

SME 100

H.264 Streaming Media Encoder



Safety Instructions

Safety Instructions • English

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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.

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Japanese

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Korean

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

주의: 이 기호 ⚠, 가 제품에 사용될 경우, 장비와 함께 제공된 책자에 나와 있는 주요 운영 및 유지보수(정비) 지침을 경고합니다.

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 user guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference; the user must correct the interference at their own expense.

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

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Conventions Used in this Guide

Notifications

The following notifications are used in this guide:

DANGER: A danger indicates a situation that **will** result in death or severe injury.

WARNING: A warning indicates a situation that has the **potential** to result in death or severe injury.

CAUTION: A caution indicates a situation that **may** result in minor injury.

ATTENTION: Attention indicates a situation that may damage or destroy the product or associated equipment.

NOTE: A note draws attention to important information.

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

Software Commands

Commands are written in the fonts shown here:

```
^ARMerge Scene,,Op1 scene 1,1 ^B 51 ^W ^C  
[ 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 mentioned in this guide, the character “0” is used for the number zero and “O” represents the capital letter “o.”

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

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

Variables are written in slanted form as shown here:

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

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

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

Specifications Availability

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

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Introduction

This section gives an overview of the user guide and describes the SME 100 and its features. Topics that are covered include:

- [About this Guide](#)
- [About the SME 100](#)
- [Features](#)
- [Definitions](#)

About this Guide

This guide contains installation, configuration, and operating information for the SME 100.

In this guide:

- The term "codec" refers to the H.264 / MPEG-4 AVC codec.
- The term "stream" refers to multimedia being delivered by the SME 100 that is constantly received by (and normally presented to) an end-user.

About the SME 100

The SME 100 is a live streaming media encoder that interfaces with DVI, RGB, HDTV, and standard definition signals for delivering media over IP networks. It features a three-input video and audio switcher, plus buffered loop-throughs for simplified integration into AV systems. The SME 100 uses H.264 / MPEG-4 AVC encoding to output an IP stream over the intranet or the Internet that can easily be decoded and viewed on PCs or H.264 compatible devices.

Figure 1 shows a typical SME 100 application.

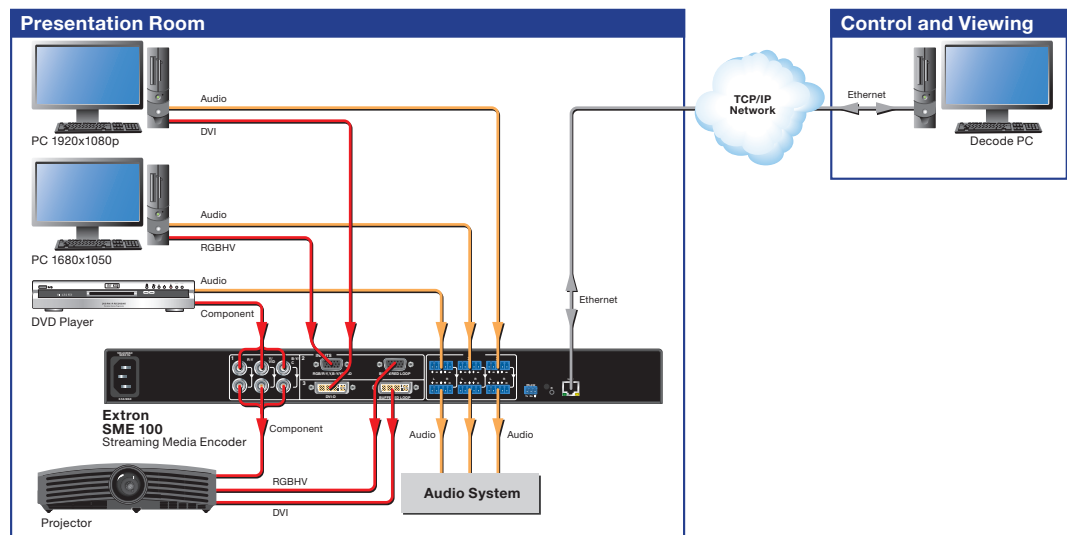


Figure 1. Typical SME 100 Application

Two versions of the SME 100 are available.

- SME 100 HD (part number **60-1061-01**)
- SME 100 SD (part number **60-1061-02**)

NOTE: Both versions have similar front and rear panel features and function exactly the same. The difference is that the SD version only supports standard definition output rates. For additional information on supported output rates, see the "[Encoder Config Menu](#)" section on page 33.

The SME 100 is able to upscale and downscale video and computer graphic input signals, allowing for output of high quality images. The SME 100 accepts standard definition and high resolution video signals up to WUXGA 1920x1200 and HDTV 1080p/60. The resolution of the streamed output is set at a user-selected rate, including resolutions as low as 166x120 and higher resolutions up to HDTV 720p or 1080p.

The SME 100 can be configured from the front panel (see the "[Front Panel Operation](#)" section on page 22). It can also be configured with a control system connected to the front panel USB Config port, the RJ-45 Ethernet connector, or the RS-232 port (see the "[Remote Communication and Control](#)" section on page 117). A web browser on a control PC connected to the same network as the SME 100 can also be used to access the embedded HTML pages, where video streams can be viewed live while making configuration and control adjustments (see the "[Web-based User Interface Operation](#)" section on page 46 and the "[Web-based Configuration Page](#)" section on page 84).

Several configuration and control options are available to adjust the encoding quality of the SME 100, such as video resolution, video bit rate, frame rate, stream type, audio bit rate, and Group of Pictures (GOP) length. Configuration and control settings made to the SME 100 can be saved as presets so that streaming profiles can be easily swapped depending on the streaming application. The SME 100 also includes several predefined presets for common streaming applications.

Licensed Third-party Software Used in the SME 100

The SME 100 uses various licensed third-party software during operation. To see the software that the SME 100 uses, click the © icon located in the upper right hand corner of the web-based user interface (see figure 2).

NOTE: For information on accessing the web-based user interface, see "[Accessing the Web-based User Interface](#)" on page 47.

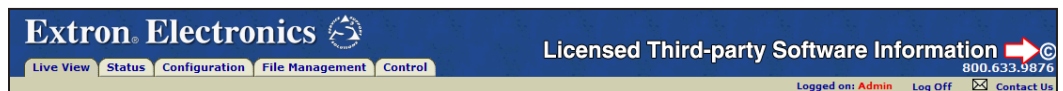


Figure 2. Licensed Third-party Software Information

The table on the next page lists the licensed third-party software used by the SME 100.

NOTE: Licensed third-party software used by the SME 100 is subject to change without notice. To see the latest software the SME 100 is using, click the © icon located in the upper right hand corner of the web-based user interface (see figure 2).

Licensed Third-party Software Used in the SME 100			
Package	License	Package	License
kernel	General Public License (GPL) v2	e2fsprogs	General Public License (GPL) v2
glib2	Lesser General Public License (LGPL)	php	PHP License v3.01
openssl	OpenSSL™	popt	MIT
mtd-utils	General Public License (GPL) v2	logrotate	General Public License (GPL) v2
alsa-utils	General Public License (GPL) v2	elfutils	General Public License (GPL) v2
alsa-lib	Lesser General Public License (LGPL)	jfsutils	General Public License (GPL) v2
lsf	Custom	iana-etc	Open Software License (OSL) v3
pam	BSD	strace	Open Software License (OSL) v3
syslogd	General Public License (GPL) v2	gdbm	General Public License (GPL) v2
vsftpd	General Public License (GPL) v2	attr	Lesser General Public License (LGPL)
busybox	General Public License (GPL) v2	dbus	Academic Free License (AFL)
libcap	Lesser General Public License (LGPL) and BSD-like	openssh	BSD
zlib	Custom	apache-httpd	Apache License v2.0
libiconv	Lesser General Public License (LGPL)	apr-util	Apache License v2.0
gettext	Lesser General Public License (LGPL)	apr	Apache License v2.0
ntp	BSD / MIT	sqlite3	Custom
libpcap	BSD	alsa-plugins	General Public License (GPL) v2
ncurses	MIT	expat	BSD
pcre	BSD	jQuery	MIT
readline	General Public License (GPL) v2	vlc	General Public License (GPL) v2
net-snmp	BSD	live555	Lesser General Public License (LGPL)

Suggested PC Requirements

The suggested PC requirements to view streams from the SME 100 are listed below.

- **Hardware**
 - 2.0 GHz Dual-Core processor
- **Operating Systems**
 - Microsoft® Windows® XP or higher
 - Mac® OS® X® 10.6 or higher
- **Media Players**
 - VLC media player (version 1.1.10)
 - QuickTime® media player (version 7.7.1)
 - Extron SMP web browser plugin (version 1.0)
- **Web Browsers**
 - Internet Explorer® version 7 or higher (for Windows operating systems)
 - Apple® Safari® version 5 or higher (for Mac OS X operating systems)
 - Mozilla® Firefox® (version 15 or higher)
 - Google® Chrome™ (version 21 or higher)

Features

- **Streams DVI, RGB, HDTV, and video signals with audio over IP networks.**
- **Inputs** — DVI-D with loop-through; universal 15-pin HD input with loop-through for RGB, HD component video, S-video, or composite video; BNCs with loop-throughs for component video, S-video, or composite video.
- **Outputs** — Ethernet for streaming H.264 / MPEG-4 AVC encoded video.
- **Standards-based H.264 / MPEG-4 AVC video compression** — The SME 100 employs high, main, and baseline profiles of the H.264 / MPEG-4 AVC compression standard, which are compatible with many different platforms including desktop and laptop PCs. SME 100 streams can easily be viewed on PCs using web browsers and software media players such as VLC media player®, QuickTime®, and the Extron SMP.
- **Integrated three-input AV switcher** — The SME 100 accepts commonly used video signal formats together with stereo audio, from DVI to analog RGB and composite video. The universal video input can accept a variety of analog formats and automatically detect between them.
- **Buffered input loop-throughs for video and audio** — Each input has a buffered loop-through. This allows the SME 100 to be integrated into a new or legacy system without the need for additional AV equipment (such as distribution amplifiers).
- **Supports input signal resolutions up to 1920x1200, including HDTV 1080p/60** — The SME 100 supports a wide range of input resolutions, from standard definition up to the high resolutions commonly used for computer-video and HDTV.
- **DVI, RGB, HDTV, and standard definition video upscaling and downscaling** — DVI, RGB computer-video, high definition video, and standard definition video sources can all be scaled to a range of defined streaming resolutions. The SME 100 features an advanced scaling engine that preserves image quality when upscaling or downscaling an input signal.
- **Auto input format detection** — The universal video input on the SME 100 can detect the incoming signal format and automatically reconfigure itself to provide the appropriate decoding and signal processing. This feature can reduce the number of required outputs for a matrix switcher, lowering system cost while improving manageability.
- **Auto-Image™ setup** — When activated, the SME 100 automatically analyzes the incoming video signal and then automatically adjusts sizing, centering, and filtering to optimize image quality. This can save time and effort when fine tuning displayed images.
- **Selectable streaming output resolutions from 166x120 to 1024x768, and HDTV 720p/30 and 1080p/30** — Available output rates include various resolutions optimized for mobile or compact devices, or computer-video (from 166x120 to 1024x768, and HDTV 720p and 1080p). Frame rates can be adjusted from 30 fps down to 1 fps.
- **AAC audio encoding** — Variable audio compression is available to support different streaming bit rate requirements.
- **Encoding quality controls** — Several user controls are available to adjust encoding quality including video resolution, video bit rate, frame rate, constant or variable bit rate control, GOP length, and audio bit rate.
- **Presets for quick recall of profiles based on target resolution or bit rates** — The SME 100 provides 16 presets for saving encoder control settings. This allows a user to quickly switch between various encoder profiles based on resolution or bit rates. Nine presets on the SME 100 HD and six presets on the SME 100 SD are predefined for common streaming applications.

- **Auto Input Memory** — When activated, the SME 100 automatically stores size, position, and picture settings based on the incoming signal. When the same signal is detected again, these image settings are automatically recalled from memory.
- **EDID Minder®** — Automatically manages EDID (Extended Display Identification Data) communication with connected DVI and VGA input sources. EDID Minder ensures that all sources power up correctly and reliably output content, whether or not they are actively connected to the display device through the input loop-throughs.
- **Glitch-free switching** — Switching between inputs is glitch-free and uses a cut transition. Presentations are enhanced by eliminating distracting visual jumps, glitches, and distortion commonly experienced when switching between computer and video sources.
- **Power save mode** — The SME 100 can be configured to enter power save mode when no device activity is detected for seven minutes. Starting a stream, configuring the unit using the web-based interface or the front panel, or communicating with the unit using the Config port or RS-232 port causes the SME 100 to exit power save mode and return to normal operation.
- **Audio switching** — The SME 100 features audio switching for three stereo balanced or unbalanced input sources with buffered loop-throughs.
- **Audio breakaway** — The SME 100 can break an audio signal away from its corresponding video signal, allowing it to be encoded for streaming with a different video input.
- **Audio input gain and attenuation** — Gain or attenuation can be adjusted for each input to eliminate noticeable differences when switching between sources, or adjusting audio levels for the output stream.
- **User-adjustable audio delay** — Audio delay can be adjusted to adapt the streamed output to different network conditions.
- **Image controls and presets** — Several user controls are available to adjust the image quality including brightness, contrast, color, tint, detail, as well as horizontal and vertical positioning, sizing, and zoom; 16 user memory presets are available for each input to store all image settings.
- **Automatic film mode processing** — The SME 100 offers advanced processing techniques (such as 3:2 pulldown detection) that help maximize image detail and sharpness for NTSC, PAL, and HDTV 1080i sources that originated from film.
- **Advanced deinterlacing** — The SME 100 outputs optimized image quality from sources (including cable or satellite set-top boxes) by using advanced motion adaptive deinterlacing for 1080i and standard definition signals.
- **Aspect ratio control** — The aspect ratio of the streamed 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).
- **Quad standard video decoding** — The SME 100 uses a digital, five-line adaptive comb filter to decode NTSC 3.58, NTSC 4.43, PAL, and SECAM for integration into systems worldwide.
- **Internal test patterns for calibration and setup** — The SME 100 offers 15 test patterns and an on-screen display (OSD) data overlay. The OSD provides information that is used to assist with calibration and setup of the SME 100 including time stamp, average bit rate, frame rate, and general system information.
- **Front panel security lockout** — This feature locks out all front panel functions; all functions however, are available through RS-232 control.
- **Ethernet monitoring and control** — The SME 100 can be controlled and actively monitored over a network.

- **Embedded preview window** — The SME 100 provides an intuitive interface that contains an embedded video window used for viewing live streams.
- **Embedded web page HTML** — The SME 100 interface includes basic HTML code that can be copied and pasted to quickly create web pages for viewing SME 100 AV streams on networked PCs.
- **RS-232 control port** — Using serial commands, the SME 100 can be controlled and configured via DataViewer or integrated into a control system. Extron products use the Simple Instruction Set (SIS™) command protocol, a set of basic ASCII code commands that allow for quick and easy programming via RS-232.
- **Rack-mountable 1U, full rack width metal enclosure**
- **Internal universal power supply** — The 100-240 VAC, 50/60 Hz, international power supply provides worldwide power compatibility.
- **Maximum Transmission Unit (MTU)** — Can be adjusted to fit network system requirements.
- **Session Announcement Protocol (SAP)** — Provides the ability to announce the broadcast to the network making it easier for the end user to discover the live stream. Compatible with many third-party H.264 devices including set-top box decoders.
- **Push and pull streaming session management** — The flexibility to manage push and pull streaming sessions allows the SME 100 to be compatible with a variety of H.264 devices and streaming applications.
- **Pull streaming transport protocols** — RTP/RTSP, interleaved RTSP, and HTTP tunneled streaming transport protocols may be used based on various network conditions or to aid in firewall navigation.
- **Push streaming transport protocols** — Native RTP and MPEG-2 transport streams may be used with unicast or multicast streaming applications. Streams can be transported on UDP or RTP depending on network conditions.
- **Streaming transport protocol options** — Allows the SME 100 to be used with a variety of network configurations; provides compatibility with many third party devices
- **H.264 compression profiles and level selection** — The H.264 baseline, main, or high profiles can be used at levels 5, 4.x, or 3.x, providing the ability to optimize video bit rate and complex coding that can be used with specific types of decoding devices (such as set-top box decoders).
- **Stream unicast or multicast while applying pull or push session management** — The SME 100 can manage streaming sessions using either push or pull configurations, which allows it to be used with a variety of decoding devices and media servers. Pull configurations apply the Real Time Streaming Protocol (RTSP). Push configurations use the Session Announcement Protocol (SAP) and Session Description Protocol (SDP). SAP and SDP protocols are able to automatically identify and configure decoding devices to decode AV streams in unicast or multicast applications.
- **Compatible with set-top box decoders** — The SME 100 is compatible with set-top box decoders which require the use of MPEG-2 transport streams and push streaming session management using SAP and SDP.
- **EIA-608B closed captioning support** — Text or prepared messaging may be streamed with live AV content using decoders or media players that support the EIA-608B closed captioning for standard definition video.
- **Network traffic prioritization** — SME 100 streaming data can be marked with a request for higher service priority from compatible routers, offering a higher Quality of Service (QoS) during constrained network conditions.

Definitions

Advanced Audio Coding (AAC) — A standardized compression and encoding scheme for lossy (low quality) digital audio.

Advanced Video Coding (AVC) — See the **H.264 (MPEG-4 AVC)** definition.

Bandwidth — A measure of available (or used) data communication resources in bit/s.

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).

Compression — The science of reducing the amount of data required to represent a picture (or a stream of pictures) and sound before sending or storing it.

Constant Bit Rate (CBR) — This scheme adjusts the output bit rate so that it stays very close to the specified target bit rate.

Constrained Variable Bit Rate (CVBR) — This scheme is similar to Variable Bit Rate (VBR), but sets a maximum allowed bit rate that the SME 100 cannot exceed.

Darwin Streaming Server (DSS) — Darwin Streaming Server (dss.macosforge.org) 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).

Domain Name System (DNS) — A database system that translates domain names (such as www.extron.com) into IP addresses.

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.

Elementary Stream — Raw H.264 video or raw AAC audio, not wrapped by additional headers.

Extended Display Identification Data (EDID) — Data structure used to communicate video display information (including native resolution and vertical interval refresh rate requirements) to a source device. The source device will then output the optimal video format for the display based on the provided EDID, ensuring proper video image quality.

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).

Gateway — A network node equipped for interfacing 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 I-frame containing the full temporal resolution and data of a video frame. Predictive frames (P-frames) follow I-frames and contain data that has changed from the preceding I-frame.

H.264 (MPEG-4 AVC) — 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).

HDTV 1080p/60 — Stands for 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.

Hypertext Transfer Protocol (HTTP) — A networking protocol that allows web 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.

Internet Group Management Protocol (IGMP) — A TCP/IP communications protocol used by hosts and adjacent routers on a network to establish multicast group memberships.

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) — Intraframes (I-frames) are primary frames that contain the full temporal 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.

Java™ — A programming language originally developed at Sun Microsystems®, Inc. (which is now merged with Oracle® Corporation).

JavaScript® — A scripting programming language designed to add interactive features to web pages.

Maximum Transmission Unit (MTU) — The maximum packet size allowed in a network data packet.

Media Access Control (MAC) — A sub-layer protocol that provides addressing and channel access control mechanisms. This protocol allows for several terminals or network nodes to communicate within a multi-point network, typically a local area network (LAN).

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. Uses of MPEG-4 include compression of AV data for streaming media on the web and CD distribution, voice (telephone, videophone), and broadcast television applications.

Multicast — A network technology for the delivery of information to a group of destinations simultaneously 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. Basically, a single stream is sent from the source to a group of recipients.

Network Time Protocol (NTP) — A protocol that is used for synchronizing the clocks of computer systems over networks.

Predictive frame (P-frame) — Predictive frames (P-frames) follow I-frames and contain data that has changed from the preceding I-frame.

Pull streaming — Streaming method that allows users to search for content, encoded with one of the transport protocols, and initiate a download or view the stream.

Push streaming — Streaming method where the encoder sends content out to one (unicast) or more (multicast) decoders using one of the transport protocols.

Quality of Service (QoS) — Performance, such as transmission rates and error rates, of a communications channel or system; suite of features that configure queuing and scheduling on the forwarding path of an E-Series router. 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).

QuickTime® — QuickTime is a proprietary multimedia framework developed by Apple® Inc. The QuickTime media player can decode and present H.264 encoded audio and video files or live streams (www.apple.com/quicktime).

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.

Session Announcement Protocol (SAP) — Used for broadcasting multicast or unicast session information. The SAP periodically multicasts 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 by eliminating the need for user configuration.

Session Description Protocol (SDP) — Used to describe multimedia sessions for the purposes of session announcement, session invitation, and other forms of multimedia session initiation (as defined in RFC 2327).

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.

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.

Streaming Media Player (SMP) web browser plugin — The Extron SMP web browser plugin (V1.0) is a new SME100 plugin. The plugin provides the best streaming features, including a full screen option and closed captioning.

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 device that cross-connects network devices.

Time To Live (TTL) — A value that specifies the number of router hops multicast traffic will make between routed domains when it exits a source.

Transmission Control Protocol (TCP) — A protocol developed for the Internet that provides reliable end-to-end data 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.

Transport Streams (TS) — A form of media wrapped in MPEG-2 transport stream headers. The MPEG-2 transport headers contain information about the media and also contain the H.264 and AAC elementary streams embedded in the transport stream packets.

- **TS/UDP** — (Unicast and multicast) An MPEG-2 transport stream containing the elementary streams for the audio and video. It is sent using UDP packets.
- **TS/RTP** — (Unicast and 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.
- **ES/RTP (Native RTP)** — (Unicast and multicast) Similar to RTSP; sends an RTP stream for video and an RTP stream for audio.

Trivial File Transfer Protocol (TFTP) — A file transfer protocol that is generally used to transfer configuration or boot files between devices in a local environment.

Unicast — The sending of messages to a single network destination host on a packet-switching network. Basically, N clients of a unicast stream will require the server to produce N streams of unicast data.

User Datagram Protocol (UDP) — A connectionless protocol that sends packets across networks using "best-effort" delivery.

Variable Bit Rate (VBR) — This scheme adjusts the output bit rate around the specified target bit rate depending on image complexity. More bandwidth is used when the video frame is more complex and less bandwidth is used when the video frame is simple.

VLC media player® — VLC media player is a commonly used, open source media player written by the VideoLAN organization (www.videolan.org/vlc). VLC media player can be used to stream, transcode, and save a variety of multimedia formats (including H.264).

Wowza® Media Server® — Wowza Media Server is software developed by Wowza Media Systems (www.wowza.com) 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).

Panels and Cabling

This section provides information on:

- [Front Panel Features](#)
- [Rear Panel Features](#)
- [Hardware Setup Overview](#)
- [SME 100 Power Up Procedure](#)

Front Panel Features

The front panel of the SME 100 is shown in figure 3 below.

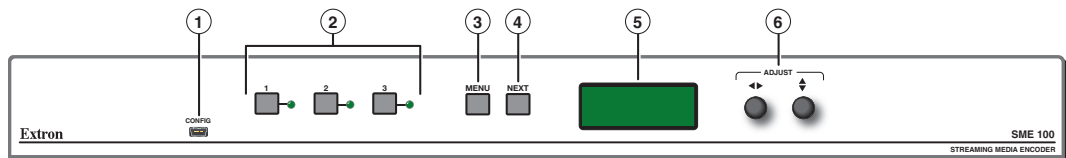


Figure 3. SME 100 Front Panel

- ① **Config port** — Connect a control PC or other USB device to this port using a Mini-B USB cable (not supplied). Use this port to send Simple Instruction Set (SIS™) commands to the SME 100 for device configuration and control.
 - For information on connecting a control PC or other USB device to this port, see the "[Sending commands using a USB connection](#)" section on page 122.
 - For information on SIS commands, see the "[Simple Instruction Set \(SIS\) Control](#)" section on page 124 and the "[Command and Response Table for SIS Commands](#)" section on page 133.
- ② **Input selection buttons** — These buttons select and switch inputs. A green LED lights to indicate the selected input. A blinking LED indicates an audio breakaway input. An input that does not contain an input source can still be selected, but the LCD display will show **No Signal**.
 - Button 1 selects input 1 (component video, S-video, or composite video).
 - Button 2 selects input 2 (component video, S-video, composite video, and RGB video [RGBHV, RGBS, RGsB, RGBcvs]).
 - Button 3 selects input 3 (DVI-D video).For information on connecting inputs, see the "[Rear Panel Features](#)" section on page 12. For information on creating an audio breakaway input, see the "[Control Page](#)" section on page 77.
- ③ **Menu button** — Pressing this button navigates through the primary configuration menus of the SME 100. For information on using the Menu button, see the "[Accessing the Menus on the LCD Display](#)" section on page 23.
- ④ **Next button** — Pressing this button navigates through the configuration submenus of each primary menu. For information on using the Next button, see the "[Accessing the Menus on the LCD Display](#)" section on page 23.

- ⑤ **LCD display** — This display shows the device settings and menu configuration information. For information on the LCD display, see the "**SME 100 Power Up Procedure**" section on page 18 and "**Accessing the Menus on the LCD Display**" section on page 23.
- ⑥ **Adjust knobs** — These knobs are used with the menu and next buttons to adjust the settings of the configuration submenus. For information on using the Adjust knobs with the Menu and Next buttons, see the "**Accessing the Menus on the LCD Display**" section on page 23.

Rear Panel Features

The rear panel of the SME 100 is shown in figure 4 below.

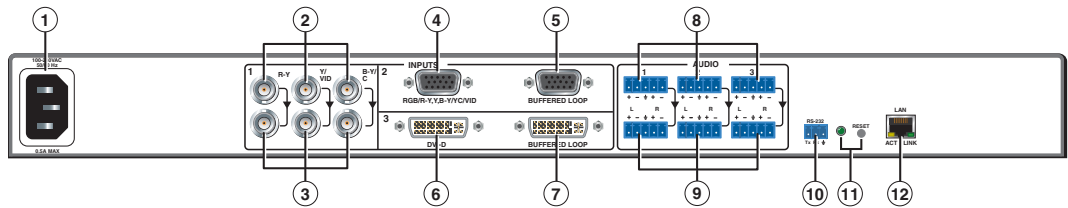


Figure 4. SME 100 Rear Panel

- ① **AC power input (IEC connector)** — Plug a standard IEC power cord into this connector to connect the SME 100 to a 100 to 240 VAC, 50 Hz or 60 Hz power source.
- ② **Component, S-video, composite BNC connectors (Input 1)** — Connect a video input device to the component, S-video, composite BNC connectors. See figure 5 below to connect the necessary signal format.



Figure 5. BNC Signal Format Connection Diagram

- ③ **Component, S-video, composite BNC buffered loop connectors (optional)** — Connect a video output device to the component, S-video, composite BNC buffered loop connectors. These connectors output the input device that is connected to input 1 (②). See figure 5 above to connect the necessary signal format.
- ④ **15-pin HD connector with EDID emulation (Input 2)** — Connect a video input device to the 15-pin HD connector. See figure 6 below for pin configurations.

Signal	Input 2 Configuration				
	Pin 1	Pin 2	Pin 3	Pin 13	Pin 14
RGBHV	R	G	B	H	V
RGBS	R	G	B	S	
RGBcvS	R	G	B	S	
RGsB	R	Gs	B		
YUV	R-Y	Y	B-Y		
S-video		Y	C		
Video		Vid			

Figure 6. 15-pin HD Connector Pin Configuration Table

- ⑩ **RS-232 connector (optional)** — Connect a host computer or control system to the RS-232 connector. Use this port to send Simple Instruction Set (SIS™) commands to the SME 100 for device configuration and control. The default protocol for this port is **9600 baud rate, no parity bit, 8 data bits, 1 stop bit, and no flow control (handshaking)**.
 - For information on SIS commands, see the "[Simple Instruction Set \(SIS\) Control](#)" section on page 124 and the "[Command and Response Table for SIS Commands](#)" section on page 133.
 - See figure 9 below to wire the RS-232 connector.

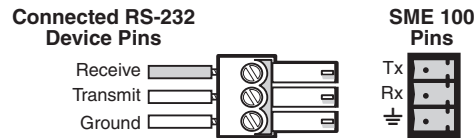


Figure 9. RS-232 Connector Wiring

- ⑪ **Reset button and LED** — The Reset button is used to reset the SME 100. The Reset LED provides the status of the reset and is used with the Reset button during a reset of the SME 100. The SME 100 has four reset modes. For information on using the reset button on the SME 100, see the "[Resetting the SME 100 Using the Rear Panel](#)" section on page 15.
- ⑫ **RJ-45 Ethernet connector** — Connect one end of an RJ-45 cable to the Ethernet connector on the SME 100 (see figure 10). Connect the other end of the RJ-45 cable to a router or switch to connect the SME 100 to a network.

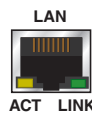


Figure 10. RJ-45 Ethernet Connector

The LEDs on the Ethernet connector indicate the status of the network connection.

- **Link LED** — This green colored LED lights when the SME 100 is connected to a network.
- **Act LED** — This amber colored LED flickers as the SME 100 actively communicates with a network.

Resetting the SME 100 Using the Rear Panel

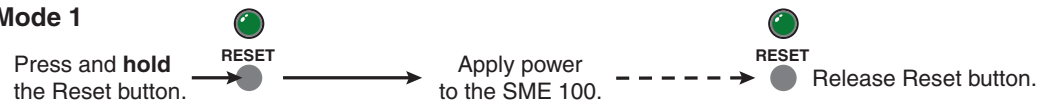
The Reset button on the rear panel of the SME 100 is used to reset the SME 100. To select different reset levels, use a pointed stylus or small screwdriver to press and hold the Reset button while the SME 100 is running or press and hold the Reset button while applying power to the SME 100.

ATTENTION: Review the reset modes carefully. Using the wrong reset mode may delete important information and configuration settings. The table on the next page provides a summary of the reset modes.

NOTES:

- The reset modes listed in the table on the next page close all open IP and Telnet connections and all sockets.
- Each reset mode is a separate reset (not a continuation from mode 1 to mode 5).
- Reset mode 2 and 3 are not available for the SME 100.
- For information on resetting the SME 100 using the web-based user interface, see the "[Reset Page](#)" section on page 116.
- For information on resetting the SME 100 using front panel menu system, see the "[Advanced Config Menu](#)" section on page 36.
- For information on resetting the SME 100 using SIS commands, see "[Resets/Reboot](#)" on page 152 of the "[Command and Response Table for SIS Commands](#)" section.

Mode 1



Modes 4 and 5

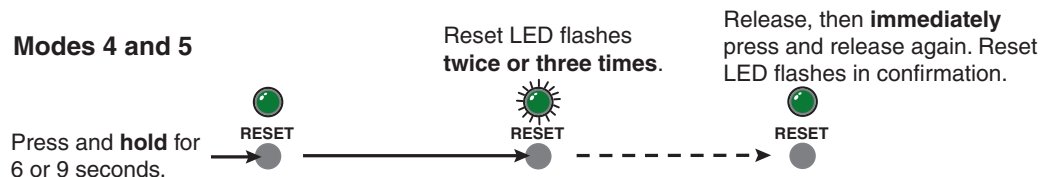


Figure 11. Resetting the SME 100

SME 100 Reset Mode Summary

	Mode	Activation	Result	Purpose and Notes
Factory Firmware	1	Hold in the recessed Reset button while applying power to the unit.	<p>The SME 100 reverts to the factory default firmware for a single power cycle.</p> <p>Booting to this mode twice in a row deletes all user files; settings (such as drivers, adjustments, and IP settings) are set to factory default.</p>	Use mode 1 to revert to the factory default firmware for a single power cycle if incompatibility issues arise with user-loaded firmware.
Reset All IP Settings	4	Hold in the Reset button for about 6 seconds until the Power LED blinks twice (once at 3 seconds, again at 6 seconds). Then, release and press Reset again within 1 second*.	<p>Mode 4:</p> <ul style="list-style-type: none"> • Enables ARP capability. • Sets the IP address back to factory default (192.168.254.254). • Sets the subnet mask address back to the factory default (255.255.0.0). • Sets the gateway IP address to the factory default (0.0.0.0). • Sets port mapping back to factory default. • Turns DHCP off. • The Reset LED on the rear panel of the unit flashes four times in succession. 	<p>Mode 4 is used to set IP address information using ARP and the MAC address.</p> <p>A "Resetting IP Settings" message appears on the LCD display.</p>
Reset to Factory Defaults	5	Hold in the Reset button for about 9 seconds until the Power LED blinks three times (once at 3 seconds, again at 6 seconds, again at 9 seconds). Then, release and press Reset again within 1 second*.	<p>Mode 5:</p> <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. • 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 when wanting to start over with configuration and uploading, and also to replace events.</p> <p>"Resetting SME 100" appears on the LCD display.</p>

NOTE: * = For modes 4 and 5, nothing happens if the momentary press does not occur within 1 second.

Hardware Setup Overview

1. Turn off and disconnect the SME 100 and all existing devices.
2. Mount the SME 100, if necessary, as described in the "**Mounting**" section on page 178.
3. Connect one end of an RJ-45 cable to the rear panel Ethernet connector on the SME 100 (see "**Rear Panel Features**" on page 12). Connect the other end of the RJ-45 cable to a router or switch to connect the SME 100 to a network.
4. Connect any necessary input devices, output devices, and control devices to the SME 100 (see "**Front Panel Features**" on page 11 and "**Rear Panel Features**" on page 12).
5. Configure the network settings of control PCs and viewing devices so they are compatible with the network the SME 100 is connected to (see the "**IP Addressing**" section on page 166 for information on choosing compatible network addresses). Connect the control PCs and viewing devices to the SME 100 network using an RJ-45 cable that is connected to a network router or switch.
6. Connect an IEC power cord into the AC power input connector of the SME 100 (see "**Rear Panel Features**" on page 12) and plug it to a 100 to 240 VAC, 50 Hz or 60 Hz power source. The SME 100 powers up and undergoes a self testing sequence (see "**SME 100 Power Up Procedure**" on page 18). Power on all necessary devices.
7. Configure the network settings of the SME 100 (see "**Network Settings Configuration**" on page 19).
 - For information on viewing and configuring the network settings of the SME 100 using the front panel, see the "**Comm Settings Menu**" section on page 43.
 - For information on configuring the network settings of the SME 100 using a control PC connected to the SME 100 network, see the "**System Settings Page**" on page 85.

SME 100 Power Up Procedure

NOTE: Before powering on the SME 100, ensure that all necessary devices are powered on and connected properly.

Apply power to the SME 100 by connecting a standard IEC power cord into the AC power connector (see the "Rear Panel Features" section on page 12) and plug it to a 100 to 240 VAC, 50 Hz or 60 Hz power source. The SME 100 undergoes a self testing sequence (see figure 12).

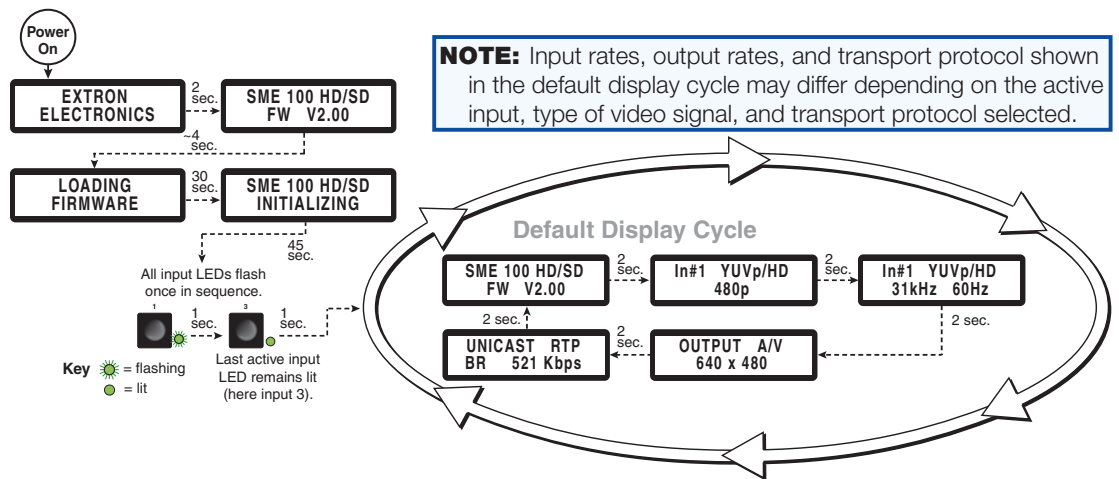


Figure 12. SME 100 Self Testing Sequence and Default Display Cycle

After the testing sequence is complete (and when the device is not being configured), the default display cycle is shown on the LCD display. The default display cycle shows the model name, firmware version, active input, input signal type, horizontal scan rate, vertical refresh rate, stream mode, output resolution, streaming method, and video bit rate in kilobits per second (kbps).

SME 100 Network Configuration

This section provides information on:

- [Network Settings Configuration](#)
- [SME 100 IP Addressing for Multiple Installations](#)
- [Protocols Used for Streaming](#)

Network Settings Configuration

NOTE: See the "[IP Addressing](#)" section on page 166 for information on choosing compatible network addresses.

The SME 100 is pre-configured with the following network settings.

IP address:	192.168.254.254
Subnet mask:	255.255.0.0
Gateway:	0.0.0.0

The network settings of the SME 100 can be reconfigured using the following methods.

- [Front Panel Network Configuration](#) — Use the "[Edit Comm Settings Menu](#)" (see page 43); this is best used for new and existing network installations.
- [Web-based User Interface Network Configuration](#) (see page 85) — This type of configuration is best used for new network installations that will be initially using the pre-configured network settings, or for existing network installations where the SME 100 is properly integrated into a network.

NOTES:

- To configure the SME 100 using the web-based user interface, the SME 100 must be connected to a network using compatible network settings. A control PC (with compatible network settings) must also be connected to the same network. The control PC uses the IP address of the SME 100 to access the web-based user interface.
- For information on how to obtain the current network settings of the SME 100 using the front panel, see the "[Comm Settings Menu](#)" section on page 43.

SME 100 IP Addressing for Multiple Installations

The default IP address and subnet mask is adequate for most installations. When multiple SME 100 devices are on the network, the IP address of each device must be different to avoid conflicts and provide consistent communications with the control PC. Since the default IP address of every SME 100 is 192.168.254.254, it is recommended that the first SME 100 connected to the network change its IP address immediately. That always ensures a previously installed SME 100 will be "out of the way" when the next one is connected, avoiding a conflict (see "[IP Addressing](#)" on page 166 for information on choosing compatible network addresses).

Protocols Used for Streaming

The following transport layer protocols are used for 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 SME 100 transport protocol, see the "[Encoder Config Menu](#)" section on page 33.

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 SME 100 uses a variety of streaming protocols to send data to a multicast group. Using multicasting, the SME 100 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 (see "[Streaming Capabilities and System Scalability](#)" on page 164).

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 SME 100 waits for viewing devices to request the stream before broadcasting.

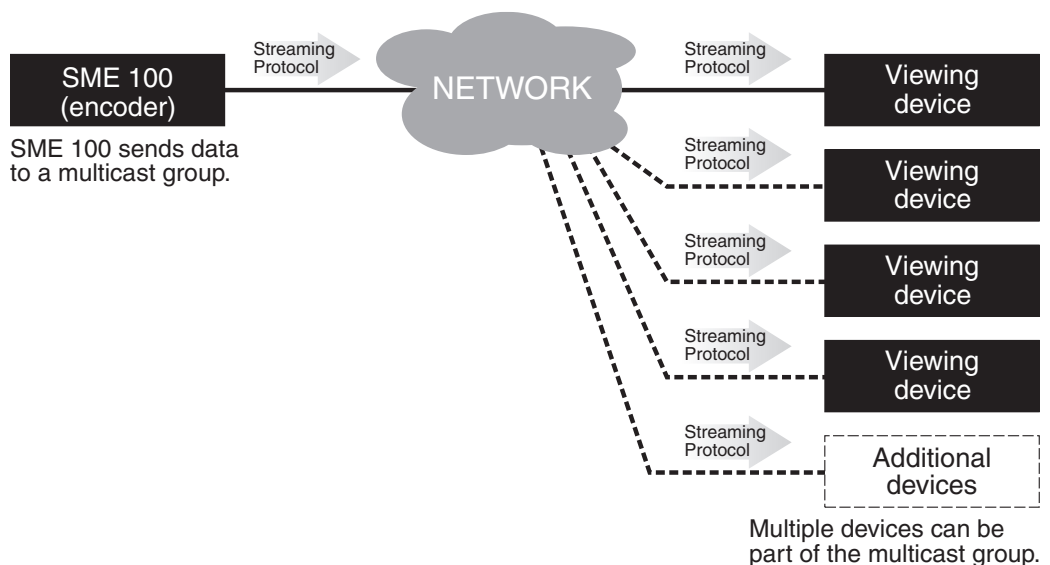


Figure 13. Multicast Streaming

NOTE: IGMP multicast protocol is used by routers and switches to deliver streams to subscribing endpoints. The SME 100 delivers packets and frames onto the network that are identified as multicast. An IGMP multicast conserves network bandwidth because the SME 100 will only send 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.

Multiple SME 100 Devices Using Multicast Streaming

When there are more than one SME 100 devices attempting to multicast, they must use unique multicast IP addresses or port numbers (see "[Multicast IP Addressing for Multiple SME 100 Installations](#)" on page 169 for additional information).

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 (SME 100 to single viewing device), but can be configured to use multiple active connections. See the tables in "[Streaming Capabilities and System Scalability](#)" on page 164 for information about the number of streams available.

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 SME 100 waits for an individual viewing device to request the stream before broadcasting.

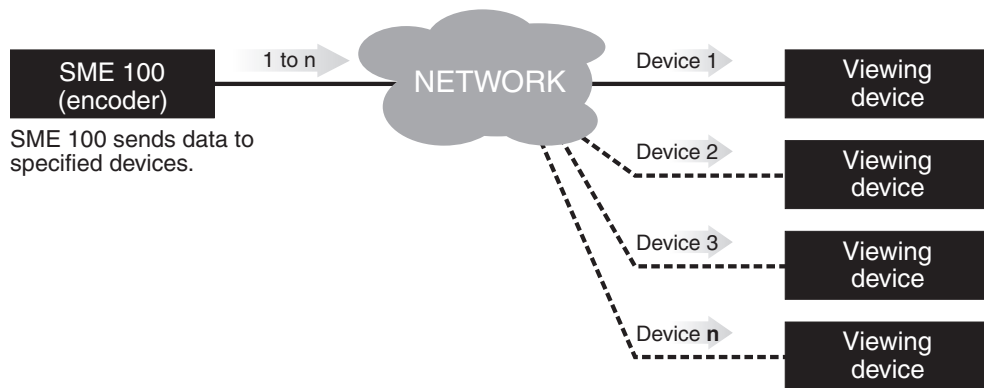


Figure 14. Unicast Streaming

NOTES:

- When unicast streaming, the SME 100 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.

Front Panel Operation

This section details how to operate and configure the SME 100 using the front panel and the menus available on the LCD display.

NOTES:

- For information on operating and configuring the SME 100 using the web-based user interface, see the "[Web-based User Interface Operation](#)" section on page 46.
- For information on operating and configuring the SME 100 using SIS commands, see the "[Remote Communication and Control](#)" section on page 117.

This section provides information on:

- [Overview of the Menu on the LCD Display](#)
- [Accessing the Menus on the LCD Display](#)
- [Presets Menu](#)
- [Input Config Menu](#)
- [Picture Control Menu](#)
- [Encoder Config Menu](#)
- [Stream Config Menu](#)
- [Advanced Config Menu](#)
- [Comm Settings Menu](#)
- [Using the Front Panel Lock \(Executive Mode\)](#)

Overview of the Menu on the LCD Display

The SME 100 contains seven primary configuration menus and one hidden menu that are displayed on the LCD display. Each primary menu contains a varying number of submenus. The primary configuration menus are shown in figure 15. The primary menus and the submenus are explained in more detail later in this section.

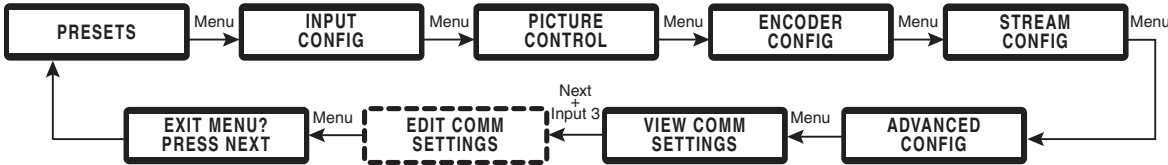


Figure 15. SME 100 Primary Configuration Menus

NOTE: For information on accessing and using the hidden Edit Comm Settings menu, see the "[Edit Comm Settings Menu \(Hidden\)](#)" section on page 43.

Accessing the Menus on the LCD Display

To access the primary menus and submenus using the front panel, follow the procedure below while referring to figure 15 on the previous page and the "Front Panel Features" section on page 11.

1. Press the Menu button to access the primary configuration menus. The first menu (Presets) is shown on the LCD display.
2. To choose a primary configuration menu, repeatedly press the Menu button until the desired menu is shown on the LCD display.
3. When the desired primary configuration menu is shown on the LCD display, repeatedly press the Next button to cycle through its submenus.

NOTE: To return to the primary configuration menus from within a submenu, press the Menu button.

4. When the desired submenu is shown on the LCD display, rotate the horizontal (◀▶) or vertical (⬆⬇⬆) Adjust knob clockwise or counterclockwise to cycle through the configuration options.
5. When the desired configuration option is shown on the LCD display, do one of the following to implement it.
 - Press the Next button to display another submenu.
 - Press the Menu button repeatedly until the Exit Menu? Press NEXT menu appears, then press the Next button to return to the default display cycle (see the "SME 100 Power Up Procedure" section on page 18 to see the default display cycle).
 - Do nothing more and wait until the LCD display returns to the default display cycle (approximately 30 seconds).

NOTE: From any primary menu or submenu, after 30 seconds of inactivity the SME 100 saves all configured settings and times out to the default display cycle.

Presets Menu

The Presets menu is used to save or recall **User Encoder** and **User Streaming** presets. Figure 16 provides an overview of the presets submenu and the options that are available.

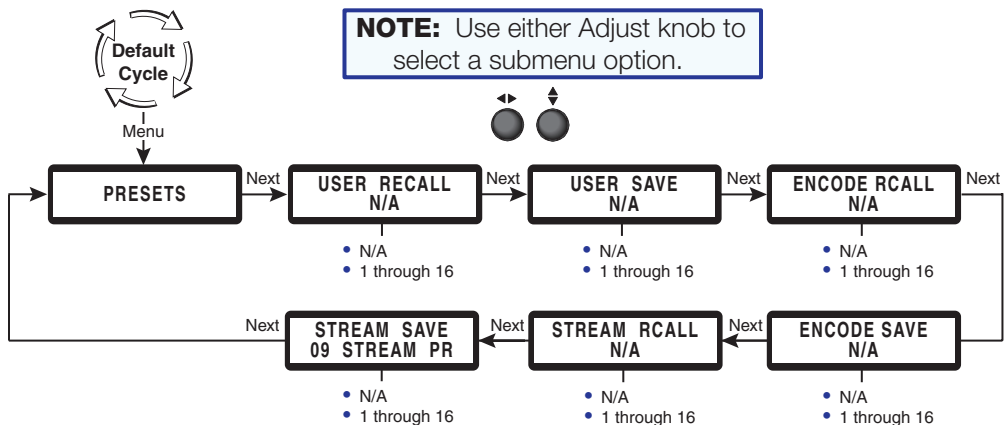


Figure 16. Presets Menu Overview

User Presets

NOTES:

- For information on recalling and saving user presets using the web-based user interface, see the "**Control Page**" section on page 77.
- For information on recalling and saving user presets using SIS commands, see "**User presets (DVI, RGB, and YUV inputs only)**" on page 140 of the "**Command and Response Table for SIS Commands**" section.

User presets are used when a shortcut is needed to quickly recall a group of settings that relate to the current content or current input.

The **User Recall** and **User Save** menus shown in figure 16 on page 23 are used to recall and save user presets. The **User Save** menu creates presets by saving the current set of image parameters for the currently selected input. The **User Recall** menu recalls and applies a saved preset to the selected input. Each input has **sixteen** available user presets that are used to recall or save settings.

The table below details the settings that are saved and recalled in a user preset.

User Preset Saved Settings		
Primary Menu	Saved Settings	
Picture Control	Horizontal Position	Contrast
	Vertical Position	Color
	Horizontal Size	Tint
	Vertical Size	Detail
	Brightness	Zoom
Advanced Config	Aspect Ratio	

Saving or recalling a preset

1. Select an input from the front panel of the SME 100 (see item ② in the "**Front Panel Features**" section on page 11).
2. Press the Menu button until the **Presets** primary configuration menu is shown on the LCD display.
3. Press the Next button until the desired submenu (**Recall** or **Save**) is shown on the LCD display.
4. Rotate either adjust knob until the desired preset is shown on the LCD display.

NOTE: Select the N/A option if a user preset is not desired.

5. Press the Next button on the **Recall** menu to recall the selected preset. Press the Next button on the **Save** menu to save the current parameters to the selected preset.

Encode Presets

Encode presets save or recall current settings for the encoder. The **Encode Recall** and **Encode Save** menus shown in **figure 16** on page 23 are used to recall and save encoder presets. The **Encode Save** menu creates presets by saving the current set of streaming parameters for the current output stream. The **Stream Recall** menu recalls and applies a saved preset to the current output stream. **Sixteen** available streaming presets are used to recall or save settings.

Encode Preset Saved Settings		
Preset Name	Stream Type	Profile Type
Video Resolution	GOP Length	Profile Level
Video Bitrate	Audio Bitrate	Closed Caption
Frame Rate		Audio Delay

See **Saving or recalling a preset** on page 24 to recall or save a preset from the front panel menu. The presets can also be saved or recalled using SIS commands.

When the SME 100 is first installed and powered on, the first nine (of 16) presets on the SME 100 HD (part number **60-1061-01**) and the first six (of 16) presets on the SME 100 SD (part number **60-1061-02**) are predefined and can be used as a template for further configuration. Presets can be changed at any time by recalling the preset, making the necessary changes, then saving the preset. The modified values will overwrite the template values. The table below details the predefined encode presets and settings.

NOTES:

- In the predefined presets, **Profile Type**, **Profile Level**, **Closed Caption**, and **Audio Delay** are set to their defaults.
- These configuration options are also saved or recalled when using Encode presets.

Encode #	Preset Name	Preset Description	Video Resolution	Video Bit Rate	Frame Rate	Stream Type	GOP Length	Audio Bit Rate
1	HVGA high	480x320 mobile, high quality	480x320	2000	30	CBR	15	384 kbps
2	HVGA medium	480x320 mobile, medium quality	480x320	1000	30	CBR	25	256 kbps
3	HVGA low	480x320 mobile, low quality	480x320	500	25	VBR	30	128 kbps
4	VGA high	680x480 Internet, high quality	680x480	3000	30	CBR	15	384 kbps
5	VGA medium	680x480 Internet, medium quality	680x480	1500	30	CBR	25	256 kbps
6	VGA low	680x480 Internet, low quality	680x480	750	20	VBR	30	128 kbps
7	720p high	720p IPTV, high quality	1280x720	4500	30	CBR	15	384 kbps
8	720p medium	720p IPTV, medium quality	1280x720	3000	30	CBR	25	256 kbps
9	720p low	720p IPTV, low quality	1280x720	1500	20	VBR	30	128 kbps

Streaming Presets

NOTES:

- For information on recalling and saving streaming presets using the web-based user interface, see the **"Using Streaming Presets"** section on page 97.
- For information on recalling and saving streaming presets using SIS commands, see **"Streaming presets"** on page 140 of the **"Command and Response Table for SIS Commands"** section.
- Streaming presets are used in the push configuration only.

Streaming presets are used when a shortcut is needed to quickly recall a group of changes in the streaming configuration on the SME 100.

Streaming Preset Saved Settings	
SAP Settings	
Stream Method (MPEG-TS)	MTU
IP (Multicast or Destination)	QoS
Destination Port	TTL

The **Stream Recall** and **Stream Save** menus shown in **figure 16** on page 23 are used to recall and save streaming presets. The **Stream Save** menu creates presets by saving the current set of streaming parameters for the current output stream. The **Stream Recall** menu recalls and applies a saved preset to the current output stream. **Sixteen** available streaming presets are used to recall or save settings.

Input Config Menu

The **Input Config** menu is used to select and configure a video signal type for the currently selected input. Figure 17 and the information that follows provide an overview of the submenus and the options that are available.

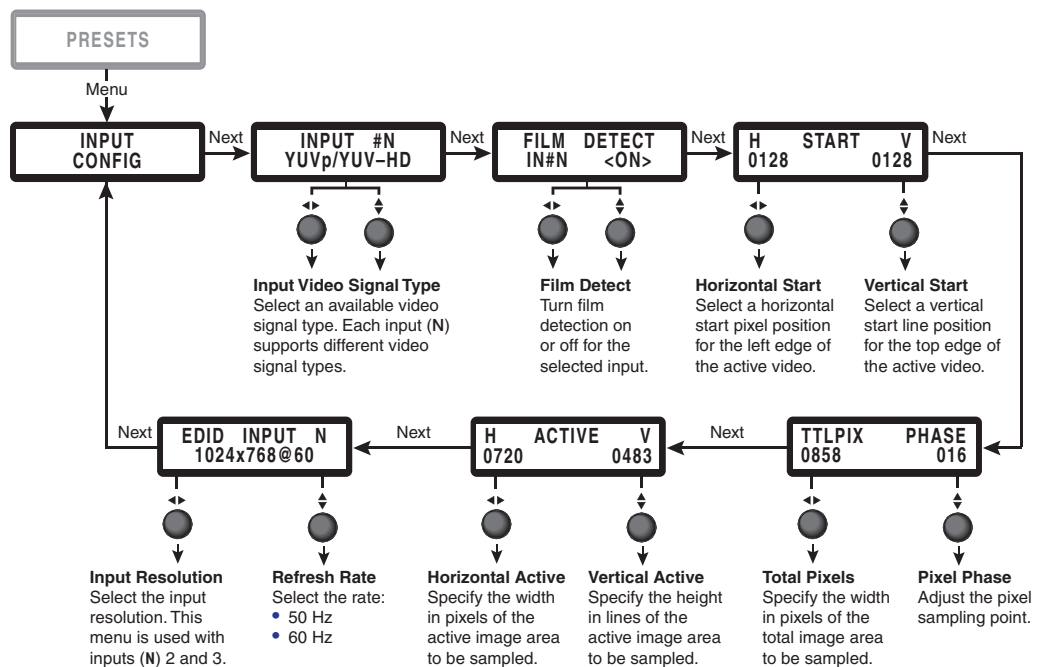


Figure 17. Input Config Submenu Overview

- **Input #N (input video signal type)** — This submenu is used to select a video signal type for the currently selected input. **N** represents the selected input (1, 2, or 3).
To use this submenu:
 - Rotate either Adjust knob to select a video signal type for the currently selected input. See the "**Available Input Video Signal Types**" section on page 30 for information on supported video signal types.
- **Film Detect** — This submenu is used to enable and disable 3:2 pulldown detection for NTSC and 2:2 pulldown detection for PAL video sources. 3:2 pulldown and 2:2 pulldown (film mode) helps maximize image detail and sharpness for video sources that originated from film.
When **film detect** is set to **On**, the SME 100 recognizes signals that originated from film and then applies video processing algorithms that optimize the conversion of video that was made with the 3:2 or 2:2 pulldown process. This results in sharply detailed images.
To use this submenu:
 - Rotate either Adjust knob to turn film detect on or off. The default is **Off**.
- **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 the selected input.
To use this submenu:
 - Rotate the horizontal (◀▶) 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 vertical (⬆️) Adjust knob to change the vertical start line position (top edge) of the active video for the selected input. The default is **128**.
- **TTLPIX (total pixels) and Phase (pixel phase)** — This submenu is used to set the total pixels and pixel phase of the active video for the selected input.
To use this submenu:
 - Rotate the horizontal (◀▶) Adjust knob to change the width (in pixels) of the total display area to be sampled for the selected input.
 - Rotate the vertical (⬆️) Adjust knob to move the pixel sampling point for the selected input. The range of settings is **0** to **31**. The default is **16**.
- **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 the selected input.
To use this submenu:
 - Rotate the horizontal (◀▶) Adjust knob to change the width (in pixels) of the active video for the selected input.
 - Rotate the vertical (⬆️) Adjust knob to change the height (in lines) of the active video for the selected input.
- **EDID Input N** — This submenu is used to select an EDID to apply to the selected input. **N** represents the selected input (2 or 3). This menu is used with the 15-pin HD and DVI inputs only (inputs 2 and 3).
To use this submenu:
 - Rotate the horizontal (◀▶) Adjust knob to change the resolution of the selected input. The default input resolution is **1024x768**.
 - Rotate the vertical (⬆️) Adjust knob to change the refresh rate of the selected input. The default input refresh rate is **60** Hz.

The table on the next page details the resolutions and refresh rates that are available for EDID emulation and supported by the SME 100.

NOTES:

- There are 24 predefined EDID and 6 custom EDID available.
- Custom EDID is captured from devices attached to the 15-pin HD or DVI buffered loop connectors (see the "**Rear Panel Features**" section on page 12) and stored in the selected custom EDID slot. Custom 1, 2, and 3 capture EDID from the 15-pin HD buffered loop connector. Custom 4, 5, and 6 capture EDID from the DVI buffered loop connector.
- For information on using the web-based user interface to apply or create a custom input EDID, see the "**Advanced Settings Page**" section on page 105.
- For information on using SIS commands to apply or create a custom input EDID, see "**Input EDID (VGA and DVI)**" on page 133 of the "**Command and Response Table for SIS Commands**" section.
- If EDID is not captured, the custom EDID resolution and refresh rate defaults to 1024x768 @ 60 Hz.

EDID Emulation Table						
Resolution	24 Hz	25 Hz	30 Hz	50 Hz	60 Hz	75 Hz
640x480				X	X	
800x600				X	X	
852x480				X	X	
*1024x768				X	*X	
1280x768				X	X	
1280x800				X	X	
1280x1024				X	X	
1360x765				X	X	
1360x768				X	X	
1365x768				X	X	
1366x768				X	X	
1400x1050				X	X	
1440x900				X	X	
1600x1200				X	X	
1680x1050				X	X	
1920x1200				X	X	
480p					X	
576p				X		
720p				X	X	
1080i				X	X	
1080p				X	X	
Custom 1						
Custom 2						
Custom 3						
Custom 4						
Custom 5						
Custom 6						

NOTES:

- * = Default video signal type
- The default refresh rate of 60 Hz is applied when the SME 100 switches to a different resolution (except for 576p which defaults to 50 Hz).

Available Input Video Signal Types

The Input #N submenu is used to select a video signal type for the currently selected input. Each input supports different video signal types as shown in the table below.

Video Input 1	Video Input 2	Video Input 3
*YUVp/HDTV YUVi S-Video Composite	*RGB YUVp/HDTV RGBcvS YUVi S-Video Composite Auto Detect	*DVI
NOTE: * = Default video signal type		

Selecting and Configuring an Input

Depending on the video signal type of the selected input, different adjustments are available for the different inputs. The table below details which submenu adjustments are available for each video signal type.

Input Adjustment	RGB	YUVp / HDTV	RGBcvS	YUVi	S-Video	Composite	DVI
Film Detect	X	X	X	X	X	X	X
H Start	X	X	X	X	X	X	
V Start	X	X	X	X	X	X	
Total Pixels	X	X					
Phase	X	X					
H Active Pixels	X	X	X	X	X	X	
V Active Lines	X	X	X	X	X	X	
EDID	X						X

Use the following procedure to configure any of the three video inputs.

1. Select an input from the front panel of the SME 100 (see item ② in the "**Front Panel Features**" section on page 11).
2. To configure the selected input, press the Menu button repeatedly until the **Input Config** primary configuration menu is shown on the LCD display.
3. Press the Next button repeatedly until the desired submenu is shown on the LCD display.
4. Rotate either Adjust knob to configure the settings of the selected submenu (see **figure 17** on page 26 for information on using the Adjust knobs).
5. After all adjustments have been completed, do one of the following to save the configuration.
 - Press the Next button to display another submenu.
 - Press the Menu button repeatedly until the **Exit Menu? Press NEXT** menu appears, then press the Next button to return to the default display cycle (see the "**SME 100 Power Up Procedure**" section on page 18 to see the default display cycle).
 - Do nothing more and wait until the LCD display returns to the default display cycle (approximately 30 seconds).

Picture Control Menu

The **Picture Control** menu is used to adjust the video image for the currently selected input. Figure 18 and the information that follows provides an overview of the submenus and the options that are available.

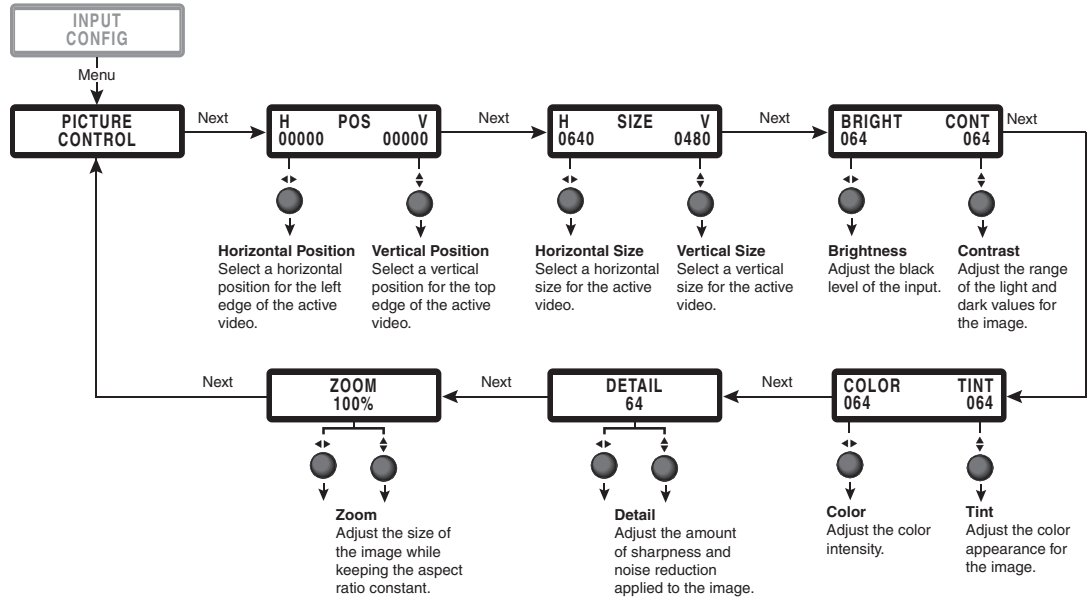


Figure 18. Picture Control Submenu Overview

- **H Pos (horizontal position) and V Pos (vertical position)** — This submenu is used to set the horizontal and vertical position of the active video for the selected input.

To use this submenu:

- Rotate the horizontal (◀▶) 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 0.
- Rotate the vertical (⬆️⬇️⬇️⬆️) 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 0.

- **H Size (horizontal size) and V Size (vertical size)** — This submenu is used to set the horizontal and vertical size of the active video for the selected input.

To use this submenu:

- Rotate the horizontal (◀▶) 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 vertical (⬆️⬇️⬇️⬆️) Adjust knob to change the vertical size of the video for the selected input. The range of settings is dependent on the output resolution.

- **Bright (brightness) and Cont (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 horizontal (◀▶) Adjust knob to change the brightness of the video for the selected input. The range of settings is 0 to 127. The default is 64.
- Rotate the vertical (⬆️⬇️⬇️⬆️) Adjust knob to change the contrast of the video for the selected input. The range of settings is 0 to 127. The default is 64.

- **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, S-video, and YUVi video signal inputs.
- The **tint** adjustment is only available for composite NTSC and S-video NTSC video signal inputs. Tint is not available for PAL video signal inputs.

To use this submenu:

- Rotate the horizontal (◀▶) 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 0 to 127. The default is 64.
- Rotate the vertical (⬆️) Adjust knob to adjust the tint (appearance of colors) of the video for the selected input. The range of settings is 0 to 127. The default is 64.

- **Detail** — This submenu is used to adjust the image sharpness and noise reduction of the active video for the selected input. Image sharpness and noise reduction are simultaneously increased or decreased when configuring this option.

To use this submenu:

- Rotate either Adjust knob to increase or decrease the image sharpness and noise reduction. The range of settings is 0 to 127. The default is 64.
- **Zoom** — This submenu is used to increase (zoom in) or decrease (zoom out) the size of the active video (for the selected input) while keeping the aspect ratio constant.

To use this submenu:

- Rotate either Adjust knob to change the size (zoom percentage) of the image. The range of settings is dependent on the output resolution. An OSD message is displayed when the maximum zoom percentage is reached.
The default is 100 percent.

Encoder Config Menu

The Encoder Config menu is used to configure what is streamed (video and audio; video only) and how the stream is output. Figure 19 and the information that follows provides an overview of the submenus and the options that are available.

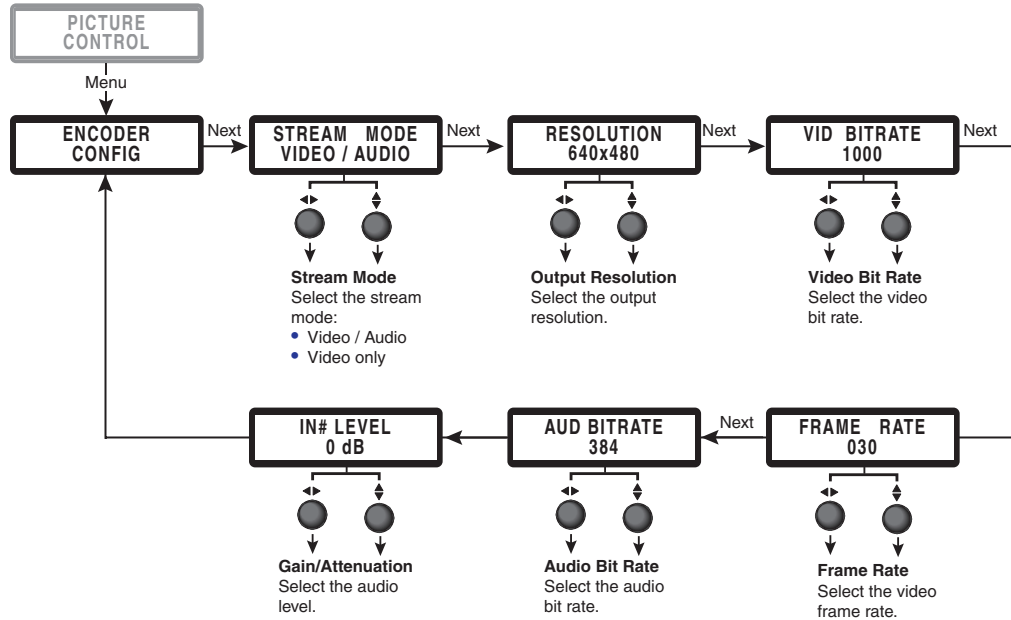


Figure 19. Encoder Config Submenu Overview

- **Stream Mode** — This submenu is used to set what is being output (streamed) by the SME 100. This configuration option is applied to all of the streams (inputs) on the SME 100.

To use this submenu:

- Rotate either Adjust knob to set the type of output stream. Two configuration options are available: **Video/Audio** or **Video Only**. The default is **Video/Audio**.
- **Resolution** — This submenu is used to set the resolution of the video being output (streamed) by the SME 100. This configuration option is applied to all of the streams (inputs) on the SME 100.

NOTE: All output resolution changes require a pause of several seconds before being applied.

See the supported output resolutions table on the next page for a complete listing of the SME 100 output formats.

To use this submenu:

- Rotate either Adjust knob to select a video output resolution. See the table on the next page for information on supported video resolutions.

Supported Output Resolutions		
Version	Resolution	Aspect
HD/SD	166x120	4:3
HD/SD	176x144	4:3
HD/SD	320x240	4:3
HD/SD	352x288	4:3
HD/SD	480x320	3:2
HD/SD	480x360	4:3
HD/SD	640x360	16:9
HD/SD	*640x480	4:3
HD/SD	720x480	4:3
HD/SD	800x480	5:3
HD/SD	720x576	4:3
HD	800x600	4:3
HD	1024x768	4:3
HD	1280x720	16:9
HD	1920x1080	16:9

NOTE: * = Default output resolution

- **Vid Bitrate (video bit rate)** — This submenu is used to adjust the number of video bits that are processed (output) per second. This configuration option is applied to all of the streams (inputs) on the SME 100.

To use this submenu:

Rotate either Adjust knob to set the number of video bits that are processed per second. The range of settings is 200 to 10000. The default is 1000.

- **Frame Rate** — This submenu is used to set the frame rate of the video being output (streamed) by the SME 100. This configuration option is applied to all of the streams (inputs) on the SME 100.

To use this submenu:

Rotate either Adjust knob to set the video frame rate. The range of settings is 1 to 30. The default is 30.

- **Audio Bitrate** — This submenu is used to select the audio bitrate in kilobits. Values are from 16 to 384.

To use this submenu:

Rotate either adjust knob to select the desired bitrate.

- **IN#** — This submenu is used to set the gain or attenuation of the audio level in dB. Values are from -15 to 15 dB.

To use this submenu:

Rotate either adjust knob to set the desired gain or attention. Rotating the knob counter clockwise decreases the audio level; rotating clockwise increases it.

Stream Config Menu

The **Stream Config** menu is used to configure how the SME 100 streams to an output device. The SME 100 operates in "push" or "pull" mode depending on the stream method selected. Figure 20 and the information that follows provides an overview of the submenus and the options that are available.

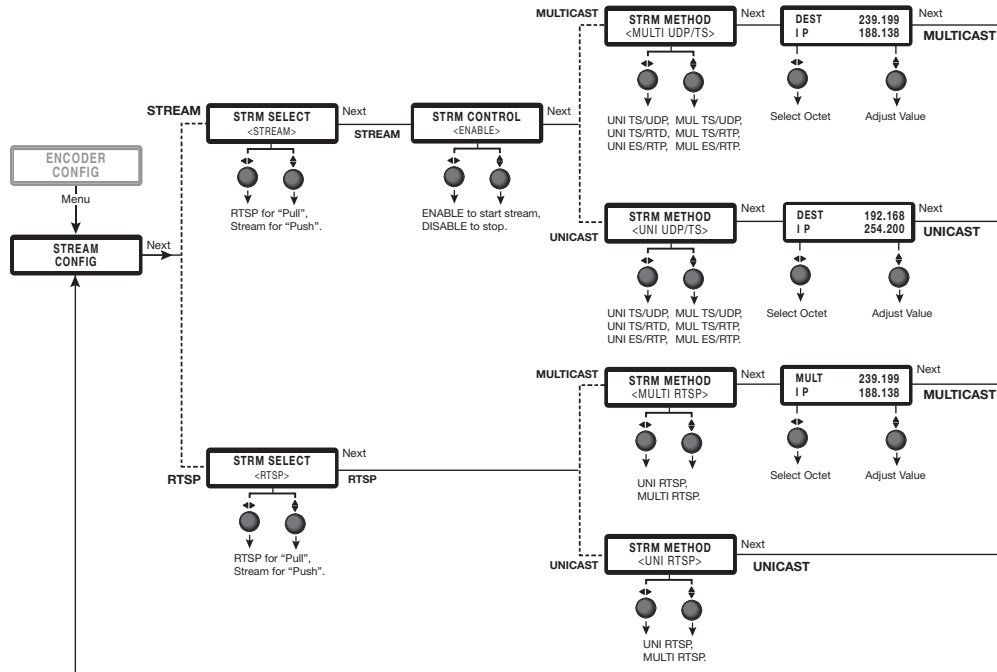


Figure 20. Stream Config Submenu Overview

- **Stream Select** — This submenu is used to configure the stream.

To use this submenu:

- Rotate either adjust knob to select RTSP to configure the pull stream or **STREAM** to configure the push stream. The next menu changes depending on the selection. The default is RTSP.
- **Stream Control (STREAM only)** — This submenu enables the stream to begin pushing audio and video to the selected destination.
- **Stream Method** — This submenu changes depending on the previous selections. When pulling a stream via RTSP, choose unicast to allow each user to select the stream or multicast to broadcast the stream to the network.
- **Multi or Dest IP (IP address)** — This submenu changes depending on whether the stream config is using the **Multi** or **Uni** stream method and is used to set the broadcast IP address. This is the IP address that other devices will use to connect to the streams being sent by the SME 100.

NOTES:

- This submenu is skipped when using the unicast RTP streaming protocol.
- For an overview on using multicast IP addresses, see the "**Multicast Streaming Method – An Overview**" section on page 20.

To use this submenu:

- Rotate the horizontal (◀▶) Adjust knob to select the desired octet.
- Rotate the vertical (⬇) Adjust knob to adjust the value of the selected octet.

Advanced Config Menu

The Advanced Config menu is used to configure various settings (auto memory, auto-image™, aspect ratio, OSD label), enable test patterns, and reset the SME 100. Figure 21 and the information that follows provides an overview of the submenus and the options that are available.

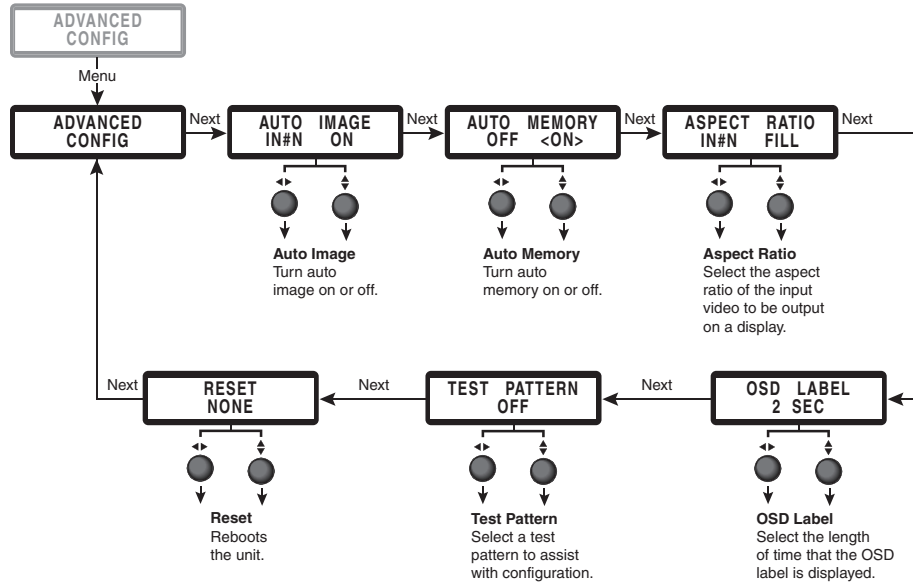


Figure 21. Advanced Config Submenu Overview

- **Auto Memory** — This submenu is used to turn the auto memory feature on or off. This configuration option is applied to all of the streams (inputs) on the SME 100. See the "[About the Auto Memory Submenu](#)" section on page 38 for information on this feature.

To use this submenu:

- Rotate either Adjust knob to turn auto memory on or off. The default is **On**.

- **Auto Image** — This submenu is used to turn the auto-image feature on or off for the currently selected input. See the "[About the Auto Image Submenu](#)" section on page 40 for information on this feature.

To use this submenu:

- Rotate either Adjust knob to turn auto-image on or off. The default is **Off**.

NOTE: A **one-time auto-image** can also be activated by selecting and holding the desired front panel input button (see the "[Front Panel Features](#)" section on page 11) for approximately two seconds. The one-time auto-image method does not affect the setting of the Auto Image submenu.

- **Aspect Ratio** — This submenu is used to set the aspect ratio of the output video for the currently selected input. See the "[About the Aspect Ratio Submenu](#)" section on page 41 for information on this feature.

To use this submenu:

- Rotate either Adjust knob to select the desired aspect ratio (**Fill** or **Follow**). The default is **Fill**.

- **OSD Label** — This submenu is used to set the amount of time that the on-screen label is shown on the output display. When an input is selected, the on-screen label appears as small white text that is placed on a black background in the top left corner of the display window. This configuration option is applied to all of the streams (inputs) on the SME 100.

To use this submenu:

- Rotate either Adjust knob to change the amount of time that the OSD label is shown on the output display. The range of settings is **0 seconds** to **5 seconds**. The default is 2 seconds.
- **Test Pattern** — This submenu is used to select test patterns which are used to calibrate display devices. The test patterns are used to configure color, convergence, focus, resolution, contrast, grayscale, aspect ratio, and audio (see "**About the Test Pattern Submenu**" on page 41).

To use this submenu:

- Rotate either Adjust knob to select the desired test pattern. The default is **Off**.
- **Reset** — This submenu is used to reset the SME 100.

To use this submenu:

- Rotate either Adjust knob to select the desired reset option, then press **Next**. The default is **Off**. Select **Yes** to continue or **No** to discontinue the reset.

Three reset options are available: **Off**, **Factory**, and **Reboot**.

- **Off** — Select this option if a unit reset is not desired. This is the default option.
- **Factory** — Select this option to reset all video, audio, and encoder configuration settings to their default values.

NOTE: This is not a mode 1 reset (see "**Resetting the SME 100 Using the Rear Panel**" on page 15).

- **Reboot** — Select this option to restart the firmware (that is currently installed) and reboot the SME 100.

NOTE: When the **Reboot** option is selected, web page communication with the SME 100 will be temporarily unavailable without notification. After the SME 100 has fully booted up, web page communication can be resumed.

•

NOTES: Other reset options are available.

- For information on resetting the SME 100 using the Reset button on the rear panel, see the "**Resetting the SME 100 Using the Rear Panel**" section on page 15.
- For information on resetting the SME 100 using the web-based user interface, see the "**Reset Page**" section on page 116.
- For information on resetting the SME 100 using SIS commands, see "**Resets/Reboot**" on page 152 of the "**Command and Response Table for SIS Commands**" section.

About the Auto Memory Submenu

NOTE: For information on using the web-based user interface to enable or disable the auto memory feature, see the "[Encoder Settings Page](#)" section on page 88.

When the Auto Memory submenu is set to On (default), the SME 100 stores the picture settings of the incoming signal that is connected to each input. When the same input signal is detected again, the stored picture settings are recalled from memory and are automatically applied to the appropriate input.

The table below details the picture settings that are saved when the auto memory feature is enabled.

Auto Memory Saved Settings		
Primary Menu	Saved Settings	
Input Config	Film Detect	Pixel Phase
	Horizontal Start	Horizontal Active Pixels
	Vertical Start	Vertical Active Lines
	Total Pixels	
Picture Control	Horizontal Position	Contrast
	Vertical Position	Color
	Horizontal Size	Tint
	Vertical Size	Detail
	Brightness	Zoom

When the Auto Memory submenu is set to Off, the SME 100 will treat every applied input as a new source. Input presets can be used in place of using the auto memory feature if desired.

NOTE: For information on using input presets, see the "[Using User and Input Presets](#)" section on page 82 or see "[Presets](#)" on page 140 of the "[Command and Response Table for SIS Commands](#)" section.

The **Auto Image** and **Auto Memory** submenus affect each other depending on whether they are enabled or disabled. Refer to the table below for more details.

NOTE: If the settings obtained from the auto memory feature are not to be used on an input signal, disable auto memory before using the auto-image feature.

The table below details the possible combinations of auto-image and auto memory settings.

Auto Memory and Auto Image Features and Interactions		
Auto Memory	Auto Image	Action
On	On	"New" input signals or rates that have not been previously detected by the SME 100 initially use default picture settings. Since auto-image is enabled, auto-image determines the picture settings that are used, automatically applies it to image, and the values obtained from auto-image are automatically saved to auto memory. The next time the same input signal is detected, the values that were stored in auto memory are applied.
On (Default)	Off (Default)	"New" input signals or rates that have not been previously detected by the SME 100 initially use default picture settings. If picture adjustments are made to an input (or if the auto-image feature is enabled), an auto memory is created and will be recalled each successive time the input signal is detected.
Off	On	When any input signal is connected to the SME 100, the default picture settings are initially used and is followed by an automatic auto-image. Since auto memory is disabled, each input that is connected is treated as a new input signal and automatically triggers an auto-image. Any picture adjustments made to the existing input signal are lost each time a new input signal is detected.
Off	Off	When any input signal is connected to the SME 100, the default picture settings are used. Any picture adjustments made to the existing input signal are lost each time a new input signal is detected.

About the Auto Image Submenu

NOTES:

- When the auto-image feature is enabled and a new input signal is detected, the SME 100 first attempts to apply values that were stored in auto memory to the input signal (if the auto memory feature is enabled). If no auto memory exists, values that are obtained from the auto-image feature are applied to the new input signal.
- If the auto-image feature is disabled and no auto memory picture information exists, the SME 100 uses default picture settings when an input signal is connected.
- See the "[About the Auto Memory Submenu](#)" section on page 38 for more information on how the **Auto Image** and **Auto Memory** submenus affect each other.
- For information on enabling or disabling the auto-image feature using the web-based user interface, see the "[Encoder Settings Page](#)" section on page 88.
- For information on enabling or disabling the auto-image feature using SIS commands, see "[Auto-image](#)" on page 134 of the "[Command and Response Table for SIS Commands](#)" section.

When an input is connected to the SME 100 and the **Auto Image** submenu is set to On, an automatic image adjustment is applied to the input signal. Auto-image measures where the active areas start and stop and adjusts the input signal accordingly, so that the output image fills the window. How the screen is filled is determined by the **Aspect Ratio** submenu (see the "[About the Aspect Ratio Submenu](#)" section on page 41).

The table below details the settings that are affected when auto-image is turned on.

Auto Image Affected Settings		
Primary Menu	Affected Settings	
Input Config	Horizontal Start	Horizontal Active Pixels
	Vertical Start	Vertical Active Lines
	Pixel Phase	
Picture Control	Horizontal Position	Horizontal Size
	Vertical Position	Vertical Size

NOTE: The remaining configuration options are left unchanged when auto-image is enabled.

Auto-image is useful in applications where a variety of input sources are likely to be encountered, such as on a lectern or podium where guest laptops might be connected.

About the Aspect Ratio Submenu

NOTES:

- For information on setting the aspect ratio using the web-based user interface, see the "**Encoder Settings Page**" section on page 88.
- For information on setting the aspect ratio using SIS commands, see "**Input aspect ratio**" on page 142 in the "**Command and Response Table for SIS Commands**" section.

The **Aspect Ratio** submenu contains two configuration options.

- When the **Aspect Ratio** submenu is set to **Fill** (default), the input signal fills the entire output area. The **Horizontal Position** and **Vertical Position** is set to $0,0$. The **Horizontal Size** and **Vertical Size** is set to match the current output resolution.
- When the **Aspect Ratio** submenu is set to **Follow**, the input signal fills the output area using its native aspect ratio (3:2, 4:3, 5:3, 16:9).

About the Test Pattern Submenu

NOTES:

- For information on selecting test patterns using the web-based user interface, see the "**Encoder Settings Page**" section on page 88.
- For information on selecting test patterns using SIS commands, see "**Streaming presets**" on page 140 of the "**Command and Response Table for SIS Commands**" section.

The following test patterns are available in this submenu. Visual representations of how the test patterns appear when viewed on a display are shown in figure **22** on the next page.

- Off
- Color Bars
- Pulse
- Timestamp
- Universal OSD
- Fine Crosshatch
- 4x4 Crosshatch
- Grayscale (32 level)
- Ramp
- Alternating Pixels
- White Field
- Crop
- 1.33 Aspect Ratio
- 1.78 Aspect Ratio
- 1.85 Aspect Ratio
- 2.35 Aspect Ratio

NOTES:

- The **Color Bars** test pattern is used to calibrate color settings on the output display and confirm that the system is properly wired.
- The **Pulse** test pattern (not shown) is used to determine audio functionality. This audio test pattern is a once a second audio pulse of 400 Hz at -10 dBu.
- The **Timestamp** test pattern (not shown) is an on-screen label that appears as small white text on a black background in the top left corner of the output display window. The current time (HH:MM:SS), average frame rate (XX.XX FPS), and average bandwidth (XXXX kbps) are displayed.
- The **Crop** test pattern is used to center the image on the output display window. Adjust the horizontal and vertical position on the SME 100 or on the display until all four crop lines are visible.

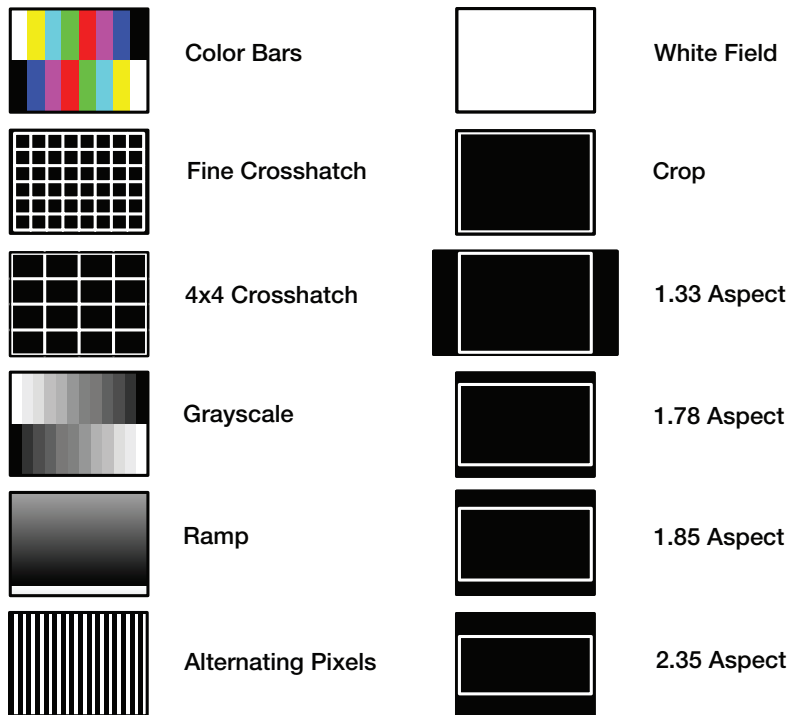


Figure 22. SME 100 Test Patterns

About the universal OSD test pattern

The universal OSD test pattern is an on-screen label that appears as small white text placed on a black background in the top left corner of the output display window. The information that is displayed on this test pattern is user defined using the web-based user interface.

For information on configuring the universal OSD test pattern using the web-based user interface, see the "[Encoder Settings Page](#)" section on page 88.

Comm Settings Menu

View Comm Settings

The View Comm Settings menu is used to view the current communication port settings. Figure 23 and the information that follows, provides an overview of the submenus available.

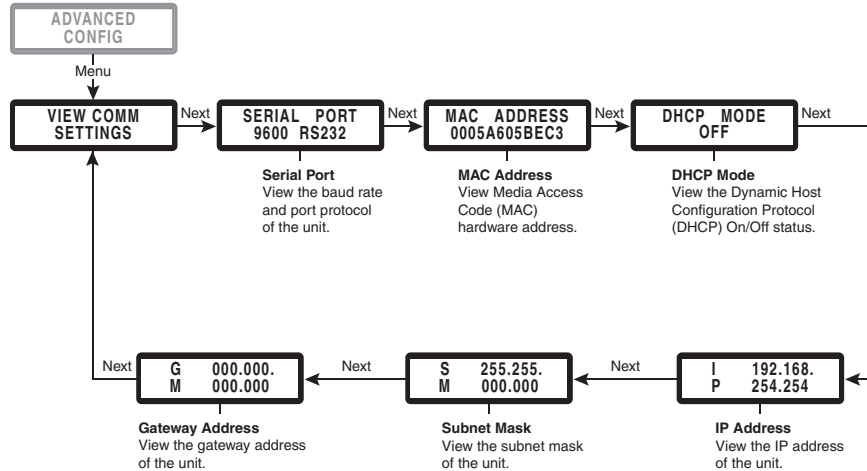


Figure 23. View Comm Settings Submenu Overview

- **Serial Port** — This submenu is used to view the baud rate and port protocol.
- **MAC Address** — This submenu is used to view the Media Access Code (MAC) hardware address.
- **DHCP Mode** — This submenu is used to view the Dynamic Host Configuration Protocol (DHCP) status (on or off).
- **IP (IP address)** — This submenu is used to view the IP address.
- **SM (subnet mask)** — This submenu is used to view the subnet mask.
- **GM (gateway address)** — This submenu is used to view the gateway address.

Edit Comm Settings Menu (Hidden)

This section details how to configure the network settings of the SME 100 using the front panel. Use the following procedure while referring to the illustrations provided and the "[Front Panel Features](#)" section on page 11 to configure the network settings of the SME 100.

NOTE: For information on using the front panel for general device configuration, see the "[Front Panel Operation](#)" section on page 22.

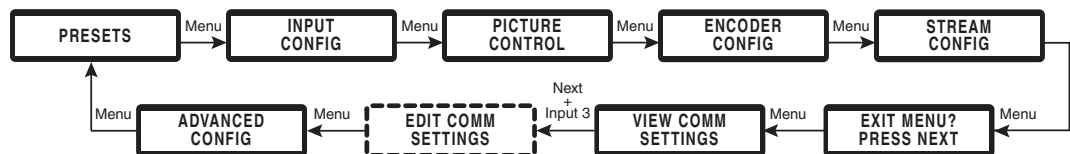


Figure 24. SME 100 Primary Configuration Menus

1. Ensure that the SME 100 is properly connected and powered on before proceeding (see the "[Hardware Setup Overview](#)" section on page 17).
2. Press the Menu button repeatedly until the View Comm Settings menu is shown on the LCD display (see figure 24).

3. Press and hold the Next button and the Input 3 button simultaneously for approximately three seconds. This changes the **View Comm Settings** menu to the **Edit Comm Settings** menu.
4. Press the Next button repeatedly to cycle to the IP address (IP), subnet mask (SM), and default gateway (GM) submenus (see figure 25).

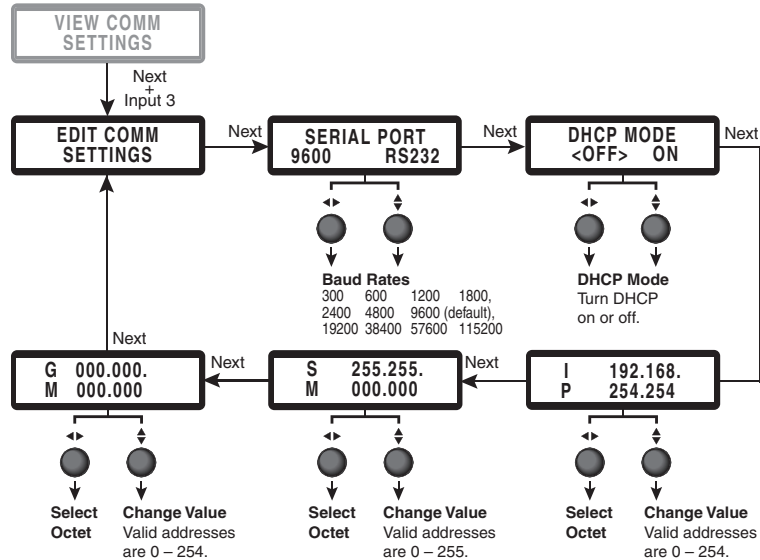


Figure 25. Edit Comm Settings Submenus

5. Change the IP address, subnet mask, and default gateway as necessary. To configure the addresses:
 - Cycle to the desired octet by rotating the left Adjust knob (◀▶).
 - Adjust the value of the octet by rotating the right Adjust knob (◈).
6. Save the network settings by pressing the Menu button. The network settings of the SME 100 are now configured.

After the network settings have been saved, the SME 100 can be further configured using the following methods:

- **Front panel configuration** — For information on configuring the SME 100 using the front panel, see the "[Front Panel Operation](#)" section on page 22.
- **Web-based user interface configuration** — For information on configuring the SME 100 using the web-based user interface, see the "[Web-based User Interface Operation](#)" section on page 46.

Using the Front Panel Lock (Executive Mode)

To prevent accidental changes to settings, **enable** the front panel lock (executive mode) on the SME 100 by pressing the Menu and Next buttons simultaneously for two seconds. The front panel lock disables all of the front panel controls, but allows communication and control changes through the RS-232 connector, Config port, and the web-based user interface. To **disable** the front panel lock (executive mode), press and hold the Menu and Next buttons simultaneously for two seconds.

When front panel lock is enabled, the LCD display shows **Exe Mode Enabled** for approximately two seconds and then returns to the default display cycle (see figure 26). When front panel lock is disabled, the LCD display shows **Exe Mode Disabled** for approximately two seconds and then returns to the default display cycle (see figure 27).

NOTES:

- For information on enabling and disabling the front panel lock using the web-based user interface, see the "[Encoder Settings Page](#)" section on page 88.
- For information on enabling and disabling the front panel lock using SIS commands, see "[Front panel lock \(executive mode\)](#)" on page 154 of the "[Command and Response Table for SIS Commands](#)" section.

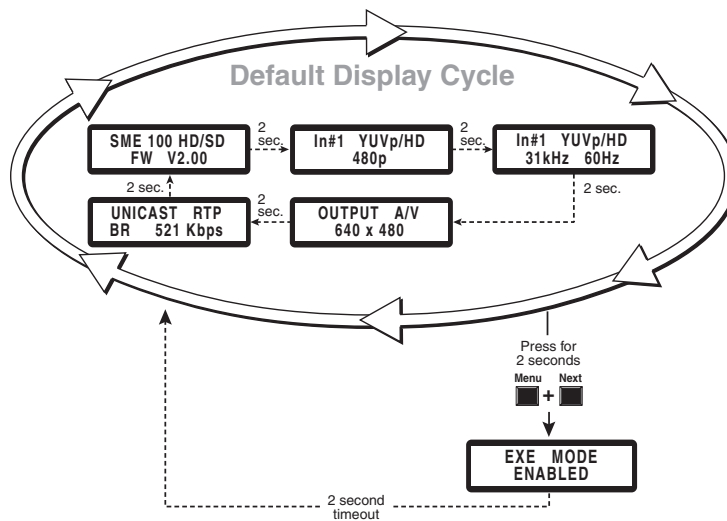


Figure 26. Enable Front Panel Lock (Executive Mode)

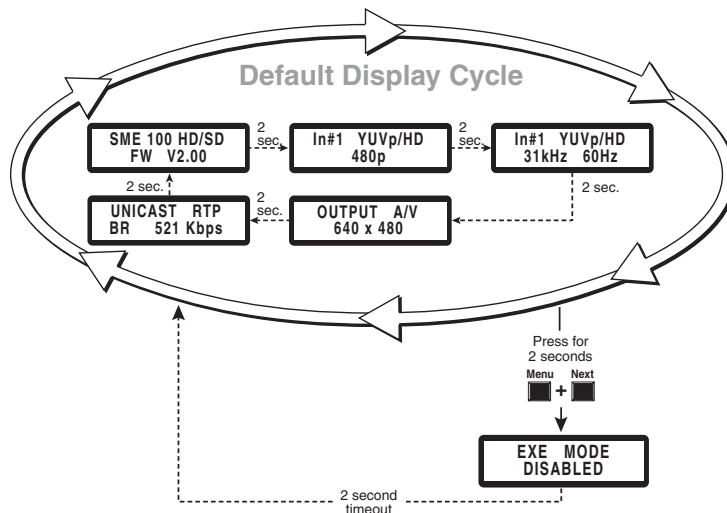


Figure 27. Disable Front Panel Lock (Executive Mode)

Web-based User Interface Operation

This section provides information about:

- [Overview of the Web-based User Interface](#)
- [SME 100 Media Players](#)
- [Accessing the Web-based User Interface](#)
- [Live View Page](#)
- [Installing Media Players](#)
- [Displayed Video Image Adjustments](#)
- [Status Page](#)
- [Configuration Page](#)
- [File Management Page](#)
- [Backup/Restore Page](#)
- [Control Page](#)

Overview of the Web-based User Interface

The web-based user interface can configure and operate the SME 100. The user interface is accessed by opening a web browser on a control PC or viewing device and entering the IP address of the SME 100 (default IP address is 192.168.254.254) into the address bar. The following list outlines the main features of the user interface.

- Full configuration of the SME 100 from a remote location using a control PC.
- Control and actively monitor the SME 100 from a remote location using a control PC.
- An embedded video window is provided by the user interface that is used for viewing live streams.
- Ability to update the firmware of the SME 100.
- When the SME 100 user interface is accessed with a web browser, a window is provided that is used to view media being streamed through the SME 100.

SME 100 Media Players

For optimal performance of the SME 100, Extron recommends two media players depending upon the firmware version. Firmware versions 2.0 and higher use the Extron Streaming Media Player (SMP) (see "[Streaming Media Player \(SMP\) Web Browser Plugin](#)" on page 51). Older firmware versions must use VLC media player and cannot use SMP.

NOTE: Extron recommends upgrading older SME 100 devices to firmware version 2.0 or higher and using the SMP web browser plugin for best performance. See "[Determining the Firmware Version](#)" on page 170 to determine the firmware version you are currently running.

The VLC media player version is critical. Only VLC Media Player Version 1.1.10 and 2.0.2 have been fully tested with the SME 100. If you do not have either version, go to the archives of the VLC media player website at www.videolan.org and locate version 1.1.10 or 2.0.2.

Accessing the Web-based User Interface

To access the web-based user interface, open a web browser on a control PC or viewing device and enter the IP address of the SME 100 (default IP address is 192.168.254.254) into the address bar.

NOTE: The system can be logged out of at any time using any of the interface pages. Click on the **Log Off** link located in the upper right corner to exit the user interface or simply close the web browser.

Live View Page

This is the first page seen after logging in. The page can also be accessed by clicking on the **Live View** tab (see figure 28).



Figure 28. Live View Page

The Live View page is used to view and listen to live streams. The Live View page shown in figure 28 contains features that are available when using the SMP web browser plugin. Features of this window can be changed by an administrator using the "**Live View Settings Page**" on page 98.

NOTES:

- When the SME 100 is first powered on, the prompt shown in figure 30 on page 51 may appear if a media player has not yet been installed. For information on installing media players, see "**Installing Media Players**" on page 51. For information on selecting a media player, see the "**Live View Settings Page**" section on page 98.
- The Extron Streaming Media Player provides the best player performance and is recommended for viewing live streaming media on the SME 100.
- If you are upgrading from firmware version 1.00, you must download SMP from the Extron website. Alternately, use the VLC media player stored on the SME 100.
- To configure the streaming transport protocol and other various settings, see the "**Encoder Settings Page**" section on page 88.
- To view streams using another player, see the "**Streaming Playback Methods**" section on page 157.

- ① **Play icon** — This icon is located in the middle of the player window and is used to play live streaming media.
- ② **Play and Stop button** — This button is used to play and stop live streaming media.
- ③ **Volume mute button** — This button is used to mute and unmute the audio volume.
- ④ **Volume control** — This slider bar is used to adjust the audio volume.



- ⑤ **Stream playback timer** — This timer displays the amount of time the user has been streaming live media. Playing a live stream activates the timer. Pressing the **Stop** button stops the timer and the total streaming time is displayed.

NOTE: The timer resets to 00:00:00 whenever the play button is pressed.

- ⑥ **Input select button** — This button allows the user to switch between live streams. Clicking the button switches inputs (incrementally from 1, 2, 3, and back to 1). Hovering over the button displays the current input.

NOTE: It is recommended that this button is disabled when streaming media to multiple viewers. To disable the button, see "[Live View Settings Page](#)" on page 98.

- ⑦ **View status button** — This button is used to view the status of the stream. When pressed, a window appears that provides the video resolution, current video bit rate, average video bit rate, and the stream URL (see figure 29).

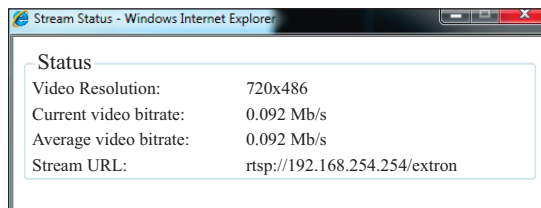


Figure 29. Stream Status Window

- ⑧ **Window resize button** — This button is used to resize the window that displays the live streaming media. When the Live View page is initially opened, the display window fits the video image to the size of the web browser. Clicking on this button will resize the window (not the web browser) to display the native output resolution.

NOTES:

- This button will not be available (grayed out) if the video output resolution is smaller than the window size of the web browser.
- The video output resolution can be set on the [Encoder Settings](#) page (see page 88).

- ⑨ **Full screen (SMP only)** — This button resizes the window to the maximum size of the output display.

NOTE: The player toolbar is hidden in full screen mode. To reveal it, move the mouse to the bottom of the screen.

To switch back to the browser view, select the icon in the far right corner.



- ⑩ **Closed caption (SMP only)** — This button toggles closed captioning on and off.

Live View Page Notifications

The following notifications may appear on the Live View page:

- Starting a stream with the **Play** icon or **Play** button displays the `initializing...` notification, unless the **Video Init Time (sec)** drop-down menu on the **Live View Settings** page (see page 98) is set to `0`.
- Stopping a stream with the **Stop** button displays the `stream stopped` notification.
- When a stream is disconnected, the `disconnected` notification is displayed.
- When the video configuration settings of the stream are changed, the `Config Changed, refreshing...` notification is displayed.
- When the SME 100 has reached its limit of connected users, a dialog box appears containing the following message: `The maximum number of users has been reached.`

Installing Media Players

The SME 100 uses a media player plugin to view live streams using a web browser. The Extron **SMP** web browser plugin is recommended for use with the SME 100 using firmware version 2.0 and higher. VLC media player is used with older 1.0 firmware versions. The following sections describe how to install the media players and plugins to a control PC or viewing device.

NOTES:

- The procedures presented in the following sections use a Microsoft® Windows® operating system and version 1.0 of SMP or version 1.1.10 of VLC media player. Either will provide optimal compatibility and are recommended for viewing live streams. These procedures may vary when using a different operating system or when different versions of the media players are used.
- Other media player plugins can be used to view live streams from the SME 100. However, plugin compatibility issues and playback errors may occur when viewing live streams.
- Different media player download procedures are used depending upon the firmware (see "**Determining the Firmware Version**" on page 170).

Streaming Media Player (SMP) Web Browser Plugin

The SME 100 requires different media player download procedures depending upon the firmware status (see "**Determining the Firmware Version**" on page 170).

After connection to the SME 100, the Live View page may display the following prompt (firmware version 2.0) if a media player is not installed on the control PC or viewing device (see figure 30). Select the first **here** link.

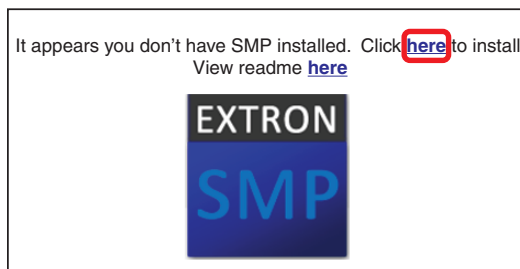


Figure 30. Live View Page – Media Player Installation Prompt

If the firmware has been updated manually, there will be no SMP software on its internal pages and the SMP plugin must be downloaded from the Extron website (see "**Installing SMP from the Website**" on page 56).

New SME 100 products from Extron have the SMP web browser plugin saved to their internal memory (see "**Installing SMP From the SME 100**" on the following page).

NOTES:

- If the link shown in figure 30 does not appear on the Live View page or a blue player window with Extron logo is displayed (see **figure 28** on page 48), a media player is already installed.
- A yellow security bar may appear at the top of the browser window after the first **here** link is clicked. If this happens, click the security bar and select **Download File**, then click the first **here** link again.

Installing SMP From the SME 100

For new SME 100 devices, install SMP using the File Management page.

1. Open the web-based user interface of the SME 100 (see "[Accessing the Web-based User Interface](#)" on page 47).
2. Select the **File Management** tab, then select **SW_Distribution** (see figure 31).

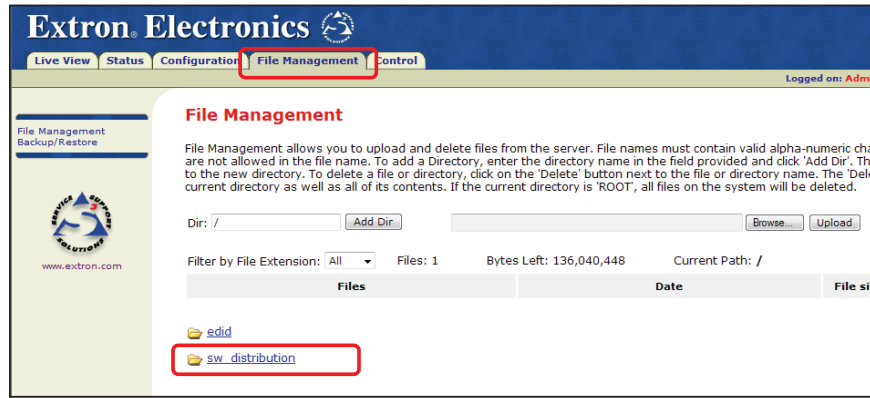


Figure 31. Select SW Distribution

3. On the next page select **Windows** (see figure 32).

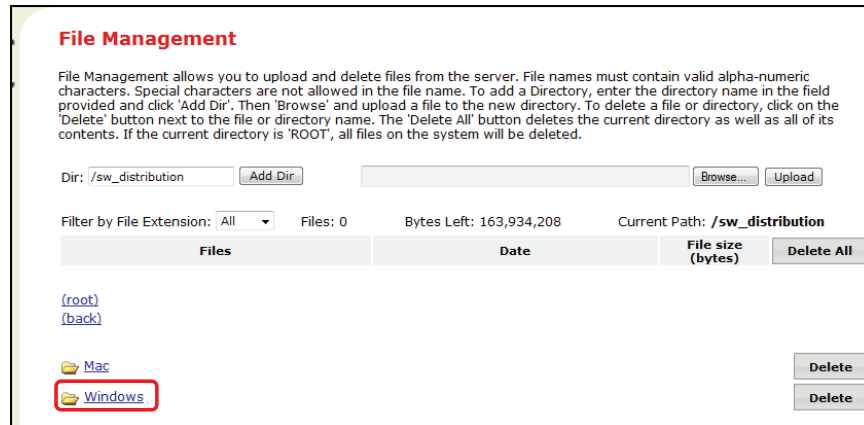


Figure 32. Select Windows

4. Then select the **smp-1.0.0.2-win32.exe** file (see figure 33).

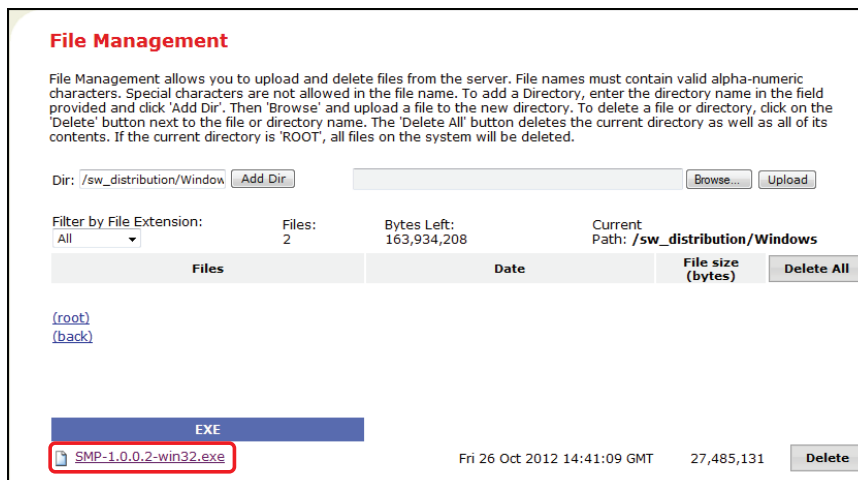


Figure 33. Select Windows, then SMP Software

The SMP installation program launches.

5. When the file download dialog appears, click **Run** to begin the download (see figure 34).

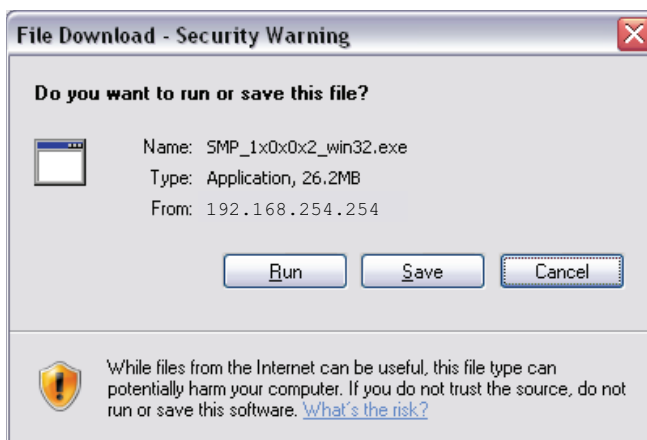


Figure 34. File Download Security Warning

6. When the installation files are downloaded, a security warning dialog box appears. Click **Run** to begin the installation (see figure 35).

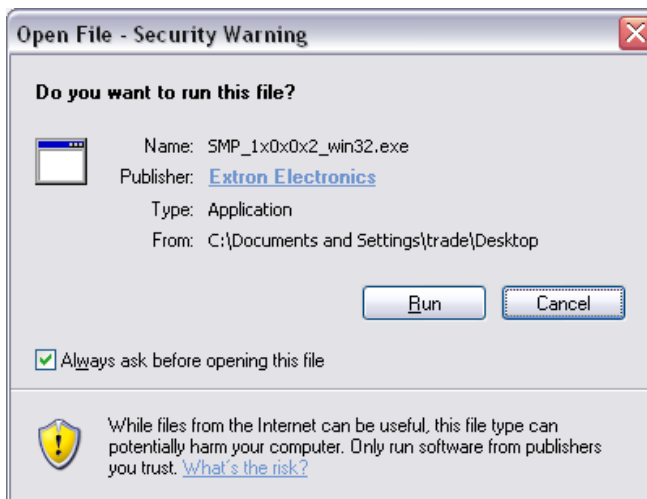


Figure 35. Security Warning

7. When the welcome dialog appears, click on **Next** to continue the installation (see figure 36).



Figure 36. SMP Installer

8. A License Agreement dialog box appears next. Read the agreement, then click **Next** to continue the installation (see figure 37) .

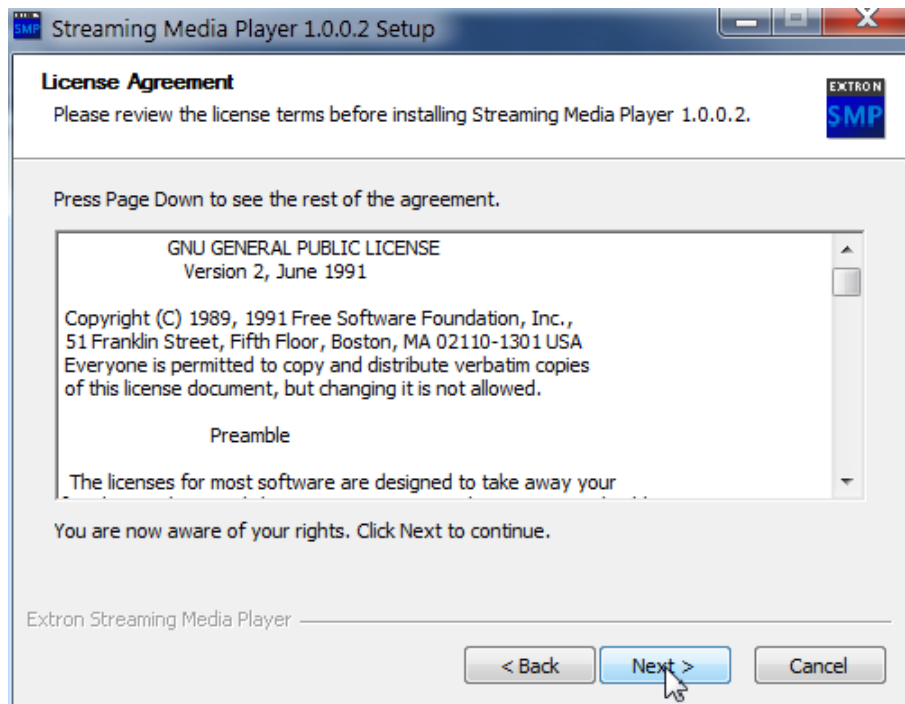


Figure 37. License Agreement

9. It is recommended to accept the default folder location, but a different location can be entered or selected using the **Browse** button. to a new location. Click **Install** when ready (see figure 38).

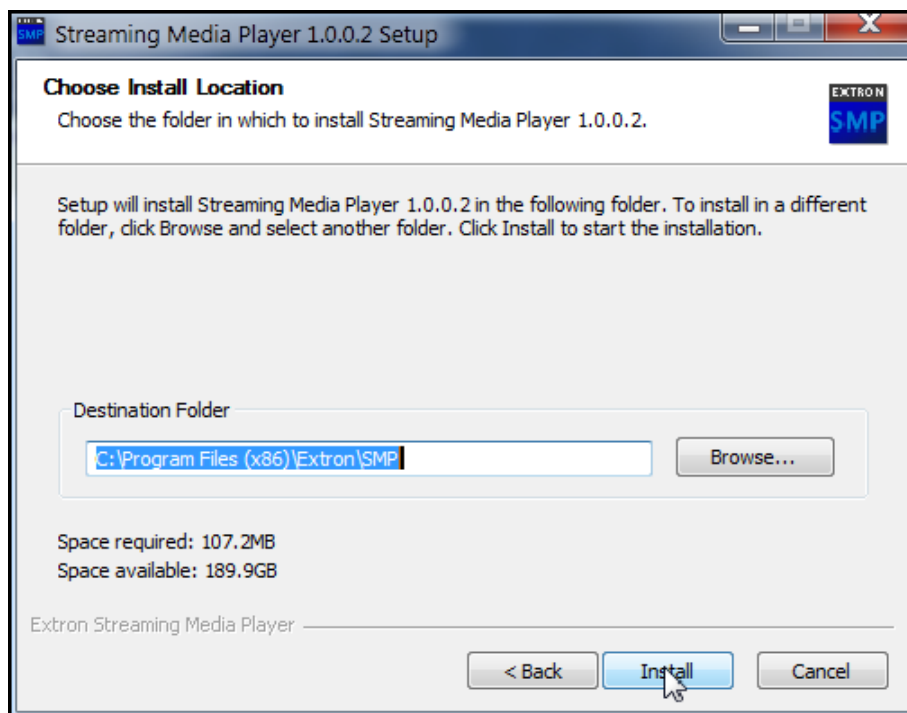


Figure 38. Change Install Location or Install

10. After the installation is complete the following dialog appears.



Figure 39. SMP Installation Completed

11. Select **Finish** to complete the installation. The SMP web browser plugin is now installed.
12. Restart the web browser.

Installing SMP from the Website

If the SME 100 firmware was manually upgraded, the SMP web plugin must be downloaded from the Extron website.

Use the following procedure to download the latest SMP player browser plugin.

1. Go to www.extron.com and search for the SME 100 product page.
2. Select the **Downloads** tab, then select the **SMP Web Browser Plugin** link.
3. Follow the instructions that appear on the screen.
4. The file is saved onto the computer. Note the folder where the firmware file is saved.
5. Navigate to the downloaded file, then double-click on it to launch the SMP installer.
6. When the File Download dialog appears, click on **Run** to begin the installation (see figure 40).

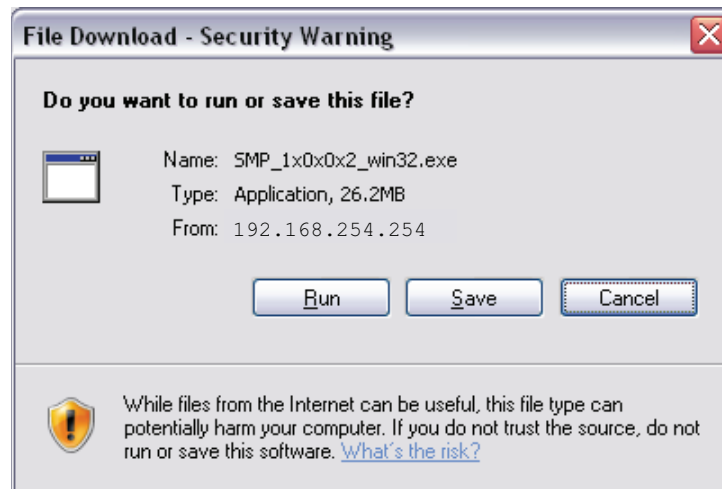


Figure 40. SMP Web Browser Plugin Installer

Go to **Step 7** on page 53 to complete the installation.

Installing VLC Media Player Stored on the SME 100 (FW 1.0 Only)

When using firmware versions older than FW 2.0, VLC media player must be installed. SMP will not function with older firmware versions.

NOTE: Extron recommends upgrading all SME 100 devices to the latest firmware and using SMP as the default web browser plugin.

Use the following procedure to install VLC media player (version 1.1.10).

1. Access the web-based user interface of the SME 100 (see "[Accessing the Web-based User Interface](#)" on page 47).
2. When the VLC media player prompt appears on the Live View page, click on the first **here** link (see figure 41).

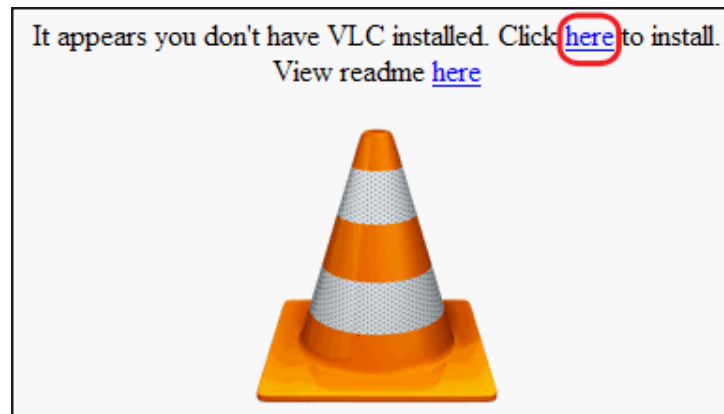


Figure 41. Live View Page – Media Player Installation Prompt

NOTES:

- If the link shown in figure 41 does not appear on the Live View page and a blue player window (with Extron logo) is displayed (see [figure 28](#) on page 48), a version of VLC media player is already installed. Verify the installed VLC media player is version 1.1.10 or version 2.0.2 (open the player, select the **Help** menu from the toolbar, then select **About**). If neither version is installed, uninstall the player and do this procedure again.
- If the link shown in figure 41 does not appear on the Live View page and VLC media player has not been installed previously to the control PC or viewing device, see "[Installing VLC media player using the File Management Page](#)" on page 62.
- A yellow security bar may appear at the top of the browser window after the first **here** link is clicked. If this happens, click the security bar and click **Download File**, then click the first **here** link again.

3. A File Download window appears. Click **Run** to download and start the VLC media player installation (see figure 42).

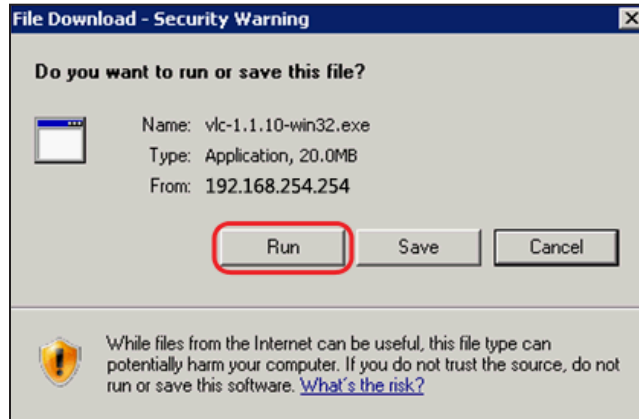


Figure 42. File Download Window

NOTE: The file can also be saved to the control PC or viewing device by pressing the **Save** button. After the file has been saved, navigate to the executable software file and double-click it to start the VLC media player installation.

4. A Security Warning window may appear that warns about running an unknown application. If this happens, verify the VLC media player installation file is shown in the **Name** field and click on the **Run** button (see figure 43).



Figure 43. Security Warning Window

5. From the Installer Language window, select the desired reading language from the drop-down menu and click **OK** (see figure 44).



Figure 44. Installer Language Window

6. The VLC media player installer welcome window appears. Click **Next** (see figure 45).

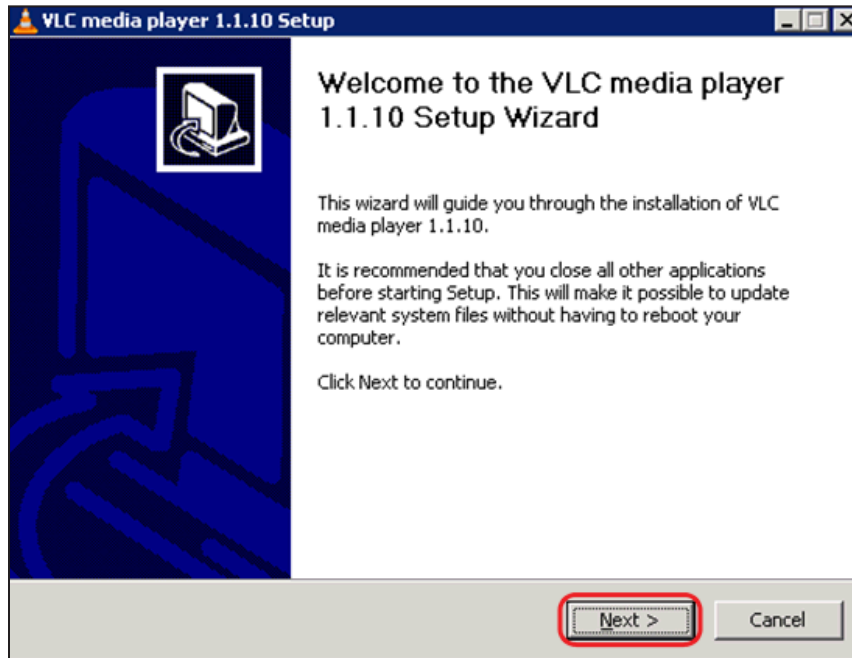


Figure 45. VLC Media Player Installer Welcome Window

7. The VLC media player agreement window appears. Read over the agreement and license terms. To accept the agreement, click **Next** (see figure 46).

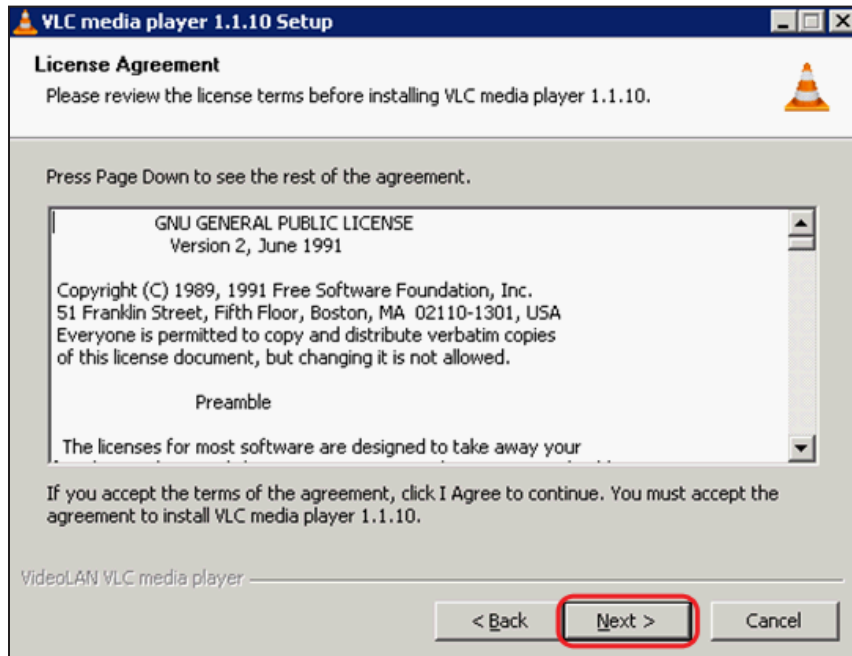


Figure 46. VLC Media Player Agreement Window

- The VLC media player components window appears (see figure 47). Make sure the **Full** option is selected from the **Select the type of install** drop-down menu. Click **Next**.

NOTE: Compatibility issues between the SME 100 and the VLC media player plugin may occur if a full installation is **not** selected.

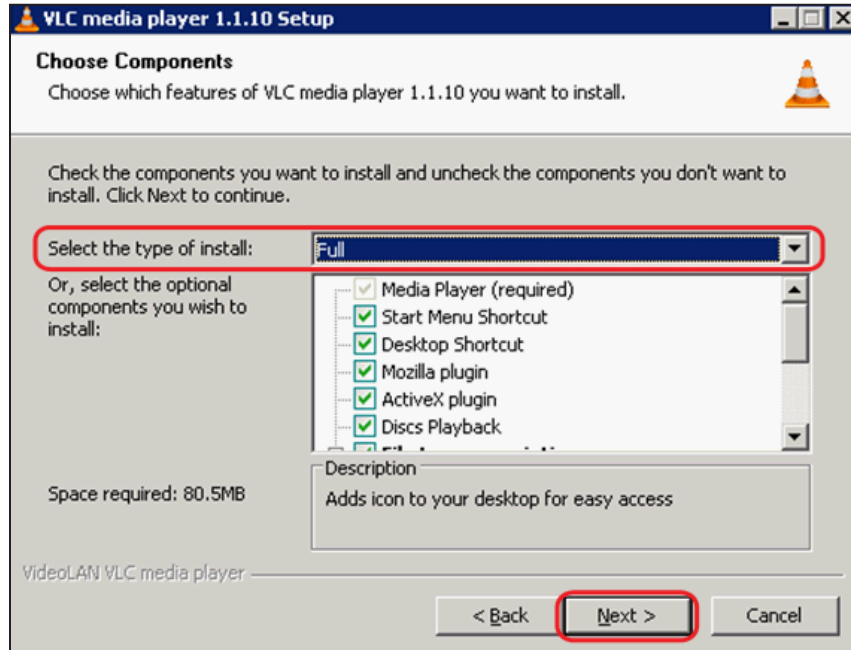


Figure 47. VLC Media Player Components Window

- The VLC media player install location window appears. If necessary, click on the **Browse** button to select an installation location for VLC media player. Click **Install** (see figure 48).

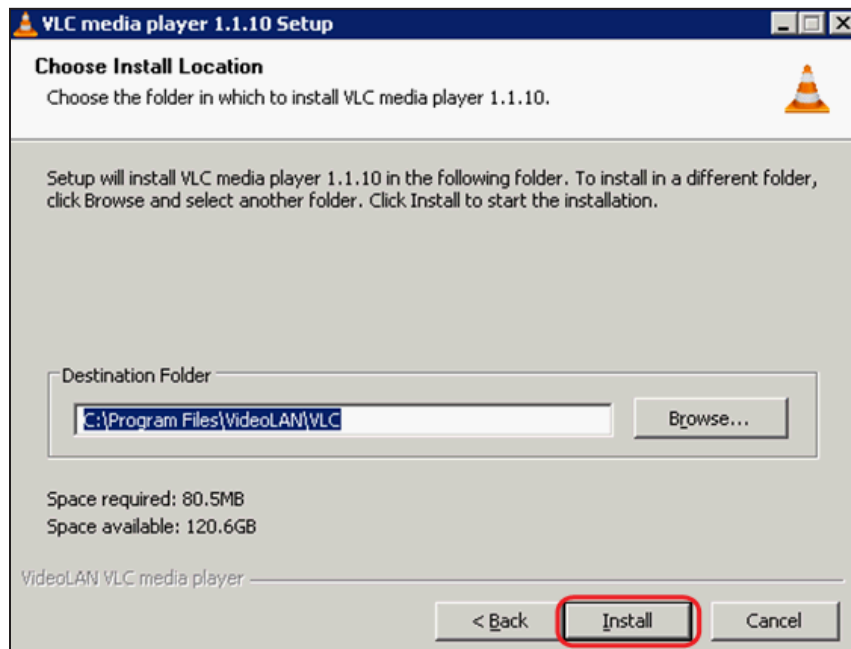


Figure 48. VLC Media Player Install Location Window

10. The VLC media player installation will require a few minutes to complete. When installation is complete, the window shown in figure 49 appears. Make sure the **Run VLC media player 1.1.10** check box is selected and click **Finish**.



Figure 49. VLC Media Player Install Complete Window

11. VLC media player is launched automatically (when the **Run VLC media player** check box is selected in the previous step) and the Privacy and Network Policies window appears. Since the SME 100 is currently compatible with version 1.1.10 of VLC media player, it is best to disable the check for updates feature. Deselect **Check for updates** and click **OK** (see figure 50).



Figure 50. Privacy and Network Policies Window – Disabling Updates

12. It is recommended to reboot the control PC or viewing device after the VLC media player installation has finished.
13. Access the web-based user interface of the SME 100 (see "[Accessing the Web-based User Interface](#)" on page 47). The Live View page should now contain a blue player window (with Extron logo; see [figure 28](#) on page 48). Click the **Play** icon to view a live stream.

Installing VLC Media Player Using the File Management Page

This is an alternate procedure that can be used to install VLC media player (version 1.1.10) to a control PC or viewing device when using firmware version 1.0.

1. If necessary, access the web-based user interface of the SME 100 (see "[Accessing the Web-based User Interface](#)" on page 47).
2. Click the **File Management** tab. The File Management page appears (see figure 51).

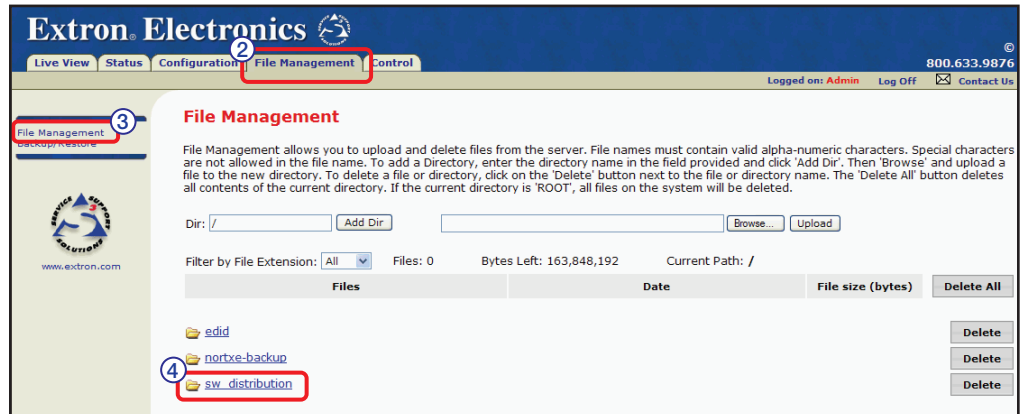


Figure 51. File Management Page – Software Distribution

3. If the File Management page does not open, select the **File Management** link on the left sidebar. This opens the File Management directory.
4. From the File Management page, click the **sw_distribution** link. This opens the sw_distribution directory.
5. From the sw_distribution directory, click the **Windows** link. This opens the Windows directory (see figure 52).

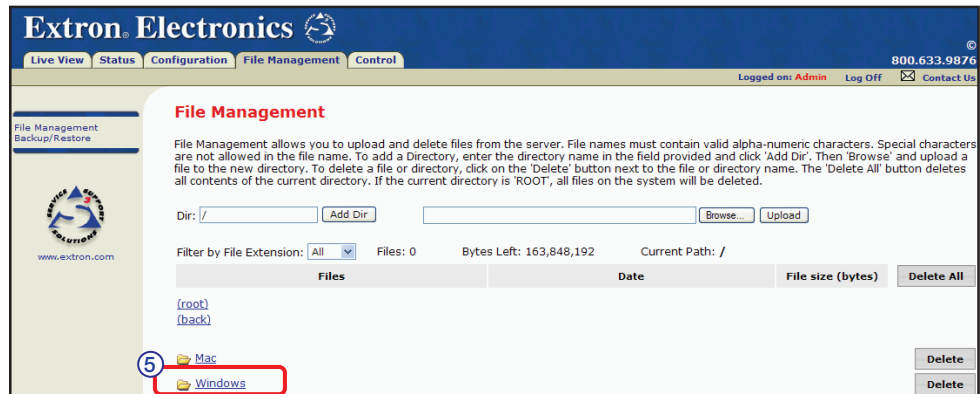


Figure 52. File Management Page – Media Player Installation

- From the Windows directory, click on the VLC media player file to start the installation process (see figure 53).

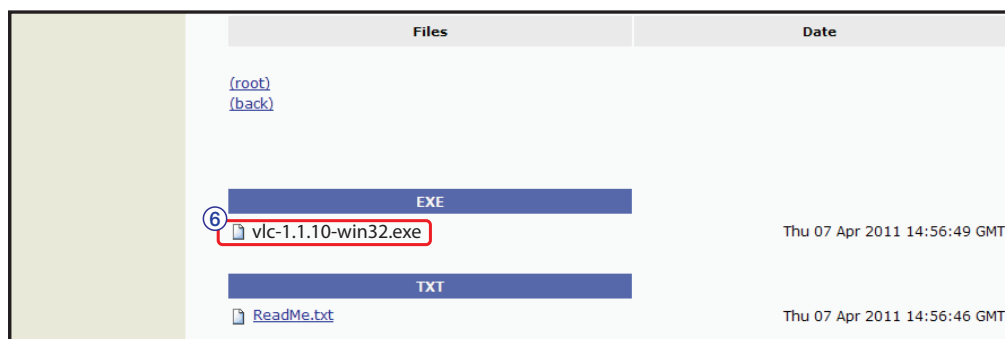


Figure 53. File Management Page – VLC media player Install File

- Proceed to step 3 of the "Installing VLC Media Player Stored on the SME 100" section on page 57.

Installing QuickTime Media Player

In some cases, a user may want to use QuickTime media player. For Mac computers, QuickTime is the only plugin available. The SME 100 can use version 7.7.1 of the player. Use the following procedure to install QuickTime media player.

NOTE: Version 7.7.1 of QuickTime media player is recommended. Other versions of QuickTime media player may cause playback and compatibility issues.

- Download and install QuickTime media player to the control PC or viewing device (www.apple.com/quicktime).
- When QuickTime media player has finished installing, it has to be selected as the default player on the SME 100 (see "Live View Settings Page" on page 98).
- Reboot the control PC or viewing device after the QuickTime media player installation and configuration is complete.
- Access the web-based user interface of the SME 100 (see "Accessing the Web-based User Interface" on page 47). The live stream automatically plays when the Live View page is loaded.

Displayed Video Image Adjustments

This section details how to adjust the image of the displayed video when viewed on a control PC or viewing device using a media player. This section focuses on making image adjustments using a control PC or viewing device and a Microsoft® Windows® operating system.

The following media players are used:

- Extron SMP web browser plugin version 1.0 (SME 100 firmware versions 2.0 and higher)
- VLC media player version 1.1.10 or version 2.0.2
- QuickTime media player version 7.7.1

Certain image adjustments may not be available depending on the type of video card installed on the control PC or viewing device.

Global image adjustments that affect everyone viewing the stream can also be made:

- On the front panel of the SME 100 using the **Picture Control** menu (see page 31).
- Using the **Control** page (see page 77) of the SME 100 web-based user interface.
- Using the **Picture Adjustments** SIS commands (see page 136).

NOTE: The SMP web browser plugin has no picture adjustments. If picture adjustments are required, they can be done using the global image adjustments above.

Using the Graphics Card Software

Generally, the image adjustments included with the media player should be used. However, there are ways to adjust the graphics card image settings which affect the picture quality of the display. Most graphics cards have their own software used to adjust various video settings. The software can be found on most PCs by selecting **Start > All Programs** and then selecting the program that correlates to the graphics card.

Graphics card image adjustments can only be made when the graphics card **software is installed** on the control PC or viewing device (not recommended).

Graphics card software will only affect the image settings of the media player plugin when the **Use Application Setting** configuration option is selected (enabled). This configuration option is usually found within the software of the graphics card.

NOTE: The adjustment buttons on the monitor or display hardware can also be used to configure image settings if necessary.

Using VLC

NOTES:

- This procedure only affects the image of streamed video that is played back on the VLC media player.
- Image settings should be changed while playing a SME 100 stream using VLC media player.

Use the following procedure to adjust the image settings of VLC media player.

1. Run VLC media player. From the desktop, select **Start > All Programs > VideoLAN > VLC media player**.

- The VLC media player appears. While playing a SME 100 stream (see the "[Playing a Stream Using VLC Media Player](#)" section on page 158), from the **Tools** menu, select **Effects and Filters** (see figure 54).

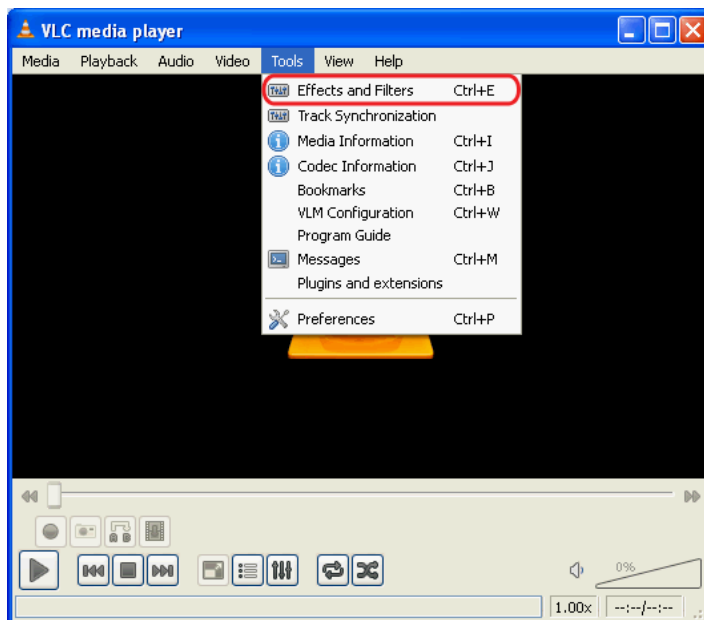


Figure 54. VLC media player — Effects and Filters

- The Adjustments and Effects window appears. Click the **Video Effects** tab and under the **Basic** tab, select the **Image adjust** check box (see figure 55). Image settings are now able to be configured.

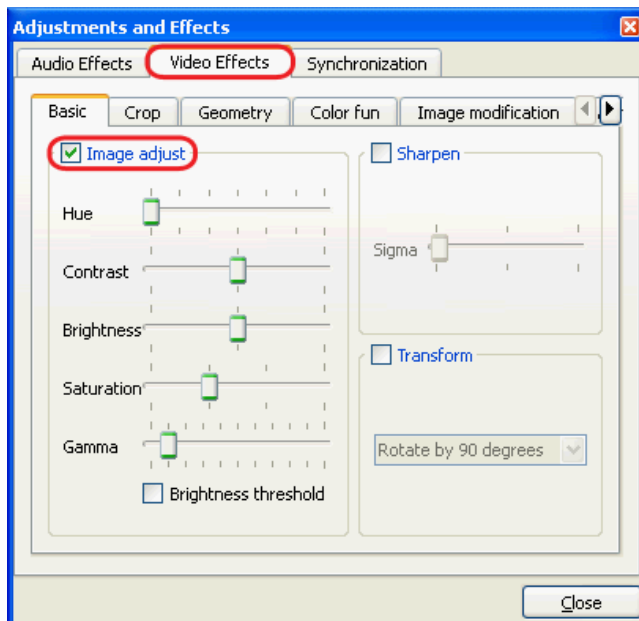


Figure 55. Adjustments and Effects Window

NOTE: If the SME 100 is not currently being used for live streaming, select the 32 level gray scale test pattern (see [About the Test Pattern Submenu](#) on page 41) to assist with brightness and contrast settings. All 32 levels should be visible. If the correct setting cannot be achieved with the VLC controls, it may be necessary to return the VLC settings to their midrange levels, then adjust the input specific settings on the SME 100 (see [Picture Control Menu](#) on page 31).

Using QuickTime Media Player

NOTES:

- This procedure only affects the image of streamed video that is played back on QuickTime media player.
- Image settings should be changed while playing a SME 100 stream using QuickTime media player. To play a stream using QuickTime media player, see the "[Playing a Pull Stream Using QuickTime Media Player](#)" section on page 162.

Use the following procedure to adjust the image settings of QuickTime media player.

1. Run QuickTime player. From the desktop, select **Start > All Programs > QuickTime > QuickTime Player**.
2. The QuickTime media player appears. While playing a SME 100 stream (see the "[Playing a Pull Stream Using QuickTime Media Player](#)" section on page 162), from the **Window** menu, select **Show A/V Controls** (see figure 56).

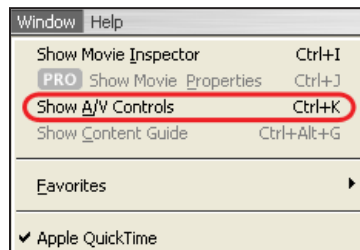


Figure 56. QuickTime Player Menu — Show A/V Controls

3. The A/V Controls window appears. Image settings can now be configured.

Status Page

The Status page is accessed by selecting the **Status** tab (see figure 57).

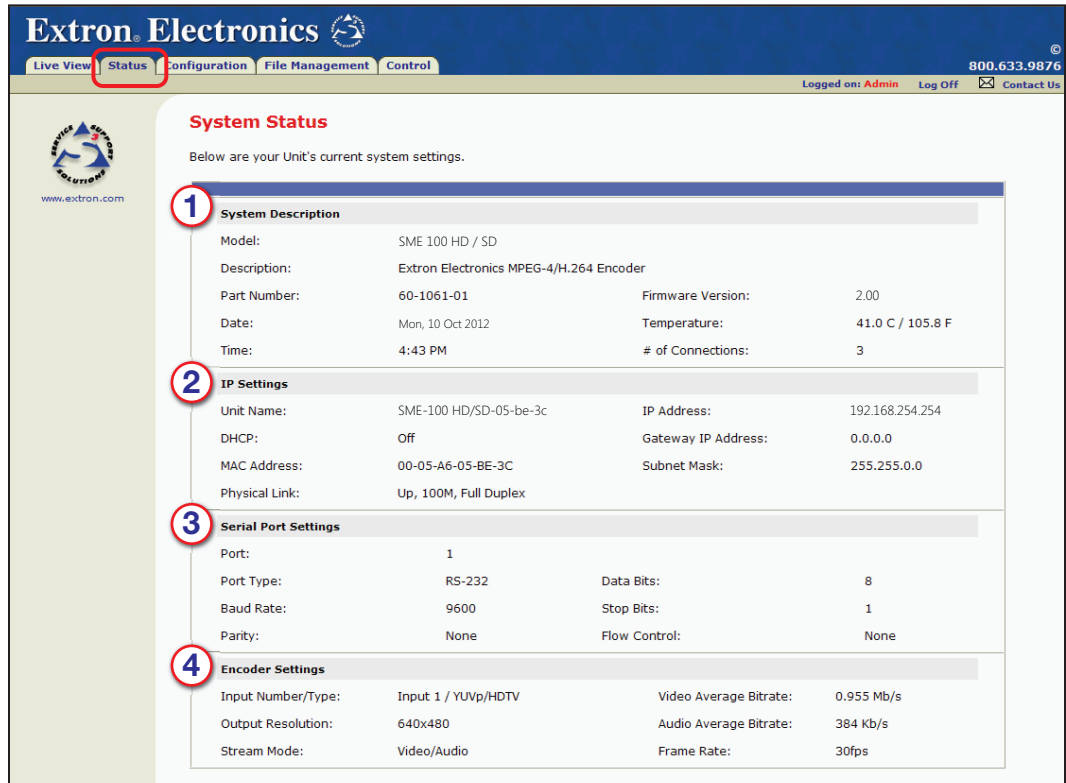


Figure 57. Status Page

The Status page displays general information about the SME 100.

① System Description panel

- **Model** — This field displays the model name of the unit.
- **Description** — This field displays a brief description of the unit.
- **Part Number** — This field displays the part number of the unit.
- **Firmware Version** — This field displays the current firmware version. For information on how to update the SME 100 firmware, see the "[SME 100 Firmware Updates](#)" section on page 170.
- **Date** — This field displays the date. The date is set on the [System Settings](#) page (see page 85).
- **Temperature** — This field displays the current temperature of the unit.
- **Time** — This field displays the time. The time is set on the [System Settings](#) page (see page 85).
- **# of Connections** — This field displays the number of users connected to the unit, but not the number of streams. To see the connected users, go to the [Security](#) page (see page 113).

② IP Settings panel

- **Unit Name** — This field displays the network name of the unit. This name can be changed on the [System Settings](#) page (see page 85).
- **IP Address** — This field displays the IP address of the unit. The IP address can be changed on the [System Settings](#) page (see page 85).
- **DHCP** — This field displays the Dynamic Host Configuration Protocol (DHCP) status. DHCP can be enabled and disabled on the [System Settings](#) page (see page 85).
- **Gateway IP Address** — This field displays the gateway IP address of the unit. The gateway IP address can be changed on the [System Settings](#) page (see page 85).
- **MAC Address** — This field displays the Media Access Control (MAC) address.
- **Subnet Mask** — This field displays the subnet mask address. The subnet mask address can be changed on the [System Settings](#) page (see page 85).
- **Physical Link** — This field displays information on the physical link of the unit.

③ Serial Port Settings panel

- **Port** — Displays the serial port number of the unit.
- **Port Type** — Displays the type of serial port type on the unit.
- **Data Bits** — Displays the number of data bits used for communication with the unit. This setting can be changed on the [Port Settings](#) page (see page 103).
- **Baud Rate** — Displays the baud rate that is being used for communication with the unit. This setting can be changed on the [Port Settings](#) page (see page 103).
- **Stop Bits** — Displays the number of stop bits that are being used for communication with the unit. This setting can be changed on the [Port Settings](#) page (see page 103).
- **Parity** — Displays the parity that is being used for communication with the unit. This setting can be changed on the [Port Settings](#) page (see page 103).
- **Flow Control** — Displays the flow control being used for communication with the unit. This setting can be changed on the [Port Settings](#) page (see page 103).

④ Encoder Settings panel

- **Input Number / Type** — This field displays the selected input number and the type of input video signal. The input number can be selected on the [Control](#) page (see page 77) and the type of input video signal can be selected on the [Encoder Settings](#) page (see page 88).
- **Video Average Bitrate** — This field displays the average bit rate of the video for the selected input.
- **Output Resolution** — This field displays the video output resolution of the selected input. The video output resolution can be changed on the [Encoder Settings](#) page (see page 88).
- **Audio Average Bitrate** — This field displays the average bit rate of the audio for the selected input.
- **Stream Mode** — This field displays the stream mode (video/audio or video only) of the selected input. The stream mode can be changed on the [Encoder Settings](#) page (see page 88).
- **Frame Rate** — This field displays the frame rate of the selected input. The frame rate can be changed on the [Encoder Settings](#) page (see page 88).

Configuration Page

The Configuration page contains eight additional links to pages that are used to configure the general settings of the SME 100. The "**Web-based Configuration Page**" section on page 84 presents a detailed overview of each configuration page. The following configuration pages are available.

- **System Settings Page**
- **Encoder Settings Page**
- **Live View Settings Page**
- **Port Settings Page**
- **Advanced Settings Page**
- **Security Page**
- **Firmware Upgrade Page**
- **Reset Page**

File Management Page

The File Management page is accessed by selecting the **File Management** tab (see figure 58).

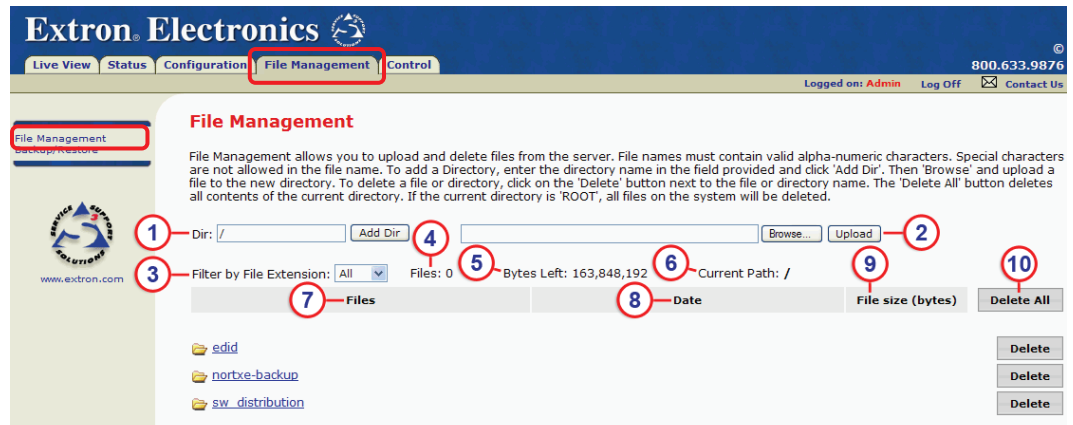


Figure 58. File Management Page

The File Management page is used to upload files from a server or control PC to the SME 100. The types of files that can be uploaded to the SME 100 include script, event, image, custom web pages, and executable files. This page can be used to store important files in a central location which allows for simpler system maintenance and system recovery.

- ① **Add directory** — This field is used to add new directories. Enter the desired directory name into this field and click the **Add Dir** button to create a new directory. See the "**Adding Directories**" section on page 71 for more information on creating directories.
- ② **Browse and upload file** — Use this field to upload files to the SME 100. Click on the **Browse** button and use the file browser to navigate to the location of file that will be uploaded to the SME 100. Select the file and click **Upload** to place the file on the SME 100. See "**Uploading Files**" on page 72 for more information on uploading files to the SME 100.

NOTE: If the file uploaded to the SME 100 is larger than the available memory shown in the **Bytes Left** field, a message appears notifying the user that not enough free space is available to store the file.

③ **Filter by File Extension** — Use this drop-down menu to view files that contain certain extensions. Only the files that contain the specified extension will be shown. By default, two filters are available.

- **All** — Select this filter to show all of the available files within a directory.
- **None** — Select this filter to hide all of the files within a directory. Only directories are visible when using this filter.

As other files are uploaded to the SME 100, the extension of each file is added to the drop-down menu.

NOTES:

- When entering another directory, the **Filter by File Extension** drop-down menu defaults to the **All** filter.
- The **Filter by File Extension** drop-down menu does not filter directories.

④ **Files** — This field displays the total number of files that are in the current directory.

NOTES:

- Directories are not included in the total number that is displayed.
- The **Filter by File Extension** drop-down menu does not affect the total number that is displayed.

⑤ **Bytes Left** — This field displays the amount of available memory (in bytes) on the SME 100 that can be used for file storage.

⑥ **Current Path** — This field displays the current folder path. Each folder directory is separated by a slash (/) character.

NOTE: When this field displays only a slash (/) character, the root directory on the SME 100 is displayed.

⑦ **Files column** — This column displays the files and, directories, and subdirectories that are in the current folder location (path). See the "[Browsing Directories and Files](#)" section on page 71 for more information on browsing directories and files.

⑧ **Date column** — This field displays the date and time that the file was uploaded to the SME 100.

⑨ **File size (bytes) column** — This field displays the size of each file in bytes.

⑩ **Delete buttons** — These buttons are used to remove directories or files from the SME 100. Two delete options are available.

- **Delete All** — Click the **Delete All** button to remove all directories and files from the selected folder directory.
- **Delete** — Click the **Delete** button to remove the selected directory or file (in that row) from the SME 100.

Browsing Directories and Files

Use the following guidelines to browse directories and files on the File Management page.

- Click on a directory link to view the files stored in the folder (see figure 59).



Figure 59. File Management Page – Directory Links

- Use the **root** and **back** links (see figure 60) to navigate between directories.
 - Click the **root** link to go to the root directory (/).
 - Click the **back** link to go back to the previous directory.

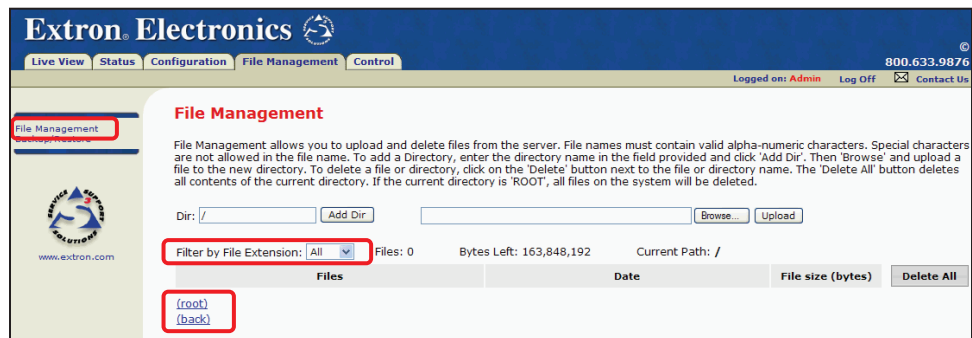


Figure 60. File Management Page – Root/Back Links; File Extension Sorting

- Files are sorted by extension type.
- The web browser navigation buttons **cannot** be used to navigate between directories on the File Management page.

Adding Directories

Use the following procedure to create a directory on the SME 100.

NOTE: New directories cannot be created in the **sw_distribution** folder.

1. Navigate to the desired location where a directory is to be created (see the "[Browsing Directories and Files](#)" section above for navigation guidelines).
2. As directories are opened, the **Dir** field is updated with the current folder location (path). To create a new directory within the current folder location (path), enter a forward slash character (/) at the end of the current folder location (path) followed by the desired name of the new directory (see figure 61).

Example: /current_folder_location/new_directory



Figure 61. File Management Page – Adding Directories

3. Click the **Add Dir** button to add the new directory to the current folder location (path).

Uploading Files

Use the following procedure to upload files to the SME 100.

NOTE: If the file uploaded to the SME 100 is larger than the amount of available memory shown in the **Bytes Left** field, a message appears notifying the user that not enough free space is available to store the file.

1. Navigate to the desired location where files will be uploaded (see the "**Browsing Directories and Files**" section on page 71 for navigation guidelines).
2. While in the directory where the file will be saved, click the **Browse** button (see figure 62) and use the file browser to navigate to the location of the file to be uploaded to the SME 100. Select the file and click **Open**.



Figure 62. File Management Page — Uploading Files

3. Click the **Upload** button to save the file to the SME 100. The file is saved in the current directory.

Saving Files

The File Management page allows users to save a file located in any of the SME 100 directories to other locations for backup or to use with another SME 100.

To save a file:

1. Navigate to the directory where the file is located (see "**Browsing Directories and Files**" on page 71 for navigation guidelines).
2. While in the directory, click the desired file (see figure 63).



Figure 63. File Management Page — Double-click File

3. The File Download dialog appears (see figure 64).

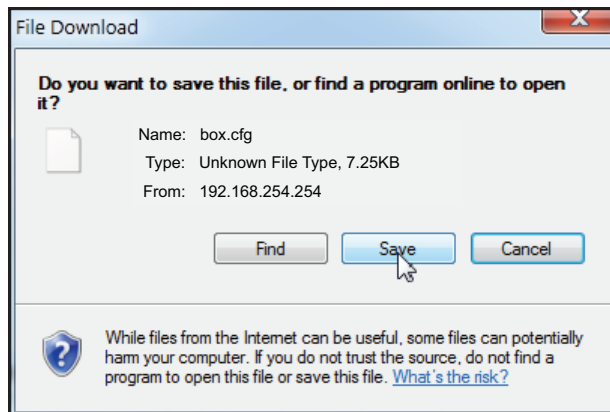


Figure 64. File Download Dialog Box

4. Click **Save**, then select the file save location for the copied file. The file can be saved to any location, such as a network drive, flash drive, or on the hard drive.

Managing Files Using FTP

The SME 100 can act as an FTP file server. FTP provides an alternate method to accessing the backup files of the SME 100. To manage files on the SME 100 using FTP:

1. From the control PC, open a web browser.
2. In the **Address** field, enter the IP address of the SME 100 using the following format, `ftp://[SME 100 IP address]` then press <Enter> (see figure 65).

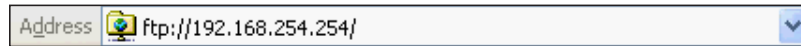


Figure 65. Enter an FTP Address (shown 192.168.254.254)

3. A Log On As window appears. Enter a user name and password and click **Log On** (see figure 66). For information on user names and passwords, see the "**Security Page**" section on page 113.

NOTE: If no password is required to access the SME 100, enter a single space character into the **Password** field.

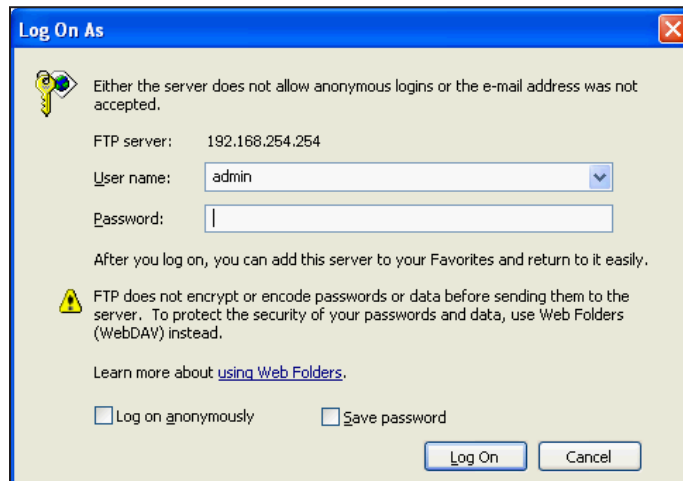


Figure 66. FTP Log On As Prompt

4. The computer is now connected to the SME 100 (see figure 67). Files can be viewed, copied, uploaded, and removed using this FTP window.

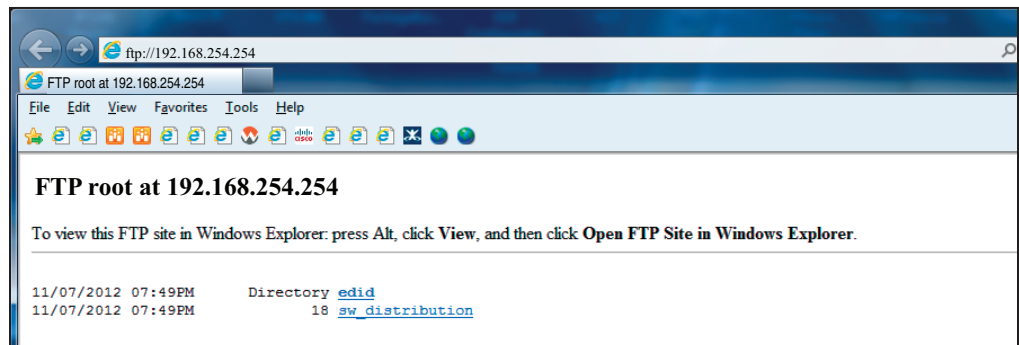


Figure 67. FTP Window

Backup/Restore Page

The File Management tab also contains a backup and restore page, accessed by clicking on the **Backup/Restore** link on the left sidebar (see figure 68).

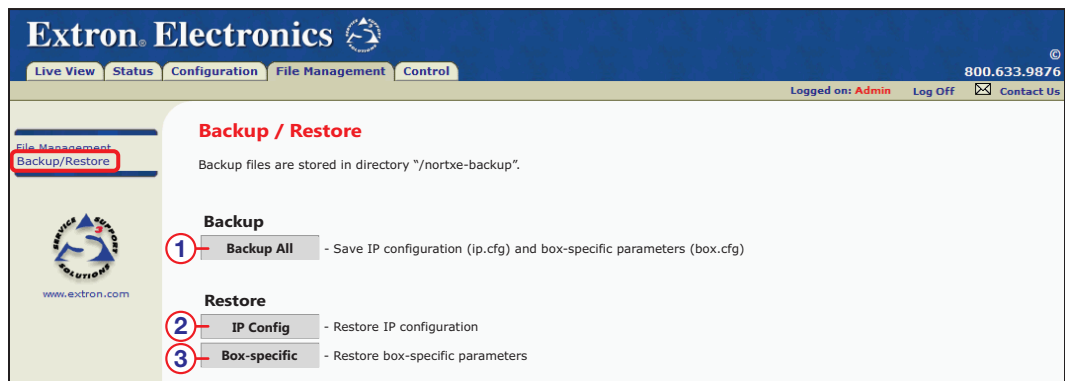


Figure 68. Backup/Restore Page

NOTE: FTP provides an alternative method to accessing and managing the backup files of the SME 100. See "[Managing Files Using FTP](#)" on page 73 for information.

The current configuration settings of connected devices can be saved and recalled using the Backup/Restore page. The backup is saved as two files; IP config and box-specific. Both files are saved when executing a **Backup All**, but each file must be restored individually. All backups use the same filenames, so a current **Backup All** overwrites previous files.

The Backup/Restore page contains the following options:

① **(Backup) Backup All** — Click this button to save all IP configuration and box specific parameters from the connected SME 100. A folder is automatically created on the File Management page called `nortxe-backup` and contains the `ip.cfg` and `box.cfg` files. These two files are used with the **Restore IP Config** (②) and **Restore Box-specific** (③) buttons when restoring configuration settings.

② **(Restore) IP Config** — Click this button to restore the IP configuration that was last saved using the **Backup All** button above.

NOTE: If the SME 100 was not backed up previously, or if there is not an `ip.cfg` file stored in the `nortxe-backup` folder, the **Restore IP Config** button will not be able to restore the IP configuration for the SME 100.

③ **(Restore) Box-specific** — Click this button to restore the box specific parameters last saved using the **Backup All** button above.

NOTE: If the SME 100 was not backed up previously, or if there is not a `box.cfg` file stored in the `nortxe-backup` folder, the **Restore Box-specific** button will not be able to restore the box specific parameters for the SME 100.

When the device is new or recently reset, there will be no backup files. A backup will need to be completed before a restore can be accomplished. The following sections provide procedures for using these buttons appropriately.

Backing Up the SME 100 Using Backup All

If a Backup All has never been done, or to do a routine backup of both the IP and Box configuration files:

1. Connect the SME 100 (see "[Rear Panel Features](#)" on page 12).
2. Open a web-browser and enter the IP address of the SME 100 (see "[Accessing the Web-based User Interface](#)" on page 47).
3. Go to the File Management Tab (see [figure 68](#) on page 74).
4. Select the **Backup/Restore** link on the left sidebar of the File Management page.
5. Under Backup select **Backup All** (item ① in [figure 68](#) on page 74).

NOTE: Two files, IP.CFG and BOX.CFG are placed in the nortxe-backup directory. Prior to the first backup, the nortxe-backup directory does not exist. The SME 100 creates it, then places the two files in it.

Backup of the current SME 100 configuration is complete. The two files (IP.CFG and BOX.CFG) can be used at any time to return the SME 100 to this state.

At this time, copies of the two files (IP.CFG and BOX.CFG) should be saved to a remote location for future use (see "[Saving Files](#)" on page 72).

Restoring Config Files from the Backup

Once a Backup All has been completed, the two backup files exist in the SME 100 nortxe-backup directory on the File Management page. To restore the IP.CFG or BOX.CFG files after making undesired changes, or to return the SME 100 to a known state:

1. Connect the SME 100 (see "[Rear Panel Features](#)" on page 12).
2. Open a web browser and enter the IP address of the SME 100 (see "[Accessing the Web-based User Interface](#)" on page 47).
3. Select the File Management Tab (see [figure 68](#) on page 74).
4. Select the **Backup/Restore** link on the left sidebar of the File Management page.
5. Under Restore there are two options to restore either the IP.CFG (② in [figure 68](#) on page 74) or BOX.CFG (③ in [figure 66](#)). Select the config file to restore. The restore program starts automatically.
6. Once completed, the program redirects to the Live View page.

NOTE: When restoring both configuration files, always do the BOX.CFG first followed by the IP.CFG. That prevents having to change the IP settings until after both configuration files have been restored.

Restoring the Configuration from Another SME 100

A BOX.CFG file from another SME 100 can be used to restore your SME 100 to a known configuration using the following instructions.

NOTES:

- Only use a donor SME 100 with the same firmware version.
- In the following procedures, the donor SME 100 is referred to as device D; the SME 100 that will be restored with the donor configuration is referred to as device A.

On the donor SME 100 (device D):

1. Complete the procedure "Backing Up the SME 100 using Backup All" on the previous page. If Backup All has already been completed, go to step 2.
2. Open a web-browser. Enter the IP address of device D, then press <Enter>.
3. Go to the File Management Tab (see [figure 68](#) on page 74).
4. Select the **File Management** link on the left sidebar of the File Management page.
5. Select the `nortxe-backup` directory, then select the `BOX.CFG` file.
6. Save the `BOX.CFG` file to a remote location such as a flash drive or network location (see ["Saving Files"](#) on page 72).

On the SME 100 to be restored (device A):

7. Complete the procedure "Backing Up the SME 100 using Backup All" .
If Backup All has already been completed, go to step 8.
8. In the web browser address line, enter the IP address of device A and press <Enter>.
9. Go to the File Management Tab.
10. Select the **File Management** link on the left sidebar of the File Management page.
11. Click the `nortxe-backup` directory
12. Using the SME 100 file management page, locate and select the `BOX.CFG` file from device D saved in step 6.
13. Select **Upload**. When asked to replace the current file, choose **Yes**.
14. Once the file is uploaded, select **Backup/Restore** from the left hand column of the File Management page.
15. Under Restore, select **Box-Specific**. The restore begins automatically.
16. When the restore has completed, the SME 100 automatically reboots and the browser returns to the Live View page.

The restore is complete. Your box now has the same configuration as the donor box.

NOTE: The `IP.CFG` file is provided as a means of restoring each box to a known IP configuration. Although an `IP.CFG` file from one box can be uploaded to another, it is not recommended. The file is meant as a backup for its specific box to resolve network issues.

If there is a need to upload an `IP.CFG` file from a donor box, your box will initially have the IP address of the donor box. Before communicating with your box, ensure the donor box is either disconnected from the network or its power removed; then use the donor IP address to communicate with your box. Once connected to your box, change its IP address to the desired one.

To reference the IP settings of the donor box, look at its front panel display.

Control Page

The Control page is accessed by selecting the **Control** tab (see figure 69).

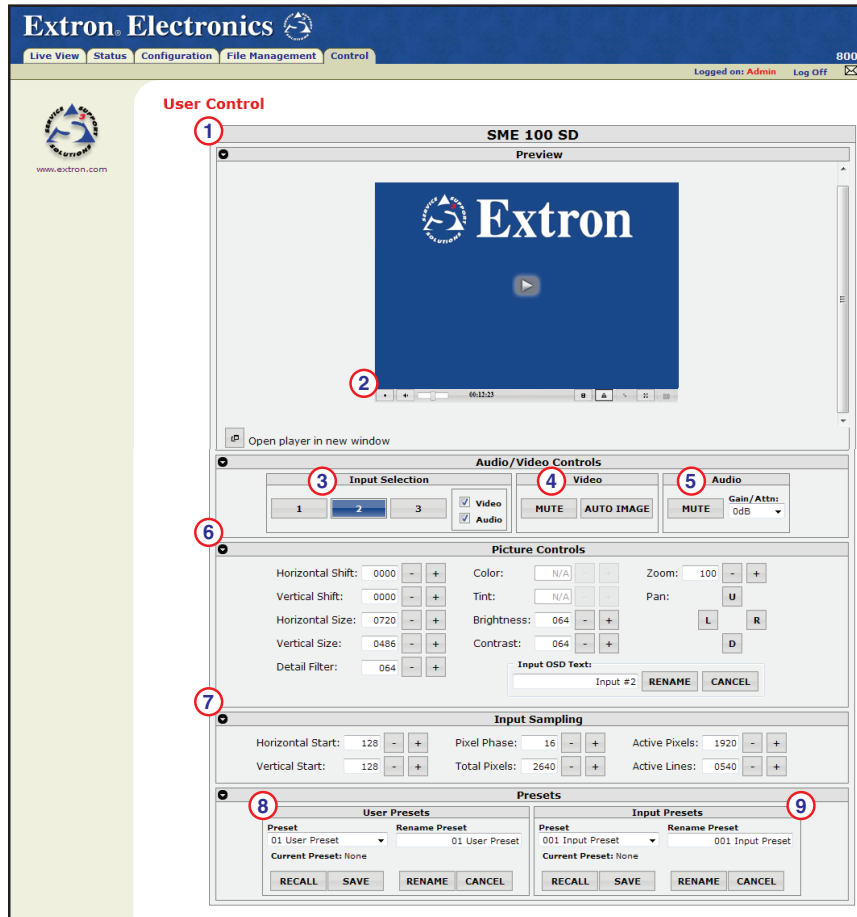




Figure 69. Control Page

The Control page is used to configure the individual settings of each input. Available settings that can be configured include audio controls, video/picture controls, input sampling controls, and preset controls (saving, recalling, and renaming).

1 Preview panel

NOTE: See the "**Live View Page Notifications**" on page 50 for information on notifications seen in the player window.

- **Play icon**  — This icon is located in the middle of the player window and is used to play live streaming media.
- **Open player in new window**  (lower left corner) — Click on this icon to open the preview window in a separate web browser.

NOTE: Opening the player stops the current stream. Press play in the new window to begin playing the stream.


② **Player toolbar** — The player toolbar provides the following live stream controls.



Figure 70. Live View Player Toolbar

- ②a **Play and Stop button** — This button is used to play and stop live streaming media.
- ②b **Volume mute button** — This button is used to mute and unmute the audio volume.
- ②c **Volume control** — This slider bar is used to adjust audio volume. This control is initially hidden. To reveal this control, hover over the volume mute button.
- ②d **Stream playback timer** — This timer displays the amount of time that the user has been streaming live media on the preview window. This timer is not initially displayed. Playing a live stream activates this timer. Pressing the **Stop** button stops the timer and the total streaming time is displayed.

NOTE: The timer resets to 00:00:00 when the play button is pressed.

The  icon may hide several configuration options. Hover over the icon to reveal the following buttons:

- ②e **Input select button** — This button allows the user to switch between live streams. Clicking on this button toggles through the inputs in sequence. Hovering over the button displays the currently selected input.
- ②f **View status button** — This button is used to view the status of the stream. When this button is pressed, a window appears that provides the video resolution, current video bit rate, average video bit rate, and the stream URL (see figure 71).

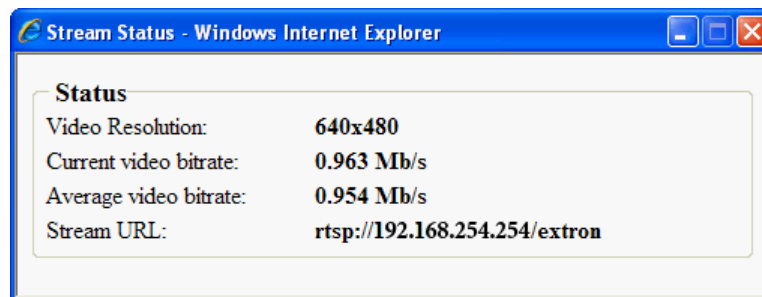


Figure 71. Stream Status Window

- ②g **Window resize button** — This button is used to resize the window that displays the live streaming media. When the Control page is initially opened, the display window fits the video image to the size of the Preview panel. Clicking on this button will resize the window (not the Preview panel) to display the native output resolution.

NOTES:

- This button will not be available if the video output resolution is smaller than the size of the Preview panel.
- When this button is pressed using SMP or VLC media players, the stream will stop. When the new window appears, the video can be restarted.

- ②h **Window fullscreen button** — This button is used to display the video at the full display resolution and size.

NOTE: For information on displaying a stream in full screen mode using other media players, see the "[Streaming Playback Methods](#)" section on page 157.

- ②i **Closed caption button** — This button is used to toggle closed captioning on or off.

③ **Audio/Video Controls panel — Input Selection**

- **Input selection buttons** — These buttons select (switch) inputs and can be used to create audio breakaway inputs. See "[Creating Audio Breakaway Inputs](#)" on page 81 for more information on audio breakaway inputs.

NOTES:

- A solid colored input selection button (see ③ in [figure 69](#) on page 77) indicates the selected input.
- A flashing input selection button indicates an audio breakaway input.

- Button **1** selects input 1 (component video, S-video, or composite video).
- Button **2** selects input 2 (component video, S-video, composite video, and RGB video [RGBHV, RGBS, RGsB, RGBcV]).
- Button **3** selects input 3 (DVI-D video).
- **Audio breakaway check boxes** — These check boxes work with the input selection buttons to create an audio breakaway input. To properly use these check boxes, use the following guidelines.
 - When using the input selection buttons to view streams (select inputs) in the Preview panel, make sure both the **Video** and **Audio** check boxes are selected.
 - An audio breakaway has been created when a solid colored input selection button and a flashing input selection button are both displayed. A solid colored LED and a flashing LED can also be seen when looking at the front panel.
 - The flashing input selection button represents the audio stream that is being used with the solid colored input selection button, which is streaming video.
 - For procedures on how to create audio breakaway inputs, see the "[Creating Audio Breakaway Inputs](#)" section on page 81.

④ **Audio/Video Controls panel — Video**

- **Mute button** — This button mutes the output video of the selected input. This button does not stop the output video stream and does not mute the audio. If another input is selected, the video mute feature is disabled.
- **Auto Image button** — When this button is pressed, a single automatic image adjustment is applied to the input signal. The table below details the settings that are affected when auto-image is turned on.

Auto Image Affected Settings		
Web Page	Affected Settings	
Control	Horizontal Shift	Vertical Start
	Vertical Shift	Pixel Phase
	Horizontal Size	Horizontal Active Pixels
	Vertical Size	Vertical Active Lines
	Horizontal Start	

NOTE: The remaining configuration options are left unchanged when auto-image is enabled.

⑤ Audio/Video Controls panel — Audio

- **Mute button** — This button mutes the output audio of the selected input. This button does not stop the output audio stream and does not mute the video. The audio mute feature remains active when other inputs are selected. Clicking the **Mute** button again removes the audio mute feature.
- **Gain/Attenuation control** — This drop-down menu is used to set the audio level for the currently selected input. The range of settings –15 dB to +15 dB.

⑥ Picture Controls panel

To adjust the following picture adjustments (except for the **Pan** and **Input OSD Text** fields), enter the desired value directly into the field or use the or icons to adjust the values by ±1.

- **Horizontal Shift** — This field is used to set the horizontal position of the active video for the selected input. The default is **0**.
- **Vertical Shift** — This field is used to set the vertical position of the active video for the selected input. The default is **0**.
- **Horizontal Size** — This field is used to set the horizontal size of the active video for the selected input. The range of settings is **0** to **4096**.
- **Vertical Size** — This field is used to set the vertical size of the active video for the selected input. The range of settings is **0** to **4096**.
- **Detail Filter** — This field is used to adjust the image sharpness and noise reduction of the active video for the selected input. Image sharpness and noise reduction are simultaneously increased or decreased when configuring this option. The range of settings is **0** to **127**. The default is **64**.
- **Color** — This field is used to adjust the color of the active video for the selected input. The range of settings is **0** to **127**. The default is **64**.
- **Tint** — This field is used to adjust the tint of the active video for the selected input. The range of settings is **0** to **127**. The default is **64**.
- **Brightness** — This field is used to adjust the brightness of the active video for the selected input. The range of settings is **0** to **127**. The default is **64**.
- **Contrast** — This field is used to adjust the contrast of the active video for the selected input. The range of settings is **0** to **127**. The default is **64**.
- **Zoom** — This field is used to increase (zoom in) or decrease (zoom out) the size of the active video (for the selected input) while keeping the aspect ratio constant. The maximum zoom percentage is dependent on the input size, output size and other factors. The range of settings is **14** percent to **572** percent. The default is **100** percent.
- **Pan** — This control is used to adjust the viewing angle. Press the icon to shift the viewing angle up. Press the icon to shift the viewing angle right, the icon to shift the viewing angle down, the icon to shift the viewing angle left.
- **Input OSD Text** — Use this field to specify the name that is seen on an output display when an input is selected. The input OSD text label is an on-screen label that appears as small white text placed on a black background in the top left corner of the output display window.

To configure the input OSD text label, enter the desired input name into the **Input OSD Text** field (16 characters maximum) and click the **Rename** button. Clicking the **Cancel** button clears any changes that were made.

⑦ Input Sampling panel

To adjust the following picture adjustments, enter the desired value directly into the field or use the or icons to adjust the values by ± 1 .

- **Horizontal Start** — This field is used to set the horizontal start position of the active video for the selected input. The default is **128**.
- **Vertical Start** — This field is used to set the vertical start position of the active video for the selected input. The default is **128**.
- **Pixel Phase** — This field is used to set the pixel phase of the active video for the selected input. The range of settings is **0** to **31**. The default is **16**.
- **Total Pixels** — This field is used to set the total pixels of the active video for the selected input.
- **Active Pixels** — This field is used to set the horizontal active pixels of the active video for the selected input.
- **Active Lines** — This field is used to set the vertical active lines of the active video for the selected input.

⑧ Presets panel — User Presets

For information on saving, recalling, and renaming user presets, see the "[User and Input Presets](#)" section on page 82. The currently active preset is shown under the **Preset** drop-down box.

⑨ Presets panel — Input Presets

For information on saving, recalling, and renaming input presets, see the "[User and Input Presets](#)" section on page 82.

Creating Audio Breakaway Inputs

To create an audio breakaway input (method 1):

1. Start by choosing an input using the [input selection buttons](#) (see page 79; make sure both the **Video** and **Audio** check boxes are selected initially). The chosen input should be streaming the **audio data** to be played over another input stream.
2. Select the **Video** check box and deselect the **Audio** check box.
3. Select the input that contains the video requiring an audio breakaway input. **Do not** select the same input that was selected in step 1.
4. The input selection button selected in step 1 should now be flashing which indicates that the audio data from this input is being used with the video of the input selected in step 3 (this input is represented with a solid colored input selection button).

To create an audio breakaway input (method 2):

1. Start by choosing an input using the input selection buttons (make sure both the **Video** and **Audio** check boxes are selected initially). The chosen input should be streaming the video data that requires audio from another input stream.
2. Check the **Audio** box and uncheck the **Video** box.
3. Select the input (see [input selection buttons](#) on page 79) that contains the audio requiring an audio breakaway. **Do not** select the same input that was selected in step 1.
4. The input selection button selected in step 3 should now be flashing which indicates that the audio data from this input is being used with the video of the input selected in step 1 (this input is represented with a solid colored input selection button).

User and Input Presets

There are two types of presets on this page.

- **User Presets** — User presets are used when a shortcut is needed to quickly recall a group of settings that relate to the current content or current input.

The User Presets panel is used to recall and save user presets. Saving a user preset saves the current set of image parameters for the currently selected input. Recalling a user preset recalls and applies a saved preset to the currently selected input. Each input has 16 available user presets that are used to recall or save settings.

The table below details the settings that are saved and recalled in a user preset.

User Preset Saved Settings		
Web Page	Saved Settings	
Encoder Settings Configuration	Aspect Ratio	
Control	Horizontal Position	Color
	Vertical Position	Tint
	Horizontal Size	Brightness
	Vertical Size	Contrast
	Detail	Zoom

- **Input Presets** — Input presets are used to define input and picture control settings that can be saved for each source within a system so that they can be recalled whenever the source is active. Unlike user presets, input presets save parameters that can be recalled only on the source that was active when the preset was saved.

The Input Presets panel is used to recall and save input presets. Saving an input preset saves the current set of input parameters for the current output stream. Recalling an input preset recalls and applies a saved preset to the current output stream. Each input has 128 available inputs presets that are used to recall or save settings.

The table below details the settings that are saved and recalled in an input preset.

Input Preset Saved Settings		
Web Page	Saved Settings	
Encoder Settings Configuration	Input type	
	Aspect Ratio	
Control	Horizontal Position	Zoom
	Vertical Position	Horizontal Start
	Horizontal Size	Vertical Start
	Vertical Size	Pixel Phase
	Detail	Total Pixels
	Color	Horizontal Active Pixels
	Tint	Vertical Active Lines
	Brightness	Input Preset Name
	Contrast	

The sections on the next page explain how to **save**, **recall**, and **rename presets**.

Saving or recalling presets

1. Select an input using the input selection buttons (see item ③ on page 79; **Input Selection**).
2. Select a preset from the desired **Preset** drop-down menu.
3. Click the **Recall** button to recall the selected preset. Click the **Save** button to save the selected preset.

NOTE: The preset is not saved or recalled if the **Save** or **Recall** button is not clicked.

Renaming presets

1. Select an input using the input selection buttons (see item ③ on page 79; **Input Selection**).
2. Select a preset from the desired **Preset** drop-down menu.
3. Rename the preset as desired using the **Rename Preset** field (16 characters maximum).
4. Click the **Rename** button to save the preset name. Clicking the **Cancel** button or navigating to a different web page clears any changes that were made.

Web-based Configuration Page

The Configuration page contains eight additional pages that are used to configure the general settings of the SME 100. This section presents a detailed overview of each configuration page. The following configuration pages are available.

- [System Settings Page](#)
- [Encoder Settings Page](#)
- [Live View Settings Page](#)
- [Port Settings Page](#)
- [Advanced Settings Page](#)
- [Security Page](#)
- [Firmware Upgrade Page](#)
- [Reset Page](#)

NOTE: For information on other web-based user interface pages, see the "[Web-based User Interface Operation](#)" section on page 46.

System Settings Page

This is the first page that is seen after clicking on the **Configuration** tab. This page can also be accessed by clicking on the **System Settings** link on the left sidebar of the Configuration page (see figure 72).

The screenshot shows the Extron Electronics System Settings page. The page is titled "Extron Electronics" and has a navigation bar with "Live View", "Status", "Configuration", "File Management", and "Control". The "Configuration" tab is selected. On the left sidebar, "System Settings" is highlighted. The main content area is divided into four sections: 1. IP Settings, 2. Date/Time Settings, 3. NTP Settings, and 4. SNMP Settings. Each section has a "Submit" and "Cancel" button. The IP Settings section includes fields for Unit Name, IP Address, Gateway IP Address, Subnet Mask, DNS, DHCP, MAC Address, Firmware, Model, and Part Number. The Date/Time Settings section includes fields for Date, Time, Zone, and Daylight Saving. The NTP Settings section includes a radio button for Enabled/Disabled, NTP Server, NTP Interval, and a Sync NTP Now button. The SNMP Settings section includes fields for SNMP Community Name, Contact Name, and Location.

Figure 72. System Settings Page

The System Settings page is used to configure the basic settings of the SME 100. Available settings that can be configured include network address information, date and time, Network Time Protocol (NTP) server information, and Simple Network Management Protocol (SNMP) network information.

① IP Settings panel

NOTE: After all of the necessary changes have been made to the following configuration options in this panel, click the **Submit** button to save the configuration settings (the page refreshes in approximately 30 seconds). Clicking the **Cancel** button or navigating to a different web page clears any changes that were made.

- **Unit Name** — This field is used to change the host name of the unit.
- **IP Address** — This field is used to change the IP address of the unit. Default IP address is **192.168.254.254**.
- **Gateway IP Address** — This field is used to change the gateway IP address of the unit. This field usually contains the IP address of the router or switch. Default gateway IP address is **0.0.0.0**.

- **Subnet Mask** — This field is used to change the subnet mask address of the unit. Default subnet mask address is **255.255.0.0**.
- **DNS** — This field is used to assign the SME 100 to the IP address of a Domain Name System (DNS) server.
- **DHCP** — If Dynamic Host Configuration Protocol (DHCP) is set to **On**, DHCP will enable a server (that is on the same network as the SME 100) to automatically assign an IP address to the SME 100.
- **MAC Address** — This field displays the Media Access Control (MAC) address of the unit.
- **Firmware** — This field displays the firmware version that is currently installed on the unit.
- **Model** — This field displays the name of the unit.
- **Part Number** — This field displays the Extron part number of the unit.

② Date/Time Settings panel

NOTES:

- Click the **Local Date/Time** button to sync the date and time settings of the control device (such as a control PC) to the SME 100.
- After all of the necessary changes have been made to the following configuration options in this panel, click the **Submit** button to save the configuration settings. Clicking the **Cancel** button or navigating to a different web page clears any changes that were made.

- **Date** — Use the drop-down menus to set the month (MM), day (DD), and year (YYYY), respectively.
- **Time** — Use the drop-down menus to set the hours (HH), minutes (MM), and AM/PM, respectively.
- **Zone** — Use this drop-down menu to select the desired time zone.
- **Daylight Saving** — Use the radio buttons to select the desired daylight savings time setting. If set to **off**, the SME 100 will not automatically update the time to match daylight savings time.

③ NTP Settings panel

The Network Time Protocol (NTP) is used for synchronizing the clocks of computer systems over networks.

To enable NTP, click on the **Enabled** radio button. The SME 100 will then sync its clock to the NTP server that is specified.

NOTES:

- Fill in the following fields and click the **Submit** button, then click the **Sync NTP Now** button to sync the SME 100 to the specified NTP server.
- Clicking the **Cancel** button or navigating to a different web page clears any changes that were made to this panel.

- **NTP Server** — Enter the NTP server address into this field.

NOTES:

- If the NTP server address is in the form of a URL, a DNS server address is **required** to sync to the NTP server.
- If the NTP server address is in the form of an IP address, a DNS server address is **not required** to sync to the NTP server.

- **NTP Interval (hours)** — The value specified in this field determines how often the SME 100 syncs with the NTP server. The range of settings is **0** to **144**. A setting of **0** means that the SME 100 will never sync with the NTP server. A setting of **144** means that the SME 100 will sync with the NTP server every 144 hours.

④ SNMP Settings panel

The Simple Network Management Protocol (SNMP) is an application-layer protocol that facilitates the exchange of management information between network devices.

This panel is used to specify how the SME 100 is seen on a network. The text that is specified in these fields are seen by the network community when the SME 100 is queried.

NOTE: After all of the necessary changes have been made to the following configuration options in this panel, click the **Submit** button to save the configuration settings. Clicking the **Cancel** button or navigating to a different web page clears any changes that were made.

- **SNMP Community Name** — Enter the community name (that acts as a password) into this field.
 - By default, the SME 100 uses "public" as its community name.
 - The supported SNMP data objects are read only (MIB II) [RFC 1213].
 - SNMP community names are case sensitive.
 - SNMP management software can be used to identify devices and their functions.
- The SME 100 supports the following SNMP security schemes:
 - SNMP V1 - No security
 - SNMP V2c - Uses simple security
- **Contact Name** — This field is used to specify the person or department that can be contacted for assistance with the SME 100.
- **Location** — This field is used to specify the location of the SME 100.

Encoder Settings Page

The Encoder Settings page is accessed by clicking on the **Encoder Settings** link on the left sidebar of the Configuration page (see figure 73).

Figure 73. Encoder Settings Page

The Encoder Settings page contains configuration settings that affect all streams (except for the configuration settings in the Video Input Configuration panel). Available configuration options include video input/output settings, audio settings, on-screen label settings, network streaming settings, encoder presets, and streaming presets settings.

1 Preview panel

NOTE: See the "**Live View Page Notifications**" section on page 50 for information on notifications seen in the player window.

The features on the preview panel are similar to those found on the Control page (see **Preview Panel** on page 77).

② Video Input Configuration panel

- **Input** — These drop-down menus are used to select a video signal type for each input. Each input supports different video signal types. The table below details the available video signal types for each input.

Video Input 1	Video Input 2	Video Input 3
*YUVp/HDTV	*RGB	S-Video
YUVi	YUVp/HDTV	Composite
S-Video	RGBcvS	AUTO
Composite	YUVi	*DVI

NOTE: * = Default video signal type

- **Auto Img** — These drop-down menus are used to turn the auto-image feature on or off. Auto-image affects some of the configuration settings that are on the **Control** page (see page 77). The table below details the settings that are affected when auto-image is turned on.

Auto Image Affected Settings	
Web Page	Affected Settings
Control	Horizontal Shift
	Vertical Shift
	Horizontal Size
	Vertical Size
	Horizontal Start

NOTE: The remaining configuration options are left unchanged when auto-image is enabled.

- **Aspect Ratio** — These drop-down menus are used to set the aspect ratio of the output video. Two configuration options are available.
 - When **Fill** (default) is selected, the input signal fills the entire output area. The **Horizontal Shift** and **Vertical Shift** fields on the **Control** page (see page 77) are set to 0,0. The **Horizontal Size** and **Vertical Size** fields on the **Control** page are set to match the current output resolution.
 - When **Follow** is selected, the input signal fills the output area using its native aspect ratio (3:2, 4:3, 5:3, 16:9).
- **Film Mode** — This drop-down menu is used to enable and disable 3:2 pulldown detection for NTSC and 2:2 pulldown detection for PAL video sources. 3:2 pulldown and 2:2 pulldown (film mode) helps maximize image detail and sharpness for video sources that originated from film.

When set to **Enable**, the SME 100 recognizes signals that originated from film and applies video processing algorithms to optimize the conversion of video that was made with the 3:2 or 2:2 pulldown process. This results in sharply detailed images.

③ Encoder Configuration panel

- **Resolution** — This drop-down menu is used to set the resolution of the video being output (streamed) by the SME 100. The [table](#) on page 34 of the "[Encoder Config Menu](#)" section lists output resolutions that are supported by the SME 100.
- **Frame Rate** — This drop-down menu is used to set the frame rate of the video being output (streamed) by the SME 100. The range of settings varies depending on the media player plugin used to view streams. The default is **30** frames per second.
- **Stream Mode** — This drop-down menu is used to set what is being output (streamed) by the SME 100. Two configuration options are available: **Video / Audio** or **Video Only**. The default is **Video / Audio**.
- **Stream Type** — Three selection drop-down menus to select a bit rate scheme.
 - **VBR** — The Variable Bit Rate (VBR) scheme continuously adjusts the bit rate depending on image complexity. It uses more bandwidth when the video frame is more complex and less bandwidth when the video frame is simple. Use the **Video Bit Rate** field to set the base bit rate number.
 - **CVBR** — The Constrained Variable Bit Rate (CVBR) scheme works the same as VBR, but sets a maximum bit rate that cannot be exceeded. It doubles the value specified in the **Video Bit Rate** field (so if the **Video Bit Rate** field contains a value of **1000** kbps, the maximum allowed bit rate is set to **2000**).
 - **CBR** — The Constant Bit Rate (CBR) scheme adjusts the bit rate so that it stays close to, but does not go over, the specified bit rate. This bit rate control mode is the most aggressive of the three schemes. The bit rate is specified using the **Video Bit Rate** field.

NOTES:

- If the specified bit rate is set higher than is required to output the stream, CBR only uses the necessary bit rate required to output the stream and does not attempt to stay close to the specified bit rate.
- If the output stream requires a higher bit rate to display the stream properly (the specified bit rate is not set high enough), the quality of the output stream will be adversely affected. This is because the CBR scheme cannot adjust the bit rate higher than the specified bit rate.

- **Closed Captioning** — Drop-down menu used to enable or disable Closed Captioning.
- **Profile Type** — Profile type and profile level are used to maintain compatibility with connected decoders. This drop-down menu sets the compression level of the H.264 stream from one of three choices:
 - Baseline – Lowest compression level and less processor intensive to decode.
 - Main – Midrate compression and performance.
 - High – Higher compression levels and better quality for the selected bit rate but more processor intensive to decode.
- **Profile Level** — This drop-down menu sets the upper limits of resolution, bit rate, and frame size. Settings are from 3.0 (for lower limits) to 5.0 (for higher limits).
- **Video Bit Rate** — This field is used to specify the number of video bits that are processed (output) per second. The range of settings is **200** to **10000**. Default is **1000**.
- **Audio Bit Rate** — This field is used to specify the number of audio bits (in kilobits) that are processed (output) per second. The range of settings is **16** to **384**. Default is **384**.

- **GOP Length** — This field is used to specify the number of secondary frames (predictive frames/P-frames) that are used between two primary frames (intraframes/I-frames). A **lower GOP length uses more bandwidth** since more primary frames are required. A **higher GOP length uses less bandwidth** since fewer primary frames are required. To obtain optimal stream quality (if bandwidth limitations are not an issue), a smaller value should be used for media that contains more motion and a higher value should be used for media with very little motion. The range of settings is **1 to 30**, default is **30**.
- **Audio Delay** — This field is used to specify the amount of time (in milliseconds) that the audio is delayed from the video. Video sometimes takes longer to process (output) than audio. Audio delay is used to properly sync the audio with the video that is being displayed. The range of settings is **0 to 999**. Default is **0** (no audio delay).

④ RTSP Configuration panel (pull stream configuration)

- **Streaming Method** — This drop-down menu is used to select the streaming protocol that will be used by the SME 100 (see the "**Protocols Used for Streaming**" section on page 20 for more information).
- **Multicast IP** — This field is used to enter the multicast IP address group that the SME 100 will stream to, typically **239.199.188.138**. This option is not available when using the unicast RTP streaming protocol.
- **MTU** (Maximum Transfer Unit) — Sets the maximum packet size. The range of settings is **1100 to 1500**. Maximum packet size increases streaming performance.
- **TTL** (Time To Live) — This field is used to specify the number of hops multicast traffic will make between routed domains when it exits the SME 100. This option is not available when using the unicast RTP streaming protocol.

⑤ Streaming Configuration panel (push stream configuration)

Consult the decoder specifications and network administrator to configure the following:

- **Stream Control** — Used to turn the output stream on (enable) or off (disable).
- **Stream Method** — Select one of the following options from the drop-down menu:
 - **TS/UDP** — (Unicast and multicast) The MPEG-2 transport stream containing raw H.264 video or raw AAC audio (elementary streams), not wrapped by any other headers. It is encapsulated in the UDP packets.
 - **TS/RTP** — (Unicast and multicast) The MPEG2 transport stream encapsulated in the RTP/UDP. RTP provides sequencing information ensuring proper ordering.
 - **ES/RTP (Native RTP)** — (Unicast and multicast) Similar to RTSP, sends a RTP stream for video and a RTP stream for audio. These elementary streams are encapsulated in UDP and RTP packets. To view this, an SDP file is also required to learn how the streams are configured.
- **Destination IP** — For unicast stream control insert the IP address of the target decoder. For multicast insert the multicast standard IP address of the network, typically **239.199.188.138**.
- **Destination Port** — For unicast stream control, enter the port number of the target decoder. For multicast, enter the multicast port number of the network.
- **MTU** (Maximum Transfer Unit) — Sets the maximum packet size. The range is **1100 to 1500**. Maximum packet size increases streaming performance.
- **TTL** (Time To Live) — Specifies the number of router hops multicast streams are allowed before being blocked.

- **QoS (Differentiated Service)** — Quality of Service allows specified network traffic to be guaranteed a certain level of priority. The QoS includes maintaining a specified level of bandwidth, latency, and packet loss. QoS allows for control of the bandwidth in a network resulting in greater reliability. Differentiated Services Code Point (DSCP), or Diffserv (RFC 2474), is used for classifying network traffic and providing QoS.

The SME 100 provides the following QoS settings:

- Best effort (DSCP [000000])
 - Normal (CS3 or DSCP [011000])
 - Highest (CS5 or DSCP [101000])
 - Low (CS2 or DSCP [010000])
 - High (CS4 or DSCP [100000])
- **SAP Control** — Session announcement protocol (SAP) is used to broadcast a session to the network. This control provides options to enable or disable the announcement, provide a session name, session description, keywords, author, and announce frequency fields to describe and identify the stream.

The following text fields can be edited and can be up to 32 characters long, but cannot contain the backslash (\), single (‘), or double (“) quotation marks.

- **Session Name** — This field contains the name of the streaming session being broadcast to the network.
- **Session Description** — This field is used by the SAP to describe the streaming session.
- **Keywords** — This field assists with identifying sessions, allowing the receiver to select a session based on the keywords entered here and describing the purpose of the stream.
- **Author** — This field identifies either the creator of the SAP or the streaming media encoder whichever is more useful or appropriate.
- **Announce Frequency** — Specifies how often a session announcement is conveyed to users. If the frequency is **0**, the frequency is calculated according to the SAP RFC standard.

⑥ Advanced Configuration panel

- **OSD Duration** — This drop-down menu is used to set the amount of time (in seconds) that the on-screen label is shown on the output display. When an input is selected, the on-screen label appears as small white text that is placed on a black background in the top left corner of the display window. The range of settings is **0** to **5**. The default is **2**.
- **Test Pattern** — This drop-down menu is used to select test patterns which are used to calibrate display devices. The test patterns are used to configure color, convergence, focus, resolution, contrast, grayscale, aspect ratio, and audio. See the "[About the Test Pattern Submenu](#)" section on page 41 for information on the available test patterns. The default is **Off**.
- **Auto Memory** — This drop-down menu is used to turn the auto memory feature on or off. When auto memory is turned on, the SME 100 stores the picture settings of the incoming signal that is connected to each input. The table below details the settings that are saved when auto memory is turned on. See the "[About the Auto Memory Submenu](#)" section on page 38 for additional information on this feature.

Auto Memory Saved Settings		
Web Page	Saved Settings	
Encoder Settings Configuration	Film Mode	
Control	Horizontal Shift	Zoom
	Vertical Shift	Pan
	Horizontal Size	Horizontal Start
	Vertical Size	Vertical Start
	Detail Filter	Pixel Phase
	Color	Total Pixels
	Tint	Horizontal Active Pixels
	Brightness	Vertical Active Lines
	Contrast	

- **Exec Mode** — This drop-down menu is used to enable or disable the front panel lock (executive mode). When the front panel lock is enabled, the front panel controls on the SME 100 are locked. Communication and control changes can still be made through the RS-232 connector, Config port, and the web-based user interface. See the "[Using the Front Panel Lock \(Executive Mode\)](#)" section on page 45 for additional information on this feature.

Universal OSD Configuration panel

This portion of the advanced configuration panel is used to configure the information that is seen when viewing the universal OSD test pattern/label. The universal OSD test pattern/label is an on-screen label that appears as small white text that is placed on a black background in the top left corner of the output display window. The [table](#) below and on the next page lists the status information that can be selected in the **Information** drop-down menus.

NOTE: The display text and each selected status information is separated with a comma. A maximum of 40 characters are shown when the universal OSD test pattern/label is enabled. If the display text and the selected status information exceeds 40 characters, the extra characters will not be shown.

- **Display Text** — Use this field to specify the name that is seen at the beginning of the OSD test pattern/label (20 characters maximum).
- **Information 1** — Use this drop-down menu to select the status information that is displayed after the name specified in the **Display Text** field.
- **Information 2** — Use this drop-down menu to select the status information that is displayed after the status information selected in the **Information 1** drop-down menu.
- **Information 3** — Use this drop-down menu to select the status information that is displayed after the status information selected in the **Information 2** drop-down menu.

Input Type Information			
Abbreviation	Description	Abbreviation	Description
Typ1	RGB	Typ5	S-Video
Typ2	YUVp/HDTV	Typ6	Composite
Typ3	RGBcvS	Typ9	DVI
Typ4	YUVi	Typ11	Autodetect

Selectable Status Information	
Status Information	Description
Off	No status information is displayed.
Info	The selected input (In1 , In2 , or In3), input type (see table below), average bit rate (AVB), and current frame rate (CFR) are displayed.
Model	The model name is displayed.
Product	The product description is displayed
System Memory	System memory information for the SME 100 is displayed. The first number displays the amount memory (in megabytes) that the SME 100 is currently using. The second number displays the total amount of memory (in megabytes) on the SME 100.
User Memory	User memory information for the SME 100 is displayed. The first number displays the amount of memory (in megabytes) that is being used for storage on the SME 100. The second number displays the total amount of storage memory (in megabytes) on the SME 100.

Selectable Status Information	
Status Information	Description
# Users	The number of users that are connected to the SME 100 is displayed.
CPU Usage	The percentage of central processing unit (CPU) that is being used is displayed. For example, if the number 37 is shown, 37 percent of the CPU on the SME 100 is currently being used.
CPU Idle	The percentage of central processing unit (CPU) that is available is displayed. For example, if the number 63 is shown, 63 percent of the CPU on the SME 100 is currently available.
Input Status	This is used for input detection. <ul style="list-style-type: none"> • 0 = No input detected • 1 = Input detected
Avg Bandwidth	This displays the average video plus audio bandwidth (measured in Kbps) being used by the SME 100 for streaming.
Framerate	The current frame rate of the video output is displayed.
Bandwidth	This displays the average amount of video and audio bandwidth (in Kbps) the SME 100 is using to stream the selected input .
Stream URL	The RTSP URL that was used to access the stream being sent by the SME 100 is displayed.
# Streams	The number of streams that are being sent to users by the SME 100 is displayed. Video and the associated audio that is sent to a user is counted as a single stream.
Firmware Ver	The version of firmware that the SME 100 is running is displayed.

⑦ Encoding presets panel

- **Preset**— Drop-down menu to select the encoding preset.
- **Rename Preset**— Direct entry field to rename a preset with a custom title.
- **Current Preset**— Text display showing the current selected preset. If a preset is not selected, displays: **None**.

For information on saving, recalling, and renaming encoding presets, see "[Using Encoding Presets](#)" on page 96.

⑧ Streaming Presets panel

For information on saving, recalling, and renaming streaming presets, see "[Using Streaming Presets](#)" on page 97.

Using Encoding Presets

The Encoding Presets panel is used to recall and save presets. Saving a preset saves the current set of encoding parameters for the current output stream. Recalling a preset recalls and applies a saved preset to the current output stream. Encoding presets allow the user to quickly switch between various encoder profiles based on the target resolution or bit rate. Sixteen available encoding presets are used to recall or save settings. The table below details the settings that are saved and recalled in an encoding preset.

Encode Preset - Saved Settings		
Video Resolution	Profile Type	Preset Name
Video Bitrate	Profile Level	Stream Mode
Frame Rate	GOP Length	Closed Caption
Bitrate Control	Audio Bitrate	Audio Delay

NOTE: The first several encoding presets are predefined.

#	Preset Name	Preset Description	Video Resolution	Video Bit Rate	Frame Rate	Stream Type	GOP Length	Audio Bit Rate
1	HVGA high	480x320 mobile, high quality	480x320	2000	30	CBR	15	384 kbps
2	HVGA medium	480x320 mobile, medium quality	480x320	1000	30	CBR	25	256 kbps
3	HVGA low	480x320 mobile, low quality	480x320	500	25	VBR	30	128 kbps
4	VGA high	680x480 Internet, high quality	680x480	3000	30	CBR	15	384 kbps
5	VGA medium	680x480 Internet, medium quality	680x480	1500	30	CBR	25	256 kbps
6	VGA low	680x480 Internet, low quality	680x480	750	20	VBR	30	128 kbps
7*	720p high	720p IPTV, high quality	1280x720	4500	30	CBR	15	384 kbps
8*	720p medium	720p IPTV, medium quality	1280x720	3000	30	CBR	25	256 kbps
9*	720p low	720p IPTV, low quality	1280x720	1500	20	VBR	30	128 kbps

NOTE: * designates HD formats available on the SME 100 HD only.

To recall an encoding preset

1. Select the desired preset from the **Preset** drop-down menu (see item ⑦ in [figure 73 on page 88](#)).
2. Click the **Recall** button to recall the selected preset.

NOTE: The preset is not recalled if the **Recall** button is not clicked.

To save an encoding preset

1. Select the desired parameters in the Encoder Configuration panel (see item ③ in [figure 73 on page 88](#)).
2. The current preset displays **None**. If desired, a preset from the **Preset** drop-down menu can be selected but should be **recalled** first to make it the current preset.
3. Select the new preset from the drop-down menu (see item ⑦ in [figure 73 on page 88](#)). Click the **Save** button to save the current parameters to the selected preset.

Renaming an encoding preset

1. Select the desired encoding preset from the **Preset** drop-down menu .
2. Rename the encoding preset using the **Rename Preset** field (16 characters maximum).
3. Click the **Rename** button to save the encoding preset name. Click the **Cancel** button or navigate to a different web page to clear any changes that were made.

Using Streaming Presets

The Streaming Presets panel is used to recall and save presets. Saving a preset saves the current set of encoding or streaming parameters for the current output stream. Recalling a preset recalls and applies a saved preset to the current output stream. Streaming presets allow the user to quickly switch between various streaming profiles based on the target resolution or bit rates. Sixteen available streaming presets are used to recall or save settings. The table below details the settings saved and recalled in a streaming preset.

Streaming Presets - Saved Settings	
SAP Control (includes all SAP settings)	
Stream Method (MPEG-TS)	MTU
IP (multicast or destination)	QoS
Destination Port	TTL

Saving or recalling a streaming preset

1. Select the desired streaming preset from the **Preset** drop-down menu (see item ⑥ in [figure 73 on page 88](#)).
2. Click the **Recall** button to make selection the current streaming preset. Click the **Save** button to save the current streaming parameters to the selected streaming preset.

NOTE: The streaming preset is not saved or recalled if the **Save** or **Recall** button is not clicked.

Renaming a streaming preset

1. Select the desired streaming preset from the **Preset** drop-down menu (see item ⑥ in [figure 73 on page 88](#)).
2. Rename the streaming preset using the **Rename Preset** field (16 characters maximum).
3. Click the **Rename** button to save the streaming preset name. Click the **Cancel** button or navigate to a different web page to clear any changes that were made.

Live View Settings Page

The Live View Settings page is accessed by clicking on the **Live View Settings** link on the left sidebar of the Configuration page (see figure 74).

The screenshot shows the Extron Electronics web interface for configuring live view settings. The main configuration area is titled "Live View Settings" and includes a dropdown menu to "Select Role to Edit". Below this are four main panels: "VLC/SMP Specific" (containing toolbar options like Input Button, Status Button, and Auto Restart Stream, along with Video Init Time and Cache Time settings), "Default Player" (allowing selection between VLC, SMP, and QuickTime), "Page Timeout" (with separate settings for Hours and Mins), and "Streaming Methods" (with a dropdown for RTP). At the bottom, the "Embed VLC/SMP/QuickTime" section provides a text area with the following HTML code: `<iframe frameborder="0" src="http://10.13.4.123/liveview.html" width="100%" height="100%"></iframe>`. Five red circles with numbers 1 through 5 are overlaid on the page to highlight specific elements: 1 points to the VLC/SMP Specific panel, 2 to the Default Player panel, 3 to the Page Timeout panel, 4 to the Streaming Methods panel, and 5 to the Embed section.

Figure 74. Live View Settings Page

The Live View Settings page is used to configure how a stream is viewed on the Live View page. Available configuration options include media player selection (SMP, VLC media player or QuickTime), toolbar settings, and live view page timeout settings.

NOTES:

- The SME 100 requires an installed media player to view streams on the Live View page. For information on installing media players, see the "[Installing Media Players](#)" section on page 51.
- The Extron SMP plugin (version 1.0) provides the best player performance and is recommended for viewing live streaming media on the SME 100.
- After all necessary changes have been made to the configuration options in the following panels, click the **Submit** button to save the configuration settings. Clicking the **Cancel** button or navigating to a different web page clears any changes that were made.
- For information on using the HTML code in the Embed VLC/SMP/QuickTime panel, see the "[Embedding the SME 100 Stream](#)" section on page 101.



To use this page, click on the **Select Role to Edit** drop-down menu and click on the desired role that requires editing. Two roles are available for editing.

- **Admin** — Select this role to edit the Live View page seen by administrators.
- **Viewer** — Select this role to edit the Live View page seen by viewers/users.

Each role contains the following configuration options.

① VLC/SMP Specific panel

NOTE: This panel is grayed out if the QuickTime player is selected as the default media player.

- **Toolbar Items** — The following options are used to configure the control options that are visible on the stream toolbar.
 - **Input Button (Admin Only)** — Selecting this check box displays the input button  on the Live View page player window. This button allows the user to choose the desired stream to view.
 - **Status Button** — Selecting this check box displays the status button  on the Live View page player window. This button allows the user to view the status of the stream.
- **Auto Restart Stream (Live view page only)** — Select this check box to automatically reconfigure and restart the stream when the profile type, profile level, video output resolution, stream mode, or stream method is changed. For example, if the video output resolution is changed while the stream is being viewed, the window automatically reconfigures and restarts the stream with the new output resolution.
- **Video Init Time (sec)** — This drop-down menu is used to set the amount of time (in seconds) taken to initialize stream playback. For example, if **5** is selected, pressing the **Play** button to view the stream forces the SME 100 to wait (initialize the stream) for five seconds before displaying the stream. The range of settings is **0** to **60** in one second intervals. Default is 5 seconds.
- **Cache Time (millisec)** — This drop-down menu is used to set the amount of jitter buffer used by the media player. The range of settings is **200** to **5000** msec in **100** millisecond intervals.

② Default Player panel

This panel is used to select the media player that will be used to view streams on the Live View page.

- **SMP** — Select this radio button to use the SMP web browser plugin.
- **VLC** — Select this radio button to use the VLC plugin.
- **QuickTime** — Select this radio button to use the QuickTime plugin.

③ Page Timeout panel

This panel is used to automatically close (log out) the connection between the viewer and the SME 100 after a specified amount of idle time has passed. This feature helps manage available bandwidth, especially when a large amount of users are accessing the SME 100 to view streams. A setting of 0 hours and 0 minutes means the timeout feature on the Live View page is disabled.

NOTE: If both the **Hours** and **Mins** drop-down menus are specified, the specified hours and minutes of idle time must pass before the SME 100 closes (logs out) the connection. For example, if the **Hours** drop-down menu is set to 2 and the **Mins** drop-down menu is set to 15, the SME 100 will wait for 2 hours and 15 minutes of idle time to pass before closing (logging out) the connection to the stream.

- **Hours** — Use this drop-down menu to set the number of inactive hours that must pass before the SME 100 closes (logs out) the connection to the stream. The range of settings is 0 to 23.
- **Mins** — Use this drop-down menu to set the number of inactive minutes that must pass before the SME 100 closes (logs out) the connection to the stream. The range of settings is 0 to 55, in increments of 5.

When the connection between the viewer and the SME 100 is about to be closed (logged out) a notification message appears at the bottom of the web page (figure 75).

You will shortly be automatically logged out. Move mouse to cancel.

Figure 75. Timeout Notification

④ Streaming Methods

This drop-down menu selects from the available **unicast RTP pull streaming** methods (see "**Protocols Used for Streaming**" on page 20) to assist with network compatibility where ports may be closed or blocked due to firewall settings:

- **Auto** – Selects the best streaming method (starting with RTP, then RTP/RTSP, then RTP/RTSP/HTTP) that will be used with the firewall configuration.

NOTE: If you are uncertain about your firewall settings, select this setting.

- **RTP** (default) – Uses RTP over UDP to send stream packets to the requested location.
- **RTP/RTSP** – Interleaved RTSP; sends stream packets over RTSP using TCP.
- **RTP/RTSP/HTTP** – HTTP tunneling; sends stream packets over HTTP using TCP.

Embedding the SME 100 Stream

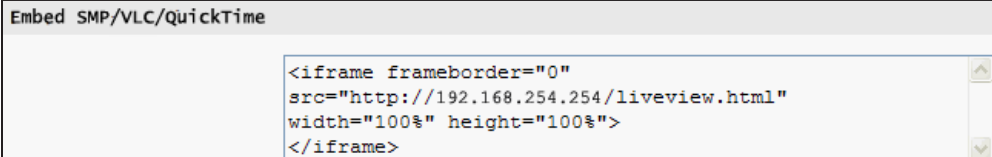
The Embed VLC/SMP/QuickTime panel (see ⑥ in figure 74) on the Live View Settings page creates HTML code that can be placed into customized web pages. **Before placing this code into a web page**, make sure that all of the settings on the SME 100 have been properly configured and that the stream is viewable from the Live View page.

NOTES:

- Embedded streams will not work if a **user** password is required to access the stream.
- To view the stream, a remote viewer must install the same media player plugin that is being used by the SME 100 for streaming.
- This procedure uses a Microsoft® Windows® operating system and may vary depending on the operating system used.

To create a basic web page that presents a SME 100 stream:

1. From the desktop, select **Start > All Programs > Accessories > Notepad**. This opens a new Microsoft Notepad document that can be used to create custom web pages. Leave this document open on the desktop.
2. If necessary, access the web-based user interface of the SME 100 (see the "**Accessing the Web-based User Interface**" section on page 47) and navigate to the **Live View Settings** page (see page 98).
3. Copy the HTML code, located in the Embed VLC/SMP/QuickTime panel (see figure 76).

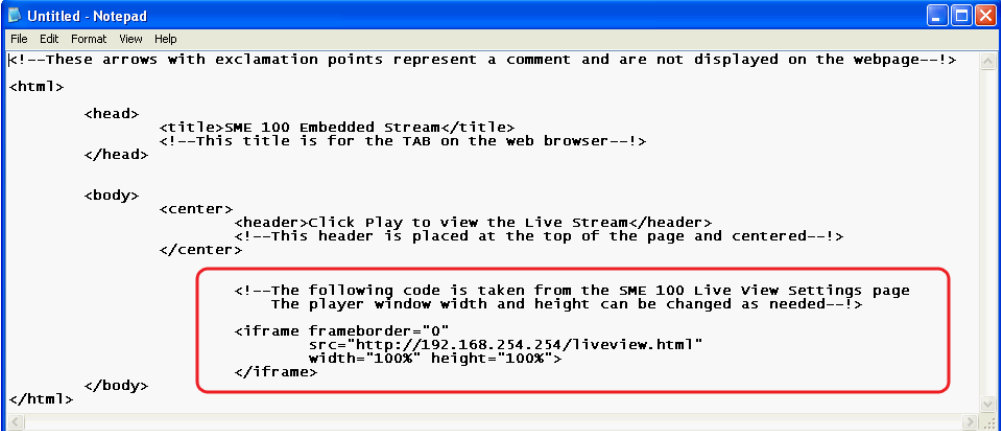


```
Embed SMP/VLC/QuickTime

<iframe frameborder="0"
src="http://192.168.254.254/liveview.html"
width="100%" height="100%">
</iframe>
```

Figure 76. Embed VLC/SMP/QuickTime Panel

4. Paste the HTML code into the open Notepad document. Figure 77 shows the code pasted into a Notepad document that contains a basic web page title and heading.



```
Untitled - Notepad
File Edit Format View Help
<!--These arrows with exclamation points represent a comment and are not displayed on the webpage-->
<html>
  <head>
    <title>SME 100 Embedded Stream</title>
    <!--This title is for the TAB on the web browser-->
  </head>
  <body>
    <center>
      <header>Click Play to view the Live Stream</header>
      <!--This header is placed at the top of the page and centered-->
    </center>
    <!--The following code is taken from the SME 100 Live view Settings page
    The player window width and height can be changed as needed-->
    <iframe frameborder="0"
    src="http://192.168.254.254/liveview.html"
    width="100%" height="100%">
    </iframe>
  </body>
</html>
```

Figure 77. Embed VLC/SMP/QuickTime Notebook Document

5. After the Notepad document has been edited as necessary, select **File > Save As** from the Notepad menu bar.

6. Navigate to the desired save location (see figure 78).
 - a. In the **File name** field, enter the desired name for the Notepad document. Make sure the name of the file contains a .html extension (see figure 78 for an example). **The name of the file must not contain a .txt extension.**
 - b. From the **Save as type** drop-down menu, make sure **All Files** is selected.
 - c. Click **Save**. The Notepad document is now saved as an HTML document.

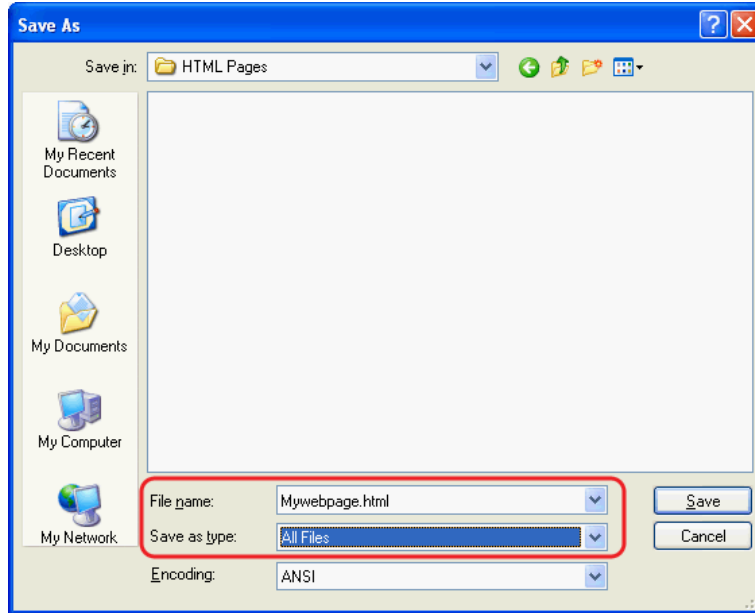


Figure 78. Saving the Notepad Document

7. Double-click on the saved HTML document to see what the web page looks like (see figure 79).

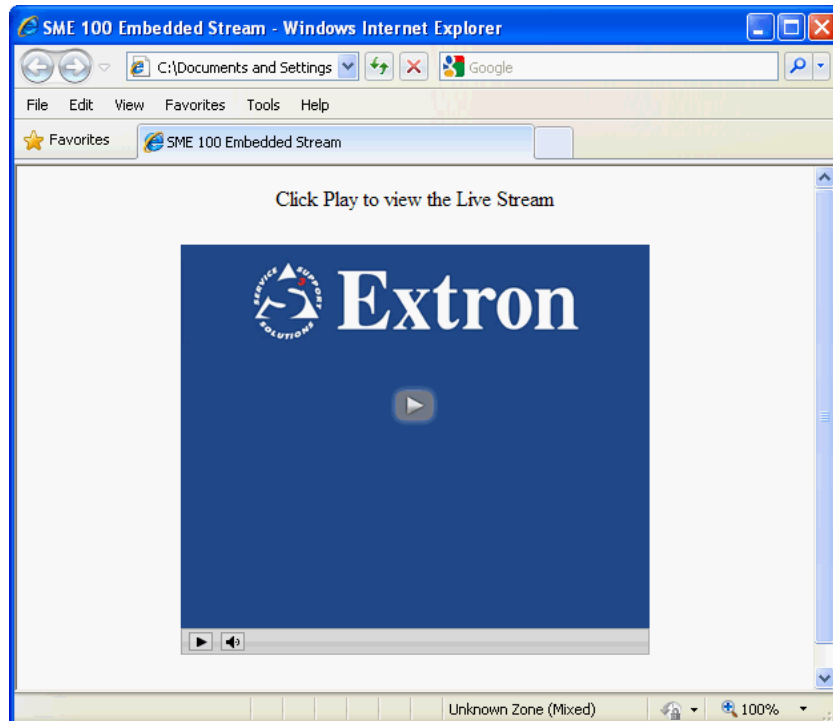


Figure 79. Resulting Web Page

Port Settings Page

The Port Settings page is accessed by clicking on the **Port Settings** link on the left sidebar of the Configuration page (see figure 80).

Extron Electronics

Live View Status Configuration File Management Control

Logged on: Admin Log Off Contact Us

800.633.9876

Port Settings

To change settings for the Serial port, make a new selection from each of the dropdown boxes and then press 'Submit'. To change settings for Network Ports, enter desired Port then press 'Submit'.

1 **Serial Port Settings**

Serial Port: 1

Port type: RS-232 Data bits: 8

Baud rate: 9600 Stop bits: 1

Parity: None Flow control: None

Submit Cancel

2 **Network Port Settings**

HTTP Port: 80 X TFTP Port: 69 X

HTTPS/SSL Port: 443 X FTP Port: 21 X

Telnet Port: 23 X Multicast Port: 6000 X

SSH Port: 22 X RTP Port: 50000 X

SNMP Port: 161 X RTSP Port: 554 X

RTSP over HTTP Port: 8080 X

Submit Cancel

Figure 80. Port Settings Page

The Port Settings page is used to change the settings of the serial port and the network port. These ports are used to communicate with the SME 100 using a control PC or control device.

① Serial Port Settings panel


NOTE: After all of the necessary changes have been made to the following configuration options in this panel, click the **Submit** button to save the configuration settings. Clicking the **Cancel** button or navigating to a different web page clears any changes that were made.

- **Serial Port** — This field displays the serial port number of the SME 100. The serial port number of the SME 100 is always **1**.
- **Port Type** — This field displays the type of serial port type on the SME 100. The type of serial port on the SME 100 is always **RS-232**.
- **Data Bits** — This drop-down menu is used to set the number of data bits that are used for communication with the SME 100. The default is **8**.

- **Baud Rate** — This drop-down menu is used to set the baud rate that is used for communication with the SME 100. The default is **9600**.
- **Stop Bits** — This drop-down menu is used to set the number of stop bits that are used for communication with the SME 100. The default is **1**.
- **Parity** — This drop-down menu is used to set the parity that is used for communication with the SME 100. The default is **None**.
- **Flow Control** — This drop-down menu is used to set the flow control that is used for communication with the SME 100. The default is **None**.

② Network Port Settings panel

NOTES:

- After all of the necessary changes have been made to the following configuration options in this panel, click the **Submit** button to save the configuration settings. Clicking the **Cancel** button or navigating to a different web page clears any changes that were made.
- If network port changes need to be made, contact a network administrator. By default, the following ports are enabled. To disable a network port, click on the  icon or place a value of **0** as the port number.
- To re-enable a port, enter the default port number or a new port number, then click **Submit**.
- See the "**Definitions**" section on page 7 for additional information.

- **HTTP Port (TCP)** — This field is used to set the HyperText Transfer Protocol port number. The default is **80**.
- **TFTP Port (UDP)** — This field is used to set the Trivial File Transfer Protocol port number. The default is **69**.
- **HTTPS/SSL Port (TCP)** — This field is used to set the secure HyperText Transfer Protocol port number. This HyperText Transfer Protocol uses the Secure Socket Layer. The default is **443**.
- **FTP Port (TCP)** — This field is used to set the File Transfer Protocol port number. The default is **21**.
- **Telnet Port (TCP)** — This field is used to set the Telnet port number. The default is **23**.
- **Multicast Port (UDP)** — Pull streaming only and requires four port addresses. This field is used to set the initial multicast port. When the initial port number is entered, the second number is entered automatically. The defaults are **6000-6003**.
- **SSH Port (TCP)** — This field is used to set the Secure Shell port number. The default is **22**.
- **RTP Port (UDP)** — For pull streaming only; these fields are used to set the Real-time Transport Protocol port number(s). After the range of port numbers have been specified, four consecutive port numbers (two ports for video and two ports for audio) are automatically assigned to stream video and audio to each RTP connection. The defaults are **50000-50999**.
- **SNMP Port (UDP)** — This field is used to set the Simple Network Management Protocol port number. The default is **161**.
- **RTSP Port (TCP)** — This field is used to set the Real-time Streaming Protocol port number. The default is **554**.
- **RTSP over HTTP Port (TCP)** — This field is used with the SMP plugin to select the port used to tunnel the stream when RTP/RTSP/HTTP is selected. The default is **8080**.

Advanced Settings Page

The Advanced Settings page is accessed by clicking on the **Advanced Settings** link on the left sidebar of the Configuration page (see figure 81).

The screenshot shows the Extron Electronics web interface. The top navigation bar includes 'Live View', 'Status', 'Configuration', 'File Management', and 'Control'. The left sidebar lists 'System Settings', 'Encoder Settings', 'Live View Settings', 'Post-Settings', 'Advanced Settings' (highlighted with a red circle and labeled '1'), 'Security', 'Firmware Upgrade', and 'Reset'. The main content area is titled 'Advanced Settings' and contains two sections: 'EDID' and 'Sync-To-Matrix'. The 'EDID' section has a 'Select Input' radio button with 'Input 2' selected, a 'Resolution' dropdown menu set to 'CUSTOM1', and a 'Refresh Rate' dropdown menu. Below these are 'Load' and 'Save Current EDID' buttons. The 'Sync-To-Matrix' section has a 'Status: Not Connected' label, an 'Enabled/Disabled' radio button with 'Disabled' selected, a 'Video Out' text input field, an 'IP Address' and 'Telnet Port' (set to 23) text input fields, and a 'Password (if req.):' text input field. Below these are 'Submit' and 'Cancel' buttons. A red circle labeled '2' is next to the 'Sync-To-Matrix' section header.

Figure 81. Advanced Settings Page

The Advanced Settings page is used to load or save EDID settings and sync the SME 100 to a matrix switcher.

① EDID panel

NOTES:

- After all of the necessary changes have been made to the following configuration options in this panel, click the **Load** button to load the EDID to the selected input device.
 - Navigating to a different web page clears any changes that were made.
 - For information on creating a custom EDID, see the "**Creating a Custom EDID**" section on page 107.
 - For information on applying EDID to an input device, see the "**Applying an EDID to an Input Device**" section on page 108.
 - For a list of supported EDID resolutions and refresh rates, see the **EDID emulation table** on page 29.
-
- **Select Input radio buttons** — Use these radio buttons to select an input (input 2 or input 3) on the SME 100. EDID can be loaded to the selected input or captured from a device that is connected to the buffered loop connector of the selected input.
 - **Resolution** — This drop-down menu is used to select the EDID resolution.
 - **Refresh Rate** — This drop-down menu is used to select the EDID refresh rate.

② Sync-To-Matrix panel

NOTES:

- After all of the necessary changes have been made to the following configuration options in this panel, click the **Submit** button to save the configuration settings. Clicking the **Cancel** button or navigating to a different web page clears any changes that were made.
- The SME 100 cannot be synced to an SMX matrix switcher.
- For information on syncing the SME 100 to a matrix switcher, see the "[Matrix Switcher Syncing](#)" section on page 109.

- **Status** — This field displays the connection status between the SME 100 and the matrix switcher. This field will display **Connected** when the SME 100 is synced with a matrix switcher.
- **Enabled/Disabled radio buttons** — Use these radio buttons to enable or disable the sync to matrix feature.
- **Video Out** — Use this field to enter the video output port number on the matrix switcher that is connected to input 2 on the SME 100.

NOTE: The matrix switcher can only connect and sync to input 2 on the SME 100.

- **IP Address** — Use this field to enter the IP address of the matrix switcher that is connected to the SME 100.
- **Telnet Port** — Use this field to enter the Telnet port of the matrix switcher that is connected to the SME 100. The default is **23**.
- **Password (if req.)** — If required, use this field to enter the password needed to access the matrix switcher that is connected to the SME 100.

Creating a Custom EDID

Use the following procedure to create a custom EDID using the Advanced Settings page on the SME 100 (see figure 82).

Figure 82. Advanced Settings Page — Creating a Custom EDID

1. Connect a video output device to the 15-pin HD buffered loop connector (buffered input 2) or the DVI buffered loop connector (buffered input 3) located on the rear panel of the SME 100 (see the "[Rear Panel Features](#)" section on page 12).
2. Use the **Select Input** radio buttons to select the desired input (buffered input 2 or buffered input 3) to capture EDID from.
3. From the **Resolution** drop-down menu, select a custom EDID number to store the new display EDID.

NOTES:

- Custom 1, 2, and 3 capture EDID from the 15-pin HD buffered loop connector. Custom 4, 5, and 6 capture EDID from the DVI buffered loop connector.
- The new EDID will overwrite existing custom EDID information.
- If a custom EDID is not captured, the resolution and refresh rate defaults to 1024x768 @ 60 Hz.

4. Click the **Save Current EDID** button to store the EDID to the custom location.

Applying an EDID to an Input Device

Use the following procedure to apply an EDID to an input device connected to the SME 100 using the Advanced Settings page (see figure 83).

The screenshot shows the Extron Electronics web-based configuration interface. The page title is "Advanced Settings" and the sub-section is "EDID". The interface includes a navigation menu on the left with options like System Settings, Encoder Settings, Live View Settings, Port Settings, Advanced Settings, Security, Firmware Upgrade, and Reset. The main content area has a "Select Input" section with radio buttons for "Input 2" (selected) and "Input 3". Below this are two drop-down menus: "Resolution" set to "1024x768" and "Refresh Rate" set to "60 Hz". A "Load" button is highlighted with a red box and a circled number 5. Below the EDID section is a "Sync-To-Matrix" section with a "Status: Not Connected" indicator, radio buttons for "Enabled" and "Disabled" (selected), and input fields for "Video Out:", "IP Address:", "Telnet Port:" (set to 23), and "Password (if req.):". "Submit" and "Cancel" buttons are at the bottom of this section. The page header includes "Extron Electronics" logo, navigation tabs (Live View, Status, Configuration, File Management, Control), and user information (Logged on: Admin, Log Off, Contact Us) and the phone number 800.633.9876.

Figure 83. Advanced Settings Page — Applying EDID

1. If necessary, connect an input device to the 15-pin HD connector (input 2) or the DVI connector (input 3) located on the rear panel of the SME 100 (see the "[Rear Panel Features](#)" section on page 12).
2. Use the **Select Input** radio buttons to select the desired input (input 2 or input 3) to apply EDID to.
3. From the **Resolution** drop-down menu, select the desired EDID resolution.

NOTES:

- Saved (custom) EDID can also be selected. For information on creating a custom EDID, see the "[Creating a Custom EDID](#)" section on page 107.
- If a custom EDID has not been captured, the resolution and refresh rate defaults to 1024x768 @ 60 Hz.

4. From the **Refresh Rate** drop-down menu, select the desired EDID refresh rate.

NOTE: If a custom EDID is selected from the **Resolution** drop-down menu, the **Refresh Rate** drop-down menu cannot be used. The custom EDID uses the refresh rate that was captured from the output device.

5. Click the **Load** button to apply the EDID to the selected input device.

Matrix Switcher Syncing

Use the following procedure to sync the SME 100 to a matrix switcher.

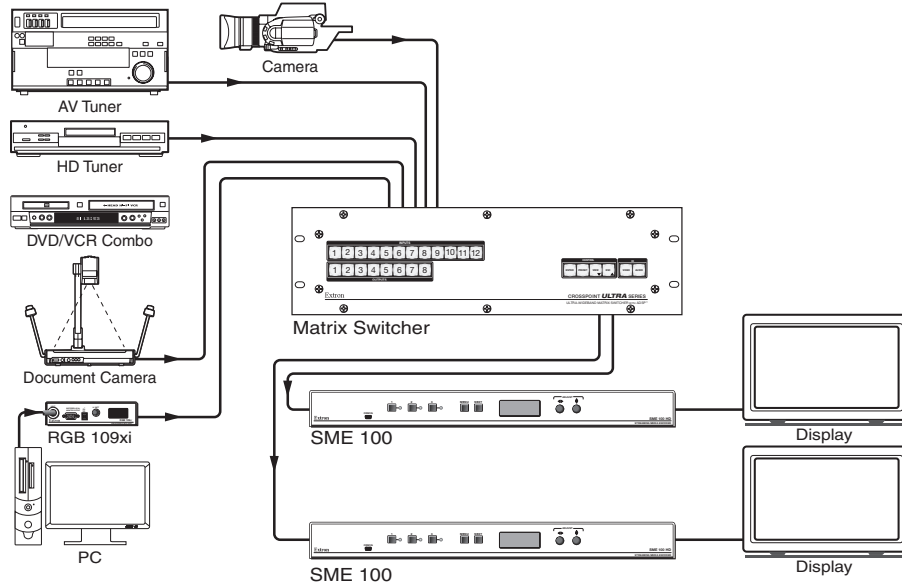


Figure 84. SME 100s Connected to a Matrix Switcher

NOTE: It is recommended to disable the **Auto Memory** and **Auto Image** configuration options before beginning. These configuration options are available in the **Advanced Config** menu (see page 36) when using the front panel menu system or on the **Encoder Settings** page (see page 88) of the web-based user interface.

1. Connect input port 2 on the SME 100 (see item ④ in the "**Rear Panel Features**" section on page 12) to a video output port on the matrix switcher.
2. On the matrix switcher, tie input 1 to the output that is connected to input 2 on the SME 100 (see figure 85). Refer to the applicable matrix switcher user guide for information on creating input and output ties.

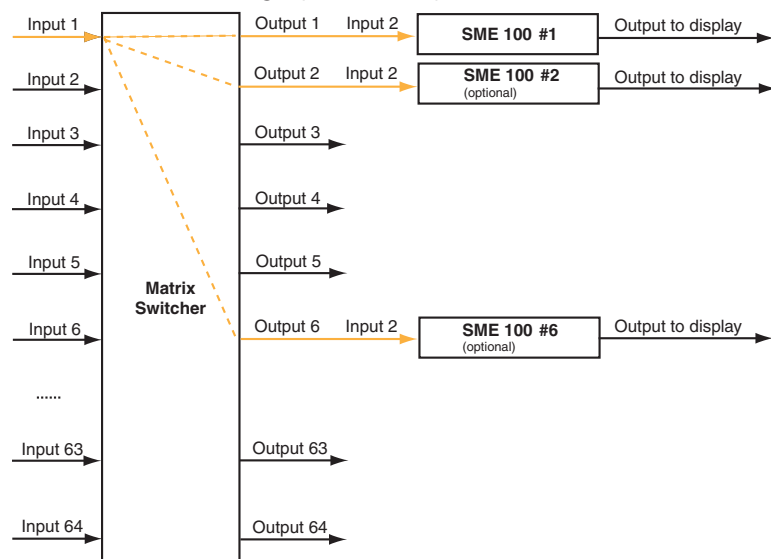


Figure 85. Multiple SME 100s Connected to a Matrix Switcher

3. On the SME 100, configure input 2 as follows.
 - a. On the SME 100, switch to input 2 (which is connected to the matrix switcher).
 - b. Set the following configuration settings as desired. These configuration options are all available in the **Input Config** menu when using the front panel menu system (see the "**Input Config Menu**" section on page 26). These configuration settings are also on the **Control** page (see page 77) of the web-based user interface (except for signal type).
 - **Signal type** — Located on the **Configuration** page; click the **Encoder Settings** link on the left sidebar (see the "**Encoder Settings Page**" section on page 88).
 - **Horizontal start**
 - **Vertical start**
 - **Total pixels**
 - **Pixel phase**
 - **Horizontal active pixels**
 - **Vertical active lines**
 - c. Set the following configuration settings as desired. These configuration options are available in the **Picture Control** menu when using the front panel menu system (see the "**Picture Control Menu**" section on page 31). These configuration settings are also on the **Control** page (see page 77) of the web-based user interface.
 - **Horizontal position (shift)**
 - **Vertical position**
 - **Horizontal size**
 - **Vertical size**
 - **Brightness**
 - **Contrast**
 - **Color**
 - **Tint**
 - **Detail**
 - d. Use the **Control** page on the web-based user interface to save the configured settings as input preset 1 (see "**Saving or recalling presets**" on page 83 of the "**User and Input Presets**" section).

NOTES:

- Each input preset must be saved using the same number as the input on the matrix switcher. For example, input 24 on the matrix switcher will be associated with input preset 24 on the SME 100.
- For information on using SIS commands to save the input preset, see "**Presets**" on page 140 of the "**Command and Response Table for SIS Commands**" section.

- In the Sync to Matrix panel, select **Enabled** from the **Enabled/Disabled radio buttons** (see figure 86).

The screenshot shows the Extron Electronics web interface. The top navigation bar includes 'Live View', 'Status', 'Configuration', 'File Management', and 'Control'. The user is logged in as 'Admin'. The left sidebar lists various settings categories, with 'Advanced Settings' highlighted. The main content area is titled 'Advanced Settings' and contains two sections: 'EDID' and 'Sync-To-Matrix'. The 'EDID' section has a 'Select Input' dropdown (Input 2 selected), 'Resolution' (CUSTOM1), and 'Refresh Rate' dropdowns, with 'Load' and 'Save Current EDID' buttons. The 'Sync-To-Matrix' section shows a 'Status: Not Connected' field, 'Enabled' radio buttons (circled 4), a 'Video Out' input field (circled 5), 'IP Address' (circled 6) and 'Telnet Port' (23, circled 7) fields, a 'Password (if req.)' field (circled 8), and 'Submit' and 'Cancel' buttons (circled 9).

Figure 86. Advanced Settings Page — Sync-To-Matrix

- Use the **Video Out** field to enter the number of the matrix switcher video output port connected to the SME 100.
- Use the **IP Address** field to enter the IP address of the matrix switcher connected to the SME 100.
- Use the **Telnet Port** field to enter the Telnet port of the matrix switcher connected to the SME 100. The default is **23**.
- If a password is needed to access the matrix switcher connected to the SME 100, use the **Password (if req.)** field to enter the password.
- Click the **Submit** button to save the configuration settings and sync the SME 100 to the matrix switcher.

NOTES:

- If the SME 100 successfully syncs with the matrix switcher, the **Status** field will display **Connected**.
- If the **Status** field continues to display **Not Connected**, check the settings of the matrix switcher and the SME 100 and try resyncing the devices.

Using the Synchronized SME 100 and Matrix Switcher

Ensure the following is done when using the SME 100 with the matrix switcher:

- Perform all input switching using the matrix switcher. A one second RGB delay on the matrix switcher is recommended to minimize the appearance of a glitch in the output while the SME 100 locks onto the new signal.
- The SME 100 senses when the matrix switcher changes input ties and the SME 100 automatically recalls the matching input preset (input presets do not need to be recalled manually).
- The SME 100 and the matrix switcher must remain on the same subnet (subnet is represented using bold **x** letters: 192.168.**xxx**.xxx). Do not change the network settings of the matrix switcher. If the network settings on the matrix switcher are changed, repeat the [Matrix Switcher Syncing](#) procedure (see page 109).

Disabling Sync to Matrix

If the Sync to Matrix feature is no longer being used, select **Disable** from the **Enabled/Disabled** radio buttons (see item ④ in [figure 86](#) on the previous page).

Security Page

The Security page is accessed by clicking on the **Security** link on the left sidebar of the Configuration page (see figure 87).

1 Passwords

User Name:	Password:	Re-enter Password:	Real Name:	Security Level:	Submit this user:
admin	<input type="password"/>	<input type="password"/>	Built in Admin account	Admin	Submit
user	<input type="password"/>	<input type="password"/>	Built in User account	Viewer	Submit
<input type="text"/>	<input type="password"/>	<input type="password"/>	<input type="text"/>	Admin	Submit Delete
<input type="text"/>	<input type="password"/>	<input type="password"/>	<input type="text"/>	Admin	Submit Delete
<input type="text"/>	<input type="password"/>	<input type="password"/>	<input type="text"/>	Admin	Submit Delete
<input type="text"/>	<input type="password"/>	<input type="password"/>	<input type="text"/>	Admin	Submit Delete
<input type="text"/>	<input type="password"/>	<input type="password"/>	<input type="text"/>	Admin	Submit Delete
<input type="text"/>	<input type="password"/>	<input type="password"/>	<input type="text"/>	Admin	Submit Delete
<input type="text"/>	<input type="password"/>	<input type="password"/>	<input type="text"/>	Admin	Submit Delete
<input type="text"/>	<input type="password"/>	<input type="password"/>	<input type="text"/>	Admin	Submit Delete
<input type="text"/>	<input type="password"/>	<input type="password"/>	<input type="text"/>	Admin	Submit Delete
<input type="text"/>	<input type="password"/>	<input type="password"/>	<input type="text"/>	Admin	Submit Delete
<input type="text"/>	<input type="password"/>	<input type="password"/>	<input type="text"/>	Admin	Submit Delete
<input type="text"/>	<input type="password"/>	<input type="password"/>	<input type="text"/>	Admin	Submit Delete
<input type="text"/>	<input type="password"/>	<input type="password"/>	<input type="text"/>	Admin	Submit Delete

Submit All Cancel

2 Active Users

Userid	Login Time	From	Service	User's Access	Real Name	Logout
serial-admin	Mon, 03 Oct 2011 16:24:35	127.0.0.1	console	Admin	Auto Serial Port Login	Logout
usb-admin	Mon, 03 Oct 2011 16:24:35	127.0.0.1	usb	Admin	Auto USB Port Login	Logout
admin	Mon, 10 Oct 2011 14:25:14	10.13.3.132	web	Admin	Built in Admin account	Logout

Figure 87. Security Page

The Security page is used to set password security, create user names, and see which active users are logged into the SME 100.

NOTES:

- The names of the **admin** and **user** profiles cannot be changed.
- By default, neither the **admin** or **user** profiles are assigned passwords. To restrict access to the SME 100, it is recommended to set unique passwords for each profile.
- To clear passwords that have been assigned to the **admin** and **user** profiles, enter a single space into the **Password** and **Re-enter Password** fields.
- The **admin** and **user** profiles require passwords if user names are created.
- Created user names must have a login password assigned to them.
- After all changes have been made to the configuration options in the Passwords panel, click the necessary **Submit** buttons to save the user names, passwords, real names, and security level for that row.
- Click the **Submit All** button (located at the bottom of the Passwords panel) to save all of the user names and passwords.
- Click a **Delete** button to delete all of the fields in that row.
- Clicking the **Cancel** button (located at the bottom of this panel) or navigating to a different web page clears any changes that were made.

① Passwords panel

- **User Name** — Use this field to enter a user name that will be used to log in. The maximum user name length is 15 characters. User name entries are case sensitive.
- **Password** — Use this field to enter the desired password that will be used to log in. A password is required for all **user created** user names. The minimum password length is 4 characters. The maximum password length is 12 characters. Password entries are case sensitive.
- **Re-enter Password** — Use this field to re-enter the same password that was used in the **Password** field.
- **Real Name** — Use this field to enter a name (or text) that describes this profile. This field must contain at least one character. A space character can be used if no descriptive name is desired. The maximum length is 30 characters.
- **Security Level** — Use this drop-down menu to set the level of access that is available to this profile. Select **Admin** to allow full configuration and viewing access to the user. Select **Viewer** to allow the user access to the Live View page only.
- **Submit this user** — Two buttons are available (**Submit** and **Delete**). These buttons save and delete information (user name, password, and so on) that is in the same row. Click the **Submit** button to save the information entered in that row. Click the **Delete** button to delete the information entered in that row.

② Active Users panel

NOTES:

- Clicking on the **Logout** button automatically logs out and removes users from the SME 100.
- The **serial-admin** and **usb-admin** profiles are automatically shown on this panel when the SME 100 is turned on. These profiles are used to enable communication with the Config port on the front panel and the RS-232 port on the rear panel.

- **Userid** — This column displays the profile **User Name** that is logged into the SME 100.
- **Login Time** — This column displays the date and time that the profile logged into the SME 100.
- **From** — This column displays the IP address of the device that is logged into the SME 100.
- **Service** — This column displays the service that was used to log into the SME 100.
- **User's Access** — This column displays the profile **Security Level** (**Admin** or **Viewer**).
- **Real Name** — This column displays the profile **Real Name** (or text that describes the profile).

After new user names and passwords have been created, click the **Log Off** link near the upper right hand corner of the web page (see figure 88). Then access the SME 100 web-based user interface and log in (see "[Accessing the Web-based User Interface](#)" on page 47.)



Figure 88. Log Off Link

Firmware Upgrade Page

The Firmware Upgrade page is accessed by clicking on the **Firmware Upgrade** link on the left sidebar of the Configuration page (see figure 89).

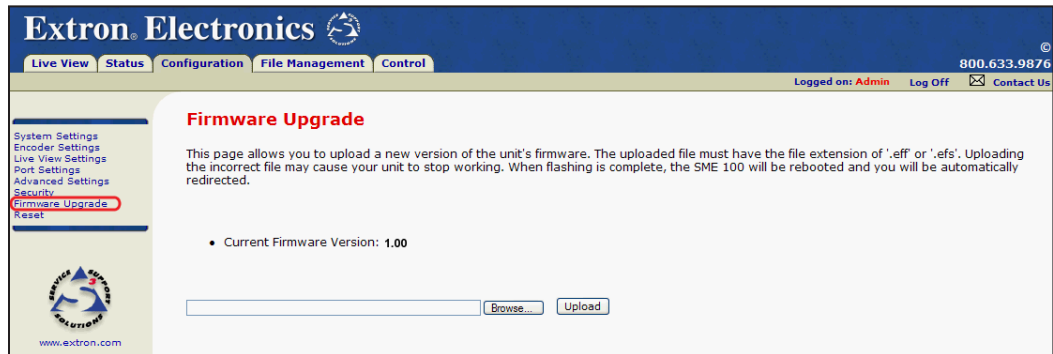


Figure 89. Firmware Upgrade Page

The Firmware Upgrade page is used to upgrade the firmware of the SME 100.

NOTES:

- The firmware file must have a **.eff** or **.efs** file extension. Uploading an incorrect file may cause the SME 100 to stop functioning.
- For information on how to update the SME 100 firmware, see the "**SME 100 Firmware Updates**" section on page 170.
- **Current Firmware Version** — The current version of firmware that is running on the SME 100 is displayed.
- **Upload firmware file** — Use the **Browse** button to navigate to the location of the firmware file. Use the **Upload** button to update the firmware of the SME 100.

Reset Page

The Reset page is accessed by clicking on the **Reset** link on the left sidebar of the Configuration page (see figure 90).

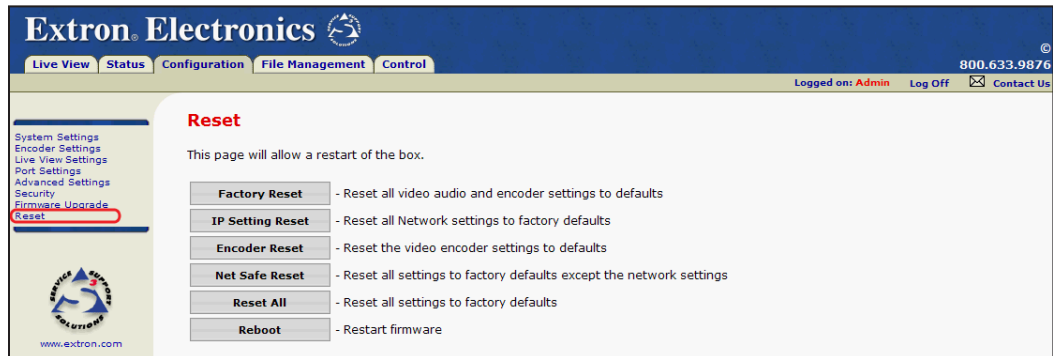


Figure 90. Reset Page

The Reset page is used to reset the configuration settings of the SME 100. The SME 100 also reboots after a reset option is selected.

- **Factory Reset** — Click this button to **reset all AV and picture controls, presets, and encoder settings** to factory defaults.
- **IP Setting Reset** — Click this button to **reset IP and NTP settings, SNMP, Serial and network port settings (except multicast, RTP, and RTSP ports)** to factory defaults (similar to a **mode 4 reset**; see page 16).
- **Encoder Reset** — Click this button to **reset the video encoder settings, RTSP and streaming configuration, and Multicast, RTP, and RTSP ports** to factory defaults.
- **Net Safe Reset** — Click this button to **reset all settings (except IP, NTP, SNMP, and network ports)** to factory defaults.
- **Reset All** — Click this button to **reset all settings** to factory defaults (similar to a **mode 5 reset**; see page 16).
- **Reboot** — Click this button to restart the firmware (that is currently installed) and reboot the SME 100. When this button is clicked, web page communication with the SME 100 will be dropped without notification. After the SME 100 has fully booted up, web page communication with the SME 100 can be resumed.

NOTES: Other reset options are available.

- For information on resetting the SME 100 using the Reset button on the rear panel, see the "**Resetting the SME 100 Using the Rear Panel**" section on page 15.
- For information on resetting the SME 100 using the front panel menu system, see the "**Advanced Config Menu**" section on page 36.
- For information on resetting the SME 100 using SIS commands, see "**Resets/Reboot**" on page 152 of the "**Command and Response Table for SIS Commands**" section.

Remote Communication and Control

This section provides information on:

- [Connecting a Control Device](#)
- [Software Overview](#)
- [Simple Instruction Set \(SIS™\) Control](#)
- [Command and Response Table for SIS Commands](#)
- [Power Save Mode](#)

Connecting a Control Device

The SME 100 can be remotely controlled using one or more of the following methods.

- Use a control PC or other device that is connected to the same network as the SME 100.
- Use a control PC or other device that is connected to the SME 100 using the rear panel RS-232 connector (see the "[Rear Panel Features](#)" section on page 12).
- Use a control PC or other device that is connected to the front panel Config port (see the "[Front Panel Features](#)" section on page 11).

Remote communications are via SIS commands (see the "[Command and Response Table for SIS Commands](#)" section on page 133). Use a communication utility, such as DataViewer (see "[Downloading the software](#)" on page 118) or Telnet, to send SIS commands and view the responses.

Software Overview

This section details how to initialize the various programs that are used to send SIS commands to the SME 100.

Using DataViewer

DataViewer is available on the included software disc and also for download, free of charge, from the Extron web site.

Downloading the software

1. Go to <http://www.extron.com/download>.
2. At the Download Center page, click the **Software** link on the left sidebar menu or click on the **Control Software** icon (see figure 91).



Figure 91. Extron Download Center Page

3. On the next Download Center page, navigate to the DataViewer program and click the **Download** link (see figure 92).

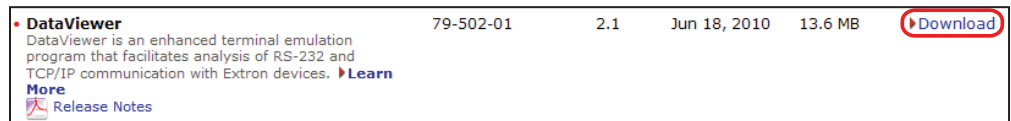


Figure 92. DataViewer Download Link

4. On the next screen, enter the requested information and click on the **Download** button (see figure 93).

Figure 93. Personal Information Form

5. Follow the instructions on the rest of the download screens to save the executable file to the computer. Note the folder where the executable file is saved.

Installing the software

1. Use the file browser on the PC to navigate to the executable software file and double-click it to open it.
2. Follow the instructions on the Installation Wizard screens to install the software to the computer.

Running DataViewer

1. From the desktop, select **Start > All Programs > Extron Electronics > IPL Tools > DataViewer > Dataviewer**. If a shortcut to DataViewer was placed on the desktop, the software can be opened by double-clicking on the icon.
2. The DataViewer Communication Setup window opens (see figure 94).

NOTE: If the Communication Setup window does not appear, select **File > Connect** from the menu bar.

Sending commands using a TCP/IP connection

1. Configure the network settings of a control PC so that it can be connected to the same network as the SME 100. Use an RJ-45 cable to connect the control PC to the network.
2. Open DataViewer (see "**Running DataViewer**" above).
3. On the Communication Setup window (see figure 94):

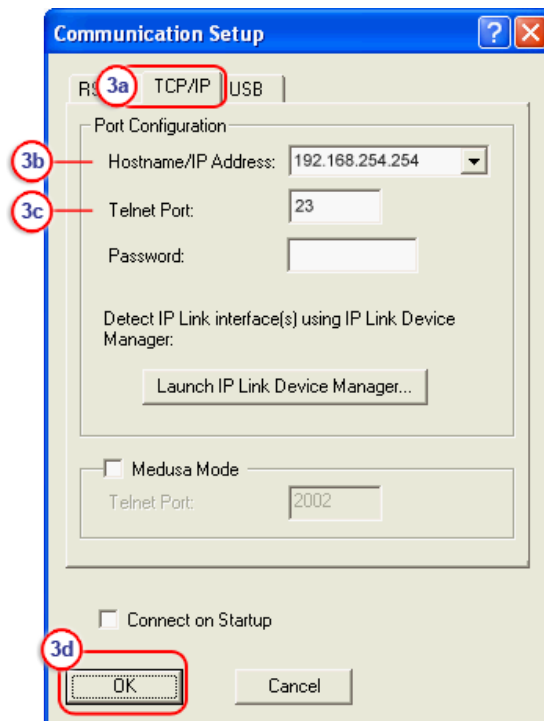


Figure 94. TCP/IP Communication Setup Window

- a. Select the **TCP / IP** tab.
- b. Enter the IP address of the SME 100 into the **Hostname / IP Address** field.
- c. In the **Telnet Port** field, enter the port number for the connection.

NOTE: The default port to send SIS commands to the SME 100 is port 23.

- d. Click **OK**. The Communication Setup window closes.

- The main DataViewer window appears. Use the **Commands** field to enter SIS commands and view the responses in the **Responses** field (see figure 95, below).

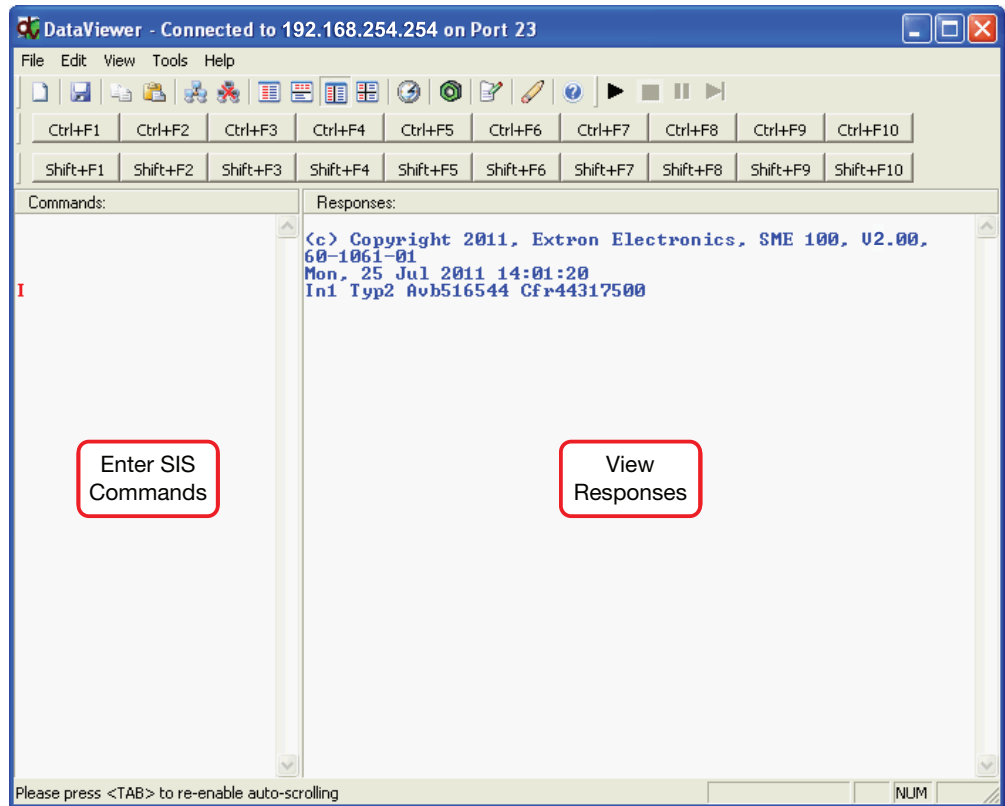


Figure 95. DataViewer Connected; SIS Command and Response Example

Sending commands using an RS-232 connection

1. Use an RS-232 cable to connect a control PC or other RS-232 device to the RS-232 connector located on the rear panel of the SME 100 (see the "[Rear Panel Features](#)" section on page 12).
2. Open DataViewer (see the "[Running DataViewer](#)" section on page 119).
3. On the Communication Setup window (see figure 96):

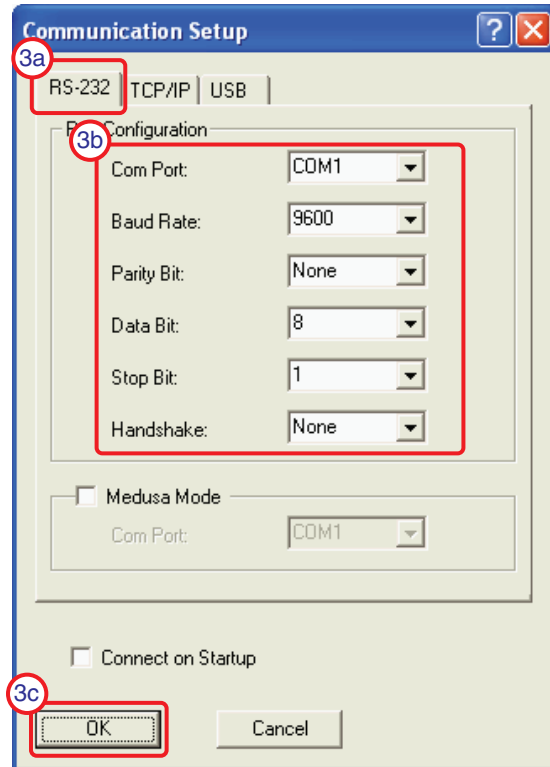


Figure 96. RS-232 Connection Setup Window

- a. Select the **RS-232** tab.
- b. Select values for the following fields.
 - **Com Port** (default = **COM1**)
 - **Baud Rate** (default = **9600**)
 - **Parity Bit** (default = **None**)
 - **Data Bit** (default = **8**)
 - **Stop Bit** (default = **1**)
 - **Handshake** (default = **None**)

NOTE: **COM1** is the default serial port. Communication can be established with any unused Com Port by selecting the port from the drop-down menu.

- c. Click **OK**. The Communication Setup window closes.
4. The main DataViewer window appears. Use the **Commands** field to enter SIS commands and view the responses in the **Responses** field (see [figure 95](#) on page 120).

Sending commands using a USB connection

1. Use a Mini-B USB cable to connect a control PC or other USB device to the front panel Config port of the SME 100 (see the "**Front Panel Features**" section on page 11).

NOTE: PCs or USB devices connected to the SME 100 using the config port require a USB driver for communication. If a PC or device is connected to the SME 100 Config Port while DataViewer is installed, the USB driver is loaded automatically.

2. Open DataViewer (see "**Running DataViewer**" on page 119).
3. On the Communication Setup window (see figure 97):

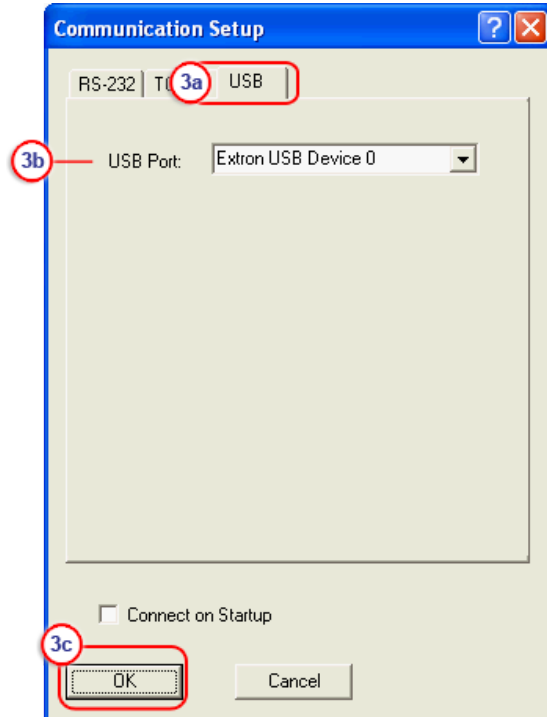



Figure 97. USB Communication Setup Window

- a. Select the **USB** tab.
 - b. Select the SME 100 device from the USB Port drop-down menu.
 - c. Click **OK**. The Communication Setup window closes.
4. The main DataViewer window appears. Use the **Commands** field to enter SIS commands and view the responses in the **Responses** field (see [figure 95](#) on page 120).

NOTE: For more information on how to use DataViewer, see the help file that comes with the program. The help file can be accessed by opening the program and pressing the <F1> key or clicking **Use help** in the **Help** menu.

Using Telnet

Follow the procedure below to run Telnet.

NOTE: To activate and run Telnet in Microsoft® Windows® 7, select **Start**  > **Help and Support** or see the "Windows 7 Help and How-to" documentation available online.

1. From the desktop, select **Start** > **Run**.
2. The Run window appears. In the **Open** field, type `telnet` and click **OK** (see figure 98).

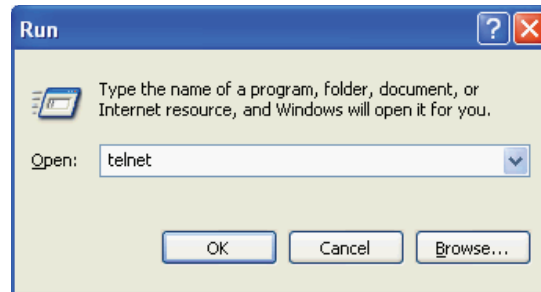


Figure 98. Run Program Window

3. The Telnet application appears. At the telnet prompt, type `open` followed by the IP address of the SME 100 and the port number (default port is 23). Then press <Enter>. See figure 99 for an example.

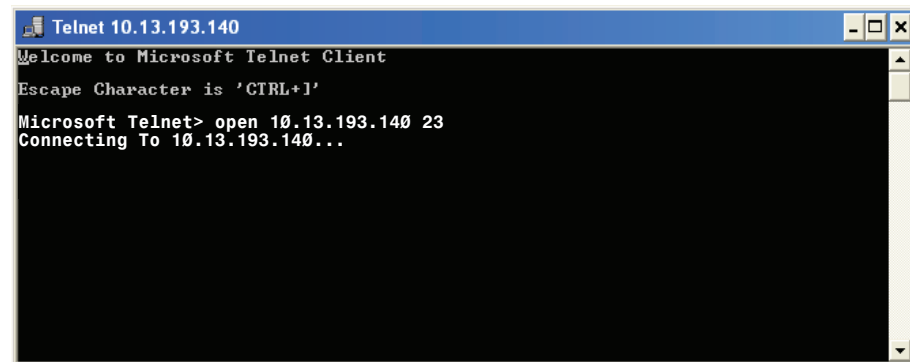


Figure 99. Telnet Open Command

4. The Telnet application is connected to the SME 100 when the window displays the copyright message (see figure 100). SIS commands can now be sent to the SME 100.

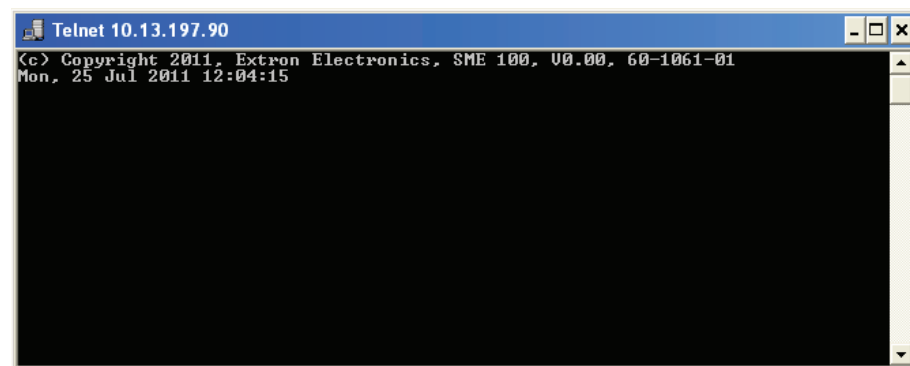


Figure 100. Telnet Connected to SME 100

Simple Instruction Set (SIS™) Control

Host-to-SME 100 Communications

SIS commands consist of one or more characters per field. No special characters are required to begin or end a command sequence. When a command is valid, the SME 100 executes the command and sends a response to the host device. All responses from the SME 100 to the host end 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.

SIS commands are sent to the SME 100 using the following programs.

- DataViewer (see "[Using DataViewer](#)" on page 118)
- Telnet (see the "[Using Telnet](#)" section on page 123)

SME 100-initiated Messages

When a local event such as a front panel selection or adjustment takes place, the SME 100 responds by sending a message to the host. No response is required from the host. The initial message sent by the SME 100 is listed here.

```
(c) Copyright 2011, Extron Electronics, SME 100 HD/SD, Vx.xx,  
60-1061-0x↵  
Day, DD MMM YYYY HH:MM:SS↵
```

Example:

```
(c) Copyright 2011, Extron Electronics, SME 100 HD/SD, V1.00,  
60-1061-0x  
Tue, 14 Jun 2011 16:51:57
```

The SME 100 initiates the copyright message when powered on or when connection via Internet protocol (TCP/IP) is established. Vx.xx is the firmware version number.

NOTES:

- A **Password** prompt appears if a password has been set on the SME 100 for the **admin** and **user** profiles. Enter the necessary password followed by a carriage return.
- The **Password** prompt is repeated when an incorrect password is entered.
- When a correct password is entered, the SME 100 responds with **Login Administrator** or **Login User** depending on the password entered.
- If the passwords are the same for the **admin** and **user** profiles, the user is logged in as an administrator.

Error Responses

When the SME 100 receives a valid SIS command, it executes the command and sends a response to the host device. If the SME 100 is unable to execute the command because the command is invalid or it contains invalid parameters, it returns an error response to the host.

The error response codes and their descriptions are as follows:

- E01 – Invalid input number
- E10 – Invalid command
- E11 – Invalid preset number
- E12 – Invalid port number
- E13 – Invalid parameter
- E14 – Not valid for this configuration
- E17 – Invalid command for signal type
- E18 – System / command timed out
- E22 – Busy
- E24 – Privilege violation
- E25 – Device not present
- E26 – Maximum number of connections exceeded
- E28 – Invalid / missing file

Using the Command and Response Table

The "**Command and Response Table for SIS Commands**" begins on page 133. Lowercase letters are allowed in the command field only as indicated. Symbols are used throughout the table to represent variables in the command/response fields. Command and response examples are shown throughout the table. The ASCII to HEX conversion table (see figure 101) is for use with the command/response table.

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

Figure 101. ASCII to Hexadecimal Character Conversion Table

Symbol definitions

- ↵ = CR/LF (carriage return/line feed)
- ← or ; = Carriage return (no line feed, hex 0D)
- = Space
- * = Asterisk character (which is a command character, not a variable)
- Esc or W = Escape
- X1 = Input selection: 1 through 3 (2 and 3 applicable for EDID only)
- X2 = Output selection
 - 2 = Analog only (VGA loop)
 - 3 = Digital only (DVI loop)
- X3 = Input video format
 - 1 = RGB (default)
 - 2 = YUVp / YUV-HD
 - 3 = RGBcvS
 - 4 = YUVi
 - 5 = S-video
 - 6 = Composite
 - 9 = DVI
 - 11 = Autodetect
- X4 = Horizontal / Vertical start: 0 through 255 (default midpoint of 128 translates to the default value in the input lookup tables)
- X6 = Pixel phase: 0 through 31 (default = 16)
- X7 = Total pixels (± 512 of the default value for high resolution video and ± 127 for interlaced video; depends on resolutions)
- X8 = Active pixels (± 512 of the default value for high resolution video and ± 127 for interlaced video; depends on resolutions)
- X9 = Active lines (± 256 of the default value; depends on resolutions)
- X10 = Off (disable) and On (enable)
 - 0 = Off or disable
 - 1 = On or enable
- X11 = Input standard
 - 0 = No signal
 - 1 = NTSC 3.85
 - 2 = PAL
 - 3 = NTSC 4.43
 - 4 = SECAM
 - = N/A (occurs when input is set to a high resolution signal format)
- X12 = Internal temperature (in degrees Celsius; xx.x)
- X13 = Horizontal and vertical frequencies
 - Format = Four (4) significant figures displayed to the tenths decimal place. Leading zeros are used for numbers below 100.
 - Example = 075.3
- X14 = Text label / Preset name (up to 16 characters)
- X15 = Picture adjustment: 0 through 127 (default = 64)
- X16 = Horizontal and Vertical position (default range depends on output resolution)
- X17 = Horizontal and Vertical size (default range depends on output resolution)
- X18 = Zoom (default range depends on output resolution; default = 100%)

- X19** = Pan (default range depends on output resolution)
- X20** = Test Pattern
 - Ø = Off (default)
 - 1 = Color bars
 - 2 = Pulse
 - 3 = Timestamp
 - 4 = Universal OSD
 - 5 = Fine crosshatch
 - 6 = 4x4 Crosshatch
 - 7 = Grayscale (32 level)
 - 8 = Ramp
 - 9 = Alternating pixels
 - 10 = White field
 - 11 = Crop
 - 12 = 1.33 aspect ratio
 - 13 = 1.78 aspect ratio
 - 14 = 1.85 aspect ratio
 - 15 = 2.35 aspect ratio
- X21** = Encoder resolution
 - 3 = 166x120
 - 4 = 176x144
 - 5 = 320x240
 - 6 = 352x288
 - 7 = 480x320 or 320p
 - 8 = 480x360
 - 9 = 640x360
 - 10 = 640x480 or 480p (default)
 - 11 = 720x486
 - 12 = 800x480
 - 13 = 720x576
 - 14 = 800x600
 - 15 = 1024x764
 - 16 = 1280x720 or 720p
 - 17 = 1920x1080 or 1080p
- X22** = Refresh Rate
 - Ø = Used when selecting a loop out or a custom EDID table
 - 1 = 24 Hz
 - 2 = 25 Hz
 - 3 = 30 Hz
 - 4 = 50 Hz
 - 5 = 60 Hz
 - 6 = 75 Hz
- X23** = Audio gain adjustment: Ø to 15 dB
- X24** = Audio attenuation: Ø to 15 dB
- X25** = User presets: 1 through 16
- X26** = Input presets: 1 through 128
- X27** = Audio level adjustment: -15 to +15 dB

- X39** = Aspect ratio settings
 - 1 = Fill (each input rate automatically fills the entire output raster; default)
 - 2 = Follow (each input rate is displayed with its native aspect ratio)
- X40** = Power save mode
 - Ø = Power save mode disabled (default)
 - 1 = Power save mode enabled (power save mode begins when no device activity is detected for seven minutes)
- X42** = Audio delay (ms): Ø through 999
- X50** = Maximum video bit rate (kbps): 200 through 10000 (default = 10000)
- X51** = Video frame rate: 1 through 30 (default = 30)
- X52** = Stream mode
 - Ø = Audio and video (default)
 - 1 = Video
- X53** = Bit rate control
 - Ø = Variable Bit Rate (VBR; default)
 - 1 = Constrained Variable Bit Rate (CVBR)
 - 2 = Constant Bit Rate (CBR)
- X54** = Target video bit rate (kbps): 200 through 10000 (default = 1000)
- X58** = GOP length: 1 through 30 (default = 30)
- X59** = Streaming method
 - Ø = Unicast RTP
 - 3 = Multicast RTP over UDP
- X63** = Streaming presets: 1 through 16 (default = 1)
- X64** = Audio bit rate (kbps): 16 through 384 (default = 384)
- X65** = Audio sample rate
 - 3 = 48 kHz (default)

- X66** = General information query (I commands)
- 1 = Model name
Example: SME 100 HD or SME 100 SD
 - 2 = Model description
Example: Extron Electronics MPEG-4/H.264 Encoder
 - 3 = System memory usage
[<# of megabytes (MB) used / # of megabytes (MB) free>]
 - 4 = User memory usage
[<# of megabytes (MB) used / # of megabytes (MB) free>]
 - 10 = Number of connected users: 0 to 15
 - 36 = Average bandwidth
[Inf36*<0 - 12000 kbps>←]
 - 37 = Current frame rate
[Inf37*<0 - 30 Frames>←]
 - 38 = Current bandwidth
[Inf38*<0 - 12000 kbps>←]
 - 40 = RTSP describe
[Inf40*<RTSP URL (128 characters)>←]
 - 41 = RTSP open connections
[Inf41*<0 - 100>←]
 - 42 = RTSP full describe
[Inf43*<RTSP URL>*<Unicast stream info>*<Multicast stream info> (400 characters)>←]
- X67** = Firmware query (Q commands)

NOTE: Responses to the numbered Q commands begin with a "Verxx" tag when in verbose modes 2/3. For example, 1Q responds Ver01*1.00←.

- * = Firmware and build number: [<X.YY.ZZZZ>]
- 0 = Verbose version information (sum of <2Q>-<3Q>-<4Q>← responses)
[<2Q>-<3Q>-<4Q>]
- 1 = Firmware version (currently running code): [<X.YY>]
- 2 = Final stage bootloader version
Example: Extron Electronics MPEG-4/H.264 Encoder
- 3 = Factory base code version
[<Factory firmware code (X.YY)>*<Kernel version (X.YY)-Description-Date loaded>]
- 4 = Updated firmware version
[<Updated firmware code (X.YY)>*<Kernel version (X.YY)-Description-Date loaded>]

NOTES: For the 3Q and 4Q commands:

- An asterisk (*) after the firmware code indicates which version of firmware is running.
Example: 1.00*(1.81-SME 100 HD/SD-Tue, 14 Jun 2011 13:40:03)]
- A question mark (?.?) after the firmware code indicates that the factory default version of firmware is running.
- A caret (^) after the firmware code indicates the version of firmware that should be running, but the factory default version of firmware is running because of a mode 1 reset.
- An exclamation point (!) after the firmware code indicates corrupt firmware.

- X68** = EDID resolution
- 4 = Custom 1 (analog)
 - 5 = Custom 2 (analog)
 - 6 = Custom 3 (analog)
 - 7 = Custom 4 (digital)
 - 8 = Custom 5 (digital)
 - 9 = Custom 6 (digital)
 - 10 = 640 x 480
 - 11 = 800 x 600
 - 12 = 852 x 480
 - 13 = 1024 x 768 (default)
 - 14 = 1280 x 768
 - 15 = 1280 x 800
 - 16 = 1280 x 1024
 - 17 = 1360 x 765
 - 18 = 1360 x 768
 - 19 = 1365 x 768
 - 20 = 1366 x 768
 - 21 = 1440 x 900
 - 22 = 1400 x 1050
 - 23 = 1680 x 1050
 - 24 = 1600 x 1200
 - 25 = 1920 x 1200
 - 30 = 480p
 - 31 = 576p
 - 32 = 720p
 - 33 = 1080i
 - 34 = 1080p
- X69** = Maximum stream bit rate (kbps): 5000 through 99000 (default = 80000)
- X70** = Time to live (hops): 1 through 255 (default = 10)
- X76** = Overscan: Applied only to SMPTE (NTSC/PAL – 1080p 50/60 Hz) input rates.
- 0 = 0.0% (default for RGB, DVI)
 - 1 = 2.5% (default for YUVp / HDTV)
 - 2 = 5.0% (default for CV, S-video, YUVi, RGBcvs)
- X101** = Specific port number: 01 through 99 (00 = reserved)
- X103** = Greenwich Mean Time (GMT) offset value: -12:00 to 14:00
Represents hours and minutes (HH:MM) offset from GMT.
- X112** = Unit name (text string up to 24 characters)
- Use the alphabet (A-Z), digits (0-9), and the minus sign/hyphen (-).
 - No blank characters can be used in the name.
 - No distinction is made between an upper case or lower case character.
 - The first character must be an alpha character.
 - The last character cannot be a minus sign/hyphen.
- X113** = Set/view local time and date (use the 24-hour clock)
- Format to set:** MM/DD/YY-HH:MM:SS
Example: 06 / 14 / 11 – 13 : 40 : 03
- Format to view:** day of week, DD MMM YYYY HH:MM:SS
Example: Tue, 14 Jun 2011 13 : 40 : 03

- X114** = IP address: xxx.xxx.xxx.xxx
 Leading zeros are optional and are suppressed in returned values.
 Factory default IP address: 192.168.254.254
 Factory default gateway IP address: 0.0.0.0
 Factory default DNS server IP address: 0.0.0.0
 Factory default multicast IP address: 239.199.188.138
 Valid multicast IP addresses: 225.0.0.0 through 239.255.255.255
- X118** = Hardware MAC address: 00-05-A6-xx-xx-xx
- X119** = Subnet mask: xxx.xxx.xxx.xxx
 Leading zeros are optional and are suppressed in returned values.
 Factory default subnet mask: 255.255.0.0

X122 = Verbose/response mode

NOTE: If tagged responses are enabled, all commands will return the constant string and the data, similar to the response received when setting a value. Example: the command `Esc CN ←` returns `Ipn • X112 ←` as a response.

- 0 = Clear/none (default for telnet connections)
- 1 = Verbose mode (default for RS-232 host control)
- 2 = Tagged responses for queries
- 3 = Verbose mode and tagged responses for queries

- X125** = Baud rate: 300, 600, 1200, 1800, 2400, 4800, 9600 (default), 19200, 38400, 57600, 115200
- X126** = Parity: **O**dd, **E**ven, **N**one (default), **M**ark, **S**pace
 Only use the **first** letter.
- X127** = Data bits: 7, 8 (default)
- X128** = Stop bits: 1 (default), 2
- X129** = Port type
 0 = RS-232 (default)
- X130** = Flow control: **S**oftware, **N**one (default)
 Only use the **first** letter.
- X131** = Data pacing (specified in milliseconds (ms) between bytes): 0 through 1000
 Default = 0 ms
 For host ports, this value is ignored and will always return 0.
- X133** = Password (up to 12 characters)
 All readable characters are permitted except "/", "\", "|", and "*".
 No blank characters (spaces) can be used in the password.
 Passwords are case sensitive.

NOTES:

- An administrator password must be set before assigning user passwords. If an administrator password has not first been set, the **E14** error will be returned.
- If the administrator password is removed, all user created profiles and passwords are disabled.

X134 = Daylight savings time

Ø = Off (ignore)

1 = U.S.A.

2 = Europe

3 = Brazil

X141 = Check password

The actual password is not shown.

If a password is set, four asterisks (****) are returned.

If a password is not set, nothing is returned.

X149 = Default name: shows the default name of the unit using the model name and the last three pairs of the MAC address.

Example: **SME-1ØØ-HD/SD-ØØ-Ø2-3D**

X152 = Connection security level

NOTES:

- The response is returned as two digits.
- A leading zero is used for values lower than 10.

ØØ = Anonymous

Ø1 - 1Ø = Extended security levels (1 through 1Ø)

11 = User (viewer)

12 = Administrator

X169 = IP connection timeout: 1 through 65ØØØ (default = 3Ø = 3ØØ seconds)

NOTES:

- Applicable to Ethernet connections only.
- The selected number multiplied by 10 determines the number of seconds required for a connection timeout.
- If no data is received during the connection timeout period, the Ethernet connection is closed.
- The response is returned as five digits with leading zeros.
- Connection timeouts can be set on the RS-232 port when using the global timeout commands only. Using the current port timeout commands returns the **E13** error.

X181 = Text (up to 64 characters)

Command and Response Table for SIS Commands

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Input Configurations			
Input selection			
Video and audio	[X1] !	In[X1]•All ←	Select audio and video from input source [X1].
Video	[X1]&	In[X1]•RGB ←	Select video from input source [X1].
Audio	[X1]\$	In[X1]•Aud ←	Select audio from input source [X1].
View video input	&	[X1] ←	View currently selected video source.
View audio input	\$	[X1] ←	View currently selected audio source.
View current input	!	[X1] ←	View currently selected input sources (video input ONLY).
Input video format			
Set format	[X1]*[X3]\	Typ[X1]*[X3] ←	Sets input [X1] to format [X3].
View format	[X1]\	[X3] ←	View video format of input [X1].
View detected format	[X1]*\	ATyp[X1]*[X3] ←	View actual video format autodetected on input [X1].
Input EDID (VGA and DVI)			
Specify a value	[Esc]A[X1]*[X68]*[X22]EDID ←	EdidA[X1]*[X68]*[X22] ←	Set the EDID resolution and refresh rate for the [X1] input.
View	[Esc]A[X1]EDID ←	[X68]*[X22] ← <i>In verbose mode:</i> EdidA[X1]*[X68]*[X22] ←	View EDID resolution and refresh rate for the [X1] input.
Save the EDID of an output	[Esc]S[X2]*[X68]*ØEDID ←	EdidS[X2]*[X68]*Ø ←	Save output [X2] EDID to [X68] (valid only for [X68] = 4-6 with [X2] = 2 and [X68] = 7-9 with [X2] = 3 only).
Input name			
<div style="border: 1px solid black; padding: 5px;"> <p>NOTE: To clear an input name, a single space character should be entered for [X14]. This action resets the input name back to the default setting.</p> </div>			
Write name	[Esc][X1],[X14]NI ←	Nmi[X1],[X14] ←	Set the name ([X14]) for input [X1].
View name	[Esc][X1]NI ←	[X14] ←	View the name of input [X1].

NOTES:

[X1] = Input selection	1 through 3 (2 and 3 applicable for EDID only)
[X2] = Output selection	2 = Analog only (VGA loop), 3 = Digital only (DVI loop)
[X3] = Input video format	1 through 7, 9, 11 (see Input video format on page 126)
[X14] = Text label / Preset name	Up to 16 characters
[X22] = Refresh rate	Ø through 6 (see Refresh rate on page 127)
[X68] = EDID resolution	4 through 34 (see EDID resolution on page 130)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Auto-image			
Enable	[x1]*1A	Img[x1]*1 ↵	Turn on auto-image for input [x1].
Disable	[x1]*ØA	Img[x1]*Ø ↵	Turn off auto-image for input [x1].
Execute	A	Img ↵	Execute auto-image for the selected input.
Execute and fill	1*A	Img1 ↵	Execute auto-image for the selected input and fill the entire output.
Execute and follow	2*A	Img2 ↵	Execute auto-image for the selected input and follow the aspect ratio of the input.
View	[x1]A	[x10] ↵	View the auto-image setting.
Horizontal start			
Specify a value	[Esc][x4]HSRT ↵	Hsrt[x1]*[x4] ↵	Set the horizontal location of the first active pixel for the active input.
Increment value	[Esc]+HSRT ↵	Hsrt[x1]*[x4] ↵	Increase the value.
Decrement value	[Esc]-HSRT ↵	Hsrt[x1]*[x4] ↵	Decrease the value.
View	[Esc]HSRT ↵	[x4] ↵	Show the horizontal location of the first active pixel for the active input.
Vertical start			
Specify a value	[Esc][x4]VSRT ↵	Vsrt[x1]*[x4] ↵	Set the vertical location of the first active line for the active input.
Increment value	[Esc]+VSRT ↵	Vsrt[x1]*[x4] ↵	Increase the value.
Decrement value	[Esc]-VSRT ↵	Vsrt[x1]*[x4] ↵	Decrease the value.
View	[Esc]VSRT ↵	[x4] ↵	Show the vertical location of the first active line for the active input.

NOTES:

[x1] = Input selection

[x4] = Horizontal / Vertical start:

[x10] = Off / On

1 through 3 (2 and 3 applicable for EDID only)

Ø through 255 (default midpoint 128 is default value in the input lookup tables)

Ø = Off or disable, 1 = On or enable

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Pixel phase (available only for RGB and YUVp input signals)			
Specify a value	Esc X6 PHAS ←	Phas X1 * X6 ←	Adjust the pixel phase to the specified value for the active input.
Increment value	Esc + PHAS ←	Phas X1 * X6 ←	Increase the pixel phase.
Decrement value	Esc - PHAS ←	Phas X1 * X6 ←	Decrease the pixel phase.
View	Esc PHAS ←	X6 ←	Show the pixel phase.
Total pixels (available only for RGB and YUVp input signals)			
Specify a value	Esc X7 TPIX ←	Tpix X1 * X7 ←	Adjust the total pixels to the specified value for the active input.
Increment value	Esc + TPIX ←	Tpix X1 * X7 ←	Increase the total pixels.
Decrement value	Esc - TPIX ←	Tpix X1 * X7 ←	Decrease the total pixels.
View	Esc TPIX ←	X7 ←	Show the total pixels.
Active pixels			
Specify a value	Esc X8 APIX ←	Apix X1 * X8 ←	Adjust the active pixels to the specified value for the active input.
Increment value	Esc + APIX ←	Apix X1 * X8 ←	Increase the active pixels.
Decrement value	Esc - APIX ←	Apix X1 * X8 ←	Decrease the active pixels.
View	Esc APIX ←	X8 ←	Show the active pixels.
Active lines			
Specify a value	Esc X9 ALIN ←	Alin X1 * X9 ←	Adjust the active lines to the specified value for the active input.
Increment value	Esc + ALIN ←	Alin X1 * X9 ←	Increase the active lines.
Decrement value	Esc - ALIN ←	Alin X1 * X9 ←	Decrease the active lines.
View	Esc ALIN ←	X9 ←	Show the active lines.
3:2 film mode detect			
Enable	Esc X1 *1 FILM ←	Film X1 * X10 ←	Enable film mode detection.
Disable	Esc X1 *Ø FILM ←	Film X1 * X10 ←	Disable film mode detection.
View setting	Esc X1 FILM ←	X10 ←	View setting.

NOTES:

X1 = Input selection
X6 = Pixel phase
X7 = Total pixels
X8 = Active pixels
X9 = Active lines
X10 = Off / On

1 through 3 (2 and 3 applicable for EDID only)
 Ø through 31 (default = 16)
 ±512 of the default value for high resolution video; ±127 for interlaced
 ±512 of the default value for high resolution video; ±127 for interlaced
 ±256 of the default value
 Ø = Off or disable, 1 = On or enable

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Picture Adjustments			
Video mute			
Enable blanking	1B	Vmt1 ↵	Blanks selected input.
Disable blanking	ØB	VmtØ ↵	Displays selected input.
View	B	ⓧ10 ↵	View the blanking status.
Color			
Specify a value	ⓧEsc ⓧ15 COLR ↵	Colrⓧ1*ⓧ15 ↵	Sets color level to ⓧ15.
Increment value	ⓧEsc + COLR ↵	Colrⓧ1*ⓧ15 ↵	Increments color level.
Decrement value	ⓧEsc - COLR ↵	Colrⓧ1*ⓧ15 ↵	Decrements color level.
View	ⓧEsc COLR ↵	ⓧ15 ↵	View current setting.
Tint			
Specify a value	ⓧEsc ⓧ15 TINT ↵	Tintⓧ1*ⓧ15 ↵	Sets tint level to ⓧ15.
Increment value	ⓧEsc + TINT ↵	Tintⓧ1*ⓧ15 ↵	Increments tint level.
Decrement value	ⓧEsc - TINT ↵	Tintⓧ1*ⓧ15 ↵	Decrements tint level.
View	ⓧEsc TINT ↵	ⓧ15 ↵	View current setting.
Contrast			
Specify a value	ⓧEsc ⓧ15 CONT ↵	Contⓧ1*ⓧ15 ↵	Sets contrast level to ⓧ15.
Increment value	ⓧEsc + CONT ↵	Contⓧ1*ⓧ15 ↵	Increments contrast level.
Decrement value	ⓧEsc - CONT ↵	Contⓧ1*ⓧ15 ↵	Decrements contrast level.
View	ⓧEsc CONT ↵	ⓧ15 ↵	View current setting.
Brightness			
Specify a value	ⓧEsc ⓧ15 BRIT ↵	Britⓧ1*ⓧ15 ↵	Sets brightness level to ⓧ15.
Increment value	ⓧEsc + BRIT ↵	Britⓧ1*ⓧ15 ↵	Increments brightness level.
Decrement value	ⓧEsc - BRIT ↵	Britⓧ1*ⓧ15 ↵	Decrements brightness level.
View	ⓧEsc BRIT ↵	ⓧ15 ↵	View current setting.
Detail filter			
Specify a value	ⓧEsc ⓧ15 HDET ↵	Hdetⓧ1*ⓧ15 ↵	Set the detail level to ⓧ15.
Increment value	ⓧEsc + HDET ↵	Hdetⓧ1*ⓧ15 ↵	Increase the detail level.
Decrement value	ⓧEsc - HDET ↵	Hdetⓧ1*ⓧ15 ↵	Decrease the detail level.
View	ⓧEsc HDET ↵	ⓧ15 ↵	View current setting.
Horizontal shift			
Specify a value	ⓧEsc ⓧ16 HCTR ↵	Hctrⓧ1*ⓧ16 ↵	Set horizontal centering to ⓧ16.
Increment value	ⓧEsc + HCTR ↵	Hctrⓧ1*ⓧ16 ↵	Shift window right.
Decrement value	ⓧEsc - HCTR ↵	Hctrⓧ1*ⓧ16 ↵	Shift window left.
View	ⓧEsc HCTR ↵	ⓧ16 ↵	View current setting.

NOTES:

- | | |
|--|--|
| ⓧ1 = Input selection | 1 through 3 (2 and 3 applicable for EDID only) |
| ⓧ10 = Off (disable) and On (enable) | Ø = Off or disable, 1 = On or enable |
| ⓧ15 = Picture adjustment | Ø through 127 (default = 64) |
| ⓧ16 = Horizontal and Vertical position | Default range depends on output resolution |

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Vertical shift			
Specify a value	Esc X16 VCTR ←	Vctr X1 * X16 ↵	Set vertical centering to X16 .
Increment value	Esc + VCTR ←	Vctr X1 * X16 ↵	Shift window down.
Decrement value	Esc - VCTR ←	Vctr X1 * X16 ↵	Shift window up.
View	Esc VCTR ←	X16 ↵	View current setting.
Horizontal size			
Specify a value	Esc X17 HSIZ ←	Hsiz X1 * X17 ↵	Set horizontal size (width) to X17 .
Increment value	Esc + HSIZ ←	Hsiz X1 * X17 ↵	Increase the width of the window.
Decrement value	Esc - HSIZ ←	Hsiz X1 * X17 ↵	Decrease the width of the window.
View	Esc HSIZ ←	X17 ↵	View current setting.
Vertical size			
Specify a value	Esc X17 VSIZ ←	Vsiz X1 * X17 ↵	Set vertical size (height) to X17 .
Increment value	Esc + VSIZ ←	Vsiz X1 * X17 ↵	Increase the height of the window.
Decrement value	Esc - VSIZ ←	Vsiz X1 * X17 ↵	Decrease the height of the window.
View	Esc VSIZ ←	X17 ↵	View current setting.
Horizontal zoom			
Specify a value	Esc X18 ZOOM ←	Zoom X1 * X18 ↵	Set zoom percentage to X18 .
Zoom in	Esc + ZOOM ←	Zoom X1 * X18 ↵	Zoom in making the window larger.
Zoom out	Esc - ZOOM ←	Zoom X1 * X18 ↵	Zoom out making the window smaller.
View	Esc ZOOM ←	X18 ↵	View current setting.

NOTES:

X1 = Input selection

X16 = Horizontal and Vertical position

X17 = Horizontal and Vertical size

X18 = Zoom

1 through 3 (2 and 3 applicable for EDID only)

Default range depends on output resolution

Default range depends on output resolution

Default range depends on output resolution (default = 100%)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Output Configurations			
Encoder profile type			
Set encode profile	[Esc] X80 EPRO ←	Epro X80 ↵	Set encode profile to X80.
View encode profile	[Esc] EPRO ←	X80 ↵	View current encode profile.
Closed Caption			
Set CC format	[Esc] X82 TVCC ←	Tvcc X82 ↵	Set CC to X82.
View CC format	[Esc] TVCC ←	X82 ↵	View current CC status.
Video resolution			
Set resolution	[Esc] X21 VRES ←	Vres X21 ↵	Set the resolution to X21.
View resolution	[Esc] VRES ←	X21 ↵	View the currently set resolution.
Video frame rate			
Set frame rate	[Esc] X51 VFRM ←	Vfrm X51 ↵	Set the frame rate value to X51.
View frame rate	[Esc] VFRM ←	X51 ↵	View the currently set frame rate.
Push stream control			
Set push stream control	[Esc] 1 *X87 STRC ←	Strc1 *X87 ↵	Set stream control for push stream X87.
View push stream control	[Esc] 1 STRC ←	X87 ↵	View stream control for push stream X87 .
SAP session name			
Write session name	[Esc] 1 ,X14 SNAM ←	Snam1 ,X14 ↵	Set the SAP session name (X14) for push stream 1.
View session name	[Esc] 1 SNAM ←	X14 ↵	View the SAP session name for push stream 1.
NOTES:			
<ul style="list-style-type: none"> To restore a default SAP Session Name, a single space character should be entered for ; unassigned Session names = "[UnitName_Stream]" valid only for existing Session Names. Session Names saved without a name will be saved with default "UnitName_OutputX" (Example: SME - 100_ Output01), standard character sets allowed. 			

NOTES:

- | | | |
|-----|----------------------------|--|
| X14 | = Text label / Preset name | up to 16 characters |
| X21 | = Encoder resolution | 3 through 17 (see Encoder resolution on page 127) |
| X51 | = Video frame rate | 1 through 30 (default = 30) |
| X80 | = Encode profile | 1 = Base, 2 = Main, 3 = High |
| X82 | = Closed caption | 0 =*Off/Disable, 1 = On/Enable |
| X87 | = Push stream control | 0 =*Off/Disable, 1 = On/Enable |

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Stream mode			
Set stream mode	Esc <u>X52</u> SMOD ←	Smod <u>X52</u> ←	Set the stream mode to <u>X52</u> .
View stream mode	Esc SMOD ←	<u>X52</u> ←	View the currently set stream mode.
Bit rate control			
Set bit rate control	Esc <u>X53</u> BRCT ←	Brct <u>X53</u> ←	Set the bit rate control to <u>X53</u> .
View bit rate control	Esc BRCT ←	<u>X53</u> ←	View the currently set bit rate control.
Total stream bit rate max			
Set maximum bit rate value	Esc S <u>X69</u> BITR ←	BitrS <u>X69</u> ←	Set the maximum (total) bit rate value to <u>X69</u> .
View maximum bit rate value	Esc S BITR ←	<u>X69</u> ←	View the maximum (total) bit rate allowed for streaming.
Video bit rate max			
Set maximum bit rate value	Esc M <u>X50</u> BITR ←	BitrM <u>X50</u> ←	Set the maximum (total) video bit rate value to <u>X50</u> .
View maximum bit rate value	Esc M BITR ←	<u>X50</u> ←	View the maximum (total) video bit rate allowed for each stream.
Video bit rate target			
Set target bit rate	Esc V <u>X54</u> BITR ←	BitrV <u>X54</u> ←	Set the target bit rate for variable bit rate to <u>X54</u> .
View target bit rate	Esc V BITR ←	<u>X54</u> ←	View the currently set target bit rate for variable bit rate.
Group of pictures (GOP) length			
Set GOP length	Esc <u>X58</u> GOPL ←	Gopl <u>X58</u> ←	Set GOP length to <u>X58</u> .
View GOP length	Esc GOPL ←	<u>X58</u> ←	View the currently set GOP length.
Pull Stream method			
Set streaming method	Esc <u>X59</u> STRM ←	Strm <u>X59</u> ←	Set streaming method type to <u>X59</u> .
View streaming method	Esc STRM ←	<u>X59</u> ←	View the currently set streaming method type.
Time to live (TTL) Pull Stream Multicast only			
Set TTL	Esc <u>X70</u> STTL ←	Sttl <u>X70</u> ←	Set the number of TTL hops.
View TTL	Esc STTL ←	<u>X70</u> ←	View the currently set number of TTL hops.

NOTES:

<u>X50</u> = Maximum video bit rate (kbps)	200 through 10000 (default = 10000)
<u>X52</u> = Stream mode	∅ = Audio and video (default), 1 = Video
<u>X53</u> = Bit rate control	∅ = Variable Bit Rate (VBR; default), 1 = Constrained Variable Bit Rate (CVBR), 2 = Constant Bit Rate (CBR)
<u>X54</u> = Target video bit rate (kbps)	200 through 10000 (default = 1000)
<u>X58</u> = GOP length	1 through 30 (default = 30)
<u>X59</u> = Streaming method	∅ = Unicast RTP, 3 = Multicast RTP over UDP
<u>X69</u> = Maximum stream bit rate (kbps)	5000 through 99000 (default = 80000)
<u>X70</u> = Total time to live (hops)	1 through 255 (default = 10)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Presets			
User presets (DVI, RGB, and YUV inputs only)			
Recall preset	1 * <u>X25</u> .	1 Rpr <u>X25</u> ↵	Recalls user preset <u>X25</u> for the selected input.
Save preset	1 * <u>X25</u> ,	1 Spr <u>X25</u> ↵	Saves user preset <u>X25</u> for the selected input.
User preset name			
NOTE: To clear a user preset name, a single space character should be entered for <u>X14</u> . This action resets the user name back to the default setting.			
Write name	Esc 1 * <u>X25</u> * <u>X14</u> PNAM ←	Pnam1 * <u>X25</u> * <u>X14</u> ↵	Set the name (<u>X14</u>) for user preset <u>X63</u> .
View name	Esc 1 * <u>X25</u> PNAM ←	<u>X14</u> ↵	View the name of user preset <u>X63</u> .
Input presets (RGB and YUV inputs only)			
Recall preset	2 * <u>X26</u> .	2 Rpr <u>X26</u> ↵	Recalls input preset <u>X26</u> .
Save preset	2 * <u>X26</u> ,	2 Spr <u>X26</u> ↵	Saves input parameters to preset <u>X26</u> .
Input preset name			
NOTE: To clear an input preset name, a single space character should be entered for <u>X14</u> . This action resets the input name back to the default setting.			
Write name	Esc 2 * <u>X26</u> * <u>X14</u> PNAM ←	Pnam2 * <u>X26</u> * <u>X14</u> ↵	Set the name (<u>X14</u>) for input preset <u>X26</u> .
View name	Esc 2 * <u>X26</u> PNAM ←	<u>X14</u> ↵	View the name of input preset <u>X26</u> .
Streaming presets			
Recall preset	3 * 1 * <u>X63</u> .	3 Rpr <u>X63</u> ↵	Recalls streaming preset <u>X63</u> for the selected input.
Save preset	3 * <u>X63</u> ,	3 Spr <u>X63</u> ↵	Saves streaming preset <u>X63</u> for the selected input.
Streaming preset name			
NOTE: To clear a streaming preset name, a single space character should be entered for <u>X14</u> . This action resets the preset name back to the default setting.			
Write name	Esc 3 * <u>X63</u> * <u>X14</u> PNAM ←	Pnam3 * <u>X63</u> * <u>X14</u> ↵	Set the name (<u>X14</u>) for streaming preset <u>X63</u> .
View name	Esc 3 * <u>X63</u> PNAM ←	<u>X14</u> ↵	View the name of streaming preset <u>X63</u> .

NOTES:

X14 = Text label / Preset name Up to 16 characters
X25 = User presets 1 through 16
X26 = Input presets 1 through 128
X63 = Streaming presets 1 through 16 (default = 1)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Encoder presets			
Recall preset	3 * <u>X83</u> .	4Rpr <u>X83</u> ↵	Recalls encode preset <u>X83</u> .
Save preset	4 * <u>X83</u> ,	4Spr <u>X83</u> ↵	Saves encode preset <u>X83</u> .
Delete/clear preset	<u>Esc</u> X4 * <u>X83</u> PRST ←	Prst X4 * <u>X83</u> ↵	Clears encode preset <u>X83</u> and sets encode preset <u>X83</u> name to [unassigned].
Encoder preset name			
Write name	<u>Esc</u> 4 * <u>X83</u> * <u>X14</u> PNAM ←	PNAM 4 * <u>X83</u> * <u>X14</u> ↵	Set the name (<u>X14</u>) for encode preset <u>X83</u> .
View name	<u>Esc</u> 4 * <u>X83</u> PNAM ←	<u>X14</u> ↵	View the name of encode preset <u>X83</u> .
	<u>Esc</u> X4 * <u>X83</u> PRST ←	Prst X4 * <u>X83</u> ↵	Clears encode preset <u>X83</u> and sets encode preset <u>X83</u> name to [unassigned].
<p>NOTES: • To restore a default encode preset name, a single space character should be entered for <u>X14</u>;</p> <ul style="list-style-type: none"> • Unassigned presets = "[unassigned]" valid only for existing presets. 			
Audio			
Audio mute			
Mute on	1Z	Amt1 ↵	Mute selected input.
Mute off	ØZ	AmtØ ↵	Unmute selected input.
View	Z	<u>X10</u> ↵	View mute status.
Audio gain and attenuation			
Set gain	<u>X23</u> G	Aud <u>X23</u> ↵	Set gain to <u>X23</u> .
Set attenuation	<u>X24</u> g	Aud <u>X24</u> ↵	Set attenuation to <u>X24</u> .
Increment audio level	+G	Aud <u>X27</u> ↵	Increase the audio level.
Decrement audio level	-G	Aud <u>X27</u> ↵	Decrease the audio level.
View	G	<u>X27</u> ↵	View current audio level.
Audio delay			
<p>NOTE: Setting the audio delay to zero disables the audio delay.</p>			
Set audio delay	<u>Esc</u> <u>X42</u> ADLY ←	Ad1y <u>X42</u> ↵	Set audio delay to <u>X42</u> .
View	<u>Esc</u> ADLY ←	<u>X42</u> ↵	View audio delay value.

NOTES:

- X10 = Off (disable) and On (enable) 0 = Off or disable, 1 = On or enable
- X14 = Text label / Preset name Up to 16 characters
- X23 = Audio gain adjustment 0 to 15 dB
- X24 = Audio attenuation 0 to 15 dB
- X27 = Audio level adjustment -15 to +15 dB
- X42 = Audio delay 0 through 999 ms
- X83 = Encode presets 1 through 16 (two digit response with 0 padding)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Audio bit rate			
Set audio bit rate	[Esc] A [X64] BITR ←	BitrA [X64] ←	Set the audio bit rate value of the output to [X64].
View	[Esc] A BITR ←	[X64] ←	View the currently set output bit rate separated values.
Audio sample rate			
Set sample rate	[Esc] [X65] AUSR ←	Ausr [X65] ←	Set the audio sample rate value of the output to [X65].
View	[Esc] AUSR ←	[X65] ←	View the currently set sample rate value.
Advanced Configurations			
Test pattern			
Select test pattern	[Esc] [X20] TEST ←	Test [X20] ←	Set the test pattern to [X20].
View	[Esc] TEST ←	[X20] ←	View the current test pattern.
Input aspect ratio			
Set to fill	[Esc] [X1] * 1 ASPR ←	Aspr [X1] * 1 ←	Set input [X1] to always fill the entire output raster (default).
Set to follow	[Esc] [X1] * 2 ASPR ←	Aspr [X1] * 2 ←	Set input [X1] to correctly setup each input rate with its native aspect ratio.
View	[Esc] [X1] ASPR ←	[X39] ←	View the currently set aspect ratio for input [X1].
Power save mode			
Set power save mode	[Esc] [X40] PSAV ←	Psav [X40] ←	Enable or disable the power save mode.
View	[Esc] PSAV ←	[X40] ←	View the currently set power save mode.
Overscan mode: applies only to SMPTE (480p – 1080p) input rates			
Set overscan mode	[Esc] [X3] * [X76] OSCN ←	Oscn [X3] * [X76] ←	Set input video format [X3] to overscan mode [X76].
View	[Esc] [X3] OSCN ←	[X76] ←	View the currently set overscan mode for the input video format [X3].

NOTES:

[X1]	= Input selection	1 through 3 (2 and 3 applicable for EDID only)
[X3]	= Input video format	1 through 7, 9, 11 (see Input video format on page 126)
[X20]	= Test pattern	0 through 15 (see Test pattern on page 127; default = 0)
[X39]	= Aspect ratio settings	1 = Fill (default), 2 = Follow
[X40]	= Power save mode	0 = Power save mode disabled (default), 1 = Power save mode enabled
[X64]	= Audio bit rate (kbps)	16 through 384 (default = 384)
[X65]	= Audio sample rate	3 = 48 kHz (default)
[X76]	= Overscan	0 through 2 (see Overscan on page 130)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Port Configuration			
Serial data port (RS-232)			
Configure parameters	<code>[Esc] X101 * X125, X126, X127, X128 CP ←</code>	<code>Cpn X101 • Ccp X125, X126, X127, X128 ↵</code>	Configures the parameters of the serial data port.
View parameters	<code>[Esc] X101 CP ←</code>	<code>X125, X126, X127, X128 ↵</code>	View the parameter settings of the serial data port.
Configure mode	<code>[Esc] X101 * X129 CY ←</code>	<code>Cpn X101 • Cty X129 ↵</code>	Configures the mode of the serial data port. The SME 100 only supports RS-232.
View mode	<code>[Esc] X101 CY ←</code>	<code>X129 ↵</code>	View the mode of the serial data port. The SME 100 only supports RS-232.
Configure flow control	<code>[Esc] X101 * X130, X131 CF ←</code>	<code>Cpn X101 • Cfl X130, X131 ↵</code>	Configures the flow control of the serial data port.
View flow control	<code>[Esc] X101 CF ←</code>	<code>X130, X131 ↵</code>	View the flow control of the serial data port.
Ethernet data port			
Set current port connection timeout	<code>[Esc] 0 * X169 TC ←</code>	<code>Pti 0 * X169 ↵</code>	Sets the connection timeout for the current Ethernet port.
View current port connection timeout	<code>[Esc] 0 TC ←</code>	<code>X169 ↵</code>	Views the connection timeout for the current Ethernet port.
Set global IP port timeout	<code>[Esc] 1 * X169 TC ←</code>	<code>Pti 1 * X169 ↵</code>	Sets the connection timeout for the global IP port.
View global IP port timeout	<code>[Esc] 1 TC ←</code>	<code>X169 ↵</code>	Views the connection timeout for the global IP port.

NOTES:

X101 = Specific port number
X125 = Baud rate
X126 = Parity
X127 = Data bits
X128 = Stop bits
X129 = Port type
X130 = Flow control
X131 = Data pacing
X169 = IP connection timeout

01 through **99** (**00** = reserved)
 Default = 9600 (see **Baud rate** on page 131)
 Default = None (see **Parity** on page 131)
 7 through 8 (default = 8)
 1 through 2 (default = 1)
0 = RS-232 (default)
 Default = None (see **Flow control** on page 131)
0 through 1000 (default = **0**; see **Data pacing** on page 131)
 1 through 65000 (default = 30 = 300 seconds; see **IP connection timeout** on page 132)

Command	ASCII Command (host to unit)	Response (unit 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 will return the E13 error. • 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#]↵	Set the telnet port.
Reset telnet port map	Esc 23MT ←	Pmt00023↵	Reset the telnet port to the default value (23).
Disable telnet port	Esc 0MT ←	Pmt00000↵	Disable the telnet port.
View telnet port map	Esc MT ←	[port#]↵	View the currently set telnet port.
Web port			
Set web port map	Esc [port#]MH ←	Pmh[port#]↵	Set the web port.
Reset web port map	Esc 80MH ←	Pmh00080↵	Reset the web port to the default value (80).
Disable web port	Esc 0MH ←	Pmh00000↵	Disable the web port.
View web port map	Esc MH ←	[port#]↵	View the currently set web port.
SNMP port			
Set SNMP port map	Esc A[port#]PMAP ←	PmapA[port#]↵	Set the SNMP port.
Reset SNMP port map	Esc A161PMAP ←	PmapA00161↵	Reset the SNMP port to the default value (161).
Disable SNMP port	Esc A0PMAP ←	PmapA00000↵	Disable the SNMP port.
View SNMP port map	Esc APMAP ←	[port#]↵	View the currently set SNMP port.
SSH port			
Set SSH port map	Esc B[port#]PMAP ←	PmapB[port#]↵	Set the SSH port.
Reset SSH port map	Esc B22PMAP ←	PmapB00022↵	Reset the SSH port to the default value (22).
Disable SSH port	Esc B0PMAP ←	PmapB00000↵	Disable the SSH port.
View SSH port map	Esc BPMAP ←	[port#]↵	View the currently set SSH port.
SSL port			
Set SSL port map	Esc S[port#]PMAP ←	PmapS[port#]↵	Set the SSL port.
Reset SSL port map	Esc S443PMAP ←	PmapS00443↵	Reset the SSL port to the default value (443).
Disable SSL port	Esc S0PMAP ←	PmapS00000↵	Disable the SSL port.
View SSL port map	Esc SPMAP ←	[port#]↵	View the currently set SSL port.

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
RTP port (streaming media port selection)			
Set RTP range port map	Esc R[start port#]* [end port#]PMAP ←	PmapR[start port#]* [end port#]↵	Set the RTP port range.
Reset RTP range port map	Esc R[port#]PMAP ←	PmapR50000*50999 ↵	Reset the RTP port range to default (50000-50999).
Disable RTP ports	Esc RØPMAP ←	PmapR00000*00000 ↵	Disable all RTP ports.
View RTP range port map	Esc R PMAP ←	[start port#]* [end port#]↵	View the currently set RTP port range.
RTSP port (streaming media control port selection)			
Set RTSP port map	Esc C[port#]PMAP ←	PmapC[port#]↵	Set the RTSP port.
Reset RTSP port map	Esc C554PMAP ←	PmapC00554 ↵	Reset the RTSP port to the default value (554).
Disable RTSP port	Esc CØPMAP ←	PmapC00000 ↵	Disable the RTSP port.
View RTSP port map	Esc C PMAP ←	[port#]↵	View the currently set RTSP port.
Multicast port			
Set multicast port map	Esc M[port#]PMAP ←	PmapM[port#]↵	Set the multicast port.
Reset multicast port map	Esc M6000PMAP ←	PmapM06000 ↵	Reset the multicast port to the default value (6000).
Disable multicast port	Esc MØPMAP ←	PmapM00000 ↵	Disable the multicast port.
View multicast port map	Esc M PMAP ←	[port#]↵	View the currently set multicast port.
FTP port			
Set FTP port map	Esc F[port#]PMAP ←	PmapF[port#]↵	Set the FTP port.
Reset FTP port map	Esc F21PMAP ←	PmapF00021 ↵	Reset the FTP port to the default value (21).
Disable FTP port	Esc FØPMAP ←	PmapF00000 ↵	Disable the FTP port.
View FTP port map	Esc F PMAP ←	[port#]↵	View the currently set FTP port.
TFTP port			
Set TFTP port map	Esc T[port#]PMAP ←	PmapT[port#]↵	Set the TFTP port.
Reset TFTP port map	Esc T69PMAP ←	PmapT00069 ↵	Reset the TFTP port to the default value (69).
Disable TFTP port	Esc TØPMAP ←	PmapT00000 ↵	Disable the TFTP port.
View TFTP port map	Esc T PMAP ←	[port#]↵	View the currently set TFTP port.

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
List all open ports			
List all open ports	<code>[Esc]LSTP ←</code>	<pre> TCP Listening ports on IPV4 and IPV6:↵ [port#], used by, description↵ [port#], used by, description↵ [port#], used by, description↵↵ ----- UDP ports in use:↵ [port#], used by, description↵ [port#], used by, description↵ [port#], used by, description↵↵ ----- Active TCP connections on IPV4 and IPV6:↵ ([port#], used by, description) connected to ...↵ ([port#], used by, description) connected to ...↵ ([port#], used by, description) connected to ...↵↵ Example response: TCP Listening ports on IPV4 and IPV6:↵ 21, tcp, ftp↵ 22, tcp, sshd↵ 23, tcp, telnet↵ 80, tcp, www↵ 443, tcp, https↵ 554, tcp, rtsp↵↵ ----- UDP ports in use:↵ 69, udp, tftp↵ 161, udp, snmpd↵ 1231, udp, devmgr↵ 50000, udp, rtp↵ 50001, udp, rtp↵↵ ----- Active TCP connections on IPV4 and IPV6:↵ (23, tcp, telnet) connected to 192.168.254.254 on port 61772↵ (554, tcp, rtsp) connected to 192.168.254.253 on port 1895↵ (554, tcp, rtsp) connected to 192.168.254.254 on port 58999↵↵ </pre>	

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
IP Setup Commands			
Set unit name	Esc X112 CN ←	Ipn • X112 ↵	Set the name of the unit.
Set unit name to factory default	Esc • CN ←	Ipn • X149 ↵	Sets the name of the unit to the factory default.
View unit name	Esc CN ←	X112 ↵	View the name of the unit.
Set date/time	Esc X113 CT ←	Ipt • X113 ↵	Set the date and time.
View date/time	Esc CT ←	X113 ↵	View the date and time.
Set GMT offset	Esc X103 CZ ←	Ipz X103 ↵	Set the Greenwich Mean Time (GMT) offset value.
View GMT offset	Esc CZ ←	X103 ↵	View the Greenwich Mean Time (GMT) offset value.
Set daylight savings time	Esc X134 CX ←	Ipx X134 ↵	Set daylight savings time.
View daylight savings time	Esc CX ←	X134 ↵	View the daylight savings time setting.
Set DHCP on	Esc 1DH ←	Idh1 ↵	Sets DHCP to on.
Set DHCP off	Esc ØDH ←	IdhØ ↵	Sets DHCP to off and resets the IP address of the SME 100 to factory default (192.168.254.254) if DHCP was previously on.
View DHCP mode	Esc DH ←	X10 ↵	View the DHCP mode setting.
Set IP address	Esc X114 CI ←	Ipi • X114 ↵	Set the IP address of the unit.
View IP address	Esc CI ←	X114 ↵	View the IP address of the unit.
View hardware MAC address	Esc CH ←	X118 ↵	View the hardware MAC address of the unit.
		<i>In verbose mode:</i> Iph • X118 ↵	
Set subnet mask	Esc X119 CS ←	Ips • X119 ↵	Set the subnet mask of the unit.
View subnet mask	Esc CS ←	X119 ↵	View the subnet mask of the unit.
Set gateway IP address	Esc X114 CG ←	Ipg • X114 ↵	Set the gateway IP address.
View gateway IP address	Esc CG ←	X114 ↵	View the gateway IP address.

NOTES:

X10 = Off (disable) and On (enable)
X103 = GMT offset value
X112 = Unit name
X113 = Set/view local time
X114 = IP address (xxx.xxx.xxx.xxx)

X118 = Hardware MAC address
X119 = Subnet mask
X134 = Daylight savings time
X149 = Default name

Ø = Off or disable, 1 = On or enable
-12:00 through 14:00; represents GMT offset (HH:MM)
Text string up to 24 characters (see **Unit name** on page 130)
Format to set: MM/DD/YY-HH:MM:SS (use the 24-hour clock)
Factory default IP address = 192.168.254.254
Factory default gateway IP address = 0.0.0.0
00-05-A6-xx-xx-xx
Factory default subnet mask = 255.255.0.0
0 through 3 (see **Daylight savings time** on page 132)
Shows the default name of the unit using the model name and the last three pairs of the MAC address (example: SME-100-HD/SD-00-02-3D)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Set DNS server IP address	Esc X114 DI ←	Ipd • X114 ↵	Set the DNS server IP address.
View DNS server IP address	Esc DI ←	X114 ↵	View the DNS server IP address.
Set multicast IP address (pull stream)	Esc X114 DIPM ←	Dipm X114 ↵	Set pull stream multicast IP address.
View multicast IP address	Esc DIPM ←	X114 ↵	View multicast IP address.
Set verbose mode	Esc X122 CV ←	Vrb • X122 ↵	Set verbose mode.
View verbose mode	Esc CV ←	X122 ↵	View verbose mode.
Get connection listing	Esc CC ←	[# of connections] ↵ <i>In verbose mode:</i> Icc[# of connections] ↵	Displays the number of active connections on the SME 100.

Protocol Configuration

NTP (Network Time Protocol)

Enable NTP to set the time	Esc 1NTEN ←	Nten1 ↵	Enables the NTP service.
Disable NTP	Esc 0NTEN ←	Nten0 ↵	Disables the NTP service and uses the control PC to set the time.
Sync NTP now	Esc 2NTEN ←	Nten2 ↵	Syncs the NTP service now.
View NTP status	Esc NTEN ←	X10 ↵	Displays the status of the NTP service
Set NTP server IP address	Esc X114 NTIP ←	Ntip X114 ↵	Set the NTP server IP address.

NOTE: Though an IP address (**X114**) is used in the command above, a URL (web address) can be used if necessary.

Set NTP server IP address to default	Esc • NTIP ←	Ntip ↵	Set the NTP server IP address to default (empty string).
View NTP server IP address	Esc NTIP ←	X114 ↵	View the IP address of the NTP server.
Set NTP port map	Esc N[port#] PMAP ←	PmapN[port#] ↵	Set the NTP port.
Reset NTP port map	Esc N 123 PMAP ←	PmapN 00123 ↵	Reset the NTP port to the default value (123).
Disable NTP port	Esc N 0 PMAP ←	PmapN 000000 ↵	Disable the NTP port.
View NTP port map	Esc N PMAP ←	[port#] ↵	View the currently set NTP port.

NOTES:

X10 = Off (disable) and On (enable)

X114 = IP address (xxx.xxx.xxx.xxx)

X122 = Verbose/response mode

0 = Off or disable, 1 = On or enable

Factory default IP address = 192.168.254.254

Factory default DNS server IP address = 0.0.0.0

Factory default multicast IP address = 239.199.188.138

Valid multicast IP addresses = 225.0.0.0 through 239.255.255.255

0 through 3 (see [Verbose/response mode](#) on page 131)

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
SNMP (Simple Network Management Protocol)			
SNMP unit contact			
Set unit contact	Esc C <u>X181</u> SNMP ←	Snmp C* <u>X181</u> ↵	Sets the unit contact to <u>X181</u> .
Set unit contact to default	Esc C • SNMP ←	Snmp C*Not • Specified ↵	Sets the unit contact to the default setting (default = Not Specified)
View unit contact	Esc C SNMP ←	<u>X181</u> ↵	View the unit contact.
SNMP unit location			
Set unit location	Esc L <u>X181</u> SNMP ←	Snmp L * <u>X181</u> ↵	Sets the unit location to <u>X181</u> .
Set unit location to default	Esc L • SNMP ←	Snmp L *Not • Specified ↵	Sets the unit location to the default setting. (default = Not Specified)
View unit location	Esc L SNMP ←	<u>X181</u> ↵	View the unit location.
SNMP community strings			
Set community public (read-only)	Esc P <u>X181</u> SNMP ←	Snmp P* <u>X181</u> ↵	Sets community public (pwd) to <u>X181</u> .
Set community public to default	Esc P • SNMP ←	Snmp P*public ↵	Sets community public to the default setting. (default = public)
View community public	Esc P SNMP ←	<u>X181</u> ↵	View the community public.
Set community private (read-only)	Esc X <u>X181</u> SNMP ←	Snmp X* <u>X181</u> ↵	Sets community private to <u>X181</u> .
Set community private to default	Esc X • SNMP ←	Snmp X*private ↵	Sets community public to the default setting. (default = private)
View community private	Esc X SNMP ←	<u>X181</u> ↵	View the community private.
SNMP access enable			
Enable SNMP access	Esc E 1 SNMP ←	Snmp E*1 ↵	Enable SNMP access.
Disable SNMP access	Esc E Ø SNMP ←	Snmp E*Ø ↵	Disable SNMP access.
View SNMP access setting	Esc E SNMP ←	<u>X10</u> ↵	View the SNMP access setting.

NOTES:

X10 = Off (disable) and On (enable) Ø = Off or disable, 1 = On or enable
X181 = Text Up to 64 characters

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
User, Password, and Security Settings			
NOTES:			
<ul style="list-style-type: none"> For the CA and CU commands, X141 responds with 4 asterisks (****) if a password exists. If no password exists, a blank response is received. NSEC = Enable / disable network security (default = off / disabled). When enabled, port 23 (telnet) will be automatically disabled (expecting users to use SSH instead). When disabled, broadcast mode, device manager mode, and ARP Ping mode is not available. SSEC = Enable / disable serial port security (default = off / disabled). When serial port security is enabled, a user name and password is required to access the serial port. 			
Set administrator password	Esc X133 CA ←	Ipa • X141 ←	Sets the administrator password.
Clear administrator password	Esc • CA ←	Ipa • ←	Clears the administrator password.
View administrator password	Esc CA ←	X141 ←	View the administrator password.
Set user password	Esc X133 CU ←	Ipu • X141 ←	Sets the user password.
Clear user password	Esc • CU ←	Ipu • ←	Clears the user password.
View user password	Esc CU ←	X141 ←	View the user password.
Query security level of a session	Esc CK ←	X152 ← <i>In verbose mode:</i> Pv | X152 ←	View the security level of a session.
Set network security	Esc X10 NSEC ←	Nsec X10 ←	Set network security to X10 .
View network security	Esc NSEC ←	X10 ←	View the network security.
Set serial port security	Esc X10 SSEC ←	Ssec X10 ←	Set the serial port security to X10 .
View serial port security	Esc SSEC ←	X10 ←	View the serial port security.
Log off user	Esc [session#] LOFF ←	Loff [session#] ←	Logs off the selected session (user). Returns the E13 error if the session does not exist. Returns the E24 error if not authorized.
Log off self	Esc LOFF ←	Loff [session#] ←	Logs off self.
View all user sessions	Esc XWHO ←	[Session 1 record] ← [Session 2 record] ← [Session N record] ← [# of active users] Active Users ←←	View all user sessions. Double CR/LF (carriage return/line feed) marks the end of the report.

NOTES:

- | | |
|--|---|
| X10 = Off (disable) and On (enable) | ∅ = Off or disable, 1 = On or enable |
| X133 = Password | Up to 12 characters (see Password on page 131) |
| X141 = Check password | See Check password on page 132 |
| X152 = Connection security level | ∅ through 12 (see Connection security level on page 132) |

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
View one user session	Esc [session#]XWHO ←	[Session#](tab) [user name](tab) [login time](tab) [from](tab) [service](tab) [user access level] (tab)[real name]↵	View the selected user session. Returns the E13 error if the session does not exist.
Set user X	Esc [User_ID]* [User_Name]* [Password]* [Real_Name]* [Security_Level]* USER ←	User[User_ID]* [user_name]* [password]* [real_name]*[security_level]↵	Creates a user as specified. User names are case sensitive, so "Fred" and "fred" can exist as two different users on the SME 100. User ID = 1-10 User Name = A-Z, 0-9 Password = A-Z, 0-9 Real Name = A-Z, 0-9 Security Level: 11 = User (viewer) 12 = Administrator
Delete user X	Esc [User_ID]*•USER ←	User[User_ID]↵	Deletes the selected user.
View user X	Esc [User_ID]USER ←	[User_ID]* [user_name]* [password]* [real_name]*[security_level]↵	Views the selected user.
View all defined users	Esc USER ←	[User_ID]* [user_name]* [password]* [real_name]*[security_level]↵ [User_ID]* [user_name]* [password]* [real_name]*[security_level]↵↵	Views all defined users. Double CR/LF (carriage return/line feed) marks the end of the report.

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Directory and File Commands			
Change / create directory	Esc <i>path/directory</i> CJ ←	Dir • <i>path/directory</i> / ←	Changes or creates a directory.
Back to root directory	Esc / CJ ←	Dir • / ←	Navigates to the root (/) directory.
Up one directory	Esc . . CJ ←	Dir • <i>path/directory</i> / ←	Moves up one directory in the directory tree.
View current directory	Esc CJ ←	<i>path/directory</i> / ←	View the current directory location.
List files from current directory	Esc DF ←	Lists all files in the current directory. Double CR/LF (carriage return/line feed) marks the end of the report. Response: <i>filename 1</i> • <i>date/time</i> • <i>length</i> ← <i>filename 2</i> • <i>date/time</i> • <i>length</i> ← ... <i>filename n</i> • <i>date/time</i> • <i>length</i> ← <i>space_remaining</i> • Bytes • Left ← ←	
		Telnet text response examples: EXN_CUSTOM1_0_A.bin Tue, 14 Feb 2012 20:47:34 GMT 128 ← EXN_CUSTOM2_0_A.bin Tue, 14 Feb 2012 20:47:34 GMT 128 ← 163786752 Bytes Left ← ←	
List files from current directory and below	Esc LF ←	Similar to the Esc DF ← command above, except the <i>path/directory</i> will precede filenames of all the files within folders in the current directory.	Lists all files in the current directory. Also lists all files within folders in the current directory.
Resets/Reboot			
Erase user supplied web pages and files	Esc <i>filename</i> EF ←	Del • <i>filename</i> ←	Erase user supplied web pages and files.
Erase current directory and its files	Esc / EF ←	Dd1 ←	Erase the current directory and its files.
Erase current directory and subdirectories	Esc // EF ←	Dd1 ←	Erases the current directory and its subdirectories.
Erase flash memory	Esc ZFFF ←	Zpf ←	This reset only removes files created in the flash (user) space, which includes those created by the backup / restore functions, software configuration tools, image captures, user-supplied HTML files, and so on. Data being used by the firmware for internal operations (such as saving of non-volatile settings) is not removed.

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Reset all device settings to factory default	Esc ZXXX ←	Zpx ↵	Reset all settings and adjustments to factory default. Excludes IP settings such as IP address, subnet mask, gateway IP address, and so on. Files on the unit are also preserved.
Absolute system reset	Esc ZQQQ ←	Zpq ↵	Reset all settings and adjustments to factory default, the IP address to 192.168.254.254 , and the subnet mask to 255.255.0.0 . Firmware version is preserved.
Absolute system reset (network settings are retained)	Esc ZY ←	Zpy ↵	This reset is same as ZQQQ except it excludes network settings such as IP address, subnet mask, gateway IP address, unit name, DHCP setting, and port mapping (telnet, web, and direct access) in order to preserve communication with the device. Files and passwords are erased. This reset is recommended after a firmware update.
IP system reset	Esc 1ZQQQ ←	Zpq1 ↵	This resets network settings such as IP address, subnet mask, gateway IP address, unit name, DHCP setting, and port mapping (all ports) to factory defaults.
Encoder system reset	Esc ZEEE ←	Zpe ↵	This resets encoder specific settings which include video bit rate max, frame rate, stream mode, bit rate control, video bit rate target, bit rate priority, GOP length, streaming method, streaming presets, output size and position, destination port, TTL, RTP and RTSP transport protocols.
Reboot	Esc 1B00T ←	Boot1 ↵	Reboot the SME 100.
Restart network	Esc 2B00T ←	Boot2 ↵	Restart the network.

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Information Request			
General information	I	In $\overline{x1}$ •Typ $\overline{x3}$ •Avb $\overline{x66}$ • Cfr $\overline{x66}$ ↵	View the following information: In = input Typ = video signal type Avb = average bandwidth Cfr = current frame rate
General information (advanced)	$\overline{x66}$ I	[Specific data]↵ <i>In verbose mode:</i> Inf $\overline{x66}$ *[Specific data]↵	View specified information.
Query firmware version	Q	[Version]↵ as X.XX (major.minor) <i>In verbose mode:</i> Ver01*[Version]↵ as X.XX (major.minor)	View firmware version.
Query firmware version (with build)	*Q	[Version]↵ as X.XX.XXXX (major.minor.build) <i>In verbose mode:</i> Bld[Version]↵ as X.XX.XXXX (major.minor.build)	View firmware version with build number.
Query firmware version (advanced)	$\overline{x67}$ Q	[Version info]↵ <i>In verbose mode:</i> Ver $\overline{x67}$ *[Version info]↵	View specific information about the firmware version.
Query part number	N/n	60-nnnn-nn↵ <i>In verbose mode:</i> Pno60-nnnn-nn↵	View the part number. SME 100 HD = 60-1061-01 SME 100 SD = 60-1061-02
View internal temperature	\overline{Esc} 20STAT↵	$\overline{x12}$ ↵	View the internal temperature in degrees Celsius.

NOTES:

$\overline{x1}$	= Input selection	1 through 3 (2 and 3 applicable for EDID only)
$\overline{x3}$	= Input video format	1 through 6, 9, 11 (see Input video format on page 126)
$\overline{x12}$	= Internal temperature	Internal temperature (in degrees Celsius; xx.x)
$\overline{x66}$	= General information query	See General information query on page 129
$\overline{x67}$	= Firmware query	See Firmware query on page 129

Command	ASCII Command (host to unit)	Response (unit to host)	Additional Description
Other Commands			
Front panel lock (executive mode)			
Enable	1X/x	Exe1 ↵	Limited front panel adjustments only.
Disable	ØX/x	ExeØ ↵	Full front panel adjustments and selection.
View setting	X/x	ⓧ10 ↵	View the status of the front panel lock (executive mode).

NOTES:

ⓧ10 = Off (disable) and On (enable) Ø = Off or disable, 1 = On or enable

Power Save Mode

Power save mode is only accessible using SIS commands. By default, power save mode is disabled. For information on how to enable power save mode, see "**Power save mode**" on page 142.

When enabled, power save mode monitors the activity of the SME 100. Power save mode begins when no device activity is detected for seven minutes. In power save mode, different subsystems of the SME 100 power down, such as the front panel backlight and decoders. The processor stays active and monitors for activity. If activity is detected, the SME 100 powers up the subsystems that were powered down.

The SME 100 **does not enter power save mode** when:

- A user is logged into the SME 100 (using a web browser or terminal window)
- A stream is active
- The front panel buttons are used
- SIS commands are being received

Reference Information

This section provides information about:

- [Part Numbers and Accessories](#)
- [Streaming Playback Methods](#)
- [Streaming Capabilities and System Scalability](#)
- [IP Addressing](#)
- [SME 100 Firmware Updates](#)
- [Browser Configuration](#)
- [Media Player and Media Server Compatibility Charts](#)
- [Mounting the SME 100](#)

Part Numbers and Accessories

Included Parts

Description	Part Number
SME 100 HD	60-1061-01
-OR-	
SME 100 SD	60-1061-02
IEC power cord	
<i>SME 100 Setup Guide</i>	

Streaming Playback Methods

Streams from the SME 100 can be viewed using various playback methods.

NOTE: The procedures presented in the following sections use a Microsoft® Windows® operating system, version 2.0.2 of VLC media player, and version 7.7.2 of QuickTime media player. These procedures may vary when a different operating system is used or when different versions of QuickTime media player or 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®
- Playing a Pull Stream Using QuickTime® 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).

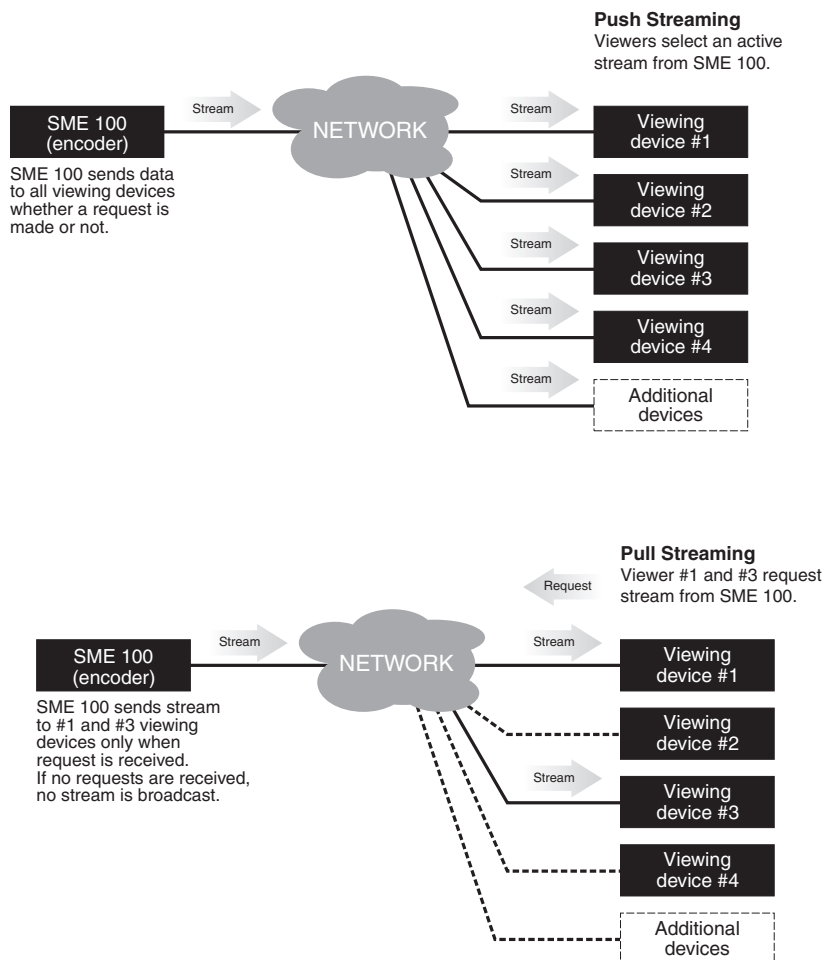



Figure 102. Push and Pull Streaming

Playing a Pull Stream Using VLC Media Player

Use the following procedure to play and view an SME 100 stream using the VLC media player.

1. If you know the stream URL, go to step 5 and use the tables on page 160. Otherwise, to obtain the stream URL, access the web-based user interface of the SME 100 (see "[Accessing the Web-based User Interface](#)" on page 47).

NOTE: An administrator must be logged into the SME 100 to use this procedure. If the **Login** link  **Login** appears near the top of the web page, click on the link and log in using an administrator profile. If the **Login** link is not visible, the user is given administrator privileges by default.

2. The Live View page appears. Click **Play** to start streaming media from the SME 100 (see figure 103).



Figure 103. Live View Page

3. When the stream begins, click on the **View status** button (see figure 103).
4. The Stream Status window appears. Note the information in the **Stream URL** field (see figure 104).

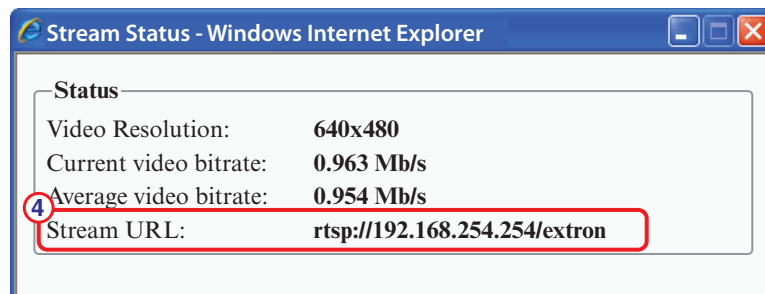


Figure 104. Stream Status Window

5. Run VLC media player. From the desktop, select **Start > All Programs > VideoLAN > VLC media player**.

- The VLC media player appears. From the **Media** menu, select **Open Network Stream** (see figure 105).

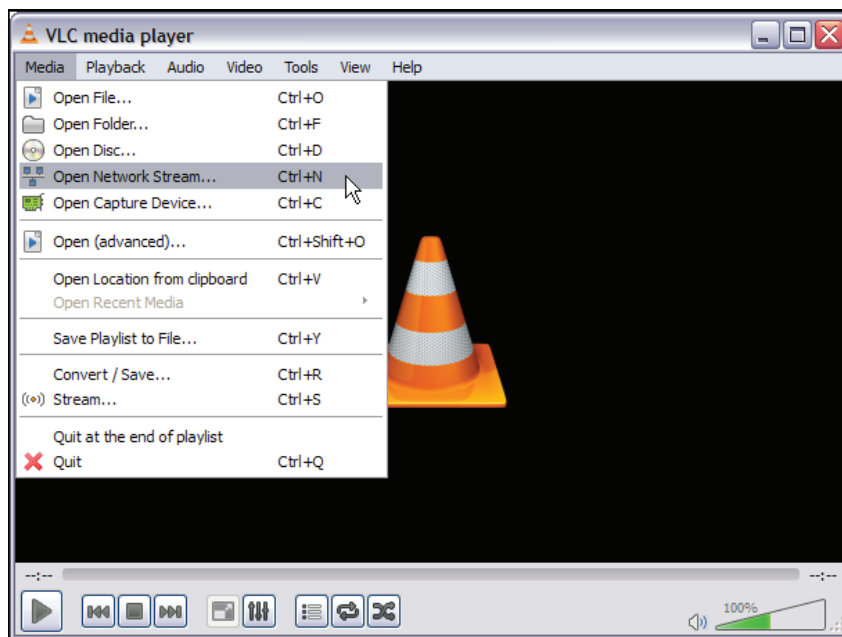


Figure 105. VLC Media Player – Open a Network Stream

- The Open Network Media window appears. In the **Please enter a network URL** field, enter the stream URL that was noted in step 4 (see figure 104 on the previous page figure 106 below).

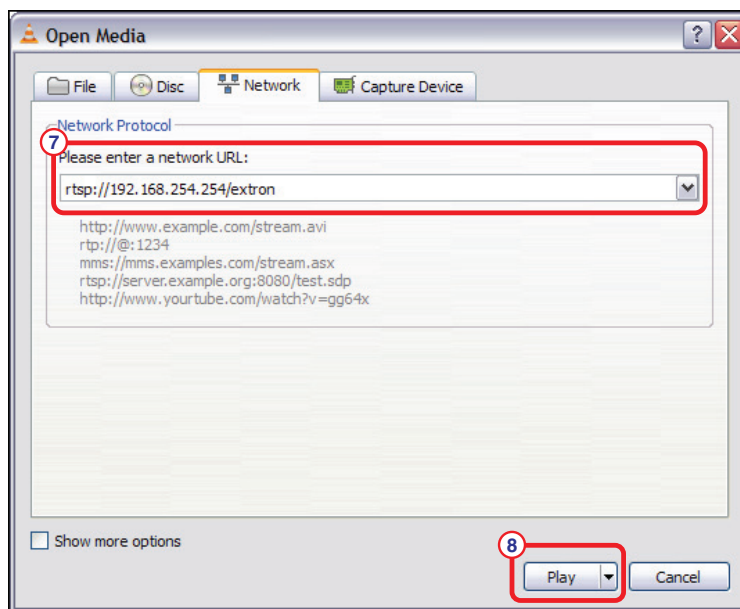


Figure 106. Enter Stream URL Information and Play

- Click **Play** (see figure 106). After a few seconds, the media streaming from the SME 100 is played 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 on VLC media player, see the "Using VLC" section on page 64.

Push 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 6 of "[Playing a Pull Stream using VLC media player](#)" on page 158). Substitute the SME 100 IP address for <SME100_IP>. Substitute the destination IP address and port number for <DESTINATION_IP>:DESTINATION_PORT.

PULL Streaming:	URL
RTSP Unicast	RTSP://<SME100_IP>/extron
RTSP Multicast	RTSP://<SME100_IP>/extron or HTTP://<SME100_IP>/web/multicast.sdp

Table 1. Pull Stream URLs

PUSH Streaming:		
Unicast (Destination IP must be set to location where stream will be played)		
	TS/UDP	UDP://@:DESTINATION_PORT
	TS/RTP	RTP://@:DESTINATION_PORT
	ES/RTP	HTTP://<SME100_IP>/web/output1.sdp
Multicast (Destination IP must be multicast IP address)		
	TS/UDP	UDP://@<DESTINATION_IP>:DESTINATION_PORT
	TS/RTP	RTP://@<DESTINATION_IP>:DESTINATION_PORT
	ES/RTP	HTTP://<SME100_IP>/web/output1.sdp

Table 2. Push Stream URLs

NOTES:

- <SME100_IP> is the IP address of the SME100.
- UDP://@:DESTINATION_PORT is typically UDP://@:60000
- Some dependencies may apply with certain versions of VLC.
- For ES/RTP, SAP is available in "Video only" stream mode.

Playing a Push Stream Using Stream Announcement Protocol (SAP)

In order to play a push stream, the VLC player uses SAP to identify streams on a local network:

1. Open VLC. From the **View** menu, select **Playlist** (see figure 107).

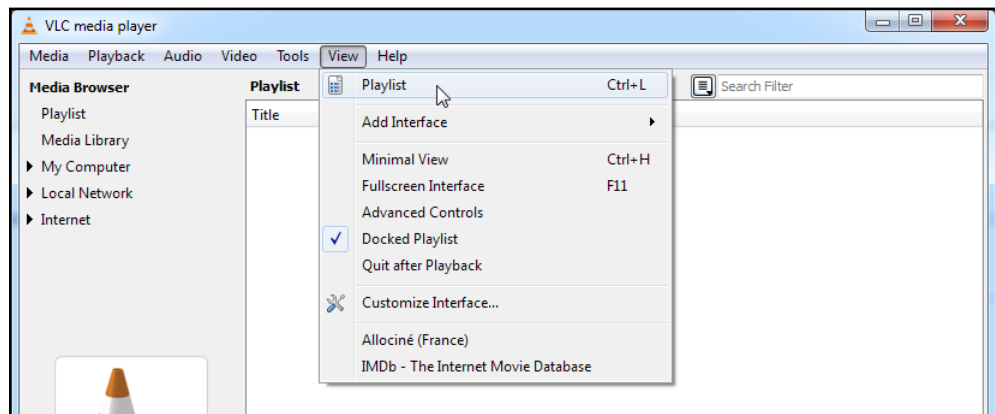


Figure 107. VLC Playlist

- From the left menu column, select **Local Network**, then select **Network streams (SAP)** (see figure 108).

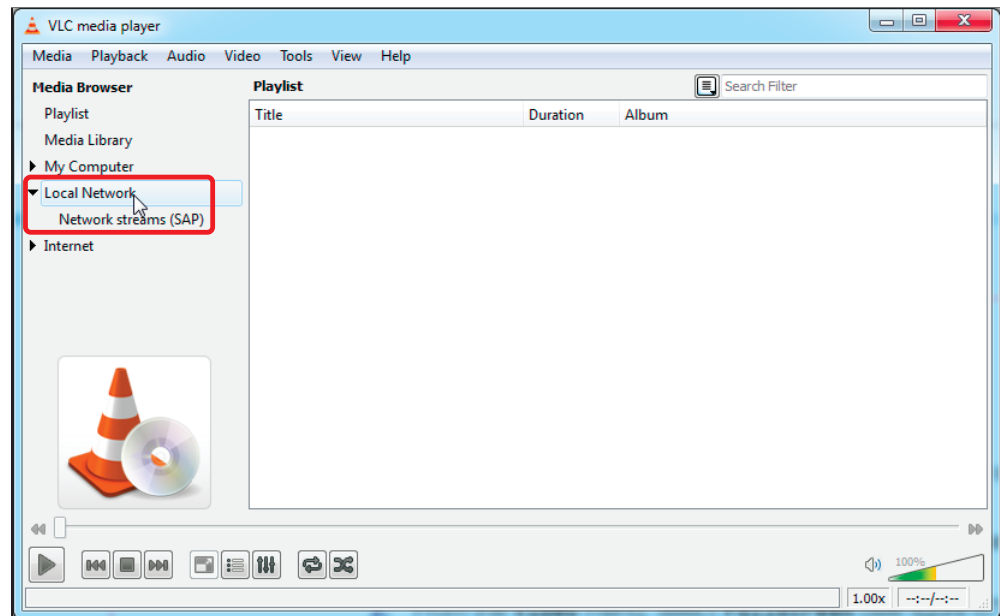


Figure 108. Select Local Network Streams

- VLC will now populate the playlist with all streams that have SAP information. If a folder is shown, open it to view the SAP streams inside (see figure 109).

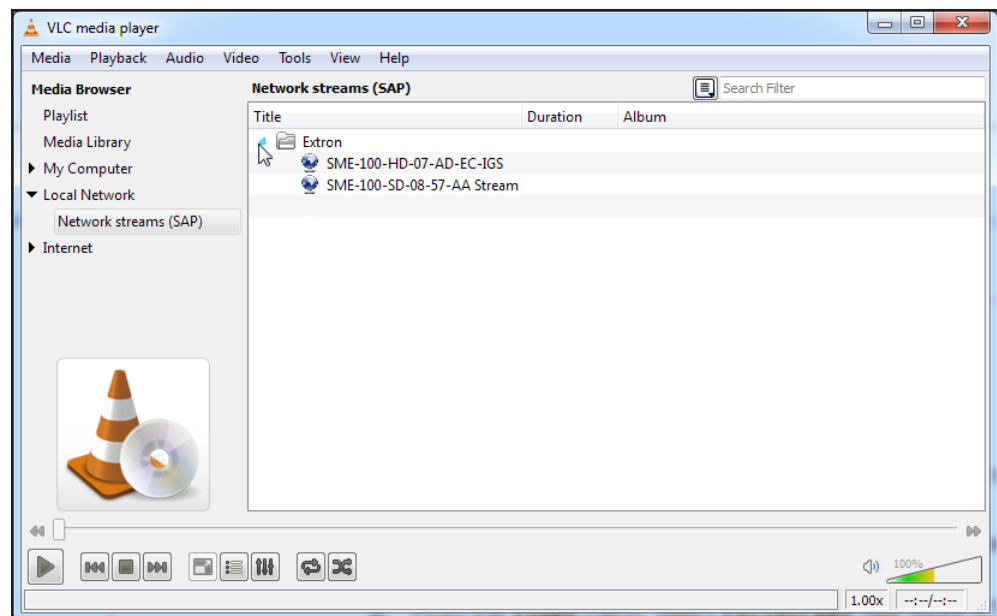


Figure 109. VLC - Select a Stream


- 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 SME 100 streams on the QuickTime player program.

1. If you know the stream URL, go to step 5 and use the tables on page 160. Otherwise, to obtain the stream URL, access the web-based user interface of the SME 100 (see the "[Accessing the Web-based User Interface](#)" section on page 47).

NOTE: An administrator must be logged into the SME 100 to use this procedure. If the **Login** link  **Login** appears near the top of the web page, click on the link and log in using an administrator profile. If the **Login** link is not visible, the user is given administrator privileges by default.

2. The Live View page appears. Click **Play** to start streaming media from the SME 100 (see figure 110).



Figure 110. Live View Page

3. When the stream begins, click the **View status** button (see figure 110).
4. The Stream Status window appears. Note the information in the **Stream URL** field (see figure 111).

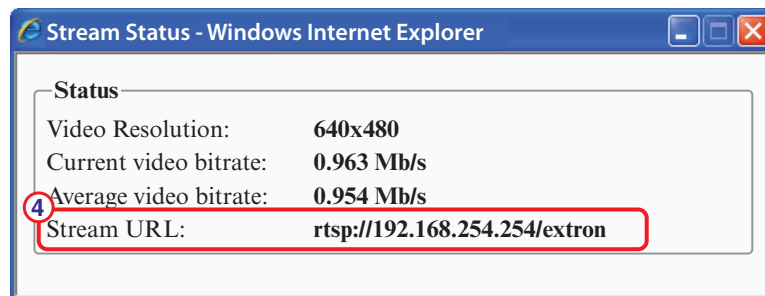


Figure 111. Stream Status Window

5. Run QuickTime media player. From the desktop, select **Start > All Programs > QuickTime > QuickTime Player**.

6. The QuickTime media player appears. From the **File** menu, select **Open URL** (see figure 112).

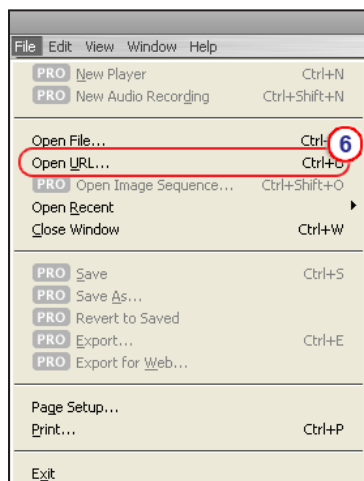


Figure 112. QuickTime Player Menu – Open URL

7. The Open URL window appears. In the **Enter an Internet URL to open** field, enter the stream URL that was noted in step 4 of this procedure (see figure 111 on previous page and figure 113).

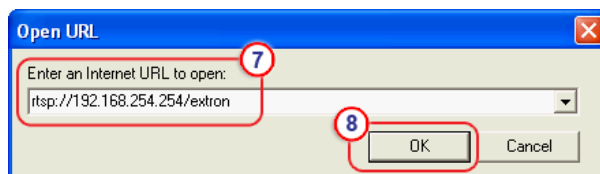


Figure 113. Enter Stream URL Information

8. Click **OK** (see figure 113). After a few seconds, the media streaming from the SME 100 is played on the QuickTime media player.

NOTES:

- If QuickTime media 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 media player image settings can now be changed if desired.
- The QuickTime media player will not display closed caption information.

Streaming Capabilities and System Scalability

The following tables detail the streaming capabilities of the SME 100. Data for the tables was obtained through laboratory testing using optimal bandwidth conditions and can vary depending on the selected video bit rate. Testing to determine the approximate maximum number of pull streams was done independently from the push stream testing. Enabling a push stream will reduce the maximum number of pull streams.

Enabling a push stream when multiple pull streams are also active may reduce the number of pull streams by stopping one or more active streams.

Available Unicast Streams

Video resolution and bitrate affect the number of unicast streams the SME 100 can broadcast. The following table compares the selected resolution and bitrate with the approximate number of unicast streams that will be available. Changing the resolution or using higher or lower bit rates may increase or decrease the available number of streams.

Unicast			
Resolution (Pixels x Lines)	Video Bit Rate (Kbps)	Approximate Number of Unicast Streams	
		Push	Pull
480x360	2700	1	8
720x486	3600	1	6
1024x768	4500	1	4
1280x720	5500	1	3
1920x1080	7500	1	1

NOTE:
The following configuration options were set on the SME 100:

- **Stream Type = CBR**
- **GOP Length = 30**
- **Stream Mode = Video/Audio**
- **Pull Streaming Method = Unicast RTP**
- **Push Streaming Method = Unicast RTP**

Available Multicast Streams

The SME 100 uses the IGMP multicast protocol to push or pull streams. The IGMP multicast protocol provides increased bandwidth efficiency because the SME 100 will only send 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 that are supported by the SME 100 when using the IGMP multicast protocol. Operating at different resolutions using higher or lower bit rates may 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 (see the separate publication "[Streaming to Wowza Media Server 3](#)" at www.extron.com).

Multicast			
Resolution (Pixels x Lines)	Recommended Video Bit Rate (Kbps)	Approximate Number of Multicast Streams	
		Push	Pull
480x360	2700	No Limit	75 to 85
720x486	3600	No Limit	74 to 85
1024x768	4500	No Limit	57 to 65
1280x720	5500	No Limit	45 to 64
1920x1080	7500	No Limit	12 to 48

NOTES:

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 SME 100:

- **Stream Type = CBR**
- **GOP Length = 30**
- **Stream Mode = Video/Audio**
- **Pull Streaming Method = Multicast UDP**
- **Push Streaming Method = Multicast UDP or RTP**

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. For information on setting up a media server, see "[Streaming to Wowza Media Server 3](#)" available on the Extron website at www.extron.com.

IP Addressing

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 that is 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	<i>NNN.HHH.HHH.HHH</i>
Class B	128.0.0.1 through 191.255.255.254	<i>NNN.NNN.HHH.HHH</i>
Class C	192.0.0.1 through 223.255.255.254	<i>NNN.NNN.NNN.HHH</i>
NOTES: • <i>NNN</i> = Network identifier • <i>HHH</i> = Host identifier		

Private and Public Address Ranges

Within each of the above classes are a range of addresses designated as "private" addresses. These are addresses that 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" addresses.

Multicast Address Range

A further range of addresses is available for multicast use:

- 224.0.0.0 – 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.

The SME 100 uses 239.199.188.138 as the default multicast address.

Subnet Mask

The subnet mask is a 32-bit binary number used to "mask" certain bits of the IP address, and 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 166 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 SME 100 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 SME 100 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.

	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 SME 100 ports are configured, only the initial port is entered by the user. The SME 100 firmware then assigns the multiple port numbers based on the initial port number.

Choosing IP Addresses

If the SME 100 and other devices are connected via an independent network, then follow the guidelines below when choosing IP addresses. However, if the SME 100 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 223.255.255.253).

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 in 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 to ensure that a device at an IP address is responding correctly (see "[Using the Ping Utility to Test Communications](#)" below).

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 appears showing a series of response messages (explained below).
4. To stop the ping utility, press <Ctrl> + <C> on the keyboard.

Response Messages

While running the ping utility, a series of response messages are displayed that are used 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 which indicates 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 (use the table in the "[Subnet Mask](#)" section on the previous page and the table in the "[What is an IP Address?](#)" section on page 166 to select the subnet mask class that matches the IP address class).

Multicast IP Addressing for Multiple SME 100 Installations

When multiple SME 100 devices are installed in a system (when the multicast address is used for push or pull streaming) the streams are managed by the SME 100 to avoid conflicts.

Pull streaming (RTSP)

The SME 100 can use one of two multicast streaming IP address assignment methods.

If multicast IP addresses for a network are limited, the various SME 100 devices can each use unassigned port numbers within the available range (1024 to 65535).

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 SME 100.

The following table shows a typical port assignment for multiple SME 100 devices using a single multicast IP address (RTSP pull streams require four sequential ports).

SME Device	SME IP	Multicast IP	Multicast Port
SME1	192.168.254.10	239.199.188.138	6000 to 6003
SME2	192.168.254.11	239.199.188.138	6004 to 6007
SME3	192.168.254.12	239.199.188.138	6008 to 6011

When there are different multicast IP addresses available, there is no need for multiple port numbers and the port number can remain at the default (6000) as shown in the next table.

SME Device	SME IP	Multicast IP	Multicast Port
SME1	192.168.254.10	239.199.188.138	6000
SME2	192.168.254.11	239.199.188.139	6000
SME3	192.168.254.12	239.199.188.140	6000

To change the SME 100 port number for multicast pull streaming, see the "[Port Settings Page](#)" on page 103.

NOTE: The SME 100 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 SME 100 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 settings page (see [Encoder Settings Page](#) on page 88).

SME 100 Firmware Updates

Determining the Firmware Version

The following methods are used to determine the version of firmware that the SME 100 is running.

- Check the default display cycle that is shown on the front panel LCD display (see the "**SME 100 Power Up Procedure**" section on page 18).
- Access the web-based user interface (see "**Accessing the Web-based User Interface**" on page 47) and click on the **Status** tab (see page 67).
- Remotely connect to the SME 100 and send the **Q** (**query firmware version**; see page 154) SIS command (see "**Remote Communication and Control**" on page 117).

Downloading the Latest Firmware

Use the following procedure to download the latest SME 100 firmware.

1. Go to www.extron.com/download.
2. On the Download Center screen, click the **Firmware** link on the left sidebar menu.
3. Find the SME 100 firmware download from the alphabetical list.

TIP: Clicking on the **S** in the alphabetical menu bar brings up all of the firmware downloads that start with "S" and should assist with finding the SME 100 firmware download link.

4. Click the **Download** link for the SME 100 firmware and follow the instructions that appear on the screen.
5. The file is saved onto the computer. Note the folder where the firmware file is saved.

Updating the Firmware Using the Web Interface

Before starting this procedure, go to www.extron.com/download and download the latest version of the SME 100 firmware.

Use the following procedure to update the firmware of the SME 100. For information on how to access the web-based user interface, see "**Accessing the Web-based User Interface**" section on page 47.

1. Click the **Configuration** tab. The Configuration page appears (see figure 114).

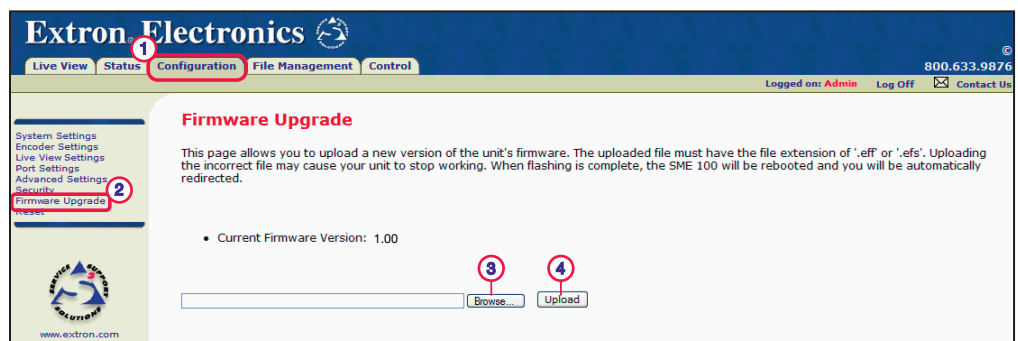


Figure 114. Configuration Page – Firmware Upgrade

2. From the Configuration page, click the **Firmware Upgrade** link.

3. Click on the **Browse** button and use the file browser to navigate to the location where the firmware file was saved. Select the file and click **Open**.

ATTENTION: The extension of the firmware file must be **.eff** or **.efs**. Opening a file with an incorrect extension may cause the SME 100 to stop functioning.

4. Click the **Upload** button (located next to the **Browse** button). The Firmware Upgrade page shows the progress of the installation and the LCD screen on the front panel of the SME 100 says **Upgrading Firmware** while the firmware is being installed. The firmware upgrade takes a few minutes to install.
5. After the firmware is properly installed, the SME 100 reboots, initializes the upgraded firmware, and starts to refresh the web-based user interface. The firmware installation is complete when the Live View page is automatically loaded on the web browser.

Browser Configuration

The SME 100 supports a variety of web browsers. Most web browsers will work with the SME 100 without requiring any configuration. This section describes how to configure the following web browsers to operate properly with the SME 100.

- Microsoft® Internet Explorer® (version 7 or higher)
- Mozilla® Firefox® (version 15 or higher)

NOTES:

- These procedures may vary when different web browser versions are used.
- The SME 100 can be configured using either a 32- or 64-bit operating system or web browser. Currently, a stream can only be viewed using a 32-bit browser.

Microsoft Internet Explorer (version 7 or higher)

1. Open Internet Explorer and select **Tools > Internet Options**. The Internet Options window appears (see figure 115).

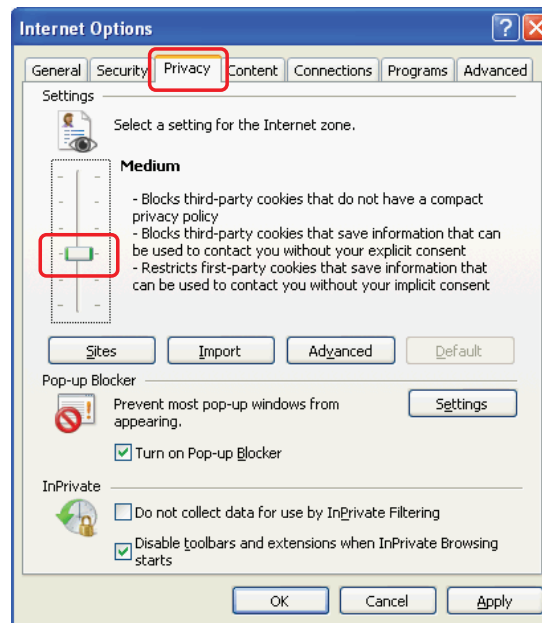


Figure 115. Internet Privacy Options

2. To enable cookies, select the **Privacy** tab and (if required) adjust the slider control to set the required security level. The SME 100 operates correctly when using security that **does not** exceed the **Medium** setting (see figure 115).

NOTES:

- Setting the security slider to block all cookies prevents the SME 100 web-based user interface from operating.
- If a high security level is required, click on the **Sites** button and allow the SME 100 web interface to use cookies (see figure 116).

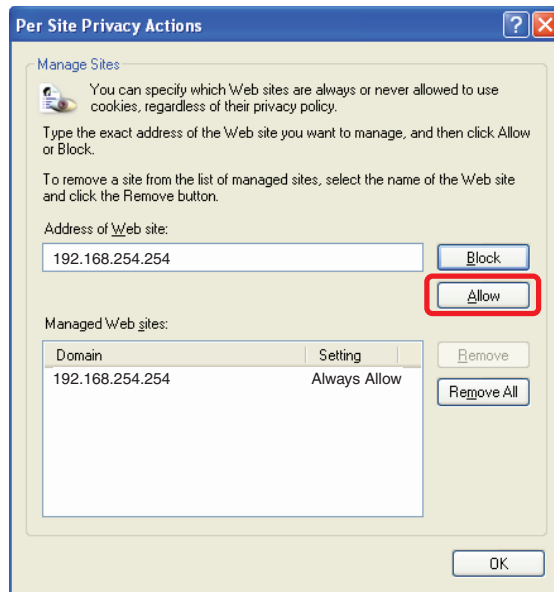


Figure 116. Per Site Internet Options

3. To enable JavaScript, select the **Security** tab (see figure 117).

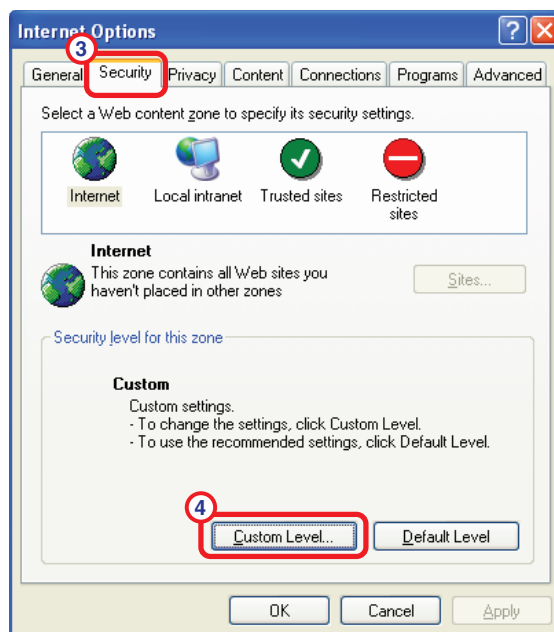


Figure 117. Security Options

4. Click the **Custom Level** button. The Security Settings window appears (see figure 116, next page).

5. Scroll down to the **Scripting** setting and under **Active scripting**, select **Enable** (see figure 118).

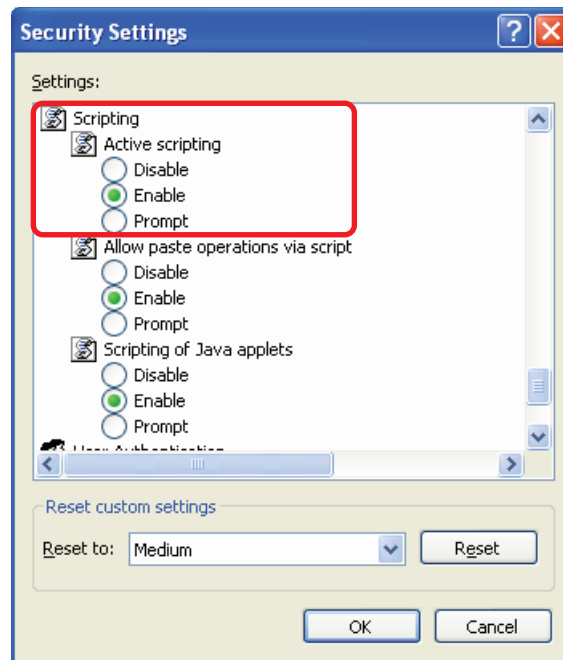


Figure 118. Custom Level Security Options

6. Click **OK** to close the Security Settings window and save the active scripting setting.
7. On the Internet Options window, click **Apply**, then click **OK** to save the new settings.

Mozilla Firefox (version 15 or higher)

1. Open Mozilla Firefox and select **Tools > Options**. The Options window appears.
2. To enable cookies, click the **Privacy** tab and from the **Firefox will** drop-down menu, select **Remember history** (see figure 119).

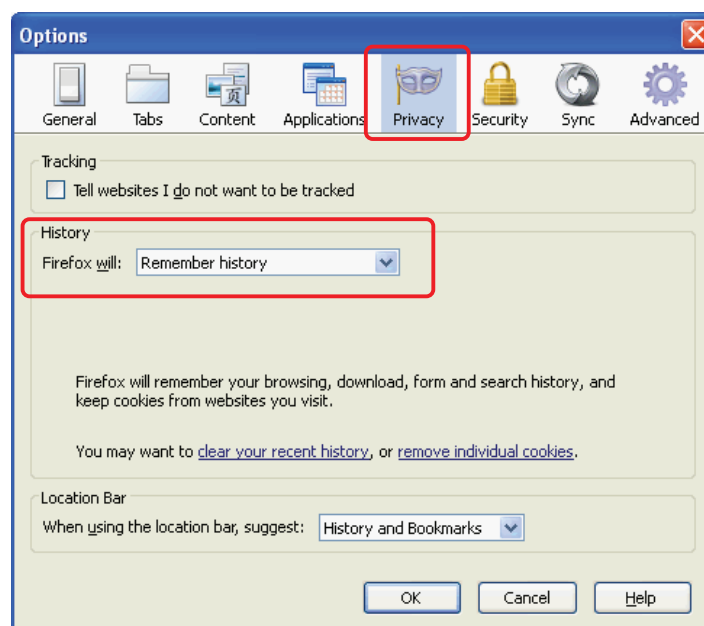


Figure 119. Cookie Preferences

3. To enable JavaScript, click the **Content** tab and make sure that the **Enable JavaScript** check box is selected (see figure 120).

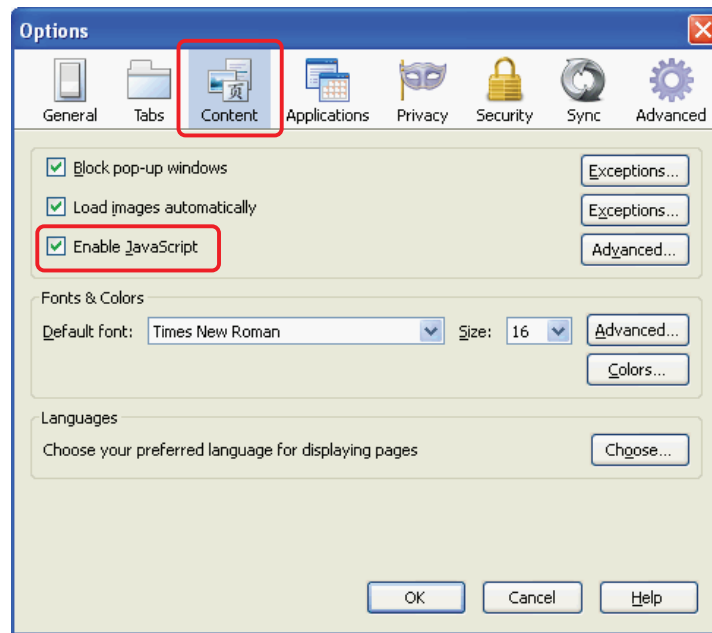


Figure 120. Scripts and Plugins Preferences

4. Click **OK** to close the window and save the settings.

Media Player and Media Server Compatibility Charts

NOTES:

- The Extron Streaming Media Player (SMP version 1.0) web browser plugin is recommended for viewing live streaming media from the SME 100.
- Different versions of the various media players may be supported, but performance will vary depending on computer hardware, computer software, and the operating system being used.

Plugin Compatibility

The following table details compatibility between web browsers and media player plugins.

		Web Browser			
		Internet Explorer (version 7, 8, or 9)	Mozilla Firefox (version 15 or higher)	Google Chrome (version 21 or higher)	Apple Safari (version 5 or higher)
Media Player Plugin	SMP Plugin for Windows (version 1.00)	X	X	X	
	VLC Plugin for Windows (version 1.1.10)	X	X	X	
	VLC Plugin for Windows (version 2.0.2)	X	X	X	
	VLC Plugin for Macintosh® (version 1.1.10)				
	QuickTime Plugin for Windows (version 7.7.1)	X	X	X	
	QuickTime Plugin for Macintosh® (version 7.7.1)		X	X	X
	Windows Media Player Plugin				

NOTES:

- **X** = Supported using 32-bit web browsers (64-bit web browsers are not supported).
Certain dependencies may apply.
- Macintosh computers automatically default to the QuickTime plugin even if the plugin is changed.

Player Compatibility

The following table details compatibility between operating systems and media players.

		Operating System		
		Microsoft Windows XP	Microsoft Windows 7	Mac OS X
Stand-alone Media Player	VLC Media Player for Windows (version 1.1.10)	X	X	X ₂
	VLC Media Player for Windows (version 2.0.2)	X	X	X ₂
	QuickTime Media Player for Windows (version 7.7.1 and higher)	X	X	X
	Windows Media Player			
NOTES: <ul style="list-style-type: none"> • X = Supported; certain dependencies may apply. • X₂ = Unicast RTP streaming method is supported. 				

Media Server Compatibility

The following table details compatibility between operating systems and media servers.

		Operating System		
		Microsoft Windows XP	Microsoft Windows 7	Mac® OS® X®
Media Server	Wowza Media Server Version 3	X	X	X
	Darwin Streaming Server (version 6.0.3)	X	X	X
NOTE: X = Supported (64-bit operating system recommended); certain dependencies may apply.				

Set-Top Box and Hardware Decoder Compatibility

Contact your Extron Representative for compatibility with third-party set-top boxes and other hardware decoders.

Mounting the SME 100

This section provides information on installing the SME 100 in a rack cabinet. Rack installation requires the use of the included brackets.

There are a variety of rack cabinets on the market, which may mean the assembly procedure will differ slightly. If necessary, refer to the instructions that came with the rack cabinet to complete the rack installation.

UL Guidelines for Rack Mounting

The following Underwriters Laboratories (UL) guidelines are relevant to the safe installation of this product in a rack:

- 1. Elevated operating ambient temperature** — If the unit is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, install the equipment in an environment compatible with the maximum ambient temperature (TMA: +122 °F, +50 °C) specified by Extron.
- 2. Reduced air flow** — Install the equipment in the rack so that the equipment gets adequate air flow for safe operation.
- 3. Mechanical loading** — Mount the equipment in the rack so that uneven mechanical loading does not create a hazardous condition.
- 4. Circuit overloading** — Connect the equipment to the supply circuit and consider the effect that circuit overloading might have on overcurrent protection and supply wiring. Consider the equipment nameplate ratings when addressing this concern.
- 5. Reliable earthing (grounding)** — Maintain reliable grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (such as the use of power strips).

Rack Mounting

The SME 100 comes with two rack mounting brackets. To mount the SME 100, secure the rack mount brackets to the front of the rack (see figure 121).

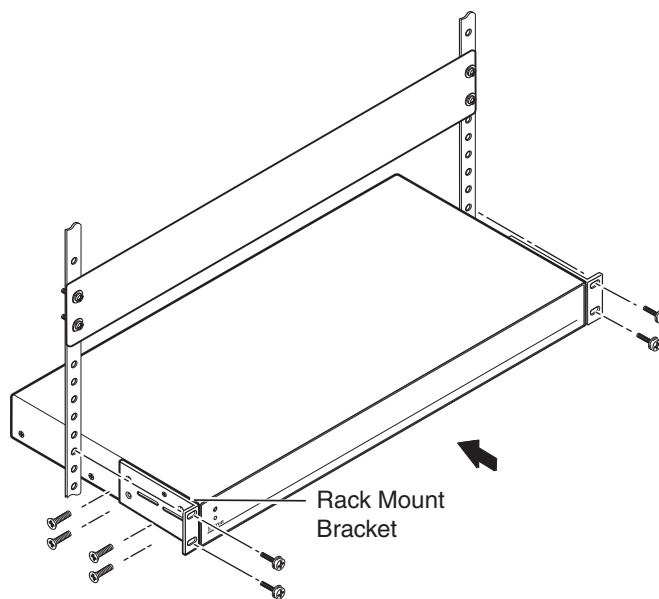


Figure 121. Mounting the SME 100

Extron Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

**USA, Canada, South America,
and Central America:**

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

Japan:

Extron Electronics, Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

Europe and Africa:

Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

China:

Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Asia:

Extron Asia Pte Ltd
135 Joo Seng Road, #04-01
PM Industrial Bldg.
Singapore 368363
Singapore

Middle East:

Extron Middle East
Dubai Airport Free Zone
F12, PO Box 293666
United Arab Emirates, Dubai

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions, or 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 Applications 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
Japan: 81.3.3511.7655

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

Extron Headquarters +1.800.633.9876 (Inside USA/Canada Only) Extron USA - West +1.714.491.1500 +1.714.491.1517 FAX	Extron USA - East +1.919.850.1000 +1.919.850.1001 FAX	Extron Europe +800.3987.6673 (Inside Europe Only) +31.33.453.4040 +31.33.453.4050 FAX	Extron Asia 800.3987.6673 (Inside Asia Only) +65.6383.4400 +65.6383.4664 FAX	Extron Japan +81.3.3511.7655 +81.3.3511.7656 FAX	Extron China +4000.398766 (Inside China Only) +86.21.3760.1568 +86.21.3760.1566 FAX	Extron Middle East +971.4.299.1800 +971.4.299.1880 FAX	Extron Korea +82.2.3444.1571 +82.2.3444.1575 FAX	Extron India 1800.3070.3777 (Inside India Only) +91.80.3055.3777 +91.80.3055.3737 FAX
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