Fiber Optic Extenders

FOX II T DP 4K
FOX II R DP 4K
Fiber Optic Transmitter and Receiver for DisplayPort

Extron Electronics
INTERFACING, SWITCHING AND CONTROL

# Safety Instructions

Safety Instructions • English

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

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

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.**

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.com**.

Instrucciones de seguridad • Español

ADVERTENCIA: Este símbolo, ⚠, cuando se utiliza en el producto, avisa al usuario de la presencia de voltaje peligroso sin aislar dentro del producto, lo que puede representar un riesgo de descarga eléctrica.

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.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.com**.

Istruzioni di sicurezza • Italiano

AVVERTENZA: Il simbolo, ⚠, se usato sul prodotto, serve ad avvertire l'utente della presenza di tensione non isolata pericolosa all'interno del contenitore del prodotto che può costituire un rischio di scosse elettriche.

ATTENTZIONE: Il simbolo, ⚠, se usato sul prodotto, serve ad avvertire l'utente della presenza di importanti istruzioni di funzionamento e manutenzione nella documentazione fornita con l'apparecchio.

Per informazioni su parametri di sicurezza, conformità alle normative, compatibilità EMI/EMF, accessibilità e argomenti simili, fare riferimento alla Guida alla conformità normativa e di sicurezza di Extron, cod. articolo 68-290-01, sul sito web di Extron, **www.extron.com**.

Instrukcje bezpieczeństwa • Polska

OSTRZEŻENIE: Ten symbol, ⚠, gdy używany na produkt, ma na celu poinformować użytkownika o obecności izolowanego i niebezpiecznego napięcia wewnątrz obudowy produktu, który może stanowić zagrożenie porażenia prądem elektrycznym.

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

Informacji na temat wytycznych w sprawie bezpieczeństwa, regulacji wzajemnej zgodności, zgodność EMI/EMF, dostępności i Tematy pokrewne, zobacz Extron bezpieczeństwa i regulacyjnego zgodności przewodnik, część numer 68-290-01, na stronie internetowej Extron, **www.extron.com**.

Инструкция по технике безопасности • Русский

ПРЕДУПРЕЖДЕНИЕ: Данный символ, ⚠, если указан на продукте, предупреждает пользователя о наличии неизолированного опасного напряжения внутри корпуса продукта, которое может привести к поражению электрическим током.

ВНИМАНИЕ: Данный символ, ⚠, если указан на продукте, предупреждает пользователя о наличии важных инструкций по эксплуатации и обслуживанию в руководстве, прилагаемом к данному оборудованию.

Для получения информации о правилах техники безопасности, соблюдении нормативных требований, электромагнитной совместимости (ЭМП/ЭДС), возможности доступа и других вопросах см. руководство по безопасности и соблюдению нормативных требований Extron на сайте Extron: , **www.extron.com**, номер по каталогу - 68-290-01.

安全说明 • 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.com**，参见 Extron 安全规范指南，产品编号 68-290-01。

安全記事・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，設備隨附的用戶手冊中有重要的操作和維護（維修）說明。

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.com**，然後參閱《Extron 安全性與法規遵守手冊》，準則編號 68-290-01。

安全上のご注意・日本語

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.com** より『Extron Safety and Regulatory Compliance Guide』(P/N 68-290-01) をご覧ください。

안전 지침 · 한국어

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.com**)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. This interference must be corrected at the expense of the user.

Class 1 Laser Product

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

CAUTION: Using controls, making adjustments, or performing procedures in a manner other than what is specified herein may result in hazardous radiation exposure.

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.

Produit laser de classe 1

Si ce produit a besoin d'un quelconque entretient, celui-ci doit être fait par Extron Electronics et son personnel qualifié.

ATTENTION : L'utilisation de commandes, la réalisation de réglages, ou l'exécution de procédures de manière contraire aux dispositions établies dans le présent document, présente un risque d'exposition dangereuse aux radiations.

Remarque : Pour plus d'informations sur les directives de sécurité, les conformités de régulation, la compatibilité EMI/EMF, l'accessibilité, et les sujets en lien, consultez le « **Informations de sécurité et de conformité Extron** » sur le site internet d'Extron.

Conventions Used in this Guide

Notifications

The following notifications are used in this guide:

WARNING: Potential risk of severe injury or death.

AVERTISSEMENT : Risque potentiel de blessure grave ou de mort.

CAUTION: Risk of minor personal injury.

ATTENTION : Risque de blessure mineure.

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

NOTE: A note draws attention to important information.

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

Software Commands

Commands are written in the fonts shown here:

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

`[Ø1] R ØØØ4 ØØ3ØØ ØØ4ØØ ØØ8ØØ ØØ6ØØ [Ø2] 35 [17] [Ø3]`

`Esc X1` * `X12` * `X X18` * `X18` * `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 "O" is the capital letter "o."

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

`Reply from 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 specifications are available on the Extron website, **www.extron.com**.

Extron Glossary of Terms

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

Contents

Introduction

> **WARNING:** The FOX II T/R DP 4K outputs continuous invisible light (Class 1 rated), which may be harmful to the eyes; use with caution.
>
> **AVERTISSEMENT :** Le FOX II T/R DP 4K émet une lumière invisible en continu (conforme à la classe 1) qui peut être dangereux pour les yeux, à utiliser avec précaution.
>
> - Do not look into the rear panel fiber optic cable connectors or into the fiber optic cables themselves.
> - Ne regardez pas dans les connecteurs de câble fibre optique sur le panneau arrière ou dans les câbles fibre optique eux-mêmes.
>
> - Plug the attached dust cap into the optical transceiver when the fiber optic cable is unplugged.
> - Branchez la protection contre la poussière dans l'ensemble émetteur/récepteur lorsque le câble fibre optique est débranché.

- **About this Guide**
- **About the FOX II T/R DP 4K Transmitter and Receiver**
- **Features**

About this Guide

This guide contains information about the ultra-high performance Extron FOX II T/R DP 4K transmitter and receiver, a fiber optic extender (see figure 1).

Extron
FOX Ⅱ T DP 4K
Fiber Optic Transmitter

Extron
IPCP Pro 250
IP Link Pro
Control Processor

Ethernet

TCP/IP Network

Ethernet

RS-232

Audio

4K DisplayPort

4K DisplayPort

Local
Monitor

PC

Extron
TLP Pro 720T
7" Table Top
TouchLink Pro
Touchpanel

Up to 30 km (18.75 miles)
Singlemode Fiber
SM Model

Extron
XPA 1002
Power
Amplifier

Extron
FOX Ⅱ R DP 4k
Fiber Optic Receiver

Audio

RS-232

4K DisplayPort

Extron
SI 28
Surface-mount
Speakers

4K Display

Figure 1.   **Typical FOX II T/R DP 4K Transmitter and Receiver Application**

About the FOX II T/R DP 4K Transmitter and Receiver

The FOX II T/R DP 4K Transmitter and Receiver are an ultra-high performance fiber optic extender set for long haul transmission of HDCP-compliant DisplayPort video, audio, and RS-232 and IR control signals over fiber optic cabling. The transmitter and receiver can extend DisplayPort signals up to 30 km (18.75 miles) for the singlemode model (see **Fiber Cable Transmission Modes** on the next page).

Transmitter

The FOX II T DP 4K transmitter accepts DisplayPort video, at a resolution of up to 4K (4096x2160 at 30 Hz). The video input can also include embedded audio. The transmitter also loops the DisplayPort input through for a local monitor.

The transmitter can accept an analog audio input on either a 3.5 mm mini jack or a 5-pole captive screw connector. The transmitter automatically detects whether embedded audio is present on the DisplayPort input. If none is detected, the transmitter selects the analog audio for the unit to embed in the digital video stream and transmit to the receiver. An SIS command selects either audio.

The transmitter accepts a one-way (transmitter-to-receiver) RS-232 and IR communication signal input (for applications such as projector control). The transmitter can receive an optional return (receiver-to-transmitter) stream of serial RS-232 and IR communications from a controlled device, such as projector responses.

The transmitter converts the DisplayPort video, the selected audio, and the RS-232 serial communication into a proprietary data stream and outputs it as an optical signal via fiber optic small form factor pluggable (SFP) modules on a single LC connector to a compatible, Extron FOX II fiber optic receiver. It also can receive an audio return channel.

The transmitter has a built-in color bars test pattern to assist in setting up the display equipment.

Receiver

The FOX II R DP 4K receiver accepts a proprietary optical signal on a single LC connector from a compatible fiber optic transmitter. The receiver is compatible with all existing Extron FOX II, FOX, FOXBOX, and PowerCage FOX VGA, DVI, and HDMI transmitters.

The receiver outputs DisplayPort video, digital audio (embedded in the DisplayPort output), analog audio, and RS-232 and IR commands and data.

If the receiver is appropriately configured and has a second fiber optic cable installed, it also can receive RS-232 and IR returns from controlled devices and send them to the transmitter via a proprietary optical signal.

The video output of the receiver is a lossless DisplayPort image up to 4K (4096x2160 at 30 Hz), including 1080p/60 with Deep Color.

Both Units

The transmitter and receiver have many controls, including audio adjustments, that are available under RS-232 and USB port SIS control. Both units have video, audio, fiber light status, and lost-light alarm indicators.

System Compatibility

The FOX II DP 4K transmitter is compatible with all Extron FOX II receivers **only**.

The FOX II DP 4K receiver is compatible with all FOX II transmitters **and** with existing FOX 500, FOXBOX, and PowerCage FOX DVI, VGA and HDMI transmitters.

> **NOTE:** The FOX II 4K receiver is **not** compatible with the FOX AV, PowerCage FOX AV, FOX 3G HD-SDI, PowerCage FOX 3G HD-SDI, and FOX 3G DVC models.

Fiber Cable Transmission Modes

The transmitter and receiver are further categorized by the type of fiber optic cable, multimode or singlemode, which define the effective range of transmission:

Multimode — Long distance, up to 2 km (6,560 feet) (depending on the fiber cable)

- FOX II T DP 4K MM
- FOX II R DP 4K MM

Singlemode — Very long distance, up to 30 km (18.75 miles)

- FOX II T DP 4K SM
- FOX II R DP 4K SM

> **NOTE:** The multimode and singlemode units are physically and functionally identical, with the exception of the effective range of transmission. In this guide, any reference applies to either transmission mode unless otherwise specified.

Features

- **Ultra high performance** — Offers lossless DisplayPort video transmission, up to 4K (4096x2160 at 30 Hz).
- **Video input** — The transmitter accepts an input from a DisplayPort source.
- **Video output on receiver** — The receiver outputs digital video on a DisplayPort connector.
- **Loop-through on transmitter** — The transmitter has a digital video loop-through on a DisplayPort connector that allows connection of a local monitor.

> **NOTE:** The receiver output and the transmitter loop-through both support dual mode DisplayPort signals.

- **HDCP Compliant**
- **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.
- **Extron fiber optic product compatibility** — Enables ultra-long distance analog RGB-to-digital conversion, when the FOX II receiver is connected to an Extron analog fiber optic transmitter, without the need for extra signal conversion devices.
- **Compatibility with FOX matrix switchers**

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

- **Two analog audio inputs** — The transmitter accepts an unbalanced stereo or mono audio input on a 3.5 mm mini jack and a balanced or unbalanced stereo or mono audio on a 5-pole captive screw connector.

- **Automatic audio detection and switching** — The transmitter can automatically detect digital audio embedded in the DisplayPort input and select it for transmission. If the transmitter does not detect embedded audio, it switches to the analog audio input. Or, you can manually select either audio input with an SIS command.

- **Analog audio input gain and attenuation** — The level of the analog audio input can be adjusted within a range of -18 dB (attenuation) to +24 dB (gain) via the RS-232 serial port or USB port.

- **Audio output** — The receiver outputs either balanced or unbalanced stereo audio on a 5-pole captive screw connector and unbalanced audio on a 3.5 mm mini jack, or digital audio embedded in the DisplayPort output.

- **DisplayPort audio de-embedding with analog stereo outputs**

- **Audio muting capability**

- **Audio return channel** — The transmitter and receiver pair supports analog audio return from the receiver to the transmitter, such as for return of a microphone input back to the transmitter.

- **Bidirectional RS-232 and IR signals over fiber optic cabling for AV device control**

- **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.

- **Loss-of-light alarms** — The transmitters and receivers have discrete outputs that indicate if either of the fiber optic links have suffered a loss of the light signal.

- **Alarm notification for fiber link loss** — The units 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 for the transmitter.

- **Product Configuration Software** — For remote control from a PC, the Extron Product Configuration Software, which runs under Microsoft® Windows®, provides a graphical interface and drag-and-drop/point-and-click operation.

- **Simple Instruction Set** — The transmitter and receiver use the SIS for easy remote control operation.

- **Upgradable firmware** — The firmware that controls the operation of each unit can be upgraded in the field via the USB Configuration port without taking the unit out of service. Firmware upgrades are available for download on the Extron website and they can be installed using the Product Configuration Software.

- **Rack mounting** — Both FOX II units are rack mountable in any conventional 19-inch wide rack, using an Extron 9.5-inch deep rack shelf.

- **Power** — The 100 VAC to 240 VAC, 50-60 Hz internal power supplies provide worldwide power compatibility and low power consumption.

Installation and Operation

This section details the installation of the FOX II T/R DP 4K transmitter and receiver system, including:

- **Installation Overview**
- **Connections**
- **Indications and Operation**

Installation Overview

Follow these steps to install and set up an Extron FOX II T/R DP 4K transmitter and receiver system for operation:

☐ Turn off all of the equipment. Ensure that the video sources and the output display are all turned off and disconnected from the power source.

☐ Mount the transmitter and receiver (see **Mounting the Units** on page 40).

☐ Connect the cables and configure the units (see "Connections," below).

☐ Plug in the power supplies, then turn on the display and the input.

Connections

Rear panels

Transmitter connections
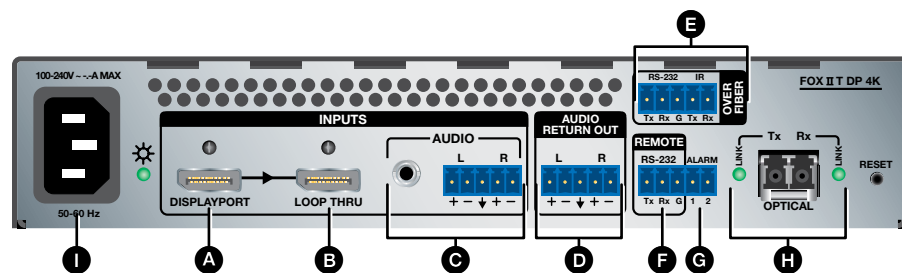
Figure 2.   FOX II T DP 4K Transmitter Rear Panel Connectors

Ⓐ **DisplayPort input port** (see page 7)
Ⓑ **Loop-Thru port** (see page 7)
Ⓒ **Analog Audio input ports** (see page 7)
Ⓓ **Audio Return Out port** (see page 7)
Ⓔ **Over Fiber port** (see page 7)

Ⓕ **Remote RS-232 port** (see page 7)
Ⓖ **Alarm port** (see page 7)
Ⓗ **Optical port and LEDs** (see page 8)
Ⓘ **Power connector** (see page 8)

Ⓐ **DisplayPort input port** (see figure 2 on the previous page) — Connect a digital video input to this DisplayPort connector. The transmitter also accepts embedded digital audio on this connector.

Ⓑ **Loop-through port** — If desired, connect a local monitor to this DisplayPort connector.

Ⓒ **Analog audio input ports** — These connectors accept the analog, unamplified, line level audio input that can be transmitted to the receiver (see **Audio connections** on page 12 to wire these connectors).
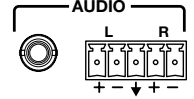
TRS connector — Plug an unbalanced audio input into this stereo tip-ring-sleeve (TRS) connector.

Captive screw input connector — Connect a balanced or unbalanced audio input to this 3.5 mm, 5-pole captive screw connector.

> **NOTE:** If both the TRS and captive screw audio connector are connected, the TRS takes priority.

Ⓓ **Audio Return Out port** — Connect an audio device, such as an amplifier or powered speakers to this 5-pole, 3.5 mm captive screw connector. This connector outputs returned, unamplified, line level audio from the receiver (see **Audio connections** on page 12 to wire these connectors).
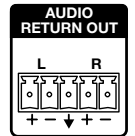
Ⓔ **Over Fiber RS-232 and IR port** — Connect a serial RS-232 signal, a modulated or unmodulated IR signal, or both to this 3.5 mm, 5-pole captive screw connector for bidirectional RS-232 and IR communication. See **RS-232 and IR connections** on page 11 to wire the connector.
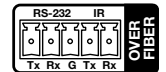
> **NOTES:**
> - If you connect only one fiber optic cable (see **item** Ⓗ on the next page), you will not receive RS-232 or IR reports from the controlled device. To receive responses from the controlled device, you must install two fiber optic cables.
> - The FOX II T/R DP 4K can pass RS-232 commands and responses at rates up to 115200 baud.
> - RS-232 and IR can be active simultaneously.

Ⓕ **Remote RS-232 port** — For serial control of the transmitter, connect a host device, such as a computer or touch panel control, via the three leftmost poles (Tx, Rx, and G) of this 5-pole captive screw connector (see **RS-232 and IR connections** on page 11 to wire this connector). See **Remote Control** on page 17 for SIS commands.
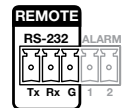
Ⓖ **Alarm port** — For remote monitoring of the status of the Rx fiber optic link (the optional fiber cable), connect an external control system or a locally-constructed or furnished monitoring device to the transmitter via the two rightmost poles (1 and 2) of this 5-pole captive screw connector. When the transmitter does not detect a light link on fiber cable Rx (optional), pin 1 and pin 2 of this port are shorted together (see **Alarm connection** on page 13 to wire this connector).
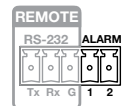
H **Fiber optic ports and LEDs** (see figure 2 on page 6) —

WARNING: The FOX II R DP 4K outputs continuous invisible light (Class 1 rated), which may be harmful to the eyes; use with caution. Plug the attached dust cap into the optical transceiver when the fiber optic cable is unplugged.

AVERTISSEMENT : Le FOX II R DP 4K émet une lumière invisible en continu (conforme à la classe 1) qui peut être dangereux pour les yeux, à utiliser avec précaution Branchez la protection contre la poussière dans l'ensemble émetteur/récepteur lorsque le câble fibre optique est débranché.

NOTES:

- Ensure that you use the proper fiber cable for your transmitter and receiver pair. Typically, singlemode fiber has a yellow jacket and multimode cable has an orange or aqua jacket.

- Only one fiber optic cable, transmitter-Tx-to-receiver-Rx, is required for video, audio, and RS-232 and IR signal transmission. **But**, if you connect only one fiber optic cable:

    - The digital video signal output by the receiver **is not** HDCP-compliant.

    - You **will not** receive RS-232 reports or return audio from the controlled device.

    - To receive responses from the controlled device and for HDCP compliance, you must install both fiber optic cables.

---

❶ **Tx (required)** — For all one-way video, audio, and serial communications from the transmitter to the receiver, connect a fiber optic cable to the Tx LC connector.

Connect the opposite end of this fiber optic cable to the Rx LC connector on the FOX II DisplayPort receiver (see **figure 3, ❿** on the next page) or to any other compatible Extron FOX II device.

❷ **Rx (optional)** — For one-way return audio and serial communications from the receiver to the transmitter, connect a fiber optic cable to the Rx LC connector.

Connect the opposite end of this fiber optic cable to the Tx LC connector on a FOX II R DP 4K receiver (see **figure 3, ❿** on the next page) or to any other compatible Extron FOX II device.

Tx Link and Rx Link LEDs — When lit, the link is active (light is sensed).

I **Power input** — Plug a standard IEC power cord into this connector to connect the unit to a 100 VAC to 240 VAC, 50-60 Hz power source. The lit LED indicates power is applied.
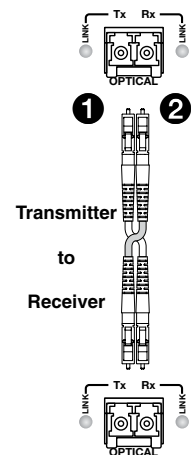
Receiver connections
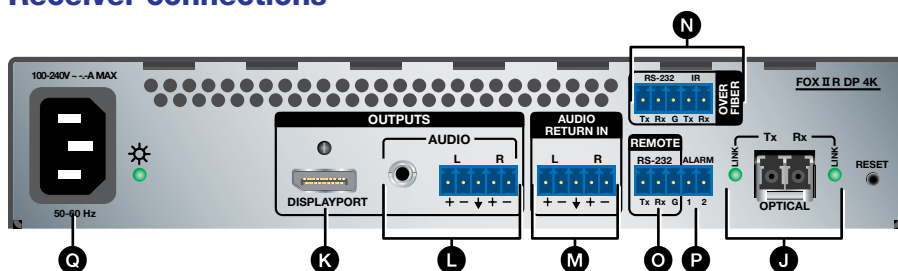
Figure 3.   FOX II R DP 4K Transmitter Rear Panel Connectors

J **Optical ports and LEDs** (see below)
K **DisplayPort output port** (see page 10)
L **Analog Audio output ports** (see page 10)
M **Audio Return In port** (see page 10)

N **Over Fiber port** (see page 10)
O **Remote RS-232 port** (see page 10)
P **Alarm port** (see page 10)
Q **Power connector** (see page 10)

J **Optical ports and LEDs** (see figure 3) —

> **WARNING:**   The FOX II T DP 4K outputs continuous invisible light (Class 1 rated), which may be harmful to the eyes; use with caution. Plug the attached dust cap into the optical transceiver when the fiber optic cable is unplugged.
>
> **AVERTISSEMENT :** Le FOX II T DP 4K émet une lumière invisible en continu (conforme à la classe 1) qui peut être dangereux pour les yeux, à utiliser avec précaution Branchez la protection contre la poussière dans l'ensemble émetteur/récepteur lorsque le câble fibre optique est débranché.

> **NOTES:**
> - You can connect the transmitter and receiver in either of two ways, as shown in the figure below right:
>   - **One way (transmitter-Tx-to-receiver-Rx) only** — Connect fiber cable ❸ (from transmitter connector ❶) **only**.
>   - **Two way (transmitter to receiver and return)** — See the figure below right. Connect fiber cable ❸ (from transmitter connector ❶ to the receiver) and fiber cable ❹ back to the transmitter (connector ❷).
> - See the transmitter fiber connector **NOTES** on page 8, which also apply to these connectors.

❸ **Rx (required)** — For all one-way video, audio, and serial communications from the transmitter to the receiver, connect a fiber optic cable to the Rx LC connector.

Connect the opposite end of this cable to the Tx connector on the FOX II T DP 4K transmitter (see **item ❶** on page 8) or to any other compatible Extron fiber optic device.

❹ **Tx (optional)** — Connect a fiber optic cable to the Tx LC connector for one-way return audio and serial communications from the receiver to the Rx connector on the transmitter.

> **NOTE:**   The Tx connector emits light when the unit is powered and the Rx port receives light.

Connect the opposite end of this cable to the Rx connector on the transmitter (see **item ❷** on page 8).

Tx Link and Rx Link LEDs — When lit, the link is active (light is received).
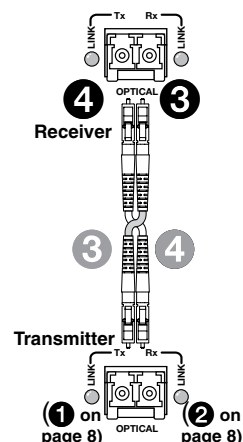
K **DisplayPort output port** (see figure 3 on the previous page) — Connect a video display to this DisplayPort connector.

L **Audio output ports** — These connectors output the transmitted, unamplified, line level analog audio (see **Audio connections** on page 12 to wire these connectors).
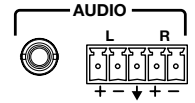
> **NOTE:** If embedded digital audio is present on the DP connector, these analog audio connectors do not output audio unless forced to so by an **SIS command** (see page 21).

TRS jack connector — Connect an audio device, such as an audio amplifier or powered speakers to this 3.5 mm TRS connector.

Captive screw output connector — Connect an audio device, such as an audio amplifier or powered speakers to this 5-pole, 3.5 mm captive screw connector.

M **Audio Return In port** — Connect a balanced or unbalanced audio input to this 3.5 mm, 5-pole captive screw connector for return to the transmitter (see **Audio connections** to wire these connectors).
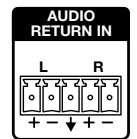
N **Over Fiber RS-232 and IR port** — Connect a serial RS-232 signal, a modulated or unmodulated IR signal, or both to this 3.5 mm, 5-pole captive screw connector for bidirectional RS-232 and IR communication (see **RS-232 and IR connections** on page 11 to wire the connector).
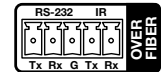
> **NOTES:**
> - If you connect only one fiber optic cable (see **item H**, on page 8), you will not receive RS-232 or IR reports from the controlled device. To receive responses from the controlled device, you must install two fiber optic cables.
> - The FOX II T/R DP 4K can pass RS-232 commands and responses at rates up to 115200 baud.

O **Remote RS-232 port** — For serial control of the receiver, connect a host device, such as a computer or touch panel control, via this 3-pole captive screw connector (see **RS-232 and IR connections** to wire this connector). See **Remote Control** on page 17 for SIS commands.
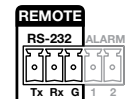
P **Alarm port** — For remote monitoring of the status of the Rx fiber optic link, connect an external control system or locally-constructed or furnished monitoring device to the receiver via the two rightmost poles (1 and 2) of this 5-pole captive screw connector. When the receiver does not detect a light link on fiber cable Rx, pin 1 and pin 2 of this port are shorted together. (see **Alarm connection** on page 13 to wire this connector).
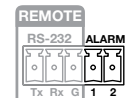
Q **Power input** — Plug a standard IEC power cord into this connector to connect the unit to a 100 VAC to 240 VAC, 50-60 Hz power source. The lit LED indicates power is applied.

Front Panel Configuration Port

> **NOTE:** The Configuration port is in the same location on the transmitter and the receiver.

Configuration port — Connect a controlling device, such as a PC, to this mini USB B port for control of all functions of the connected unit (see **Remote Control** on page 17 for SIS commands and software control).

This mini USB B port serves a similar communications function as the rear panel Remote RS-232 ports (see **item F** on page 7 and **item O** on the previous page), but it is easier to access than the rear port after the unit has been installed and cabled.

CONFIG PORT
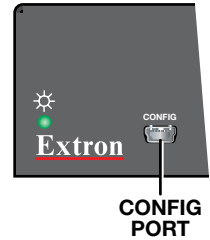
> **NOTE:** A front panel Configuration port connection and a rear panel Remote RS-232 port connection can both be active at the same time. If commands are sent simultaneously to both, the command that reaches the processor first is handled first.

Connection Considerations

DisplayPort connections

DisplayPort signals run at a very high frequency and are prone to errors caused by bad connections or excessive cable length. To avoid the loss of an image or jitter, follow these guidelines:

- Do not exceed 6.5 feet (2 meters) of cable on the input or buffered loop-through of the FOX II T DP 4K transmitter or the output of the FOX II R DP 4K receiver.

- Use only the cable specifically designed and intended for high speed digital signals that is supplied by Extron. Use of non-DisplayPort cables or modified cables can result in a missing video output.

RS-232 and IR connections

Figure 4 shows how to wire the RS-232 and IR connectors.
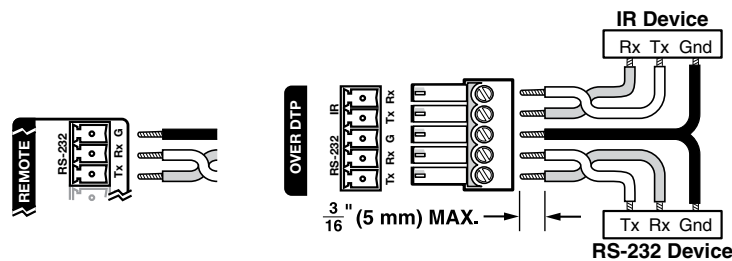
Figure 4. **RS-232 and IR Connector Wiring**

> **NOTES:**
> - The length of exposed wires is important. **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.
> - Do not tin the power supply leads before installing them in the connector. Tinned wires are not as secure in the connector and could be pulled out.

Audio connections

> **NOTE:** The level of the analog audio inputs can be set via an **SIS command** (see page 21) or using the software `Analog Input Gain` slide control (see the **Analog Input control, ❾**, in "Product Configuration Software" on page 32).

The following table shows the audio format that is sent over the fiber connection, along with the DisplayPort video, when the audio input format is set to `Auto` (the default setting, see the Input audio selection **SIS commands** on page 21 to switch the active audio source).

Embedded DisplayPort Audio	Analog Audio	Transmitted Audio
Present	Not present	Embedded audio
Present	Present	Embedded audio
Not present	Present	Analog audio
Not present	Not present	No audio

3.5 mm TRS input and output connections

See figure 5 to identify the tip, ring, and sleeve when you are making connections for the transmitter or receiver from existing audio cables. A mono audio connector consists of the tip and sleeve. A stereo audio connector consists of the tip, ring, and sleeve.
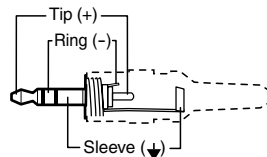
3.5 mm Stereo Plug Connector

Figure 5. Stereo Plug Audio Connector

Captive screw input connections

See figure 6 to properly wire a captive screw input connector, either audio input on the transmitter or return audio input on the receiver.

Unbalanced Stereo Input   **Balanced Stereo Input**
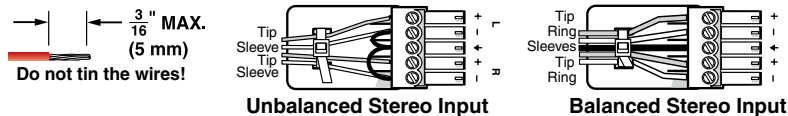
Figure 6. Captive Screw Connector Wiring for Stereo Audio Inputs

> **NOTE:** The length of exposed wires is important (see the RS-232 and IR connector **NOTES** on the previous page for more information).

Captive screw output connection

See figure 7, below, to properly wire a captive screw output connector, either audio output on the receiver or return audio output on the transmitter. The connector is included with transmitter and receiver, but you must supply the audio cable. Use the supplied tie-wrap to strap the audio cable to the extended tail of the connector.
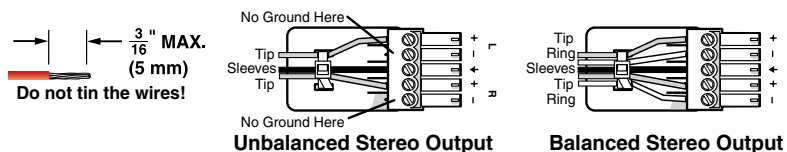
Figure 7.   Captive Screw Connector Wiring for Stereo Audio Output

ATTENTION:

- For unbalanced audio, connect the sleeves to the ground contact. **DO NOT** connect the sleeves to the negative (-) contacts.
- Pour l'audio asymétrique, connectez les manchons au contact au sol. Ne **PAS** connecter les manchons aux contacts négatifs (–).

NOTE: The length of exposed wires is important (see the RS-232 and IR connector **NOTES** on page 11 for more information).

Alarm connection

Pin 1 and pin 2 are shorted together when no light is detected.
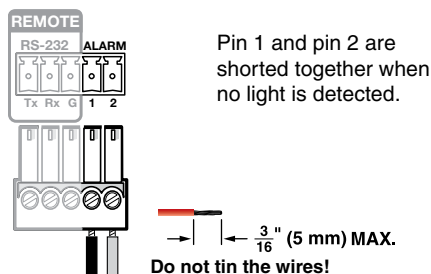
Figure 8.   Alarm Connector

NOTE: The length of exposed wires is important (see the RS-232 and IR connector **NOTES** on page 11 for more information).

Indications and Operation

Front Panel Features
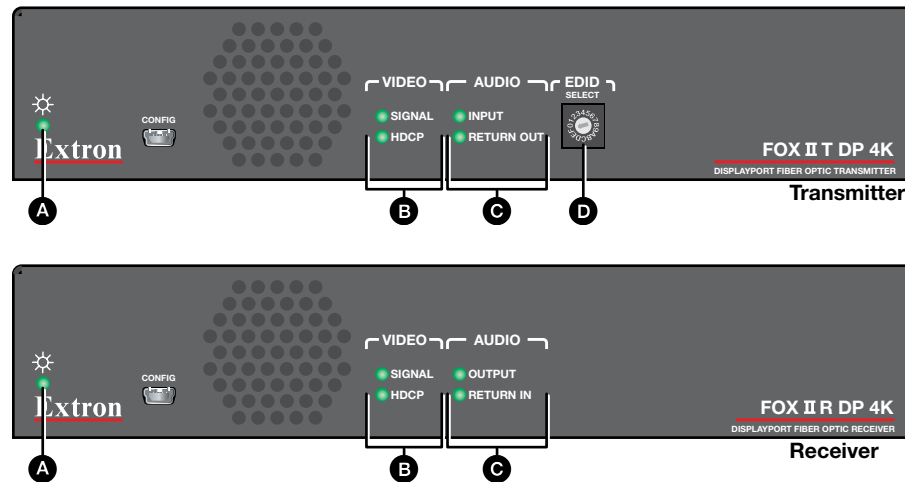
Figure 9. FOX II T/R DP 4K Transmitter Front Panel Features

Ⓐ ☼ **(power) indicator —** Indicates that power is applied to the unit.

Ⓑ Video LEDs —

Signal LED —

> **Transmitter** — Lights when the transmitter detects an active signal on its video input.

> **Receiver** — Lights when the receiver detects an active DisplayPort signal on its fiber input.

HDCP LED — Lights when the input signal is HDCP encrypted.

Ⓒ Audio LEDs —

Input LED (transmitter) — Lights when an analog audio or PCM digital audio signal remains above -35 dBV. The LED goes dark if the audio signal level drops below the threshold for 10 seconds or longer.

Output LED (receiver) — Lights when an analog audio or PCM digital audio signal remains above -35 dBV. The LED goes dark if the audio signal level drops below the threshold for 10 seconds or longer.

Return Out LED (transmitter) — Lights when analog audio is present on the transmitter Audio Return Output connector.

Return In LED (receiver) — Lights when analog audio is present on the receiver Audio Return Input connector.

D **EDID Select rotary switch** (see figure 9 on the previous page) — Set this switch to one of the positions below to select the source of the DDC or a specific resolution.

Position 0 — A user-recorded EDID that has been previously:

- Captured from the display connected to the receiver output.

- Captured from the display connected to transmitter DisplayPort Loop-through connector (see **item B**, from figure 2, on page 7).

- Manually imported via an **SIS command** (see page 20) or Product Configuration Software action in the **EDID minder window** (see page 30) to the transmitter.

Position 1 — The EDID is selected via the rear panel Remote RS-232 port or the front panel Configuration port, using an SIS command or the Product Configuration Software. This is the factory default position.

Position 2 — The EDID is received from the display connected to the receiver.

> **NOTE:** EDID from the display connected to the receiver requires connection of both fiber cables.

Position 3 — The EDID is received from the display connected to the DisplayPort Loop-through connector (see **item B**).

Position 4 – E — Specify a resolution. The table below identifies the switch positions and the associated resolutions. All resolutions are at 60 Hz with the exception of 3840x2160 (E), which is 30 Hz.

Pos.	Source or resolution	Pos.	Resolution	Pos.	Resolution
0	User recorded EDID	6	1366x768	C	2048x2160
1	Selected via RS-232	7	1440x900	D	2560x1600
2	Display on Rx output	8	1680x1050	E*	3840x2160
3	Display on Tx loop-through	9	1920x1080 (1080p)	F	N/A
4	1280x720 (720p)	A	1920x1200		
5	1280x800	B	2048x1536		

* 30 Hz

Rear Panel Features

> **NOTE:** The `Reset` button is in the same location on the transmitter and the receiver.

Reset button — Press and release or press and hold this button to initiate two levels of transmitter reset (see **Performing resets** on the next page).

Reset Button
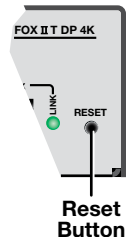
Operation

After the transmitter, the receiver, and their connected devices are powered up, the system is fully operational. If any problems are encountered, verify that the cables are routed and connected properly, and that all display devices have identical resolutions and refresh rates. If your problems persist, call the Extron S3 Sales & Technical Support Hotline. See the contact numbers on the **last page** of this guide for the Extron office nearest you.

To take advantage of the various adjustments and test patterns available in the FOX II T/R DP 4K, you need to connect a computer or other USB-capable device to the front panel Configuration port or a RS-232 capable device to the rear panel Remote RS-232 port on the unit to be addressed. Operate the connected device using either SIS commands or the Product Configuration Software (see **Remote Control**, beginning on the next page).

Performing resets

The rear panel recessed `Reset` button on both units allows you to revert to the factory loaded firmware for one power cycle (a "mode 1" reset, for comparison with Extron IP Link products). All user files and settings, such as audio adjustments and video settings are maintained. A mode 1, firmware, reset is helpful if a firmware upload was interrupted, resulting in a non-operational unit.

A second reset mode resets all settings to their factory defaults except for the current firmware level (a mode 5 reset). This reset is the same as performed when you issue the `Esc`ZXXX← SIS command (see page 22).

Mode 1 reset

Reset to the factory-installed firmware for one power cycle as follows:

1. Power off the unit to be reset.

2. Use a Tweeker or other small item to press and **hold** the recessed `Reset` button while you apply power to the unit.

3. When the power up process is complete (the front and rear panel Power LEDs are lit), release the `Reset` button.

   The transmitter or receiver returns to the original, factory-installed firmware until the next time power is removed and restored.

Mode 5 reset

Reset all settings, except firmware, to the factory defaults as follows.

1. With power applied, use a Tweeker or other small item to press and **hold** the `Reset` button for approximately 9 seconds, until the front or rear panel Power LED blinks three times.

2. Release the `Reset` button and then immediately (within 1 second) press and release the button again.

   The front and rear panel Power LEDs blink four times during the reset.

Remote Control

This section describes the remote control operation of the FOX II T/R DP 4K transmitter and receiver, including:

- **Simple Instruction Set Control**
- **Product Configuration Software**

The transmitter and receiver each have a front panel Configuration port, a USB mini-B connector (see **Configuration Port** on page 11) and a rear panel Remote RS-232 port, a 3-pole captive screw connector (see **item** ❻ on page 7, **item** ❿ on page 10, and **RS-232 and IR connections** on page 11). Either of these ports can be connected to a host device such as a computer running the HyperTerminal or DataViewer utility, or a control system to make remote control of the transmitter and receiver possible.

The protocol for the serial ports is as follows:

- 9600 baud
- no parity
- 8 data bits
- 1 stop bit
- no flow control

> **NOTE:**   SIS commands and Product Configuration Software functions are transmitter- or receiver-specific or may have different responses depending on the unit connected. You must connect to the appropriate device for the command or function to work properly or to get the expected response.

Simple Instruction Set Control

Host-to-Unit Instructions

SIS commands consist of one or more characters per field. No special characters are required to begin or end a command character sequence. When a command is valid, the unit executes the command and sends a response to the host device. All responses from the unit to the host end with a carriage return and a line feed (CR/LF = ↵), which signals the end of the response character string. A string is one or more characters.

Unit-Initiated Messages

When a local event, such as an equipment power-up, occurs, the unit responds by sending a message to the host. The unit-initiated messages are listed below:

`(c) Copyright 20`*`nn`*`, Extron Electronics FOX II T DP 4K YY•, V`*`x.xx`*`, 60-`*`nnnn-xx`*`↵`

- or -

`(c) Copyright 20`*`nn`*`, Extron Electronics FOX II R DP 4K YY•, V`*`x.xx`*`, 60-`*`nnnn-xx`*`↵`

The connected unit issues the appropriate copyright message (above) when it first powers on. V*x.xx* is the firmware version number; `60-`*`nnnn-xx`* is the part number of the connected unit. *YY* is either `SM` (singlemode) or `MM` (multimode).

`2Lnk`*`n`*`•SigI`*`n`*`•Res`*`x`*`•Hdcpi`*`y`*`•AudI`*`n`*`•AudO`*`n`*`•EdidMdr`*`a`*`•TX↵` (transmitter)

- or -

`2Lnk`*`n`*`•SigI`*`n`*`•Hdcpi`*`y`*`•AudO`*`n`*`•RX↵` (receiver)

The unit sends the status message whenever a change in the fiber link and video connection occurs.

- *n* is the connection status, where `0` = signal not detected and `1` = signal detected.

- *x* is the detected resolution (such as `1920x1080@60Hz`).

- *y* is the HDCP source (transmitter) or sink (receiver) status, where `0` = no source or sink, `1` = HDCP source or sink, `2` = non-HDCP source or sink.

- *a* is the rotary switch position (transmitter only), `00` through `15` (F hex).

`DDC↵`
`EdidMdr`*`nn`*`↵`

The unit sends the EDID Minder change message whenever a change in the position of the transmitter front panel DDC hex switch occurs. *nn* is the switch position, `0` through `15` (F hex).

`HplgO↵`

The unit sends the Hot plug message whenever the DisplayPort connector is either plugged in or unplugged.

Error Responses

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

`E10` - Invalid command
`E13` - Invalid parameter
`E14` - Invalid command for this configuration
`E17` - Invalid command for signal type
`E22` - Busy

Using the Command and Response Tables

The command and response table for the transmitter begins on the **next page**. The command and response table for the receiver begins on **page 23**. Uppercase and lower case letters are acceptable in the command field except where indicated for the audio level (gain and attenuation) commands. Symbols throughout the table represent variables in the command and response fields. Examples are shown throughout the tables. The ASCII to HEX conversion table below is for use with 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	l	7C	}	7D	~	7E	DEL	7F

Symbol Definitions for Transmitter SIS Commands

↵ = CR/LF (carriage return/line feed)

← = Carriage return (no line feed)

| = Pipe (can be used interchangeably with the ← character)

• = Space (hard) character

Esc = Escape key (hex 1B) (**W** can be used interchangeably with the **Esc** character)

X1 = EDID resolution and rate   See the **table** on the next page.

X2 = Save EDID source   1 = transmitter loop-through   2 = receiver output

X3 = Video and sync mute status   Ø = mute off   1 = video mute   2 = video and sync mute

X4 = On and off status   Ø = off (disabled)   1 = on (enabled)

X5 = Video bit depth   Ø = auto mode (**default**)   1 = 8-bit

X6 = Audio gain adjustment range   ØØ to **24**

X7 = Audio level adjustment range   −**18** to +**24** (in 1 dB steps)

X8 = Audio attenuation adjustment range   ØØ to **18**

X9 = Audio input format   Ø = auto (**default**)   1 = digital (embedded DisplayPort) audio   2 = analog audio

X10 = Audio mute   Ø = mute all   1 = mute DisplayPort   2 = mute analog

X11 = Color bars test pattern   Ø = off (**default**)   1 = 720p at 60 Hz   2 = 1080p at 60 Hz

X12 = Transmitter name   Up to 24 characters, alphanumeric or minus sign only. The first character must be a letter. The last character cannot be a minus sign. No spaces are allowed, and there is no distinction between upper and lower case.

X13 = Link and input status   Ø = link or input not detected   1 = link or input detected

X14 = Audio output   1 = digital   2 = analog

X15 = Input HDCP signal   Ø = no source detected   2 = source detected no HDCP present
     1 = source detected with HDCP

X16 = Internal temperature nnnF•nnC

X17 = Resolution $nnnn$^Horizontal x$nnnn$^Vertical @xxHz

X18 = EDID switch position   ØØ (0 hex) through **15** (F hex) (see **item ➒** and the table on page 15)

X19 = Firmware version $v.vv$

X20 = Optical module manufacturer   Up to 16 alphanumeric characters

X21 = Tx or Rx power $xx.x$ dBm

X22 = Operating temp of module $nnn.n$

X23 = HDCP Output Status   Ø = no sink   1 = HDCP sink   2 = non-HDCP sink

Command and Response Table for Transmitter SIS Commands

Command	SIS Command (host to unit)	Response (unit to host)	Additional description
EDID Minder Resolution			

> **NOTE**:
> - The front panel HEX switch must be in position 1 for the `Esc`AEDID commands to be effective. In any other position, the transmitter returns the E14 error code.
> - An active monitor must be connected to the transmitter Loop-Through connector (X2 = 1) or receiver output port (X2 = 2) for the `Esc`SEDID command to be effective. If no input is connected the transmitter returns the E13 error code.

Command	SIS Command (host to unit)	Response (unit to host)	Additional description
Set the EDID resolution	`Esc`A X1 EDID ←	EdidA X1 ↵	Set the EDID resolution to X1.
Example:	`Esc`A27EDID ←	EdidA27 ↵	Set the EDID resolution to 1280x768 at 60 Hz with embedded 2-channel audio.
View the EDID resolution	`Esc`AEDID ←	X1 ↵	
Save an EDID	`Esc`S X2 EDID ←	EdidS X2 ↵	Save the EDID from the X2 connection to memory.
Video and sync mutes (DisplayPort Loop-through)			
Mute output, video only	1B	Vmt1 ↵	Mute the video output, display black video.
Mute output, video and sync	2B	Vmt2 ↵	Mute the video and sync outputs.
Unmute output	ØB	VmtØ ↵	Output video.
Show video mute status	B	X3 ↵	Video mute status is X3.
HDCP notification (DisplayPort Loop-through)			
Enable HDCP notification	`Esc`N1HDCP ←	HdcpN1 ↵	Enable green screen (**default**).
Disable HDCP notification	`Esc`NØHDCP ←	HdcpNØ ↵	Disable green screen.
View HDCP notification	`Esc`NHDCP ←	X4 ↵	
Video Bit Depth (DisplayPort Loop-through)			
Set video bit depth to auto	`Esc`VØBITD ←	BitdVØ ↵	Follow the input bit depth.
Set video bit depth to 8-bit	`Esc`V1BITD ←	BitdV1 ↵	Force 8-bit depth.
View video bit depth	`Esc`VBITD ←	X5 ↵	

KEY: X1 = EDID resolution   See the table below. All resolutions are 60 Hz, **except** those with †, which are 30 Hz.

X1	Value	X1	Value	X1	Value	X1	Value	X1	Value
Video only (no embedded audio)									
Ø1	800x600	Ø6	1280x1024	11	1600x900	16	1920x2160	21	2560x1440
Ø2	1024x768	Ø7	1360x768	12	1600x1200	17	2048x1080	22	2560x1600
Ø3	1280x720	Ø8	1366x768	13	1680x1050	18	2048x1536	23†	3840x2160
Ø4	1280x768	Ø9	1400x1050	14	1920x1080	19	2048x2160		
Ø5	1280x800	1Ø	1440x900	15	1920x1200	20	2560x1080		
Video and embedded 2-channel audio									
24	800x600	29	1280x1024	34	1600x900	39	1920x2160	44	2560x1440
25	1024x768	3Ø	1360x768	35	1600x1200	4Ø	2048x1080	45	2560x1600
26*	1280x720	31	1366x768	36	1680x1050	41	2048x1536	46†	3840x2160
27	1280x768	32	1400x1050	37	1920x1080	42	2048x2160		
28	1280x800	33	1440x900	38	1920x1200	43	2560x1080		
Connected display or a customer-saved value									

X1	Source
47	Display connected to the receiver output connector
48	Display connected to the transmitter loop-through connector
49	User memory

* Default
† 30 Hz

X2 = Save EDID from source   1 = transmitter loop-through   2 = receiver output
X3 = Video and sync mute status   Ø = off   1 = video mute on   2 = video and sync mute on
X4 = On or off status   Ø = off   1 = on
X5 = Video bit depth   Ø = auto mode (**default**)   1 = 8-bit

Command	SIS Command (host to unit)	Response (unit to host)	Additional description
Input reports as an HDCP authorized device			
HDCP authorized device on	[Esc]E1HDCP←	HdcpE1↵	Set the transmitter as an HDCP-authorized device (**default**).
HDCP authorized device off	[Esc]EØHDCP←	HdcpEØ↵	Set the transmitter as **not** an HDCP-authorized device.
View HDCP authorized device status	[Esc]EHDCP←	[X4]↵	Show HDCP authorized device status.
Analog audio input gain and attenuation			
NOTE: The set gain (G) and set attenuation (g) commands **are** case sensitive. The increment level, decrement level, and show level **are not** case sensitive.			
Set input audio gain to a +dB value	[X6]G	Aud[X7]↵	Set the input level to [X7] dB (gain).
Example:	2G	Aud2↵	Set the input level to +2 dB (gain).
Set input audio attenuation to a -dB value	[X8]g	Aud[X7]↵	Set the input level to [X7] dB (attenuation).
Increment input level	+G	Aud[X7]↵	Increase the audio level by 1 dB.
Example:	+G	Aud3↵	Increment the input level from +2 dB to +3 dB.
Decrement input level	−G	Aud[X7]↵	Decrease the audio level by 1 dB.
Show input level	G	[X7]↵	
Audio input format			
NOTE: This command selects the audio input that is transmitted to the receiver.			
Select auto	[Esc]IØAFMT←	AfmtIØ↵	Transmit the digital audio embedded in the DisplayPort input, if detected, otherwise transmit the analog audio.
Select digital audio	[Esc]I1AFMT←	AfmtI1↵	Transmit the digital audio embedded in the DisplayPort input.
Select analog audio	[Esc]I2AFMT←	AfmtI2↵	Transmit the analog audio input.
Show audio selection	[Esc]IAFMT←	[X9]↵	Show the selected format.
Audio mute (DisplayPort Loop-through and Return Out)			
Mute the audio	[X10]*1Z	Amt[X10]*1↵	Silence the DisplayPort Loop-through audio, Return Out audio, or both of the transmitter.
Example:	1*1Z	Amt1*1↵	Silence the DisplayPort Loop-through audio.
Unmute the audio	[X10]*ØZ	Amt[X10]*Ø↵	The transmitter outputs DisplayPort Loop-through audio, Return Out audio, or both.
Show audio mute status	[X14]Z	[X4]↵	Mute status of [X14] audio is [X4].
Color bars test pattern			
NOTE: The transmitter generates the color bars test pattern and sends it to the receiver. You must have the transmitter-Tx-to-receiver-Rx fiber cable connected for the receiver to output the selected test pattern. The test pattern turns off if power is removed.			
Output color bars test pattern	[Esc]1TEST←	Test[X11]↵	Set the transmitter to output color bars at 720p.
Output color bars test pattern	[Esc]2TEST←	Test[X11]↵	Set the transmitter to output color bars at 1080p.
Turn test pattern off	[Esc]ØTEST←	TestØ↵	Set the transmitter to output the input video (no test pattern).
Show test pattern status	[Esc]TEST←	[X11]↵	

KEY:			
[X4] = On and off status	Ø = off (disabled)	1 = on (enabled)	
[X6] = Audio gain adjustment range	ØØ to 24		
[X7] = Audio level adjustment range	- 18 to +24 (in 1 dB steps)		
[X8] = Audio attenuation adjustment range	ØØ to 18		
[X9] = Audio input format	Ø = auto (**default**)	2 = analog audio	
	1 = digital (embedded DisplayPort) audio		
[X10] = Audio mute	Ø = mute all (output DisplayPort and analog)	2 = mute analog only	
	1 = mute DisplayPort only		
[X11] = Color bars test pattern	Ø = off (**default**)	1 = 720p at 60 Hz	2 = 1080p at 60 Hz
[X14] = Audio output	1 = digital	2 = analog	

Command and Response Table for Transmitter SIS Commands (continued)

Command	SIS Command (host to unit)	Response (unit to host)	Additional description
Transmitter name			
Assign a name to the device	`Esc` `X12` `CN←`	`Ipn•` `X12` `↵`	Name the transmitter `X12`.
Reset device name to default	`Esc` `•CN←`	`Ipn•FOX-II-T-DP-4K` `↵`	
View the device name	`Esc` `CN←`	`X12` `↵`	
Status requests			
View Rx link (Rx-to-Tx) status	`2S`	`X13` `↵`	
View input video status	`4S`	`X13` `↵`	
View audio input status	`5S`	`X13` `↵`	
View HDCP status	`6S`	`X15` `↵`	
View temperature	`2ØS`	`X16` `F•` `X16` `C` `↵`	Show temperature in degrees Fahrenheit and Celsius.
Information requests			
Information request	`I`	`2Lnk` `X13` `•SigI` `X13` `•Res` `X17` `•HdcpI` `X15` `•AudI` `X14` `•AudO` `X13` `•EdidMdr` `X18` `•TX` `↵`	
			The unit responds with the current status (light detected) of the Rx optical link and the digital input (signal detected), the resolution, the HDCP status, the input audio selected, the signal status of the audio output, the EDID rotary switch position, and the device type (`TX`).
Show firmware version	`Q`	`X19` `↵`	
Example:	`Q`	`1.23` `↵`	The factory-installed firmware version is 1.23 (sample value only).
Request HDCP output status	`Esc` `OHDCP←`	`HdcpO` `X23` `↵`	Show HDCP detected on the transmitter loop-through output.
Request part number	`N`	`6Ø–nnnn–nn` `↵`	See the Extron website for part numbers.
Request SFP status	`4ØS`	`X20` `•` `X21` `Tx` `•` `X21` `Rx` `•` `X22` `↵`	
Resets			
Reset audio	`Esc` `ZA←`	`Zpa` `↵`	Reset audio setting to default levels (0 dB gain).
System reset	`Esc` `ZXXX←`	`Zpx` `↵`	Reset all settings to factory defaults.

KEY:		
`X12` = Transmitter name	Up to 24 alphanumeric characters and hyphen (–). No spaces are allowed, and there is no distinction between upper and lower case.	
`X13` = Link status	Ø = light or signal input not detected	1 = light or signal detected
`X14` = Audio output	1 = digital	2 = analog
`X15` = Input HDCP signal	Ø = no source detected	
	1 = source detected with HDCP	2 = source detected no HDCP present
`X16` = Temperature	*nnn*	
`X17` = Resolution	*nnnn*Horizontal x*nnnn*Vertical@*xx*Hz	
`X18` = EDID switch position	ØØ (0 hex) through 15 (F hex) (see **item D** and the table on page 15)	
`X19` = Firmware version	*v.vv*	
`X20` = Optical module manufacturer	Up to 16 alphanumeric characters	
`X21` = Tx or Rx power	*xx.x* dBm	
`X22` = Operating temp of module	*nnn.n*	
`X23` = HDCP Output Status	Ø = no sink	1 = HDCP sink 2 = non-HDCP sink

Symbol Definitions for Receiver SIS Commands

↵ = CR/LF (carriage return/line feed)

← = Carriage return (no line feed)

| = Pipe (can be used interchangeably with the ← character)

• = Space (hard) character

Esc = Escape key (hex 1B)

W = Can be used interchangeably with the Esc character

X3 = Video and sync mute status   Ø = off   1 = video mute on   2 = video and sync mute on

X4 = On and off status   Ø = off   1 = on

X5 = Video bit depth   Ø = Auto mode (**default**)   1 = 8-bit

X6 = Audio gain adjustment range   ØØ to 24

X7 = Audio level adjustment range   −18 to +24 (in 1 dB steps)

X8 = Audio attenuation adjustment range   ØØ to 18

X10 = Audio mute   Ø = mute all   1 = mute DisplayPort   2 = mute analog

X12 = Receiver name   Up to 24 characters, alphanumeric or minus sign only. The first character must be a letter. The last character cannot be a minus sign. No spaces are allowed, and there is no distinction between upper and lower case.

X13 = Link and input status   Ø = link or input not detected   1 = link or input detected

X15 = Sink and output HDCP signal   Ø = no source detected   2 = source detected but no HDCP present
    1 = source detected with HDCP

X16 = Internal temperature   *nnn*F•*nn*C

X19 = Firmware version   *v.vv*

X20 = Optical module manufacturer   Up to 16 alphanumeric characters

X21 = Tx or Rx power   *xx.x* dBm

X22 = Operating temp of module   *nnn.n*

X23 = HDCP Output Status   Ø = no sink   1 = HDCP sink   2 = non-HDCP sink

Command and Response Table for Receiver SIS Commands

Command	SIS Command (host to unit)	Response (unit to host)	Additional description
Video and sync mutes			
Mute output, video only	1B	Vmt1↵	Mute the video output, display black video.
Mute output, video and sync	2B	Vmt2↵	Mute the video and sync outputs.
Unmute output	ØB	VmtØ↵	Output video.
Show video mute status	B	X3↵	Video mute status is X3.
HDCP notification			
Enable notification	Esc N1HDCP←	HdcpN1↵	Enable green screen (**default**).
Disable notification	Esc NØHDCP←	HdcpNØ↵	Disable green screen.
View notification status	Esc NHDCP←	X4↵	
Audio input gain and attenuation (analog audio return)			
NOTE: The set gain (G) and set attenuation (g) commands **are** case sensitive. The increment level, decrement level, and show level **are not** case sensitive.			
Set input audio gain to a +dB value	X6G	AudX7↵	Set the input level to X7 dB (gain).
Example:	2G	Aud2↵	Set the input level to +2 dB (gain).
Set input audio attenuation to a -dB value	X8g	AudX7↵	Set the input level to X7 dB (attenuation).
Increment input level	+G	AudX7↵	Increase the audio level by 1 dB.
Example:	+G	Aud3↵	Increment the input level from +2 dB to +3 dB.
Decrement input level	−G	AudX7↵	Decrease the audio level by 1 dB.
Show input level	G	X7↵	

Command	SIS Command (host to unit)	Response (unit to host)	Additional description
Audio mute			
Mute the audio	[X10]*1Z	Amt[X10]*1↵	Silence the receiver DisplayPort audio.
Example:	1*1Z	Amt1*1↵	Silence the DisplayPort audio.
Unmute the audio	[X10]*ØZ	Amt[X10]*Ø↵	The transmitter outputs DisplayPort audio, analog audio, or both.
Show audio mute status	[X14]Z	[X4]↵	Mute status of [X14] audio is [X4].
Video Bit Depth			
Set video bit depth to auto	[Esc]VØBITD←	BitdVØ↵	Follow the input bit depth.
Set video bit depth to 8-bit	[Esc]V1BITD←	BitdV1↵	Force 8-bit depth.
View video bit depth	[Esc]VBITD←	[X5]↵	
Receiver name			
Assign a name to the device	[Esc][X12]CN←	Ipn•[X12]↵	Name the receiver [X12].
Reset device name to default	[Esc]•CN←	Ipn•FOX-II-R-DP-4K↵	
View the device name	[Esc]CN←	[X12]↵	
Status requests			
View Rx link (Tx-to-Rx) status	2S	[X13]↵	
View input video status	4S	[X13]↵	
View audio input status	5S	[X13]↵	
View HDCP status	6S	[X15]↵	Report the status of the HDCP encoding on the output.
View temperature	2ØS	[X16]F•[X16]C↵	Show temperature in degrees Fahrenheit and Celsius.
Information requests			
Information request	I	1Lnk[X13]•SigI[X13]•HdcpO[X13]•AudO[X13]•RX↵	
			The unit responds with the current status (light detected) of optical link 1, the digital input (signal detected), the HDCP status of the output, and the output audio; and the device type (Rx).
Show firmware version	Q	[X19]↵	
Example:	Q	1.23↵	The factory-installed firmware version is 1.23 (sample value only).
Request HDCP Output Status	[Esc]OHDCP←	HdcpO[X23]↵	Show HDCP detected on the receiver output.
Request part number	N	6Ø–nnnn–nn↵	See the Extron website, **www.extron.com**, for part numbers.
Request SFP status	4ØS	[X20]•[X21]^Tx•[X21]^Rx•[X22]↵	
Resets			
Reset audio	[Esc]ZA←	Zpa↵	Reset the return audio gain and attenuation to 0 dB.
System reset	[Esc]ZXXX←	Zpx↵	Reset all settings to factory defaults.

KEY:			
[X5] = Video bit depth	Ø = auto mode (**default**)	1 = 8-bit	
[X10] = Audio mute	Ø = mute all (output DisplayPort and analog)	2 = mute analog only	
	1 = mute DisplayPort only		
[X12] = Receiver name	Up to 24 alphanumeric characters and hyphen (–) No spaces are allowed, and there is no distinction between upper and lower case.		
[X13] = Link and input status	Ø = link or input not detected	1 = link or input detected	
[X14] = Audio output	1 = digital	2 = analog	
[X15] = Sink and output HDCP signal	Ø = no source detected		
	1 = source detected with HDCP		
	2 = source detected but no HDCP present		
[X16] = Internal temperature	nnnF•nnC		
[X19] = Firmware version	v.vv		
[X20] = Optical module manufacturer	Up to 16 alphanumeric characters		
[X21] = Tx or Rx power	xx.x dBm		
[X22] = Operating temp of module	nnn.n		
[X23] = HDCP Output Status	Ø = no sink	1 = HDCP sink	2 = non-HDCP sink

Product Configuration Software

The Extron Product Configuration Software, which communicates with the connected transmitter or receiver via the front panel Configuration port (see **Configuration Port** on page 11) of that unit, provides an easy way to operate and configure the unit.

The program is compatible with Windows 7, 64-bit, or later. Updates to this program can be downloaded from the Extron website. An Extron Insider account is required.

Installing the Software

The Product Configuration Software, version 3.5.6 or newer, and Firmware Loader are available on the Extron website. Download and install both programs as follows:

> **NOTES:**
> - This procedure uses Internet Explorer. Depending on the browser you use, some steps or indications may be different.
> - Steps 1 through 7, below, are also used to download firmware update packages.

1. Visit the website **www.extron.com** and click the `Download` tab (see figure 10, ❶).
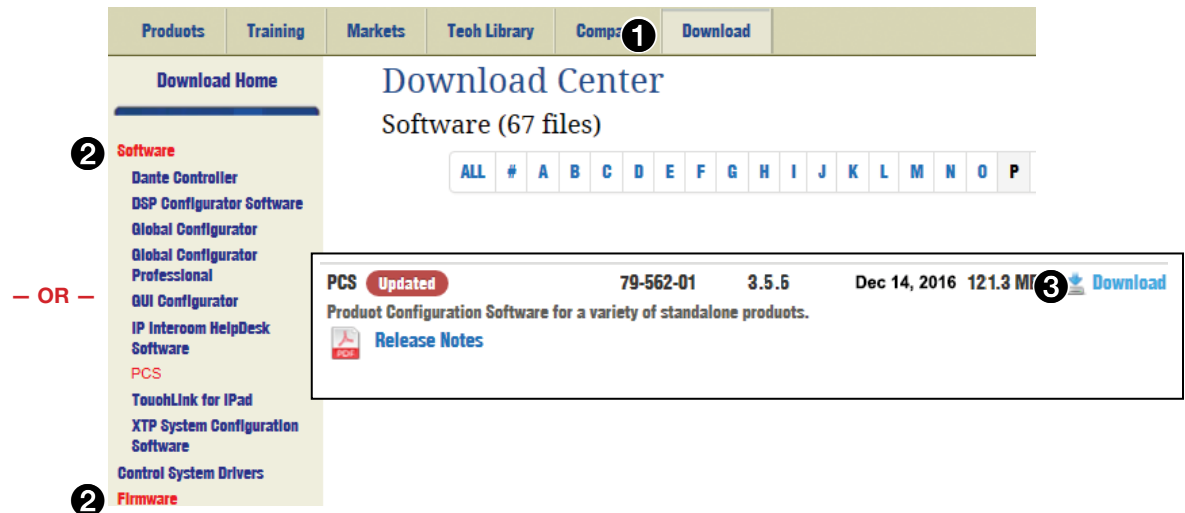
Figure 10.   Downloading a Software or Firmware Package

2. Click the `Software` or `Firmware` link as appropriate to the operation you are performing (❷).

> **TIPS:**
> - Many popular software packages have direct links on the `Download` page that you can click instead. Figure 10 shows the **PCS** link.
> - Jump to the nearest page of downloads by clicking the desired filtering letter.

3. Click `Download` for the desired software or firmware to download (❸).

   The `Log in` dialog box appears (see **figure 11** on the next page).

Figure 11. Log in Center Dialog Box

4. Enter the **E-Mail address** and **Password** associated with your Extron website account (see figure 11, ❶).

> **TIPS:**
> - Contact the Extron S3 Sales & Technical Support Hotline to obtain website credentials.
> - Click **Keep me logged in** to eliminate steps 4 and 5 in future downloads.

5. Click **Log in** to copy the software or firmware to the computer (❷).

6. If your browser asks you to confirm that you want to continue (see figure 12), click **Run** or make a similar confirmation (❶).
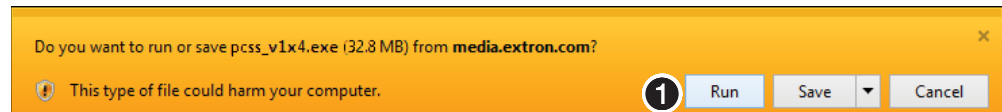
Figure 12. Download Warning and Confirmation

> **NOTE:** Figure 12 may appear different or may not appear at all, depending on your Web browser choice and its security settings.

7. Click **Run** to confirm that you want to run the installation (see figure 12, ❶).

8. **For a firmware download**, exit this procedure and return to **Updating the Firmware** on page 36.

9. Follow the on-screen instructions. The installation creates a `C:\Program Files\Extron\Extron PCS` directory, and it places the following four icons into a group folder named "`Extron Electronics\Extron Product Configuration Software:`"

> **NOTE:** `C:\Program Files(x86)\` ... for 64-bit operating systems.

- **Check for Extron PCS Updates**
- **Extron PCS Help**
- **Extron Product Configuration Software**
- **Uninstall Extron Product Configuration Software**

Starting the Program

Start the Extron Product Configuration Software as follows:

1. Click **Start > Programs > Extron Electronics > Extron Product Configuration Software > Extron Product Configuration Software**.

   The Product Configuration Software opens to the **Device Discovery** window (see figure 13).
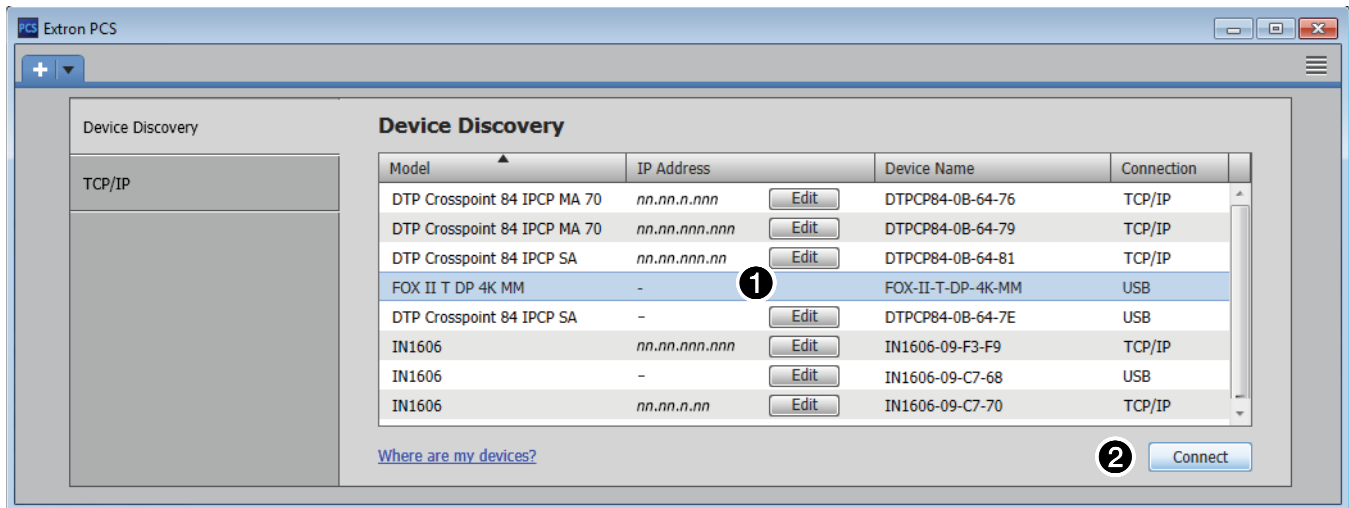

Figure 13.   Device Discovery Screen

2. Select (click) your FOX II T/R DP 4K and the USB port (❶).

3. Click **Connect** (❷). The Product Configuration Software opens to the **Status** window (see **figure 14** for the transmitter and **figure 15** for the receiver, both on the next page).

Using the Software

Once you have connected to a device, the `Status` window (see figure 14 for the transmitter and figure 15 for the receiver) is the default start-up window for the Product Configuration Software. The window provides indications of the connection status.

Status window
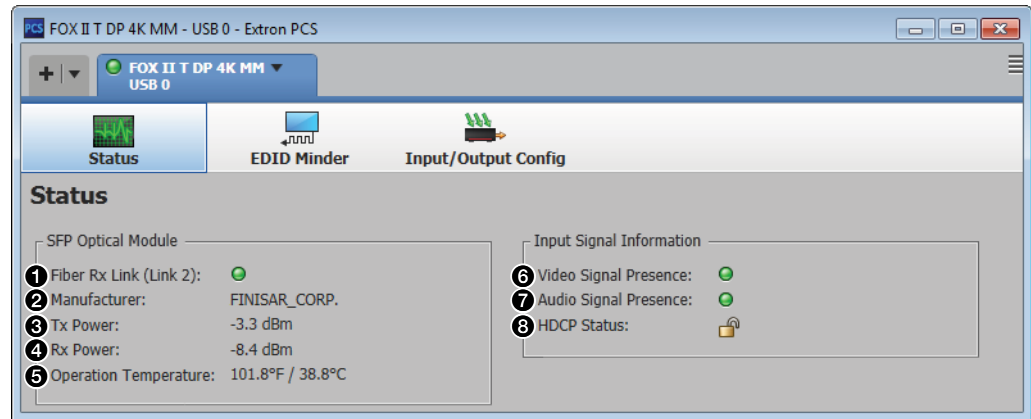
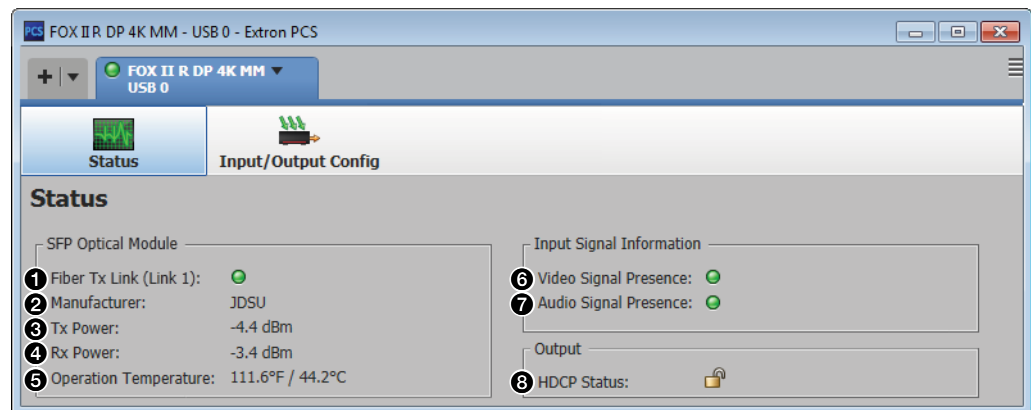**Figure 14.** **Status Window for the Transmitter**

Figure 15. **Status Window for the Receiver**

❶ Fiber Link indicators

Rx (Link 2) indicator (transmitter connection) — Indicates green (●) when the transmitter detects light on the fiber optic cable connected to the Rx port.

Tx (Link 1) indicator (receiver connection) — Indicates green (●) when the receiver detects light on the fiber optic cable connected to the Tx port.

❷ Manufacturer — Indicates the manufacturer of the SFP module.

❸ Tx Power — Indicates the power on the Tx optical module of the unit in dBm.

❹ Rx Power — Indicates the power on the Rx optical module of the unit in dBm.

❺ Operating Temperature — Indicates the temperature in degrees Fahrenheit and degrees Celsius.

⑥ Video Signal Presence indicators (see figure 14 and figure 15 on the previous page)

Transmitter connection — Indicates green (⊙) when the transmitter detects a sync signal on its DisplayPort video input.

Receiver connection — Indicates green (⊙) when the receiver detects a digital video signal on its fiber optic input.

⑦ Audio Signal Presence indicators

Transmitter connection — Indicates green (⊙) when the analog audio or PCM digital audio signal remains above -35 dBV. Indicates gray (⊙) if the audio signal level drops below the threshold for 10 seconds or longer.

Receiver connection — Indicates green (⊙) when the analog audio or PCM digital audio signal remains above -35 dBV. Indicates gray (⊙) if the audio signal level drops below the threshold for 10 seconds or longer.

⑧ HDCP Signal indicator — Shows a lock icon (🔒) when the digital video signal has copyright encryption applied and shows an unlocked icon (🔓) when the signal is not copyright protected.

EDID Minder window (connected to transmitter only)

The `EDID Minder` window (see figure 16) provides controls for you to tailor the EDID that is provided to the transmitter. Select this window from either the `Status` or `Input/Output Configuration` window by clicking **EDID Minder** on the menu bar.

> **NOTE:** The transmitter front panel EDID Select rotary switch must be in the 1 position for most of the EDID Minder window to be available for operation. When the switch is in other positions, only the Input field (❻) and the following is displayed:
>
> ⚠️ The EDID Rotary Switch is not set to 1. In order to assign EDID through the software, change the EDID Rotary Switch position to 1. The Rotary Switch can be found on the device.

Figure 16. EDID Minder Screen (Transmitter Connection Only)

Click an EDID box in the **Available EDID** (❶), **Connected Outputs** (❷), or **Favorites** (❸) panes to select (highlight in yellow) the EDID identified by that box.

If desired, drag and drop an EDID box into the **Favorites** pane.

If desired, reduce the number of EDID boxes displayed by selecting a filter in one of four categories (panes) (❹): **Resolution**, **Refresh Rate**, **Video Format**, and **Audio Format**.

The **Common Timings** tab (❺) allows you to create a list view of the connected output EDIDs that you use.

The **Input** pane (❻) displays the resolution, rate, video type, and embedded audio format of the DisplayPort input.

Input/Output Configuration window

The `Input/Output Configuration` window allows you to set the input and output option features of the transmitter (see figure 17) and receiver (see **figure 18**, on page 33). Select this window from either the `Status` or `EDID Minder` window by clicking **Input/Output Config** on the menu bar.
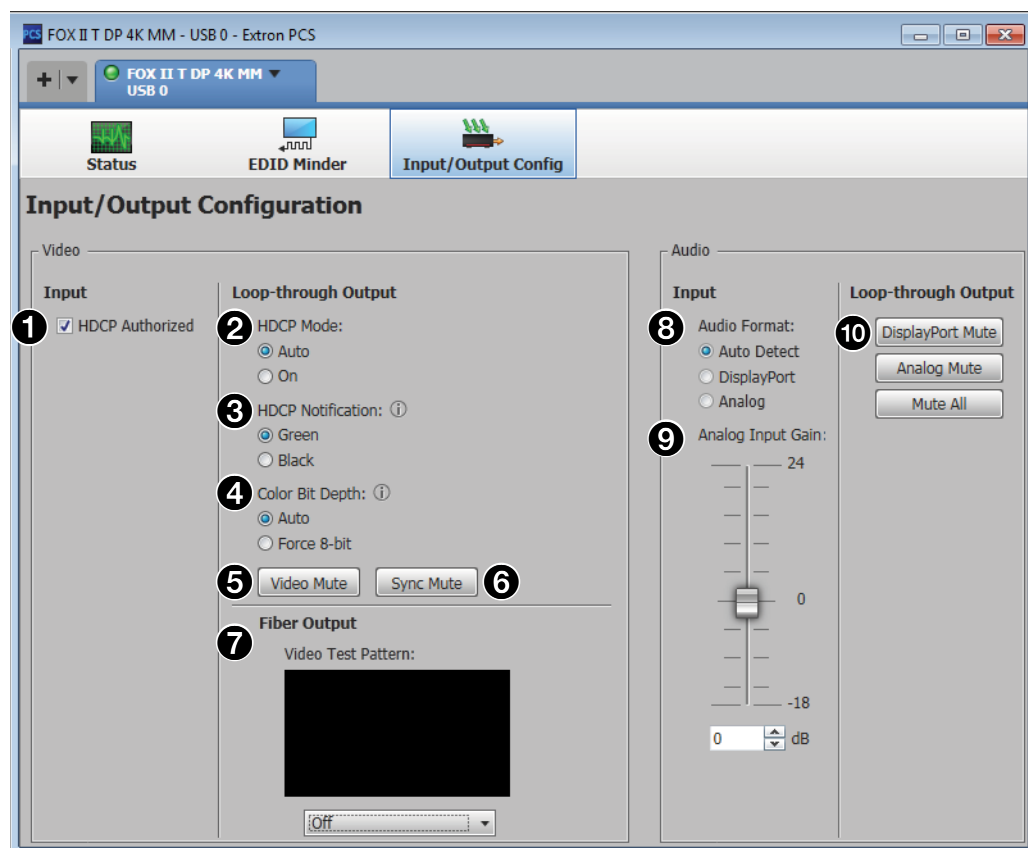
Transmitter Input/Output Configuration window

Figure 17. **Input/Output Configuration Screen for the Transmitter**

❶ `HDCP Authorized` checkbox — Select for the transmitter to act as an HDCP-authorized device. Clear if you do not desire the transmitter to act as an HDCP-authorized device. An HDCP authorized device allows an HDMI source to output HDCP-encrypted video.

A non-authorized setting is useful for video sources that always encrypt their output if the connected device (the transmitter in this example) is HDCP capable. If the display connected to the receiver is not HDCP compliant, this automatic encryption would result in no display.

❷ `HDCP Mode` radio buttons — Select the `Auto` radio button for the transmitter to follow the input video HDCP encryption status on the Loop-through connector. Select **On** to always encrypt the loop-thru output video regardless if the input video is encrypted or not.

❸ HDCP Notification radio buttons (see figure 17 on the previous page) — Select either the **Green** or **Black** radio button to select how the transmitter displays HDCP notification on a monitor connected to its Loop-through output port.

HDCP Notification:
- ○ Green
- ◉ Black

The HDCP notification function in the transmitter enables a connected display to show a green or black screen if the transmitted video is HDCP encrypted, and the display is not HDCP capable.

❹ Color Bit Depth radio buttons — Select the **Auto** radio button for the transmitter to automatically follow the input bit depth. Select **Force 8-bit** to constrain the bit depth.

Color Bit Depth:
- ◉ Auto
- ○ Force 8-bit

❺ Video Mute button — Click this button to toggle the video mute on and off for the transmitter Loop-through output port. Video mute sends black video while maintaining sync timings from the input video signal. Embedded audio continues to be output.

Video Mute

❻ Sync Mute button — Click this button to toggle the video mute on and off for the transmitter Loop-through output port. Sync mute disables the sync output, allowing the display to go blank and, eventually (depending on the timeout parameters set in the connected display) go into standby or sleep mode. Embedded audio is also muted.

Sync Mute

NOTE: **Video Mute** cancels **Sync Mute** and **Sync Mute** cancels **Video Mute**.

❼ Video Test Pattern drop-down list — Click the **Video Test Pattern** drop-down list to select among 720p and 1080p color bars for the transmitter to send to the receiver on the fiber cable. Or select **Off** to transmit the digital video that is input on the DisplayPort input port.

Video Test Pattern:

720p @60Hz Color Bars ▾
Off
720p @60Hz Color Bars
1080p @60Hz Color Bars

❽ Audio Format radio buttons

Audio Format:
- ◉ Auto Detect
- ○ DisplayPort
- ○ Analog

**Auto Detect radio button** — Transmit the embedded digital audio if detected, otherwise transmit analog audio.

DisplayPort radio button — Transmit the embedded digital audio.

Analog radio button — Transmit the analog audio.

❾ Analog Input Gain slide control — Click and slide the **Analog Input Gain slide control** control to vary to select the input audio gain or attenuation value on the analog input only, from -18 dB to +10 dB in 1 dB increments.
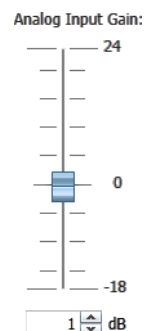
Analog Input Gain:

24
0
-18
1 ⬍ dB

NOTE: As an alternative, you can also either:
- Click the up arrow (⬆) and down arrow (⬇) buttons to step the level up and down.
- Click and highlight the value displayed in the **dB** field (1 ⬍ dB) and type in the desired numeric level.

❿ Loop-through Output Mute buttons — Click the **Mute** buttons to toggle the following mute functions on and off:

Loop-through Output

DisplayPort Mute
Analog Mute
Mute All

DisplayPort Mute — Mute the signal on the Loop-through DisplayPort Output port.

Analog Mute — Mute the signals on both Loop-through analog audio output ports.

Mute All — Mute the signals on the Loop-through DisplayPort Output port and both analog audio output ports.

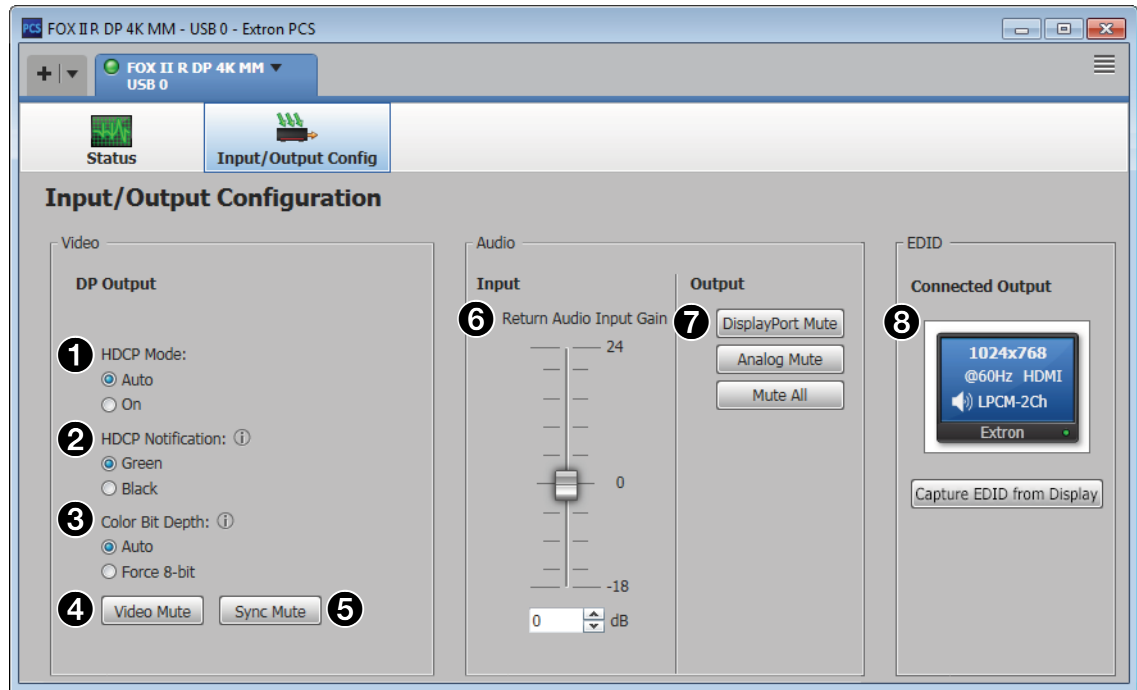### Receiver Input/Output Configuration window

Figure 18. Input/Output Configuration Screen for the Receiver

❶ HDCP Mode radio buttons — Select the **Auto** radio button for the receiver to follow the input video HDCP encryption status on the DisplayPort connector. Select **On** to always encrypt the output video regardless if the input video is encrypted or not.

❷ HDCP Notification radio buttons — Select either the **Green** or **Black** radio button to select how the receiver displays HDCP notification on a monitor connected to its DisplayPort Output port.

❸ Color Bit Depth radio buttons — Select the **Auto** radio button for the transmitter to automatically follow the input bit depth. Select **Force 8-bit** to constrain the bit depth.

❹ Video Mute button — Click this button to toggle the video mute on and off for the receiver DisplayPort output port. Video mute sends black video while maintaining sync timings from the input video signal. Embedded audio continues to be output.

❺ Sync Mute button — Click this button to toggle the video mute on and off for the receiver DisplayPort output port. Sync mute disables the sync output, allowing the display to go blank and, eventually (depending on the timeout parameters set in the connected display) go into standby or sleep mode. Embedded audio is also muted.

> **NOTE:** **Video Mute** cancels **Sync Mute** and **Sync Mute** cancels **Video Mute**.

⑥ Return Audio Input Gain slide control (see figure 18 on the previous page) — Click and slide the **Return Audio Input Gain** slide control to vary to select the input audio gain or attenuation value of the audio returned to the transmitter, from -18 dB to +24 dB in 1 dB increments.

> **NOTE:** As an alternative, you can also either:
> - Click the up arrow (▲) and down arrow (▼) buttons to step the level up and down.
> - Click and highlight the value displayed in the **dB** field (1 ▲▼ dB) and type in the desired numeric level.
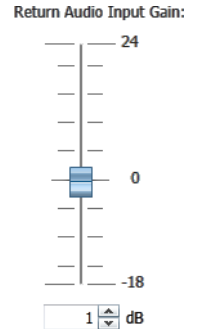
⑦ Mute buttons — Click the **Mute** buttons to toggle the following mute functions on and off:

DisplayPort Mute — Mute the signal on the DisplayPort Output port.

Analog Mute — Mute the signals on both analog audio output ports.

Mute All — Mute the signals on the DisplayPort Output port and both analog audio output ports.

⑧ EDID panel — Shows the EDID information of the connected display. Click the **Capture EDID from Display** button to store the EDID in the Extron library on the connected computer.
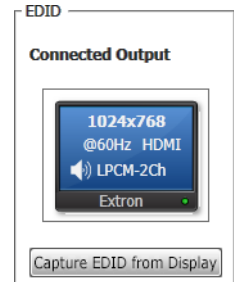
Device Menu (Both Units)

The device menu is accessed by clicking the ▼ icon on the device tab above the menu bar.

- **Disconnect** — Disconnects the Product Configuration Software from the unit while leaving the program active.

- **Settings** — Opens the **Unit Information** dialog box (see figure 19), which provides general information about the connected unit.
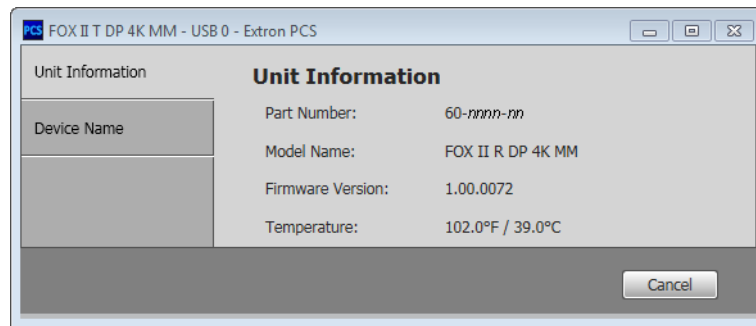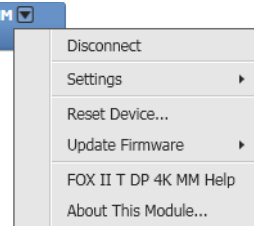

Figure 19.   Unit Information Dialog Box

The `Model Name` can be changed to a custom value or reset to the default value by clicking the **Device Name** tab, opening the **Device Name** dialog box (see figure 20). The **Apply** button becomes selectable when you have entered a name in the **Enter a device name:** field.
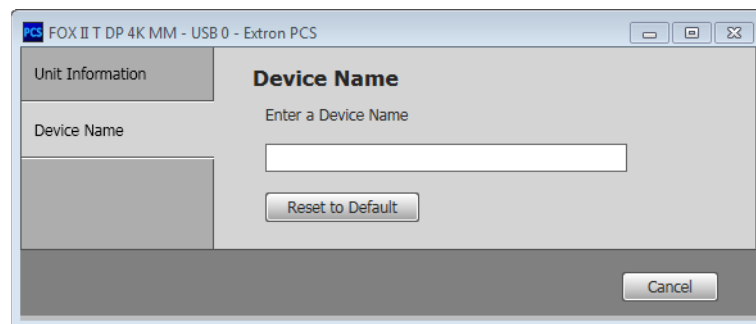

Figure 20.   Device Name Dialog Box

- **Reset Device ...** — Opens a dialog box (see figure 21) that allows you to reset the connected transmitter or receiver. Reset returns all settings to their default values.
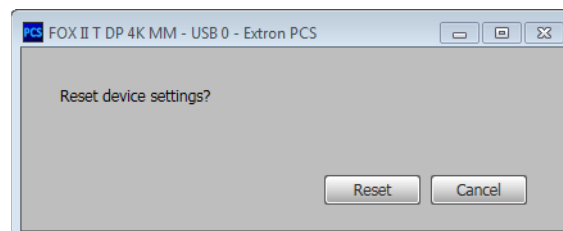

Figure 21.   Reset Device Dialog Box

- **Update Firmware ...** — Disconnects the Product Configuration Software from the unit and opens the Firmware Loader utility in the background (see **Updating the Firmware**, on the next page).

- **About This Module ...** — Shows the version of the unit-specific part of the software.

Updating the Firmware

The Product Configuration Software can open the Firmware Loader utility, which provides a way to replace the transmitter or receiver firmware without taking the unit out of service.

> **NOTE:** Upgrading the firmware does not overwrite the current configuration.

Update the unit firmware as follows:

1. Perform steps 1 through 7 of **Installing the Software**, on page 25, to download the firmware upgrade from the Extron website.

2. Click `Run` in the `File Download and Security Warning` dialog boxes, if applicable (see **figure 22**, ❶ on the next page). The PC downloads the firmware update from the Extron website and starts the Extron Installation Program to extract the firmware file.

3. Click `Finish` (❷). The program extracts the firmware files and places them in a folder identified in the InstallShield Wizard.

> **ATTENTION:**
> - The firmware file must have an .s19 extension. Other file types can cause the unit to stop functioning.
> - Le firmware doit avoir une extension .S19. D'autres types de fichiers peuvent nuire au fonctionnement de l'émetteur.

> **NOTES:**
> - **Note the folder to which the firmware file is saved**. When downloaded from the Extron website, the firmware is placed in a subfolder of:
>   - **64-bit OS**: `C:\Program Files (x86)\Extron\Firmware`.
>   - **32-bit OS**: `C:\Program Files\Extron\Firmware`.
> - The original factory-installed firmware is permanently available on the unit. If the attempted firmware upload fails, the unit reverts to the factory-installed firmware.

4. Click `Finish` (❸) to exit the program.

5. Connect the computer to the front panel Configuration port (see **Configuration Port** on page 11) of the unit to be updated.
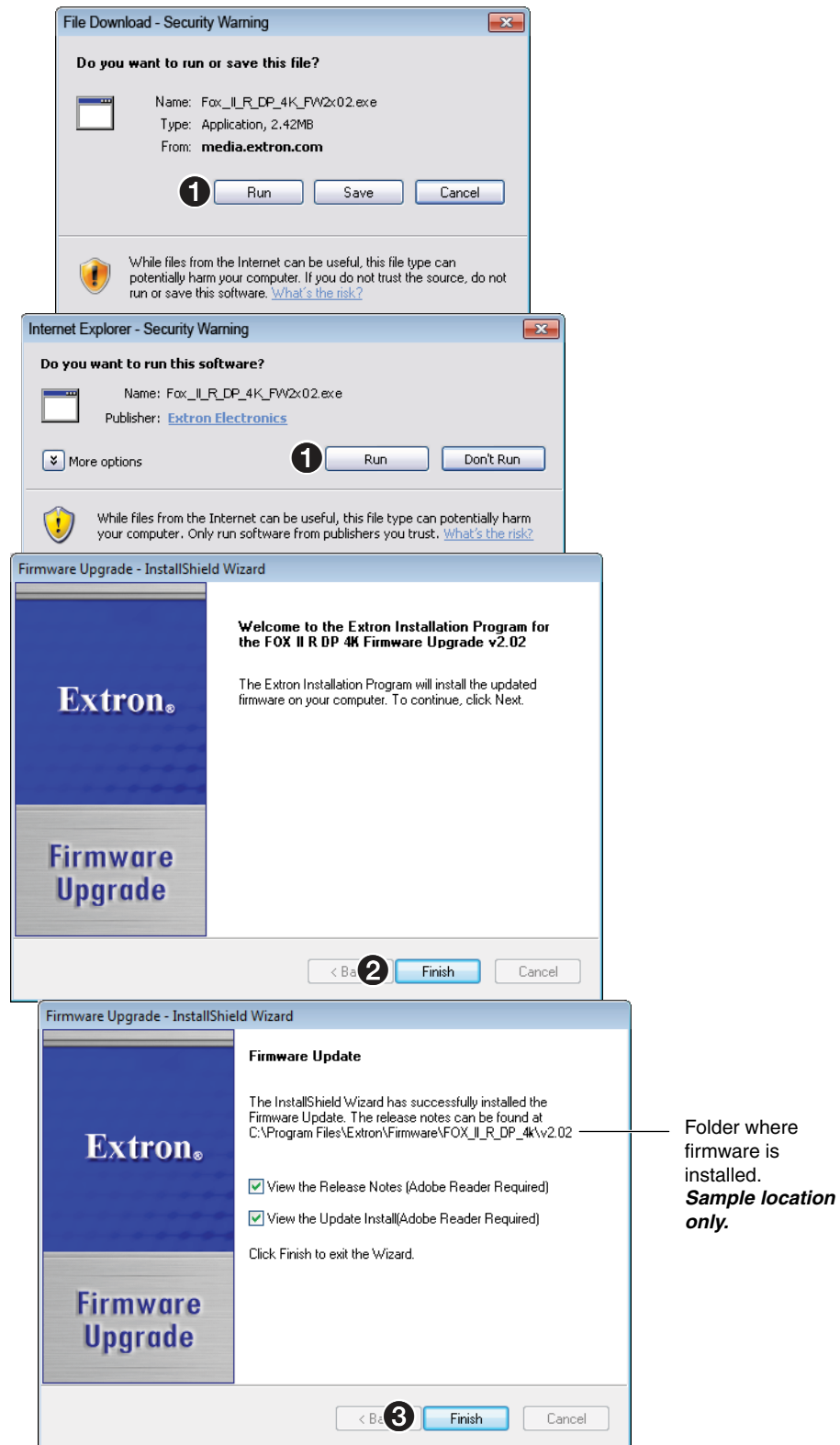
Figure 22. Downloading Firmware Upgrade Files

Folder where firmware is installed. *Sample location only.*

6. Start the Product Configuration Software and connect to the unit (see **Starting the Program** on page 27).

7. On the device tab, click ⯆ > `Update firmware`. An `Update Firmware` dialog box opens, and the software asks you to confirm that you want to disconnect it from the unit (see figure 21).

8. Click `Continue` (❶). The Product Configuration Software disconnects itself from the unit and calls the Firmware Loader utility in the background. The `Update Firmware` dialog box appears.
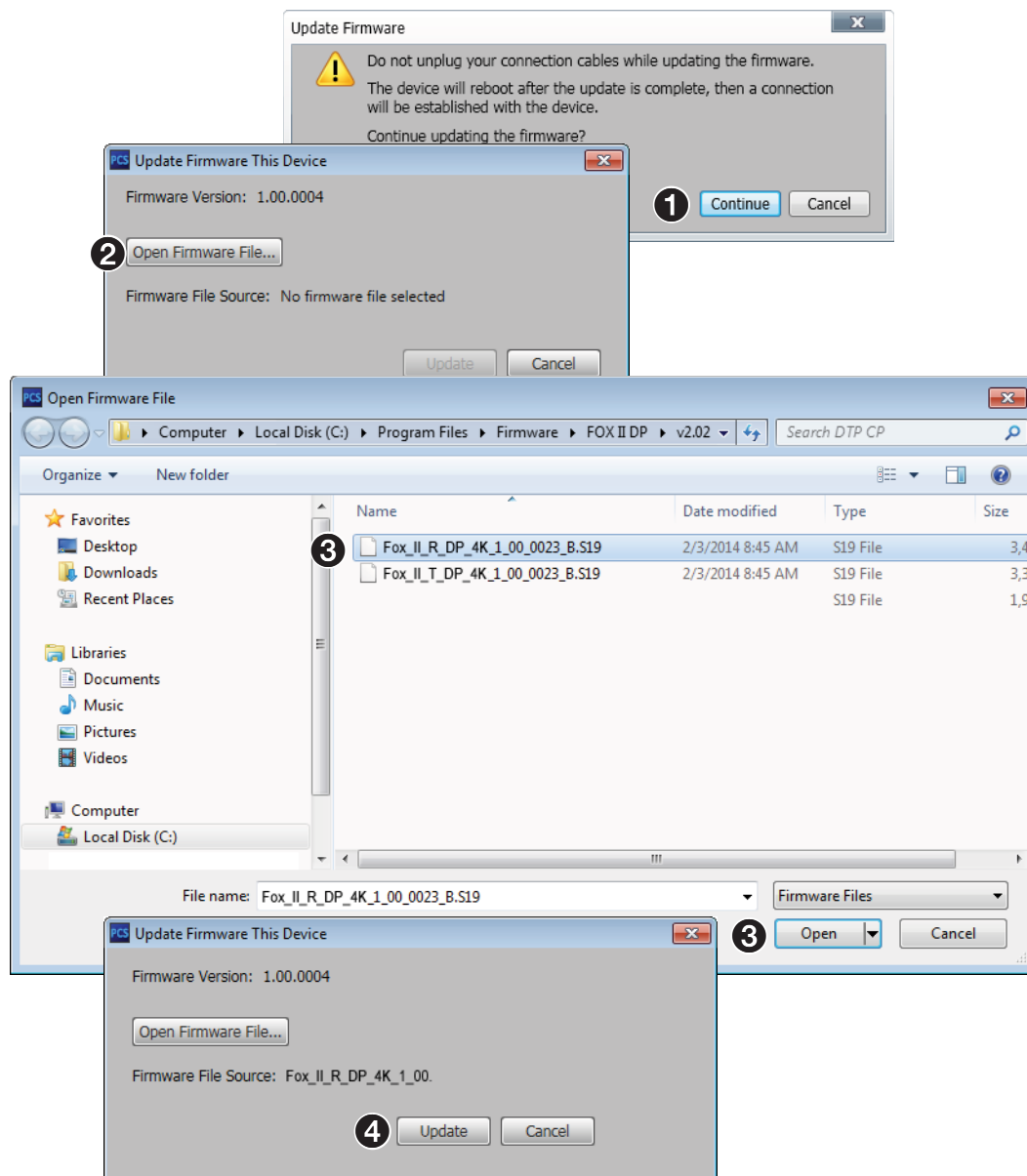

Figure 23.   Updating Firmware

9. Click `Open Firware File` (❷). The `Open` dialog box opens.

10. Navigate to the folder where you saved the firmware upgrade file. Select the file and click `Open` (❸). The `Update Firmware` dialog box returns to the top.

11. Click **Update** (see **figure 23**, ❹ on the previous page).

The software advises you that you are about to reprogram the unit firmware. Click **OK** to continue.

The Firmware Loader utility tests the connection, installs the update, and then verifies the firmware.
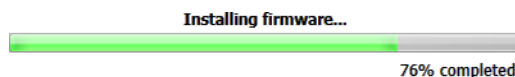
At the conclusion of the process, the utility reports `Update Complete` and prompts you to reconnect to the device (see figure 24).

Figure 24.   Reconnect Message

12. Click **Close** (❶). The Product Configuration Software window returns to the front, showing the **Device Discovery** window (see **figure 13** on page 27).

13. Reconnect the program as described in **Starting the Program** on page 27.

Unit Mounting

Mounting the Units

> **ATTENTION:**
> - Installation and service must be performed by authorized personnel only.
> - L'installation et l'entretien doivent être effectués par le personnel autorisé uniquement.

Either of the 1U high, half-rack width units can be placed on a tabletop or mounted on a rack shelf, or under or through a desk or other furniture. The receiver can be mounted to a projector bracket.

Tabletop Use

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

Mounting Kits

Mount the unit using any compatible rack, projector, or furniture mounting kit, listed on the Extron website (**www.extron.com**), in accordance with the directions included with the kit. For rack shelf mounting, also see "UL Rack-Mounting Guidelines," below.

UL Rack-Mounting Guidelines

The following Underwriters Laboratories (UL) guidelines pertain to the installation of the FOX II T/R DP 4K unit into a rack.

- **Elevated operating ambient** — If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consider installing the equipment in an environment compatible with the +122 °F (+50 °C) maximum ambient temperature (Tma) specified by Extron.

- **Reduced air flow** — Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

- **Mechanical loading** — Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

- **Circuit overloading** — Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

- **Reliable earthing (grounding)** — Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (such as the use of power strips).

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.

Europe and Africa:
Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

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

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

China:
Extron China
686 Ronghua Road
Songjiang District
Shanghai 201611
China

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

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.