Fiber Optic Switcher

FOX T USW 103

Three Input Universal Switcher
with an Integrated Fiber Optic Transmitter

Extron Electronics

INTERFACING, SWITCHING AND CONTROL

Safety Instructions • English

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

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

For information on safety guidelines, regulatory compliances, EMI/EMF compatibility, accessibility, and related topics, see the Extron Safety and Regulatory Compliance Guide, part number 68-290-01, on the Extron website, **www.extron.com**.

Instructions de sécurité • Français

AVERTISSEMENT: Ce pictogramme, ⚠, lorsqu'il est utilisé sur le produit, signale à l'utilisateur la présence à l'intérieur du boîtier du produit d'une tension électrique dangereuse susceptible de provoquer un choc électrique.

ATTENTION: Ce pictogramme, ⚠, lorsqu'il est utilisé sur le produit, signale à l'utilisateur des instructions d'utilisation ou de maintenance importantes qui se trouvent dans la documentation fournie avec le matériel.

Pour en savoir plus sur les règles de sécurité, la conformité à la réglementation, la compatibilité EMI/EMF, l'accessibilité, et autres sujets connexes, lisez les informations de sécurité et de conformité Extron, réf. 68-290-01, sur le site Extron, **www.extron.fr**.

Sicherheitsanweisungen • Deutsch

WARNUNG: Dieses Symbol ⚠ auf dem Produkt soll den Benutzer darauf aufmerksam machen, dass im Inneren des Gehäuses dieses Produktes gefährliche Spannungen herrschen, die nicht isoliert sind und die einen elektrischen Schlag verursachen können.

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

Weitere Informationen über die Sicherheitsrichtlinien, Produkthandhabung, EMI/EMF-Kompatibilität, Zugänglichkeit und verwandte Themen finden Sie in den Extron-Richtlinien für Sicherheit und Handhabung (Artikelnummer 68-290-01) auf der Extron-Website, **www.extron.de**.

Instrucciones de seguridad • Español

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ATENCIÓN: Este símbolo, ⚠, cuando se utiliza en el producto, avisa al usuario de la presencia de importantes instrucciones de uso y mantenimiento recogidas en la documentación proporcionada con el equipo.

Para obtener información sobre directrices de seguridad, cumplimiento de normativas, compatibilidad electromagnética, accesibilidad y temas relacionados, consulte la Guía de cumplimiento de normativas y seguridad de Extron, referencia 68-290-01, en el sitio Web de Extron, **www.extron.es**.

Chinese Simplified（简体中文）

警告：⚠产品上的这个标志意在警告用户该产品机壳内有暴露的危险电压, 有触电危险。

注意：⚠产品上的这个标志意在提示用户设备随附的用户手册中有重要的操作和维护(维修) 说明。

关于我们产品的安全指南、遵循的规范、EMI/EMF 的兼容性、无障碍使用的特性等相关内容，敬请访问 Extron 网站 **www.extron.cn**，参见 Extron 安全规范指南，产品编号 68-290-01。

Chinese Traditional（繁體中文）

警告：⚠若產品上使用此符號,是為了提醒使用者,產品機殼內存在著可能會導致觸電之風險的未絕緣危險電壓。

注意 ⚠ 若產品上使用此符號,是為了提醒使用者。

有關安全性指導方針、法規遵守、EMI/EMF 相容性、存取範圍和相關主題的詳細資訊，請瀏覽 Extron 網站：**www.extron.cn**，然後參閱《Extron 安全性與法規遵守手冊》，準則編號 68-290-01。

Japanese

警告: この記号 ⚠ が製品上に表示されている場合は、筐体内に絶縁されていない高電圧が流れ、感電の危険があることを示しています。

注意: この記号 ⚠ が製品上に表示されている場合は、本機の取扱説明書に記載されている重要な操作と保守(整備)の指示についてユーザーの**注意**を喚起するものです。

安全上のご注意、法規厳守、EMI/EMF適合性、その他の関連項目については、エクストロンのウェブサイト**www.extron.jp**より『Extron Safety and Regulatory Compliance Guide』(P/N 68-290-01) をご覧ください。

Korean

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

주의: 이 기호 ⚠, 가 제품에 사용될 경우, 장비와 함께 제공된 책자에 나와 있는 주요 운영 및 유지보수(정비) 지침을 경고합니다.

안전 가이드라인, 규제 준수, EMI/EMF 호환성, 접근성, 그리고 관련 항목에 대한 자세한 내용은 Extron 웹 사이트(**www.extron.co.kr**)의 Extron 안전 및 규제 준수 안내서, 68-290-01 조항을 참조하십시오.

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. The Class A limits provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference; the user must correct the interference at his own expense.

> **NOTE:** For more information on safety guidelines, regulatory compliances, EMI/EMF compatibility, accessibility, and related topics, see the "**Extron Safety and Regulatory Compliance Guide**" on the Extron website.

FDA/IEC 60825-1 Requirements

CLASS 1 LASER PRODUCT

Complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No. 5, dated June 24, 2007.

The product is intended to be used with the fiber optic cables fully installed.

This product meets the applicable requirements of IEC 60825-1, Edition 1 (2007).

Any service to this product must be carried out by Extron Electronics and its qualified service personnel.

Conventions Used in this Guide

Notifications

The following notifications are used in this guide:

> **WARNING:** A warning indicates a situation that has the potential to result in death or severe injury.

> **CAUTION:** A caution indicates a situation that may result in minor injury.

> **ATTENTION:** Attention indicates a situation that may damage or destroy the product or associated equipment.

> **NOTE:** A note draws attention to important information.

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

Software Commands

Commands are written in the fonts shown here:

```
^AR Merge Scene,,Op1 scene 1,1 ^B 51 ^W^C
```
```
[Ø1] R ØØØ4 ØØ3ØØ ØØ4ØØ ØØ8ØØ ØØ6ØØ [Ø2] 35 [17] [Ø3]
```

Esc X1 * X17 * X20 * X23 * X21 CE ⬅

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

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

```
Reply from 2Ø8.132.18Ø.48: bytes=32 times=2ms TTL=32
```
```
C:\Program Files\Extron
```

Variables are written in slanted form as shown here:

```
ping xxx.xxx.xxx.xxx —t
```
```
SOH R Data STX Command ETB ETX
```

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

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

Click the **OK** button.

Specifications Availability

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

Contents

Introduction

This section contains general information about this guide and the FOX T USW 103 Universal Switcher with an integrated fiber optic transmitter, selected device features, and a typical application diagram. Topics in this section include:

- **About This Guide**
- **About the FOX T USW 103**
- **Key Features**
- **Application Diagram**

About This Guide

This guide describes installation, operation, and control procedures, and reference information for the FOX T USW 103 Universal Switcher with an integrated fiber optic transmitter. In this guide, the terms "FOX T USW 103" and "switcher" are used interchangeably to refer to the FOX T USW 103 Universal Switcher with an integrated fiber optic transmitter in singlemode or multimode.

About the FOX T USW 103

The Extron FOX T USW 103 is a three input universal switcher with an integrated fiber optic transmitter that provides long haul transmission of HDCP-compliant HDMI, RGBHV, or HD component video; stereo audio; and RS-232 signals over fiber optic cabling. The switcher delivers pixel-for-pixel transmission of images up to 1920x1200, including HDTV 1080p/60.

To configure and control the FOX T USW 103, connect a host device, such as a computer, and enter Simple Instruction Set (SIS) commands (see **Simple Instruction Set Control** on page 12) or use the FOX Extenders Control Program (see **FOX Extenders Control Program** on page 20).

System Compatibility

The FOX T USW 103 operates in either of two modes, selected under RS-232 control, for compatibility with other, non-HDMI, units:

- **Plus** — Supports resolutions up to 1920x1200 @ 60Hz. The fiber optic output of the switcher can be received only by one of six receivers: a FOXBOX HDMI Rx, FOXBOX DVI Plus Rx, PowerCage HDMI Rx, PowerCage FOX DVI Plus Rx, FOXBOX SR HDMI, and PowerCage FOX SR HDMI.
- **Non-Plus** — Supports resolutions up to 1600x1200 and 1080p @ 60 Hz (including HDTV 1080p/60 Hz), is HDCP compliant, and does not contain embedded audio (analog audio is still supported). The fiber optic output of the transmitter can be received by any FOXBOX, PowerCage FOX, and FOX 500 VGA and DVI unit, including the Plus and non-Plus units.

Cable Transmission Modes

The transmitter is further categorized by the type of fiber optic cable, multimode (FOX T USW 103 MM) or singlemode (FOX T USW 103 SM), which define the effective range of transmission:

- **Multimode** — Long distance, up to 2 km (6,560 feet) (depending on the fiber cable)
- **Singlemode** — Very long distance, up to 30 km (18.75 miles)

Key Features

Long distance fiber optics transmission — Transmits HDMI or analog video, stereo audio, and RS-232 signals up to 30 km when using singlemode fiber optic cabling.

Inputs — Include two female HDMI type A connectors, one RGBHV/RGBS or HD component on 15-pin HD connector, and one unbalanced analog stereo audio on 3.5 mm stereo mini-jack.

All digital technology — Delivers pixel-for-pixel transmission of video signals to ensure optimal image quality at resolutions up to 1920x1200, including HDTV 1080p/60.

Digital conversion of analog video and audio input signals — Digitizes analog signals, ensuring that a reliable, high quality digital video signal is sent to the output destination.

Auto-input switching — Automatically switches to the highest or lowest priority input with an active video signal for simplified operation.

HDCP-compliance

Key Minder — Authenticates and maintains continuous HDCP encryption between input and output devices to ensure quick and reliable switching in professional AV environments, while enabling simultaneous distribution of a single source signal to one or more displays.

EDID Minder — Automatically manages EDID communication between connected devices to ensure that all sources properly power up and reliably display content.

Audio embedding — Converts analog stereo audio signals to digital HDMI audio when the analog input is selected.

Audio gain and attenuation adjustment capability

LED indicators for signal presence, HDCP, and power — Provides a visual indication of system status for real-time feedback and monitoring of key performance parameters.

RS-232 control — Features an RS-232 serial port for control and configuration.

Contact closure remote control availability

Alarm notification for fiber link loss — The FOX T USW 103 can be set up to trigger an external control system for immediate notification when a fiber link has been lost. Requires a second fiber link.

Multimode and singlemode availability — Available as an 850 nm multimode model for long-range transmissions up to 2 km (6,560 feet), and a 1310 nm singlemode model for extreme distances up to 30 km (18.75 miles).

Industry standard LC fiber optic connectors — Provide reliable physical connectivity and precise fiber core alignment.

Compatibility with the following Extron FOX series products:

- **Matrix switchers** — Creates HDCP-compliant signal distribution systems up to 1000x1000 and larger.

- **HDMI, DVI Plus, DVI, and VGA receivers** — Compatible with FOX series HDMI, DVI Plus receivers up to 1920x1200, including HDTV 1080p/60. Compatible with FOX series DVI and VGA receivers up to 1600x1200, including HDTV 1080p/60.

> **NOTE:** The FOX T USW 103 is not compatible with the FOX 3G HD-SDI, FOX 3G DVC, or FOX AV models.

Front panel USB configuration port

1 inch (2.5 cm) high, half rack width metal enclosure — Compact, low profile enclosure for discreet placement and concealment.

Includes LockIt HDMI cable lacing bracket

Energy-efficient external universal power supply included — Provides worldwide compatibility, low power consumption, and reduced operating costs.

Application Diagram

The following diagram shows a typical application of the FOX T USW 103 with three input sources, a fiber optic receiver, and control system.
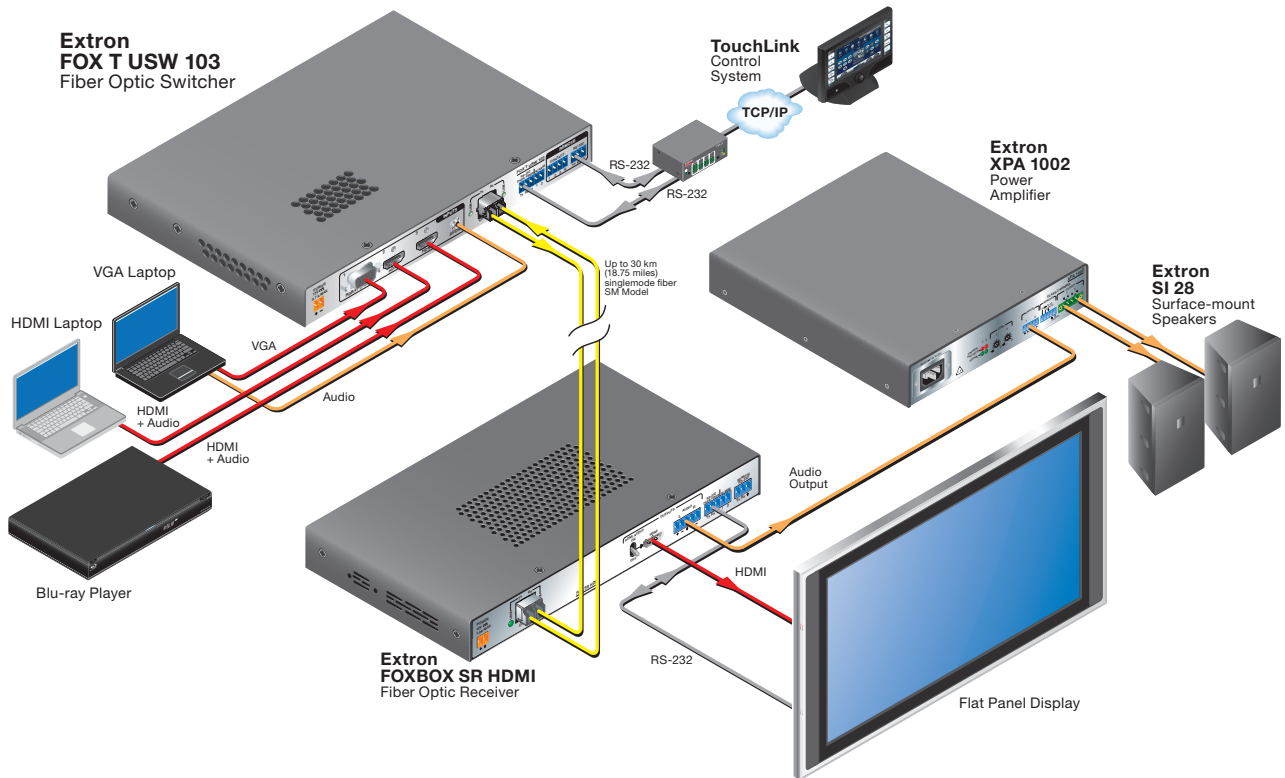
Figure 1.   Typical FOX T USW 103 Application

Installation

This section describes information for connecting and wiring the FOX T USW 103. Topics in this section include:

- **Mounting the FOX T USW 103**
- **Rear Panel Features**
- **Making Connections**

Mounting the FOX T USW 103

The FOX T USW 103 can be mounted in a rack, under a desk, or on a tabletop (see **Mounting** on page 38 for more mounting details).

Rear Panel Features
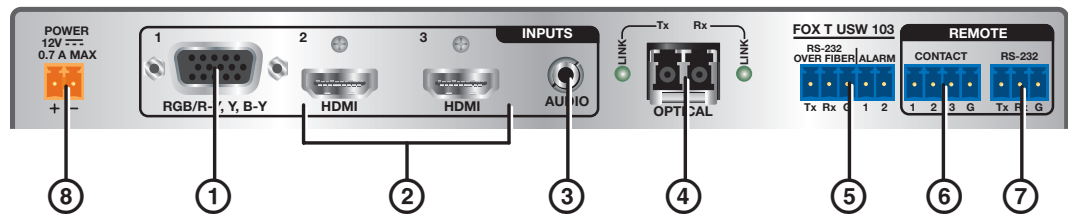
Figure 2.   **FOX T USW 103 Rear Panel Features**

Input Connectors

① **Analog video connector** — Connect a video source to the female 15 HD connector, labeled input 1.

② **HDMI connectors** — Connect a source device to either or both HDMI connectors, labeled inputs 2 and 3 (see **Connecting HDMI Connectors** on page 6). They can accept HDMI, DVI, or dual mode DisplayPort video sources.

③ **Audio connector** — Connect an analog audio source to the 3.5 mm TRS jack. All three video inputs can share this audio input.
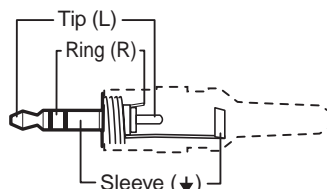
3.5 mm Stereo Plug Connector (unbalanced)

Figure 3.   **Wiring for Unbalanced Stereo Audio**

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The following table shows the audio format that is sent over the fiber connection when a specific audio format is not specified (see the **Input audio selection** SIS command on page 15 to switch the active audio source).

Selected Video Input	HDMI Embedded Audio Present	Analog Audio Present	Audio Sent Over Fiber
VGA	N/A	Yes	Analog audio
VGA	N/A	No	No audio
HDMI	Yes	No	HDMI embedded audio
HDMI	Yes	Yes	HDMI embedded audio
HDMI	No	Yes	Analog audio
HDMI	No	No	No audio

Fiber Optic Connector

④ **Fiber optic connector** — For one-way video, audio, and serial communication from the FOX T USW 103 to a receiver, connect a fiber optic cable between the Tx port on the FOX T USW 103 and the Rx port on a receiver.

To return serial data from a receiver to the FOX T USW 103 or for HDCP-compliance, connect a fiber optic cable between the Rx port on the FOX T USW 103 and the Tx port on the receiver (see **Wiring for Fiber Communication** on page 7).

> **NOTES:**
> - Ensure the proper fiber optic cable is used. Typically, singlemode fiber optic cable has a yellow jacket and multimode fiber optic cable has an orange or aqua jacket.
> - Only one fiber optic cable, transmitter-Tx-to-receiver-Rx, is required for video, audio, serial command transmission, but the HDMI signal output on the receiver will not be HDCP-compliant and the FOX T USW 103 will not receive RS-232 reports from the controlled device.

The Link LED indicators light when there is light presence on either fiber optic port.

RS-232 Over Fiber and Alarm Connector

⑤ **RS-232 Over Fiber port** — To pass serial command signals to a receiver (for serial control of a projector, for example), connect a host device to the switcher via the leftmost poles (Tx, Rx, and G) of this 5-pole captive screw connector (see **Wiring for RS-232 Over Fiber and Alarm Communication** on page 8 for wiring configurations).
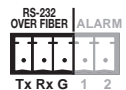
Alarm port — For remote monitoring of the status of fiber optic link 2, connect a custom or furnished monitoring device to the switcher via the rightmost poles (1 and 2) of this 5-pole captive screw connector (see **Wiring for RS-232 Over Fiber and Alarm Communication** on page 8).
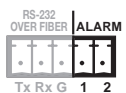
> **NOTE:** Pins 1 and 2 short within the switcher when link 2 does not detect any connection.

Control Connectors

⑥ **Contact closure connector** — Connect a contact closure device (such as a simple switch) to the 3.5 mm, 4-pole captive screw connector. The first three ports are used for selecting inputs 1 through 3 when momentarily shorted to the ground pin (see **Wiring for Remote Contact Closure Communication** on page 8).

⑦ **RS-232 connector** — Connect a host device to the 3.5 mm, 3-pole captive screw connector for serial control of the switcher.

Power Connector

⑧ **Power connector** — Connect an external power supply to the 3.5 mm, 2-pole captive screw connector (see **Wiring the Power Supply** on page 9).

Making Connections

Connecting HDMI Connectors

Use an Extron LockIt Lacing Bracket to secure an HDMI cable to each device as follows:
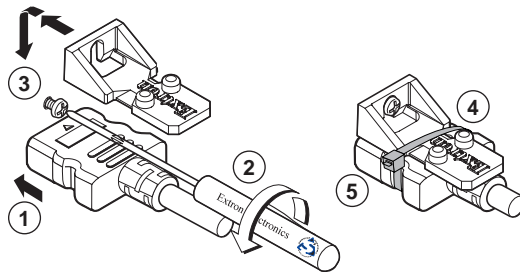
Figure 4.   Installing the LockIt Lacing Bracket

1. Plug the HDMI cable into the panel connector.

2. Loosen the HDMI connection mounting screw from the panel enough to allow the LockIt lacing bracket to be placed over it. The screw does not have to be removed.

3. Place the LockIt lacing bracket on the screw and against the HDMI connector, then tighten the screw to secure the bracket.

> **ATTENTION:**   Do not overtighten the HDMI connector mounting screw. The shield to which it is fastened to is very thin and can easily be stripped.

4. Loosely place the included tie wrap around the HDMI connector and the LockIt lacing bracket as shown.

5. While holding the connector securely against the lacing bracket, use pliers or a similar tool to tighten the tie wrap, then remove any excess length.

Wiring for Fiber Communication

> **WARNING:** **Risk of serious physical injury.** This device outputs continuous invisible light, which may be harmful to the eyes; use with caution.
>
> - Do not look into the rear panel fiber optic cable connectors or into the fiber optic cables themselves.
>
> - Plug the attached dust caps into the optical transceivers when the fiber cable is unplugged.

NOTES:

- Ensure the proper fiber optic cable is used for the FOX T USW 103 and receiver. Typically, singlemode fiber optic cable has a yellow jacket and multimode fiber optic cable has an orange or aqua jacket.

- Only one fiber optic cable, transmitter-Tx-to-reciever-Rx, is required for video, audio, and serial command transmission. However, for only one fiber optic cable:

  - The HDMI signal output by the receiver is not HDCP compliant.

  - RS-232 reports from a controlled device are not available.

- To receive responses from the controlled device and for HDCP-compliance, install both fiber optic cables.
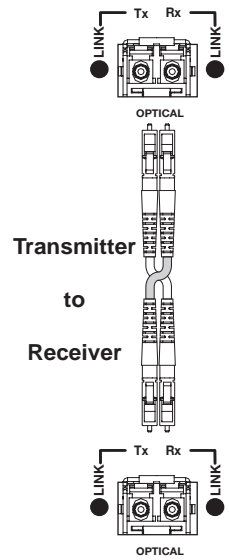
Wiring for RS-232 Over Fiber and Alarm Communication

The RS-232 Over Fiber port is for transmission of serial signals, such as projector control signals. The alarm port is an internal relay to connect or disconnect a custom alarm circuit. Wire the connector as shown in figure 5 below.
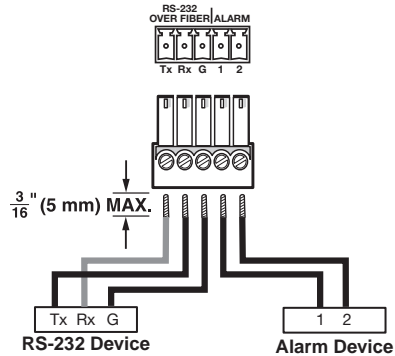
Figure 5.   Wiring the RS-232 Over Fiber and Alarm Connector

> **ATTENTION:**   The length of exposed wires is critical. The ideal length is 3/16 inch (5 mm).
> - Longer bare wires can short together.
> - Shorter wires are not as secure in the connectors and could be pulled out.

For RS-232 over fiber connection, cross the Tx and Rx lines once between the source and the target.

The alarm pins do not produce any discrete on or off or voltage signals.

> **NOTES:**
> - The alarm port does not produce any discrete on or off voltage signals.
> - If power is lost or if link 2 optical light is disconnected, lost, or broken, alarm pins 1 and 2 internally short.

Wiring for Remote Contact Closure Communication

Each port senses an external switch or contact closure. Use these ports to select an input on the switcher. Wire the connector as shown in figure 6 below.
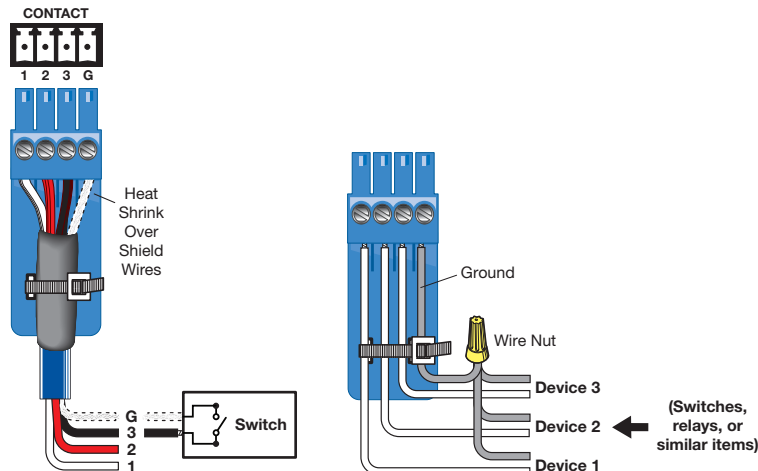
Figure 6.   Wiring the Contact Closure Connector

Wiring the Power Supply

Connect a 12 VDC power supply to the 3.5 mm, 2-pole captive screw connector.
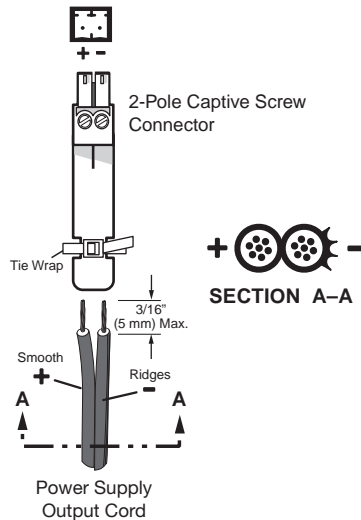
Figure 7.   Power Connector Wiring

> **CAUTION: Electric shock hazard.** The two power cord wires must be kept separate while the power supply is plugged in. Remove power before wiring.

> **ATTENTION:**
> - This product is intended to be supplied by a Listed Power Unit marked "Class 2" or "LPS," rated 12 VDC, 1.0 A minimum. Always use a power supply supplied by or specified by Extron. Use of an unauthorized power supply voids all regulatory compliance certification and may cause damage to the supply and the end product.
> - Unless otherwise stated, the AC/DC adapters are not suitable for use in air handling spaces or in wall cavities. The installation must always be in accordance with the applicable provisions of National Electrical Code ANSI/NFPA 70, article 75 and the Canadian Electrical Code part 1, section 16. The power supply shall not be permanently fixed to a building structure or similar structure.
> - Power supply voltage polarity is critical. Incorrect voltage polarity can damage the power supply and the unit. The ridges on the side of the cord identify the power cord negative lead.
> - The length of the exposed (stripped) copper wires is important. The ideal length is 3/16 inch (5 mm).

> **TIP:** Do not tin the stripped power supply leads. Tinned wires are not as secure in the captive screw connectors and could be pulled out.

Operation

This section describes the front panel features of the FOX T USW 103 and describes front panel operations. Topics in this section include:

- **Front Panel Features**
- **Front Panel Operation**

Front Panel Features
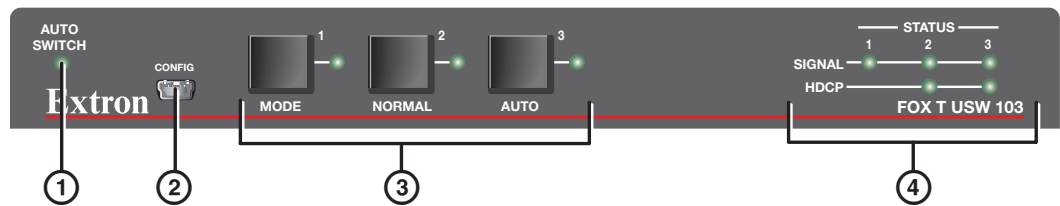
Figure 8.   FOX T USW 103 Front Panel Features

① **Auto Switch LED** — Lights when the transmitter is in auto switch mode.

② **Config port** — Connect a host device to the mini USB Config port for remote control.

③ **Input selection buttons** — Select inputs 1 through 3 or modes of operation. The corresponding LEDs light to indicate the active input.

④ **Status LEDs** — The Signal LEDs light to indicate the signal presence of each input. The HDCP LEDs light when the signal on the corresponding input is HDCP compliant. Input 1 (the VGA connector) does not have an HDCP LED.

Front Panel Operation

The three buttons with corresponding LEDs on the front panel (labeled Mode, Normal, and Auto) are used to manually select inputs 1 through 3 or enable and disable device modes. The LEDs indicate status and the currently selected input.

To enable or disable executive, auto switch, or normal switch mode from the front panel, press and hold a combination of input selection buttons simultaneously until the appropriate LEDs blink (see the table below for the different button combinations).

Front Panel Button Combinations for Device Modes	
Mode	**Button Combinations**
Executive	1, 2, and 3
Auto switch (prioritize the highest numbered active input)	1 and 3
Normal switch (default)	1 and 2

The front panel operations can also be performed remotely with SIS commands or the FOX Extenders Control Program (see **Simple Instruction Set Control** on page 12 or **FOX Extenders Control Program** on page 20).

Initial Power Up

Upon initial power up, the front panel LEDs blink simultaneously. They blink once for multimode or twice for singlemode. Afterwards, the LEDs return to their normal signal presence indication.

If a different fiber optic SFP module or no SFP module is connected, the LEDs first blink once or twice to identify the device, but then blink continuously.

Selecting an Input

To select an input from the front panel, perform the following actions:

1. Press the input selection button that corresponds with the desired rear panel input connector.

2. The corresponding LED lights to indicate the active input.

Enabling or Disabling Front Panel Lockout Mode (Executive Mode)

Push and hold (for about 5 seconds) inputs 1, 2, and 3 simultaneously until the front panel LEDs blink three times to enable or disable front panel configuration. In executive mode, contact closure and RS-232 control are still available. By default, executive mode is disabled.

Enabling Auto Switch Mode

Press and hold (for about 3 seconds) inputs 1 and 3 simultaneously until the front panel Auto Switch LED lights. This prioritizes the highest numbered active input.

> **NOTE:** Setting audio switch mode to prioritize the lowest numbered active input can be done only with SIS commands (see **Auto switch mode** SIS commands on page 15). Normal switch mode is the default mode.

Enabling Normal Switch Mode

Press and hold (for about 3 seconds) inputs 1 and 2 simultaneously until the front panel Auto Switch LED turns off. This is the default mode.

SIS Configuration and Control

This section describes remote control of the FOX T USW 103 through SIS commands and basic installation instructions for the FOX Extenders Control Program (see to the *FOX Extenders Control Program Help File* for operation details).

To enable serial control of the FOX T USW 103, use a computer running the HyperTerminal or Extron DataViewer utility, or a control system. Connect the computer to the FOX T USW 103 through the front panel Config port or the rear panel RS-232 connector.

The protocol for the RS-232 port is as follows: 9600 baud, no parity, 8 data bits, 1 stop bit, no flow control

Simple Instruction Set Control

SIS Programming Guide

Host-to-device and device-to-host communication

SIS commands consist of one or more characters per field. No special characters are required to begin or end a command sequence. When the FOX T USW 103 determines that a command is valid, it executes the command and sends a response to the host device. All responses from the switcher or receiver 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.

Device-initiated messages

When a local event occurs, the device responds by sending a message to the host. The device-initiated message may depend on whether the device is multimode or singlemode. They are listed below.

`© Copyright 2013, Extron Electronics FOX T USW 103 MM, Vx.xx, 60-1229-11`

`© Copyright 2013, Extron Electronics FOX T USW 103 SM, Vx.xx, 60-1229-12`

V*x.xx* is the firmware version number.

`Reconfig`↵
The FOX T USW 103 returns this message when there is any change to the input frequency on the currently selected input.

`1Lnk`X5`•2Lnk`X5`•Vid`X5`•Aud`X5`•`X10`•TX`↵

The FOX T USW 103 returns this status message whenever a change in the fiber link, video, or audio connection occurs. X5 indicates whether the link is present or not present (Ø = not present, 1 = present) and X10 represents whether the device is multimode or singlemode (MM = multimode, SM = singlemode).

Error responses

When the FOX T USW 103 receives an SIS command and determines that it is valid, it performs the command and sends the corresponding response to the host device. If the command is determined invalid or contains invalid parameters, the switcher or receiver returns an error response to the host. The error response codes are:

EØ1 = Invalid input number   E13 = Invalid parameter

EØ6 = Invalid switch attempt in this mode   E14 = Not valid for this configuration

E1Ø = Invalid command   E17 = Invalid command for signal type

E12 = Invalid port number   E22 = Busy

Using the command and response table for SIS commands

The **Command and Response Tables** begin on page 15. Lowercase letters are acceptable in the command field except where indicated. Figure 9 shows the hexadecimal equivalent of ASCII characters used in the command and response tables.

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

Figure 9.   **ASCII to Hexadecimal Conversion**

Symbol definitions

    ↵   =   Carriage return and line feed

¦ or ←   =   Carriage return with no line feed

    ●   =   Space

Esc or W   =   Escape key

| X26 | = | EDID output resolution and refresh rate | See the tables below. |

VGA - PC								
SIS Value	Resolution	Refresh Rate (Hz)	SIS Value	Resolution	Refresh Rate (Hz)	SIS Value	Resolution	Refresh Rate (Hz)
1	800x600	60	7	1360x768	60	12	1600x1200	60
2	1024x768	60	8	1366x768	60	13	1680x1050	60
3	1280x720 (analog default)	60	9	1400x1050	60	14	1920x1080	60
4	1280x768	60	10	1440x900	60	15	1920x1200	60
5	1280x800	60	11	1600x900	60	16	2048x1080	60
6	1280x1024	60						

DVI - PC								
SIS Value	Resolution	Refresh Rate (Hz)	SIS Value	Resolution	Refresh Rate (Hz)	SIS Value	Resolution	Refresh Rate (Hz)
17	800x600	60	23	1360x768	60	28	1600x1200	60
18	1024x768	60	24	1366x768	60	29	1680x1050	60
19	1280x720	60	25	1400x1050	60	30	1920x1080	60
20	1280x768	60	26	1440x900	60	31	1920x1200	60
21	1280x800	60	27	1600x900	60	32	2048x1080	60
22	1280x1024	60						

HDMI - PC with 2-channel Audio								
SIS Value	Resolution	Refresh Rate (Hz)	SIS Value	Resolution	Refresh Rate (Hz)	SIS Value	Resolution	Refresh Rate (Hz)
33	800x600	60	38	1360x768	60	43	1600x1200	60
34	1024x768	60	39	1366x768	60	44	1680x1050	60
35	1280x768	60	40	1400x1050	60	45	1920x1200	60
36	1280x800	60	41	1440x900	60	46	2048x1080	60
37	1280x1024	60	42	1600x900	60			

HDMI HDTV								
SIS Value	Resolution	Refresh Rate (Hz)	SIS Value	Resolution	Refresh Rate (Hz)	SIS Value	Resolution	Refresh Rate (Hz)
47	480p 2-ch audio	60	51	1080i 2-ch audio	50	55	User assigned or imported 1	
48	576p 2-ch audio	50	52	1080i 2-ch audio	60	56	User assigned or imported 2	
49	720p 2-ch audio	50	53	1080p 2-ch audio	50	57	User assigned or imported 3	
50	720p 2-ch audio (digital default)	60	54	1080p 2-ch audio	60			

Command and Response Tables for SIS Commands

Command	ASCII Command (Host to Device)	Response (Device to Host)	Additional Description
Input Switching			
Input selection			
NOTE: The FOX T USW 103 saves the last input selection when cycling power.			
Set video input selection	`X11` `!`	`In` `X11` `●All` ↵	Select input `X11`.
View video input selection	`!`	`X11` ↵	View currently selected source.
Auto switch mode			
Disable auto switch mode	`Esc` `ØAUSW` ←	`AuswØ` ↵	Switch inputs manually (default).
Set priority to the highest active input	`Esc` `1AUSW` ←	`Ausw1` ↵	Gives priority to the highest numbered active input.
Set priority to the lowest active input	`Esc` `2AUSW` ←	`Ausw2` ↵	Gives priority to the lowest numbered active input.
View the auto switch mode	`Esc` `AUSW` ←	`X12` ↵	View the auto switch mode.
Audio Configuration			
Audio gain and attenuation			
NOTE: Gain and attenuation are case-sensitive.			
Set gain	`X7` `G`	`Aud` `X9` ↵	Set gain to `X9`.
Set attenuation	`X8` `g`	`Aud` `X9` ↵	Set attenuation to `X9`.
Increment audio level	`+G` or `+g`	`Aud` `X9` ↵	Increase the gain or attenuation.
Decrement audio level	`-G` or `-g`	`Aud` `X9` ↵	Decrease the gain or attenuation.
View audio level	`G` or `g`	`X9` ↵	View the audio level.
Input audio selection			
Set audio input format	`Esc` `I` `X11` `*` `X25` `AFMT` ←	`AfmtI` `X11` `*` `X25` ↵	Set input `X11` to `X25` audio format.
View audio input format	`Esc` `I` `X11` `AFMT` ←	`X25` ↵	View the audio iput format.

NOTE:

`X7`	= Audio gain	Ø to 1Ø (Ø = default)
`X8`	= Audio attenuation	−18 to Ø
`X9`	= Audio level	−18 to 1Ø
`X11`	= Input selection	1 = VGA (input 1)
		2 = HDMI (input 2)
		3 = HDMI (input 3)
`X12`	= Auto switch mode	Ø = manual switching (default)
		1 = priority given to the highest numbered active input
		2 = priority given to the lowest numbered active input
`X25`	= Audio input format	Ø = auto (default)
		1 = digital embedded
		2 = analog

Command	ASCII Command (Host to Device)	Response (Device to Host)	Additional Description
Picture Adjustment (Analog Only)			
Pixel phase			
Set a pixel phase value	`Esc` `1*` `X22` `PHAS` ←	`Phas` `X22` ↵	Adjust the pixel phase to `X22`.
Increment value	`Esc` `1+PHAS` ←	`Phas` `X22` ↵	Increase the pixel phase.
Decrement value	`Esc` `1-PHAS` ←	`Phas` `X22` ↵	Decrease the pixel phase
View pixel phase value	`Esc` `1PHAS` ←	`X22` ↵	Show the pixel phase value
Total pixels			
Set a value	`Esc` `1*` `X23` `TPIX` ←	`Tpix` `X23` ↵	Set the total pixels.
Increment value	`Esc` `1+TPIX` ←	`Tpix` `X23` ↵	Increase the total pixels.
Decrement value	`Esc` `1-TPIX` ←	`Tpix` `X23` ↵	Decrease the total pixels.
View total pixel value	`Esc` `1TPIX` ←	`X23` ↵	Show the total pixels.
Horizontal start			
Set horizontal start value	`Esc` `1*` `X24` `HSRT` ←	`Hsrt` `X24` ↵	Set horizontal location of first active pixel in active window.
Increment value	`Esc` `1+HSRT` ←	`Hsrt` `X24` ↵	Move the image to the right.
Decrement value	`Esc` `1-HSRT` ←	`Hsrt` `X24` ↵	Move the image to the left.
View horizontal start value	`Esc` `1HSRT` ←	`X24` ↵	Show horizontal location of the first active pixel in active window.
EDID			
NOTE: Digital EDID can be assigned only to a digital input. Analog EDID can be assigned only to an analog input.			
Input EDID (VGA and HDMI)			
Assign factory EDID	`Esc` `A` `X11` `*` `X26` `EDID` ←	`EdidA` `X11` `*` `X26` ↵	Set the EDID resolution and refresh for input `X11`.
View assigned EDID	`Esc` `A` `X11` `EDID` ←	`X26` ↵	View EDID resolution and refresh for input `X11`.
View EDID native resolution	`Esc` `N` `X11` `EDID` ←	`X2` ↵	
View current EDID in Hex	`Esc` `R` `X11` `EDID` ←	`X3` ↵	
Export EDID selection	`Esc` `E` `X26` `EDID` ←	`X4` ↵	Export EDID in binary format.
Import EDID to store location	`Esc` `I` `X14` `EDID` ← `X4`	`EdidI` `X14` ↵	Import EDID in binary format to user stored EDID slot `X14`.

NOTE: `X2` = Native resolution and refresh rate
`X3` = EDID record (Hex) 128 or 256 bytes
`X4` = EDID record (binary) 128 or 256 bytes
`X11` = Input selection 1 = VGA (input 1)
2 = HDMI (input 2)
3 = HDMI (input 3)
`X14` = User assigned EDID 55 = VGA (input 1)
56 = HDMI (input 2)
57 = HDMI (input 3)
`X22` = Pixel phase Ø to **63** (**32** = default)
`X23` = Total pixels ±**255** of the default value (depends on the input rate)
`X24` = Horizontal start Ø to **255** (**128** = default)
`X26` = EDID output resolution See the tables on page 13.

Command	ASCII Command (Host to Device)	Response (Device to Host)	Additional Description
Advanced Configurations			
Input sync detection			
View input sync detection	`Esc` 1LS←	`xxx.x,xxx.x`↵	Shows horizontal frequency in kHz and vertical frequency in Hz. Returns `000.0,000.0` if no signal is detected.
Input video format (VGA only)			
Set input video format	1*`X15`\	`Typ1*`X15`↵`	Sets input 1 to format `X15`.
View input video format	1\	`X15`↵	View video format of input 1.
Front panel lockout			
Set front panel executive mode	`X5`X	`Exe`X5`↵`	Enable or disable (default) the front panel lockout (executive) mode.
View front panel executive mode	X	`X5`↵	View the front panel lockout (executive) mode.
Plus mode transmission			
Disable Plus mode transmission	81*Ø#	`Plus0`↵	Disable Plus mode transmission.
Enable Plus mode transmission	81*1#	`Plus1`↵	Enable Plus mode transmission (default).
View Plus mode transmission	81#	`X5`↵	View Plus mode transmission setting.
HDCP authorized device (HDMI inputs only)			
HDCP authorized device On	`Esc` E `X11` *1HDCP←	`HdcpE`X11`*1`↵	HDCP authorized device on for input `X11` (default).
HDCP authorized device Off	`Esc` E `X11` *ØHDCP←	`HdcpE`X11`*0`↵	HDCP authorization off for input `X11`.
Query HDCP authorized device status	`Esc` E `X11` HDCP←	`X6`↵	View the HDCP authorization status.
HDCP status (HDMI inputs only)			
Query HDCP status	`Esc` I `X11` HDCP←	`X13`↵	View the HDCP status.

NOTE:

`X5` = Enable or disable	Ø = off or not detected 1 = on or detected
`X6` = HDCP authorization	Ø = HDCP authorization off 1 = HDCP authorization on (default)
`X11` = Input selection	1 = VGA (input 1) 2 = HDMI (input 2) 3 = HDMI (input 3)
`X13` = HDCP status (HDMI only)	Ø = no source device detected 1 = source detected with HDCP 2 = source detected but no HDCP is present
`X15` = Input video format	Ø = auto detect (default) 1 = RGB 2 = YUV

Command	ASCII Command (Host to Device)	Response (Device to Host)	Additional Description
Device name			
NOTE: No blank or space characters are permitted. The first character must be a letter. The last character cannot be a minus or hyphen.			
Set unit name	`Esc` `X16` `CN` ←	`Ipn●` `X16` ↵	Set device name.
Set unit name to factory default	`Esc` `●CN` ←	`Ipn●` `X17` ↵	Set device to default.
View unit name	`Esc` `CN` ←	`X16` ↵	View device name.
Information requests			
Query general information	`I`	`1Lnk` `X5` `●2Lnk` `X5` `●Vid` `X5` `●Aud` `X5` `●` `X10` `●TX` ↵	
Query firmware version	`Q`	`x.xx` ↵	
Query firmware build	`*Q`	`x.xx.xxxx` ↵	
Query part number	`N`	`6Ø-1229-nn` ↵	
Query all firmware version	`ØQ`	`x.xx-x.xx` ↵	
Query updated FPGA version	`35Q`	`x.xx` ↵	
Status request			
View fiber link 1 status	`1S`	`X5` ↵	
View fiber link 2 status	`2S`	`X5` ↵	
View input video status	`3S`	`X5` `X5` `X5` ↵	
View input audio status	`4S`	`X5` ↵	
Request all signal status	`5S`	`SigI` `X5` `X5` `X5` `●SigO-●2HdcpI` `X5` `●3HdcpI` `X5` `●HdcpO-` ↵	
Request HDMI signal status	`6S`	`SigI` `X5` `X5` `●SigO-` ↵	
Request HDCP status	`7S`	`2HdcpI` `X5` `●3HdcpI` `X5` `●HdcpO-` ↵	

NOTE:

`X5` = On or off		Ø = off or not detected	
		1 = on or detected	
`X10` = SFP module type		`SM` = singlemode	
		`MM` = multimode	
`X11` = Input selection		1 = VGA (input 1)	
		2 = HDMI (input 2)	
		3 = HDMI (input 3)	
`X16` = Unit name		text string up to 24 characters (`A-Z`, `Ø-9`, `-`). No blank or space characters are permitted. The first character must be a letter. The last character cannot be a hyphen.	
`X17` = Extron device name		`FOX-T-USW-1Ø3`	

Command	ASCII Command (Host to Device)	Response (Device to Host)	Additional Description
View internal temperature			
View internal temperature	2ØS	[X1]↵	Internal temperature in degrees Fahrenheit and Celsius.
Factory reset			
System Reset (factory default)	[Esc]ZXXX←	Zpx↵	Resets unit to factory default.
Reset audio gain and attenuation	[Esc]ZA←	Zpa↵	Reset audio gain and attenuation to default levels.
Upload firmware			
Upload firmware	[Esc]Upload←	Sendheader↵	
SFP module			
View SFP module information	4ØS	[X18]●[X19]●[X20]●[X21]↵	

NOTE: [X1] = Internal temperature in degrees Fahrenheit and Celsius
[X18] = Vendor or manufacturer name
[X19] = Transmit (Tx) output power · in dBm
[X20] = Receive (Rx) optical power · in dBm
[X21] - Operation temperature · in ˚C

FOX Extenders
Control Program

The Extron FOX Extenders Control Program provides an alternate method to control and configure the FOX T USW 103. The application provides controls to adjust device parameters that are specific to the basic and advanced setup of the transmitter. Users can also manage firmware and check for updates to the application. The Extron FOX Extenders Control Program communicates with the transmitter via the Remote RS-232 port on the rear panel Remote RS-232 and Alarm connector or front panel USB Config port. The program is compatible with Microsoft® Windows® 2000, Windows XP, or later Windows operating systems. Updates to this program can be downloaded from the Extron website (**www.extron.com**). Topics in this section include:

- **Installing the Software**
- **Starting the Software**
- **Using the Software**

Installing the Software

The program is contained on the *Extron Software Products* DVD or available for download on the Extron website, **www.extron.com**.

To install the software from the DVD:

1. To install the software, insert the DVD into the DVD drive. The Extron software DVD window should appear automatically. If it does not self-start, run Launch.exe from the DVD.

2. Click the `Software` tab, scroll to the desired program, and click `Install`.

3. Follow the instructions that appear on the screen. By default, the installation creates a folder in the Program Files directory for the FOX Extenders Control Program.

To download the software from the website:

1. On the Extron website, click the `Download` tab.

2. From the left sidebar, click the `Software` link.

3. Navigate to FOX Extenders.

4. Click the `Download` link to the right of the desired device.

5. Submit any required information to start the download. Note where the file is saved.

6. Open the executable (.exe) file from the save location.

7. Follow the instructions that appear on the screen. By default, the installation creates a folder in the Program Files directory for the FOX Extenders Control Program.

Starting the Software

Start the Extron FOX Extenders Control Program as follows:

1. Open the FOX Extenders Control Program. The Communication Setup window appears.
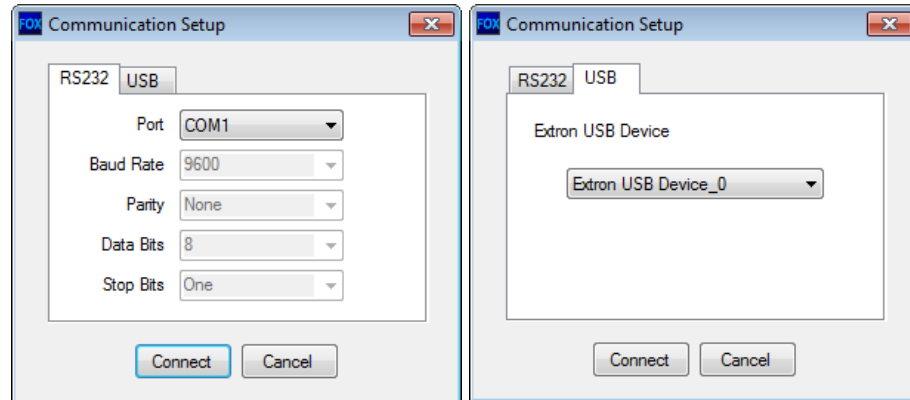
Figure 10. **Communication Setup Window Connection Methods**

2. Select the desired connection method.

   - To connect the software to the device through the rear panel Remote RS-232 connector, click the **RS232** tab and select the desired port from the **Port** drop-down list.

   - To connect the software to the device through the front panel USB connector, click the **USB** tab and select the Extron USB device from the **Extron USB Device** drop-down list.

3. Click the **Connect** button. The FOX Extenders Control Program window appears.

   NOTE: Some controls and displays are available only when connected to specific devices.

Using the Software

For more configuration and control details, see to the *FOX Extenders Control Program Help File* for configuration and control details. Open the file using one of the following methods:

- Once the FOX Extenders Control Program is open, press the <F1> key on the keyboard.

- Once the FOX Extenders Control Program is open, select **Contents** from the **Help** menu.

- From the Windows Start Menu, select **FOX Extenders Help** from the FOX Extenders Control Program folder.

The main screen opens (see figure 12 on page 23).
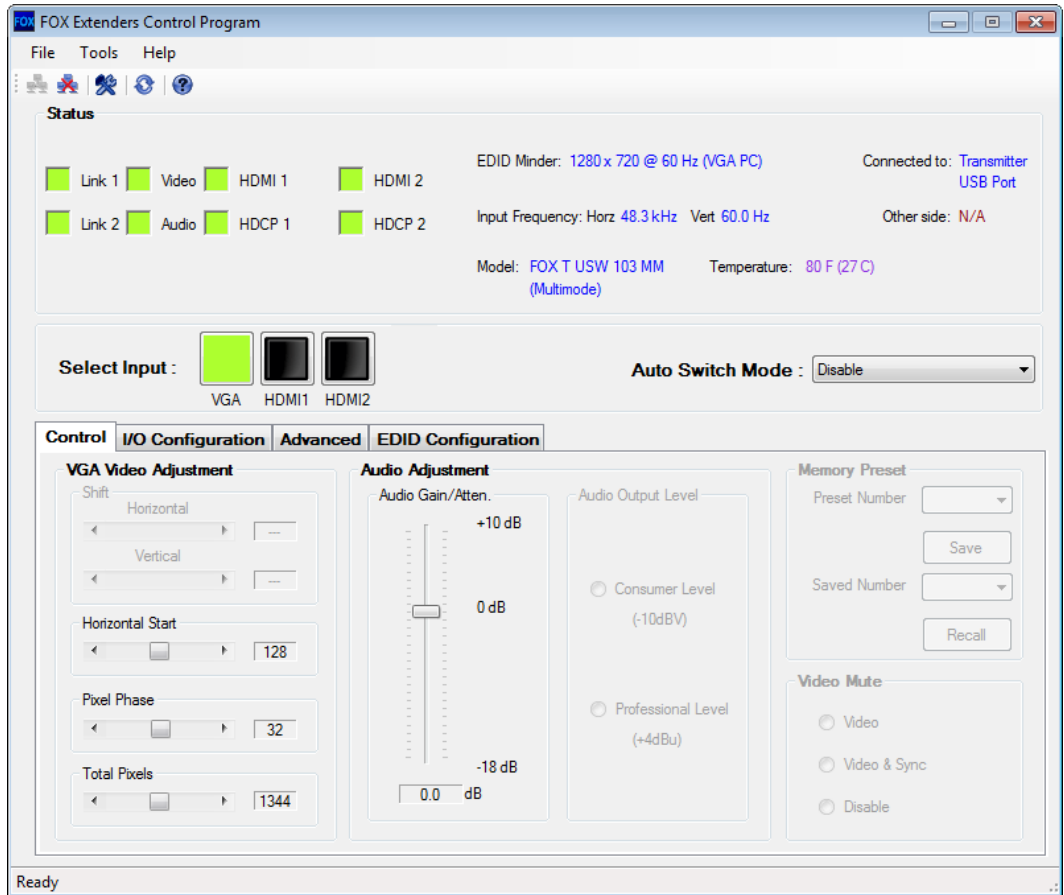
Figure 11.   Main Screen

The main screen consists of a top menu, Status panel, Input Selection panel, and Configuration panel.

Top Menu

The top menu consists of three menus for connection options, device information and configuration, and additional resources.

File menu

The File menu contains options for connecting and disconnecting the device and exiting the FOX Extenders Control Program.
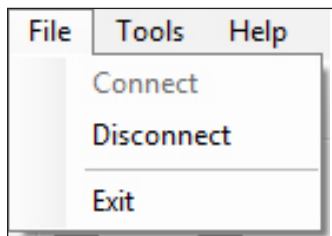
Figure 12.   File Menu

Options that appear gray are not available.

Connect

The Connect option establishes communication with a device. This function re-establishes communication with the device if it times out or enables a connection to a new device. If a device is already connected, the Connect function is disabled until the device is disconnected or the connection times out.

To re-establish the connection if communication is lost:

1. From the **File** menu, select **Connect**. Alternatively, click the ![icon] icon. This displays the Communication Setup dialog box, which is the communication module through which connection to the device is established.

2. Select the communication port from the **Port** drop-down list.

3. Click **Connect**. The Communication Setup dialog box closes and the FOX Extenders Control Program main screen remains open.

Disconnect

The Disconnect option stops communication with the current device, but leaves the FOX Extenders Control Program open. Once disconnected, configuration can no longer be done unless connection is re-established.

To disconnect from the device, select **Disconnect** from the **File** menu or click the ![icon] icon. The status bar at the bottom of the window indicates that the device is disconnected.

Exit

The Exit option closes the FOX Extenders Control Program.

To exit the program, select **Exit** from the **File** menu.

Tools Menu

The Tools menu contains options for displaying device information or configuring the device.
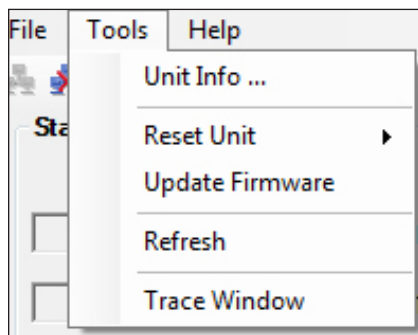
Figure 13. **Tools Menu**

Unit Info

The Unit Info option opens a dialog box with information about the connected device.
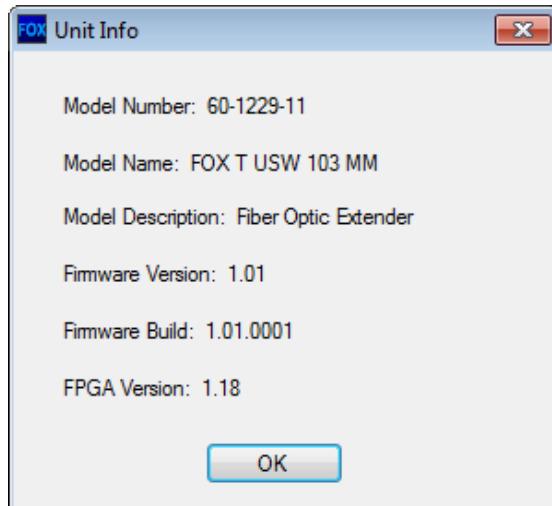
Figure 14. Unit Info Dialog Box

1. From the **Tools** menu, select **Unit Info**. This opens a dialog box displaying information about the connected unit. The displayed information includes:

    *   Model number of the device

    *   Name of the device model

    *   Description of the model

    *   Firmware version currently found on the device

    *   Firmware build

    *   FPGA version

2. Click the **OK** button to close the dialog box and return to the main screen.

Reset Unit

There are three listed reset options:

*   Master System Reset

*   Audio Gain/Atten. Reset

*   Presets Reset

Depending on the chosen reset option, different settings are cleared.
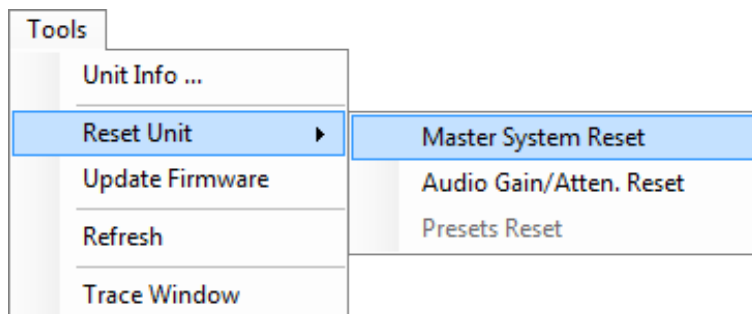
Figure 15. Reset Unit Menu

> **NOTE:** Be careful to select the intended reset option. Selecting the incorrect reset can result in unintended loss of settings.

Master System Reset — Resets all unit settings and user settings to factory defaults.

From the **Tools** menu, locate the Reset submenu and select **Master System Reset**.
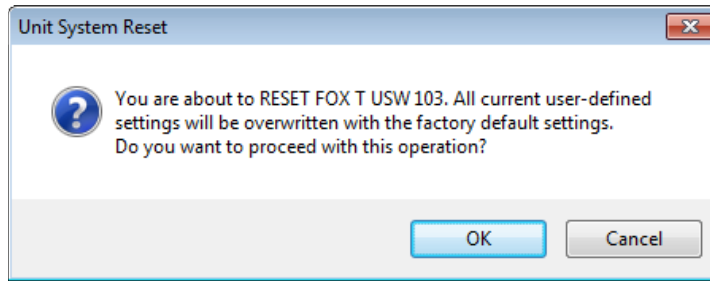
Figure 16. Unit System Dialog Box

Audio Gain/Atten. Reset — Resets the level of audio gain and attenuation to factory defaults.

From the **Tools** menu, locate the Reset submenu and select **Audio Gain/Atten. Reset**.
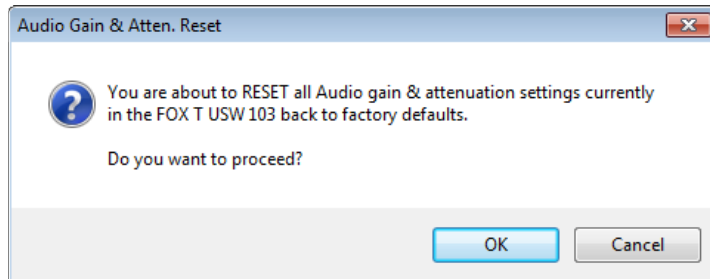
Figure 17. Audio Gain and Attenuation Reset Dialog Box

Presets Reset — Is not available for the FOX T USW 103.

Update Firmware

The Update Firmware option opens the Extron Firmware Loader application. This application is used to upload new firmware to the connected device.

> **NOTE:** In order for the Update Firmware option to work, install the Firmware Loader application (see **Downloading Extron Firmware Loader** on page 38). Otherwise, the Update Firmware option is disabled.

To update firmware:

1. From the **Tools** menu, select **Update Firmware**. Alternatively, click the 🛠 icon. This opens Firmware Loader (if this application is already installed on the connected PC).

2. Find firmware to upload to the desired device by performing one of the following actions:

   • From the **File** menu of Firmware Loader, select **New Firmware for Selected Devices**.

   • In the Devices section of the Firmware Loader main screen, double-click the **New Firmware File** field associated with the selected device.

   The Choose Firmware File dialog box opens.

3. Browse to the device-specific firmware file that has been downloaded on your PC. Valid firmware files have a BIN file extension (see **Downloading Firmware** on page 40).

4. Click the **Open** button. The Choose Firmware File dialog box closes.

5. Click the **Begin** button. This uploads the new firmware onto the connected device. The **Progress** field for the selected device shows the progress of the upload. After the upload is complete, this field is blue and shows 1ØØ%.

6. Exit Firmware Loader.

7. From the **File** menu of the FOX Extenders Control Program, select **Connect** to re-establish communication with the device.

8. Re-enter the connection information in the Connect dialog box to re-establish communication with the device.

See the *Firmware Loader Help File* and supporting documentation for further information about using Firmware Loader.

Refresh

The Refresh option refreshes the main screen of the FOX Extenders Control Program without restarting the application. This is useful if connection to a device is lost (such as if the unit has been unplugged accidentally) or settings change on the device.

From the **Tools** menu, select **Refresh**. Alternatively, click the 🔄 icon.

Trace Window

The Trace Window option displays data sent to and received from the device in a separate window for troubleshooting.
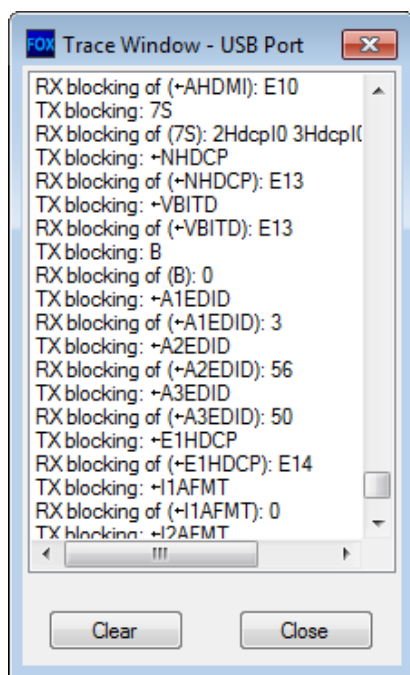
Figure 18. Trace Window Dialog Box

1. From the **Tools** menu, select **Trace Window**. The Trace Window dialog box opens.

2. To clear existing information, click the **Clear** button.

3. Click the **Close** button to close the Trace Window dialog box.

Help Menu

The Help menu contains options for additional information and reference material, checking for updates to the FOX Extenders Control Program, and software information.
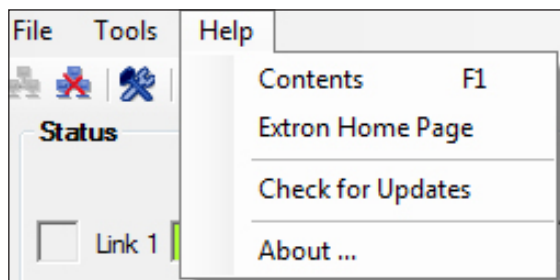
Figure 19. **Help Menu**

Contents

The Contents option launches the FOX Extenders Control Program help file.

Open the help file in one of the following ways:

- From the `Help` menu, select `Contents`.
- Press <F1> on your keyboard.
- Click the 🛈 icon to launch the help file.

Extron Home Page

The Extron Home Page option displays the Extron website. The Extron website contains supporting documentation for Extron products and downloadable firmware and software updates (see **Download Extron Firmware Loader** on page 38).

From the `Help` menu, select `Extron Home Page`. This opens a new Internet browser window to the Extron website.

Check for Updates

The Check for Updates option verifies that the latest version of the FOX Extenders Control Program is being used. If there is a new version available, the option to install it becomes available.

From the `Help` menu, select `Check for Updates`.

About...

This option opens a dialog box displaying information about the FOX Extenders Control Program.

1. From the **Help** menu, select **About**. This opens a dialog box displaying information about the FOX Extenders Control Program. The displayed information includes:

   • Name of the application

   • Currently installed software version

   • Software part number

   • Copyright

   • Application description
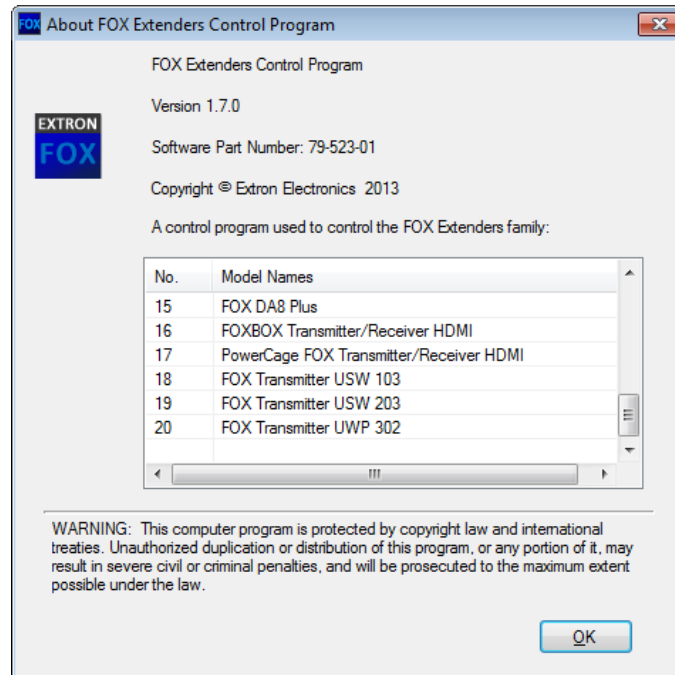
Figure 20.   About FOX Extenders Control Program Dialog Box

2. Click the **OK** button to close this dialog box and return to the main screen of the application.

Main Screen

The Main Screen contains status information, input selection, and configuration options.
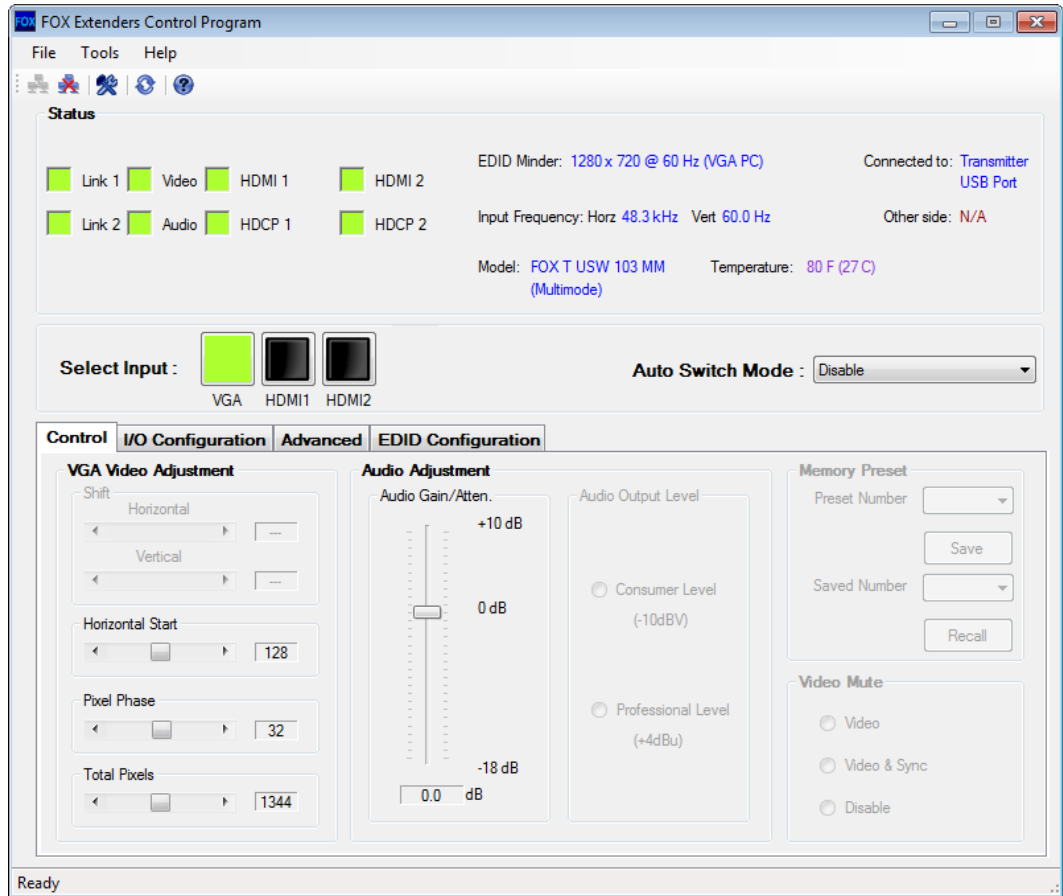
Figure 21. **Main Screen**

> **NOTE:** The main screen may appear different from the image above depending on what is connected. Functions which are not applicable are disabled.

Status panel
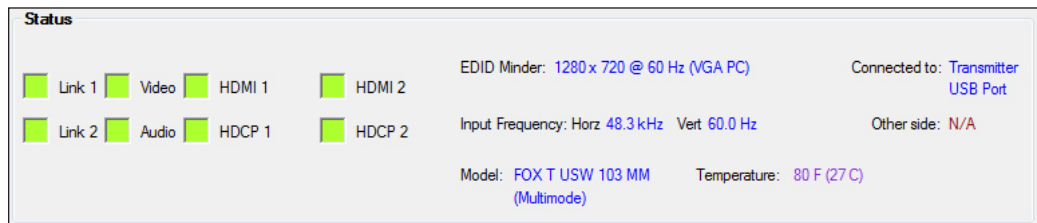
Figure 22. **Status Panel**

The Status panel of the screen provides visual indications of the connection status and the names of the connected units. The following information is displayed:

Link 1 Indicator — Displays green when the receiver detects light on Link 1 (connecting the Tx port of the transmitter to the Rx port of the receiver).

Link 2 Indicator — Displays green when an HDMI transmitter detects light on Link 2 (connecting the Tx port of an HDMI receiver to the Rx port of an HDMI transmitter).

> **NOTE:** For transmission of HDMI video with HDCP content, two fibers are required.

Video Indicator — Displays green when the transmitter detects an active signal on the VGA input.

Audio Indicator — Displays green when the device detects audio with the selected input. If the selected input has an analog audio signal above -44 dBV, the indicator turns green immediately, but turns gray after the audio signal level drops below the threshold continuously for 10 seconds. If the selected input has digital embedded audio, the indicator displays green and remains green as long as the digital audio signal is detected.

HDMI Indicator — Displays green when the unit receives an HDMI input signal.

HDCP Indicator — Displays green if the input signal is HDCP-encrypted.

EDID Minder — Displays the current EDID Minder settings.

Input Frequency — Displays the horizontal and vertical frequencies of the current input. This field indicates No Input Signal if there is no input signal.

Model — Displays the model of the device that is connected via RS-232 or USB.

Connected to — Displays the communication port of the unit that is connected to the PC. This can be either a communication port on the transmitter or a communication port on the receiver.

Other side — Displays `N/A` whenever connected to a FOX T USW 103.

Temperature — Displays the internal temperature of the device.

Input Selection panel

The Input Selection panel is used to select inputs manually or automatically.

Figure 23. Input Selection Panel

Select Input — Select the desired input. The currently selected input is green. The left button represents Input 1 (VGA). The right button represents Input 2 (HDMI).

Auto Switch Mode — Allows the device to auto switch inputs based on the chosen configuration. The options are Disabled, Priority to Highest Active, or Priority to Lowest Active.

> **NOTE:** The Default setting on the FOX T USW 103 is `Disabled`.

Control tab

The Control tab contains picture and audio adjustments. To access these options, click the `Control` tab.
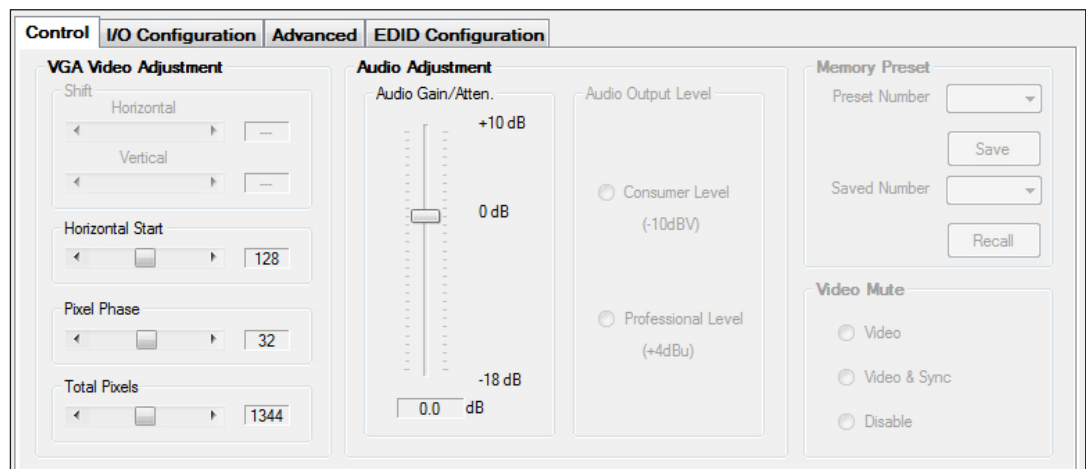
Figure 24. Control Tab

VGA Video Adjustment panel

The VGA Video Adjustment panel of the Control tab adjusts the following video parameters on the analog input: horizontal start, pixel phase, and total pixels.
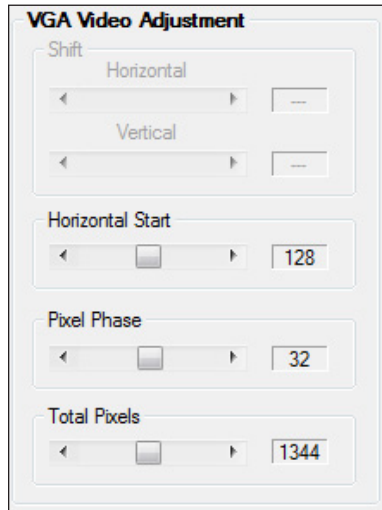

Figure 25. **VGA Video Adjustment Panel**

Horizontal Start — Defines the number of pixels in the blanking area to the left of the active area.

In the Horizontal Start panel of the VGA Video Adjustment panel, click the `Left` or `Right` arrows, or click and drag the slider to adjust the setting to the desired value. The field to the right of a slider shows the current value for the associated setting.

> **NOTE:** The value for Horizontal Start can range between 0 and 255.
> Default setting: **128**.

Pixel Phase — Controls the pixel phase. Sampling at the optimum pixel phase results in a bright, stable output.

In the Pixel Phase panel of the VGA Video Adjustment panel, click the `Left` or `Right` arrows, or click and drag the slider to adjust the setting to the desired value. The field to the right of a slider shows the current value for the associated setting.

> **NOTE:** The value for Pixel Phase can range between 0 and 63. Default setting: **32**.

The Total Pixels setting (see below) must be correctly set before adjusting Pixel Phase.

Total Pixels — Controls the total number of pixels in an active window.

In the Shift panel of the VGA Video Adjustment panel, click the `Left` or `Right` arrows, or click and drag the slider to adjust the setting to the desired value. The field to the right of a slider shows the current value for the associated setting.

> **NOTE:** The Total Pixels setting depends on the input rate. It is ±255 of the default value.

Audio Adjustment panel

The Audio Adjustment panel of the Control tab allows adjusts the gain and attenuation of analog input audio.
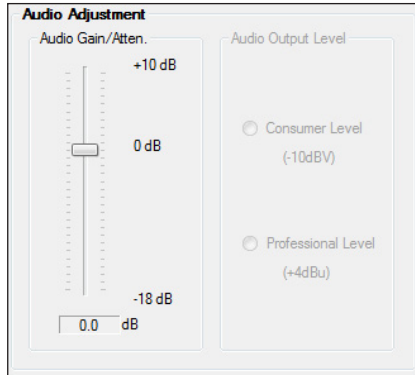
Audio Gain and Attenuation — Adjusts the analog input audio gain or attenuation value. This ranges from -18.0 dB to +10.0 dB in 1.0 dB increments.

In the Audio Gain/Atten. panel, click and drag the slider to the desired level. The current value is displayed in a field below the slider control.

Audio Output Level — Is not available for the FOX T USW 103.

I/O Configuration Tab

The I/O Configuration tab contains options for input and output settings. To access these options, click the `I/O Configuration` tab.
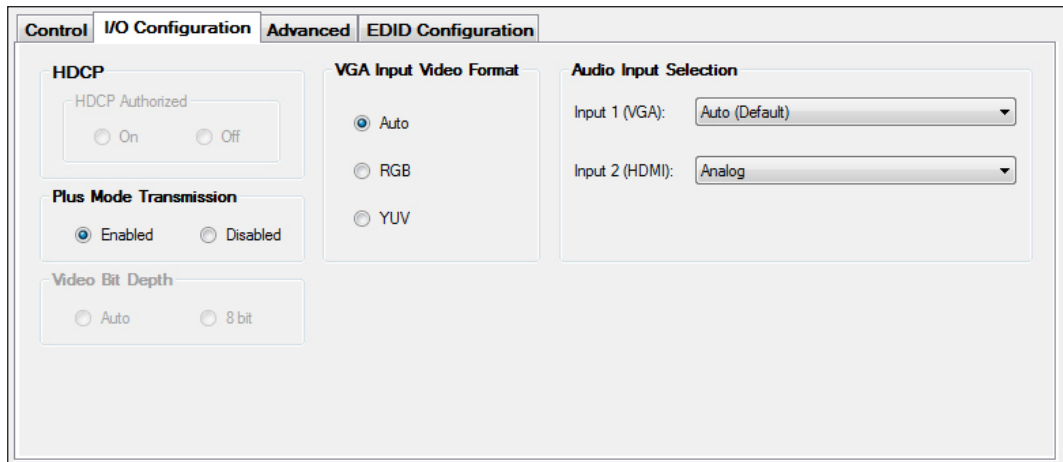
Figure 26.   I/O Configuration Tab

HDCP panel

The HDCP Authorized setting allows a user to turn off HDCP communication on discrete inputs. This setting is useful for devices such as Mac computers, iPhones, iPads, and some Windows 7 sources that will always encrypt their output if the downstream sink is capable of HDCP. By not allowing HDCP signals on an input, most content from these sources can be passed as a non-encrypted signal to analog and digital video outputs. In a video system that has requirements to not transmit HDCP encrypted data (such as non-HDMI FOX Extenders), HDCP Authorized should be turned off at the input to keep the non-HDMI FOX Extender's output unencrypted.

In the HDCP panel, select the `On` radio button to enable the HDCP Authorized setting or select `Off` to disable the HDCP Authorized setting.

NOTE: Default setting: HDCP Authorized is `On`.

Plus Mode Transmission panel

Plus mode can support rates up to 1920x1200 @ 60Hz, with embedded audio, and is HDCP compliant. Non-Plus mode supports rates up to 1600x1200 and 1080p, is HDCP compliant, and does not contain embedded audio (analog audio is still supported).

In the Plus Mode Transmission panel, click the **Enabled** radio button to enable Plus mode. To disable Plus mode, click the **Disabled** radio button.

> **NOTE:** Default setting: Plus Mode is **Enabled**.

VGA Input Video Format panel
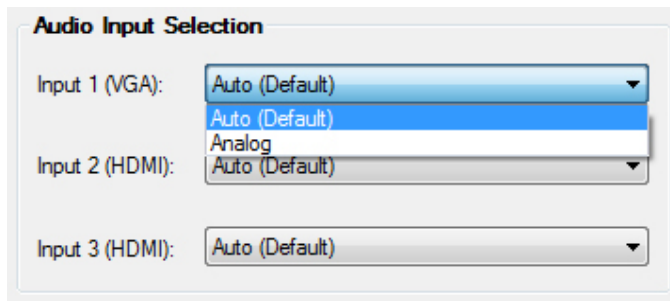
This setting selects RGB or YUV Input Video Format for the VGA input.

> **NOTE:** Default setting: VGA Input Video Format is **Auto**.

Audio Input Selection panel

This panel sets the audio type for the VGA and HDMI inputs, or set them to **Auto** for automatic selection.

For each input, select the desired audio input type from the **Input** drop-down list.

Figure 27. **Audio Input 1 Options**

> **NOTE:** Default setting: Audio Input Selection is **Auto** for all inputs.

Advanced Tab

Figure 28. **Advanced Tab**

Advanced Configuration panel

Executive mode restricts access to the front panel button functions.
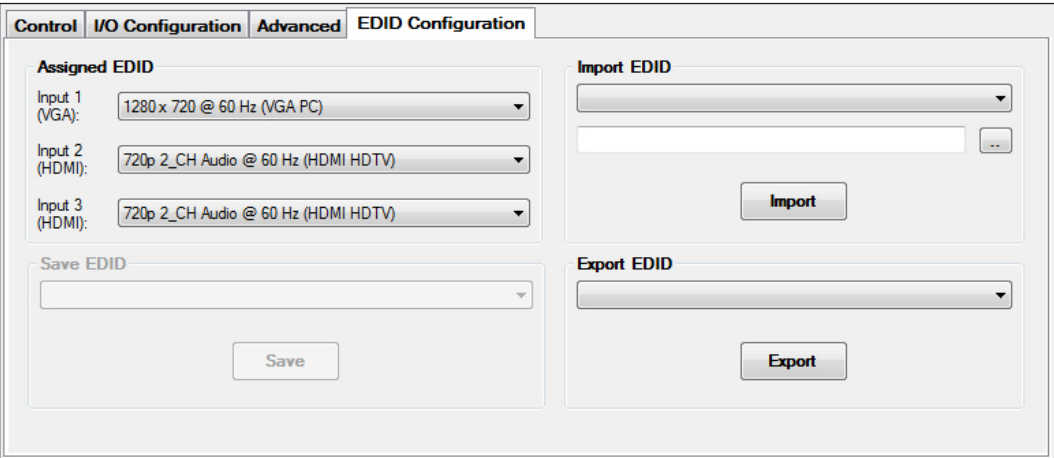
To enable or disable executive mode, click either the **On** or **Off** radio button in the Executive Mode panel.

> **NOTE:** Turning on Executive Mode will not disable the ability to control the device with the FOX Extenders Control Program.

EDID Configuration Tab

EDID is a data structure used to communicate video display information, including native resolution and vertical refresh rate requirements, to a source device. The source device then outputs the optimal video format for the display based on the provided EDID data, ensuring proper video image quality.

To access EDID options, click the **EDID Configuration** tab.
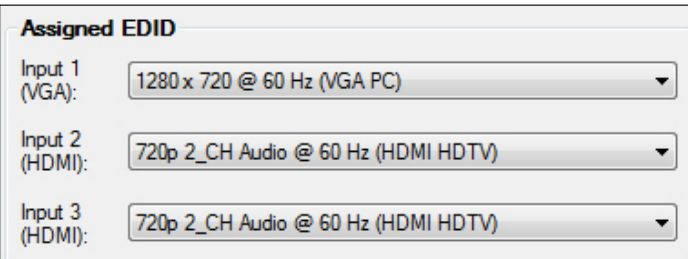
Figure 29.   EDID Configuration Tab

Assigned EDID panel

This shows the current EDID configuration for each input. You can assign unique EDID for any input.

Figure 30.   Assigned EDID Panel

Choose the desired EDID from the drop-down list of the desired input.

> **NOTE:** The default EDID is 720p for HDMI inputs and 1280x720 for VGA input.

Save EDID panel

> **NOTE:** This setting is not available for the FOX T USW 103.

Import EDID panel

EDID files can be imported to the FOX T USW 103 and saved in a table on the device.

> **NOTE:** When an EDID file is imported to a user assigned input location, the EDID is automatically assigned to the selected user input.
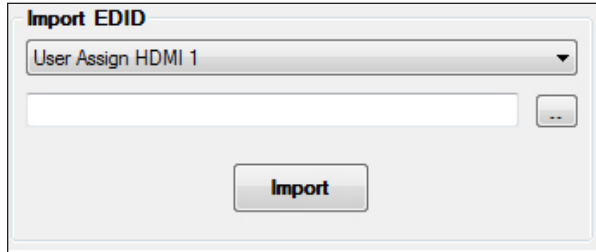

Figure 31. Import EDID Panel

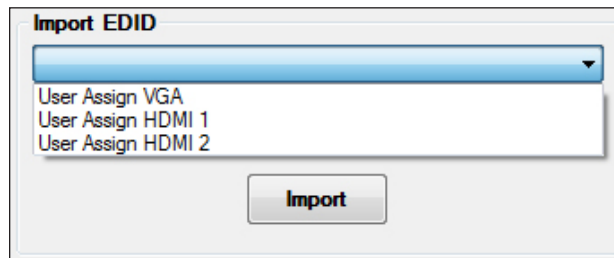1. In the Import EDID panel, from the drop-down list, select the desired input.

Figure 32. Import EDID Options

2. Click on the **Browse** button to locate and select the desired EDID file on the connected PC. The Open dialog box opens.
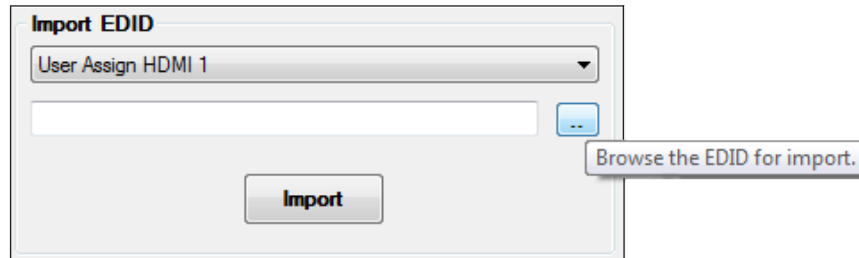

Figure 33. Browse Button for Importing EDID

3. Select the EDID file and click the **Open** button. The Open dialog box closes.

4. Click the **Import** button. The EDID is imported and assigned to the selected input.

Export EDID panel

EDID files on the FOX T USW 103 can be exported to the connected PC. To open and view them, use the Extron EDID Manager software, available at **www.extron.com**.

The EDID Manager software aids in troubleshooting any EDID related issues that may occur during configuration or operation of an AV system.
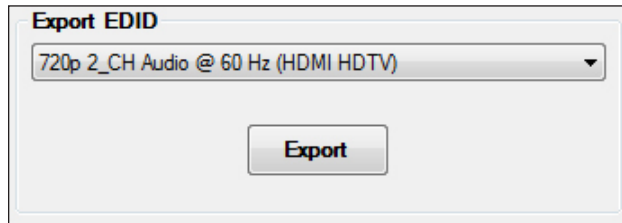
Figure 34.   **Export EDID Panel**

1. In the Export EDID panel, select the desired EDID to export from the drop-down list.

2. Click the `Export` button. The Save As dialog box opens.

3. Select the export destination and file name for the EDID.

4. Click the `Save` button. The EDID setting is exported.

Reference Information

This section provides mounting and firmware updating information. Topics in this section include:

- **Mounting**
- **Updating Firmware**

Mounting

The FOX T USW 103 can be placed on a tabletop or mounted in a rack or underneath a desk.

Tabletop Use

Attach the provided rubber feet to the bottom four corners of the enclosure.

Mounting Kits

Mount the unit using any optional compatible mounting kit listed on the Extron website (**www.extron.com**), in accordance with the directions included with the kit. For rack-mounting, see **UL guidelines for rack-mounted devices** below.

UL guidelines for rack-mounted devices

The following Underwriters Laboratories (UL) guidelines pertain to the safe installation of the FOX T USW 103 in a rack.

1. **Elevated operating ambient temperature** — If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, install the FOX T USW 103 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 no compromised.

3. **Mechanical loading** — Mount the equipment in the rack so that a hazardous condition is not achieved due to uneven mechanical loading.

4. **Circuit overloading** — Connect the equipment to the supply circuit and consider the effect that circuit overloading might have an overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used 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 (e.g. use of power strips).

Updating Firmware

To update firmware for the FOX T USW 103, download the new firmware to a connected computer and upload the firmware with the Firmware Loader utility or the FOX Extenders Control Program (see to the *FOX Extenders Control Program Help File*).
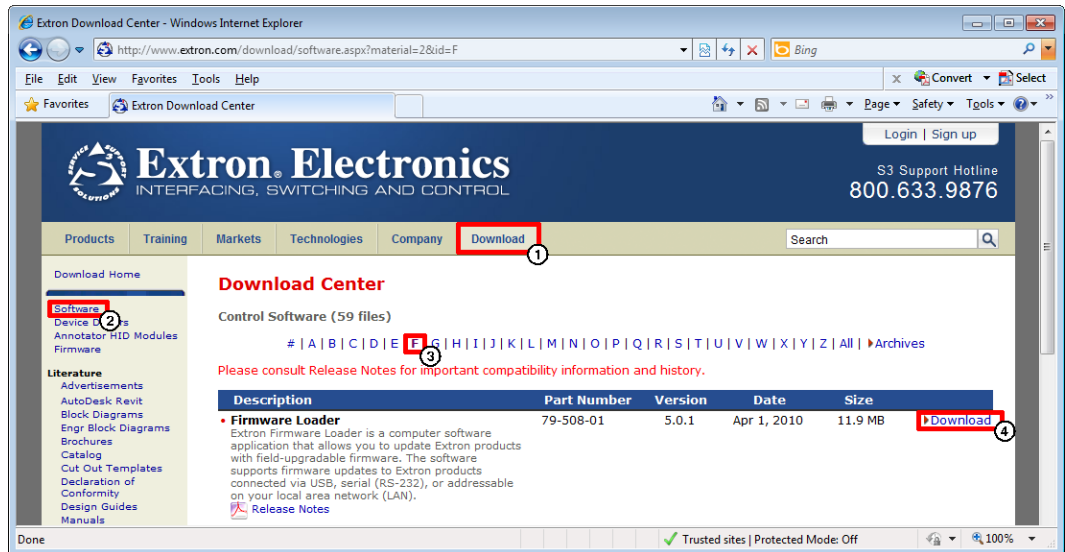
Downloading Extron Firmware Loader

Figure 35.   Firmware Loader on the Extron Website

1.   On the Extron website, **www.extron.com**, click the `Download` tab.

2.   From the left sidebar, click the `Software` link.

3.   Navigate to Firmware Loader.

4.   Click the `Download` link on the right that corresponds with the program.

5.   Submit any required information to start the download.

Installing Firmware Loader

1.   Once Firmware Loader has been downloaded, run the .exe file from the save location. The installation wizard window opens.

2.   Click `Next` to continue through the process, filling out necessary information and specifying custom settings on each prompt.
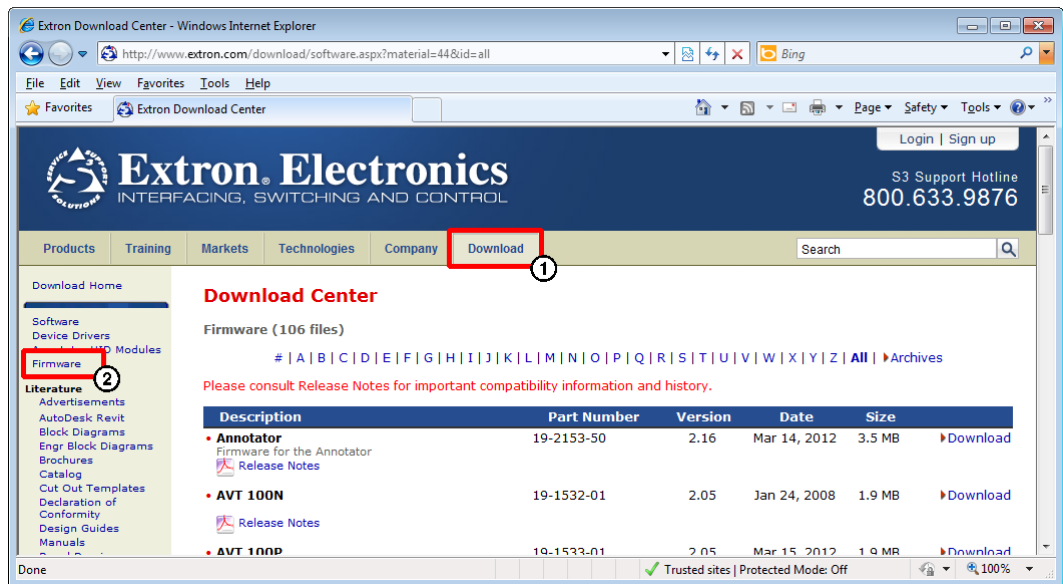
Downloading Firmware

Figure 36. Downloading Firmware from the Extron Website

1. On the Extron website, **www.extron.com**, click the `Download` tab.

2. From the left sidebar, click the `Firmware` link.

3. Navigate to FOX T USW 103.

4. Ensure the available firmware version is a later version than the current one on the device.

   NOTE: The firmware release notes are in a PDF file that provides details about the changes between different firmware versions. The file can be downloaded from the same page as the firmware on the Extron website, **www.extron.com**.

5. Click the `Download` link to the right of the desired device.

6. Submit any required information to start the download. Note where the file is saved.

7. Open the executable (.exe) file.

8. Follow the instructions on the Installation Wizard screens to install the new firmware on the computer. A Release Notes file, giving information on what has changed in the new firmware version, and a set of instructions for updating the firmware are also loaded.

Installing Firmware with Firmware Loader

1. Open Firmware Loader to establish a connection between the computer and the device. The Add Device... dialog box opens.
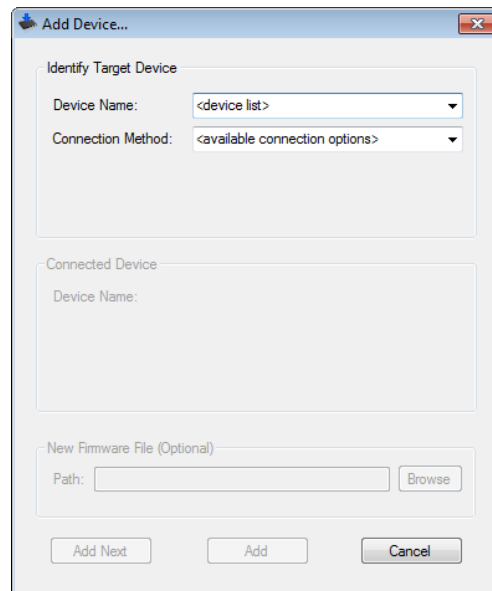
2. Select FOX T USW 103 from the `Device Name` drop-down list.

3. Select the method of connection from the `Connection Method` drop-down list.

4. Depending on the connection method, additional options appear. Make the appropriate selections for the current connection method.

5. Click `Connect`.

6. Click `Browse` in the New File Firmware (Optional) section.

7. On the Open window, navigate to the new firmware file, which has an .S19 extension, and click `Open`.

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

8. Click `Add`. The Add Device... window closes and the device and firmware are listed in the Firmware Loader main window.

9. Click `Begin` to start the upload process.

10. Close Firmware Loader when the `Remaining Time` field shows `00.00.00`, the `Progress` column shows `100%`, and the `Status` field shows `completed` (see **Factory Reset SIS commands** on page 19 for reset information).

Extron Warranty

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

USA, Canada, South America,
and Central America:
Extron Electronics
1230 South Lewis Street
Anaheim, CA 92805
U.S.A.

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

Europe and Africa:
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Hanzeboulevard 10
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The Netherlands

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686 Ronghua Road
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Singapore 368363
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Middle East:
Extron Middle East
Dubai Airport Free Zone
F12, PO Box 293666
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This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions, or if modifications were made to the product that were not authorized by Extron.

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

USA: 714.491.1500 or 800.633.9876	**Europe**:	31.33.453.4040
Asia: 65.6383.4400	**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
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