Crestron **HD-XSP**
7.1 High-Definition Professional Surround Sound Processor
Operations & Installation Guide

CRESTRON®

Important Safety Instructions

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Clean only with dry cloth.
- Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Only use attachments/accessories specified by the manufacturer.
- Use only with the cart, stand, tripod, bracket or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.

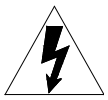
- Unplug this apparatus during lightning storms or when unused for long periods of time.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- Disconnect power prior to connecting or disconnecting equipment.
- Do not install in direct sunlight.
- The apparatus must be installed in a way that the power cord can be removed either from the wall outlet or from the device itself in order to disconnect the mains power.
- Prevent foreign objects from entering the device.

WARNING:

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPARATUS TO RAIN OR MOISTURE. THE APPARATUS SHALL NOT BE EXPOSED TO DRIPPING OR SPLASHING. OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHOULD NOT BE PLACED ON THE APPARATUS.

WARNING:

TO PREVENT ELECTRIC SHOCK, DO NOT REMOVE COVER. THERE ARE NO USER SERVICEABLE PARTS INSIDE. ONLY QUALIFIED SERVICE PERSONNEL SHOULD PERFORM SERVICE.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product's enclosure t hat may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING:

THIS IS AN APPARATUS WITH CLASS I CONSTRUCTION. IT SHALL BE CONNECTED TO AN ELECTRICAL OUTLET WITH AN EARTHING GROUND TERMINAL.

IMPORTANT:

This device can be used with Class 2 output wiring.

Regulatory Compliance

As of the date of manufacture, the HD-XSP has been tested and found to comply with specifications for CE marking and standards per EMC and Radiocommunications Compliance Labelling.

Federal Communications Commission (FCC) Compliance Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following conditions: (1) This device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications not expressly approved by the manufacturer responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Industry Canada (IC) Compliance Statement

CAN ICES-3(B)/NMB-3(B)

This document was written by the Technical Publications department at Crestron.

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7.1 High-Definition Professional Surround Sound Processor: HD-XSP

Introduction

Modern boardrooms and auditoriums are more than just places to meet and speak to an audience — they are high-tech presentation environments where groups gather to share ideas, inspire thought, and motivate action through the use of dynamic, interactive multimedia. In an age where the televisions in our homes are commonly supplemented by some kind of surround sound enhancement, it is only logical that the same aural experience should be found in any corporate, government, hospitality or educational presentation space. But, while specifying a large screen display has become as simple as choosing paint, adding high-quality surround sound still relies on wedging consumer grade components into an otherwise professional system. The result is typically complicated, expensive, and ultimately unsatisfactory.

Features and Functions

- True 7.1 surround sound processing for commercial and residential applications
- All of the needed features and performance — none of the complexity or cost
- DTS-HD Master Audio™, Dolby® TrueHD, and Dolby Digital® Plus decoding
- HDMI®, S/PDIF (optical and coaxial), and stereo analog inputs
- Source input compensation and 80 ms lip sync adjustment per input
- Balanced analog 7.1 surround sound line outputs
- DSP with 9-band graphic or parametric EQ, delay, crossover and compression
- Support for systems without a center speaker or subwoofer
- High-definition 3D video pass-through via HDMI
- Balanced stereo or mono downmix output
- Balanced stereo mix input

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Features and Functions

(Continued)

- Built-in noise generator
- Advanced HDCP management for trouble-free handling of all digital content
- QuickSwitch HD® technology for fast, reliable switching
- CEC pass-through from a control system enables control of display and source devices over HDMI
- Color LCD front panel for setup and basic operation
- Native Crestron® system integration
- 10/100 Ethernet communications
- Front panel USB port for installer setup
- Simplified setup via front panel or software
- Single-space rack mountable

The HD-XSP from Crestron answers the call for a truly professional surround sound solution that is simple and affordable to implement. The HD-XSP provides the features and performance necessary to enable high-definition 7.1 channel audio for virtually any commercial environment. It fits easily in a crowded equipment rack and integrates cleanly with other AV and control equipment. It supports the latest 7.1 digital formats including Dolby TrueHD, Dolby Digital Plus and DTS-HD Master Audio, with advanced HDCP management for trouble-free handling of all digital HD content. Professional DSP and input/output mixing is even built in to streamline integration as part of a complete multimedia presentation system.

The HD-XSP is also useful for many residential applications, providing a cost-effective, compact surround sound processor that is well suited for integration as part of a total home automation and entertainment system.

Complete Connectivity

The HD-XSP includes full input connectivity for all types of digital and analog sources including Blu-ray Disc® players, HDTV receivers, game consoles, computers, media servers and mobile devices. Additional specialized inputs and outputs are provided to facilitate integration with system switchers, matrix routers, microphone mixers, and teleconferencing codecs.

- HDMI Input – The HDMI input provides the essential interface for handling high-definition 7.1 digital surround sound and HDCP protected content. It can also handle DisplayPort Multimode signals using an appropriate adapter. Easy HDMI input expansion is possible using a Crestron HD-MD8X1 switcher*. CEC signals can even be passed through from a control system to control the source device right through the HDMI connection.
- S/PDIF Inputs – A combination of one optical and two coaxial S/PDIF digital audio inputs provides connectivity for digital sources without HDMI.
- Stereo Analog Inputs – Two stereo audio inputs are included to handle analog signals from line level sources such as laptop computers, media players, and mobile devices.

* Items sold separately.

- Surround Sound Outputs – A total of eight balanced line level outputs are provided to drive a multichannel power amplifier feeding up to seven speakers and a subwoofer. The HD-XSP can be configured to work with systems up to 7.1 channels, including those without a discrete center speaker or subwoofer. Each output channel includes a discrete 9-band graphic or parametric EQ plus trim, delay, and crossover adjustments. Additional controls are provided for main volume, bass, treble, loudness, compression, and LFE.
- Downmix Output – This balanced output provides a stereo or mono downmix of the surround sound signal to feed a separate speaker zone, assistive listening system, codec, or recording device. It includes controls for volume, bass, treble, loudness, and balance.
- Mix Input – This balanced stereo input is designed to connect to the output of a microphone mixer or teleconferencing codec. This input bypasses all internal signal processing and surround sound decoding, mixing with the main program signal at the Front Left/Right and/or Downmix outputs.
- HDMI Output – An HDMI output is included to pass the HDMI input signal through to a display device. The HDMI output passes Full HD 1080p60 video and WUXGA computer signals with HDCP, Deep Color, and 3D. It also passes audio with the option to select either a straight pass-through from the HDMI input or a stereo downmix of the main surround signal. It can even pass CEC signals from a control system to control the display device.

Each HDMI, S/PDIF, and stereo input includes an input compensation adjustment to match the average level between sources. Each of these inputs also includes up to 80 ms of lip-sync delay.

Easy Integration

By design, the HD-XSP fits seamlessly into just about any AV presentation or distribution system. It is rack-mountable and occupies just one rack space. It contains no fans, ensuring silent operation. Via Ethernet, it can communicate with a Crestron control system, allowing simplified operation using a touch screen, handheld remote, or mobile device.

Via its HDMI input and output, the HD-XSP provides an ideal solution for adding surround sound processing to a Crestron DMPS Series DigitalMedia™ Presentation System or any DM® Switcher (all sold separately). It can even be located remotely and interfaced using a DM transmitter and/or receiver. Or, via its S/PDIF or analog inputs, it can be added to a Sonnex™ Multiroom Audio System to provide surround sound processing for a single room zone.

Via its Mix input and Downmix output, the HD-XSP solves a lot of problems that other processors do not address. The Mix input allows the signal from a microphone mixer to be passed through unprocessed and mixed with the program signal at the output. This allows live speech and surround sound signals to coexist and function simultaneously through the same speaker system. The Downmix output converts the full audio presentation into a stereo or mono signal, perfect for feeding a remote listening zone, an assistive listening system, or a recording device.

For teleconferencing and Web streaming applications, the HD-XSP serves as a cost-effective surround sound downmixer to allow participants at the far end to experience the full audio presentation. Simultaneously, it mixes the incoming signal from the far end with the local surround sound audio and sends it to the local room speakers.

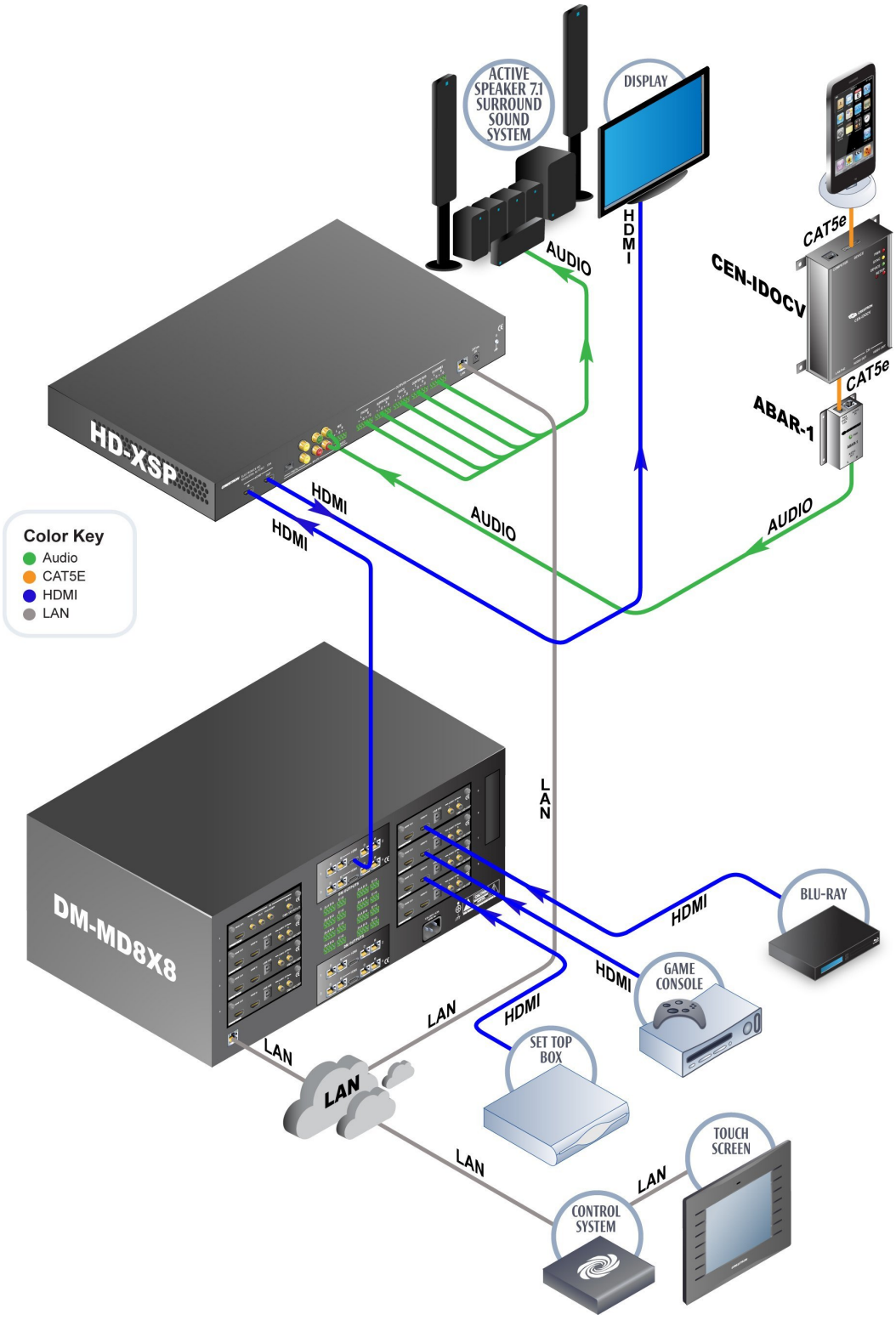
To drive all the room speakers, Crestron AMP Series Commercial Power Amplifiers* offer a high-performance, custom-configurable multichannel amplifier solution for boardrooms, auditoriums, and custom theaters of any configuration — even systems using 70 or 100 Volt ceiling speakers. Or, for the ultimate in performance, choose a PROCISE® High-Definition Professional Surround Sound Amplifier.*

* Items sold separately.

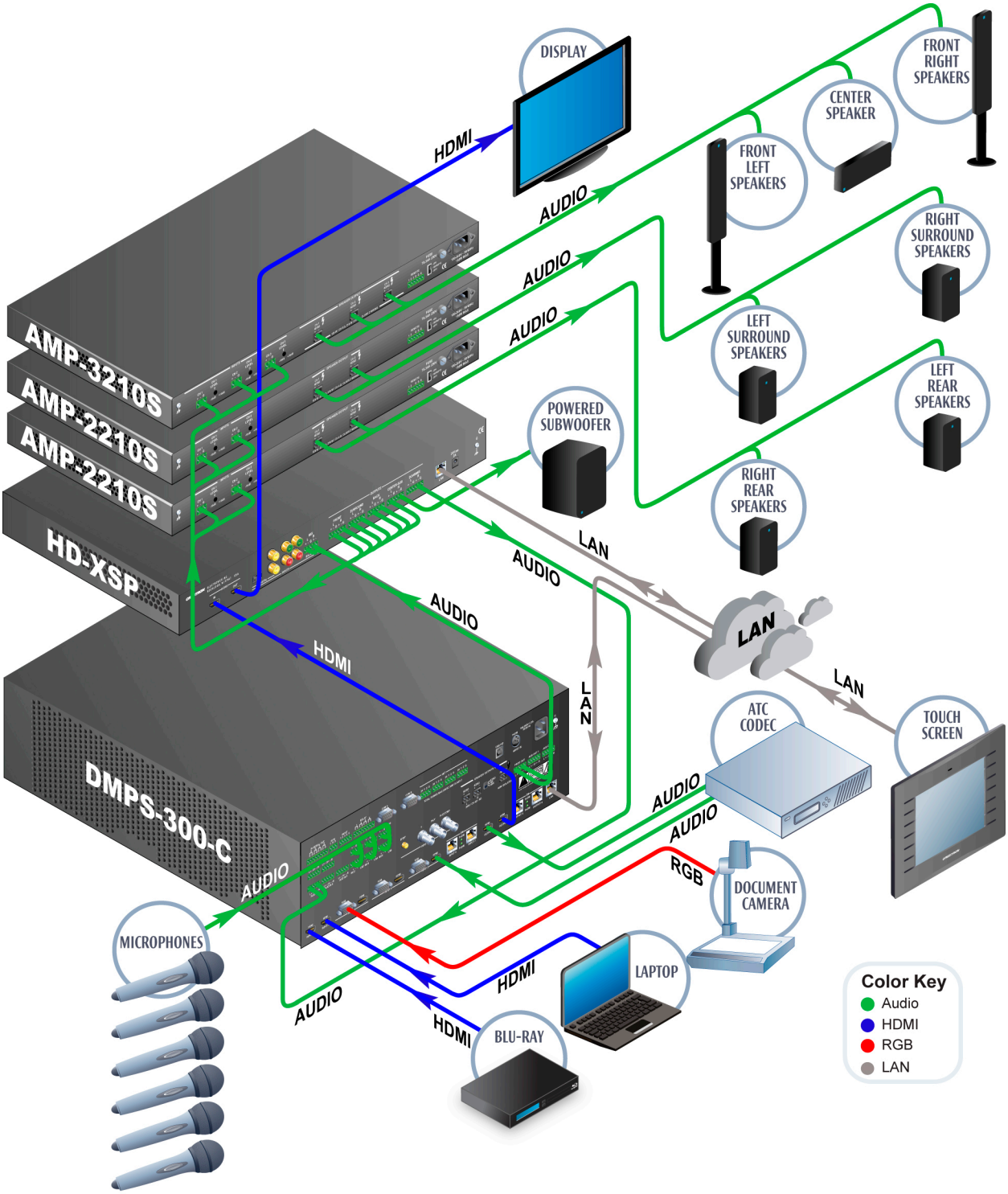
Applications

The following diagrams show a HD-XSP in a residential and a commercial application.

HD-XSP in a Residential Application



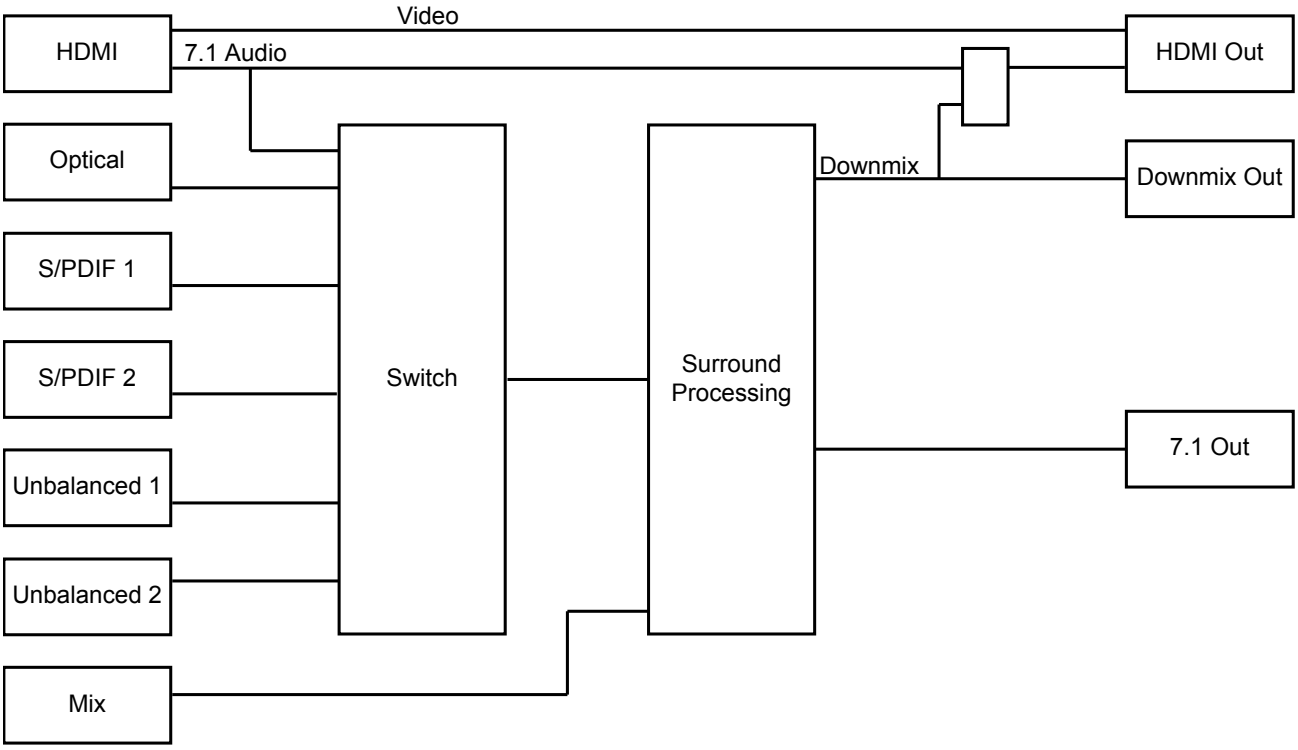
HD-XSP in a Commercial Application



Internal Block Diagram

The following diagram represents the switching abilities of the HD-XSP.

Internal Block Diagram of the HD-XSP



Specifications

Specifications for the HD-XSP are listed in the following table.

HD-XSP Specifications

SPECIFICATION	DETAILS
Audio – General	
Features	Six selectable source inputs plus built-in noise generator, 7.1 Dolby Digital/DTS® surround sound decoder, 7.1 multichannel signal processing and steering, 9-band graphic or parametric EQ, 80 ms lip-sync delay, 20 ms speaker delay, unprocessed *Direct* mode, stereo or mono downmix output, stereo mix input (post surround decoder/processor), HDCP management, QuickSwitch HD
Input Signal Types	HDMI supporting HD lossless multichannel up to 7.1 with HDCP, DisplayPort Multimode*, S/PDIF (coaxial and optical), analog 2-channel
Output Signal Types	Analog 7.1 channel, analog 2-channel downmix, HDMI with 2-channel downmix

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HD-XSP Specifications (Continued)

SPECIFICATION	DETAILS
Audio – General (continued)	
Analog-To-Digital Conversion	24-bit 96 kHz
Digital-To-Analog Conversion	24-bit 96 kHz (192 kHz in *Direct* mode)
Audio – Surround Sound Output	
Frequency Response	20 Hz to 20 kHz ±0.5 dB
Total Harmonic Distortion + Noise (THD + N)	< 0.002% digital in, < 0.003% balanced in, < 0.003% unbalanced in (at 1 kHz across balanced analog out)
Signal-to-Noise (S/N) Ratio	> 108 dB digital in, > 103 dB balanced in, > 103 dB unbalanced in (A-Weighted at full output across balanced analog out)
Decoding Modes	None, Stereo, Dolby Pro Logic IIx Movie, Dolby Pro Logic IIx Music, DTS Neo:6 Cinema, DTS Neo:6 Music, Two Channel Steering – Surround, Two Channel Steering – Rear, Multichannel Stereo (Party), Dolby Digital, Dolby Digital EX, Dolby Digital Plus, Dolby TrueHD, DTS, DTS-ES Matrix, DTS-ES Discrete, DTS 96/24, DTS-HD Master Audio, PCM Multichannel
Speaker Trims	±12 dB per output (Front L/R, Surround L/R, Back L/R, Center, Sub)
Speaker Delay	0 to 20 ms per output
Crossover Frequency	Large (full range), 40, 50, 60, 70, 80, 90, 100, 120, 150, or 200 Hz per output (excluding sub)
Low Frequency Effects (LFE)	-10.0 to 0.0 dB
Main Volume Level	-80 to +20 dB, adjustable from 0% to 100%, plus mute
Bass Control	±12.0 dB
Treble Control	±12.0 dB
EQ Modes	9-band graphic (per output) or 9-band parametric (per output)
GEQ Center Frequencies	63, 125, 250, 500, 1k, 2k, 4k, 8k, 16k Hz
GEQ Gain	±12.0 dB per band
PEQ Center Frequency	10 to 20,000 Hz per band
PEQ Gain	±12.0 dB per band
PEQ Bandwidth	0.1 to 3.5 octaves per band
Loudness Compensation	On/off
Compression	None, Crestron DRC (Heavy, Medium, Light), Dolby/DTS DRC (Heavy, Medium, Light), Dolby TrueHD Auto
DTS Neo:6 Music Settings	Center Gain 0.0 to 1.0, Standard or Wide mode
Dolby Pro Logic IIx Music Settings	Dimension ±3, Center Width 0 to 7, Standard or Panorama

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HD-XSP Specifications (Continued)

SPECIFICATION	DETAILS
Audio – Downmix Output	
Frequency Response	20 Hz to 20 kHz ±0.5 dB
Total Harmonic Distortion + Noise (THD + N)	< 0.002% digital in, < 0.004% balanced in, < 0.004% unbalanced in (at 1 kHz across balanced analog out)
Signal-to-Noise (S/N) Ratio	> 107 dB digital in, > 103 dB balanced in, > 102 dB unbalanced in (A-Weighted at full output across balanced analog out)
Downmix Volume Level	-80 dB to +20 dB, adjustable from 0% to 100%, plus mute
Bass Control	±12.0 dB
Treble Control	±12.0 dB
Loudness Compensation	On/off
Balance	±50%
Summing	Stereo or mono selectable
Audio – Program Inputs	
Input Compensation	±10.0 dB per input
Lip-Sync Delay	0.0 to 80.0 ms per input
Audio – Mix Input	
Main Volume	-80.0 to 0.0 dB plus mute, feeds front left/right outputs
Downmix Volume	-80.0 to 0.0 dB plus mute, feeds downmix outputs

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HD-XSP Specifications (Continued)

SPECIFICATION	DETAILS
Video	
Features	Audio breakaway, HDCP management, resolution management, Crestron QuickSwitch HD
Input Signal Types	HDMI, DisplayPort Multimode*
Output Signal Type	HDMI
Formats	HDMI with Deep Color & 3D, HDCP content protection support
Input Resolutions, Progressive	640 x 480 @ 60 Hz, 720 x 480 @ 60 Hz (480p), 720 x 576 @ 50 Hz (576p), 800 x 600 @ 60 Hz, 848 x 480 @ 60 Hz, 852 x 480 @ 60 Hz, 854 x 480 @ 60 Hz, 1024 x 768 @ 60 Hz, 1024 x 852 @ 60 Hz, 1024 x 1024 @ 60 Hz, 1280 x 720 @ 50 Hz (720p50), 1280 x 720 @ 60 Hz (720p60), 1280 x 768 @ 60 Hz, 1280 x 800 @ 60 Hz, 1280 x 960 @ 60 Hz, 1280 x 1024 @ 60 Hz, 1360 x 768 @ 60 Hz, 1365 x 1024 @ 60 Hz, 1366 x 768 @ 60 Hz, 1400 x 1050 @ 60 Hz, 1440 x 900 @ 60 Hz, 1600 x 900 @ 60 Hz, 1600 x 1200 @ 60 Hz, 1680 x 1050 @ 60 Hz, 1920 x 1080 @ 24 Hz (1080p24), 1920 x 1080 @ 25 Hz (1080p25), 1920 x 1080 @ 50 Hz (1080p50), 1920 x 1080 @ 60 Hz (1080p60), 1920 x 1200 @ 60 Hz, 2048 x 1080 @ 24 Hz, 2048 x 1152 @ 60 Hz, plus any other resolution allowed by HDMI up to 165 MHz pixel clock
Input Resolutions, Interlaced	720 x 480 @ 30 Hz (480i), 720 x 576 @ 25 Hz (576i), 1920 x 1080 @ 25 Hz (1080i25), 1920 x 1080 @ 30 Hz (1080i30), plus any other resolution allowed by HDMI up to 165 MHz pixel clock
Output Resolutions	Matched to inputs
Communications	
Ethernet	For control & setup; 10/100 Mbps, auto-switching, auto-negotiating, auto-discovery, full/half duplex, DHCP
USB	USB client for setup
HDMI	Passes CEC and EDID, CEC control system pass-through to HDMI input and output, supports HDCP, provides HDCP key management

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HD-XSP Specifications (Continued)

SPECIFICATION	DETAILS
Power Requirements	
Power Pack	2.0 A @ 24 Vdc,100-240 Vac, 50/60 Hz power pack included
Environmental	
Temperature	41º to 104º F (5º to 40º C)
Humidity	10% to 90% RH (non-condensing)
Heat Dissipation	65 Btu/h
Enclosure	
Chassis	Metal with black finish, vented sides
Front Panel	Metal with black finish and polycarbonate label overlay
Mounting	Freestanding or 1U 19-inch rack-mountable (feet and rack ears included)
Dimensions	
Height	1.72 in (44 mm) without feet
Width	19 in (483 mm) with rack ears
Depth	10.23 in (260 mm)
Weight	4.2 lbs (1.9 kg)
Included Accessory	
Power Pack	24 Vdc, Universal
Available Accessories	
AMP Series	Commercial Power Amplifiers
CBL Series	Crestron Certified Interface Cables
HD-MD8X1	QuickSwitch HD 8x1 HDMI Switcher
PROAMP Series	PROCISE High-Definition Surround Sound Amplifiers

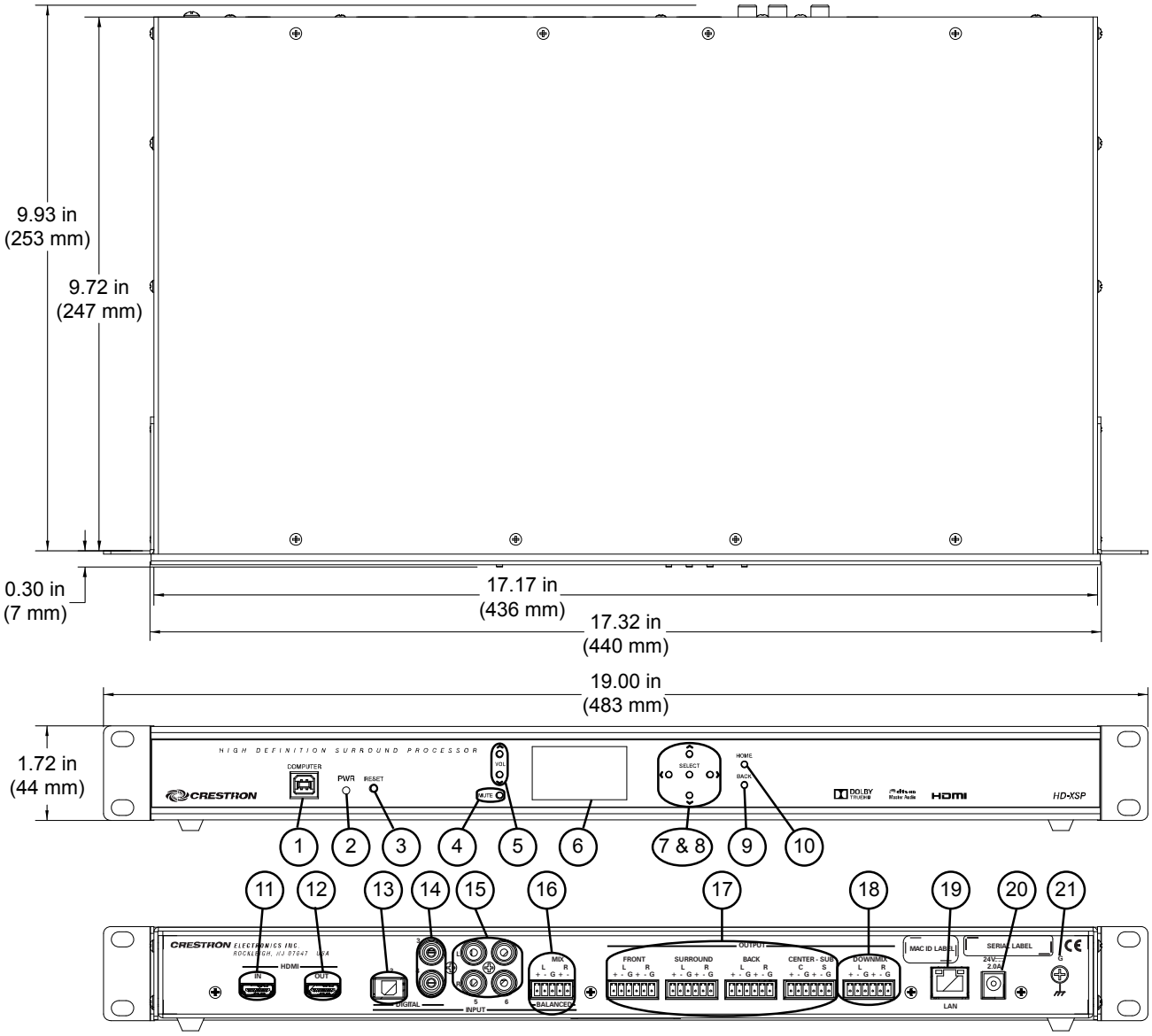
* HDMI requires an appropriate adapter or interface cable to accommodate a DisplayPort Multimode signal.

Physical Description

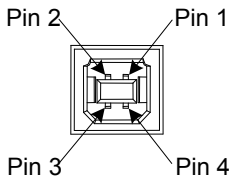
This section provides information on the connections, controls and indicators available on the HD-XSP.

HD-XSP Physical View

HD-XSP Overall Dimensions



Connectors, Controls & Indicators

#	CONNECTORS*, CONTROLS & INDICATORS	DESCRIPTION
1	COMPUTER  	(1) USB Type B female; USB computer console port (cable included); For setup only **PIN** / **DESCRIPTION** 1 – +5 Vdc 2 – Data - 3 – Data + 4 – Ground

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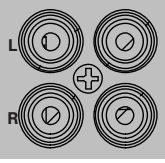
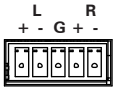
Connectors, Controls & Indicators (Continued)

#	CONNECTORS*, CONTROLS & INDICATORS	DESCRIPTION
2	PWR LED	(1) Green LED, indicates operating power supplied via power pack
3	RESET	(1) Recessed push button for hardware reset
4	MUTE	(1) Push button for audio mute
5	VOL ∧, VOL ∨	(2) Push buttons for volume adjustment
6	Display	Display Type: TFT active matrix color LCD Size: 1.8 inch (45 mm) diagonal Resolution: 220 x 176 pixels Functions: Displays audio settings and setup parameters
7	∧, ∨, <, >	(4) Push buttons, for 4-way LCD menu navigation and parameter adjustment
8	SELECT	(1) Push button, used to select or execute the highlighted menu item or value
9	BACK	(1) Push button, steps menu back one level
10	HOME	(1) Push button, returns to the home menu
11	HDMI IN 	(1) 19-pin Type A HDMI female; HDMI digital audio/video input
12	HDMI OUT 	(1) 19-pin Type A HDMI female; HDMI digital audio/video output
13	INPUT, DIGITAL 2 	(1) JIS F05 female (TOSLINK) optical fiber connector; S/PDIF optical digital audio input
14	INPUT, DIGITAL 3 – 4 	(2) RCA female; S/PDIF coaxial digital audio inputs; Input Impedance: 75 Ω nominal
15	INPUT, L/R 5 – 6 	(4) RCA female comprising (2) unbalanced stereo line level audio inputs; Input Impedance: 10 kΩ Maximum Input: 2 Vrms;
16	INPUT, MIX L/R BALANCED 	(1) 5-pin 3.5 mm detachable terminal block; Balanced/unbalanced stereo line level audio input; Input Impedance: 24 kΩ balanced, 12 kΩ unbalanced; Maximum Input Level: 4 Vrms balanced, 2 Vrms unbalanced

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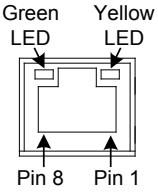
Connectors, Controls & Indicators (Continued)

#	CONNECTORS*, CONTROLS & INDICATORS	DESCRIPTION
17	OUTPUT, FRONT L/R, SURROUND L/R, BACK L/R, CENTER C, SUB S 	(4) 6-pin 3.5 mm detachable terminal block; Balanced/unbalanced line level 7.1 surround sound audio output; Output Impedance: 200 Ω balanced, 100 Ω unbalanced; Maximum Output Level (**FRONT**, **SURROUND**, **BACK**, **CENTER**): 4 Vrms balanced, 2 Vrms unbalanced; Maximum Output Level (**SUB**): 12.6 Vrms balanced, 6.3 Vrms unbalanced
18	OUTPUT, DOWNMIX L/R 	(1) 6-pin 3.5 mm detachable terminal block; Balanced/unbalanced line level stereo audio output; Output Impedance: 200 Ω balanced, 100 Ω unbalanced; Maximum Output Level: 4 Vrms balanced, 2 Vrms unbalanced
19	LAN 	(1) 8-wire RJ-45 female (8P8C modular jack); 10BASE-T/100BASE-TX Ethernet port; Green LED indicates link status; Yellow LED indicates Ethernet activity **PIN / SIGNALS** 1 TX + 2 TX - 3 RX + 4 Connected to pin 5 5 Connected to pin 4 6 RX - 7 Connected to pin 8 8 Connected to pin 7
20	24VDC 2.0A 	(1) 2.1 x 5.5 mm DC power connector 24 Vdc power input; Power pack included
21	G 	(1) 6–32 screw, chassis ground lug

* Interface connectors for **MIX, FRONT, SURROUND, BACK, CENTER-SUB** and **DOWNMIX** ports are provided with the unit.

Setup

Network Wiring

When wiring the Ethernet network, consider the following:

- Use Crestron Certified Wire.
- Use Crestron power supplies for Crestron equipment.

Unlike other Crestron network devices, the HD-XSP does not use Cresnet® for communications between the device and the control system. The HD-XSP requires the use of a high-speed Ethernet connection for control system communications.

For general information on connecting Ethernet devices in a Crestron system, refer to the latest version of the Crestron e-Control® Reference Guide (Doc. 6052), which is available from the Crestron Web site (www.crestron.com/manuals).

Identity Code

The IP ID is set within the HD-XSP's IP table using Crestron Toolbox™. For information on setting an IP table, refer to the Crestron Toolbox help file. The IP IDs of multiple HD-XSP devices in the same system must be unique.

When setting the IP ID, consider the following:

- The IP ID of each unit must match an IP ID specified in the Crestron Studio™ or SIMPL Windows program.
- Each device using IP to communicate with a control system must have a unique IP ID.

Installation

Ventilation

The HD-XSP should be used in a well-ventilated area. The venting holes should not be obstructed under any circumstances.

To prevent overheating, do not operate this product in an area that exceeds the environmental temperature range listed in the table of specifications. Consider using forced air ventilation or incrementing the spacing between units to reduce overheating. Contact with thermal insulating materials should be avoided on all sides of the unit.

Rack Mounting

The HD-XSP can be mounted in a rack or stacked with other equipment. Two "ears" are provided with the HD-XSP so that the unit can be rack mounted. These ears must be installed prior to mounting. Complete the following procedure to attach the ears to the unit. The only tool required is a #1 or #2 Phillips screwdriver.

WARNING: To prevent bodily injury when mounting or servicing this unit in a rack, observe the following guidelines:

- When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.

NOTE: Observe the following guidelines when installing equipment in a rack:

- Elevated Operating Ambient Temperature - If 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, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.
- Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.
- Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips)

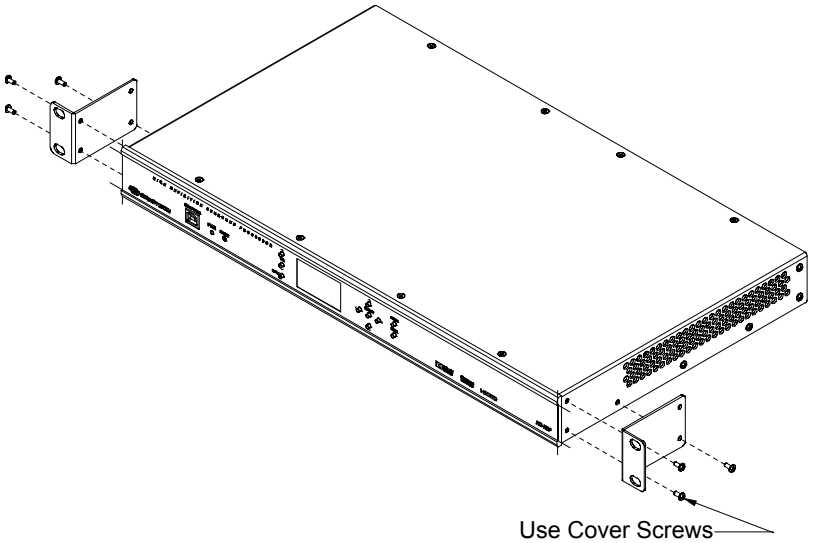
NOTE: If rack mounting is not required, rubber feet are provided for tabletop mounting or stacking. Apply the feet near the corner edges on the underside of the unit.

To install the ears, use the following procedure.

CAUTION: To prevent equipment damage, use only the rack ears Crestron provides for this device.

1. There are screws that secure each side of the HD-XSP top cover. Using a #1 or #2 Phillips screwdriver, remove the three screws closest to the front panel from one side of the unit. Refer to the diagram following step 3 for a detailed view.
2. Position a rack ear so that its mounting holes align with the holes vacated by the screws in step 1.
3. Secure the ear to the unit with three screws from step 1, as shown in the following diagram.

Ear Attachment for Rack Mounting

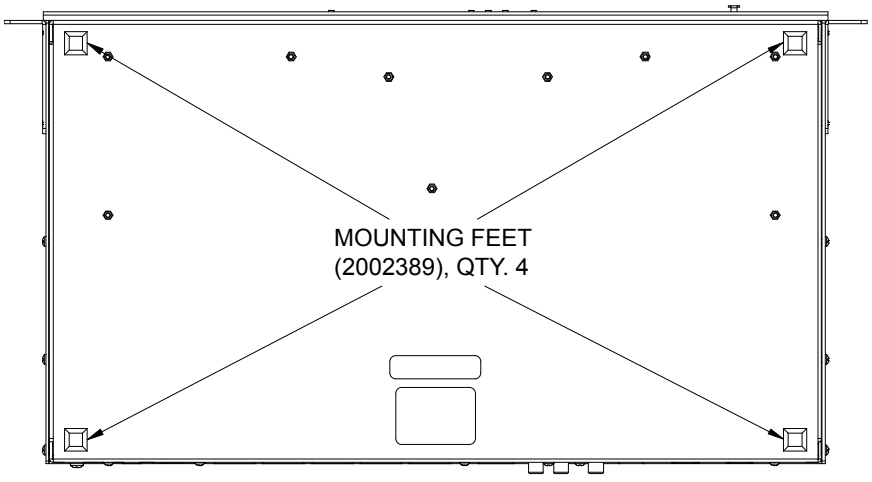


4. Repeat procedure (steps 1 through 3) to attach the remaining ear to the opposite side.

Stacking

Four "feet" are provided with the HD-XSP so that if the unit is not rack mounted, the rubber feet can provide stability when the unit is placed on a flat surface or stacked. These feet should be attached prior to the hookup procedure. Refer to the following illustration for placement of the feet.

Foot Placement for the HD-XSP



NOTE: No more than two HD-XSP units should be stacked.

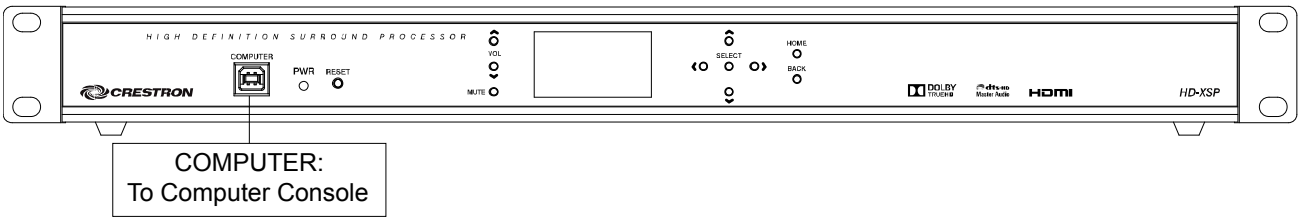
Hardware Hookup

Connect the Device

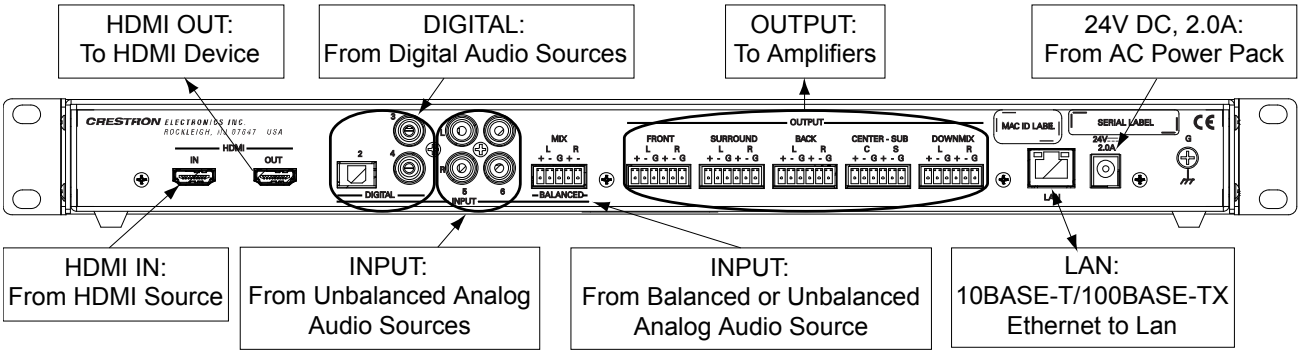
Make the necessary connections as called out in the illustration that follows this paragraph. Apply power after all connections have been made.

When making connections to the HD-XSP, use Crestron power supplies for Crestron equipment.

Hardware Connections for the HD-XSP (Front)



Hardware Connections for the HD-XSP (Rear)



NOTE: Ensure the unit is properly grounded by connecting the chassis ground lug to an earth ground (building steel).

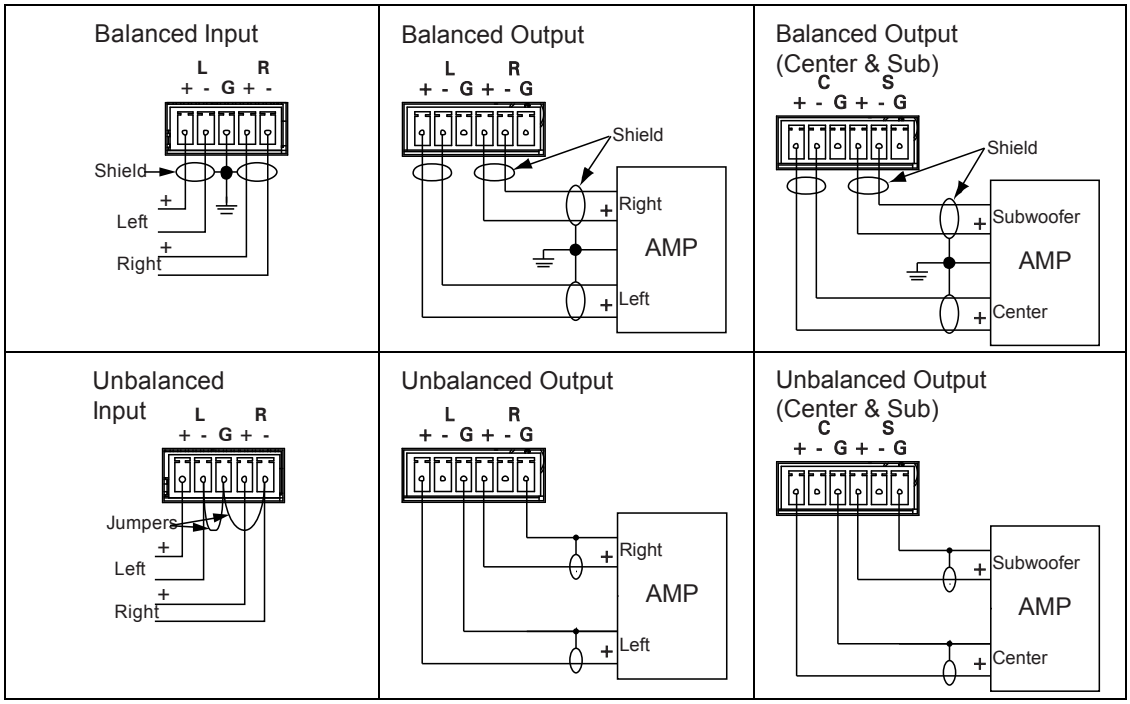
NOTE: To prevent overheating, do not operate this product in an area that exceeds the environmental temperature range listed in the table of specifications.

One balanced/unbalanced audio input and four balanced/unbalanced audio outputs are provided, utilizing 5-pin and 6-pin terminal block connectors respectively. For connection details, refer to the following table and diagrams.

Audio Connections

SIGNAL NAME	BALANCED AUDIO INPUT	BALANCED AUDIO OUTPUT	UNBALANCED AUDIO INPUT	UNBALANCED AUDIO OUTPUT
+	L +	L +	L + In	Left/Subwoofer + Out
-	L -	L -	L – signal return, jumper to GND	Open
G	Shield/Ground	Shield/Ground	Ground	Common ground
+	R +	R +	R + In	Right/Subwoofer + Out
-	R -	R -	R – signal return, jumper to GND	Open

Typical Balanced/Unbalanced Inputs and Outputs



Uploading and Upgrading

Crestron recommends using the latest programming software and that each device contains the latest firmware to take advantage of the most recently released features. However, before attempting to upload or upgrade it is necessary to establish communication. Once communication has been established, files (for example, programs or firmware) can be transferred to the control system (or device). Finally, program checks can be performed (such as changing the device ID or creating an IP table) to ensure proper functioning.

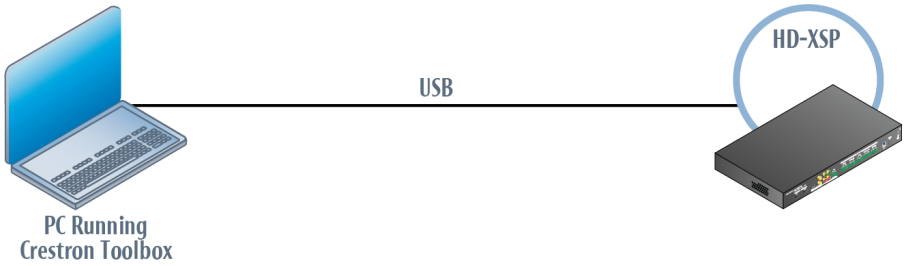
NOTE: Crestron software and any files on the Web site are for authorized Crestron dealers and Crestron Service Providers (CSPs) only. New users must register to obtain access to certain areas of the site (including the FTP site).

Establishing Communication

Use Crestron Toolbox for communicating with the HD-XSP; refer to the Crestron Toolbox help file for details. There are two methods of communication: USB and TCP/IP.

USB

USB Communication



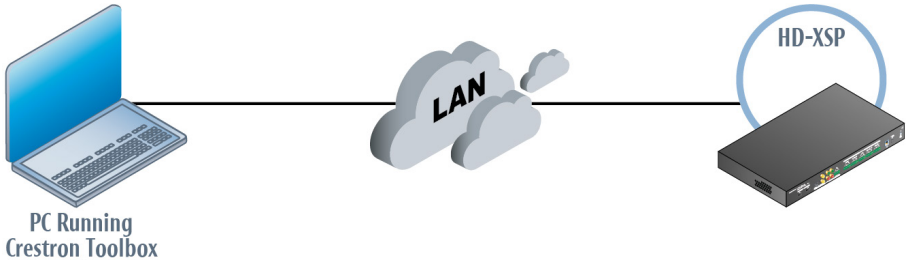
The **COMPUTER** port on the HD-XSP connects to the USB port on the PC via the included Type A to Type B USB cable:

1. Click **Tools | System Info**.
2. Click the  icon.
3. Select *USB* as the connection type. When multiple USB devices are connected, identify the HD-XSP by entering "HD-XSP" in the *Model* text box, the unit's serial number in the *Serial* text box or the unit's hostname (if known) in the *Hostname* text box.
4. Click **OK**. Communications are confirmed when the device information is displayed.

TCP/IP

NOTE: Required for operation with a Crestron control system.

Ethernet Communication



The HD-XSP connects to PC via Ethernet:

1. Use the Device Discovery Tool (click the icon) in Crestron Toolbox to detect all Ethernet devices on the network and their IP configuration. The tool is available in Toolbox version 1.15.143 or later.
2. Click on the HD-XSP to display information about the device.

Programs and Firmware

Program or firmware files may be distributed from programmers to installers or from Crestron to dealers. Firmware upgrades are available from the Crestron Web site as new features are developed after product releases. One has the option to upload programs via the programming software or to upload and upgrade via the Crestron Toolbox. For details on uploading and upgrading, refer to the Crestron Studio help file, SIMPL Windows help file, or the Crestron Toolbox help file.

Crestron Studio / SIMPL Windows

If a Crestron Studio (or SIMPL Windows) program is provided, it can be uploaded to the control system using Crestron Studio (or SIMPL Windows) or Crestron Toolbox.

Firmware

Check the Crestron Web site to find the latest firmware. (New users must register to obtain access to certain areas of the site, including the FTP site.)

Upgrade HD-XSP firmware via Crestron Toolbox.

1. Establish communication with the HD-XSP as described in "Establishing Communication" which starts on page 20.
2. Select **Tools** | **Package Update Tool…** to upgrade the HD-XSP firmware or double click on an appropriate Package Update File (PUF) located on the hard drive. The Package Update Tool is loaded as a standalone application

Program Checks

Using Crestron Toolbox, display the "System Info" window (**Tools | System Info**) and select the **Functions** menu to display actions that can be performed on the HD-XSP.

Be sure to use Crestron Toolbox to create the HD-XSP IP table.

1. Select **Functions | IP Table Setup**.
2. Add, modify or delete entries in the IP table. The HD-XSP can have only one IP table entry.
3. A defined IP table can be saved to a file or sent to the device.

Edit the control system's IP table to include an entry for the HD-XSP. The entry should list the HD-XSP's IP ID (specified on the HD-XSP's IP table) and the internal gateway IP address 127.0.0.1.

Configuration

The HD-XSP can be configured with the front panel controls or with Crestron Toolbox. For details on using Crestron Toolbox, please refer to the Crestron Toolbox help file. Otherwise, continue reading below.

"Installer" Menu

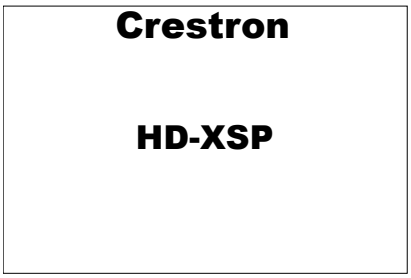
The "Installer" menu is used to configure the HD-XSP

Open "Installer" Menu

To configure the HD-XSP using the front panel controls, the "Installer" menu must be displayed. To open the "Installer" menu:

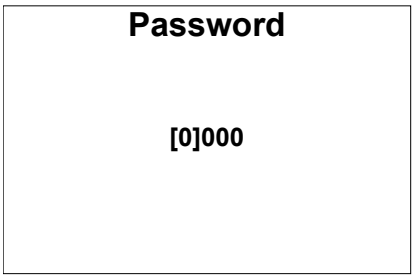
1. Press **HOME** to display the "Crestron HD-XSP" screen as shown in the following illustration.

   "Crestron HD-XSP" Screen

2. Press **BACK** to display the "Password" screen.

   "Password" Screen

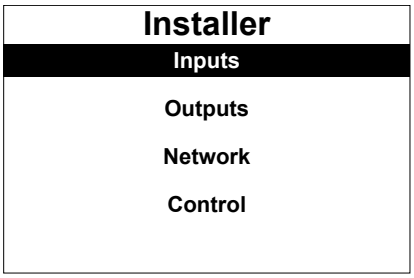
   

3. Use the ∧, ∨, <, >, and **SELECT** buttons to enter the password.
   - To select a number, press ∧ or ∨.
   - To move the cursor left or right, press < or >.

   When the password is displayed, move the cursor to the rightmost digit and press **SELECT**. The "Installer" menu is displayed.

NOTE: The default password is **0000**. For instructions on changing the password, refer to "Password" on page 34.

"Installer" Menu



The "Installer" menu is divided into four sections.

- *Inputs*: Set the name and compensation level of each input.
- *Outputs*: Set the audio parameters for the theater and downmix outputs.
- *Network*: Configure and view the HD-XSP's Ethernet settings.
- *Control*: Configure and view the HD-XSP's front panel settings.

Exit "Installer" Menu

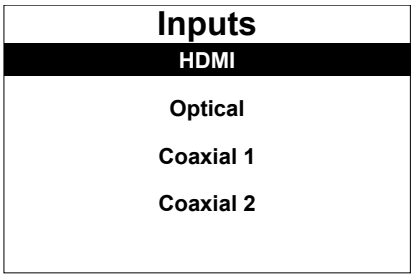
To exit the "Installer" menu, press **HOME**.

Configure Inputs

The name and compensation level for each input are set from the *Inputs* section of the "Installer" menu. To configure an input:

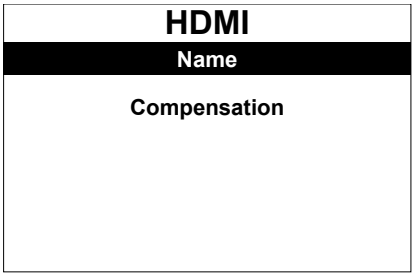
1. Open the "Installer" menu as described in "Open "Installer" Menu" on page 23.
2. Press ∧ or ∨ to highlight *Inputs* and press **SELECT**. The "Inputs" menu is displayed.

   "Inputs" Menu

3. Press ∧ or ∨ to highlight the input to configure and press **SELECT**. The selected input's menu is displayed.

   Input Menu (HDMI Shown)

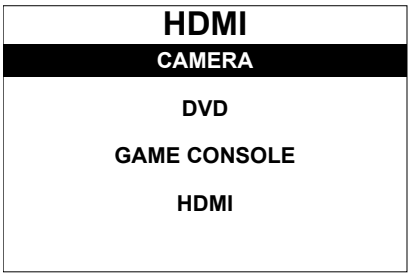
   

Name the Input

The inputs of the HD-XSP are assigned default names from the factory. However a new name can be assigned to the input. To change the name:

1. Press ∧ or ∨ to highlight *Name* and press **SELECT**. The sources *name* screen is displayed.

   "HDMI" Screen

2. Press ∧ or ∨ to highlight the desired name and press **SELECT**. The display returns to the previous menu.

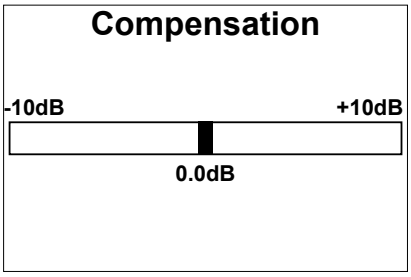
   To cancel and return to the previous menu, press **BACK**.

Adjust Compensation Level

The compensation level of each input can be adjusted. To adjust an input's compensation level:

1. Press ∧ or ∨ to highlight *Compensation* and press **SELECT**. The "Compensation" screen is displayed.

   "Compensation" Screen

2. Press < or >to select the amount of compensation to be applied and press **SELECT**. The display returns to the previous menu.

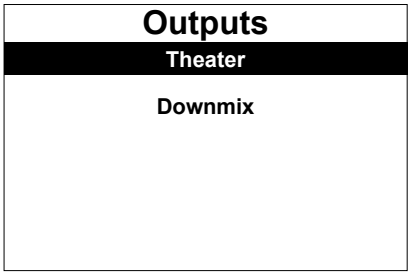
   To cancel and return to the previous menu, press **BACK**.

Configure Outputs

Audio settings for the Theater output and Downmix output are set from the *Outputs* section of the "Installer" menu. To configure an output:

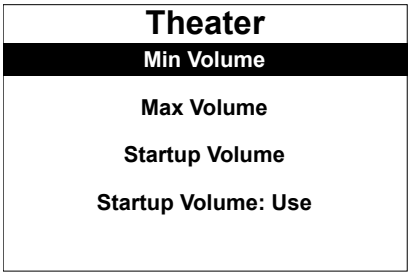
1. Open the "Installer" menu as described in "Open "Installer" Menu" on page 23.
2. Press ∧ or ∨ to highlight *Outputs* and press **SELECT**. The "Outputs" menu is displayed.

"Outputs" Menu



3. Press ∧ or ∨ to highlight the output to configure and press **SELECT**. The selected output's menu is displayed.

Output Menu (Theater Shown)

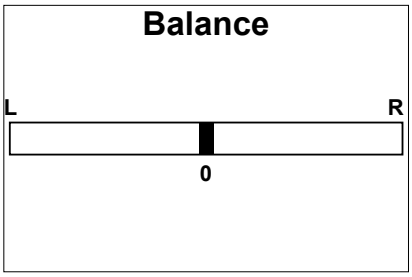


Balance (Downmix Output Only)

The balance of the Downmix output can be adjusted. To adjust the balance:

1. Select the output to configure as described in "Configure Outputs" which starts on page 25.
2. Press ∧ or ∨to highlight *Balance* and press **SELECT**. The "Balance" screen is displayed.

"Balance" Screen



3. Press < or > to adjust the balance and press **SELECT**. The display returns to the previous menu.

   To cancel and return to the previous menu, press **BACK**.

Stereo/Mono (Downmix Output Only)

The output of the Downmix output can be set for stereo or mono sound. To set the output:

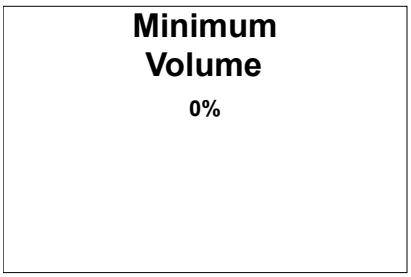
1. Select the output to configure as described in "Configure Outputs" which starts on page 25.
2. Press ∧ or ∨ to highlight *Stereo* or *Mono* and press **SELECT**. The setting toggles between "Stereo" and "Mono".

Minimum Volume (Theater & Downmix Output)

The *Minimum Volume* setting is the lowest volume setting to which an output can be set. To adjust the minimum volume:

1. Select the output to configure as described in "Configure Outputs" which starts on page 25.
2. Press ∧ or ∨ to highlight *Min Volume* and press **SELECT**. The "Minimum Volume" screen is displayed.

"Minimum Volume" Screen



3. Press ∧ or ∨ to adjust the minimum volume level and press **SELECT**. The display returns to the previous menu.

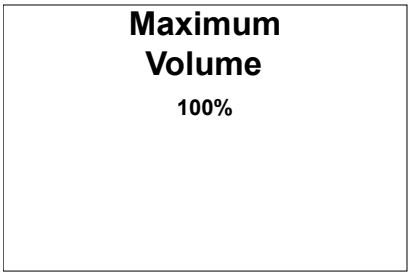
   To cancel and return to the previous menu, press **BACK**.

Maximum Volume (Theater & Downmix Output)

The *Maximum Volume* setting is the highest volume setting to which an output can be set. To adjust the maximum volume:

1. Select the output to configure as described in "Configure Outputs" which starts on page 25.
2. Press ∧ or ∨ to highlight *Max Volume* and press **SELECT**. The "Maximum Volume" screen is displayed.

"Maximum Volume" Screen



3. Press ∧ or ∨ to adjust the minimum volume level and press **SELECT**. The display returns to the previous menu.

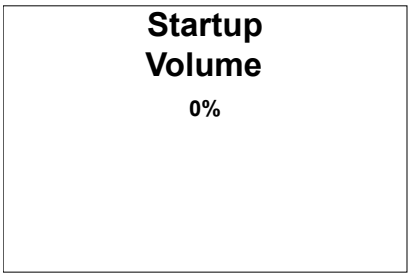
   To cancel and return to the previous menu, press **BACK**.

Startup Volume (Theater & Downmix Output)

The *Startup Volume* setting specifies the volume level that is used when the Theater or Downmix output is turned on. To adjust the Startup volume:

1. Select the output to configure as described in "Configure Outputs" which starts on page 25.
2. Press ∧ or ∨ to highlight *Startup Volume* and press **SELECT**. The "Startup Volume" screen is displayed.

"Startup Volume" Screen



3. Press ∧ or ∨ to adjust the minimum volume level and press **SELECT**. The display returns to the previous menu.

   To cancel and return to the previous menu, press **BACK**.

   To enable or disable the startup volume setting, refer to "Use/Ignore Startup Volume" below.

Use/Ignore Startup Volume (Theater & Downmix Output)

The startup volume setting can be enabled or disabled. When the startup volume setting is ignored, the last volume setting is used. To set the output:

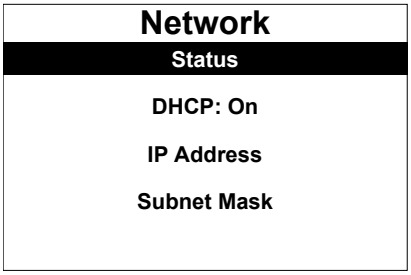
1. Select the output to configure as described in "Configure Outputs" which starts on page 25.
2. Press ∧ or ∨ to highlight *Startup Volume: Use* or *Startup Volume: Ignore* and press **SELECT**. The setting toggles between "Use" and "Ignore".

Configure Network

Ethernet settings for the HD-XSP are set from the *Network* section of the "Installer" menu. To configure the Ethernet settings:

1. Open the "Installer" menu as described in "Open "Installer" Menu" on page 23.
2. Press ∧ or ∨ to highlight *Network* and press **SELECT**. The "Network" menu is displayed.

   "Network" Menu



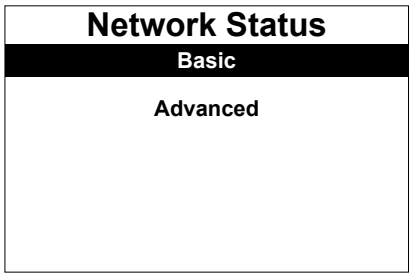
3. Press ∧ or ∨ to highlight the parameter to view or configure and press **SELECT**.

Status

Details of the HD-XSP's Ethernet connection can be viewed from the *Status* section of the "Network" menu. To view this information:

1. Open the "Network" menu as described in "Configure Network" above.
2. Press ∧ or ∨ to highlight *Status* and press **SELECT**. The "Network Status" menu is displayed.

"Network Status" Menu



3. Press ∧ or ∨ to highlight the desired level of detail to be displayed (*Basic* or *Advanced*) and press **SELECT**.
   - *Basic*: Shows the status of the Ethernet link, the HD-XSP's IP address, and the hostname of the master control system.
   - *Advanced*: Shows the status of the Ethernet link, the HD-XSP's MAC address, the HD-XSP's IP address, the subnet mask, the default router, the DHCP setting, the hostname, the domain name, and the IP addresses of DNS servers.
4. Press ∧ or ∨ to scroll through the Ethernet details.
5. Press **SELECT** to return to the previous menu.

Enable/Disable DHCP

The HD-XSP can obtain an IP address, subnet mask, and default router information from a DHCP server. To enable or disable DHCP:

1. Open the "Network" menu as described in "Configure Network" on page 28.
2. Press ∧ or ∨ to highlight *DHCP: On* or *DHCP: Off* and press **SELECT**. The setting toggles between "On" and "Off".

   If any changes were made, the HD-XSP reboots upon exiting the "Installer" menu.

IP Address

The HD-XSP uses TCP/IP for communication with a control system. The IP address can be manually set or obtained from a DHCP server. For information on enabling DHCP to obtain an IP address, refer to "Enable/Disable DHCP" above.

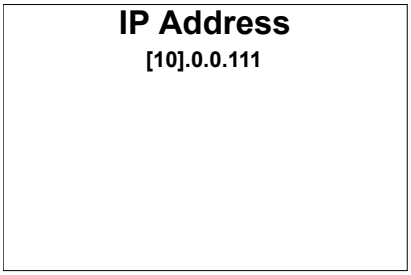
NOTE: If DHCP is enabled, any changes made do not take effect.

To manually set an IP address:

1. Open the "Network" menu as described in "Configure Network" on page 28.
2. Press ∧ or ∨ to highlight *IP Address* and press **SELECT**.

   If DHCP is enabled, an IP address and a message stating "DHCP On: Address Invalid" is displayed. Otherwise, controls for setting the IP address are displayed in the "IP Address" screen.

"IP Address" Screen



3. Press ∧ or ∨ to set the first octet of the IP address.
4. Press < or > to move the cursor between octets (or press **SELECT** to move to the next octet) to select for editing.
5. Repeat steps 3 and 4 for each octet.
6. To save the IP address and return to the "Network Setup" menu, move the cursor to the rightmost octet and press **SELECT**. To cancel the operation and return to the previous screen, press **BACK**.

   If any changes were made, the HD-XSP reboots upon exiting the "Installer" menu.

Subnet Mask

The subnet mask can be manually set or obtained from a DHCP server. For information on enabling DHCP to obtain a subnet mask, refer to "Enable/Disable DHCP" on page 29.

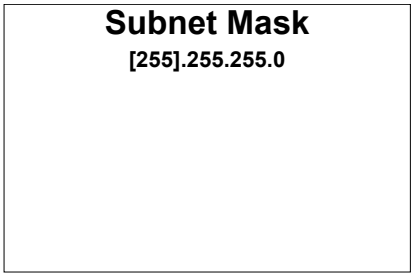
NOTE: If DHCP is enabled, any changes made do not take effect.

To manually set the subnet mask:

1. Open the "Network" menu as described in "Configure Network" on page 28.
2. Press ∧ or ∨ to highlight *Subnet Mask* and press **SELECT**.

   If DHCP is enabled, the subnet mask and a message stating "DHCP On: Address Invalid" is displayed. Otherwise, controls for setting the subnet mask are displayed in the "Subnet Mask" screen.

   "Subnet Mask" Screen



3. Press ∧ or ∨ to set the first octet of the subnet mask.
4. Press < or > to move the cursor between octets (or press **SELECT** to move to the next octet) to select for editing.
5. Repeat steps 3 and 4 for each octet.

6. To save the subnet mask and return to the "Network Setup" menu, move the cursor to the rightmost octet and press **SELECT**. To cancel the operation and return to the previous screen, press **BACK**.

   If any changes were made, the HD-XSP reboots upon exiting the "Installer" menu.

Default Router

The default router can be manually set or obtained from a DHCP server. For information on enabling DHCP to obtain a default router, refer to "Enable/Disable DHCP" on page 29.

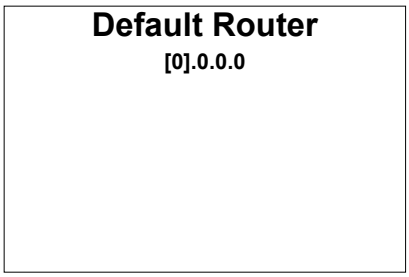
NOTE: If DHCP is enabled, any changes made do not take effect.

To manually set the default router:

1. Open the "Network" menu as described in "Configure Network" on page 28.
2. Press ∧ or ∨ to highlight *Default Router* and press **SELECT**.

   If DHCP is enabled, the default router and a message stating "DHCP On: Address Invalid" is displayed. Otherwise controls for setting the default router are displayed in the "Default Router" screen.

   "Default Router" Screen

3. Press ∧ or ∨ to set the first octet of the default router.
4. Press < or > to move the cursor between octets (or press **SELECT** to move to the next octet) to select for editing.
5. Repeat steps 3 and 4 for each octet.
6. To save the default router and return to the "Network Setup" menu, move the cursor to the rightmost octet and press **SELECT**. To cancel the operation and return to the previous screen, press **BACK**.

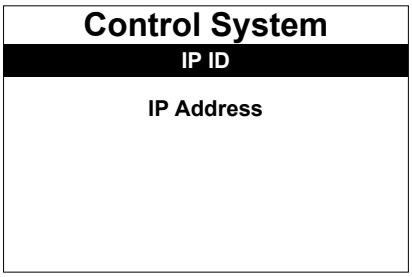
   If any changes were made, the HD-XSP reboots upon exiting the "Installer" menu.

Control System

The "Control System" menu is used to specify the HD-XSP's IP ID and the IP address of the control system. To specify the IP ID and the control system IP address:

1. Open the "Network" menu as described in "Configure Network" on page 28.
2. Press ∧ or ∨ to highlight *Control System* and press **SELECT**. The "Control System" menu is displayed.

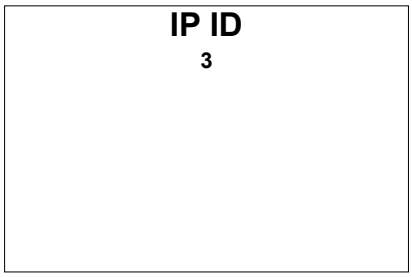
"Control System" Menu



3. Set the IP ID that identifies the HD-XSP in the Crestron Studio (or SIMPL Windows) program:

   a. Press ∧ or ∨ to highlight *IP ID* and press **SELECT**. The "IP ID" screen is displayed.

      "IP ID" Screen

   b. Press ∧ or ∨ to display the desired IP ID and press **SELECT**. The display returns to the previous screen.

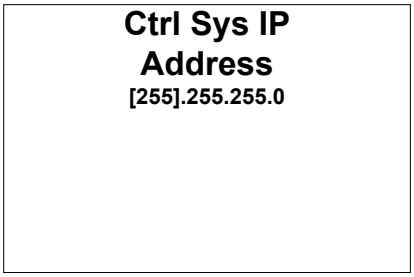
      NOTE: The IP ID must match the IP ID in the Crestron Studio (or SIMPL Windows) program.

      If any changes were made, the HD-XSP reboots upon exiting the "Installer" menu.

4. Set the master control system's IP address:

   a. Press ∧ or ∨ to highlight *IP Address* and press **SELECT**. The "Ctrl Sys IP Address" screen is displayed.

      "Ctrl Sys IP Address" Screen

   b. Press ∧ or ∨ to set the first octet of the IP address.

   c. Press < or > to move the cursor between octets (or press **SELECT** to move to the next octet) to select for editing.

d. Repeat steps b and c for each octet.

e. To save the IP address and return to the "Network Setup" menu, move the cursor to the rightmost octet and press **SELECT**. To cancel the operation and return to the previous screen, press **BACK**.

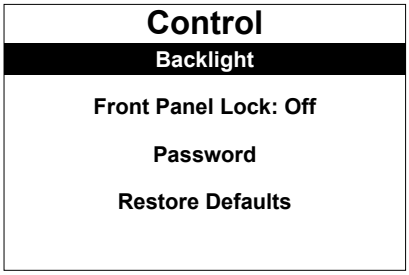
If any changes were made, the HD-XSP reboots upon exiting the "Installer" menu.

Configure Front Panel

Settings for the HD-XSP's front panel controls are set from the *Control* section of the "Installer" menu. To configure the front panel controls:

1. Open the "Installer" menu as described in "Open "Installer" Menu" on page 23.
2. Press ∧ or ∨ to highlight *Control* and press **SELECT**. The "Control" menu is displayed.

"Control" Menu



3. Press ∧ or ∨ to highlight the parameter to view or configure and press **SELECT**.

Backlight

The backlight of the LCD display can be adjusted. To adjust the backlight:

1. Open the "Control" menu as described in "Configure Front Panel" above.
2. Press ∧ or ∨ to highlight *Backlight* and press **SELECT**. The backlight toggles between dim and bright.

Front Panel Lock

The front panel user controls can be locked or unlocked for operation.

NOTE: The "Installer" menu can still be opened when the front panel is locked.

To lock or unlock the front panel controls:

1. Open the "Control" menu as described in "Configure Front Panel" on page 33.
2. Press ∧ or ∨ to highlight *Front Panel Lock: On* or *Front Panel Lock: Off* and press **SELECT**. The setting toggles between "On" and "Off".

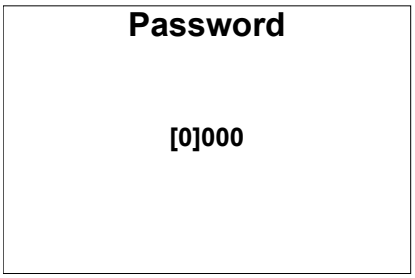
NOTE: When locked, only the **BACK** button can be used to access the "Installer" menu.

Password

The password for opening the "Installer" menu can be changed. To change the password:

1. Open the "Control" menu as described in "Configure Front Panel" on page 33.
2. Press ∧ or ∨ to highlight *Password* and press **SELECT**. The "Password" screen is displayed.

"Password" Screen



3. Use the ∧, ∨, <, >, and **SELECT** buttons to enter the password.
   - To select a number, press ∧ or ∨.
   - To move the cursor left or right, press < or >.

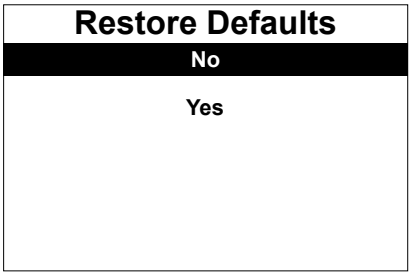
   When the password is displayed, move the cursor to the rightmost digit and press **SELECT** to save the password. The "Control" menu is displayed.

Restore Defaults

To restore the HD-XSP to the factory default settings:

1. Open the "Control" menu as described in "Configure Front Panel" on page 33.
2. Press ∧ or ∨ to highlight *Restore Defaults* and press **SELECT**. The "Restore Defaults" menu is displayed.

"Restore Defaults" Menu



3. Press ∧ or ∨ to highlight *Yes* and press **SELECT**. The "Are You Sure" menu is displayed.
4. Press ∧ or ∨ to highlight *Yes* and press **SELECT**. The factory default settings are restored.
5. To cancel at any point, press ∧ or ∨ to highlight *No* and press **SELECT**.

Operation

When power is applied to the HD-XSP, the "Crestron HD-XSP" screen is displayed, followed by the "Current Source" menu. For details on using the "Current Source" menu, refer to "Select a Source or Decoding Mode", which starts below.

Additional functions are available from the "HD-XSP" menu. For details, refer to "Additional Functions", which starts on page 37.

NOTE: The HD-XSP can also be operated with the HD-XSP tool in Crestron Toolbox. For details, refer to the Crestron Toolbox help file.

Select a Source or Decoding Mode

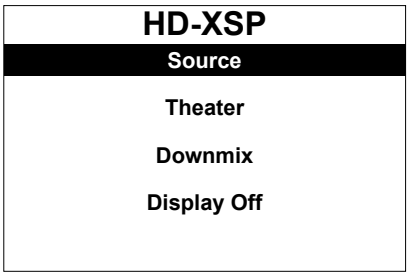
The "Current Source" menu is used to select a source and a decoding mode.

NOTE: The "Current Source" menu is displayed when power is applied to the HD-XSP.

To display the "Current Source" menu:

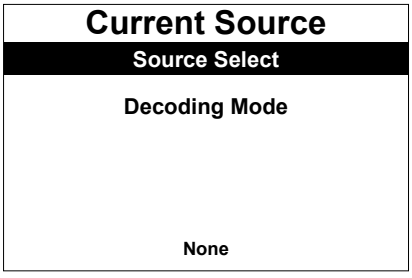
1. Press **HOME**.
2. Press **SELECT**. The "HD-XSP" menu is displayed.

"HD-XSP" Menu



3. Press ∧ or ∨ to highlight *Source* and press **SELECT**. The "Current Source" menu is displayed.

"Current Source" Menu (No Source or Decoding Mode Selected)

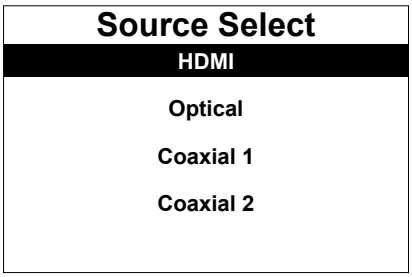


Select a Source

To select a source for listening:

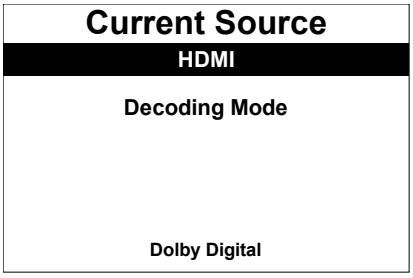
1. Press ∧ or ∨ to highlight *Source Select* and press **SELECT**. The "Source Select" menu is displayed.

"Source Select" Menu



2. Press ∧ or ∨ to highlight the desired source and press **SELECT**. The display returns to the "Current Source" menu. If a signal type is detected, the supported signal type is shown on the bottom of the display.

"Current Source" Menu (Source Selected, No Decoding Mode Selected)

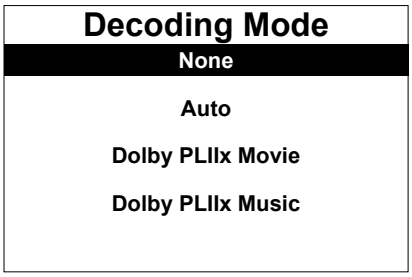


Select a Decoding Mode

To select a surround sound decoding mode:

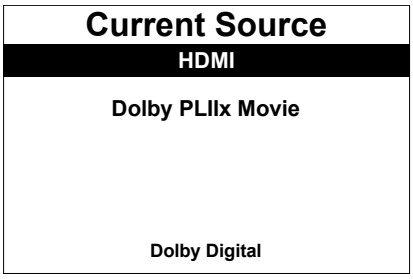
1. Press ∧ or ∨ to highlight *Decoding Mode* and press **SELECT**. The "Decoding Mode" menu is displayed, showing a list of supported decoding modes for the detected audio signal.

"Decoding Mode" Menu



2. Press ∧ or ∨ to highlight the desired mode and press **SELECT**. The display returns to the "Current Source" menu showing the selected source and the selected decoding mode.

"Current Source" Menu (Source and Decoding Mode Selected)



Volume Control and Mute (Theater Output Only)

During operation, the theater output's volume level can be adjusted or muted.

- To adjust the theater output's volume level, Press **VOL** ∧ or **VOL** ∨.

  NOTE: The downmix output's volume level is adjusted via control system programming.

- To mute the theater output, press **MUTE**. An indicator lights on the bottom of the display.

  NOTE: The downmix output's mute function is controlled from the front panel. Refer to "Mute" on page 41 for details.

- To unmute the theater output, press **MUTE**.

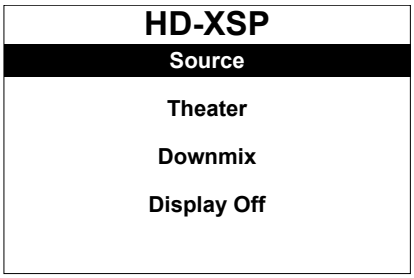
  NOTE: The downmix output's mute function is controlled from the front panel. Refer to "Mute" on page 41 for details.

Additional Functions

Controls for the theater output, downmix output and display are available from the "HD-XSP" menu. To display the "HD-XSP" menu:

1. Press **HOME**.
2. Press **SELECT**. The "HD-XSP" menu is displayed.

"HD-XSP" Menu



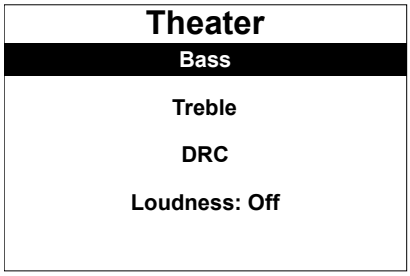
Source

To select a source and decoding mode, press ∧ or ∨ to highlight *Source* and press **SELECT**. The "Current Source" menu is displayed. Refer to "Select a Source" on page 35 for details.

Theater

The *Theater* section of the "HD-XSP" menu provides controls for managing the audio settings for the theater output. To open the "Theater" menu, press ∧ or ∨ to highlight *Theater* and press **SELECT**. The "Theater" menu is displayed.

"Theater" Menu

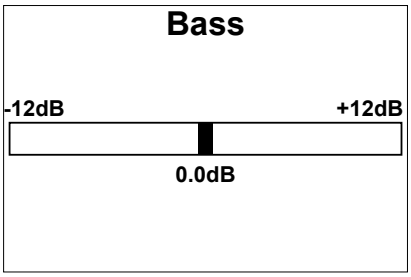


Bass

The bass level for the theater output can be adjusted. To adjust the bass level:

1. Open the "Theater" menu as described in "Theater" above.
2. Press ∧ or ∨ to highlight *Bass* and press **SELECT**. The "Bass" screen is displayed.

   "Bass" Screen

3. Press < or > to adjust the bass level and press **SELECT**. The display returns to the previous menu.

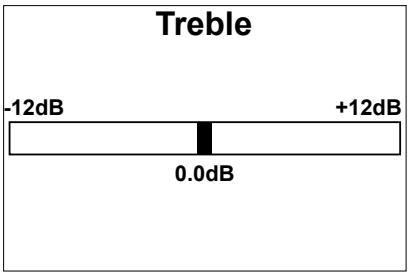
   To cancel and return to the previous menu, press **BACK**.

Treble

The treble level for the theater output can be adjusted. To adjust the treble level:

1. Open the "Theater" menu as described in "Theater" above.
2. Press ∧ or ∨ to highlight *Treble* and press **SELECT**. The "Treble" screen is displayed.

"Treble" Screen



3. Press **<** or **>** to adjust the treble level and press **SELECT**. The display returns to the previous menu.

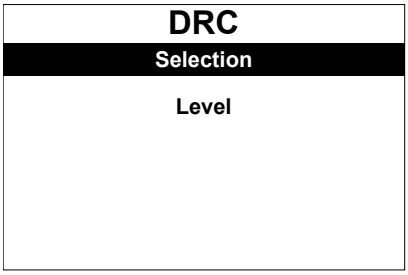
   To cancel and return to the previous menu, press **BACK**.

Dynamic Range Control (DRC)

The theater output features dynamic range control (DRC). To configure the dynamic range control:

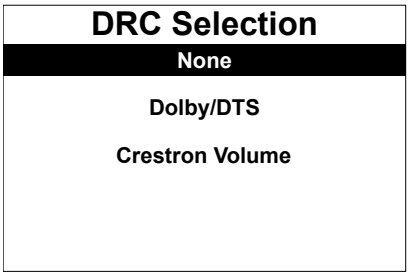
1. Open the "Theater" menu as described in "Theater" on page 38.
2. Press ∧ or ∨ to highlight *DRC* and press **SELECT**. The "DRC" menu is displayed.

   "DRC" Menu



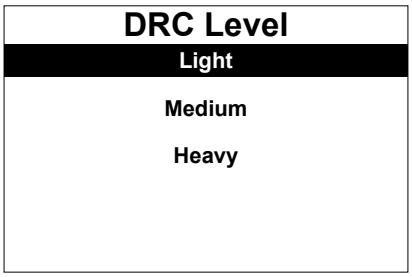
3. Configure the DRC:
   - *Selection*: Select the type of DRC to be used.
     a. Press ∧ or ∨ to highlight *Selection* and press **SELECT**. The "DRC Selection" menu is displayed.

        "DRC" Menu



     b. Press ∧ or ∨ to highlight the desired type of DRC to be used and press **SELECT**. The display returns to the previous screen.
   - *Level*: Select the level of DRC to be applied.
     a. Press ∧ or ∨ to highlight *Level* and press **SELECT**. The "DRC Level" menu is displayed.

"DRC" Menu



b. Press ∧ or ∨ to highlight the desired level of DRC to be applied and press **SELECT**. The display returns to the previous screen.

4. Press **BACK** to return to the previous screen.

Loudness

The loudness feature can be set from the "Theater" menu. To set loudness:

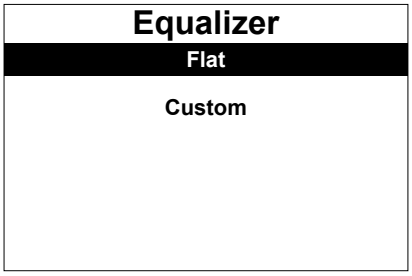
1. Open the "Theater" menu as described in "Theater" on page 38.
2. Press ∧ or ∨ to highlight *Loudness: On* or *Loudness: Off* and press **SELECT**. The setting toggles between "On" and "Off".

Equalizer

The HD-XSP can use a custom equalization setting that is created in Crestron Toolbox. To set the equalization:

1. Open the "Theater" menu as described in "Theater" on page 38.
2. Press ∧ or ∨ to highlight *EQ* and press **SELECT**. The "Equalizer" screen is displayed.

"Equalizer" Screen



3. Press ∧ or ∨ to highlight the desired setting and press **SELECT**. The display returns to the previous screen.

NOTE: The *Custom* setting can only be configured with Crestron Toolbox.

Direct Mode

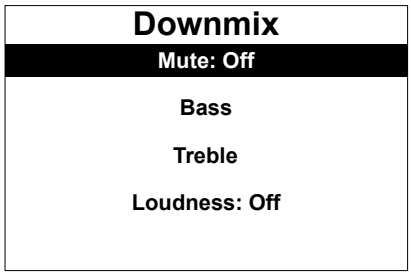
Direct mode is used to bypass any signal processing. To set *Direct* mode:

1. Open the "Theater" menu as described in "Theater" on page 38.
2. Press ∧ or ∨ to highlight *Direct Mode: On* or D*irect Mode: Off* and press **SELECT**. The setting toggles between "On" and "Off".

Downmix

The *Downmix* section of the "HD-XSP" menu provides controls for managing the audio settings for the downmix output. To open the "Downmix" menu, press ∧ or ∨ to highlight *Downmix* and press **SELECT**. The "Downmix" menu is displayed.

"Downmix" Menu



Mute

The mute function for the downmix output is set from the "Downmix" menu. To mute or unmute the downmix output:

1. Open the "Downmix" menu as described in "Downmix" which starts on page 40.
2. Press ∧ or ∨ to highlight *Mute: Off or Mute: On* and press **SELECT**. The setting toggles between "On" and "Off"

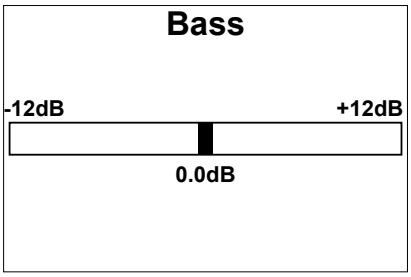
NOTE: While the theater output can be muted with the **MUTE** button, the downmix output can only be muted with this method or a control system program.

Bass

The bass level for the Downmix output can be adjusted. To adjust the bass level:

1. Open the "Downmix" menu as described in "Downmix" which starts on page 40.
2. Press ∧ or ∨ to highlight *Bass* and press **SELECT**. The "Bass" screen is displayed.

"Bass" Screen



3. Press < or > to adjust the bass level and press **SELECT**. The display returns to the previous menu.

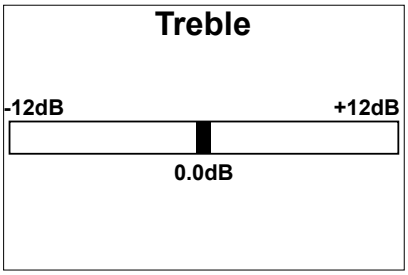
   To cancel and return to the previous menu, press **BACK**.

Treble

The treble level for the Downmix output can be adjusted. To adjust the treble level:

1. Open the "Downmix" menu as described in "Downmix" which starts on page 40.
2. Press ∧ or ∨ to highlight *Treble* and press **SELECT**. The "Treble" screen is displayed.

"Treble" Screen



3. Press < or > to adjust the treble level and press **SELECT**. The display returns to the previous menu.

   To cancel and return to the previous menu, press **BACK**.

Loudness

The loudness feature can be set from the "Downmix" menu. To set loudness:

1. Open the "Downmix" menu as described in "Downmix" which starts on page 40.
2. Press ∧ or ∨ to highlight *Loudness: On* or *Loudness: Off* and press **SELECT**. The setting toggles between "On" and "Off".

Display

The display can be turned on or off during operation. To switch the display on or off during operation, press ∧ or ∨ to highlight *Display Off* and press **SELECT**. The display goes dark.

To turn the display on again, press **SELECT**.

Problem Solving

Troubleshooting

The following table provides corrective action for possible trouble situations. If further assistance is required, please contact a Crestron customer service representative.

HD-XSP Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Device does not function.	HD-XSP is not receiving power.	Use the provided power pack. Verify connection.
Sound is not heard.	HD-XSP is muted.	Turn off mute function.
	Volume is turned down.	Raise volume to an audible level.
	Amplifier not properly connected.	Verify output connections.
60 Hz hum heard on a selected input source.	Source is not selected/properly connected.	Verify that source is selected and properly connected.
	60 Hz hum heard on a selected input source.	Connect the chassis of the source to the **G** (Ground) screw on the HD-XSP.

Reference Documents

The latest version of all documents mentioned within the guide can be obtained from the Crestron Web site (www.crestron.com/manuals).

List of Related Reference Documents

DOCUMENT TITLE
Crestron e-Control Reference Guide

Further Inquiries

To locate specific information or resolve questions after reviewing this guide, contact Crestron's True Blue Support at 1-888-CRESTRON [1-888-273-7876] or refer to the listing of Crestron worldwide offices on the Crestron Web site (www.crestron.com/offices) for assistance within a particular geographic region.

To post a question about Crestron products, log onto the Online Help section of the Crestron Web site (www.crestron.com/onlinehelp). First-time users must establish a user account to fully benefit from all available features.

Future Updates

As Crestron improves functions, adds new features and extends the capabilities of the HD-XSP, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

Check the Crestron Web site periodically for manual update availability and its relevance. Updates are identified as an "Addendum" in the Download column.

Return and Warranty Policies

Merchandise Returns / Repair Service

1. No merchandise may be returned for credit, exchange or service without prior authorization from Crestron. To obtain warranty service for Crestron products, contact an authorized Crestron dealer. Only authorized Crestron dealers may contact the factory and request an RMA (Return Merchandise Authorization) number. Enclose a note specifying the nature of the problem, name and phone number of contact person, RMA number and return address.
2. Products may be returned for credit, exchange or service with a Crestron Return Merchandise Authorization (RMA) number. Authorized returns must be shipped freight prepaid to Crestron, 6 Volvo Drive, Rockleigh, N.J. or its authorized subsidiaries, with RMA number clearly marked on the outside of all cartons. Shipments arriving freight collect or without an RMA number shall be subject to refusal. Crestron reserves the right in its sole and absolute discretion to charge a 15% restocking fee plus shipping costs on any products returned with an RMA.
3. Return freight charges following repair of items under warranty shall be paid by Crestron, shipping by standard ground carrier. In the event repairs are found to be non-warranty, return freight costs shall be paid by the purchaser.

Crestron Limited Warranty

Crestron Electronics, Inc. warrants its products to be free from manufacturing defects in materials and workmanship under normal use for a period of three (3) years from the date of purchase from Crestron, with the following exceptions: disk drives and any other moving or rotating mechanical parts, pan/tilt heads and power supplies are covered for a period of one (1) year; touch screen display and overlay components are covered for 90 days; batteries and incandescent lamps are not covered.

This warranty extends to products purchased directly from Crestron or an authorized Crestron dealer. Purchasers should inquire of the dealer regarding the nature and extent of the dealer's warranty, if any.

Crestron shall not be liable to honor the terms of this warranty if the product has been used in any application other than that for which it was intended or if it has been subjected to misuse, accidental damage, modification or improper installation procedures. Furthermore, this warranty does not cover any product that has had the serial number altered, defaced or removed.

This warranty shall be the sole and exclusive remedy to the original purchaser. In no event shall Crestron be liable for incidental or consequential damages of any kind (property or economic damages inclusive) arising from the sale or use of this equipment. Crestron is not liable for any claim made by a third party or made by the purchaser for a third party.

Crestron shall, at its option, repair or replace any product found defective, without charge for parts or labor. Repaired or replaced equipment and parts supplied under this warranty shall be covered only by the unexpired portion of the warranty.

Except as expressly set forth in this warranty, Crestron makes no other warranties, expressed or implied, nor authorizes any other party to offer any warranty, including any implied warranties of merchantability or fitness for a particular purpose. Any implied warranties that may be imposed by law are limited to the terms of this limited warranty. This warranty statement supersedes all previous warranties.

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Operations & Installation Guide – DOC. 7446A
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Specifications subject to
change without notice.