


MPX 423 A


Media Presentation Matrix Switcher



Safety Instructions


Safety Instructions • English


WARNING: This symbol, , when used on the product, is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

ATTENTION: This symbol, , when used on the product, is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

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Sicherheitsanweisungen • Deutsch


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VORSICHT: Dieses Symbol , auf dem Produkt soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

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Instrucciones de seguridad • Español


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Instructions de sécurité • Français


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
Istruzioni di sicurezza • Italiano


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Instrukcje bezpieczeństwa • Polska


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UWAGI: Ten symbol, , gdy używany na produkt, jest przeznaczony do ostrzegania użytkownika ważne operacyjne oraz instrukcje konserwacji (obsługi) w literaturze, wyposażone w sprzęt.

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Инструкция по технике безопасности • Русский


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경고: 이 기호 ⚠ 가 제품에 사용될 경우, 제품의 인클로저 내에 있는 접지되지 않은 위험한 전류로 인해 사용자가 감전될 위험이 있음을 경고합니다.

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This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. The Class A limits provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference. This interference must be corrected at the expense of the user.

NOTE: For more information on safety guidelines, regulatory compliances, EMI/EMF compatibility, accessibility, and related topics, see the “[Extron Safety and Regulatory Compliance Guide](#)” on the Extron website.

Battery Notice

This product contains a battery. Do not open the unit to replace the battery. If the battery needs replacing, return the entire unit to Extron (for the correct address, see the Extron Warranty section on the last page of this guide).

CAUTION: Risk of explosion. Do not replace the battery with an incorrect type. Dispose of used batteries according to the instructions.

ATTENTION : Risque d’explosion. Ne pas remplacer la pile par le mauvais type de pile. Débarrassez-vous des piles usagées selon le mode d’emploi.

Conventions Used in this Guide

Notifications

The following notifications are used in this guide:

CAUTION: Risk of minor personal injury.

ATTENTION : Risque de blessure mineure.

ATTENTION:

- Risk of property damage.
- Risque de dommages matériels.

NOTE: A note draws attention to important information.

TIP: A tip provides a suggestion to make working with the application easier.

Software Commands

Commands are written in the fonts shown here:

```
^AR Merge Scene,,Op1 scene 1,1 ^B 51 ^W ^C
```

```
[01] R000400300004000080000600 [02] 35 [17] [03]
```

NOTE: For commands and examples of computer or device responses mentioned in this guide, the character “0” is used for the number zero and “O” is the capital letter “o.”

Computer responses and directory paths that do not have variables are written in the font shown here:

```
Reply from 208.132.180.48: bytes=32 times=2ms TTL=32
```

```
C:\Program Files\Extron
```

Variables are written in slanted form as shown here:

```
ping xxx.xxx.xxx.xxx -t
```

```
SOH R Data STX Command ETB ETX
```

Selectable items, such as menu names, menu options, buttons, tabs, and field names are written in the font shown here:

From the **File** menu, select **New**.

Click the **OK** button.

Specifications Availability

Product specifications are available on the Extron website, www.extron.com.

Extron Glossary of Terms

A glossary of terms is available at <http://www.extron.com/technology/glossary.aspx>.

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Introduction

This section covers the following topics:

- [About This Manual](#)
- [About the MPX 423 A Media Presentation Matrix Switcher](#)
- [Features](#)

About This Manual

This manual describes the installation and operation of the Extron MPX 423 A Media Presentation Matrix Switcher. Throughout the guide the MPX 423 A is also referred to as the MPX, the switcher, or the matrix switcher.

About the MPX 423 A Media Presentation Matrix Switcher

The MPX 423 A is a matrix presentation switcher that supports both single and separate switching modes. It merges the following independent switchers into a single, compact enclosure:

- 4x2 VGA-UXGA matrix switcher
- 4x2 composite video matrix switcher
- 4x2 S-video matrix switcher
- 12x2 stereo audio switcher

The MPX 423 A has the following video connector types:

- 15-pin HD input connectors for VGA signals
- BNC input connectors for composite video signals
- 4-pin mini DIN input connectors for S-video signals

The audio functions use captive screw connectors that are shared between three input groups and support balanced and unbalanced wiring.

There are three device control options:

- Front panel button control
- Ethernet control (using Telnet or the on-board web server)
- RS-232 control using Extron SIS commands

Features

- **Multiple video inputs** — Twelve inputs including:
 - Four VGA (or SVGA or UXGA RGBHV, RGBS, RGsB, or RsGsBs) inputs on 15-pin HD female connectors
 - Four S-video (NTSC, PAL, or SECAM) inputs on 4-pin mini DIN female connectors
 - Four composite video (NTSC, PAL, or SECAM) inputs on BNC female connectors.
- **Multiple video outputs** — Two outputs per video format for simultaneous (in separate switcher mode), or one at a time (in single switcher mode) display on VGA, composite video, or S-video devices.

- **Audio switcher** — The 12x2 audio switcher selects among the audio outputs of each of the three signal groups.
- **Audio breakaway** — The MPX 423 A provides the capability to break an audio signal away from its corresponding video signal. Audio breakaway switching can be controlled via the front panel or RS-232.
- **Multiple audio inputs and outputs** — Twelve balanced or unbalanced stereo inputs and two balanced or unbalanced stereo outputs, all using captive screw connectors
- **Single switcher mode** — Allows for one-touch switching. When one of the 12 inputs is accessed, the signals of the input are routed to the outputs of its group. Outputs of the other groups are disconnected, while audio output remains unaffected.
- **Separate switcher mode** — Allows for independent switching to the output of any given I/O group. This effectively divides the MPX 423 A into three separate switchers in one box.
- **Current configuration memory** — Allows for ties and audio settings to be saved in nonvolatile memory. When the switcher is powered off and then on again, the switcher recalls the connections made on the last configuration, including audio settings.
- **IP Link** — IP Link-enabled products offer an integrated web server with high performance architecture, global compatibility with industry standard Ethernet communication protocols, multi-user support, and a web-based asset management application specifically designed to work with products that include IP Link technology.
- **RS-232 remote control** — Allows remote control of the MPX switcher using the Extron Simple Instruction Set (SIS) or a third-party control system.
- **Downloadable firmware updates** — The latest firmware can be conveniently downloaded from the Extron website, and updates for new features and capabilities can be easily upgraded through the IP Link Ethernet port.
- **Bandwidth** — Bandwidth is 350 MHz (-3 dB), typical for VGA video, allowing this switcher to switch everything from NTSC video to high-resolution computer signals.
- **Front panel security lockout** — Locks out all front panel functions except for input/output tie viewing to prevent unwanted setting changes.
- **Genlock sync (for composite and S-video)** — Includes video genlock capabilities allowing for vertical interval switching and smooth, glitch-free transitions.
- **Digital Sync Validation Processing (DSVP)** — Includes Extron exclusive DSVP technology, which allows for the monitoring of input signal status information, as well as the scan rate for computer signal inputs.
- **Input audio gain and attenuation (adjustable via RS-232)** — Allows users to set the level of audio gain or attenuation (-18 dB to +24 dB). Individual input audio levels may be adjusted so there are no noticeable volume differences when switching between sources. (The default setting is 0 dB.)
- **Speed-sensitive volume control** — Automatic sensitivity control allows the user to easily fine-tune the audio volume.
- **Versatile mounting options** — The MPX 423 A is housed in a rugged, 1U high, full rack wide metal enclosure, and can be easily mounted into any rack or podium, or under a desk.
- **Internal international power supply** — The internal power supply provides worldwide power compatibility.

Installation

This section covers the following topics:

- [Installation Overview](#)
- [Mounting the Matrix Switcher](#)
- [Rear Panel Connectors](#)
- [Connecting the Matrix Switcher](#)
- [RS-232 and Ethernet Control](#)

Installation Overview

1. Turn off power to the MPX 423 A switcher and all other devices that will be connected.
2. Select the mounting option and install the appropriate brackets. Mount the switcher as illustrated in [Mounting the Matrix Switcher](#) below.
3. Attach up to four VGA, four S-video, and four Video (composite) input devices (up to four of each type) to the MPX 423 A switcher (see [Rear Panel Connectors](#) on page 5 and [Connecting the Matrix Switcher](#) on page 6 for details and an installation diagram).
4. Connect up to two VGA, two composite video, or two S-video outputs from the switcher to a projector or other output device.
5. For audio input, connect up to 12 audio sources to the audio inputs of the VGA, Video (composite), or S-video groups (up to four audio sources for each group).
6. For audio output, connect up to two audio output devices.
7. If the MPX 423 A matrix switcher is to be connected to a computer or host controller for remote control, see [RS-232 and Ethernet Control](#) on page 7 and do one of the following:
 - Connect the RS-232 cable from the host controller to the 9-pin, female RS-232 remote connector of the switcher. For more detailed information, see [Remote Control Port \(RS-232\)](#) on page 16.
 - Plug one end of a CAT 5, straight-through Ethernet cable to the RJ-45 LAN port of the switcher and connect the other end to a network switch on the same network as the host controller or PC.
8. Power up the input and output devices, then connect power to the rear AC connector on the switcher.

Mounting the Matrix Switcher

MPX 423 A Matrix Switchers are housed in 1U high, 17.4" wide metal enclosures that are rack- or desk-mountable. A rack and desk mounting kit is supplied with each switcher. A switcher may also be mounted under a table, desk, or podium, or on a wall, using the optional under-desk mounting kit.

Tabletop Use

Affix a self-adhesive rubber foot to each bottom corner of the switcher.

Rack Mounting the Switcher

UL requirements for rack mounting

The following Underwriters Laboratories (UL) requirements pertain to the installation of the MPX 423 A into or onto a rack.

- 1. Elevated operating ambient** — 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, consider installing the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified by the manufacturer (122° F, 50° C for the MPX).
- 2. Reduced air flow** — Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
- 3. Mechanical loading** — Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- 4. 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.
- 5. Reliable earthing (grounding)** — 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 (such as the use of power strips).

Rack mounting instructions

To rack mount the switcher:

1. Attach the rack mount brackets to the switcher with the eight #8 machine screws (provided).
2. Insert the switcher into the rack, align the holes in the mounting bracket with those of the rack.
3. Secure the switcher to the rack using the supplied machine screws.

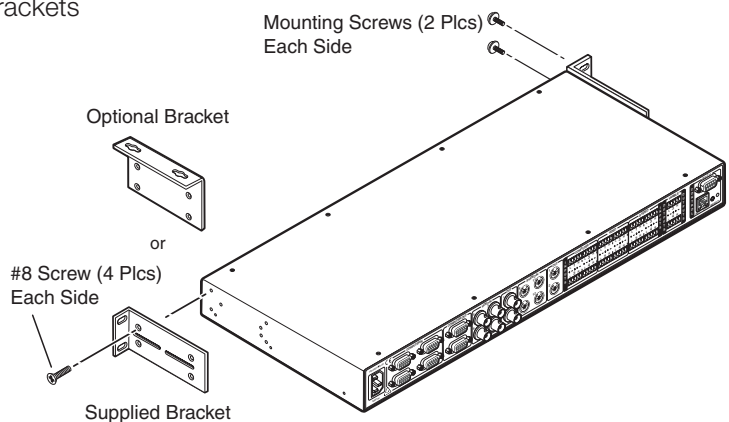


Figure 1. Mounting the Switcher

Furniture Mounting the Switcher

The MPX 423 A can be mounted under a table or other horizontal surface with an optional Extron under-desk mounting kit.

1. Secure the two table or wall mounting brackets included in the under-desk mounting kit to the switcher with the eight machine screws provided in the kit (see figure 1).
2. Hold the switcher with attached brackets against the underside of the desk, and mark the location of holes for screws on the underside of the desk.
3. Drill 1/4" (6.4 mm) deep, 3/32" (2 mm) diameter pilot holes in the desk at the marked screw locations from the underside of the desk.
4. Insert the four wood screws into the pilot holes. Fasten each screw into the installation surface until just less than 1/4" (6.4 mm) of the screw head protrudes.

5. Install the slotted holes of the mounting brackets (with the switcher attached) over the protruding screw heads.
6. Slide the switcher slightly forward or back, then tighten all four screws to secure the switcher in place.

Rear Panel Connectors

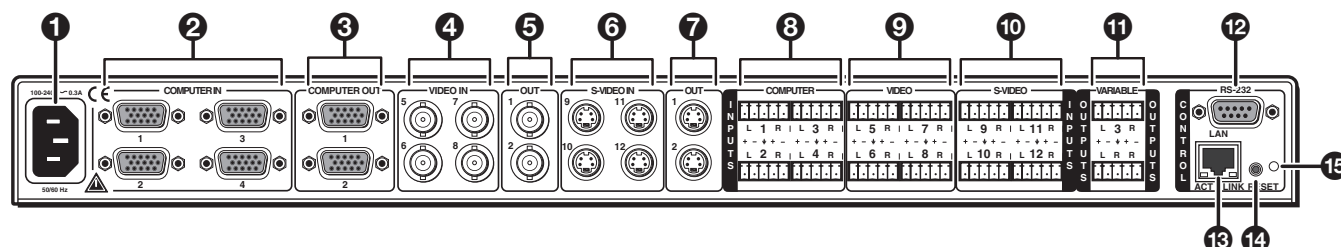


Figure 2. MPX 423 A Rear Panel

- ❶ **AC power** — Standard AC power connector for a power source of 100 - 240 VAC, operating at 50/60 Hz.
- ❷ **VGA input group** — Four female 15-pin HD connectors for RGB video input (numbered 1 to 4).
- ❸ **VGA output** — Two female 15-pin HD connectors for RGB video output.
- ❹ **Composite input group** — Four female BNC connectors for composite input (numbered 5 to 8).
- ❺ **Composite output** — Two female BNC connectors for composite output.
- ❻ **S-video input group** — Four female 4-pin mini DIN connectors for S-video input (numbered 9 to 12).
- ❼ **S-video output** — Two female 4-pin mini DIN connectors for S-video output.
- ❽ **VGA audio input group** — Four 3.5 mm female captive screw connectors for audio input from the VGA group (see [Audio](#) on page 13).
- ❾ **Composite audio input group** — Four 3.5 mm, female, captive screw connectors for the composite group input (see [Audio](#)).
- ❿ **S-video audio input group** — Four 3.5 mm, female, captive screw connectors for the S-video group input (see [Audio](#)).
- ⓫ **Variable audio output** — Two 3.5 mm, female, captive screw connectors for balanced/unbalanced variable audio output. Only audio output 1 is variable from the front panel volume knob. Both audio outputs (1 and 2) are variable through RS-232 or Ethernet/Telnet via the SIS commands and built-in webpage.
- ⓬ **RS-232** — One female DB9 connector for a host computer or third party controller using the Extron Simple Instruction Set (SIS).
- ⓭ **LAN Activity LED** — A blinking yellow LED indicates LAN activity.
LAN connector — Plug an RJ-45 jack into this socket to connect the unit to a computer network. Use a straight-through cable to connect to a switch, hub, or router.
Link LED — The green LED lights to indicate a good LAN connection.
- ⓮ **Reset button** — A recessed button that allows for a manual reset using a Extron Tweezer, pointed stylus or ballpoint pen. The unit can be reset to five modes (see [Resetting the Unit](#) on page 15).
- ⓯ **Reset LED** — The green LED blinks to show reset mode indications and to show that power is on (see [Resetting the Unit](#) on page 15).

Connecting the Matrix Switcher

The MPX 423 A matrix switcher connects to up to 12 input devices simultaneously, and can output to as many as six devices simultaneously, or one at a time.

Follow the steps below and see the installation example in figure 3.

1. Turn off power to the MPX 423 A matrix switcher and all other devices that will be connected.
2. Mount the MPX 423 A in the desired position on a desk, in a rack, or under a table **as described previously** in this chapter.
3. Connect up to four VGA, four composite video, and four S-video input devices to the rear panel of the MPX 423 A matrix switcher.
4. Connect the VGA, Video (composite), and S-video outputs (up to six, two of each video format) on the switcher to the inputs of the display(s).
5. For audio input, connect up to 12 audio sources to the audio inputs of the Computer (VGA), Video (composite), or S-video groups (up to 4 for each group) on the switcher.
6. For audio output, connect an audio output device to each of the two audio outputs (see **Audio Outputs** on page 14 for wiring diagrams).
7. If the matrix switcher is to be connected to a computer or host controller for remote control of the unit, connect the RS-232 cable from the host to the RS-232 connector on the switcher rear panel. For the RS-232 pinout table, see **RS-232 and Ethernet Control** on the next page.
8. For an Ethernet connection, plug a CAT 5, straight-through Ethernet cable into the RJ-45 LAN port on the rear panel of the switcher (see **RS-232 and Ethernet Control** for pinout instructions).
9. Power up the input and output devices, then connect power to the rear AC connector of the switcher.

NOTE: The boot-up message reads: © Copyright 2007, Extron Electronics, MPX 423 A, V1.02, 60-683-01 (for RS-232 connection).

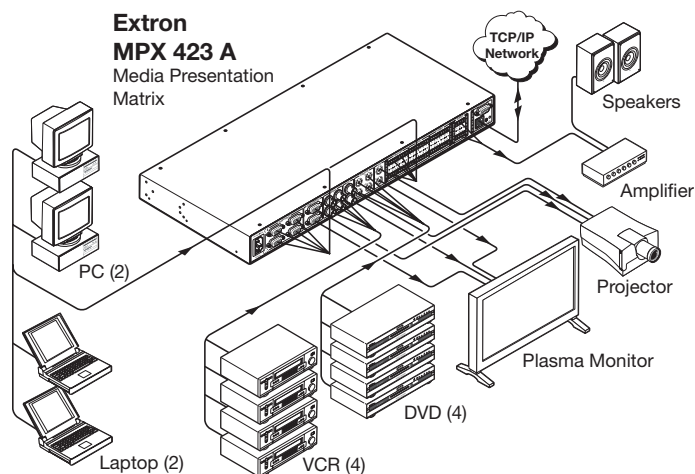


Figure 3. MPX 423 A Installation Example

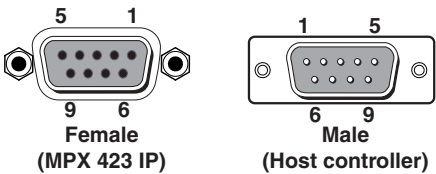
RS-232 and Ethernet Control

For RS-232 control, use a control cable with only pins 2, 3, and 5 connected. Otherwise, either cut the wires to the other pins in hard-shelled connectors or remove the unneeded pins from molded plugs. See [SIS Programming and Control](#) starting on page 16 for definitions of the SIS commands and details on how to install and use the control software.

NOTE: The cable used to connect the RS-232 port to a computer or control system may need to be modified by removing pins or cutting wires. If unneeded pins are connected, communication may not be possible.

The RS-232 connector is a 9-pin D female with the following pin designations:

Pin	RS-232	Description
1	—	not used
2	Tx	Transmit data
3	Rx	Receive data
4	—	not used
5	Gnd	Signal ground
6	—	not used
7	—	not used
8	—	not used
9	—	not used



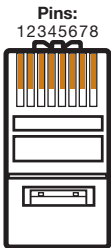
The protocol is

- 9600 baud
- 8-bit
- 1 stop bit
- No parity
- No flow control

The MPX 423 A is compatible with baud rates 19200, 38400, and 115200.

For Ethernet control, connect a CAT 5, straight-through Ethernet cable to the RJ-45 LAN port of the switcher.

RJ-45 Connector



Insert Twisted Pair Wires

Straight-through Cable (for connection to a switch, hub, or router)			
Pin	End 1 Wire Color	Pin	End 2 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
TIA/EIA-T568B		T568B	

Figure 4. RJ-45 Connector

For more detailed information, see [Remote Control Port \(RS-232\)](#) on page 16.

Operation

This section covers the following topics:

- [Front Panel Operation](#)
- [Switcher Modes and Operation](#)
- [Audio](#)
- [Resetting the Unit](#)

Front Panel Operation

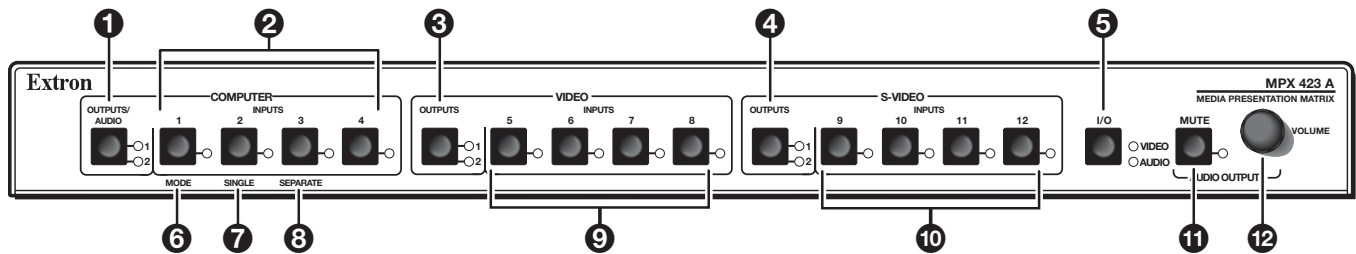


Figure 5. MPX 423 A Matrix Switcher Front Panel

The following sections describe the front panel controls. The controls for the three independent switchers within the MPX are grouped by input type.

- 1 Computer Outputs/Audio button and LEDs** — These two green LEDs serve four functions:
 - Display which VGA video output (1 or 2) is currently active.
 - Indicate which audio output is active.
 - Indicate output selection when setting the switching mode.
 - Mute the selected VGA output (see [Muting and Unmuting Video, Audio, or Both](#) on page 11).
- 2 Computer (VGA) input buttons and LEDs** — Buttons 1 through 4 select the input for the VGA input sections of the MPX unit. When lit, the LEDs adjacent to each button indicate which input has been selected for output.
- 3 Video (composite) output button and LEDs** — Displays which composite video output (1 or 2) is currently active. To mute the selected composite video output, see [Muting and Unmuting Video, Audio, or Both](#).
- 4 S-video output button and LEDs** — Displays which S-video output (1 or 2) is currently active. To mute the selected S-video output, see [Muting and Unmuting Video, Audio, or Both](#).
- 5 I/O button and LEDs** — This button serves four functions:
 - Allows for toggling between video and audio modes, and simultaneous video and audio functionality. The video and audio LEDs to the right of the I/O button indicate the current selection: video, audio, or video and audio.
 - Provides a method of accessing the front panel security lockout function.
 - Acts as a system reset button.
 - Functions with the Mute button to set an RGB delay.

- ⑥ **Mode button** — This is the secondary function of this button (see [figure 5, ②](#), computer (VGA) input buttons) on the previous page). The mode function of this button allows the MPX 423 A to be used in either “single” or “separate” mode.
- ⑦ **Single switcher mode button** — This is the secondary function of this button (see [②](#)). Press and release this button when in “switching mode” (see [Switcher Modes and Operation](#) on page 9) to select the single switcher mode. The associated LED indicates if the single switcher mode is on (when blinking). When the **Mode** button is released, the LED resumes input indication.
- ⑧ **Separate switcher mode button** — This is the secondary function of this button (see [②](#)). Press and release this button to select the separate switcher mode. The associated LED indicates if the separate switcher mode is on (when blinking). When the **Mode** button is released, the LED resumes input indication.
- ⑨ **Composite video input buttons and LEDs** — Buttons 5 through 8 select the input for the composite video sections of the MPX unit. The LEDs adjacent to each button (when lit) indicate which input has been selected for output.
- ⑩ **S-video input** — Buttons 9 through 12 select the input for the S-video group of the MPX unit. When lit, the LEDs adjacent to each button indicate which input has been selected for output 1.
- ⑪ **Audio output mute button and LED** — This button mutes audio output 1. When lit, the LED indicates that audio output 1 is muted.
- ⑫ **Audio output volume knob** — This adjustment knob controls the volume of audio output 1.

NOTE: The front panel audio controls (mute and volume) control only audio output 1. Both audio outputs (1 and 2) are controllable through RS-232 or Ethernet and Telnet via the SIS commands and built-in web page.

Switcher Modes and Operation

Introduction to Single Switcher Mode

In single switcher mode, the switcher emulates a 1 output switcher with 12 inputs. When a video input signal is tied to an output, it is routed to the output of the same video signal format. All other video output signals are muted.

The audio operates independently as a 12 inputs to 2 outputs matrix switcher (see [Audio](#) on page 13 for more information).

NOTE: Both audio outputs can be configured in single switcher mode. That is, the unit emulates two 1-output switchers with 12 inputs each.

Introduction to Separate Switcher Mode

In separate switcher mode the switcher emulates three 1-output switchers with 4 inputs. There are three input selection groups on the front panel ([figure 5](#) on page 8):

- Computer
- Video (composite)
- S-video

These three groups operate independently from each other, and each of the twelve inputs can be routed only to its own video output format group.

The audio operates independently as a 12 inputs to 2 outputs matrix switcher.

NOTE: Both audio outputs can be configured in Separate mode. That is, the unit emulates three 2-output switchers with 4 inputs each.

Establishing a Tie

When you connect an input with an output in video or audio, you are establishing a tie. A tie can be a video-only tie (only a video signal is being transmitted through an output), an audio-only tie (only an audio signal is being transmitted through an output) or an audio and video (AV) tie (a video signal and audio signal are being transmitted together or apart through one or more outputs).

To establish a tie using the MPX 423 A, do the following:

1. Press the **I/O** button to select a video-only, audio-only, or AV tie.
2. Press an **Output** button to select the output.
3. Press an **Input** button to select any of the 12 inputs.

Reading the LEDs

Reading the LEDs of the MPX 423 A matrix switcher is the primary means of controlling your inputs and outputs. The unit uses a series of LED colors and actions to indicate the status of each group and/or tie.

When in audio-only or video-only mode

- A lit Input LED represents a tie.
- The lit I/O LEDs show the signal type (audio or video).

When in AV mode

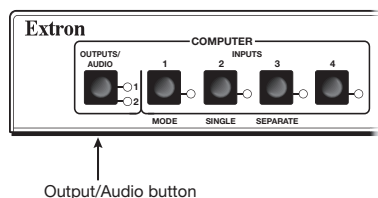
- A lit Input LED represents a video-only tie.
- A blinking Input LED represents an audio tie.
- A blinking Audio I/O LED represents audio that follows the video signal.
- An active Video LED is always lit.

NOTE: A blinking output LED represents a muted state.

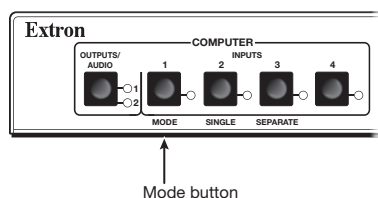
Viewing or Changing the Switching Mode

To view or change the active switching mode (single or separate) for a selected output:

1. Press the **Outputs/Audio** button to select an output (1 or 2). The LED for the selected output lights.



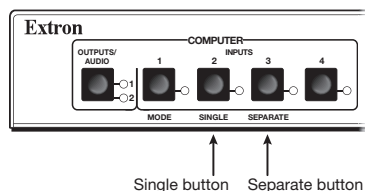
2. Press and hold the **Mode** button for approximately 3 seconds. The Single and Separate LEDs light. One is lit solidly, one is blinking. The blinking LED indicates the currently active switching mode (Single or Separate).



3. Press the **Single** button or the **Separate** button to select the desired mode.

When you make a mode selection, the Single and Separate LEDs turn off, and the Mode LED begins blinking.

If a selection is not made within 30 seconds, the currently active mode remains active, the Single and Separate LEDs turn off, and the Mode LED begins blinking.



4. Press the **Mode** button. The Mode LED turns off, and all other front panel LEDs return to their input indications.

NOTE: The switcher mode selection affects only the selected output port. It is possible to have one output port in single switcher mode, and the other output port in separate switcher mode.

Muting and Unmuting Video, Audio, or Both

Individual outputs can be muted or unmuted as follows:

NOTE: Regardless of switching modes, you can still mute individual outputs.

1. Select a video, audio, or both to mute or unmute by pressing the **I/O** button.
2. One at a time, press and hold the output button for the desired output group for approximately 2 seconds. The output LED for the selected output blinks to indicate the mute or return to their previous state to indicate the unmute.
 - Press and hold the computer output button for 2 seconds to mute the selected computer (VGA) outputs.
 - Press and hold the composite video output button for 2 seconds to mute the selected composite video output.
 - Press and hold the S-video output button for 2 seconds to mute the selected S-video output.

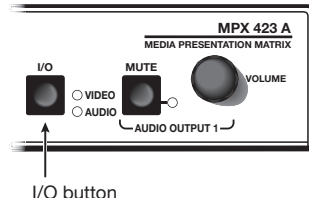
NOTES:

- Since the video groups share the audio outputs, audio outputs can be muted in any video group. To avoid unwanted audio mute, select video only or audio only by pressing the **I/O** button before muting the selected output.
- Mutes are saved to nonvolatile memory. When power is removed and restored, the mute settings are retained.
- To view the mute status, it is recommended to select video only or audio only (**I/O** button) and toggle output buttons on any video group. The muted output LED blinks.
- Selecting video and audio (**I/O** button) to view muted outputs is not recommended. Blinking output LEDs could also indicate an audio or follow-all tie.

Locking and Unlocking the Front Panel

Front panel security lockout prevents accidental switching of inputs from the front panel. When front panel security lockout is active, the user can only view the ties in each group; all input buttons and audio functions are locked.

To toggle the front panel lockout on and off, press and hold the **I/O** button for three seconds. The Video and Audio LEDs flash twice to indicate a change in the front panel security status (on or off).



When front panel lockout is on, the user can still view the ties by toggling the **I/O** and output buttons. The LEDs of the corresponding inputs light according to their tie modes.

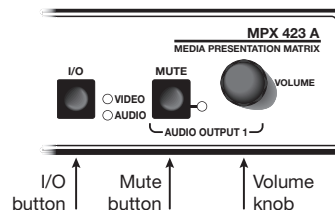
If you attempt to make a tie in lockout mode, the Video and Audio LEDs flash twice, indicating that no ties can be made from the front panel. RS-232 and Ethernet controls are still available when the front panel is locked.

Setting RGB Delay

The RGB delay feature clears the screen during transition to a new input source, which prevents a visible glitch from occurring on the output screen. RGB delay can be set between 0 and 5.0 seconds in 0.5 second increments.

To use the front panel to set an RGB delay:

1. Select the desired output (1 or 2).
2. Press and hold the **I/O** and **Mute** buttons simultaneously for three seconds. The Video LED and the currently selected Output LED begin flashing.
3. Turn the **Volume** knob clockwise to increase delay time. Input LEDs 1 - 10 light one at a time as the **Volume** knob is turned clockwise. Each lit input LED represents a 0.5 second delay. When RGB delay reaches its maximum of 5 seconds (LEDs 1 through 10 on), the **Mute** LED blinks.
4. Press the **I/O** button to exit.



For setting the RGB delay through RS-232 or Ethernet control, see [SIS Programming and Control](#) starting on page 16 and [Ethernet Control](#) starting on page 27.

Using Genlock Sync

The genlock sync feature locks the sync generators of multiple devices to a single source which prevents visible glitches from occurring on the output screen during transition to a new input source. The source at input 5 provides the genlock sync signal to all of the Video group inputs. The source at input 9 provides the genlock sync signal to all of the S-Video group inputs. This happens automatically when inputs are connected to inputs 5 and 9. No configuration is required.

Audio

The MPX 423 A is also a 12x2 audio matrix switcher, where any of the 12 inputs can be routed to one or both outputs simultaneously.

Establishing an Audio Tie

Regardless of the video switching mode for which the unit is configured (single or separate), the MPX 423 A also emulates a 12x2 audio switcher.

To make an audio-only tie:

1. Press the **I/O** button until only the Audio LED is lit.
2. Use any one of the three **Outputs** buttons to select output 1 or 2 (output LEDs 1 or 2 light in all three video groups to indicate which output, 1 or 2, is selected).
3. Select any of the twelve inputs (buttons 1 - 12). The selected input (1 - 12) is routed to the selected output (1 or 2).

NOTE: When establishing an audio tie, please note:

- The front panel audio controls, **Mute** and **Volume**, only control audio output 1. Audio output 2 is controllable via RS-232 and Ethernet.
- A blinking LED indicates an audio tie or a mute.
- When an input LED and the I/O Audio LED blink simultaneously, the video input is being followed by its associated audio signal.

Audio Breakaway

Audio breakaway allows you to route the audio signal separately from the video signal. Any audio signal can be selected and sent with any video signal to one or all outputs in any combination, simultaneously.

Audio breakaway switching can be done via front panel control, through RS-232, or via Ethernet remote control.

Volume Control (Output 1 Only)

Use the Audio Output 1 **Volume** knob to adjust the volume of audio output 1.

- Turn the knob clockwise to increase volume at a rate of 1 dB per step of the digital potentiometer.
- Turn the knob counterclockwise to decrease volume.

NOTE: Control of audio output 2 is available through RS-232 or Ethernet and Telnet only.

The volume adjustment is speed sensitive. To avoid large audible volume jumps when the knob is turned quickly, the volume is changed in smaller steps.

Audio Mute (Output 1 Only)

Press the **Mute** button to toggle between mute and unmute for audio output 1. The Mute LED lights when audio is muted. If a muted output is not at maximum attenuation, it is disconnected. Press the audio **Mute** button again to unmute the output and return to the previous output level.

NOTE: Control of audio output 2 is available through RS-232 or Ethernet and Telnet only.

Adjusting the Input Audio Level

The audio level of each input can be adjusted from -18 to +24 dB. The factory default level is 0 dB. There is only one audio setting, which is applied to both the left and right audio inputs of the selected input device.

Audio level settings are stored in non-volatile memory and are retained through a power cycle.

When performing the procedure below, you may monitor the input audio gain or attenuation level via RS-232 using HyperTerminal (see **SIS Programming and Control** starting on page 16).

To enter the audio adjustment mode and adjust an input audio level:

1. Press and hold the **Mute** button for 2 seconds. The I/O Audio LED and one of the input LEDs (for example, input 7) blinks indicating the audio adjustment mode.
2. Press the desired input button. The LED for the selected button begins blinking.

NOTES:

- There is no indication of the audio level available by viewing the front panel. You can monitor the volume level adjustments via an RS-232 connection and HyperTerminal.
- Pressing an input button while in audio adjustment mode activates or deactivates a tie.

3. Turn the **Volume** control knob clockwise to increase volume and counterclockwise to decrease the volume level of the selected input.
4. Press and release the **I/O** button or wait 30 seconds for the unit to exit the audio adjustment mode.

NOTE: Pressing the **Mute** button while in audio adjustment mode activates the mute for output 1.

Audio Outputs

Balanced or unbalanced audio output is available on the MPX 423 A using a 3.5 mm, 5-pole captive screw connector, wired as shown below.

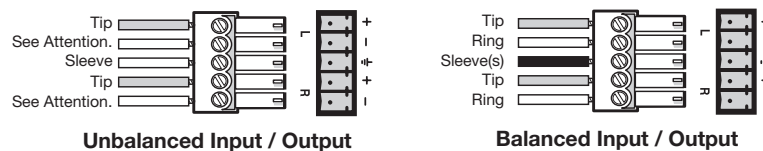


Figure 6. 3.5 mm, 5-pole Captive Screw Audio Connectors

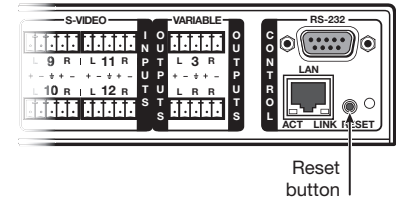
ATTENTION:

- Connect the sleeve to ground (Gnd, $\frac{1}{2}$). Connecting the sleeve to a negative (-) terminal damages the audio output circuits.
- Connectez le manchon à la borne de terre (Gnd, $\frac{1}{2}$). Connecter le manchon à une borne négative (-) endommagera les circuits de la sortie audio.

Resetting the Unit

There are four reset modes activated by a recessed **Reset** button on the rear panel. Use a pointed stylus, Extron Tweaker, or ballpoint pen to activate the rear panel **Reset** button (shown at right).

The **I/O** button on the front panel also has limited reset capabilities. These are described in **Factory Reset Modes** on this page.



Hardware Reset Modes

The available reset modes are listed in the table below.

NOTE: Reset modes close all open IP and Telnet connections and all sockets.

Reset Modes	Description
Mode 1 (Hardware Reset)	Press and hold the Reset button while applying power to set the unit back to the base firmware that shipped with the unit from the factory. Event scripting does not start when the unit is powered on in this mode. This allows you to recover a unit that has incorrect code or updated firmware running. All user files and settings are maintained. User web pages may not work correctly if the unit is using an earlier firmware version.
Mode 3 (Event Reset)	Press and hold the Reset button until the I/O LED blinks once (3 seconds) followed by a momentary (<1 second) press to turn events either on or off, depending on the current state of the events.
Mode 4 (IP Setting Reset)	Press and holding the Reset button until the I/O LED blinks twice (6 seconds) followed by a momentary (<1 second) press to reset IP settings. The I/O LED blinks four times in quick succession, confirming a Mode 4 reset. This mode <ul style="list-style-type: none">• Enables ARP program capability• Sets the IP address back to factory default• Sets the subnet back to factory default• Sets the gateway address back to factory default• Turns DHCP off• Turns events off Nothing happens if the momentary press does not occur within one second.
Mode 5 (Absolute Reset)	Holding the Reset button until the I/O LED blinks three times (9 seconds) followed by a momentary (<1 second) press causes a complete system reset back to factory default conditions. Nothing happens if the momentary press does not occur within 1 second. The I/O LED blinks four times in quick succession, confirming a Mode 5 reset.

NOTE: The factory configured passwords for this device have been set to the device serial number. Passwords are case sensitive. Performing a mode 5 absolute system reset sets the passwords to no password.

Factory Reset Modes

Factory resets can be set using the front panel **I/O** button. To reset the MPX 423 A to factory defaults

1. Press and hold the **I/O** button on the front panel while plugging in AC power.
2. Continue to hold the **I/O** button until all LEDs on the front panel blink. Once the **I/O** button is released, power-up continues, and the LEDs return to their default configuration.

SIS Programming and Control

This section covers the following topics:

- **Remote Control Port (RS-232)**
- **Host-to-MPX 423 A Communications**
- **Commands and Responses**

Remote Control Port (RS-232)

The MPX 423 A RS-232 port connects to a host or controller that generates the proper command codes and recognizes the responses from the switcher (see **RS-232 and Ethernet Control** on page 7).

Commands and responses for programming the MPX 423 A from a host system connected to the RS-232 port are listed on the following pages.

Host-to-MPX 423 A Communications

The MPX 423 A matrix switcher accepts SIS commands through the RS-232 port or via Telnet through the LAN port. SIS commands consist of one or more characters per field. No special characters are required to begin or end a command sequence. When the unit determines that a command is valid, it executes the command and sends a response to the host device. All responses from the unit to the host end with a carriage return and a line feed (CR/LF = **↵**), which signals the end of the response character string. A string is one or more characters.

MPX 423 A-Initiated Messages

If you are communicating with the MPX 423 A via RS-232 or via a verbose Telnet connection, when a local event such as a front panel selection or adjustment takes place, the unit responds by sending a message to the host. No response is required from the host. The unit-initiated message is listed here.

```
(c) Copyright 2007, Extron Electronics, MPX 423 A, Vx.xx , 60-683-01↵  
Day, DD Mon YYYY HH:MM:SS↵
```

Vx.xx is the firmware version number.

The unit sends the boot and copyright messages under the following circumstances:

- If the unit is off and an RS-232 connection is already set up (the PC is cabled to the unit and a serial communication program such as HyperTerminal is open), the connected unit sends these messages via RS-232 when it is first powered on.
- If the unit is on, it sends the boot and copyright messages when you first open a Telnet connection to the unit. You can see the day of the week, date, and time if the unit is connected via Telnet, but not via RS-232. If you are using a Telnet connection, the copyright message, date, and time are followed by a password prompt (if set).

Password Information

The “←Password:” prompt requires a password (administrator level or user level) followed by a carriage return.

If the correct password is entered, the unit responds with “←Login Administrator←” or “←Login User←”, depending on password entered. If passwords are the same for both administrator and user, the unit defaults to administrator privileges.

Error Responses

If the MPX 423 A is unable to execute a command, it returns an error response to the host. The error response codes and their descriptions are as follows:

- | | |
|---|---------------------------------------|
| E01 – Invalid input channel number (the number is too large) | E25 – Device is not present |
| E10 – Unrecognized command | E26 – Maximum connections exceeded |
| E12 – Invalid output number / invalid port number | E27 – Invalid event number |
| E13 – Invalid parameter (number is out of range or too large) | E28 – Bad file name or file not found |
| E14 – Not valid for this configuration | |
| E17 – System timed out | |
| E22 – Busy | |
| E23 – Checksum error (for file uploads) | |
| E24 – Privilege violation (Ethernet, Extron software only) | |
| People with user privileges have access to ALL view and read commands, and the following: | |
| <ul style="list-style-type: none">• Create ties• Set RGB and audio mutes | |
| Exception: User cannot read the Admin password. | |

Error Response References

The following superscripted numbers are used within the command descriptions on the following pages to identify commands that may respond as shown:

- ¹⁴ – Commands that give an E14 (not valid for this configuration) response if the current configuration of the unit does not support that command.
- ²² – Commands that yield an E22 (busy) response.
- ²⁴ – Commands that give an E24 (privilege violation) response if you are not logged in at the administrator level.
- ²⁷ – Commands that yield an invalid parameter (number is out of range, invalid event number).
- ²⁸ – Commands that may give an E28 (file not found) response.

Copyright Information

The following copyright message is initiated by the MPX 423 A matrix switcher at power-up (for an RS-232 connection):

© Copyright 2007, Extron Electronics, MPX 423 A, Vx.xx, 60-683-01

NOTE: Vx.xx = the firmware version number.

Commands and Responses

Using the Command and Response Tables

The MPX 423 A can be controlled via a Telnet connection (port 23) or a web browser connection (port 80). The ASCII and URL commands listed in the **Command and Response Table for SIS Commands** starting on page 20 perform the same functions, but are encoded differently to accommodate the requirements of each port (Telnet or web browser).

This ASCII to hexadecimal (HEX) conversion table is for use with the command and response tables.

ASCII to Hex Conversion Table																Esc 1B	CR 0D	LF 0A
Space →	20	!	21	"	22	#	23	\$	24	%	25	&	26	'	27			
	(28) 29	* 2A	+ 2B	, 2C	- 2D	. 2E	/ 2F										
	0 30	1 31	2 32	3 33	4 34	5 35	6 36	7 37										
	8 38	9 39	: 3A	; 3B	< 3C	= 3D	> 3E	? 3F										
	@ 40	A 41	B 42	C 43	D 44	E 45	F 46	G 47										
	H 48	I 49	J 4A	K 4B	L 4C	M 4D	N 4E	O 4F										
	P 50	Q 51	R 52	S 53	T 54	U 55	V 56	W 57										
	X 58	Y 59	Z 5A	[5B	\ 5C] 5D	^ 5E	_ 5F										
	` 60	a 61	b 62	c 63	d 64	e 65	f 66	g 67										
	h 68	i 69	j 6A	k 6B	l 6C	m 6D	n 6E	o 6F										
	p 70	q 71	r 72	s 73	t 74	u 75	v 76	w 77										
	x 78	y 79	z 7A	{ 7B	7C	} 7D	~ 7E	DEL 7F										

Figure 7. ASCII to Hex Conversion Table

The command and response tables list ASCII command codes (for Telnet or RS-232), the corresponding URL encoded command codes (for web browsers), the responses from the unit, and a description of the function or results of the command.

The following rules apply for commands and responses:

- Upper and lower case characters may be used in the command field unless otherwise specified.
- Commands may be sent back-to-back without spaces (for example, 2!65V1Z).
- Numbers can be entered in 1, 2, or 3 digits, e.g., 8V = 08V = 008V.
- Telnet control versus web browser control differences include:
 - For a web browser, "URL" is used to shorten the examples. "URL" refers to the full uniform resource locator (URL) of the control interface and web page, including all path information (such as <http://192.168.100.10/myform.htm>).
 - To send a web browser command, prefix it with the URL and ?cmd=.
 - For web browser, all **non-alphanumeric characters** must be coded with the hexadecimal equivalent, %xx, where xx is the two-character hex byte. For example, a comma (,) is coded as %2C. Characters such as %, +, and space () must be coded with hex bytes to be interpreted correctly.
 - Some characters differ depending on the method used.

Telnet

Escape = W or (hex 1B)

CR = pipe (|) or (hex 0D)

Web browser

Escape = W [must **not** be hex encoded]

CR = Pipe (|) [must **not** be hex encoded]

In either method, {Data} = data that will be directed to a specified port and must be hex encoded if non-alphanumeric.

NOTE: If you make adjustments (changes to volume, and so forth), via the front panel, RS-232 or IP, it takes 100 seconds for the new data to be saved to flash memory.

Symbol Definitions

Symbols used in the command/response tables are described below.

↵	= CR/LF (carriage return/line feed) (hex 0D 0A)
←	= Carriage return (no line feed, hex 0D) (Use the pipe character, , instead for web browser commands.)
•	= Space character
	= Pipe (vertical bar) character
*	= Asterisk. In this table, the asterisk does not represent a variable or specific function. It is merely used as a command line character.
[Esc]	= Escape key (hex 1B) (Use W instead of [Esc] for web browsers.)
[X1]	= 1 thru max. number of inputs
[X2]	= 0 through max. number of inputs (input 0 = muted output)
[X3]	= Outputs 1 through 6 1, 2 = VGA & audio, and mode selection outputs 3, 4 = Composite video 5, 6 = S-video
[X4]	= -18 through +24 (default 0 dB) (43 steps of audio gain or attenuation)
[X5]	= 0 dB (default) through 24 dB (audio gain)
[X6]	= 1 dB through 18 dB (audio attenuation)
[X7]	= Volume adjustment range (0%-100%) [min. = 0 through max. = 64, default = (0 dB)] in 1 dB steps except from 1 to 0 = -30 dB
[X9]	= On/off status: 0 = off/disable, 1 = on/enable For verbose mode 0 = none (default for Telnet connection) 1 = Verbose mode (default for RS-232/RS-422) 2 = Tagged response for queries 3 = Verbose mode & tagged queries
[X10]	= Signal/no signal: 0 = no signal at input; 1 = signal at input
[X11]	= Switcher mode: 1 = single, 2 = separate
[X13]	= Delay in 1/2 second increments (10 max. = 5.0 seconds / default = 0 seconds)
[X14]	= Video/audio mute 0 = no mute, 1 = video mute, 2 = audio mute, 3 = video and audio mute
[X15]	= Frequency in Hz or kHz (xxx.xx)
[X17]	= 10s of milliseconds wait time for characters coming into a serial port before terminating (default = 10 = 100 ms, max. = 32767)
[X18]	= 10s of milliseconds wait time between characters coming into a serial port before terminating (default = 2 = 20 ms, max. = 32767)

[X19]	= Controller firmware version to the second decimal place
[X20]	= Verbose firmware - description - upload date/time (see the query verbose firmware version information SIS command on page 24)
[X22]	= Power supply voltages and temperature (°F) (+5.0 V, +3.3 V, =2.5 V, +15.0 V, -5.0 V, -15.0 V, temp)
[X25]	= Matrix name (24 characters max.) Invalid characters: + ~ @ = ' [] { } < > : \ ?
[X26]	= GMT date [WWW, • DD • MMM • YYYY • HH : MM : SS • GMT]
[X27]	= IP address (###.###.###.###)
[X29]	= Default name is a combination of model name and the last 3 pairs of the MAC address (such as MPX-423A-00-02-3D)
[X30]	= Password (12 digits, alphanumeric)
[X31]	= Security level of the connection: 11 = user 12 = administrator
[X34]	= Hardware (MAC) address (##-##-##-##-##-##)
[X35]	= Number of open connections (0 - 255)
[X37]	= GMT date (MM/DDD/YY•HH:MM:SS)
[X38]	= Domain name (example = extron.com)
[X39]	= GMT offset (-12.0 through 14.0 hours and minutes removed from GMT)
[X40]	= Daylight saving time: 0 = Daylight saving time off/ignore 1 = Daylight saving time on (northern hemisphere) 2 = Daylight saving time (Europe) 3 = Daylight saving time (Brazil)
[X45]	= DHCP (0 = off; 1 = on)
[X46]	= Port number XX. The port number is represented as two ASCII characters (2 bytes). For example, port 01 is represented as 30 31 in hex.
[X47]	= Baud rate: (9600, 19200, 38400, 115200)
[X48]	= Parity: Odd , Even , None , Mark , Space
[X49]	= Data bits: 7 or 8
[X50]	= Stop bits: 1 or 2
[X51]	= Port type: 0 = RS-232
[X52]	= Flow control: Hardware , Software , None
[X53]	= Data pacing (specified in milliseconds between bytes): 0000 - 1000 (default = 0 ms)

Command and Response Table for SIS Commands

Command	ASCII Command (host to switcher)	Response (switcher to host)	Additional Description
Input Selection (in Single and Separate Switcher Mode)			
Tie input (A and V)	X2*X3!	Out X3•In X2•All←	Tie video and audio from input X2 to output X3.
Tie input RGBHV (VGA)	X2*X3&	Out X3•In X2•RGB←	Tie video only from input X2 to output X3.
Tie input video	X2*X3%	Out X3•In X2•Vid←	Tie video only from input X2 to output X3.
Tie input audio	X2*X3\$	Out X3•In X2•Aud←	Audio breakaway.
Tie input to all outputs, audio and video	X2*!	In X2•All←	Tie video and audio from input X2 to all outputs.
Example:	5*!	In 05•All←	Tie input 5 video and audio to all outputs.
Tie input to all outputs, RGBHV only	X2*&	In X2•RGB←	Video breakaway.
Example (see Note below):	8*&	In 08•RGB←	Tie input 8 video to all outputs.
Tie input to all outputs, video only	X2*%	In X2•Vid←	Video breakaway.
Example (see Note below):	10*%	In 10•Vid←	Tie input 10 video to all outputs.
NOTE: The & tie all command for RGB and the % tie all command for video can be used interchangeably.			
KEY:			
Variables for the input number (X2) and for outputs 1 and 2 (X3) for each category of video (computer, composite video, S-video) are assigned as shown below.			
	VGA/Computer	Composite Video	S-video
Input	X2 = 1 - 4	X2 = 5 - 8	X2 = 9 - 12
Output 1	X3 = 1	X3 = 3	X3 = 5
Output 2	X3 = 2	X3 = 4	X3 = 6
X4	= -18 through +24 (default 0 dB) (43 steps of audio gain or attenuation)		
X7	= Volume adjustment range (0%-100%) [min. = 0 through max. = 64, default = (0 dB)] in 1 dB steps except from 1 to 0 = -30 dB		
Tie an Input to All Outputs (Audio Only)			
Tie an input to all outputs (audio only)	X2*\$	In X2•Aud←	Tie audio input X2 to all audio outputs.

Command	ASCII Command (host to switcher)	Response (switcher to host)	Additional Description
View			
View current video ties	<code>[Esc]0*[X3]*1VC←</code>	<code>[X2]¹•[X2]²•[X2]³•[X2]⁴•[X2]⁵•[X2]⁶-----Vid←</code>	<p>Show current video configuration</p> <p>Example response:</p> <p>01 03 06 08 00 12 -----Vid</p> <ul style="list-style-type: none"> VGA video output 1 is tied to input 01. VGA video output 2 is tied to input 03. Composite video output 1 is tied to input 06. Composite video output 2 is tied to input 08. S-video output 1 is tied to no input. S-video output 2 is tied to input 12.
View current audio ties	<code>[Esc]0*[X3]*2VC←</code>	<code>[X2]¹•[X2]²-----Aud←</code>	<p>Show current audio configuration.</p> <p>Example response:</p> <p>06 12 -----Aud</p> <ul style="list-style-type: none"> Audio output 1 is tied to input 06. Audio output 2 is tied to input 12.
Read video output tie	<code>[X3]%</code>	<code>[X2]←</code>	Video input <code>[X2]</code> is tied to output <code>[X3]</code> .
Read RGBHV output tie	<code>[X3]&</code>	<code>[X2]←</code>	RGBHV input <code>[X2]</code> is tied to output <code>[X3]</code> .
Read audio output tie	<code>[X3]\$</code>	<code>[X2]←</code>	Audio input <code>[X2]</code> is tied to audio output <code>[X3]</code> .
Read audio gain for input	<code>[X1]G</code>	<code>[X4]←</code>	
Read audio volume for output	<code>[X3]V</code>	<code>[X7]←</code>	Read output volume for audio output 1 or 2.
KEY: Variables for the input number (<code>[X2]</code>) and for outputs 1 and 2 (<code>[X3]</code>) for each category of video (computer, composite video, S-video) are assigned as shown below.			
	VGA/Computer	Composite Video	S-video
Input	<code>[X2]</code> = 1 - 4	<code>[X2]</code> = 5 - 8	<code>[X2]</code> = 9 - 12
Output 1	<code>[X3]</code> = 1	<code>[X3]</code> = 3	<code>[X3]</code> = 5
Output 2	<code>[X3]</code> = 2	<code>[X3]</code> = 4	<code>[X3]</code> = 6
Switcher Mode Selection			
Switcher mode selection	<code>[X3]*[X11]*1#</code>	<code>[X3]Mod[X11]←</code>	Set output <code>[X3]</code> to switcher mode <code>[X11]</code> .
View switcher mode	<code>[X3]*1#</code>	<code>[X11]←</code>	Read the mode of switcher output <code>[X3]</code> .
KEY: <code>[X11]</code> = Switcher mode selection: 1 = Single mode; 2 = Separate mode (default).			

Command	ASCII Command (host to switcher)	Response (switcher to host)	Additional Description
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Setting Input Audio Gain/Attenuation

NOTE: The set gain (G) and attenuation (g) commands are case sensitive.

Gain (+dB)	$\boxed{X1} * \boxed{X5} G$	In $\boxed{X1}$ •Aud $\boxed{X4}$ ↵	Set audio gain for input $\boxed{X1}$ to a +dB value.
Attenuation (-dB)	$\boxed{X1} * \boxed{X6} g$	In $\boxed{X1}$ •Aud $\boxed{X4}$ ↵	Set audio gain for input $\boxed{X1}$ to a -dB value.
Increment	$\boxed{X1} + G$	In $\boxed{X1}$ •Aud $\boxed{X4}$ ↵	Increase gain by 1 dB.
Decrement	$\boxed{X1} - G$	In $\boxed{X1}$ •Aud $\boxed{X4}$ ↵	Decrease gain by 1 dB.
View input gain	$\boxed{X1} G$ or $\boxed{X1} g$	$\boxed{X4}$ ↵	

KEY:
 $\boxed{X1}$ = 1 thru max. number of inputs
 $\boxed{X4}$ = -18 through +24 (default 0 dB) (43 steps of audio gain or attenuation)
 $\boxed{X5}$ = 0 dB (default) through 24 dB (audio gain)
 $\boxed{X6}$ = 1 dB through 18 dB (audio attenuation)

Setting Output Audio Volume

Output level	$\boxed{X3} * \boxed{X7} V$	Out $\boxed{X3}$ •Vol $\boxed{X7}$ ↵	Set audio volume to specified value.
Increment	$\boxed{X3} + V$	Out $\boxed{X3}$ •Vol $\boxed{X7}$ ↵	Increase volume by 1 step.
Decrement	$\boxed{X3} - V$	Out $\boxed{X3}$ •Vol $\boxed{X7}$ ↵	Decrease volume by 1 step.
View volume	$\boxed{X3} V$	$\boxed{X7}$ ↵	

KEY:
 $\boxed{X3}$ = Outputs 1 through 6. 1, 2 = VGA & audio, and mode selection outputs. 3, 4 = Composite video. 5, 6 = S-video
 $\boxed{X7}$ = Volume adjustment range (0%-100%) (min. = 0 through max. = 64, default = [0 dB]) in 1 dB steps except from 1 to 0 = -30 dB

NOTE: These commands are **not** case sensitive. V and v can be used interchangeably.

Audio Mute

Audio mute	$\boxed{X3} * 1 Z$	Amt $\boxed{X3}$ *1↵	Mute output $\boxed{X3}$ audio (audio off). 1 = mute on, 0 = mute off
Audio unmute	$\boxed{X3} * 0 Z$	Amt $\boxed{X3}$ *0↵	Unmute output $\boxed{X3}$ audio (audio on).
Read audio mute	$\boxed{X3} Z$	$\boxed{X9}$ ↵	
Mute on all	$1 * Z$	Amt1↵	
Mute off all	$0 * Z$	Amt0↵	

KEY:
 $\boxed{X3}$ = Outputs 1 through 6.
1, 2 = VGA & audio, and mode selection outputs.
3, 4 = Composite video. 5, 6 = S-video
 $\boxed{X9}$ = On/off status: 0 = off/disable, 1 = on/enable.

NOTE: These commands are not case sensitive. Z and z can be used interchangeably.

Command	ASCII Command (host to switcher)	Response (switcher to host)	Additional Description
RGB Delay (Triple Action Switching)			
Set RGB delay	[Esc][X3]*[X13]D ←	Out[X3]•Dly[X13] ←	Set the RGB interval for switches.
Read RGB delay	[Esc][X3]D ←	[X13] ←	
KEY: [X3] = Outputs 1 and 2. 1, 2 = VGA & audio outputs 1 or 2 <div> NOTE: If any output other than 1 or 2 is specified for [X3], the unit returns an E13 error message. </div> [X13] = Delay in 1/2 second increments (10 max. = 5.0 seconds / default = 0 seconds)			
RGB /Video Mute			
RGB/video mute	[X3]*1B	Vmt[X3]*1 ←	Mute output [X3] RGB (video off) 1 = mute on, 0 = mute off
NOTE: You can also use input 0 (zero) for mute. For example, 0*1! = mute output 1 for video and audio.			
RGB/video unmute	[X3]*0B	Vmt[X3]*0 ←	Unmute output [X3] RGB (video on).
Read RGB/video mute	[X3]B	[X9] ←	1 = mute on, 0 = mute off
View output mutes	[Esc]VM ←	[X14] ¹ (1) [X14] ² (2) [X14] ³ (3) [X14] ⁴ (4) [X14] ⁵ (5) [X14] ⁶ (6) ←	Each [X14] response is the mute status of an output, starting from output 1.
NOTE: Outputs 1 and 2 = VGA and audio, outputs 3 and 4 = video only, outputs 5 and 6 = S-video only.			
KEY: [X3] = Outputs 1 through 6. 1, 2 = VGA & audio, and mode selection outputs. 3, 4 = composite video. 5, 6 = S-video [X14] = Video/audio mute: 0 = no mute, 1 = video mute, 2 = audio mute, 3 = video and audio mute			
List DSVP (Digital Sync Validation Processing)			
NOTE: If there is no connection or error, the unit responds with 000.00, 000.00.			
List sync (DSVP) (VGA inputs only)	[X1]LS	[X15], [X15] ←	Listed as Horz, Vert - xxx.xx, xxx.xx.
List all (DSVP)	0LS	[X10] ¹ [X10] ² [X10] ³ [X10] ⁴ [X10] ⁵ [X10] ⁶ [X10] ⁷ [X10] ⁸ [X10] ⁹ [X10] ¹⁰ [X10] ¹¹ [X10] ¹² ←	Each [X10] response is the connection status of an input, starting from input 1.
Example:	0LS	010111001011 ←	In this example, signals are present on VGA inputs 2, 4; video inputs 1, 2; and S-video inputs 1, 3, and 4.
KEY: [X1] = 1 through maximum number of inputs [X10] = Signal/no signal: 0 = no signal at input; 1 = signal at input			
Front Panel Security Lockout Mode			
Lock all front panel functions	1X	Exe 1 ←	Enable lock mode 1.
Unlock all front panel functions	0X	Exe 0 ←	Unlock front panel.
View lock status	X	[X9] ←	
KEY: [X9] = On/off status: 0 = off/disable; 1 = on/enable			

Command	ASCII Command (host to switcher)	Response (switcher to host)	Additional Description
Information Queries			
Request information	I	Vga1* X2 •Vga2* X2 •Vid1* X2 •Vid2* X2 •Svd1* X2 •Svd2* X2 •Aud1* X2 •Aud2* X2 ↵	
Request part number	N	60-683-01↵	The part number of the MPX 423 A is 60-683-01.
Query firmware version	Q	X19 ↵	Read controller firmware version
Query verbose firmware version information	0Q	X19X20X20 ↵ Response description: Ethernet protocol firmware version - controller firmware version - updated firmware version↵	Provide a detailed status of the Ethernet protocol firmware, the controller firmware, and any firmware upgrade. The firmware that is running is marked by an asterisk (*). A caret (^) indicates that the firmware has a bad checksum or an invalid load. ??? indicates the firmware is not loaded.
Read system status	S	X22 ↵	
KEY: X2 = 0 through max. number of inputs (input 0 = muted output) X19 = Controller firmware version to the second decimal place X20 = Verbose firmware version - description - upload date/ time X22 = Power supply voltages and temperature (°F) (+5.0 V, +3.3 V, =2.5 V, +15.0 V, -5.0 V, -15.0 V, temp)			
Resets			
System reset (factory default)	Esc ZXXX↵	Zpx↵	Clears all ties, resets all audio gains to 0 dB, and resets volume to 100%.
Absolute system reset	Esc ZQQQ↵	Zpq↵	Similar to system reset (ZXXX). Resets IP address and subnet mask to the following default values IP address = 192.168.254.254 Subnet mask = 255.255.0.0.
NOTE: The factory configured passwords for this device have been set to the device serial number. Passwords are case sensitive. Performing a mode 5 absolute system reset sets the passwords to no password.			
System Setup Commands			
Set matrix name	Esc X25 CN↵	Ipn• X25 ↵	
Set unit name to factory default ²⁴	Esc •CN↵	Ipn• X29 ↵	
Read matrix name	Esc CN↵	X25 ↵	
KEY: X25 = Matrix name (24 character max..) Invalid characters: + ~ @ = ' [] { } < > : \ ? X29 = Default name—a combination of model name and the last 3 pairs of the MAC address (for example, MPX-423A-00-02-3D).			
Set time/date	Esc X37 CT↵	Ipt X37 ↵	
Read time/date	Esc CT↵	X26 ↵	
Set GMT offset	Esc X39 CZ↵	Ipt X39 ↵	
Read GMT offset	Esc CZ↵	X39 ↵	
KEY: X37 = GMT date and time (short version): (MM/DDD/YY•HH:MM:SS) X26 = GMT date and time (long version): [WWW•DD•MMM•YYYY•HH:MM:SS•GMT] X39 = GMT offset (-12.0 through 14.0 hours and minutes removed from GMT)			

Command	ASCII Command (host to switcher)	Response (switcher to host)	Additional Description
Set daylight saving time	[Esc][X40]CX ←	Ipt[X40] ←	
Read daylight saving time	[Esc]CX ←	[X40] ←	
KEY: [X40] = Daylight saving time 0 = Daylight saving time off/ignore 1 = Daylight saving time (northern hemisphere) 2 = Daylight saving time (Europe) 3 = Daylight saving time (Brazil)			
Configure parameters ²⁴	[Esc][X46]*[X47],[X48],[X49],[X50]CP ←	Cpn[X1]•Ccp[X47],[X48],[X49],[X50] ←	
Read port parameters	[Esc][X46]CP ←	[X47],[X48],[X49],[X50] ←	
Set port mode	[Esc][X46]*[X51]CY ←	Cpm[X46]•Cty[X51] ←	
Read port mode	[Esc][X46]CY ←	[X51] ←	
Configure flow control ²⁴	[Esc][X46]*[X52],[X53]CF ←	Cpn[X1]•Cfl[X52],[X53] ←	
View flow control	[Esc][X46]CF ←	[X52],[X53] ←	
View receive timeout	[Esc][X46]CE ←	[X17],[X18] ←	
KEY: [X1] = 1 thru max. number of inputs [X17] = 10s of milliseconds wait time for characters coming into a serial port before terminating (default = 10 = 100 ms, max. = 32767) [X18] = 10s of milliseconds wait time between characters coming into a serial port before terminating (default = 2 = 20 ms, max. = 32767) [X46] = Port number XX. The port number is represented as two ASCII characters (2 bytes) (example: port 01 is represented as 30 31 in hex) [X47] = Baud rate: (9600, 19200, 38400, 115200) [X48] = Parity: O dd, E ven, N one, M ark, S pace [X49] = Data bits: 7 or 8 [X50] = Stop bits: 1 or 2 [X51] = Port type: 0 = RS-232 [X52] = Flow control: H ardware, S oftware, N one [X53] = Data pacing (specified in milliseconds between bytes): 0000 - 1000 (default = 0 ms)			
IP Setup Commands			
Set DHCP on or off	[Esc][X45]DH ←	Idh[X45] ←	
Read DHCP status	[Esc]DH ←	[X45] ←	
Set IP address	[Esc][X27]CI ←	Ipi[X27] ←	
Read IP address	[Esc]CI ←	[X27] ←	
Read hardware (MAC) address	[Esc]CH ←	[X34] ←	
Set subnet mask	[Esc][X27]CS ←	Ips[X27] ←	
Read subnet mask	[Esc]CS ←	[X27] ←	
Set gateway IP	[Esc][X27]CG ←	Ipg[X27] ←	
Read gateway IP	[Esc]CG ←	[X27] ←	
KEY: [X27] = IP address or subnet mask (###.###.###.###) [X34] = Hardware (MAC) address (##-##-##-##-##-##) [X45] = DHCP (0 = off; 1 = on)			

Command	ASCII Command (host to switcher)	Response (switcher to host)	Additional Description
Password and Related Commands			
Set administrator password	[Esc][X30]CA ←	Ipa [X30] ←	The response consists of four asterisks instead of the actual password.
Clear administrator password ²⁴	[Esc]•CA ←	Ipa • ←	
Read administrator password	[Esc]CA ←	[X30] ←	The response consists of four asterisks instead of the actual password.
Set user password	[Esc][X30]CU ←	Ipu [X30] ←	
Clear user password ²⁴	[Esc]•CU ←	Ipu • ←	
Read user password	[Esc]CU ←	[X30] ←	The response consists of four asterisks instead of the actual password.
Read the security level (administrator or user) of the connection	[Esc]CK ←	[X31] ←	
NOTES: <ul style="list-style-type: none"> The factory configured passwords for this device have been set to the device serial number. Passwords are case sensitive. Performing an absolute system reset removes the passwords. Password can be read only via RS-232. 			
KEY: <ul style="list-style-type: none"> [X30] = Password (12 characters, alphanumeric) [X31] = Security level of the connection: 11 = user 12 = administrator 			
Verbose Mode Commands			
Set verbose mode ²⁴	[Esc][X9]CV ←	Vrb [X9] ←	
Read verbose mode	[Esc]CV ←	[X9] ←	
KEY: <ul style="list-style-type: none"> [X9] = Verbose status: 0 = none (default for Telnet connection) 1 = Verbose mode (default for RS-232/RS-422 connection) 2 = Tagged response for queries 3 = Verbose mode & tagged response for queries 			

Ethernet Control

The MPX 423 A matrix switcher features an on-board web server, displayed as a set of default web pages. These pages allow you to control and operate the MPX unit through its Ethernet port, connected via a LAN or WAN, using a web browser.

This chapter describes these default web pages, which are always available and cannot be erased or overwritten. Topics in this section include the following:

- **Accessing and Using the Web Server**
- **Navigating the Default Web Pages**
- **Special Characters**

Accessing and Using the Web Server

Access the switcher through the on-board web pages as follows:

1. On the desktop on the PC, double click the browser icon to launch the web browser program.
2. Click in the address field of the browser.
3. Enter the IP address of the MPX 423 A in the address field.

NOTE: If the local system administrators have not changed the value, the factory-specified default, 192.168.254.254, is the correct value for this field.

4. If you want the browser to display a page other than the default page (such as a custom page that you have created and uploaded), enter a slash (/) and the file name to open.

NOTES:

- The address field of the browser should display the address in the following format: `xxx.xxx.xxx.xxx/{optional_file_name.html}` ←
- The following characters are invalid in file names:
{space} ~ @ = ' [] { } < > ' " ; : | \ and ?.

5. Press the keyboard **Enter** key. The switcher checks to see if it is password protected.
 - If the switcher is not password protected, proceed to step 7.
 - If the switcher is password protected, the **Connect to (password prompt)** page is displayed.

NOTE: A username entry is not required.

6. Click in the **Password** field and enter the appropriate administrator or user password.

NOTE: The factory configured passwords for this device have been set to the device serial number. Passwords are case sensitive. Performing a mode 5 absolute system reset sets the passwords to no password.

7. Click the **OK** button. The switcher checks several possibilities, in the following order, and then responds accordingly:
 - Does the address include a specific file name, such as `192.168.156.10/file_name.html`? If so, the switcher downloads that page.
 - Is there a file in the memory of the switcher that is named `index.html`? If so, the switcher downloads `index.html` as the default start-up page.
 - If neither of the above conditions is true, the switcher downloads the factory-installed default start-up page, `nortxe_index.html` (see figure 8 on this page), also known as the **System Status** page.

Navigating the Default Web Pages

The MPX 423 A default web pages include four tabs (**Status**, **Configuration**, **File Management**, and **Control**) for easy navigation of the administrative options including system status, password control, file management, and video and audio settings.

Status Tab

The **Status** tab includes pages that show the current system status information and DSVP data for the MPX 423 A.

System Status page

The **System Status** page, shown below, is the default page of the on-board web server, and provides an overview of the status of various aspects of the matrix switcher. It provides immediate system information, power status, and serial port settings for the MPX.

Extron Electronics

System Status DSVP

System Status

System Information

Unit Name:	MPX-423A-08-A2-40	Firmware Version:	1.02
Model:	MPX 423 A	Temperature:	100.40 F / 38.00 C
Part Number:	60-683-01	# of Connections:	006
Date:	12/19/2019	Access Level:	Admin
Time:	3:05 PM		

Power Status

+5 Volts:	4.92V
+3.3 Volts:	3.28V
+2.5 Volts:	2.51V
+15 Volts:	15.28V
-5 Volts:	-5.03V
-15 Volts:	-15.23V

Serial Port Settings

Port Type:	RS-232
Baud Rate:	9600
Data Bits:	8
Parity:	None
Stop Bits:	1
Flow Control:	None

Figure 8. System Status Page

DSVP Page

The DSVP page, accessible from the **Status** tab, allows you to view a snapshot-in-time of the input frequencies of connected inputs on the Digital Sync Validation Processing (DSVP) page (see figure 9).

Extron Electronics

Status Configuration File Management Control

Logged on: Admin Log Off Contact Us 800.633.9876

System Status
DSVP

DSVP

This screen allows you to view the Input Frequencies and Signal Status for each input on the switcher.

Input Frequencies

COMPUTER

Input	Signal Status	Horizontal (kHz)	Vertical (Hz)
001	<input type="checkbox"/>	----	----
002	<input type="checkbox"/>	----	----
003	<input type="checkbox"/>	----	----
004	<input type="checkbox"/>	----	----

COMPOSITE VIDEO

Input	Signal Status	Source
005	<input type="checkbox"/>	No Source
006	<input type="checkbox"/>	No Source
007	<input type="checkbox"/>	No Source
008	<input type="checkbox"/>	No Source

S-VIDEO

Input	Signal Status	Source
009	<input type="checkbox"/>	No Source
010	<input type="checkbox"/>	No Source
011	<input type="checkbox"/>	No Source
012	<input type="checkbox"/>	No Source

Figure 9. DSVP Page

Configuration Tab

The **Configuration** tab includes pages that show the current system settings, passwords, and firmware upgrade data for the MPX 423 A.

System Settings Page

The **System Settings** page (see figure 10) consists of fields where you can view and edit IP administration and system settings. Date and time information can be easily updated.

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Status Configuration File Management Control

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System Settings Passwords Firmware Upgrade

System Settings

Below are your Unit's basic System Settings. Most units will work with the default IP Settings without making any changes. If you require help changing your settings, please refer to the user guide.

IP Settings

Unit Name: MPX-423A-08-A2-40

DHCP: ☐ On ☒ Off

IP Address: 192.168.118.105

Gateway IP Address: 0.0.0.0

Subnet Mask: 255.255.0.0

MAC Address: 00-05-A6-08-A2-40

Firmware: 1.02

Model: MPX 423A

Part Number: 60-683-01

Submit Cancel

Date/Time Settings

Date: 12/19/2019 Local Date/Time

Time: 3:13 PM

Zone: (GMT-12:00) Eniwetok, Kwajalein

Daylight Saving: ☐ Off ☒ USA ☐ Europe ☐ Brazil

Submit Cancel

Figure 10. System Settings Page

IP settings fields

The IP settings fields provide a location for viewing and editing settings unique to the Ethernet interface. After editing any of the settings on this page, click the **Submit** button.

Edit these fields as follows:

1. Click in the desired field. The graphic cursor becomes a text cursor.
2. Edit the unit name, address, or mask as desired.
3. Press the **Tab** key on the keyboard or click in another field to exit the edited field.
4. Click the **Submit** button to make the name or address change take effect.

Descriptions for some of these fields follow.

Unit Name

This name field can be changed to any valid name, up to 24 alphanumeric characters.

NOTE: The following characters are invalid in the matrix name:
{space} ~ @ = ' [] { } < > ' " ; : | \ ?

The default unit name is a combination of the product name followed by the last three octet pairs from the MAC address.

DHCP

Dynamic Host Configuration Protocol (DHCP) is an Internet protocol for automating the configuration of computers that use TCP/IP. If DHCP is turned on (see the radio buttons in [figure 10](#) on the previous page) it can be used to automatically assign IP addresses, deliver TCP/IP stack configuration parameters such as the subnet mask and default router, and provide other configuration information such as the addresses for printer, time and news servers. For specific settings information, contact your system administrator.

IP Address

The MPX 423 A **IP Address** field contains the IP address of the connected matrix switcher. This value is encoded in the flash memory in the switcher.

Valid IP addresses consist of four 1-, 2-, or 3-digit numeric subfields separated by dots (periods). Each field can be numbered from 000 through 255. Leading zeroes, up to 3 digits total per field, are optional. Values of 256 and above are invalid.

The default address is 192.168.254.254, but if this conflicts with other equipment at your installation, you can change the IP address to any valid value.

NOTE: Editing the Extron IP address while connected via the Ethernet port can immediately disconnect the user from the matrix switcher. Extron recommends editing this field using an RS-232 connection and protecting the Ethernet access to this screen by assigning an administrator password to qualified and knowledgeable personnel only.

Gateway IP Address

The **Gateway IP Address** field identifies the address of the gateway to the mail server to be used if the MPX 423 A switcher and the mail server are not on the same subnet. The gateway IP address has the same parameters rules as the system IP address.

Subnet Mask

The **Subnet Mask** field is used to determine whether the MPX 423 A switcher is on the same subnet as the mail server when you are subnetting.

MAC Address

The hardware address is hard-coded in the switcher and cannot be changed.

Date/Time Settings

The **Date/Time Settings** fields provide a location for viewing and setting the date and time functions. Click **Local Date/Time** to synchronize the MPX internal clock with the time setting of the PC.

Passwords Page

As shown in figure 11, password-protected connections allow two levels of protection: administrator and user.

- Administrators have full access to all MPX 423 A switching capabilities and editing functions.
- Users can only create ties, set video and audio mutes, and view all settings, with the exception of passwords.

NOTES:

- The factory configured passwords for this device have been set to the device serial number. Passwords are case sensitive. Performing a mode 5 absolute system reset (see [Hardware Reset Modes](#) on page 15) deletes all passwords (sets both passwords to nothing).
- An administrator password must be created before a user password can be created.

The fields on the **Passwords** page are for entering and verifying administrator and user passwords.

Figure 11. Passwords Page

Passwords are case sensitive and are limited to 12 upper case and lower case alphanumeric characters.

To create one or more passwords:

1. Each password must be entered twice: once in the **Password** field and then again in the **Re-enter Password** field. Characters in these fields are masked by asterisks (*****).

NOTE: The following characters are invalid in passwords:
{space} + ~ @ = ' [] { } < > ' " ; : | \ ?

If you do not want to password protect an access level, leave the **Password** field and the **Re-Enter Password** field blank.

2. After entering the desired password in both fields, click the **Submit** button.

Keep in mind that accessing the MPX and entering SIS commands (see [SIS Programming and Control](#) on page 16)

- Via an Ethernet connection is password protected.
- Via the RS-232 port is not password protected.

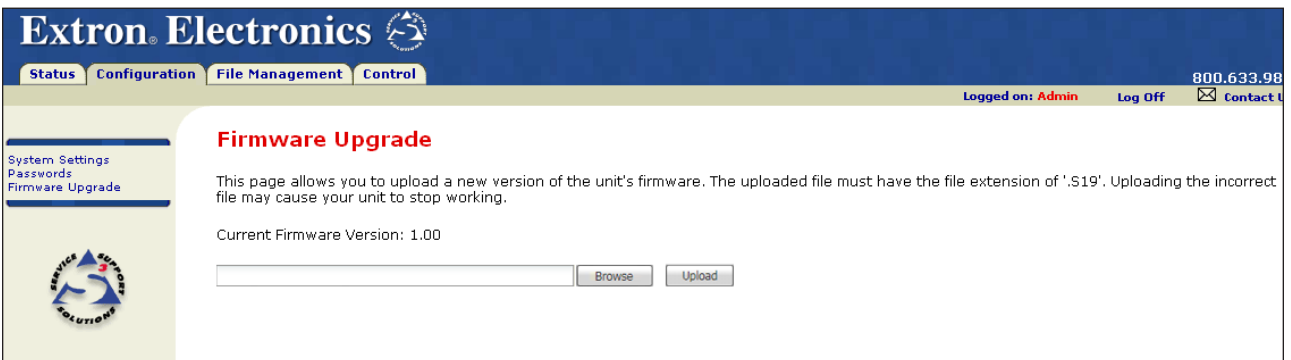
Also, an administrator password must be created before a user password can be created.

To clear an existing password so that no password is required:

1. Delete the asterisks in the **Password** field and place a blank space in the field.
2. Click the **Submit** button.

Firmware Upgrade Page

The **Firmware Upgrade** page (shown in figure 12) provides a way to replace the firmware without taking the switcher out of service.



or

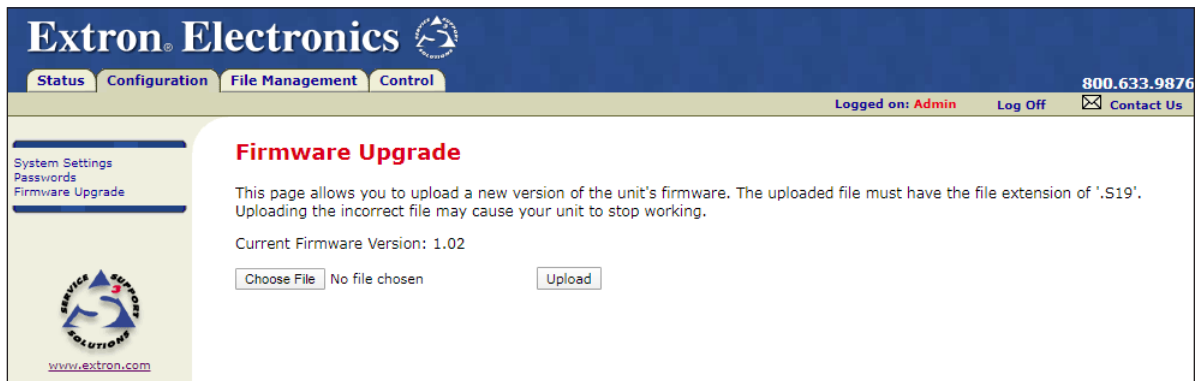


Figure 12. Firmware Upgrade Page — Version 1.00 (Top), Version 1.02 (Bottom)

NOTE: The **Firmware Upgrade** page is only for replacing the firmware that controls all switcher operation. To insert your own HTML pages, see [File Management Page](#) on page 35 later in this section.

Updating the firmware

Insure that your PC is connected to the MPX 423 A switcher via the Ethernet port on the switcher. Update the firmware as follows:

1. On the Extron website (www.extron.com) hover over the **Download** tab and select the **Firmware** link from the drop-down list. The **Download Center Firmware** page opens.
2. Navigate to the MPX 423 A.
3. Ensure the available firmware version is a later version than the current one on the device.
4. Click the **Download** link in the far right column.

NOTES:

- You must have an Extron Insider account and log in to that account to download either firmware or software.
- The firmware release notes file provides details about the changes between different firmware versions. The file can be downloaded from the same page as the firmware..

5. Submit required information and follow on-screen instructions to start the download. Note where the file is saved.
6. From the save location, open the executable (.exe) file.

7. Follow the instructions on the firmware upgrade Installation Wizard screens to install the new firmware on the computer.
8. Use a browser program to access the MPX 423 A switcher via its internal web pages.
9. Click the **Configuration** tab.
10. Click the **Firmware Upgrade** link.
11. Depending on the existing firmware version, click the **Browse** or the **Choose File** button. An **Open** dialog box appears.
12. Navigate to and select the new firmware file.

NOTES:

- Valid firmware files must have the file extension '.S19'. Any other file extension is not a firmware upgrade.
- The original factory-installed firmware is permanently available on the MPX 423 A switcher. If the attempted firmware upload fails for any reason, the switcher automatically reverts to the factory-installed firmware.

13. Click the **Open** button. The dialog box closes and the selected file is listed on the **Firmware Upgrade** page.
14. Click the **Upload** button. The firmware upload to the MPX 423 A switcher begins. The process can take several minutes to complete, and the unit may reboot.

File Management Page

The **File Management** page (within the **File Management** tab), is a useful tool that allows you to use and upload existing and custom web pages. Custom pages can be developed using a third-party web page development program such as Adobe® Dreamweaver®. File management also allows you to remove unnecessary or outdated files when they are no longer needed.

To add or update files:

1. Select the **File Management** tab to open the **File Management** page.

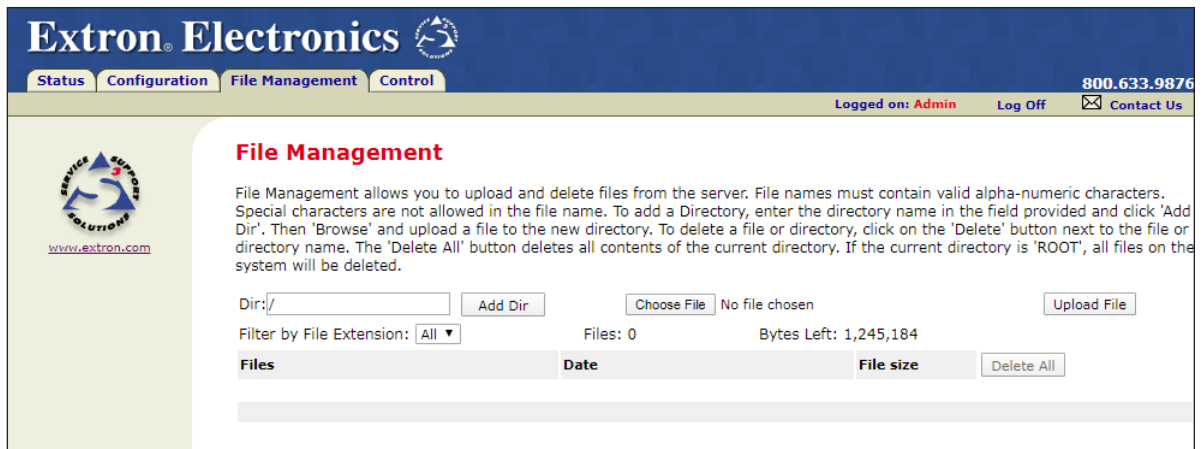


Figure 13. File Management Page

2. Depending on the firmware version used by the MPX, click the **Browse** button or the **Choose File** button. An **Open** dialog box appears.
3. Navigate to and select the file you want to upload.

NOTE: If you want one of the pages that you create and upload to be the default start-up page, name that file `index.html`.

4. Click the **Upload File** button to upload the file. The file is then added to the list of files in the **Files** column. After ten files have been loaded, additional file management pages appear in the page navigation area (on the right side of the screen).

To add a directory:

1. Enter the directory name in the **Dir** field.
2. Click the **Add Dir** button.
3. Click the **Browse** button or the **Choose File** button (depending on the installed firmware version), and locate your chosen directory.
4. Upload a file to the new directory.

To delete unwanted files:

1. Locate and select the file you wish to delete within the **Files** list.
2. Click the **Delete** button next to the file to be deleted. If you wish to delete additional files, wait for the screen to refresh before clicking the **Delete** button of the next file.

To delete all files, click the **Delete All** button. The file count reverts to 0 and all pages are deleted.

Control Tab

The Control tab allows access to the Set and View Ties page, and the Video and Audio Settings page for the MPX 423 A.

Set and View Ties page

Use the Set and View Ties page (figure 14) to quickly view and change input-to-output ties. The Set and View Ties page shows a representation of the MPX 423 A front panel, where the computer (VGA) inputs, the video (composite) inputs, and the S-video inputs are shown in their 4x2 groupings. Output modes can be easily identified as single or separate.

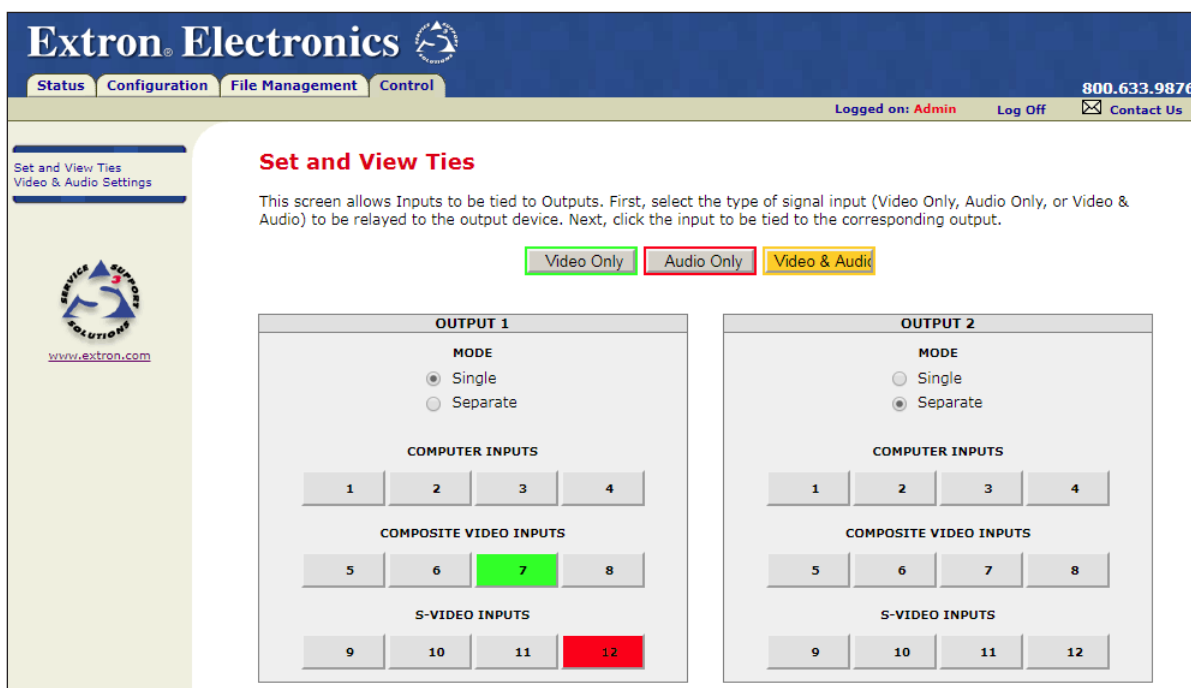


Figure 14. Set and View Ties Page

The status of each tie is visible through buttons of three different colors:

- An **amber** button indicates video and audio ties.
- A **green** button indicates video-only ties.
- A **red** button indicates audio-only ties.
- The **gray** buttons indicate no ties.

Creating a tie

Select and switch an input as follows:

1. Click the **Video Only**, **Audio Only**, or **Video & Audio** button to select video, audio, or both for switching (audio follow or audio breakaway). Each mouse click on a button toggles the other two buttons off.
2. Click on an input or output selection button to create a tie (if not tied) or untie (if tied) of the input and output associated with that button. The button color represents the signal type for the tie: green for video, red for audio and amber for audio and video.

Video & Audio Settings Page

The **Video & Audio Settings** page (figure 15) provides a way to set the input audio gain and attenuation, set the output volume, mute and unmute all video and audio outputs, and set the video delay (switching interval).

Figure 15. Video and Audio Settings Page

Change the input gain and attenuation

Users can set the level of audio gain or attenuation (-18 dB to +24 dB) for each input from the **Video & Audio Settings** page. Audio levels can be adjusted so there are no noticeable volume differences between sources.

Change the audio level of an input as follows:

1. Click the **Input** drop-down list (see ❶ at right).
2. Select the number of the desired input from the list.
3. Click the **Input Audio Level (dB)** drop-down list (❷).
4. Select the desired gain or attenuation value from the list.

Mute and unmute one or all outputs

Mute one or all outputs as follows:

1. To select an individual output to mute or unmute, click on the **Output** drop-down list.
2. Select the number of the desired output.
3. Click the **Video Only**, **Audio Only**, or **Video & Audio** button to select video, audio, or both for muting. Each click on a button toggles the other two buttons off.
4. Click the **Mute** or **UnMute** button to mute or unmute the selected output, or click the **Mute All** or **UnMute All** to mute or unmute all of the outputs. Observe the mute status indications (as shown at right) on the page. Unmuted is displayed in green and muted is displayed in red.

NOTE: If you choose an output number greater than 2, (that is, outputs 3 or 4 for video signals and 5 or 6 for S-video signals) the audio mute options are no longer accessible.

Use RGB delay

You can use the RGB delay feature to insure smooth, glitch-free transitions between inputs of the computer input group only. With a range of half second increments, the maximum delay possible is 5 seconds.

To use the RGB delay feature, click on the **RGB Delay** drop-down list and select the desired time (in seconds) for the output delay.

NOTE: If you choose an output number greater than 2, (that is, outputs 3 or 4 for video signals and 5 or 6 for S-video signals) the RGB delay options are no longer accessible.

Change the output volume level

Users can set the volume level for each output. The range is:

- Level 0 = minimum volume through
- Level 64 = maximum volume

NOTES:

- If you choose an output number greater than 2, (that is, outputs 3 or 4 for composite video signals and 5 or 6 for S-video) the volume level options are no longer accessible.
- The default volume level for output 1 is at level 50.
The default volume level for output 2 is at level 64.

Change the audio level setting for an output as follows:

1. Click on the **Output** drop-down list (see ❶ at right) and select the desired output (1 or 2).
2. Click on the **Volume Steps (64 max)** drop-down list (❷) and select the desired output level (00 to 64) (see the table on the next page to compare the value in this list to attenuation and output volume).

The screenshot shows a control panel for the MPX 423 A. It features several settings for a selected output:

- Output:** A drop-down menu with a circled ❶ next to it, currently showing '1'.
- RGB Delay (Seconds):** A drop-down menu showing '0.0'.
- Volume Steps (64 Max):** A drop-down menu with a circled ❷ next to it, currently showing '50'.
- Mute Status:** Two indicators, 'Video' and 'Audio', both showing 'UnMuted' in green text.

The following table defines the value of each audio volume step.

Audio Volume Adjustment Settings								
[X7] Value	dB of Attenuation	Output Volume	[X7] Value	dB of Attenuation	Output Volume	[X7] Value	dB of Attenuation	Output Volume
00	98	0%						
01	63	5.5%	23	41	38.5%	45	19	71.5%
02	62	7%	24	40	40%	46	18	73%
03	61	8.5%	25	39	41.5%	47	17	74.5%
04	60	10%	26	38	43%	48	16	76%
05	59	11.5%	27	37	44.5%	49	15	77.5%
06	58	13%	28	36	46%	50	14	79%
07	57	14.5%	29	35	47.5%	51	13	80.5%
08	56	16%	30	34	49%	52	12	82%
09	55	17.5%	31	33	50.5%	53	11	83.5%
10	54	19%	32	32	52%	54	10	85%
11	53	20.5%	33	31	53.5%	55	9	86.5%
12	52	22%	34	30	55%	56	8	88%
13	51	23.5%	35	29	56.5%	57	7	89.5%
14	50	25%	36	28	58%	58	6	91%
15	49	26.5%	37	27	59.5%	59	5	92.5%
16	48	28%	38	26	61%	60	4	94%
17	47	29.5%	39	25	62.5%	61	3	95.5%
18	46	31%	40	24	64%	62	2	97%
19	45	32.5%	41	23	65.5%	63	1	98.5%
20	44	34%	42	22	67%	64	0	100%
21	43	35.5%	43	21	68.5%			
22	42	37%	44	20	70%			

[X7] value (as used in SIS commands and responses) = volume step level

Special Characters

The HTML language reserves certain characters for specific functions. The switcher will not accept these characters as part of the switcher name, passwords, or locally created file names.

The switcher rejects the following characters:

{space} ~ @ = ' [] { } < > ' " semicolon (;) colon (:) | \ and ?

Extron 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 Electronics
1230 South Lewis Street
Anaheim, CA 92805
U.S.A.

Asia:

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

Japan:

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

Europe:

Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

China:

Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Middle East:

Extron Middle East
Dubai Airport Free Zone
F13, PO Box 293666
United Arab Emirates, Dubai

Africa:

Extron South Africa
3rd Floor, South Tower
160 Jan Smuts Avenue
Rosebank 2196, South Africa

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 if modifications were made to the product that were not authorized by Extron.

NOTE: If a product is defective, please call Extron and ask for an Application Engineer to receive an RA (Return Authorization) number. This will begin the repair process.

USA: 714.491.1500 or 800.633.9876

Asia: 65.6383.4400

Europe: 31.33.453.4040 or 800.3987.6673

Japan: 81.3.3511.7655

Africa: 27.11.447.6162

Middle East: 971.4.299.1800

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.