, Google Calendar and other scheduling services.
- **Schedule recording and streaming** — Easily import and create recording schedules from Microsoft Exchange Server or using the iCalendar format.
- **RS 232, Ethernet, and digital I/O control ports** — Interface with control systems, sensors, or external devices used in the AV presentation environment.
- **Standards-based H.264 / MPEG 4 AVC video compression** — The SMP supports use of the Baseline, Main, or High Profiles at Levels 4.x, or 3.x providing the ability to optimize video coding for use with various types of applications and decoding devices.
- **Channel A buffered input loop-through** — Channel A input connectors include a buffered loop-through, for easy integration into new or legacy systems without the need for additional AV equipment such as distribution amplifiers.
- **Auto Image setup** — When activated, the unit automatically analyzes the incoming video signal and then automatically adjusts sizing, centering, and filtering to optimize image quality. This can save time and effort in fine tuning displayed images.
- **Layout presets simplify control** — The SMP provides 16 standard or customizable presets that specify the size and positioning of AV sources and metadata, simplifying management and selection of layouts from the front panel or an external control system.
- **Streaming presets** — Thirty-two streaming presets combining stream destination, protocols, and parameters are available for quick and easy setup, and switching between live streams.
- **Encoding presets for quick recall of specific compression settings** — The SMP provides 16 standard or customizable presets for saving specific encoding settings such as H.264 profile, resolution, GOP, and bit rate session management configurations. Users can quickly switch between these archive and confidence encoder presets to support different applications.
- **Pull streaming transport protocols** — RTP/RTSP, RTSP interleaved, and HTTP tunneled streaming transport protocols may be applied, based on various network conditions or to aid in firewall navigation.
- **Push streaming transport protocols** — Native RTP, RTMP, RTMPS, or MPEG 2 Transport Streams - TS, may be applied in unicast or multicast streaming applications. TS may be transported using UDP or RTP based on network conditions.
- **Simultaneous unicast and multicast streaming per encode** — The SMP supports multiple concurrent stream modes per channel allowing simultaneous unicast and multicast RTSP pull streaming for each encode.
- **Session Announcement Protocol - SAP and Session Description Protocol - SDP** — SAP and SDP protocols simplify identification of AV source streams in unicast or multicast push streaming applications.
- **Adjustable recording and streaming bit rates** — Select video bit rates from 200 Kbps to 10 Mbps for video and audio bit rates from 16 Kbps to 384 Kbps based on the viewing application, storage, streaming, or network conditions.

- **Clean switching** — Switching has a clean transition between sources. Distractions such as visual jumps, glitches, and distortion commonly experienced when switching between computer and video sources will not be experienced when using the SMP.
- **Recording metadata** — Metadata can be assigned to make indexing and searching of recordings simple including: Title, Creator, Subject, Description, Publisher, Contributor, and Date.
- **Metadata text overlay** — Data concerning the recording can be presented and clearly identified on recording layouts with AV sources and a background image.
- **Uploadable background image files** — Upload PNG image files at resolutions up to 1920x1080 to identify organizational or event information.
- **On screen display information** — Present device information and status on source images to aid in troubleshooting and fault finding activities.
- **Onscreen display video time reference** — Text displaying a time and date reference can be presented within the onscreen display in the top left corner of the output signal.
- **Extended time recording** — Recordings that would produce a media file size greater than 4 GB are bundled into a recording package of sequential MP4 files.
- **User configurable recording file size** — Split recordings into specified file sizes.
- **Automatic file management for internal storage** — Storage space is automatically created for new recordings when additional space is required. Files are deleted on a first-in, first-out basis. Important recordings can be locked and retained indefinitely until they are manually deleted.
- **System workflow alarms** — Notify monitoring systems or support staff if disk space is low, encrypted signals are detected, AV signal errors occur, or other error conditions exist.
- **Alarm reporting** — Automate communication with monitoring systems or support staff using email, SNMP traps, or Simple Mail Transfer Protocol - SMTP messages.
- **"Publish Failure" Alarm** — There is a new alarm notification for a publishing failure for transferring recordings. The new alarm can be found in the Configuration > Alarms and Traps > Alarm Message List.
- **View Temperature SIS** — SIS command to view system temperature. The new command information can be found in the SMP User Guide section Remote Communication and Control.
- **AAC audio encoding** — Standards-based audio compression is used to provide compatibility with many devices. The bit rate can be adapted to different application requirements.
- **Video encoding quality controls including video resolution, video bit rate, frame rate, constant or variable bit rate control, GOP length, and audio bit rate** — Several user controls are available to adjust encoding quality.
- **Auto Input Memory** — When activated, the SMP 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.
- **Automatically manage EDID communication between connected devices with EDID Minder** — Automatically manage EDID communications between devices, EDID Minder, ensuring use of optimal signal formats.
- **Audio input gain and attenuation** — Gain or attenuation can be adjusted for each input signal to eliminate noticeable differences when switching between sources or adjusting audio levels for the output stream.
- **Picture controls for brightness, contrast, signal sampling, and overscan** — Sixteen user memory presets are available for each input to store all image settings.

- **Aspect ratio control** — The aspect ratio of a source window can be controlled by selecting a FILL mode, which provides a full screen output, FOLLOW mode, which preserves the aspect ratio, or FIT mode, which maintains image uniformity and zooms into the source.
- **HDCP authentication and signal presence confirmation** — Provides real-time verification of HDCP status for each digital video input and output signal. This allows for easy signal and HDCP verification through RS 232 or Ethernet, providing valuable feedback to a system operator or helpdesk support staff.
- **HDCP Visual Confirmation** — When HDCP encrypted content is transmitted to a non HDCP compliant display, a full screen green signal is sent to the display for immediate visual confirmation that protected content cannot be viewed on that display.
- **Quad standard video decoding** — A digital, five-line adaptive comb filter decodes NTSC 3.58, NTSC 4.43, PAL, and SECAM for integration into systems worldwide.
- **Internal test patterns for setup** — The SMP offers test patterns as well as on-screen display - OSD data overlay including timestamp, number of connected users, CPU usage, network status, disk free file space, audio level, and system information to aid in calibration and setup.
- **Front panel lockout** — This feature locks out either all front panel functions, Menu functions only, or all but recording transport controls. All functions are available through Ethernet, USB, and RS 232 control.
- **Ethernet monitoring and control** — The SMP is controllable over Ethernet, supporting configuration and real-time management from a control system.
- **Embedded Web interface** — Provide an intuitive Web interface with an embedded video window for viewing the live stream, as well as source input and encoding adjustments.
- **RS-232 control port** — Enable the use of serial commands for integration into a control system. Extron products use the SIS - Simple Instruction Set command protocol, a set of basic ASCII commands that allow for quick and easy programming.
- **USB keyboard and mouse ports** — Configure communication settings of the SMP using a keyboard and mouse viewing the embedded webpage from the HDMI output connection.
- **LockIt HDMI cable lacing brackets included.**
- **Rack-mountable 1U, full rack width metal enclosure.**
- **Internal Extron Everlast power supply** — Provides worldwide power compatibility, with high demonstrated reliability and low power consumption for reduced operating cost.
- **Extron Everlast Power Supply is covered by a 7 year parts and labor warranty.**

Installation

This section provides information on:

- [Mounting the SMP 300 Series](#)
- [Rear Panel Overview](#)
- [Rear Panel Reset](#)

Mounting the SMP 300 Series

The SMP 300 Series models are housed in a 1U high, full rack width metal enclosure that can sit on a table with the provided rubber feet or mounted using the attached rack mounts. Select a suitable mounting location (see [Mounting the SMP 300 Series](#) on page 138), then choose an appropriate mounting option.

- Before connecting the SMP 300 Series, turn off all devices that are to be connected.
- Connect all external devices to the SMP models before applying power.

Rear Panel Overview

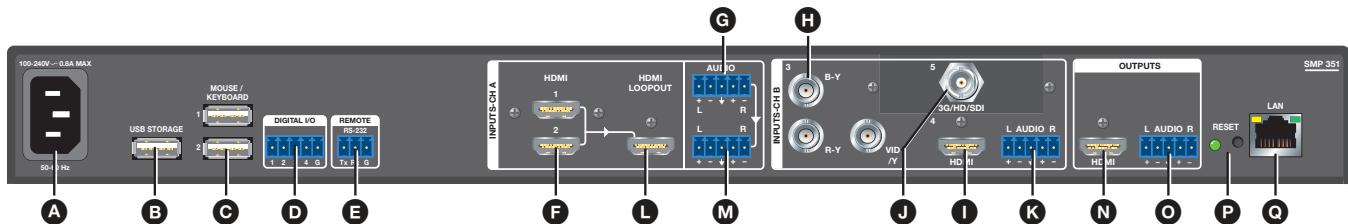


Figure 4. SMP 300 Series Rear Panel (SMP 351 3G-SDI shown)

- A** 100-240 VAC IEC connector for power input
- B** USB type A port for external storage device
- C** (2) USB type A ports for mouse and keyboard, or remote control RCP 101
- D** 3.5 mm, 5-pole captive screw port for digital I/O
- E** 3.5 mm, 3-pole captive screw port for Simple Instruction Set (SIS™) control over RS-232
- F** HDMI inputs 1 and 2
- G** 3.5 mm, 5-pole captive screw port for channel A analog stereo audio input
- H** 3 BNC connectors for component or composite video input 3
- I** HDMI input 4
- J** (Optional input 5) 3G/HD/SDI input card (SMP 351 3G-SDI and SMP 352 3G-SDI only)
- K** 3.5 mm, 5-pole captive screw port for channel B analog stereo audio input
- L** HDMI loop thru from input 1 or 2
- M** 3.5 mm, 5-pole captive screw port for channel A analog stereo audio loop output
- N** HDMI preview output
- O** 3.5 mm, 5-pole captive screw port for analog stereo audio output
- P** Reset button and LED
- Q** RJ-45 Ethernet port for LAN connection

Power Connection

- A 100-240 VAC power input** (see [figure 4](#) on page 15) — Connect the provided IEC cord. Verify the front panel buttons and LCD illuminate (see [Front Panel Menu Operation](#) on page 26).

Control System and External Device Connections

The SMP 300 Series can be configured and controlled from the Remote RS-232 port (see [figure 4](#), **E** on page 15) or the front panel USB mini-B Config port (see [figure 8](#), **B** on page 21) using SIS commands with DataViewer. A standard web browser can be used for control and configuration from the LAN port. Because the LAN port must be connected for streaming output, Extron recommends using it for configuration, remote control, and firmware upgrades.

- B USB storage device** — Attach an optional external USB storage device to the front or rear USB ports to save recorded files. The storage device can be any standard external hard drive or USB flash drive formatted with a compatible file system.

NOTE: The SMP 300 Series can detect and record to USB storage devices using FAT32, VFAT long file name extensions, EXT2, EXT3, EXT4 file systems, or NTFS-formatted storage volumes. For FAT32 USB storage, file sizes must be limited to 4 GB or the recording creates multiple 4 GB files.

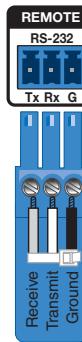
- C USB keyboard and mouse, or RCP 101** — Connect a keyboard and mouse to the two USB type A ports. With a keyboard and mouse connected, the user can toggle <Ctrl + ALT + S> the HDMI output (see [figure 8](#)) between the standard preview output and the internal browser view.

- D Digital I/O** — Connect to the four 3.5 mm, 5-pole captive screw ports to provide user-defined digital inputs or outputs (see [Digital I/O Configurator](#) on page 104).

- E Remote RS-232** — Connect the host RS-232 cable to the rear panel with a 3-pole captive screw connector for bidirectional (± 5 V) serial host control, to control the SMP 300 Series using SIS commands over RS-232.

The default protocol port is:

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



- F Reset button and LED** — Press the button to reset the SMP 300 Series. There are several reset modes to return the SMP to user-defined configuration settings or to return all settings back to factory defaults.

The LED indicates the selected reset mode, and provides the reset status during the reset operation (see [Rear Panel Reset](#) on page 19).

NOTE: The factory configured passwords for all accounts on this device have been set to the device serial number. In the event of a complete system reset, the passwords convert to the default, which is no password (see [Users and Roles](#) on page 86 to change a password).

- G RJ-45 Ethernet connector (LAN)** — Use a standard Ethernet cable to connect to a network. The default network settings are:

IP Address:	192.168.254.254
Subnet Mask:	255.255.0.0
Default Gateway:	0.0.0.0
DHCP:	OFF

NOTE: To connect the SMP 300 Series directly to a computer Ethernet port, use a crossover Ethernet cable (see [Connection Options](#) on page 106).

Input Connections

The audio and video inputs are grouped into channel A and channel B (see [figure 4](#) on page 15).

- Channel A analog audio input can be selected for video inputs 1 or 2 (**F**).
- Channel B analog audio can be selected for video inputs 3 (**H**), 4 (**I**), or 5 (**J**).

F HDMI input (1 and 2) — Connect an HDMI (or DVI with suitable adapter) source device to input 1 and input 2.

NOTE: Channel A (inputs 1 and 2) is optimized for full range sources such as PCs.
When using a video source with adjustable quantization range on these inputs, select "Full Range" for the most accurate video reproduction.

G Channel A analog audio input — Connect a balanced or unbalanced stereo line level audio device to this 5-pole, 3.5 mm captive screw port. Channel A audio can be selected for output with HDMI inputs 1 and 2 instead of the embedded audio. Wire the connector as shown in figure 5.

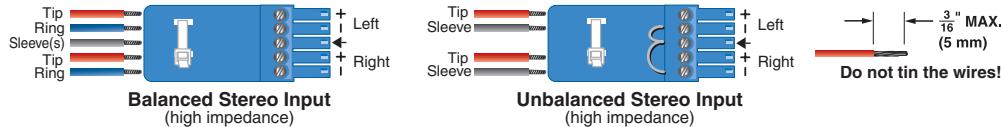


Figure 5. Audio Input Captive Screw Connector Wiring

- H Analog video input 3** — Connect component video to the three BNC connectors (B-Y, R-Y, VID/Y). Connect a composite video signal to the VID/Y BNC connector.
- I HDMI input 4** — Connect an HDMI (or DVI with suitable adapter) source device to input 4.
- J Serial digital video input 5 (SMP 351 3G-SDI and SMP 352 3G-SDI only)** — Connect a 3G/HD/SDI video signal to this BNC connector.
- K Channel B analog and 3G-SDI audio input** — Connect a balanced or unbalanced stereo line level audio device to this 5-pole, 3.5 mm captive screw port. Channel B audio can be selected from either the HDMI embedded audio, Ch B analog audio, or the audio can be set to Off. Wire the connector as shown in figure 5.

Output Connections

- L HDMI loop-thru output** — Connect an HDMI (or DVI with suitable adapter) display device to the HDMI Loop Thru output to view the selected input 1 or input 2.
- M Audio loop output** — Connect a balanced or unbalanced stereo line level audio device to this 5-pole, 3.5 mm captive screw port. Wire the connector as shown in figure 6. Audio is always from audio input (**G**).

ATTENTION:

- For unbalanced audio, connect the sleeves to the ground contact. DO NOT connect the sleeves to the negative (-) contacts.
- Pour l'audio asymétrique connectez les manchons au contact au sol. Ne PAS connecter les manchons aux contacts négatifs (-).

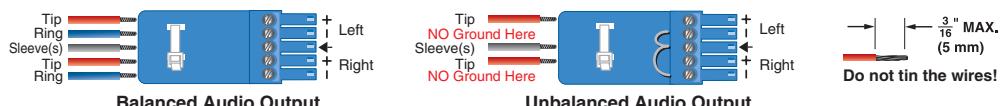


Figure 6. Audio Output Captive Screw Connector Wiring

ATTENTION:

- The length of the exposed wires in the stripping process is important. The ideal length is 3/16 inch (5 mm). If longer, the exposed wires may touch, causing a short circuit between them. If shorter, the wires can be easily pulled out even if tightly fastened by the captive screws.
- La longueur des câbles exposés est importante lorsque l'on entreprend de les dénuder. La longueur idéale est de 5 mm (3/16 inches). S'ils sont trop longs, les câbles exposés pourraient se toucher et provoquer un court circuit. S'ils sont trop courts, ils pourraient sortir, même s'ils sont attachés par les vis captives.
- Do not tin the wires. Tinned wires are not as secure in the captive screw terminals and could pull out.
- Ne pas étamer les câbles. Les câbles étamés ne sont pas aussi bien fixés dans les terminaisons des à vis captives et pourraient sortir.

N **HDMI preview output** — Connect an HDMI (or DVI with suitable adapter) display device to this HDMI output (see [figure 4](#) on page 15). Using an attached USB keyboard and mouse, the preview output can be switched between a preview of the recorded content and an internal browser client.

O **Analog audio output** — Connect a balanced or unbalanced stereo line level audio device to this 5-pole 3.5 mm captive screw port (see [figure 6](#) on page 17 for wiring information) for select audio output.

The audio output depends both on the input selection and if the embedded audio or analog audio is selected for that input (see [Audio Select](#) on page 43). Audio output is selected from channel A, channel B, or a mix of both channel A and channel B. For the SMP 352 and SMP 351 with LinkLicense, with dual mono enabled, audio output is selected from channel B dual mono or a mix of both channel A and channel B dual mono.

NOTE: The default audio channel is channel A and channel B. When dual mode is enabled, the default output is channel A and channel B dual mono.

Rear Panel Reset

The **Reset** button on the rear panel of the SMP 300 Series (see [figure 4](#) on page 15) returns the SMP 300 Series to various modes of operation. There are three unit reset modes (numbered 1, 4, and 5) that are initiated from the rear panel reset button. To select different reset modes, use a pointed stylus or small screwdriver to press and hold the **Reset** button when the SMP 300 Series is powered on or press and hold the **Reset** button while applying power to the SMP 300 Series.

NOTES:

- The reset modes listed in the [SMP 300 Series Reset Modes](#) table on page 20 close all open IP and Telnet connections and all sockets. The table has details comparing the reset modes and detailing affected configuration settings and user content.
- Each reset mode is a separate reset (not a continuation from mode 1 to mode 5).
- Reset modes 2 and 3 are not available for the SMP 300 Series.
- The SMP 300 Series can also be reset using the web-based user interface (see [System Resets](#) on page 102).
- For information on resetting the SMP 300 Series using SIS commands see [Resets](#) on page 116.

ATTENTION:

- Review the reset modes carefully. Some reset modes delete all user loaded content and revert the device to default configuration.
- Analysez minutieusement les différents modes de réinitialisation. Certains modes de réinitialisation suppriment l'intégralité du contenu chargé de l'utilisateur et remettent l'appareil au mode de configuration par défaut.

See figure 7 and the [SMP 300 Series Reset Modes](#) table for a summary of the reset modes.

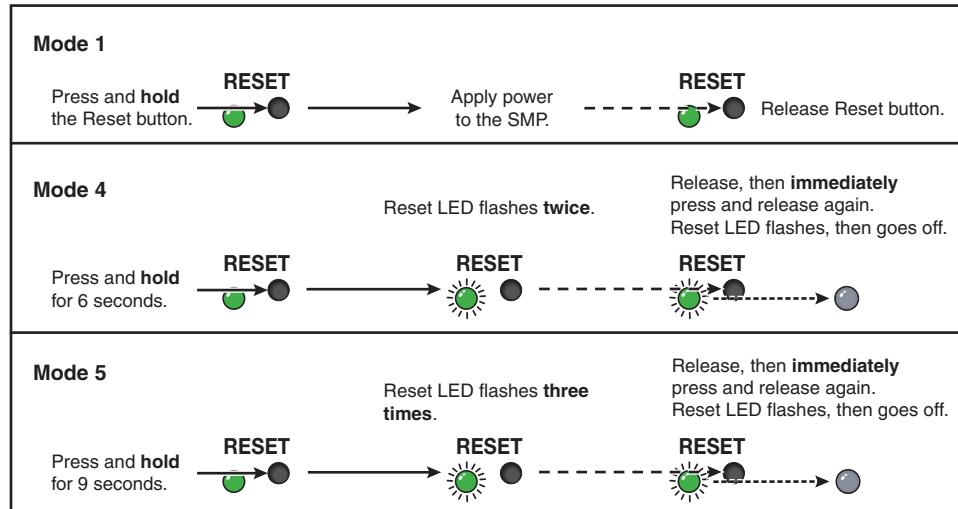


Figure 7. Resetting the SMP 300 Series

SMP 300 Series Reset Modes				
	Mode	Activation	Result	Purpose and Notes
Factory Firmware	1	Hold in the recessed rear panel Reset button while applying power to the unit.	The SMP 300 Series reverts to the factory default firmware for a single power cycle.	Use mode 1 to revert to the factory default firmware for a single power cycle if incompatibility issues arise with user-loaded firmware. All user files and settings are maintained.
	NOTE: Do not operate with the default firmware loaded by a mode 1 reset. Use it only to load the most current firmware to the device.			
Reset All IP Settings	* 4	Hold in the Reset button until the Reset LED blinks twice (once at 3 seconds, again at 6 seconds). Then, release and press the Reset button again within 1 second*.	<p>Sets the following back to back to factory default.</p> <ul style="list-style-type: none"> • Port mapping • IP address: 192.168.254.254 • Subnet mask address: 255.255.0.0 • Gateway IP address: 0.0.0.0 <p>Turns DHCP off.</p> <p>The Reset LED on the rear panel of the unit flashes four times in succession.</p>	<p>Mode 4 is used to set IP address information using ARP and the MAC address.</p> <p>Resetting IP Settings appears on a connected display.</p>
Reset to Factory Defaults	* 5	Hold in the Reset button until the Reset LED blinks three times (once at 3 seconds, again at 6 seconds, again at 9 seconds). Then, release and press the Reset button again within 1 second*.	<p>Performs a complete reset to factory defaults (except the firmware).</p> <ul style="list-style-type: none"> • Does everything mode 4 does. • Clears port configurations. • Resets all IP options. • Resets all passwords. • Clears all user settings. • Clears all files from the unit. • The Reset LED on the rear panel of the unit flashes four times in succession. 	<p>Mode 5 is useful to start over with default configuration and uploading, and also to replace events.</p> <p>Resetting SMP 300 Series appears on a connected display.</p> <p>Mode 5 is equivalent to SIS command ZQQQ (see SIS command Absolute reset on page 116).</p>
NOTES: <ul style="list-style-type: none"> • *For modes 4 and 5, nothing happens if the momentary press does not occur within 1 second. • The factory configured passwords for all accounts on this device have been set to the device serial number. In the event of a complete system reset, the passwords convert to the default, which is no password (see Users and Roles on page 86 to change a password). 				

Front Panel Operation

This section of the manual discusses the operation of the SMP 300 Series from the front panel.

Topics covered include:

- **Front Panel Features**
- **Layout Presets (For Composite Mode Only)**
- **Power Up Procedure**
- **Front Panel Menu Operation**
- **Front Panel Lockout (Executive Modes)**
- **Alarms**

Front Panel Features

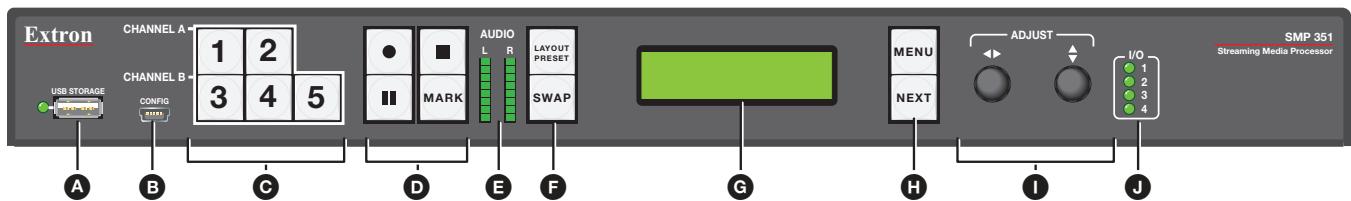


Figure 8. SMP 300 Series Front Panel

- A** Type A USB connector and activity LED for external storage
B USB mini B connector for configuration
C Input buttons for source selection
D Record controls with LED indicators
E Audio level indicators
F Layout Preset and Swap buttons
G Menu display
H Menu navigation buttons (MENU and NEXT)
I Adjust knobs (left \blacktriangleleft and right \triangleright)
J I/O display LEDs

- A** **USB storage port and activity LED** — Connect a USB compatible media device to this port. The green LED blinks during both reading and writing of data. The storage device can be any standard external hard drive or USB flash drive formatted with a compatible file system.

NOTE: The SMP 300 Series can detect and record to USB storage devices using FAT32, VFAT long file name extensions, EXT2, EXT3, EXT4 file systems, or NTFS-formatted storage volumes. For FAT32 USB storage, file sizes must be limited to 4 GB or the recording creates multiple 4 GB files.

ATTENTION:

- Disconnecting a USB device while recording to it may result in corrupt or lost data.
- Déconnecter un périphérique USB alors qu'un enregistrement y est effectué, peut engendrer une altération ou une perte de données.

B **Config port** (see [figure 8](#) on page 21)— Connect a control device to this port with a USB mini-B cable (not supplied). Use this port to send SIS commands to the SMP 300 Series for device configuration and control (see [Remote Communication and Control](#) starting on page 106).

C **Input selection** — Press these buttons to select inputs associated with the rear panel input ports.

- **Channel A** — Press the corresponding button to select HDMI input 1 or 2. If analog audio (instead of embedded audio) is selected for an input, Channel A analog audio is output with the video.
- **Channel B** — Press the corresponding button to select composite/component input 3, HDMI input 4, and (optional) SDI input 5. If analog audio is selected for input 4, Channel B analog audio is output with the selected video input.

The currently selected Channel A input button and currently selected Channel B input button light solid amber.

NOTE: Input 5 lights only when the optional SDI input card is installed and the input is selected.

D **Record controls with LED indicators** — Press the **Record**, **Stop**, **Pause**, and **Mark** buttons to perform the operation. The buttons light to indicate the current state of record operation.

- **Record** — Press  to record the selected inputs. The record button lights solid red during active recording.
- **Stop** — Press  to stop the active recording. When pressed during a recording, the stop button blinks green while the recorded file is being finalized, then lights solid green when the file is finalized.
- **Pause** — Press  to pause recording. When pressed, the **Pause** button blinks green to indicate recording is paused. Press **Record** or press **Pause** again to resume recording, or press **Stop** to halt the recording.
- **Mark** — Press  to place a chapter marker in the recorded file. When pressed during recording, the button illuminates green momentarily to indicate a chapter marker is inserted. The button also illuminates when JPEG thumbnails are automatically created at a fixed interval (default: 1 minute).

NOTE: The SMP does not create chapter marks or capture thumbnails on virtual input recordings.

E **Audio level indicators** — Two stacks of eight green LEDs track the audio level of the left and right audio channels from -60 dBFS (one LED) to 0 dBFS (eight LEDs). The LEDs indicate both signal presence and active input signal levels.

- **Input Configuration Mode** — When input gain is adjusted, the meters display the currently selected input left and right channel audio levels to assist setting audio gain (see [Audio Level](#) on page 43).
- **Normal Mode** — The meters display the left and right encoder input levels measured after all audio input adjustments are applied and audio sources are blended or merged (if applicable).

F **Layout Preset** (for composite mode only) **and Swap** — Press **LAYOUT PRESET** to select one of the 16 capture presets (see [Layout Presets \(For Composite Mode Only\)](#) on page 23). The button illuminates green. Use the **ADJUST** knobs (see [figure 8](#),  on page 23) to select the desired output layout. Press **NEXT (H)** to activate it.

Press **SWAP** to switch Channel A and B inputs between the two layout windows. The button illuminates green for 1 second to indicate the input swap.

G **Menu display** — Displays configuration menus and status information. Use the **MENU** and **NEXT** buttons (see [figure 8](#) on page 21, **H**) and **ADJUST** knobs (**I**) to navigate the menu. During normal operation, a default display cycle is presented (see [Power Up Procedure](#) on page 25). If there is an active alarm (see [Alarms](#) on page 49), it is listed instead.

H **Menu navigation (MENU and NEXT)** — Lights amber (unless menu lockout is enabled). Press to access and navigate the configuration and control menus and submenus.

NOTE: The menu button blinks red when there is an active alarm (see [Alarms](#)).

- **MENU** — Use this button to enter and move through the main menu system.
- **NEXT** — Use this button to step through the submenus of the selected menu.

I **Adjust knobs (left ↔ and right ↑↓)** — Rotate these controls to scroll through menus and to make adjustments within a menu or submenu.

NOTE: The buttons and controls on the SMP 300 Series can be locked so that configuration using the front panel is not possible (see [Front Panel Lockout \(Executive Modes\)](#) on page 49).

J **I/O display** — A stack of four green LEDs that correspond to the four digital I/O connections on the rear panel (see [figure 4](#) on page 15). Each LED indicates the on or off status of the corresponding ports which can be configured as digital input or digital output (see [Digital I/O Configurator](#) on page 104).

Layout Presets (For Composite Mode Only)

Layout presets define which inputs are selected and where they are placed on the output screen. There are 12 preconfigured and 4 user presets for custom layout configurations.

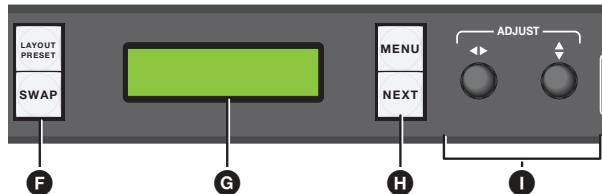


Figure 9. Front Panel Layout Preset and Swap

The two input channels, A and B, are determined by direct selection from the front panel.

To select 1 of the 12 preconfigured layout presets:

1. Select input 1 or 2 for channel A and input 3, 4, or 5 for channel B (see [figure 4](#)).
2. Press **LAYOUT PRESET** (see figure 9, **F**) to open the menu on the front panel display (**G**).
3. Use either **ADJUST** knob (**I**) to cycle through the presets. When the desired layout name appears on the output display, stop.

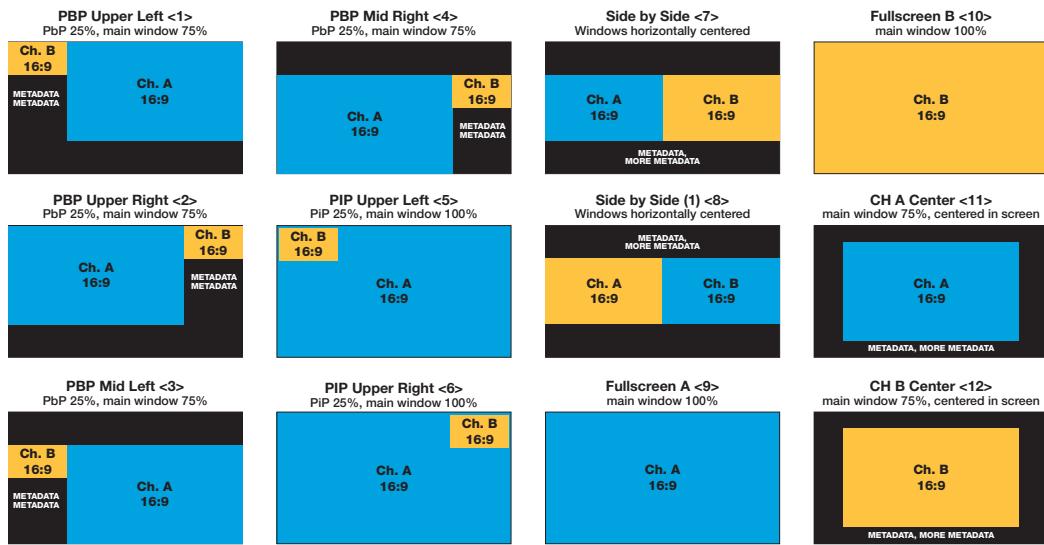


Figure 10. Layout Presets

NOTE: **PBP** = Picture Beside Picture

PIP = Picture In Picture

4. Press **NEXT** (see **figure 9**, **H** on page 23) to select the layout.
5. If desired, press **SWAP** to reverse the screen position of the A and B input selections.

To store a custom layout configuration:

1. Select the layout from the above configurations closest to your requirements.
2. Change the window size and centering adjustments for each input to modify the layout as needed (see **Picture Control Menu** on page 30),
3. Press and hold **LAYOUT PRESET** for 3 seconds to enter the saved layout menu.
4. Use either **ADJUST** knob to select the desired preset location to store the new layout.
5. Press **Next** to save the new layout.

NOTE: In order to preserve the aspect ratios of the windows, some layouts can have slightly different spacing at lower resolutions. It is recommended to save custom layouts at the resolution at which they are to be recalled.

Power Up Procedure

NOTE: Before powering the SMP 300 Series, ensure that all necessary devices are connected properly. Devices do not need to be powered.

Connect the power cord to a 100 to 240 VAC supply (see **Power Connection** on page 16). The unit undergoes self testing during the boot sequence (see figure 11 and figure 12). After the sequence is complete (and when the device is not being configured or has an active alarm), the default display cycle is on the LCD display.

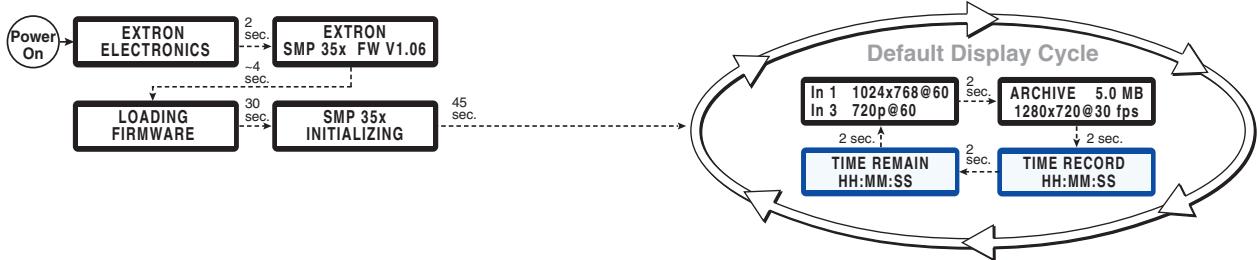


Figure 11. Boot Sequence and Default Display Cycle for Composite Mode

NOTE: The information shown in the default display cycle differs depending on the active input and the type of video signal. **Time Record** only displays during a recording. **Time Remain** displays the remaining time in the event and the estimated recording time available during an unscheduled recording.

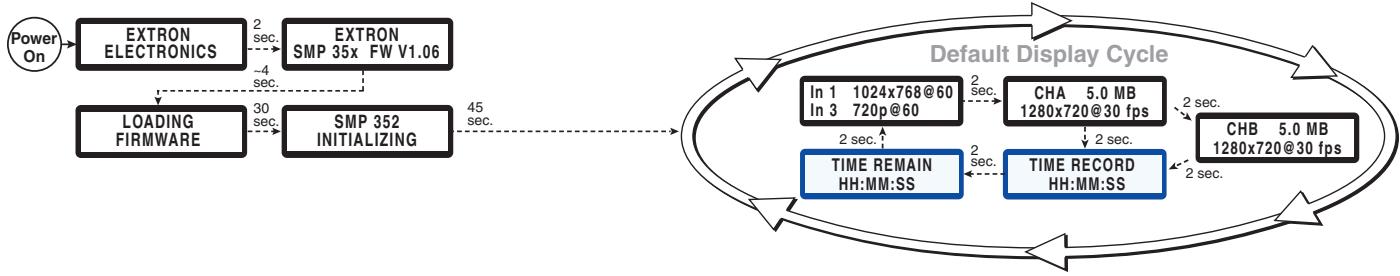
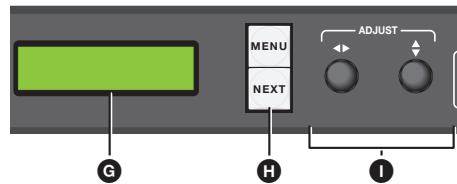


Figure 12. Boot Sequence and Default Display Cycle for Dual Channel Mode

The default display cycle varies depending on the input video signal and output stream selection. It shows the selected inputs and their resolutions, stream bit rate, and output resolution. During recording, the current length of the recording and time remaining are added to the default cycle.

Front Panel Menu Operation

Configuration and adjustments can be performed using the embedded web pages (see [Overview of the Web-Based User Interface](#) on page 52), SIS commands (see [Remote Communication and Control](#) starting on page 106), or the front panel controls and the menus displayed on the LCD screen (see image at the right, **G**). These menus are used primarily during the initial set up.



Menu Navigation

- G** **Menu display** — Displays the configuration menus on a 16x2 LCD display.
- H** **Navigation buttons** —
 - **MENU button** — Press to activate menus and cycle through the main menus.
 - **NEXT button** — Press to move between the submenus of the selected main menu.
- I** **ADJUST knobs (\blacktriangleleft , \triangleright)** — In configuration mode, rotate the left (\blacktriangleleft) control and right (\triangleright) control to scroll through submenu options and to make configuration selections (see the flowcharts in this chapter for details).

Menu Overview

After start-up, when no adjustments are actively being made, the **Default Display Cycle** (see figure 13 below and [figure 14](#) on page 27) runs on the **Menu** display LCD (**G**). The screen progressively cycles through the input and output format information, showing the number and video format of the active input and the current output resolution.

NOTE: If a signal is not present on the currently selected input, NOT DETECTED appears in place of the input type. For example, IN#4 NOT DETECTED.

If there is an active recording, TIME RECORD displays the current length of the recording. TIME REMAIN shows the time remaining for an active scheduled recording.

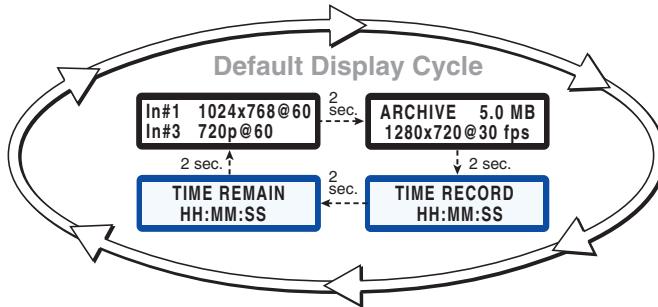


Figure 13. Default Display Cycle for Composite Mode

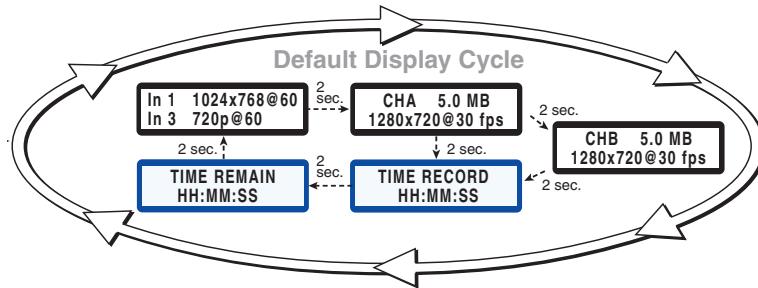


Figure 14. Default Display Cycle for Dual Channel Mode

Press the **MENU** button once to bring up the first main (top level) menu, as shown below. Each successive **MENU** button press cycles to the next main menu.

NOTE: From any menu or submenu, after 30 seconds of inactivity, the SMP 300 Series times-out to the default display cycle.

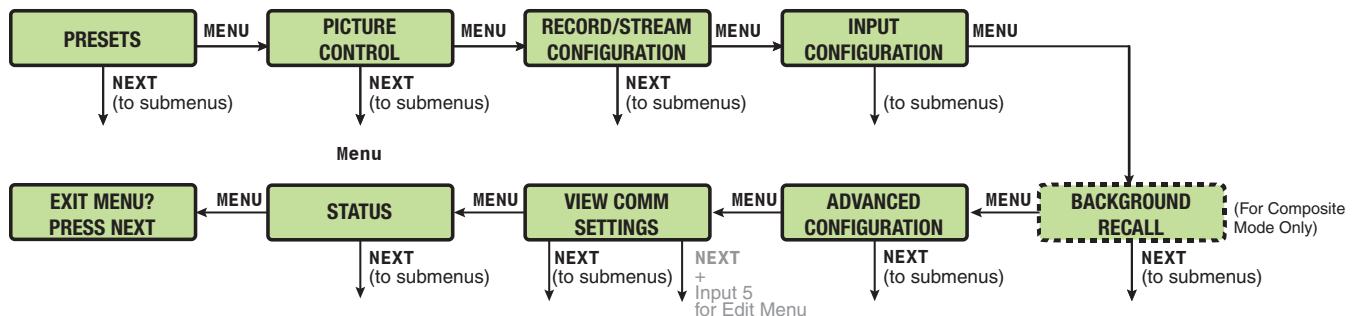


Figure 15. Top Level Menus

The flowchart above provides an overview of the menu system.

The top level menus are displayed one at a time, in order, on the LCD panel by pressing the **MENU** front panel button.

To return to the default cycle from a top level menu or submenu, press **MENU** repeatedly until **EXIT MENU? PRESS NEXT** shows, then press **NEXT**. Alternatively, the menu times out after 30 seconds of inactivity and returns to the default cycle.

Press **NEXT** when a menu displays to access its submenu. Within the submenu, press **MENU** to exit the submenu and return to the currently active menu or press **NEXT** to move to the next submenu.

Submenu details with configuration and options for each setting are on the following pages. A complete schematic of the menus and submenus is in the reference section (see **Front Panel Menu Diagrams** starting on page 160).

Presets Menu

The presets menu allows the user to save or recall encoder and user presets.

- From the default menu, press **MENU** to cycle to the **Presets** menu.
- Press **NEXT** to enter the submenus.
- Press **NEXT** to advance to the relevant submenu: **Recall** or **Save**.
- Within the submenu, use the **ADJUST** controls to select the preset, then press **NEXT** to recall or save the selection.
- Press **MENU** to exit the submenu.

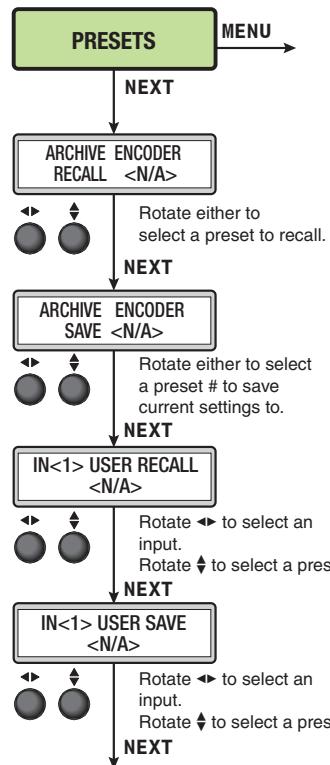


Figure 16. Presets Menu in Composite Mode

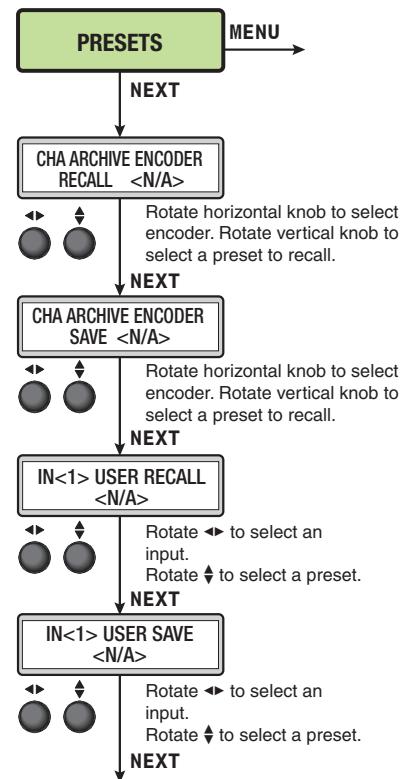


Figure 17. Presets Menu in Dual Channel Mode

Encoder presets

Encoder presets allow users to quickly switch between various encoder profiles for different resolution and bit rates. There are 32 encoder presets for different streaming and recording applications. Presets 33 through 42 are factory default presets to support Panopto quality settings.

Encoder presets save the following parameters:

ENCODER PRESETS		
Video Resolution	Profile Type	Record Mode
Video Bit Rate	Profile Level	GOP Length
Frame Rate	Audio Bit Rate	Preset Name
Bit Rate Control	Audio Delay	IDR Interval

Default encoder presets

The first 18 encoder presets are predefined.

Preset 3 is the default value for the Archive Encoder (Channel A and Channel B).

Preset 9 is the default value for the Confidence Encoder (Streaming = on by default).

Preset #	Preset Name	Resolution	Video Bit Rate (kbps)	Frame Rate (fps)	Audio Bit Rate (kbps)	Bit Rate Control	GOP Length	H.264 Profile	H.264 Level
1	1080p High	1920x1080	8000	30	320	VBR	30	High	4.1
2	1080p Low	1920x1080	6000	15	128	CVBR	30	Main	3.2
*3	720p High	1280x720	5000	30	192	VBR	30	High	3.1
4	720p Low	1280x720	3000	15	128	CVBR	30	Main	3.1
5	480p High	848x480	2500	30	128	VBR	30	High	3.1
6	480p Low	848x480	1500	15	80	CVBR	30	Main	3.1
7	VGA High	1280x1024	3500	30	128	VBR	30	High	4.1
8	VGA Low	1024x768	2500	15	128	VBR	30	High	3.1
9	Confidence	512x288	350	15	192	VBR	15	Base	3.0
10	Speaker 1080p	1920x1080	5000	30	192	VBR	60	High	3.0
11	Speaker 720p	1280x720	2500	30	192	VBR	60	High	3.0
12	Speaker 480p	848x480	1000	30	192	VBR	60	Main	3.0
13	Presentation 1080p	1920x1080	2000	15	192	VBR	30	Main	3.0
14	Presentation 720p	1280x720	1000	15	192	VBR	30	Main	3.0
15	Presentation 480p	848x480	600	15	192	VBR	30	Main	3.0
16	Presentation 1440x180	1440x180	1600	15	192	VBR	30	Main	3.0
17	Presentation 1280x1024	1280x1024	1200	15	192	VBR	30	Main	3.0
18	Presentation 1024x768	1024x768	1000	15	192	VBR	30	Main	3.0
19-32	User Defined								

NOTES:

- *Audio settings are determined by the encoding for the primary recording or stream. Audio for confidence monitoring is not re-encoded. Therefore, by default, the recording uses encoder preset 3, and the audio bit rate is 192 kbps.
- Default record mode is video and audio.
- The predefined encoder presets can be modified by the user. If necessary, a factory reset returns all changes to the above table values.

User presets

User presets save current settings or recall previously saved configurations for the selected input. User presets can be saved on one input rate and recalled on a different input rate. There are 16 user presets per input.

User presets save the following parameters (per input):

- Color
- Tint
- Contrast
- Preset name
- Aspect ratio
- Brightness

To save a user preset from the front panel:

1. From the Picture Control menu, configure the selected input as desired (see [Input Configuration Menu](#) on page 39).
2. Press **MENU** to cycle through the main menus to the **Presets** menu.
3. Press **NEXT** to cycle to the **User Save** submenu.
4. Rotate the left (**◀▶**) **ADJUST** knob to select the input.

NOTE: Only the selected front panel channel A and the selected channel B inputs are available.

5. Use the right (**◀**) **ADJUST** knob to select one of the 16 user presets.
6. Press **NEXT** to save the new preset values.

Each input has sixteen user preset locations available. A configuration can be saved to any preset number using this menu, the embedded web pages, or via SIS. Select **N/A** and press **NEXT** to exit without saving settings.

To recall a user preset from the front panel:

1. Press **MENU** to cycle through the main menus to the **Presets** menu.
2. Press **NEXT** to cycle to the **User Recall** submenu.
3. Rotate the left (**◀▶**) **ADJUST** knob to select the input.

NOTE: Only the selected front panel channel A and the selected channel B inputs are available.

4. Use the left (**◀**) **ADJUST** knob to select one of the sixteen user presets.
5. Press **NEXT** to select the new preset for the input.

Each input has 16 user presets recalled using this menu, the web pages, or via SIS. Select **N/A** and press **NEXT** to exit without applying the user preset settings.

Picture Control Menu

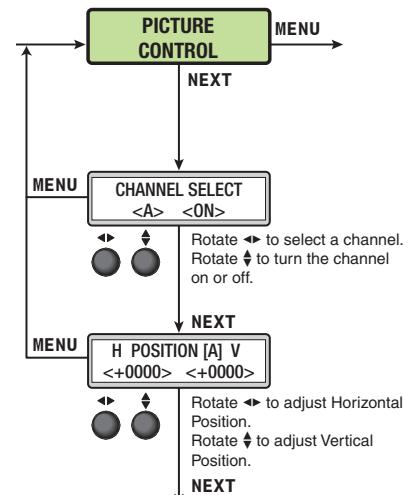
The Picture Control menu includes all picture settings such as color, tint, brightness, and contrast. In composite mode, it allows the user to adjust horizontal and vertical window positioning along with horizontal and vertical window size for the selected input (see [Layout Presets \(For Composite Mode Only\)](#) on page 23).

From the Picture Control menu, press **NEXT** to move to the desired submenu.

In full screen mode, only channel A or only channel B is displayed. If both channels are active, use the **Channel Select** submenu and either adjustment control to select between channel A and B. The submenu displays the status of the selected window.

Within the submenu, use the **ADJUST** knobs to select and change values as required.

Press **MENU** to exit the submenu.



The Channel Select submenu is available for all inputs. Subsequent picture control submenus are available depending on the input selection (see the following table).

	Range	YUVp/ HDTV	YUVi	Composite Video	HDMI
Position	*	X	X	X	X
Size	Vert: 64 to 4096 Horz: 120 to 4096	X	X	X	X
Brightness	0 to 127	X	X	X	X
Contrast	0 to 127	X	X	X	X
Color	0 to 127		X	X	
Tint	0 to 127			NTSC Only	

NOTES:

- * The position range depends on the selected resolution.
- X indicates applicable picture controls for the input type.
- The position and size values are for archive encoding.

Channel select

This submenu selects the input channel for the remainder of the submenus.

Rotate either **ADJUST** knob to select channel A and channel B.

Picture position (composite mode only)

This submenu sets the horizontal (H) and vertical (V) position of the active video for the selected channel. The maximum value depends on the archive encoder resolution. The range is dynamically adjusted to ensure at least 32x32 pixels of the window stay on the screen. A small window (for example, 300 pixels wide) cannot go far into the negative (in this case it is limited to -268 pixels).

To use this submenu:

- Rotate the left (◀▶) **ADJUST** knob to change the horizontal position of the video for the selected input. The selected value relates to the left edge of the active video. The default is 0000.
- Rotate the right (◀) **ADJUST** knob to change the vertical position of the video for the selected input. The selected value relates to the top edge of the active video. The default is 0000.

Picture size (composite mode only)

The **Size** submenu is used to set the horizontal and vertical size of the active video for the selected input.

To use this submenu:

- Rotate the left (◀▶) **ADJUST** knob to change the horizontal size of the video for the selected input. The range of settings is dependent on the output resolution.
- Rotate the right (◀) **ADJUST** knob to change the vertical size of the video for the selected input. The range of settings is dependent on the output resolution.

Brightness and contrast

This submenu is used to adjust the brightness and contrast of the active video for the selected input.

To use this submenu:

- Rotate the left (◀▶) **ADJUST** knob to change the brightness of the video for the selected input. The range of settings is **000** to **127**. The default is **064**.
- Rotate the right (▲▼) **ADJUST** knob to change the contrast of the video for the selected input. The range of settings is **000** to **127**. The default is **064**.

Color and tint

This submenu is used to adjust the color and tint of the active video for the selected input.

NOTES:

- The color adjustment is only available for composite and YUV video signal inputs.
- The tint adjustment is only available for composite NTSC video signal inputs. Tint is not available for PAL video signal inputs.

To use this submenu:

- Rotate the left (◀▶) **ADJUST** knob to adjust the color of the video for the selected input. When this configuration option is set to **0**, colors appear as shades of gray. The range of settings is **000** to **127**. The default is **064**.
- Rotate the right (▲▼) **ADJUST** knob to adjust the tint (appearance of colors) of the video for the selected input. The range of settings is **000** to **127**. The default is **064**.

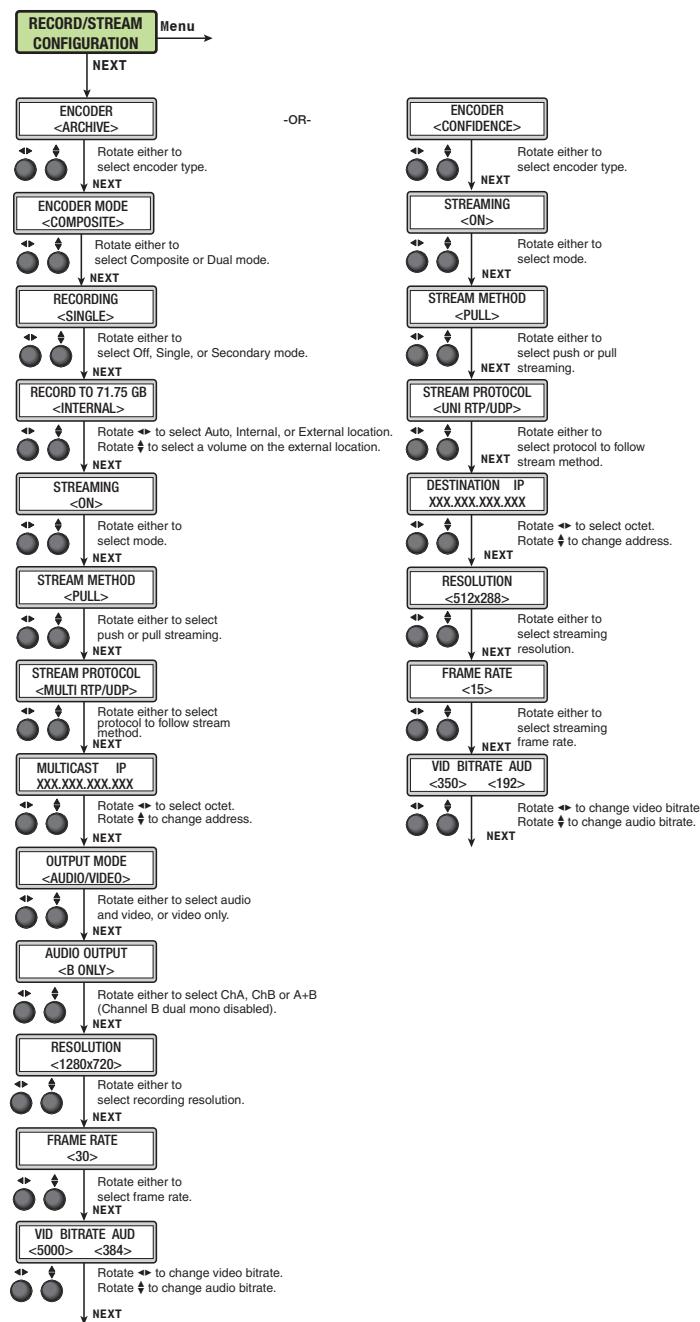
Record and Stream Configuration Menu

This menu allows the user to configure the archive (recording) and confidence encodes.

Use either **Adjust** knob to change the selections. Press **Next** to enter changes and move to the next submenu. Press **Menu** to enter changes and return to the main menu.

The flow chart on the right shows all possible submenus for the RECORD/STREAM CONFIGURATION menu.

Subsequent submenus are hidden or displayed depending on previous submenu selections.



Encoder select menu

This submenu determines the purpose of the encoded stream. The subsequent encoder configuration submenus are dependent on this setting.

Select one of the following:

- **Archive** — Provides the highest quality stream but uses the most bandwidth and resources. The settings also apply to the recordings.
- **Confidence** — Provides a lower quality stream, typically for confidence monitoring.

Recording mode

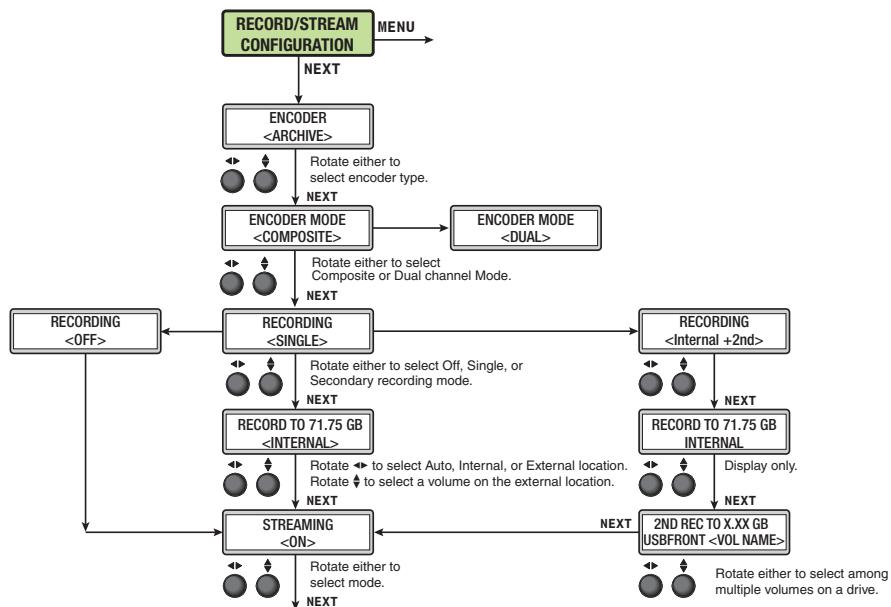


Figure 18. Recording Submenus for Composite Mode

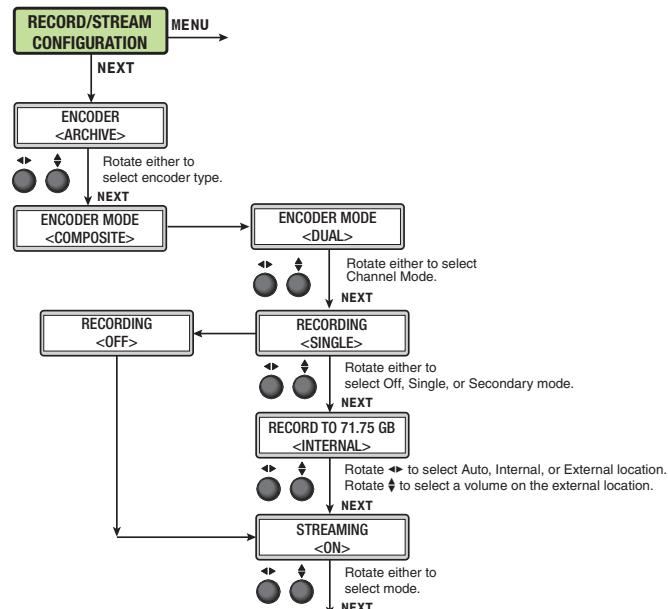


Figure 19. Recording Submenus for Dual Channel Mode

The Encoder Archive mode submenu contains options for directing the recording to a storage location. Rotate either selection knob to select Composite (see figure 18) or Dual Channel (see figure 19) mode.

If Composite mode is selected, rotate either selection knob to select:

- **Single** — The archive stream is recorded to the internal drive only (default).
- **Secondary** — The archive stream is recorded to the internal drive and the drive connected to one of the USB ports (front, rear, or RCP).
- **Off** — Recording is off.

NOTE: If Dual Channel mode is selected, rotate either knob to select **Single** or **Off**.

Subsequent submenus are available based on the **Recording** selection.

NOTE: When a USB device has more than one logical volume, each volume is numbered. Use the right **ADJUST** knob to select from among the different volumes on USB front, USB rear, and USB RCP storage devices.

ATTENTION:

- Disconnecting a USB device while recording to it may result in corrupt or lost data.
- Déconnecter un périphérique USB alors qu'un enregistrement y est effectué, peut engendrer une altération ou une perte de données.

NOTE: The SMP 300 Series can detect and record to USB storage devices using FAT32, VFAT long file name extensions, EXT2, EXT3, EXT4 file systems, or NTFS-formatted storage volumes. For FAT32 USB storage, file sizes must be limited to 4 GB or the recording creates multiple 4 GB files. FAT32 internal recording does not have the 4 GB size limit, if unlimited file size is selected.

Record To (Single)

The Record To submenu selects the drive the input is recorded to.

- **Auto** — The SMP stores the recording to locations in order of priority as set in the **Destination Recording Priority** drop-down lists.
- **Internal** — Selects the internal drive and displays the available drive space.
- **External** — Selects the drive connected to the front panel USB port and displays the available drive space. If there is no drive connected, the submenu is skipped.

When **External** is active, rotate the left (**◀▶**) **ADJUST** knob to select from the following:

- **<USBFRONT [VOLNAME]>** — An external drive connected to the front panel USB port.
- **<USBREAR [VOLNAME]>** — An external drive connected to the rear panel USB port.
- **<USBRCP [VOLNAME]>** — An external drive connected to the RCP USB port.

Auto mode allows users to set the recording storage priority by selecting options from the four **Destination Recording Priority** drop-down lists (see figure 20 below). Recordings are saved to the highest priority that has available storage space to the lowest (left to right). When that drive is full, the SMP uses the next drive with available space in the priority list (see [Start an Ad Hoc Recording](#) on page 61).

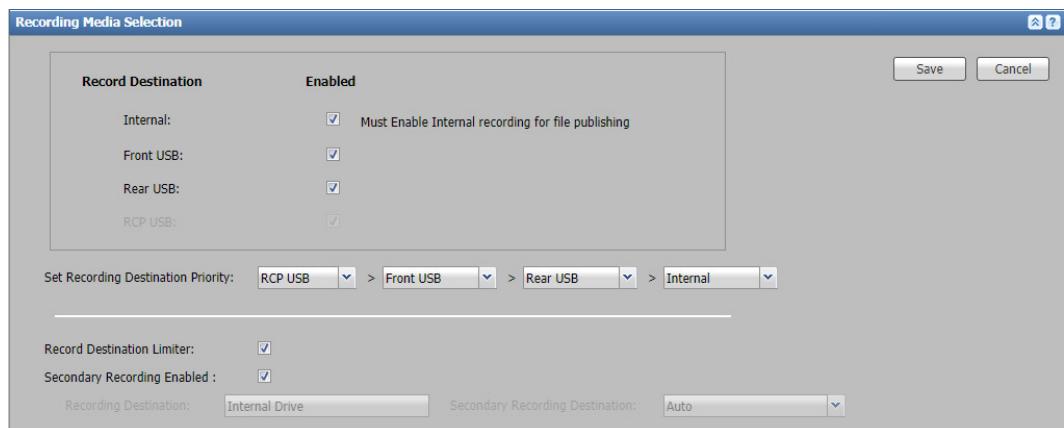


Figure 20. Recording Media Selection and Limit

For more information about recording media selection, please refer to the *SMP 300 Series Embedded Web Pages Help File*.

Record To (Internal + 2nd)

The Record To submenu selects the drive the input records to. Selecting **Internal + 2nd** assumes there is a USB drive connected. The input is always recorded to both the internal and external drives.

NOTE: In Dual Channel mode, Secondary Recording is disabled.

- **Internal** — Displays the available drive space for the internal drive.
- **External** — Displays the available drive space of the connected USB drive. If no drive is currently connected, the drive space shows **N/A**.

When **External** is active, rotate the left ($\blacktriangleleft\triangleright$) **ADJUST** knob to select from the following:

- **<USBFRONT [VOLNAME]>** — An external drive connected to the front panel USB port.
- **<USBREAR [VOLNAME]>** — An external drive connected to the rear panel USB port.
- **<USBRCP [VOLNAME]>** — An external drive connected to the RCP USB port.

Streaming

Streaming is available in both archive and confidence encodes. Streaming can be **ON** (enabled) or **OFF**. When streaming is enabled, the **STREAM METHOD**, **STREAM PROTOCOL**, and **MULTICAST IP** or **DESTINATION IP** submenus are available (see figure 21). The appropriate submenus are displayed depending on the previous submenu selection.

NOTE: In the menus and submenus, **MULTI** refers to a multicast protocol and **UNI** refers to unicast.

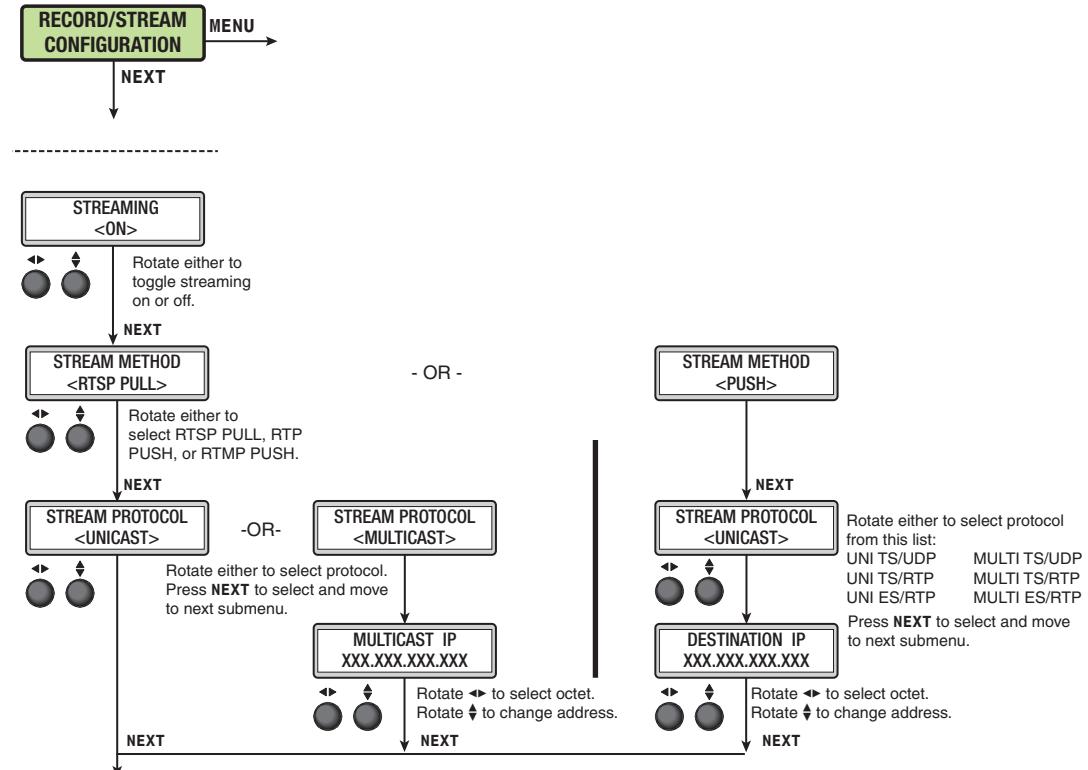


Figure 21. Streaming Submenus

The following submenus appear only when the encoder selection is **ARCHIVE**. Confidence encodes have independent stream settings.

Stream Method

Rotate either **ADJUST** knob to select: **PULL** (default) or **PUSH**.

Stream Protocol

The available stream protocol follows push or pull streaming.

- When **RTSP PULL** streaming is selected, choose between **UNI RTP/UDP** (default) and **MULTI RTP/UDP**.
- When **RTP PUSH** streaming is selected, choose one of six options: **UNI TS/UDP** (default), **UNI TS/RTP**, **UNI ES/RTP**, **MULTI TS/UDP**, **MULTI TS/RTP** and **MULTI ES/RTP**.
- When **RTMP PUSH** streaming is selected, go to the web UI to enter the server URL and stream name/key of the push destination

For more information, refer to the *SMP 300 Series Embedded Web Pages Help File*.

Multicast IP for pull multicast

When a multicast protocol is selected, the **MULTICAST IP** address must be entered. Check with the IT department for the correct multicast IP address for your network.

Enter the **MULTICAST IP** address:

- Rotate the left (◀▶) **ADJUST** knob to select the octet.
- Rotate the right (◀▶) **ADJUST** knob to change the address.

Destination IP for push streaming

When push streaming is selected, the **DESTINATION IP** address must be entered.

Enter the **DESTINATION IP** address:

- Rotate the left (◀▶) **ADJUST** knob to select the octet.
- Rotate the right (◀▶) **ADJUST** knob to change the address.

NOTE: The destination can also be configured to a local hostname or fully qualified domain name using the web-based user interface (see the *SMP 300 Series Embedded Web Pages Help File* for details).

Output mode

When the **ARCHIVE** encoder is selected, an option is provided to output audio and video or video only.

Rotate either **ADJUST** knob to select an output mode (see [figure 22](#) on the next page): **AUDIO/VIDEO** or **VIDEO**.

Audio Output

The SMP 351 without LinkLicense allows the user to set the **AUDIO OUTPUT** to either **A ONLY**, **B ONLY**, or **A+B**.

The SMP 351 with LinkLicense and the SMP 352 allow users to set the **AUDIO OUTPUT** to either channels **A+B DUAL MONO** or **B DUAL MONO** when Dual Mono for channel B is enabled.

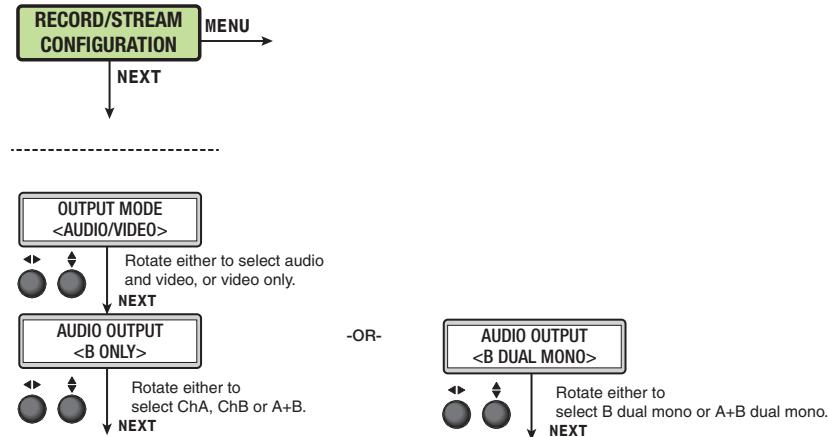


Figure 22. Audio Output Submenu

Resolution

Archive and confidence encoders have independent resolution settings.

The selections are:

- **Custom**
- **512x288**
- **848x480**
- **1024x768**
- **1280x720** (default)
- **1280x1024**
- **1920x1080**

There are three types of encoders - Archive Channel A, Archive Channel B, and Confidence.

	Output Rate	Aspect	Format Name	Max FPS
1	848x480	16:9	480p	30
2	1280x720	16:9	720p	30
3	1920x1080	16:9	1080p	30
4	1024x768	4:3	XGA	30
5	1280x1024	5:4	SXGA	30
6	512x288	16:9	WCIF	30

Recording resolution defaults to 1280x720.

NOTES:

- If the archive and confidence aspect ratios do not match, the source material can appear stretched on the confidence stream.
- A custom rate is defined with the web-based UI.
- For composite mode, the confidence encode cannot have a higher resolution than the archive encode.

Frame Rate (video)

Archive and confidence encodes have independent frame rate settings. This menu provides a frame rate selection (frames per second) from the following list:

- 30 (default)
- 24
- 12.5
- 10
- 25
- 15
- 12
- 5

Frame rates are selected separately for the archive and confidence encoder configurations.

Bit Rate (Video)

Archive and confidence encodes have independent video bit rate settings. **Video (VID)** bit rate sets a target video bit rate from 200 kbps to 10000 kbps (default 5000 kbps).

Rotate the left (◀▶) **ADJUST** knob to select the video bit rate.

Bit Rate (Audio)

Archive and confidence encodes have the same audio bit rate settings. **Audio (AUD)** bit rate allows the user to select an audio bit rate in kbps from the following selections:

- 80
- 96
- 128
- 192 (default)
- 256
- 320

Rotate the right (◀▶) **ADJUST** knob to select an audio bit rate.

Input Configuration Menu

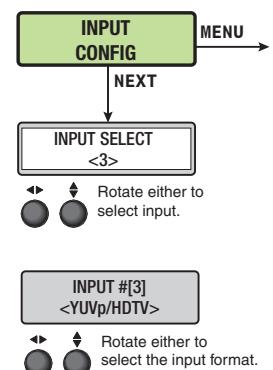
This menu allows the user to configure each of the five inputs.

NOTE: The Input Configuration submenus are input specific. Depending on the input type, not all submenus (shown in gray on subsequent pages) are available.

From the Input Config menu, press **NEXT** to enter the submenu (see image below, right).

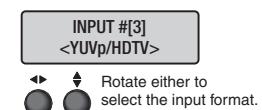
Input Select

The first submenu is the input selection (see image above right). Rotate either **ADJUST** knob to select the desired input number from the active front panel input selections for further configuration. This selection determines the subsequent submenus that are visible.



Input Format

The next submenu selects the input signal format (see image at right).



INPUT #1	INPUT #2	INPUT 3	INPUT 4	**INPUT 5
*HDMI/DVI	*HDMI/DVI	*YUVp/HDTV	*HDMI/DVI	*Auto-SDI
		YUVi		3G-SDI
		Composite		HD-SDI
				SDI

*Default

**Input 5 is only available on the SDI models.

NOTE: When there is no active input, the input parameters show N/A. For digital inputs, H/V start, H/V active, total pixel and phase submenus do not apply.

Film Detection (interlaced input formats only)

Film detection is automatically enabled when an interlaced input format is selected (see **Input Format** on page 39). Film detection supports 2:2 and 3:2 detection. The processing maximizes image detail and sharpness for interlaced sources that originated from film. Film detection is valid for any interlaced input type. The SMP 300 Series de-interlaces NTSC, PAL, and 1080i inputs.

If PIP mode and film detection are on for both inputs, the priority is given to the interlace input. If both inputs are interlaced, priority is first to the larger window size, or to the main window.

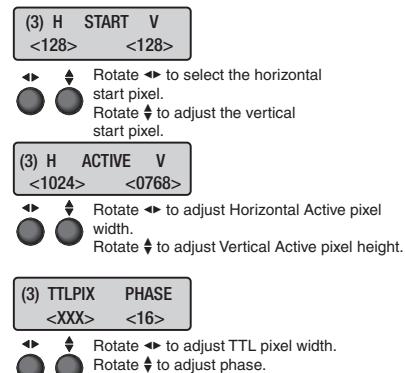
Film detection mode cannot be disabled and has no user adjustments.

Signal Sampling Configuration

Signal sampling optimizes the input signal for the currently selected input. The signal sampling settings are only available for analog inputs.

To use this submenu:

- **H Start** (horizontal start) and **V Start** (vertical start) — This submenu is used to set the horizontal and vertical start positions of the active video for input 3.
 - Rotate the left ($\blacktriangleleft\blacktriangleright$) **ADJUST** knob to change the horizontal start pixel position (left edge) of the active video for the selected input. The default is **128**.
 - Rotate the right (\blacktriangledown) **ADJUST** knob to change the vertical start line position (top edge) of the active video for the selected input. The default is **128**.
- **H ACTIVE** (horizontal active pixels) and **V ACTIVE** (vertical active lines) — This submenu is used to set the horizontal active pixels and vertical active lines of the active video for input 3.



To use this submenu:

- Rotate the left ($\blacktriangleleft\blacktriangleright$) **ADJUST** knob to change the width (in pixels) of the active video for the selected input.
- Rotate the right (\blacktriangledown) **ADJUST** knob to change the height (in lines) of the active video for the selected input.
- **TTLPIX** (total pixels) and **PHASE** (pixel phase) — This submenu is used to set the total pixels and pixel phase of the active video for input 3.

To use this submenu:

- Rotate the left ($\blacktriangleleft\blacktriangleright$) **ADJUST** knob to change the width (in pixels) of the total display area to be sampled for the selected input.
- Rotate the right (\blacktriangledown) **ADJUST** knob to move the pixel sampling point for the selected input. The range of settings is **000** to **063**. The default is **032**.

Aspect Ratio

The **Aspect Ratio** adjustment allows the user to select between input rates to fill the entire window for that channel (**FILL**), scale up to fit the channel window and keep the original aspect ratio (**FIT**), or to allow each input rate to display in its native aspect ratio with respect to the channel window (**FOLLOW**).

ASPECT RATIO IN[1]
<FILL>

Rotate either to
select an aspect ratio for the
selected input.

The aspect ratio can be changed per input. The selected input is displayed in the first line. Rotate either **ADJUST** knob to select **FOLLOW**, **FILL** (default), and **FIT** for the selected input.

Aspect Ratio	Screen Appearance	Description
FOLLOW		The input format passes unchanged. A 4x3 format (represented by the red block on the left) remains at its original aspect ratio. The vertical dimension fills, but not the horizontal dimension of the output or recording. Letter box or pillar bars can be applied based on the horizontal and vertical size settings (see Picture Control Menu on page 30).
FIT		The input format is zoomed to fill the output with top and bottom or left and right information cropped out in order to fit the screen without letterboxing or adding pillars. Some loss of image occurs represented by the dimmed image outside the red block.
FILL		The input format is non-uniformly scaled to fill the 16x9 output. A 4x3 input fills the horizontal and vertical screen of the output or recording with some distortion of the input (default)

NOTE: The selected input aspect ratio setting is applied to both the archive and confidence outputs. If the confidence resolution is different, the applied aspect ratio cannot be maintained. For example, if the archive resolution is 1080p with an aspect ratio of 16:9, and the confidence display is 1024x768 with an aspect ratio of 4:3, the input aspect ratio selection cannot be maintained for both.

EDID on HDMI Connectors

EDID emulation is available on HDMI inputs 1, 2 and 4. By default, all three custom EDIDs are set to 720p @ 60 Hz, 2-channel audio. The selected input is displayed in the first line. Rotate either **ADJUST** knob to select the desired EDID from the **EDID table** on page 42.

EDID INPUT #1
<720p_60_2ch>

Rotate to set an
EDID value for the
active input.

EDID	Resolution	Refresh Rate	Rate Type	Video Forma	Audio
1	800x600	60 Hz	PC	DVI	N/A
2	1024x768	60 Hz	PC	DVI	N/A
3	1280x720	60 Hz	PC	DVI	N/A
4	1280x768	60 Hz	PC	DVI	N/A
5	1280x800	60 Hz	PC	DVI	N/A
6	1280x1024	60 Hz	PC	DVI	N/A
7	1360x768	60 Hz	PC	DVI	N/A
8	1366x768	60 Hz	PC	DVI	N/A
9	1400x1050	60 Hz	PC	DVI	N/A
10	1440x900	60 Hz	PC	DVI	N/A
11	1600x900	60 Hz	PC	DVI	N/A
12	1600x1200	60 Hz	PC	DVI	N/A
13	1680x1050	60 Hz	PC	DVI	N/A
14	1920x1080	60 Hz	PC	DVI	N/A
15	1920x1200	60 Hz	PC	DVI	N/A
16	800x600	60 Hz	PC	HDMI	2-Ch
17	1024x768	60 Hz	PC	HDMI	2-Ch
18	1280x768	60 Hz	PC	HDMI	2-Ch
19	1280x800	60 Hz	PC	HDMI	2-Ch
20	1280x1024	60 Hz	PC	HDMI	2-Ch
21	1360x768	60 Hz	PC	HDMI	2-Ch
22	1366x768	60 Hz	PC	HDMI	2-Ch
23	1400x1050	60 Hz	PC	HDMI	2-Ch
24	1440x900	60 Hz	PC	HDMI	2-Ch
25	1600x900	60 Hz	PC	HDMI	2-Ch
26	1600x1200	60 Hz	PC	HDMI	2-Ch
27	1680x1050	60 Hz	PC	HDMI	2-Ch
28	1920x1200	60 Hz	PC	HDMI	2-Ch
29	480p	60 Hz	HDTV	HDMI	2-Ch
30	576p	50 Hz	HDTV	HDMI	2-Ch
31	720p	50 Hz	HDTV	HDMI	2-Ch
32	720p	60 Hz	HDTV	HDMI	2-Ch
33	1080i	50 Hz	HDTV	HDMI	2-Ch
34	1080i	60 Hz	HDTV	HDMI	2-Ch
35	1080p	25 Hz	HDTV	HDMI	2-Ch
36	1080p	50 Hz	HDTV	HDMI	2-Ch
37	1080p	24 Hz	HDTV	HDMI	2-Ch
38	1080p	60 Hz	HDTV	HDMI	2-Ch
39	User Loaded Slot 1				
40	User Loaded Slot 2				
41	User Loaded Slot 3				

Audio Select

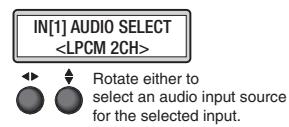
Each of the inputs has a corresponding input audio format selection. The selected input is displayed in the first line.

For HDMI inputs 1, 2, 4, and 5 the audio format can be:

- **LPCM 2CH** (default) — Embedded digital audio (default).
- **ANALOG AUDIO** — Analog audio from the rear panel captive screw connections.
- **OFF** — No audio.

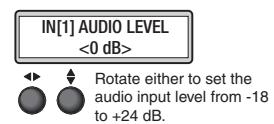
For analog video input 3, the audio format can be:

- **ANALOG AUDIO** (default) — Analog audio from the rear panel captive screw connections.
- **OFF** — No audio.



Audio Level

Each audio input channel can be adjusted from **-18 dB** to **+24 dB**. The default value is **0 dB**. The selected input is displayed in the first line.



Background Recall Menu (For composite mode only)

A background can be selected to record with the channel A and B inputs. Background files must be in PNG format and uploaded to the **Background** folder of the SMP 300 Series using the embedded web pages or an SFTP client.

Use either knob to scroll through available files. Press **NEXT** to apply the background to the current layout. If the file is smaller than the selected output resolution, the background displays from the top left corner. If the file resolution is larger, the background is cropped to fit the selected resolution.

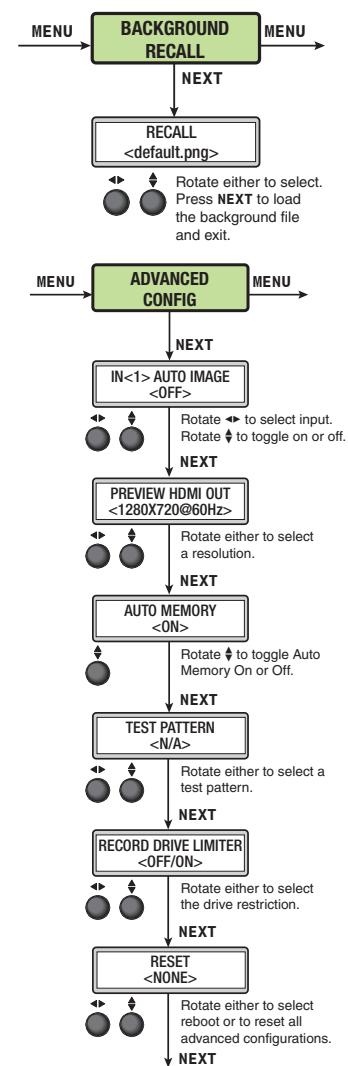
Advanced Configuration Menu

The following flowchart provides an overview of the **ADVANCED CONFIGURATION** menu. Options include **AUTO IMAGE** (**ON** or **OFF**), **PREVIEW HDMI OUT**, **AUTO MEMORY** (**ON** or **OFF**), **TEST PATTERN**, **RECORD DRIVE LIMITER**, and **RESET** (defaults to factory).

Auto-Image

This mode is selectable per input and is used where a variety of input sources are likely encountered. Auto-Image automatically sizes and positions incoming video signal to fill the channel window when a new input signal is detected. When Auto Memory is off, Auto-Image executes whether or not the same input frequency has been detected before.

NOTE: Enabling Auto-Image when overscan is also enabled recalls the default sampling settings for the detected input rate.



Use the left (\blacktriangleleft) **ADJUST** knob to select the desired input. Use the right (\triangleright) **ADJUST** knob to toggle **AUTO IMAGE ON** or **OFF** (default).

When enabled and a new input frequency is detected, an existing Auto Memory for the signal is applied (if **AUTO MEMORY** is enabled). If no entry exists, an automatic Auto-Image is applied to the new signal. This sizes and positions the incoming video signal to display properly within the channel window, with respect to the current aspect ratio setting.

The value is global to all analog inputs on the SMP 300 Series and defines the minimum luminosity that the Auto-Image routine defines as active video (default: 25%).

Auto-Image affects active pixel, active lines, H/V start, and phase configurations. All other picture controls remain unchanged. If the aspect ratio is set to **FILL**, H/V position returns to 0, 0 and the H/V size is set to match the current output rate. Input sampling settings are updated according to standard Auto-Image operation. If the aspect ratio is set to Follow or Fit, the H/V position and H/V size are set to maintain the native aspect ratio of the input in respect to the current output resolution. All input sampling settings are updated according to standard Auto-Image operation. Image size and position are reset to default values after auto imaging.

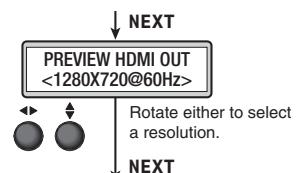
Press **NEXT** to select the input value and move to the next submenu.

NOTE: Aside from the standard Auto-Image SIS command, there are unique commands to Auto-Image to fill the output and maintain input aspect ratio (see **Auto-Image and Memory** on page 122).

Preview HDMI Output

Use either front panel **ADJUST** knobs to select the refresh rate of the **Preview HDMI Output**. It can be either 50 Hz or 60 Hz (default). The resolution follows the archive output and cannot be changed.

Press **NEXT** to select the value and move to the next submenu.



NOTE: When the selected archive resolution is under 720 lines (for example, if the archive encoder is set as 848x480 or 512x288) the HDMI preview output is set to 1280x720, with the video content centered in the 720p window.

Auto Memory

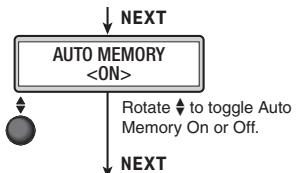
AUTO MEMORY is enabled on all inputs by default. It should only be disabled if the user desires to have a source applied to the input treated as a new source regardless of whether the source was detected previously.

When enabled and a new input frequency is detected, an existing Auto Memory for the signal is first applied.

If no entry exists, it performs an automatic Auto-Image on the new signal. This sets a size and position for the image to fill the screen, with respect to the current aspect ratio setting.

The SMP 300 Series has 16 global memory locations, and stores unique entries for each input format (for example, YUVi versus YUV-HD). Auto Memory saves H/V start, active pixels, active lines, total pixels, phase, brightness, contrast, color, and tint settings.

The input lookup table identifies new analog inputs based on input type, total line count of the input, and H/V frequency. Auto Memory locations associate with specific entries in the input lookup table (not based solely on H/V frequency). For example, the RGBHV 1024x768 @ 60 Hz input lookup table entry can only have a single associated Auto Memory.



Digital inputs are automatically set up using information regarding image size and refresh provided by the digital input. This allows for non-standard rates (not found in the input lookup table) to display correctly. Digital inputs that do not match an existing lookup table are saved to Auto Memory as unique entries based on the total line count, H/V active, and vertical refresh rate.

Press **NEXT** to select the value and move to the next submenu.

Test Patterns

Test patterns are an essential tool for configuration and troubleshooting.

The SMP 300 Series offers eight patterns, applied per window: color bars, time stamp, pulse (for audio), crop aspect ratio (1.33, 1.78, 1.85), and universal OSD patterns.

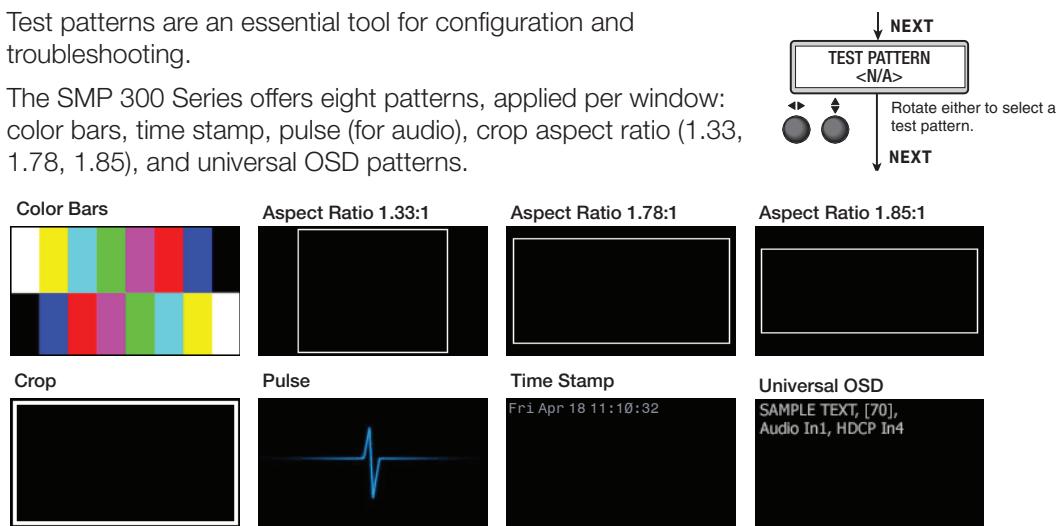


Figure 23. Test Patterns

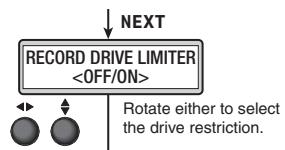
- **Color Bars** — Standard full screen color bars overlaid on top of the current layout.
- **Time Stamp (For composite mode only)** — Displays white text in a small, translucent, gray rectangle with the unit date and time (for example: **Fri Apr 18 HH:MM:SS**) in the top left corner of the display window.
- **Pulse** — Select **Pulse** to output an audio pulse of 400 Hz at -10 dBu for audio output testing.
- **Crop** — Outlines the active picture area.
- **Aspect Ratio** — Three patterns with screen outlines in 1.33:1, 1.78:1, and 1.85:1 for centering and size adjustment.
- **Universal OSD (For composite mode only)** — This pattern consists of a small, translucent, gray rectangle with white text overlaid atop the source video content. It appears in the upper left of the screen. The text includes brief text of your choice followed by three selectable elements separated by commas (see [Setting up the universal OSD test pattern](#) on page 78).

Rotate either **ADJUST** knob to scroll through the patterns. Stop on the desired pattern and press **NEXT**. The selected test pattern is immediately output to the display. The test pattern displays until another pattern is selected, **OFF** is selected from the **Test Pattern** drop-down list, or unit power is recycled.

Record Drive Limiter

Configure the record drive locations to be limited or to be fully automatic. The following limitations can be selected:

- **OFF** (not restricted, default) — Record to internal memory and any connected drives.
- **ON**

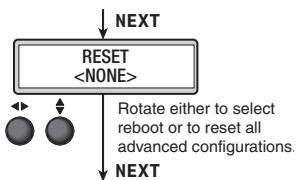


Based on the top level selection, the **REC LOCATION** submenu under Record/Stream Config offers different record drive options (see [Record and Stream Configuration Menu](#) on page 33).

Reset

The Reset submenu provides a factory reset or firmware reboot. The selections are:

- **To Factory** — Equivalent to a ZQQQ command (see [Resets](#) on page 116). The unit is reset to factory defaults with the current firmware.
- **Reboot Unit** — Identical to a power cycle.



A reset or reboot confirmation message appears before the reset or reboot. After confirming, the front panel LCD displays **Resetting/Rebooting Unit**.

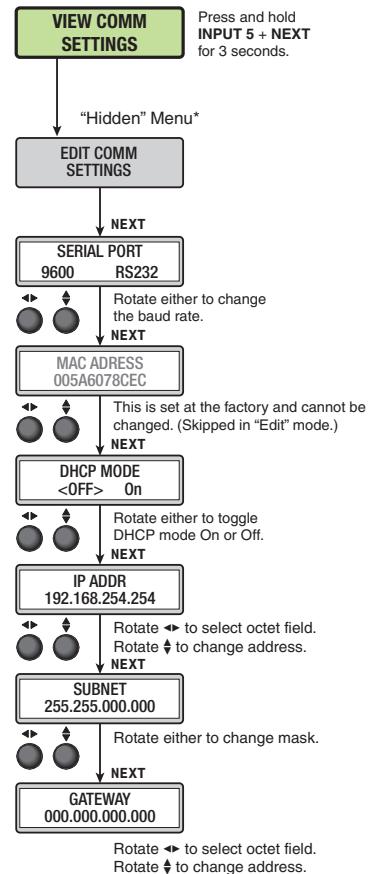
NOTE: The factory configured passwords for all accounts on this device have been set to the device serial number. In the event of a complete system reset, the passwords convert to the default, which is no password (see [Users and Roles](#) on page 86 to change a password).

Comm Settings (View and Edit) Menu

The two Comm Settings menus provide a status of the current serial port and IP settings for the communications ports. A hidden menu allows changes to the settings.

The main menu defaults to the **VIEW COMM SETTINGS** submenus for viewing all communication port settings. Press **NEXT** to cycle through the submenu.

The **VIEW COMM SETTINGS** submenu is read-only. To make changes, press and hold **NEXT** and **INPUT 5** simultaneously for 3 seconds in the **VIEW COMM SETTINGS** menu or any of the submenus. The **VIEW COMM SETTINGS** menu changes to the **EDIT COMM SETTINGS** menu.



Change an Address

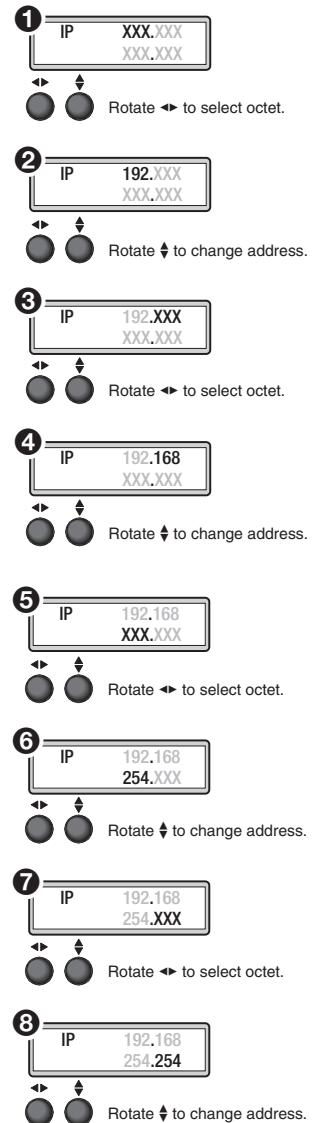
To change the IP address (IP ADDR), Subnet Mask (SUBNET), and Gateway IP address (GATEWAY):

Enter the EDIT COMM SETTINGS menu and navigate to the desired address (IP address shown).

1. Make the octet selection with the left ($\blacktriangleleft\blacktriangleright$) **ADJUST** knob. The selected octet blinks (shown in **Bold** in the illustration at right, **1**).
2. Change the selected octet value using the right (\blacktriangledown) **ADJUST** knob (**2**).
3. Make the next octet selection with the left ($\blacktriangleleft\blacktriangleright$) **ADJUST** knob. The selected octet blinks (shown in **Bold** in the illustration at right, **3**).
4. Change the selected octet value using the right (\blacktriangledown) **ADJUST** knob (**4**).
5. Make the next octet selection with the left ($\blacktriangleleft\blacktriangleright$) **ADJUST** knob. The selected octet blinks (shown in **Bold** in the illustration at right, **5**).
6. Change the selected octet value using the right (\blacktriangledown) **ADJUST** knob (**6**).
7. Make the next octet selection with the left ($\blacktriangleleft\blacktriangleright$) **ADJUST** knob. The selected octet blinks, shown in **Bold** in the illustration at right (**7**).
8. Change the selected octet value using the right (\blacktriangledown) **ADJUST** knob (**8**).

When you are done with the changes, press **MENU** to cancel the changes and return to the EDIT COMM SETTINGS menu or **NEXT** to submit the value. The network connection restarts to reflect the changes after pressing **NEXT** from the **GATEWAY** submenu.

NOTE: The subnet mask is changed using either **ADJUST** knob.



Status Menu

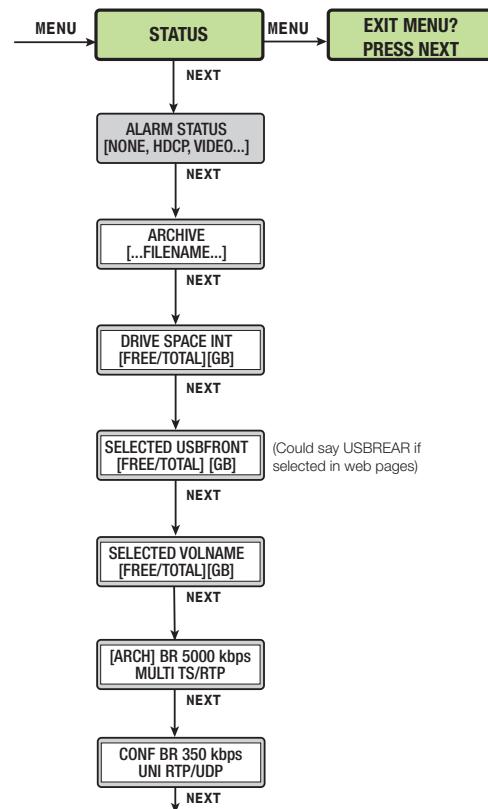
The STATUS menu contains read-only submenus that show the current unit status including active alarms, recording file names, free space and total internal and external drive capacity, and bit rates for archive and confidence streams.

- **ALARM STATUS** — Scroll through the active alarms. If no alarms are present, it shows None.
- **ARCHIVE** — Displays filenames currently being written to or the last file created. If the filename is longer than sixteen characters, the filename scrolls. It shows N/A if no new or current recordings are present.

NOTE: A non-ASCII character in a filename is displayed as a white block.

- **DRIVE SPACE** — Indicates the free and total space on the internal hard drive and the selected USB drive. The capacity is shown in three digits with two decimals in either MB or GB.
- **SELECTED VOLUME NAME** — Displays the size and free space on a connected USB drive.
- **OUTPUT STREAM** — Displays the video bit rate and protocol of the output stream.

Press **NEXT** to return to the STATUS menu.



Exit Menu

From this submenu, press **MENU** to return to the PRESETS menu cycle, or press **NEXT** to exit the menu and return to the default cycle.

Front Panel Lockout (Executive Modes)

To prevent accidental changes to front panel menu settings, simultaneously press **MENU** and **MARK** for 3 seconds to enable front panel lockout mode.

The menu system returns to the default menu within 10 seconds.

Executive mode begins in mode 1. Rotate either **ADJUST** knob to cycle to mode 2, then mode 3, and mode 4 (Executive mode off).

When executive mode is active, all functions and adjustments can still be made via USB, RS-232, or Ethernet control (see **Remote Communication and Control** starting on page 106).

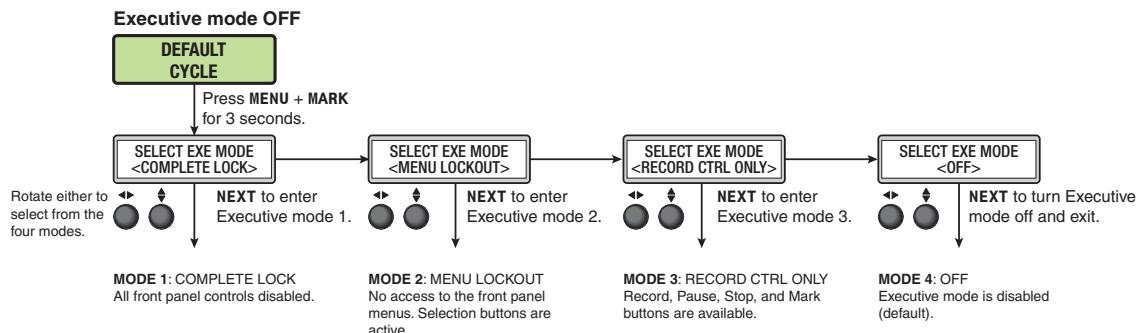


Figure 24. Front Panel Lockout (Executive Mode)

When executive mode is enabled, simultaneously press **MENU** and **MARK** to display the **SELECT EXE MODE** submenu. The current executive mode status is listed in this submenu.

In addition, when executive mode is enabled, the front panel buttons change color corresponding to the active executive mode (see the following table).

Executive Mode	Executive Mode Description	Active Input Buttons	Layout Preset/Swap	Menu/Next
1	Complete lock	Amber	Off	Off
2	Menu lockout	Amber	Amber	On
3	Record ctrl only	Amber	Off	Off
Off	OFF (no lockout)	Amber	Amber	Amber

NOTE: Control buttons indicate the current recording or streaming status regardless of executive mode.

Alarms

The front panel alarms display lists alerts for events as determined in the web page (see **Alarms and Traps** on page 88). The **Alarm** table on page 50 lists alarms generated by the SMP 300 Series, what they mean, and how they are cleared.

NOTE: All active alarms can be manually cleared by an administrator via the web page (see **Alarms** on page 100).

Alarm	Alarm Generated	Alarm Cleared
App Failure	<ul style="list-style-type: none"> A drop in communication between firmware and enabled FlexOS app. It is a Notify alarm by default. 	Reinstall the FlexOS app.
Audio Loss	<p>One of these occur during a recording:</p> <ul style="list-style-type: none"> Audio is absent (signal is at or below -60 dBFS) before a recording starts, an alarm triggers after 5 minutes of the start of the recording. Audio is lost during a recording, the alarm triggers after 10 seconds. 	<ul style="list-style-type: none"> The audio signal is maintained above -60 dBFS for a contiguous period of 60 seconds. The recording session ends.
Auth Failures	Any combination of access interfaces (web page, Telnet, API, SFTP, SIS via SSH) that require authentication, with a maximum of 20 failed login attempts within 20 seconds on any combination of user IDs (including non-existent user IDs).	Can only be cleared by an administrator via the web page (see Alarms and Traps on page 88) or SIS commands (see Clear active alarms on page 116).
Disk Error	<ul style="list-style-type: none"> Internal system storage volume registers one or more read or write errors that cannot be recovered. A read or write error is detected on the selected storage volume (for example: a write protected drive). Target storage volume is not found (for example: USBFront is selected but the SMP does not detect any external storage). 	<ul style="list-style-type: none"> Replace the affected USB storage. Choose a different target storage volume. Remove the write protection from the volume.
Disk Space	<ul style="list-style-type: none"> The external USB storage volume drops to <10 minutes of recording time while recording. The target volume does not have sufficient space to record at the start of an event. 	<ul style="list-style-type: none"> Replace the affected storage with one having adequate space (USB drive). Choose an alternate target storage volume with adequate space.
Firmware Failure	<ul style="list-style-type: none"> A failure to start a critical portion of SMP operation. It is a Notify alarm by default. 	Contact Extron Support when this alarm is triggered.
HDCP Video	The signal is HDCP protected and the SMP cannot negotiate HDCP for any reason on an active input.	The HDCP source is no longer active or is taken off the input.
NTP Sync	<ul style="list-style-type: none"> The SMP attempts to automatically sync with the configured NTP server and fails the primary and retry attempts. SMP fails multiple manual sync attempts. 	The NTP sync succeeds without retries for a period of five synchronization attempts.
Publish Failure	A file transfer method is configured but the unit fails to upload files after 5 sequential retries.	Can only be cleared by an Administrator via the web page (see Alarms and Traps) or SIS command (see Clear active alarms).
Record Halt	A recording is terminated without a command to stop.	Can only be cleared by an Administrator via the web page (see Alarms and Traps).
Sched Server	There is an error communicating with the scheduling server.	The connection to the server is restored or an alternate scheduling configuration is set.
Temperature Internal	The SMP internal temperature exceeds 60° C for 2 minutes.	The SMP temperature drops below 50° C.
USB Overcurrent (front and rear USB)	A USB port current draw exceeds the 1.5 A limit of the ports.	The offending device is removed from the SMP.
USB Overcurrent (keyboard and mouse)	A USB port current draw of a connected mouse or keyboard exceeds the 0.5 A limit of the ports.	The offending device is removed from the SMP.

Alarm	Alarm Generated	Alarm Cleared
Video Loss	<ul style="list-style-type: none"> • Video sync is lost during a recording for a period of 0.5 seconds that is not the result of an input change. • The input is changed and video sync cannot be established within a 2 seconds limit. 	Video sync is detected for about 2 seconds.
Virtual Input	<ul style="list-style-type: none"> • V1 or V2 is selected but the connection cannot be established (fail to load). • V1 or V2 is selected but the unit detects stream errors (cannot connect to stream). 	<ul style="list-style-type: none"> • A new stream URI is entered. • Successfully reconnect the stream. • Manually cleared by the Admin.

Web-Based User Interface

This section provides information about:

- [Overview of the Web-Based User Interface](#)
- [Accessing the Web-Based User Interface](#)
- [Logging Out and Logging In](#)
- [AV Controls Panel](#)
- [Recording Controls](#)
- [Scheduled Events](#)
- [Configuration](#)
- [File Management](#)
- [Troubleshooting](#)
- [Mirroring LinkLicense](#)

Overview of the Web-Based User Interface

The SMP 300 Series embedded web pages provide the software user interface for operating and configuring the SMP via a PC on the same network.

NOTE: In figure 25, the home page for a standard SMP 300 Series device is shown. If the Horizontal Video Mirroring LinkLicense is purchased, there will be an additional Mirroring LinkLicense tab and Horizontal Video Mirroring Status section.

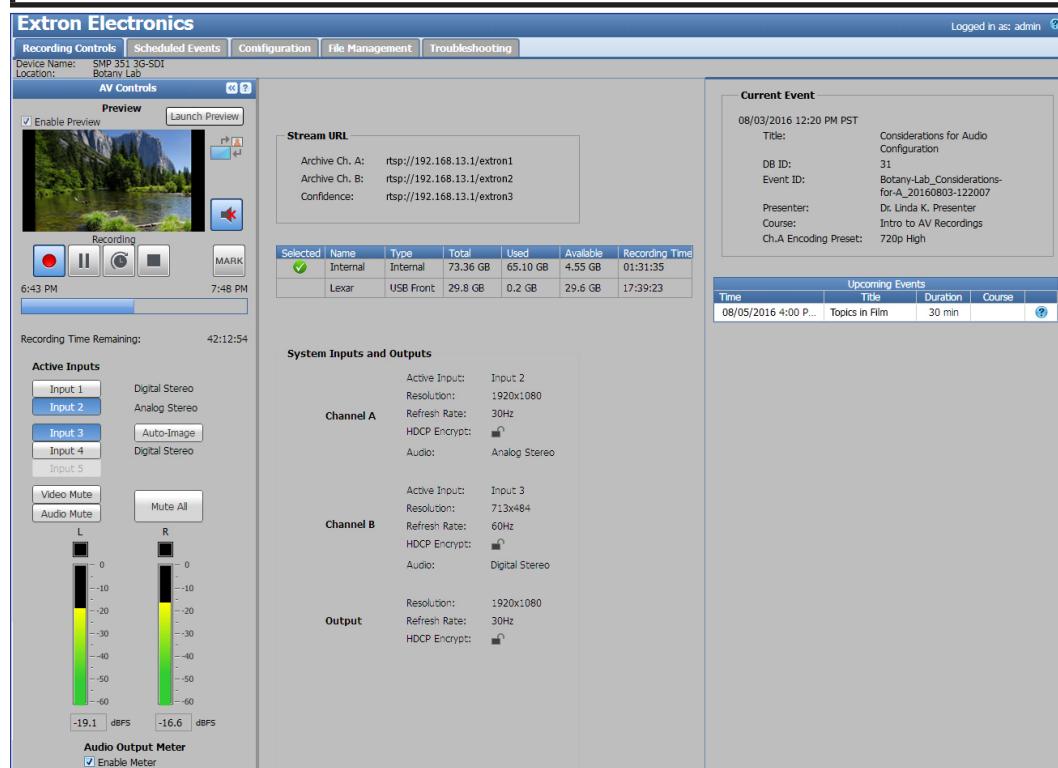


Figure 25. SMP 300 Series Embedded Web Pages

These web pages provide the following features:

- Configure the SMP.
- Import a schedule, integrate schedules from a scheduling system, or create ad hoc recordings.
- Update firmware.

- Configure automatic uploads (publishing) of completed recordings to a designated server or video publishing system.
- Remote control and active monitoring of the SMP.
- View the AV content that is being recorded and streamed in a small embedded video window.
- Access to upload background files to and download or transfer presentation recordings from the SMP.
- Display alarm history and allow administrators to clear active alarms.
- Upload and install a LinkLicense on an SMP 351 or SMP 351 3G-SDI (see [Extron LinkLicense](#) on page 3).

Web Browser Requirements

In order to view the SMP 300 Series embedded web pages, use one of the supported web browsers (see [PC Requirements](#) on page 3).

NOTE: The preview video in the **AV Controls** panel of the SMP uses an HTML5 player and is not supported by Microsoft Internet Explorer v.11, Microsoft Edge, or Apple Safari. To see a preview of the current stream you can either:
 Use a different browser, or
 Open a standalone, third-party video player (such as VideoLAN™ open source VLC™ media player) and connect to the confidence stream from the SMP.

Web-Based User Interface Help Files

The SMP 300 Series web-based user interface contains an extensive set of help files to assist with the connection, configuration, monitoring, and operation of the SMP 300 Series. The following sections contain an overview of those files and also include information not contained in the help files.

Accessing the Web-Based User Interface

To access the embedded web page user interface:

1. Connect a control PC to the LAN port of the SMP 300 Series, or to the same network shared by the SMP.
2. Open a web browser.
3. Enter the IP address of the SMP 300 Series into the browser address field (the default IP address is **192.168.254.254**).
4. Enter the username and password to log in.

NOTE: The factory configured passwords for all accounts on this device have been set to the device serial number. In the event of a complete system reset, the passwords convert to the default, which is no password (see [Users and Roles](#) on page 86 to change a password).

5. Click **Log In** or **OK**.

The main user interface opens to the Recording Controls page (see figure 26).

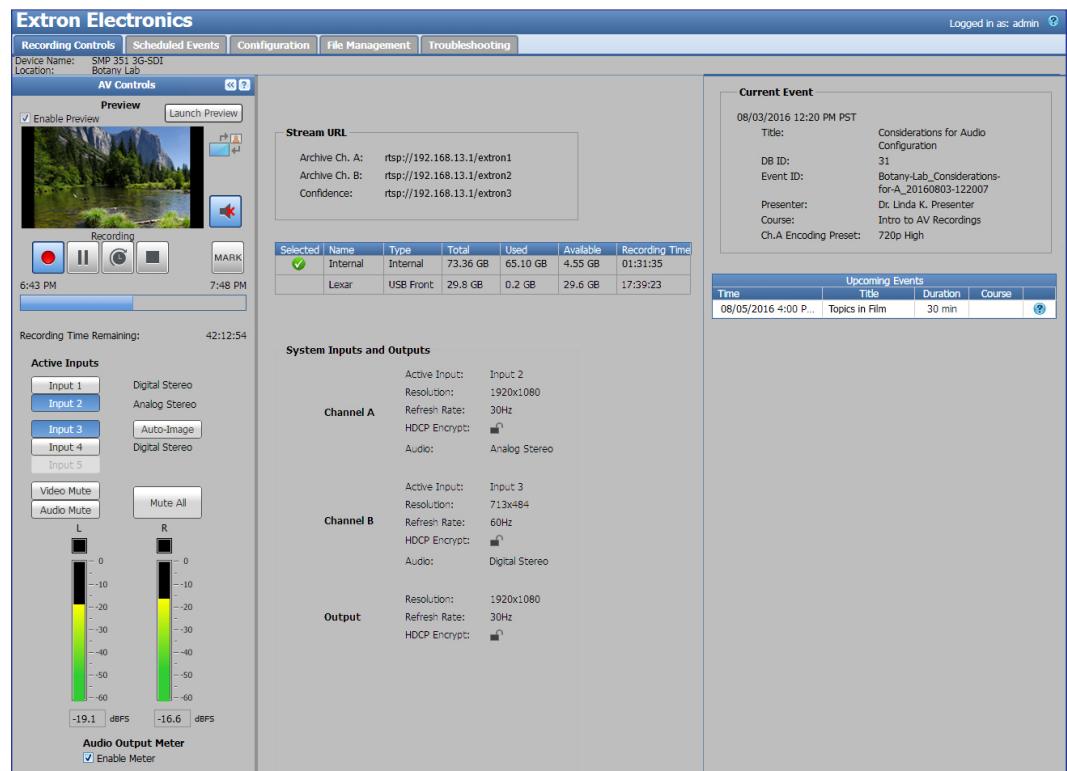


Figure 26. SMP 300 Series Main User Interface

NOTE: In figure 26, the home page for a standard SMP 300 Series device is shown. If the Horizontal Video Mirroring LinkLicense is purchased, there will be an additional Mirroring LinkLicense tab and Horizontal Video Mirroring Status section displaying the status of the horizontal mirroring of each input.

Page Overview

The SMP 300 Series pages are organized by function and further organized within those main functions. Click the tabs to open the pages.

Tabs

The pages in the SMP 300 Series are grouped within five main tabs at the top of the page:



Figure 27. Five Main Function Tabs

- ① **Recording Controls** (see page 64) — This single page provides a view of the status of currently selected inputs and outputs, along with details of the active recording and stream (the current event), and a table-style list of upcoming scheduled events. The URLs of the streams are also displayed on this page.
- ② **Scheduled Events** (see page 66) — This tab features three pages that provide a calendar view of previous and upcoming recording events, as well as scheduling and publishing configuration options.
- ③ **Configuration** (see page 72) — The eight pages within this tab contain the core controls typically needed during initial setup, upgrading the unit, or restoring a configuration. These pages make it possible for an administrator to configure basic AV input settings:
 - Output video test patterns for setup.
 - Configure output stream settings and presets.
 - Set up AV encoding and presets.
 - Select or configure layouts and layout presets.
 - Set passwords.
 - Set up notices and alarms.
 - Select preview window settings.The Configuration pages also provide the means to configure basic communication, identity, time, data storage, and recording location settings, along with making it possible to update firmware or restore a configuration from a saved file.
- ④ **File Management** (see page 95) — This page provides the means to view folders and files on the internal drive and any attached external drive, and to upload background image files to the unit. It also provides the means to connect the SMP to shared network drives.
- ⑤ **Troubleshooting** (see page 97) — The five pages within this tab display factory-defined and user-defined information about the unit and the encoded streams, display a log of events and a log of alarms and their status, provide two simple diagnostic tools for checking network connections, and provide the means to perform a variety of types of resets on the SMP.
- ⑥ **Mirroring LinkLicense** (see page 103) — **If the unit has been upgraded with the Horizontal Video Mirroring LinkLicense**, there will be a sixth tab with two panels. This page allows the user to enable horizontal video mirroring on each input, adjust the minimum available recording time available on a storage device, and set a start recording delay.

NOTE: Users logged in as administrators can access all the embedded web pages and subpages. User logged in as users can access only the **Recording Controls** page and the **AV Controls** panel.

Pages Within Tabs

The **Scheduled Events**, **Configuration**, and **Troubleshooting** tabs each include several pages. To access each page, click the corresponding function within the second tier of tabs (sub-tabs) located below the main tabs near the top of the page (see **Configuration > Input/Output Settings** shown selected in figure 28).



Figure 28. Pages Within Tabs – Sub-tabs

Panels and Sections

Each SMP 300 Series web page contains at least one panel and a main window with sections that group the controls and information for each page. Most panels include controls and a variety of adjustments and settings. Specific sections can include controls or simply display information. Sections or panels can include tabs with additional selections and options.

All SMP 300 Series web pages include the **AV Controls** panel at the left of the page (see **AV Controls Panel** on page 58). The **Recording Controls** page is the main page and also serves as the main operating interface. It contains one panel and three sections. Pages such as the **Systems Settings** page within the **Configuration** tab include several panes, each with a different collection of information and settings.

Collapse and expand panes

Click the **Expand** (see figure 29, ①) arrow button on the right side of a pane. The pane opens to a full view, or as much as possible with the current display settings.

Click the **Collapse** (②) arrow button at the top corner of a pane to collapse it. This hides the controls and provides additional room for other panes.

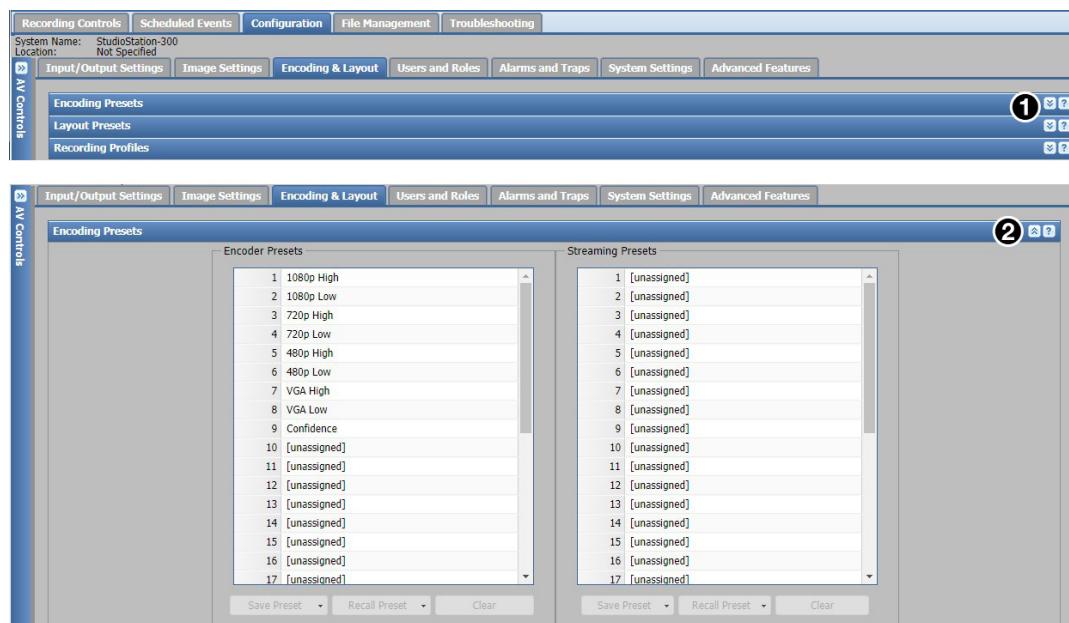


Figure 29. Collapsed and Expanded Panes

NOTE: For some pages, the last-selected view is maintained. If you navigate away from one page to a different tab or page, and then return, the page appears as it did before leaving the page. Panes automatically collapse each time you leave and return.

Web Page Idle (Timeout)

To conserve resources (memory, bandwidth) on the PC, if the web browser is idle for more than about an hour, the SMP 300 Series web page enters idle mode. During idle mode, status updates and video confidence (preview) display image updates are suspended, and the following message is displayed in front of the page:

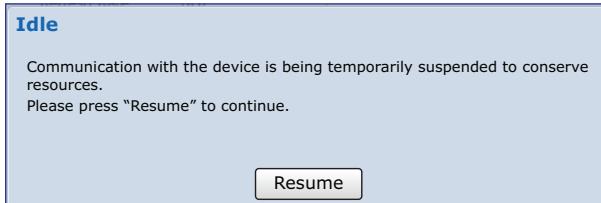


Figure 30. Communication Suspended Notification Dialog

NOTE: The idle status does not affect the recording or the output AV streams, which continue unaffected, no matter what state (active or idle) the web pages are in.

To reconnect the web page to the live feed from the SMP 300 Series, click **Resume**. In a moment, the browser refreshes the view, the status updates, and video confidence display resume.

NOTE: If the SMP 300 Series loses the network connection, the connection to the embedded web pages is also lost. You may receive notice of the connection failure, but there is no specific status indication for disconnection.

Logging Out and Logging In

Before changing roles (from administrator to user, or user to administrator) or changing user accounts, log out of the embedded web pages. The user or administrator status is displayed in the upper right corner of all web pages.

The **Logout** button shows only if one or more passwords is active.

NOTE: The factory configured passwords for all accounts on this device have been set to the device serial number. In the event of a complete system reset, the passwords convert to the default, which is no password (see **Users and Roles** on page 86 to change a password).

To log out of the web pages:

1. From any embedded web page, click the **Logout** button at the upper right of the browser page.
A **Logout** dialog box opens.
2. Click **OK** to log out of the SMP 300 Series web pages, or click **Cancel** to remain logged on using the same account.

The **Logout** dialog closes and returns you to the embedded web pages.

NOTE:

- If you click **Cancel**, you remain logged in and the embedded web pages continue to function as they did before you clicked **Logout**.
- If you click **OK**, the controls are replaced by a message confirming that you are logged out and asking you to close the browser. Close the browser completely. If you close only a tab within the browser, the logout process does not complete.
- Some browsers, such as Google Chrome, include an option to continue running in the background after closing. If this is enabled on Windows, the browser can be exited completely using the taskbar notification icon.

To log in to an SMP 300 Series:

1. Open a web browser.
2. Enter the IP address of the SMP into the address field and navigate to that unit. The **Authentication Required** (Chrome or Firefox) or **Windows Security** (Microsoft Edge) login dialog box opens.
3. Enter the appropriate user or administrator user name and corresponding password into the fields.

NOTE: The factory configured passwords for all accounts on this device have been set to the device serial number. In the event of a complete system reset, the passwords convert to the default, which is no password (see [Users and Roles](#) on page 86 to change a password).

4. Click **Log In** or **OK**. The embedded web page opens.

AV Controls Panel

The AV Controls panel is available on every page and within all tab views. Located along the left side of the pages, this panel makes it possible to easily control a recording, see a thumbnail view of the recorded and output video, swap video content between windows, select different inputs, and mute or unmute the AV output. The browser always opens with the AV Controls panel expanded and both presenters and administrators have access.

AV Controls Panel Features

The AV Controls panel includes the following features:

Preview

This area (see ①, at right) provides a small, live stream view of the output video. It is delayed about 5 seconds compared to the recording and output stream.

The live preview stream is independent of the streaming settings configured in the **Encoding Presets** pane (see [Encoding & Layout](#) on page 81).

NOTE: The preview video in the AV Controls panel of the SMP uses an HTML5 player and is not supported by Microsoft Edge or Apple Safari. To see a preview of the current stream either:

Use a different browser or

Open a standalone, third-party video player (such as VideoLAN opensource VLC media player) and connect to the stream from the SMP.

- **Disabling the preview window** — To make the embedded web pages faster to refresh, the live preview can be disabled. The recording and output streams continue to be streamed when this preview is disabled. To disable the live feed to this preview, clear (uncheck) the **Enable Preview** checkbox (②) above the preview window.

To display the preview again, select (check) the **Enable Preview** checkbox. The confidence stream for the preview can also be disabled using front panel controls (see [Front Panel Menu Operation](#) on page 26).

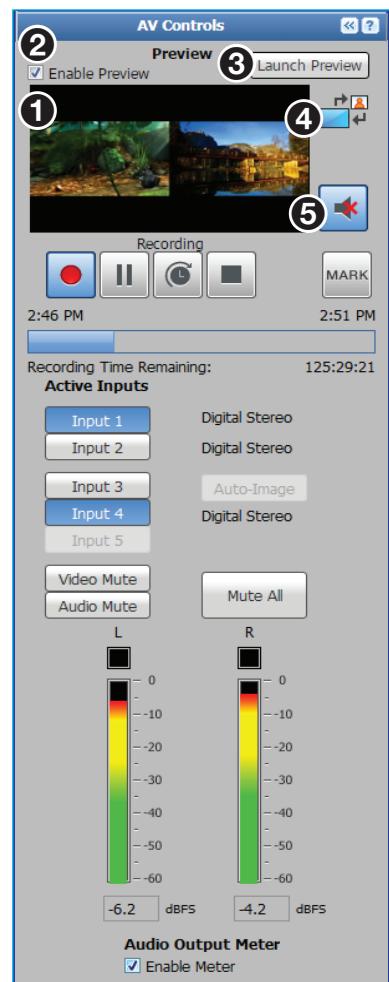


Figure 31. AV Controls Panel

- **Separate preview window** — To open the live preview in a separate, larger window, click the **Launch Preview** button (see **figure 31**, ③ on page 58) in the upper right corner of the **AV Controls** panel. When the separate live preview window opens, preview audio is enabled and the preview window within the panel is disabled. If you close the separate live preview window, select (check) the **Enable Preview** checkbox (②) again to display the preview stream within the panel.
- **Full screen preview** — To display the preview in full screen view, double-click the preview image in the **AV Controls** panel. To exit full screen view, press the keyboard <Esc> key.

Swap (For composite mode only)

Click the **Swap** button (④) to make video from channel A trade window locations with video from channel B.

NOTE: The Swap button in the **AV Controls** panel is disabled when the SMP is in dual channel encoding mode. The Swap button on the front panel is disabled during recording when the SMP is in dual channel encoding mode.

Preview mute

By default, the audio portion of the preview is muted, which does not affect audio to the recording and web streams. To listen to the audio that accompanies the preview, click the preview audio **Mute** button (⑤) to change from muted (default) to unmuted (see figure 32):



Figure 32. Mute Button

Recording controls

Recording control buttons function the way controls do on a DVR or other recording device. Buttons include (see figure 33):



Figure 33. Recording Control Buttons

- **Record** — Set up an ad hoc* recording session and start or resume recording.
- **Pause** — Pause recording.
- **Extend** — Extend the duration of a recording event by ten minutes beyond the scheduled end time.

NOTE: The **Extend Recording** button only applies to scheduled recordings.

- **Stop** — Stop recording and end the recording session.

*An ad hoc recording session is one that has been set up for a specific occasion without being scheduled. Ad hoc recordings can last up to eight hours.

Text above the buttons lists the status of the recording: **recording**, **paused**, or **stopped**. A button is blue when selected (active or on) and gray when deselected (inactive or off).

- **Mark** — This button works like the **Mark** button on the front panel of the SMP. It is grayed out and inaccessible when the unit is not recording, and becomes accessible and clickable once a recording starts. When you click this button during a recording, you create a time-referenced chapter marker to make it easy to find content at that point in the recording during playback. When you click the button, the button becomes unavailable (grays out). The button reactivates after a brief delay (about five seconds) while unit stores the marker information.

NOTE: The front panel buttons also indicate the recording state, mirroring the AV Control panel indicators (see **Front Panel Features** on page 21).

Progress bar

A progress bar (see figure 34, ①) below the recording control buttons is a horizontal bar graph that shows how much recording time has elapsed and, if it is a scheduled session rather than an ad hoc recording, how long the presentation is expected to last. For an ad hoc recording, initially the progress bar shows a five minute duration. The displayed duration increases in five-minute increments as the ad hoc recording progresses.

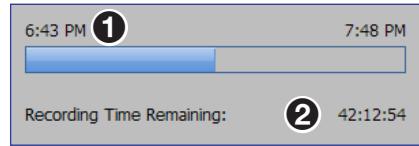


Figure 34. Progress Bar and Recording Time Available

Recording time available

Recording time remaining (②) is indicated below the progress bar in the format *HHH:MM:SS*. The estimate of how much time remains available is based on the combination of available storage space and the current stream resolution and bit rate. During a scheduled recording, this field indicates how much time remains in the event. During an ad hoc recording, the calculated time is displayed.

If dual recording mode is enabled, the remaining time is listed first for the internal storage drive and then for the selected secondary (external USB) drive (132:46:27*00:03:44, for example).

Input selection, mute controls, audio indication, and auto-image

Inputs are grouped into two channels:

- **Channel A** (see figure 35, ①) — Composed of input 1 (HDMI) and input 2 (HDMI).
- **Channel B** (②) — Composed of input 3 (component/composite), input 4 (HDMI), and optional input 5 (3G/HD/SDI) for the SMP 351 3G-SDI and SMP 352 3G-SDI.

There is one analog audio input per channel. HDMI inputs can be configured for digital audio (embedded in HDMI) or a shared analog input for the channel. The audio type for each input is displayed in the right column (④). There is one analog audio input per channel. HDMI inputs can be configured for digital audio (embedded in HDMI) or a shared analog input for the channel. The audio type for each input is displayed in the right column (④).

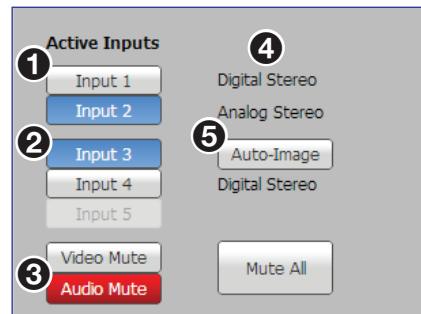


Figure 35. Active Inputs, Mute, Audio, and Auto-image

Audio format (**Off**, **Digital Stereo** or **Analog Stereo**) must be configured in the **Input/Output Settings** page (see [Input/Output Settings](#) on page 74).

To select AV sources:

1. Click the input buttons (see figure 35, ① and ②) in the left column of the **Active Inputs** area to select AV sources for a presentation. Input changes take effect immediately.
2. To apply Auto-Image to input 3, click **Auto-Image** (⑤). Auto-Image automatically sizes and centers the selected input to match the channel B window.
3. Click the desired button (③) to mute video only (**Video Mute**), audio only (**Audio Mute**), or both audio and video (**Mute All**).

When a mute mode is selected (active), the corresponding button or buttons are red. Click the buttons to toggle mute states, use the front panel controls, or send SIS commands to the unit via RS-232 or USB control. When unmuted, the button changes from red to gray.

4. To enable the meters, select the **Enable Meter** checkbox below the meters (see figure 36).

Left and right channel indicators display the audio output level (in dBFS) when there is an active audio output. The boxes at the top of the meters are red when audio clipping occurs and black when audio is not clipped.

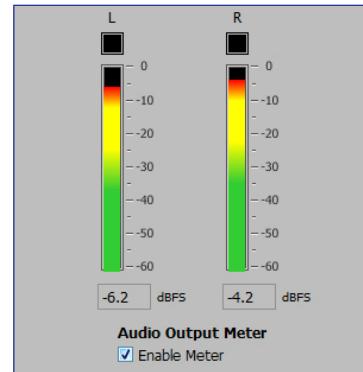


Figure 36. Audio Output Meter

Start an Ad Hoc Recording

A user logged on to the SMP, either at the user level or the administrator level, can initiate an ad hoc (unscheduled) recording. To start an ad hoc recording from the AV Controls panel, see the *SMP 300 Series Embedded Web Pages Help File*.

NOTES:

- For more information about single and dual storage modes, see [Setting the Default Recording Media](#) on page 90) within **Configuration > System Settings**.
- If the unit is set for recording destination limiting, users do not have the option to select a different storage location. The storage location or locations are preselected and cannot be changed from this dialog box.
- If the recording is restricted to a USB device with multiple partitions, then partition selection within the USB drive is still available.
- Ad hoc recordings can last up to eight hours. At the end of eight hours, the SMP stops recording.

Recording Destination Options

If the unit is set for **single storage mode** (recordings are saved to only one storage drive), choose a recording destination from the **Recording Destination** drop-down list (see figure 37).

Figure 37. Ad hoc Recording Destination Dialog, Single Recording Destination

- If the unit is **NOT** set to limit the recording destination, recording destination options are as follows:
 - **auto** — The recording is saved to the first available storage location that is not full. The priority is front USB port, rear USB port, internal memory. If a USB drive has more than one logical volume, only the volume with the largest free space for that port in the **Recording Destination** drop-down list is used to store content.
 - To record to another volume on the device, the target location must be manually select rather than using the **auto** option.
 - **internal** — The recording is saved in the internal memory of the SMP.
 - **external-usbfront/usbrear/VOLUME2/, usbrear/VOLUME1/, usbrear/NEW_VOLUME, usbrcp/volume3**, and so forth — The recording is stored to the indicated external USB drive and volume (using whatever volume name is on that drive) connected to the front panel or rear panel USB storage port on the SMP.
- If the unit **is** set to limit the recording destination, you cannot change the storage location (internal, front USB, rear USB, RCP USB). However, if the unit is set to store recordings to one of the USB ports, and if the connected drive contains more than one volume, you can select a volume from the **Recording Destination** drop-down list.

If the unit is set for **secondary storage mode**, the file is saved to two storage drives simultaneously. In dual recording mode, the recording is always saved to the internal drive as the primary storage location; only the secondary location is configurable.

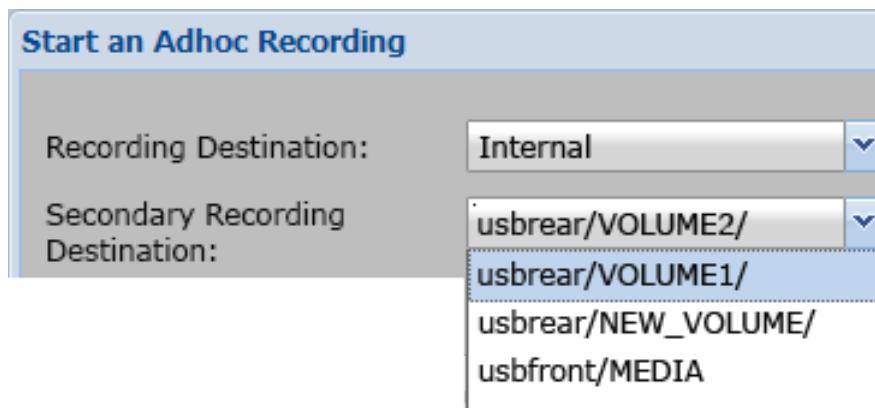


Figure 38. Ad hoc Recording, Secondary Recording Destination Selection

Select the secondary storage location from the drop-down list (see figure 38).

- If the unit **is** set to restricted mode, you can select only from front panel USB drives or from rear panel USB drives, depending on whether the front or the rear option is selected in the system settings. If the unit is set to use a front panel USB drive for the secondary storage location but a drive is connected to the rear panel USB port instead of the front panel port, the **Secondary Recording Location:** drop-down list displays **n/a** (not available or not applicable) as the only option.
- If the unit is **NOT** set for restricted mode, you can select any available USB drive and volume.
- If no USB drive is attached to a particular port, the option for that port is either not shown at all or is shown as **n/a**.

Recording Profile and Metadata

After selecting the recording destination, a preconfigured, saved recording profile can be selected or metadata can be entered for the ad hoc recording (see figure 39).

NOTE: When a recording profile is selected from the drop-down list, the metadata fields are grayed out.

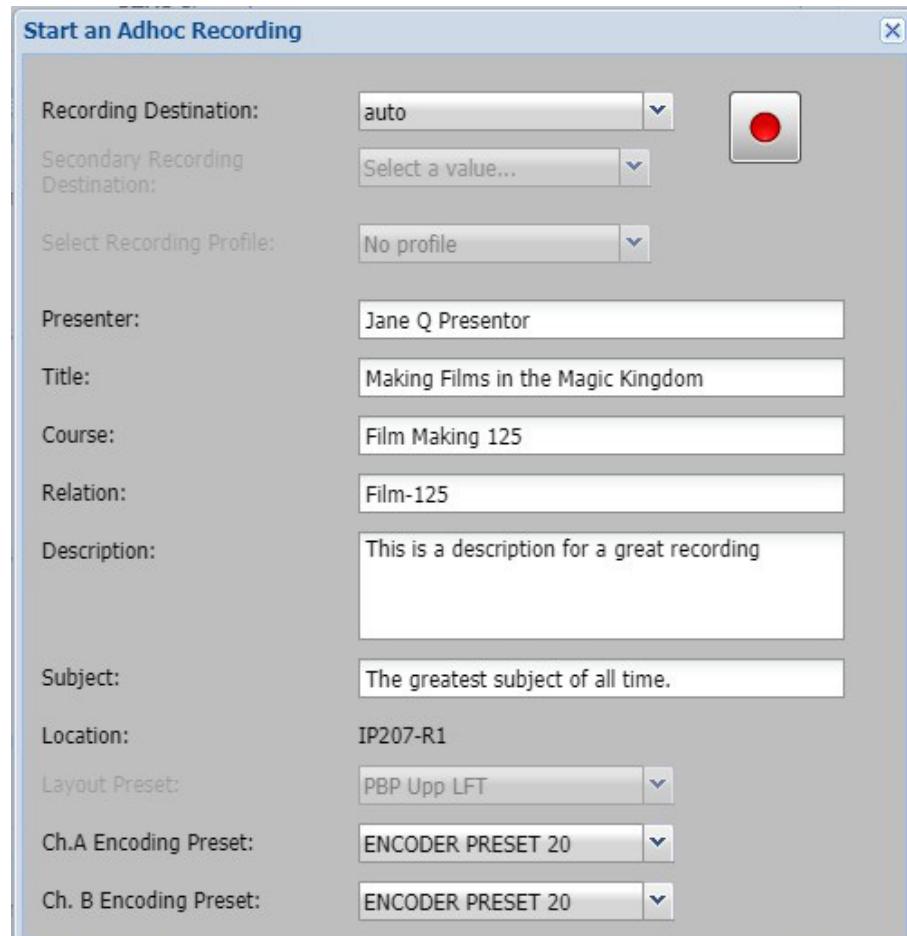


Figure 39. Ad hoc Recording Profile and Metadata

Recording Controls

The Recording Controls page displays information about the active inputs and the output signal, the presentation event currently in progress, and a list of upcoming presentations.

Information on this page updates every few seconds. Contents of the page are read-only and are displayed for all users.

This page contains five panels and AV Controls (see figure 40):

- ① Stream URL — The URL for the unicast and multicast streams currently in progress.
- ② Storage Information — The location or locations and size of the stored file or files.
- ③ System Inputs and Outputs — The input and output signal parameters.
- ④ Current Event — The presentation currently in progress.
- ⑤ Upcoming Events — A list of upcoming scheduled events for the day.
- ⑥ AV Controls — Start an ad hoc recording or control a recording in progress (see [Start an Ad Hoc Recording](#) on page 61 for details).

NOTE: In figure 40, the home page for a standard SMP 300 Series device is shown. If the Horizontal Video Mirroring LinkLicense is purchased, there will be an additional **Mirroring LinkLicense** tab and **Horizontal Video Mirroring Status** section displaying the status of the horizontal mirroring of each input.

Extron Electronics Logged in as: admin

Recording Controls | Scheduled Events | Configuration | File Management | Troubleshooting

System Name: SMP-351-TechP21
Location: SMP-351-TechP21

⑥ AV Controls

Preview Launch Preview

Recording MARK

6:43 PM 7:48 PM

Recording Time Remaining: 42:12:54

① Stream URL

Archive Ch. A:	rtsp://197.168.118.120/extron1
Archive Ch. B:	rtsp://197.168.118.120/extron2
Confidence:	rtsp://197.168.118.120/extron3

② Storage Information

Selected	Name	Type	Total	Used	Available	Recording Time
<input checked="" type="checkbox"/>	Lexar	USB Front	29.8 GB	0.2 GB	29.6 GB	17:39:23

③ System Inputs and Outputs

	Active Input:	Input 2
Channel A	Resolution:	1920x1080
	Refresh Rate:	30Hz
	HDCP Encrypt:	<input checked="" type="checkbox"/>
	Audio:	Analog Stereo
Channel B	Active Input:	Input 3
	Resolution:	713x484
	Refresh Rate:	60Hz
	HDCP Encrypt:	<input checked="" type="checkbox"/>
	Audio:	Digital Stereo
Output	Resolution:	1920x1080
	Refresh Rate:	30Hz
	HDCP Encrypt:	<input checked="" type="checkbox"/>

④ Current Event

08/03/2016 12:20 PM PST

Title:	Considerations for Audio Configuration
DB ID:	31
Event ID:	Botany-Lab_Considerations-for-A_20160803-122007
Presenter:	Dr. Linda K. Presenter
Course:	Intro to AV Recordings
Ch.A Encoding Preset:	720p High

⑤ Upcoming Events

Time	Title	Duration	Course
08/05/2016 4:00 P...	Topics in Film	30 min	<input type="checkbox"/>

Figure 40. AV Controls, Recording Controls Page

NOTE: For information on the AV Controls (see [AV Controls Panel](#) on page 58) and Recording Controls panels, aside from a basic description of the Storage Information table, see the *SMP 300 Series Embedded Web Pages Help File*.

Storage Information

The storage information table (see figure 41) the Stream URL panel (also available in **File Management** on page 95) displays the names of the available connected storage devices, their locations (internal, USB front panel port, USB rear panel port, USB RCP port), total capacity, and amount of used and available storage space. It also provides an estimate of remaining recording time for each drive and indicates (with a check mark) which drive is selected as the only or primary recording location. If the SMP is set for dual recording mode, a second check mark symbol indicates the drive selected as the secondary recording location.

NOTE: The capacity of the internal drive shown in the **Total** column depends on the options selected for the device. The SMP 352 has 440 Gigabytes. The SMP 351 has the options of 80 Gigabyte models and 440 Gigabyte models available for purchase.

Selected	Name	Type	Total	Used	Available	Recording Time
<input checked="" type="checkbox"/>	Internal	Internal	440.11 GB	25.16 GB	410.48 GB	137:44:08
	VOLUME2	USB Front	1.97 GB	1.37 GB	511.08 MB	00:10:02
	VOLUME1	USB Front	1.71 GB	1.33 GB	294.73 MB	00:05:47
	VOLUME2	USB Rear	1.86 GB	645.62 MB	1.23 GB	00:24:49
	VOLUME1	USB Rear	1.86 GB	1.30 GB	580.25 MB	00:11:24

Figure 41. Recording Controls, Storage Information Table

NOTES:

- Recordings stored on the internal drive can be automatically uploaded to a network server (see **Setting the Default Recording Media** on page 90).
- If internal storage space is nearly full and the SMP is set up to automatically upload recordings to a server, the SMP uses an automatic disc cleanup feature to make room for new recordings. As needed, the unit automatically deletes recordings previously uploaded to a server, starting with the oldest recordings, until there is enough free space on the disk.
- For details on recording deletion, see **Deleting Recordings** in the *SMP 300 Series Embedded Web Pages Help File*.
- To learn how to lock a recording to prevent it from being automatically deleted, see **Locking and Unlocking a Recording Package Folder** in the *SMP 300 Series Embedded Web Pages Help File*.

Scheduled Events

The Scheduled Events page includes three secondary tabs, Recording Calendar, Schedule Settings (see page 67), and Publish Settings (see page 69), with corresponding pages that allow administrators to create scheduled recordings, publish (upload) them, and review the status of recordings.

Recording Calendar

The Recording Calendar page lists the currently selected scheduling source, publishing destination, when the schedule was last synchronized, and has a file cleanup schedule. It also features two different views (calendar or list) to see all recordings (in-progress events, upcoming scheduled events, and recordings that have already taken place).

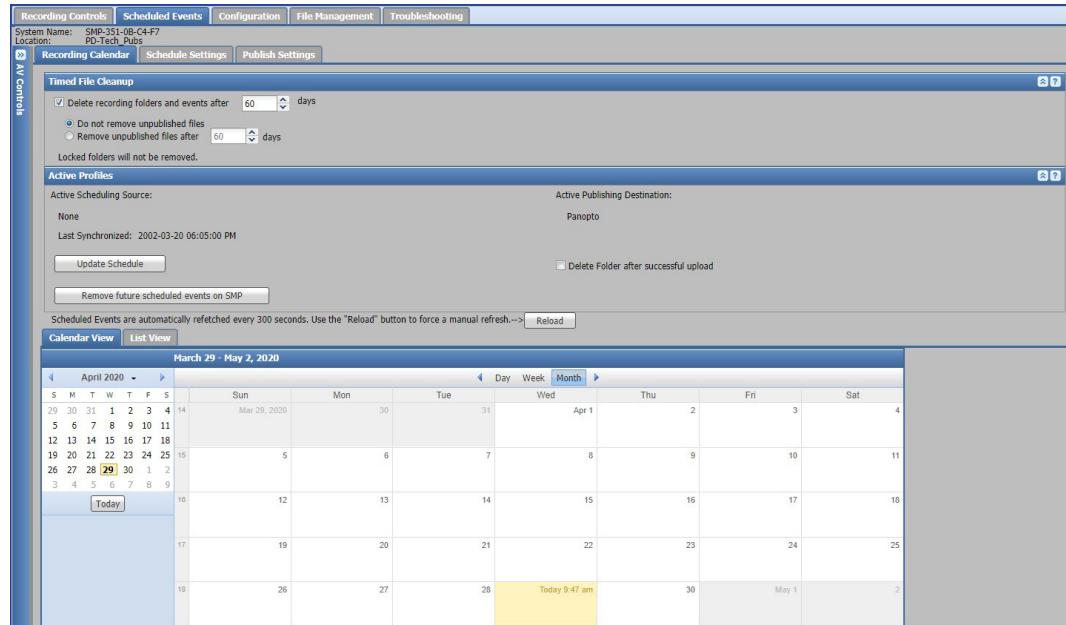


Figure 42. Recording Calendar Page

The calendar displays recordings in two views:

- **Calendar View** (see figure 42) — Access a detailed view dialog box about each specific event from this page. Also, in the event that a recording does not transfer to the designated network server or if a file needs to be uploaded again, initiate a re-upload from the detail view.
- **List View** (see figure 43) — Recording events are listed in a table format. Recordings are listed by title, starting time, course ID, creator, identifier (file name), state, and the like. Entries can be sorted or searched in this view.

Recording Events								
DB ID	Start Time	Title	Course ID	Creator	State	Media Present	Lock	Identifier
1	1999-12-31 05:23:53 PM				No Transfer Method defined	Yes	No	SMP-351-08-C4-F7_20000101-0123532
2	1999-12-31 05:34:23 PM				No Transfer Method defined	Yes	No	SMP-351-08-C4-F7_20000101-0134232
3	2015-06-08 02:02:17 PM				No Transfer Method defined	Yes	No	SMP-351-08-C4-F7_20150608-210217Z
4	1999-12-31 04:07:29 PM				No Transfer Method defined	Yes	No	SMP-351-08-C4-F7_20000101-000729Z
5	1999-12-31 04:26:03 PM				No Transfer Method defined	Yes	No	SMP-351-08-C4-F7_20000101-002603Z
30	2000-01-22 03:35:27 PM	Something wonderfully boring		The Great Presenter	No Transfer Method defined	Yes	No	Something-wonderfull_20000122-153527

Figure 43. Recording Calendar List View

Information on this page updates every 300 seconds, but can be refreshed as needed by clicking the **Update Schedule** button above the Active Profiles panel.

Schedule Settings

The Schedule Settings page within Scheduled Events allows administrators to choose how to obtain presentation schedules and, if appropriate, import calendars or connect to a scheduling system (see figure 44). Scheduling must be set up using this page. It cannot be set up via the front panel.

Firmware v2.xx Schedule Settings

The Firmware v2.xx Schedule Settings page has two panels: Active Profiles and Schedule Source Configuration, which has five sub-pages that provide options to import calendars from sources such as an iCalendar file, a Microsoft Exchange Server schedule, and an Opencast Matterhorn Server.

NOTE: The SMP 300 Series device has the basic **Schedule Settings** and **Publish Setting** tabs while operating with firmware v2.xx (xx = latest version).

Recording Calendar | Schedule Settings | Publish Settings

Active Profiles

Active Schedule Source:
 No Centralized Schedules (adhoc event only)
 Manually Import iCalendar one time
 Import iCalendar data periodically
 Centralized Schedule as Microsoft server
 Centralized Schedule as Opencast server
Last Synchronized: 2019-08-26 09:27:00 AM

Active Publishing Destination:
 No Centralized upload server
 Ingest into Kaltura Hosted Video Platform
 Ingest into Opencast server
 FTP/SFTP/CIFS server
 Delete Folder after successful upload

Schedule Source Configuration

Manual Calendar Import | Periodic Calendar Import | Microsoft Exchange Server | Kaltura Service | Opencast Server

Opencast Server Address: http://0.0.0.0:8080 Test This Server Save Cancel

Username: opencast_system_account

Password: ****

Capture Agent Name: SMP211DHK-R4

Update Schedule Every: 300 seconds

Store: 14 days of schedule data

Restore to Default

Advanced Test Settings

Figure 44. Schedule Settings Page

A note on using the SMP with an Opencast system

The SMP supports HTTP ETags (entity tags), which make it possible to cache some scheduling information to minimize network traffic. When the SMP requests schedules from the Opencast server system, the Opencast server sends an ETag parameter to the SMP. Each time the SMP and server exchange schedule information, the system reads the ETag and determines whether there were any changes to scheduled events since the last synchronization.

- If there have been no changes, then less scheduling data is exchanged between the SMP and the server, which reduces network traffic and the time needed for schedule updates.
- If changes have been made, the server issues a new ETag, and the SMP updates the schedules.

NOTE: Read the *SMP 300 Series Embedded Web Pages Help File* for details and step-by-step procedures on scheduling.

Firmware v3.xx Schedule Settings

The Firmware v3.xx Schedule Settings page within **Scheduled Events** allows administrators to connect to a scheduling system (see figure 45). Scheduling must be set up using this page. Scheduling options are available from the selected FlexOS app.

NOTE: The SMP 300 Series device has the Flex OS app options **Schedule Settings** and **Publish Setting** tabs while operating with firmware v3.xx (xx = latest version).

To install Panopto for scheduling:

1. Download the SMP firmware v3.00 or newer from www.extron.com.
 2. Install firmware via the web UI (see **Firmware and License Loader** in **System Settings** on page 89).
 3. Purchase the Enhanced Panopto Features Linklicense from www.extron.com.
- NOTE:** The Enhanced Panopto Features LinkLicense is required for scheduling only.
4. Install the LinkLicense on the SMP (see **Firmware and License Loader** in **System Settings**).
 5. Download the Panopto FlexOS app v1.01 or newer from www.extron.com.
 6. Install the Panopto scheduling FlexOS app (see **Advanced Features** on page 93).
 7. In the **Active Profiles** panel, select **Panopto** in **Step 1: Active PUBLISHING Destination**.
 8. Select **Panopto** in **Step 2: Active SCHEDULE Source**.
 9. Click the **Configure** button to set up Panopto integration.

NOTE:

- If Panopto is selected for both scheduling and publishing, enter the Panopto **Registration Key** on the **Schedule Settings** page and the user is automatically logged in on the **Publish Settings** page also.
- If the **Panopto Server** field is changed in either the **Schedule Settings** tab or the **Publish Settings** tab, the same field is updated in both tabs.

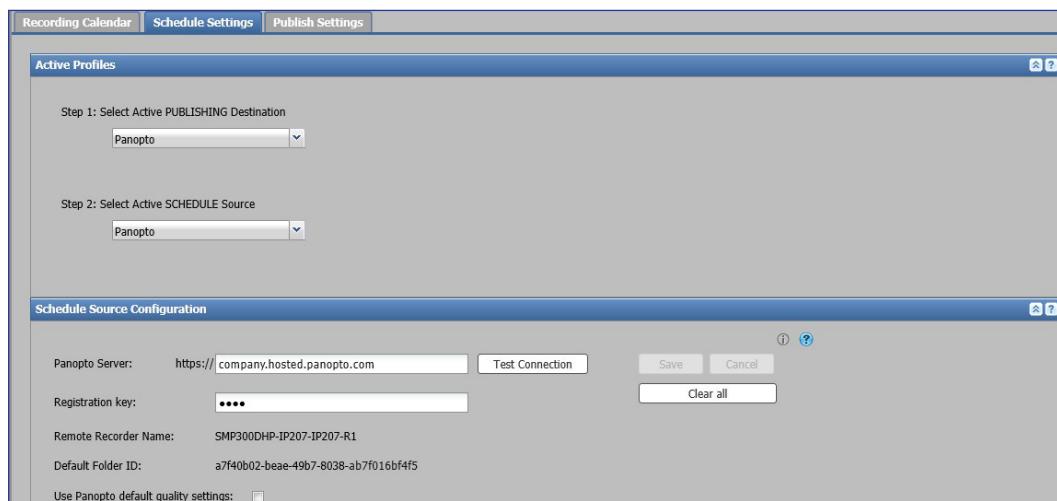


Figure 45. Schedule Settings Page for Panopto Users

NOTE: For additional information and details on how to configure settings for Panopto scheduling, see the *SMP 300 Series Embedded Web Pages Help File*.

Publish Settings

The Publish Settings page provides controls to specify and configure the server destination to upload completed recordings.

Firmware v2.xx Publish Settings

The Firmware v2.xx Publish Settings page has two panels: **Active Profiles** and **Publishing Destination Configuration**, which has three sub-pages to specify the server destination to upload completed recordings, to configure and test protocols and settings to enable publication (uploading), and to automatically delete internal recording folders after successfully publishing the folders.

NOTE: The SMP 300 Series device has the basic **Schedule Settings** and **Publish Setting** tabs while operating with firmware v2.xx (xx = latest version).

The screenshot shows the 'Publish Settings' page with the following interface elements:

- Active Profiles:** A section for selecting an active schedule source. Options include "No Centralized Schedules (adhoc event only)" (selected), "Manually import iCalendar one time", "Import iCalendar data periodically", "Centralized Schedule as Microsoft server", and "Centralized Schedule as OpenCast server". It also displays the last synchronization date: "Last Synchronized: 2003-01-08 07:02:00 PM".
- Active Publishing Destination:** A section for selecting a publishing destination. Options include "No Centralized upload server", "Ingest into Kaltura Hosted Video Platform", "Ingest into OpenCast server" (selected), and "FTP/SFTP/CIFS server". It includes a "Transfer Max bit rate" field set to 5000 kb/s and a checkbox for "Delete Folder after successful upload".
- Publishing Destination Configuration:** A tabbed section with three tabs: "Kaltura Ingest" (selected), "OpenCast Ingest", and "Other FTP/SFTP/CIFS". The "Kaltura Ingest" tab shows fields for "Opencast Server Address" (http://0.0.0.0:8080), "Username" (opencast_system_account), "Password" (****), "Capture Agent Name" (SMP-351-TechP21), "Track Flavor" (presentation/source), and "Enable Multi-File Ingest" (checked). It also has a "Restore to Default" button and a link to "Advanced Test Settings".

Figure 46. Publish Settings Page

Select the desired radio button for an Active Schedule Source from these options:

Active Schedule Source	Corresponding Tab
No Centralized Schedules (adhoc event only) (default)	Not applicable
Manually import iCalendar one time	Manual Calendar Import
Import iCalendar data periodically	Periodic Calendar Import
Centralized Schedule as Microsoft server	Microsoft Exchange Server
Centralized Schedule as OpenCast Server	OpenCast Server

Select the desired radio button for a publishing destination from these options:

Active Publishing Destination	Corresponding Tab
No Centralized upload server (default)	Not applicable
Ingest into Kaltura Hosted Video Platform	Kaltura Ingest
Ingest into OpenCast Server	OpenCast Ingest
FTP/SFTP/CIFS server	Other FTP/SFTP/CIFS

For additional information and details on how to configure settings for each publishing option, see the *SMP 300 Series Embedded Web Pages Help File*.

Firmware v3.xx Publish Settings

The Firmware v3.xx Publish Settings page provides controls to specify the server destination to upload completed recordings. Once an App is installed and configured, such as the Panopto app, the recorded file is automatically set to publish (upload) to the applicable server.

NOTE: The SMP 300 Series device has the Flex OS app options **Schedule Settings** and **Publish Setting** tabs while operating with firmware v3.xx (xx = latest version).

To install Panopto:

1. Download the SMP firmware v3.00 or newer from the [Extron website](#).
2. Install firmware via the web UI (see **Firmware and License Loader** in **System Settings** on page 89).
3. Download the Panopto Flex OS app v1.00 or newer from the Extron product page.
4. Install the app via the web UI (see [Advanced Features](#) on page 93).

To publish files to Panopto:

1. Go to **Scheduled Events > Publish Settings > Publishing Destination Configuration** to configure Panopto publishing.
2. Enter the IP address or fully qualified domain name of the Panopto server into the **Panopto Server** field.
 - If the Panopto **Registration Key** was entered on the Schedule Settings page, the administration username and password are not requested (see figure 47). Go to [step 6](#) on page 71.

The screenshot shows the 'Publish Settings' page with the following sections:

- File Transfer Schedule:** Options for 'Upload Files immediately after recording is completed' (selected) or 'Upload File at specific time only'. Fields for Start Time, End Time, and Day (Sunday).
- Active Profiles:** Step 1: Select Active PUBLISHING Destination (Panopto selected). Step 2: Select Active SCHEDULE Source (None selected). A note says: 'To activate scheduling: - Download the desired FlexOS app from www.extron.com and install it on this unit. - Ensure the installed FlexOS app is enabled. A scheduling LinkLicense may be required.'
- Publishing Destination Configuration:** Fields for Panopto Server (company.hosted.panopto.com), Administrator Username (someone@company.com), Administrator Password (*****), and Default Folder ID (00000000-0000-0000-0000-00000000). Buttons for Test Connection, Save, and Cancel.

Figure 47. Publish Settings Page for Panopto Scheduling Users

- If Panopto scheduling is not selected on the Schedule Settings page, the administration username and password are required (see [figure 48](#) on page 71). Continue to [step 3](#) on page 71.



Figure 48. Publish Settings Page for Panopto Users

3. Enter the Panopto account user name into the **Administrator Username** field.
4. Enter the Panopto account password in the **Administrator Password** field .
5. Enter the Panopto Folder ID in the **Default Folder ID** field.
To locate the Panopto Folder ID number:
 - a. Log in to your Panopto account in a web browser.
 - b. Click on the desired folder.
 - c. Click on the folder settings icon () in the right corner of the page, under the Help link.
A pop-up window opens for the selected folder.
 - d. Click **Manage** from the options in the left column.
 - e. Copy the alpha-numeric **Folder ID**.
 - f. Paste or enter the alpha-numeric **Folder ID** into the **Default Folder ID** field in the SMP web UI.
6. Click the **Test Connection** button to have the SMP check and validate the connection to the server.
Notification of a successful connection or an error appears as a pop-up notification at the top of the panel.

NOTE: The SMP communicates with Panopto via HTTPS. To establish a successful connection, the cacert.pem must be uploaded to the SMP cert folder. The latest cacert.pem file can be downloaded from <https://curl.haxx.se/ca/cacert.pem>. For additional information on how to obtain and upload a CA certificate file to the SMP, see the *SMP 300 Embedded Web Pages Help File*.

7. If needed, change the address, username, or password, and retest the connection until the server connection is successful.
8. (Optional) If the SMP is in Dual Channel mode, enter the audio channel for the Panopto upload, **Channel A** or **Channel B**.
9. Click **Save** to save the settings.
10. Click **Cancel** to clear the username and password.

NOTE: The SMP creates an XML file describing the upload content and is uploaded with the recording files. Title and Description metadata are listed in the XML file.

Configuration

The eight pages within the Configuration page contain the core controls needed during initial setup, for upgrading the unit, and restoring a configuration.

NOTE: Administrators can view and make changes to all settings. Those logged in as users do not have access to the Configuration tab.



Figure 49. Configuration Tab with Subtabs

Using these pages, an administrator can:

- Configure basic AV input settings.
- Output video test patterns for setup.
- Configure output stream settings and presets.
- Set up AV encoding and presets.
- Select or configure layouts and layout presets.
- Set passwords.

NOTE: The factory configured passwords for all accounts on this device have been set to the device serial number. In the event of a complete system reset, the passwords convert to the default, which is no password (see [Users and Roles](#) on page 86 to change a password).

- Set up notices and alarms.
- Select preview window settings.
- Configure digital I/O ports.
- Configure basic communication, identity, time, data storage, and recording location settings.
- Upgrade the unit by updating firmware or installing an [Extron LinkLicense](#) (see page 3).
- Save configurations or restore a configuration from a saved file.

Configuration Tab Features



Figure 50. Configuration Tab and Sub-tabs

The pages within Configuration include the following (see figure 50):

- ① Input/Output Settings** (see page 74) — Change the name for each input, select the video format for input 3, select an aspect ratio type, and enable or disable Auto-Image, Auto Memory, HDCP authorization for each input.

Configure audio for each channel (A and B). For SMP 351 models, adjustments are for audio level only. For the SMP 352 and SMP 351 models, adjustments can be made to many audio levels, filter and tone (bass and treble), and dynamic compression.

Output one of several video test patterns for use during display setup, select the refresh rate for the local HDMI output, and configure the universal OSD content, size, and style.

- ② Image Settings** (see page 79) — Configure video input sampling and sizing, set up overscanning of SMPTE input signals, and adjust picture controls (brightness, contrast, and the like). Save or recall input and user presets.

- ③ Encoding & Layout** (see page 81) —

From the first expandable panel in this page:

- Set up AV encoding
- Configure the streaming method, protocol, and settings
- Create encoder presets
- Create streaming presets

From the second panel:

- Configure layouts (arrangement of windows)
- Select or create layout presets
- Select the background image
- Configure metadata elements

From the third panel:

- Select metadata to associate with a recording file
- Create recording profiles

- ④ Users and Roles** (see page 86) — Set administrator and user passwords.

NOTE: The factory configured passwords for all accounts on this device have been set to the device serial number. In the event of a complete system reset, the passwords convert to the default, which is no password.

- ⑤ Alarms and Traps** (see page 88) — Set up the e-mail server and the sender and recipient e-mail addresses for notifications within this page. Select the alarm "priority" level for each of several types of errors or conditions monitored by the unit.

- ⑥ System Settings** (see page 89) — Configure settings in ten expandable panels. An administrator can configure settings for unit identity, communication, storage, and the like. Configure settings for network and serial communication, identity (unit name and network location), and date and time. Also, update firmware, add a license, and save configurations or restore a configuration from a saved file.

- ⑦ Advanced Features** (see page 93) — Enable a web browser client option on the unit or upload new applications such as the Digital I/O port configuration plug-in.

For more detailed information on these pages, see the *SMP 300 Series Embedded Web Pages Help File*.

Input/Output Settings

The three expandable panels within **Input/Output Settings** allow an administrator to select a number of settings for video input, test the output, and select options for audio output format and mute. When using firmware v3.04 or higher, the virtual inputs are available with a fourth panel to configure the additional two virtual inputs.

NOTES:

- The SMP accepts up to two RTSP or Push ES/RTP multicast streams. It records the two virtual inputs at its native resolution into m4v/mp4 files, and allows re-streaming. In Dual channel mode, the SMP can record up to 4 files plus an audio-only file.
- The SMP does not decode and composite virtual inputs into a layout.
- For this initial release of the virtual inputs, the SMP cannot connect to a virtual input stream that requires password authentication.
- Once the virtual input is turned on, the SMP connects with the incoming streams. The virtual input status can be monitored from the web UI.
- Some RTSP IP camera streams do not include RTCP packets and its packet received or dropped status is always shown as zero on web UI.

This page includes audio configuration controls for each channel (A and B):

- For the basic SMP 351 models, adjustments are for audio levels only.
- For SMP 352 models or SMP 351 models with LinkLicense, adjustments can be made to audio levels, filter and tone (bass and treble), and dynamic compression.

To open this page, click the **Configuration > Input/Output Settings**.

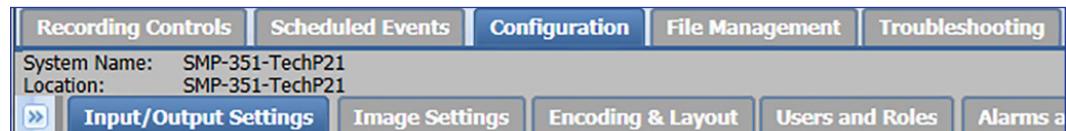


Figure 51. Input/Output Settings Sub-tab

The Input/Output Settings page opens (see figure 52)



Figure 52. Input/Output Settings Page

NOTE: The selected input aspect ratio setting is applied to both the archive and confidence outputs. If the confidence resolution is different, the applied aspect ratio cannot be maintained. For example, if the archive resolution is 1080p with an aspect ratio of 16:9, and the confidence display is 1024x768 with an aspect ratio of 4:3, the input aspect ratio selection cannot be maintained for both.

Auto Image and Auto Memory

Select the checkbox to enable **Auto-Image**. Auto-Image simplifies setup by executing image sizing, centering, and filtering adjustments with a single button push.

Select the checkbox to enable **Auto Memory**. Auto Memory recalls input and image settings for signals that have previously been applied. When Auto Memory is disabled, the SMP 300 Series treats every new input as a new source.

These two features can work together depending on the configuration the user chooses. See the table below for more information on the settings.

Auto Memory and Auto-Image Features		
Auto Memory	Auto-Image	Information
On	On	"New" signals or rates not previously detected by the device are initially set up using default parameters. Then, Auto-Image is automatically applied and those values are stored. The next time that signal is detected, the stored values in the auto memory location are applied.
On	Off	"New" signals or rates not previously detected by the device are set up using default parameters. If changes are made manually to the input and picture settings, an auto memory location is created and then recalled each successive instance that the input is detected.
Off	On	When auto memory is disabled, each change in the input sync is treated as a new signal, and Auto-Image is triggered automatically. Any changes that are made manually to the image and picture controls are lost each time a new refresh rate is detected.
Off	Off	Each change in the input sync causes default values to be applied to the rate. Any changes that are made manually to the image and picture controls are lost when a new rate is applied.

Virtual Input Configuration

When using firmware v3.04 or higher, the virtual inputs are available with a fourth panel to configure the additional two virtual inputs. Configure the virtual inputs from this panel (see the *SMP 300 Series Embedded Web Pages Help File* to configure the virtual inputs).

HDMI Output Configuration

Configure the preview output from this panel.

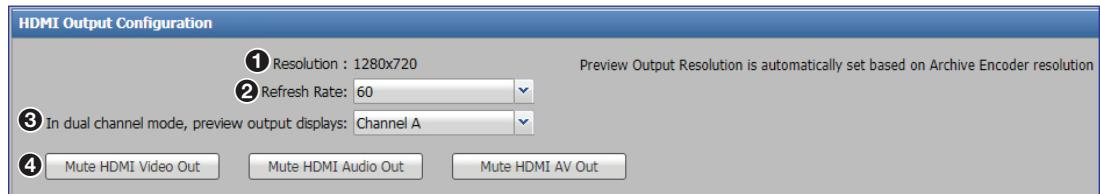


Figure 53. HDMI Output Configuration Pane

- ① View the resolution of the local HDMI preview output (see the *SMP 300 Series Embedded Web Pages Help File* to configure the resolution).

NOTE: The resolution of the local output follows the archive encoder resolution. When the selected archive resolution is under 720 lines (512x288, for example), the HDMI preview output is set to 1280x720, with the video content centered in the 720p window.

- ② Select a refresh rate (**50 Hz** or **60 Hz**) for the HDMI preview output.
 ③ Select the preview output displays when the SMP 300 is in dual channel mode.
 ④ Select a button to mute the audio, video, or both the audio and video.

Changing the Font and Text for the Input Switching On-screen Display

If optional fonts are uploaded to the SMP 300 Series, you can select and use one for displaying OSD text instead of the default font. Size and color can be selected for the OSD text. Optional fonts must be uploaded to the fonts folder within the SMP from the **File Management** page or by using an SFTP client program before selecting it in this page.

NOTES:

- The SMP supports TrueType™ (.ttf) and OpenType® (.otf) fonts.
- To upload a font file, use the file upload utility within the **File Management** page (see **File Management** on page 95).
- The user is responsible for obtaining necessary font licenses before uploading fonts.
- After changing the font, some text may appear truncated in the OSDs because characters may be wider in the selected font than in the system default font.
- The font selected here can be different from the font that is used for the metadata overlay within a recording layout (see **Configuring Metadata Elements (For composite mode only)** on page 84).

TIP: Many free, open source fonts are available at <https://fonts.google.com/>.

To select a different font and change the size and color:

1. Open the Input/Output Settings page (see **Input/Output Settings** on page 74).
2. Expand the **OSD Configuration** panel (see figure 54).



Figure 54. OSD Configuration Panel

3. Navigate to the **OSD** section and select an available font from the **Font** drop-down list (①). The selected font is immediately applied to both the input switching OSD and the universal OSD.
4. To change the size, enter a number into the **Size** field or click the **Up** and **Down** arrows (②) to adjust the value. The number is a percentage of the baseline font height, from 40 to 120%, with 100 being the default.
5. To change the font color, enter a six-character hexadecimal color value into the **Color** field (③). The default color is #ffffff (white).

NOTE: Consult a hex color table, if needed. Each pair of characters represents the three separate values that specify the levels of the component colors red, green, and blue, respectively. For example, red is represented by #FF0000, which is 100% red, 0% green, 0% blue.

Outputting and using a video test pattern

NOTE: No input signal is needed when using a test pattern for display device setup.

The OSD Configuration panel in the Input/Output Settings page allows selection and immediate output of one of eight internally stored test patterns to the local HDMI preview output from the SMP, as well as to the recording and output stream. Video test patterns are helpful for calibrating connected displays or projectors for color, convergence, focus, resolution, contrast, and aspect ratio. Audio test options are useful for testing audio output.

To select and output a test pattern:

1. Open the Input/Output Settings page.
2. Expand the **OSD Configuration** panel.
3. Select a pattern from the **Test Patterns** drop-down list. A preview of the test pattern shows above the drop-down list. Available test patterns include the following:



Figure 55. Test Patterns

- The **Pulse** "test pattern" is an audio-only test. Select **Pulse** to output an audio pulse of 400 Hz at -10 dBu for audio output testing.
- For composite mode only:
 - The **Time Stamp** pattern displays white text in a small, gray rectangle with the unit date and time (for example: Fri Apr 18 HH:MM:SS) on a black background in the top left corner of the display window.
 - The **Universal OSD** pattern consists of a small, translucent, gray rectangle with white text overlaid atop the source video content. It shows in the upper left of the screen. The text includes brief custom text followed by three selectable elements separated by commas. The options for those elements are listed in **Setting up the universal OSD test pattern** on page 78.

The universal OSD pattern can be displayed together with the main AV content because it overlays the video rather than replacing it. As a result, the universal OSD pattern can be used at any time, not just during setup. It can also serve as an on screen label for presentations, in addition to metadata labels (which may or may not be displayed, depending on the screen layout) (see **Encoding & Layout** on page 81 for more information on metadata within screen layouts and on selecting content for the metadata fields).

The selected test pattern is immediately output to the display and reflected in the preview in the **AV Controls** panel on the left of the screen. The test pattern displays until another pattern, or **Off** is selected from the **Test Pattern** drop-down list, or until unit power is recycled.

NOTE: When a test pattern is selected, it is overlaid atop the source AV and streamed to the display, stream, and recording. If **Off** is selected, the test pattern is turned off.

Setting up the universal OSD test pattern

To set up the universal OSD test pattern (for composite mode only):

1. Open the Input/Output Settings page.
2. Expand the **OSD Configuration** panel at the bottom of the page.
3. Select **Universal OSD** from the **Test Patterns** drop-down list. The fields and drop-down menus in the Universal OSD section become accessible.
4. Enter the text (up to 16 characters) into the **Display Text** field within the Universal OSD area. This is the first text that appears in the universal OSD, and can function as a brief title or description.
5. Select an information category from the **Information 1** drop-down list, and also, if desired, from the **Information 2** and **Information 3** drop-down lists.

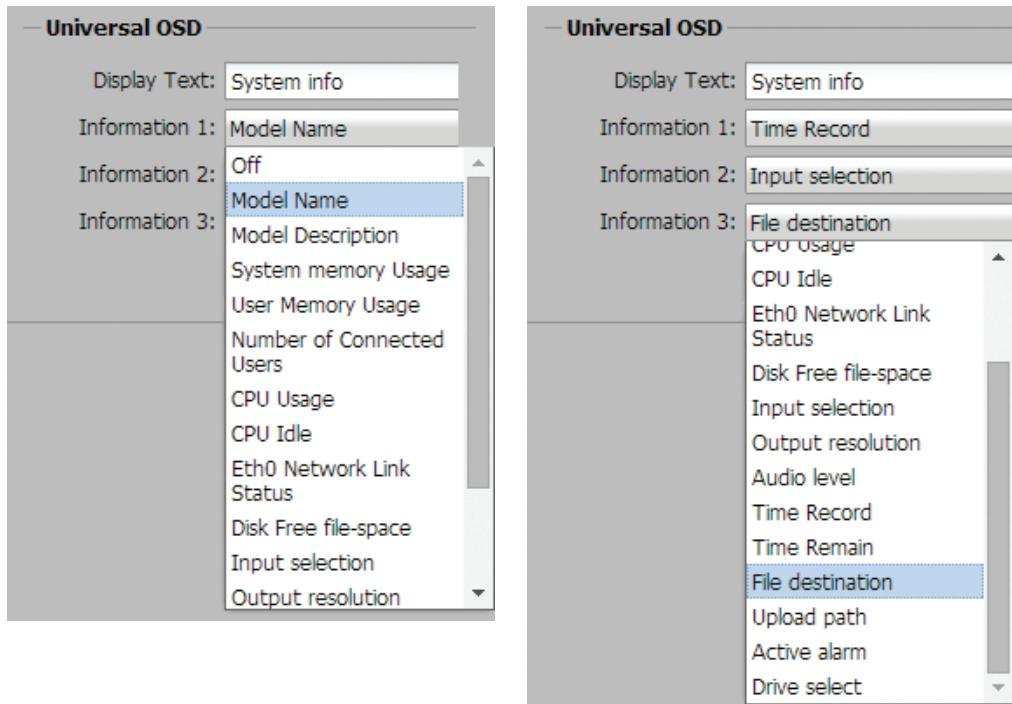


Figure 56. Universal OSD Information Selection

As an example, when **File destination** is selected, the OSD text might be **Front USB** or **Internal Drive Only**, depending on the current system settings.

The categories are identical to those used in the SIS information commands (such as **1i**, **2i**, **3i**, and so forth). For reference, see the **Command and Response Tables** starting on page 114.

If desired, select an information category from the **Information 2** drop-down list and select another category from the **Information 3** drop-down list.

Changes are saved automatically and applied shortly after being selected. The universal OSD text appears on-screen in this format:

Display Text, Information 1, Information 2, Information 3.

See figure 57 for examples of how the configuration settings (on the left) translate to the universal OSD (on the right).

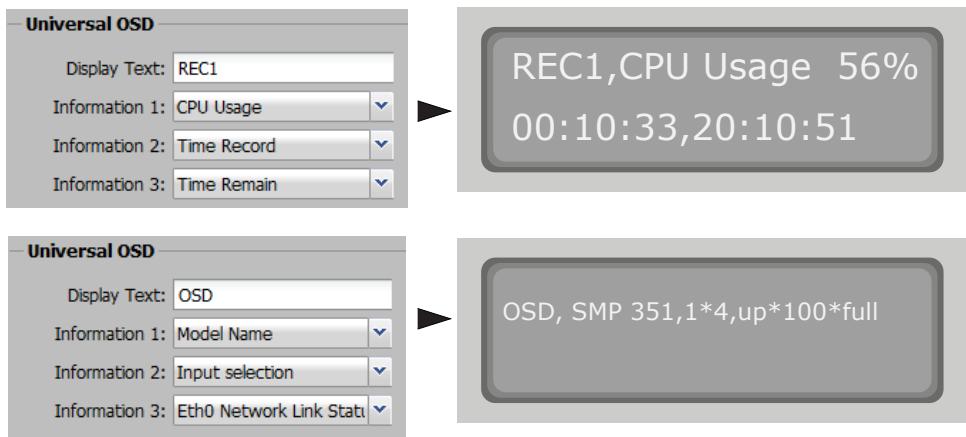


Figure 57. Universal OSD Information Selection and Display

Input Switching OSD

Select the **Display "No Source" OSD to indicate no video input** checkbox to remove the check mark and disable this OSD.

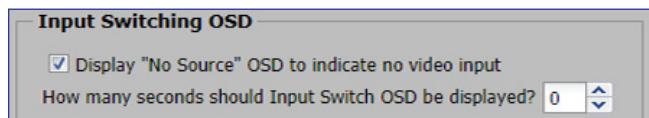


Figure 58. "No Source" OSD Selection

When enabled, enter a number into the **How many seconds should Input Switch OSD be displayed?** field or use the **Up** and **Down** arrows next to the field to select a number from 0 to 300 seconds.

By default, the SMP displays a "No Source" OSD when there is not an active video input.

NOTE: If **Active Input in Full Screen** is selected in from the **When there's no input, display** drop-down in Configuration>Encoding & Layout> Layout Presets, the "No Source" OSD will not appear.

For more options, see the *SMP 300 Series Embedded Web Pages Help File*.

Image Settings

Use the controls within the **Image Settings** page within the **Configuration** tab to configure video input sampling and sizing, set up overscanning of SMPTE input signals, and adjust picture controls (brightness, contrast, and similar). Also save or recall input and user presets from this page.

NOTE: A user must be logged in as an administrator to see or change these settings.

To open this page, click the **Configuration** tab at the top of the SMP Series embedded web pages and then click the **Image Settings** tab on the second tier of tabs.

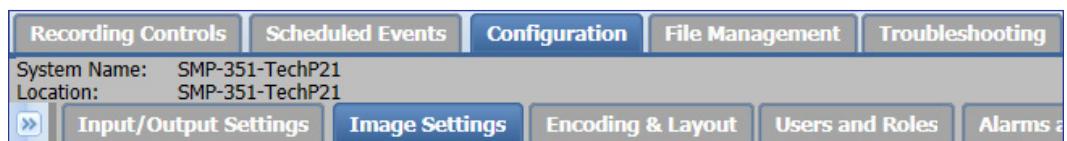


Figure 59. Image Settings Sub-tab

The **Image Settings** page opens (see figure 60).

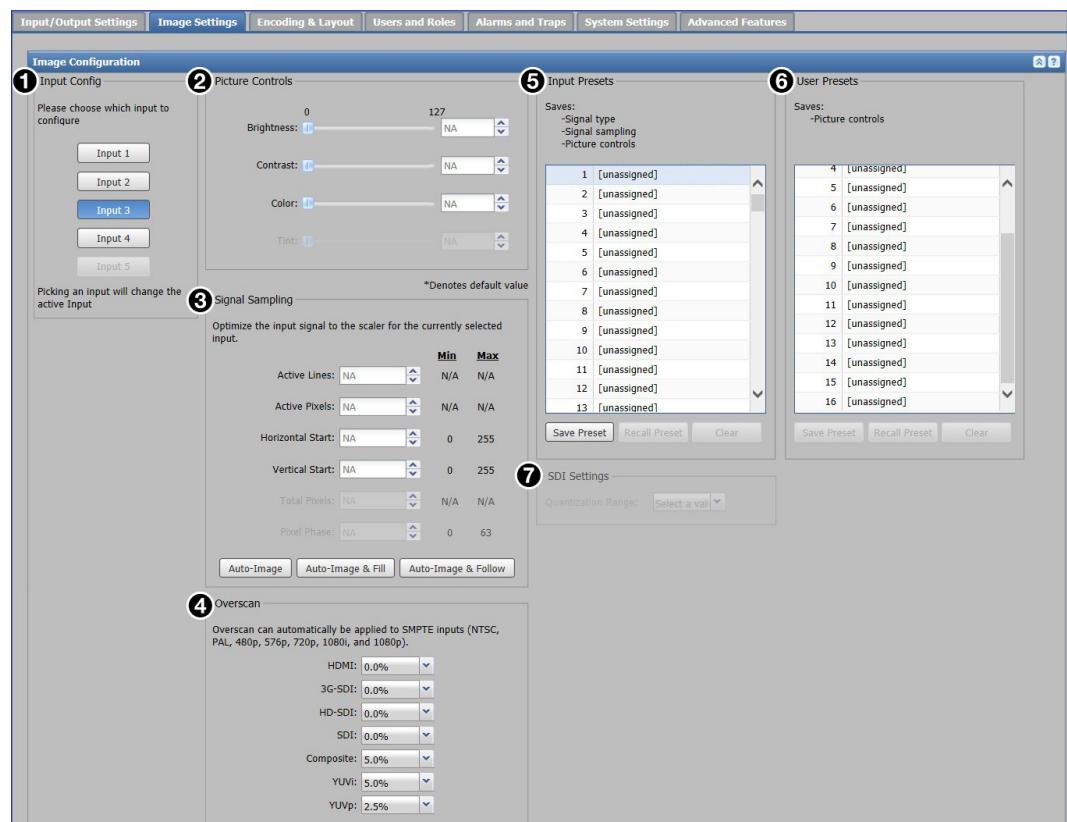


Figure 60. Image Settings Page

This page has a collapsible panel with seven sections (see figure 60):

- 1 Input Config** — Select the input to be configured.

NOTE: You must select an input from the **Input Config** panel in the upper left of this page before you can adjust the image settings or save or recall presets. Selecting an input within the **Image Settings** page also changes the active input.

- 2 Picture Controls** — Alter the quality of the image by changing brightness, contrast, color, and tint.
- 3 Signal Sampling** — Configure the size, location, and aspect ratio of the currently selected input or select **Auto-Image**, **Auto-Image & Fill**, or **Auto-Image & Follow**.
- 4 Overscan** — Set the amount (**0**, **2.5%**, or **5%**) of picture enlargement applied to each video signal type for any SMPTE standard input.
- 5 Input Presets** — Save up to 128 presets per input or recall one of those presets per input, each with a combination of signal type, signal sampling, and picture controls.
- 6 User Presets** — Save or recall up to 16 presets of picture controls per input.
- 7 SDI Settings** (SMP 351 3G-SDI and 352 3G-SDI only) — Set the quantization range for SDI signals from input 5.

Except for the overscan settings and input preset saving and recalling, the settings on this page can also be configured using the front panel menu and controls (see the *SMP 300 Series Embedded Web Pages Help File* for more information).

Selecting SDI-specific Settings

For input 5 of an SMP 351 3G-SDI and SMP 352 3G-SDI you can select the quantization range, which sets the black and white level for the RGB data of the SDI input.

To set the quantization:

Select one of the following options from the **Quantization Range** drop-down list:

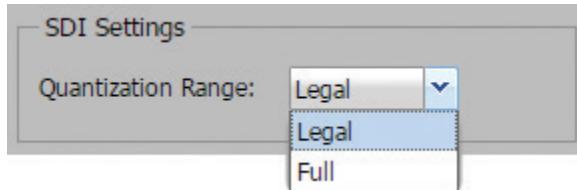


Figure 61. Quantization Range Drop-down List

- **Legal** — Select this option when the YCbCr video data of the SDI source (input 5) is within the "legal" range (64-940 for luma and 64-960 for chroma).
- **Full** — Select this option when the quantized YCbCr video data of the SDI source uses the full range of available bandwidth.

NOTES:

- The SDI settings are disabled for inputs 1 through 4.
- Most SDI sources use the "legal" range.

Encoding & Layout

The controls within the **Encoding & Layout** page configure signal streaming and encoding and also permit selection or configuration of video layouts. A user must be logged in as an administrator to see or change these settings.

To open this page, click the **Configuration > Encoding & Layout**.

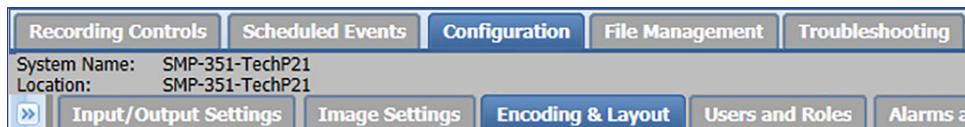


Figure 62. Configuration Tab, Encoding & Layout

The Encoding & Layout page opens. It features three expandable panels:

- **Encoding Presets** — Configure audio encoding, video encoding, and streaming parameters, then create and save or recall presets of those settings.
- **Layout Presets** — Set the size, position, and aspect ratio of video windows for both channels and save those settings as a preset or recall default or user-created preset, also set the background image and configure metadata elements.
- **Recording Profiles** — Select metadata content to associate with an individual recording file and save it to one of 32 **Recording Profiles** that can be recalled for later use.

NOTES:

- Some of the encoder settings can also be set using the front panel menu and controls (see **Picture Control Menu** on page 30) or using Extron SIS commands (see the **Command and Response Tables** on page 114).
- Layout presets are set up in this web page or via the front panel menu (see the **SMP 300 Series Embedded Web Pages Help File** for additional information).

Encoding Presets

Encoding presets are combinations of settings for audio and video encoding. The recording uses the highest quality signal encoding (archive encoding), and the preview (confidence view) displayed within the embedded web pages uses the lowest quality encoding (confidence encoding) of the encoding streams.

- **SMP 351 models** support up to two encodes (archive and confidence), one recording, one local output, and live streams simultaneously.
- **SMP 352 models and SMP 351 models with LinkLicense** support up to three encodes (archive A, archive B, and confidence), two recordings, one local output, and live streams simultaneously.

NOTE: In composite mode, the video encoding resolution of the archive encoder must always be higher than or equal to that of the confidence encoder.

Any of the default encoder presets or user-created presets can be recalled and applied to a recording session (archive encoder) and stream using the embedded web pages. Presets can also be recalled using the front panel menu and controls (see [Presets Menu](#) on page 28) or SIS Commands (see the [Presets](#) on page 124).

NOTE: Encoding presets must be selected prior to the start of a recording. You cannot change encoding settings during an active recording. For custom resolutions, the resolution height and width must be specified before the custom rate can be used.

The first 18 presets are factory set. Presets 1 through 9 are for popular, general AV uses with settings from 1080p High (1080p resolution at 8000 Kbps) to Confidence (515x288 at 350 Kbps). Presets 10 through 18 provide convenient settings that make it easy to integrate the SMP into an Opencast system, especially when using dual channel encoding. Some are tailored for speaker flavor, some for presentation flavor. Factory defined presets 33 through 42 support Panopto quality settings. For more information, see the [SMP 300 Series Embedded Web Pages Help File](#).

NOTE: Some of the parameters available on this page can also be set individually using front panel controls.

An overview of encoding

Each of the two encoders for the SMP 300 Series can be used for multiple purposes. The table below shows how each encoder is typically used and the differences. For details, see the [SMP 300 Series Embedded Web Pages Help File](#).

Encoding Stream	Usage	Conditions or Differences	Comment
Archive Encoding	Recording	Refresh rate: 5 to 30 fps	Highest quality and resolution
	Local HDMI output through the rear panel Output (preview) port	Refresh rate: 50 or 60 Hz. Does not use the compression settings specified in the archive encoder preset. This output bypasses compression and encoding.	
	Live stream via the LAN port and network if using a decoder application	Refresh rate: 5 to 30 fps (same as the recording stream)	
Confidence Encoding	Preview window in the AV Controls panel		For composite encoding mode, confidence encoding must always be the same or lower resolution than archive encoding
	Live stream via the LAN port and network if using a decoder application		

Streaming Presets

Streaming Presets allow the user to quickly switch between various streaming options. There are 32 streaming presets that can be saved or recalled to archive and confidence.

Streaming presets save the following parameters:

STREAMING PRESETS	
Preset name	Multicast IP/destination (for Multicast only)
Streaming method and protocol	QoS (for Push streaming only)
Stream port	SAP setting (for Push streaming only)
MTU	RTMP publish URL (for RTMP push only)
TTL	Destination IP/hostname
RTSP Stream Name	Advanced section of RTMP, such as RTMP port, primary and backup server URL, stream name, username, and password (for RTMP push only)
RTSP over HTTP port (Pull streaming only)	

Audio Encoding

Which input signals are combined to form the encoded audio output vary depending on audio channel selection and the status of the dual analog mono option, as detailed in the following table:

Audio Encoding Channel Selection	Channel B Dual Analog Mono Status	Channel Input and Output
Channel A	Disabled	Enc L = ChA L Enc R = ChA R
Channel B	Disabled	Enc L = ChB L Enc R = ChB R
ChB Dual Mono	Enabled	Enc L = ChB L + ChB R Enc R = ChB L + ChB R
ChA + ChB	Disabled	Enc L = ChA L + ChB L Enc R = ChA R + ChB R
ChA + ChB Dual Mono	Enabled	Enc L = ChA L + ChB L + ChB R Enc R = ChA R + ChB L + ChB R

NOTES:

- Enc = Encoded output channel
- Ch n = Input channel *n*
- L = Left, R = Right
- Dual analog mono audio is available only on input channel B. If you enable this feature, all audio input for channel B should be analog mono, though digital stereo is accepted on input 4.
- Set the dual analog mono audio status in **Configuration > Input/Output Settings > Input/Output Configuration**.
- Select the audio encoding channel in **Configuration > Encoding & Layout > Encoding Presets > Channel Selection**.

Both left and right encoded audio signals (Enc L and Enc R) are incorporated into all the outputs (whether recordings or streams):

- Archive (composite) or archive channel A and archive channel B
- Confidence
- Local HDMI preview output

The SMP 300 Series has two independent recording options, which can be selected together or independently:

- **Recording Enabled** — Select this checkbox to record a video as an mp4/m4v file. The drop-down list provides two video recording options: **Audio + Video** and **Video Only**.
- **Audio-only Recording Enabled** — Select this checkbox for a recording of only the audio as an m4a file.

For more audio processing information, see the *SMP 300 Series Embedded Web Pages Help File*.

Layout presets (for composite mode only)

NOTES:

- A user must be logged in as an administrator to see or change these settings.
- Users can recall layout presets when setting up recordings.
- Layout presets and metadata configuration are available only in composite encoding mode.

Layout presets define where on the screen the video windows for each input channel are located and how big each window is. Each channel (A and B) has a defined aspect ratio, size, and position. Depending on the layout arrangement, a layout can also include metadata text and some areas that let a black background or background images be visible. In the **Layout Presets** panel, set up some of the metadata that can appear in streams.

Any of the default or user-created layout presets can be recalled and applied. Layouts apply to all streams at once: a recording session, streams, and the preview stream within the **AV Controls** panel (see **AV Controls Panel** on page 58). Presets can also be recalled using SIS commands (see **Layout Presets (for composite mode only)** on page 125).

The first 12 presets are factory default layouts. Presets 13 through 16 are unassigned and unconfigured. All presets can be configured through the controls in the **Encoding & Layout** page (for additional information, see the *SMP 300 Series Embedded Web Pages Help File*).

Configuring Metadata Elements (For composite mode only)

Select and specify the metadata text content that is incorporated into the video and used for other purposes. Also, select the font and font color to use for that text overlay within the video.

NOTE: The metadata display and the metadata configuration controls are disabled when dual channel encoding mode is active in SMP 352 models and SMP 351 models with LinkLicense.

Changing the Font Used for the Metadata Overlay

If optional fonts are uploaded to the SMP, they are available to select for displaying metadata text instead of the default font.

NOTES:

- The SMP supports TrueType™(.ttf) and OpenType® (.otf) fonts.
- To upload a font file, use the file upload utility within the **File Management** page.
- The user is responsible for obtaining any necessary font licenses before uploading fonts to the SMP 300 Series.
- After changing the font, some text may appear truncated in the on-screen text because characters may be wider in the selected font than in the system default font.
- The font selected for the overlay can be different from the font used for both the input switching OSD and the universal OSD (see **Changing the Font and Text Settings Used for the Input Switching On-screen Display** on page 76).
- To select a different font color, enter the six-character hexadecimal color value. The default font color is white (ffffff).
- For additional information on how to select a different font or font color, see the *SMP 300 Series Embedded Web Pages Help File*.

TIP: Many free, open source fonts are available at <https://fonts.google.com/>.

Recording Profiles

Recording profiles can be configured, saved, and recalled in the **Recording Profiles** expandable panel. Fill in the appropriate fields with the metadata text content to be associated with an individual recording file. There are 32 recording profiles that can be saved or recalled to archive and confidence files.

Recording profiles save the following parameters:

RECORDING PROFILE FIELDS	
Contributor	Presenter
Copyright	Publisher
Course	Relation
Coverage	Source
Description	Subject
Format	Title
Language	Type

The SMP 300 Series lists the currently **Active Profile**, and the **Default Profile** can be selected from a drop-down list. The specified default profile is used if a user starts a recording without choosing a profile.

Any recording profile can be recalled and applied before starting a recording. Recording Profiles can also be recalled, but not created, by using SIS commands (see **Recording Profiles** on page 132).

For additional information on Recording Profiles, see the *SMP 300 Series Embedded Web Pages Help File*.

Users and Roles

In the **Users and Roles** page within **Configuration**, an administrator can set up both administrator and user level passwords. Passwords are not required, though they are recommended for controlling access to configuration functions.

Passwords can be set up only via this page or using SIS commands (see **Remote Communication and Control** starting on page 106). They cannot be set via the front panel.

NOTES:

- The factory configured passwords for all accounts on this device have been set to the device serial number. In the event of a complete system reset, the passwords convert to the default, which is no password.
- An administrator password is required before a user password can be set.
- If only an administrator password is set, only administrators are able to log in to the SMP 300 Series web pages. Users have no access.
- To allow user access to a password-protected unit, set both an administrator password and a user password, and users must log in using the user password.

To open this page, click the **Configuration** tab at the top of the SMP 300 Series embedded web pages and then click the **Users and Roles** tab on the second tier of tabs.

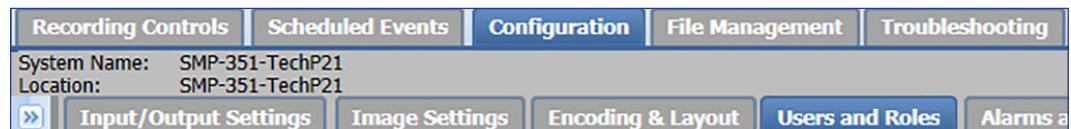


Figure 63. Configuration Tab, Users and Roles Sub-tab

The Users and Roles page opens, showing the Password pane (see figure 64).

A screenshot of the Password panel. The panel has a title bar 'Password'. It contains two sets of input fields. The first set is for the 'admin' user: 'Login ID' is 'admin', 'Administrator Password' is '****', and 'Confirm Password' is '****'. The second set is for the 'user' user: 'Login ID' is 'user', 'User Password' is blank, and 'Confirm Password' is blank. There are 'Show Password' checkboxes and 'Clear' buttons next to each password field. At the bottom right are 'Save' and 'Cancel' buttons.

Figure 64. Password Panel

Setting passwords

If no passwords are set, anyone who opens the internal web pages is connected with administrator-level access and can make changes to all settings. To limit access and prevent changes to system configuration, the following options are available:

- **Set an administrator level password only** — This option allows only administrators to access the SMP 300 Series web pages. End users cannot log in to use the web pages.

- **Set both an administrator level password and a user level password** — This allows administrators to log in and manage all aspects of the SMP 300 Series. Users can log in to use just the AV Controls panel and the Recording Controls page.

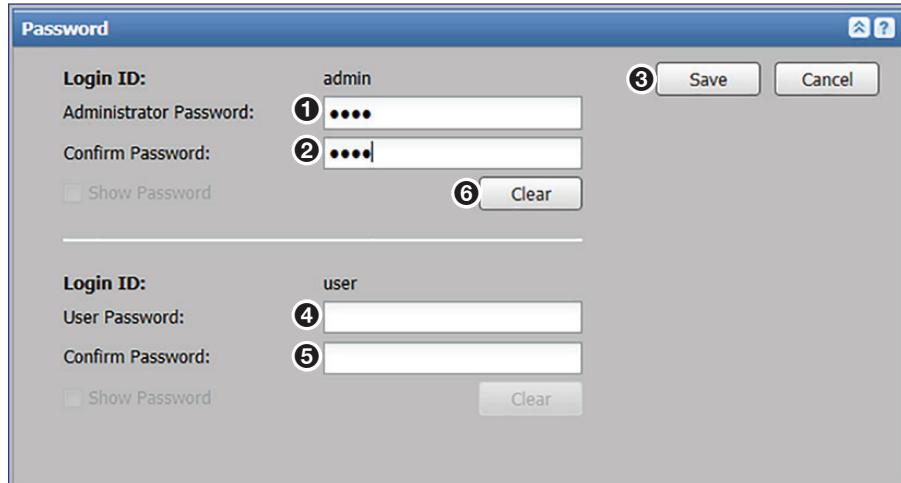


Figure 65. Password Panel

To set passwords:

1. Enter a desired password, at least four characters long, into the **Administrator Password** field (see figure 65, ①) in the **Login ID: admin** panel.
 - Passwords must consist of any readable characters, up to 128 characters.
 - Passwords cannot contain a single space or the "pipe" (|) character.
 - Passwords are case-sensitive.
2. Enter the same password into the **Confirm Password** field (②) directly below the **Administrator Password** field. Once a password is entered, the fields in the **Login ID: user** section are accessible.
3. If no user password is set, click **Save** (③) in the upper right of the Password panel.

To set a user password, complete steps 4 through 6.

4. To set a user level password, type a desired password into the **User Password** field (④) in the **Login ID: user** panel.
5. Type the same password into the **Confirm Password** field (⑤) directly below the **User Password** field.
6. Click **Save** (③). Both the administrator and user passwords are saved.

Clearing Passwords

To remove (clear) a password, click **Clear** (⑥) corresponding to the administrator or user password and click **Save** (③) to remove.

NOTE: When the administrator password is cleared, the user password is also cleared.

Alarms and Traps

In the **Alarms and Traps** page within **Configuration**, an administrator can configure e-mail account and communication settings to allow the unit to send notification e-mails. This is also the location for selecting whether to log, display a message about, or send an email about various conditions and errors experienced by the SMP 300 Series.

To open this page, click the **Configuration** tab (see figure 66) at the top of the SMP embedded web pages and click the **Alarms and Traps** tab on the second tier of tabs.

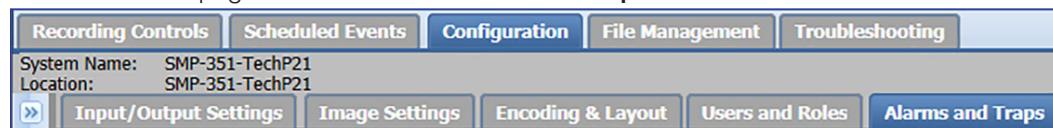


Figure 66. Configuration Tab, Alarms and Traps Subtab

The Alarms and Traps page opens, showing the two panels (see figure 67).

A screenshot of the 'Alarms and Traps' page. The top panel, labeled ①, is titled 'Alarm Notifier Destinations'. It contains fields for 'From' User ID (from@yourhost.com), 'To' User ID (to@yourhost.com), Email Server Address (exchange.yourhost.com), Use Encryption (None), TCP Port (0), Username (someuser), and Password (*****). A 'Test' button is also present. The bottom panel, labeled ②, is titled 'Alarm Message List'. It shows a table of alarms with their names in the first column. The second column is 'Priority' with four options: Notify (radio button), Display (radio button), Log (radio button), and Disabled (radio button). The 'Notify' column has blue radio buttons for most alarms, while 'Display', 'Log', and 'Disabled' have white radio buttons. The alarms listed include App Failure, Audio Loss, Auth Failures, Disk Error, Disk Space, Firmware Failure, Hdcp Video, Ntp Sync, Publish Failure, Record Halt, Sched Server, Temperature Internal, Usb Front Overcurrent, Usb Keyboard Overcurrent, Usb Mouse Overcurrent, Usb Rear Overcurrent, and Video Loss.

Figure 67. Alarms and Traps Page

① **Alarm Notifier Destinations** — Enter email sender and receiver information for alarm notifications (see the **Alarm** table on page 50 for more information on the alarms).

② **Alarm Message List** — Choose the priority for a given alarm on the SMP, or disable the alarm. The options for an alarm are:

- **Notify** — The SMP sends an email and unsolicited SIS response.
- **Display** — The indicate alarm LED is active on the front panel, AAP or wallplate, and web page. The event is also logged.
- **Log** — The SMP records the alarm in the events log only.
- **Disabled** — The alarm is disabled.

NOTES:

- If internal storage space is nearly full (when the disk space alarm is triggered) and the SMP is set up to automatically upload recordings to a server (see **Publish Settings** on page 69), then the SMP uses an automatic disc cleanup feature to make room for new recordings. The unit automatically deletes previous recordings that have been uploaded to a server, starting with the oldest recordings, until there is enough free space on the disk.
- All active alarms can be manually cleared by an administrator via the web page.

System Settings

Controls within eight of the twelve panels in the **System Settings** page are essential during initial setup of the unit. The four other panels contain features used infrequently for updating the unit, restoring a configuration, or limiting access to front panel controls.

NOTE: A user must be logged in as an administrator to see or change these settings.

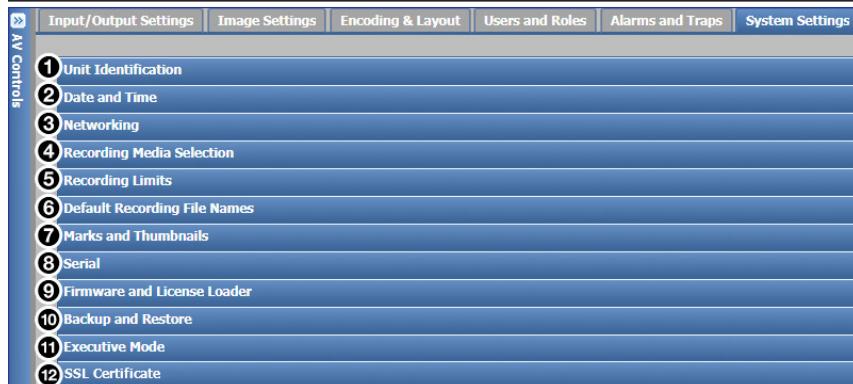


Figure 68. System Settings Panels

The panels are:

- 1 Unit Identification** — Set the system (unit) name and a description for its location. This is also the location of the model name and description, part number, firmware version, overall unit temperature, part number, serial number, and license information.
- 2 Date and Time** — Set the date, time, time zone, and settings for syncing with one or more NTP (network time protocol) servers.
- 3 Networking** — Set the IP addresses for the unit, gateway, and DNS server, as well as the subnet mask and port numbers for a variety of port types, or enable or disable SNMP.
- 4 Recording Media Selection** — Set recording parameters, such as destination, destination priority, and secondary recording mode.
- 5 Recording Limits** — Set recording file size and duration limits for ad hoc recordings.
- 6 Default Recording File Names** — Choose what type of information is used to compose names of recordings and what type of file extension (m4a, m4v, and mp4).
- 7 Marks and Thumbnails** — Choose whether to have the SMP produce normal (small) size thumbnail images of the recorded video or thumbnail images the same size (resolution) as the archive encoder settings.
- 8 Serial** — Set the baud rate and protocol for the rear panel remote control serial port.
- 9 Firmware and License Loader** — Initiate firmware uploads and enter LinkLicense information (see [Extron LinkLicense](#) on page 3).

NOTE: All streaming configurations go back to default when firmware is updated.

- 10 Backup and Restore** — Back up current SMP or IP configuration settings, or restore a previously saved configuration file.
- 11 Executive Mode** — Enable or disable various levels of front panel lock-out to limit access to the controls and functions of the SMP.
- 12 SSL Certificate** — Import user supplied SSL certificates.

Many of the system setup tasks must be performed within these pages (see the *SMP 300 Series Embedded Web Pages Help File*). However, some of the settings can also be set using the front panel controls or Extron SIS commands.

Setting the Default Recording Media

To choose where a recording is saved during its creation:

NOTE: Secondary storage mode is not available and cannot be selected if dual channel encoding mode is active.

1. In the System Settings page, click the **Recording Media Selection** panel bar.

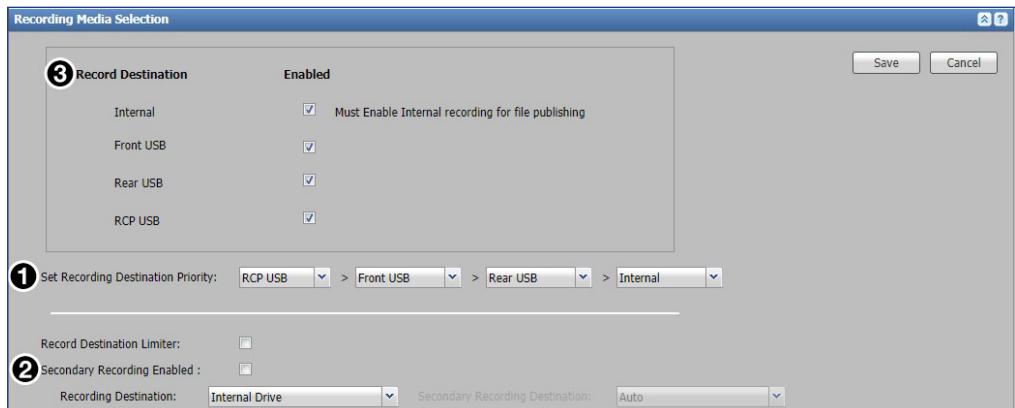


Figure 69. Recording Media Selection Panel

2. Use the drop-down lists in **Set Recording Destination Priority** (see figure 69, ①) to designate where the SMP stores a recording when **Auto** is selected as the recording destination or a recording destination is unavailable.

The default destination priority is: **RCP USB, Front USB, Rear USB, Internal**.

3. An Admin can disable one or more **Record Destinations** to prevent a user from recording to that location by deselecting the checkbox or checkboxes. For example, if the **Front USB** is deselected, the SMP does not recognize a USB drive inserted into the Front USB port, and the recording file is not saved to this **Record Destination**.

To save recordings to a single location (to use single storage mode):

- a. Verify that the **Secondary Recording Enabled** checkbox (②) is disabled (unchecked).
- b. Select the checkbox or checkboxes in the **Record Destination** panel (③) to enable recording destinations.
 - **Internal** — This forces the unit to store recordings only in its internal storage, even if USB drives are attached to the front and rear panel ports.
 - **Front USB, Rear USB, or RCP USB** — These options force the unit to record to a USB drive connected to the corresponding port.

NOTES:

- At least one record location must be enabled as a record destination.
- The **Internal** recording destination must be enabled for file publishing.
- The SMP automatically uploads recording files to a network server only if files are recorded to and stored on the **internal drive**. If only a USB option is selected, files cannot be auto-uploaded to a server.
- When a record destination is disabled, the SMP will not report a USB flash drive attached to a port.
- Secondary recording must be turned off to record virtual input into files.
- The RCP USB location is grayed out if an RCP 101 is not detected.
- All locations are enabled by default. Select the checkbox to deselect.

4. To save recordings to two locations at once (dual recording mode):

NOTE: Secondary storage mode is not available and cannot be selected if dual channel encoding mode is active.

- Select (check) the **Secondary Recording Enabled** checkbox (see figure 70, ①).

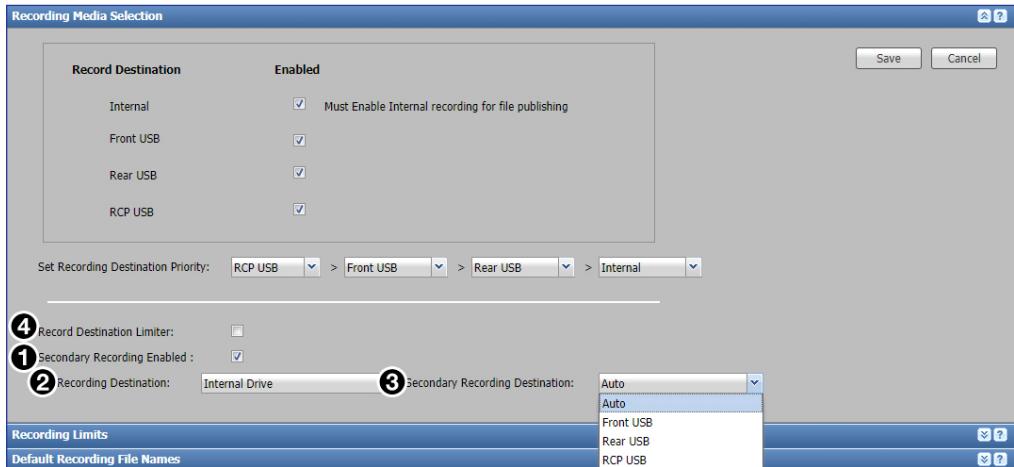


Figure 70. Recording Media Selection - Enable Dual Recording

- The selection in the **Recording Destination:** field changes to **Internal Drive** (②). This cannot be changed in dual recording mode. The recording is always stored to the internal drive.
 - The **Secondary Recording Destination:** drop-down list is enabled (③).
- Select an option (**Auto**, **Front USB**, **Rear USB**, or **RCP USB**) from the **Secondary Recording Destination:** drop-down list.
 - This designates which storage drive (if one is connected at that location and it has been enabled in the **Record Destination** pane) is used to store a second copy of the recording.
 - If **Auto** is selected, the secondary recording destination is based upon the selections made in [step 2](#) on page 90. Ensure **Internal** and the desired secondary recording destination are enabled (see [figure 69](#), ③ on page 90).
- Optionally, limit users to the storage drive location selected in step 2 or the **Secondary Recording Destination** specified in step 4 (without the ability to change locations). To do so, select (check) the **Record Destination Limiter** checkbox (④).

NOTE: If the **Record Destination Limiter** checkbox is selected and the setting has been saved by clicking the **Save** button within the **Recording Media Selection** panel, destination settings cannot be changed and secondary storage mode cannot be enabled or disabled until the **Record Destination Limiter** is disabled and that change is saved.

Once the **Record Destination Limiter** has been disabled, make changes to the other settings and save the changes.

Setting the Recording File Limits

Recording files can be limited (portions of long recordings) to a specific size. If this feature is enabled (default), each time a recording file reaches the specified size, the file is saved and the SMP creates a new file (up to the specified size) for the next portion of the recording, and so on until the recording event ends or the SMP runs out of storage space.

To set a recording file size limit:

1. In the System Settings page, click the **Recording Limits** panel bar.



Figure 71. Limit Recording Size

2. Select (check) the **Recording File Size Limiter** checkbox (see figure 71, ①).
3. Enter a number into the **Maximum File Size** field or use the **Up** and **Down** arrows (②) next to the field to select a number. The file size can be limited to any size between **100 MB** to **3800 MB** (3.8 GB).
 - The default is **3584 MB**.
 - If the **Recording File Size Limiter** checkbox is deselected, the size limit function is disabled, and the entire recording is stored in a single file.
4. Click **Save**, or **Cancel** (③) to discard the changes.

NOTE: For an SMP set for secondary storage mode with unlimited file size selected, the recording saved on the internal storage drive is saved in a single file. However, if the recording is saved to a USB storage device with FAT32 formatting, recording creates multiple 4 GB files as a result of the FAT32 size limit. Use a USB drive formatted for NTFS in order to avoid the file size limit.

Ad hoc recordings can be limited to a specific duration. If this feature is enabled, the SMP stops recording an event after the specified number of hours.

To limit the ad hoc recording duration:

1. In the System Settings page, click the **Recording Limits** panel bar.



Figure 72. Limit Ad hoc Recording Duration

2. Select (check) the limit **Recording Ad hoc Duration Limiter** checkbox (see figure 72, ①).
3. Enter a number into the **Maximum Ad hoc Record Duration** field or use the **Up** and **Down** arrows (②) next to the field to select a number from 0 to 24 hours.
 - By default, the **Recording Ad hoc Duration Limiter** checkbox is not checked and there is no limit on duration.
 - Enter time in full hours only. Fractions of an hour are not saved.
4. Click **Save**, or click **Cancel** (③) to discard the changes.

Advanced Features

In the Advanced Features page within the Configuration page, an administrator can do the following:

- Set the SMP to run a web browser client application for direct control on site for limited network (IP) configuration when a network-connected computer is not available.
- Upload a FlexOS plugin application to add functions and configuration options, then use the plugin to configure features of the SMP.

NOTE: These settings cannot be set via the front panel.

To open this page, click **Configuration > Advanced Features**.

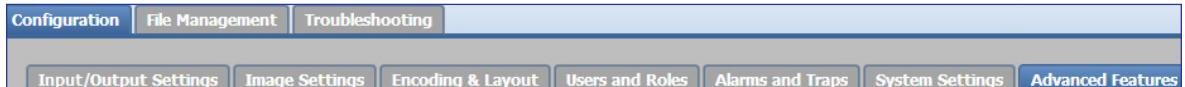


Figure 73. Configuration tab, Advanced Features Sub-tab

The Advanced Features page opens to the Browser Client and FlexOS Apps panels.

A screenshot of the 'Advanced Features' page. It has two main sections: 'Browser Client' and 'FlexOS Apps'.
Browser Client: A note says 'From the attached keyboard in either front or rear USB port, press CTRL + ALT + S to switch between Preview Output and Internal Web Browser.' There is a checkbox labeled 'Enable the browser client?' with a checkmark.
FlexOS Apps: A section for uploading new apps. It shows a table with one row:

App Name	Version	Startup State	Run State	Uses	Status	Actions
Digital I/O	2.00.00...	Enabled	Start	No digital I/O ports are in...	This app controls the digital I/O.	<button>Configure</button> <button>Delete</button>

Figure 74. Advanced Features Page

Using an Internal Browser Client, a Keyboard and Mouse to Control the SMP 300 Series

Configure the SMP to run a web browser client application for direct control, if a stand-alone computer is not available on site. If enabled, the internal browser provides access to a subset of the Network (IP) Settings configuration pane.

To set up the SMP for local control using its internal browser client:

1. On a computer connected to the same network as the SMP, open a browser, enter the IP address of the unit into the address field, and connect to the embedded web pages.
2. Click the **Configuration** tab at the top of the SMP 300 Series embedded web pages and then click the **Advanced Features** tab on the second tier of tabs.
3. Select the **Enable the browser client?** checkbox (see figure 74, ①) in the Browser Client panel.

NOTE: The following steps do not require a computer and do not require the SMP to be connected to a network.

4. Connect a monitor, keyboard, and mouse directly to the SMP 300 Series (see **Control System and External Device Connections** on page 16).
 - Connect the keyboard to one of the rear panel Mouse/Keyboard USB connectors.
 - Connect the mouse to the other rear panel Mouse/Keyboard USB connectors.
 - Connect a display to the local HDMI Preview Out port on the rear panel.

- By default, the local output shows the preview (confidence) image on the connected monitor or display. To switch between viewing the preview and viewing the embedded web pages, press the <**Ctrl + Alt + S**> keys on the keyboard connected to the SMP 300 Series.

NOTE: The default web page allows configuration of the network settings.

- Use the mouse and keyboard to navigate through the pages and panels to make changes as needed.
- When all the changes have been completed, press the <**Ctrl + Alt + S**> keys on the keyboard to switch back from the browser client to the preview display.

Uploading a FlexOS Application to the SMP 300 Series

Occasionally Extron develops supplemental applications or plug-ins to enhance or add functions or control options to the product. For example, download a plug-in application to use the embedded web pages to configure and monitor the rear panel digital I/O ports. The controls in the **Advanced Features** page upload the application (app) to the SMP (see the *SMP 300 Series Embedded Web Pages Help File*).



Figure 75. FlexOS Apps Panel

NOTE: You may need to log in to the [Extron website](#) using your Extron Insider account information in order to download the software.

Contact your Extron representative if you need a login ID.

Available applications

Digital I/O configuration — The digital I/O configuration (**Digital I/O**) application is included with the SMP 300 Series. Use it to rename each digital input/output port, set its use mode (input or output, with or without pull-up), create labels for on and off states, and see the status of each port. Additionally, link monitored conditions, such as the state of a particular I/O port, a specific recording mode, or mute state or alarm with actions with this application. These actions include changing an input, recording mode, or mute mode, or swapping channels or setting a chapter marker. For further information, see [FlexOS Applications](#) on page 104.

Panopto app — This optional application enables importing Panopto Schedules and file publishing to Panopto. The Panopto app requires firmware v3.00 or newer. Scheduling and RTMP/RTMPS streaming to Panopto are enabled by Enhanced Panopto Features LinkLicense.

Kaltura app — This optional application enables scheduling, RTMP streaming, and publishing directly to Kaltura KMC. The Kalutua app requires firmware v3.00 or newer. Scheduling and RTMP/RTMPS streaming to Kaltura KMC are enabled by Enhanced Kaltura Features LinkLicense.

iCalendar app - This optional application enables ingesting periodic schedules from Outlook, Google Calendar, and other scheduling services. The iCalendar app requires firmware v3.01 or newer.

Additional applications may become available in the future for download from the Extron website.

File Management

The **File Management** page contains a directory of files stored in the SMP 300 Series and any connected shared drives on the network, which can be deleted, renamed or locked. It also contains a file upload utility to add new files to the SMP for use as background images. Use this page to connect the SMP to shared network drives and upload or download files from the SMP through an SFTP client.

Only users logged in to the SMP 300 Series with administrator privileges have access to the **File Management** page and can make changes.

To open this page, click the **File Management** tab:



Figure 76. File Management Tab

The **File Management** page opens to the **File Directory** (see figure 77, ①), **File Upload Utility** (②), **Accessing Internal Filesystem** (③) panes, and the storage information table (④):

The screenshot shows the SMP 300 Series Web-Based User Interface. The top navigation bar includes tabs for Configuration, File Management (selected), Troubleshooting, and StudioStation. The main content area has four sections: 1. **File Directory**: A tree view showing the root directory / with subfolders backgrounds, certs, diagnostics, fonts, nortxe-backup, opencast_logs, recording_logs, recordings, shares, and B3_PD2_Calendar.ics. 2. **File Upload Utility**: A form to select a file to upload, with fields for Destination Name and Destination Directory, and buttons for Upload and Cancel. 3. **Accessing Internal Filesystem**: Instructions for using an SFTP client, including the device's IP address (sftp://192.168.194.21:22022), login credentials (admin or user), and a checkbox for enabling SMD. 4. **Storage Information Table**: A table listing connected storage devices with columns for Name, Type, Total, Used, Available, and Recording Time. The table shows three entries: Internal (Internal, Internal, 80.11 GB, 25.16 GB, 54.95 GB, 132:41:17), 2nd (USB Rear, 1.86 GB, 645.62 MB, 1.23 GB, 00:24:49), and USB_DISK (USB Rear, 1.86 GB, 1.30 GB, 580.25 MB, 00:11:24). A filter dropdown and a Network Shares button are at the bottom of the table.

Figure 77. Configuration, File Management Tab

The storage information table (also on the **Recording Controls** page) lists the names of the available connected storage devices, their locations (internal, USB front panel port, USB rear panel port), total capacity, and amount of used and available storage space. It also provides an estimate of remaining recording time for each drive.

Name	Type	Total	Used	Available	Recording Time
Internal	Internal	73.4 GB	0.2 GB	69.4 GB	25:52:43
500MB_DR...	USB Front	0.5 GB	0.5 GB	0.0 GB	00:00:15
USB_DISK	USB Rear	1.9 GB	0.2 GB	1.7 GB	00:38:04

Figure 78. Storage Information Table

This list can be sorted. Click on any of the table headings or click the arrow that appears when you mouse over a table heading and select a sort order from the drop-down list.

NOTES:

- Recordings stored on the internal drive can be automatically uploaded to a network server (configured in **Configuration > Schedule Settings > Publish Settings**). If internal storage space is nearly full, the SMP uses a disc cleanup feature to make room for new recordings. As needed, the unit automatically deletes old recordings that have already been uploaded to a server, starting with the oldest recordings, until there is enough free space on the disk. The unit removes recordings that have not been published if additional free space is needed.
- The recording time estimate for the internal drive considers space that can be made available from recordings that are eligible for automatic deletion. At times, the total listed space may not equal the total calculated space (used + available + system).
- The total space listed for the internal drive may be larger than the sum of used space plus available space because the total includes space reserved for system files.
- The available space might be larger than the difference between the total and used space because used space includes deletable recordings.
- For detailed information on disk space and storage, see the *SMP 300 Series Embedded Web Pages Help File*.

Add a Network Share

Network servers or network-attached storage drives (network shares) can be added to the file list so the SMP 300 Series can access files and folders stored on shared network resources. These shares can store background images.

NOTE: The size of network shares is initially unknown and there can be significant performance issues if the entire contents of every network share is indexed on every filter or search request. To provide the best performance with available resources, the searches and filtering for network shares is limited to the layer immediately below the level that the user manually expands. If the user fully expands the share, then it is fully indexed, searched, and filtered (see the *SMP 300 Series Embedded Web Pages Help File* to add a network share).

Upload and Download Files Using an SFTP Client

NOTE: Recordings can be downloaded from the SFTP client but recordings cannot be deleted from the client.

Automatic file uploading to a network location (see **Setting the Default Recording Media** on page 90), the recording re-transfer (re-upload) option within the **Scheduled Events** page, and the upload option on the **File Management** page for uploading background image files to the unit satisfy most file transfer needs. However, if there is a need to transfer files into or out of the SMP outside of those controls, use an SFTP client utility.

To use an SFTP client utility to transfer files:

1. Click the **File Management** tab.
2. Copy the URL from the **Accessing Internal Filesystem** pane. The URL includes the SFTP protocol name (sftp), the address of the SMP, and the logical port number (usually 22022) of the LAN port. For example, `sftp://192.168.194.28:22022`.
3. Open an SFTP client program of your choice.
4. Paste the URL from the SMP 300 Series into the host name or host address field of the SFTP client program. If necessary, delete `sftp` from the URL and select SFTP from a different field or menu, and remove the port number from the URL and paste it into a port number field.

5. If an administrator username and password are set for the unit, enter those in the appropriate fields in the SFTP client.
6. Log into or connect to the SMP.
7. Use the SFTP client software to copy files (recordings, logs, background images) to and from the internal storage folders on the SMP.
8. Disconnect from the SMP (close the SFTP session).

Troubleshooting

The five pages within the **Troubleshooting** page contain controls typically used during initial setup to test connections, and then later if product support issues arise. A logged in administrator can:

- View current system conditions and connections.
- View event logs and alarms.
- Test network connections.
- Reset the unit.

NOTES:

- Only administrators have access to the **Troubleshooting** tab and can see and make changes to all settings.
- The factory configured passwords for all accounts on this device have been set to the device serial number. In the event of a complete system reset, the passwords convert to the default, which is no password (see **Users and Roles** on page 86 to change a password).

Features of the Troubleshooting Page



Figure 79. Troubleshooting Tab

The pages within **Troubleshooting** are:

- ① **Status** (see page 98) — Displays information about the firmware and web page versions, system and component temperatures, fan speeds, Ethernet connection, MAC address, date and time, as well as details about the bit rates for audio and both the archive and confidence encoding streams.
- ② **Logs** (see page 99) — Displays a list (log) of alerts and notices for any event set up for any status other than **Disabled** in **Configuration > Alarms and Traps > Alarm Message List**. The log can be sorted by date and time, severity, DB ID, or message. It can also be filtered, or exported to a CSV file.
- ③ **Alarms** (see page 100) — Similar to Logs, this page displays a list of the more severe events that trigger alarms. The list can be sorted, filtered, or exported to a CSV file. Individual alarms can be cleared. Only active and recently active alarms are displayed.
- ④ **Diagnostic Tools** (see page 101) — Test network connections using a ping utility, a route (tracert) function, or Nmap test. Also, run other diagnostic tests that generate a debugging log.
- ⑤ **System Resets** (see page 102) — Initiate a unit reboot, delete all stored content and format the internal storage, or perform one of five different types of reset.

Status

The **Status** page within the **Troubleshooting** page displays factory-defined and user-defined information about the unit. This page contains the unit name, part number, firmware version, MAC address, location description, and related information about the unit. It also displays the current audio bit rate and the video bit rates for all encoding streams.

Some of the information in this page can also be found using SIS commands (see **Command and Response Tables** starting on page 114) or the front panel (see **Status Menu** on page 48).

To open this page, click the **Troubleshooting** tab at the top of the SMP 300 Series embedded web pages and then click the **Status** tab on the second tier of tabs (see figure 80).

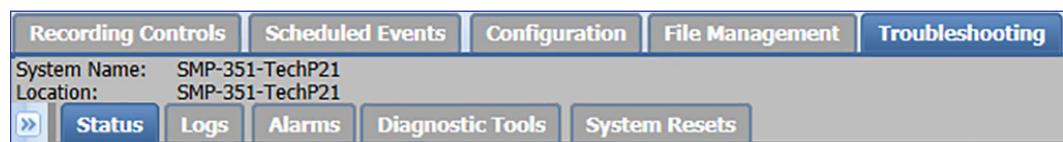


Figure 80. Troubleshooting Tab, Status Sub-tab

The **Status** page opens, showing the **Detailed System Status** and **Encoder Status** panels (see figure 81).

A screenshot of the Status page. At the top, there is a horizontal navigation bar with tabs: Status, Logs, Alarms, Diagnostic Tools, and System Resets. The Status tab is active. Below this is a section titled "Detailed System Status" containing various system parameters. A callout (1) points to a link labeled "Find new firmware on Extron.com". Another callout (2) points to a "Sync" button next to a date and time entry. Below this is a section titled "Encoder Status" displaying audio and video bitrate information for three streams: Audio Bitrate, ARCHIVE Video Bitrate, and CONFIDENCE Video Bitrate.

Figure 81. Status Page

All of the items on this page are read-only except:

- The hyperlink to the Extron website **Find new firmware on Extron.com** (see figure 81, ①) where updated firmware for the unit is located.
- The **Date & Time Sync** button (2) commands the unit to sync its internal clock time and date with the settings from an NTP server.

Logs

The Logs page within Troubleshooting displays a list (log) of alerts and notices for any event set up for a status other than **Disabled** in the Configuration > Alarms and Traps > Alarm Message panel. All log entries are read-only. The logs can be sorted, filtered, searched, or exported to a comma-separated values (CSV) file.

To open this page, click the **Troubleshooting** tab at the top of the embedded web pages, then click the **Logs** tab on the second tier of tabs (see figure 82).

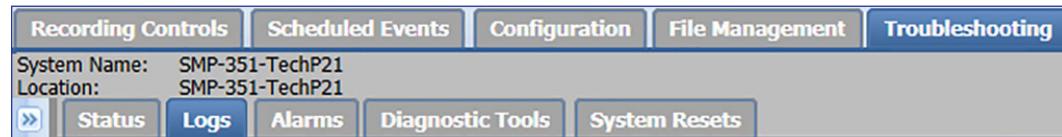


Figure 82. Troubleshooting Tab, Logs Sub-tab

The Logs page opens, showing filtering controls and the log list (see figure 83).

A screenshot of the 'Logs' page. At the top, there is a header bar with tabs: Status, Logs, Alarms, Diagnostic Tools, and System Resets. Below the header is a search/filter section with fields for Event ID, Severity, and Reported Date, along with a 'Reset Filters' button and an 'Export Log to CSV file' button. The main area contains a table of log entries. The table has columns: Date & Time, Severity, Event ID, and Message. The table shows 55 log entries from March 3, 2015, with various severity levels (info, alert, notice) and event IDs. Some messages describe recording stops and starts, CIFS uploads, and regular expression matches. At the bottom of the table, there are navigation links for pages, a total count of 55 entries, and a 'Clear All Logs' button.

Date & Time	Severity	Event ID	Message
16 03/03/2015 05:43:06 PM	info	5	Recording stopped
17 03/03/2015 05:43:05 PM	alert	5	warning alert 'audio_loss' was cleared when value 'Recording stopped' met threshold 'Audio maint'
18 03/03/2015 05:27:59 PM	alert	5	warning alert 'audio_loss' was triggered when value 'audio lost' met threshold 'Audio lost for an e:
19 03/03/2015 05:22:55 PM	info	5	Recording started
20 03/03/2015 05:22:54 PM	info	5	H264 level increased due to resolution and frame rate too high
21 03/03/2015 04:19:20 PM	notice	4	CIFS Upload, [/Adhoc_SMP-351-0C-E9-75_20150303-161834/xfer_complete] size 0 (bytes) in 0.0
22 03/03/2015 04:19:19 PM	notice	4	CIFS Upload, [/Adhoc_SMP-351-0C-E9-75_20150303-161834/thumbnails/00015100.jpg] size 737 =
23 03/03/2015 04:19:19 PM	notice	4	CIFS Upload, [/Adhoc_SMP-351-0C-E9-75_20150303-161834/Adhoc_SMP-351-0C-E9-75_201503
24 03/03/2015 04:19:17 PM	notice	4	CIFS Upload, [/Adhoc_SMP-351-0C-E9-75_20150303-161834/episode.xml] size 467 (bytes) in 0.0
25 03/03/2015 04:19:16 PM	notice	4	CIFS Upload, [/Adhoc_SMP-351-0C-E9-75_20150303-161834/Adhoc_SMP-351-0C-E9-75_201503
26 03/03/2015 04:19:15 PM	info	4	Recording stopped
27 03/03/2015 04:18:34 PM	info	4	Recording started
28 03/03/2015 04:18:24 PM	info	3	Recording stopped
29 03/03/2015 04:18:10 PM	info	3	Recording started
30 03/02/2015 02:39:59 PM	notice	2	CIFS Upload, [/Adhoc_SMP-351-0C-E9-75_20150302-143940/xfer_complete] size 0 (bytes) in 0.0
31 03/02/2015 02:39:59 PM	notice	2	CIFS Upload, [/Adhoc_SMP-351-0C-E9-75_20150302-143940/Adhoc_SMP-351-0C-E9-75_201503 -

Figure 83. Logs Page

For further information, see the *SMP 300 Series Embedded Web Pages Help File*.

Alarms

The **Alarms** tab within Troubleshooting displays a list of alerts for events as determined in **Configuration > Alarms and Traps > Alarm Message List**. Alarm list entries are read-only. The alarm list can be sorted, filtered, searched, or exported to a comma-separated values (CSV) file.

To open this page, click the **Troubleshooting** tab at the top of the SMP 300 Series embedded web pages, then click the **Alarms** tab on the second tier of tabs (see figure 84).

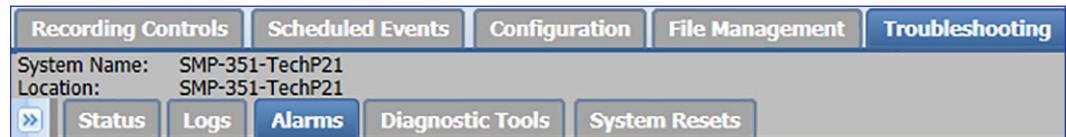


Figure 84. Troubleshooting, Alarms Sub-tab

The Alarms page opens, showing filtering controls and the alarm history list (see figure 85).

A screenshot of the Alarms page, specifically the Alarm History panel. At the top, there is a header bar with tabs: Status, Logs, Alarms, Diagnostic Tools, and System Resets. The Alarms tab is selected. Below the header, there is a section titled "Alarm History" with a "Filter the logs by:" section containing dropdown menus for Status (Any), Severity (Any), and Reported Date (a date range from 05/29/2014 to 05/29/2014), and a "Reset Filters" button. To the right of the filter section is an "Export Log to CSV file" button. The main area shows a table of alarm history entries. The table has columns: Status, Severity, Alarm Message, Reported Time (UTC), Ended Time (UTC), and Muted. There are three rows of data:

Status	Severity	Alarm Message	Reported Time (UTC)	Ended Time (UTC)	Muted
Cleared	Critical	video_loss - source connected	05/29/2014 10:28 AM	05/29/2014 10:29 AM	<input type="checkbox"/>
Muted	Critical	audio_loss - Audio stabilized	05/29/2014 10:29 AM	05/29/2014 03:24 PM	<input checked="" type="checkbox"/>
Active	Warning	ntp_sync_loss - ntp sync loss	05/29/2014 10:52 AM	Pending	<input type="checkbox"/>

At the bottom right of the table is a "Clear Selected Alarm(s)" button.

Figure 85. Alarms Page, Alarm History Panel

- Active, unresolved alarms are displayed as red text.
- To clear or remove an alarm, select the row it is listed in and click **Clear Selected Alarm(s)**.
- To mute an alarm, so that it does not appear in the alarm list again the next time it is triggered, select the checkbox for that alarm in the **Muted** column.

For further information about the Alarms page, see the *SMP 300 Series Embedded Web Pages Help File*.

Diagnostic Tools

The Diagnostic Tools page within Troubleshooting provides a convenient way to test network connections using a ping utility, a trace route (tracert) function, and an Nmap network discovery tool. Also, generate a log file to send to Extron support staff to aid in troubleshooting problems with the unit or the system.

To open this page, click the **Troubleshooting** tab at the top of the embedded web pages and then click the **Diagnostic Tools** tab on the second tier of tabs (see figure 86).

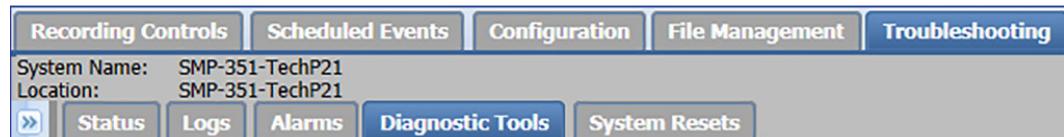


Figure 86. Troubleshooting Tab, Diagnostic Tools Sub-tab

The Diagnostic Tools page opens (see figure 87).

A screenshot of the Diagnostic Tools page. It features four main sections: 'Ping' (with an 'Address to Ping' input field and a 'Ping' button), 'Tracert' (with an 'Address to Trace' input field and a 'Tracert' button, accompanied by a warning message: 'Warning! Trace Route can take one minute to process!'), 'Diagnostics' (with 'Start Diagnostics' and 'Cancel Diagnostics' buttons), and 'Nmap' (with 'Host' and 'Port' input fields, a 'Nmap' button, and a warning message: 'Warning! Nmap can take one minute to process!').

Figure 87. Diagnostic Tools

For further information about the Diagnostic Tools page, see the *SMP 300 Series Embedded Web Pages Help File*.

System Resets

The **System Resets** page within **Troubleshooting** contains options to initiate a unit reboot, delete all stored content and format the internal storage, or perform one of five different types of reset. Some of the reset options offered here can also be performed using SIS commands or the front panel menu.

To open this page, click the **Troubleshooting** tab at the top of the embedded web pages and then click the **System Resets** tab on the second tier of tabs (see figure 88).

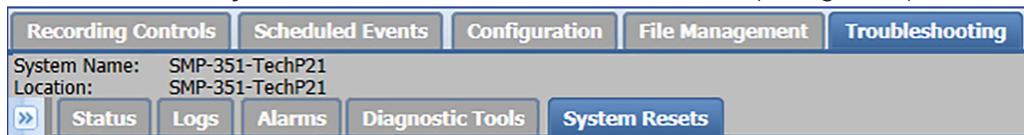


Figure 88. Troubleshooting Tab, System Resets Sub-tab

The System Resets page opens to the Reset panel (see figure 89).

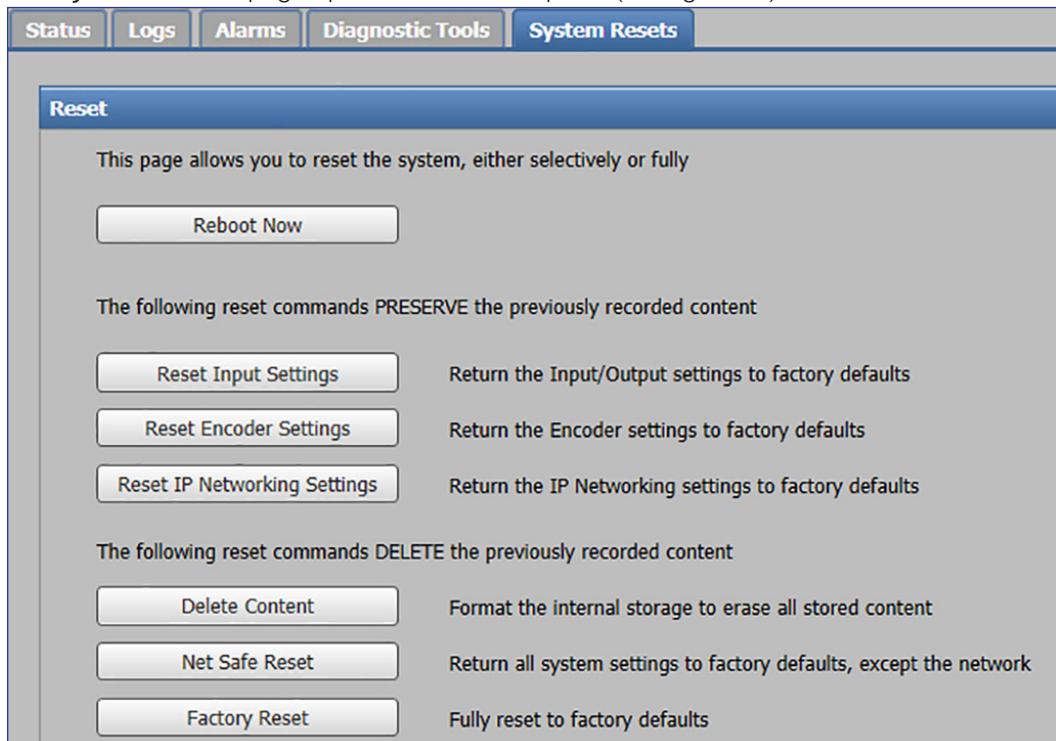


Figure 89. System Resets Page

Each option within this page includes a description of its function. To perform a reboot, reset, or content deletion (storage reformatting), click the button for the desired option. When a reset or reboot is performed, the unit reboots and loses its network connection.

NOTES:

- After a reset or reboot, it may take a few minutes for the SMP to restart and connect to the network. Refresh the browser window to reconnect to the unit.
- When you select **Reset IP Networking Settings** or **Factory Reset**, all IP addresses and network settings are reset to factory defaults. You must connect again using the default addresses.
- The factory configured passwords for all accounts on this device have been set to the device serial number. In the event of a complete system reset, the passwords convert to the default, which is no password (see **Users and Roles** on page 86 to change a password).

For information about resets, see the *SMP 300 Series Embedded Web Pages Help File*.

Mirroring LinkLicense

If the SMP has been upgraded with the Horizontal Video Mirroring LinkLicense, the web UI will have a **Mirroring LinkLicense** tab. The Mirror LinkLicense page has two panels: **Recording Settings**, and **Horizontal Video Mirroring Settings** that are used to configure the SMP for one button recording.

To open this page, click the **Mirroring LinkLicense** tab at the top of the embedded web pages (see figure 90).



Figure 90. Mirroring LinkLicense Tab

The Mirroring LinkLicense page opens with two expandable panels (see figure 91).

A screenshot of the Mirroring LinkLicense page. At the top, there is a header with the Extron Electronics logo, a user login status (Logged in as: admin), and a logout link. Below the header, the main content area has two expandable panels. Panel 1, titled "Recording Settings", contains fields for "Delayed Recording Start for ad hoc recording" (set to 5 seconds) and "To start recording, the selected recording destination must have at least" (set to 5 minutes). Panel 2, titled "Horizontal Video Mirroring Settings", contains a table with five inputs labeled 1 through 5. Inputs 4 and 5 have checkboxes checked under the "Horizontal Video Mirroring" column. A note below the table states: "This mirroring effect applies to the recording, streaming and HDMI output."

Figure 91. Mirror LinkLicense Page

The panels in the Mirror LinkLicense page are:

① Recording Settings —

- Set the delay time to start recording after the record command has been issued (default is 5 seconds).
- Set the minimum recording time on a recording destination (default is 5 minutes).

② Horizontal Video Mirroring Settings — Enable **Horizontal Video Mirroring** for one or more inputs. This feature shows the video or stream as a reflected image on the central vertical axis, as the SMP flips the video horizontally, to allow the notes to be displayed correctly, if the presenter is standing behind a glass marker board, facing the camera to address the audience while writing notes on the board.

For detailed information on configuring the Mirroring LinkLicense page settings, see the *SMP 300 Series Embedded Web Pages Help File*.

FlexOS Applications

This section provides basic instructions on how to use each supplemental plug-in application (app) available for the SMP 300 Series.

When an app is downloaded and installed, a user must have administrator privileges to access the Advanced Features page and to use the applications. The apps are available on the SMP 300 Series product page at www.extron.com.

Optional Applications

Digital I/O Configurator

This application allows the user to first configure and label the digital input/output (I/O) ports and then create up to 16 different monitors that check for conditions and apply actions when the conditions are met.

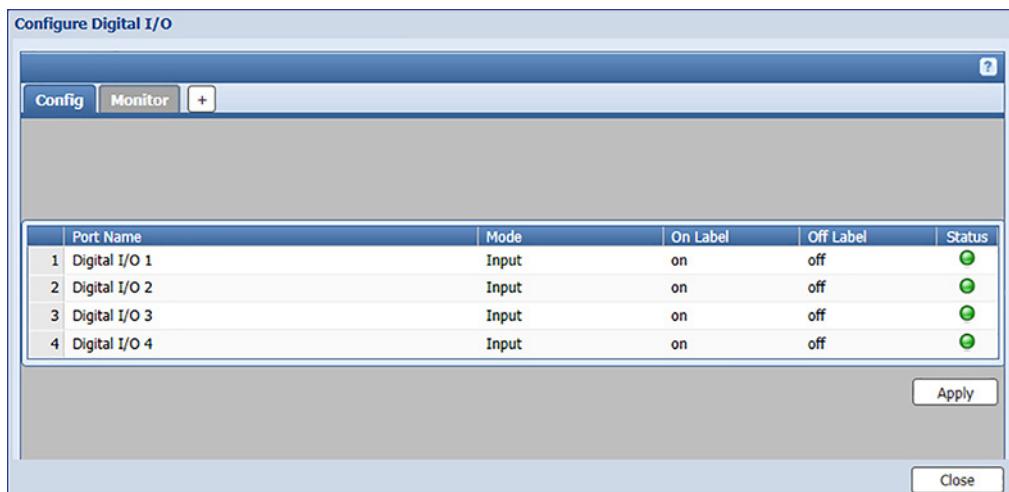


Figure 92. Configure Digital I/O Dialog Box

NOTE: Pull-up resistors are often used with buttons and switches that are wired as contact closures to ground. With a pull-up resistor, the input pin reads a high state when the button is not pressed (the circuit is open). When the button is pressed, it connects the input pin directly to ground, and the input pin reads a low state.

TIPS: Here are some guidelines on when to select one of the pull-up modes.

- **Input with pull-up** — Enable the pull-up resistor if the external device does not have the capability or is not configured to drive the SMP digital input above the minimum logic high threshold (such as when connected to a switch contact closure to ground, or when a digital output drives an open collector or drain).
- **Output with pull-up** — Enable the pull-up resistor if the load requires that a logic high signal be driven from the source (the SMP) (when the load does not have its own internal pull-up resistor, for example). Pull-ups do not need to be used when driving loads that require only contact closure to ground (when controlling an Extron IPL T PC1, for example).

Kaltura

This optional application enables scheduling, RTMP streaming, and publishing directly to Kaltura KMC. The Kalutua app requires firmware v3.00 or newer. Scheduling and RTMP/RTMPS streaming to Kaltura KMC are enabled by Enhanced Kaltura Features LinkLicense.

iCalendar

This optional application enables ingesting periodic schedules from Outlook, Google Calendar, and other shceduling servies. The iCalendar app requires firmware v3.01 or newer.

Panopto

This optional application enables importing Panopto Schedules and file publishing to Panopto. The Panopto app requires firmware v3.00 or newer. Scheduling and RTMP/RTMPS streaming to Panopto are enabled by Enhanced Panopto Features LinkLicense.

Full instructions for loading and using FlexOS applications in the web-based user interface, are available in the *SMP 300 Series Embedded Web Pages Help File*.

Remote Communication and Control

This section describes Simple Instruction Set (SIS) command programming and control of the SMP 300 Series, including:

- **Connection Options**
- **Host-to-device Communications**
- **Using the Command and Response Tables**
- **Command and Response Tables**

Connection Options

The SMP 300 Series can be configured and controlled using SIS commands or embedded web pages. Configure and control the SMP 300 Series remotely via a host computer or other device (such as a control system) by connecting to the rear panel RS-232 port, LAN port, or the front panel USB Config port of the SMP device.

RS-232 Port

The SMP 300 Series has a rear panel serial port (see **figure 4, E** on page 15) that can be connected to a host device such as a computer running a HyperTerminal utility, or the Extron DataViewer utility. The port makes serial control of the SMP possible. Use the protocol information listed below to make the connection (see **Host-to-device Communications** on page 108).

RS-232 protocol defaults:

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

Front Panel Configuration Port

The mini B USB port is located on the front panel (see **figure 8, B** on page 21). Connect to a host computer for configuration using SIS commands with DataViewer, available at www.extron.com. To connect the SMP 300 Series to a host computer, download the USB driver, follow the on-screen instructions, and configure the SMP as required.

NOTE: If an Extron USB device has never been connected to the host computer, prior to connecting the SMP 300 Series config (USB) port for the first time, you must install and activate the USB driver. The simplest way to do this is to install DataViewer (see **DataViewer** on page 141).

Ethernet (LAN) Port

The rear panel LAN connector (see [figure 4](#), Q on page 15) on the device can be connected to an Ethernet LAN or WAN. Communication between the device and the control system or PC is via Telnet (a TCP socket using port 23). The Telnet port can be changed, if necessary, via SIS or using the SMP 300 Series web UI. This connection makes SIS control of the device possible using a control system or PC connected to the same LAN or WAN.

LAN port defaults:

- DHCP: off
- SMP 300 Series IP address: 192.168.254.254
- Subnet mask: 255.255.0.0
- Gateway IP address: 0.0.0.0

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 SMP.
- **Patch (straight) cable** — Connection of the SMP to an Ethernet LAN.

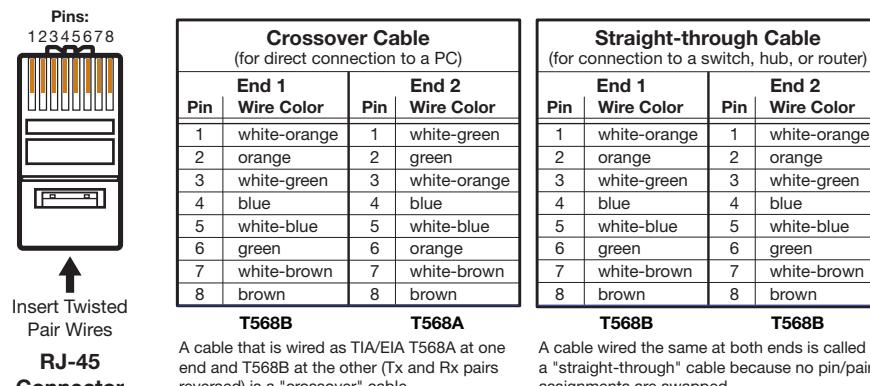


Figure 93. RJ-45 Ethernet Connector Pin Assignments

To establish a network connection to the SMP:

1. Open a TCP socket to port 23 using the SMP 300 Series 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.

2. The SMP responds with a copyright message including the name of the product, firmware version, part number, and the current date and time.
3. The device is password protected, enter the appropriate name, **admin** or **user** and password.

NOTE: The factory configured passwords for all accounts on this device have been set to the device serial number. In the event of a complete system reset, the passwords convert to the default, which is no password (see [Users and Roles](#) on page 86 to change a password).

- a. If the password is accepted, the device responds with **Login User** or **Login Administrator**.
- b. If the password is not accepted, the **Password** prompt returns.

Connection Timeouts

The Ethernet link times out after a designated period of time with no communication. By default, this timeout value is 5 minutes, but the value can be changed.

NOTE: Extron recommends leaving the default timeout at 5 minutes and periodically issuing the Query (Q) command to keep the connection active. If there are long idle periods, disconnect the socket and reopen the connection when another command must be sent.

Verbose Mode

Telnet connections can be used to monitor for changes that occur, such as SIS commands from other Telnet sockets or serial port changes. For a Telnet session to receive change notices, 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. Front panel changes are also sent to users who are in verbose mode.

Host-to-device Communications

SIS commands consist of one or more characters per command field. They do not require special characters to begin or end the command sequence. Each 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.

NOTE: SSH connections may add an extra line feed in the final terminator SIS responses, for example, standard is ↴ and SSH is ↴ ↴.

SMP 300 Series-initiated Messages

The SMP 300 Series initiates messages under specific conditions. No response is required from the host. The SMP 300 Series initiated messages are listed here.

↳ Copyright 2014-2022, Extron Electronics, SMP 351, Vn.nn, 60-1324-01 ↴

Day, DD MMM YYYY HH:MM:SS ↴

or

↳ Copyright 2014-2022, Extron Electronics, SMP 351 3G-SDI, Vn.nn,
60-1324-02 ↴

Day, DD MMM YYYY HH:MM:SS ↴

or

↳ Copyright 2014-2022, Extron Electronics, SMP 352, Vn.nn, 60-1634-11 ↴

Day, DD MMM YYYY HH:MM:SS ↴

or

↳ Copyright 2014-2022, Extron Electronics, SMP 352 3G-SDI, Vn.nn,
60-1634-12 ↴

Day, DD MMM YYYY HH:MM:SS ↴

Vn.nn is the firmware version number.

The SMP sends the copyright messages under the following circumstances:

- If the SMP is off and an RS-232 connection is already set up (the PC is cabled to the SMP and a serial communication program such as HyperTerminal is open), the connected unit sends these messages via RS-232 when first powered on.
- If the SMP is on, it sends the copyright messages when a Telnet connection to the SMP is first opened. The day of the week, date, and time are shown when the SMP is connected via Telnet, but not via RS-232. If using a Telnet connection, the copyright message, date, and time is followed by a password prompt.

Password Information

NOTE: The factory configured passwords for all accounts on this device have been set to the device serial number. In the event of a complete system reset, the passwords convert to the default, which is no password (see **Users and Roles** on page 86 to change a password).

The **←Password:** prompt requires a password (administrator level or user level) followed by a carriage return. The prompt is repeated if the correct password is not entered.

If the correct password is entered, the unit responds with **← Login Administrator←** or **← Login User←**, depending on the password entered. If passwords are the same for both administrator and user, the unit defaults to administrator privileges.

Error Responses

When the SMP is unable to execute the command, it returns an error response to the host. The error response codes and their descriptions are as follows:

E10	– Unrecognized command	E18	– System timed out
E12	– Invalid port number	E22	– Busy
E13	– Invalid parameter (number is out of range)	E24	– Privilege violation
E14	– Not valid for this configuration	E26	– Maximum connections exceeded
E17	– Invalid command for signal type	E28	– Bad file name or file not found

Using the Command and Response Tables

The **Command and Response Tables** begins on page 114. Symbols used in the table represent variables in the command and response fields. Command and response examples are shown throughout the table. The SIS commands are not case sensitive. The ASCII to Hex conversion table below is for use with the command and response table.

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

Figure 94. ASCII to Hex Conversion

Symbol definitions

- ← = CR/LF (carriage return/line feed)
- ← = Carriage return
- or | = or pipe symbol (no line feed, hex = 0D)
- = Space
- [Esc]** = Escape
- or W
- X1** = Inputs 1 to 4 (1 to 5 for SDI models)
- X8** = Status
 - 0 = Offline
 - 1 = Live
- X9** = 0 = Disabled/unassigned/off/unmuted (default)
1 = Enabled/assigned/on/muted
- X10** = Configuration type
 - 0 = IP Config (ip.cfg)
 - 2 = Box specific parameters (box.cfg)
- X11** = Firmware version number
- X12** = Device name (63 characters, max)
Must comply with internet host name standards.
- X13** = Day, date, and time (Day,•MM•DD•YY-HH:MM:SS)
- X14** = Time zone acronym (2 to 6 letters)
- X15** = Greenwich Mean Time (GMT) offset value: -12:00 to 14:00. Represents hours and minutes (HH:MM) offset from GMT including the time zone name.
- X16** = IP address in dotted decimal notation
(xxx.xxx.xxx.xxx)
Default: 192.168.254.254 (no padding)
Default gateway IP address: 0.0.0.0
Default DNS server IP address: 0.0.0.0
- X17** = Subnet mask
Default: 255.255.0.0 (no padding)
- X18** = Hardware MAC address
(00-05-A6-NN-NN-NN)
- X19** = Time in tens of milliseconds to wait for characters coming into a serial port before terminating (min = 0, max = 32767 and, default = 10 = 100 ms). The response is returned with leading zeros.
- X20** = Time in tens of milliseconds to wait between characters coming into a serial port before terminating (min = 0, max = 32767, and default = 2 = 20 ms). The response is returned with leading zeros. Commands using both **X17** and **X20** must have both values = 0 or both set to non-zero.
- X21** = Parameter to set either Length of message to receive or Delimiter value. L=#=byte count (min = 0, max = 32767, default = 0L = 0 byte count).
D = Decimal value for ASCII character (min = 0, max = 00255, default = 00000L). Value is placed prior to parameter: 3 byte length = 3L and ASCII 0A delimiter is 10D.
The parameter is case sensitive, and must use capital D or capital L. The response is returned with leading zeros.
- X22** = Priority status for receiving timeouts —
0 = Use **Send** data string command parameters (if they exist) (default).
1 = Use **Configure** receive timeout command parameters instead.
- X23** = Verbose mode
 - 0 = Clear/none (default for Telnet connections)
 - 1 = Verbose mode (default for USB and RS-232 host control)
 - 2 = Tagged responses for queries
 - 3 = Verbose mode and tagged responses for queries
- X24** = Temperature — Degrees in Celsius (example: xx.xC)
- X25** = RS-232 baud rate (9600 [default], 19200, 38400, 57600, 115200)
- X26** = RS-232 parity — single letter:
Odd, **Even**, **None** (default), **Mark**, **Space**
- X27** = RS-232 data bits — 7, 8 (default)
- X28** = RS-232 stop bits — 1 (default), 2
- X29** = Input mode
 - 0 = Off
 - 1 = ES RTP Push
 - 2 = RTSP Pull
- X30** = Audio format
 - 0 = Disable audio
 - 1 = Analog (default of input 3)
 - 2 = LPCM 2 CH (default)
- X31** = Authentication type
 - 0 = Off
 - 1 = Basic
 - 2 = Digest
- X32** = Connection status
 - 0 = NA
 - 1 = Disconnected
 - 2 = Connected
- X33** = Password — Maximum length 128 characters. All alpha-numeric characters permitted except |, and "space".
- X40** = Encode profile
 - 1 = Base
 - 2 = Main
 - 3 = High
- X41** = Output mode
 - 1 = Video and audio
 - 2 = Video only
- X42** = Bit rate control type
 - 0 = VBR (default)
 - 1 = CVBR
 - 2 = CBR
- X43** = Video bit rate — 200 to 10000

NOTE: The factory configured passwords for all accounts on this device have been set to the device serial number. In the event of a complete system reset, the passwords convert to the default, which is no password.

X44	= Audio bit rate — 80, 96, 128, 192, 256, 320	X504	= Input video format 1 = YUVp / HDTV (default) 2 = YUVi 3 = Composite 4 = 3G-SDI 5 = HD-SDI 6 = SDI 7 = Auto-SDI (Input 5 default)
X45	= GOP length — 1 to 300		
X46	= Record resolution 1 = 480p 2 = 720p 3 = 1080p 4 = WCIF (512x288) 5 = XGA (1024x768) 6 = SXGA (1280x1024) 99 = Custom		
X47	= Record frame rate 1 = 30 5 = 12.5 2 = 25 6 = 12 3 = 24 7 = 10 4 = 15 8 = 5	X505	= Stream name — Up to 16 alphanumeric characters, a hyphen (-), or underscore (_)
X48	= Output refresh rate 1 = 60 Hz (default) 2 = 50 Hz	X506	= Audio selection 40000 = Analog Input A (Left) 40001 = Analog Input A (Right) 40002 = Digital input A (Left) 40003 = Digital input A (Right) 40004 = Analog Input B (Left) 40005 = Analog Input B (Right) 40006 = Digital input B (Left) 40007 = Digital input B (Right) 60000 = Output (Left, for audio mute control only) 60001 = Output (Right, for audio mute control only)
X49	= Aspect ratio 01 = Fill (the input automatically fills the entire output raster; default) 02 = Follow (the input is displayed in its native aspect ratio) 03 = Fit (the input is zoomed in to fill the entire output raster while maintaining its aspect ratio)	X507	= Audio level in 0.1 dB steps — -180 to 240 = -18.0 to +24.0 dB
X51	= Executive mode: 0 = Off (default) 1 = Complete lockout (no front panel control) 2 = Menu lockout (menu only) 3 = Allow recording controls only	X510	= Overscan 0 = 0 % (default = HDMI inputs) 1 = 2.5 % (default: YUVp input) 2 = 5.0 % (default: YUVi and composite inputs)
X64	= HDMI output 0 = Channel A full screen 1 = Channel B full screen 2 = Confidence layout	X511	= HDCP status 0 = No sink/source detected 1 = HDCP detected, 2 = Sink/source detected but no HDCP
X67	= EDID user location (1, 2, and 3)	X512	= HDCP notification 0 = Off (mute output to black) 1 = On (green HDCP notification-screen, default)
X68	= EDID resolution (see EDID table on page 42)	X514	= Input name, up to 16 characters — Default = Input X where X is the input number
X69	= Port timeout in tens of seconds 1 to 65000 (zero padded. Default: 00030 = 300 seconds)	X529	= Json string of recording profile parameters (for example: {"id":1,"name":"RECORD PROFILE01","contributor":"Contributor1","coverage":Coverage1"}...)
X100	= Default name — Combination of model name and last three pairs of MAC address (for example: SMP-351-07-8C-EC)	X530	= User/Encoder/Layout Preset number — 1 to 32 (two-digit response — 0 padding)
X500	= Stream selection 1 = Archive Channel A 2 = Archive Channel B (Available for Dual Mode only) 3 = Confidence 4 = Virtual input 1 re-stream 5 = Virtual input 2 re-stream	X531	= Preset name — Up to 16 characters
X501	= Input number 1 to 5 1 or 2 digit command, Two-digit response	X532	= Input preset number — 1 to 128
X502	= Output channel 1 = A (input 1 and 2) 2 = B (input 3, 4, and 5)	X533	= Streaming preset — 1 to 16 (two-digit response — 0 padding)
X503	= Encoding mode 0 = Composite mode 1 = Dual channel mode		

X538	= Metadata parameter 0 = Contributor 1 = Coverage 2 = Presenter 3 = Date (view only) 4 = Description 5 = Format 6 = Identifier (view only) 7 = Language 8 = Publisher 9 = Relation 10 = Rights 11 = Source 12 = Subject 13 = Title 14 = Type 15 = SystemName (view only) 16 = Course	X564	= Audio delay — 0 to 999 ms
X539	= Metadata value — 127 character maximum	X565	= Test patterns (0 to 8) 0 = Off (default) 1 = Color bars 2 = Aspect ratio 1.33 3 = Aspect ratio 1.78 4 = Aspect ratio 1.85 5 = Crop 6 = Pulse 7 = Timestamp (Composite mode only) 8 = Universal OSD (Composite mode only)
X540	= Recording status 0 = Stop 1 = Start 2 = Pause	X566	= RTMP URL (string)
X541	= Recorder time in minutes — 1 to 60	X567	= Audio output 1 = Ch A 2 = Ch B 3 = Ch A + Ch B 4 = Ch A + Ch B (Analog dual mono enabled only) 5 = Ch B (Analog dual mono enabled only)
X542	= Recording destination auto internal usbfront usbrear usbrcp N/A	X581	= Front panel audio level indication -1500 to 0 Full bars = 0 No bars = <-600 Format: left*right Example: -58*-63
X543	= File size (in megaBytes)	X582	= Recording mode 0 = Channel A disabled 1 = Single Recording in Composite mode 2 = Internal + Secondary Recording in Composite mode
X544	= 0 = Recording disabled 1 = Single recording enabled 2 = Dual recording enabled	X591	= USB Storage 0 = All USB storage 2 = USBFront 3 = USBRear 4 = USBRCP
X545	= Thumbnail size 0 = Normal (default) 1 = Follows archive resolution	X592	= Valid DB_ID number (integer)
X546	= Recorder status stopped recording paused	X593	= Delay duration in seconds — 5 to 60.
X551	= Video Output Frame Rate 1 = 30 Hz 5 = 12.5 Hz 2 = 25 Hz 6 = 12 Hz 3 = 24 Hz 7 = 10 Hz 4 = 15 Hz 8 = 5 Hz	X595	= Virtual inputs — 1 = input 1, 2 = input 2
X560	= Destination 0 = Auto 1 = Internal 2 = USBFront 3 = USBRear 4 = USBRCP 11 = Internal + Auto 12 = Internal + USBFront 13 = Internal + USBRear 14 = Internal + USBRCP	X596	= RTSP stream URL
X563	= Encoder Presets — 1 to 32	X603	= Pixel phase adjustment — 0 to 63 (default = 32)
		X604	= Horizontal and vertical start — 0 to 255 (default = 128)
		X605	= Total pixels — Up to ± 512 of the default value for the detected rate
		X606	= Active lines — Up to ± 256 of the default value for the detected resolution (range varies based on input resolution)
		X607	= Active pixels — Up to ± 512 of the default value for the detected resolution (range varies based on input resolution)
		X608	= Picture adjust — 0 to 127 (default = 64)
		X609	= Horizontal centering — Varies based on archive resolution
		X611	= Vertical centering — Varies based on archive resolution
		X612	= Horizontal size — 120 to 4096
		X613	= Vertical size — 64 to 4096

- X621** = SNMP contact name text, up to 64 characters
(default = Not Specified)
- X622** = SNMP location, up to 64 characters
(default = Not Specified)
- X623** = SNMP public community string, up to 64 characters
(default = public)

NOTE: SNMP names and community strings
can be up to 64 alphanumeric characters
including hyphens, underscores and periods.

Command and Response Tables

Command Function	SIS Command (Host to Device)	Response (Device to Host)	Additional Description
Information Requests			
NOTE: An asterisk (*) after the version number indicates the currently running version. Question marks (? . ?) indicate that only factory firmware is loaded. A caret (^) indicates the firmware version that should be running, but a Mode 1 reset Rear Panel Reset on page 19 was executed and the default factory firmware is running. An exclamation point (!) indicates corrupted firmware. These apply to 0Q-4Q.			
Firmware version	Q or 1Q	X11←	Firmware version to 2 decimal places (1.00).
Firmware and build version	*Q/q	X11←	Firmware version to 2 decimal places plus build number to 4 decimal places (1.12.1234).
Verbose version info	0Q	Sum of 2Q-3Q-4Q←	Show bootstrap, factory-installed, and updated firmware version.
Bootstrap Version	2Q	X11←	The bootstrap firmware is not user replaceable, but you may need this information for troubleshooting.
Factory firmware version	3Q	X11 plus Web ver.-desc-UL date/time← 1.00.0000-b2325(1.81LX-SMP 351 -Sat, 01 Nov 2014 20:10 UTC)←	Factory installed firmware is not user replaceable. This firmware is the version the SMP reverts to after a mode 1 reset.
Updated firmware version	4Q	X11 plus Web ver.-desc-UL date/time← 1.00.0004-b2635*(1.81LX-SMP 351 -Sun, 02 Nov 2014 00:12 UTC)←	Use this command to find out which version of firmware has been uploaded into the SMP 300 Series.
View temperature of the unit	Esc 20STAT← Verbose mode 2/3	X24← 20Stat X24←	
KEY: X11 = Firmware version number X24 = Temperature Degrees in Celsius (example: xx.xC)			
Query part number	N	60-1324-01← 60-1324-02← 60-1324-11← 60-1324-12← 60-1634-11← 60-1634-12←	SMP 351 SMP 351 3G-SDI SMP 351 400GB SSD SMP 351 3G-SDI/ 400GB SSD SMP 352 SMP 352 3G-SDI
Query model name	1I	Example: SMP•351←	SMP 351, SMP 351 3G-SDI, SMP 352, or SMP 352 3G-SDI
Query model description	2I	Streaming•Media•Processor←	
Query system memory usage	3I	#Bytes used out of #KBytes←	
Query serial number	99I	Example: A13VE3R←	Returns the serial number.
Query MAC address	98I	Example: 00:05:A6:HH:HH:HH←	Returns one or more MAC addresses in a colon separated string.
Query LinkLicense	Esc LELIC←	Dual Recording Upgrade, 79-2547-XX←←	If license not installed, returns ←←. If multiple license are installed, each displays on a separate line with ←← after the last license.
Query number of connected users	10I	N←	Number of users.
Query system processor usage	11I	NN←	Returns a percentage of total.
Query system processor idle	12I	NN←	Returns a percentage of total.

Command Function	SIS Command (Host to Device)	Response (Device to Host)	Additional Description
Information Requests (continued)			
Query eth0 link status	13I	Current link state (up/down)* speed in MB (10/100/1000)* mode (full/half)↔.	
Query file transfer config	38I	Example: \\Network_Storage\Folder, cifs↔.	
Query selected input status	42I	ChA<In#*<input name*<input resolution*<frame rate*<1/0>, ChB<In#*<input name*<input resolution*<frame rate*<1/0>↔ Example: Cha1*Input1Name*1920x1080*60*1, ChB3*Input3Name*720x480*60*1↔ Example: Cha*Input1Name*n/a*n/a*0, ChB4*Input4Name*1920x1080*50*1↔	
Query Archive/ChA encoder presets	43I	<DefaultPreset#*<DefaultPresetName>, <SelectedPreset#*<SelectedPresetName>↔	
Query CHB encoder presets (Dual Channel only)	44I	<DefaultPreset#*<DefaultPresetName>, <SelectedPreset#*<SelectedPresetName>↔	
Query Confidence encoder presets	45I	<DefaultPreset#*<DefaultPresetName>, <SelectedPreset#*<SelectedPresetName>↔ Example: 3*720 High, 1*1080p High↔ Example: 3*720 High, 0*modified, not saved↔	
Query Archive/ChA streaming presets	46I	<SelectedPreset#*<SelectedPresetName>↔	
Query ChB streaming presets	47I	<SelectedPreset#*<SelectedPresetName>↔	
Query Confidence streaming presets	48I	<SelectedPreset#*<SelectedPresetName>↔ Example: 3*RTMPYouTube↔ Example: 0*modified, not saved↔	
Query layout preset	49I	<DefaultPreset#*<DefaultPresetName>, <SelectedPreset#*<SelectedPresetName>↔ Example: 3*PBP Mid LFT, 7*Side By Side↔	
Storage Info			
Query internal	55I	Internal*<used*<total*<free*<recording_time*<active>↔	
Query front USB	56I	<name*<used*<total*<free*<recording_time*<active>, <name*<used*<total*<free*<recording_time*<active>...↔	
Query rear USB	57I	<name*<used*<total*<free*<recording_time*<active>, <name*<used*<total*<free*<recording_time*<active>...↔	
Query RCP USB	58I	<name*<used*<total*<free*<recording_time*<active>, <name*<used*<total*<free*<recording_time*<active>...↔	
NOTES:			
<ul style="list-style-type: none"> For all USB ports, each new <name> field signifies a new partition on that USB drive, and are separated by a comma (,). For the <active> field, the device will respond with 0, 1, or 2: 0 = not active, 1 = single recording active, 2 = secondary recording active. 			
Query installed FlexOS app or apps (firmware v3.00 or newer)	60I	<app name*<ver#*<enable/disable>↔ <app name*<ver#*<enable/disable>↔ <app name*<ver#*<enable/disable>↔↔	run state enable = 1 run state disable = 0
Example:		Digital I/O*2.08.0013*0↔ Panopto*1.00.0002*1↔↔	
Sync Schedule			
Trigger schedule sync	EscSTRGR↔	TrgrS↔	Sync with schedule (return error code if scheduling is off or not supported)
Unsolicited response		TrgrS↔	Schedule is refreshed.

Command Function	SIS Command (Host to Device)	Response (Device to Host)	Additional Description
Remove Schedule			
Remove scheduled recording events	[Esc]XTRGR←	TrgrX←	All future recording events are removed from the unit.
Unsolicited response		TrgrX←	Schedule is refreshed.
Clear Alarms			
Clear active alarms	[Esc]CALRM←	Alrm C←	Clear all active alarms.
View active alarms	39I If no active alarms	[name:alarm_name],[level:alarm_level]...← None active←	
Name Unit			
Set unit name	[Esc]X12CN←	Ipn[X12]←	
Set unit name to default	[Esc]•CN←	Ipn[X100]←	
View unit name	[Esc]CN←	X12←	
View Telnet connections	[Esc]CC← Verbose mode 2/3	N← Icc N←	<i>N</i> = Number of active IP connections.
Set verbose mode	[Esc]X23CV←	Vrb[X23]←	
View verbose mode	[Esc]CV←	X23←	

NOTE: If tagged responses is enabled, all read commands return the data, the same as setting the value does.

KEY:	X12 = Unit name	Unit name is a text string of up to 63 characters from the alphabet (A-Z), digits (0-9), and the minus sign/hyphen (-). The first character must be an alpha character. The last character must not be a minus.
	X23 = Verbose mode	0 = Clear/none (default for Telnet connections) 1 = Verbose mode (default for USB and RS-232 host control) 2 = Tagged responses for queries 3 = Verbose mode and tagged responses for queries (Example: command: [Esc]CV← Response: Vrb3←)
	X100 = Default name	Combination of model name and last three pairs of MAC address (Example: SMP-351-07-8C-EC)

System Commands

Backup/Restore

Save configuration	[Esc]1*[X10]XF←	Cfg1*[X10]←	Save configuration to file location (/nortxe-backup).
Restore configuration	[Esc]0*[X10]XF←	Cfg0*[X10]←	Load configuration from file location (/nortxe-backup).

KEY: **X10** = Configuration type 0 = IP config (ip.cfg), 2 = Box specific parameters (box.cfg)

Resets

Reboot system	[Esc]1BOOT←	Boot1←	Complete system reboot.
Restart the network	[Esc]2BOOT←	Boot2←	
Reset flash	[Esc]ZFFF←	Zpf←	Reset flash memory (excludes recording files).
System reset (factory defaults)	[Esc]ZXXX←	Zpx←	Resets device to default and deletes recorded files.
Reset all device settings and delete recording files	[Esc]ZY←	Zpy←	Reset to default except IP address, delete all user and recorded files

NOTE: This reset excludes IP settings such as IP address, subnet mask, gateway IP address, unit name, DHCP setting and port mapping (Telnet/web/direct access) in order to preserve communication with the device.

Absolute reset	[Esc]ZQQQ←	Zpq←	Same as System Reset , plus returns the IP address and subnet mask to defaults.
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NOTE: The factory configured passwords for all accounts on this device have been set to the device serial number. In the event of a complete system reset, the passwords convert to the default, which is no password (see **Users and Roles** on page 86 to change a password).

Command Function	SIS Command (Host to Device)	Response (Device to Host)	Additional Description
Port Assignment			
NOTES:			
	<ul style="list-style-type: none"> Duplicate port# assignments are not permitted (for example, the Telnet and web port assignment cannot be the same) and E13 error is returned. Remapping of port# assignments must be to ports 1024 or higher (unless resetting to the default port number or disabling the port by setting it to 0). 		
Telnet Port			
Set Telnet port map	[Esc] [port#]MT ←	Pmt [port#] ←	
Reset Telnet port map	[Esc] 23MT ←	Pmt 00023 ←	Reset the Telnet port to the default value (23).
Disable Telnet port	[Esc] 0MT ←	Pmt 00000 ←	
View Telnet port map	[Esc] MT ←	[port#] ←	
Web Port			
Set web port map	[Esc] [port#]MH ←	Pmh [port#] ←	
Reset web port map	[Esc] 80MH ←	Pmh 00080 ←	Reset the web port to the default value (80).
Disable web port	[Esc] 0MH ←	Pmh 00000 ←	
View web port map	[Esc] MH ←	[port#] ←	
SNMP Port			
Set SNMP port map	[Esc] A[port#]PMAP ←	Pmap A[port#] ←	
Reset SNMP port map	[Esc] A161PMAP ←	Pmap A00161 ←	Reset the SNMP port to the default value (161).
Disable SNMP port	[Esc] A0PMAP ←	Pmap A00000 ←	
View SNMP port map	[Esc] APMAP ←	[port#] ←	
SSH (SIS) Port			
Set SSH port map	[Esc] B[port#]PMAP ←	Pmap B[port#] ←	
Reset SSH port map	[Esc] B22023PMAP ←	Pmap B22023 ←	Reset the SSH port to the default value (22023).
Disable SSH port	[Esc] B0PMAP ←	Pmap B00000 ←	
View SSH port map	[Esc] BPMAP ←	[port#] ←	
SSL Port			
Set SSL port map	[Esc] S[port#]PMAP ←	Pmap S[port#] ←	
Reset SSL port map	[Esc] S443PMAP ←	Pmap S00443 ←	Reset the SSL port to the default value (443).
Disable SSL port	[Esc] S0PMAP ←	Pmap S00000 ←	
View SSL port map	[Esc] SPMAP ←	[port#] ←	
Echo for SIS over SSH			
Enable Echo	[Esc] 1ECHO ←	Echo 1 ←	Operate like SSH client.
Disable Echo	[Esc] 0ECHO ←	Echo 0 ←	Operate like Telnet (port 23).
View Echo status	[Esc] ECHO ←	X9 ←	View the Echo setting
KEY:	[X9] = Enable/On or disable/off	0 = Disabled/off (default)	1 = Enabled/on (Returns command entered along with response).

Command Function	SIS Command (Host to Device)	Response (Device to Host)	Additional Description
SNMP (Simple Network Management Protocol)			
SNMP Unit Contact			
Set unit contact	[Esc] C [X621]SNMP←	SnmpC*[X621]←	Sets the unit contact to [X621].
Set unit contact to default	[Esc] C •SNMP←	SnmpC*Not•Specified←	Sets the unit contact to the default setting.
View unit contact	[Esc] CSNMP←	[X621]←	View the unit contact.
KEY: [X621] = SNMP contact name text, up to 64 alphanumeric characters, hyphens, underscores and period			
SNMP Unit Location			
Set unit location	[Esc] L [X622]SNMP←	Snmp L*[X622]←	Sets the unit location to [X622].
Set unit location to default	[Esc] L •SNMP←	SnmpL*Not•Specified←	Sets the unit location to the default setting.
View unit location	[Esc] LSNMP←	[X622]←	View the unit location.
KEY: [X622] = SNMP location, up to 64 alphanumeric characters, hyphens, underscores and period (default = Not Specified).			
SNMP Community Strings			
Set public community string	[Esc] P [X623]SNMP←	SnmpP*[X623]←	Sets public community string to [X623].
Set public community string to default	[Esc] P •SNMP←	SnmpP*public←	Sets community string to the default.
View public community string	[Esc] PSNMP←	[X623]←	View the public community string.
NOTE: Community strings are referred to as passwords in the web-based user interface.			
KEY: [X623] = SNMP public community string, up to 64 alphanumeric characters, hyphens, underscores and period (default = public).			
SNMP Access Enable			
Enable SNMP access	[Esc] E1SNMP←	SnmpE*1←	Enable SNMP access.
Disable SNMP access	[Esc] E0SNMP←	SnmpE*0←	Disable SNMP access.
View SNMP state	[Esc] ESNMP←	[X9]←	View the SNMP access setting.
KEY: [X9] = Enable/disable 0 = Off or disable (default), 1 = On or enable			

Command Function	SIS Command (Host to Device)	Response (Device to Host)	Additional Description
IP Setup Commands			
Set date/time	[Esc] MM/DD/YY- HH:MM:SS CT ↵	Ipt • X13 ↵	Set the date and time.
View date/time	[Esc] CT ↵	X13 ↵	View the date and time.
Set time zone	[Esc] X14 * TZON ↵	Tzon • X14 * X15 ↵	
Example:	[Esc] PST * TZON ↵	Tzon • PST*(UTC-08:00/UTC-07:00) • Pacific Time ↵	
View time zone	[Esc] TZON ↵ Verbose mode 2/3	X14 * X15 ↵ Tzon • X14 * X15 ↵	
Example:		PST*(UTC-08:00/UTC-07:00) • Pacific Time ↵	
View all time zones	[Esc] * TZON ↵	X14 * X15 ↵ ... X14 * X15 ↵ ↵	Repeats for all time zones Verbose mode 2/3 adds Tzon • to beginning of string
Set DHCP on	[Esc] 1DH ↵	Idh1 ↵	Sets DHCP to on.
Set DHCP off	[Esc] 0DH ↵	Idh0 ↵	Sets DHCP to off.
View DHCP mode	[Esc] DH ↵	X9 ↵	0=DHCP off (default) 1=DHCP on.
KEY:			
X9	= On/off	0 = Disabled/off (default), 1 = Enabled/on	
X13	= Local date/time	Set: MM/DD/YY-HH:MM:SS	
X14	= Time zone Acronym	Read: day of week, date, month, year HH:MM:SS (for instance; Fri, 21 Jun 2002 10:54:00) (2 to 6 letters) Example: PST for Pacific Standard Time	
X15	= Time zone offset	GMT offset value (-12:00 to 14:00) representing hours and minutes (HH:MM) local time is offset from GMT time and includes the time zone name. Example: PST*(UTC-08:00) Pacific Time	
Set IP address, subnet mask, gateway	[Esc] 1 * X16 * X17 * X16 CISG ↵	Cisg1*IP/subnet bits*gateway ↵	
NOTE: The CISG command resets the network immediately without the need for a BOOT command.			
View IP address, subnet mask, gateway	[Esc] 1CISG ↵ Example:	IP/subnet bits*gateway ↵ 192.168.254.254/16*0.0.0.0 ↵	
Set IP address	[Esc] X16 CI ↵	Ipi • X16 ↵	
View IP address	[Esc] CI ↵	X16 ↵	
View hardware MAC address	[Esc] CH ↵ Verbose mode 2/3	X18 ↵ Iph • X18 ↵	View the hardware MAC address of the unit.
Set subnet mask	[Esc] X17 CS ↵	Ips • X17 ↵	
View subnet mask	[Esc] CS ↵	X17 ↵	
Set gateway IP address	[Esc] X16 CG ↵	Ipg • X16 ↵	Set the gateway IP address.
View gateway IP address	[Esc] CG ↵	X16 ↵	View the gateway IP address.
Set DNS server IP address	[Esc] X16 DI ↵	Ipd • X16 ↵	Set the DNS server IP address (default: 0.0.0.0).
View DNS server IP address	[Esc] DI ↵	X16 ↵	View the DNS server IP address.
KEY:			
X16	= IP Address	Default IP address: 192.168.254.254 Default Gateway: 0.0.0.0 Default DNS: 0.0.0.0	
X17	= Subnet Mask	Default: 255.255.0.0	
X18	= Hardware MAC address	00-05-A6-XX-XX-XX	

Command Function	SIS Command (Host to Device)	Response (Device to Host)	Additional Description
IP Setup Commands (continued)			
Set current port timeout	[Esc] 0 * [X69] TC ←	Pti 0 * [X69] ←	
View current port timeout	[Esc] 0 TC ←	[X69] ←	
Set global IP port timeout	[Esc] 1 * [X69] TC ←	Pti1 * [X69] ←	
View global IP port timeout	[Esc] 1 TC ←	[X69] ←	
KEY: [X69] = Port timeout In tens of seconds, zero padded 1 to 65000 (default: 00030 = 300 seconds)			
RS-232 Port			
Configure serial port parameters	[Esc] 1 * [X25], [X26], [X27], [X28] CP ←	Cpn 01•Ccp [X25], [X26], [X27], [X28] ←	
Reset serial port	[Esc] 1 * 9600, n, 8, 1 CP ←	Cpn 01•Ccp [X25], [X26], [X27], [X28] ←	
View serial port settings	[Esc] 1 CP ←	[X25], [X26], [X27], [X28] ←	
Set serial port receive timeout	[Esc] 1 * [X19]*[X20]*[X22]*[X21] CE ←	Cpn01•Cce[X19], [X20], [X22], [X21] ←	
View serial port receive timeout	[Esc] 1 CE ←	[X19], [X20], [X22], [X21] ←	
KEY: [X19] = Port timeout Time in tens of milliseconds to wait for characters coming into a serial port before terminating (min=0, max=32767, default: 10 = 100 ms). The response is returned with leading zeros. [X20] = Intercharacter timeout Time in tens of milliseconds to wait between characters coming into a serial port before terminating (min=0, max=32767. Default: 2 = 20 ms). The response is returned with leading zeros. Commands using both [X19] and [X20] must have both values = 0 or both set to non-zero. [X21] = Primary port status Parameter to set either the Length of message to receive, or the Delimiter value. L=#=byte count (min=0, max=32767. Default=0L=0 byte count). D = decimal value for ASCII character. (min=0, max=00255. Default=00000L). Value is placed prior to parameter: 3 byte length = "3L" and ASCII 0A delimiter is "10D". The parameter is case sensitive, must use capital D or capital L. The response is returned with leading zeros. Priority status for receiving timeouts: 0 = Use Send data string command parameters when available, 1 = Use Configure receive timeout command parameters (default = 0). 9600 (default), 19200, 38400, 57600, 115200 baud [X22] = Length delimiter Odd, Even, None (default), Mark, Space [X25] = RS-232 baud rate 7, 8 (default) [X26] = RS-232 parity 1 (default), 2 [X27] = RS-232 data bits [X28] = RS-232 stop bits			
Front Panel Lock (Executive Mode)			
Set Executive mode	[X51] X	Exe[X51] ←	
View Executive mode	X	[X51] ←	
KEY: [X51] = Executive mode 0 = Off, 1 = Complete lockout (no front panel control), 2 = Menu lockout, 3 = Allow recording controls only			
RCP 101 Executive Mode			
Executive mode on	99 * 1 X	Exe99*1 ←	
Executive mode off	99 * 0 X	Exe99*0 ←	
Query status	99 * X	[X9] ←	
KEY: [X9] = On/off 0 = Disabled/off (default), 1 = Enabled/on			

Command Function	SIS Command (Host to Device)	Response (Device to Host)	Additional Description
Password and Security Settings			
Set administrator password	[Esc] X33 CA ←	Ipa•X33←	
View administrator password	[Esc] CA ←	****←	If no password is set, the response is ← (no ****).
Reset (clear) administrator password	[Esc] •CA ←	Ipa•←	
Set user password	[Esc] X33 CU ←	Ipu•X33←	
View user password	[Esc] CU ←	****←	If no password is set, the response is ← (no ****).
Reset (clear) user password	[Esc] •CU ←	Ipu•←	
View session security level	[Esc] CK ←	n←	Security level of connection 11 = User, 12 = Administrator

NOTE: The factory configured passwords for all accounts on this device have been set to the device serial number. In the event of a complete system reset, the passwords convert to the default, which is no password.

KEY: **X33** = Password Maximum length 128 characters. All alpha-numeric characters permitted except |, and "space".

File Commands

Change directory	[Esc] path/directory/CJ ←	Dirl path/directory/←	
Return to root directory	[Esc] /CJ ←	Dirl/←	
Up one directory	[Esc] ..CJ ←	Dirl path/directory/←	
View current directory	[Esc] CJ ←	path/directory/←	
Erase current directory and included files	[Esc] /EF ←	Ddl←	Also deletes files inside directory
Erase current directory and sub-directories	[Esc] //EF ←	Ddl←	
List files from current directory and below	[Esc] LF ←	path/filename•date/time•length← path/filename•date/time•length← path/filename•date/time•length← ... space_remaining•Bytes Left←←	filename/date/time/bytes left

NOTE: Folders and files in the /recordings/ folder are read-only and cannot be deleted with /EF command. Recordings can be deleted with the SIS command **Delete Recording Event and Files by DB_ID**.

SMP Recording Folder Shared on SMD

Enable folder share	[Esc] E1 * 1SHRF ←	ShrfE1*1←	Allow SMP Recording folder share.
Disable folder share	[Esc] E1 * 0SHRF ←	ShrfE1*0←	Disable SMP Recording folder share.
Query folder share setting	[Esc] E1SHRF ←	X9←	View folder share status.
Query path	[Esc] P1SHRF ← Verbose mode 2/3	<SMP IP>:/var/uf/recordings← ShrfP1*<SMP IP>:/var/uf/recordings←	

KEY: **X9** = Disable/enable 0 = Disabled (default), 1 = Enabled

Delete Recording Event and Files by DB_ID

Delete recording event and file	[Esc] Z X592 RCDR ←	RcdrZ X592←
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KEY: **X592** = Delete recording by DB_ID Valid DB_ID number (integer)

Command Function	SIS Command (Host to Device)	Response (Device to Host)	Additional Description
Input Selection			
Select input	X501 * X502 !	In X501 * X502 ← In02*01←	Switches channel X502 to input X501 . X501 and X502 are returned in 2-digit responses.
Example:			
View selected input	X502 !	X501 ←	View the input source X501 for channel X502 .
Set input 3 format	3* X504 \	Typ 03* X504 ←	
View input 3 format	3\	X504 ←	
Set input name	Esc X501 , X514 NI←	Nmi X501 , X514 ←	Set the input source X501 name to X514 .
View input name	Esc X501 NI←	X514 ←	
View input selection/ channel	32I	ChA X501 *ChB X501 ←	
KEY: X501 = Input number 1 to 5 X502 = Output channel 1 = A (Input 1 and 2), 2 = B (Input 3, 4, and 5) X504 = Input video format 1 = YUVp/HDTV (default), 2 = YUVi, 3 = Composite X514 = Input name Name (up to 16 characters). Default is "Input X" where "X" is the input number			
Input Video Aspect Ratio			
Set to fill	Esc X501 *1ASPR←	Aspr X501 *01←	Sets input X501 to fill.
Set to follow	Esc X501 *2ASPR←	Aspr X501 *02←	Sets input X501 to follow.
Set to fit (zoom)	Esc X501 *3ASPR←	Aspr X501 *03←	Sets input X501 to fit.
View aspect setting	Esc X501 ASPR←	X49 ←	
KEY: X49 = Aspect ratio 01 = Fill (the input automatically fills the entire output raster: default) 02 = Follow (the input is displayed in its native aspect ratio) 03 = Fit (the input is zoomed in to fill the entire output raster while maintaining its aspect ratio) X501 = Input number 1 to 5			
Auto-Image and Memory			
Enable/disable Auto-Image per input	X501 * X9 A	Img X501 * X9 ←	
View Auto-Image	X501 *A	X9 ←	
Performs Auto-Image to current output	X502 A	Img X502 ←	Performs Auto-Image to the current input selection of output X502 .
Set Auto Memory on	Esc 1AMEM←	Amem1←	
Set Auto Memory off	Esc 0AMEM←	Amem0←	
View Auto Memory	Esc AMEM←	X9 ←	
KEY: X9 = On/off 0 = Disabled (default), 1 = Enabled X501 = Input number 1 to 5 X502 = Output channel 1 = A (Inputs 1 and 2), 2 = B (Inputs 3, 4, and 5)			
Video Mute			
Mute output to black	X502 * 1B	Vmt X502 *01←	Mute channel X502 output.
Unmute output	X502 * 0B	Vmt X502 *00←	Unmute channel X502 output.
View video mute status	X502 B	X9 ←	00 = Unmuted, 01 = Muted
KEY: X9 = Muted/unmuted 0 = Unmuted (default), 1 = Muted X502 = Output channel 01 = A, 02 = B			

Command Function	SIS Command (Host to Device)	Response (Device to Host)	Additional Description
Recording			
Stop recording	[Esc] Y0 RCDR ←	RcdrY0 ←	
Start recording	[Esc] Y1 RCDR ←	RcdrY1 ←	
Pause recording	[Esc] Y2 RCDR ←	RcdrY2 ←	
View record status	[Esc] Y RCDR ←	X540 ←	
Extend record time	[Esc] E X541 RCDR ←	RcdrE X541 ←	For scheduled recordings only, extend by X541 minutes.
Add chapter marker	[Esc] B RCDR ←	RcdrB ←	
Execute swap	%	Tke ←	Swap channel A and channel B positions.
Recording status (secondary recording disabled)	I	<ChA X501 * ChB X501> * <X546> * <X542> * <free space in KBytes> * <time record> * <time remain> ←	
Recording status (secondary recording enabled)	I	<ChA X501 * ChB X501> * <X546> * <internal> * X542 > * <internal free space> * <external free space> * <time record> * <time remain_internal> * <time external> ←	

NOTE: For view recording time (35I and 36I) 00:00:00 is displayed when not recording.

View recording duration/elapsed time of recording	35I	HH:MM:SS ←	Displays 00:00:00 when not recording
Verbose 2/3 mode		Inf35*HH:MM:SS ←	
View record time remaining (secondary recording disabled)	36I	X542 • HH:MM:SS ←	Displays 00:00:00 when not recording
Verbose 2/3 mode		Inf36*X542 • HH:MM:SS ←	
View record time remaining (secondary recording enabled)	36I	internal • HH:MM:SS * X542 • HH:MM:SS ←	
Verbose 2/3 mode:		Inf36*internal • HH:MM:SS * X542 • HH:MM:SS ←	
View record destination (secondary recording enabled)	37I	internal * X542 ←	
Verbose 2/3 mode		Inf37*internal * X542 ←	
View record destination (secondary recording disabled)	37I	X542 ←	
Set record destination	[Esc] D X560 RCDR ←	RcdrD X560 ←	Select record destination for recording(s).
View record destination	[Esc] D RCDR ←	X560 ←	View recording destination for next recording.

KEY:	X501 = Input number		
X502	= Output channel	1 to 5	
X540	= Recording status	1 = A (Input 1 and 2), 0 = Stop, 1 = Record,	2 = B (Input 3, 4, and 5) 2 = Pause
X541	= Time	MM (0 to 60 minutes)	
X542	= Recording destination	auto, internal, usbfront, usbrear, usbrcp	
X546	= Recorder status	stopped, usbfront, usbrear, usbrcp, N/A	
X560	= Destination	0 = Auto, 1 = Internal, 11 = Internal + Auto, 14 = Internal + USBRCP	2 = USBFront, 3 = USBRear, , 12 = Internal + USBFront, 4 = USBRCP, 13 = Internal + USBRear,

Audio-only Recording

Enable audio-only recording	[Esc] A1 * 1RCDR ←	RcdrA1 *1 ←
Disable audio-only recording	[Esc] A1 * 0RCDR ←	RcdrA1 *0 ←
View status	[Esc] A1RCDR ←	X9 ←
KEY: X9 = On/off 0 = Disabled (default), 1 = Enabled		

Command Function	SIS Command (Host to Device)	Response (Device to Host)	Additional Description
View all recording events			
View all events	[Esc] L RCDR ↵	{ "db_id": , "start": , "identifier": "", "creator": "", "title": "", "state": , "media_present": "", "package": ""} ↵	
	Example	{"db_id": 22, "start": 1582141003, "identifier": "SMP300DHP-IP207_20200219-193643Z", "creator": "", "title": "", "state": 11, "media_present": "true", "package": "/var/internal/SMP300DHP-IP207_20200219-193643Z"} ↵	
	Example	{"db_id":1,"start":1630344031,"identifier":"","creator":"","title":"","state":11,"media_present":1,"package":"/var/internal/Adhoc_20210830-172034Z"} ↵	
		{"db_id":2,"start":1630344858,"identifier":"","creator":"","title":"","state":4,"media_present":1,"package":"/var/internal/Adhoc_20210830-173420Z"} ↵	
KEY: "State"		0 = SCHEDULE_PENDING - Recording Scheduled, 1 = SCHEDULE_CURRENT - Recording Now 2 = SCHEDULE_PROCESSED - Recording Finalized, 3 = SCHEDULE_FINISHED - Ready to Upload 4 = SCHEDULE_ARCHIVING - Uploading to Server, 5 = SCHEDULE_ARCHIVED - Uploading to Server Complete, 6 = SCHEDULE_ARCHIVE_FAILED - Uploading to Server Failed (retry pending), 8 = SCHEDULE_PACKAGE_DELETED - Recording Deleted (to recover disk space), 9 = SCHEDULE_RECORD_FAILED - Recording Failed (package corrupted), 10 = SCHEDULE_ARCHIVE_NOMETHOD - No Transfer Method Defined, 11 = SCHEDULE_RECORD_SKIPPED - Transfer Skipped, 200 = SCHEDULE_PACKAGE_RESCHED - Transfer Rescheduled (one time)	
Metadata commands			
Set output metadata	[Esc] M [X538] * [X539] RCDR ↵	RcdrM [X538] * [X539]	
Example:	[Esc] M2*ProfessorX RCDR ↵	RcdrM2*ProfessorX	
Query output metadata	[Esc] M [X538] RCDR ↵	[X539]	
Example:	[Esc] M2 RCDR ↵	ProfessorX	
KEY: [X538] = Metadata parameter	0 = Contributor, 1 = Coverage, 2 = Presenter, 3 = Date (view only), 4 = Description, 5 = Format, 6 = Identifier (view only), 7 = Language, 8 = Publisher, 9 = Relation, 10 = Rights, 11 = Source, 12 = Subject, 13 = Title, 14 = Type, 15 = System Name, 16 = Course		
KEY: [X539] = Metadata value	Up to 127 alpha-numeric characters. All metadata values are cleared to be ready for the next data. Metadata cannot be updated once the recording starts. New metadata is applied to the next recording.		
Presets			
User Presets			
Recall user preset	1* [X502]* [X530].	1Rpr [X502]* [X530]	Set channel [X502] to preset [X530].
Save user preset	1* [X502]* [X530],	1Spr [X502]* [X530]	
Set user name	[Esc] 1* [X530], [X531] PNAM ↵	Pnam1* [X530], [X531]	Set preset number [X530] to name [X531].
Query user name	[Esc] 1* [X530] PNAM ↵	[X531]	
Query user presets	52* [X501]# Verbose mode 2/3	[X9 ¹] [X9 ²] [X9 ³] ... [X9 ¹⁶] PreU [X501]* [X9 ¹] [X9 ²] [X9 ³] ... [X9 ¹⁶]	
KEY: [X9] = On/off	0 = Disabled/unassigned/off/unmuted (default),	1 = Enabled/assigned/on/muted	
[X501] = Input number	1 to 5		
[X502] = Output channel	1 = Channel A, 2 = Channel B		
[X530] = Preset Number	1 to 32		
[X531] = Preset Name	Up to 16 characters		

Command Function	SIS Command (Host to Device)	Response (Device to Host)	Additional Description
Presets continued			
Recall Layout Preset (for confidence in Dual Channel mode only)			
Recall layout preset	9 * 3 * X530 .	9Rpr3 * X530 ◀	Recall layout preset to X530 to confidence encoder in dual channel mode.
KEY: X530 = User/Encoder/Layout Preset Number X531 = Preset Name			
Input Presets			
Recall preset	2 * X501 * X532 .	2Rpr X501 * X532 ◀	
Save preset	2 * X501 * X532 ,	2Spr X501 * X532 ◀	
Set preset name	Esc 2 * X532 , X531 PNAM ←	Pnam2* X532 , X531 ◀	
View preset name	Esc 2 * X532 PNAM ←	X531 ◀	
Delete input preset	Esc X2* X532 PRST ←	PrstX2* X532 ◀	
Query input presets	51# Verbose mode 2/3	X9 ¹ X9 ² X9 ³ ... X9 ¹²⁸ ◀ PreI X9 ¹ X9 ² X9 ³ ... X9 ¹²⁸ ◀	
KEY: X9 = On/off X501 = Input number X531 = Preset Name X532 = Input preset number			
Layout Presets (for composite mode only)			
Save layout preset	7 * X530 ,	7Spr X530 ◀	Save layout preset to X530 .
Recall layout preset	7* X530 .	7Rpr X530 ◀	Recall layout preset X530 including input selections.
Recall layout preset	8* X530 .	8Rpr X530 ◀	Recall layout preset X530 without input selections.
Set preset name	Esc 7* X530 , X531 PNAM ←	Pnam7* X530 , X531 ◀	Set X530 to X531 .
Query preset name	Esc 7* X530 PNAM ←	X531 ◀	
Reset layout preset to defaults	Esc X7 * X530 PRST ←	PrstX7* X530 ◀	Reset X530 to defaults
Encoder Presets			
Recall preset	4* X500 * X563 .	4Rpr X500 * X563 ◀	Recalls Encoder preset X563 for X500
Save preset	4* X500 * X563 ,	4Spr X500 * X563 ◀	Saves Encoder preset X563 for selected channel
Set preset name	Esc 4* X563 , X514 PNAM ←	Pnam4* X563 , X514 ◀	Set encoder preset number X563 to name X514 .
View encoder preset name	Esc 4* X563 PNAM ←	X514 ◀	View the name of Encoder preset X563 .
Reset encoder preset to default	Esc X4* X563 PRST ←	PrstX4* X563 ◀	Clears Encoder preset X563 , and sets Encoder preset name to [unassigned].
KEY: X500 = Streaming encoder X514 = Encoder/Streaming preset name X563 = Encoder presets			
1 = Archive Channel A, 2 = Archive Channel B (Available for Dual Channel only) 3 = Confidence Up to 16 characters 1 to 32			

Command Function	SIS Command (Host to Device)	Response (Device to Host)	Additional Description
Stream Name (for RTSP PULL stream)			
Set stream name	[Esc]N [X500] * [X505] STRC ←	StrcN [X500] * [X505] ←	
View stream name	[Esc]N [X500] STRC ← Verbose mode 2/3	[X505] ← StrcN [X500] * [X505] ←	
KEY:	[X500] = Streaming encoder [X505] = Stream name	1 = Archive Channel A, 3 = Confidence Up to 16 characters	2 = Archive Channel B (Available for Dual Channel only)
Streaming Presets			
Recall preset	3*[X500] * [X530] .	3Rpr [X500] * [X530] ←	Recalls Streaming preset [X530] for [X500] .
Save preset	3*[X500] * [X530] ,	3Spr [X500] * [X530] ←	Saves Streaming preset [X530] for selected channel.
Set preset name	[Esc] 3*[X530] , [X514] PNAM ←	Pnam3*[X530] , [X514] ←	Set encoder preset number [X530] to name [X514] .
View preset name	[Esc] 3*[X530] PNAM ←	[X514] ←	View the name of Streaming preset [X530] .
Delete or clear preset	[Esc] X3*[X530] PRST ←	PrstX3*[X530] ←	Clears preset [X530] , and sets preset name to [unassigned].
KEY:	[X500] = Streaming Encoder [X514] = Encoder/Streaming preset name [X530] = Streaming presets	1 = Archive Channel A, 3 = Confidence, Up to 16 alphanumeric characters, a hyphen (-), or underscore (_) 1 to 32 (two digit response — 0 padding)	2 = Archive Channel B (Available for Dual Channel only) 4 = Virtual input 1 re-stream, 5 = Virtual input 2 re-stream 1 to 32 (two digit response — 0 padding)
Virtual Inputs			
Virtual Input Authentication Type			
Set virtual input authentication type	[Esc] E [X595] * [X31] STRM ←	StrmE [X595] * [X31] ←	
View virtual input authentication type	[Esc] E [X595] STRM ←	[X31] ←	
KEY:	[X31] = Authentication type [X595] = Virtual input	0 = Off, 1 = Virtual input 1, 2 = Basic, 4 = Digest 5 = Virtual input 2	
RTSP Virtual Input Source			
Load media item path	[Esc] U [X595] * [X596] PLYR ←	PlyrU [X595] * [X596] ←	
View current media path	[Esc] U [X595] PLYR ← Verbose mode 2/3	[X596] ← PlyrU [X595] * [X596] ←	
KEY:	[X595] = Virtual input [X596] = RTSP stream URL	1 = Virtual input 1, 2 = Virtual input 2	
RTSP Virtual Input Username			
Set RTSP virtual input username	[Esc] V [X595] * <username> PLYR ←	PlyrV [X595] * <username> ←	
View RTSP virtual input username	[Esc] V [X595] PLYR ←	<username> ←	
KEY:	[X595] = Virtual input	1 = Virtual input 1, 2 = Virtual input 2	

Command Function	SIS Command (Host to Device)	Response (Device to Host)	Additional Description
Virtual Inputs continued			
RTSP Virtual Input Password			
Set RSTP virtual input password	[Esc] W [X595]* <password> PLYR ←	PlyrW[X595], ****←	Returns **** if a password is set.
View RSTP virtual input password	[Esc] W [X595] PLYR ←	****←	Returns an empty string if a password is not set.
Virtual Input Connection Status			
View virtual input connection status	[Esc] Y [X595] PLYR ←	[X32]←	
Verbose mode 2/3		PlyrY[X595]*[X32]←	
KEY:	[X32] = Connection status [X595] = Virtual input	0 = N/A, 1 = Virtual input 1, 2 = Virtual input 2	1 = Disconnected, 2 = Connected
Virtual Input Mode			
Set virtual input mode	[Esc] T [X595]* [X29] STRM ←	StrmT[X595]*[X29]←	
View virtual input mode	[Esc] T [X595] STRM ←	[X29]←	
Virtual Input Multicast IP Address			
Set virtual input multicast IP address	[Esc] A [X595]* <multicast IP>STRM ←	StrmA[X595]*<multicast IP>←	
View virtual input multicast IP address	[Esc] A [X595] STRM ←	<multicast IP>←	
Virtual Input Push Base Port			
Set virtual input Push base port	[Esc] P [X595]* <base port#>STRM ←	StrmP[X595]*<base port#>←	Base port is the beginning port of the range
View virtual input Push base port	[Esc] P [X595] STRM ←	<base port#>←	
KEY:	[X29] = Input mode [X595] = Virtual input	0 = Off, 1 = Virtual input 1, 2 = Virtual input 2	1 = ES RTP Push, 2 = RTSP Pull
Input Adjustments (Input 3 only)			
Pixel Phase			
Set pixel phase	[Esc] 3*[X603] PHAS ←	Phas03*[X603]←	Set input 3 to pixel phase [X603]
Increment pixel phase value	[Esc] 3+PHAS ←	Phas03*[X603]←	Increment pixel phase of input 3
Decrement pixel phase value	[Esc] 3-PHAS ←	Phas03*[X603]←	Decrement pixel phase of input 3
View value	[Esc] 3 PHAS ←	[X603]←	View pixel phase [X603] of input 3
KEY:	[X603] = Pixel phase	0 to 63 (default: 32)	
Total Pixels			
Set total pixels value	[Esc] 3*[X605] TPIX ←	Tpix03*[X605]←	Set total pixels (per line) for input 3 to [X605].
Increment total pixels value	[Esc] 3+TPIX ←	Tpix03*[X605]←	Increment the total pixels [X605] for input 3 by one pixel.
Decrement total pixels value	[Esc] 3-TPIX ←	Tpix03*[X605]←	Decrement the total pixels [X605] for input 3 by one pixel.
View total pixels	[Esc] 3 TPIX ←	[X605]←	View total pixels for input 3.
KEY:	[X605] = Total pixels	Up to +512 of the default value for the detected range	

Command Function	SIS Command (Host to Device)	Response (Device to Host)	Additional Description
Input Adjustments (Input 3 only) continued			
Horizontal Start			
Set horizontal start	[Esc] 3*[X604]HSRT←	Hsrt 03*[X604]←	Set the horizontal start value for input 3 to X604 .
Increment horizontal start	[Esc] 3+HSRT←	Hsrt 03*[X604]←	Increment the horizontal start value X604 for input 3 by one pixel.
Decrement horizontal start	[Esc] 3-HSRT←	Hsrt 03*[X604]←	Decrement the horizontal start value X604 for input 3 by one pixel.
View horizontal start	[Esc] 3 HSRT←	X604 ←	View the horizontal start value X604 of input 3.
KEY: X604 = Horizontal and vertical start 0 to 255 (default: 128)			
Vertical Start			
Set vertical start	[Esc] 3*[X604]VSRT←	Vsrt 03*[X604]←	Set the vertical start value of input 3 to X604 .
Increment vertical start value	[Esc] 3+VSRT←	Vsrt 03*[X604]←	Increment the vertical start value X604 for input 3 by one pixel.
Decrement vertical start value	[Esc] 3-VSRT←	Vsrt 03*[X604]←	Decrement the vertical start value X604 for input 3 by one pixel.
View vertical start	[Esc] 3 VSRT←	X604 ←	View the vertical start value X604 of input 3.
KEY: X604 = Horizontal and vertical start 0 to 255 (default: 128)			
Active Pixels			
Set active pixels	[Esc] 3*[X607]APIX←	Apix03*[X607]←	Set the active pixels per line for input 3 to X607 .
Increment active pixels	[Esc] 3+APIX←	Apix03*[X607]←	Increment the active pixels X607 for input 3 by one pixel.
Decrement active pixels	[Esc] 3-APIX←	Apix03*[X607]←	Decrement the active pixels X607 for input 3 by one pixel.
View active pixels	[Esc] 3 APIX←	X607 ←	View the active pixels value X607 of input 3.
KEY: X607 = Active pixels Up to +512 of the default value for the detected resolution			
Active Lines			
Set active lines	[Esc] 3*[X606]ALIN←	Alin03*[X606]←	Set active lines for input 3 to X606 .
Increment active lines	[Esc] 3+ALIN←	Alin03*[X606]←	Increment the active lines X606 for input 3 by one pixel.
Decrement active lines	[Esc] 3-ALIN←	Alin03*[X606]←	Decrement the active lines X606 for input 3 by one pixel.
View active lines	[Esc] 3 ALIN←	X606 ←	View the active lines value X606 of input 3.
KEY: X606 = Active lines Up to +256 of the default value for the detected resolution			

Command Function	SIS Command (Host to Device)	Response (Device to Host)	Additional Description
Picture Adjustments			
Color (NTSC and PAL inputs only)			
Specify a value	<code>Esc X502 *X608 COLR ←</code>	<code>Colr X502 *X608←</code>	Sets color level to <code>X608</code> .
Increment value	<code>Esc X502 + COLR ←</code>	<code>Colr X502 *X608←</code>	Increments color level.
Decrement value	<code>Esc X502 - COLR ←</code>	<code>Colr X502 *X608←</code>	Decrements color level.
View	<code>Esc X502 COLR ←</code>	<code>X608←</code>	View current setting.
Tint (NTSC input only)			
Specify a value	<code>Esc X502 *X608 TINT ←</code>	<code>Tint X502 *X608←</code>	Sets tint level to <code>X608</code> .
Increment value	<code>Esc X502 + TINT ←</code>	<code>Tint X502 *X608←</code>	Increments tint level.
Decrement value	<code>Esc X502 - TINT ←</code>	<code>Tint X502 *X608←</code>	Decrements tint level.
View	<code>Esc X502 TINT ←</code>	<code>X608←</code>	View current setting.
KEY:	<code>X502</code> = Output channel <code>X608</code> = Picture adjust	01 = A, 02 = B 000 to 127, default: 064 (3-digit response)	
Contrast			
Specify a value	<code>Esc X502 *X608 CONT ←</code>	<code>Cont X502 *X608←</code>	Sets contrast level to <code>X608</code> .
Increment value	<code>Esc X502 + CONT ←</code>	<code>Cont X502 *X608←</code>	Increments contrast level.
Decrement value	<code>Esc X502 - CONT ←</code>	<code>Cont X502 *X608←</code>	Decrements contrast level.
View	<code>Esc X502 CONT ←</code>	<code>X608←</code>	View current setting.
Brightness			
Specify a value	<code>Esc X502 *X608 BRIT ←</code>	<code>Brit X502 *X608←</code>	Sets brightness level <code>X608</code> .
Increment value	<code>Esc X502 + BRIT ←</code>	<code>Brit X502 *X608←</code>	Increments brightness level.
Decrement value	<code>Esc X502 - BRIT ←</code>	<code>Brit X502 *X608←</code>	Decrements brightness level.
View	<code>Esc X502 BRIT ←</code>	<code>X608←</code>	View current setting.
KEY:	<code>X502</code> = Output channel <code>X608</code> = Picture adjust	01 = A, 02 = B 000 to 127, default: 064 (3-digit response)	
Horizontal Centering (for Composite mode only)			
Specify a value	<code>Esc 1*X502 *X609 HCTR ←</code>	<code>Hctr X502 *X609←</code>	Set horizontal centering to <code>X609</code> .
Increment value	<code>Esc 1*X502 + HCTR ←</code>	<code>Hctr X502 *X609←</code>	Shift window right.
Decrement value	<code>Esc 1*X502 - HCTR ←</code>	<code>Hctr X502 *X609←</code>	Shift window left.
View	<code>Esc 1*X502 HCTR ←</code>	<code>X609←</code>	View current setting.
KEY:	<code>X502</code> = Output channel <code>X609</code> = Horizontal centering	01 = A, 02 = B The value corresponds to the horizontal position of the left edge of the window. The range varies, so the window never goes completely off-screen (5-digit response).	
Horizontal Size (for Composite mode only)			
Specify a value	<code>Esc 1*X502 *X612 HSIZ ←</code>	<code>Hsiz X502 *X612←</code>	Set horizontal size to <code>X612</code> .
Increment value	<code>Esc 1*X502 + HSIZ ←</code>	<code>Hsiz X502 *X612←</code>	Increase width of the window.
Decrement value	<code>Esc 1*X502 - HSIZ ←</code>	<code>Hsiz X502 *X612←</code>	Decrease width of the window.
View	<code>Esc 1*X502 HSIZ ←</code>	<code>X612←</code>	View current setting.
NOTE: Horizontal centering and horizontal size values are adjusted in multiples of 8. If a value is entered that is not a multiple of 8, the closest acceptable value is applied and returned.			
KEY:	<code>X502</code> = Output channel <code>X612</code> = Horizontal size	01 = A, 02 = B 00120 to 04096 (5-digit response).	

Command Function	SIS Command (Host to Device)	Response (Device to Host)	Additional Description
Picture Adjustments continued			
Vertical Centering (for Composite mode only)			
Specify a value	[Esc] 1*[X502]*[X611]VCTR ←	Vctr[X502]*[X611] ←	Set vertical centering [X611].
Increment value	[Esc] 1*[X502]+VCTR ←	Vctr[X502]*[X611] ←	Shift window down.
Decrement value	[Esc] 1*[X502]-VCTR ←	Vctr[X502]*[X611] ←	Shift window up.
View	[Esc] 1*[X502]VCTR ←	[X611] ←	View current setting.
KEY:	[X502] = Output channel [X611] = Vertical centering	01 = A, 02 = B	The value corresponds to the vertical position of the top edge of the window. The range varies, so the window never goes completely off-screen (5-digit response).
Vertical Size (for Composite mode only)			
Specify a value	[Esc] 1*[X502]*[X613]VSIZ ←	Vsiz[X502]*[X613] ←	Set vertical size (height) to [X613].
Increment value	[Esc] 1*[X502]+VSIZ ←	Vsiz[X502]*[X613] ←	Increase height of the window.
Decrement value	[Esc] 1*[X502]-VSIZ ←	Vsiz[X502]*[X613] ←	Decrease height of the window.
View	[Esc] 1*[X502]VSIZ ←	[X613] ←	View current setting.
NOTE:	Vertical centering and vertical size values are adjusted in multiples of 2. If a value is entered that is not a multiple of 2, the closest acceptable value is applied and returned.		
KEY:	[X502] = Output channel [X613] = Vertical size	01 = A, 02 = B 00064 to 04096 (5-digit response).	
Encoder Settings (Archive Encode and Recording)			
Stream Enable/Disable			
Stream enable	[Esc] X500*[X9]STRC ←	Strc[X500]*[X9] ←	Enable or disable each stream.
View stream status	[Esc] X500STRC ←	[X9] ←	
KEY:	[X9] = Enable/disable [X500] = Stream selection	0 = Disabled (default), 1 = Archive Channel A, 3 = Confidence	1 = Enabled 2 = Archive Channel B (Available for Dual Channel mode only),
RTMP (primary) Destination URL/Stream Key			
Set RTMP URL	[Esc]U1*[X500]*[X566]RTMP ←	RtmpU1*[X500]*[X566] ←	Enter primary publish URL of [X500].
View RTMP URL	[Esc]U1*[X500]RTMP ←	[X566] ←	View primary publish URL of [X500].
RTMP (backup) Destination URL/Stream Key			
Set RTMP URL	[Esc]U2*[X500]*[X566]RTMP ←	RtmpU2*[X500]*[X566] ←	Enter backup publish URL of [X500].
View RTMP URL	[Esc]U2*[X500]RTMP ←	[X566] ←	View backup publish URL of [X500].
KEY:	[X500] = Stream selection [X566] = RTMP URL (string)	1 = Archive Channel A, 3 = Confidence	2 = Archive Channel B (Available for Dual Channel mode only),
RTMP Stream Enable/Disable			
Enable RTMP push stream	[Esc]E[X500]*[X9]RTMP ←	RtmpE[X500]*[X9] ←	Enable or disable RTMP push stream [X500].
View RTMP push stream	[Esc]E[X500]RTMP ←	[X9] ←	View status of RTMP push stream [X500].
KEY:	[X9] = Enable/disable [X500] = Stream selection	0 = Disabled (default), 1 = Archive Channel A, 3 = Confidence	1 = Enabled 2 = Archive Channel B (Available for Dual Channel mode only),

Command Function	SIS Command (Host to Device)	Response (Device to Host)	Additional Description
Encoder Settings (Archive Encode and Recording) continued			
RTMP Stream Status			
Query primary RTMP Status	[Esc] S1*[X500] RTMP ←	X8 ←	View primary RTMP stream status.
Verbose mode 2/3		RtmpS1*[X500] *X8 ←	
Query backup RTMP Status	[Esc] S2*[X500] RTMP ←	X8 ←	View backup RTMP stream status.
Verbose mode 2/3		RtmpS2*[X500] *X8 ←	
KEY: [X8] = Status [X9] = Enable/disable [X500] = Stream selection			
	0 = Offline, 0 = Disabled (default), 1 = Archive Channel A, 3 = Confidence	1 = Live 1 = Enabled 2 = Archive Channel B (Available for Dual Channel mode only), 3 = Confidence	
Auto Reconnect RTMP			
Enable auto reconnect	[Esc] R [X500] *1RTMP ←	RtmpR[X500]*1←	Default is enabled.
Disable auto reconnect	[Esc] R [X500] *0RTMP ←	RtmpR[X500]*0←	
View auto reconnect	[Esc] R [X500] RTMP ←	X9 ←	
KEY: [X9] = Enable/disable [X500] = Stream selection			
	0 = Disabled, 1 = Archive Channel A, 3 = Confidence	1 = Enabled (default) 2 = Archive Channel B (Available for Dual Channel mode only), 3 = Confidence	
Enable/Disable Single/Secondary Recording (Composite mode)			
Single recording enable	[Esc] X1*1RCDR ←	Rcdr X1*1←	Enable single recording (internal or external).
Secondary recording enable	[Esc] X1*2RCDR ←	Rcdr X1*2←	Enable secondary recording (internal or external).
Recording disable	[Esc] X1*0 RCDR ←	Rcdr X1*0←	Disable recording.
View record status	[Esc] X1RCDR ←	X582 ←	View status.
KEY: [X582] = Recording mode			
	0 = Channel A disabled, 2 = Internal + Secondary Recording in Composite mode	1 = Single Recording in Composite mode	
Enable/Disable Archive Recording (Dual Channel mode)			
Set archive channel A	[Esc] X1*[X9]RCDR ←	Rcdr X1*[X9]←	Set archive channel A.
View channel A record status	[Esc] X1RCDR ←	X9←	View channel A record status.
Set archive channel B	[Esc] X2*[X9]RCDR ←	Rcdr X2*[X9]←	Set archive channel B.
View ch B record status	[Esc] X2RCDR ←	X9←	View channel B record status.
KEY: [X9] = Enabled/Disabled			
	0 = Disabled (default),	1 = Enabled	
Enable/Disable Virtual Input Recording (with firmware v3.04 or higher)			
Set virtual input 1	[Esc] X4*[X9]RCDR ←	Rcdr X4*[X9]←	
View virtual input 1 record status	[Esc] X4RCDR ←	X9←	
Set virtual input 2	[Esc] X5*[X9]RCDR ←	Rcdr X5*[X9]←	
View virtual input 2 record status	[Esc] X5RCDR ←	X9←	
KEY: [X9] = Enabled/Disabled			
	0 = Disabled (default),	1 = Enabled	

Command Function	SIS Command (Host to Device)	Response (Device to Host)	Additional Description
Encoder Settings (Archive Encode and Recording) continued			
Delayed Recording Start for Ad hoc			
NOTE:	The Mirroring LinkLicense is required in order to set the delay duration command.		
Delay duration	[Esc] P [X593] RCDR ←	Rcdr P [X593] ←	Delay ad hoc recording start for [X593] seconds.
View delay duration	[Esc] PRCDR ←	[X593] ←	Query original setting.
View recording start countdown	Example	RecStart[X593] ← RecStart12 ← , RecStart11 ← , RecStart10 ... ←	Unsolicited response to display recording start countdown.
KEY: [X593] = Delay duration in seconds 5 to 60 seconds (default = 5).			
Recording Profiles			
Recall recording profile	[Esc] R5* [X530] PRST ←	PrstR5* [X530] ←	
Query active profile	[Esc] L5PRST ←	PrstL5* [X530] ←	Verbose 2/3 mode
View selected profile	[Esc] V5* [X530] PRST ←	PrstV5* [X529] ←	Verbose 2/3 mode
Delete recording profile	[Esc] X5* [X530] PRST ←	PrstX5* [X530] ←	
KEY: [X530] = Presets 1 to 32 (two digit response — 0 padding) [X529] = Json string of recording profile parameters (for example: [{"id":1,"name":"RECORD PROFILE 01","contributor":"Contributor1","coverage":"Coverage1", "Presentor1...."}])			
Encoder Profile			
Set profile	[Esc] [X500]* [X40] EPRO ←	Epro[X500]* [X40] ←	Set encode profile to [X40].
View profile	[Esc] [X500] EPRO ←	[X40] ←	View encode profile [X40].
Set output mode	[Esc] 1*[X41] SMOD ←	Smod1* [X41] ←	Set output mode to [X41].
View output mode	[Esc] 1 SMOD ←	[X41] ←	View output mode [X41].
KEY: [X40] = Encode profile 1 = Base, [X41] = Output mode 1 = Video and audio, [X500] = Stream selection 1 = Archive Channel A, 2 = Main, 2 = Video only 3 = Confidence 3 = High [X41] = Output mode 1 = Video and audio, [X500] = Stream selection 1 = Archive Channel A, 2 = Main, 2 = Video only 3 = Confidence [X40] = Encode profile 1 = Base, [X41] = Output mode 1 = Video and audio, [X500] = Stream selection 1 = Archive Channel A, 2 = Main, 2 = Video only 3 = Confidence			
Composite/Dual Channel Encoder Mode			
Set archive encoding mode	[Esc] 1* [X503] ENCM ←	Encm1* [X503] ←	Select encoding mode for Archive.
View selected encoding mode	[Esc] 1ENCM ←	[X503] ←	View encoding mode for Archive.
KEY: [X503] = Encoding mode 0 = Composite mode, 1 = Dual Channel mode			
Dual Channel HDMI Output			
Set HDMI output	[Esc] [X64] OMOD ←	Omod[X64] ←	Set HDMI output to [X64].
Query HDMI output	[Esc] OMOD ←	[X64] ←	
KEY: [X64] = HDMI output 0 = Channel A full screen, 1 = Channel B full screen, 2 = Confidence layout			

Command Function	SIS Command (Host to Device)	Response (Device to Host)	Additional Description
Encoder Settings (Archive Encode and Recording) continued			
HDMI Video Mute			
Enable blanking	99*1B	Vmt9 9*1←	Blanks HDMI video output.
Disable blanking	99*0B	Vmt99*0←	Displays HDMI video output.
View status	99B	X9←	View the video mute status.
HDMI Audio Mute			
Mute HDMI audio	99*1Z	Amt99*1←	Mute HDMI audio output.
Unmute HDMI audio	99*0Z	Amt99*0←	Unmute HDMI audio output.
View status	99Z	X9←	View the audio mute status.
KEY: X9 = Disable/Enable 0 = Disabled/unmuted (default), 1 = Enabled/muted			
Group of Pictures (GOP) Length			
Set GOP length	Esc X500*X45 GOPL ←	Gopl X500*X45←	Set GOP length to X45.
View GOP length	Esc X500 GOPL ←	X45←	
KEY: X45 = GOP length 1 to 300			
Bit Rate Control			
Set bit rate control type	Esc X500*X42 BRCT ←	Brct X500*X42←	Set bit rate control type to X42.
View bit rate control type	Esc X500 BRCT ←	X42←	
Video Bit Rate			
Set video bit rate	Esc V X500*X43 BITR ←	Bitrv X500*X43←	Set video bit rate to X43.
View video bit rate	Esc V X500 BITR ←	X43←	
Audio Bit Rate			
Set audio bit rate	Esc A X500*X44 BITR ←	Bitra X500*X44←	Set audio bit rate to X44.
View audio bit rate	Esc A X500 BITR ←	X44←	
KEY: X42 = Bit rate control type 0 = VBR (default), 1 = CVBR, 2 = CBR X43 = Video bit rate 00200 to 10000 (5-digit response) X44 = Audio bit rate 80, 96, 128, 192, 256, 320 X500 = Stream selection 1 = Archive Channel A, 2 = Archive Channel B (Dual Channel mode only), 3 = Confidence			
Recording Thumbnail Size			
Set thumbnail size	Esc T X545 RCDR ←	RcdrT X545←	
View recording thumbnail size	Esc TRCDR ←	X545←	
KEY: X545 = Thumbnail size 0 = Normal (default), 1 = Follows archive resolution			
Preview Output Refresh Rate			
Set preview output refresh rate	Esc X48 RATE ←	Rate X48←	
View output refresh rate	Esc RATE ←	X48←	
KEY: X48 = Output refresh rate 1 = 60 Hz (default), 2 = 50 Hz			

Command Function	SIS Command (Host to Device)	Response (Device to Host)	Additional Description
Record Resolution and Frame Rate			
Set record resolution	[Esc] X500*X46 VRES ←	Vres X500*X46 ←	
View record resolution	[Esc] X500 VRES ←	X46 ←	
Set record frame rate	[Esc] X500*X47 VFRM ←	Vfrm X500*X47 ←	
View record frame rate	[Esc] X500 VFRM ←	X47 ←	
View record resolution and frame rate (For composite mode only)	33I Example	Horz resolution x Vert resolution * Frame rate ← 1280x720*30 ←	
View current recording information (For composite mode only)	1*I Verbose mode 2/3	<ChA X502*ChB X501>*<X46>*<X47>*<X543>*<X43>← Inf*<ChA X502*ChB X501>*<X46>*<X47>*<X543>*<X43>←	
KEY:			
	X43 = Video bit rate	00200 to 10000 (5-digit response)	
	X46 = Record resolution	480p, 720p, 1080p, 512x288, 1024x768, 1280x1024, Custom	
	X47 = Record frame rate	1 = 30, 2 = 25, 3 = 24, 4 = 15, 5 = 12.5, 6 = 12, 7 = 10, 8 = 5	
	X500 = Stream selection	1 = Archive Channel A, 2 = Archive Channel B (Dual Channel mode only), 3 = Confidence	
	X501 = Input number	1 to 5	
	X502 = Output channel	1 = A, 2 = B	
	X543 = File size	File size in mega Bytes	
Advanced Configuration			
Overscan Mode			
Set overscan mode	[Esc] X504*X510 OSCN ←	Oscn X504*X510 ←	Sets input type X504 to overscan mode X510.
View overscan mode	[Esc] X504 OSCN ←	X510 ←	View the current overscan X510 for input type X504.
KEY:			
	X504 = Input video format	1 = YUVp/HDTV (default), 2 = YUVi, 3 = Composite	
	X510 = Overscan	0 = 0% (default: HDMI inputs), 1 = 2.5% (default: YUVp input), 2 = 5.0% (default: YUVi and composite inputs)	
Test Pattern			
Set test pattern	[Esc] X565 TEST ←	Test X565 ←	
View test pattern	[Esc] TEST ←	X565 ←	
KEY:			
	X565 = Test patterns	0 = Off (default), 1 = Color bars, 2 = Aspect ratio 1.33, 3 = Aspect ratio 1.78, 4 = Aspect ratio 1.85, 5 = Crop, 6 = Pulse, 7 = Timestamp (composite mode only), 8 = Universal OSD (composite mode only)	
HDCP Settings (HDMI Inputs only)			
View input HDCP status	[Esc] I X501 HDCP ←	X511 ←	
Set input HDCP authorization on	[Esc] E1*X501 HDCP ←	Hdcpe X501*1 ←	Turn HDCP authorized device on for input X501
Set input HDCP authorization off	[Esc] E0*X501 HDCP ←	Hdcpe X501*0 ←	Turn HDCP authorized device off for input X501 (default)
View input HDCP authorization	[Esc] E X501 HDCP ←	X9 ←	
Enable HDCP notification	[Esc] N1HDCP ←	HdcpN1 ←	Enable green screen HDCP notification (default)
Disable HDCP notification	[Esc] N0HDCP ←	HdcpN0 ←	Disable green screen HDCP notification
View HDCP notification	[Esc] NHDCP ←	X512 ←	
KEY:			
	X9 = On/off	0 = Disabled/off (default), 1 = Enabled/on	
	X501 = Input number	1 to 5	
	X511 = HDCP status	0 = No sink/source detected, 1 = HDCP detected, 2 = Sink/source detected but no HDCP	
	X512 = HDCP notification	0 = Off (mute output to black), 1 = On (green HDCP notification-screen, default)	

Command Function	SIS Command (Host to Device)	Response (Device to Host)	Additional Description
Advanced Configuration continued			
Safely Eject USB Storage			
Eject USB storage	[Esc] X591 USBE ↵	USBE X591 ↵	
KEY: X591 = Eject USB storage 0 = All USB storage, 2 = USBFront, 3 = USBRear, 4 = USBRCP			
Horizontal Video Mirroring			
Enable mirroring per input	[Esc] I X1 *4ROTA ↵	RotaI X1 *4 ↵	Turn on mirroring for input X1 .
Disable mirroring per input	[Esc] I X1 *0ROTA ↵	RotaI X1 *0 ↵	Turn off mirroring for input X1 .
View setting	[Esc] I X1 ROTA ↵	RotaI X1 ↵	View mirroring setting.
KEY: X1 = Inputs 1 through 4 (1 through 5 for SDI model)			
Background Image (for composite mode only)			
Select background filename	[Esc] ffilenameRF ↵	Imrfilename ↵	
View background filename	[Esc] RF ↵	"filename" ↵	
Mute background image	[Esc] 0RF ↵	Imr0 ↵	
Audio			
Audio Input Format			
Set audio format	[Esc] I X1 * X30 AFMT ↵	AfmtI X1 * X30 ↵	
View	[Esc] I X1 AFMT ↵	X30 ↵	
KEY: X1 = Audio input 1 to 4, 1 to 5 for SDI models X30 = Audio format 0 = Disable audio, 1 = Analog (default for input 3), 2 = LPCM 2 CH (default)			
Audio Output (Channel Selection)			
Recall preset	X567.	Rpr X567 ↵	Recall audio output preset X567 .
KEY: X567 = Audio output 1 = Ch A, 2 = Ch B, 3 = Ch A + Ch B, 4 = Ch A + Ch B (Analog dual mono enabled only), 5 = Ch B Dual mono (Analog dual mono enabled only)			
Audio Delay			
NOTE: Set the audio delay to zero to disable it.			
Set audio delay	[Esc] 1 * X564 ADLY ↵	Adly1* X564 ↵	
View	[Esc] 1 ADLY ↵	X564 ↵	View audio delay value.
KEY: X564 = Audio delay 000 to 999 ms (default 0 ms, 3-digit response)			

Command Function	SIS Command (Host to Device)	Response (Device to Host)	Additional Description
Audio continued			
Audio Mute			
Mute audio channel	[Esc] M [X506]*1AU←	DsM [X506]*1←	Mute audio channel [X506].
Unmute audio channel	[Esc] M [X506]*0AU←	DsM [X506]*0←	Unmute audio channel [X506].
View audio channel mute status	[Esc] M [X506] AU←	[X9]←	
NOTE: The audio output mute setting applies to the stream, recording, and confidence.			
KEY: [X9] = Mute/unmute 0 = Unmuted (default), 1 = Muted [X506] = Audio selection 40000 = Analog Input A (Left), 40001 = Analog Input A (Right), 40002 = Digital input A (Left) 40003 = Digital input A (Right), 40004 = Analog Input B (Left), 40005 = Analog Input B (Right) 40006 = Digital input B (Left), 40007 = Digital input B (Right), 60000 = Output (Left, for audio mute control only), 60001 = Output (Right, for audio mute control only)			
Audio Level			
Set input audio level	[Esc] G [X506]*[X507] AU←	DsG [X506]*[X507]←	Set audio input channel [X506] to level [X507].
Example	[Esc] G 40000*100AU←	DsG40000*100←	Set analog audio input A (left) to +10 dB.
View input audio level	[Esc] G [X506] AU←	[X507]←	View input audio channel [X506] level [X507].
Example	[Esc] G 40000AU←	100←	Analog audio input A (left) is set to +10 dB.
KEY: [X506] = Audio selection 40000 = Analog Input A (Left), 40001 = Analog Input A (Right), 40002 = Digital input A (Left) 40003 = Digital input A (Right), 40004 = Analog Input B (Left), 40005 = Analog Input B (Right) 40006 = Digital input B (Left), 40007 = Digital input B (Right), 60000 = Output (Left, for audio mute control only), 60001 = Output (Right, for audio mute control only) [X507] = Audio level Audio level in 0.1 dB steps (-180 to 240 = -18.0 to +24.0 dB)			
Audio			
View front panel audio level indicators	34I	[X581]*[X581]←	left*right
Verbose 2/3 mode		Inf34*[X581]*[X581]←	
Example:		-58*-63←	
KEY: [X581] = Front panel audio level left*right: -1500 to 0, Full bars = 0, No bars = ≤ -600			
EDID Minder			
Assign EDID to specific input	[Esc] A [X501]*[X68] EDID ←	EdidA [X501]*[X68]←	
View EDID assignment	[Esc] A [X501] EDID ←	[X68]←	
Import EDID to user location	[Esc] I [X67], [filename] EDID←	EdidI [X67]←	Import a 128 or 256-Byte binary EDID file to the user loaded EDID location [1 to 3].
Export EDID in binary format	[Esc] E [X68], [filename] EDID←	EdidE [X68]←	Export a 128 or 256-Byte binary EDID file from EDID location [X68]. [filename] can optionally carry a full path name. The EDID file is a .bin file, carrying 128 or 256 bytes of binary data.
KEY: [X67] = EDID User loaded slots 1, 2, and 4 [X68] = EDID number See EDID Values on page 137 [X501] = Input number 1 to 5			

EDID Values					
X68	Resolution	Refresh	Rate Type	Video Format	Audio
1	800 x 600	60 Hz	PC	DVI	N/A
2	1024 x 768	60 Hz	PC	DVI	N/A
3	1280 x 720	60 Hz	PC	DVI	N/A
4	1280 x 768	60 Hz	PC	DVI	N/A
5	1280 x 800	60 Hz	PC	DVI	N/A
7	1360 x 768	60 Hz	PC	DVI	N/A
8	1366 x 768	60 Hz	PC	DVI	N/A
9	1400 x 1050	60 Hz	PC	DVI	N/A
10	1440 x 900	60 Hz	PC	DVI	N/A
11	1600 x 900	60 Hz	PC	DVI	N/A
12	1600 x 1200	60 Hz	PC	DVI	N/A
13	1680 x 1050	60 Hz	PC	DVI	N/A
14	1920 x 1080	60 Hz	PC	DVI	N/A
15	1920 x 1200	60 Hz	PC	DVI	N/A
16	800 x 600	60 Hz	PC	HDMI	2-Ch
17	1024 x 768	60 Hz	PC	HDMI	2-Ch
18	1280 x 768	60 Hz	PC	HDMI	2-Ch
19	1280 x 800	60 Hz	PC	HDMI	2-Ch
20	1280 x 1024	60 Hz	PC	HDMI	2-Ch
21	1360 x 768	60 Hz	PC	HDMI	2-Ch
22	1366 x 768	60 Hz	PC	HDMI	2-Ch
23	1400 x 1050	60 Hz	PC	HDMI	2-Ch
24	1440 x 900	60 Hz	PC	HDMI	2-Ch
25	1600 x 900	60 Hz	PC	HDMI	2-Ch
26	1600 x 1200	60 Hz	PC	HDMI	2-Ch
27	1680 x 1050	60 Hz	PC	HDMI	2-Ch
28	1920 x 1200	60 Hz	PC	HDMI	2-Ch
29	480p	60 Hz	HDTV	HDMI	2-Ch
30	576p	50 Hz	HDTV	HDMI	2-Ch
31	720p	50 Hz	HDTV	HDMI	2-Ch
32*	720p	60 Hz	HDTV	HDMI	2-Ch
33	1080i	50 Hz	HDTV	HDMI	2-Ch
34	1080i	60 Hz	HDTV	HDMI	2-Ch
35	1080p	25 Hz	HDTV	HDMI	2-Ch
36	1080p	50 Hz	HDTV	HDMI	2-Ch
37	1080p	24 Hz	HDTV	HDMI	2-Ch
38	1080p	60 Hz	HDTV	HDMI	2-Ch
39	User Loaded Slot 1				
40	User Loaded Slot 2				
41	User Loaded Slot 3				

* Default

Reference Information

This section provides information about:

- [Mounting the SMP 300 Series](#)
- [Supported File Types, Drive Formats, Browsers, and Browser Plugins](#)
- [DataViewer](#)
- [Streaming Method Overview](#)
- [Estimating Storage Requirements for a Recording](#)
- [Front Panel Menu Diagrams](#)
- [Front Panel Menu Diagrams \(Record/Stream Configuration\)](#)

Mounting the SMP 300 Series

The 1U high, full rack width, 11.5 inch deep SMP 300 Series Streaming Media Decoders can be:

- Set on a table
- Mounted on a rack shelf
- Mounted under a desk or tabletop
- Mounted on a projector bracket

See the SMP 300 Series product page at www.extron.com for compatible mounting kits.

Tabletop Use

The SMP 300 Series includes rubber feet (not installed). For tabletop use, attach a self-adhesive rubber foot to each corner on the bottom of the unit.

Furniture Mounting

Furniture mount the SMP 300 Series using an optional under-desk or through-desk mounting kit. Follow the instructions included with the mounting kit.

Table or Wall Mounting

Extron table or wall mounting brackets extend approximately 1/4 inch (6.4 mm) above the top surface of the SMP 300 Series enclosure. This design allows an air space between the mounting surface and the enclosure. Follow the instructions included with the mounting kit.

Rack Mounting

For rack mounting using the included rack mounts, do not install the rubber feet. Mount the SMP 300 Series on a 19 inch universal or basic rack shelf.

UL Rack Mounting Guidelines

The following Underwriters Laboratories (UL) guidelines pertain to the safe installation of the SMP 300 Series in a rack.

CAUTION:

- **Elevated operating ambient temperature** — If the unit installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment can be greater than room ambient temperature. Therefore, install the unit in an environment compatible with the maximum ambient temperature ($T_{ma} = +122^{\circ}\text{F}, +50^{\circ}\text{C}$) specified by Extron.
- **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.
- **Mechanical loading** — Mount the equipment in the rack so that uneven mechanical loading does not produce a hazardous condition.
- **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.
- **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).

Consignes UL pour le montage en rack

Les consignes UL (« Underwriters Laboratories ») suivantes concernent l'installation en rack d'un boîtier SMP 300 Series :

ATTENTION :

- **Température ambiante élevée** — En cas d'installation de l'équipement dans un rack fermé ou composé de plusieurs unités, la température du rack peut être supérieure à la température ambiante. Par conséquent, il est préférable d'installer l'équipement dans un environnement qui respecte la température ambiante maximale ($T_{ma} = +122^{\circ}\text{F}, +50^{\circ}\text{C}$) spécifiée par Extron.
- **Réduction du flux d'air** — Si l'équipement est installé dans un rack, veillez à ce que le flux d'air nécessaire pour un fonctionnement sécurisé de l'équipement soit respecté.
- **Charge mécanique** — Installez l'équipement en rack de manière à éviter toute situation dangereuse causée par le déséquilibre de la charge mécanique.
- **Surcharge électrique** — Lorsque vous connectez l'équipement au circuit d'alimentation, observez la connexion de l'équipement et étudiez les effets possibles d'une surcharge du circuit sur les protections contre les surintensités et les conducteurs d'alimentation. Consultez à cet égard les indications de la plaque d'identification de l'équipement.
- **Mise à la terre** — Assurez-vous que l'équipement est correctement mis à la terre. Accordez une attention particulière aux connexions électriques autres que les connexions directes au circuit de dérivation (ex. : les multiprises).

Supported File Types, Drive Formats, Browsers, and Browser Plugins

File Formats

The SMP 300 Series creates *.m4v and mp4 video and m4a audio files, and *.jpg thumbnail and chapter marker images. They use still image files for background material. Optional fonts can be used for on-screen displays.

Recording File Types

- mp4 (as m4v), m4a

Still Image File Types

- png (for background images)
- jpg (for SMP-created thumbnails and chapter markers)

Font File Types

- TrueType™ (.ttf)
- OpenType® (.otf)

NOTE: To upload a font file, use the file upload utility within the **File Management** page. The user is responsible for obtaining any necessary font licenses before uploading fonts to the SMP.

Drive Formats

The SMP 300 Series supports FAT32, NTFS, and VFAT long file names, EXT2, EXT3 and EXT4 formats for USB drives that are used for file storage.

NOTE: For FAT32 USB storage, file sizes must be limited to 4 GB or the recording creates multiple 4 GB files. FAT32 internal recording does not have the 4 GB size limit, if unlimited file size is selected.

Browsers

In order to view the SMP 300 Series embedded web pages, use one of the supported web browsers (see **PC Requirements** on page 3).

NOTE: The preview video in the **AV Controls** panel of the SMP uses an HTML5 player and is not supported by Microsoft Internet Explorer v.11, Microsoft Edge, or Apple Safari. To see a preview of the current stream either:

Use a different browser, or

Open a standalone, third-party video player (such as VideoLAN™ open source VLC™ media player) and connect to the confidence stream from the SMP.

Browser Plugins

Supported web browser streaming player plugins for use with the embedded web pages include the following:

- Extron Streaming Media Player (SMP) for Windows
- VideoLAN VLC
- Apple QuickTime

DataViewer

DataViewer is an enhanced terminal emulation program that facilitates analysis of RS-232, USB, and TCP/IP communication with Extron devices. The software allows users to send commands to a device and view the responses in ASCII or hexadecimal format. Command and response logs can be saved in text or HTML format.

Download the installation file and load the program on the PC connected to the SMP 300 Series. DataViewer is available at www.extron.com.

Start the DataViewer program

1. Click the desktop icon.
2. The Communications Setup dialog box opens. Select a **Communication** tab.
 - a. Select the **Comm Port (RS-232)** tab (see figure 95, ①) if using the rear panel RS-232 port.
 - b. Select the **TCP/IP** tab (②) if using a network connection.
 - c. Select the **USB** tab (③) if using the front panel config port.

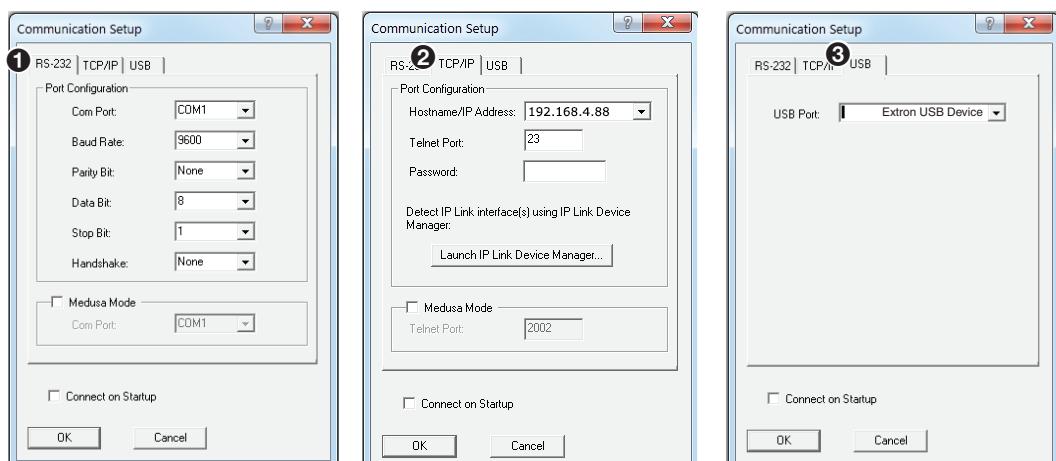


Figure 95. Communications Dialogs

3. Select the startup options:
 - a. If RS-232 is selected, configure the port settings (①).
 - b. If TCP/IP is selected, configure the IP address and Telnet port (②). Enter a password.

NOTE: The factory configured passwords for all accounts on this device have been set to the device serial number. In the event of a complete system reset, the passwords convert to the default, which is no password (see **Users and Roles** on page 86 to change a password).

- c. If USB is selected, choose **Extron USB Device** in the drop-down list (③).

NOTE: To automatically connect to the SMP 300 Series, select **Connect on startup**.

4. Click **OK** to connect to the SMP 300 Series and start using the program.

You are now ready to begin entering commands. Open the *DataViewer Help* file from the toolbar for more information on the program.

Sending commands using a TCP/IP connection

1. Configure the network settings of a control PC to connect it to the same network as the SMP 300 Series. Connect the control PC to the network with an RJ-45 cable.
2. Start the DataViewer program (see [Start the DataViewer program](#) on page 141) and follow the steps to connect to the SMP 300 Series via TCP/IP.
3. On the **Communication Setup** window (see figure 95):
 1. Select the **TCP/IP** tab.
 2. Enter the IP address of the SMP 300 Series into the **Hostname/IP Address** field.
 3. In the **Telnet Port** field, enter the port number for the connection.

NOTE: The default telnet port for SIS commands is port 23.

4. Click **OK**. The **Communication Setup** dialog closes.

The main **DataViewer** dialog opens and the SMP 300 Series responds with a copyright statement containing the model number, part number, and current firmware version of the connected SMP 300 Series, along with the date (see figure 96, ②).

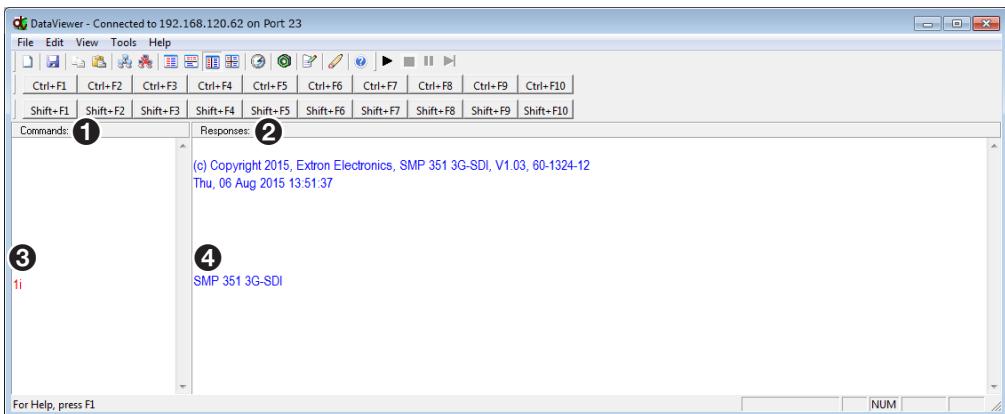


Figure 96. Enter Commands and View Responses

5. Use the **Commands** field to enter SIS commands (see figure 96, ①). View the responses in the **Responses** field (②).

For example, enter **1I**, the command to display the model name, in the **Commands** field (③). The **Responses** field (④) returns the model name and number of the connected device.

What is an IP Address?

A full explanation of IP addressing is beyond the scope of this user guide. However, the following information is enough to get started.

An IP address is a 32-bit binary number used to identify each device on an Ethernet network. This number is usually represented by four decimal numbers (each in the range 0 to 255) separated by dots, (for example, **198.123.34.240**). This is called "dotted decimal notation".

An IP address is divided into two parts:

- The network identifier
- The host identifier

On a given network, each address must have the same network identifier value, but have a unique host identifier. There are, therefore, different classes of addresses that define:

- The range of valid addresses.

- The parts of the address used to identify the network and host.

The most common IP address classes are:

Class	Valid Address Range	Identifier Arrangement
Class A	0.0.0.1 to 127.255.255.254	NNN.HHH.HHH.HHH
Class B	128.0.0.1 through 191.255.255.254	NNN.NNN.HHH.HHH
Class C	192.0.0.1 through 223.255.255.254	NNN.NNN.NNN.HHH

NOTES:

- NNN = Network identifier
- HHH = Host identifier

Private and Public Address Ranges

Within each of the classes are a range of addresses designated as "private" addresses. These addresses should only be used on private local networks and intranets and cannot be accessed directly from the Internet.

- 10.0.0.0 – 10.255.255.255
- 172.16.0.0 – 172.31.255.255
- 169.254.0.0 – 169.254.255.255
- 192.168.0.0 – 192.168.255.255

Addresses outside these ranges are considered "public".

Multicast Address Range

A further range of addresses is available for private multicast domain use:

- 239.0.0.0 to 239.255.255.255

These addresses (also known as class D addresses) are used to allow several devices to be part of the same multicast group. Each device in the group has the same multicast address and can effectively send data to all other devices in the same group simultaneously.

NOTE: The SMP uses 239.199.188.138 as the default multicast address for the archive stream and 239.199.188.142 as the confidence stream default.

Subnet Mask

The subnet mask is a 32-bit binary number used to "mask" certain bits of the IP address. It extends the number of network options available for the IP address. The subnet mask does this by allowing part of the host identifier to be used as a subnetwork identifier.

It is important that the correct value is used for the subnet mask. The value of the subnet mask is dependent on the IP address class being used. Use the table below and the table in the [What is an IP Address?](#) section on page 142 to select the subnet mask class that matches the IP address class.

Class	Subnet Mask
Class A	255.0.0.0
Class B	255.255.0.0
Class C	255.255.255.0

Port Number

A port number is combined with the IP address to create an application-specific or process-specific address. The port number can uniquely identify an application or process on a computer and thereby enable the computer to share a single Ethernet connection for multiple requirements. A port number is always associated with the IP address of the computer, as well as the type of protocol used for network communication.

The SMP uses specific ports, but can be configured to meet most requirements. In addition to the default ports, any port in the available range (1024 to 65535) can be used.

NOTE: Ports previously assigned and currently in use by the SMP cannot be used again.

All streaming methods (except TS/UDP push) use multiple port numbers. The following table shows the number of ports used by each streaming method. Archive and confidence streams have different port numbers.

	RTSP (Pull)	TS/UDP (Push)	TS/RTP (Push)	ES/RTP (Push)
Unicast (per stream)	4*	1	2	4*
Multicast	4*	1	2	4*

* 4 ports for "Audio/Video", or 2 ports for "Video only"

When the SMP 300 Series ports are configured, only the initial port is entered by the user. The SMP 300 Series firmware then assigns the multiple port numbers based on the initial port number.

Choosing an IP Address

If the SMP 300 Series and other devices are connected via an independent network, then follow the guidelines below when choosing IP addresses. However, if the SMP 300 Series and other devices are being connected to an existing network, advise the network administrator and ask them to assign suitable addresses.

On an independent network, nearly any type of address can be used (in theory). However, it is generally recommended that class C addresses are used (192.0.0.1 through 223.255.255.255).

There are two rules for choosing IP addresses:

- The network identifier must be the same for each address.
- The host identifier must be unique for each address.

Applying these rules to class C addresses, the first three decimal values of the IP addresses must all be the same, while the last value is used to uniquely identify each device.

The table below shows an example of a valid class C addressing scheme.

Device	IP Address	Subnet Mask
Device 1	208.132.180.41	255.255.255.0
Device 2	208.132.180.42	255.255.255.0
Device 3	208.132.180.43	255.255.255.0

NOTE: The host identifiers (41, 42, and 43 in the example above) do not need to be sequential or in any particular order. However, it is recommended that the numbers are grouped for simplicity.

The table below shows an example of an invalid class C addressing scheme.

Device	IP Address	Subnet Mask
Device 1	208.132.180.41	255.255.255.0
Device 2	192.157.180.42	255.255.255.0
Device 3	208.132.180.41	255.255.255.0

Assuming the IP address for device 1 is valid, the IP address for device 2 is invalid because the network identifier for each address must begin with **208.132.180.xxx**. The IP address for device 3 is invalid because it is using the same IP address as device 1.

The ping command can be used from a computer (see [Using the Ping Utility to Test Communications](#) on page 145) or from the web interface to ensure that a device at an IP address is responding correctly.

Using the Ping Utility to Test Communications

Use the ping command to test communications between a Windows-based computer and another device on the same network.

1. From the desktop, select **Start > Run**.
2. The Run dialog box displays. In the **Open** field, enter **ping nnn.nnn.nnn.nnn -t** (where *nnn.nnn.nnn.nnn* is the IP address of the device to test).
3. Click **OK** or press the **<Enter>** key. A window opens showing a series of response messages (explained below).
4. To stop the ping utility, press **<Ctrl + C>** on the keyboard.

NOTE: The embedded web page includes a ping utility (see [Diagnostic Tools](#) on page 101).

Response Messages

While running the ping utility, a series of response messages are displayed to determine the status of the communications link. For example, pinging a device with the IP address **208.132.180.48** replies with a message similar to the following:

Reply from 208.132.180.48: bytes=32 time=2ms TTL=32

This is the correct response indicating that the device at the specified address is communicating correctly. The response time value may vary according to network traffic. If one of the following messages are received:

- **Request timed out** — There has been no response from the specified address. Either the processor is not receiving data (from the computer) or is not sending data back. Check that the device is powered on and set to the same address that was pinged. Also, check that the device is correctly connected to the network.
- **Reply from 208.132.180.48: Destination host unreachable** — The IP address of the computer is not in the same class as the device being pinged. Check that the subnet mask on both the computer and the device are set to the same value. Also check that both IP addresses are within the correct range for the chosen class and are compatible (see [Subnet Mask](#) on page 143 and [What is an IP Address?](#) on page 142 to select the subnet mask class that matches the IP address class).

Multicast IP Addressing for Multiple SMP 300 Series Installations

Pull streaming (RTSP)

When multiple SMP 300 Series devices are installed in a system and multicast addressing is used for push or pull streaming, please follow the guidelines below for configuration.

NOTE: To prevent conflicts, always check to see if other devices using the same IP address have already used a port number before using it in the SMP 300 Series.

For most applications, the multicast address should use 239 as the first octet and should be unique for each SMP 300 Series. The port number can remain at the default (12340) as shown in the next table.

Device	SMP IP	Multicast IP	Multicast Port
SMP1	192.168.254.10	239.199.188.138	12340
SMP2	192.168.254.11	239.199.188.139	12340
SMP3	192.168.254.12	239.199.188.140	12340

NOTE: The SMP 300 Series automatically inserts the ending port number when the initial port number is entered.

Push streaming (TS/UDP, TS/RTP, ES/RTP)

Push streams to a multicast address generally require only two ports, except for ES/RTP which requires four. When push streaming from multiple SMP 300 Series devices to multicast addresses, the same IP address rules apply as with pull streaming.

For push streaming, the destination IP and port number are adjusted using the encoder presets page.

Streaming Method Overview

The streaming method used by the SMP 300 Series should be considered carefully. Multicast is typically used for live multicasting a "one-to-many" session when it is known there are multiple viewers of a stream. Unicast streaming is used for on-demand video where the network infrastructure does not support multicast traffic. Typically, unicast streaming is used for a point-to-point (one-to-one) connection.

Protocols Used for Streaming

Streaming protocols must be selected based on the streaming method and the SMP 300 Series capability. The following transport layer protocols can be used for SMP streaming.

Pull		Push	
Unicast	Multicast	Unicast	Multicast
RTP (RTP over UDP)	RTP (RTP over UDP)	TS/UDP	TS/UDP
		TS/RTP	TS/RTP
		ES/RTP (Native RTP)	ES/RTP (Native RTP)

The transport protocols are summarized in this section. For information on how to change the SMP 300 Series transport protocol, see [Streaming](#) on page 36.

Multicast Streaming Method – An Overview

This streaming method is used for live video multicasting with low latency in a "one-to-many" streaming session. The SMP 300 Series uses a variety of streaming protocols to send data to a multicast group. Using multicasting, the SMP 300 Series does not need to know the IP address of the devices viewing the stream. This allows a large number of users to view the data simultaneously while using bandwidth efficiently. The maximum number of connected users is dependent on the type of distribution network used.

NOTE: To use this streaming method, each network must be configured to pass multicast broadcasts.

Multicast streaming can use push or pull streaming. It can push the data to a network for broader distribution, or to many individual viewing devices. It can also use pull streaming, where the SMP 300 Series waits for viewing devices to request the stream before broadcasting.

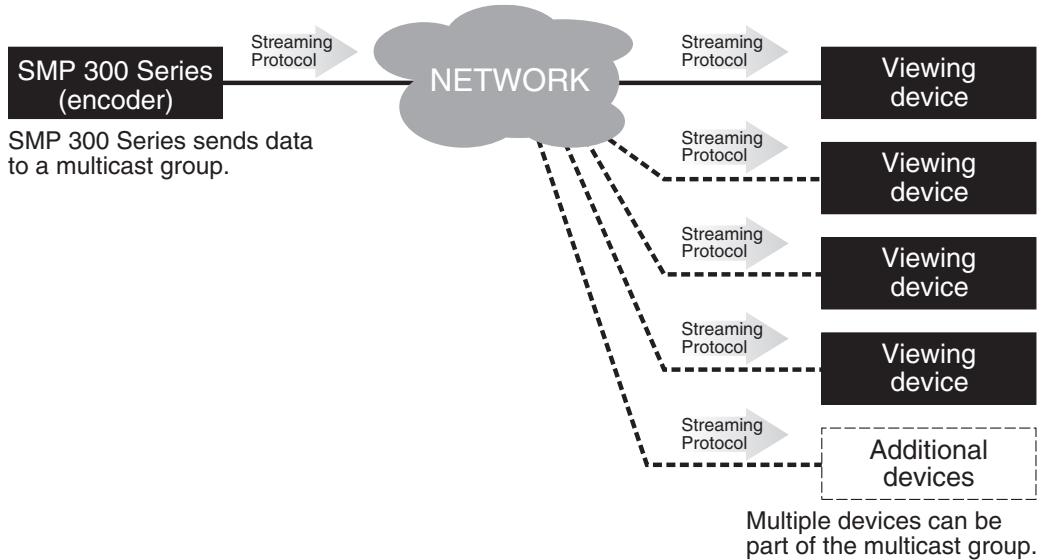


Figure 97. Multicast Streaming

NOTE: IGMP (Internet Group Management Protocol) multicast protocol is used by routers and switches to deliver streams to subscribing endpoints. The SMP 300 Series delivers packets and frames onto the network that are identified as multicast. An IGMP multicast conserves network bandwidth because the SMP 300 Series only sends data when a connection is made by a user. All network switches and routing equipment must be properly configured to support IGMP snooping and IGMP query to avoid flooding all endpoints with unnecessary streaming traffic.

Unicast Streaming Method – An Overview

This streaming method is used for on-demand video with low latency and uses a variety of streaming protocols. It can be used where the network infrastructure does not support multicast traffic. Typically, unicast streaming is used for a point-to-point (one-to-one) connection (SMP 300 Series to single viewing device), but can be configured to use multiple active connections.

Unicast streaming can use push or pull streaming. It can push the data to individual or multiple viewing devices, or it can use pull streaming, where the SMP 300 Series waits for an individual viewing device to request the stream before broadcasting.

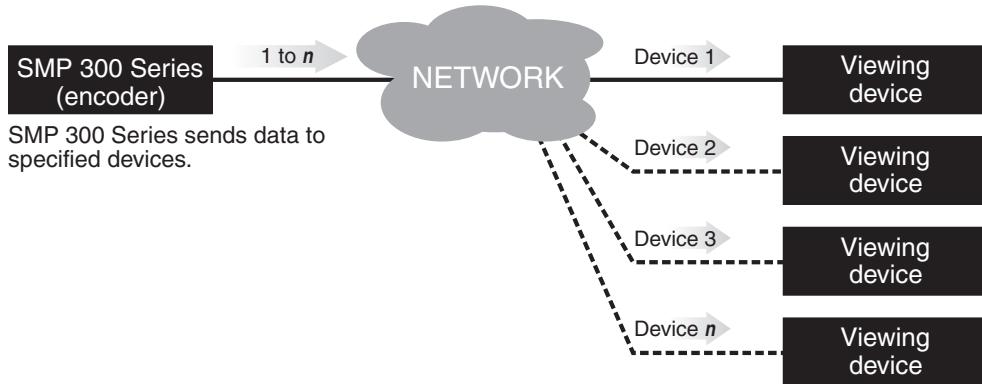


Figure 98. Unicast Streaming

NOTES:

- When unicast streaming, the SMP 300 Series sends an individual stream to each viewing device. This means that the total bandwidth increases as the number of actively connected viewing devices increases and the total bandwidth decreases as the number of actively connected viewing devices decreases.
- In the figure above, n represents an unspecified number of additional streams.

Streaming Playback Methods

Streams from the SMP 300 Series can be viewed using various playback methods.

NOTE: The procedures presented in the following sections use a Microsoft Windows operating system and version 2.0.2 of VLC media player. These procedures may vary when a different operating system is used or when different versions of the VLC media player are used.

The following streaming playback methods are discussed:

- Push and Pull Streaming
- Playing a Push or Pull Stream Using VLC Media Player®

Push and Pull Streaming

The client computer or media player can either search the network for active streams (push streaming from the encoder) and select the desired video, or send a request to the encoder to begin streaming a video to it (pull streaming).

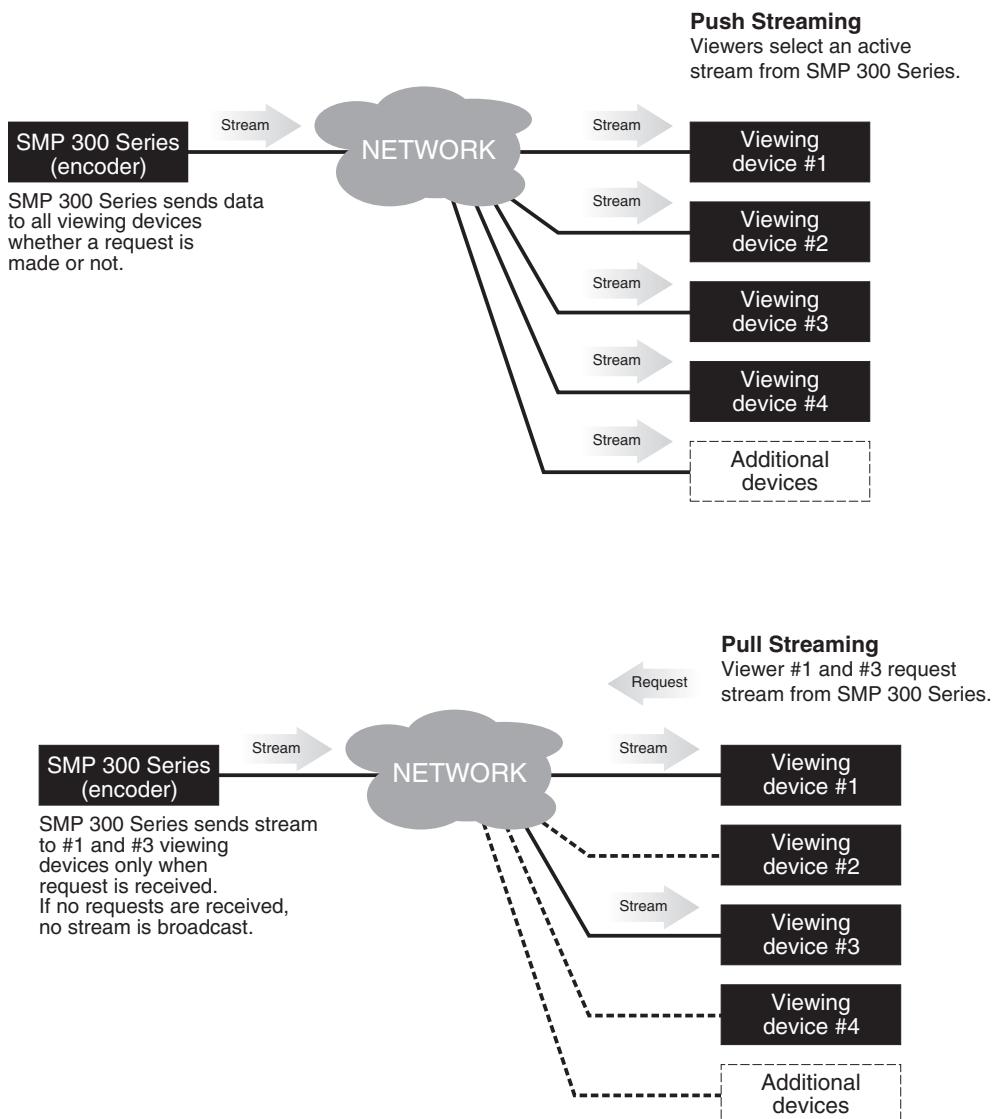


Figure 99. Push and Pull Streaming

Push Stream and Pull Stream Playback URLs

To verify a running stream, use the templates below to place the stream into the VLC "Open Network Stream" dialog (see step 5 of [Playing a Pull Stream Using VLC Media Player](#) on page 153). Substitute the SMP IP address for <SMP35x_IP>. Substitute the destination IP address and port number for <DESTINATION_IP>:<DESTINATION_PORT>.

Pull Stream URLs	
PULL Streaming:	URL
RTSP Unicast (Archive Channel A)	<code>rtsp://<SMP35x_IP>/<stream name 1></code>
RTSP Unicast (Archive Channel B)	<code>rtsp://<SMP35x_IP>/<stream name 2></code> NOTE: This stream is available only on units that are set for dual encoding mode.
RTSP Unicast (Confidence)	<code>rtsp://<SMP35x_IP>/<stream name 3></code>
RTSP Multicast (Archive Channel A)	<code>rtsp://<SMP35x_IP>/<stream name 1>/multicast</code> or <code>HTTP://<SMP35x_IP>/live/pull/multicast1.sdp</code>
RTSP Multicast (Archive Channel B)	<code>rtsp://<SMP35x_IP>/stream name 2/multicast</code> or <code>HTTP://<SMP35x_IP>/live/pull/multicast2.sdp</code> NOTE: This stream is available only on units that are set for dual encoding mode.
RTSP Multicast (Confidence)	<code>rtsp://<SMP35x_IP>/<stream name 3>/multicast</code> or <code>HTTP://<SMP35x_IP>/live/pull/multicast3.sdp</code>

Push Stream URLs	
PUSH Streaming:	
Unicast (Destination IP must be set to the location where the stream is played)	
TS/UDP	<code>UDP://:@:DESTINATION_PORT</code>
TS/RTP	<code>RTP://:@:DESTINATION_PORT</code>
ES/RTP (Archive Channel A)	<code>HTTP://<SMP35x_IP>/live/push/s1.sdp</code>
ES/RTP (Archive Channel B)	<code>HTTP://<SMP35x_IP>/live/push/s2.sdp</code> NOTE: This stream is available only on units that are set for dual encoding mode.
ES/RTP (confidence)	<code>HTTP://<SMP352_IP>/live/push/s3.sdp</code>
Multicast (Destination IP must be multicast IP address)	
TS/UDP	<code>UDP://@<DESTINATION_IP>:DESTINATION_PORT</code>
TS/RTP	<code>RTP://@<DESTINATION_IP>:DESTINATION_PORT</code>
ES/RTP (Archive Channel A)	<code>HTTP://<SMP35x_IP>/live/push/s1.sdp</code>
ES/RTP (Archive Channel B)	<code>HTTP://<SMP35x_IP>/live/push/s2.sdp</code> NOTE: This stream is available only on units that are set for dual encoding mode.
ES/RTP (confidence)	<code>HTTP://<SMP35x_IP>/live/push/s3.sdp</code>

NOTES:

- <SMP35x_IP> is the IP address of the SMP 300 Series.
- For push URLs, the Destination Port is the lowest port in the Port Range set from the web page.
- UDP://@:DESTINATION_PORT default is UDP://@:12340.
- Some dependencies may apply with certain versions of VLC.
- For ES/RTP, SAP is available in Video only stream mode.

Streaming Capabilities and System Scalability

The following tables detail the streaming capabilities of the SMP 300 Series. Data for the tables was obtained through laboratory testing using optimal bandwidth conditions and can vary depending on the selected video bit rate.

NOTE: Testing to determine the approximate maximum number of pull streams was done on the Archive encoder with one pull unicast confidence stream. Recording while streaming does **not** reduce the maximum number of pull streams.

Available Unicast Streams

Video resolution and bit rate affect the total number of unicast streams (Archive and Confidence) the SMP 300 Series can broadcast. The following table compares the selected resolution and bit rate with the approximate number of unicast streams that are available. Changing the resolution or using higher or lower bit rates may increase or decrease the available number of streams.

Pull Stream Method

Unicast		
Resolution (Pixels x Lines @ frame rate)	Video Bit Rate (Kbps)	Approximate Number of Pull Streams
848x480 @ 15	1500	40
1024x768 @ 15	2500	32
1280x1024 @ 30	3500	29
1280x720 @ 30	5000	23
1920x1080 @ 30	8000	16

NOTE: The following configuration options were set on the SMP:

- Stream Type = VBR
- GOP Length = 30
- Stream Mode = Video/Audio
- Layout = Full screen with high motion content
- Archive Pull Streaming Method = Unicast RTP
- Confidence Pull Streaming Method = Unicast RTP at default setting

Push Stream Method

The number of push unicast streams is one per encoder (the SMP 300 Series has two encoders, Archive and Confidence in composite mode and 3 encoders, Archive Channel A, Archive Channel B and confidence in dual channel mode).

Available Multicast Streams

The SMP 300 Series uses the IGMP multicast protocol to push or pull streams. The IGMP multicast protocol provides increased bandwidth efficiency because the SMP 300 Series only sends data when a connection is made by the user. All network switches and routing equipment must be properly configured to support IGMP snooping and IGMP query to avoid flooding all endpoints with unnecessary streaming traffic.

The table below indicates the approximate number of multicast streams supported by the SMP 300 Series using the IGMP multicast protocol. Operating at different resolutions using higher or lower bit rates can increase or decrease the scalability of the streaming system.

NOTE: For networks not configured to use the IGMP multicast protocol, consider using a media server to deliver multiple unicast streams to control PCs and viewing devices.

Pull Stream Method

Multicast		
Resolution (Pixels x Lines @ frame rate)	Recommended Video Bit Rate (Kbps)	Approximate Number of Pull Streams
1920 x 1080 @ 30	8000	>180

NOTE: The number of available pull streams is dependent on bandwidth and content (high motion or static content).

The following configuration options were set on the SMP:

- Stream Type = VBR
- GOP Length = 30
- Stream Mode = Video/Audio
- Layout = Full screen with high motion content
- Archive Pull Streaming Method = Multicast UDP
- Confidence Pull Streaming Method = Unicast RTP at default settings

If more streams are required, setting up a media server is the next step in expanding the streaming architecture. A media server provides a scalable live streaming media solution.

Push Stream Method

The number of multicast push streams is not limited.

Playing a Pull Stream Using VLC Media Player

Use the following procedure to play and view an SMP 300 Series stream using the VLC media player.

1. If you know the stream URL, go to step 5. Otherwise, to obtain the stream URL, access the web-based user interface of the SMP 300 Series (see [Accessing the Web-Based User Interface](#) on page 53)

NOTES:

- If no password is set, anyone can view the stream URL. If a password is set, you must be logged in to view the URL.
- The factory configured passwords for all accounts on this device have been set to the device serial number. In the event of a complete system reset, the passwords convert to the default, which is no password (see [Users and Roles](#) on page 86 to change a password).

2. The Recording Controls page opens. In the Stream URL panel, if the archive and confidence streams are set to **Pull** (see [Push Stream and Pull Stream Playback URLs](#) on page 150), the box displays the URL necessary to request a stream from the SMP 300 Series. Note the full URL in figure 100 for later reference.

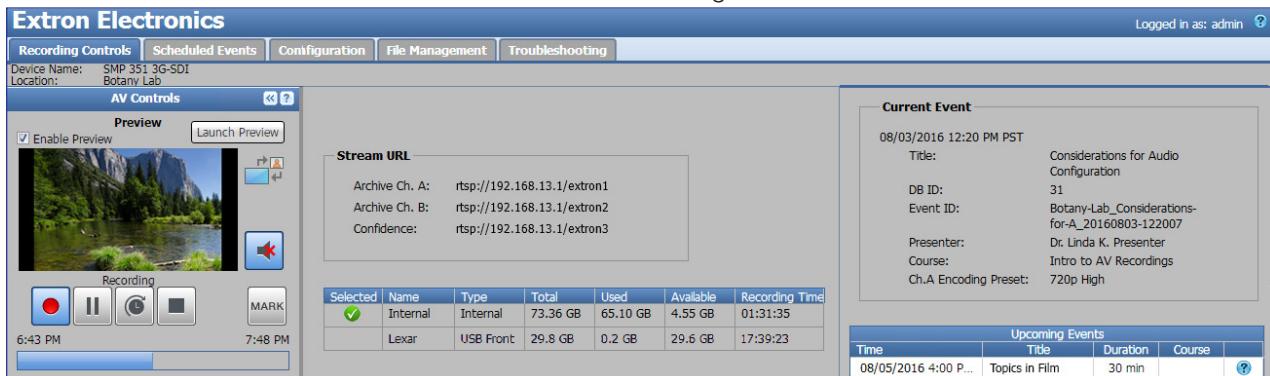


Figure 100. Recording Controls

3. Run the VLC media player. The media player opens.
4. Select **Media > Open Network Stream** (see figure 101).

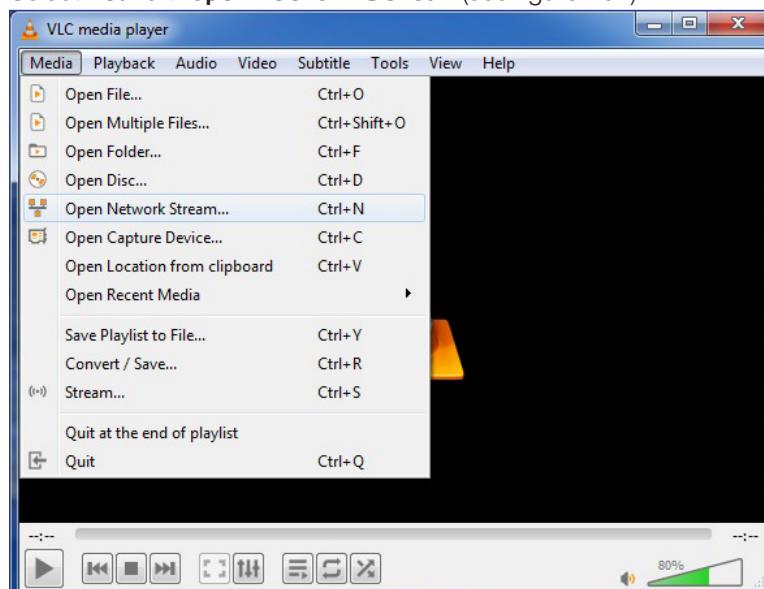


Figure 101. VLC Media Player – Open a Network Stream

5. The Open Network Media dialog box opens. Using the stream URL that was noted in step 2 on the previous page (`rtsp://192.168.13.1/extron1`), enter it into the **Please enter a network URL:** field (see figure 102, ①).

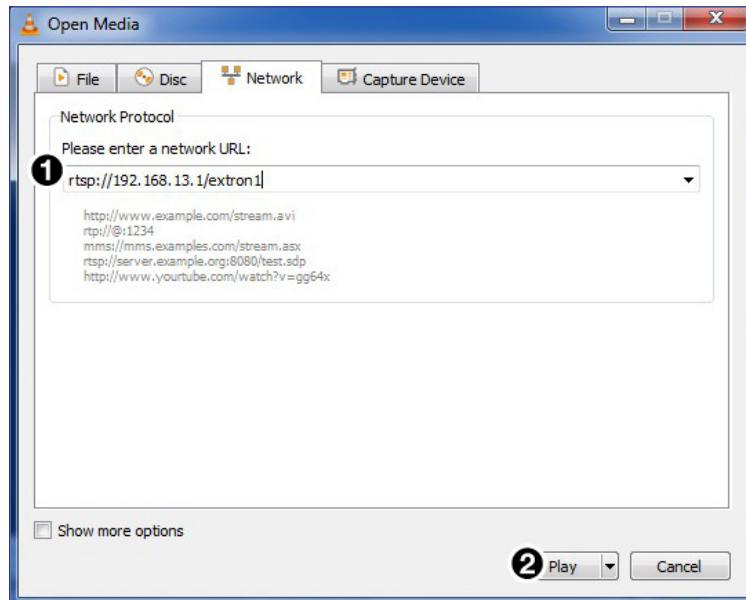


Figure 102. Enter Stream URL Information and Play

6. Click **Play** (②). After a few seconds, the media streaming from the SMP 300 Series plays on the VLC media player.

NOTE: The VLC media player image settings can now be changed if desired. For information on adjusting the image settings, see the VLC media player help file.

Playing a Push Stream Using Stream Announcement Protocol (SAP)

In order to play a push stream, the VLC player uses SAP to identify streams:

1. Open VLC. From the View menu, select **Playlist** (see figure 103).

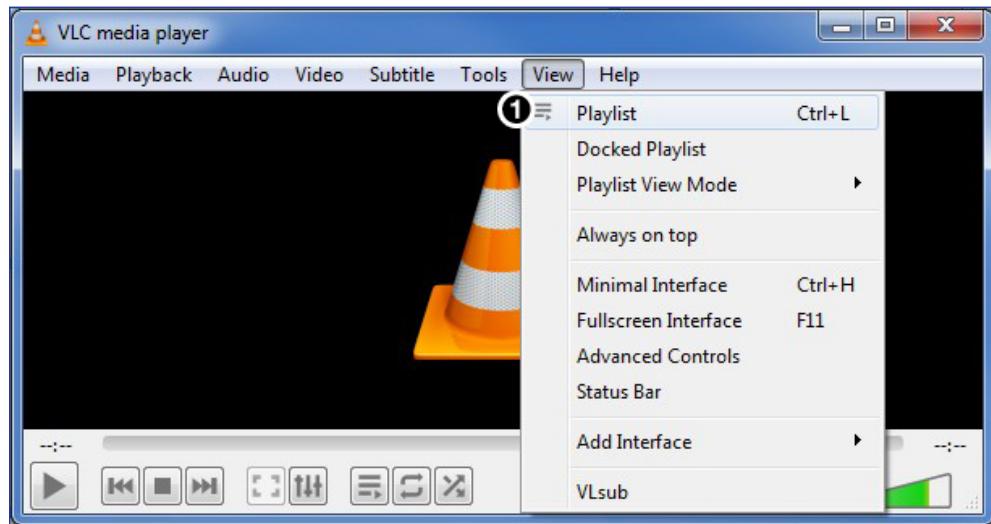


Figure 103. VLC Playlist

2. From the left menu column, select **Local Network** (see figure 104, ②).
3. Select **Network streams (SAP)** (③).

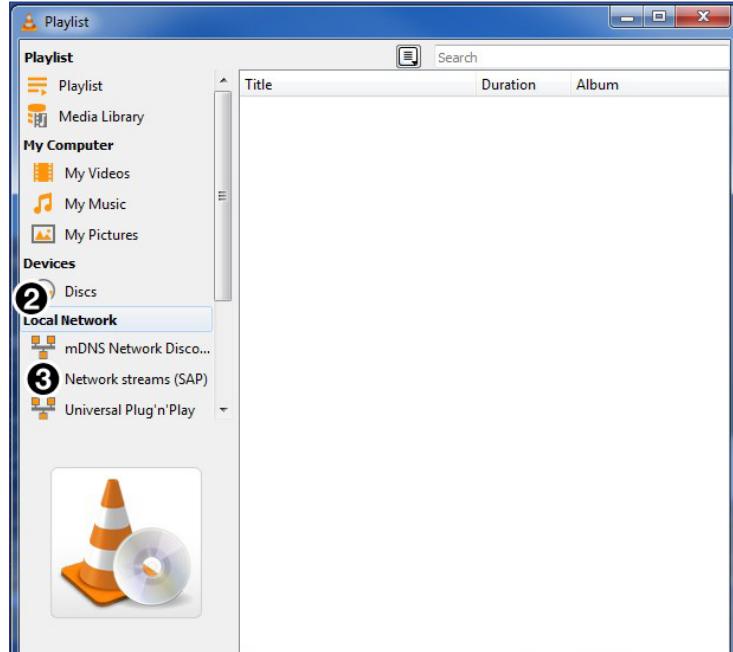


Figure 104. Select Local Network Streams

4. VLC populates the playlist with all streams that contain SAP information. If a folder is shown, open it to view the SAP streams inside (see figure 105, ①).

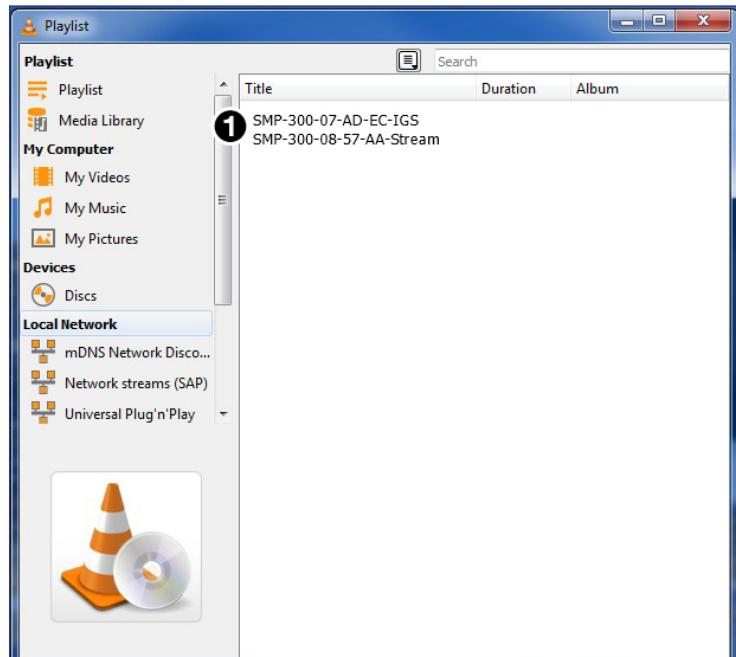


Figure 105. VLC - Select a Stream

5. Either double-click the desired stream to begin playback, or single-click, then use the VLC player controls at the bottom of the window to view and control the stream.

NOTE: Depending on the announcement frequency, it may take several moments before the SAP streams appear.

Playing a Pull Stream Using QuickTime Media Player

Use the following procedure to playback and view SMP 300 Series streams on the QuickTime player program.

1. If the stream URL is known, go to step 4. Otherwise, to obtain the stream URL, access the web-based user interface of the SMP 300 Series (see [Web-Based User Interface](#) starting on page 52).

NOTES:

- If no password is set, anyone can view the stream URL. If a password is set, you must be logged in to view the URL.
- The factory configured passwords for all accounts on this device have been set to the device serial number. In the event of a complete system reset, the passwords convert to the default, which is no password (see [Users and Roles](#) on page 86 to change a password).

2. The Recording Controls page opens (see figure 106).

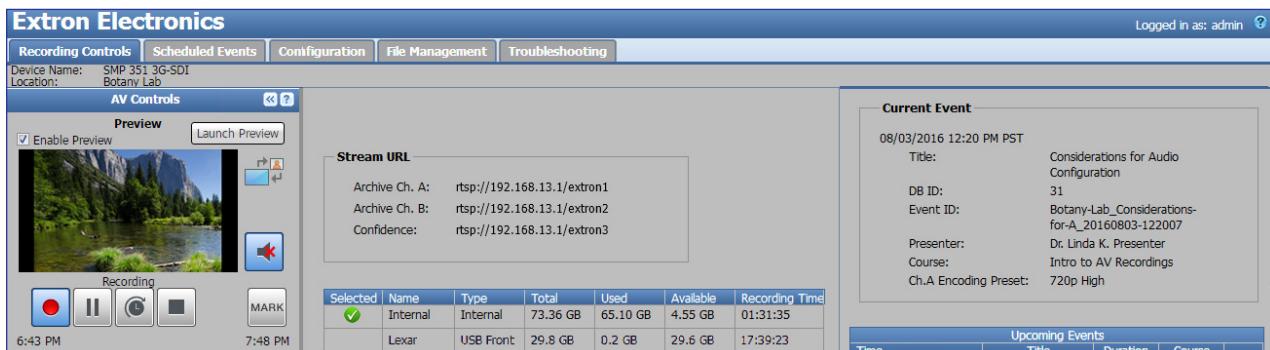


Figure 106. Recording Controls Page

3. Note the Archive URL in the Stream URL panel.
4. Run QuickTime player. From the desktop, select **Start > All Programs > QuickTime > QuickTime Player**.

The QuickTime media player opens.

5. From the File menu, select **Open URL** (see figure 107, ①).

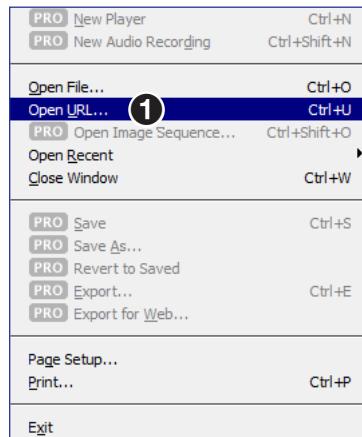


Figure 107. QuickTime Player Menu – Open URL

The Open URL dialog opens (see figure 108).

6. In the **Enter an Internet URL to open** field, enter the stream URL that was noted in step 3 (1).

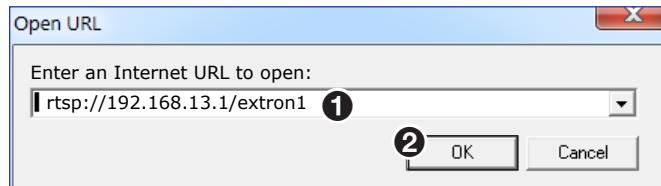


Figure 108. Enter Stream URL Information

7. Click **OK** (2). After a few seconds, the media stream from the SMP 300 Series plays on the QuickTime player.

If QuickTime player fails to play the stream:

1. From the QuickTime player menu, select **Edit > Preferences > QuickTime Preferences**.
2. Click the **Advanced** tab and select **Safe mode (GDI only)**.
3. Click **Apply**, then **OK** to save the settings.
4. Close the player window and do this procedure again.

The QuickTime player image settings can now be changed if desired.

NOTE: The QuickTime player does not display closed caption information.

Estimating Storage Requirements for a Recording

Estimating Storage per Recording Hour

It is necessary to know the video and audio bit rates configured in the Extron SMP 300 Series. For these examples, the calculations assume that the bit rates remain constant during the recording. If using VBR (variable bit rate, which is the default) then the actual bit rates are often slightly lower than this estimate. In some cases they can be higher.

To estimate storage per recording hour:

1. Find the SMP 300 Series video bit rate and audio bit rate, which are in kbps (kilobits per second).
2. Insert those bit rates into the following equation:

$$[(\text{video bit rate} + \text{audio bit rate}) * 3600 \text{ seconds per hour}] / 8 \text{ bits per byte} * 1000 = \\ x \text{ MBph (megabytes per hour)}$$

Example:

Using the default 720p High encoder preset, with

- Video bit rate = 5000 kbps
- Audio bit rate = 192 kbps

For a 1-hour recording (3600 seconds),

$$\bullet \quad ([5000 + 192] * 3600) / 8000 = 2336.4 \text{ MBph or } 2.34 \text{ GBph}$$

For the default encoder presets of an SMP 300 Series, the following are the estimated storage requirements for each hour of recording:

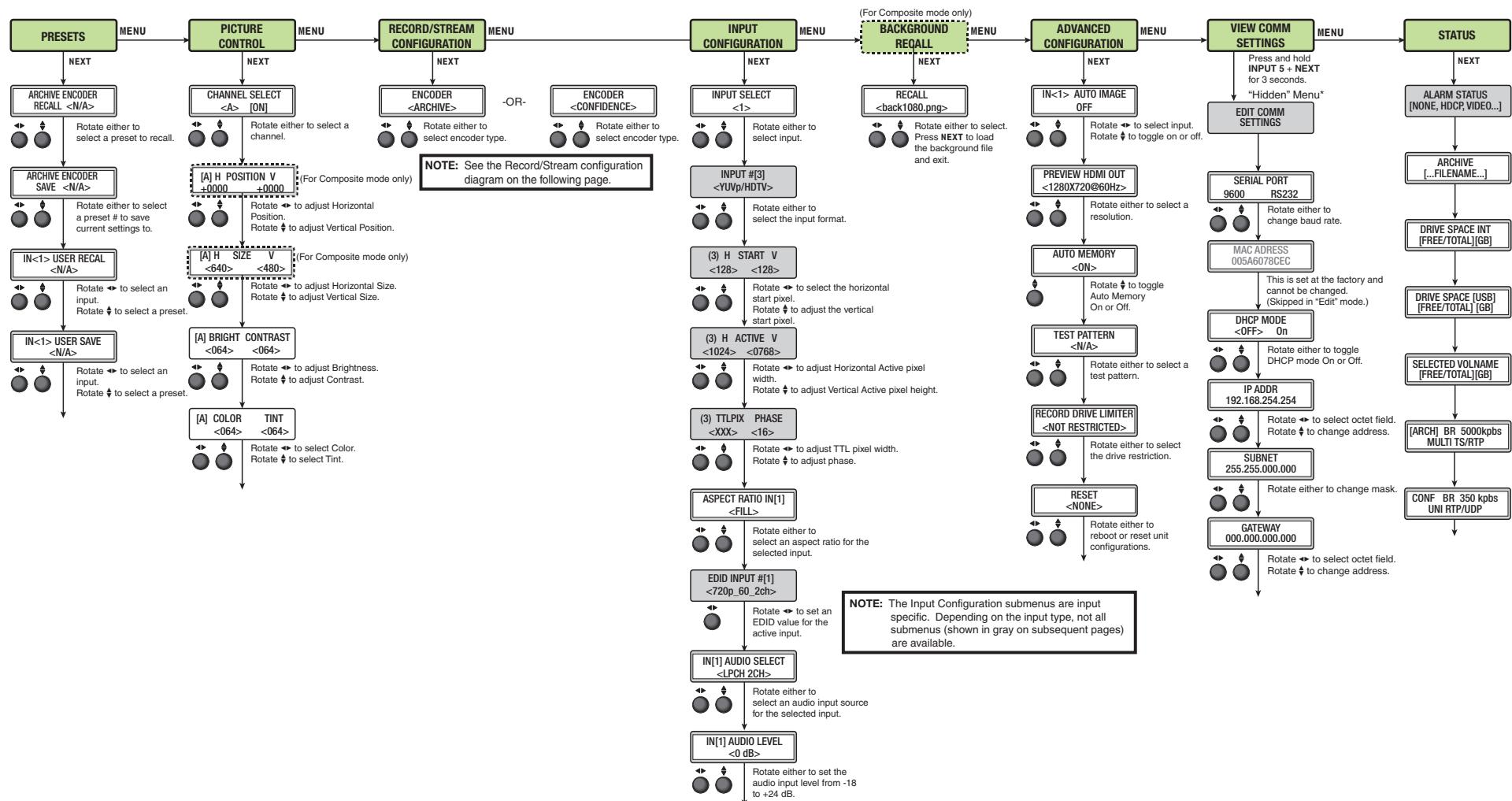
Estimated Storage Requirements				
Encoder Preset	Video bit rate (kbps)	Audio bit rate (kbps)	MB per hour	GB per hour
1080p High	8000	320	3744.0	3.74
1080p Low	6000	128	2757.6	2.76
720p High	5000	192	2336.4	2.34
720p Low	3000	128	1470.6	1.41
480p High	2500	128	1182.6	1.18
480p Low	1500	80	711.0	0.71
VGA High	3500	128	1632.6	1.63
VGA Low	2500	128	1182.6	1.18
SMP 300 Series max. rates	10,000	320	4644.0	4.64
SMP 300 Series min. rates	200	80	126.0	0.13

NOTE: If several encoding rates are chosen, do the above calculation for each of the possible rates. Also, estimate how often each of the encoding rates is selected.

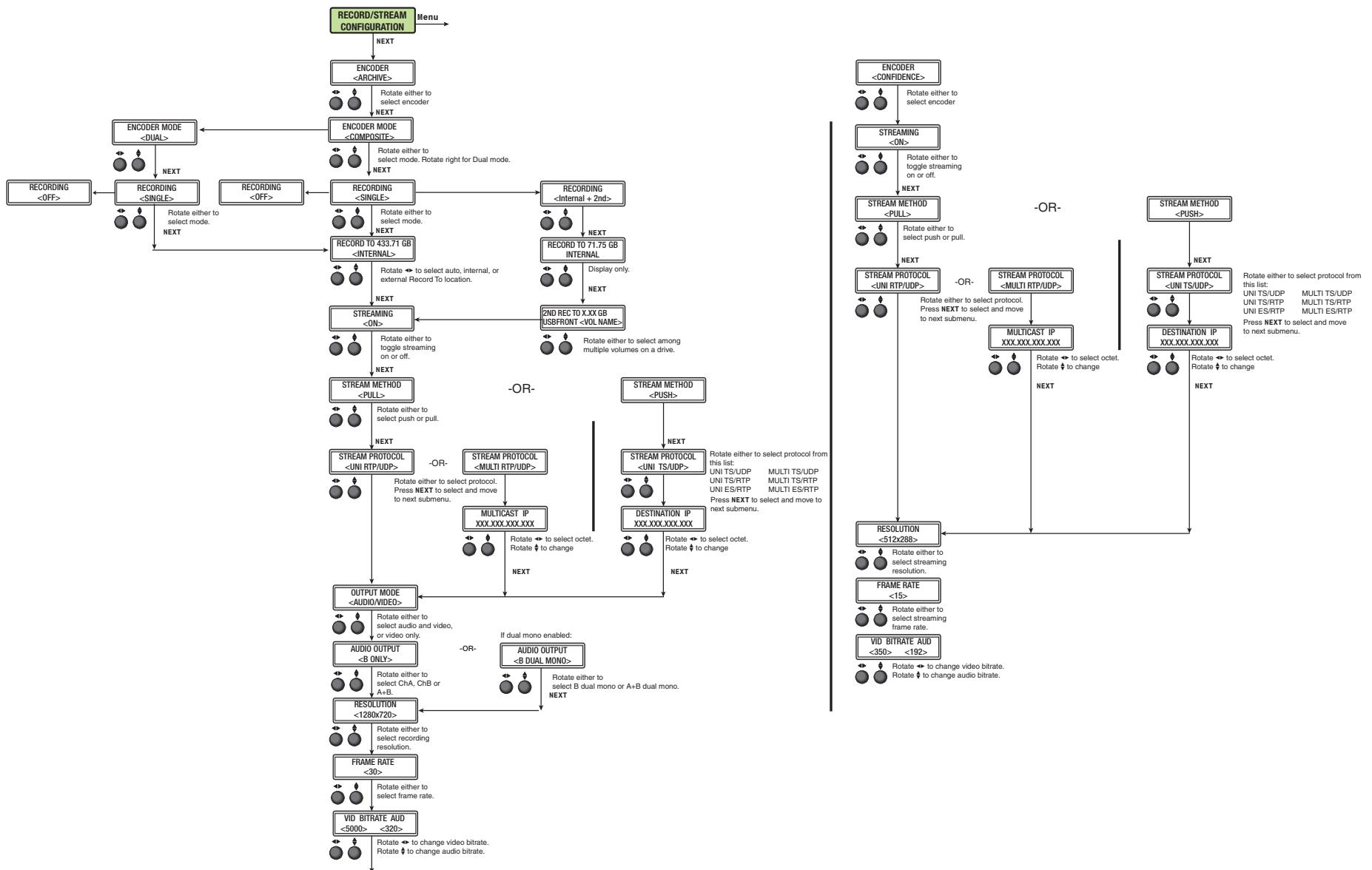
To estimate the number of hours of recordings that can be stored on a specific size of hard drive:

- Determine the SMP 300 Series video bitrate and audio bitrate, in kbps (kilobits per second).
- Insert those bitrates into the following equation:
$$[(\text{hard drive size in GB} * 8,000,000) / (\text{video bitrate} + \text{audio bitrate})] / 3600 = x \text{ hours}$$

Front Panel Menu Diagrams



Front Panel Menu Diagrams (Record/Stream Configuration)



Glossary

Ad hoc recording — An ad hoc recording session is one that has been set up for a specific occasion or task without being previously scheduled.

Advanced Audio Coding (AAC) — A standardized compression and encoding scheme for lossy (low quality) digital audio. Higher bit rates provide higher quality. Part of the MPEG-2 and MPEG-4 specifications. The SMP 300 Series supports AAC-LC (MPEG-2 part 7, MPEG-4 part 3, sub-part 4 and part 14, MP4 audio).

Advanced Video Coding (AVC) — Video compression format, H.264/MPEG-4 part 10 (see the [H.264 \(MPEG-4 AVC\)](#) definition on page 165).

Address Resolution Protocol (ARP) — A protocol for assigning an [IP address](#) (see page 166) to a device based on the device [MAC \(Media Access Control\)](#) (see page 166) address or physical machine address, that maintains a table showing the correlation between the two.

Archive stream or streams — The primary encoding streams are used to create recordings, and they can also be used for streaming. Archive streams are typically higher resolution than confidence streams.

Aspect ratio control — The aspect ratio of the video output can be controlled by selecting a fill mode, which provides a full screen output, or a follow mode, which preserves the original aspect ratio of the input signal.

Auto-Image — An Extron technology for scan converters and signal processors that simplifies setup by executing image sizing, centering, and filtering adjustments with a single button push.

Auto Memory — Auto memory recalls input and image settings for signals that have previously been applied. If this feature is disabled, the device treats every newly applied input as a new source.

B-frames — Bi-directionally predictive coded picture. Contains predictive, difference information from the preceding and following I- or P-frame within a [GOP](#) (see page 165). Data preceding or following the B-frame are required to recreate video information in a B-frame. They offer significantly better compression than I or P frames, but are not available in Baseline profile.

Bandwidth — The total range of frequencies required to pass a specific signal without significant distortion or loss of data. In analog terms, the lower and upper frequency limits are defined as the half power, or -3 dB signal strength drop, compared to the signal strength of the middle frequency, or the maximum signal strength of any frequency, expressed as xx Hz to xx kHz (or MHz) @ -3 dB. In digital terms, it is the maximum bit rate at a specified error rate, expressed in bits per second (bps). The device bandwidth should be wider than the highest possible bandwidth of the signals it may handle. (In general, the wider the bandwidth, the better the performance. However, bandwidth that is too wide can pass excessive noise with the signal.)

Baud — The speed of data transmission, often in bits per second or megabits per second.

Bit rate — The number of bits that are conveyed or processed per unit of time. Bit rate is quantified using the bits per second (bit/s) unit, often in conjunction with an SI prefix such as kilo- (kbit/s or kbps), mega- (Mbit/s or Mbps), or giga- (Gbit/s or Gbps).

Channel — A group of inputs that the encoder treats as a single input because only one input in the group can be selected and active at a time. One video input and one audio input signal are selected per channel and passed on to the encoder. For the SMP 352 there are two input channels:

- Channel A groups inputs 1 (HDMI) and 2 (HDMI) together.
- Channel B groups inputs 3 (component or composite video), 4 (HDMI), and 5 (3G/HD/SDI) together.

In composite mode, depending on layout configuration, one or both channels can be encoded (together with a background image and metadata) and incorporated into the output stream.

Codec — (1) Coder/decoder: A device that converts analog video and audio signals into a digital format for transmission over telecommunications facilities and also converts received digital signals back into analog format. It may also dial up the connection, like a modem for teleconferencing. (2) Compressor/decompressor: Codecs can be implemented in software, hardware, or a combination of both.

Composite encoding mode — The SMP 300 Series mode that signals from channels A and B are combined into one archive stream (forming a single recording). This is the only mode available in the SMP 351 and SMP 351 3G-SDI.

Composite encoding is the alternative to dual channel encoding mode signals from channel A and signals from channel B are encoded to separate archive streams (and, therefore, separate recordings), each with its own settings. SMP 352 Series models and SMP 351 Series models with LinkLicense offer both dual channel encoding and composite encoding.

Compression — The art and science of reducing the amount of data required to represent a picture or a stream of pictures and sound before sending or storing it. Compression systems are designed to eliminate redundant or repeated information to the desired data level while allowing the original information to be reproduced to the desired quality.

Confidence stream — The encoding stream used for video previews, as in the AV Controls panel, and also for streaming. For composite encoding mode, signals for the confidence stream are encoded at or below the resolution or refresh rate of the archive encoding stream. The confidence stream uses the same audio settings as the archive stream, but the video encoding differs.

Constant Bit Rate (CBR) — Constant bit rate encoding means that the rate at which codec output data is consumed is constant. CBR is useful for streaming multimedia content on data communication channels which operate more efficiently or require the bit rate to remain within a tight tolerance. Typically the constant bit rate is created by stuffing bits into a variable bit rate signal which has a defined peak or maximum limit.

Constrained Variable Bit Rate (CVBR) — This scheme is similar to **Variable Bit Rate (VBR)**, (see page 169) but sets a maximum allowed bit rate that the encoder cannot exceed.

Darwin Streaming Server (DSS) — Darwin Streaming Server is software developed by Apple that provides a high performance media streaming server for delivering content. The software is used to simultaneously stream to a broad range of screens and devices (including computers, televisions, smartphones, and tablets).

Data bits — The number of bits used to represent one character of data. Data bits can be 7, 8, or 16, but most serial devices use 8 bits for ASCII characters.

DB ID — DB ID is the database identification number of a scheduled recording event. The number appears in the event details within the Scheduled Events page.

To determine the event ID for a recording event, click on the Scheduled Events tab, locate and click on the event in the calendar. The ID number appears in the Event Details dialog box. Troubleshooting logs can be sorted or filtered by the event ID number.

DDC — Display Data Channel (DDC) is a bidirectional communications standard developed by VESA (Video Electronics Standards Association) that defines a universal data transmission standard for the connectivity between display devices and computers.

Decoder — 1) In analog video, a device used to separate the RGBS (red, green, blue and sync) signals from a composite video signal. Also known as an NTSC decoder. 2) In digital systems, a device which does the reverse of an encoder, undoing the encoding so that the original information can be retrieved. The same method used to encode is usually just reversed in order to decode. Video over IP decoders accept IP data streams and output an analog or digital video signal. 3) In control systems, the device in a synchronizer or programmer which reads the encoded signal and turns it into a form of control.

Dynamic Host Configuration Protocol (DHCP) — A network protocol that enables a server to automatically assign unique network addresses (IP address, subnet mask, gateway) to a device using a defined range of numbers configured for the network.

DiffServe (Differentiated Services) — DiffServ specifies a scalable, coarse-grained mechanism for classifying and managing network traffic and providing quality of service (QoS).

Domain Name System (DNS) — A database system that translates domain names (such as www.extron.com) into IP addresses.

Dual channel encoding mode — The SMP 300 Series mode that signals from channel A and signals from channel B are encoded to separate archive streams (and, therefore, separate recordings), each with its own settings. SMP 352 Series models and SMP 351 Series models with LinkLicense offer both dual channel encoding and composite encoding.

Dual channel encoding, the alternative to composite encoding mode, signals from channels A and B are combined into one archive stream (forming a single recording). All models offer composite encoding mode.

Dynamic IP address — An IP address that is automatically assigned to a client device in a TCP/IP network, typically by a DHCP server. Network devices that serve multiple users, such as servers and printers, are usually assigned a static (unchanging) IP address.

Extended Display Identification Data (EDID) — A data structure used to communicate video display information, including native resolution and vertical interval refresh rate requirements, to a source device over the Display Device Channel (DDC). The source device outputs the optimal video format for the display based on the provided EDID, ensuring proper video image quality.

EDID Minder — Automatically manages EDID communication between connected devices.

Elementary Stream — Raw [H.264 \(MPEG-4 AVC\)](#) (see page 165) video or raw [AAC](#) audio (see page 162), not wrapped by additional headers.

Encoder — A hardware device or software program used to compress (encode) or change a signal from one format to another or convert an analog signal into a digital data stream. The SMP 300 Series is an encoder that converts analog audio and video into digital streams.

Ethernet — A Local Area Network (LAN) standard officially known as IEEE 802.3. Ethernet and LAN technology are used for interconnecting computers, printers, workstations, terminals, services, and similar devices, within the same building or campus. Ethernet operates over twisted pair and over coaxial cable at speeds starting at 10 Mbps. For LAN interconnectivity, Ethernet is a physical link and data link protocol reflecting the two lowest layers of the OSI Reference Model.

File Transfer Protocol (FTP) — A protocol that is used to transfer files from one host to another host over a TCP-based network (such as the Internet). Also see [Secure File Transport Protocol \(SFTP\)](#) on page 167 for more information.

Gateway — A router or proxy server between networks, or a network node equipped to interface with another network that uses different protocols (an entrance and exit into a communications network).

Group of Pictures (GOP) — A group of successive pictures within a coded video stream. A GOP begins with an Intraframe (**I-frame**) (see page 166) containing the full spatial resolution and data of a video frame. Predictive frames (**P-frames**) (see page 167) follow I-frames and contain data that has changed from the preceding I-frame. Bi-predictive frames (**B-frames**) (see page 162) reference frames before and after the current frame.

H.264 (MPEG-4 AVC) — H.264/MPEG-4 Part 10. A block oriented, motion-compression-based codec standard developed by the ITU-T Video Coding Experts Group (VCEG) together with the ISO/IEC Moving Picture Experts Group (MPEG).

HDCP — High-bandwidth Digital Content Protection. HDCP is a digital rights management scheme developed by Intel® to prevent the copying of digital video and audio content. HDCP is mandatory for the HDMI interface, optional for DVI. HDCP defines three basic system components: source, sink, and repeater.

HDMI — High-Definition Multimedia Interface (HDMI®): an interface for the digital transmission of high definition video, multi-channel audio, and control signals, over a single cable. (NOTE: The SMP transmits 2-channel digital audio only.)

HDTV — High definition television with a resolution of 1080p (1920x1080p), 720p (1280x720p), or 1080i (1920x1080i).

HDTV 1080p/60 — High definition television displayed at 1920x1080 resolution (1080p; 2,073,600 pixels) with a refresh rate of 60 Hz.

Hop — In a packet-switching network, a hop is the trip a data packet takes from one router (or intermediate point) to another in the network.

Host name — This is a unique name by which a device is known on a network. It identifies a particular host in electronic communication.

Hypertext Transfer Protocol (HTTP) — A network protocol based on TCP/IP that is used to retrieve hypertext objects from remote web pages and allows servers to transfer and display web content to users.

Hypertext Transfer Protocol over Secure Sockets Layer (HTTPS) — A networking protocol that allows web servers to transfer and display web content to users **securely**. All transferred data is encrypted so that only the recipient is able to access and read the content. It is not a protocol itself, but rather a combination of Hypertext Transfer Protocol (HTTP) on top of the SSL/TLS protocol, which adds the security capabilities of SSL/TLS to standard HTTP communications.

iCalendar file — An iCalendar file is a file containing schedule, task, or meeting information in a standard format. iCalendar files work independent of transport protocol and can be used cross-platform to share calendar data.

Internet Group Management Protocol (IGMP) — A TCP/IP communications protocol used by hosts and adjacent routers on a network to establish multicast group memberships.

When the SMP 300 Series is connected to a streaming media server, the IGMP multicast protocol is used to pull RTSP streams. The IGMP multicast protocol conserves network bandwidth because the streaming media server only connects to the SMP 300 Series when the connection to the streaming media server is made by the user. All network switches and routing equipment must be properly configured to support IGMP snooping and IGMP query to avoid flooding all endpoints with unnecessary streaming traffic.

Internet Protocol (IP) — The primary protocol that establishes the Internet. It defines addressing methods and structures for datagram encapsulation, allowing delivery of packets from a source to a destination across an internetwork based purely on addressing.

Intraframe (I-frame) — In video compression schemes, intraframes (I-frames) are primary frames that contain the full spatial resolution and data of a video frame.

IP address — A numerical label using the Internet Protocol assigned to devices in a network. The IP address for the source and destination are included in an IP datagram. A unique, 32-bit binary number (12-digit dotted decimal notation — xxx.xxx.xxx.xxx) based on version 4 of the Internet Protocol (IPv4) that identifies each sender and each receiver of information connected to a LAN, WAN, or the Internet. IP addresses can be static (see **Static IP Address** on page 168) or dynamic (see **DHCP** on page 164).

Java™ — A class-based, object oriented programming language developed at Sun Microsystems®, Inc. (merged with Oracle® Corporation). Programs written in Java can run on multiple platforms.

JavaScript® — A scripting programming language adding interactive features to web pages.

LAN — Local Area Network. A computer network that connects devices in a limited area, such as a building or campus, using network equipment that does not include leased communications lines.

Maximum Transmission Unit (MTU) — The maximum packet size allowed in a network data packet.

Media Access Control (MAC) — A unique hardware number given to devices that connect to the Internet. When your computer or networking device (such as a router, hub, or interface) is connected to the Internet, a table (see **ARP** on page 162) relates the IP address of the device to its corresponding physical address on the **LAN** (see page 166). This protocol allows for several terminals or network nodes to communicate within a multi-point network, typically a local area network.

Metadata — A metadata record consists of attributes to describe another object. The Dublin Core Metadata Element Set contains 15 generic elements for describing resources: Contributor, Publisher, Title, Data, Language, Format, Subject, Description, Identifier, Relation, Source, Type, Coverage, and Rights.

MPEG-2 — The video compression algorithm used for DVD-Video, Digital Broadcast Satellite (DBS), and Digital TV (including HDTV) delivery systems.

MPEG-4 — A patented collection of methods defining compression of audio and visual (AV) digital data. MPEG-4 allows higher amounts of data compression and encoding efficiency than MPEG-2. It also includes support for digital rights management and for interactive multimedia applications.

MPEG-4 uses include compression of AV data for streaming media on the web; CD, HD DVD, or Blu-Ray Disc distribution; voice (telephone, videophone) distribution; and broadcast television applications.

Multicast — A network technology for the delivery of information to a group of destinations simultaneously. A single stream is sent from the source to a group of devices at the same time in one transmission. Delivery is managed by network switches using the most efficient strategy to deliver the messages over each link of the network only once, and creating copies only when the links to the group of destinations split.

Network Address Translation (NAT) — A network protocol that allows multiple devices to have their own, individual, private addresses, but they share one public IP address (IPv4) for connection to the internet or other networks.

Network Time Protocol (NTP) — A protocol used for synchronizing the clocks of computer systems over networks.

Opencast Server — An Opencast server is an open-source platform to support the management of audio and video content in the education market. Institutions can use an Opencast server to produce, manage, and distribute lecture recordings.

Overscan — An applied “zoom” on SMPTE inputs (NTSC, PAL, 480p, 576p, 720p, 1080i, 1080p) to hide closed caption/ancillary data, edge effects, or other video artifacts.

Parity (or Parity checking) — An error detection technique that tests the integrity of the digital data being sent. Parity can be set to None, Even, or Odd.

Predictive frame (P-frame) — In video compression schemes, predictive frames follow I-frames and contain data that has changed from the preceding **I-frame** (see page 166).

Presenter — A person who makes recordings using the SMP, regardless of their login role (user or administrator).

When the **Record** button is pressed in the **AV Controls** panel, the **Start an Adhoc Recording** pop-up window opens, where you can enter the name of the presenter in the **Presenter** field. The name of the presenter is stored with the metadata for the recording, and it appears in the Creator column of the **Scheduled Events > Recording Calendar > List View** table. If recordings are uploaded from the SMP to an Opencast, or Kaltura system, and if that presenter is a user of that publishing system, the presenter or creator name is used to sort or tag that recording.

Pull streaming — Streaming method that allows users to search for content. Users specify a content source and initiate a download or view the stream. The content streaming is initiated by the end user (at the decoder rather than at the encoder).

Push streaming — A streaming method where the encoder sends content out to one (unicast) or more (multicast) decoders using one of the transport protocols. Content streaming is initiated at the encoder.

Quality of Service (QoS) — The grade of performance, such as transmission rates and error rates, of a communications channel or system. QoS provides a level of predictability and control beyond the best-effort delivery that the router provides by default (best-effort service provides packet transmission with no assurance of reliability, delay, jitter, or throughput).

Real-time Messaging Protocol (RTMP) — An application level protocol, owned by Adobe, designed for transmission of audio, video, and data over TCP.

Real-time Streaming Protocol (RTSP) — A network control protocol designed for use in audio visual and communications systems to control streaming media.

Real-time Transport Protocol (RTP) — An Internet Engineering Task Force (IETF) standard for streaming real-time multimedia over IP in packets.

Router — A network device that forwards packets from one network to another.

Secondary storage mode — The SMP setting in which recordings are saved to two storage drives rather than one. This is the alternative to single storage mode (see **Single Storage Mode** on page 162).

Secure File Transfer Protocol (SFTP) — Similar to FTP, this protocol adds encryption and requires credentials for file transfers.

Secure Shell (SSH) — A network protocol that creates a secure channel used for secure communication between two computers on a network. SSH is typically used for data communication, remote shell (login) services, or command execution.

Secure Sockets Layer (SSL) — A protocol used by web servers and web browsers that creates a uniquely encrypted channel for private communications over the public Internet.

Session Announcement Protocol (SAP) — Used by source devices (encoders or servers) in conjunction with SDP to publicize the availability of a stream to decoders and players. The SAP periodically broadcasts session description information on an industry standard multicast address and port. When received by remote clients, these announcements can be used to facilitate the viewing of streams, eliminating the need for user configuration.

Session Description Protocol (SDP) — This protocol is used to describe streaming media initialization parameters. It covers session announcement, session invitation, media type and format, and other forms of multimedia session initiation (as defined in RFC 2327). SDP does not deliver media itself. It simply details the stream parameters and how the stream is started.

Simple Instruction Set (SIS) — A set of commands developed by Extron that allows for RS-232, USB, and TCP/IP control of certain Extron products. A command is sent from the control device to the product (using a minimal number of characters) and a response is received from the product and shown on the display of the control device.

Simple Network Management Protocol (SNMP) — An application-layer protocol that facilitates the exchange of management information between network devices. This protocol collects (and configures) information from network devices (such as servers, hubs, switches, and routers) on an Internet Protocol (IP) network.

Single Storage Mode — The SMP setting in which recordings are saved to only one storage drive. This is the alternative to secondary storage mode (see [Secondary Storage Mode](#) on page 161).

Static IP address — An IP address specifically assigned to a device or system in a network configuration. This type of address requires manual configuration of the network device or system and can only be changed manually or by enabling **DHCP** (see page 164).

Stop bits — The bit or bits transmitted that signal the end of a character. Typically set to 1.

Streaming media (stream) — Multimedia that is constantly received by (and normally presented to) an end-user while being delivered by a streaming provider. Internet television is a commonly streamed medium.

Switch — A network switch enables communication between devices in a network by routing data between ports at the data link layer (layer 2 of the OSI model). A managed switch can be configured to transmit data only to the specific device for which the data was meant.

Telnet port — Most controllers support Telnet and use port 23 as the communication port to receive or issue commands.

Transmission Control Protocol (TCP) — A protocol developed for the Internet that provides reliable end-to-end data packet delivery from one network device to another.

Transmission Control Protocol/Internet Protocol (TCP/IP) — The communication protocol of the Internet. Computers and devices with direct access to the Internet are provided with a copy of the TCP/IP program to allow them to send and receive information in an understandable form.

Time To Live (TTL) — A value that specifies the number of router hops multicast traffic can make between routed domains when it exits a source.

TMDS — Transition Minimized Differential Signaling. An all-digital video transmission standard developed by Silicon Image, Inc. TMDS is the core technology used in DVI and HDMI.

Transport Streams (TS) — A form of media wrapped in MPEG-2 transport stream headers. The MPEG-2 transport headers contain information about the media.

The SMP is compatible with transport streams that contain H.264 encoded video and AAC encoded audio. Transport streams containing MPEG-2 video and AC3 audio are not supported.

- **TS/UDP** — (Unicast or multicast) An MPEG-2 transport stream containing the elementary streams for the audio and video. It is sent using UDP packets.
- **TS/RTP** — (Unicast or multicast) Transport stream that is sent using RTP/UDP. RTP provides sequencing information; if the sequencing information is reordered by the network, RTP reorganizes and processes the information in the correct order. UDP would process the sequencing information out of order, making RTP performance better on larger, many hop networks.

Unicast — Sending messages from one device to a single network destination on a network. Having N clients of a unicast stream requires the server to produce N streams of unicast data.

User Datagram Protocol (UDP) — A connectionless, transport layer protocol that sends packets (datagrams) across networks using “best-effort” delivery. It is a relatively simple protocol that does not include handshaking.

Variable Bit Rate (VBR) — A compression scheme that adjusts the output bit rate around a specified target bit rate depending on the audio or image complexity. More bandwidth is used when the video frame is more complex and less bandwidth is used when the video frame is simple.

Extron Warranty

Extron 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 will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

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

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

Asia:

Extron Asia Pte Ltd
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363
Singapore

Japan:

Extron, Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

Europe:

Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

China:

Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Middle East:

Extron Middle East
Dubai Airport Free Zone
F13, PO Box 293666
United Arab Emirates, Dubai

Africa:

Extron South Africa
3rd Floor, South Tower
160 Jan Smuts Avenue
Rosebank 2196, South Africa

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 or 800.633.9876

Asia: 65.6383.4400

Europe: 31.33.453.4040 or 800.3987.6673

Japan: 81.3.3511.7655

Africa: 27.11.447.6162

Middle East: 971.4.299.1800

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

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

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