SSP 7.1

PROFESSIONAL SURROUND SOUND PROCESSOR

DOLBY DIGITAL EX | PRO LOGIC IIx

dts Digital Surround ES | Neo:6 | 96/24

- Supports Dolby® and DTS® source formats and listening modes as well as PCM and analog audio
- Automatic surround sound format detection and decoding
- Test signals for setup and calibration
- Front panel input selection with LED indication
- Listening mode override
- Front panel audio level adjustment with LED level and clip indication
- SSP Setup and Control Software included
- Seven channel, nine-band parametric EQ
- Live and Emulate operation modes with configuration file saving
- Distance compensation adjustment for each speaker
- Up to 100 ms lip sync adjustment on each input
- Rack-mountable 1U, half rack width enclosure
- Front panel security lockout
- RS-232 serial control

The Extron SSP 7.1 Surround Sound Processor delivers up to eight channels of multi-channel audio with Dolby and DTS decoding and surround sound processing. It is designed for professional surround sound integration into corporate and commercial environments, and is equipped with the essential features for pro A/V applications, including a compact, rack-mountable enclosure, RS-232 serial control, and balanced line-level outputs.

DESCRIPTION

The Extron **SSP 7.1** five input Surround Sound Processor provides up to eight channels of surround sound for pro A/V applications in corporate and commercial environments. This professional processor and its unique GUI-based software simplify management of multi-channel audio formats, ensuring error-free surround sound decoding.

The SSP 7.1 automatically detects and decodes audio content in various Dolby and DTS formats from DVD, Blu-ray Disc, and HDTV broadcasts. It also offers Dolby Pro Logic II/IIx and DTS Neo:6® processing to provide surround sound from two-channel stereo. The SSP 7.1 features coaxial and optical digital inputs, plus an analog balanced/unbalanced two-channel input. It is designed for integration into pro A/V installations, with a compact, rack-mountable metal enclosure, RS-232 serial control, and balanced/unbalanced line level outputs. The included control software offers a user-friendly GUI for setup and operation.

The SSP 7.1 is designed for simple, intuitive operation from the front panel, with LED indicators for source selection, source format detection, listening mode override, and output volume level. At the touch of a button, the user can override the current surround sound output and switch to a different listening mode, for example, from 5.1 channel Dolby Digital to two-channel downmixed stereo, or from two-channel stereo to 7.1 channels via Dolby Pro Logic IIx. The user also has the option to send stereo audio to all left and right speakers without surround sound processing.

Control and Configuration

The SSP Setup and Control Software features an intuitive user interface for efficient setup and control of the SSP 7.1 as well as calibration of the sound system. Using the software, an integrator can specify the number and size of all speakers in the system, and enter the distance of each speaker from the central listening position, or location where acoustical measurements are taken. A nine-band parametric EQ is available for each of the satellite speaker channels to tailor the output signal to the acoustical environment.

Test Signals for Calibration

The SSP 7.1 generates test signals including Dolby noise and full-bandwidth pink noise that can be routed sequentially to each speaker, or directed selectively to any speaker using the software. Dolby noise is a band-limited pink noise that allows for higher sound pressure levels, which is advantageous when calibrating speaker outputs to equal SPLs. An individual trim level is provided for each channel to facilitate calibration. The pink noise test signals can be used to calibrate a speaker's interaction with the acoustical environment. The SSP 7.1 also offers the option to use an external source for test signals, which can then be directed to any speaker, or all speakers in sequence.

Designed for Pro A/V Integration

The SSP 7.1 is housed in a 1U, half rack width enclosure that is rack-mountable and occupies a fraction of the space required for a conventional surround sound receiver. It can be controlled and configured using RS-232 serial control. For compatibility with pro A/V sound equipment, the SSP 7.1 offers balanced or unbalanced inputs and outputs. Front panel controls can be locked out to prevent unauthorized operation.

FEATURES

- **Supports Dolby and DTS source formats and listening modes as well as PCM and analog audio**
- **Automatic surround sound format detection and decoding** – The SSP 7.1 automatically detects the format of the incoming audio signal, and then applies the necessary decoding so that signals are sent to the appropriate outputs.
- **Input source surround sound format indicator** – The appropriate LED indicator illuminates to indicate the incoming format of the selected input source, whether Dolby Digital, DTS, PCM, or two-channel analog.
- **Test signals for setup and calibration** – The SSP 7.1 generates test signals, including band-limited Dolby noise and full-bandwidth pink noise, to facilitate calibration of sound pressure levels from all speakers, and to fine-tune a speaker's interaction with the acoustical environment. The SSP 7.1 also offers the option to use an external source for test signals, which can then be directed to any speaker, or all speakers in sequence.
- **Front panel input selection with LED indication** – A discrete button is provided for each input source, allowing for simple, intuitive operation.
- **Listening mode override** – At the touch of a button, the listening mode can be changed from the primary decoded surround sound format to an alternate listening mode.
- **Front panel audio level adjustment with LED level and clip indication** – Provides overall output volume adjustment for all outputs as well as adjustment of input level for the analog input. Accompanying LEDs display input gain level, and a dedicated LED indicator illuminates red when clipping has occurred.
- **SSP Setup and Control Software** – The included Windows control software features an intuitive user interface for efficient setup and control of the SSP 7.1 as well as calibration of the sound system. The software also allows for real-time monitoring and control of the processor.
- **Seven channel, nine-band parametric EQ** – To optimize speakers to the environment, each full range output features nine fully parametric EQ filters with +/-24 dB of boost and attenuation, with adjustable frequency and Q. Filters can be adjusted by grabbing filter handles with a mouse, or by manually typing in settings.
- **Live and Emulate operation modes with configuration file saving** – Allows settings to be configured offline, then uploaded to the SSP 7.1. The software also downloads configuration files from the processor for archiving.
- **Distance compensation adjustment for each speaker** – The SSP 7.1 ensures that sounds from each speaker reach the listener at the same time by delaying sound from the closer speakers. The software offers up to 100 ms of delay per channel.
- **Up to 100 ms lip sync adjustment on each input** – The SSP 7.1 offers an independent lip sync offset delay for each input, to keep audio in sync with video signals that noticeably lag behind the audio. Each lip sync offset provides up to 100 ms of delay.
- **Rack-mountable 1U, half rack width enclosure**
- **Front panel security lockout**
- **RS-232 serial control**

SUPPORTED FORMATS AND MODES

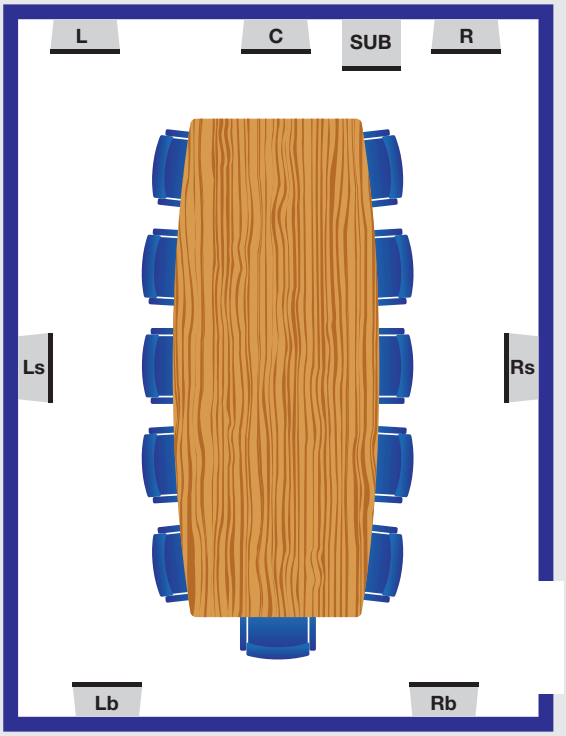
The SSP 7.1 includes decoding for various Dolby multi-channel formats. Dolby Digital delivers up to 5.1 channels of audio. Dolby Digital EX is a variant of Dolby Digital that delivers 6.1 audio with an extra channel for the back speakers. Dolby Pro Logic is used to decode four channels of surround sound from two-channel content encoded with Dolby Surround, including Dolby Digital 2.0, PCM, or two-channel analog signals. Dolby Digital and Dolby Surround content are widely available via television broadcasts, DVD, and Blu-ray Disc.

Dolby Pro Logic II is a proprietary audio processing technology for two-channel stereo content that provides 5.1 channels of surround sound. Dolby Pro Logic IIx is a further enhancement of Dolby Pro Logic that delivers processing for up to 7.1 channels. It is applicable to two-channel content, and also to Dolby Digital 5.1 to add one or two extra back surround channels.

In addition to the Dolby formats and processing modes, the SSP 7.1 also provides decoding of DTS multi-channel audio formats.

DTS Digital Surround offers up to 5.1 channels. DTS-ES is an enhancement of DTS Digital Surround that delivers an additional back surround channel. DTS Digital Surround is available on some DVD titles and on Blu-ray Disc. DTS 96/24 is a format, available on some DVDs, that offers high resolution 5.1 channel audio at 96 kHz and 24 bits per channel.

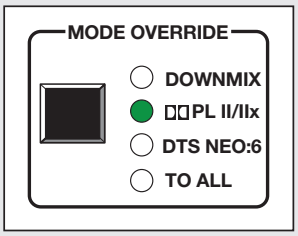
DTS Neo:6 is surround sound processing applicable to any two-channel audio content, and can be used to deliver 5.1, 6.1, or 7.1 channels.



A typical 7.1 surround sound speaker system for a boardroom. The L - left, C - center, and R - right speakers are positioned at the front of the room where the screen is located. The Ls and Rs speakers on the side walls are assigned to the left and right surround channels, and the Lb and Rb speakers are for the left and right back surround channels. SUB denotes the location of the subwoofer which receives the LFE - Low Frequency Effects channel, as well as low frequencies filtered from the other channels.

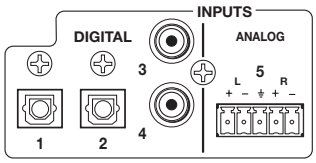
Listening Mode Override

The SSP 7.1 offers the flexibility to switch from one surround sound or listening mode to another, to suit the needs of a particular application, or simply to fulfill the requests of the end user. For example, incoming two-channel audio can be processed to 7.1 channels via DTS Neo:6 or Dolby Pro Logic II/IIx. Stereo audio can also be duplicated to the side and back surround channels.



Live and Emulate Modes

The SSP 7.1 Setup and Control software allows for real-time control of all parameters and switching of the processor in Live mode. Emulate mode allows for complete setup and file saving while working offline. Configuration files can be saved, downloaded from the SSP 7.1 for archiving, and uploaded to the processor for quick setup.



Input Connectivity Options

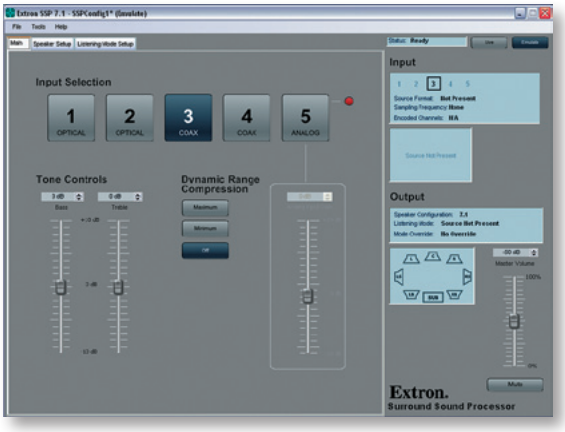
The inputs of the SSP 7.1 accept various sources that deliver Dolby and DTS content, including DVD, Blu-ray Disc, HDTV broadcasts, digital satellite and cable, and PCs. Five inputs are provided, including two optical digital, two coaxial digital, and analog balanced/unbalanced two-channel audio.

SSP SETUP AND CONTROL SOFTWARE

The SSP 7.1 includes SSP control software for setup and control. It is also essential as an aid in calibrating the entire sound system. This PC-based software offers an appealing alternative to the often tedious process of navigating through layers of on-screen display menus while using an IR remote, something common with conventional surround sound receivers. It features a user-friendly GUI that is intuitive and easy to access, with controls and configuration options organized into a series of tabs. The software can be used either in a live connection to the SSP 7.1 via RS-232 to make changes in real-time, or use the Emulate mode to create and save files offline before uploading to the SSP 7.1.

Main Menu

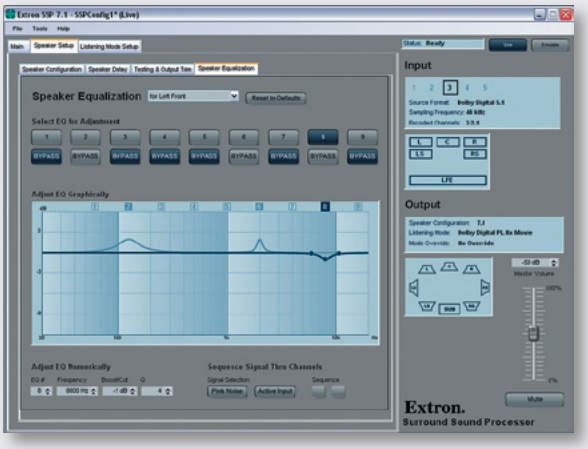
The Main menu allows for real-time control of the SSP 7.1. Direct access to essential system functions are provided, including direct input source selection and adjustment of input gain for the analog source.



For the Main menu, as well as all other tabs, a single panel provides all information relating to system status of the SSP 7.1. This includes the currently selected input, the input source format, the sampling rate of the incoming signal, and the number and configuration of encoded channels. For output parameters, the software displays the output speaker configuration, the currently selected listening mode, and the listening mode override, if engaged. This system status panel also offers the ability to adjust the master volume and mute the audio.

Speaker Setup

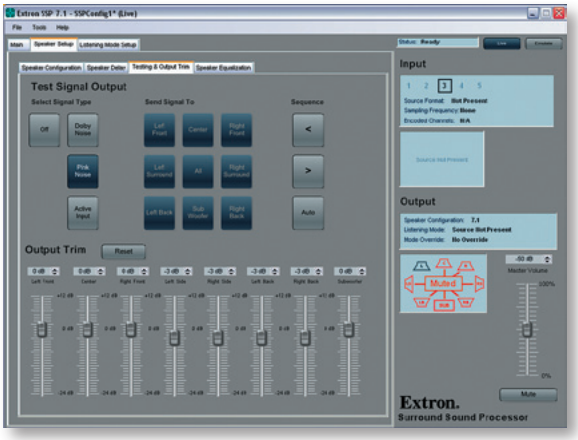
Speaker setup is easily accomplished with just a few mouse clicks. Simply select "Large," "Small," or "None" for each speaker in the system. A crossover setting is provided for bass management, so that frequencies below the selected crossover point are directed from all of the speakers designated as "Small," to the speakers designated as "Large" and to the subwoofer.



The software is just as intuitive when it comes to specifying speaker distances. Enter the distance of each speaker – in feet, meters, or time in milliseconds – from the central listening position. Lip sync offset delays are also provided for each input, if necessary, to compensate if the video noticeably lags behind the audio. Seven channels of fully parametric EQ are available to balance the sonic quality of each full band output. The graphical waveform can be easily adjusted by grabbing filter handles to set filter frequency, gain, and Q. These values can also be entered numerically.

System Calibration

The SSP 7.1 generates band-limited Dolby noise and full-range pink noise test signals for system calibration as well as verification of proper speaker setup. Band-limited Dolby noise signals are useful as a test reference for measuring the sound pressure level produced by each speaker. Output trim levels are provided for each channel, so that adjustments can be made as necessary to ensure that all speakers output equal sound pressure levels. The SSP 7.1 offers the flexibility to send test signals sequentially to all speakers in either direction, or to any selected speaker.



Full-range pink noise signals can be useful in calibrating each speaker's performance relative to its interaction with the environment. The SSP 7.1 also allows for the use of test signals from an external source. These signals can be directed to any selected speaker, all speakers in sequence, or all speakers simultaneously.

SPECIFICATIONS

AUDIO

Gain	Unbalanced output: 0 dB; balanced output: +6 dB, when volume is set to 0 dB gain.
Frequency response	20 Hz to 20 kHz, ±0.2 dB
THD + Noise	<0.03% @ 1 kHz, at maximum output level
S/N	>100 dB, 20 Hz to 20 kHz, unweighted
Stereo channel separation	Analog input only: >90 dB @ 1 kHz
CMRR	Analog input only: >75 dB (typical) @ 1 kHz
Bass adjustment	±10 dB @ 90 Hz
Treble adjustment	±10 dB @ 7500 Hz
Volume control	- 100 dB to 0 dB
Bass management crossover frequencies	40 Hz to 250 Hz

AUDIO INPUT — ANALOG

Number/signal type	1 analog stereo/mono, balanced/unbalanced
Listening modes	Stereo, stereo to all, mono, mono to all, Dolby® Pro Logic® Dolby Pro Logic II Movie/Music, Dolby Pro Logic IIx Movie/Music, DTS™ Neo:6 Cinema/Music
Connector	(1) 3.5 mm captive screw connector, 5 pole
Impedance	>10k ohms balanced/unbalanced, DC coupled
Nominal level	+4 dBu (1.23 Vrms) balanced or -10 dBV (316 mVrms) unbalanced
Maximum level	+15 dBu (balanced/unbalanced) at 1% THD+N
Input gain adjustment	0 dB to +24 dB (default = 0 dB), adjustable via RS-232

NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu

AUDIO INPUT — DIGITAL

Number/signal type	4 S/PDIF (2 optical, 2 coaxial)
Source formats	PCM, Dolby Digital 2/0, Dolby Digital 2/0 Surround, Dolby Digital 5.1, Dolby Digital EX, DTS 2-channel, DTS Digital Surround 5.1, DTS-ES Matrix 6.1, DTS-ES Discrete 6.1, DTS 96/24, DTS 96/24 ES Matrix
Listening modes	Stereo, stereo to all, mono, mono to all, Dolby Digital, Dolby Digital EX, Dolby Pro Logic, Dolby Pro Logic II Movie/Music, Dolby Pro Logic IIx Movie/Music, DTS 5.1, DTS-ES Matrix, DTS-ES Discrete, DTS Neo:6 Cinema/Music, DTS + Dolby EX, DTS + Dolby Pro Logic IIx Movie/Music
Connectors	2 TOSLINK™ fiber optic connectors 2 RCA jacks

AUDIO OUTPUT

Number/signal type	8 stereo, balanced/unbalanced, for left and right front, left and right sides, left and right back, center, and subwoofer output
Connectors	(8) 3.5 mm captive screw connectors, 3 pole
Impedance	50 ohms unbalanced, 100 ohms balanced
Gain error	±0.2 dB channel to channel
Maximum level (Hi-Z)	>+21 dBu balanced or >+15 dBu unbalanced at 0.03% THD+N
Output level range per channel	-24 dB to + 12 dB
D/A conversion	24 bit, 96 kHz

CONTROL/REMOTE — AUDIO PROCESSOR

Serial host control port	1 bidirectional RS-232 front panel 2.5 mm mini stereo jack 1 bidirectional RS-232 rear panel 3.5 mm captive screw connector, 3 pole
Baud rate and protocol	9600 (default), 19200, 38400, 115200 baud (adjustable); 8 data bits, 1 stop bit, no parity
Pin configuration	Mini stereo jack: tip = TX, ring = RX, sleeve = GND Captive screw connector: pin 1 = TX, 2 = RX, 3 = GND
Program control	Extron's control/configuration program for Windows® Extron's Simple Instruction Set (SIS™)

GENERAL

Power	100 VAC to 240 VAC, 50-60 Hz, 30 watts, internal
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70°C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50°C) / 10% to 90%, noncondensing
Cooling	Convection, no vents
Mounting	
Rack mount	Yes, with optional 1U rack shelf
Furniture mount	Yes, with optional under-desk mounting kit
Enclosure type	Metal
Enclosure dimensions	1.7" H x 8.75" W x 6.0" D (1U high, half rack wide) (4.3 cm H x 22.2 cm W x 15.2 cm D) (Depth excludes connectors and knob.)
Product weight	1.3 lbs (0.6 kg)
Shipping weight	3 lbs (2 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	CE, c-UL, UL
EMI/EMC	CE, C-tick, FCC Class B, ICES, VCCI
Environmental	Complies with the appropriate requirements of RoHS, WEEE
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTE: All nominal levels are at ±10%

NOTE: Specifications are subject to change without notice.

Model	Version Description	Part number
SSP 7.1	Surround Sound Processor	60-842-01

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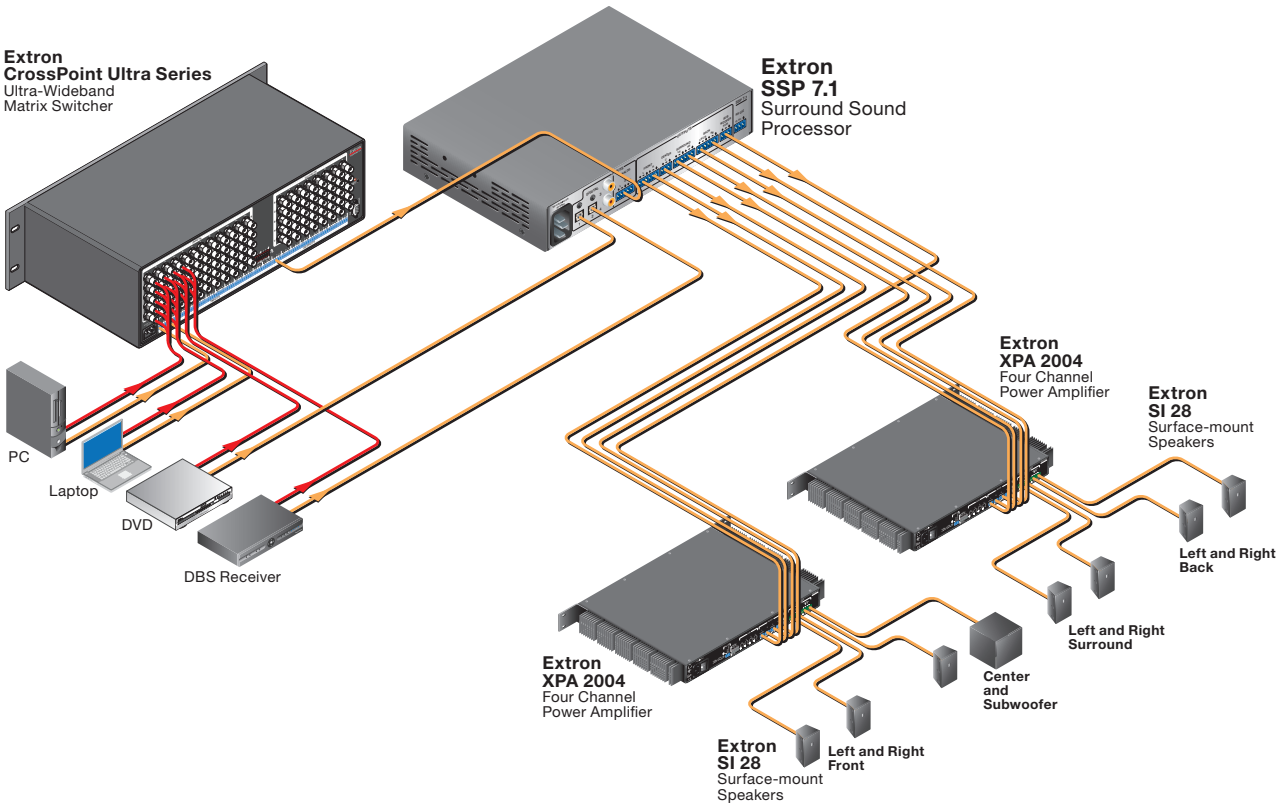
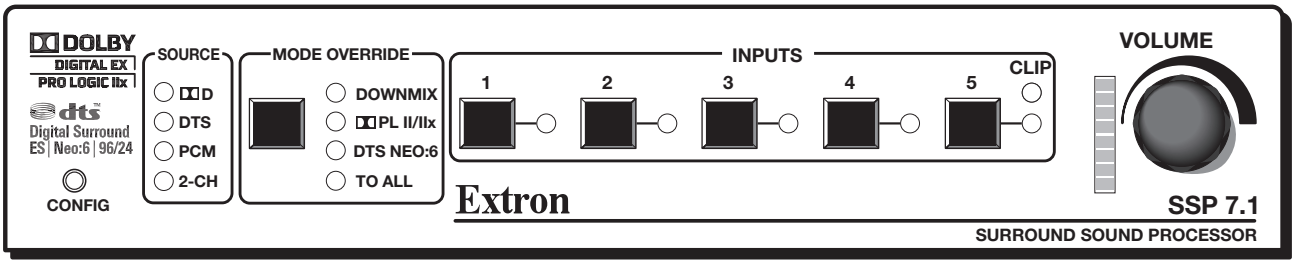
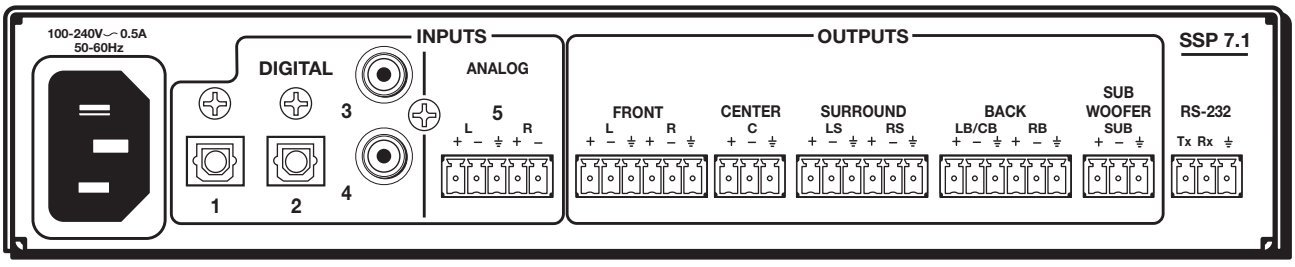
APPLICATION DIAGRAM



PANEL DRAWINGS



Front



Back

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