Extron® Electronics

INTERFACING, SWITCHING AND DISTRIBUTION

User's Manual

SW6 VGA Audio

6-input, 1-output VGA — QXGA and Stereo Audio Switcher

68-377-01 **Rev. E**
03 08

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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.

Conserver 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.

Precaucion

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 especificamente recomendados por el fabricante, ya que podrian 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 la 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 ces 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'll y a remplacment incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un ype equivalent recommande par le constructeur. Mettre au reut les batteries usagees conformement 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 Erdanschluß, 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 Stomversorgung (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 dagegengestellt 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 Öbjekten 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 sobrecalientamiento 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
1001 East Ball Road
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

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

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

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

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

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

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

安全须知 • 中文

这个符号提示用户该设备用户手册中有重要的操作和维护说明。

这个符号警告用户该设备机壳内有暴露的危险电压，有触电危险。

注意

阅读说明书 • 用户使用该设备前必须阅读并理解所有安全和使用说明。

保存说明书 • 用户应保存安全说明书以备将来使用。

遵守警告 • 用户应遵守产品和用户指南上的所有安全和操作说明。

避免追加 • 不要使用该产品厂商没有推荐的工具或追加设备，以避免危险。

警告

电源 • 该设备只能使用产品上标明的电源。 设备必须使用有地线的供电系统供电。 第三条线（地线）是安全设施，不能不用或跳过。

拔掉电源 • 为安全地从设备拔掉电源，请拔掉所有设备后或桌面电源的电源线，或任何接到市电系统的电源线。

电源线保护 • 妥善布线， 避免被踩踏，或重物挤压。

维护 • 所有维修必须由认证的维修人员进行。 设备内部没有用户可以更换的零件。为避免出现触电危险不要自己试图打开设备盖子维修该设备。

通风孔 • 有些设备机壳上有通风槽或孔，它们是用来防止机内敏感元件过热。 不要用任何东西挡住通风孔。

锂电池 • 不正确的更换电池会有爆炸的危险。 必须使用与厂家推荐的相同或相近型号的电池。 按照生产厂的建议处理废弃电池。

FCC Class A Notice

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. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. The Class A limits are designed to 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 harmful interference, in which case the user will be required to correct the interference at his own expense.

NOTE *This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance with FCC emissions limits.*

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Chapter One

Introduction

About the SW6 VGA Audio Switcher

About the SW6 VGA Audio Switcher

The SW6 VGA Audio (SW6 VGA A) (figure 1) is a 6-input, 1-output audio/video switcher housed in a rack mountable, 1U high, full width metal enclosure with internal, universal, 100-240 VAC, 50/60 Hz power supply.

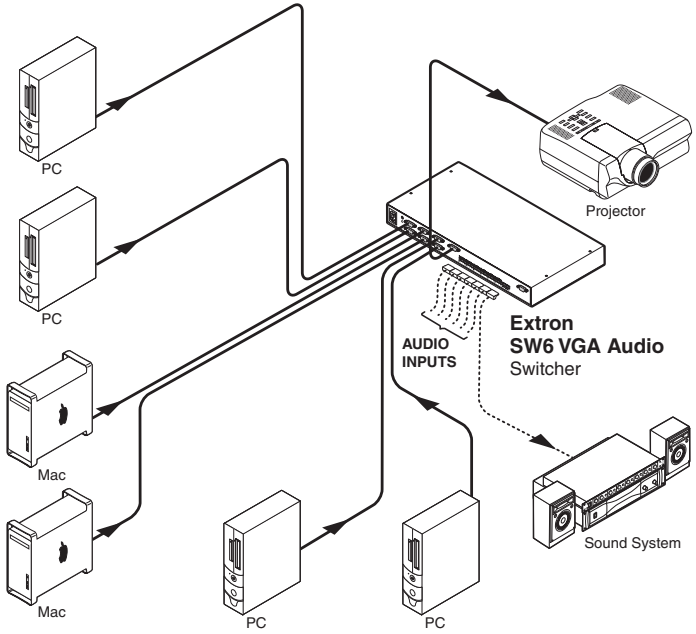


Figure 1 — Typical SW6 VGA Audio application

Chapter Two

Installation and Operation

Mounting the Unit

Connections

Operation

Mounting the Unit

CAUTION *Installation and service must be performed by authorized personnel only.*

The 1U high, full-rack width unit can be placed on a tabletop, mounted on a rack shelf, or mounted under a desk or other furniture.

Tabletop placement

Affix the four included rubber feet to the bottom of the unit and place it in any convenient location.

Rack mounting

UL guidelines

The following Underwriters Laboratories (UL) guidelines pertain to the installation of as SW6 VGA Audio into a rack (figure 2-1).

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. Therefore, consider installing the equipment in an environment compatible with the maximum ambient temperature (Tma) of +122 °F (+50 °C) specified by Extron.
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).

Mounting instructions

For optional rack mounting, mount the 1U high, full rack width switcher on either of the following rack shelves:

- RSU 129 9" 1U universal rack shelf kit (part #**60-190-01**) (figure 2-1)
- RSB 129 9" 1U basic rack shelf (part #**60-604-01**)

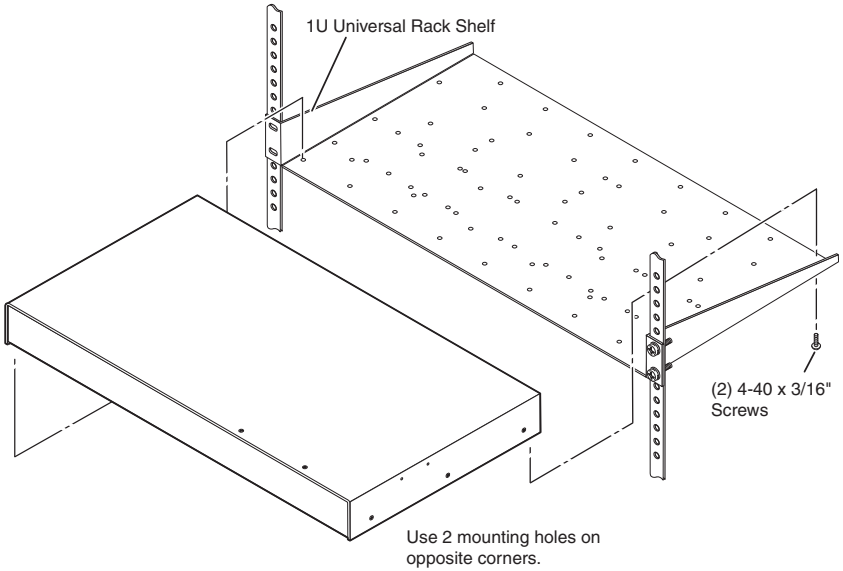


Figure 2-1 — Mounting the unit on a standard rack shelf

1. If installed, remove the feet from the bottom of the unit.
2. Mount the unit on the shelf, using two 4-40 x 3/16" screws in opposite (diagonal) corners to secure the unit to the shelf.
3. Insert the shelf into the rack, aligning the holes in the shelf with those of the rack.
4. Secure the shelf to the rack using the supplied machine screws.

Under furniture mounting

If desired, mount the SW6 VGA Audio under a desk or other furniture (figure 2-2) with the optional MBU 129 under-desk mounting bracket (part #**70-219-01**), as follows:

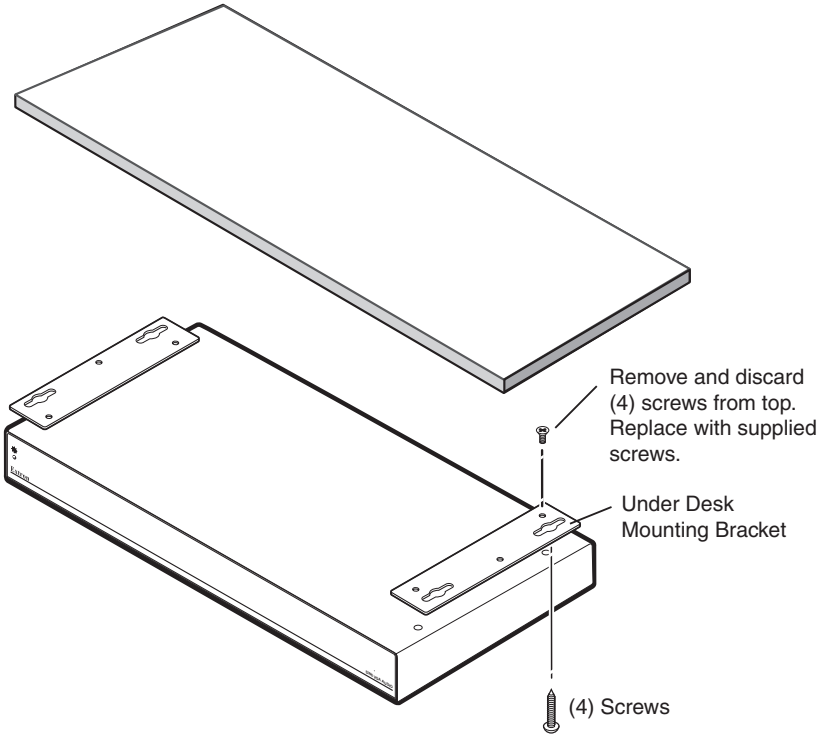


Figure 2-2 — Mounting the unit under a desk

1. If installed, remove the feet from the bottom of the unit.
2. Remove and discard the four screws in the top of the switcher.
3. Using the screws supplied in the mounting bracket kit, secure the mounting brackets to the top of the switcher with the slotted holes on the outside.
4. Hold the switcher with the attached brackets against the underside of the table or other furniture. Mark the location of the brackets' slotted screw holes on the mounting surface.
5. Drill 3/32" (2 mm) diameter pilot holes, 1/4" (6.3 mm) deep in the mounting surface at the marked screw locations.
6. Insert #8 wood screws into the four pilot holes. Tighten each screw into the mounting surface until just less than 1/4" of the screw protrudes.
7. Align the mounting screws with the slots in the brackets and place the switcher against the surface, with the screws through the bracket slots.
8. Slide the switcher slightly forward or back, then tighten all four screws to secure the switcher in place.

Connections

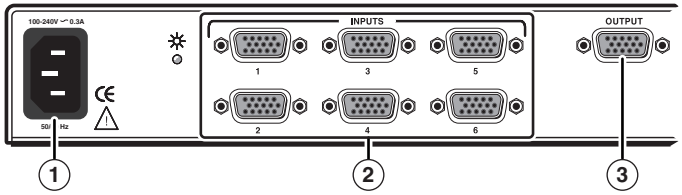


Figure 2-3 — SW6 VGA A rear panel (left half)

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

② **Video Input connectors —** Connect up to six RGBHV computer video (VGA–QXGA) to these 15-pin HD connectors.

NOTE *The switcher can also accept RGBS, RGsB, RsGsBs, and HDTV component video.*

③ **Video Output connector —** Connect an RGBHV (VGA-QXGA) video display to this female 15-pin HD connector.

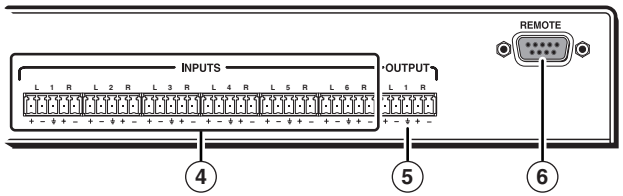
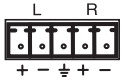


Figure 2-4 — SW6 VGA A rear panel (right half)

④ Audio Input connectors — Connect balanced or unbalanced stereo or mono audio inputs to these 3.5 mm, 5-pole captive screw connectors. Connectors are included with each switcher, but you must supply the audio cable. See "Audio connections" on the next page to wire the connectors.



⑤ Audio Output connector — Connect a balanced or unbalanced stereo or mono audio device to this 3.5 mm, 5-pole captive screw connector. Connectors are included with each switcher, but you must supply the audio cable. See "Audio connections" on the next page to wire the connectors.

⑥ **Remote connector —** Connect a host device, such as a computer, touch panel control, or RS-232 capable PDA to the switcher via this 9-pin D connector for serial RS-232 control (figure 2-5).

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	Ground
6	—	In #3	Input #3
7	—	In #4	Input #4
8	—	In #5	Input #5
9	—	In #6	Input #6

Figure 2-5 — Remote connector

See chapter 3, "Remote Control", for definitions of the SIS commands (serial commands to control the switcher via this connector) and for details on how to install and use the control software.

To select an input using contact closure control, momentarily tie an input's selection pin to ground.

NOTE *Contact closure input selection cannot be performed when the auto switch mode is on.*

Audio connections

See figure 2-6 to wire a connector for the appropriate input or output type and impedance level. High impedance is generally over 800 ohms.

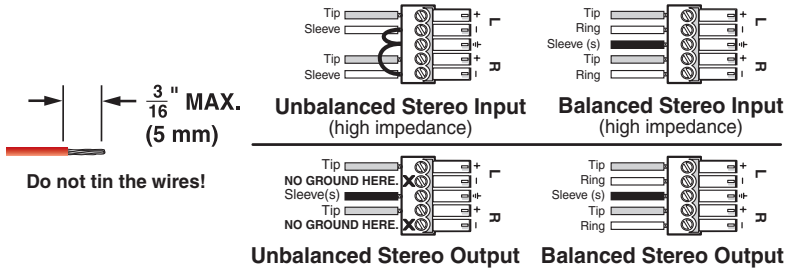


Figure 2-6 — Captive screw connector wiring for audio

CAUTION *The length of the exposed (stripped) portion of the copper wires is important. The ideal length is 3/16" (5 mm). Longer bare wires can short together. Shorter bare wires are not as secure in the captive screw connectors and could be pulled out.*

CAUTION *The input audio connectors can easily be inadvertently plugged partially into one receptacle and partially into an adjacent receptacle. Ensure that the connector is plugged fully and only into the desired input or output.*

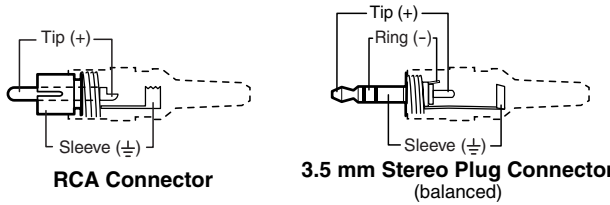


Figure 2-7 — Typical audio connectors

Operation

Controls and indicators

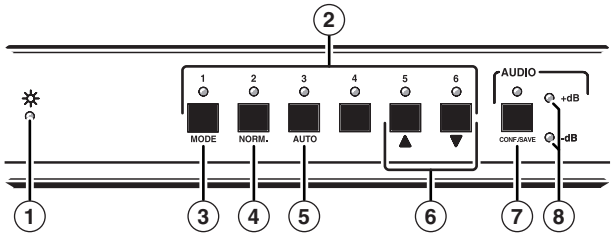


Figure 2-8 — SW6 VGA Audio front panel features

① **Power LED —** Indicates that AC power is applied (also on the rear panel, figure 2-9).

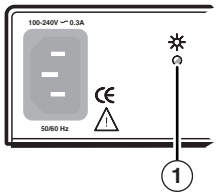


Figure 2-9 — Rear panel power connector

② **Input Buttons and LEDs —** When the auto switch mode is off, these buttons select the input. The LED for the selected input lights.

The LEDs continue to indicate the selected input when the auto switch mode is on. If no input LED is lit, no input has active sync pulses and no input is selected.

NOTE *Front panel input selection cannot be performed when the auto switch mode is on.*

③ **Mode button —** Use this button, with either the Auto or the Normal button, to manually turn auto switch mode on or off. This button is a secondary function of the Input 1 button.

④ **Normal button —** Use this button, with the Mode button, to manually turn auto switch mode off. This button is a secondary function of the Input 2 button.

⑤ **Auto button —** Use this button, with the Mode button, to manually turn auto switch mode on.

Auto is a secondary function of the Input 3 button.

⑥ **▲ and ▼ buttons —** Use these buttons to increase or decrease the selected input's audio gain or attenuation. These buttons are secondary functions of the Input 5 and Input 6 buttons.

⑦ **Audio Configuration/Save button and LED —** Selects the audio mode, in which you can set the input audio (gain and attenuation level for each input.

⑧ **+dB and -dB LEDs —** Indicate polarity (gain [+] or attenuation [-]) of input audio level setting.

Switch modes

The SW6 VGA Audio switcher operates in manual or auto switch mode.

- **Manual switch mode —** Input selection is done using Input buttons 1 through 6 on the front panel or through the rear panel Remote connector (contact closure or RS-232).
- **Auto switch mode —** The switcher automatically selects the highest number input that has sync pulses available. Input selection by the front panel switches or through the Remote connector is blocked.

Determining the switch mode

To determine which mode is active, press and release an unselected input button.

Normal switch mode — That input becomes the selected input.

Auto switch mode — The switcher does not select the input associated with the button that you pushed.

Selecting a switch mode

Switch between modes by pressing and **holding** the Mode (Input 1 button) and either the Normal (Input 2) or Auto (Input 3) button until either the Normal or Auto LED blinks (figure 2-10).

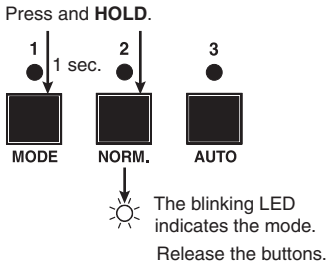
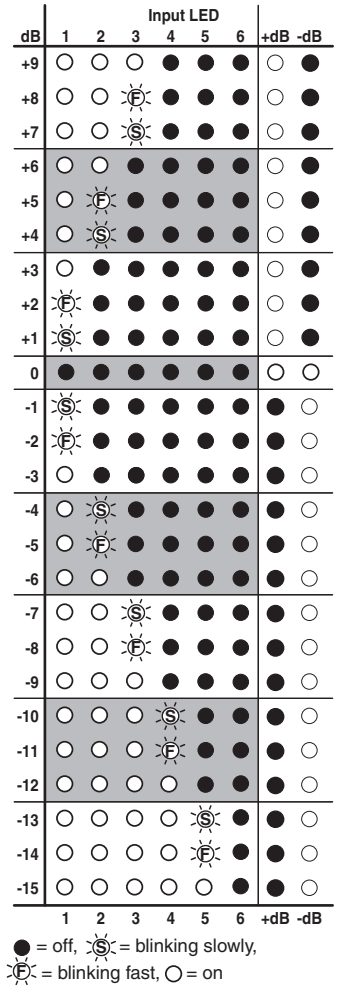


Figure 2-10 — Selecting a switch mode

Audio level control

The audio level setting for the selected input can be viewed and changed (within a range of -15 dB to +9 dB), to ensure that there is no noticeable volume difference among sources.



Adjusting the audio level

View or change the audio input level as follows:

1. Select an input.
2. Press and hold the Audio Configuration/Save button until the Audio Configuration/Save LED blinks. Release the button.

   The Input LEDs indicate the audio level. The +dB and –dB LEDs display the polarity (+ [gain] or – [attenuation]).

   - Each Input LED shows a range of 3 dB:
     - Slow blink = 1 dB
     - Fast blink = 2 dB
     - Lit = 3 dB
   - The +dB LED lit indicates a positive (gain) level. The –dB LED lit indicates a negative (attenuation) level. Both LEDs lit indicate 0 dB.
3. Press and release the ▲ (Input 5) or ▼ (Input 6) buttons to increase or decrease the audio level by 1 dB.
4. Press and hold the Audio Configuration/Save button until the Audio Configuration/Save LED goes out. Release the button.

NOTE

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

Resetting all audio levels

To reset the audio level to 0 dB for all inputs, press and hold the Audio Configuration/Save button. The Audio Configuration/Save LED begins to blink after approximately 1 second. Continue to hold the button for approximately 10 seconds until the LED turns off. All input audio levels are reset to 0 dB.

Chapter Three

Remote Control

Simple Instruction Set Control

Windows®-Based Program Control

Contact Closure Control

IR 102 Infrared Remote Control

The SW6 VGA Audio switcher's rear panel Remote connector (figure 3-1) can be connected to the serial port output of a host device, such as a computer or control system, to an Extron IR 102 Kit Universal Remote Control, **OR** to a remote contact closure device. Remote coontrol of the switcher is via Extron's Simple Instruction Set (SIS™), Extron's Windows®-based control program, the IR 102 Kit, or a contact closure device.

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	Ground
6	—	In #3	Input #3
7	—	In #4	Input #4
8	—	In #5	Input #5
9	—	In #6	Input #6

Figure 3-1 — Remote connector pinout

The RS-232 protocol of the rear panel Remote connector is 9600 baud, 1 stop bit, no parity, and no flow control. The connector has the pin assignments shown in figure 3-1.

For RS-232 and IR control, use a control cable with only pins 2, 3, and 5 connected. To accomplish this, either cut the wires to the other pins in hard-shelled connectors, or remove the unneeded pins from molded plugs.

For contact closure, use a control cable with pins 2 and 3 NOT connected. To accomplish this, either cut the wires to these pins in hard-shelled connectors or remove these pins from molded plugs.

Simple Instruction Set Control

Host-to-switcher 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 (unsolicited) 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 1998, EXTRON ELECTRONICS SW6VGA AUDIO, V*x.xx*↵

The switcher issues the copyright message when it first powers on. V*x.xx* is the firmware version number.

C*n*↵

The switcher issues the C*n* message when a front panel input selection operation occurs and immediately following the copyright message. *n* is the input number.

Reconfig↵

The switcher initiates this message when there is a change in an .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).

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 begins on the next page. Lower-case letters are acceptable in the command field except where indicated for the gain and attenuation commands. 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 = output mute)
X2	=	Switch mode	1 = auto switch mode 2 = normal switch mode
X3	=	Audio level	0 - 15
X4	=	Gain or attenuation	-15 through +9 *(dBs of gain or attenuation)*
X5	=	Switch mode	1 = normal switch mode 2 = auto switch mode
X6	=	Firmware version	*n.nn*

ASCII to HEX Conversion Table

	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 unit)	Response (unit to host)	Additional description
Switching commands			
Select video and audio input	X1!	C X1 ↵	Select input X1 as output.
Example:	6!	C6↵	Select input 6 as output.
Select video input	X1&	V X1 ↵	Select input X1 video as output (audio breakaway).
Select audio input	X1$	A X1 ↵	Select input X1 audio as output (audio breakaway).
Switch mode			
Set auto switch mode	#1	F1↵	Switcher automatically selects the highest numbered input with a signal present. Front panel and RS-232 input selection are blocked.
Set manual switch mode	#2	F2↵	Switcher responds to front panel/RS-232 input selection.
Input audio level			
NOTE *The set gain (G) and set attenuation (g) commands are case sensitive. The* show audio level *command is* ***not*** *case sensitive.*			
Set input gain	X1*X3G	In X1 • Aud=X4 ↵	Set input X1 audio level to X4 dB of gain.
Example:	3*6	In1 • Aud=+6↵	Set input 1 audio level to +6 dB of gain.
Set input attenuation	X1*X3g	In X1 • Aud=X4 ↵	Set input X1 audio level to X4 dB of attenuation.
Show input audio level	VX1G	In X1 • Aud=X4 ↵	Input X1 audio level is X4 of gain or attenuation.
Information requests			
Information request	I	V X1 • A X1 • F X5 • QVER X6 • M6↵ Show system configuration and mode. "M" is the total number of inputs, always 6 for this product.	
Request part number	N	N60-260-01↵	
Query firmware version	Q	X6 ↵	

Windows®-Based Program Control

The Windows-based Extron Universal Switcher Control Program, which communicates with the switcher via the Remote port, provides an easy way to configure and operate the SW6 VGA Audio switcher. The program is compatible with Windows 2000 and Windows XP or higher versions.

Installing the software

The program is contained on the Extron Software Products CD-ROM, disk B. Install the software as follows:

1. Insert the CD-ROM into the drive. The installation program should start automatically. If it does not self-start, run Launch.exe from the CD.

   The Extron software CD window appears (figure 3-2).

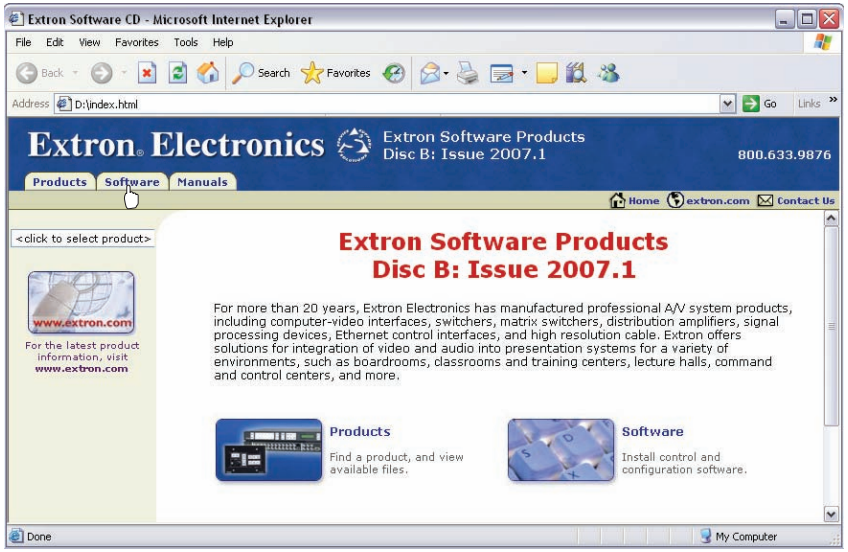


Figure 3-2 — Software CD window

2. Click the Software tab (figure 3-2).
3. Scroll to the desired program and click Install (figure 3-3).

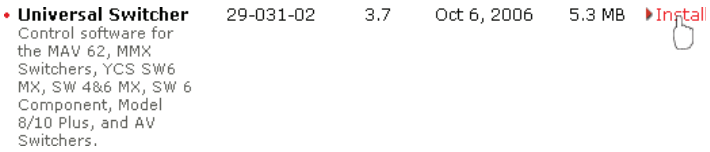


Figure 3-3 — Software installation

4. Follow the on-screen instructions. By default, the installation of the Universal Switchers Control Program creates a C:\Program Files\Extron\UnivSW, and it places four icons into a group folder named "Extron Electronics\Universal Switcher." The four installed icons are:
   - Check for Universal Switcher Updates
   - Uninstall Universal Switcher
   - Universal Switcher Control Program
   - Universal Switcher Help

Using the software

Run the program as follows:

1. Click **Start** > **Programs** > **Extron Electronics** > **Universal Switcher Control Pgm**.
2. Click the comm port that is connected to the switcher's RS-232 port.
3. The Extron Universal Switcher Control Program window (figure 3-4) displays the selected video and audio input.

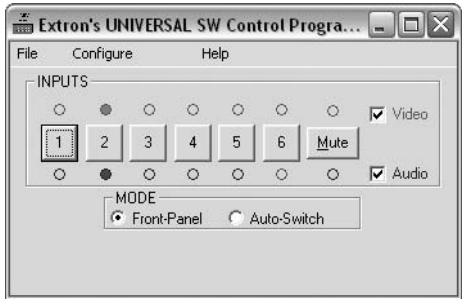


Figure 3-4 — Universal Switcher Control program window

Using the help system

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

- Click **Start** > **Programs** > **Extron Electronics** > **Universal Switcher Help**.
- From within the switcher control program, select **Help** > **Contents** on the task bar.
- From within the 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. Figure 3-5 shows the contact closure 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	Ground
6	—	In #3	Input #3
7	—	In #4	Input #4
8	—	In #5	Input #5
9	—	In #6	Input #6

Figure 3-5 — Remote connector pinout

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.

IR 102 Infrared Remote Control

The optional Extron IR 102 kit consists of the following components:

- IR 102 handheld remote control unit
- VersaTools IR 102 remote receiver with 3' cable and RS-232 connector
- IR detector with 6' cable and captive screw connector
- External 12 VDC power supply

Install and operate the remote control in accordance with the *IR 102 User's Guide* included with the remote.

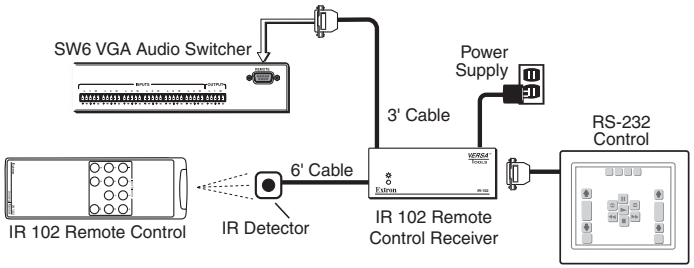


Figure 3-6 — IR 102 Remote application

Appendix A

Reference Information

Specifications

Part Numbers

Specifications

Video

Gain	Unity
Bandwidth	350 MHz (-3 dB)
Crosstalk	<-68 dB @ 10 MHz, <-39 dB @ 100 MHz

Video input

Number/signal type	6 VGA–QXGA RGBHV, RGBS, RGsB, RsGsBs, HDTV component video
Connectors	6 female 15-pin HD
Nominal level	1.0 Vp-p for Y of component video 0.7 Vp-p for RGB and for R-Y and B-Y of component video
Minimum/maximum levels	Analog: 0.3 V to 1.5 Vp-p with no offset
Impedance	75 ohms
Horizontal frequency	15 kHz to 145 kHz
Vertical frequency	30 Hz to 170 Hz
Return loss	<-42 dB @ 5 MHz

Video output

Number/signal type	1 VGA–QXGA RGBHV, RGBS, RGsB, RsGsBs, HDTV component video
Connectors	1 female 15-pin HD
Nominal level	1.0 Vp-p for Y of component video 0.7 Vp-p for RGB and for R-Y and B-Y of component video
Minimum/maximum levels	Analog: 0.3 V to 1.5 Vp-p (follows input)
Impedance	75 ohms
Return loss	<-43 dB @ 5 MHz
DC offset	±5 mV maximum with input at 0 offset

Sync

Input type	RGBHV, RGBS, RGsB, RsGsBs, bi-level and tri-level sync
Output type	RGBHV, RGBS, RGsB, RsGsBs, bi-level and tri-level sync (follows input)
Input level	1V to 5 Vp-p
Output level	TTL: 5 Vp-p, unterminated
Input impedance	510 ohms
Output impedance	75 ohms
Polarity	Positive or negative

Audio

Gain	Unbalanced output: 0 dB; balanced output: +6 dB
Frequency response	20 Hz to 20 kHz, ±0.05 dB
THD + Noise	0.03% @ 1 kHz, 0.3% @ 20 kHz at nominal level
Bandwidth	100 kHz at -3 dB
S/N	>90 dB, balanced, at maximum output (unweighted)
Crosstalk	<-65 dB @ 20 kHz, <-80 dB @ 1 kHz and below 60 Hz, fully loaded
Stereo channel separation	>80 dB @ 1 kHz, >60 dB @ 20 kHz
CMRR	>75 dB @ 20 Hz to 20 kHz

Audio input

Number/signal type	6 stereo, balanced/unbalanced
Connectors	(6) 3.5 mm captive screw connectors, 5 pole
Impedance	>12k ohms unbalanced, 25k ohms unbalanced, DC coupled
Nominal level	-10 dBV (316 mV)
Maximum level	+18 dBu, (balanced or unbalanced) at 1% THD+N
Input gain adjustment	–15.0 dB to +9.0 dB, adjustable per input

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

Audio output

Number/signal type	1 stereo, balanced/unbalanced
Connectors	(1) 3.5 mm captive screw connector, 5 pole
Impedance	50 ohms unbalanced, 100 ohms balanced
Gain error	±0.1 dB channel to channel
Nominal level	-4 dBV (63.1 mV)
Maximum level (Hi-Z)	>+26 dBu, balanced; >21 dBu, unbalanced at 1% THD+N
Maximum level (600 ohm)	>+21 dBm, balanced; >+15 dBm unbalanced at 1% THD+N

Control/remote — switcher

Serial control port	RS-232, 9-pin female D connector
Baud rate and protocol	9600 baud, 8 data bits, 1 stop bit, no parity
Serial control pin configurations.	2 = TX, 3 = RX, 5 = GND
Contact closure	9-pin female D connector
Program control	Extron's control/configuration program for Windows® Extron's Simple Instruction Set (SIS™)

General

Power	100 VAC to 240 VAC, 50/60 Hz, 30 watts, internal
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Cooling	Convection, unvented
Rack mount	Yes, with optional 9.5" deep rack shelf, part #60-190-01 (RSU 129) or 60-604-01 (RSB 129) Furniture mountable with optional under-desk mounting kit, part #70-219-01 (MBU 129)
Enclosure type	Metal
Enclosure dimensions	1.75" H x 17.1" W x 9.4" D (1U high, full rack wide) 4.4 cm H x 43.4 cm W x 23.9 cm D (Depth excludes connectors.)
Product weight	4.5 lbs (2.0 kg)
Shipping weight	7 lbs (4 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Listings	UL, CUL
Compliances	CE, FCC Class A
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTE *All nominal levels are at ±10%.*

NOTE *Specifications are subject to change without notice.*

Part Numbers

Included parts

These items are included in each order for an SW6 VGA Audio:

Included parts	Part number
SW6 VGA Audio switcher	60-260-01
IEC power cord	
Tweeker (small screwdriver)	
SW6 VGA Audio User's Guide	
Captive screw 5-pole connectors (qty. 7)	10-457-12
Extron Software Products CD (Universal Switcher Control Program)	

Cables

Male-to-male VGA cables	Part number
VGA M-M MD/3, 3' (0.9 m)	26-238-14
VGA M-M MD/6, 6' (1.8m)	26-238-01
VGA M-M MD/10, 10' (3.0m)	26-238-07
VGA M-M MD/25, 25' (7.6 m)	26-238-03
VGA M-M MD/50, 50' (15.2m)	26-238-18

Accessories

Accessory	Part number
RSU 129 1U Universal rack shelf	60-190-01
RSB 129 1U Basic rack shelf	60-604-01
MBU 129 Under-desk mounting bracket	70-219-01
Mac HV/VGA adapter	26-340-02
SY-VGA/XGA	26-173-01
KP 6 remote control keypad	60-111-20
IR 102 remote control kit	70-224-01