Extron® Electronics

INTERFACING, SWITCHING AND DISTRIBUTION

Setup Guide

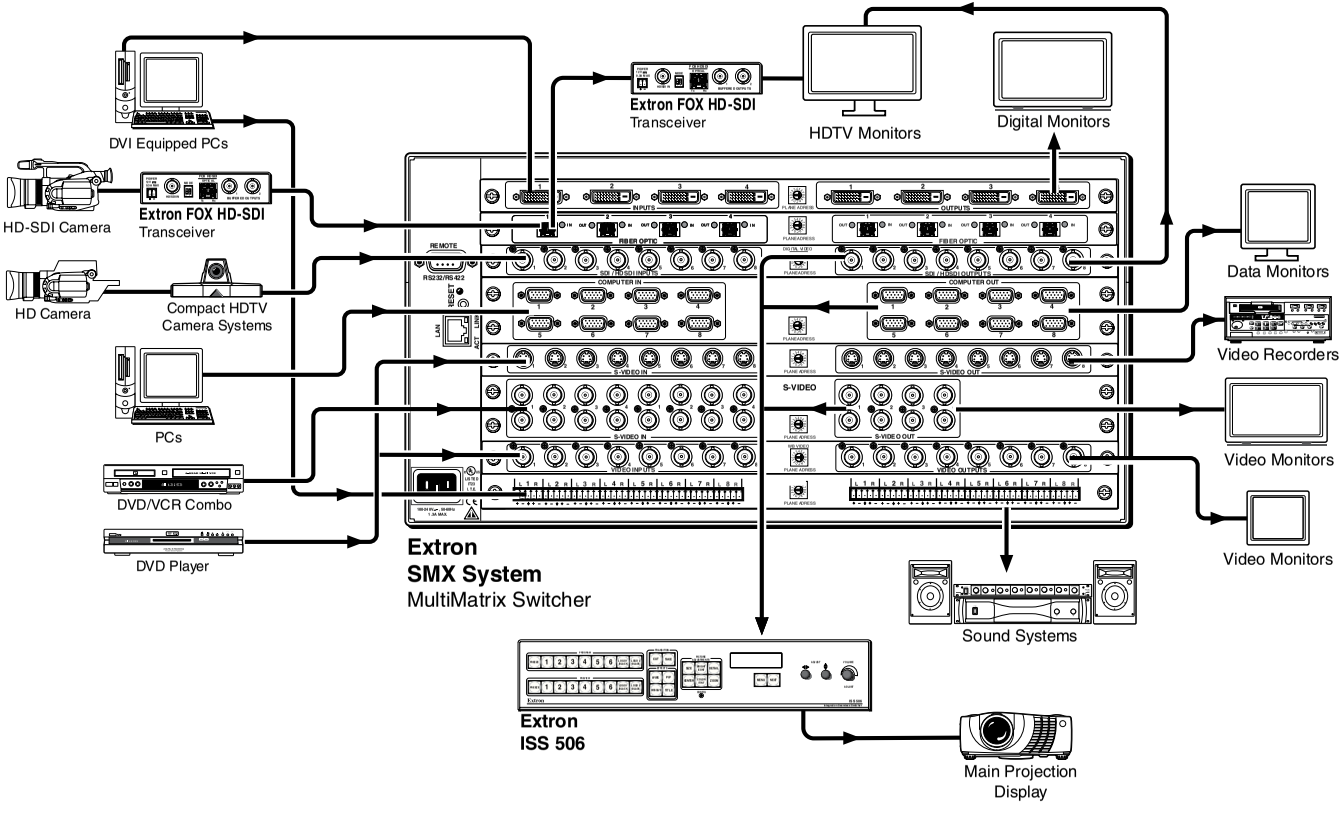
IMPORTANT:
Refer to www.extron.com for the user manual and installation instructions before connecting the product to the power supply.

SMX System

MultiMatrix Switchers

68-1452-50
Rev. A
02 09

Typical SMX switcher application



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Chapter One

Introduction

About this Manual

About the SMX System MultiMatrix Switchers

Introduction

About this Setup Guide

This setup guide helps you to easily and quickly set up, configure, and operate your Extron SMX matrix switcher using step by step instructions. It covers basic operations using the front panel controls and selected Simple Instruction Set (SIS™) commands, how to load and start the Windows®-based SMX Control Program, and how to connect to the built-in HTML pages for switcher operation.

NOTE *As used in this guide the terms "video model" and "audio model" refers to any SMX switcher that switches video and audio respectively. The terms "SMX matrix switcher", SMX switcher", "SMX", and "switcher" are refer to a typical SMX System MultiMatrix Switcher.*

NOTE *For detailed information on the product described in this guide, refer to the* SMX System MultiMatrix Switchers User's Manual *(also referred to as the* SMX User's Manual), *available at www.extron.com, or the Extron CD.*

About the SMX System MultiMatrix Switchers

The Extron SMX System MultiMatrix Switcher is a rack mountable, modular, configurable, multi-format system available in 3U, 4U, or 5U frames. Each frame has horizontal rear panel slots into which optional I/O boards can be inserted in any configuration and signal type as listed below:

Signal Type	I/O Connector		I/O size (slots used)			
Composite video	BNC			8x4 (1)	8x8 (1)	16x16 (2)
S-video	BNC			8x4 (2)	8x8 (2)	16x16 (4)
SDI and HDSDI	BNC		4x4 (1)	8x4 (1)	8x8 (1)	16x16 (2)
Wideband video	BNC			8x4 (1)	8x8 (1)	16x16 (2)
Sync	BNC				8x8 H or V (1) 8x8 HV (2)	16x16 H or V (2)
VGA	15-pin HD			8x4 (2)	8x8 (2)	16x16 (4)
S-video	mini DIN			8x4 (1)	8x8 (1)	16x16 (2)
DVI/DVI-Pro	DVI-I (Digital Only)		4x4 (1)	4x8 (2)	8x4 (2)	8x8 (2)
HDMI	HDMI		4x4 (1)	4x8 (2)	8x4 (2)	8x8 (2)
Audio (analog)	Captive screw			8x4 (1)	8x8 (1)	16x16 (2)
Fiber optic	Optical (SFP)				8x8 (1)	16x16 (2)

The 3U enclosure has six single board slots, the 4U has eight and the 5U has ten slots. Each slot supports power and control connections to the main unit controller and can be configured by the user.

Chapter Two

Installation

Rear Panel

Front Panel Overview

Rear Panel

NOTE *SMX switchers are available in 3U, 4U, or 5U frames. The number, type, and arrangement of I/O boards in your switcher may differ from that shown in figure 2-1.*

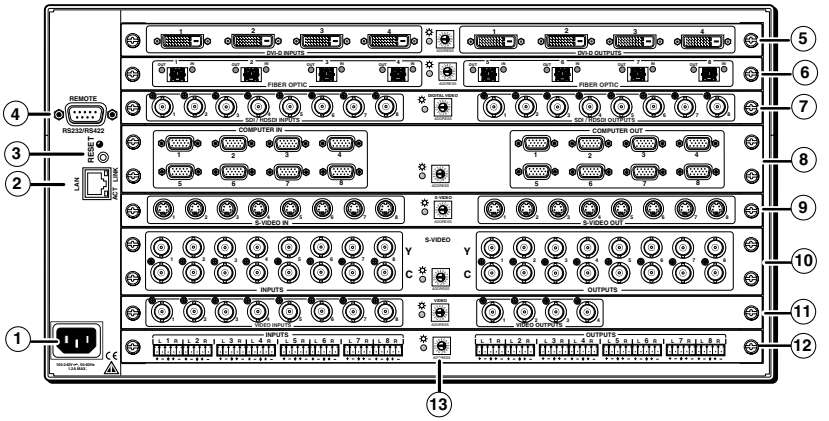

Figure 2-1 — An example of a 5U SMX rear panel

SMX Rear panel features:

① AC power connector
② LAN Ethernet port
③ Reset button and LED
④ Remote serial port
⑤ - ⑫ I/O boards (optional)
⑬ Plane address switch

(for front panel see page 2-4)

Installation and cabling

Step 1 — Mounting

Turn off or disconnect all equipment power sources and rack mount the SMX, following the detailed instructions in chapter 2, *SMX System MultiMatrix Switchers User's Manual* found online at **www.extron.com.**

Step 2 — Connect inputs

Connect inputs from video and/or audio sources to the applicable I/O board connectors marked "Inputs" (see table on page 1-2 for connector/signal types).

Step 3 — Connect outputs

Connect audio and video output devices to the applicable I/O board connectors marked "Outputs" (see table on page 1-2). See page A-3 for audio connector wiring details

Step 4 — Connect control devices

LAN Ethernet port — Connect to an Ethernet LAN or WAN via this RJ-45 connector ② to control the switcher from a remote location, using a PC's Internet browser. See page A-2 for network cable termination method.

The Ethernet connection indicator LEDs marked "Link" and "Act", indicate the status of the SMX's Ethernet connection. The Link LED lights **green** when connected to an Ethernet LAN, and the Act LED flickers **amber**, as the devices communicate.

NOTE *Do not use standard telephone cables, as they do not support Ethernet or Fast Ethernet. Do not stretch or bend cables as transmission errors could occur.*

Remote port — For serial RS-232 or RS-422 control, connect a host computer or control system via this 9-pin D connector ④.


ADDRESS

RS-232 protocol (default values):
• 9600 baud • 1 stop bit • no parity • 8 data bits • no flow control.

NOTE *See chapter 4, "SIS™ Programming and Control", in the SMX User's Manual, for definitions of the SIS commands. See chapter 5, "SMX Software" to install and use the control software.*

Step 5 — Connect power

AC power connector — Plug in a standard IEC power cord from a 100 to 240 VAC, 50 - 60 Hz power source into this receptacle ①.

Step 6 — Set plane address

Set the plane address (0-15) with the 16 position (0-F) rotary encoder ⑬.

Installing/swapping the Input/Output boards

The I/O boards used in any installation will vary and can be installed and changed as desired.

NOTE *All boards are hot-swappable, and can be installed without shutting down the switcher and removing the power.*

Follow the instructions on the card supplied with the boards.

Front Panel Overview

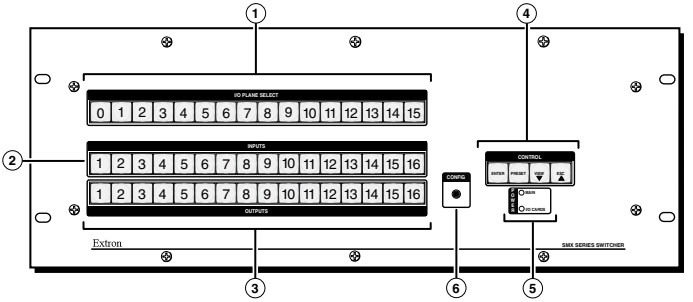

Figure 2-3 — Front Panel features

① **I/O Plane address selection buttons —** Select I/O planes (0-15), and buttons 0 and 1 select RS-232 or RS-422 communication.

② **Input selection buttons —** Select/switch inputs, creates and removes ties, sets background illumination (press/hold inputs 0 and 1), or indicates output audio volume.

③ **Output selection buttons —** Select/switch outputs, creates and removes ties, and indicates input audio gain/attenuation.

NOTE *Input and output buttons are also used to save and recall global and plane addresses.*

④ **Control buttons —** Enter, Preset, View, and Esc. Used to configure unit, save/recall presets, create/remove/view ties, audio volume/gain adjustment, lock modes, and port configuration.

⑤ **Power status LEDs —** Indicates **p**ower status for main unit and I/O boards.

⑥ **Front panel configuration port —** Connect a control system or computer to this (RS-232) port, using an optional 9-pin D to 2.5 mm mini jack TRS RS-232 cable, part **#70-335-01**. RS-232 protocol (default values): • 9600 baud • 1 stop bit • no parity • 8 data bits • no flow control

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Chapter Three

Front Panel Operation

Creating Ties

Viewing Ties

Muting or Unmuting Outputs

Removing Ties

I/O Presets

Setting the Front Panel Locks (Executive Modes)

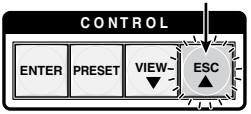
Adjusting the Input Audio Level

Adjusting the Output Audio Volume

Reset Levels

Creating Ties

Step 1 – Press and release Esc.

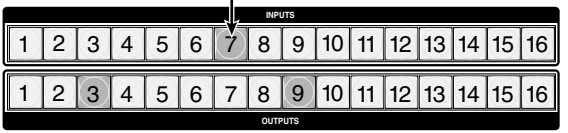


Flashes green once. Clears pending changes.

Step 2 – Press and release the desired I/O Plane button.

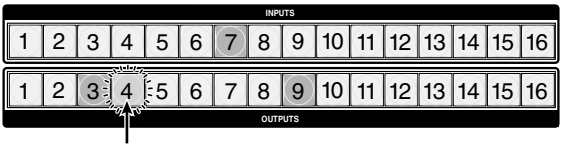
*I/O plane and input buttons lights **green** if on a **video** plane, **red** if on an **audio** plane, or **amber** if on a video and audio plane.*

Step 3 – Press desired Input button.



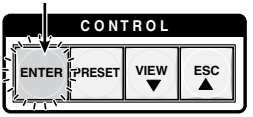
Currently tied outputs light. Input 1 turns off.

Step 4 – Press and release desired output button(s).



*Output button blinks. Enter button also blinks (**green**).*

Step 5 – Press and release Enter.

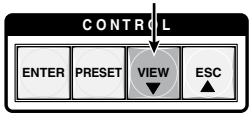


Button lights turn off. Ties are now made.

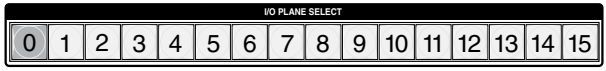
NOTE *An input can be tied to multiple outputs. An ouptuts can only have one input.*

Viewing Ties

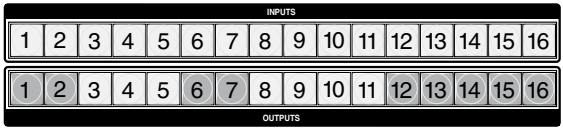
Step 1– Press the View button.



*View button lights **red***



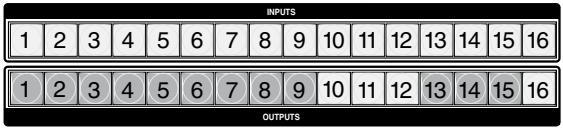
Last plane button used lights.



***Untied** buttons light No input buttons light.*

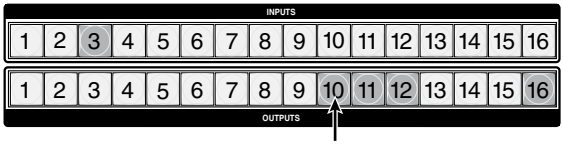
Step 2 – To view ties for another plane, press that plane button.

Selected plane button lights



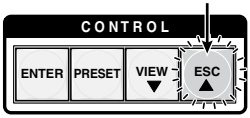
***Untied** output buttons light. Muted outputs blink*

Step 3 – To view inputs tied to an output, press a tied output button.



*Tied outputs and associated input light. **Untied** output buttons turn off.*

Step 4 – Press and release Esc.



NOTE *If all outputs light, no outputs are tied. If no outputs light, all outputs are tied.*

Maximum number of outputs lit corresponds to number of outputs on the I/O board (4, 8, or 16).

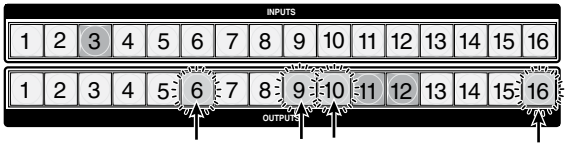
Esc blinks green once. Button lights turn off. No changes are made to ties.

Muting or unmuting Outputs

NOTE *When front panel is in lockout mode 2, the output mute status can be viewed only. No changes (i.e. muting or unmuting) can be made from the front panel.*

Follow steps 1 – 3 of "Viewing Ties".

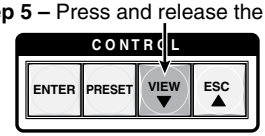
Step 4 – To mute outputs, press and hold lit or unlit output button(s) for 2 seconds.
To unmute outputs, press and hold blinking output button(s) for 2 seconds.



Muting – Selected previously lit buttons blink, indicating outputs are now muted.
Unmuting – Previously blinking buttons remain lit, indicating those outputs are now unmuted.

NOTE *For video, only RGB is muted. Sync is not muted. For RGBHV systems, only the R, G, and B boards are muted, and the H and V boards remain active. All tied and untied outputs can be muted.*

Step 5 – Press and release the View button.

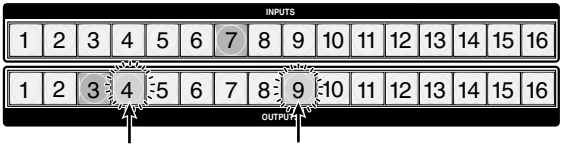


All buttons turn off.

Removing Ties

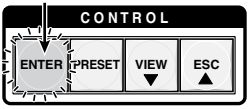
Follow steps 1 – 3 of "Creating Ties".

Step 4 – Press and release desired **lit** output button(s).



*Selected outputs blink. Enter button also blinks (**green**).*

Step 5 – Press and release Enter button to remove ties.



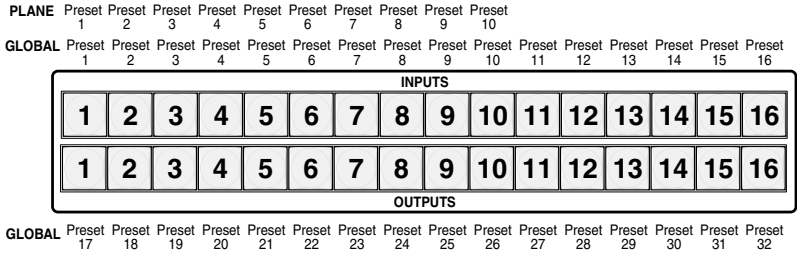
All buttons extinguish. Ties to selected ouptuts have been removed.

I/O Presets

The SMX has a total of thirty-two global preset (using I/O buttons 1-16) and ten plane preset (input buttons 1-10) addresses available.

Global preset — Saves and recalls configurations for all planes. Use the input buttons (for presets 1 through 16) and output buttons (for presets 17 through 32) to save any current tie configuration to any one of the presets.

Plane preset — Saves and recalls the configurations for a specific plane, without affecting the other plane connections. Use input buttons 1-10 to save a plane preset.



Global and plane preset addresses

Read all the notes below.

NOTE *Presets **cannot** be viewed from the front panel unless recalled as the current configuration. Presets can be seen using the Windows®-based SMX Control Program. Refer to the* SMX User's Manual.

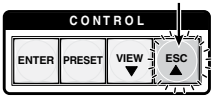
The current configuration and all presets are stored in non-volatile memory. When power is removed and restored, the current configuration remains active and all presets are retained.

Only lit presets can be recalled. When a preset is recalled, it replaces the current configuration, and overwrites all of the current ties in favor of its own ties. Current configuration is lost unless previously stored as a preset.

Audio gain settings are not saved with the preset and do not change when a preset is recalled. Only the audio and video ties are stored and recalled.

Saving or recalling a global preset

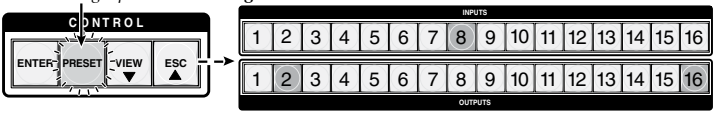
Step 1 – Press and release Esc.



Flashes green once and clears pending changes.

Step 2 – To **save** a global preset, press and **hold** the Preset button (for about 2 seconds).
– To **recall** a global preset, press and **release** the Preset button.

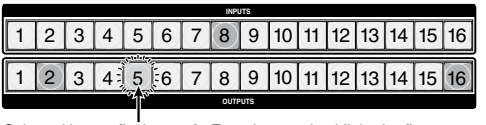
NOTE *Saving a preset – Preset button **flashes red** (shown here).*
*Recalling a preset – button **lights red.***



*Buttons for any previously saved global presets light **red** (here presets 8, 18, and 32). Any lit or unlit button can be saved to.*

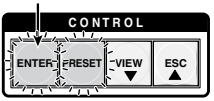
Step 3 – (To save) Press and release the desired input or output button (here output 5, preset 21).
– (To recall) Press and release the desired **lit** input or **lit** output button.

NOTE *When saving the current global configuration to a previously saved global preset, existing data is overwriten.*



*Selected button flashes **red.** Enter button also blinks (**red**).*

Step 4 – Press the Enter button to save or recall preset.



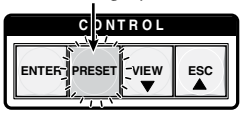
Current configuration is saved to global preset 21 and all buttons turn off.

Saving or recalling a plane preset

Follow step 1 of "Saving or recalling a global preset".

Step 2 – To **save** a plane preset, press and **hold** the Preset button (for 2 seconds).
– To **recall** a plane preset, press and **release** the Preset button.

NOTE *Saving a preset – Preset button **flashes red** (shown here).*
*Recalling a preset – Preset button **lights red.***



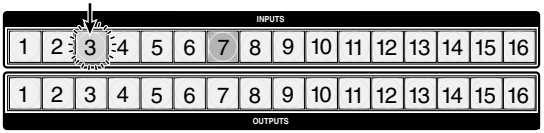
NOTE *At this time all lit presets are global presets, **not** plane presets.*

Step 3 – Press the desired plane button (here plane 0).

Plane button lights amber.

NOTE *At this time all global presets go out and any saved **plane** presets light red (here plane preset #7).*

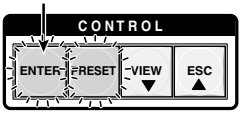
Step 4 – (To save) Press and release the desired input button (here plane preset 3).
– (To recall) Press and release the desired **lit** input button.



*Selected button flashes **red.** Enter button also blinks (**red**).*

NOTE *When saving the current plane configuration to a previously saved plane preset, the existing data is overwriten.*

Step 5 – Press the Enter button to save or recall the plane preset.



Current configuration is saved to plane preset 3 and all buttons turn off.

Setting the Front Panel Locks (Executive Modes)

The matrix switcher has three levels of front panel security lock.

Lock mode 0 — The front panel is completely unlocked and all front panel controls are available. Basic and advanced features are available.

Lock mode 1 (Executive mode) — All changes are locked from the front panel (except for setting Lock mode 2). Only View mode is available.

Lock mode 2 (Advanced Executive mode) — Basic functions are unlocked. Advanced features are locked and can be viewed only (default mode).

Basic features consist of:

Making ties, saving and recalling presets, setting input audio gain and attenuation, and changing lock modes.

Advanced features consist of:

Setting video and audio output mutes, setting audio output volume, setting RGB delay (VGA, RGBHV boards), setting the rear panel remote port protocol and baud rate.

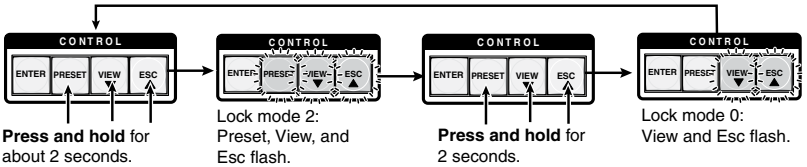
NOTE *The switcher is shipped from the factory in Lock mode 2.*

Selecting Lock mode 2 or toggling between mode 2 and mode 0

NOTE *If the switcher is in Lock mode 0, this procedure selects mode 2. Preset, View, and Esc buttons flash green twice.*

If it is in Lock mode 2, this procedure selects mode 0 (unlocks the switcher). View and Esc flash green twice.

To toggle between lock mode 2 and lock mode 0

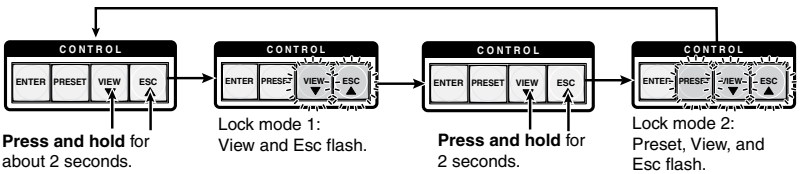


Selecting Lock mode 1 or toggling between mode 2 and mode 1

NOTE *If the switcher is in Lock mode 1, this procedure selects mode 2. Preset, View, and Esc buttons flash green twice.*

If the switcher is in Lock mode 2, this selects mode 1. View and Esc buttons flash green twice.

To toggle between lock mode 1 and lock mode 2



Adjusting the Input Audio Level

The audio level of each input can be displayed and adjusted through a range of -18 dB to +24 dB. The level can be adjusted from the front panel, or via RS-232or Ethernet connection.

NOTE *Refer to the* SMX User's Manual *for adjustment methods using SIS commands.*

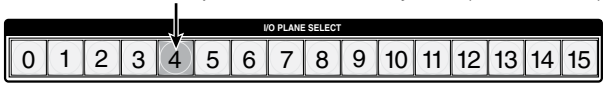
Using the front panel

Example: Change inputs 8's audio level settings from -9dB to +20 dB. Input 8 is on audio plane 4.

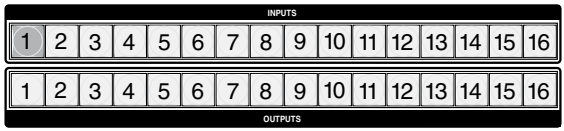
Step 1 – Press and release Esc.

Flashes green once and clears pending changes.

Step 2 – Press audio I/O plane button to be adjusted (here button 4).

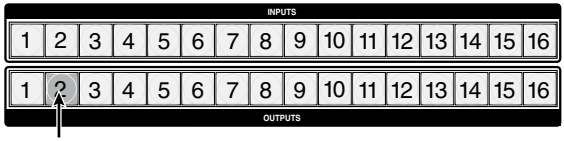


*Plane button lights **red,** indicating an audio (signal) plane.*



*I/O button 1 lights **red.***

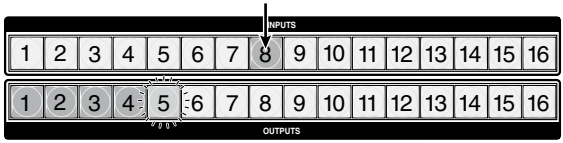
Step 3 – Press and **hold** any I/O plane button until audio plane button flashes.



*I/O button momentarily lights **red** until audio plane button flashes. I/O button 1 turns off.*

*Selected audio plane button flashes **red** and I/O button turns off.*

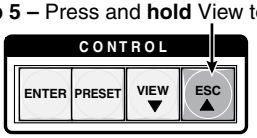
Step 4 – Press the button for the input needing the audio level adusted (here 8).



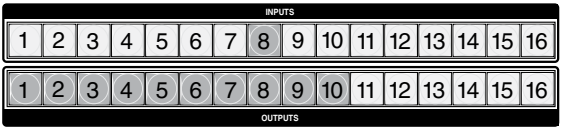
*Selected input button lights **green,** and View button lights **red.***
The current audio level dB is indicated by the lit and flashing output buttons.
*Here buttons 1-4 lit and 5 flashing **red** indicates an input level of -9 dB.*
(See Input Audio Level Table for button lighting and dB levels.)

NOTE *View button lights **red** and output buttons are **red** when current audio level is negative dB, and Esc button lights **red** and output buttons are **green** when it is positive dB.*

Step 5 – Press and **hold** View to decrease or Esc to increase audio level (here Esc).



*Selected control button lights **red**.*



*Selected input button remains lit. Outputs light, flash, or go out as the level changes. Here the dB is raised to +20 dB. Outputs 1-10 are lit **green**.*
(See Input Audio Level Table for button lighting and dB levels.)
*Additional inputs can be adjusted by repeating steps **4** and **5**.*

Step 6 – Press Enter to leave the input audio level adjustment mode.
All buttons go out.

Input Audio Level Table

dB	Color	Output Buttons lit	+/-	dB	Color	Output Buttons lit	+/-
24	green	12	▲	-1	red	1 flash	▼
23	green	12 flash	▲	-2	red	1 flash	▼
22	green	11	▲	-3	red	2 flash	▼
21	green	11 flash	▲	-4	red	2 flash	▼
20	green	10	▲	-5	red	3 flash	▼
19	green	10 flash	▲	-6	red	3 flash	▼
18	green	9	▲	-7	red	4 flash	▼
17	green	9 flash	▲	-8	red	4 flash	▼
16	green	8	▲	-9	red	5 flash	▼
15	green	8 flash	▲	-10	red	5 flash	▼
14	green	7	▲	-11	red	6 flash	▼
13	green	7 flash	▲	-12	red	6 flash	▼
12	green	6	▲	-13	red	7 flash	▼
11	green	6 flash	▲	-14	red	7 flash	▼
10	green	5	▲	-15	red	8 flash	▼
9	green	5 flash	▲	-16	red	8 flash	▼
8	green	4	▲	-17	red	9 flash	▼
7	green	4 flash	▲	-18	red	9	▼
6	green	3	▲				
5	green	3 flash	▲				
4	green	2	▲				
3	green	2 flash	▲				
2	green	1	▲				
1	green	1 flash	▲				
0							

▲ = Esc
▼= View

NOTE *There is only one audio level setting per input and one per output on an audio plane. The audio level and volume is shared by the left and right inputs and outputs.*

Audio levels and volumes are stored in nonvolatile memory. When power is removed or restored, settings are retained.

*If the audio is set to "follow all", at initial selection (step **2**) the I/O plane and tied I/O buttons light amber. When an input or output button is held (step **3**), the plane blinks red.*

Adjusting the Output Audio Volume

The audio output level of each output can be displayed and adjusted through a range of 64 steps (1 dB per step 0% to 100%). The audio level can be adjusted from the front panel, RS-232, or through Ethernet. Adjustment is attenuation only.

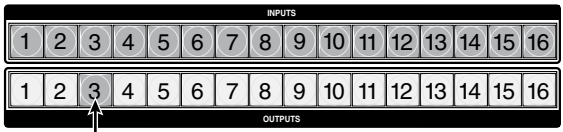
NOTE *Refer to the SMX Users Manual for adjustment methods using SIS commands.*
Front panel adjustment and viewing are only available when the unit is in Lock mode 0.

Using the front panel

Example: Reduce output 3's (on plane 4) audio volume to 65.5%.

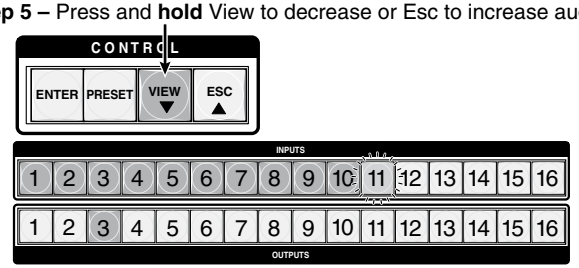
Follow steps **1**, **2**, and **3** as shown in the previous section ("Adjusting the Input Audio Level"), page 3-9.

Step 4 – Press the button for the **output** needing the audio volume adusted (here 3).



*Selected output button lights **green,** and View button lights **red.***
The current audio volume is indicated by the lit and flashing input buttons.
*Here input buttons 1-16 lit **green** indicate an output volume of 100% (0 dB attentuation).*
(See Output Audio Volume Table for button lighting and volume percentages.)

Step 5 – Press and **hold** View to decrease or Esc to increase audio level (here View).



Selected output button remains lit. Inputs light, flash, or go out as the volume changes.
*Here the volume is decreased to 65.5%. Inputs 1-10 are lit **green**, and 11 is flashing slowly.*
*Additional outputs can be adjusted by repeating steps **4** and **5**.*

Step 6 – Press Enter to leave the output audio volume adjustment mode.
All buttons go out.

Output Audio Volume Table							
Volume %	dB Attenuation	Buttons lit	SIS commnand	Volume %	dB Attenuation	Buttons lit	SIS commnand
100	0	16	plane*out# *64V/v	52.0	32	8	plane*out# *32V/v
98.5	1	16	63	50.5	33	8	31
97.0	2	slow	62	49.0	34	slow	30
95.5	3	slow	61	47.5	35	slow	29
94.0	4	15	60	46.0	36	7	28
92.5	5	15	59	44.5	37	7	27
91.0	6	slow	58	43.0	38	slow	26
89.5	7	slow	57	41.5	39	slow	25
88.0	8	14	56	40.0	40	6	24
86.5	9	14	55	38.5	41	6	23
85.0	10	slow	54	37.0	42	slow	22
83.5	11	slow	53	35.5	43	slow	21
82.0	12	13	52	34.0	44	5	20
80.5	13	13	51	32.5	45	5	19
79.0	14	slow	50	31.0	46	slow	18
77.5	15	slow	49	29.5	47	slow	17
76.0	16	12	48	28.0	48	4	16
74.5	17	12	47	26.5	49	4	15
73.0	18	slow	46	25.0	50	slow	14
71.5	19	slow	45	23.5	51	slow	13
70.0	20	11	44	22.0	52	3	12
68.5	21	11	43	20.5	53	3	11
67.0	22	slow	42	19.0	54	slow	10
65.5	23	slow	41	17.5	55	slow	9
64.0	24	10	40	16.0	56	2	8
62.5	25	10	39	14.5	57	2	7
61.0	26	slow	38	13.0	58	slow	6
59.5	27	slow	37	11.5	59	slow	5
58.0	28	9	36	10.0	60	1	4
56.5	29	9	35	8.5	61	1	3
55.0	30	slow	34	7.0	62	slow	2
53.5	31	slow	plane*out# *33V/v	5.5	63	slow	1
				0	76	0	0

Reset Levels

The rear panel has a recessed Reset button (see page 2-2, ③) that initiates four levels of resets (numbered 1, 3, 4, and 5). Use a pointed stylus, ballpoint pen, or Extron Tweeker to access it and enter the reset levels.

See the table on next page for a summary of the modes.

CAUTION *Review the reset modes carefully. Using the wrong reset mode may result in unintended loss of flash memory programming, port reassignment, or a controller reboot.*

NOTE *The reset modes listed below close all open IP and Telnet connections and close all sockets. Also, the following modes are separate functions, not a continuation from mode 1 to mode 5.*

If the reset button is continuously held down, the I/O lights blink every 3 seconds and enter a different reset level, corresponding to modes 3, 4, and 5.

Reset mode uses

Use mode 1 to revert to the factory default firmware version if incompatibility issues arise with user-loaded firmware.
See notes on next page.

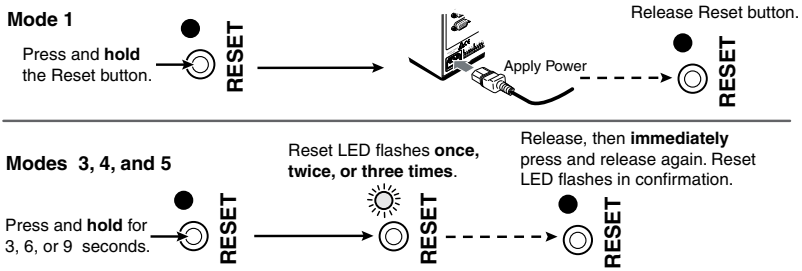
Use mode 3 to restart the communication and control events.

Use mode 4 to reset most IP protocols to their default settings.

Use mode 5 to restore the switcher to the default conditions.

NOTE *Mode 5 reset clears most adjustments. To save these settings, use the Windows-based SMX Control Program and the* **File** > **Save MATRIX settings as...** *selection before you perform this reset (see chapter 4, "SIS Programmer's Guide").*

To reset the switcher:



Reset Mode Table		
Mode	**Action**	**Result**
1	Hold down the recessed Reset button while applying power to the switcher.	**Defaults switcher to factory installed firmware.** Event scripting will not start if the switcher is powered on in this mode. All user files and settings (drivers, adjustments, IP settings, etc.) are maintained. See notes below.
3	Hold down the Reset button for 3 seconds, **until the Reset LED blinks once**, then press Reset momentarily (<1 second) within 1 second.	**Mode 3 turns events on or off.** During resetting, the Reset LED flashes 2 times if events are starting, 3 times if events are stopping.
4	Hold down the Reset button for 6 seconds, **until the Reset LED blinks twice** (once at 3 seconds, again at 6 seconds) then press Reset momentarily (<1 second) within 1 second.	**Mode 4:** • Enables ARP capability. • Sets IP address to factory default. • Sets subnet address to factory default. • Sets gateway address to factory default. • Sets port mapping to factory default. • Turns DHCP off. • Turns events off. The Reset LED flashes four times in quick succession confirming the reset.
5	Hold down the Reset button for 9 seconds, **until the Reset LED blinks three times** (once at 3 seconds, again at 6 seconds, and then again at 9 seconds). Then press Reset momentarily (<1 second) within 1 second.	**Mode 5 performs a complete reset to factory defaults (with the exception of the firmware):** • Does everything mode 4 does. • Resets almost all real time adjustments: clears all ties and presets, clears all audio or RS-232 mutes, clears all I/O grouping, clears all RGB delay settings to zero, and clears all input and output audio settings. • Resets all IP options. • Removes/clears all files for the switcher. The reset LED flashes four times in quick succession confirming the reset.

NOTE *After a mode 1 reset is performed, update the switcher's firmware to the latest version. Do not operate the switcher firmware version that results from the mode 1 reset. If you want to use the factory default firmware, you must upload that version again.*

If you do not want to update firmware, or you performed a mode 1 reset by mistake, cycle power to the switcher to return to the firmware version that was running before the mode 1 reset. Use the 0Q SIS command to confirm that the factory default firmware is no longer running (look for the asterisk [*] following the version number).

Chapter Four

SIS™ Programmer's Guide

Selected SIS™ Commands

SIS Command Tables

Selected SIS™ Commands

The switchers use Simple Instruction Set (SIS) commands for operation and configuration. These commands can be run from a PC connected to either of the switcher's serial ports or the Ethernet port. See ② and ④ on page 2-2, and ⑥ on page 2-6, for connection information.

NOTE *The tables that begins on the page 4-4 are a partial list of SIS commands. For a complete list, refer to the* SMX User's Manual, *chapter 4, "Programmer's Guide".*

Establishing a network (Ethernet) connection

1. Open a TCP socket to port 23 using the switcher's IP address.

   NOTE *The factory default IP address is 192.168.254.254.*

   The switcher responds with a copyright message including the date, the name of the product, firmware version, part number, and the current date/time.

2. If the switcher is not password-protected, the device is now ready to accept SIS commands.

   If the switcher is password protected, enter the appropriate password. If accepted, the switcher responds with `Login User` or `Login Administrator`. If the password is not accepted, the `Password` prompt reappears.

Connection time-outs

The Ethernet link times out and disconnects after a designated period of time of no communications. By default, this time-out value is set to five minutes but the value can be changed.

NOTE *Extron recommends leaving the default time-out at five minutes and periodically issuing the Query (Q) command to keep the connection active or disconnecting the socket and reopening the connection when necessary.*

Number of connections

A switcher can have up to 200 simultaneous TCP connections, including all HTTP sockets and Telnet connections. When the limit is reached, the switcher accepts no new connections until some have been closed. No error message or indication is given that the limit has been reached. To maximize performance unnecessary open sockets should be closed.

Verbose mode

Telnet connections to a switcher can be used to monitor changes that occur on the switcher. The Telnet session must be in verbose mode 1 or 3. See the Verbose Mode command in the SIS command tables.

Host-to-switcher instructions

SIS commands consist of one or more characters per command field and do not require any special characters to begin or end the sequence. Switcher response to an SIS command ends with a carriage return and a line feed, which signals the end of the character string (string = one or more characters).

↵ = CR/LF (carriage return/line feed)

← = Carriage return (no line feed) • = Space character

Error messages

E01 = Invalid input number
E10 = Invalid command
E11 = Invalid preset number
E12 = Invalid output number
E13 = Invalid parameter
E14 = Invalid for this configuration
E24 = Privilege violation
E25 = Device not present (invalid plane/slot)
E26 = Maximum number of connections exceeded
E27 = Invalid event number
E28 = Bad filename/file not found

EDID — Extended Display Identification Data

A communications protocol or instruction set for the identification of display devices to computers using the DDC (Display Data Channel) transmission standard. See page 4-10 for SIS commands.

EDID Minder Table — DDC source selection

SIS value X32	Resolution	Refresh (Hz)	SIS value X32	Resolution	Refresh (Hz)
0	Automatic		21	1280x1024	60
1	Output 1		22	1280x1024	75
2	Output 2		23	1365x768	60
3	Output 3		24	1365x768	75
4	Output 4		25	1366x768	60
5	Output 5		26	1366x768	75
6	Output 6		27	1400x1050	60
7	Output 7		28	1600x1200	60
8	Output 8		29	480p	60
9	640x480	60	30	576p	50
10	640x480	75	31	720p	50
11	800x600	60	32	720p	60
12	800x600	75	33	1080i	50
13	852x480	60	34	1080i	60
14	852x480	75	35	1080p	50
15	1024x768 (default)	60	36	1080p	60
16	1024x768	75	37	User assigned	
17	1024x852	60	38	User assigned	
18	1024x852	75	39	User assigned	
19	1280x768	60	40	User assigned	
20	1280x768	75			

SIS Command Tables

Command	ASCII command (host to switcher)	Response (switcher to host)	Additional description
Output switching by plane			
NOTE *The & tie command for RGBHV and the % tie command for video can be used interchangeably. The **!** tie command can be used for switching both video signals and audio signals with the same plane address.*			
Tie input to an output (RGBHV)	X22*X2*X3 &	X22Out X3 • In X2 • RGB↵	Tie input X2 to output X3 on plane X22 for RGB signals.
Tie input to an output (video)	X22*X2*X3 %	X22Out X3 • In X2 • Vid↵	Tie input X2 to output X3 on plane X22 for video signals.
Tie input to an output (audio)	X22*X2*X3 $	X22Out X3 • In X2 • Aud↵	Tie input X2 to output X3 on plane X22 for audio signals.
Tie input to an output (all)	X22*X2*X3 !	X22Out X3 • In X2 • All↵	Tie input X2 to output X3 on plane X22 for all signals.
NOTE *Commands can be entered back-to-back in a string with no spaces. For example: 1*1*1&001*002*002&001*003*003&001.... The SMX supports 1-, 2-, and 3-digit numeric entries (1*1*1!, 01*02*02&, or 001*003*003%). The & **tie** command for RGB and the % **tie** command for video can be used interchangeably. The & **read tie** command for RGB and the % **read tie** command for video can be used interchangeably.*			
Tie input to all (RGBHV)	X22*X2*&	X22In X2 • RGB↵	Tie input X2 to all outputs on plane X22 for RGB signals.
Tie input to all (video)	X22*X2*%	X22In X2 • Vid↵	Tie input X2 to all outputs on plane X22 for video signals.
Tie input to all (audio)	X22*X2*$	X22In X2 • Aud↵	Tie input X2 to all outputs on plane X22 for audio signals.
Tie input to all (audio and video)	X22*X2*!	X22In X2 • All↵	Tie input X2 to all outputs on plane X22, all signals.

NOTE

X2 = Input number	01 – (maximum number of inputs for your model), 00 = untied
X3 = Output number	01 – (maximum number of outputs for your model)
X22 = Plane number	00 – 15, 90-99 (virtual plane)

Command	ASCII command (host to switcher)	Response (switcher to host)	Additional description
Quick multiple tie			
Make multiple ties	Esc+Q X22*X2*X3 ! ...X22*X2*X3$ ←	Qik ↵	Make multiple ties with one command entry.
Example:	Esc+Q01*3*4!01*3*5%.. 01*3*6$↵	Qik↵	Tie plane 01's input 3 to outputs 4, 5, and 6.
NOTE *This command activates all I/O switches simultaneously.*			
View ties			
NOTE *If the view follow-all tie command (!) is used for an output with a break-away tie, the switcher responds with an error message, E14.*			
View video output tie	X22*X3%	X2↵	View video input tied to output X3 on plane X22.
		X22OutX3•InX2•Vid↵	(in verbose mode)
View RGBHV output tie	X22*X3&	X2↵	View RGBHV input tied to output X3 on plane X22.
View audio output tie	X22*X3$	X2↵	View audio input tied to output X3 on plane X22.
		X22OutX3•InX2•Aud↵	(in verbose mode)
RGB/Video mute			
RGB/video mute	X22*X3*1B/b	X22Vmt X3*1↵	Mute RGB/video output X3.
RGB/video unmute	X22*X3*0B/b	X22Vmt X3*0↵	Unmute RGB/video for X3.
Read RGB mute	X22*X3B/b	X9↵	Read RGB/video output X3.
RGB/video mute per plane	X22*1*B/b	X22Vmt00*1↵	Mute RGB/video plane.
RGB/video unmute per plane	X22*0*B/b	X22Vmt00*0↵	Unmute RGB/video plane.

NOTE

X2 = Input number	01 – (maximum number of inputs for your model), 00 = untied
X3 = Output number	01 – (maximum number of outputs for your model)
X9 = Mute status	0 = off, 1 = on
X22 = Plane number	00 – 15

Command	ASCII command (host to switcher)	Response (switcher to host)	Additional description
Audio mute			
Audio mute	X22*X3*1Z/z	X22AmtX3*1↵	Mute audio output X3.
Audio unmute	X22*X3*0Z/z	X22AmtX3*0↵	Unmute audio for X3.
Read audio mute	X22*X3Z/z	X9↵	Read audio output X3.
Audio mute entire plane	X22*1*Z/z	X22Amt00*1↵	Mute audio.
Audio unmute entire plane	X22*0*Z/z	X22Amt00*0↵	Unmute audio.
View mute			
View output mutes (per plane)	Esc X22VM↵	X14[1]X14[2]...X14[n]↵	View output mute for plane X22.
		Mut X22•X14[1]X14[2]...X14[n]↵	(in verbose mode)
Global presets (all planes)			
Save current ties as a global preset	X11,	SprX11↵	Save the current set of ties as global preset X11. The command character is a comma (,).
Example:	9,	Spr09↵	Save current tie set as preset 9.
Recall a global preset	X11.	RprX11↵	Recall global preset X11, and becomes the current configuration. Command character is a period (.).
Example:	5.	Rpr05↵	Recall preset 5 as current configuration.

NOTE *If you attempt to recall a preset that has not been saved, the SMX responds with the E11 error code.*

NOTE

X3 = Output number	01 to maximum number of outputs
X9 = Mute status	0 = off, 1 = on
X11 = Preset number	01 – 32 (global presets), 1-10 (plane presets)
X14 = Video/audio mute status	0 = no mutes, 1= video mute, 2 = audio, 3 = video and audio mute
X22 = Plane address	00 to 15 (for 16 planes)

Command	ASCII command (host to switcher)	Response (switcher to host)	Additional description
Plane presets			
Save current ties as a plane preset	X22*X11*0,	X22SprX11↵	Save the current set of ties as plane preset X11. The command character is a comma (,).
Recall a plane preset	X22*X11*0.	X22RprX11↵	Recall plane preset X11, which becomes the current configuration. The command character is a period (.).
Virtual (multi plane) definition			
Write virtual plane address	Esc X29,X22[1],X22[2], ...X22[n]MP ←	MpvX29,X22[1],X22[2],...X22[n]↵	Write virtual plane address (90 to 99).
Read virtual plane address	Esc X29MP ←	X22[1],X22[2], ...X22[n]↵	Read virtual plane address.
Front panel lockout (executive mode)			
Lock front panel (advanced functions)	2X/x	Exe2↵	Enable advanced executive mode.
Lock front panel (advanced and basic functions)	1X/x	Exe1↵	Enable executive mode.
Unlock front panel	0X/x	Exe0↵	Disable executive mode.
View front panel lock status	X/x	X9 ↵	X9 = status of executive mode.

NOTE *For full Lock mode details, refer to chapter 3, "Setting the Front Panel Locks (Executive Modes)" section.*

NOTE
X9 = Executive mode: 0 = unlocked (all functions); 1= locked (basic and advanced); 2 = locked (advanced, default value)
X11 = Preset number 01 – 32 (global presets), 1-10 (plane presets)
X22 = Plane number 00 – 15
X29 = Virtual plane number 90 –99

Command	ASCII command (host to switcher)	Response (switcher to host)	Additional description
Information requests			
NOTE *Firmware version/part number/information is for the primary frame only.*			
Query firmware version	Q	X21↵	The firmware version is 1.00 (sample value).
Example:	Q	1.00↵ Ver01*X21↵	(verbose response)
Query system status	S	X24•X24•X24•X25•X26•X26•X77•X78↵	
Example:	S	Sts0* 3.31 4.98 24.22 +100.40 03305 03308 1 0↵ (verbose response) 3.31 and 4.98 are power supply voltages; 24.22 is fan voltage, 100.40 (degrees F) is the temperature, 03305 is fan 1 rpm, 03308 is fan 2 rpm, 1 is primary power supply (OK).	
Query switcher information (general) per plane (16 actual and 10 virtual) plus board configuration	I	V X2 0 X X3 0 A X2 0 X X3 0 • ... V X2 16 X X3 16 A X2 16 X X3 16 • … V X2 25 X X3 25 A X2 25 X X3 25 ↵ V16x16A16x16•V--X--A--X--•V--X--A--X--•V--X--A--X--•...V--X--A--X--↵	
NOTE *The I response gives 26 parameters, the first 16 (V_x_A_x_) are plane information (planes 0-15), and the next are virtual planes 1-10 (90-99).*			
Query plane address per slot	Esc STAT↵	X22 (slot 1) • X22 (slot 2) • ... X22 (slot 6/8/10) ↵ Stat X22 (slot 1) • X22 (slot 2) • ... X22 (slot 6/8/10) ↵	(verbose response)
Slot 1 2 3 4 5 6 7 8 9 10 *Example:* stat 00•01•--•02•--•--•03•--•03•03↵ (5U frame, 10 slots) Slot 1 00 the board address installed in slot 1 is plane 00 Slot 2 01 the board address installed in slot 2 is plane 01 Slot 3 -- No board installed			

NOTE

X2 = Input number — 01 – (maximum number of inputs for your model), 00 = untied
X3 = Output number — 01 – (maximum number of outputs for your model)
X21 = Firmware version number
X22 = Plane number
X24 = Voltage (+ or - voltage)
X25 = Temperature
X26 = Fan speed (rpm)
X77 = Primary power supply (0 = not installed, 1 = OK
X78 = Secondary (redundant) power supply (0 = not installed, 1 = OK)

Command	ASCII command (host to switcher)	Response (switcher to host)	Additional description
Query part number and slot information	**N**	**60-xxx-yy**	
	*N	**60-xxx-yy.**X23n[1]X23n[2]X23n[3]..... X23n[6/8/10]↵	
		Pno 60-xxx-yy.X23n[1]X23n[2]X23n[3].... X23n[6/8/10]↵	(verbose response)

Example: *N Pno60-857-01.L04J07G00G00G00G15D00D15C00C15

where X23n[x] = XYZ; X = type of board (B-T & X), YZ = board size (00-15) and n[x] is the number of the slot the board is installed in.

NOTE *For all combinations see tables at right.*
Upper table gives X value. Lower table gives YZ value.

n[1] = Slot 1 L04 DVI board (L) 4x4 configuration (04) - 1 slot board
n[2] = Slot 2 J07 HD-SDI board (J) 8x8 configuration (07) - 1 slot board
n[3] = Slot 3 G00 Slot 3 is covered by VGA board (G) no board (0)
n[4] = Slot 4 G00 Slot 4 is covered by VGA board (G) no board (0)
n[5] = Slot 5 G00 Slot 5 is covered by VGA board (G) no board (0)
n[6] = Slot 6 G15 VGA board (G) 1616 configuration (15) - 4 slots board
n[7] = Slot 7 D00 Slot 7 is covered by S-video BNC board top (D) no board (0)
n[8] = Slot 8 D15 S-video BNC top board (D) 1616 configuration (15) - 2 slots (top) of 4
n[9] = Slot 9 C00 Slot 9 is covered by S-video BNC board bottom (C) no board (0)
n[10]= Slot 10 C15 S-video BNC top board (C) 1616 configuration (15) - 2 slots (bottom) of 4

NOTE *A slot response can show either no board installed (X00), or the slot is covered by a multi slot board as shown in example above; slots 3, 4, and 5, (G00) are covered by the 1616 VGA board in slot 6.*

(X)	Board Type	(X)	Board Type
B	Video	L	DVI
C	S-video	M	DVI
D	S-video	N	DVI PRO
E	Wideband	O	HDMI
F	S-video DIN	P	FOMX 1616
G	VGA	Q	FOMX 88
H	VGA	R	RESERVED
I	Audio analog	S	RESERVED
J	SDI/HDSDI	T	RESERVED
K	Sync	X	No board installed

Reference # (YZ)	Board Size	Note
15	16x16	
08	8x8x2	For sync and S-video
07	8x8	
06	8x4	
05	4x8	
04	4x4	
00	No board installed or slot covered by multi slot board	Refer to next slot for size of board.

Command	ASCII command (host to switcher)	Response (switcher to host)	Additional description
EDID (Extended Display Identification Data) commands			
Assign EDID data to input	Esc A X30 * X01 * X32 EDID ←	X30 EdidA X01 * X32 ↵	
Assign EDID data to all inputs	Esc A X30 * X32 * EDID ←	X30 EdidA00 * X32 ↵	
Save output #1 EDID data to user space	Esc S X30 * X32 EDID ←	X30 EdidS X32 ↵	Only applies where X32 = 37 to 40.
View EDID data assigment	Esc A X30 * X01 EDID ←	X32 ↵ X30 EdidA X01 * X32 ↵	Verbose mode.
Export EDID file data	Esc E X30 * X32 EDID ←	X60 ↵ X30 EdidE X32 * X60 ↵	Verbose mode.
Import EDID file data to user file location	Esc I X30 * X32 EDID ← X60	X30 EdidI X32 ↵	Only applies where X32 = 37 to 40.

NOTE *For EDID table see page 4-3 in this guide or refer to the online* SMX User's Manual.

NOTE
- X01 = Input number (for tie) 01 – (maximum number of inputs for your model)
- X30 = Slot address 01 – 10
- X32 = EDID reference file for DDC data 00 – 40, where **15** = default, **0** = automatic, **1-8** = stored from connected EDID monitors as reference, **9-36** = factory fixed rates, **37-40** = user definable
- X60 = EDID file data block, 128 bytes of binary data

Command	ASCII command (host to switcher)	Response (switcher to host)	Additional description
IP setup commands			
Set IP address	Esc X34CI ←	Ipi• X34↵	X34 = IP address in the format ###.###.###.###. Leading zeros in all the four fields are optional for setting values.
View IP address	EscCI←	X34↵	
Set subnet mask	Esc X19CS←	Ips•X19↵	X19 = subnet mask in the format ###.###.###.###. Leading zeros in all four fields are optional.
View subnet mask	EscCS←	X19↵	
Set gateway IP address	Esc X35CG←	Ipg•X35↵	X35 = gateway IP address in the format ###.###.###.###. Leading zeros in all the four fields are optional.
View gateway IP address	EscCG←	X35↵	
Set E-mail events for recipient	Esc X43X41,X30,X44,X45EM←	X30Ipe X43X41*X44*X45↵	
View E-mail events for recipient	Esc X43X41,X30,X44EM←	X45X45X45...X45↵	

NOTE
X19 = Subnet mask
X30 = Slot address, 00 (for F and P of X43), 01 up to 10 (for I of X43)
X34 = IP address
X35 = Gateway address
X43 = Notification selection 1: I (inputs), F (fans), P (power supply)
X41 = E-mail account, 65 to 72
X44 = Notification selection 2: If X43 = I then X44 = 00 (all inputs) or 1 to 16.
If X43 = F then X44 = 00 (both fans), or 01 (fan 1), or 02 (fan 2).
If X43 = P then X44 = 00 (both power supplies), or 01 (PS 1), or 02 (PS 2).
X45 = Notify when?: 0 = no response, 1 = fail/missing, 2 = fixed/restored, 3 = both ½, 4 = suspend, 5 =resume

Command	ASCII command (host to switcher)	Response (switcher to host)	Additional description
IP setup commands cont'd			
Set verbose mode	Esc X37CV ←	Vrb X37 ↵	Enable or disable verbose mode and/or tagged responses, in which additional information is given in query response.
NOTE *The SMX can send out unsolicited information (such as a notice of a change in input or some other setting). This a verbose (wordy) relationship between the switcher and a connected device. For a direct RS-232/422 connection, the SMX is set for verbose mode by default. When the SMX is connected via Ethernet, verbose mode is disabled by default in order to reduce the amount of communication traffic on the network. To use verbose mode with a switcher connected via Ethernet, you must set this mode to on each time you reconnect to the SMX.*			
View verbose mode	Esc CV ←	X37 ↵	
Reset commands			
Reset all device settings to factory settings	Esc ZXXX←	Zpx↵	Clears all ties and presets, audio gain and volume, and resets unit to factory default.
NOTE *Excludes IP settings, e.g., IP address, subnet mask, and gateway address. Does not remove file system.*			
Absolute system reset	Esc ZQQQ←	Zpq↵	Clears all ties and presets, and resets unit to factory default (mode 5 reset).
NOTE *Includes resetting IP address to 192.168.254.254 and subnet mask to 255.255.0.0. Firmware version remains same.*			

NOTE X37 = Verbose mode: 0 = neither verbose mode nor tagged responses enabled; 1 = verbose enabled, no tagged responses (default); 2 = tagged responses enabled, verbose mode disabled; 3 = verbose mode and tagged responses enabled

Chapter Five

Configuration and Control

Installing and Starting the SMX Control Program

Accessing the HTML Pages

Using the Web Pages to Configure the SMX

Installing and Starting the SMX Control Program

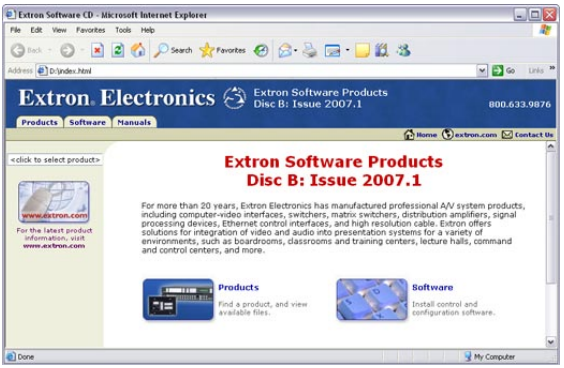
The switcher can be operated via the Windows®-based SMX Control Program. This program is contained on the Extron Software Products CD-ROM (included with the switcher). Install and run this program on a Windows-based PC connected to either of the switcher's serial ports or the Ethernet port. See ② and ④, on pages 2-2 and 2-3, or ⑥ on page 2-4, for connection information. It cannot be run from the CD-ROM.

NOTE *For full details on operating the program, refer to the* SMX User's Manual, *chapter 5, "SMX Software".*

Installing the program

1. Insert the CD-ROM into the drive. The CD self starts.

   The Extron software CD window appears.



NOTE *If the CD does not self start, run Launch.exe from the CD.*

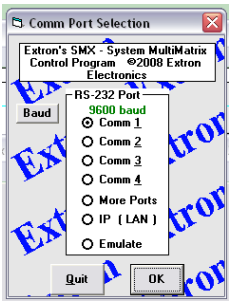
2. Click the **Software** tab.
3. Scroll to the SMX Control Program and click **Install**.

4. Follow the on-screen instructions. The installation program creates a C:\Program Files\Extron\SMX folder. Within this are created 3 icons for:
   - SMX Control pgm
   - SMX Help
   - Uninstall SMX Control pgm

Starting the program

1. Click **Start** > **Programs** > **Extron Electronics** > **SMX Control Program** > **SMX Control Pgm** icon.

   The Comm Port Selection window appears.



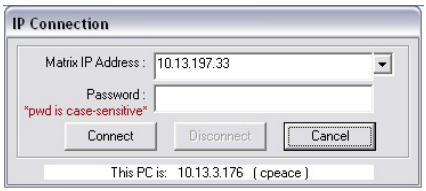
2. Choose the comm (serial) port that is connected to the switcher or **IP [LAN]**.

NOTE **For a comm port**, *check the baud rate displayed in the comm port selection window. To change the baud rate, click the* **Baud** *button, double-click the desired baud rate.*

Click **OK**.

If you selected a comm port in step 2, the SMX Control Program is ready for operation.

3. **If you selected IP [LAN] in step 2**, the IP Connection window appears.



   a. Examine the Matrix IP Address field, which displays the last Matrix IP address entered and a drop down box with a list of the most recently used IP addresses.

      If listed, select the applicable IP address, or enter the correct IP address in the field.

NOTE *192.168.254.254 is the factory-specified default IP address.*

   b. If the switcher is password protected, enter the appropriate administrator or user password in the Password field.

   c. Click **Connect**. The SMX Control Program is ready for operation.

Accessing the HTML Pages

Another way to operate the switcher is via its factory-installed HTML pages, which are always available and cannot be erased or overwritten. The switcher's HTML pages are accessible through its LAN port, connected via a LAN or WAN, using a Web browser such as Microsoft® Internet Explorer®. See ④ on page 2-3 for connection information.

NOTE *If your Ethernet connection to the matrix switcher is unstable, try turning off the proxy server in your Web browser. In Microsoft Internet Explorer, click* **Tools** > **Internet Options** > **Connections** > **LAN Settings**, *uncheck the* **Use a proxy server...** *box, and click* **OK**.

NOTE *For details on operating the switcher via HTML pages, refer to the* SMX Users Manual, *chapter 6, "HTML Operation"*.

1. Start the Web browser program.
2. Click in the browser's Address field.
3. Enter the matrix's IP address in the Address field.

NOTE *192.168.254.254 is the factory-specified address.*

4. Press the keyboard Enter key. The switcher checks to see if it is password protected.

   If the switcher is not password protected, it displays the HTML start-up page. The switcher is ready for operation via HTML remote control.

   If the switcher is password protected, the switcher displays the Connect to xx.xx.xxx.xx Password page.

NOTE *A user name entry is not required.*

5. Enter the appropriate administrator or user password in the **Password** field and click **OK**.
6. The switcher displays the HTML start-up page. The switcher is ready for operation via HTML remote control.

Using the Web Pages to Configure the SMX

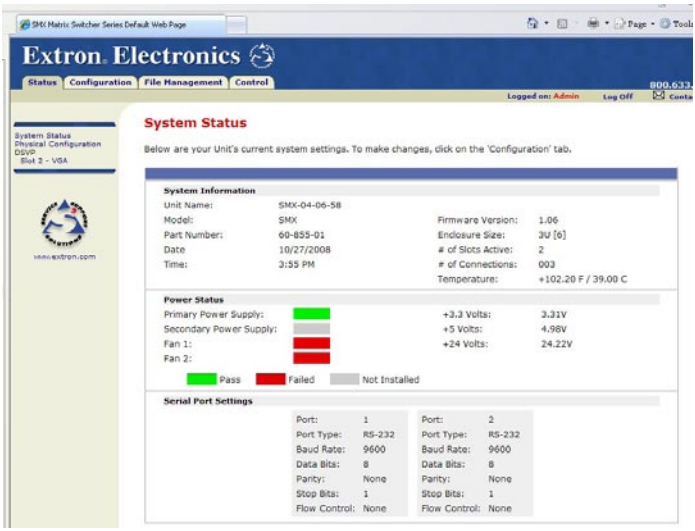
The switcher settings can be configured via LAN /WAN web pages using a suitable Internet browser (Internet Explorer®, Firefox®).

To view and configure the switcher via Web pages:

1. If not already done, connect the SMX to a PC using the rear panel RJ-45 LAN connector.
2. Open the Internet browser on the host computer, and in the address bar type the IP address for the SMX switcher.

NOTE *The default IP address is 192.168.254.254. Check with the administrator if the IP address has been changed.*

The browser opens the SMX Matrix Switcher Series Default Web Page (see screen shot), at the System Status page.



SMX default Web page — system status

There are three other pages, the Configuration page, the File Management page, and Control page. Any of these pages can accessed by clicking on the applicable tab.

Status page

This page allows the user to monitor the system. Settings shown are not configurable from this page.

Click in the left column to access System Status, Physical Configuration, and DSVP pages.

Configuration page

This page gives access to the following major settings: System Settings, Passwords, Email Settings and Firmware Upgrade.

Click in the left column to access each page section.

File Management page

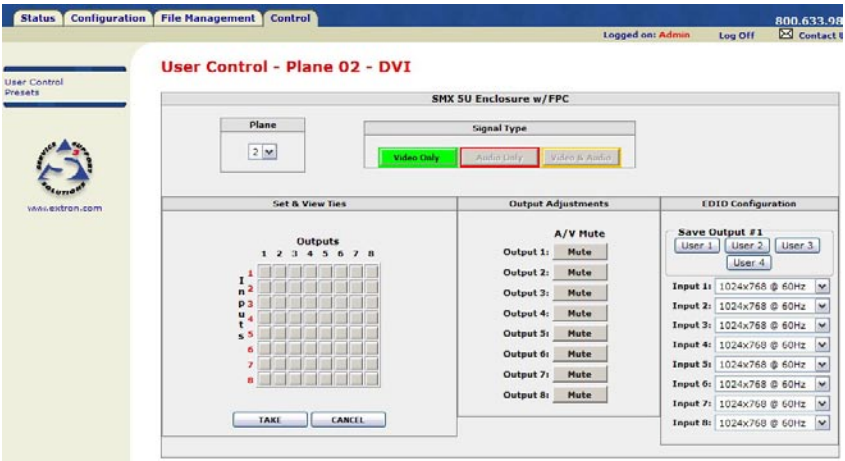
This page allows files to be uploaded and deleted from the server within the SMX.

Control page

This page has two sections: User Control and Presets.

The User Control section allows, for each plane, the input to output ties to be set and viewed, input audio gain/attenuation, and output audio volume settings to be adjusted. Audio and video signals can be muted or unmuted per output from this section.

In addition, where DVI boards are installed, EDID configurations can be set from this page.



SMX Control Web page — User Control

From the Presets section, global and plane presets can be saved and recalled.

Click in the left column to access each page section.

NOTE *For full details on using the Web pages refer to the* SMX User's Manual, *available at www.extron.com.*

Appendix A

Reference Material

Cable and Connector Wiring

Installing the Input/Output Boards

Reference Material

NOTE *For SMX series specifications refer to the* SMX User's Manual *online or on the supplied CD, or to the product's Web page online at www.extron.com.*

Cabling and Connector Wiring

Ethernet cables must be of the correct type, properly terminated relevant to the application, and with the correct pinout.

Choosing a network cable

Use Category (CAT) 3, 4, 5, 5e, or 6 unshielded twisted pair (UTP) or shielded twisted pair (STP) cables, terminated with RJ-45 connectors. Ethernet cables are limited to 328' (100 m). Half-duplex and full-duplex Ethernet connections allowed.

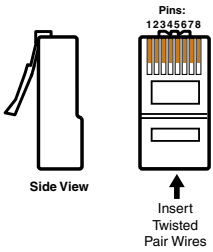
The cable used depends on the network speed:

- 10 Mbps (10Base-T Ethernet) requires, at a minimum, CAT 3 UTP or STP cable.
- 100 Mbps (100Base-T Fast Ethernet) requires, at a minimum, CAT 5 UTP or STP cable.

Terminating the network cable

Terminate as either a patch or a crossover cable (see below).

- **Patch (straight) cable** — Connecting the SMX to an Ethernet hub, router, or switcher also hosting a controlling computer
- **Crossover cable** — Direct connection between the SMX and a controlling computer



Straight-through Cable
(for connection to a switch, hub, or router)

End 1		End 2	
Pin	Wire Color	Pin	Wire Color
1	white-orange	1	white-orange
2	orange	2	orange
3	white-green	3	white-green
4	blue	4	blue
5	white-blue	5	white-blue
6	green	6	green
7	white-brown	7	white-brown
8	brown	8	brown

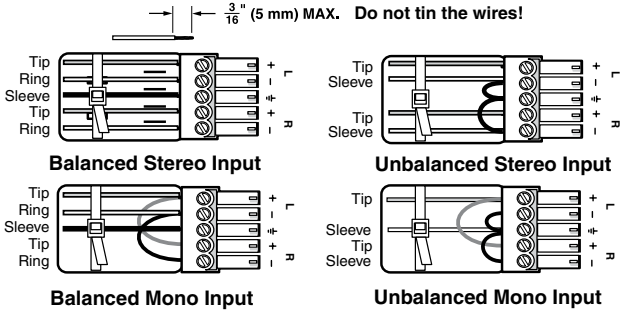
Crossover Cable
(for direct connection to a PC)

End 1		End 2	
Pin	Wire Color	Pin	Wire Color
1	white-orange	1	white-green
2	orange	2	green
3	white-green	3	white-orange
4	blue	4	blue
5	white-blue	5	white-blue
6	green	6	orange
7	white-brown	7	white-brown
8	brown	8	brown

RJ-45 connector pinout tables

Wiring audio connectors

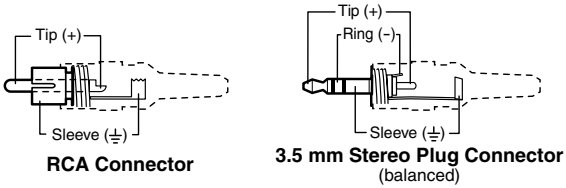
Audio input connectors — Connect audio input devices to the 3.5 mm, 5-pole captive screw connectors (up to two groups of eight sets possible). Wire the input connector for the appropriate signal type, as shown below.



Audio input captive screw wiring

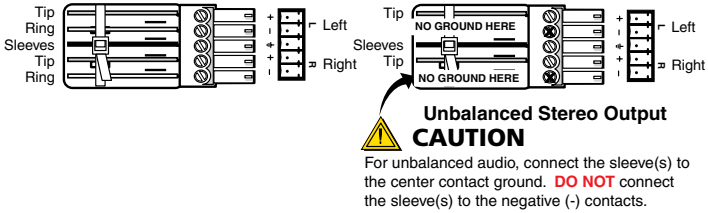
NOTE *A mono audio connector consists of the tip and sleeve, whereas a stereo audio connector consists of the tip, ring, and sleeve. The tip, ring, and sleeve wires are also shown above (balanced inputs).*

See the SMX User's Manual, *chapter 3, "Operation and Setup", for details about setting up the audio.*



Audio connectors

Audio output connectors — Connect audio output devices to the 3.5 mm, 5-pole captive screw connectors (up to two groups of eight sets possible). The connectors output unamplified, line level audio. See the figure below for wiring details.



Audio output captive screw wiring

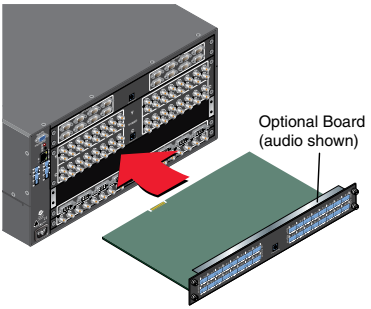
Installing the Input/Output Boards

The I/O boards used in any installation will vary and can be installed and changed as desired.

NOTE *All boards are hot-swappable, and can be installed without shutting down the switcher and removing the power.*

Installing new boards into an empty SMX frame

1. Remove as many of the blanks panels from the rear of the unit as needed.
2. Slide the I/O board into the open slot, carefully aligning it with the plastic slides in the frame (see figure). Push firmly into place.
3. Tighten the screws on each end of the board.
4. Set the plane address with the rotary encoder.
5. Repeat steps 1 through 4 for all boards needing installation.



NOTE *Boards are hot swappable (no need to remove power from the unit).*

New output boards are autodetected and takes approximately 20 seconds to initialize. If the unit is connected by RS-232, Telnet, or LAN, a "Reconfig" notice is shown.

Any new boards are now ready for cabling and configuration.

Replacing an existing SMX I/O board

1. Remove any cables from the I/O board being replaced.
2. Loosen the two outer screws and remove the board.
3. Slide the replacement board firmly into place.
4. Tighten the screws.
5. Set plane using plane address rotary switch.
6. Repeat **1-5** for all boards to be replaced.

New output boards are autodetected, initialized, and then ready for cabling and configuration.

Extron's Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

USA, Canada, South America, and Central America:
Extron USA
1001 East Ball Road
Anaheim, CA 92805
U.S.A.

Europe, Africa, and the Middle East:
Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

Asia:
Extron Asia
135 Joo Seng Road #04-01
PM Industrial Bldg.
Singapore 368363
Singapore

Japan:
Extron Japan
Kyodo Building, 16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

China:
Extron China
686 Ronghua Road,
Songjiang District
Shanghai 201611
China

Middle East:
Extron Middle East
Dubai Airport Free Zone
F12, PO Box 293666
United Arab Emirates, Dubai

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions or non-Extron authorized modification to the product.

If it has been determined that the product is defective, please call Extron and ask for an Applications Engineer at (714) 491-1500 (USA), 31.33.453.4040 (Europe), 65.6383.4400 (Asia), or 81.3.3511.7655 (Japan) to receive an RA# (Return Authorization number). This will begin the repair process as quickly as possible.

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

Extron **USA - West**
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+1.714.491.1517 FAX

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Inside USA / Canada Only
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+1.919.863.1797 FAX

Extron **Europe**
+800.3987.6673
Inside Europe Only
+31.33.453.4040
+31.33.453.4050 FAX

Extron **Asia**
+800.7339.8766
Inside Asia Only
+65.6383.4400
+65.6383.4664 FAX

Extron **Japan**
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+81.3.3511.7656 FAX

Extron **China**
+400.883.1568
Inside China Only
+86.21.3760.1568
+86.21.3760.1566 FAX

Extron **Middle East**
+971.4.2991800
+971.4.2991880 FAX