SMP 300 Series

H.264 STREAMING MEDIA PROCESSORS

Multipurpose Adaptable Platform for Recording and Streaming AV Presentations

- Process two high resolution AV sources from up to five available input signals.
- Record and stream simultaneously.
- High quality scaling with flexible two-window management.
- Produce MP4 media or M4A audio files that are compatible with virtually any media player.
- Stream concurrently at two resolutions and bit rates from the same source.

Extron

Introduction

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

Streaming Solutions Require Flexibility

Any organization with a network and an AV presentation system can benefit from streaming. Today's streaming systems must be compatible with high resolution source signals, including high definition cameras. They must reliably interface, switch, and combine video with digital imagery and data to enhance 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, streaming at more than one resolution and bit rate concurrently adds important flexibility, ensuring that media can be delivered to destinations with different viewing requirements or network bandwidth.

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 Recording and Streaming Processors

The SMP 300 Series of products are high performance recording and streaming processors for capturing and distributing AV sources and presentations as recorded media and live streaming. They incorporate Extron's FlexOS®, a flexible platform for automating system operation. Accepting HDMI, component, composite, and optional 3G-SDI signals, SMP 300 Series processors can record and stream simultaneously and can stream at two different resolutions and bit rates concurrently using a range of transport protocols and session management options.

- The SMP 351 creates a composited two-window recording and stream from its available sources.
  - An optional LinkLicense® upgrade unlocks SMP 352 functionality within the SMP 351.
- The SMP 352 can create composited or independent recordings and streams from two different sources with independent settings for each channel. It also has advanced audio DSP features for level control, filtering, and dynamics, as well as streaming presets that increase functionality and provide a simplified workflow.

A Cost-Effective Solution

Comprehensive control and configuration features make SMP 300 Series products integration-friendly and easy to control and operate. Requiring no recurring licensing fees, these H.264 processors have a low cost of ownership, making them a cost-effective solution for delivering presentations to a larger audience.

Many Applications Benefit from Recording and Streaming

SMP 300 Series products are ideal for use in virtually any professional environment where AV sources can be streamed live or recorded for future reference, especially when combining multiple AV sources will enhance the message. Recording and Streaming AV presentations allows an organization to communicate and train employees and students that cannot be present at an event. Event recording provides everyone with the opportunity to review and gain insight into the live experience. SMP 300 Series products can be adapted to many applications, documenting virtually any meeting, conference, or activity that uses an AV source as a reference. They are ideal for use in corporate, education, government, healthcare, courtroom, house of worship, and rental and staging applications.

Presentation Recording & Streaming

SMP 300 Series products provide a comprehensive combination of signal processing, switching, scaling, and control features that simplify the integration of recording and streaming into AV systems. The versatility of the FlexOS platform makes it easy to adapt them for various applications and their broad feature set delivers quality and performance, making them a superior choice for recording and streaming applications.

Flexible Source Inputs

The SMP 300 Series processes two high resolution AV sources from up to five available connections. One of two HDMI signals can be selected from Channel A along with analog or HDMI-embedded stereo audio, and a loop through HDMI and audio connection. Channel B inputs support common camera formats including composite, component HD, and HDMI. The SMP 300 Series includes 3G-SDI models that accept serial digital video and audio signals supplied by cameras and other professional video sources.

Signal Processing Capabilities Produce High Quality Content

Comprehensive scaling, picture control, aspect ratio management, and HDCP-compliant signal management features ensure that SMP 300 Series products present AV sources with quality and accuracy for every application. Advanced de-interlacing and scaling produce high quality video for both standard definition and high resolution sources as they are scaled up or down.

Multi-Source Window Processing

SMP 300 Series products offer highly flexible source presentation options. The Channel A and B input signals can be presented on the output individually at full screen or together in any two-window display arrangement including side-by-side. Sixteen standard and customized source layouts are available for quick recall of window display presets. These multi-source processing features make it easy to recreate the live presentation experience and retention of the information presented.

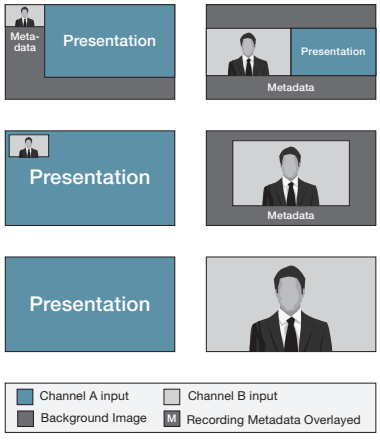
Quality Multi-Source Audio Processing

The SMP 300 Series provides audio mixing and DSP features that simplify audio management. They select or mix the analog or digital signals from Channel A and B sources, based on the selected source layout and input configurations. Audio output signals are adjusted automatically during source switches to eliminate potential clicks, pops, or undesired effects, producing a quality audio experience without the need for external processing equipment.

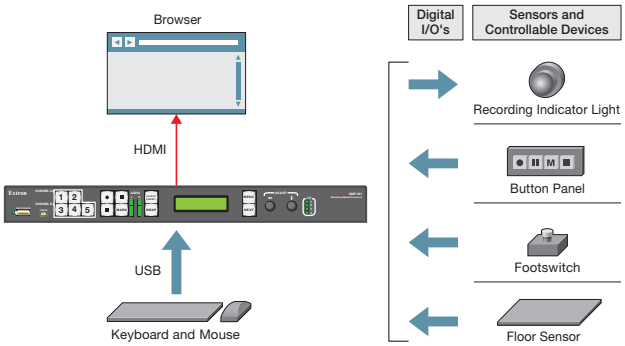
Effective User Control and Integration Options

SMP 300 Series products offer several control options. The front panel controls and LCD display provide an effective interface for configuration and control. The RS-232 port can be used to interface with a control system, and the Ethernet port is available as an additional control interface.

The Extron FlexOS embedded operating system makes SMP 300 Series products highly adaptable to a multitude of recording, streaming, processing, and control requirements. It provides a platform from which applications can be installed to automate system operation. An integrated web browser application can be viewed and managed using the HDMI output and USB keyboard and mouse connections. These programs interface with four digital I/O ports, accepting triggers from push button controls and sensors to manage specific functions, such as enabling recording sessions, marking a chapter in a recording, and digitally control devices such as a recording indicator light.



Up to sixteen customizable window layout presets can be saved and quickly recalled from the front panel or an AV control system. Twelve are shown here.



SMP 300 Series products can be directly controlled using a USB keyboard and mouse. Custom applications can be uploaded to manage four digital I/O ports that interface with digitally controlled devices.

Presentation Recording & Streaming

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. The 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 black and white decorator-style, MK, and EU versions to compliment a wide range of environments. MK model is available in white only.

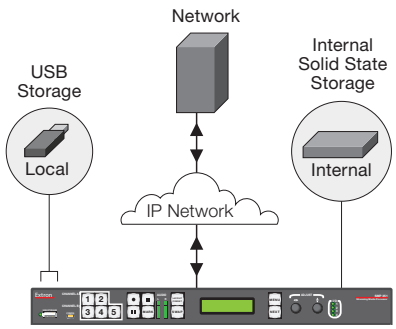
Powerful Tools for Scheduling, Monitoring, and Management

Recording schedules can be automatically updated by configuring the SMP 300 series products to integrate with Opencast, Microsoft Exchange or a centrally managed iCalendar file. Automated messages can be delivered to support staff or monitoring systems through Simple Network Management Protocol – SNMP or email when signal errors or encrypted sources are detected, or when storage nears capacity, allowing for proactive service. Operational system data is logged continually.

Recorded Media Enhanced with Data

SMP 300 Series products can produce MP4 (M4V) and M4A audio files which are compatible with virtually any media player. They can record at video bit rates from 200 kbps to 10 Mbps at 480p, 720p, or 1080p resolutions as well as 1024x768 and 1280x1024 computer-video resolutions at rates from 1 to 30 frames per second.

Recordings can include metadata with information such as: Title, Creator, Subject, Description, Publisher, Contributor, and Date, which makes searching, indexing, and managing multiple recordings easier. Set chapter marks during recording sessions for highly efficient searching and scanning during file playback.



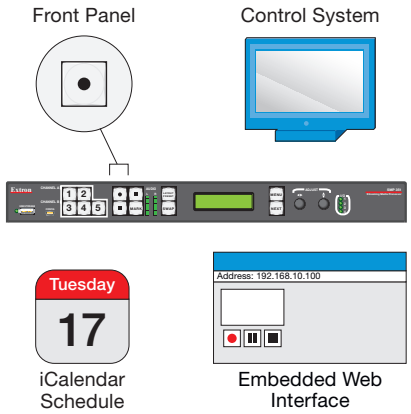
Save AV recordings to internal solid state storage, a locally connected USB storage device or it can transfer files to a network storage directory.

Storage Options Serve Different Applications

SMP 300 Series products can be configured to limit storage and save presentations to either the internal solid state drive, USB drive, or the network storage location. When network storage is defined, reliable capture is ensured by first saving the recording internally before transferring it to a file server.

Extensive Streaming Capabilities

SMP 300 Series products offer extensive streaming capabilities. They can record and stream simultaneously at two different resolutions and bit rates concurrently. High resolution, high bit rate encoding delivers superior quality for large screen overflow applications. Streaming bit rates can range from 200 kbps to 10 Mbps for video and 16 kbps to 384 kbps for audio. SMP 300 Series products support both push and pull streaming session management, and a range of streaming transport protocols including RTMP for live streaming to popular third-party hosting services such as UStream, YouTube Live, Facebook Live, Wowza Streaming Cloud and more.



Recording sessions can be initiated from the front panel, a control system, the embedded web page, or automatic recording can be scheduled using the iCalendar format.

Features

Process two high resolution AV sources from up to five available input signals
Size and position two AV source signals in layouts that maximize the viewing experience.

Record and stream simultaneously
Document presentations and extend live streaming to overflow rooms or media servers. AV and IT staff can also view streaming in low resolution for support functions.

High quality scaling with flexible two-window management
Display one or two high resolution sources in various window arrangements, including picture-in-picture and picture-by-picture arrangements for optimal interpretation.

HDMI, component, composite, and optional 3G-SDI input
Connect common AV signal formats at resolutions up to 1920x1200 including 1080p/60. The 3G-SDI model offers an additional 3G-SDI input connection.

Produce MP4 media or M4A audio files that are compatible with virtually any media player
Use recordings produced by the SMP 300 Series processors directly with any software media player, computer or mobile device.

Stream concurrently at two resolutions and bit rates from the same source
High resolutions and high bit rates deliver superior quality images for overflow applications and lower bit rates and resolutions are more efficient for streaming distribution and confidence viewing applications.

Dual Channel Recording and Streaming with confidence stream
Simultaneously record and stream from two different video sources with independent stream settings for each channel. A confidence stream is also available for remote preview of streamed or recorded content (LinkLicence upgrade required for SMP 351).

License-free operation contributes to a low cost of ownership
With no required licensing or recurring support fees, the SMP 300 series products are a cost effective solution for AV streaming and recording.

Record and 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.

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.

Save recordings to internal solid state drive, external USB storage, or a defined network storage directory
Recordings can be saved to pre-defined locations most convenient to users.

Aspect ratio control
The aspect ratio of a source window can be controlled by selecting a FILL mode, which provides a full screen output, FOLLOW mode, which preserves the aspect ratio, or FIT mode, which maintains image uniformity and zooms into the source.

Audio mixing and advanced audio DSP
Advanced audio DSP features offer control over audio levels, filtering, and dynamics for a quality audio experience without requiring the use of external mixing and DSP equipment.

HDMI-embedded stereo audio or analog stereo input and output signal support
Digital and analog audio signals are supported on the input channels and the output channel.

Adjustable recording and streaming bit rates
Select video bit rates from 200 Kbps to 10 Mbps for video and audio bit rates from 16 Kbps to 384 Kbps based on the viewing application, storage, streaming or network conditions.

Standards-based H.264 / MPEG 4 AVC video compression
The SMP 300 Series Processors 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.

Chapter and event marking with thumbnails
Chapters or events can be marked, and JPEG image thumbnails in user defined resolutions are produced to promote efficient searching and scanning.

Easy to configure and operate from the front panel or external control system
Ensure that presentations will be streamed and recorded, and valuable information will be documented and repurposed.

HDCP Visual Confirmation
When HDCP-encrypted content is transmitted to a non-HDCP compliant display, a full-screen green signal is sent to the display for immediate visual confirmation that protected content cannot be viewed on the display.

Direct compatibility with Hosted Video Platforms
Integrate publishing of recorded media directly to third party platforms such as Opencast and Kaltura.

Schedule recording and streaming
Easily import and create recording schedules from Microsoft Exchange Server or using the iCalendar format.

Layout presets simplify control
The SMP 300 Series processors provides 16 standard or customizable presets that specify the size and positioning of AV sources and metadata, simplifying management and selection of layouts from the front panel or an external control system.

Encoding presets for quick recall of specific compression settings
The SMP 300 Series processors provide 16 standard or customizable presets for saving specific encoding and streaming settings such as H.264 profile, resolution, GOP, bit rate session management configurations, transport protocols, destination addresses, and other network configurations. Users can quickly switch between these archive and confidence encoder presets to support different applications.

Overview

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

Audio level indicator
Left and right channel indicators provide a visual reference for signal level and aid in troubleshooting.

LCD control interface, direct access buttons and precise rotary controls
An intuitive LCD interface, direct access buttons, and precise rotary controls simplify system setup.

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.

Layout preset button
In Single Channel mode, select one of sixteen blended source arrangements, presenting Channel A, Channel B, metadata, and background image.

Enhanced audio DSP
Enhanced Audio DSP adds controls for Dynamics, Filtering, and Level Controls – SMP 352 only.

SMP 352 - Front

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

Input select buttons
Select the Channel A and Channel B source signals that are processed and displayed.

SWAP button
In Single Channel mode, quickly swap Channel A and Channel B source positions in the recording layout. In Dual mode, swaps within the HDMI preview output.

Internal solid state storage
Save recorded content to internal solid state storage and reliably transfer media files to USB or network storage

Digital I/O LED indicators
Highly visual front panel LEDs provide a quick indication of individual port status.

Digital I/O connection
Interface with simple push button controls, sensors, or digitally controlled devices to manage recording and streaming applications or AV devices.

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

HDMI, component HD, and composite inputs
Source signal options provide compatibility with commonly used AV and camera signals, and benefit from clean switching transitions across input signals.

Optional 3G-SDI input
SMP 300 Series 3G-SDI models accept serial digital video and audio signals supplied by cameras and other professional video sources.

SMP 352 - Back

USB keyboard and mouse connectors
Direct keyboard and mouse connections provide the means to directly control and configure the unit while viewing the embedded web page from the HDMI output.

Loop through connections
Loop through connections allow for easy integration of presentation sources into AV systems without the need for additional equipment.

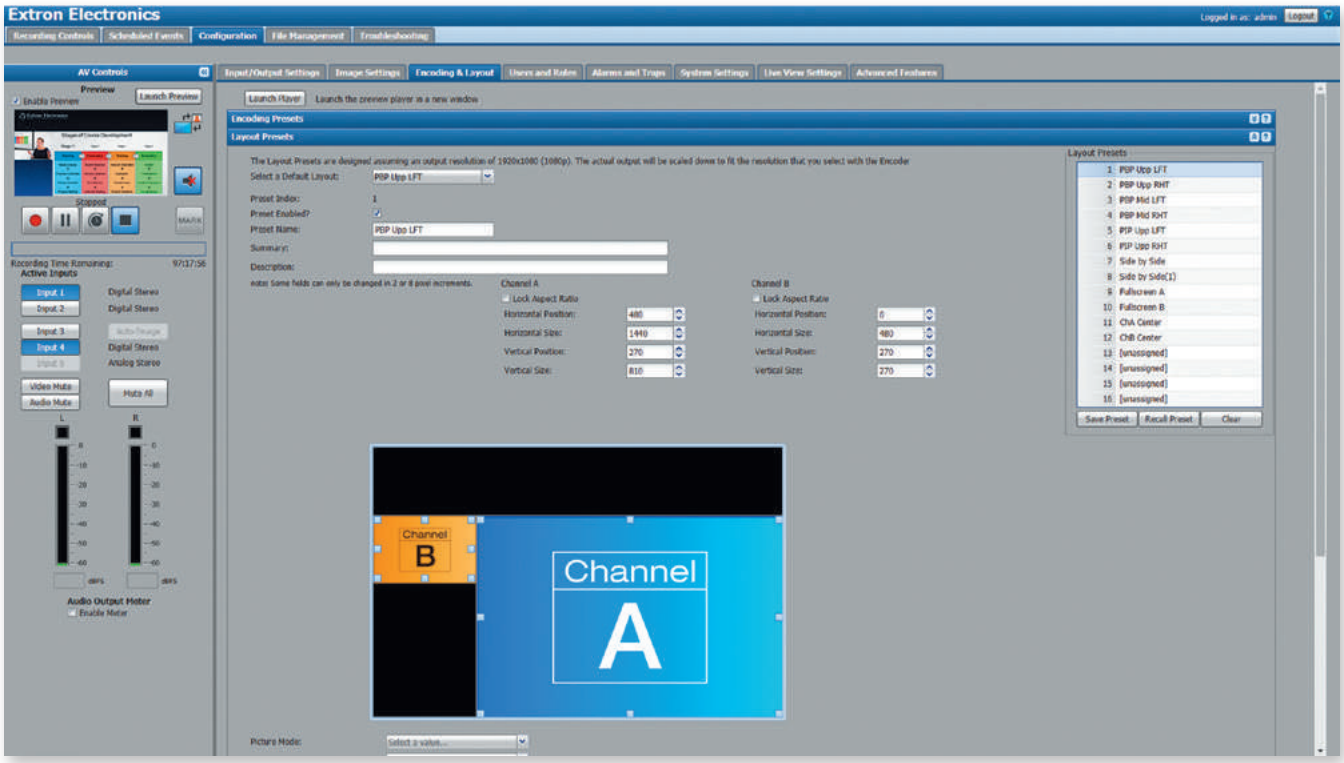
HDMI output
In Single Channel mode, provides a local preview of the blended layout. In Dual mode, provides a local preview of Channel A or Channel B as selected by the Swap button.

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.

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

HDCP-compliant signal management
Present encrypted sources on HDCP compliant displays. A green screen and HDCP message is presented if the destination is encoded media, the preview output, or a display that is not HDCP-compliant.

Embedded Web Page



Source layouts are created from the embedded web page that integrate Channel A and Channel B inputs with a PNG background image and metadata.

Intuitive Interface for Configuration

SMP 300 Series processors have an embedded web interface, which makes navigating and configuring the wide array of signal processing, recording, streaming, scheduling, and control functions simple. The embedded web page provides a visual overview of recording activity and session schedules. 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 processor.

Efficient Signal Management and Source Switching

The embedded web page interface clearly presents the controls for managing input and output signals. It identifies the signal type, resolution, AV format, and encryption status for all input signals and the output signal. Intuitive controls adjust brightness, contrast, and overscan values, and custom sampling values can be entered for analog sources as required. Additional signal processing controls are provided for: aspect ratio management, signal and format detection, and audio levels. A small preview window in the embedded web page decodes a live view of the current source layout. The preview window is accompanied by an arrangement of buttons for selecting input signals, analog or digital audio formats, and audio mixing configurations.

Preparing Layouts to Capture Effective Presentations

The recording layout page features the adjustments that produce the largest visual impact. Up to sixteen layouts can be customized and saved from this page.

Channel A and Channel B source windows are easily positioned and sized using a mouse, or by entering numeric values from a keyboard. Previously uploaded PNG image files can be selected to serve as the background image. Six common metadata element positions can be selected, typically near the sides, top, or bottom of the output image so the text does not distract from critical visual content.

A media player window can be launched from the layout page that decodes a live stream from the SMP 300 Series processor. This provides the user with a live view of the source layout during system programming and testing activities.

Embedded Web Page

Encoding Presets Simplify Streaming Management

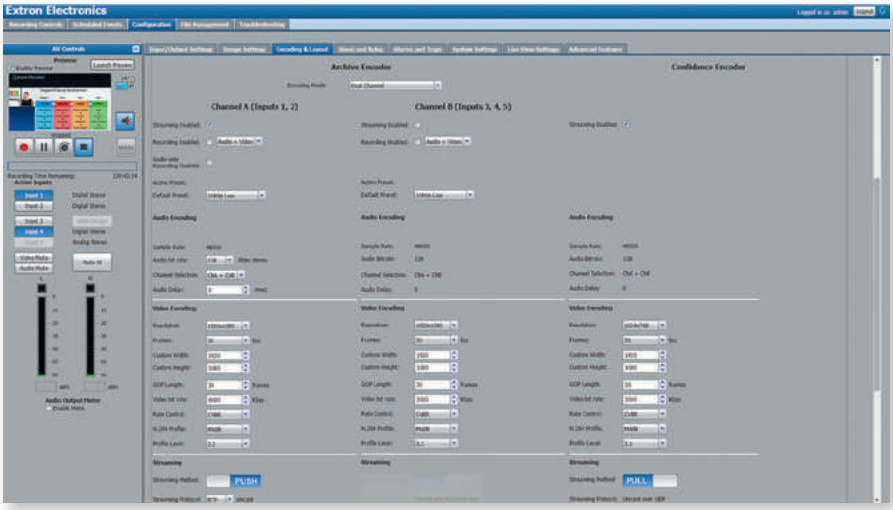
The many encoding parameters and protocols used in streaming applications can introduce undesirable complexity for system programmers. The embedded web page provides a simple interface to define two separate channels of live streaming. The Archive Encoder uses the same resolution and bit rate as the recording session. The Confidence Encoder typically uses a lower resolution and bit rate. Independent values can be defined for bit rate, frame rate, H.264 profile and level, and Group of Pictures – GOP for each encoder.

Unique menus define pull and push streaming configurations. Both must define unicast or multicast operation, transport protocol, maximum transmission unit – MTU, destination addresses, and application ports, where appropriate. The pull streaming menu also identifies the number of active client sessions. The push streaming menu provides additional configuration for Session Description Protocol – SDP and Session Announcement Protocol – SAP, Quality of Service – QoS, and Time to Live - TTL.

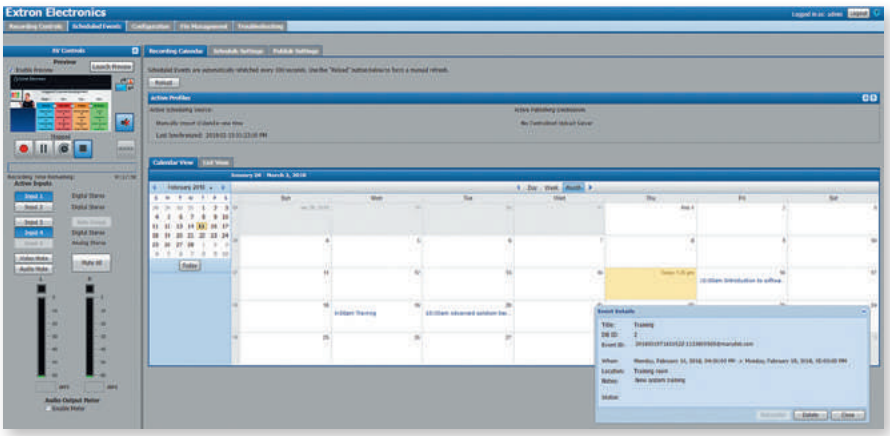
The encoding parameters are saved in a preset which can be recalled from an external control system, streamlining the number of variables to be managed by control systems.

Session Scheduling and Publishing Configuration

The embedded web interface includes an internal calendar, which identifies future recording sessions and references all past sessions. Recording schedules can be manually or periodically uploaded using the iCalendar file format or managed through integration with third party platforms such as Opencast or Microsoft Exchange.



Parameters for two different streaming configurations are defined from the encoding preset page.



The embedded web page includes a calendar that identifies all past and future recording sessions.

System Data and Diagnostics Support Efficient Management from the Network

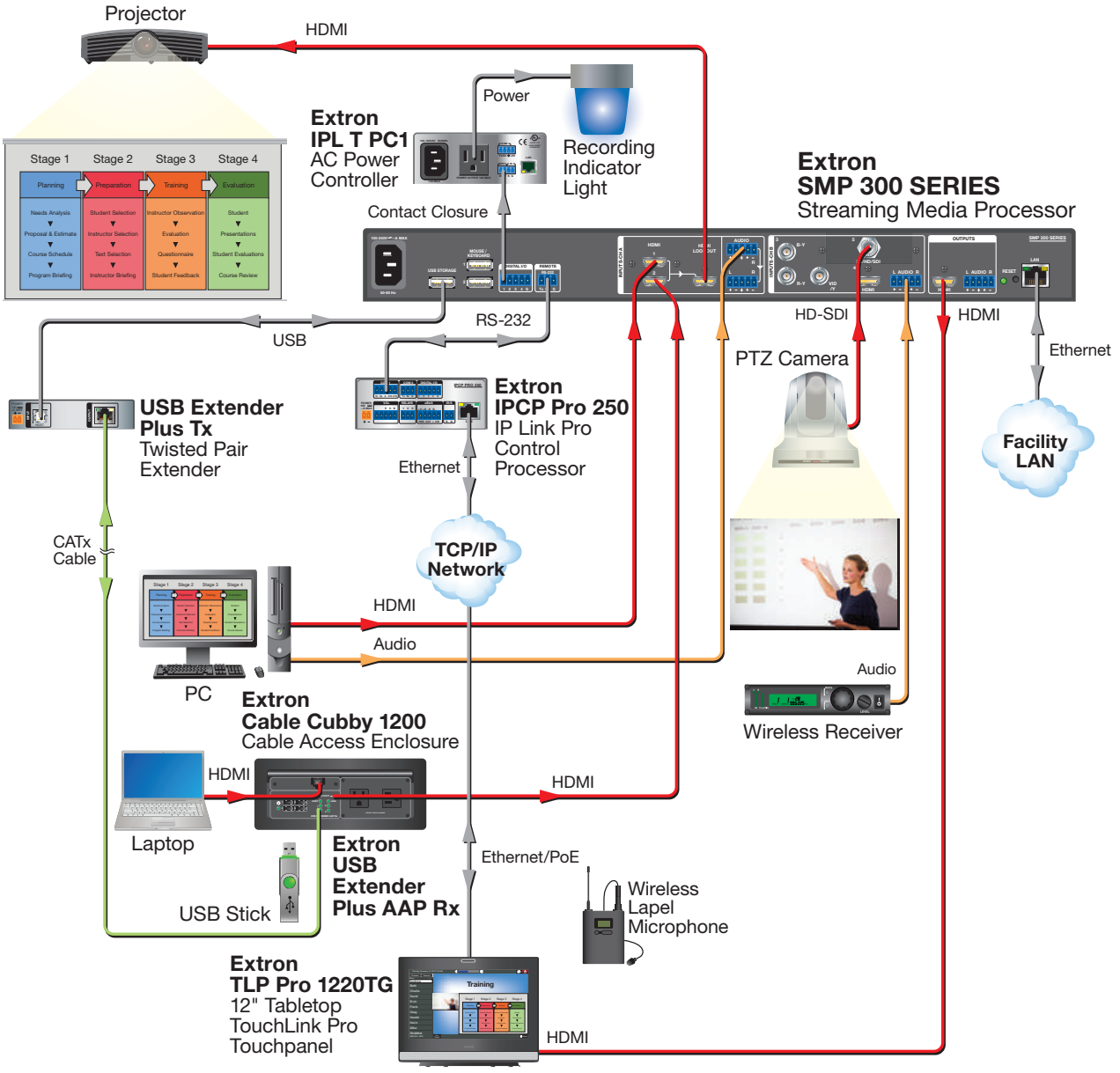
Diagnostic tools provided by the embedded web page aid AV and IT staff with support and troubleshooting activities. Daily system logs document recording sessions, usage conditions, and operating concerns, such as recording starts, or storage errors.

The embedded web page presents real-time streaming bit rates, and offers ICMP ping and traceroute diagnostics, giving AV and IT staff powerful tools and data for diagnosing network issues. Proactive service and maintenance activities can be supported by system alarms delivered to support staff or monitoring systems using email, SNMP traps or SMTP protocol.

Applications

AV PRESENTATION AND RECORDING SYSTEM

The **SMP 351** can serve as the central switching and processing device for an AV system. This system uses the **SMP 351 3G-SDI** to manage AV sources and record an HD-SDI camera, together with a PC or laptop source connected through an Extron **Cable Cubby 1200** enclosure. An Extron **TLP Pro 1220TG** touchpanel and **IPCP Pro 250** control processor provide an interface for the user to select the AV source to present and blended layout that will be used during a recording session. The HDMI output from the SMP-351 3G-SDI displays a preview of the recording layout. It is connected to the HDMI input on the TLP Pro 1220TG touchpanel. An Extron FlexOS application has been installed on the SMP 351 for managing a recording indicator light. The FlexOS application interfaces with the digital I/O port and triggers an Extron **IPL T PC1** power controller, supplying power to the light during a recording session. Users have the option to save MP4 files directly to a USB thumb drive from the SMP 300.



Applications

CLASSROOM PRESENTATION, RECORDING, AND STREAMING SYSTEM

The **SMP 352** Dual Recording H.264 Streaming Media Processor can be a valuable asset for any sizable classroom or auditorium. Live streaming and on-demand playback of recorded presentations and courses can capture and share an experience for individuals who cannot be present at the live event. This AV system includes a lectern that houses an Extron SMP 352 and an Extron **DTP CrossPoint 84 IPCP MA 70V**. Together, they manage the AV presentation system for local participants and distant observers. Lectures and presentations are recorded and manually uploaded to a content management system for on-demand access.

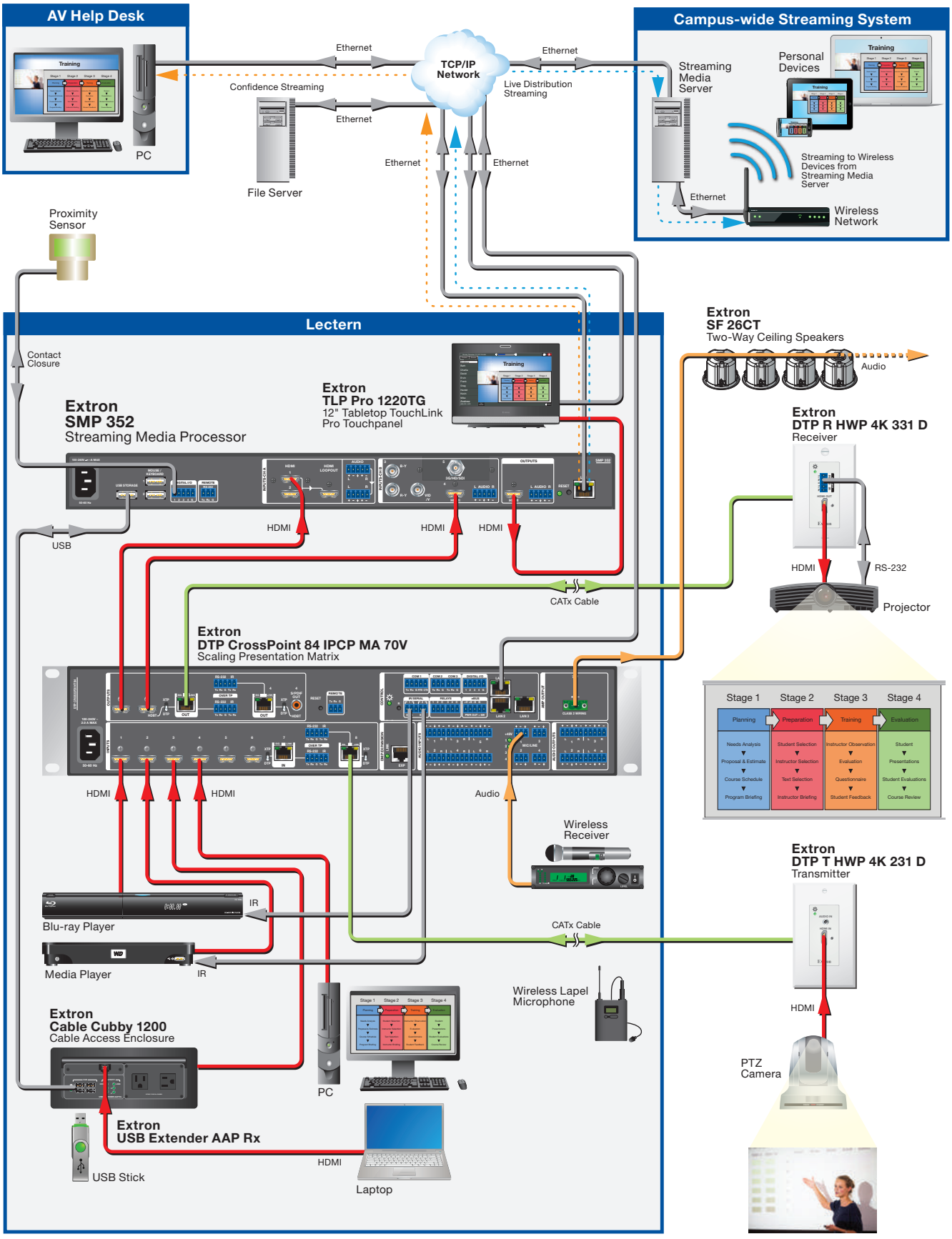
Presenters select from a variety of source devices to present supporting media from a Blu-ray player, a media player, and a PC. Additionally, support for personal devices is facilitated by an HDMI connection from an Extron **Cable Cubby 1200** located at the lectern. A high-definition camera with PTZ control provides a visual of the presenter and an Extron **DTP T HWP 4K 231 D** is used to extend the camera signal to the CrossPoint 84. Any source can be routed to the classroom projector through the CrossPoint 84 using an Extron **DTP HDMI 330 D Rx** extender. Two HDMI source signals are routed from the CrossPoint 84 to the SMP 352 to be processed, recorded, and streamed.

The CrossPoint 84 manages audio from the HDMI input connections and from a wireless microphone receiver incorporating lavalier or handheld microphones. The active audio signal is supplied to the internal amplifier, which distributes the signal to several Extron **SF 26CT** speakers equipped with 70V transformers. This audio signal is also embedded into one of the two HDMI signals fed to the SMP 352.

An iCalendar file with the classroom recording schedule is periodically uploaded to the SMP 352. This schedule initiates recording sessions during meetings and training courses. The SMP 352 receives two HDMI signals with embedded audio from the DTP CrossPoint 84, and simultaneously records and streams both signals independently at 720p, empowering users to select their preferred presentation layout. Typically, a PowerPoint presentation is placed in a large window and camera video of the presenter is placed in a smaller window arranged in a picture-by-picture or picture-in-picture layout. When the recording session is complete, a file package is prepared, which includes the MP4 files, metadata, and a folder with JPEG thumbnail images. This file package is then transferred to a defined storage directory on a file server. A custom application uploaded to the SMP 352 interfaces with a room sensor to ensure recording is not initiated if a presenter is not detected.

The SMP 352 also streams AV presentations to a media server at 720p for live unicast streaming to other meeting rooms or individuals across campus who could not attend the event. Live streaming is typically viewed from PCs or personal devices. IT and AV support staff can also access live streaming at a lower resolution, such as 512x288, to verify that the system is functioning properly. While HDCP-encrypted sources can be presented locally in the classroom from the CrossPoint 84, the SMP 352 will not stream or record HDCP-encrypted signals. Encrypted sources will appear as a green screen with an HDCP message indicating that the source image cannot be presented.

A **TLP Pro 1220TG** touchpanel serves as the user interface for this AV system. It provides source selection, source control, and other functions in addition to presenting a live preview of the SMP 352 encoded source layout. Thumb drives or portable USB storage devices can connect to the SMP 352 via the Cable Cubby 1200, giving presenters the ability easily “capture and carry” their presentations directly from the lectern rather than saving them to a file server.


AV Help Desk
PC
Ethernet
Confidence Streaming
Ethernet
File Server
TCP/IP Network
Ethernet
Live Distribution Streaming
Campus-wide Streaming System
Streaming Media Server
Personal Devices
Training
Streaming to Wireless Devices from Streaming Media Server
Ethernet
Wireless Network
Proximity Sensor
Lectern
Contact Closure
Extron
SMP 352
Streaming Media Processor
Extron
TLP Pro 1220TG
12" Tabletop TouchLink Pro Touchpanel
USB
HDMI
HDMI
HDMI
Extron
SF 26CT
Two-Way Ceiling Speakers
Audio
Extron
DTP R HWP 4K 331 D
Receiver
HDMI
RS-232
Projector
CATx Cable
Extron
DTP CrossPoint 84 IPCP MA 70V
Scaling Presentation Matrix
HDMI
HDMI
Audio
Stage 1
Stage 2
Stage 3
Stage 4
Planning
Preparation
Training
Evaluation
Wireless Receiver
Extron
DTP T HWP 4K 231 D
Transmitter
IR
Blu-ray Player
CATx Cable
Media Player
IR
Wireless Lapel Microphone
HDMI
Extron
Cable Cubby 1200
Cable Access Enclosure
PC
PTZ Camera
Extron
USB Extender AAP Rx
HDMI
USB Stick
Laptop

Specifications

INPUT	
Number/signal type	3 HDMI digital video (HDCP compliant), 1 component video (Y, R-Y, B-Y; interlaced, progressive, HD), or composite video Optional: 1 SDI, HD-SDI, or 3G-SDI digital component video
Resolution range	640x480 to 1920x1200 (reduced blanking), 480p, 480i, 576p, 720p, 1080i, 1080p, NTSC, and PAL, sampled pixel for pixel
VIDEO PROCESSING	
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
VIDEO OUTPUT	
Number/signal type	
SMP 351, SMP 351 3G-SDI	2 H.264/AVC digital video over Ethernet 1 HDMI digital video (HDCP compliant)
SMP 351 Series with LinkLicense, SMP 352 Series	3 H.264/AVC digital video over Ethernet 1 HDMI digital video (HDCP compliant)
Scaled resolution	Archive/record: 480p, 720p, 1080p, 512x288, 1024x768, 1280x1024, custom Confidence: 480p, 720p, 1080p, 512x288, 1024x768, 1280x1024, custom
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, JPEG, JSON, XML
File transfer protocols	FTP, SFTP, CIFS
Network file share protocols	CIFS/SMB, NFS
Internal storage capacity	
SMP 351 Series	80 GB (75 GB for recording files) or 400 GB (400 GB for recording files)
SMP 352 Series	400 GB (400 GB for recording files)
External USB ports	1 (front panel), 1 (rear panel), USB 2.0 (Each port is current limited to 1.5 A.)
AUDIO INPUT	
Analog	
Number/signal type	
SMP 351, SMP 351 3G-SDI	2 stereo, balanced or unbalanced, 1 with loop-through
SMP 351 Series with LinkLicense, SMP 352 Series	Ch. A: 1 stereo, balanced or unbalanced, with loop-through Ch. B: 1 stereo, balanced or unbalanced, or 2 mono, unbalanced
Digital	
Number/signal type	3 stereo, digital de-embedded from HDMI 1 loop-through from HDMI 1 stereo, digital de-embedded from SDI (optional)

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 — ANALOG	
Number/signal type	1 stereo, balanced/unbalanced
AUDIO OUTPUT — DIGITAL	
Number/signal type	1 stereo, HDMI (re-embedded local preview) 1 AAC-LC digital audio over Ethernet
DIGITAL I/O CONTROL	
Number/signal type	4 digital input/output (configurable)
COMMUNICATION	
USB	
USB configuration ports	1 front panel female mini USB B
Mouse and keyboard port	2 rear panel USB type A
Serial control	
Serial control port	1 bidirectional RS-232, rear panel 3.5 mm captive screw connector, 3-pole
Ethernet control	
Ethernet host port	1 female RJ-45
Ethernet data rate	10/100/1000Base-T, half/full duplex with autodetect
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
Transport	TCP, UDP, multicast IGMPv3 (RFC 3376) or unicast
All supported	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)
GENERAL	
Power supply	Internal Input: 100-240 VAC, 50-60 Hz
Power consumption	30 watts typical
Enclosure dimensions	1.7" H x17.5" W x 11.5" D (1U high, full rack wide) (4.3 cm H x 44.4 cm W x 29.2 cm D) (Depth excludes connectors.)
Regulatory compliance	
Safety	CE, c-UL, UL
EMI/EMC	
SMP 351 Series	CE, C-tick, FCC Class A, ICES, KCC, VCCI
SMP 352 Series	CE, C-tick, FCC Class A, ICES, VCCI

Model	Version Description	Part number
SMP 351	Standard Version – 80 GB SSD	60-1324-01
SMP 351 3G-SDI	with 3G-SDI Input – 80 GB SSD	60-1324-02
SMP 351	Standard Version – 400 GB SSD	60-1324-11
SMP 351 3G SDI	with 3G-SDI Input – 400 GB SSD	60-1324-12
SMP 352 - 400 GB SSD	Dual Recording – 400 GB SSD	60-1634-11
SMP 352 3G-SDI - 400 GB SSD	Dual Recording w/3G-SDI – 400 GB SSD	60-1634-12

For complete specifications, please go to www.extron.com
Specifications are subject to change without notice.

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