

# SMP 111

## SINGLE CHANNEL H.264 STREAMING MEDIA PROCESSOR

Multipurpose Adaptable Platform  
for Recording and Streaming  
AV Presentations

- ▶ Process live, high resolution HDMI video and audio with metadata
- ▶ Stream and record simultaneously
- ▶ High quality scaling with aspect ratio control, size, and position
- ▶ Produces MP4 media files that are compatible with virtually any media player
- ▶ Automatic file uploading
- ▶ RTMP streaming protocol supports popular third party hosting services



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# Introduction

The convergence of AV and IT continues to create new opportunities for AV integrators. The scale, flexibility, and reach of IP networks offer an incredible opportunity to extend live presentations to individuals unable to attend an event due to time, distance, or other physical barriers. Streaming and recording are effective ways that organizations can use to communicate and educate, by capturing the presentation experience and delivering that same information and insight to viewers anywhere.

## Streaming Solutions Require Flexibility

Any organization with a network and an AV presentation system can enjoy the benefits of streaming. Today's streaming systems must be compatible with high resolution source signals, including high definition cameras. They must reliably present video that enhances a user's insight into the live experience. Streaming products must also conform to different network policies and operating requirements by supporting multiple transport protocols and session management methods. Additionally, the ability to record at a high resolution while streaming at a lower resolution or bit rate addresses network bandwidth requirements.

## Recording Requirements for Presentations

To efficiently produce, manage, and distribute recorded presentations, a variety of requirements must be met. Effective systems record media that can be easily processed and transferred to a variety of storage formats. The recorded media must be efficiently processed with rights-managed user access, operating within an organization's standard network services and conforming

to their IT policies. Lastly, the media must be published in a format that can be easily delivered and consumed.

## Extron Streaming and Recording

The SMP 111 is a high performance recording and streaming processor for capturing and distributing AV sources and presentations as live streaming and recorded media. The SMP 111 accepts an HDMI signal with embedded audio and an analog audio signal. Extron high performance scaling and flexible signal processing enable superior display of content of varying resolutions from computers and HDTV sources. The SMP 111 supports extensive streaming capabilities. It can record and stream simultaneously, with independent resolutions and bit rates using a range of transport protocols and session management options. Recording with the SMP 111 provides easy capture of live HDMI signals to internal flash storage and external USB drives. Requiring no licensing fees, the SMP 111 is a compact, flexible, and cost-effective solution for streaming and recording content.

The SMP 111 is complemented by Entwine™ Enterprise Media Platform. This platform is used to administer users, groups, and recordings produced by the SMP 111. Entwine EMP also processes the recorded media into file packages that provide a data-rich playback experience using the Entwine VideoLounge™ player, a browser-based media player that can be operated from virtually any computer or mobile device.

## A Cost-Effective Solution

Comprehensive control and configuration features make the SMP 111 integration-friendly and easy to control and operate. Requiring no recurring licensing fees, it has a low cost of ownership, making it a cost-effective solution for delivering presentations to a larger audience.

## Many Applications Benefit from Streaming and Recording

The SMP 111 is ideal for applications that require simple recording of a single video signal with audio and metadata. It provides MP4 or M4V file format recordings integrated with metadata, chapter and event marking. It is also ideal for applications that require live streaming to remote participants, hosting services, or local confidence viewing. The SMP 111 can be adapted to many applications, documenting virtually any meeting, conference, or activity that uses an AV source as a reference. The SMP 111 is ideal for use in corporate, education, government, and rental and staging applications.



# Presentation Recording & Streaming

## Signal Processing Simplifies Setup and Operation

Like many other Extron AV products, the SMP 111 offers comprehensive digital and analog signal processing features that make it easy to connect with various presentation sources. EDID Minder® automatically manages EDID communications to ensure sources power up properly and a reliable output signal is provided. Auto-Image™ automatically adjusts source sizing, centering, and filtering and Auto Input Memory saves the size, position, and picture settings of incoming signals, ensuring that sources present properly. Comprehensive picture, aspect ratio, size, and position controls provide quality images.

## Highly Adaptable FlexOS Platform

FlexOS is Extron's flexible, embedded operating system that manages and controls additional functions within the SMP 111. FlexOS makes the SMP 111 easily-adaptable to new requirements over time for a multitude of streaming, recording, processing, control, and presentation applications.

## Flexible System Control Options

Many different control capabilities are available from the SMP 111. The front panel buttons and LED indicators provide a simple interface to manage, monitor, and control the unit for a wide variety of applications. The SMP 111 also features an RS-232 port and an Ethernet port to interface with remote devices and control systems.

A mini USB control port is available on the front panel of the SMP 111 to support direct configuration from a PC. Alternatively, a USB port on the rear of the unit is available for connection to a keyboard and mouse, to serve as the interface for the embedded web browser. The browser can be viewed from the HDMI output connection and serves as a convenient method to access network setup and control.

## Powerful Tools for Monitoring and Management

Simple Network Management Protocol – SNMP traps, email, and Simple Mail Transfer Protocol – SMTP can deliver messages to support staff or monitoring systems when signal errors or encrypted sources are detected, or when storage nears capacity, allowing for proactive service. Operational system data is logged continually, detailing recording sessions, storage directory use, file names, metadata, and storage capacity. This information provides valuable data for evaluating usage patterns and operating concerns.

## Recorded Media Enhanced with Data

The SMP 111 produces an MP4 or M4V container format compatible with virtually any media player. It records at resolutions

from 512x288 through 1920x1080, including 480p, 720p, or 1080p, supporting a variety of storage, and playback requirements. Recordings can include metadata such as: Title, Creator, Subject, Description, Publisher, Contributor, and Date, making searching, indexing, and managing multiple recordings more efficient. Chapter marks can be set during recording sessions, providing highly efficient searching and scanning during file playback. JPEG thumbnail images are captured periodically and for specially marked events, and the thumbnail image size is selectable. Extron recording packages include thumbnail images, chapter marks, metadata, and the recorded video and audio. The combination of a high resolution AV signal, on-screen data, metadata, thumbnail images, and chapter marks make navigation of SMP 111 recordings highly efficient and effective. MP4 recordings can be saved to internal flash storage, a USB storage device, or a defined network storage directory. USB storage devices connect easily to the SMP 111 from the front or rear panel.

## Content Management and Publishing Options

The SMP 111 produces MP4 or M4V media files with chapter marks, JPEG thumbnail images, and metadata supporting a data-rich playback experience from content management systems. It can be configured to integrate directly with Extron's Entwine EMP enterprise media platform for lecture capture and distribution, or the Opencast Video Solution. It also integrates with the Kaltura Hosted Video Platform. SMP 111 AV recordings can be automatically transferred to network shares or FTP servers for a simplified workflow. Recording packages may also be manually uploaded to third party content management systems such as iTunes-U, Blackboard LMS, SharePoint, CaptionSync, YouTube, Moodle, and more.

## Extensive Streaming Capabilities

The SMP 111 offers flexible encoder settings to allow for high resolution, high bit-rate recordings while also offering the ability to stream at a lower resolution and bit-rate to reduce network impact. Bit rates can range from 200 Kbps to 10 Mbps for video and 80 Kbps to 384 Kbps for audio. Push and pull streaming sessions are supported, offering a range of streaming transport protocols and session management methods. These capabilities provide flexibility to stream from the SMP 111 to a variety of devices in different system configurations and network conditions.

# Features

## **Process live, high resolution HDMI video and audio with metadata**

Combines high quality video and audio with supporting data for cataloging and indexing to produce an enhanced presentation experience.

## **Stream and record simultaneously**

Document presentations, view confidence streaming, or extend live media to overflow destinations without the need for a computer or additional equipment.

## **High quality scaling with aspect ratio control, size, and position**

Configurable aspect ratio control allows selection of FILL, FOLLOW, or FIT modes as well as zoom and position settings.

## **Produces MP4 media files that are compatible with virtually any media player**

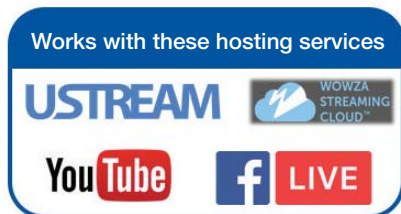
Use recordings produced by the SMP 111 directly with any software media player, computer or mobile device.

## **Automatic file uploading**

Manage the transfer of recordings automatically using defined workflows to Hosting Services, FTP, Secure FTP, and CIFS network shares.

## **RTMP streaming protocol supports popular third party hosting services**

Supports RTMP push streaming with stream name or key, and user authentication for services like YouTube Live, Wowza Streaming Cloud, Facebook Live, Ustream, and more.



## **Supports source resolutions up to 1920x1200, including HDTV 1080p/60**

The SMP 111 supports a wide range of input resolutions, from standard definition up to the resolutions commonly used for computer video and HDTV.

## **Stream at resolutions from 512x288 to 1080p/30**

High resolutions deliver superior quality images for overflow applications and lower resolutions are more efficient for streaming distribution and confidence viewing applications.

## **Supports HDMI with embedded and analog audio**

Facilitates the mixing of embedded AV audio with analog stereo audio for compatibility with AV presentation systems.

## **Records audio, video and data to a media folder**

Recordings contained within the folder include a standard MP4 or M4V audio and video recording, as well as metadata including data fields such as Title, Subject, Description, Presenter, Date etc. The folder provides a complete package of all captured elements.

## **Save recordings to internal storage, external USB storage, or network storage**

Configure the SMP 111 to save recordings to internal storage and external USB drives simultaneously. Permits the creation of both an archive copy, and a portable USB copy.

## **HDMI output with audio**

Presents a preview of the presentation with mixed, HDMI-embedded stereo audio.

## **Mark Chapters for quick selection**

Events or chapters can be marked, both periodically, time based, or manually by front panel, or a control system. Chapter marks permit directly jumping to those indicated points of the recording during playback.

## **Capture thumbnails**

Thumbnails are captured at native resolution or set to 848x480, defined by the archive encoder settings. Periodic capture of images during the recording facilitates rapid scanning to desired visual section during playback.

## **Record at 512x288 thru 1920x1080, including 480p, 720p, or 1080p**

Use standard video resolutions or computer resolutions based on the desired content or viewing requirements.

## **Audio mixing and DSP functionality**

Produces a quality audio experience without requiring the use of external mixing and DSP equipment.

## **Directly compatible with Entwine EMP, Opencast, and Kaltura Hosted Video Platform**

Configure to automatically send recordings to content management systems for processing and posting of content.

## **Compatible with third-party content management systems**

Manually upload recordings to systems such as iTunes-U, Blackboard LMS, SharePoint, CaptionSync, YouTube, Moodle, and RSS feed.

## **RS-232 and Ethernet control**

The SMP 111 interfaces with AV control systems via serial or Ethernet using Extron's SIS™ - Simple Instruction Set command protocol.

## **USB remote control port**

Configure communication settings using a keyboard and mouse while viewing the embedded webpage, or connect the optional RCP 101 remote control panel for extended front panel operation and convenient thumb drive access.

## **Standards-based H.264 / MPEG 4 AVC video compression**

The SMP 111 supports use of the Baseline, Main, or High Profiles at Levels 4.x, or 3.x providing the ability to optimize video coding for use with various types of applications and decoding devices.

## **Auto Input Memory**

The SMP 111 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.

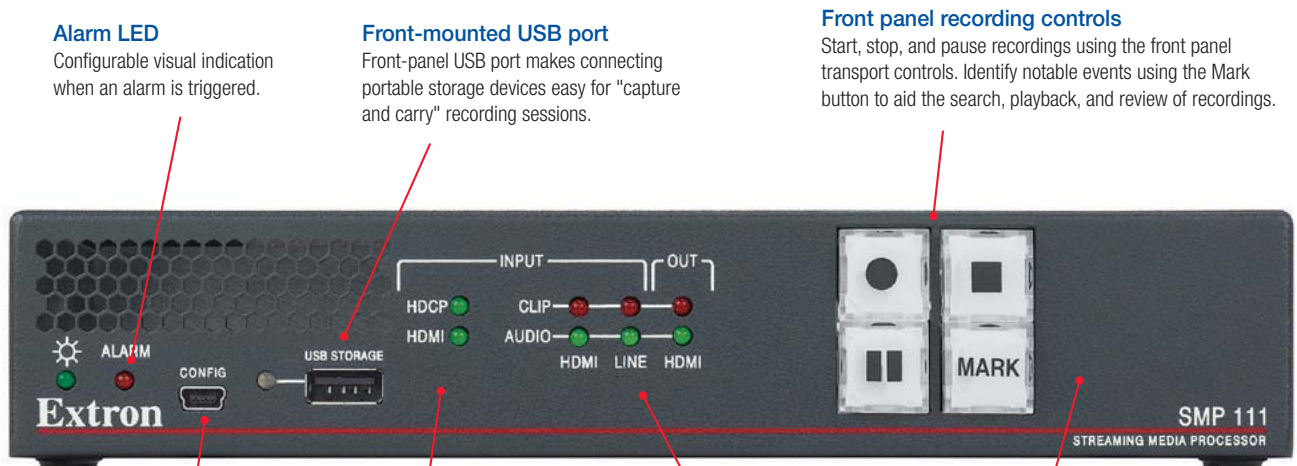
## **Encoding presets for quick recall of compression settings**

The SMP 111 provides 16 customizable presets for specific encoding and streaming parameters. Users can quickly switch between these encoder presets to support different applications.

## **License-free operation for to a low cost of ownership**

With no licensing or support fees, the SMP 111 is a cost effective solution for AV streaming and recording.

# Overview



SMP 111 - Front

### Alarm LED

Configurable visual indication when an alarm is triggered.

### Front-mounted USB port

Front-panel USB port makes connecting portable storage devices easy for "capture and carry" recording sessions.

### Front panel recording controls

Start, stop, and pause recordings using the front panel transport controls. Identify notable events using the Mark button to aid the search, playback, and review of recordings.

### Configuration port

The front panel USB port provides convenient access to control the unit directly from a PC.

### HDMI and HDCP LED indicators

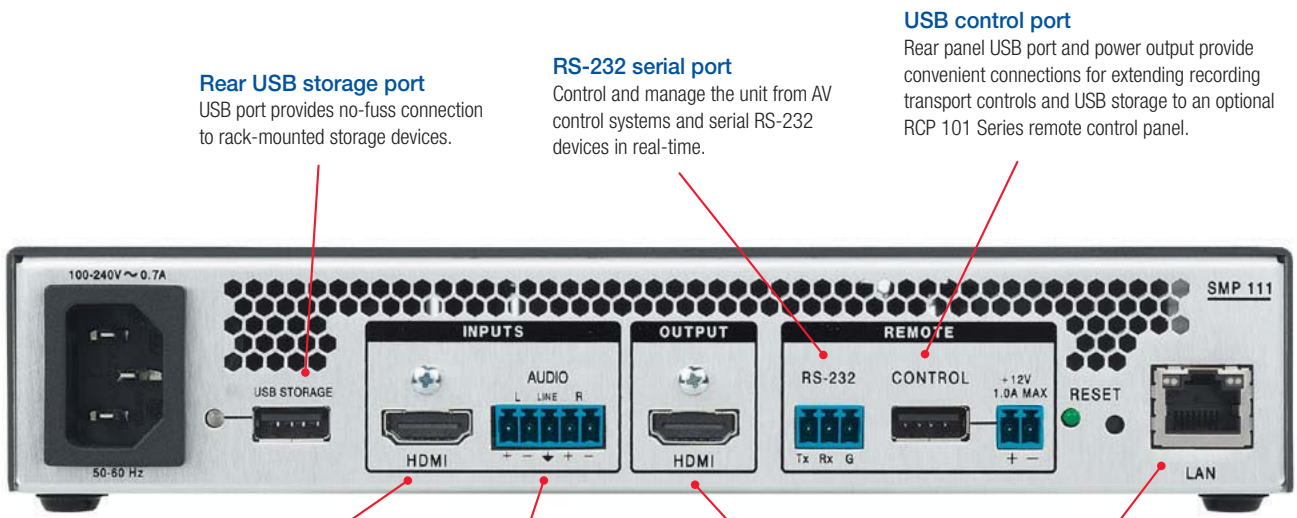
HDMI LED indicates when an active input signal is present while the HDCP LED provides visual feedback of HDCP encrypted content.

### Audio LED indicators

Discrete level indicators for HDMI audio, analog audio input, and audio output provide a visual reference for signal level and aid in troubleshooting.

### Internal flash storage

Save recorded contents to internal flash storage and reliably transfer media files to USB or network storage.



SMP 111 -Back

### Rear USB storage port

USB port provides no-fuss connection to rack-mounted storage devices.

### RS-232 serial port

Control and manage the unit from AV control systems and serial RS-232 devices in real-time.

### USB control port

Rear panel USB port and power output provide convenient connections for extending recording transport controls and USB storage to an optional RCP 101 Series remote control panel.

### HDMI input

HDMI video and embedded audio support for compatibility with commonly used AV sources and camera signals.

### Analog audio input

Stereo line level input for recording analog stereo audio sources. Audio source is user selectable: analog only, embedded HDMI audio, or analog audio mixed with embedded HDMI audio.

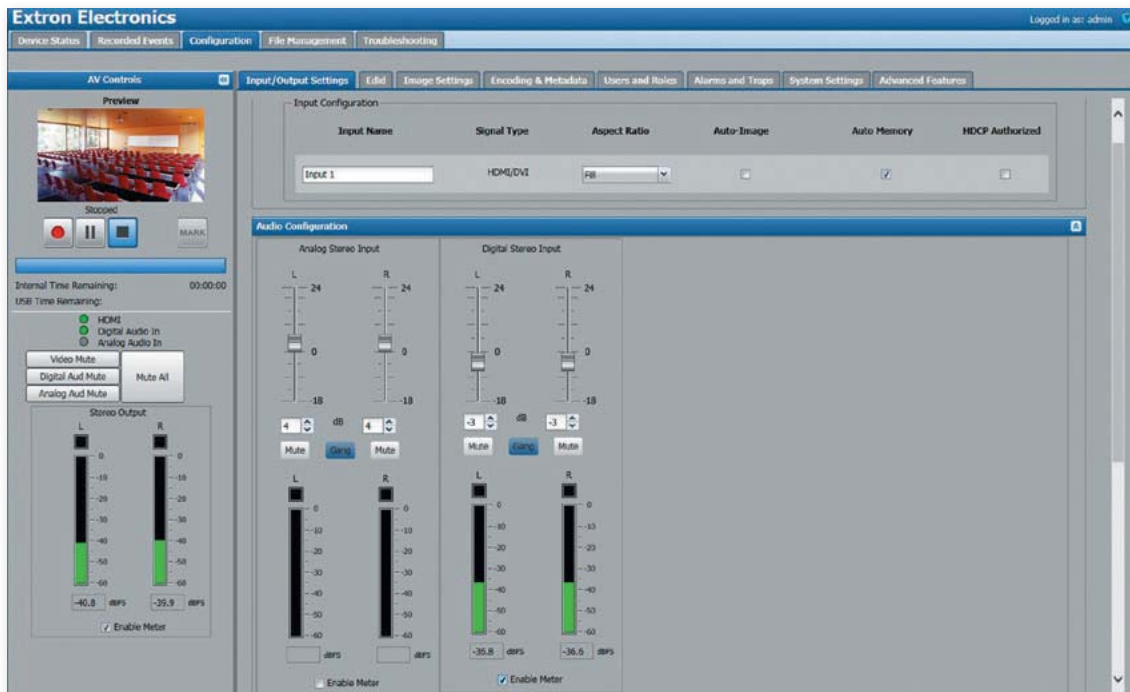
### HDMI output

Provides a local preview of the streamed output.

### Ethernet port

Multi-purpose Ethernet port for streaming transport and transfer of recordings to network storage directories. It also serves as the interface for AV control systems and the embedded web interface.

# Embedded Web Interface



The embedded webpage allows easy access to configuration settings, as well as monitoring of video and audio signals

## Intuitive Interface for Configuration

The SMP 111 has an embedded web interface, which makes it simple and easy to navigate and configure a wide array of signal processing, recording, streaming, and automated functions. The embedded web page provides all of the detailed settings in a tabular format organized by function. It is used to configure publishing and file transfer parameters and provides valuable tools for managing, monitoring, and troubleshooting. The embedded web page makes it easy for AV support staff and IT departments to control and manage the streaming processor.

## Efficient Signal Management and Operation

The embedded web page interface presents the controls for managing input and output signals. It identifies signal presence, mute, audio level, and recording status. User controls are provided for transport functions and chapter marks during the recording process. Additional processing controls are provided for: aspect ratio management, audio mixing and level adjustment, as well as full encoder configuration and presets. A small preview window in the embedded web page decodes a live view of the encoder process. Changes in settings and parameters are applied immediately with no restarting or loading required.

## RCP 101 Series - Remote Control Panels for SMP Series



RCP 101 D



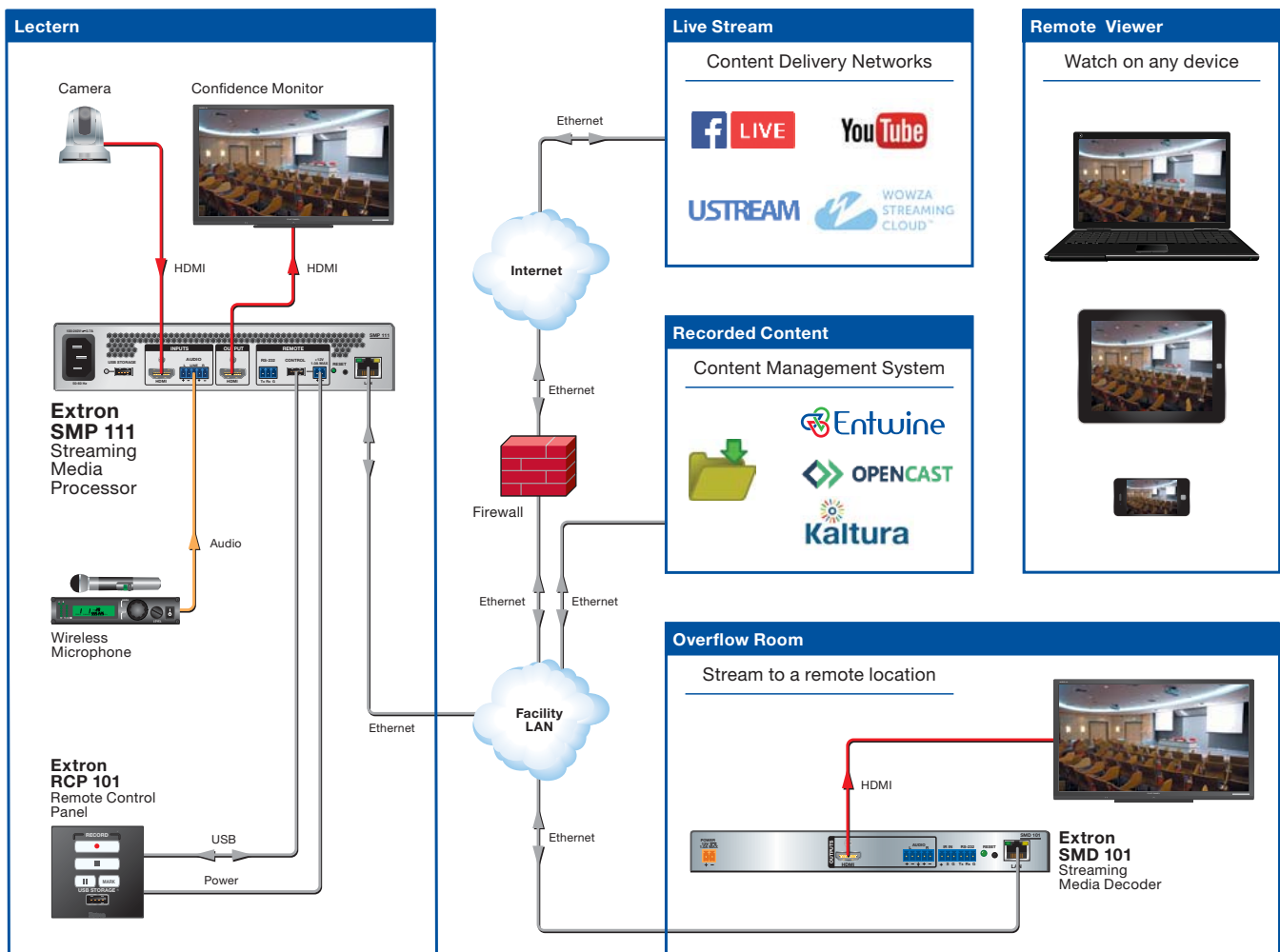
RCP 101 EU

Extron **RCP 101 Series** remote control panels feature backlit transport controls for remote operation of Extron SMP Series products. A USB port provides convenient access to a thumb drive or external portable storage. RCP 101 panels have status and alarm indicator lights with an audible buzzer. A 15 foot (4.5 meter) USB cable is included. RCP 101 panels may be used with Extron **USB Extender Plus Series** twisted pair extenders to support distances up to 330 feet (100 meters). Available in decorator-style, MK, and EU versions; the EU version is compatible with Flex55 enclosures or EU junction boxes. RCP 101 Series panels include black and a white faceplates to compliment a wide range of environments. MK model is available in white only.

# Applications

## CAMPUS VIDEO DISTRIBUTION SYSTEM

Instructors, trainers, athletic departments, and media centers benefit from the SMP 111 Streaming Media Processor, and are able to record and stream their sessions with ease. Providing a flexible platform to record to both the internal flash storage and provide a duplicate copy on a USB drive, makes the process of documenting an event very efficient. Coupled with the ability to automatically upload the recordings to content management systems after the session, and provide a live stream to services such as YouTube, and Facebook Live all at the same time, makes this a complete system in a very small package. Supporting an HDMI source, such as a camera, computer, or an entire upstream AV system, the input scaling engine manages resolution changes and matches the desired recording and separate streaming resolutions. Adding a microphone or auxiliary audio source in addition to the HDMI source audio is easily configured, and the two audio sources can be mixed together. Flexible streaming presets allow for rapid adjustment of streaming configurations to serve multiple tasks, such as streaming to an overflow room before switching the stream to a hosting service.



# Specifications

VIDEO INPUT	
Number/signal type	1 HDMI digital video (HDCP content not supported)
Resolution range	480i, 480p, 576i, 576p, 720p, 1080i, 1080p, 640x480 to 1920x1200* *reduced blanking
Format	RGB and YCbCr digital video
VIDEO PROCESSING	
Digital sampling	8-, 10-, or 12-bits per channel, 165 MHz pixel clock (HDMI)
Digital processing	4:2:2, 8-bits per color
Compression	H.264/AVC (ITU H.264, ISO/IEC 14496-10) 4:2:0, 8-bit color Encoding profiles: High, Main, Baseline; Encoding levels: 4.1, 4.0, 3.2, 3.1, 3.0; configurable GOP
Bit rate	200 kbps to 10 Mbps
Bit rate control	Selectable (variable, constrained, or constant)
Latency	130 msec* (encode), 600 msec* (encode/decode) *Indicates minimum latency. Encoder, decoder, and network dependencies apply.
VIDEO OUTPUT	
Number/signal type	1 H.264/AVC digital video over Ethernet 1 HDMI digital video
Scaled resolution	HDMI output/record: 480p, 720p, 1080p, 512x288, 1024x768, 1280x1024 Stream: 480p, 720p, 1080p, 512x288, 1024x768, 1280x1024
Frame rate	Up to 30 fps for all output rates
Formats	H.264/AVC (Profile type: High, Main, Baseline. Profile level: 4.1, 4.0, 3.2, 3.1, 3.0)
RECORDING AND STORAGE	
File system for USB storage	FAT32, NTFS, VFAT long file name extensions, EXT2, EXT3, EXT4
File types	H.264 and AAC in an MP4 container, M4A, JPEG, JSON, XML
File transfer protocols	FTP, SFTP, CIFS
Network file share protocols	CIFS/SMB, NFS
Internal storage capacity	32 GB SDHC
External USB ports	1 (front panel), 1 (rear panel), USB 2.0 (max. current 1.5 A)
Font file format	(TrueType) TTF, (OpenType) OTF
AUDIO INPUT	
Analog	
Number/signal type	1 stereo (balanced or unbalanced)
Digital	
Number/signal type	1 stereo, digital de-embedded from HDMI
AUDIO PROCESSING	
Sampling rate	16 bit, 48 kHz or 44.1 kHz sampling
Compression	AAC-LC MPEG-4 (ISO/IEC 14496-3:2005)
Bit rate	80 kbps to 320 kbps, stereo
AUDIO OUTPUT – DIGITAL	
Number/signal type	1 stereo, HDMI (re-embedded audio) 1 AAC-LC digital audio over Ethernet

COMMUNICATION		
USB		
USB configuration port	1 front panel female mini USB B	
Mouse and keyboard port	Connect via any USB ports on SMP 111.	
USB control port	Connect to optional accessory RCP 101.	
USB standards	USB 1.1, USB 2.0, high/full/low speed hosts	
Serial control		
Serial control port	1 bidirectional RS-232, rear panel 3.5 mm captive screw connector, 3-pole	
Remote power	(1) +12 VDC power on 3.5 mm, 2-pole captive screw connector 1.0 A max	
Ethernet control		
Ethernet host port	1 female RJ-45	
Ethernet data rate	10/100/1000Base-T, half/full duplex with autodetect	
Maximum Transmission Unit	68-1500 MTU, adjustable	
Protocols		
Streaming	Pull: RTP/RTCP (RFC 3550), RTSP (RFC 2326), Interleaved RTSP (RTP/RTSP), RTP/RTSP tunneled through HTTP unicast or multicast Push: MPEG2-TS/UDP* (ISO/IEC 13818-1), MPEG2-TS/ RTP* (RFC 2250, IPTV-ID-0087, ETSI TS 102 034), Direct RTP (RFC 3984), SAP (RFC2974), SDP (RFC4566), unicast or multicast, RTMP TCP, UDP, multicast IGMPv3 (RFC 3376) or unicast IGMPv3 (RFC 3376), IP, UDP, SSL, DHCP, HTTP, HTTPS, RTP, RTSP, SNMP V2 (RFC 1213), SAP (RFC2974), SDP (RFC4566), QoS (RFC 2474), NTPv4 (RFC 4330)	
Transport		
All supported		
GENERAL		
Power supply	Internal Input: 100-240 VAC, 50-60 Hz	
Power consumption	23 watts typical	
Thermal dissipation	50 BTU/hr	
Enclosure dimensions	1.66" H x 8.68" W x 9.5" D (1U high, half rack wide) (4.2 cm H x 22.1 cm W x 21.6 cm D) (Depth excludes connectors.)	
Regulatory compliance		
Safety	CE, c-UL, UL	
EMI/EMC	CE, C-Tick, FCC Class A, ICES, VCCI	
Environmental	Complies with the appropriate requirements of RoHS and WEEE.	
<b>Model</b>	<b>Version Description</b>	<b>Part number</b>
SMP 111	Single Channel Recorder – 32 GB	60-1594-01



For complete specifications, please go to [www.extron.com](http://www.extron.com)  
Specifications are subject to change without notice.

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