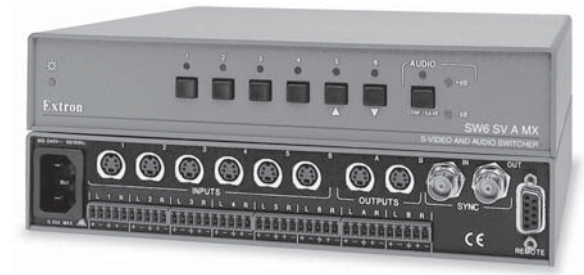


User's Manual



Audio/Video Switchers

- SW6 AV MX
- SW6 AV MX AS
- SW6 CV MX
- SW6 CV MX AS
- SW6 SA MX
- SW6 SV MX
- SW6 SV MX AS
- SW6 SV A MX
- SW6 SV A MX Auto



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Precautions

Safety Instructions • English



This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.



This symbol 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.

Caution

Read Instructions • Read and understand all safety and operating instructions before using the equipment.

Retain Instructions • The safety instructions should be kept for future reference.

Follow Warnings • Follow all warnings and instructions marked on the equipment or in the user information.

Avoid Attachments • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

Consignes de Sécurité • Français



Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).



Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.

Attention

Lire les instructions • Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.

Conservier les instructions • Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

Respecter les avertissements • Observer tous les avertissements et consignes marqués sur le matériel ou présentés dans la documentation utilisateur.

Eviter les pièces de fixation • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

Sicherheitsanleitungen • Deutsch



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



Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.

Achtung

Lesen der Anleitungen • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits- und Bedienungsanleitungen genau durchlesen und verstehen.

Aufbewahren der Anleitungen • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.

Befolgen der Warnhinweise • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.

Keine Zusatzgeräte • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

Instrucciones de seguridad • Español



Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.



Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.

Precaución

Leer las instrucciones • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

Conservar las instrucciones • Conservar las instrucciones de seguridad para futura consulta.

Obedecer las advertencias • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean específicamente recomendados por el fabricante, ya que podrían implicar riesgos.

Warning

Power sources • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

Power disconnection • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

Power cord protection • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

Servicing • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

Slots and openings • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

Lithium battery • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Avertissement

Alimentations • Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité: n'essayez pas de le contourner ni de la désactiver.

Déconnexion de l'alimentation • Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

Protection du cordon d'alimentation • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

Réparation-maintenance • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à des opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

Fentes et orifices • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

Lithium Batterie • Il a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur. Mettre au reut les batteries usagées conformément aux instructions du fabricant.

Vorsicht

Stromquellen • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdschluss, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

Stromunterbrechung • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stromversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

Schutz des Netzkabels • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar dagegestellt werden können.

Wartung • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.

Schlitze und Öffnungen • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.

Litium-Batterie • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

Advertencia

Alimentación eléctrica • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearia ni eliminaria.

Desconexión de alimentación eléctrica • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.

Protección del cables de alimentación • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

Reparaciones/mantenimiento • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.

Ranuras y aberturas • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el sobrecalentamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

Batería de litio • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterías usadas siguiendo las instrucciones del fabricante.

Extron's Warranty

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

USA, Canada, South America, and Central America:

Extron Electronics
1230 South Lewis Street
Anaheim, CA 92805, USA

Europe, Africa, and the Middle East:

Extron Electronics, Europe
Beeldschermweg 6C
3821 AH Amersfoort
The Netherlands

Asia:

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

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

If it has been determined that the product is defective, please call Extron and ask for an Applications Engineer at (714) 491-1500 (USA), 31.33.453.4040 (Europe), or 65.383.4400 (Asia) to receive an RA# (Return Authorization number). This will begin the repair process as quickly as possible.

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

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

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

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Audio/Video Switchers

Chapter One

Introduction

About the Audio and Video Switchers

Features

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Printed in the USA
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About the Audio and Video Switchers

The Extron SW family of audio/video switchers are 6-input, 2-output composite video, S-video, and/or stereo audio switchers. The AS and Auto versions are functionally identical, but also include an auto-sync detect mode. Auto-sync detect mode, when enabled, automatically selects the highest numbered input with a video signal available. The following table identifies the models and their video, audio, and auto-sync capabilities.

A/V switchers' attributes

Switcher	Part #	Composite video		Auto-sync detect	
		S-video	Audio	S-video	Audio
SW6 AV MX	60-208-01		●	●	
SW6 AV MX AS	60-208-22		●	●	●
SW6 CV MX	60-205-01		●		
SW6 CV MX AS	60-205-22		●		●
SW6 SA MX	60-206-01			●	
SW6 SV MX	60-207-01	●			
SW6 SV MX AS	60-207-22	●			●
SW6 SV A MX	60-358-01	●		●	
SW6 SV A MX Auto	60-358-02	●		●	●

The switchers are compatible with NTSC, PAL, and SECAM video. If external sync is connected, video switching occurs during the vertical interval, providing glitch-free switching.

The switchers allow the user to switch between devices, such as a DSS receiver, a VHS or S-VHS VCR, a DVD player, or a camcorder and output the image to one or two video recorders or displays such as a data monitor or large screen projector (figure 1-1).

The ½-rack width switcher can be mounted to a standard Extron rack panel (part # 60-190-01). Each model has an internal 100VAC to 240VAC, 50/60 Hz, 10 watts, auto-switchable power supply that provides worldwide power compatibility.

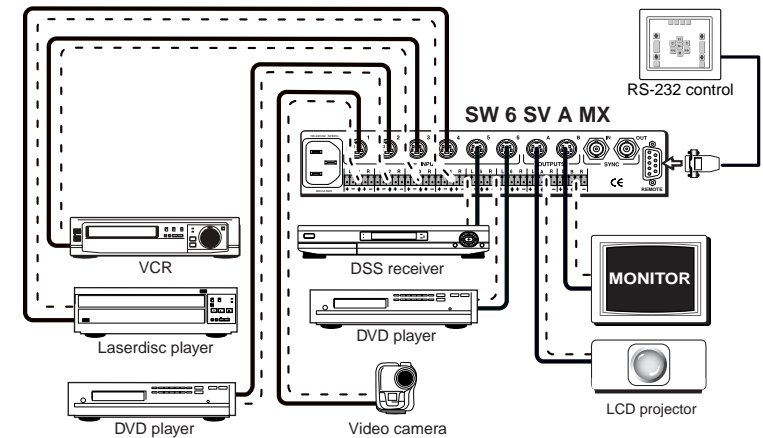


Figure 1-1 — Typical A/V switcher application

Features

S-video models

Inputs — S-video switchers accept up to six S-video inputs on 4-pin mini DIN connectors.

Outputs — S-video switchers output two identical S-video signals on 4-pin mini DIN connectors.

Composite video models

Inputs — Composite video switchers accept up to six composite video inputs on BNC female connectors.

Outputs — Composite video switchers output two identical composite video signals on BNC female connectors.

Audio models

Inputs — Audio switchers accept up to six stereo audio inputs, balanced or unbalanced, on 3.5 mm, 5-pole captive screw terminals.

Outputs — Audio switchers output two identical stereo audio outputs, balanced or unbalanced, on 3.5 mm, 5-pole captive screw terminals.

Audio input gain and attenuation — Users can set the level of audio gain or attenuation (-15dB to +9dB) for each input via the RS-232 link or from the front panel. Individual input audio levels can be adjusted so there are no noticeable volume differences between sources.

Auto models

Auto-sync detect — Auto or AS models continuously monitor all inputs and automatically switch to the highest-numbered input with video sync pulses present. If video is absent from all inputs, no input is selected. The auto version can operate in either normal (manual switch) or auto-switch mode.

All models

Front panel control — The operator can select the input and set the audio gain and attenuation for each input using the front panel buttons.

RS-232 control — The operator can control the switcher from a remote computer or other host using an RS-232 link on the Remote port. RS-232 control uses Extron's Simple Instruction Set™ (SIS™) or the Windows-based control software.

Simple Instruction Set — The Simple Instruction Set program lets a host computer control the switcher with simple commands.

Windows control software — Extron's Windows-based control software provides a graphic way to set up and control the switcher with an on-screen control panel.

Contact closure — The operator can control the switcher remotely using a contact closure keypad connected to the Remote port.

Optional infrared remote control — The operator can also control the switcher using Extron's IR 20 Universal SYS 4/8/10/AV remote control accessory (part #70-036-03) connected to the Remote port.

Rack mount option — The switchers are 1U high and a half-rack width wide. They can be installed on a standard rack shelf using an Extron 1U Shelf Rack, part # 60-190-01.

Auto-switching power supply — An internal power supply with an IEC connector makes power cord connection easy. The power supply can be used internationally with any power input from 110 VAC to 240 VAC at 50 or 60 Hz and adapts automatically to the input type.



Chapter Two

Installation

Installation Overview

Mounting the switcher

Rear Panel Cabling

Installation Overview

To install and set up an Extron A/V switcher for operation, follow these steps:

- 1 Turn off all of the equipment that will be connected to the switcher.
- 2 Mount the switcher. See *Mounting the switcher* in this chapter.
- 3 Attach the cables. See *Rear Panel Cabling* in this chapter.
- 4 Connect power cords and turn on the display devices and the input devices.
- 5 Set the audio gain and attenuation. See *Front Panel Controls and Indicators* in chapter 3.

Mounting the switcher

1. For optional rack mounting, mount the A/V switcher on the left or right side of a 19" 1U Universal Rack Shelf (Extron part #60-190-01) (figure 2-1).

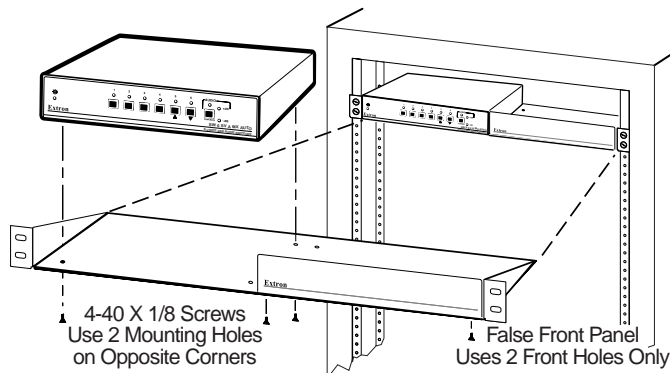


Figure 2-1 — Rack mounting the switcher

- a. If feet were previously installed on the bottom of the case, remove them.
- b. Mount the switcher on the rack shelf, using two 4-40 x 1/8 screws in opposite (diagonal) corners to secure the case to the shelf.
2. If desired, attach a false front panel, or a second 1/2-rack-width device to the other side of the shelf.
3. Attach the rack shelf to the rack using four 10-32 x 3/4" bolts and four #10 beveled dress washers.

Rear Panel Cabling

All connectors are on the rear panel. Depending on the model of the switcher, the type and layout of the connectors on the rear panel will vary. Figure 2-2 shows the rear panel of the SW6 SV A MX switcher. Figure 2-3 shows the rear panel of the SW6 AV MX switcher. These two models have all the connectors available on the A/V switchers.

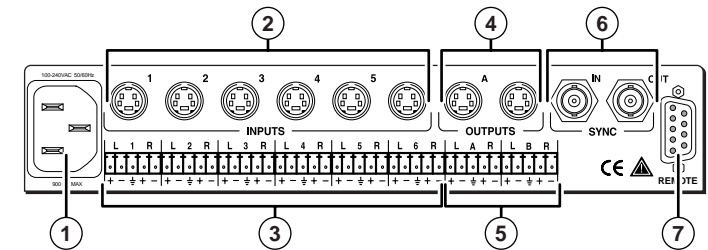


Figure 2-2 — SW6 SV A MX rear panel cabling

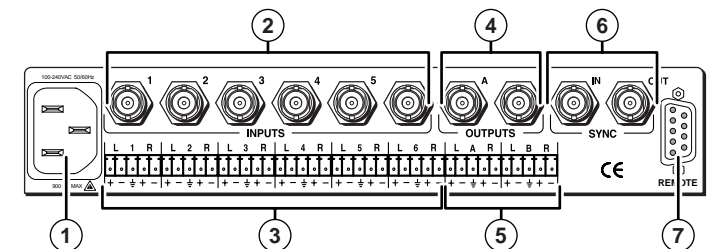


Figure 2-3 — SW6 AV MX rear panel cabling

Power connection

- 1 AC power connector — Plug a standard IEC power cord into this connector to connect the switcher to a 100 to 240VAC, 50 Hz or 60 Hz power source.

Signal input connections

S-video models

- 2 S-video input connectors — Connect S-video sources to these 4-pin mini DIN connectors.

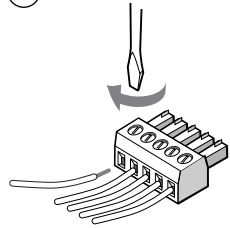
Composite video models

- 2 Composite video input connectors — Connect composite video sources to these female BNC connectors.

NOTE The A/V switchers do not alter the video signal in any way. The signal output from the switcher is in the same format as the input.

Audio models

- ③ **Connections for balanced and unbalanced audio inputs** — Each input has a 3.5 mm, 5-pole captive screw connector for balanced or unbalanced stereo audio input. Connectors are included with each A/V switcher, but you must supply the audio cable. See figure 2-4 to wire a connector for the appropriate input type and impedance level. High impedance is generally over 800 ohms.



WARNING *The captive screw connector can easily be inadvertently plugged partially into one receptacle and partially into an adjacent receptacle. This misconnection could damage the audio output circuits. Exercise care to ensure the captive screw connector is plugged into the desired input or output.*

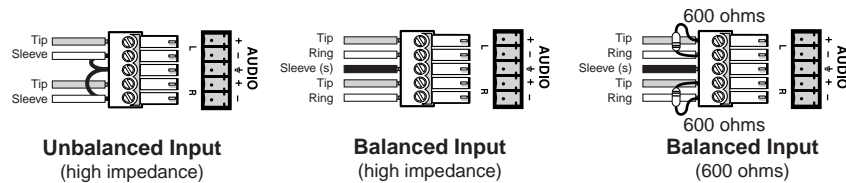


Figure 2-4 — Captive screw connector wiring for inputs

NOTE *When making connections from the switcher using existing audio cables, see figure 2-5. A mono audio connector consists of the tip and sleeve. A stereo audio connector consists of the tip, ring and sleeve. The ring, tip, and sleeve wires are also shown on the captive screw audio connector diagrams, figure 2-4 and figure 2-6.*

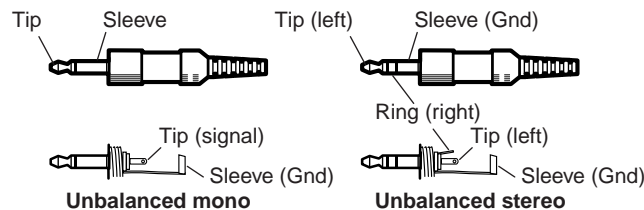


Figure 2-5 — Phono audio connectors

The audio level for each input can be individually set, via the front panel or RS-232, to ensure that the level on the output does not vary from input to input. See chapter 3, *Operation*, and chapter 4, *RS-232/Remote Control*, for details.

Signal output connections

S-video models

- ④ **S-video output connectors** — Connect S-video displays to these two 4-pin mini DIN connectors.

Composite video models

- ④ **Composite video output connectors** — Connect composite video displays to these two female BNC connectors.

Audio models

- ⑤ **Connections for audio outputs** — These 3.5 mm, 5-pole captive screw connectors output the selected unamplified, line level audio. Connect audio devices, such as an audio amplifier or powered speakers. See figure 2-6 to properly wire an output connector.

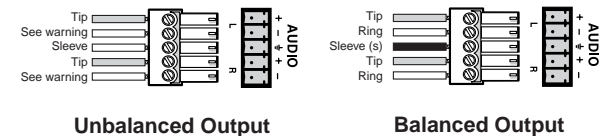


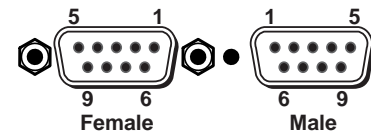
Figure 2-6 — Captive screw connector wiring for audio output

WARNING *Connect the sleeve to ground (Gnd). Connecting the sleeve to a negative (-) terminal will damage the audio output circuits.*

By default, the audio output follows the video switch. Audio breakaway, commanded via the RS-232 link, allows the user to select from any one of the audio input sources. See chapter 4, *RS-232/Remote Control* for details on the RS-232 connection

RS-232 or contact closure connection

- ⑥ **Remote connector** — Connect a host device, such as a computer or touch control panel, an Extron IR 20 Universal SYS 4/8/10/AV remote control, or a remote contact closure device to the A/V switcher via this 9-pin D connector for remote control using the Simple Instruction Set™ (SIS), the Extron graphical control program for Windows, the IR 20 remote control, or a contact closure device.



See chapter 4, *RS-232/Remote Control* for definitions of the SIS commands, details on how to install and use the control software, and information on how to make a remote contact closure device.

External sync connection

When the switching between inputs, the resulting image change should be seamless, or clean. The A/V switchers can use an external signal to synchronize switching during the vertical interval. Without the external sync locking feature, switching between inputs can result in a brief rolling (sync loss) or a brief change in the picture size.

- ⑦ **External Sync In connector** — Connect an external sync signal to this BNC connection for genlocking the video signal in broadcast or other sync-critical applications.

External Sync Out connector — Connect any downstream equipment that requires genlocking to this BNC connector to route the external sync signal throughout the system in broadcast or other sync-critical applications.

Figure 2-7 shows a basic external sync configuration. The Ext Sync In connector receives a timing signal. The Ext Sync Out connector allows the signal to be passed on to another video device, if required.

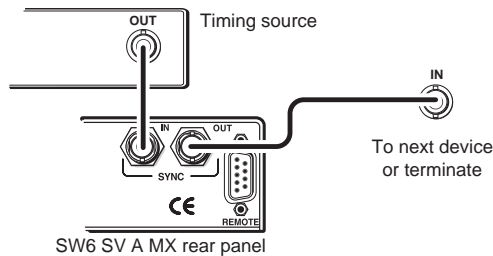


Figure 2-7 — Simple external sync connection example

Figure 2-8 shows a typical configuration in which the timing source passes through three video cameras and a video scan converter before connecting to the switcher. This type of video camera is capable of synchronizing with the external timing source for video editing applications.

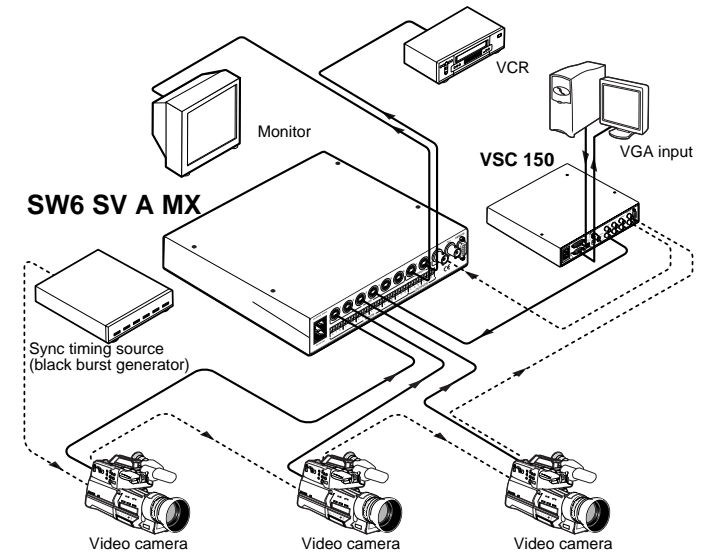


Figure 2-8 — Multiple device external sync connection example

If no external sync timing source is connected to the switcher, switching occurs immediately.



Chapter Three

Operation

Front Panel Controls and Indicators

Front Panel Operations

Memory

Troubleshooting — If no image appears

Front Panel Controls and Indicators

Figure 3-1 shows the controls and indicators on the front panel of the SW6 CV MX switcher, which is video only and has no auto-sync detect capabilities. Figure 3-2 shows the front panel of the SW6 SV A MX Auto switcher, which has audio and auto-sync capabilities. These two models have all the controls and indicators available on the A/V switchers.

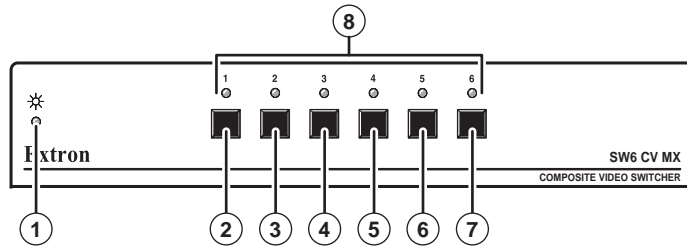


Figure 3-1 — SW6 CV MX front panel controls and indicators

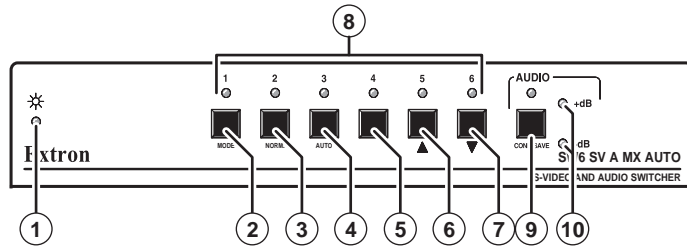


Figure 3-2 — SW6 SV A MX Auto front panel controls and indicators

- ① **Power LED** — The Power LED lights to indicate power is on. If AC voltage is available, power is on. When power is first applied, all front panel LEDs flash to indicate that the power up sequence was accomplished satisfactorily.
- ② **Input 1/Mode button** — The input 1/Mode button selects input 1 for output.

As a secondary function on auto-sync detect models, the button is used with the input 2 or input 3 button to select the switching mode. See *Normal and auto sync mode* in this chapter.
- ③ **Input 2/Normal button** — The input 2/Norm button selects input 2 for output.

As a secondary function on auto-sync detect models, the button is used with the input 1 button to select normal mode. See *Normal and auto sync mode* in this chapter.

- ④ **Input 3/Auto button** — The input 3/Auto button selects input 3 for output.

As a secondary function on auto-sync detect models, the button is used with the input 1 button to select auto-sync mode. See *Normal and auto sync mode* in this chapter.

- ⑤ **Input 4 button** — The input 4 button selects input 4 for output.
- ⑥ **Input 5/▲ button** — The input 5/▲ button selects input 5 for output.

As a secondary function on audio models, the button is used to increase the amount of audio gain for a selected input. See *Audio gain and attenuation* in this chapter.

- ⑦ **Input 6/▼ button** — The input 6/▼ button selects input 6 for output.

As a secondary function on audio models, the button is used to decrease the amount of the audio gain for a selected input. See *Audio gain and attenuation* in this chapter.

- ⑧ **Input 1 through 6 LEDs** — The input 1 through 6 LEDs identify the selected input.

As a secondary function on audio models, the input 1 through 5 LEDs indicate the audio level of the selected input. See *Audio gain and attenuation* in this chapter.

On auto-sync detect models, the input 2 and 3 LEDs also indicate the switching mode. See *Normal and auto sync mode* in this chapter.

- ⑨ **Audio configuration/save button and LED** — The Audio button and LED enable the user to view and/or change the current audio level setting for each input. See *Audio gain and attenuation* in this chapter.

- ⑩ **+dB/-dB LEDs** — The +dB and -dB LEDs indicate the polarity of the audio level setting. See *Audio gain and attenuation* in this chapter.

Front Panel Operations

Plug in all system components and turn on the input devices (such as DVD players, laserdisc players, VCRs, and DSS receivers) and the output devices. Set the input devices to

output video using each device's own operating instructions. Select an input. The image should appear on the screen.

Selecting an input

To select an input using the front panel buttons, press and release the button for the desired input (auto-sync detect models must be in normal mode). The LED for the selected input lights.

Input selection can also be done by an RS-232 device or a third party contact closure device (see chapter 4, *RS-232/Remote Control*).

Normal and auto-sync mode

The auto-sync detect model can operate in either normal (manual switch) or auto-sync mode. Input selection by the front panel buttons is blocked while in auto-sync mode. However, the front panel LEDs remain functional and the buttons can be used to view or change the mode.

Viewing the current switch mode

The current mode can be determined at any time by pressing and **holding** the input 1/Mode button until either the input 2/Norm or input 3/Auto LED blinks to indicate the mode. Release the input 1/Mode button.

NOTE *Conversely, if selecting input 1 and the input 1/Mode button is held too long, the current mode is displayed and input 1 is not selected.*

Selecting normal mode

Press and **hold** the input 1/Mode and input 2/Norm buttons simultaneously. The input 2/Norm LED blinks to indicate normal mode. Release both buttons. The default input is input 1, but if you release the input/Mode 1 button before releasing the input 2/Norm button, the switcher may select input 2.

NOTE *When changing mode, if the input 1/Mode button is released too soon (before the input 2 or 3 LED begins to blink), input 1 may be selected.*

Selecting auto-sync mode

Press and **hold** the input 1/Mode and input 3/Auto buttons simultaneously. The input 3/Auto LED blinks to indicate auto-sync mode. Release both buttons. The highest-numbered input with video sync pulses present is automatically selected for output. If no sync is present, no input is selected.

NOTE *When changing mode, if the input 1/Mode button is released too soon (before the input 2 or 3 LED begins to blink), input 1 may be selected.*

Audio gain and attenuation

The audio level of each input can be displayed and adjusted through a range of -15dB to +9dB to ensure that there is no noticeable volume difference among sources. The audio level can be adjusted from the front panel or by using Extron's Windows-based control program.

1. Press and release an input button to select an input.

NOTE *Auto-sync detect models must be in normal mode.*

2. Press and **hold** the Audio button until the Audio LED begins to blink, then release the Audio button. The audio level for the selected input is displayed in the input 1 through 5 LEDs and the polarity (+ or -) is displayed by the +dB and -dB LEDs.

Each input LED indicates 0dB when off, 1dB when blinking slowly, 2dB when blinking quickly, and 3dB when lit.

The +dB LED on indicates a positive (gain) level. The -dB LED on indicates a negative (attenuation) level. Both LEDs on indicate 0dB.

3. Press and release the ▲ and ▼ buttons to increase and decrease the audio level.
4. Press and hold the Audio button until the Audio LED turns off to save the gain value in memory and exit the audio display and adjustment mode.

Key:

- = off (value 0 dB),
- ⊙ = slow blink (value 1dB),
- ⊙ = fast blink (value 2dB),
- ⊙ = on (value 3dB)

dB	Input LED					+dB	-dB
	1	2	3	4	5		
+9	⊙	⊙	⊙	⊙	⊙	●	⊙
+8	⊙	⊙	⊙	⊙	⊙	●	⊙
+7	⊙	⊙	⊙	⊙	⊙	●	⊙
+6	⊙	⊙	⊙	⊙	⊙	●	⊙
+5	⊙	⊙	⊙	⊙	⊙	●	⊙
+4	⊙	⊙	⊙	⊙	⊙	●	⊙
+3	⊙	⊙	⊙	⊙	⊙	●	⊙
+2	⊙	⊙	⊙	⊙	⊙	●	⊙
+1	⊙	⊙	⊙	⊙	⊙	●	⊙
0	●	●	●	●	●	●	●
-1	⊙	⊙	⊙	⊙	⊙	●	⊙
-2	⊙	⊙	⊙	⊙	⊙	●	⊙
-3	⊙	⊙	⊙	⊙	⊙	●	⊙
-4	⊙	⊙	⊙	⊙	⊙	●	⊙
-5	⊙	⊙	⊙	⊙	⊙	●	⊙
-6	⊙	⊙	⊙	⊙	⊙	●	⊙
-7	⊙	⊙	⊙	⊙	⊙	●	⊙
-8	⊙	⊙	⊙	⊙	⊙	●	⊙
-9	⊙	⊙	⊙	⊙	⊙	●	⊙
-10	⊙	⊙	⊙	⊙	⊙	●	⊙
-11	⊙	⊙	⊙	⊙	⊙	●	⊙
-12	⊙	⊙	⊙	⊙	⊙	●	⊙
-13	⊙	⊙	⊙	⊙	⊙	●	⊙
-14	⊙	⊙	⊙	⊙	⊙	●	⊙
-15	⊙	⊙	⊙	⊙	⊙	●	⊙

- NOTE**
1. There is one audio level setting per input. The setting is shared by the left and right audio inputs.
 2. The audio level settings are stored in non-volatile memory. When power is removed and restored, the audio level settings are retained.

Viewing and adjusting an audio level

See figure 3-3 and figure 3-4 and the following steps for an example of viewing and adjusting the audio level on a switcher with audio.

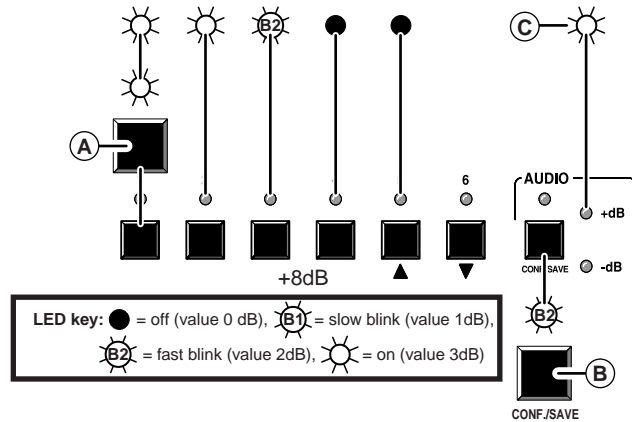


Figure 3-3 — Viewing the audio level

- Press and release an input button to select an input. The associated input LED lights.
- Press and **hold** the Audio Conf./Save button until the Audio LED starts blinking.
- The gain or attenuation value is displayed in the input 1 through 5 LEDs. In Figure 3-3, the value +8dB is displayed.
- Press and release the ▼ button several times to decrease the audio level displayed in the input LEDs by 1dB per button push. Note the input LED, +dB LED, and -dB LED changes that occur each time the ▼ button is pressed and released. Figure 3-4 shows the result of pressing the ▼ button a total of nine times to change the value to -1dB. Note that the +dB LED has turned off and that the -dB LED is on to indicate a negative level.
- Press and **hold** the Audio Conf./Save button until the Audio LED off. The input LEDs stop displaying the audio level, the +dB and -dB LEDs go off, and the selected input LED lights.

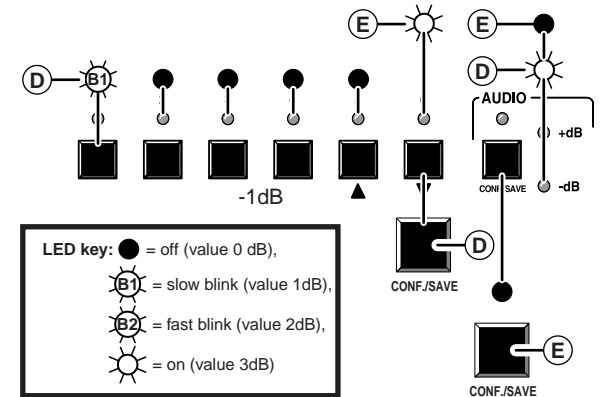


Figure 3-4 — Adjusting the audio level

Audio level reset

To reset the audio level to 0dB for all inputs, press and **hold** the Audio Conf./Save button for approximately 10 seconds. The Audio LED begins to blink and then turns off. Release the Audio Conf./Save button.

Memory

Audio and switch mode settings are saved in nonvolatile memory. When the switcher is powered off, the settings are retained. When the switcher is powered on, the saved memory settings are active. The selected input is not a saved value; when the switcher is powered on it defaults to input 1.

- NOTE** If an auto-sync detect model switcher is powered off in auto mode, it automatically switches to the highest-numbered input with video sync pulses present when it is powered back on. If no input has video present, all input select LEDs are off (only the Power LED is on).

Troubleshooting — If no image appears

1. Ensure that all devices are plugged in and powered on. The switcher is receiving power if the front panel Power LED is lit.
2. Ensure an active input is selected on the switcher or that the switcher is in auto-sync mode.
3. Ensure that the proper signal format is supplied.
4. Check the cabling and make corrections as necessary.
5. Call the Extron S³ Sales & Technical Support Hotline if necessary.



4

Chapter Four

RS-232/Remote Control

- Simple Instruction Set Control
- Windows-Based Program Control
- Contact Closure Remote Control
- Infrared Remote Control

The A/V switchers' rear panel Remote connectors (Figure 4-1) can be connected to the serial port output of a host device, such as a computer or control system, to an Extron IR 20 Universal SYS 4/8/10/AV remote control, or to a remote contact closure device. Other than the IR 20, remote communications with the switcher are via Extron's Simple Instruction Set, Extron's Windows-based control program, or pin-programmed in the case of a contact closure device.

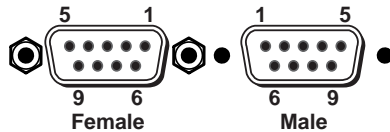


Figure 4-1 — Remote connector pinout

The RS-232 protocol of the rear panel RS-232/Remote connector is 9600 baud, 1 stop bit, no parity, and no flow control. The connector has the following pin assignments:

Pin	RS-232	Contact closure	Function
1	—	In#1	Input #1
2	TX	—	Transmit data (-)
3	RX	—	Receive data (+)
4	—	In#2	Input #2
5	Gnd	Gnd	Signal ground
6	—	In#3	Input #3
7	—	In#4	Input #4
8	—	In#5	Input #5
9	—	In#6	Input #6

Simple Instruction Set Control

Host-to-interface communications

SIS commands consist of one or more characters per field. No special characters are required to begin or end a command character sequence. When a command is valid, the switcher executes the command and sends a response to the host device. All responses from the switcher 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.

Switcher-initiated messages

When a local event, such as a front panel operation or error condition, occurs, the switcher responds by sending a message to the host. The switcher-initiated messages are listed below:

(C) Copyright 1996, Extron Electronics AV Series, Vx.xx ↵
Cn ↵

The switcher issues the copyright message and input selected message when it first powers on. Vx.xx is the firmware version number. Cn identifies the currently selected input, where n is the input number (input 1 is the power-up default in normal mode). The switcher also sends the Cn ↵ message whenever the selected input is changed using the front panel buttons.

Reconfig ↵

The switcher initiates this message when there is a change in an audio model's audio gain setting.

Error responses

When the switcher receives a valid SIS command, it executes the command and sends a response to the host device. If the switcher is unable to execute the command because the command is invalid or it contains invalid parameters, the switcher returns an error response to the host. The error response codes are:

- E01 ↵ - Invalid input channel number (out of range)
- E06 ↵ - Invalid input channel change (auto-switch mode active)
- E09 ↵ - Invalid function (mode) parameter
- E10 ↵ - Invalid command
- E13 ↵ - Invalid value (out of range)
- E14 ↵ - Illegal command for this configuration

Timeout

Pauses of 10 seconds or longer between command ASCII characters result in a timeout. The command operation is aborted with no other indication.

Using the command/response table

The command/response table is on the next page. Lower case letters are allowed in the command field only as indicated. Symbols are used throughout the table to represent variables in the command/response fields. Command and response examples are shown throughout the table. The ASCII to HEX conversion table below is for use with the command/response table.

Symbol definitions

- ↵ = CR/LF (carriage return/line feed) (0x0D 0A)
- = space
- [X1] = Input number 0 through 6 (0 = muted output)
- [X2] = Gain/attenuation value 16 steps ±1dB per step
- [X3] = Gain/attenuation value Numeric dB value, -15 to +9
- [X4] = Switch mode 1 = normal (manual) mode 2 = auto-switch mode
- [X5] = Software version x.xx
- [X6] = C, V, or A C = channel (audio & video) V = video A = audio
- [X7] = 6 Total number of inputs

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

Command/response table for SIS commands

Command	ASCII Command (host to switcher)	Response (switcher to host)	Additional description
Input selection			
Select video/audio input	[X1]!	↵ [X6] [X1] ↵	Select input [X1] entire channel.
Example (SW6 AV MX):	5!	↵ C5 ↵	Select input 5 video and audio.
Example (SW6 SV MX):	5!	↵ V5 ↵	Select input 5 video only.
Example (SW6 SA MX):	5!	↵ A5 ↵	Select input 5 audio only.
Select video input only	[X1]&	↵ V[X1] ↵	Select input [X1] video only (audio breakaway).
Select audio input only	[X1]\$	↵ A[X1] ↵	Select input [X1] audio only (audio breakaway).
Audio gain and attenuation			
Set gain	[X1]*[X2]G	↵ IN[X1]•AUD=[X3] ↵	Set gain for input [X1] to [X3]dB.
Example:	4*3G	↵ IN4•AUD=3 ↵	Set gain for input 4 to 3dB.
Set attenuation	[X1]*[X2]g	↵ IN[X1]•AUD=[X3] ↵	Set attenuation for input [X1] to [X3]dB.
Front panel mode			
Set switching mode	# [X4]	↵ F[X4] ↵	Set switch mode to [X4].
Example	#2	↵ F2 ↵	Set switch mode to auto (auto-switch).
View, information, part number, and firmware requests			
View gain or attenuation	V[X1]G	↵ IN[X1]•AUD=[X3] ↵	View gain for input [X1].
Example	V4G	↵ IN4•AUD=-3 ↵	Attenuation for input 4 is set to -3dB.
Information request	I/i	↵ V[X1]•A[X1]•F[X4]•QVER[X5]•M[X7] ↵	Video input 2; audio input 2; front panel mode auto; software version 1.23; total # of inputs = 6.
Example	I/i	↵ V2•A2•F2•QVER1.23•M6 ↵	Video input 2; audio input 2; front panel mode auto; software version 1.23; total # of inputs = 6.
Request for part number	N/n	↵ N60-358-02 ↵	60-358-02 = SW6 SV AMX Auto.
Query software version	Q/q	↵ QVER[X5] ↵	Software version 1.23.

Windows-Based Program Control

The Universal Switcher Control Program, part #29-031-01, is compatible with Windows 3.1/3.11, Windows 95/98, Windows NT, Windows ME, and Windows 2000 and provides remote control of the following:

- Input selection (including audio breakaway for models with video and audio)
- Audio gain and attenuation adjustments (audio models)
- Front panel switch mode selection (auto-switching models)

Updates to this program can be downloaded from the Extron Web site (<http://www.extron.com>).

Installing the software

The program is contained on a single 3.5" diskette and can be run from the floppy drive, or it can be installed and run from the hard drive.

To install the software on the hard drive, run setup.exe from the floppy disk and follow the screen instructions.

By default, the Windows installation creates a C:\UNIVSW folder and places two icons (Universal Switcher Control Program and Universal Switcher Help) into a group named "Extron Electronics".

Using the software

1. To run the software, double click on the Universal Switcher Control Program icon in the Extron Electronics program group.



2. Click on the comm port that is connected to the switcher's RS-232 port.
3. The Extron Universal Switcher Control Program window (Figure 4-2) displays the selected input, the audio gain for the selected input, and the panel mode.

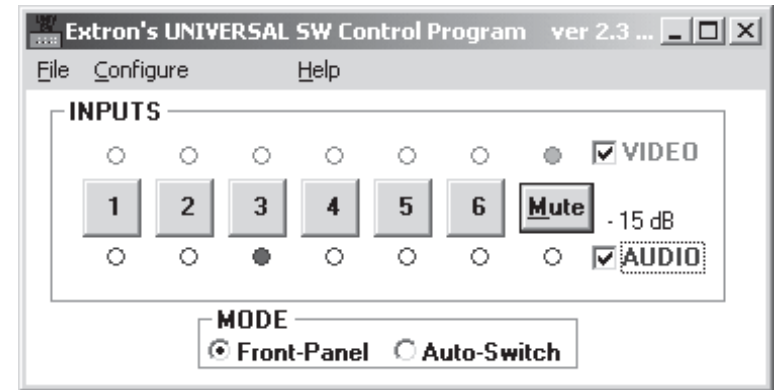


Figure 4-2 — Universal Switcher program window

Using the help system

For information about program features, you can access the help program in any of the following ways:

- From the Extron Electronics program group, double-click on the Signal Enhancement Products Help icon.



Universal Switcher Help

- From within the Windows-based switcher control program, click on the Help entry on the task bar.
- From within the Windows-based switcher control program, press the F1 key.

Contact Closure Remote Control

The Remote connector also provides a way to select an input to the switcher using a remote contact closure device. Contact closure control uses pins on the Remote connector that are not used by the RS-232 interface. The contact closure pin assignments are shown in the table on page 4-2.

To select a different input number using a contact closure device, momentarily short the pin for the desired input number to logic ground (pin 5). To force one of the inputs to be always selected, leave the short to logic ground in place. The short overrides front panel input selections.

NOTE Shorting the contact closure pin to override the front panel selection will work for all inputs on non auto-switching models. On auto-switching models, only the contact closure pins for inputs 2 through 6 can be shorted in this fashion. If pin 1 is connected to ground for an extended period on an auto-switch model, input 1 is not selected. Rather, the LEDs alternately display the previously selected input and blink the current front panel mode.

Infrared Remote Control

The optional Extron IR 20 Universal SYS 4/8/10/AV consists of the following components:

- System remote (hand-held remote control)
- IR detector with 6' cable and RJ-11 connector
- IR-20 SYS 4/AV switcher remote adapter with 3' cable and RS-232 T connector
- External 9 VDC adapter power supply

Install and operate the remote control in accordance with IR 20 User's Guide (part #68-200-01) included with the remote.



Audio/Video Switchers

A

Appendix A

Specifications Accessories and Part Numbers

Specifications

Included Parts

Accessories

Cables

Specifications

Video

Gain	Unity
Bandwidth	30 MHz (-3dB)
Differential phase error	0.01°, 4.43 to 30 MHz
Differential gain error	0.03%, 4.43 to 30 MHz
Crosstalk	-70dB @ 3.58 MHz
Switching speed	160 nS (max.)

Video input

Number/signal type	6 S-video	SW 6 SV MX, SW 6 SV A MX
	6 composite video	SW 6 CV MX, SW 6 AV MX
Connectors	6 4-pin mini-DIN female	SW 6 SV MX, SW 6 SV A MX
	6 BNC female	SW 6 CV MX, SW 6 AV MX
Minimum/maximum levels	Analog	0.3V to 1.5V p-p with no offset
Impedance	75 ohms (all inputs are terminated at 75 ohms)	
Return loss	-41dB @ 5 MHz	
External sync (genlock)	0.3V to 0.4V p-p	

Video output

Number/signal type	Individually buffered	
	2 S-video	SW 6 SV MX, SW 6 SV A MX
	2 composite video	SW 6 CV MX, SW 6 AV MX
Connectors	2 4-pin mini-DIN female	SW 6 SV MX, SW 6 SV A MX
	2 BNC female	SW 6 CV MX, SW 6 AV MX
Minimum/maximum levels	Analog	0.3V to 1.5V p-p
Impedance	75 ohms	
Return loss	-47dB @ 5 MHz	
DC offset	±5mV maximum with input at 0 offset	
Switching type	Vertical interval	

Sync

Genlock connectors	2 BNC female
Standards	NTSC, PAL, SECAM

Input level	0.3V to 5.0V p-p	SW 6 SV A MX
	0.5 to 5.0V p-p	all other models
Output level	TTL	4V to 5V p-p
Polarity	Positive or negative (follows input)	

Audio — SW 6 SA MX, SW 6 SV A MX, and SW 6 AV MX only

Gain	Unbalanced -15dB to +9dB, balanced -9dB to +15dB
Frequency response	20 Hz to 20 kHz, ±0.05dB
THD + Noise	0.03% @ 1 kHz, 0.3% @ 20 kHz at rated maximum output drive
S/N	>90dB at rated maximum output drive
Crosstalk	<-65dB @ 20 kHz, <-80dB @ 1 kHz or below 60 Hz, fully loaded
Stereo channel separation	>80dB @ 20 Hz to 20 kHz
CMRR	>75dB @ 20 Hz to 20 kHz

Audio input — SW 6 SA MX, SW 6 SV A MX, and SW 6 AV MX only

Number/signal type	6 stereo, balanced/unbalanced
Connectors	6 3.5 mm captive screw connectors, 5 pole
Impedance	
SW 6 SV A MX	>10 kohms unbalanced, >20 kohms balanced, DC coupled
SW 6 SA MX, SW 6 AV MX	>25 kohms balanced, 50 kohms unbalanced, DC coupled
Maximum level	+15dBu, (balanced or unbalanced) at stated %THD+N
Input gain adjustment	-15dB to +9dB, adjustable per input

Audio output — SW 6 SA MX, SW 6 SV A MX, and SW 6 AV MX only

Number/signal type	2 stereo, balanced/unbalanced
Connectors	2 3.5 mm captive screw connectors, 5 pole
Impedance	50 ohms unbalanced, 100 ohms balanced
Gain error	±0.1dB channel to channel
Maximum level (Hi-Z)	>+21dBu, balanced or unbalanced at stated %THD+N
Maximum level (600 ohm)	>+15dBm, balanced or unbalanced at stated %THD+N

Accessories and Part Numbers, cont'd

NOTE *OdBu = 0.775 volts (RMS).*

Control/remote — switcher

Serial control port	RS-232, 9-pin D female connector
Baud rate and protocol	9600, 8-bit, 1 stop bit, no parity
Serial control pin configurations	2 = TX, 3 = RX, 5 = GND
Contact closure	9-pin D female
Contact closure pin configurations	1 = input 1, 2 = input 2, 5 = GND, 6 = input 3, 7 = input 4, 8 = input 5, 9 = input 6
Program control	Extron's control program for Windows® Extron's Simple Instruction Set™ – SIS™

General

Power	100VAC to 240VAC, 50/60 Hz, 10 watts, internal, auto-switchable
Temperature/humidity	Storage -40° to +158°F (-40° to +70°C) / 10% to 90%, non-condensing Operating +32° to +122°F (0° to +50°C) / 10% to 90%, non-condensing
Rack mount	Yes, with optional 1U rack shelf, part #60-190-01
Enclosure type	Metal
Enclosure dimensions	1.75" H x 8.75" W x 9.5" D (1U high, 1/2 rack width) 4.4 cm H x 22.2 cm W x 24.1 cm D (Depth excludes connectors.)
Product weight	
SW 6 CV MX	2.9 lbs (1.3 kg)
SW 6 SV MX, SW 6 SA MX	2.7 lbs (1.2 kg)
SW 6 AV MX	3.3 lbs (1.5 kg)
SW 6 SV A MX	3.0 lbs (1.4 kg)
Shipping weight	
SW 6 CV MX, SW 6 SV MX, SW 6 SA MX	5 lbs (2.3 kg)
SW 6 AV MX, SW 6 SV A MX	6 lbs (2.7 kg)
Vibration	ISTA/NSTA 1A in carton (International Safe Transit Association)
Listings	UL, CUL
Certifications	CE, FCC Class A
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTE *Specifications are subject to change without notice.*

Included Parts

Included parts	Part number
Switcher	
SW6 AV MX	60-208-01
SW6 AV MX AS	60-208-22
SW6 CV MX	60-205-01
SW6 CV MX AS	60-205-22
SW6 SA MX	60-206-01
SW6 SV MX	60-207-01
SW6 SV MX AS	60-207-22
SW6 SV A MX	60-358-01
SW6 SV A MX Auto	60-358-02
Universal Switcher Control Program	29-031-01
SW6 SV A MX switcher label	33-585-01
A/V switcher label	33-263-01
A/V switcher User's Guide	68-293-01

Accessories

Accessories	Part number
S-video male to 2 BNC adapter, female, 8"	26-353-02
S-video female to 2 BNC, male (various lengths)	26-353-xx
BNC male to RCA female adapter	10-264-01

Cables

Extron's SVHS cable is suitable for S-video and Super High Resolution SHR 1 cable is suitable for composite video. Both these families of Extron cables have male gender connectors on both ends.

S-video Cable	Part number
SVHS 6' (6 feet/1.8 meters)	26-316-02
SVHS 12' (12 feet/3.7 meters)	26-316-03
SVHS 20' (20 feet/6.1 meters)	26-316-01
SVHS 30' (30 feet/9.1 meters)	26-316-04
SVHS 50' (50 feet/15.2 meters)	26-316-05
SVHS 75' (75 feet/22.9 meters)	26-316-06

Accessories and Part Numbers, cont'd

S-video Cable	Part number
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SVHS 100' (100 feet/30.4 meters)	26-316-07
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Super High Resolution Cable	Part number
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SHR 1-3' (3 feet/0.9 meter)	26-383-01
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SHR 1-6' (6 feet/1.8 meters)	26-383-12
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SHR 1-12' (12 feet/3.7 meters)	26-383-07
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SHR 1-25' (25 feet/7.6 meters)	26-383-04
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SHR 1-50'HR (50 feet/15.2 meters)	26-383-05
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SHR 1-75'HR (75 feet/22.9 meters)	26-383-06
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SHR 1-100'HR (100 feet/30.5 meters)	26-383-03
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SHR 1-150'HR (150 feet/45.0 meters)	26-383-08
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SHR 1-200'HR (200 feet/60.0 meters)	26-383-09
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SHR 1-250'HR (250 feet/75.0 meters)	26-383-10
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SHR 1-300' (300 feet/91.4 meters)	26-383-11
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