User Guide

Fiber Optic Extenders

FOX II T DP
FOX II R DP

Fiber Optic Transmitter and Receiver for DisplayPort

Extron Electronics
INTERFACING, SWITCHING AND CONTROL

68-1988-01 **Rev. A**
02 14

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**.

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**.

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.

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

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

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Chinese Simplified（简体中文）

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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。

Japanese

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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。

Korean

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

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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.

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This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC rules. The Class A limits provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference; the user must correct the interference at his own expense.

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

FDA/IEC 60825-1 Requirements

CLASS 1 LASER PRODUCT

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

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

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

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

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Conventions Used in this Guide

Notifications

The following notifications are used in this guide:

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

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

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

NOTE: A note draws attention to important information.

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

Software Commands

Commands are written in the fonts shown here:

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

Esc X1 * X17 * X20 * X23 * X21 CE ←

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

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

```
Reply from 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**.

Contents

Introduction

WARNING: Potential vision damage — The FOX II DP transmitter and receiver output continuous laser light, which may be harmful to the eyes; use with caution.

- **Do not look** into the rear panel fiber optic cable connectors or into the fiber optic cables themselves.
- Plug the attached dust caps into the optical transceivers when the fiber cable is unplugged.

About this Guide

This guide contains information about the ultra-high performance Extron FOX II DP Transmitter and Receiver, a fiber optic extender (see figure 1, below).

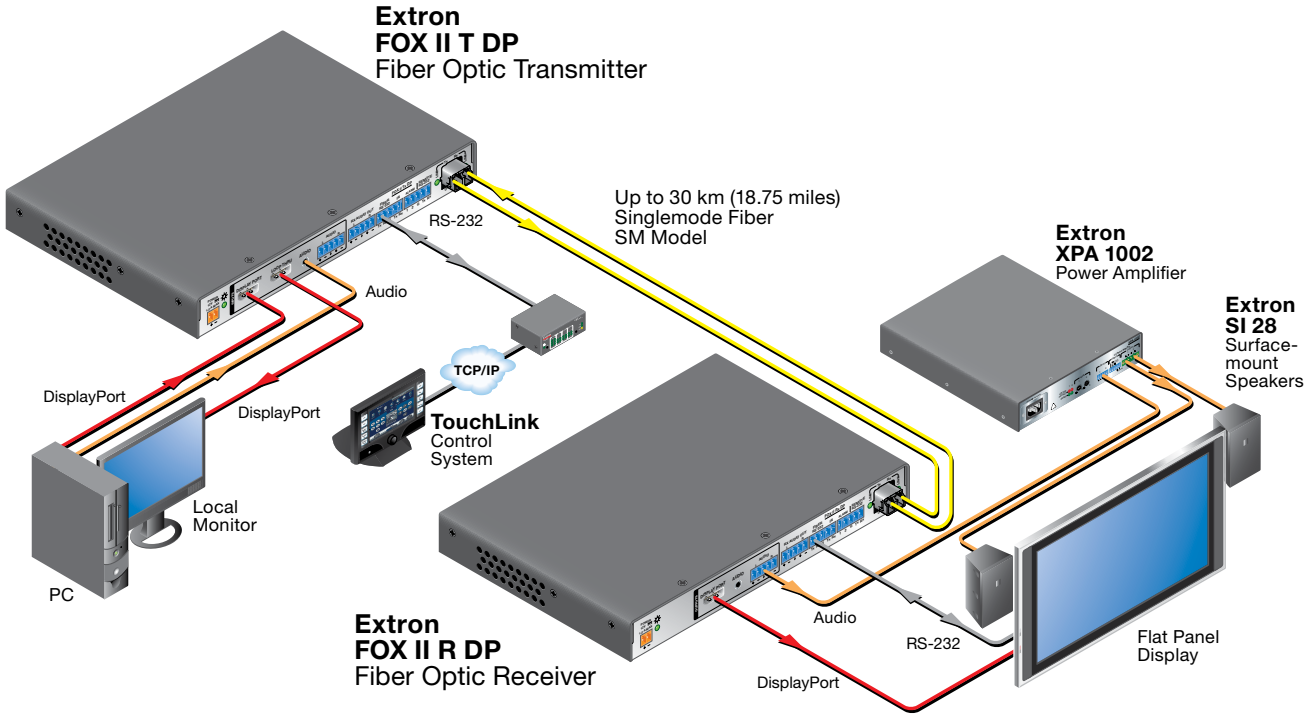


Figure 1. Typical FOX II DP Transmitter and Receiver Application

About the FOX II DP Transmitter and Receiver

The FOX II DP 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 miles).

Transmitter

The FOX II T DP transmitter accepts DisplayPort video, at a resolution of up to 2560x1600 and a data rate of up to 10.8 Gbps (2.7 Gbps per lane). The video input can also include embedded audio. The transmitter also loops the DisplayPort input through for a local monitor.

The transmitter can also 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 and if none, selects the analog audio for the unit to embed in the digital video stream and transmit to the receiver. An RS-232 Simple Instruction Set (SIS) command selects either audio.

The transmitter accepts a one-way (transmitter-to-receiver) RS-232 serial communication (for applications such as projector control) serial signal input. The transmitter can receive an optional return (receiver-to-transmitter) stream of serial RS-232 communications, 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 on a single LC connector to a compatible fiber optic receiver. It also can receive a proprietary optical signal from the receiver consisting of the RS-232 return from a controlled device and 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 receiver accepts a proprietary optical signal on a single LC connector from a compatible fiber optic transmitter.

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

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

If RS-232 return is implemented, the receiver outputs a proprietary signal on the second fiber optic cable carrying the RS-232 signal.

For video resolutions up to 2560x1600, the video output of the receiver is a perfect, pixel-for-pixel recreation of the video signal input to the transmitter.

Both Units

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

System Compatibility

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

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

- DVI Plus models: Resolutions up to 1920x1200 @ 60 Hz, with embedded audio and analog audio support
- Non plus models: Resolutions up to 1600x1200 @ 60 Hz, with analog audio support. Embedded audio is not supported.

NOTES:

- The receiver video output is HDCP-compliant when the transmitter input is from an HDCP-compliant source and two fiber cables are used.
- The FOX II 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 MM
- FOX II R DP MM

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

- FOX II T DP SM
- FOX II R DP SM

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

Features

Ultra high performance — Offers pixel-for-pixel DisplayPort video transmission, up to 2560x1600 at 60 Hz.

Video input — The transmitter accepts an input from a DisplayPort source.

Loop-through on transmitter — The transmitter has a digital video loop-through on a DisplayPort connector that allows connection of a local monitor.

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.

Video output — The receiver outputs digital video on a DisplayPort connector.

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 500 DA6 distribution amplifier and 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.

NOTE: Analog audio is not embedded in the digital video stream but is transmitted as it is input.

Analog audio input gain and attenuation — The level of the analog audio input can be adjusted within a range of -18 dB (attenuation) to +10 dB (gain) via the serial port or USB port.

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

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.

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 panels of 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 RS-232 port and USB port 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 external power supply for each unit provides worldwide power compatibility, low power consumption, and reduced operating costs.

Installation and Operation

This section details the installation of the FOX II DP 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 DP 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.

NOTE: For proper equipment cooling, do not stack units in a rack.

☐ Mount the transmitter and receiver (see **Mounting the Units** on page 41).

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

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

Connections

Transmitter Connections and Controls

Rear panel

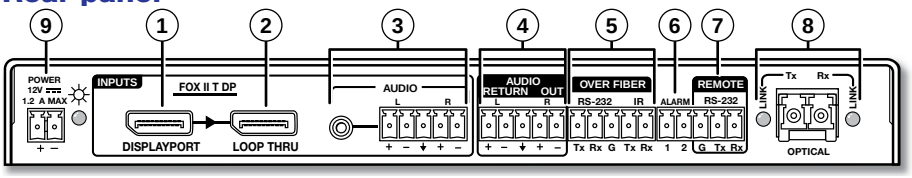


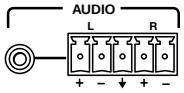
Figure 2. FOX II DP Transmitter Rear Panel Connectors

① **DisplayPort input port** — Connect a digital video input to this DisplayPort connector.

The FOX II T DP also accepts embedded digital audio on this connector.

② **Loop-through output port** — If desired, connect a local monitor to this DisplayPort connector.

③ **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 13 to wire these connectors).



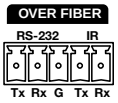
Mini jack connector — Plug an unbalanced audio input into this stereo mini jack connector.

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 mini jack and captive screw audio connector are connected, the mini jack takes priority.

④ **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 13 to wire these connectors).

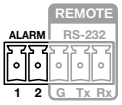
⑤ **Bidirectional RS-232 and IR port** — Connect a serial RS-232 signal, a modulated or unmodulated IR signal, or both to this 3.5 mm, 5-pole captive screw connector for bidirectional RS-232 and IR communication. See **RS-232 and IR connections** on page 12 to wire the connector.



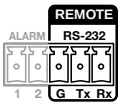
NOTES:

- If you connect only one fiber optic cable (see **item ⑧**, 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 and leave link 2 enabled (via an **SIS command** to the receiver [see page 25] or using the Product Configuration Software [see **Receiver Input/Output Configuration screen** on page 35]).
- The FOX II DP can pass RS-232 commands and responses at rates up to 115200 baud.

⑥ **Alarm port** — For remote monitoring of the status of fiber optic link 2, connect a locally-constructed or furnished monitoring device to the transmitter via the two leftmost 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 14 to wire this connector).



⑦ **Remote RS-232 port** — For serial control of the transmitter, 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** on page 12 to wire this connector). See **Remote Control** on page 18 for SIS commands and software control.



⑧ Fiber optic ports and LEDs —

WARNING: Potential vision damage — These units output continuous laser light, which may be harmful to the eyes; use with caution.

- **Do not look** into the rear panel fiber optic cable connectors or into the fiber optic cables themselves.
- Plug the attached dust caps into the optical transceivers when the fiber cable is unplugged.

NOTES:

- Ensure 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 serial command 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 from the controlled device.

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

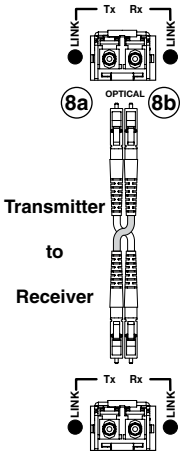
⑧a Tx (required) — For all one-way video, audio, and serial communications from the transmitter to the receiver, connect a fiber optic cable to the Tx LC connector.

Connect the opposite end of this fiber optic cable to the Rx LC connector on the FOX II DisplayPort receiver (see **item ⑫** on figure 4 and on page 9) or to any other compatible Extron FOX device.

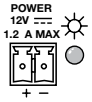
⑧b Rx (optional) — For all one-way return video, audio, and serial communications from the receiver to the transmitter, connect a fiber optic cable to the Rx LC connector.

Connect the opposite end of this fiber optic cable to the Tx LC connector on a FOX II R DP receiver (see **item ⑫** on figure 4 and on page 10) or to any other compatible Extron FOX device.

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



⑨ DC power input — Plug the included external 12 VDC power supply into this connector. The LED indicates power is applied. See **Power supply wiring** on page 15, to wire the connector.



Front panel

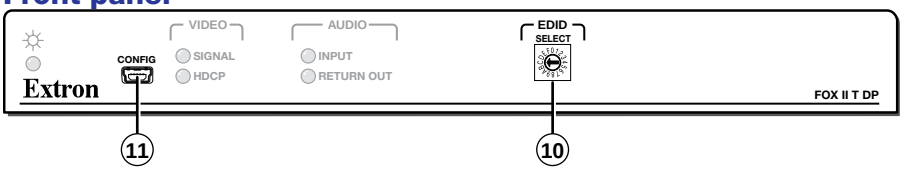


Figure 3. FOX II DP Transmitter Front Panel Control and Connector

⑩ **EDID Select rotary switch** — 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:

- Captured from the display connected to the receiver output.
- Captured from the display connected to transmitter DisplayPort Loop-through connector (see **item** ② on figure 2 on page 6).
- Manually imported via an **SIS command** (see page 21) or Product Configuration Software **action** (see page 32) 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.

Position 3 — The EDID is received from the display connected to the DisplayPort Loop-through connector (see **item** ② on figure 2 on page 6).

Position 4 – F — Specify a resolution. The table below identifies the switch positions and the associated resolutions. All resolutions are at 60 Hz.

Pos.	Source or resolution	Pos.	Resolution	Pos.	Resolution
0	User recorded EDID	6	1280x800	C	1920x1080 (1080p)
1	Selected via RS-232	7	1366x768	D	1920x1200
2	Display on Rx output	8	1400x1050	E	2048x1536
3	Display on Tx loop-through	9	1440x900	F	2560x1600
4	1024x768	A	1600x1200		
5	1280x720 (720p)	B	1680x1050		

⑪ **Configuration port** — Connect a controlling device, such as a PC, to this mini USB B port for control of all FOX II T DP functions and to install a firmware upgrade (see **Remote Control** on page 18 for SIS commands and software control).

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

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.

Receiver Connections

Rear panel

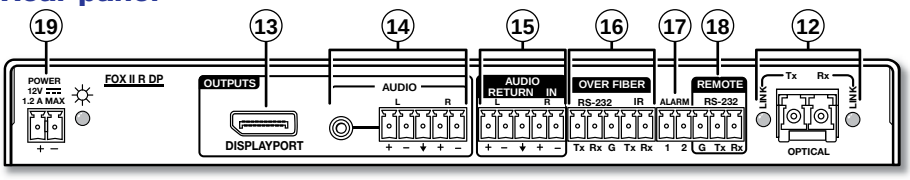


Figure 4. FOX II DP Receiver Rear Panel Connections

⑫ **Fiber optic ports and LEDs** —

WARNING: Potential vision damage — These units output continuous laser light, which may be harmful to the eyes; use with caution.

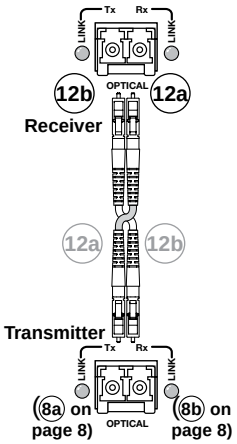
- **Do not look** into the rear panel fiber optic cable connectors or into the fiber optic cables themselves.
- Plug the attached dust caps into the optical transceivers when the fiber cable is unplugged.

NOTES:

- You can connect the transmitter a receiver in either of two ways:
  - **One way (transmitter-Tx-to-receiver-Rx) only** — Connect fiber cable ⑫a (from transmitter connector ⑧a) **only**.
  - **Two way (transmitter to receiver and return)** — See figure 5. Connect fiber cable ⑫a (from transmitter connector ⑧a to the receiver) and fiber cable ⑫b back to the transmitter (connector ⑧b).
- See the transmitter fiber connector **NOTES** on page 8, which also apply to these connectors.

⑫a **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 fiber optic cable to the Tx connector on the FOX II T DP transmitter (see **item** ⑧a on page 8) or to any other compatible Extron fiber optic device.



⑫b **Tx (optional)** — Connect a fiber optic cable to the Tx LC connector for all one-way return serial communications from the receiver to the Rx connector on the transmitter.

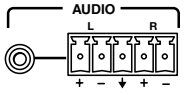
NOTE: The Tx connector emits light when the unit is powered and the Rx port receives light.

Connect the opposite end of this fiber optic cable to the Rx connector on the FOX II T DP transmitter (see **item** ⑧b on page 8).

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

⑬ **DisplayPort Output connector** — Connect a video display to this DisplayPort connector.

⑭ **Audio output ports** — These connectors output the transmitted, unamplified, line level analog audio (see **Audio connections** on page 13 to wire these connectors). These connectors output professional level (+4 dBu) audio.



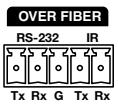
NOTE: If embedded digital audio is present on the DP connector, these analog audio connectors do not output audio unless forced using an **SIS command** (see page 22).

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

⑮ **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** on page 13 to wire these connectors).

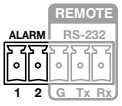
⑯ **Bidirectional RS-232 and IR port** — Connect a serial RS-232 signal, a modulated or unmodulated IR signal, or both to this 3.5 mm, 5-pole captive screw connector for bidirectional RS-232 and IR communication (see **RS-232 and IR connections** on page 12 to wire the connector).



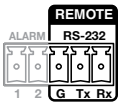
NOTES:

- If you connect only one fiber optic cable (see **item** ⑫, on the previous 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 DP can pass RS-232 commands and responses at rates up to 115200 baud.

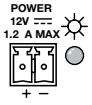
⑰ **Alarm port** — For remote monitoring of the status of fiber optic link 2, connect a locally-constructed or furnished monitoring device to the receiver via the two leftmost poles (1 and 2) of this 5-pole captive screw connector. When the receiver does not detect a light link on fiber cable Rx, pin 1 and pin 2 of this port are shorted together. (see **Alarm connection** on page 13 to wire this connector).



⑱ **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** on page 12 to wire this connector). See **Remote Control** on page 18 for SIS commands and software control.



⑲ **DC power input** — Plug the included external 12 VDC power supply into this connector. The LED indicates power is applied (see **Power supply wiring** on page 15, to wire the connector).



Front panel

Figure 5. FOX II DP Receiver Front Panel Controls and Connector

⑳ **Configuration port —** Connect a controlling device, such as a PC, to this mini USB B port for control of all FOX II R DP functions (see **Remote Control** on page 18 for SIS commands and software control). CONFIG

This port serves a similar communications function as the rear panel Remote RS-232 port (see **item** ⑱ on the previous page), but it is easier to access than the rear port after the transmitter has been installed and cabled.

NOTE: Both a front panel Configuration port connection and a rear panel Remote RS-232 port connection can be active at the same time. If commands are sent to both simultaneously, the processor handles the command it receives 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) on the input or buffered loop-through of the FOX II DP transmitter or the output of the FOX II DP 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 6 shows how to wire the RS-232 and IR connectors.

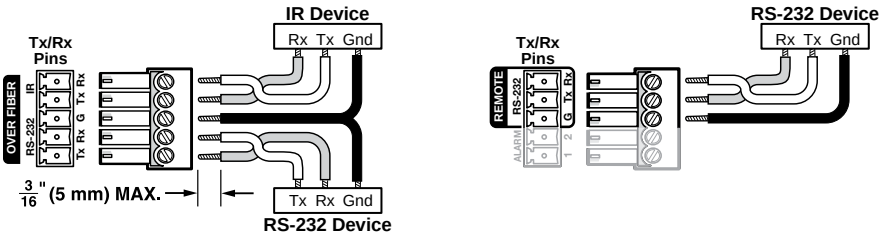


Figure 6. RS-232 and IR Connector Wiring

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.
- The Remote RS-232 port is wired differently than stand-alone Extron RS-232 ports.

Audio connections

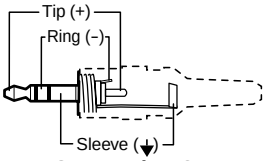
NOTE: The level of the analog audio inputs can be set via an **SIS command** (see page 21) to the transmitter or using the **Product Configuration Software** (see page 33).

The following table shows the audio format that is sent over the fiber connection, along with the DisplayPort video, when a specific audio format is not specified (see the Input audio selection **SIS commands** on page 22 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 mini jack input and output connections

See figure 7 to identify the tip, ring, and sleeve when you are making connections for the transmitter 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
(balanced)

Figure 7. Stereo Plug Audio Connector

Captive screw input connections

See figure 8 to properly wire a captive screw input connector, either audio input on the transmitter or return audio input on the receiver.

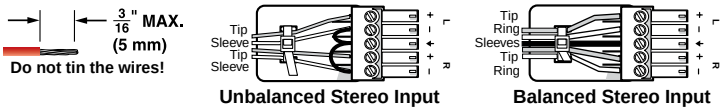


Figure 8. Captive Screw Connector Wiring for Stereo Audio Inputs

NOTE: The length of exposed wires is important (see the first two RS-232 and IR connector **NOTES** on page 12 for more information).

Audio output connector

See figure 9, 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, but you must supply the audio cable. Use the supplied tie-wrap to strap the audio cable to the extended tail of the connector.

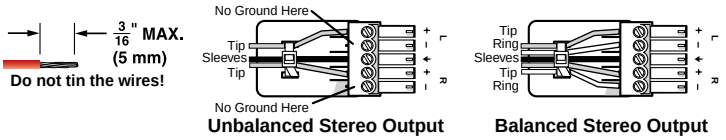


Figure 9. Captive Screw Connector Wiring for Stereo Audio Output

ATTENTION: For unbalanced audio, connect the sleeves to the ground contact. **DO NOT** connect the sleeves to the negative (-) contacts.

NOTE: The length of exposed wires is important (see the first two RS-232 and IR connector **NOTES** on page 12 for more information).

Alarm connection

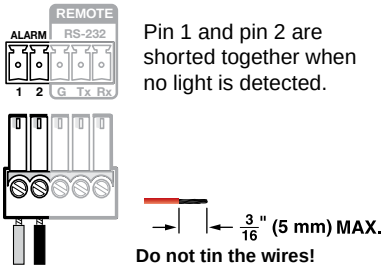


Figure 10. Alarm Connector

NOTE: The length of exposed wires is important (see the first two RS-232 and IR connector **NOTES** on page 12 for more information).

Power supply wiring

ATTENTION: Always use power supplies specified by Extron for the FOX II units. Use of an unauthorized power supply voids all regulatory compliance certification and may cause damage to the supply and the unit.

Figure 11 shows how to wire the power connector.

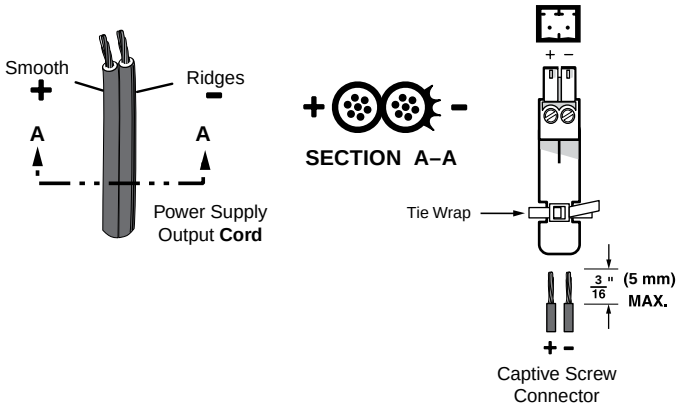


Figure 11. Power Connector Wiring

ATTENTION:

- This product is intended to be supplied by a Listed Power Unit marked “Class 2” or “LPS,” rated 12 VDC, 2.0 A minimum. Always use power supplies supplied by or specified by Extron. Use of an unauthorized power supply voids all regulatory compliance certification and may cause damage to the supply and the end product.
- Unless otherwise stated, the AC/DC adapters are not suitable for use in air handling spaces or in wall cavities.
- The installation must always be in accordance with the applicable provisions of National Electrical Code ANSI/NFPA 70, article 75 and the Canadian Electrical Code part 1, section 16. The power supply shall not be permanently fixed to a building structure or similar structure.
- Power supply voltage polarity is critical. Incorrect voltage polarity can damage the power supply and the unit. The ridges on the side of the cord (figure 11) identify the power cord negative lead.

To verify the polarity before connection, plug in the power supply with no load and check the output with a voltmeter.

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

ATTENTION: The length of exposed wires is important (see the first two RS-232 and IR connector **NOTES** on page 12 for more information).

Use the supplied tie wrap to strap the power cord to the extended tail of the connector.

Alternatively, an optional Extron PS 124 Universal 12 VDC Power Supply can power multiple Extron 12 VDC devices using only one AC power connector.

Indications and Operation

Transmitter Indications

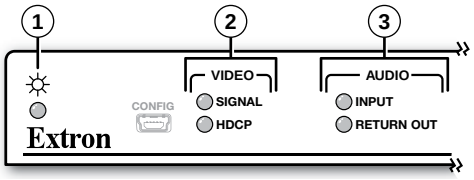


Figure 12. FOX II DP Transmitter Front Panel Features

① ☼ **(power) indicator —** Indicates that power is applied to the unit.

② **Video LEDs** —

Signal LED — Lights when the transmitter detects an active signal on its video input.

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

③ **Audio LEDs** —

Input LED — Lights when the transmitter either:

- Detects a low level audio signal for a short period of time on the analog input. It returns to unlit if the audio signal drops below the minimum threshold for a short period of time.
- Detects embedded audio.

Return Out LED — Lights when the transmitter detects a signal on its Return Audio Output connector.

Receiver Indications

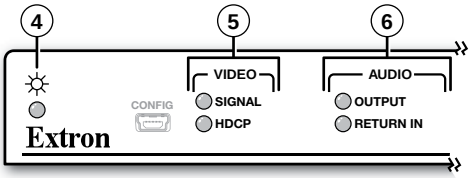


Figure 13. FOX II DP Receiver Front Panel Features

④ ☼ **(power) indicator —** Indicates that power is applied to the unit.

⑤ **Video LEDs** —

Signal LED — Lights when an active DisplayPort signal is detected on the fiber input of the receiver.

HDCP LED — Lights when the input video signal detected on the fiber input is HDCP encrypted.

⑥ **Audio LEDs** —

Output LED — Lights on the receiver when the transmittereither:

- Detects a low level audio signal for a short period of time on the analog input. It returns to unlit if the audio signal drops below the minimum threshold for a short period of time.
- Detects embedded audio.

Return In LED — Lights when the receiver detects a signal on its Return Audio Input connector.

Operation

After the transmitter, all receivers, 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 DP, 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** on page 18).

Remote Control

This section describes the remote control operation of the FOX II DP transmitter and receiver, including:

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

The transmitter and receiver each have a front panel Configuration port, a mini USB jack (see **item** ⑪ on page 9 and **item** ⑳ on page 12) and a rear panel Remote RS-232 port, a 3-pole captive screw connector (see **RS-232 and IR connections** on page 12). Any 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 serial control of the transmitter and receiver possible.

The protocol for all ports is as follows:

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

NOTE: RS-232 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, V*x.xx*, 60-*nnnn-xx*↵↵

- or -

(c) Copyright 20*nn*, Extron Electronics FOX II R DP, 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.

Reconfig↵

The unit sends the Reconfig message whenever the video input signal to the transmitter is changed.

1Lnk*n*•2Lnk*n*•Vid*n*•Aud*n*•XX•Tx↵

- or -

1Lnk*n*•2Lnk*n*•Vid*n*•Aud*n*•XX•Rx↵

The unit sends the status message whenever a change in the fiber link and video connection occurs. *n* is the connection status, where Ø = link or input not detected and 1 = link or input detected. *XX* = either SM (singlemode) or MM (multimode).

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.

Hplg2↵

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:

E1Ø - Invalid command
E13 - Invalid parameter
E14 - Invalid command for this configuration

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 24**. 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.

Space →

ASCII to Hex Conversion Table																			
	20	!	21	"	22	#	23	$	24	%	25	&	26	'	27
(	28	)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/	2F
0	30	1	31	2	32	3	33	4	34	5	35	6	36	7	37
8	38	9	39	:	3A	;	3B	<	3C	=	3D	>	3E	?	3F
@	40	A	41	B	42	C	43	D	44	E	45	F	46	G	47
H	48	I	49	J	4A	K	4B	L	4C	M	4D	N	4E	O	4F
P	50	Q	51	R	52	S	53	T	54	U	55	V	56	W	57
X	58	Y	59	Z	5A	[	5B	\	5C	]	5D	^	5E	_	5F
`	60	a	61	b	62	c	63	d	64	e	65	f	66	g	67
h	68	i	69	j	6A	k	6B	l	6C	m	6D	n	6E	o	6F
p	70	q	71	r	72	s	73	t	74	u	75	v	76	w	77
x	78	y	79	z	7A	{	7B	|	7C	}	7D	~	7E	DEL	7F

Esc	1B
CR	0D
LF	0A

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	See the **table** on page 21. All resolutions are at the 60 Hz refresh rate.		
X2	= Save EDID source	1 = transmitter loop-through display		2 = receiver output display
X3	= Video and sync mute status	0 = mute off	1 = video mute on	2 = video and sync mute
X4	= Audio gain adjustment range	00 to 10		
X5	= Audio level adjustment range	–18 to +10 (in 1.0 dB steps)		
X6	= Audio attenuation adjustment range	00 to 18		
X7	= Video delay (0 plus six steps at 0.25 seconds per step)	0 = 0 second 1 = 0.25 second **2 = 0.5 second (default)**	3 = 0.75 second 4 = 1.0 second	5 = 1.25 second 6 = 1.5 second
X8	= Audio input for transmission	0 = Auto 1 = Digital (embedded DisplayPort) audio	2 = Analog audio	
X9	= Audio output	0 = DisplayPort and analog	1 = DisplayPort only	2 = Analog only
X10	= On and off status	0 = off	1 = on	
X11	= Color bars test pattern	0 = Off (**default**) 1 = 720p at 50 Hz	2 = 720p at 60 Hz 3 = 1080p at 60 Hz	
X12	= Transmitter name			
X13	= Link and input status	0 = link or input not detected	1 = link or input detected	
X14	= Input HDCP signal	0 = no source detected 1 = source detected with HDCP	2 = source detected but no HDCP present	
X15	= Loop-through display	0 = no sink device connected 1 = sink device detected and HDCP compliant	2 = sink device detected, but not HDCP compliant	
X16	= Internal temperature	*nnn*F•*nn*C		
X17	= Transmission mode	SM = singlemode	MM = multimode	
X18	= Firmware version	*v.vv*		
X19	= Frequency	*nnn.n*		
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	= EDID switch position	00 (0 hex) through 15 (F hex) (see **item** ⑩ and the table on page 9)		

Command and Response Table for Transmitter SIS Commands

Command	SIS Command (host to unit)	Response (unit to host)	Additional description
EDID Minder Resolution			
Set the EDID resolution	Esc A X1 EDID ←	EdidA X1 ↵	Set the EDID resolution to X1.
Example:	Esc A23EDID ←	EdidA23 ↵	Set the EDID resolution to 1280x768 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 the memory location.
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.
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	X4 G	Aud X5 ↵	Set the input level to X5 dB (gain).
Example:	2G	Aud2 ↵	Set the input level to +2 dB (gain).
Set input audio attenuation to a -dB value	X6 g	Aud X5 ↵	Set the input level to X5 dB (attenuation).
Increment input level	+G	Aud X5 ↵	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 X5 ↵	Decrease the audio level by 1 dB.
Show input level	G	X5 ↵	

KEY: X1 = EDID resolution — See the table below.

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

Connected display or a customer-saved value	
X1	**Source**
39	Display connected to the receiver output connector
4Ø	Display connected to the transmitter loop-through connector
41	User memory

* Default

X2 = Save EDID 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 = Audio gain adjustment range — ØØ to 1Ø

X5 = Audio level adjustment range — -18 to +1Ø (in 1.0 dB steps)

X6 = Audio attenuation adjustment range — ØØ to 18

Command/response table for Transmitter SIS commands (continued)

Command	SIS Command (host to unit)	Response (unit to host)	Additional description
Video shutdown delay			
NOTES: • The Set Video Delay command blanks the digital video for a specified time to help sink devices correctly detect an AV rate change. • **Only** video is blanked; embedded audio is **not** muted.			
Set delay	3*X7#	Dly X7 ↵	Delay video by an interval of X7.
Example:	3*3#	Dly3↵	Delay video by an interval of 0.75 seconds (3 x 0.25 seconds).
View delay	3#	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 ←	X8 ↵	Show the selected format.
Audio mute (DisplayPort Loop-through and Return Out)			
Mute the audio	X9*1Z	Amt X9 *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	X9*ØZ	Amt X9 *Ø↵	The transmitter outputs Return Out audio.
Show audio mute status	X9*Z	X10 ↵	Mute status of X9 audio is X10.
NOTE: Ø is not a valid X9 value for the **show** audio mute status command.			
Input reports as an HDCP authorized device			
HDCP authorized device on	Esc E1HDCP ←	HdcpE1↵	Set the transmitter as an HDCP-authorized device.
HDCP authorized device off	Esc EØHDCP ←	HdcpEØ↵	Set the transmitter as **not** an HDCP-authorized device.
View HDCP authorized device status	Esc EHDCP ←	X10 ↵	Show HDCP authorized device status.
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 X11 Test ←	Test X11 ↵	Set the transmitter to output the color bars test pattern to the receiver. X11 defines the resolution and rate.
Turn test pattern off	Esc ØTest ←	TestØ↵	Set the transmitter to output the input video to the receiver (no test pattern is selected).
Show test pattern status	Esc Test ←	X11 ↵	
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•X12↵	Name the transmitter "FOX II T DP".
View the device name	Esc CN ←	X12 ↵	

KEY:

X7 = Video delay (0 plus six steps at 0.25 seconds per step)
- **Ø** = 0 second
- **1** = 0.25 second
- **2** = 0.5 second (**default**)
- **3** = 0.75 second
- **4** = 1.0 second
- **5** = 1.25 second
- **6** = 1.5 second

X8 = Audio input for transmission
- **Ø** = Auto
- **1** = Digital (embedded DisplayPort) audio
- **2** = Analog audio

X9 = Audio output (DisplayPort Loop-through and Return Out)
- **Ø** = DisplayPort and analog
- **1** = DisplayPort only
- **2** = Analog only

X10 = HDCP and mute on or off status
- **Ø** = Off
- **1** = On

X11 = Color bars test pattern
- **Ø** = Off (**default**)
- **1** = 720p at 50 Hz
- **2** = 720p at 60 Hz
- **3** = 1080p at 60 Hz

X12 = Transmitter name
- Up to 24 alphanumeric characters and hyphen (–)

Command/response table for Transmitter SIS commands (continued)

Command	SIS Command (host to unit)	Response (unit to host)	Additional description
Status requests			
View link 1 (Tx-to-Rx) status	1S	X13↵	
View link 2 (Rx-to-Tx) status	2S	X13↵	
View input video status	3S	X13↵	
View input audio status	4S	X13↵	
View all signal status	5S	SigIX13•SigOX13•HDCPIX14•HDCPOX15↵	Report the status of the DisplayPort input, DisplayPort output, HDCP encoding on the input, and HDCP encoding on the output.
View DisplayPort signal status	6S	SigIX13•SigOX13↵	Report the status of the DisplayPort input and DisplayPort output.
View HDCP status	7S	HDCPIX14•HDCPOX15↵	Report the status of the HDCP encoding on the input and HDCP encoding on the output.
View temperature	20S	X16F•X16C↵	Show temperature in degrees Fahrenheit and Celsius.
Information requests			
Information request	I	1LnkX13•2LnkX13•VidX13•AudX13•X17•Tx↵	The unit responds with the current status (signal detected) of optical link 1, optical link 2, the video input, and the audio link; the fiber optic transmission mode (singlemode or multimode); and the device type (Tx).
Show firmware version	Q	X18↵	
Example:	Q	1.23↵	The factory-installed firmware version is 1.23 (sample value only).
Request part number	N	60–*nnnn*–*nn*↵	See the Extron website, **www.extron.com**, for part numbers.
Input sync detection	Esc1LS←	X19horizontal, X19vertical↵	Shows horizontal frequency in kHz and vertical frequency in Hz. 000.0,000.0 if no signal is detected.
Request SFP status	40S	X20•X21Tx•X21Rx•X22↵	
Request switch position	EscSTAT←	EdidMdrX23↵	
Resets			
Reset audio	EscZA←	Zpa↵	Reset audio setting to default levels (0 dB gain).
System reset	EscZXXX←	Zpx↵	Reset all settings to factory defaults.

KEY:

X13 = Link status	0 = light or signal input not detected 1 = light or signal detected	
X14 = Input HDCP signal	0 = no source detected 1 = source detected with HDCP 2 = source detected but no HDCP present	
X15 = Loop-through display	0 = no sink device connected 1 = sink device detected and HDCP compliant 2 = sink device detected, but not HDCP compliant	
X16 = Temperature	*nnn*	
X17 = Transmission mode	SM = singlemode	MM = multimode
X18 = Firmware version	*v.vv*	
X19 = Sync frequency	*xxx.x* (frequency in kHz [H] or Hz [V])	
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 = EDID switch position	00 (0 hex) through 15 (F hex) (see **item 10** and the table on page 9)	

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	= Audio gain adjustment range	ØØ to 1Ø	
X5	= Audio level adjustment range	–18 to +1Ø (in 1.0 dB steps)	
X6	= Audio attenuation adjustment range	ØØ to 18	
X7	= Video delay (0 plus six steps at 0.25 seconds per step)	Ø = 0 second 1 = 0.25 second **2 = 0.5 second (default)**	3 = 0.75 second 4 = 1.0 second 5 = 1.25 second 6 = 1.5 second
X9	= Audio output	Ø = DisplayPort and analog	1 = DisplayPort only 2 = Analog only
X10	= On and off status	Ø = off	1 = on
X12	= Receiver name		
X13	= Link and input status	Ø = link or input not detected	1 = link or input detected
X14	= Input HDCP signal	Ø = no source detected 1 = source detected with HDCP	2 = source detected but no HDCP present
X15	= Loop-through display	Ø = no sink device connected 1 = sink device detected and HDCP compliant	2 = sink device detected, but not HDCP compliant
X16	= Internal temperature	*nnn*F•*nn*C	
X17	= Transmission mode	SM = singlemode	MM = multimode
X18	= Firmware version	*v.vv*	
X19	= Frequency	*nnn.n*	
X20	= Optical module manufacturer	Up to 16 alphanumeric characters	
X21	= Tx or Rx power	*xx.x* dBm	
X22	= Operating temp of module	*nnn.n*	
X24	= Audio output level	Ø = Consumer level (-10 dBV)	1 = Professional level (+4 dBu)

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	EscN1HDCP←	HdcpN1↵	
Disable notification	EscNØHDCP←	HdcpNØ↵	
View notification status	EscNHDCP←	X10↵	
Video shutdown delay			
NOTES: • The Set Video Delay command delays the digital video to help monitors sync correctly during an input rate change. • **Only** video is delayed; embedded audio is **not** delayed.			
Set delay	3*X7#	DlyX7↵	Delay video by an interval of X7.
Example:	3*3#	Dly3↵	Delay video by an interval of 0.75 seconds (3 x 0.25 seconds).
View delay	3#	X7↵	

Command/response table for Receiver SIS commands (continued)

Command	SIS Command (host to unit)	Response (unit to host)	Additional description
Audio input gain and attenuation (for 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	X4 G	Aud X5 ↵	Set the input level to X5 dB (gain).
Example:	2G	Aud2↵	Set the input level to +2 dB (gain).
Set input audio attenuation to a -dB value	X6 g	Aud X5 ↵	Set the input level to X5 dB (attenuation).
Increment input level	+G	Aud X5 ↵	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 X5 ↵	Decrease the audio level by 1 dB.
Show input level	G	X5 ↵	
Audio output level			
Set to consumer level (**default**)	4Ø*Ø#	Lvl Ø↵	Set output level to -10 dBV.
Set to professional level	4Ø*1#	Lvl1↵	Set output level to +4 dBu.
View audio output level	4Ø#	X24 ↵	
Audio mute			
Mute the audio	X9 *1Z	Amt X9 *1↵	Silence the audio output of the receiver.
Unmute the audio	X9 *ØZ	Amt X9 *Ø↵	The receiver outputs audio.
Show audio mute status	X9 *Z	X10 ↵	Mute status of X9 audio is X10.
NOTE: Ø is not a valid X9 value for the **show** audio mute status command.			
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•X12↵	Name the receiver "FOX II R DP".
View the device name	Esc CN←	X12 ↵	
Status requests			
View link 1 (Tx-to-Rx) status	1S	X13 ↵	
View link 2 (Rx-to-Tx) status	2S	X13 ↵	
View input video status	3S	X13 ↵	
View input audio status	4S	X13 ↵	
View all signal status	5S	SigI X13 •SigO X13 •HDCPI X14 •HDCPO X15 ↵	Report the status of the DisplayPort input, DisplayPort output, HDCP encoding on the input, and HDCP encoding on the output.
View DisplayPort signal status	6S	SigI X13 •SigO X13 ↵	Report the status of the DisplayPort input and DisplayPort output.
View HDCP status	7S	HDCPI X14 •HDCPO X15 ↵	Report the status of the HDCP encoding on the input and 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 •2Lnk X13 •Vid X13 •Aud X13 •X17 •Rx↵	The unit responds with the current status (signal detected) of optical link 1, optical link 2, the video input, and the audio link; the fiber optic transmission mode (singlemode or multimode); and the device type (Rx).
Show firmware version	Q	X18 ↵	
Example:	Q	1.23↵	The factory-installed firmware version is 1.23 (sample value only).
Request part number	N	6Ø–*nnnn–nn*↵	See the Extron website, **www.extron.com**, for part numbers.
Input sync detection	Esc 1LS←	X19 horizontal , X19 vertical ↵	Shows horizontal frequency in kHz and vertical frequency in Hz. ØØØ.Ø,ØØØ.Ø if no signal is detected.
Request SFP status	4ØS	X20 •X21 Tx •X21 Rx •X22 ↵	

Command/response table for Receiver SIS commands (continued)

Command	SIS Command (host to unit)	Response (unit to host)	Additional description
Resets			
Reset audio	Esc ZA ←	Zpa ↵	Reset the audio output to the consumer level and return audio gain and attenuation to 0 dB.
System reset	Esc ZXXX ←	Zpx ↵	Reset all settings to factory defaults.

Product Configuration Software

The Extron Product Configuration Software, which communicates with the connected transmitter or receiver via the rear panel Remote RS-232 port or front panel Configuration USB port of that unit, provides an easy way to operate and configure the unit.

The program is compatible with Windows 2000, Windows XP, or later. Updates to this program can be downloaded from the Extron website.

Installing the Software

The Product Configuration Software, version 1.4 or newer, and Firmware Loader are available on the Extron website. Download and install both programs as follows:

NOTE: Steps 1 through 6, below, are also used to download firmware update packages.

1. Visit the website **www.extron.com** and click the **Download** tab (see figure 14).

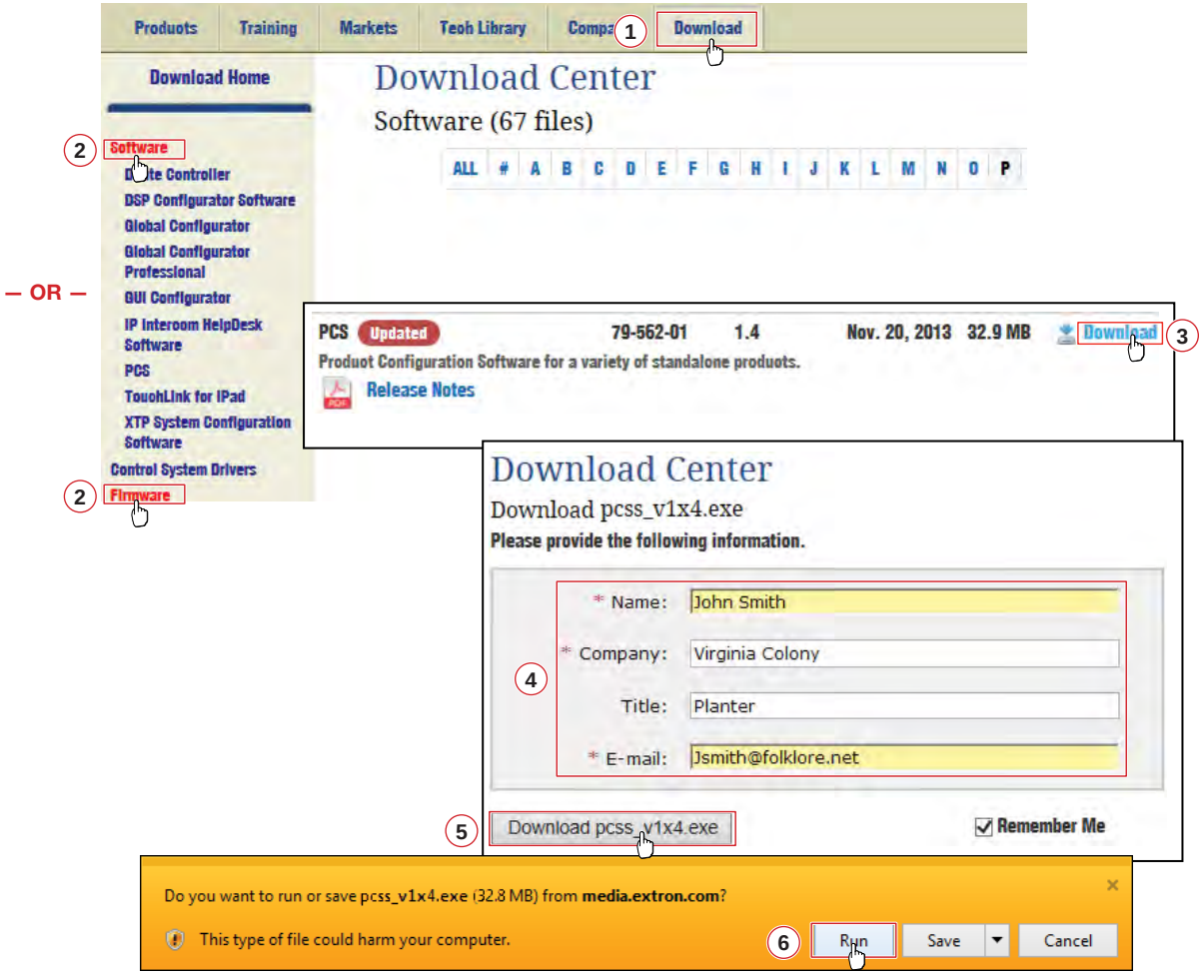


Figure 14. Downloading a Software or Firmware Package

2. Click the **Software** or **Firmware** link as appropriate to the operation you are performing.
3. Select the desired software or firmware file to download and click **Download**.

TIP: Jump to the nearest page of downloads by clicking the desired filtering letter.

4. Enter the requested personal information;

   TIP: Click **Remember Me** to eliminate step 4 in future downloads.

5. Click **Download** to copy the software or firmware to your computer.
6. Cick **Run** to confirm that you want to run the installation.
7. **For a firmware download**, exit this procedure and return to **Updating the Firmware** on page 37.
8. 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 Windows 7 or Windows 8.

   - **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 Select Connection Options screen (see figure 15).

   NOTES:
   - Figure 15 shows the RS-232 and the USB radio buttons both selected. This is for reference only; selecting one radio button deselects the other.
   - The transmitter and receiver do not have Ethernet connections; the Ethernet connection cannot be selected for these products.

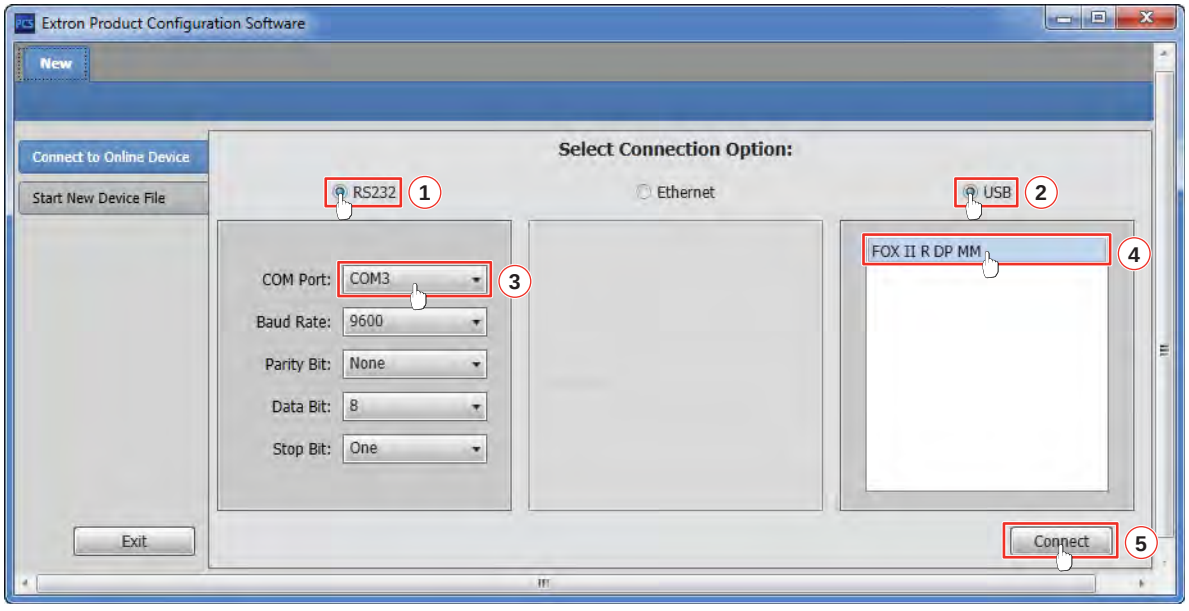


Figure 15. Select Connection Options Screen

2. **If this is the first use with the FOX II units**, click the **New** tab. The program opens to the Select Connection Options screen.
3. **If necessary for a Remote RS-232 port connection**, select the **RS232** radio button (see **figure 15**, item ① on on the previous page). Proceed to step 4.

   If necessary for a Configuration port connection, select the **USB** radio button (②). Proceed to step 5.
4. **For a Remote RS-232 connection**, select the Com port to which your transmitter or receiver is connected (③). Click **Connect** (⑤). The Product Configuration Software displays the Status screen (figure 16 for, below, the transmitter and **figure 17**, on the next page, for the receiver, both on the next page).
5. **For a USB connection**, select the transmitter or receiver in the USB device field (④). Click **Connect** (⑤). The Product Configuration Software displays the Status screen (figure 16 for the transmitter and **figure 17** for the receiver).

   Once connected, the Product Configuration Software consists of two tabs:

   - **Configuration**, consisting of Status, EDID Minder (for a transmitter connection only), and Input/Output Config(uration) screens
   - **Hardware**, consisting of Unit Information, Device Name, and Reset Device screens

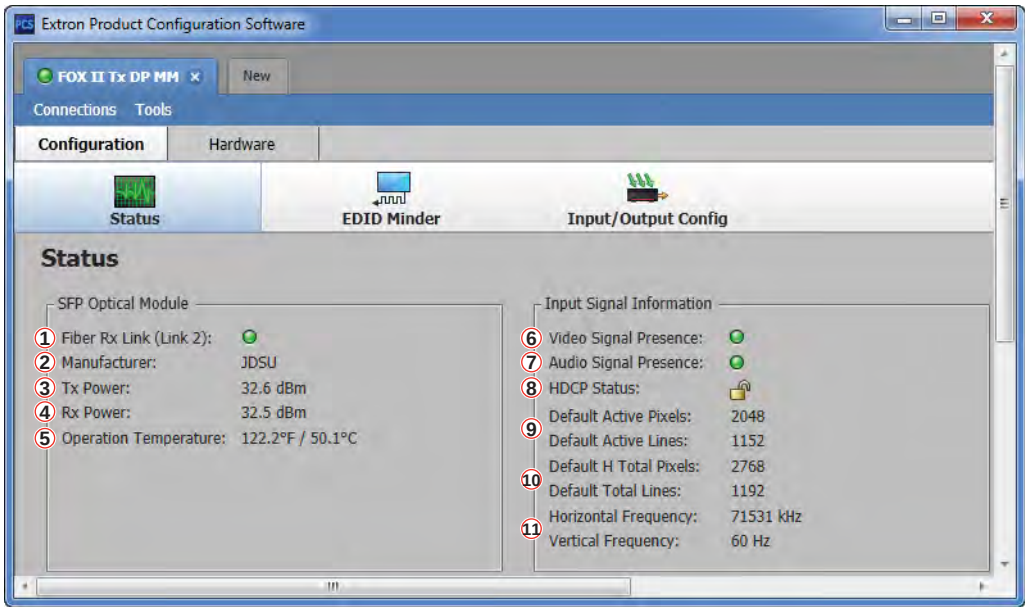


Figure 16. Status Screen for the Transmitter

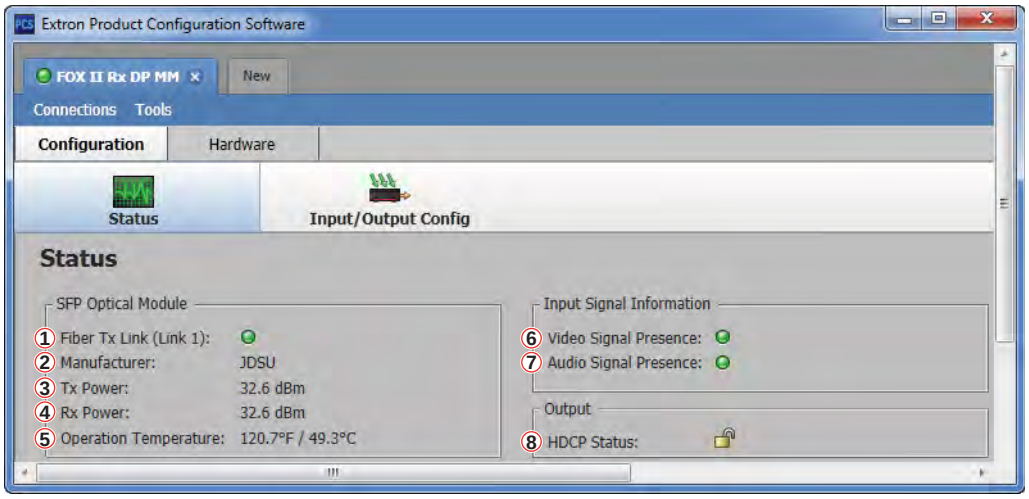


Figure 17. Status Window for the Receiver

Using the Software

Once you have connected to a device, the Status screen (see **figure 16**, on the previous page, for the transmitter and figure 17, above, for the receiver) is the default start-up screen for the Product Configuration Software. The screen provides indications of the connection status.

Configuration > Status window (both units)

① **Fiber Rx Link indicators**

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

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

② **Manufacturer fields** — Indicates the manufacturer of the SFP module.

③ **Tx Power fields** — Indicates the power on the Tx optical module of the unit in dBm.

④ **Rx Power fields** — Indicates the power on the Rx optical module of the unit in dBm.

⑤ **Operating Temperature** — Indicates the temperature in degrees Fahrenheit and degrees Celsius.

⑥ **Video Signal Presence indicators**

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.

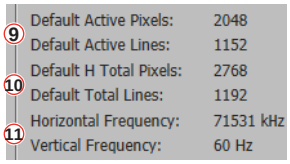
⑦ **Audio Signal Presence indicators**

Transmitter connection — Indicates green when the transmitter detects a low level analog audio signal for a short period or embedded audio. This indicator goes dark if the detected analog audio signal drops below the minimum threshold for a short period.

Receiver connection — Indicates green when the receiver detects an embedded digital or low level analog audio signal on its fiber optic input.

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

Configuration > Status screen (transmitter connection only)



⑨ **Default Active Pixels and Lines fields** — These fields display the size (resolution) of the connected DisplayPort video source.

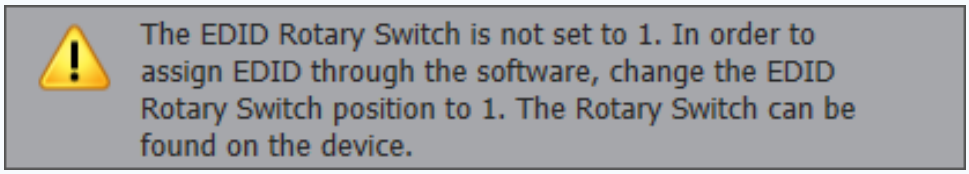
⑩ **Default H Total Pixels and Total Lines fields** — These fields display the total size of the connected DisplayPort video source.

⑪ **Horizontal Frequency and Vertical Frequency fields** — These fields display the horizontal frequency of the digital video input in kHz and vertical frequency in Hz.

Configuration > EDID Minder screen (transmitter connection only)

The EDID Minder screen (see figure 18, below) provides controls for you to tailor the EDID that is provided to the transmitter. Select this screen by clicking the **EDID Minder** subtab from either the Status or Input/Output Configuration screen or **Configuration > EDID Minder** from one of the Hardware screens.

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 (⑤) and the following is displayed:



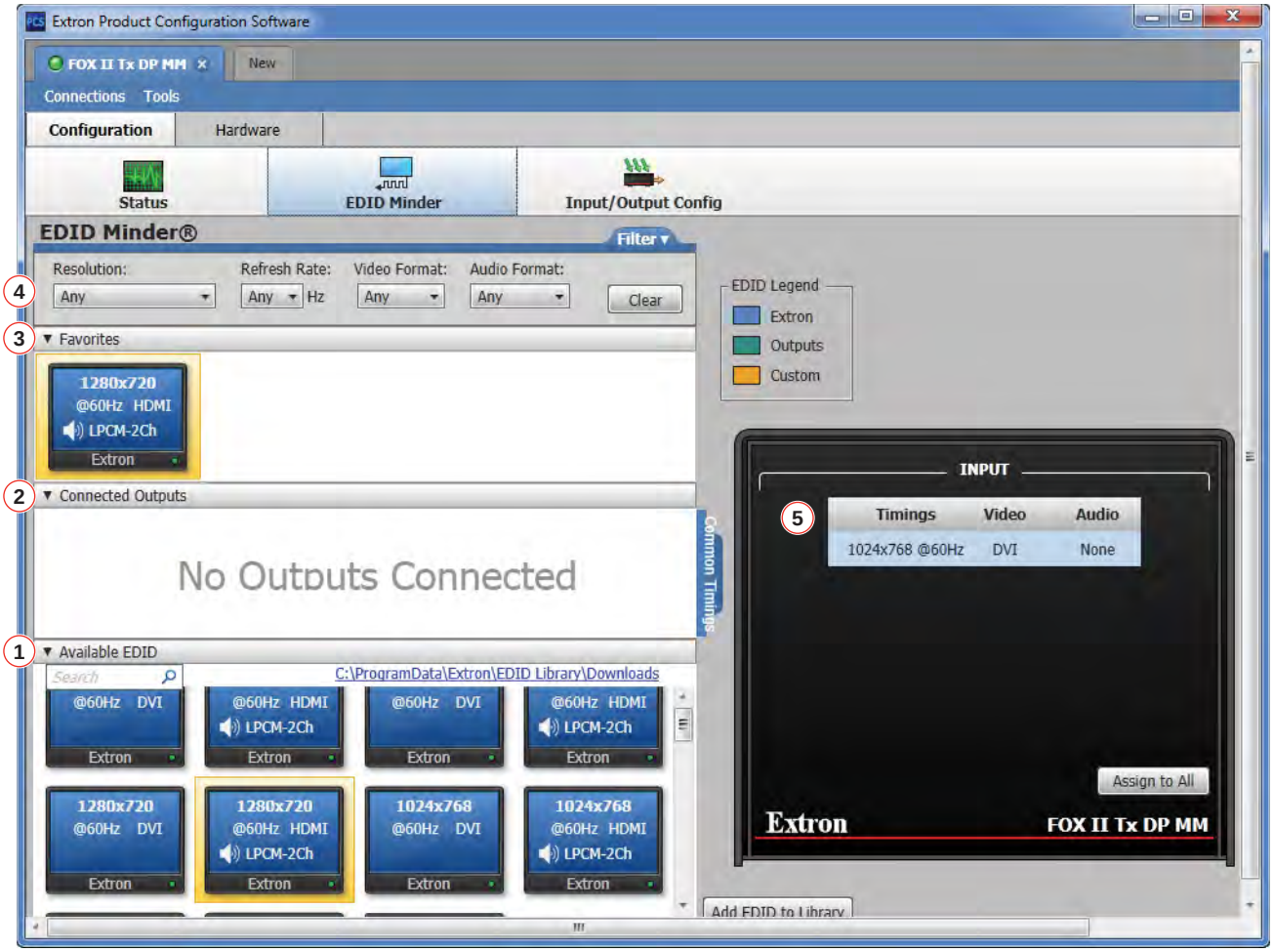


Figure 18. EDID Minder Screen (Transmitter Connection Only)

Click an EDID box in the **Available EDID** (①), **Connected Outputs** (②), or **Favorites** (③) panels to select (highlight in yellow) the EDID identified by that box.

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

If desired, reduce the number of EDID boxes displayed by selecting a filter in one of four categories (panels) (④): **Resolution**, **Refresh Rate**, **Video Format**, and **Audio Format**.

The Input panel (⑤) displays the resolution, rate, video type, and embedded audio format of the DisplayPort input.

Configuration > Input/Output Configuration screen

The Input/Output Configuration screen allows you to set the input and output option features of the transmitter (see figure 19, below) and receiver (see **figure 20**, on page 35). Select this screen by clicking the **`Input/Output Config`** subtab from either the Status or EDID Minder screen or **`Configuration > Input/Output Config`** from one of the Hardware screen.

Transmitter Input/Output Configuration screen

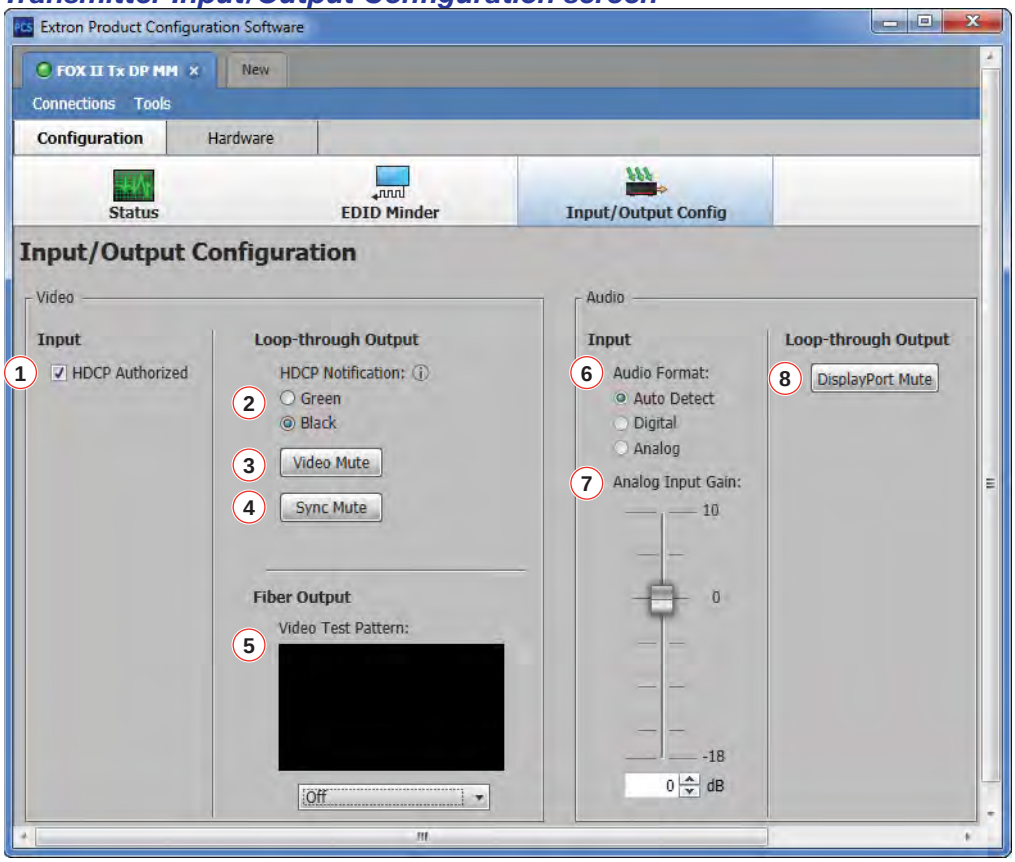
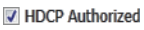


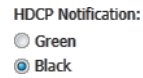
Figure 19. Input/Output Configuration Screen for the Transmitter

① **`HDCP Authorized` checkbox** — Select for the transmitter to act as an HDCP-authorized device. Deselect 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.

② **`HDCP Notification` radio buttons** — 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.



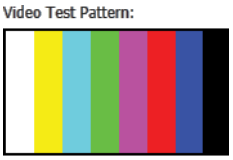
The HDCP notification function in the transmitter enables a connected display to show a green or black screen if the transmitted video is HDCP encrypted, and the display is not HDCP capable.

③ **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.

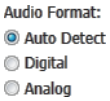
④ **Sync Mute button** — Click this button to toggle the video mute on and off for the transmitter Loop-through output port. Sync mute disables the sync output, allowing the display to go blank and, eventually (depending on the timeout parameters set in the connected display) go into standby or sleep mode. Embedded audio is also muted.

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

⑤ **Video Test Pattern drop-down box** — Click the **Video Test Pattern** drop-down box to select from the available test patterns, shown at right, for the transmitter to send to the receiver on the fiber cable. Or select **Off** to transmit the digital video input on the DisplayPort input port.



⑥ **Audio Format radio buttons** —

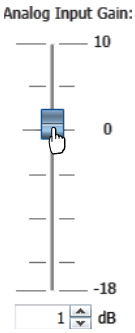


Auto Detect radio button — Transmit the embedded digital audio if detected, otherwise transmit analog audio.

Digital radio button — Transmit the embedded digital audio.

Analog radio button — Transmit the analog audio.

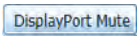
⑦ **Analog Input Gain slide control** — Click and slide the **Analog Input Gain slide control** control to vary to select the input audio gain or attenuation value on the analog input only, from -18 dB to +10 dB in 1.0 dB increments.



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.

⑧ **DisplayPort Mute button** — Click this button to mute and unmute the audio embedded in the DisplayPort loop-through output.



Receiver Input/Output Configuration screen

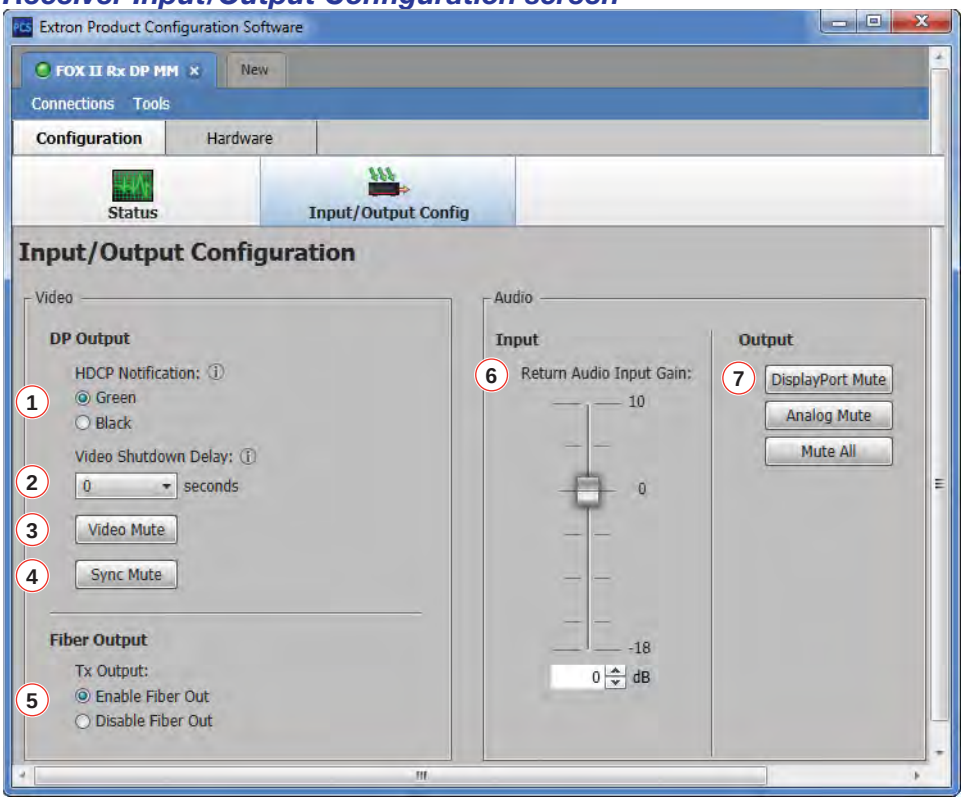
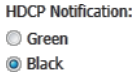
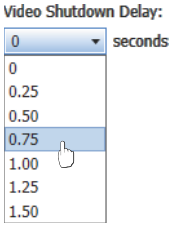


Figure 20. Input/Output Configuration Screen for the Receiver

① **`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.

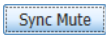


② **`Video Shutdown Delay` drop-down box** — Click the **`Video Shutdown Delay`** drop-down box to set the video shut down delay. This setting delays the digital video to help the monitor sync correctly during an input rate change. **Only** video is delayed; embedded audio is **not** delayed.



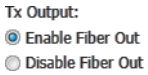
③ **`Video Mute` button** — Click this button to toggle the video mute on and off for the receiver DisplayPort output port. Video mute sends black video while maintaining sync timings from the input video signal. Embedded audio continues to be output.

④ **`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`**.

⑤ **`Tx Output` radio buttons** — Select among the available radio buttons to define the function of the receiver Tx LC connector; either:

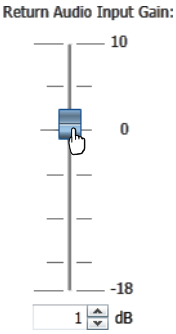


`Enable Fiber Out` — Routing RS-232 over fiber to the transmitter

`Disable Fiber Out` — No function

NOTE: The disable fiber out function is primarily used and recommended when the transmitted signal is routed via a FOX 500 DA6 and the receiver is connected to any of outputs 2 through 6 on the FOX DA.

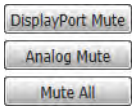
⑥ **`Return Audio Input Gain` slide control** — Click and slide the **`Return Audio Input Gain`** slide control to vary to select the input audio gain or attenuation value of the audio returned to the transmitter, from -18 dB to +10 dB in 1.0 dB increments.



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.

Hardware > Unit Information screen (both units)

The Unit Information screen (see figure 21) provides general information about the connected unit. Select this screen by clicking the **`Unit Information`** subtab from either the Device Name or Reset Device screen or **`Hardware > Unit Information`** from one of the Configuration screens.

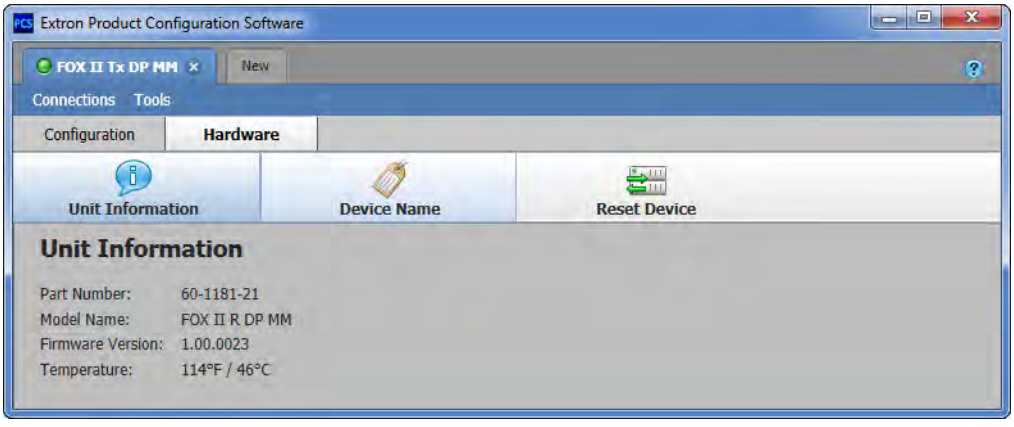


Figure 21. Unit Information Screen

Hardware > Device Name screen (both units)

The Device Name screen provides controls to allow you to assign a locally-assigned name to the unit or to reset the unit to the default name. Select this screen by clicking the **Device Name** subtab from either the Unit Information or Reset Device screen or **Hardware > Device Name** from one of the Configuration screens.

The **Apply** and **Cancel** buttons become selectable when you have entered a name in the **Enter a device name:** field.

Hardware > Reset Device screen (both units)

The Reset Device screen provides a button to command a reset of the connected unit. Reset returns all settings to their default values. Select this screen by clicking the **Reset Device** subtab from either the Unit Information or Device Name screen or **Hardware > Reset Device** from one of the Configuration screens.

Updating the Firmware

The Product Configuration Software can call the Firmware Loader utility, which provides a way to replace the firmware that is coded on the control board of the transmitter or receiver 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 6 of **Installing the Software**, on page 27, to download the firmware upgrade from the Extron website, **www.extron.com**.
2. Click **Run** in the File Download and Security Warning dialog boxes (see **figure 22** 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 **Next**. The program extracts the firmware files and places them in a folder identified in the InstallShield Wizard window.

ATTENTION: The firmware file must have an .s19 extension. Other file types can cause the unit to stop functioning.

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:
  - **Windows 7 or Windows 8**: `C:\Program Files (x86)\Extron\Firmware`.
  - **Older versions**: `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** to exit the program.
5. Connect the computer to the front panel Configuration port (see **page 9** [transmitter] or **page 12** [receiver]) of the unit to be updated.

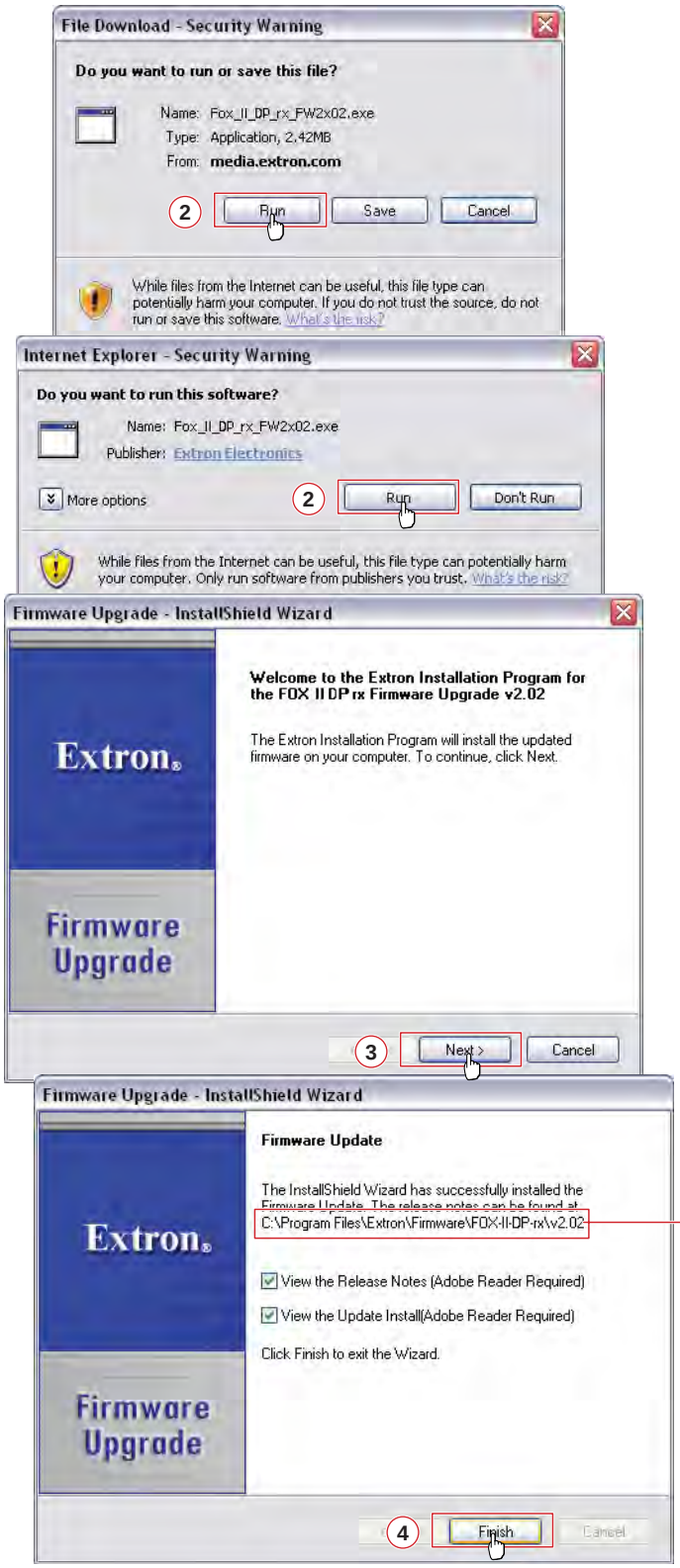


Figure 22. Downloading Firmware Upgrade Files

6. Start the Product Configuration Software and connect to the unit (see **Starting the Program**, steps 1, 2, 3, and 5, starting on page 28.
7. Click **Tools** > **Update firmware**. The software asks you to confirm that you want to disconnect it from the unit (see figure 23).
8. Click **Continue**. The Product Configuration Software disconnects itself from the unit and calls the Firmware Loader utility in the background. The Update Firmware dialog box appears.

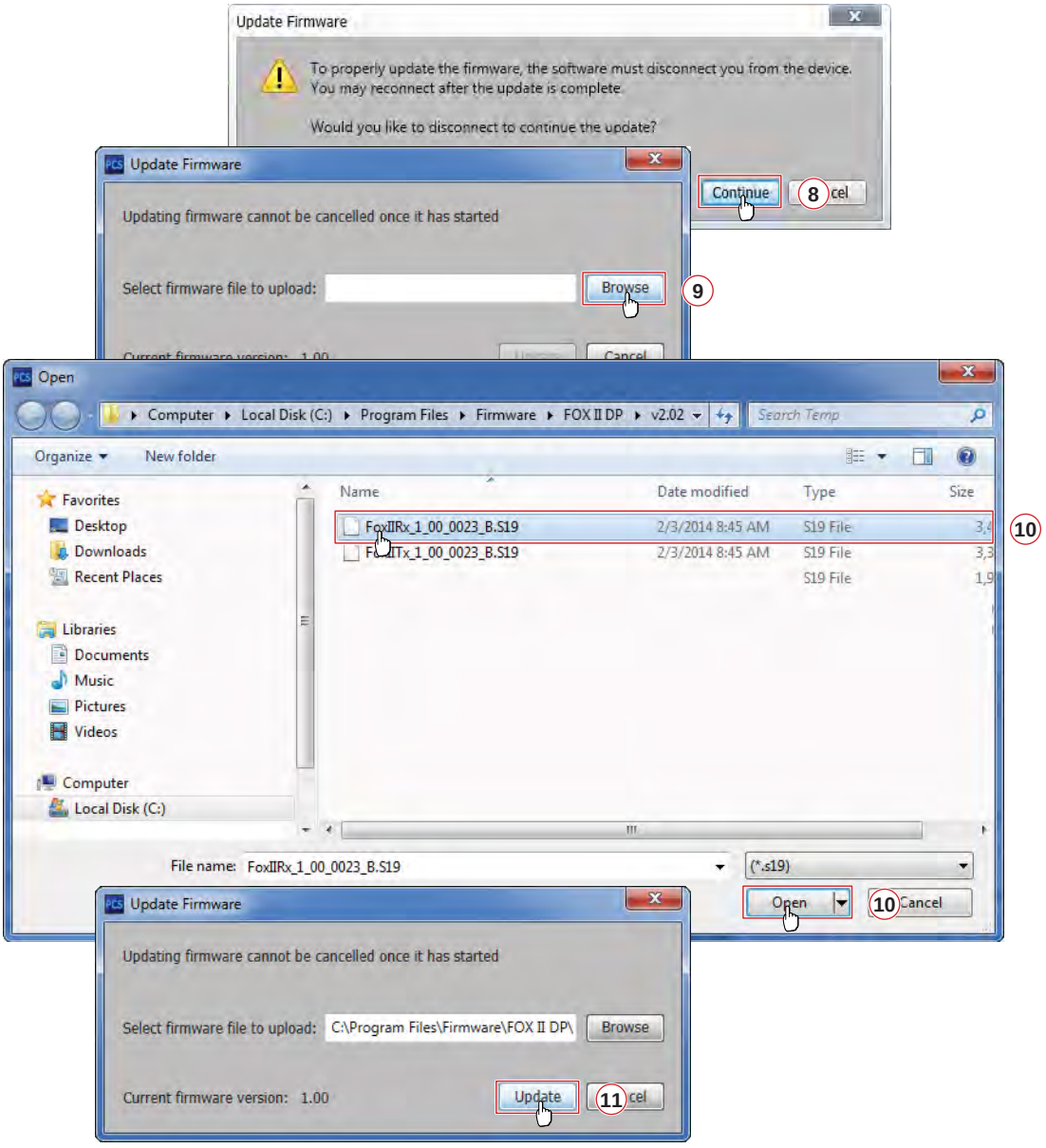


Figure 23. Updating Firmware

9. Click **Browse**. The Open dialog box opens.
10. Navigate to the folder where you saved the firmware upgrade file (see figure 23, above). Select the file and click **Open**. The Update Firmware dialog box returns to the top.

11. Click **Update**.

    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 `Upload Complete`.

12. Click **Close**. The Product Configuration Software window returns to the front.
13. Click the ⊗ in the connection tab to completely disconnect the program from the unit and then reconnect the program as described in **Starting the Program**, beginning at step 3 on page 29.

Unit Mounting

Mounting the Units

ATTENTION: Installation and service must be performed by authorized personnel only.

Either of the 1-inch 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.

Rack-Mounting UL Guidelines

The following Underwriters Laboratories (UL) guidelines pertain to the installation of the FOX II DP 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.

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

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

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

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

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

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

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

USA:	714.491.1500 or 800.633.9876	**Europe:**	31.33.453.4040
Asia:	65.6383.4400	**Japan:**	81.3.3511.7655

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

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

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

Extron Headquarters	Extron Europe	Extron Asia	Extron Japan	Extron China	Extron Middle East	Extron Korea	Extron India
+1.800.633.9876 (Inside USA/Canada Only) Extron USA - West +1.714.491.1500 +1.714.491.1517 FAX Extron USA - East +1.919.850.1000 +1.919.850.1001 FAX	+800.3987.6673 (Inside Europe Only) +31.33.453.4040 +31.33.453.4050 FAX	+800.7339.8766 (Inside Asia Only) +65.6383.4400 +65.6383.4664 FAX	+81.3.3511.7655 +81.3.3511.7656 FAX	+4000.398766 Inside China Only +86.21.3760.1568 +86.21.3760.1566 FAX	+971.4.299.1800 +971.4.299.1880 FAX	+82.2.3444.1571 +82.2.3444.1575 FAX	1800.3070.3777 Inside India Only +91.80.3055.3777 +91.80.3055.3737 FAX