



SW USB Series

USB Switchers



Extron® Electronics
INTERFACING, SWITCHING AND CONTROL



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 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 específicamente recomendados por el fabricante, ya que podrían implicar riesgos.

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。

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, the desktop power module (if detachable), or 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 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'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 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 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 puentearla 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 y 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.

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.
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.
For more information on safety guidelines, regulatory compliances, EMI/EMF compliance, accessibility, and related topics, [click here](#).

Conventions Used in this Guide

In this user guide, the following are used:

CAUTION: A caution indicates a potential hazard to equipment or data.

NOTE: A note draws attention to important information.

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

WARNING: A warning warns of things or actions that might cause injury, death, or other severe consequences.

Commands are written in the fonts shown here:

```
^ARMerge Scene,,Op1 scene 1,1 ^B51 ^W^C
```

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

```
Esc[X1*[X17*[X20*[X23*[X21]CE←
```

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

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

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

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

Variables are written in slanted form as shown here:

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

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

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

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

Click the **OK** button.

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Trademarks

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Introduction

This section gives an overview of the Extron SW USB Series switchers. Topics include:

- [About this Guide](#)
- [About the SW USB Series](#)
- [Features](#)
- [Application Diagrams](#)

About this Guide

This guide describes the Extron SW2 USB, SW4 USB, and SW4 USB Plus switchers and provides instructions on installing, configuring, and operating them. The terms “SW USB” and “switcher” are used throughout this guide to refer to all models.

About the SW USB Series

The SW USB Series switchers make it possible for two or four host computers to share and switch among up to four peripheral USB devices such as mass storage devices, keyboards, mice, and other human interface devices (HIDs). They function as USB hubs with switching and device emulation, so that connections are maintained between host computers and peripherals.

Features

A number of specialized features help to streamline system integration, including port status indication, RS-232 pass-through, front panel security lockout, and multiple control points.

- **Outputs** — Four female USB type A connectors act as a USB hub. Each port supplies the 500 mA, 5 V rating required in the USB specification.
- **USB 2.0 compatibility** — The SW USB switchers are backward compatible with all previous USB data rate standards, including low speed (1.5 Mbps), full speed (12 Mbps), and high speed (480 Mbps).
- **Mounting** — The SW USB Series switchers have compact 1U high, ½-rack wide, 3 inches (7.6 cm) deep metal enclosures that can be mounted on a rack shelf or under or through furniture.
- **Host and peripheral emulation** — The SW4 USB Plus model provides increased system reliability by enabling an uninterrupted connection between host and peripheral devices.
 - **Host emulation:** When a keyboard or a mouse is connected to port 3 or 4 and the appropriate rear panel DIP switch is set to On, the SW USB switches to the connected keyboard or mouse instantly (see “[Host Emulation \(SW4 USB Plus Only\)](#)” in the “Operation” section for more information).
 - **Peripheral emulation:** The SW USB provides problem-free boot-up by constantly emulating a keyboard and mouse to the computer or another input device, regardless of whether or not a keyboard or mouse is actually connected.
- **Power supply** — An external power supply provides worldwide compatibility.

- **RS-232 control and pass-through** — The SW USB switcher can be controlled by Simple Instruction Set (SIS™) commands received via an RS-232 interface. These SIS commands can be sent to an RS-232 controllable Extron AV switcher attached to the SW USB RS-232 Pass Thru port (see the “[SIS Programming and Control](#)” section for an explanation of the available SIS commands).
- **Contact closure control** — Connecting a push-button contact closure device to the SW USB Contact port or shorting pin 1, 2, 3, or 4 to the ground (⏏) pin of the Contact port provides an alternative method of input selection on the SW USB. Commands issued via contact closure can also be passed through the RS-232 Pass Thru port to an attached RS-232 controllable Extron switcher (see “[Setting Up Contact Closure Control](#)” in the “Installation” section for more information).
- **Hot key switching** — (SW4 USB Plus only) When host emulation is enabled, inputs can be selected by a combination of key presses on a keyboard connected to port 3 or 4.
- **Front panel security lockout (executive mode)** — To prevent unauthorized access to the switchers, front panel lock mode can be enabled via front panel controls or SIS commands to disable all front panel controls.
- **Port status LEDs** — The Active USB LEDs provide visual indication of port status and activity for USB peripherals and all connected and active host devices.

Application Diagrams

The following diagrams show examples of how an SW USB Series switcher can be connected.

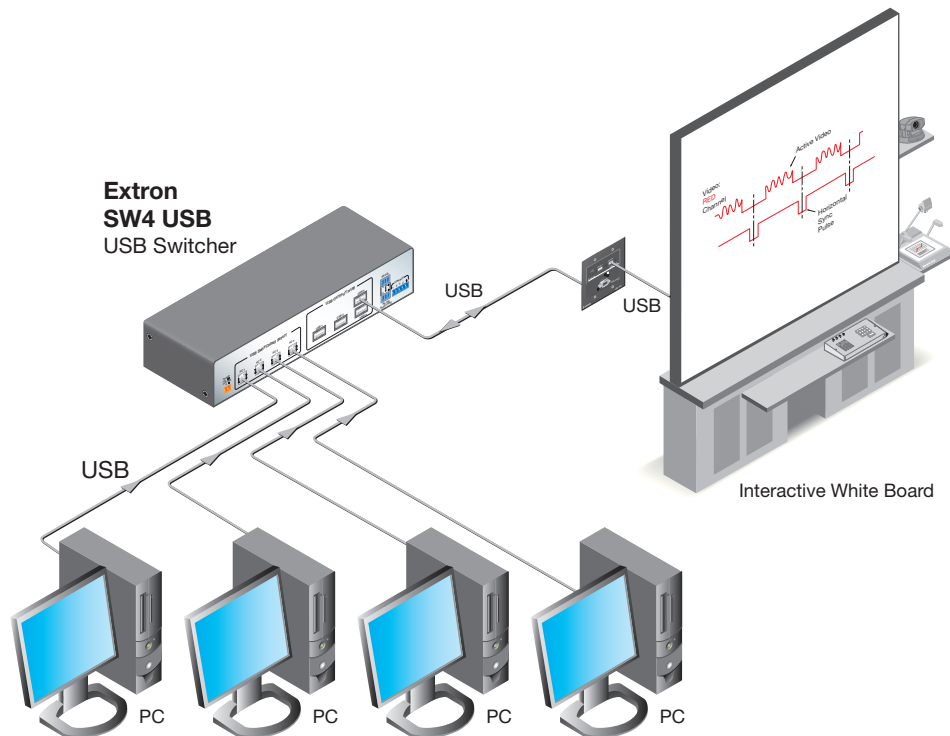


Figure 1. Connection Diagram for an SW4 USB Switcher with Interactive White Board

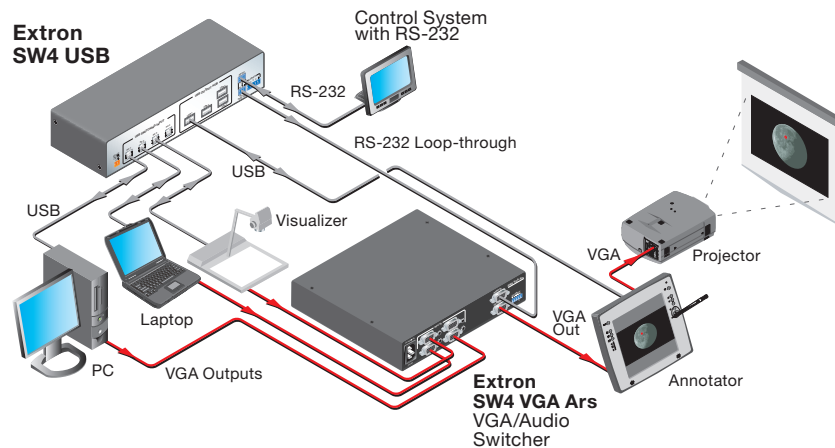


Figure 2. Connection Diagram for an SW4 USB Switcher with an SW VGA Series Switcher in an Annotator Application

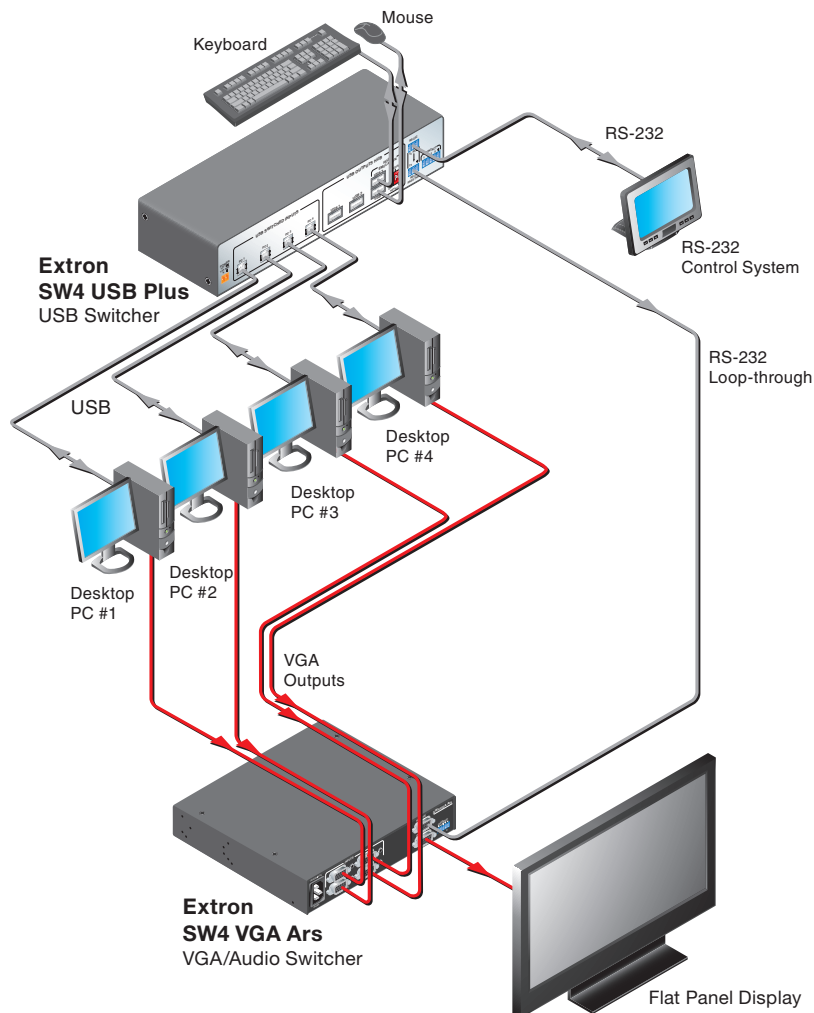


Figure 3. Connection Diagram for an SW4 USB Plus Switcher in a Keyboard-Video-Mouse (KVM) Switching Application

Installation

This section gives an overview of the steps to installing the SW USB Series switchers. It also provides a description of the rear panel connectors and instructions for cabling. The following topics are discussed:

- [Installation Overview](#)
- [Rear Panel Features](#)
- [Wiring the Power Connector](#)
- [Wiring for RS-232 Communication](#)
- [Setting Up Contact Closure Control](#)
- [Connecting Multiple SW USBs in a System](#)

Installation Overview

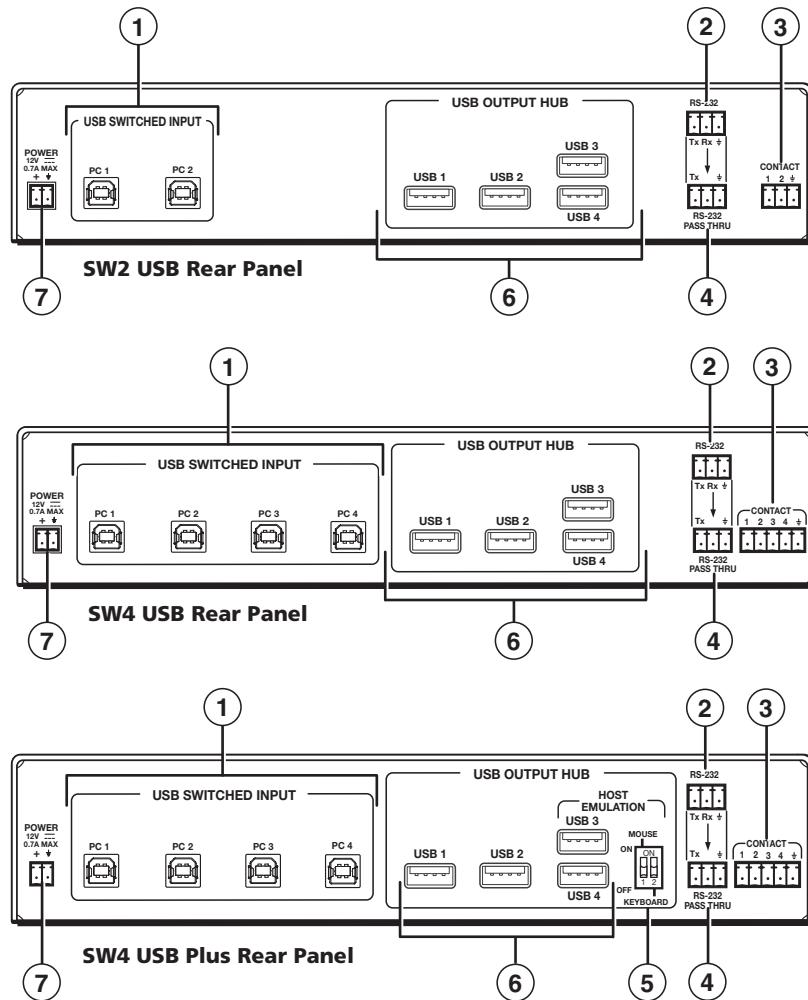
To install and set up the SW USB switcher:

1. (Optional) Mount the switcher to a rack shelf or furniture (see “[Mounting the SW USB Series Switcher](#)” in the “Reference Information” section).
2. Connect host devices to one or more SW USB Switched Input type B connectors, using cable lengths of up to 15 feet (4.5 m).
3. Connect one or more peripheral USB devices to the SW USB Output Hub type A connectors, using USB cable lengths of up to 15 feet (4.5 m).
4. (Optional) Connect an RS-232 cable between the SW USB RS-232 port and a host computer or control system (see “[Wiring for RS-232 Communication](#)” on page 8).

NOTE: The computer that you use for RS-232 control should **not** be one of the host devices connected to any of the input ports.

5. (Optional) Connect an external Extron AV switcher to the RS-232 Pass Thru port. You can then control this switcher via commands sent through this port.
6. (Optional) Wire one of the provided 3-pole or 5-pole captive screw plugs to a 2-button or 4-button contact closure device, and connect the device to the SW USB Contact port (see “[Setting Up Contact Closure Control](#)” on page 9).
7. If using a different power supply from the one that was provided, wire a 2-pole captive screw plug to the external power supply (see “[Wiring the Power Connector](#)” on page 6).
8. **SW4 USB Plus only:** If desired, attach a keyboard, a mouse, or both to output ports 3 or 4, and set the appropriate DIP switches for host emulation (see “[Host Emulation \[SW4 USB Plus Only\]](#)” in the “Operation” section).
9. Power on the USB peripheral devices, if applicable.
10. Power on the SW USB switcher.
11. Power on the host devices.

Rear Panel Features



- ① **Input connectors** — Connect host devices, such as computers, to these female USB type B connectors, using cable lengths of up to 15 feet (4.5 m). Pinouts for these connectors follow the standard pinout defined in USB standards.
- ② **RS-232 port** — Connect a host computer or control system to this 3-pole, 3.5 mm captive screw connector for RS-232 control and status feedback (see “[Wiring for RS-232 Communication](#)” on page 8). This port can also be used to update firmware.

NOTE: The computer that you use for RS-232 control should **not** be one of the host devices connected to any of the input ports.

- ③ **Contact port** — If desired, connect a two- or four-button contact closure device to this 3-pole (SW2) or 5-pole (SW4 models), 3.5 mm captive screw connector to enable input selection via contact closure (see “[Setting Up Contact Closure Control](#)” on page 9).
- ④ **RS-232 Pass Thru port** — If desired, connect an Extron AV switcher to this 3-pole, 3.5 mm captive screw connector (see “[RS-232 Pass Thru port](#)” on page 9). Commands issued via the front panel, contact closure, or an RS-232 interface on a PC or control system can be sent through this port to the connected AV switcher.

NOTE: Only Extron products can be controlled via this port.

- ⑤ **Emulation DIP switches** — (SW4 USB Plus only) These DIP switches enable host emulation to a keyboard and mouse connected to output ports 3 and 4. Switch 1 enables host emulation to a mouse; switch 2 enables emulation to a keyboard. When a keyboard or a mouse is connected to port 3 or 4, and the appropriate switch is set to On, the SW USB Plus switches to the connected keyboard or mouse instantly, without the delay that normally occurs while the computer recognizes a new peripheral device.
- ⑥ **Output connectors** — Connect peripheral USB devices, such as keyboards, mice, storage drives, or webcams, to these female USB type A connectors, using cable lengths of up to 15 feet (4.5 m). All outputs supply the 500 mA, 5 V rating defined in USB standards.

NOTES:

- If your SW USB system contains multiple computers, drivers for all connected peripheral devices should be loaded on all computers.
- The four outputs act as a USB hub. Inputs cannot be routed to specific USB output connectors. All outputs are simultaneously connected to the selected input.
- On the SW USB Plus, output ports 3 and 4 can be used for host emulation with supported keyboards and mice only (see “**Host Emulation [SW4 USB Plus Only]**” in the “Operation” section for more information).

- ⑦ **Power connector** — Attach the provided external 12 VDC power supply to this 2-pole, 3.5 mm captive screw connector (see “**Wiring the Power Connector**”).

Wiring the Power Connector

If using an external power supply other than the one provided with the SW USB, you may need to wire the connector for it.

WARNING: The two power cord wires must be kept separate while the power supply is plugged in. Remove power before wiring.

To wire the power connector:

1. Cut the DC output cord of the power supply to the length needed.
2. Strip the jacket to expose 3/16 inch (5 mm) of the conductors.

CAUTION: Exposing more than 3/16 inch (5 mm) of the copper wires could allow the stripped wires to touch each other, causing a short circuit. This could result in the external DC power supply overheating or burning.

Exposing less than the recommended amount may cause the wires to slide out of the connector too easily, even if they are tightly pinched by the captive screws.

3. Slide the exposed leads into a 2-pole captive screw plug and secure them by tightening the screws, using a small screwdriver.
4. To verify the polarity of the power cord before connecting it, plug in the power supply with no load and check the output with a voltmeter.

5. Use the supplied tie-wrap to strap the power cord to the extended tail of the connector. The figure below shows how to wire the power connector.

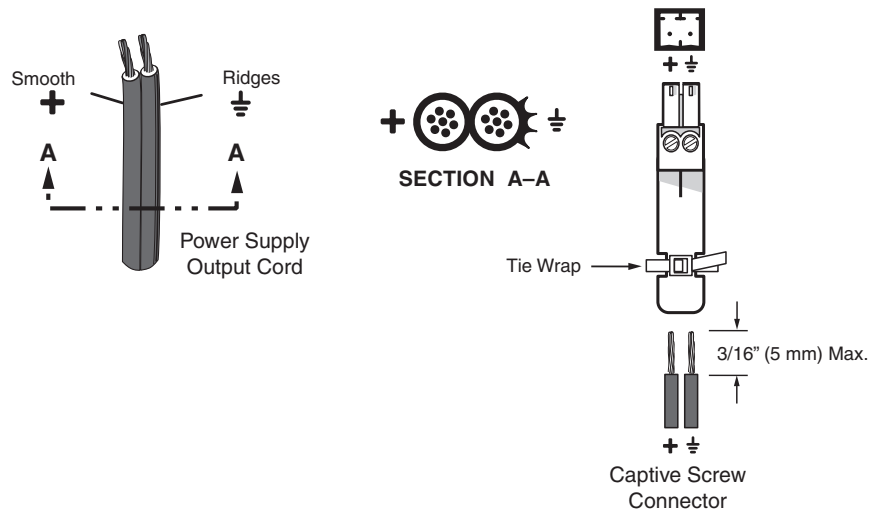


Figure 4. Power Connector Wiring

- CAUTIONS:**
- When you are connecting the power supply, voltage polarity is extremely important. Applying power with incorrect voltage polarity could damage the power supply and the regenerator. Identify the negative lead by the ridges on the side of the cord (see [figure 4](#)). To verify the polarity before connection, plug in the power supply with no load and check the output with a voltmeter.
 - Do not tin the stripped power supply leads before attaching the captive screw connector. Tinned wires are not secure in the captive screw connectors and could be pulled out. They may also break after being bent several times.
 - Do not permanently fix the power supply to the building structure or similar structures.
 - Do not place the power supply within environmental air handling spaces or the wall cavity.
 - The installation must be in accordance with the applicable provisions of the National Electrical Code ANSI/NFPA 70, Article 725 and the Canadian Electrical Code, Part 1, Section 16.
 - The power supply must be located within the same vicinity as the Extron AV processing equipment in an ordinary location, pollution Degree 2, and secured to a podium, a desk, or an equipment rack within a dedicated closet.
 - Always use a power supply specified by Extron for an SW USB. Use of an unauthorized power supply voids all regulatory compliance certification and may cause damage to the power supply and the unit.

Wiring for RS-232 Communication

RS-232 Port

The 3-pole, 3.5 mm captive screw connector labeled “RS-232” is used for optional RS-232 communication between the SW USB and a computer or control system. The control system plugged into this port can issue commands to the SW USB, which can pass the commands through to an Extron AV switcher that is plugged into the RS-232 Pass Thru port.

NOTE: The computer that you use for RS-232 control should **not** be one of the host devices connected to any of the input ports.

To connect your computer or control system to the RS-232 connector, use a female 9-pin D-to-bare-wire RS-232 cable, such as an Extron UC50 Universal Projector Control cable.

1. Wire the unterminated end of the RS-232 cable to one of the provided 3-pole captive screw plugs.
2. Plug the wired 3-pole connector into the RS-232 receptacle on the SW USB rear panel.

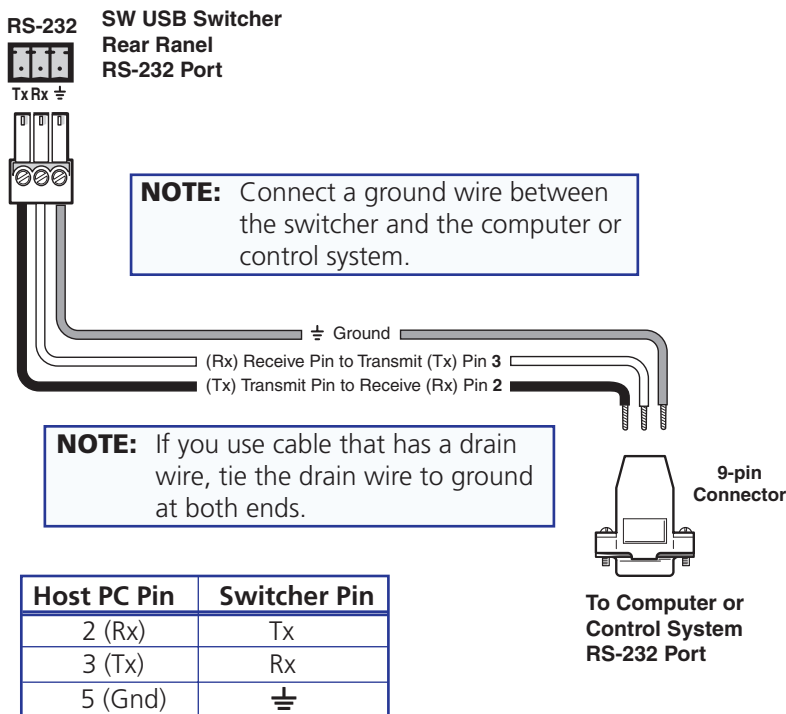


Figure 5. Wiring the RS-232 Connector

RS-232 Pass Thru Port

The RS-232 Pass Thru port loops the signal received at the SW USB RS-232 control port, the Contact (closure) port, or the front panel input buttons through the RS-232 Pass Thru port to send SIS commands to another Extron AV switcher.

NOTE: Only Extron products can be controlled via this port.

You can configure the SW USB to send SIS commands or input selections through the RS-232 Pass Thru port to the AV switcher. Two loop modes are available:

- **Loop mode 0:** The port passes through SIS commands from the computer, input selections made via contact closure, and input selections made by pressing front panel buttons.
- **Loop mode 1:** The port passes only SIS commands from your computer.

See “[Issuing Commands to an Extron AV Switcher via the RS-232 Pass Thru Port](#)” in the “Operation” section for more information on the loop modes and SIS commands.

The diagram below shows how to wire the SW USB RS-232 Pass Thru port for use with an Extron AV switcher. The RS-232 Pass Thru port does not have a receive pin; therefore, it does not receive responses from the connected switcher.

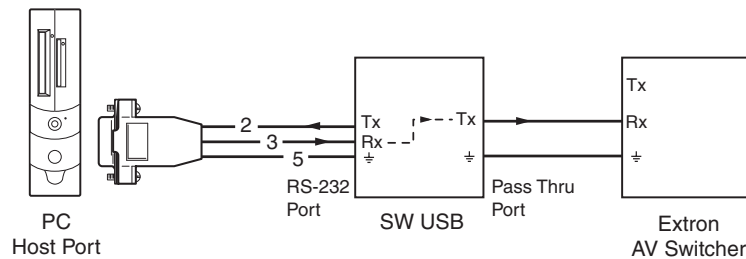


Figure 6. Connections for RS-232 Loop-through

Setting Up Contact Closure Control

Contact closure is another method of input selection. To enable input selection by contact closure, connect a push-button contact closure device (such as an Extron CCR 2BLB, CCR 4BLB, or CCR 204) to the SW USB Contact port.

Alternatively, you can manually short one of the pins to ground (the ground [⏏] pin is pin 3 for SW2 and pin 5 for SW4 models) using a jumper. Shorting pin 1 to ground selects input 1, pin 2 selects input 2, and so forth.

Controlling an Extron AV Switcher

For applications in which the SW USB is connected to an Extron AV switcher that can be controlled via RS-232, inputs can be selected on both switchers by contact closure.

To set up for contact closure control of an AV switcher:

1. If desired, connect a contact closure device to the SW USB Contact port.
2. Connect the SW USB RS-232 Pass Thru port to the RS-232 port on the AV switcher (see [figure 7](#) on the next page).
3. Issue the SIS command `[Esc] 0LOOP ←` to the SW USB to enable loop 0 mode (see “[Selecting the loop mode](#)” in the “Operation” section for more information).

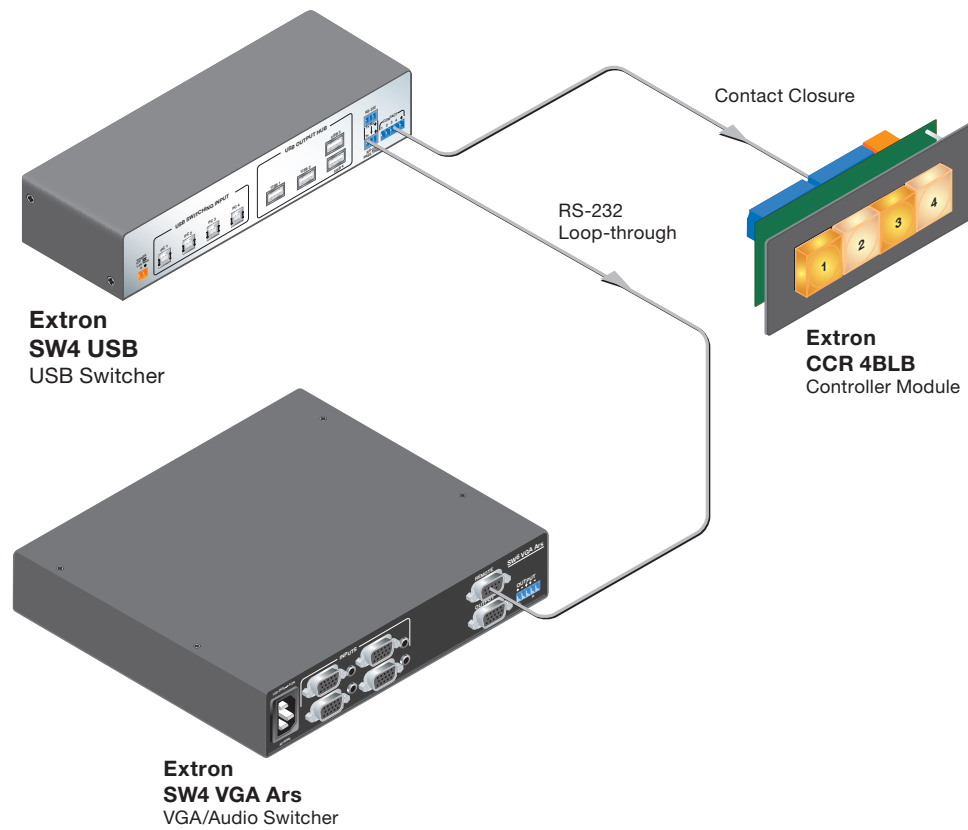


Figure 7. Using the SW USB with a Contact Closure Device and an AV Switcher

Connecting Multiple SW USBs in a System

The USB specification states that a maximum of five hubs (or five SW USBs) can be connected in a series.

NOTE: Do not exceed five cascaded hubs and a total of 127 peripheral devices in the entire system.

The following illustration shows an example of a single host with the maximum of five SW USB switchers cascaded in a series.

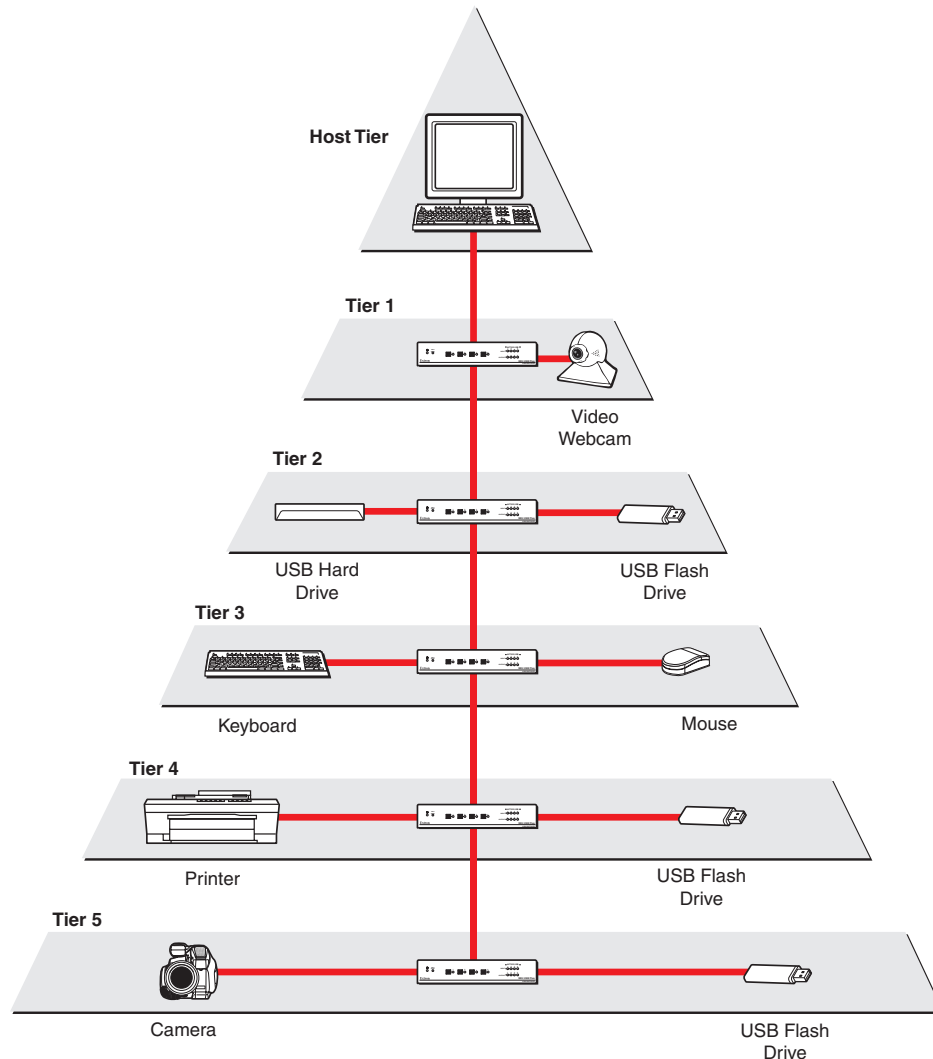


Figure 8. Example of a Host with Five SW USB Switchers Cascaded in a Series

Operation

This section provides a description of the SW USB front panel features and describes the procedures for performing the functions that are accessed from the front panel. The following topics are covered:

- [Front Panel Features](#)
- [Operations](#)
- [Updating Firmware](#)

Front Panel Features

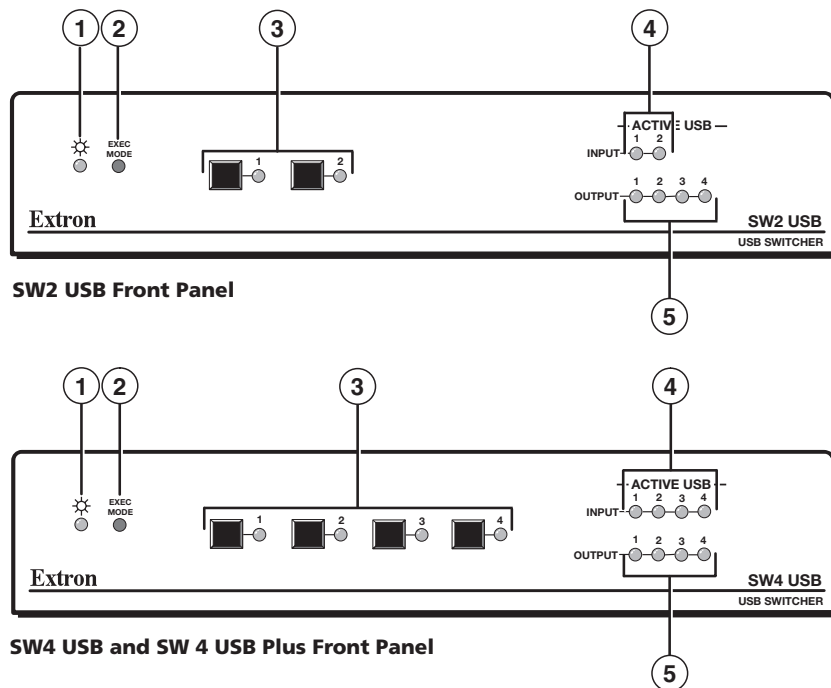


Figure 9. SW USB Series Front Panels

- ① **Power LED** — This green LED lights when the SW USB has power.
- ② **Exec Mode LED** — This red LED lights when the SW USB is in front panel lock mode, indicating that input selections cannot be made from the front panel (see [“Locking and Unlocking the Front Panel \(Executive Mode\)”](#) on page 16).
- ③ **Input Selection buttons and LEDs** — Press these buttons to select inputs 1 and 2 (SW2) or 1 through 4 (SW4 and SW4 Plus). The green LED at the right of each button lights when the corresponding input has been selected. These buttons also can be used to initiate front panel lock mode and to reset the unit (see [“Locking and Unlocking the Front Panel \(Executive Mode\)”](#) on page 16 and [“Resetting”](#) on page 17).

Active USB (port status) LEDs:

- ④ **Input LEDs** — Each of these green LEDs lights when a host or PC is connected to the corresponding USB input port on the switcher and is detected by the SW USB, whether or not the input is selected.
- ⑤ **Output LEDs** — Each of these green LEDs lights when a peripheral device is connected to the corresponding output port on the SW USB and has been enabled by the selected input device or host PC.

Operations

Powering on the System

To power on the SW USB and connected devices:

1. Connect all input and output devices to the rear panel connectors on the switcher (see **“Rear Panel Features”** in the “Installation” section for more information).
2. If desired, connect a host PC to the RS-232 port (see **“Wiring for RS-232 Communication”** in the “Installation” section).
3. Plug the power supply into the 2-pole captive screw power connector on the rear panel.
The unit performs a self-test, during which the Exec Mode LED and the front panel Input LEDs each blink once in succession from left to right. If the self-test completes with no errors, the LED for the most recently selected input remains lit.
4. Select each input and power up the host device connected to it (see **“Selecting an Input”**).

Selecting an Input

SW USB inputs can be selected by using:

- The front panel buttons
- Contact closure
- SIS commands
- Keyboard (“hot key switching,” SW4 USB Plus only)

Selecting an input from the front panel

To select an input from the front panel, press the desired input button. The LED adjacent to the button lights. After an input is selected, its LED remains lit until a new input is selected or the SW USB is powered off.

Selecting an input using contact closure

Use one of the following methods to select inputs on the SW USB and the AV switcher (if connected) using contact closure (see **“Setting Up Contact Closure Control”** in the “Installation” section for connection information):

- **Using a contact closure device:** If a two- or four-button contact closure device is connected to the SW USB Contact port, press the button on the device that corresponds to the SW USB input that you want to select. The first button on the left selects input 1, the second button selects input 2, and so forth.
- **Using a jumper wire:** On the Contact port, use a jumper wire to connect the ground (≡) pin to one of the other pins in the Contact connector (the ground (≡) pin is pin 3 for SW2 and pin 5 for SW4 models). Connecting pin 1 to ground selects input 1, pin 2 selects input 2, and so forth.
- **Using an IR 102:** See the *IR 102 User's Manual* to use the IR 102 with a switcher.

Selecting an input on an AV Switcher via contact closure

To make input selections on a connected AV switcher via contact closure, you must place the SW USB in **loop 0** mode. When the ground pin of the Contact port is connected to one of its other pins by one of the methods described on the previous page, the SW USB sends the input selection SIS command **[X1]** ! (where **[X1]** is the input number) through the RS-232 Pass Thru port to the AV switcher. The AV switcher then switches to the selected input (see “Issuing Commands to an Extron AV Switcher via the RS-232 Pass Thru Port,” below).

Selecting an input using SIS commands

You can also select an input via an RS-232 connection using SIS commands (see the “**SIS Programming and Control**” section for a list of available SIS commands and their explanations).

If an Extron AV switcher is connected to the RS-232 Pass Thru port, the SIS commands that you enter can also be passed through to the connected switcher, even if the connected switcher has more inputs than the SW USB (see “Issuing Commands to an Extron AV Switcher via the RS-232 Pass Thru Port,” below).

Selecting an input using the keyboard (SW4 USB Plus only)

When a keyboard is connected to an emulation port and the keyboard emulation DIP switch (switch 2) is set to On, you can switch to a desired input by pressing **<Ctrl> + <Shift> + <input number>** (for example, to switch to input 3, press **<Ctrl> + <Shift> + <3>**).

See “**Host Emulation (SW4 USB Plus Only)**” on page 17 for information on setting up the SW4 USB Plus for host emulation.

NOTE: If you want to use the **<Ctrl> + <Shift> + <input number>** key combination for another purpose, you can disable the keyboard switching feature using the SIS command **[Esc] H [X2] USBC ←** (see the **Hot key commands** in the “SIS Programming and Control” section for more information).

Issuing Commands to an Extron AV Switcher via the RS-232 Pass Thru Port

To configure the SW USB to pass commands through the RS-232 Pass Thru port to a connected AV switcher, you must select a loop mode. The loop mode determines which types of commands are passed through this port. The two loop modes are:

- **Loop 1 mode** — In this mode, SIS commands sent to the SW USB via an RS-232 interface are passed through the RS-232 Pass Thru port to the AV switcher. The RS-232 interface is the **only** method of issuing commands to the AV switcher.
- **Loop 0 mode** (default) — In this mode, in addition to passing through SIS commands sent from the computer RS-232 interface, the SW USB also passes input selections entered via contact closure or the front panel buttons through the RS-232 Pass Thru port to the AV switcher.

Selecting the loop mode

To select the loop mode, enter one of these commands:

- **For loop 1 mode:** **[Esc] 1LOOP ←**
- **For loop 0 mode:** **[Esc] ØLOOP ←** command.

The **table** on the next page summarizes the two loop modes.

Mode	SIS Command	Commands Passed Through to an AV Switcher
Loop 1	1LOOP ←	Only SIS commands received via the RS-232 control port
Loop 0 (Default Mode)	ØLOOP ←	<ul style="list-style-type: none"> Input selections made via contact closure or the front panel buttons SIS commands sent via the RS-232 interface (loop 1 functionality)

See the “[Command and Response Table for SIS Commands](#)” in the “SIS Programming and Control” section for an explanation of all supported SIS commands.

NOTE: You can issue commands to the SW USB using the front panel buttons, RS-232, or contact closure in **both** loop modes. The loop mode selection affects only commands going through the RS-232 Pass Thru port to the AV switcher.

SIS command processing

When an AV switcher is connected to the RS-232 Pass Thru port, SIS commands are processed in one of the following ways:

- Passed through to the AV switcher **without** being acted on by the SW USB
- Performed by the SW USB and **not** passed through to the AV switcher
- Performed by the SW USB and passed to the AV switcher, which also performs them. This applies only to the input selection command !, where is the input number.

The table below shows how the SIS commands are handled by an SW USB with a connected AV switcher. (Unless otherwise indicated, commands are **not** case-sensitive.)

SIS Command	SW USB Function	SW USB Response to Host
!	Performed and passed through	Chn ←
^	Performed, not passed through	Usb ←
E (any)	Performed, not passed through	See the SIS command table .
X	Performed, not passed through	←
N	Performed, not passed through	6Ø-95n-Ø2 ←
Q	Performed, not passed through	n.nn ←
*Q	Performed, not passed through	n.nn.nnnn ←
I	Performed, not passed through	Chn•InACT OutACT ←
ØV – 1ØØV	Passed through, not performed*	CMD ←
&	Passed through, not performed*	CMD ←
%	Passed through, not performed*	CMD ←
1B, ØB	Passed through, not performed*	CMD ←
1M, ØM	Passed through, not performed*	CMD ←
1Z, ØZ	Passed through, not performed*	CMD ←
\$	Passed through, not performed*	CMD ←

* For explanations of commands that are passed through to the AV switcher and **not** performed by the SW USB, see your AV switcher user guide.

Example: When a control system issues an SIS input selection command 1! (select input 1), 2! (select input 2), 3! (select input 3), or 4! (select input 4), the SW USB switches to the corresponding input. The SW USB also passes the SIS input selection command through the RS-232 Pass Thru port, causing the same input to be selected on the AV switcher.

Commands that cannot be passed through

The following SIS commands **cannot** be passed through to the AV switcher:

- **Information requests:** View part number (N), Request information (I), and Query firmware version (Q)
- **Change loop mode** (**[Esc]** nLOOP)
- **Upload firmware** (**[Esc]** UpLoad)

See the “**Command and Response Table for SIS Commands**” in the “SIS Programming and Control” section for explanations of SIS commands that are performed by the SW USB.

Sending commands to an AV switcher using contact closure

In loop 0 mode, you can select an input on the SW USB by shorting the equivalent pin on the Contact port to ground (either by pressing a button on a connected contact closure device or by connecting a jumper between pin 1, 2, 3, or 4 and \perp [ground]). Shorting the pin to ground issues an input selection command to the SW USB, which passes an SIS input selection command through its RS-232 Pass Thru port to the AV switcher. The switcher then switches to the corresponding input.

Example: If you want to select input 1 on the AV switcher, short pin 1 to ground on the SW USB Contact port. The SW USB switches to input 1 and, simultaneously, the RS-232 Pass Thru port passes the SIS command 1! to the AV switcher, which also switches to input 1.

The following table shows the SIS commands that are issued when inputs are selected by contact closure:

Contact Closure Selection	SIS Command Sent via RS-232 Pass Thru	Function on the AV Switcher
Pin 1 to \perp	1!	Select input 1
Pin 2 to \perp	2!	Select input 2
Pin 3 to \perp	3!	Select input 3
Pin 4 to \perp	4!	Select input 4

Locking and Unlocking the Front Panel (Executive Mode)

Front panel lock mode (executive mode) disables all front panel controls, locking out the user from those functions. Putting the switcher in this mode enhances security by protecting against inappropriate or accidental changes to settings. When the SW USB is in lock mode, RS-232 and contact closure remain available.

- **To lock the front panel:** Press input buttons 1 and 2 simultaneously and hold them until the red Exec Mode LED lights (approximately 5 seconds).

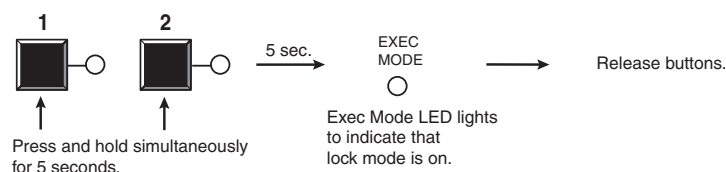


Figure 10. Enabling Lock Mode

- **To exit lock mode:** Repeat the procedure described above. When the SW USB is no longer in lock mode, the Exec Mode LED turns off.

Resetting

To reset the switcher to its factory default settings from the front panel:

1. Disconnect power from the SW USB.
2. Press and hold the Input 1 button while reapplying power to the unit.

The Input LEDs blink three times to indicate that a reset has occurred. The input selection defaults to input 1, and the Input 1 LED lights.

Host Emulation (SW4 USB Plus Only)

The SW4 USB Plus model provides host emulation to peripheral devices on two of its output ports. If a keyboard, mouse, or both are connected to output port 3 or 4, and the Host Emulation DIP switches are set to On, the SW USB emulates a host PC to the connected peripheral device. The keyboard or mouse connected to port 3 or 4 still responds as if it were attached directly to the computer on the selected input.

Host emulation allows instant communication of the emulated ports when the SW USB switches to another input, by eliminating the delay that normally occurs while a computer recognizes a new device and establishes communication with it.

Setting up for host emulation

To enable host emulation:

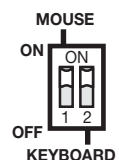
1. Connect a keyboard, a mouse, or both to output port 3, 4, or both. The SW4 USB Plus can emulate a keyboard and a mouse simultaneously. Either type of device can be connected to either or both of the two emulation ports (3 and 4).

NOTE: The SW USB can emulate a host through ports 3 and 4 if a hub or an extender with an internal hub is connected to either of these ports. Only a single hub or extender is supported. If a second hub or a second extender is connected, host emulation is disabled on one of the ports.

2. Place the Host Emulation DIP switches on the rear panel in the appropriate position to enable emulation for the connected device. The table below shows the switch positions for keyboard and mouse emulation.

Switch 1 (Mouse)	Switch 2 (Keyboard)	Emulation
Off (down)	Off (down)	No emulation
On (up)	Off (down)	Emulate mouse only.
Off (down)	On (up)	Emulate keyboard only.
On (up)	On (up)	Emulate keyboard and mouse.

Example: In the illustration at right, the DIP switches are set to enable emulation of both a mouse and a keyboard (up).



- NOTES:**
- If two mice or two keyboards are connected to output ports 3 and 4, and the appropriate emulation DIP switch is set to On, the switcher emulates a host to only one port.
 - When one or both DIP switches are set to On (up), host emulation follows the attached peripheral device:
 - When the Mouse DIP switch (switch 1) is set to On (up), the switcher emulates a host to any standard mouse that is connected to either of the emulation output ports (3 or 4).
 - When the Keyboard DIP switch (switch 2) is set to On, the switcher emulates a host to any standard keyboard that is connected to an emulation port.
 - When both DIP switches are set to On, the switcher emulates a host to any connected standard mouse or keyboard that is connected to port 3 or 4.

Supported peripheral devices

The SW4 USB Plus can emulate a host only to a standard keyboard and a standard mouse. The emulation feature is **not** supported with non-standard keyboards or mice, such as devices that require additional drivers.

For example, the SW USB does not support host emulation for RF/Bluetooth keyboards and mice, hubs, extenders with internal hubs, or any peripherals connected to those types of devices. If these devices are connected to output ports 3 and 4 when the DIP switches are set to On, the devices are switched through to the input.

Alternatively, you can set the Host Emulation DIP switches to Off when using these devices.

Troubleshooting

If the SW USB detects a non-standard keyboard or mouse, an error condition may occur in which the Exec Mode LED blinks and the SW USB reboots in a repeating cycle. If this happens, and rebooting does not resolve the issue, set the host emulation DIP switches to Off, and then wait for the switcher to reboot. You will not be able to use host emulation with that keyboard or mouse.

Peripheral Emulation (SW4 USB Plus Only)

In addition, the SW4 USB Plus emulates a mouse and keyboard to the computer or other input device that is connected to the selected input port. This emulation of peripheral devices is constant, whether or not a keyboard or mouse is actually connected to the ports, facilitating problem-free boot-up. Keyboard and mouse emulation is always present on the inputs of the switcher.

Updating Firmware

Extron periodically updates product firmware in conjunction with the release of new software revisions. Before updating any Extron product to the latest revision level, be sure to read the supplied release notes or contact Extron Technical Support to determine if your product requires a firmware update.

You can find out what version of firmware is currently loaded on your switcher by entering the SIS Q command via the RS-232 interface (see the [Query firmware version](#) command in the "SIS Programming and Control" section).

New firmware versions for the SW USB can be downloaded from the Extron web page. After you install the new firmware on your computer, you can upload it to the switcher using either SIS commands (see the “**Command and Response Table for SIS Commands**” in the “SIS Programming and Control” section) or the Firmware Loader software.

The Firmware Loader utility, which enables you to update the SW USB firmware, is provided on the Extron Software Products DVD. It is also available free of charge from the Extron website at www.extron.com.

NOTE: For further information on using Firmware Loader, select **Help** from the **Help** menu on the Firmware Loader window or press the <F1> key.

To update the firmware using Firmware Loader:

1. If necessary, download the Firmware Loader software from the Extron website:
 - a. On the Extron web page, select the **Download** tab.
 - b. On the Download Center page, select the **Software** link on the left sidebar menu.
 - c. Locate the Firmware Loader and click the **Download** link at the far right.
 - d. Follow the on-screen instructions to download the Firmware Loader program to your computer.
2. From the Extron website, download the latest firmware file and install it on your computer.
 - a. On the Extron web page, select the **Download** tab.
 - b. On the Download Center page, click the **Firmware** link on the left sidebar menu.
 - c. On the list of available firmware files, locate the SW USB and click the **Download** link at right.

SW USB Firmware for the SW2 USB, SW4 USB, and SW4 USB Plus. Release Notes	19-2096-01	2.02	Oct 29, 2009	2.1 MB	Download
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- d. On the next screen, fill in the required information, then click the **Download SWUSB_Series_FWnxxn.exe** button.
 - e. On the next two File Download - Security Warning windows, click **Run**.
 If you want to save the firmware installer file to install the firmware on your computer later, click **Save** on these two windows. On the Save As window that opens, browse to the folder where you want to save the firmware installation file, and click **Save**. When ready to install the firmware, find and double-click this file.
 - f. Follow the instructions on the installation wizard screens to install the firmware on your computer.
3. From the **Start** menu on your computer, select **All Programs > Extron Electronics > Firmware Loader > Firmware Loader**. The Firmware Loader window opens with the Add Device window in front of it.

4. On the Add Device window, select your SW USB model from the **Device Names** drop-down menu.

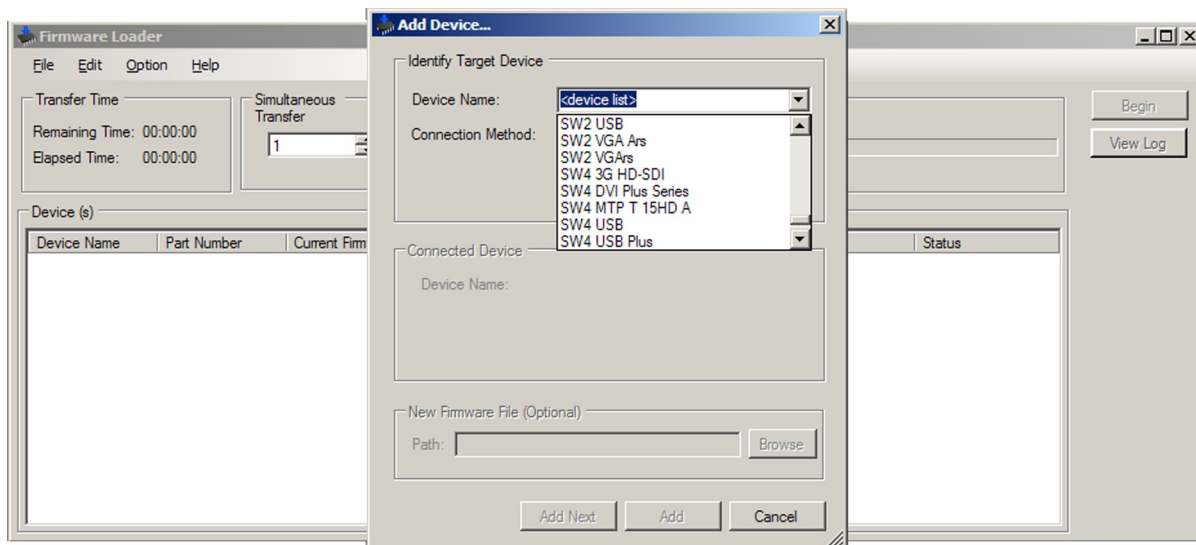


Figure 11. Device Name Drop-down Menu on the Add Device Window

5. From the **Connection Method** drop-down menu, select **RS-232** (the only option).
6. Select the appropriate options from the **Com Port** and **Baud Rate** menus (this information is provided by your system administrator).
7. Click **Connect**. If the connection is successful, the name of your SW USB model is displayed in green and followed by a check mark in the Connected Device section.
8. Click the **Browse** button in the New Firmware File (Optional) section.
9. On the Open window, navigate to the new firmware file, which has a **S19** extension, and double-click it.

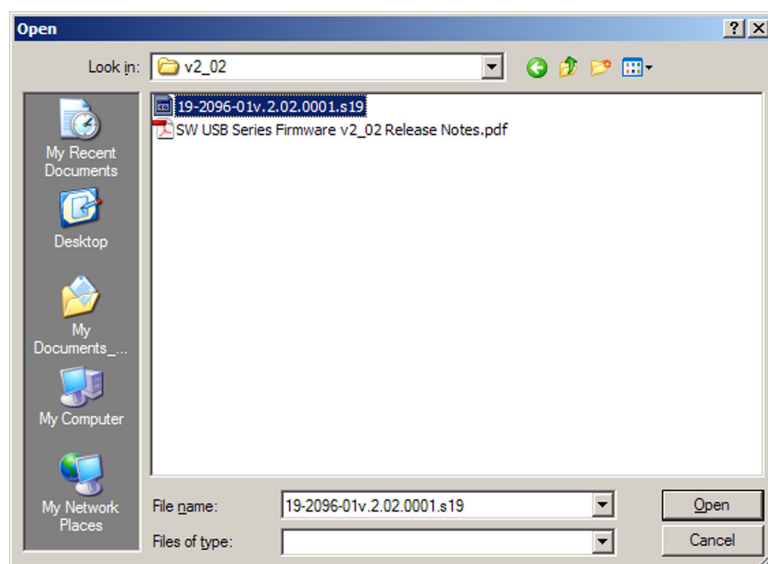


Figure 12. Open Window for Firmware Loader

CAUTION: Valid firmware files must have the file extension **S19**. A file with any other extension is not a firmware upgrade for this product and could cause the switcher to stop functioning.

- NOTES:**
- The original factory-installed firmware is permanently available on the SW USB. If the attempted firmware upload fails for any reason, the switcher reverts to the factory-installed firmware.
 - When downloaded from the Extron website, the firmware is placed in a folder at C:\Program Files\Extron\Firmware\SW USB or C:\Program Files (x86)\Extron\Firmware\SW USB (for Windows 7).

10. On the Add Device window, the path to the new firmware file is displayed in the **Path** field.

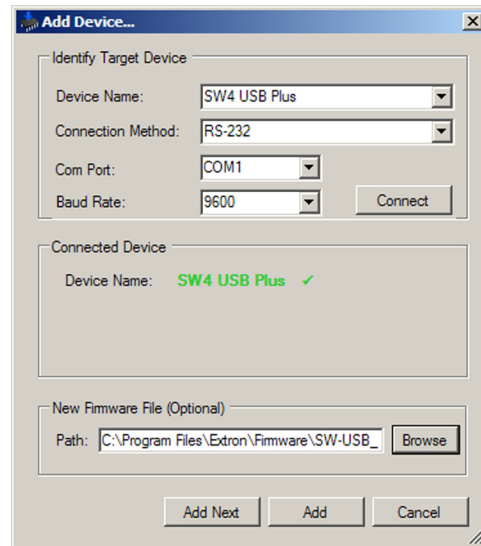


Figure 13. Add Device Window with an SW USB Switcher and Firmware File Selected

11. Click **Add**. The Add Device window closes, and your SW USB name and information appear in the Devices section of the Firmware Loader window.

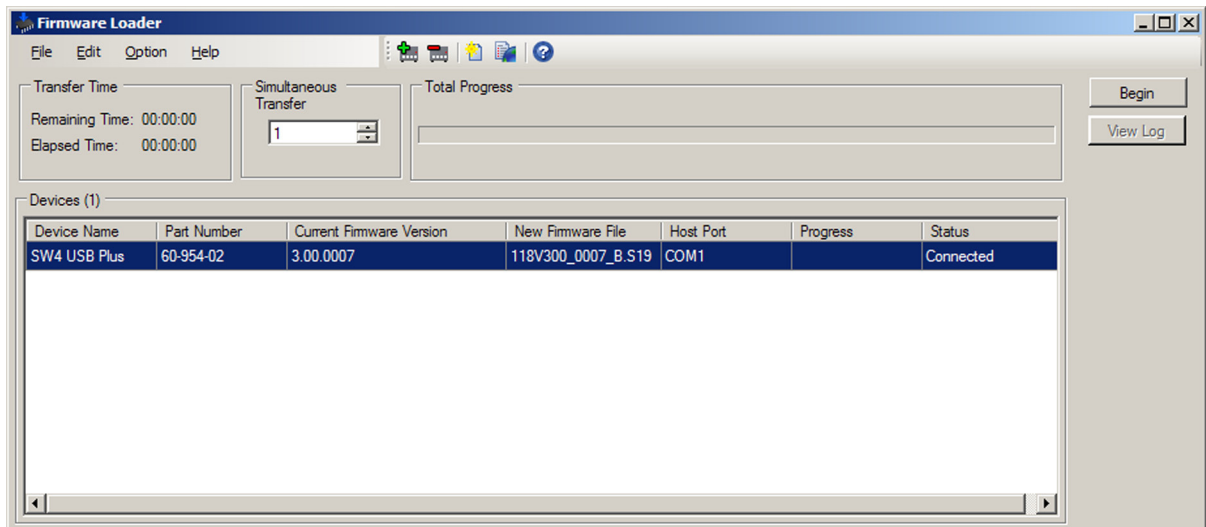


Figure 14. Firmware Loader Window with SW USB Device Added

12. Click **Begin**. The following indicators on the Firmware Loader window show the progress of the update:

- The Transfer Time section shows the amounts of remaining and elapsed time for the update.
- The Total Progress section displays a progress bar with **Uploading...** above it.
- In the Devices section, the Progress column displays an incrementing percentage and another progress bar. The Status column displays **Uploading**.

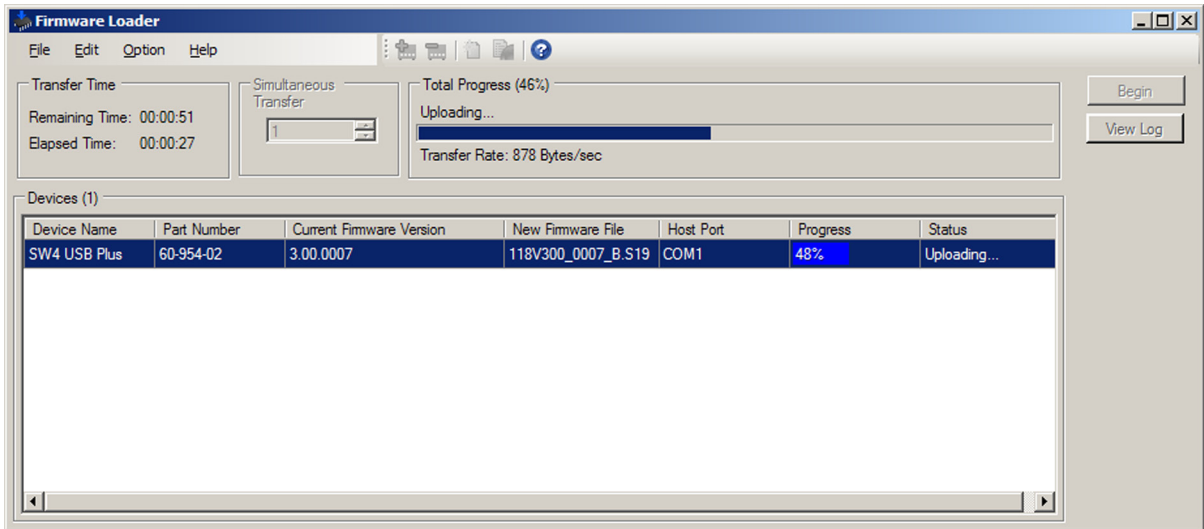


Figure 15. Firmware Upload in Progress

When the upload is complete, the **Remaining Time** field shows **00.00.00**, the Progress column shows **100%**, and **Completed** is displayed above the progress bar and in the **Status** field.

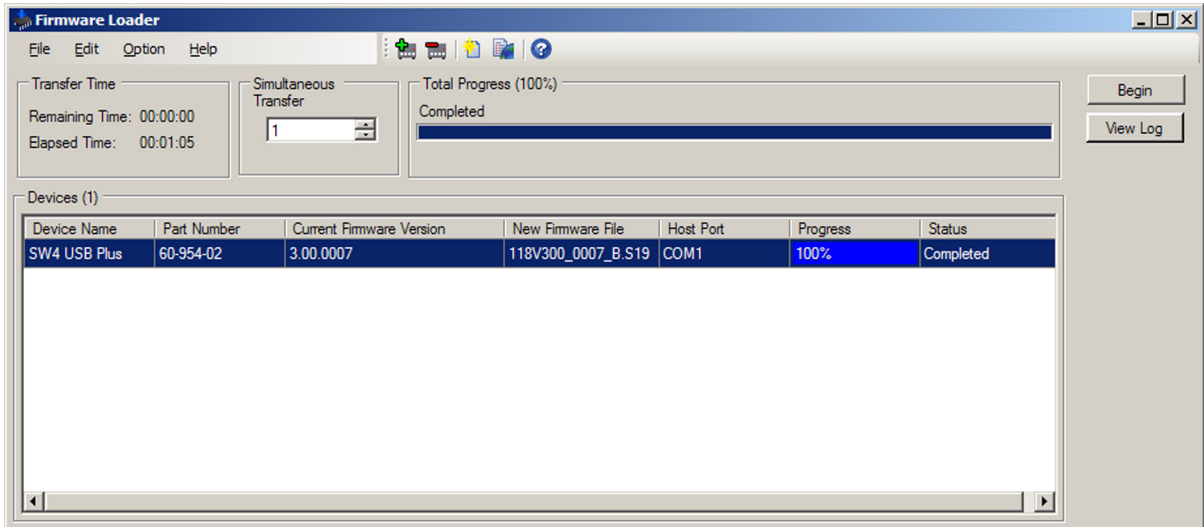


Figure 16. Firmware Upload Complete

13. When the firmware upload and unit reset are complete, close the Firmware Loader window.

SIS Programming and Control

This section describes the connection through which the SW USB switchers can be configured and controlled remotely via SIS commands, and describes the commands that are available. Topics include:

- [Host-to-Switcher Communications](#)
- [Using the Command and Response Table](#)
- [Command and Response Table for SIS Commands](#)

The SW USB can be remotely set up and controlled via a host computer or other device (such as a control system) that is attached to the rear panel RS-232 port (see “[Wiring for RS-232 Communication](#)” in the “Installation” section for information on connecting to this port). You can issue Simple Instruction Set (SIS) commands to the switcher using your computer RS-232 interface with a communication software program such as Extron DataViewer or HyperTerminal.

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 sequence. When the SW USB determines that a command that was entered is valid, it executes the command and sends a response to the host device.

Most responses from the SW USB to the host computer end with a carriage return and a line feed (CR/LF = \leftarrow), 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 selection takes place, the switcher responds by sending a message to the host, indicating what selection was entered. No response is required from the host.

The switcher sends the following copyright message when it first powers on.

© Copyright 20nn, Extron Electronics SWn USB [Plus], Vn.nn

where SWn is the switcher model number as well as the number of inputs, and Vn.nn is the firmware version number.

NOTE: This message is displayed only when power is applied to the switcher while it is connected to the computer.

Error Responses

If the switcher is unable to execute a command it receives because the command is invalid or contains invalid parameters, the SW USB returns an error response to the host. Error response codes and their descriptions are:

E01 – Invalid input channel number (out of range)

E10 – Invalid command

E13 – Invalid value (out of range)

Using the Command and Response Table

The **Command and Response Table** on the next page lists valid ASCII command codes, the responses of the switcher to the host, and descriptions of the command functions or the results of executing the commands. The ASCII to Hex Conversion Table below is for use with the Command and Response Table.

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						

Symbol Definitions

↵ = CR/LF (carriage return and line feed) (hex 0D 0A)

← = Soft carriage return (no line feed)

• = Space

[Esc] = Escape key

[X1] = Input number: 0 through the maximum number of inputs (2 or 4)

0 = all inputs disconnected

1 = input 1

3 = input 3

2 = input 2

4 = input 4

[X2] = Hot key status

0 = disabled

1 = enabled

[X3] = On and off, signal, or front panel lock status

0 = Off or signal not present

1 = On or signal present

[X4] = [X3] [X3] [X3] [X3]

The [X3]s represent inputs 1, 2, 3, and 4 in succession.

[X5] = Position of the mouse emulation DIP switch (SW4 USB Plus only)

0 = Mouse emulation off (DIP switch 1 is down.)

1 = Mouse emulation on (DIP switch 1 is up.)

[X6] = Position of the keyboard emulation DIP switch (SW4 USB Plus only)

0 = Keyboard emulation off (DIP switch 2 is down.)

1 = Keyboard emulation on (DIP switch 2 is up.)

NOTE: Unless otherwise indicated, commands are **not** case sensitive.

Command and Response Table for SIS Commands

Command	ASCII Command (Host to Unit)	Response (Unit to Host)	Additional Description
Input Selection			
Select input	[X1]!	Chn [X1] ↵	Select input [X1] for both the SW USB and the attached AV switcher (if any). [X1] = 1, 2, 3, or 4.
Select SW USB input only	[X1]^	Usb [X1] ↵	Select input [X1] on the SW USB only (not passed through).
Hot Key			
Enable and disable hot key	[Esc] H [X2] USBC ←	UsbcH [X2] ↵	Enable and disable the hot key function. For [X2]: 1 = enabled Ø = disabled
View hot key status	[Esc] H USBC ←	[X2] ↵	Display current hot key status [X2].
Configure RS-232 Pass-through			
Send SIS commands via computer RS-232 interface	[Esc] 1LOOP ←	Loop1 ↵	Pass SIS commands through the RS-232 Pass Thru port to the AV switcher only if the commands are sent to the SW USB via the computer RS-232 interface.
Send input selection commands via contact closure, front panel, or the RS-232 interface	[Esc] ØLOOP ←	LoopØ ↵	Pass all SIS commands sent from the computer RS-232 interface, and only input selection commands sent via the front panel or contact closure, to the AV switcher via the RS-232 Pass Thru port.
View loop-through setting	[Esc] LOOP ←	Loop [X3] ↵	View pass-through setting [X3]. For [X3]: Ø = Loop 0 mode is enabled. 1 = Loop 1 mode is enabled.
Front Panel Lockout (Executive Mode)			
Enable executive mode	1X	Exe1 ↵	Lock the front panel.
Disable executive mode	ØX	ExeØ ↵	Unlock the front panel.
Lockout status	X	[X3] ↵	Show executive mode on/off status. For [X3]: 1 = on, Ø = off
Information Requests			
Request information	I	Chn [X1] • InACT [X4] • OutACT [X4] • Emu1 [X5] [X6] ↵	Show the selected input and output. [X4] = Activity of all inputs and outputs For SW USB Plus only: [X5] = Mouse emulation switch position [X6] = Keyboard emulation switch position For [X5] and [X6]: Ø = off (down); 1 = on (up)
Request part number	N	6Ø-95n-nn ↵	Show the SW USB part number. SW2 = 6Ø-952-Ø2, SW4 = 6Ø-953-Ø2, SW4 USB Plus = 6Ø-954-Ø2.
Query firmware version	Q	n.nn ↵	Show firmware version, expressed to the second decimal place.
Example:	Q	1.Ø1 ↵	The unit firmware version is 1.Ø1.
Query version and build	*Q	n.nn.nnnn ↵	Show firmware version and build number.
Reset			
Reset	[Esc] ZXXX ←	Zpx ↵	Reset the switcher to factory default values.

Command	ASCII Command (Host to Unit)	Response (Unit to Host)	Additional Description
Upload Firmware			
Upload firmware	Esc Upload ←	...go ↵ Up1 ↵	Up1 appears after the upload is complete (see “ Updating Firmware ” in the “Operation” section for information on the firmware updating process).

Reference Information

This section provides reference information on the SW USB Series. The following topics are covered:

- [Specifications](#)
- [Part Numbers and Accessories](#)
- [Mounting the SW USB Series Switcher](#)

Specifications

USB

USB specification.....	USB 2.0 compatible
USB data rates.....	Low speed (1.5 Mbps), full speed (12 Mbps), high speed (480 Mbps)

USB input

Connectors	
SW2 USB	2 female USB type B
SW4 USB, SW4 USB Plus.....	4 female USB type B

USB output

Connectors	4 female USB type A
------------------	---------------------

Control/remote — switcher

Serial control port.....	(1) RS-232, 3.5 mm captive screw connector, 3 pole (1) RS-232 pass-through, 3.5 mm captive screw connector, 3 pole
Baud rate and protocol.....	9600 baud, 8 data bits, 1 stop bit, no parity
Serial control pin configurations	
RS-232	1 = Tx, 2 = Rx, 3 = GND
RS-232 pass-through	1 = Tx, 3 = GND
Contact closure	
SW2 USB	(1) 3.5 mm captive screw connector, 3 pole
SW4 USB, SW4 USB Plus.....	(1) 3.5 mm captive screw connector, 5 pole
Contact closure pin configuration	
SW2 USB	1 = input 1, 2 = input 2, 3 = GND
SW4 USB, SW4 USB Plus.....	1 = input 1, 2 = input 2, 3 = input 3, 4 = input 4, 5 = GND
Program control	Extron Simple Instruction Set (SIS)

General

Power supply.....	External Input: 100-240 VAC, 50-60 Hz Output: 12 VDC, 1 A, 12 watts
Power consumption	12 VDC, 0.70 A
Device	8.6 watts, 12 VDC
Device and power supply	11.9 watts, 100-240 VAC, 50-60 Hz

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, no vents
Thermal dissipation	
Device	29.4 BTU/hr
Device and power supply	40.7 BTU/hr
Mounting	
Rack mount	Yes, with optional rack shelf kit
Furniture mount	Yes, with optional under-desk mounting kit
Enclosure type	Metal
Enclosure dimensions	1.6" H x 8.6" W x 3.0" D (1U high, half rack wide) (4.1 cm H x 21.8 cm W x 7.6 cm D)
Product weight	2.0 lbs (0.9 kg)
Shipping weight	3 lbs (2 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)
Regulatory compliance	
Safety	CE, c-UL, UL
EMI/EMC	CE, C-tick, FCC Class A, ICES, VCCI
MTBF	30,000 hours
Warranty	3 years parts and labor

NOTES:

- All nominal levels are at $\pm 10\%$.
- Specifications are subject to change without notice.

Part Numbers and Accessories

Included Parts

Included Part	Replacement Part Number
SW2 USB	60-952-02
SW4 USB	60-953-02
SW4 USB Plus	60-954-02
3.5 mm, 3-pole captive screw connector with strain relief (3 for SW2 USB, 2 for SW4 USB and SW4 USB Plus)	100-456-01
3.5 mm, 5-pole captive screw connector with strain relief (SW4 USB and SW4 USB Plus)	100-457-01
12 VDC power supply with 2-pole captive screw connector attached	
IEC power cord	
Clear zip ties (3)	
Rubber feet, unattached (4)	
<i>SW USB Series Setup Guide</i>	
Software Products DVD	

Optional Accessories

Accessory	Part Number
CCR 2BLB Two-Button Contact Closure Remote With Backlit Buttons (black, white)	70-589-02, -03
CCR 4BLB Two-Button Contact Closure Remote With Backlit Buttons (black, white)	70-588-02, -03
CCR 204 Four-Button Contact Closure Remote (black)	60-794-02
IR 102 Remote Control Kit	70-224-01
SW2 VGA Series Switcher	60-257-22
SW4 VGA Series Switcher	60-258-22
PS 1210C 12 V, 1 A Desktop Power Supply	70-775-01
2-pole orange captive screw connectors, 10-pack	100-454-01
3-pole blue captive screw connectors, 10-pack	100-456-01

Mounting Options

These mounting kits can be purchased for the SW USB:

Mounting Option	Part Number
RSU 129 (9.5" deep 1U universal rack shelf kit)	60-190-01
RSB 129 (9.5" deep 1U basic rack shelf)	60-604-02
RSU 126 (6" deep 1U universal rack)	60-190-10
RSB 126 (6" deep basic rack shelf)	60-604-11
RSF 123 (3.5" deep 1U rack shelf kit)	60-190-20
RSB 123 (3.5" deep 1U rack shelf)	60-604-21
MBU 123 Mini Under-desk Mounting Kit	70-212-01

Mounting the SW USB Series Switcher

The SW USB Series switcher can be set on a table, mounted on a rack shelf, or mounted under a desk, podium, or table.

Tabletop Use

Four adhesive rubber feet are included with the SW USB switcher. For tabletop use, attach one foot at each corner on the bottom of the unit, and place the switcher in the desired location.

Rack Mounting

UL rack mounting guidelines

The following Underwriters Laboratories (UL) guidelines pertain to the safe installation of the equipment in a rack.

- 1. Elevated operating ambient temperature** — If the equipment is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, install the equipment in an environment compatible with the maximum ambient temperature (TMA = +122 °F, +50 °C) specified by Extron.
- 2. Reduced air flow** — Install the equipment in a rack so that the amount of air flow required for safe operation of the equipment is not compromised.
- 3. Mechanical loading** — When mounting the equipment in the rack, ensure that uneven mechanical loading does not cause a hazardous condition.
- 4. Circuit overloading** — When connecting the equipment to the supply circuit, consider the effect that circuit overloading might have on overcurrent protection and supply wiring. Consider equipment nameplate ratings when addressing this concern.
- 5. Reliable earthing (grounding)** — Maintain reliable grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (for example, use of power strips).

Rack mounting procedure

To rack mount the SW USB, you can use one of the Extron 19-inch rack shelf mounting options (see “[Mounting Options](#)” on page 29 for part numbers).

- 1.** If feet were previously attached to the bottom of the switcher, remove them.
- 2.** Mount the SW USB Series switcher on the rack shelf, using two 4-40 x 3/16 inch screws in opposite (diagonal) corners to secure the unit to the shelf.
- 3.** Install blank panels or other units on the rack shelf as desired.
- 4.** Install the shelf in the rack.

The [illustrations](#) on the next page show examples of how the SW USB can be mounted on different sized rack shelves.

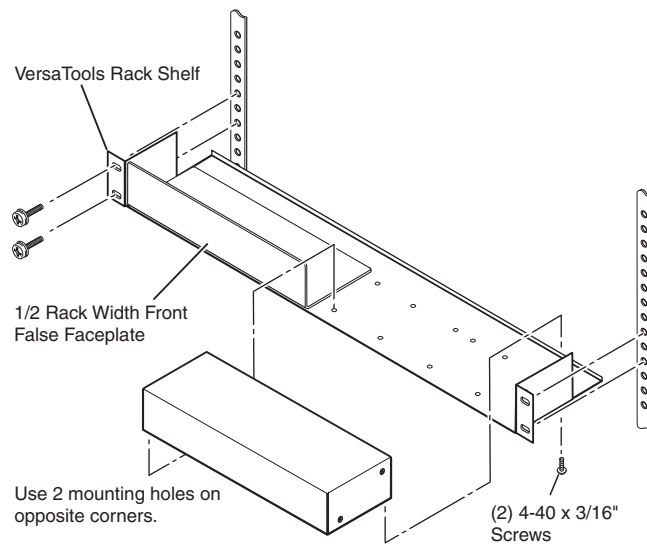


Figure 17. Mounting an SW USB Switcher on a 3.5-inch Deep Rack Shelf

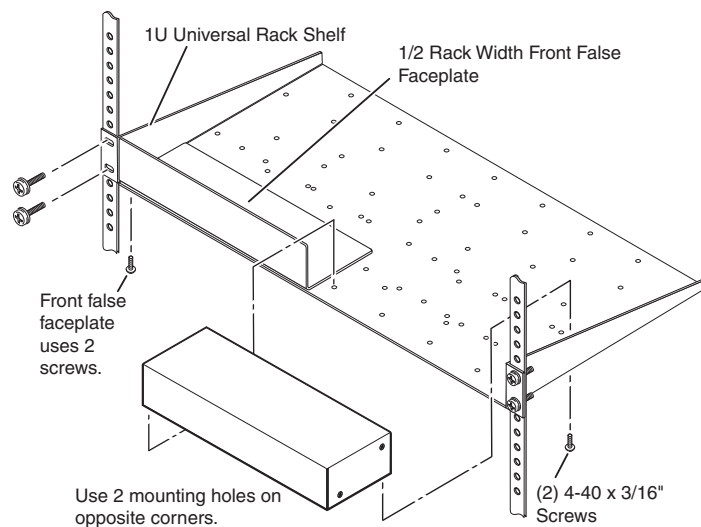


Figure 18. Mounting an SW USB Switcher on a Standard 9.5-inch Deep Rack Shelf

Furniture Mounting

To mount the SW USB switcher under a desk, table, or podium, use the optional MBU 123 Mini Under-Desk Mounting Kit (part number 70-212-01), as follows:

1. If rubber feet were previously attached to the bottom of the unit, remove them.
2. Remove the two screws from one side of the SW USB. Retain the screws for possible later reassembly.
3. Attach the brackets to the sides of the unit, using the provided machine screws.
4. Hold the unit with the attached brackets against the underside of the table or other furniture. On the mounting surface, mark the location of the screw holes in the bracket.
5. Drill 3/32 inch (2 mm) diameter pilot holes, 1/4 inch (6.3 mm) deep, into 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 slightly less than 1/4 inch of the screw head protrudes.
7. Align the mounting screws with the slots in the brackets and place the unit against the surface, with the screws through the bracket slots.

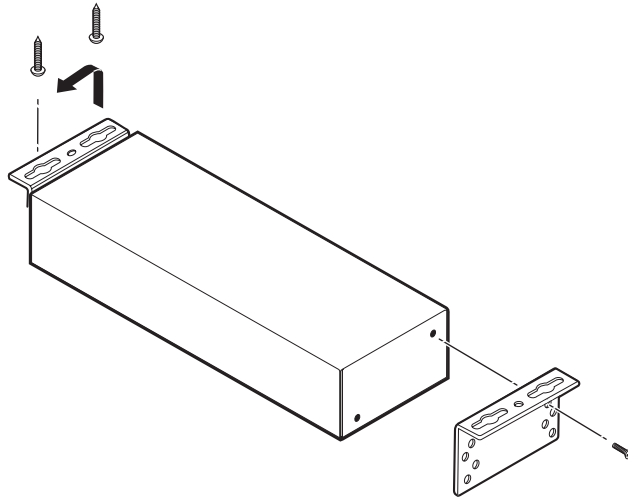


Figure 19. Mounting the SW USB under Furniture

8. Slide the unit slightly forward or back, then tighten all four screws to secure it in place.

Extron Warranty

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

USA, Canada, South America, and Central America:

Extron Electronics
1001 East Ball Road
Anaheim, CA 92805
U.S.A.

Japan:

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

Europe, Africa, and the Middle East:

Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

China:

Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

Asia:

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

Middle East:

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

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

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

USA: (714) 491-1500

Asia: +65.6383.4400

Europe: +31.33.453.4040

Japan: +81.3.3511.7655

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

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

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

Extron Headquarters	Extron Europe	Extron Asia	Extron Japan	Extron China	Extron Middle East	Extron Korea	Extron India
+1.800.633.9876 (Inside USA/Canada Only)	+800.3987.6673	+800.7339.8766	+81.3.3511.7655	+4000.398766	+971.4.2991800	+82.2.3444.1571	1800.3070.3777
Extron USA - West	Extron USA - East	(Inside Europe Only)	(Inside Asia Only)	Inside China Only	Inside India Only	+82.2.3444.1575 FAX	Inside India Only
+1.714.491.1500	+1.919.863.1794	+31.33.453.4040	+65.6383.4400	+86.21.3760.1568	+91-80-3055.3777		+91-80-3055.3777
+1.714.491.1517 FAX	+1.919.863.1797 FAX	+31.33.453.4050 FAX	+65.6383.4664 FAX	+86.21.3760.1566 FAX			+91 80 3055 3737 FAX