User Guide

XTP Systems

XTP SFR HD 4K

XTP Scaling Fiber Optic Receiver

Extron

68-2203-01 Rev. G
01 20

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.

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Instrucciones de seguridad • Español

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

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Instructions de sécurité • Français

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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**.

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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.

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Instrukcje bezpieczeństwa • Polska

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

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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.

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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。

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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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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 * 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" 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

This section contains general information about this guide and the Extron XTP SFR HD 4K scaling receiver. Topics in this section include the following:

Guide Overview

This guide provides installation, operation, control, and reference information for the XTP SFR HD 4K scaling receiver series primarily in point-to-point applications.

NOTE: See an XTP matrix switcher user guide at **www.extron.com** for matrix applications.

In this guide, the terms “scaling receiver” and “XTP SFR HD 4K” are used interchangeably to refer to the XTP SFR HD 4K SM scaling fiber receiver or XTP SFR HD 4K MM scaling fiber receiver.

Product Description

The Extron XTP SFR HD 4K receives video, audio, bidirectional RS-232 and IR, and Ethernet signals over a single fiber optic cable. It incorporates Extron Vector 4K scaling technology to deliver selectable HDMI output resolutions up to 4K. For streamlined integration, it features on-screen menus, audio de-embedding to digital S/PDIF or analog stereo audio outputs, and relays for room control. Ethernet extension along with RS-232 and IR insertion allow LAN access and remote AV device control.

The following diagram shows one way the XTP SFR HD 4K can be integrated in an XTP point-to-point application.

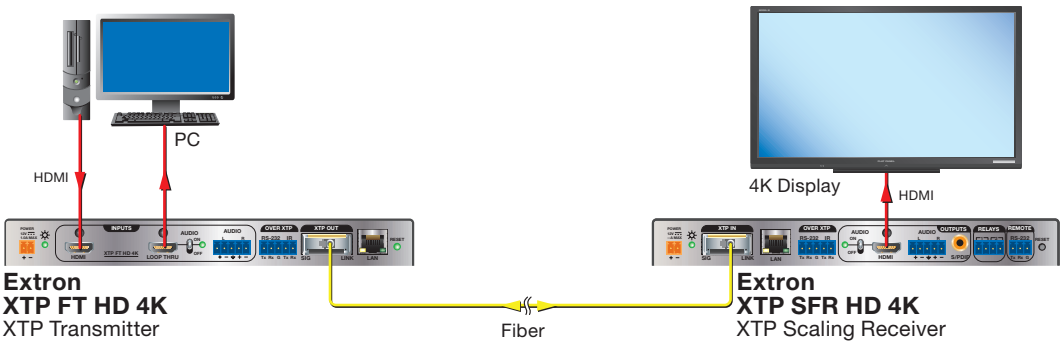


Figure 1. Typical XTP SFR HD 4K Point-to-Point Application

WARNING: Potential risk of severe injury. The XTP SFR HD 4K outputs continuous invisible light, which may be harmful to the eyes; use with caution.

AVERTISSEMENT : Risque potentiel de blessure grave ou de mort. Le XTP SFR HD 4K émet une lumière invisible en continu 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 caps into the optical transceivers when the fiber cable is unplugged.
- Branchez les protections contre la poussière dans l'ensemble émetteur/récepteur lorsque le câble fibre optique est débranché.

System Compatibility

The XTP SFR HD 4K is compatible with XTP systems, but the maximum video resolution may be limited with different XTP devices. See the table below for maximum video resolutions and refresh rates for various XTP systems.

		Output			
		Non-4K	**4K Fiber**	**4K Twisted Pair**	**4K Plus**
Input	**Analog**	1920x1200 @ 60 Hz	1920x1200 @ 60 Hz	1920x1200 @ 60 Hz	1920x1200 @ 60 Hz
	Non-4K Digital	2048x1080 @ 60 Hz	2048x1080 @ 60 Hz	2048x1080 @ 60 Hz	2048x1080 @ 60 Hz
	4K Fiber	2048x1080 @ 60 Hz	4096x2160 @ 24 Hz	4096x2160 @ 24 Hz	4096x2160 @ 24 Hz
	4K Twisted Pair	2048x1080 @ 60 Hz	4096x2160 @ 24 Hz	4096x2160 @ 30 Hz	4096x2160 @ 30 Hz
	4K PLUS	2048x1080 @ 60 Hz	4096x2160 @ 24 Hz	4096x2160 @ 30 Hz	4096x2160 @ 60 Hz

Cable Transmission

The devices are further categorized by the type of fiber optic cable, multimode (MM) or singlemode (SM), which defines the effective range of transmission:

- **Multimode** — Long distance, up to 500 m (1,640 feet) depending on the fiber cable
- **Singlemode** — Very long distance, up to 10 km (6.21 miles)

NOTES:

- The multimode and singlemode models are physically and functionally identical with the exception of the effective range of transmission.
- Different modes are not compatible with each other.
- A color-coded sticker identifies the type of SFP module: orange for multimode and yellow for singlemode.

Control Methods

To directly control the scaling receiver, use one of the following methods:

- On-screen display (OSD) menu (see **On-Screen Display Menu System** on page 14)
- Simple Instruction Set (SIS) commands (see **SIS Configuration and Control** on page 23)
- XTP System Configuration Software (see **Configuration Software** on page 32)

Certain features can also be controlled through an XTP matrix switcher (see the XTP matrix switcher user guide at **www.extron.com**).

Features

XTP Interconnection Features

- **Reliable cable infrastructure** — Accepts video with embedded audio, bidirectional RS-232 and IR control, and Ethernet over one fiber optic cable.
- **Bidirectional RS-232 and IR insertion** — Controls a remote display without the need for additional cabling through bidirectional RS-232 control and IR signals inserted into the XTP output.
- **Ethernet extension** — Reduces independent network drops required within a system with centralized 10/100 Ethernet communication.
- **Signal and link status LED indicators for XTP ports** — Provide a means for validating signal flow and operation from transmitter to receiver, allowing quick identification of connectivity issues.

Video Features

- **Advanced Extron Vector 4K scaling technology** — Ensures critical-quality 4K imagery, with best-in-class image upscaling and downscaling, enhanced color accuracy, and picture detail.
- **Video Scaling** — Scales HDMI, DVI, RGB, HD component video, and standard definition video received from XTP devices.
- **Selectable output rates** — Outputs selected rates from 640x480 to 4K (3840x2160) using the on-screen menu system or via RS-232 or USB control.
- **Scaler bypass mode** — Allows scaling to be bypassed to support unprocessed transmission of 3D, UHD 3840x2160/60 4:2:0, 4096x2160/24, and other formats.
- **HDMI specification features** — Support data rates up to 10.2 Gbps, 3D, and HD lossless audio formats.
- **HDCP compliance** — Ensures display of content-protected media and interoperability with other HDCP-compliant devices.
- **HDMI to DVI Interface Format Correction** — Automatically reformats HDMI source signals for output to a connected DVI display.
- **Aspect ratio control** — Controls the aspect ratio of the video output by selecting a FILL mode, which provides a full screen output, or a FOLLOW mode, which preserves the original aspect ratio of the input signal.

Audio Features

- **Multiple embedded audio formats** — Supports a broad range of multi-channel audio signals, providing reliable operation with HDMI devices.
- **HDMI audio de-embedding with multi-channel digital S/PDIF audio and analog stereo audio outputs** — Supports digital HDMI audio as a balanced or unbalanced analog stereo signal on captive screw connectors or an S/PDIF connector.
- **Audio output volume adjustment and muting**
- **Selectable HDMI audio pass-through** — Enables or disables audio signal pass-through on the HDMI output from a rear panel toggle switch.

Control Features

- **Front panel USB configuration port**
- **Contact closure device control** — Enables control of room functions such as projector lifts, screen operations, and other environmental controls.
- **Extron XTP System Configuration Software compatibility** — Allows for easy setup and commissioning.
- **On-screen menus** — Allow for easy system setup using the front panel controls.
- **RS-232 control** — Enables the use of serial commands for integration into a control system. Extron products use the SIS - Simple Instruction Set command protocol, a set of basic ASCII commands that allow for quick and easy programming.

General Features

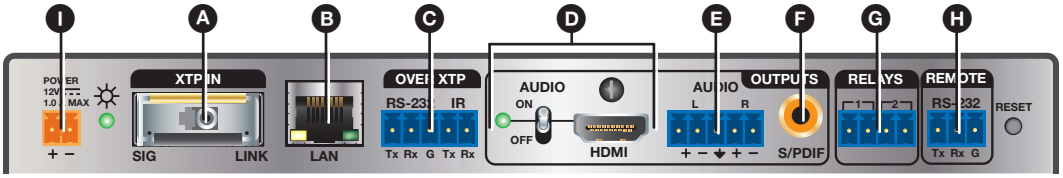
- **XTP compatibility** — Provides a flexible signal switching and distribution solution that is completely integrated, ensuring reliable routing of multiple digital and analog formats.
- **EDID Minder** — Automatically manages EDID communication between connected devices. It ensures that all sources power up properly and reliably outputs content for display.
- **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.
- **HDCP Visual Confirmation** — Provides a green signal when encrypted content is sent to a non-compliant display.
- **Image freeze control** — Freezes a live image through RS-232 or USB control.
- **Internal test patterns** — Include five test patterns for calibration and setup.
- **Output Standby Mode** — Automatically mutes video and sync output to the display device when no active input signal is detected.
- **Front panel security lockout** — Allows security lockout of front panel buttons except for input selection and volume adjustment.
- **LockIt HDMI cable lacing brackets** — Secure HDMI cables to the HDMI connectors.
- **1” (2.5 cm) high, half rack width metal enclosure** — Allows for discreet placement and concealment.
- **Highly reliable, energy-efficient external universal power supply included** — Provides worldwide power compatibility, with high demonstrated reliability and low power consumption for reduced operating costs.

Installation

This section contains installation procedures for the XTP SFR HD 4K and wiring details. Topics in this section include the following:

- **Rear Panel Connectors**
- **Connection Details**

Rear Panel Connectors



Interconnection Connectors	Output Connectors	Control and Power Connectors
A **XTP input connector** (see page 6) **B** **LAN connector** (see page 6) **C** **RS-232 and IR Over XTP connector** (see page 6)	**D** **HDMI output connector and audio switch** (see page 6) **E** **Analog audio output connector** (see page 7) **F** **S/PDIF audio output connector** (see page 7)	**G** **Relay connectors** (see page 7) **H** **Remote RS-232 connector** (see page 7) **I** **Power connector and LED** (see page 7)

Figure 2. **XTP SFR HD 4K Rear Panel Connectors**

XTP Interconnection

Ⓐ **XTP input connector** (see figure 2 on the previous page) — Connect an XTP fiber transmitter or XTP matrix switcher to the fiber optic connector.

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- Plug the attached dust caps into the optical transceivers when the fiber cable is unplugged.
- Branchez les protections contre la poussière dans l'ensemble émetteur/récepteur lorsque le câble fibre optique est débranché.

NOTES:

- Different modes are not compatible with each other.
- Ensure the proper fiber cable is used. Typically, singlemode fiber optic cables have a yellow jacket and multimode fiber optic cables have an orange or aqua jacket.

Ⓑ **LAN connector** — Connect a control device or device to be controlled to the RJ-45 connector labeled LAN for 10/100Base-T Ethernet communication through this pass-through port. LEDs on the connector indicate link and activity status.

Ⓒ **RS-232 Over XTP port** — To pass bidirectional serial signals between XTP-compatible devices, connect a controlling or controlled device to the 5-pole captive screw connector. The port includes only the 3 poles labeled "RS-232."

IR Over XTP port — To transmit and receive IR signals (up to 56 kHz), connect a controlling or controlled device to the 5-pole captive screw connector. This port includes the 2 poles labeled "IR" and shares the ground pole with the RS-232 port.

NOTE: RS-232 and IR data can be transmitted simultaneously (see **RS-232 and IR Over XTP Communication** on page 9 for wiring details).

Output Connections

Ⓓ **HDMI output connector and audio switch** — Connect a digital video display to the female HDMI connector. It supports HDMI or DVI (with an appropriate adapter) signals. See **HDMI Audio Switch** on page 13 to mute or unmute embedded audio output.

NOTES:

- The maximum cable length is 15 feet (4.6 meters).
- Use Extron LockIt Cable Lacing Brackets to secure HDMI connectors to the device (see **HDMI Connection** on the next page).

Ⓔ **Analog audio output connector** (see figure 2 on page 5) — Connect a balanced or unbalanced, stereo or mono audio output device to the 3.5 mm, 5-pole captive screw connector for analog audio output (see figure 3 for wiring details).

NOTE: If the device is receiving 2-channel LPCM embedded audio on the HDMI input signal, it is extracted and converted to a stereo analog signal.

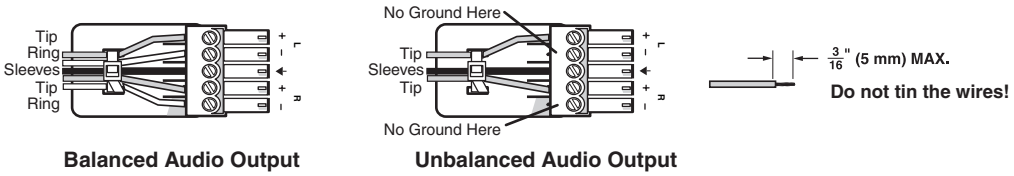


Figure 3. Audio Output Wiring

ATTENTION:

- For unbalanced audio, connect the sleeves to the contact ground. 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 (–).

Ⓕ **S/PDIF audio output connector** — Connect an audio device to the female orange RCA connector for digital S/PDIF audio output (see **Audio Output Overview** on page 13 for supported audio formats on the S/PDIF output). The type of audio present on this output is dictated by the following:

- The audio format selected on the source material or device.
- The source device automatically outputting an audio format through EDID.

Control Connections

Ⓖ **Relay connectors** — Connect equipment that can be controlled via momentary or latching contact, such as projector screens or lifts, to the normally open relays.

ATTENTION:

- Do not exceed 24 V at 1.0 A for each port.
- Ne pas dépasser 24 volts à 1,0 A pour chaque port.

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

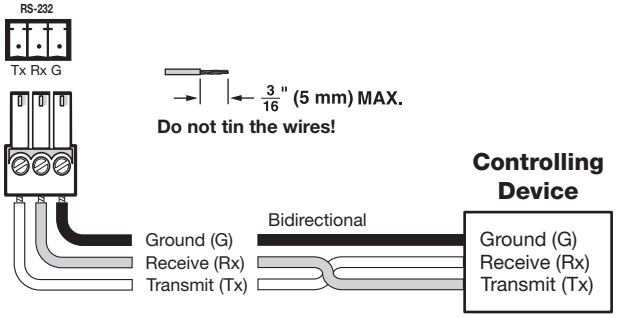


Figure 4. Remote RS-232 Wiring

Ⓘ **Power connector and LED** — Connect the external 12 V, 1.0 A power supply to the 2-pole captive screw connector (see **Power Connection** on page 10). The Power LED lights to indicate the device is receiving power.

Connection Details

HDMI Connection

To secure the HDMI cable to the HDMI input connector, use an Extron LockIt Cable Lacing Bracket and a tie wrap.

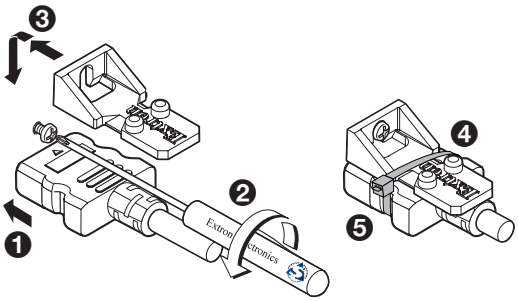


Figure 5. Installing the LockIt Cable Lacing Bracket

1. Plug the HDMI cable into the panel connection (see figure 5, ❶).
2. Loosen the HDMI connection mounting screw from the panel (❷) enough to allow the LockIt to be placed over it. The screw does not have to be removed.
3. Place the LockIt on the screw and against the HDMI connector (❸), and then tighten the screw to secure the bracket.
4. Loosely place the included tie wrap around the HDMI connector and the LockIt (❹).
5. While holding the connector securely against the cable lacing bracket, use pliers or similar tools to tighten the tie wrap, then remove any excess length (❺).

ATTENTION:

- Connect and pull the tie wraps until they are secure. Do not overtighten.
- Connectez et tirez les serre-câbles jusqu'à ce qu'ils soient sécurisés. Ne pas trop serrer.

RS-232 and IR Over XTP Communication

The RS-232 and IR Over XTP connector passes serial signals (such as projector control signals) and infrared data. To pass bidirectional serial command signals between XTP-compatible devices, connect a control device to the three poles (Tx, Rx, and G) under "RS-232" of the 5-pole captive screw connector. To transmit and receive IR signals, connect a control device to the three poles (G, Tx, and Rx) under "IR." The ground (G) pole is shared.

NOTE: RS-232 and IR data can be transmitted or received simultaneously (see figure 6 below for wiring considerations).

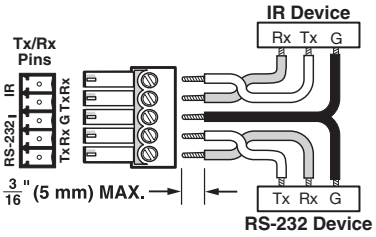


Figure 6. Wiring the RS-232 and IR Over XTP Connector

ATTENTION: The length of the exposed wires in the stripping process is important.

ATTENTION : La longueur des câbles exposés est importante lorsque l'on entreprend de les dénuder.

- The ideal length is 3/16 inch (5 mm).
- La longueur idéale est de 5 mm (3/16 inches).

- If they are any longer, the exposed wires may touch, causing a short circuit between them.
- S'ils sont un peu plus longs, les câbles exposés pourraient se toucher et provoquer un court circuit.

- If they are any shorter, the wires can be easily pulled out even if tightly fastened by the captive screws.
- S'ils sont un peu plus courts, ils pourraient sortir, même s'ils sont attachés par les vis captives.

Power Connection

Apply power to the scaling receiver with the provided power supply (if necessary, see figure 7 for wiring considerations).

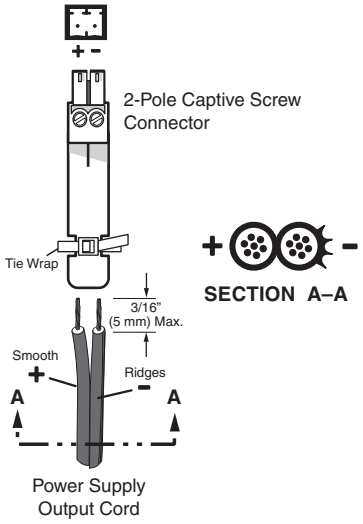


Figure 7. Power Wiring

See the **notifications** on the next page for other considerations.

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

AVERTISSEMENT : Les deux cordons d'alimentation doivent être tenus à l'écart l'un de l'autre quand l'alimentation est branchée. Couper l'alimentation avant de faire l'installation électrique.

ATTENTION:

- This product is intended for use with a UL Listed power source marked "Class 2" or "LPS" rated 12 VDC, 1.0 A minimum. Always use a power supply supplied by or specified by Extron. Use of an unauthorized power supply voids all regulatory compliance certification and may cause damage to the supply and the unit.
- Ce produit est destiné à une utilisation avec une source d'alimentation listée UL avec l'appellation « Classe 2 » ou « LPS » et normée 12 Vcc, 1,0 A minimum. Utilisez toujours une source d'alimentation fournie par Extron. L'utilisation d'une source d'alimentation non autorisée annule toute conformité réglementaire et peut endommager la source d'alimentation ainsi que l'unité.

- 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 725 and the Canadian Electrical Code part 1, section 16. The power supply shall not be permanently fixed to a building structure or similar structure.
- Sauf mention contraire, les adaptateurs AC/DC ne sont pas appropriés pour une utilisation dans les espaces d'aération ou dans les cavités murales. Cette installation doit toujours être en accord avec les mesures qui s'applique au National Electrical Code ANSI/NFPA 70, article 725, et au Canadian Electrical Code, partie 1, section 16. La source d'alimentation ne devra pas être fixée de façon permanente à une structure de bâtiment ou à une structure similaire.

- Power supply voltage polarity is critical. Incorrect voltage polarity can damage the power supply and the unit. The ridges on the side of the cord identify the power cord negative lead.
- La polarité de la source d'alimentation est primordiale. Une polarité incorrecte pourrait endommager la source d'alimentation et l'unité. Les stries sur le côté du cordon permettent de repérer le pôle négatif du cordon d'alimentation.

- The length of the exposed (stripped) copper wires is important. The ideal length is 3/16 inch (5 mm).
- La longueur des câbles exposés est primordiale lorsque l'on entreprend de les dénuder. La longueur idéale est de 5 mm (3/16 inch).

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

Operation

After all transmitters, 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. If problems persist, call the Extron S3 Sales & Technical Support Hotline.

This section contains information for front panel operation and configuration of the XTP SFR HD 4K and configuration through the On-Screen Display (OSD) menu. Topics in this section include:

- **Front Panel Features and Indicators**
- **HDMI Audio Switch**
- **Audio Output Overview**
- **On-Screen Display Menu System**
- **Front Panel Lockout Mode (Executive Mode)**
- **Reset Modes**

Front Panel Features

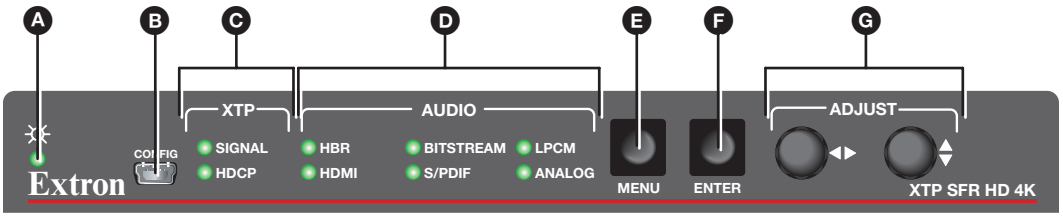


Figure 8. XTP SFR HD 4K Front Panel Features

A Power LED indicators — Lights when power is applied to the unit. There are two Power LED indicators, one on the front panel and one on the left side of the rear panel.

B Configuration connector — If desired, connect a host device to the front panel USB mini-B connector for configuring the receiver.

C XTP LED indicators

- **Signal** — Lights when an active XTP input signal is received.
- **HDCP** — Lights when the received input signal is encrypted.

D Audio LED indicators

- **HBR** — Lights when the audio input is high bit rate audio.
- **Bitstream** — Lights when the embedded audio signal format is a Dolby® Digital, DTS, or 2-Ch Dolby.
- **LPCM** — Lights when the embedded audio signal is LPCM-2Ch.
- **HDMI** — Lights when the HDMI audio output is enabled.
- **S/PDIF** — Lights when the S/PDIF audio output is enabled.
- **Analog** — Lights when the analog audio output is enabled.

Ⓔ **Menu button** (see figure 8 on the previous page) — Press this button to navigate the OSD menu or enable or disable front panel lockout mode (see **Front Panel Lockout Mode (Executive Mode)** on page 22).

Ⓕ **Enter button** — Press this button to navigate the OSD menu or enable or disable front panel lockout mode (see **Front Panel Lockout Mode (Executive Mode)**).

Ⓖ **Adjustment knobs** — Rotate the horizontal (◄►) or vertical (▲▼) adjustment knob to navigate the on-screen display menu or adjust submenu items.

HDMI Audio Switch

The rear panel HDMI audio switch mutes or unmutes the embedded audio on the HDMI output connector (see **figure 2**, Ⓓ on page 5). The LED next to the switch lights when HDMI audio is enabled.

- Hold the rear panel HDMI audio switch up until the associated LED indicator lights (about 1 second) to enable embedded audio on the associated HDMI connector.
- Hold the HDMI audio switch down until the associated LED indicator turns off (about 1 second) to disable embedded audio on the associated HDMI connector.

The switch returns to the middle position after it has been released to allow continued control through SIS commands or the XTP System Configuration Software.

Audio Output Overview

By default, an XTP transmitter or matrix switcher prioritizes embedded digital audio over analog audio. Use SIS commands (see **SIS Configuration and Control** on page 23) or the XTP System Configuration Software (see **Configuration Software** on page 32) to manually select the audio input.

The following table shows the audio formats available on the different audio output connectors on the scaling receiver.

Audio Format Availability on Receiver Audio Outputs

	Audio Output		
Audio Input Format	**HDMI**	**S/PDIF**	**Analog**
2-channel LPCM up to 48 kHz	Yes	Yes	Yes
Multi-channel PCM up to 7.1, 192 kHz	Yes		
Dolby® Digital® up to 5.1	Yes	Yes	
Dolby Digital EX	Yes	Yes	
Dolby Digital Plus	Yes		
Dolby TrueHD	Yes		
Dolby Atmos™	Yes		
DTS® Digital Surround up to 5.1	Yes	Yes	
DTS-ES Matrix 6.1	Yes	Yes	
DTS-ES Discrete 6.1	Yes	Yes	
DTS-HD	Yes		
DTS-HD Master Audio™	Yes		

On-Screen Display Menu System

XTP SFR HD 4K Configuration and adjustments can be performed by using SIS commands (see **SIS Configuration and Control** on page 23), the XTP System Configuration Software (see **Configuration Software** on page 32), or by using the front panel controls and the OSD menu. The OSD menu is used primarily when the receiver is first set up.

NOTE: The OSD menu has a fixed time-out of 10 seconds.

Menu Navigation Using Front Panel Controls

- **Menu button** — Press the **Menu** button to activate the OSD menu or close submenus or submenus items.
- **Enter button** — Press the **Enter** button to select submenu items or accept changes to settings.
- **Adjustment knobs** — Rotate the **Horizontal Adjustment** (◄►) knob or **Vertical Adjustment** (▲▼) knob to navigate submenus and submenu items and adjust settings.

Menu Overview

The OSD menu contains six submenus with various submenu items for adjusting settings or viewing device information. Use the **Menu**, **Enter**, and adjustment knobs to navigate the OSD menu.

To open the OSD menu:

1. Connect a display device to the HDMI output connector.
2. Press the **Menu** button to open the OSD menu.

To navigate the OSD menu:

1. After opening the OSD menu, rotate the adjustment knobs to navigate the six submenus. The following table shows the six submenus and their respective submenu items.

Submenus	Submenu Items				
Image Reset	Image reset				
Picture Controls	Horizontal/ vertical position	Horizontal/vertical size	Brightness/ contrast	Detail	
User Presets	Recall	Save			
Input Configuration	Total pixels	Horizontal/vertical active pixels			
Output Configuration	Resolution	Output format	Color bit depth		
Advanced Configuration	Test pattern	Blank	Freeze	Aspect ratio	System reset

2. Press the **Enter** button to open the selected submenu.
3. Rotate the adjustment knobs to navigate the submenu items.
4. Press the **Enter** button to adjust or view a submenu item or press the **Menu** button to return to the list of submenus.

To adjust a submenu item:

1. Navigate to an adjustable submenu item and press the **Enter** button to select the submenu item.
2. As required, rotate the adjustment knobs or press the **Enter** button to adjust the submenu item.
3. Press the **Enter** button to accept the new value. Press the **Menu** button to cancel any pending changes.

To exit the OSD menu:

While in the list of submenus, press the **Menu** button to exit the OSD menu.

Image Reset Submenu

The `Image Reset` submenu allows the execution of a one-time reset of the image.

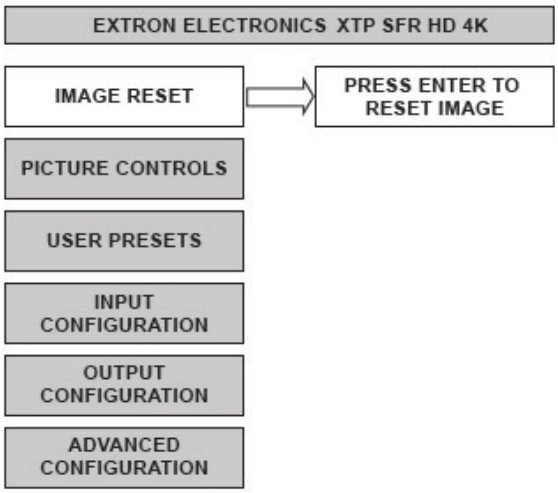


Figure 9. Image Reset Submenu

- **Image reset** — Press the **Enter** button to reset shift and size settings to the default values.

Picture Controls Submenu

The `Picture Controls` submenu allows the adjustment of picture settings.

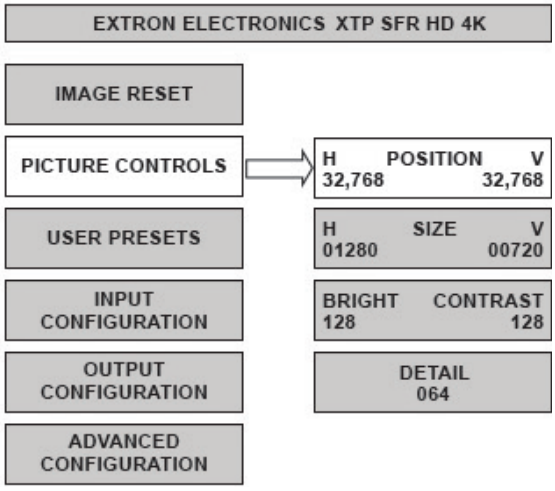


Figure 10. Picture Controls Submenu

- **Image position** — Rotate the **`Horizontal Adjustment`** knob to adjust the horizontal (`H`) position of the image. Rotate the **`Vertical Adjustment`** knob to adjust the vertical (`V`) position of the image. The default value is `32,768`.
- **Image size** — Rotate the **`Horizontal Adjustment`** knob to adjust the horizontal (`H`) size of the image. Rotate the **`Vertical Adjustment`** knob to adjust the vertical (`V`) size of the image. The default value is based on the selected output resolution.
- **Brightness and contrast** — Rotate the **`Horizontal Adjustment`** knob to adjust the brightness (`Bright`) of the image. Rotate the **`Vertical Adjustment`** knob to adjust the contrast (`Contrast`) of the image. The default value is `128`.
- **Detail** — Rotate the adjustment knobs to adjust the detail of the image. The default value is `64`.

User Presets Submenu

The `User Presets` submenu allows the current picture control settings for the selected input to be saved in user presets. User presets can be saved and recalled later on another input, allowing them to also be used as aspect ratio or discrete size and center shortcuts. There are eight user preset slots available. User presets save the following settings:

- Brightness and contrast
- Detail
- Image size and position

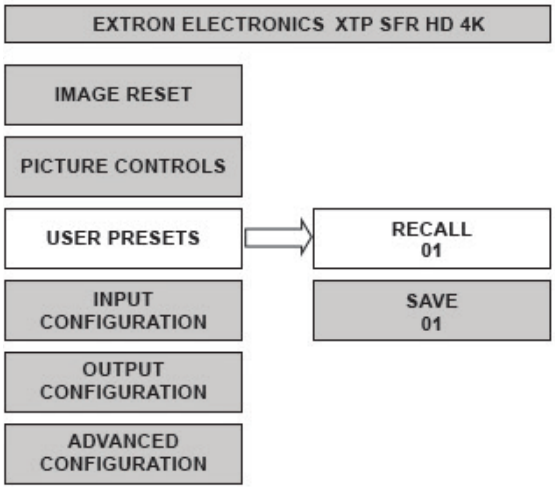


Figure 11. User Presets Submenu

- **Recall** — Rotate the adjustment knobs to select a preset to recall.
- **Save** — Rotate the adjustment knobs to select a preset to store the current picture control settings.

Input Configuration Submenu

The `Input Configuration` submenu displays the total pixels and horizontal and vertical active pixels of the input signal.

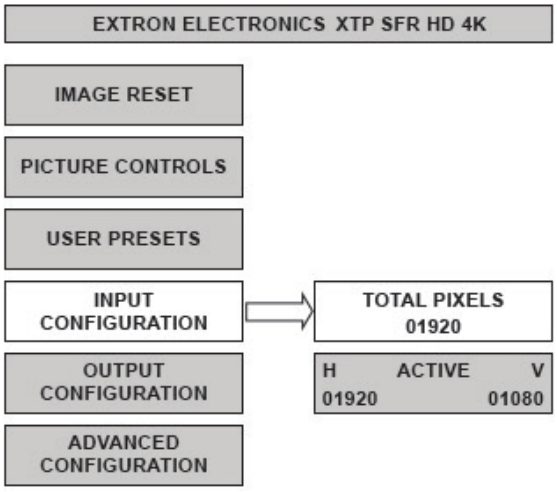


Figure 12. Input Configuration Submenu

- **Total pixels** — Displays the total pixels of the input signal. This is not configurable.
- **Active** — Displays the active horizontal (H) pixels and vertical (V) lines of the input signal. These are not configurable.

Output Configuration Submenu

The `Output Configuration` submenu is used to configure the output resolution and refresh rate. Output format and color bit depth settings are not configurable from the OSD. To configure either setting, use SIS commands (see **Output Configuration Commands** on page 26) or use the XTP System Configuration Software (see **Input/Output tab** on page 39).

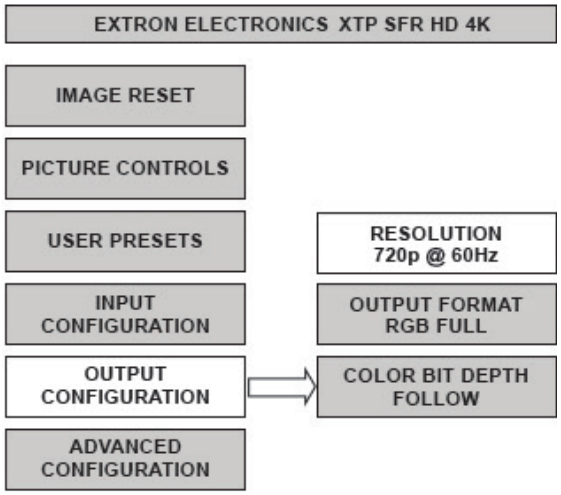


Figure 13. Output Configuration Submenu

- **Resolution** — Rotate the adjustment knobs to select a new resolution and refresh rate. The following table shows the available resolutions and refresh rates. The resolution and refresh rate can also be changed with SIS commands (see the **Output scaler rate** SIS commands on page 27).

Resolution	23.98 Hz	24 Hz	25 Hz	29.97 Hz	30 Hz	48 Hz	50 Hz	59.94 Hz	60 Hz
640x480									•
800x600									•
1024x768									•
1280x768									•
1280x800									•
1280x1024									•
1360x768									•
1366x768									•
1440x900									•
1400x1050									•
1600x900									•
1680x1050									•
1600x1200									•
1920x1200									•
2048x1200									•
2048x1536									•
2560x1080									•
2560x1440						•			•
2560x1600									•
480p								•	•
576p							•		
720p			•	•	•		•	•	•
1080i							•	•	•
1080p	•	•	•	•	•		•	•	•*
2K (2048x1080)	•	•	•	•	•	•	•	•	•
1920x2160	•	•	•	•	•		•	•	•
2048x2160	•	•	•	•	•		•	•	•
4K (3840x2160)	•	•	•	•	•				
Bypass scaling	•								

* Default

- **Output format** — Shows the HDMI output format setting. This is not configurable from the OSD menu. To configure this setting, use SIS commands (see **HDMI output format** SIS commands on page 26) or the XTP System Configuration Software (see **Input/Output tab** on page 39). The HDMI output format has three components:
  - **Video format** — DVI or HDMI
  - **Color space** — RGB 4:4:4, YUV 4:2:2, or YUV 4:4:4
  - **Quantization range** — full (0-255) or limited (16-235)

  The following formats are available:
  - Auto (based on display EDID)
  - DVI RGB 444
  - HDMI RGB 444 Full
  - HDMI RGB 444 Limited
  - HDMI YUV 444 Full
  - HDMI YUV 444 Limited
  - HDMI YUV 422 Full
  - HDMI YUV 422 Limited
- **Color bit depth** — Shows the color bit depth setting. This is not configurable from the OSD menu. To configure this setting, use SIS commands (see **Video bit depth** SIS commands on page 26) or the XTP System Configuration Software (see **Input/Output tab** on page 39).

Advanced Configuration Submenu

The `Advanced Configuration` submenu is used to set test patterns, screen blanking and freezing, aspect ratio, and system reset.

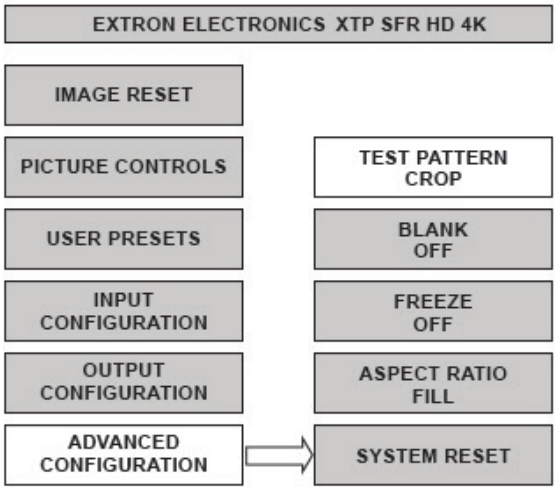


Figure 14. Advanced Configuration Submenu

- **Test pattern** — Rotate the adjustment knobs to select a test pattern. The available test patterns are `Crop`, `Alternating Pixels`, `4x4 Crosshatch`, `Color Bars`, and `Grayscale`. The default setting is `Off`.

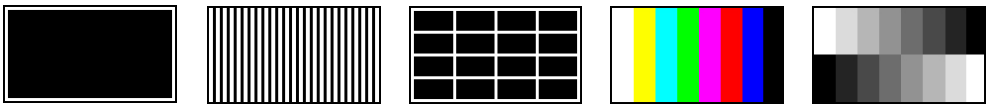


Figure 15. Test Pattern Examples

NOTE: All test patterns include a single pixel border.

- **Blank** — Rotate the adjustment knobs to turn the blank screen feature on or off. When on, the screen turns black, but the OSD menu is still available.
- **Freeze** — Rotate the adjustment knobs to freeze or unfreeze the output.
- **Aspect ratio** — Rotate the adjustment knobs to set the output aspect ratio to **`Fill`** or **`Follow`**. When the aspect ratio is set to `Fill`, the output is sized and centered to fill the entire output screen. When the aspect ratio is set to `Follow`, the native aspect ratio of the input is maintained.
- **Factory reset** — Press and hold the **`Enter`** button to reset the device to factory defaults. The scaler retains the current firmware version.

Front Panel Lockout Mode (Executive Mode)

Executive mode locks all front panel controls (RS-232 and USB control are still available). To enable or disable executive mode through the front panel, press and hold the **Menu** and **Enter** buttons simultaneously for about 2 seconds or until the Power LED blinks (see **Front Panel Lockout mode** SIS commands on page 30 or **Configuration Software** on page 32 for remote enabling or disabling of the Front Panel Lockout mode).

Reset Modes

Use the recessed **Reset** button on the rear panel (see figure 16, A) to return the device to default settings or restore factory-shipped firmware.

Figure 16. Rear Panel Reset Button

Reset Mode Summary			
Mode	**Activation**	**Result**	**Purpose and Notes**
Factory Firmware Reset (mode 1)	Press and hold the recessed **Reset** button while applying power to the device. **NOTE:** After this reset, update the device with the latest firmware version. Do not operate the device with the firmware version that results from this reset.	The device reverts to the factory default firmware for a single power cycle. **NOTE:** If this reset was performed by mistake or is no longer desired, cycle power to the device again to restore the firmware version running prior to the reset.	Use this reset to return the firmware to the factory version temporarily if an incompatibility issue arises with the current firmware.
User Settings Reset (mode 5)	Hold down the **Reset** button until the Power LED blinks three times (over approximately 9 seconds). Then, press the **Reset** button again momentarily (<1 second).	The device reverts to the factory defaults except for firmware. • All user modifiable configurations reset to default values, including real-time adjustments. • The front panel Power LED blinks four times in quick succession during the reset.	Use this reset to restart with the default configuration. This is equivalent to the ZXXX SIS command (see the **Reset mode** SIS command on page 31).

SIS Configuration and Control

This section contains SIS communication details and SIS commands and responses when connected directly to an XTP SFR HD 4K. Topics in this section include:

- **Host Device Connection**
- **SIS Overview**
- **Command and Response Tables for SIS Commands**

Host Device Connection

Use a connected computer running the Extron DataViewer utility to send and receive SIS commands and responses. To connect directly to an XTP SFR HD 4K, connect the computer to the XTP SFR HD 4K through the front panel USB configuration port (see **figure 8**, Ⓑ on page 12) or the rear panel Remote RS-232 connector (see **figure 2**, Ⓗ on page 5). The protocol for the serial port is as follows: 9600 baud, no parity, 8 data bits, 1 stop bit, no flow control.

SIS Overview

Host and Device Communication

SIS commands consist of one or more characters per field. No special characters are required to begin or end a command sequence. When the XTP SFR HD 4K determines that a command is valid, it executes the command and sends a response to the host device. All responses from the receiver to the host end with a carriage return and a line feed (CR/LF = ↵), which signals the end of the response character string. A string is one or more characters.

Device-Initiated Message

When the device is connected through the serial port only and a local event occurs, the device responds by sending a message to the host.

The following copyright message is displayed after a power cycle via RS-232.

`(C) Copyright` *`YYYY`*`, Extron Electronics, XTP SFR HD 4K MM V`*`x.xx`*`, 60-1278-21`↵

`(C) Copyright` *`YYYY`*`, Extron Electronics, XTP SFR HD 4K SM V`*`x.xx`*`, 60-1278-22`↵

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

Error Responses

When the XTP SFR HD 4K receives an SIS command and determines that it is valid, it performs the command and sends the corresponding response to the host device. If the command is determined invalid or contains invalid parameters, the receiver returns an error response to the host. The error response codes are:

E1Ø = Invalid command
E11 = Invalid preset number
E13 = Invalid parameter
E14 = Not valid for this configuration
E17 = Invalid command for signal type
E22 = Busy

Command and Response Tables Overview

The command and response tables for SIS commands list the commands the receiver recognizes as valid, the responses returned to the host, a description of the command function or results of executing the command, and some examples of commands in ASCII.

NOTE: Upper and lowercase text can be used interchangeably unless otherwise stated.

Symbol Definitions

The table below shows the hexadecimal equivalent of ASCII characters used in the command and response tables. Hexadecimal values include two digits. The following symbols are commonly used throughout the command and response tables.

ASCII and Hexadecimal Conversion Table

First Hexadecimal Digit	Second Hexadecimal Digit															
	0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**
0											LF			←		
1												Esc				
2	●	!	“	#	$	%	&	‘	(	)	*	+	,	-	.	/
3	Ø	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5	P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
6	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7	p	q	r	s	t	u	v	w	z	y	z	{	|	}	~	

↵ = Carriage return and line feed (LF)

← = Carriage return with no line feed

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

● = Space

Esc = Escape key

W = Can be used interchangeably with the Esc character.

Command and Response Tables for SIS Commands

Command	ASCII Command (host to XTP)	ASCII Response (XTP to host)	Additional Description
Picture Adjustment Commands			
Contrast			
Set contrast	Esc X1 CONT ←	Cont X1 ↵	Set the contrast to X1.
Increase contrast	Esc +CONT ←	Cont X1 ↵	Increase the contrast level by one.
Decrease contrast	Esc -CONT ←	Cont X1 ↵	Decrease the contrast level by one.
View contrast level	Esc CONT ←	Cont X1 ↵	View the contrast level.
Brightness			
Set brightness	Esc X1 BRIT ←	Brit X1 ↵	Set brightness level to X1.
Increase brightness	Esc +BRIT ←	Brit X1 ↵	Increase brightness level by one.
Decrease brightness	Esc -BRIT ←	Brit X1 ↵	Decrease brightness level by one.
View brightness	Esc BRIT ←	Brit X1 ↵	View the brightness level.
Detail filter			
Set detail level	Esc X2 HDET ←	Hdet X2 ↵	Set the detail level to X2.
Increase detail level	Esc +HDET ←	Hdet X2 ↵	Increase the detail level by one.
Decrease detail level	Esc -HDET ←	Hdet X2 ↵	Decrease the detail level by one.
View detail level	Esc HDET ←	Hdet X2 ↵	View the detail level.
Image reset			
Execute an image reset	A	Img ↵	Reset shift and size settings to the default values.

KEY:

X1 = Picture adjustment — Ø to 255 (128 = default)

X2 = Detail filter — Ø to 255 (64 = default)

Command	ASCII Command (host to XTP)	ASCII Response (XTP to host)	Additional Description
Horizontal shift			
Set horizontal shift	Esc X3 HCTR ←	Hctr X3 ↵	Set horizontal position to X3.
Increase horizontal shift	Esc +HCTR ←	Hctr X3 ↵	Shift the image right by one.
Decrease horizontal shift	Esc -HCTR ←	Hctr X3 ↵	Shift the image left by one.
View horizontal shift	Esc HCTR ←	Hctr X3 ↵	View the horizontal position.
Vertical shift			
Set vertical shift	Esc X3 VCTR ←	Vctr X3 ↵	Set vertical position to X3.
Increase vertical shift	Esc +VCTR ←	Vctr X3 ↵	Shift the image down by one.
Decrease vertical shift	Esc -VCTR ←	Vctr X3 ↵	Shift the image up by one.
View vertical shift	Esc VCTR ←	Vctr X3 ↵	View the vertical position.
Horizontal size			
Set horizontal size	Esc X4 HSIZ ←	Hsiz X4 ↵	Set image width to X4.
Increase horizontal size	Esc +HSIZ ←	Hsiz X4 ↵	Increase the image width by one.
Decrease horizontal size	Esc -HSIZ ←	Hsiz X4 ↵	Decrease the image width by one.
View horizontal size	Esc HSIZ ←	Hsiz X4 ↵	View the image width.
Vertical size			
Set vertical size	Esc X4 VSIZ ←	Vsiz X4 ↵	Set image height to X4.
Increase vertical size	Esc +VSIZ ←	Vsiz X4 ↵	Increase the image height by one.
Decrease vertical size	Esc -VSIZ ←	Vsiz X4 ↵	Decrease the image height by one.
View vertical size	Esc VSIZ ←	Vsiz X4 ↵	View the image height.

Output Configuration Commands

HDMI output format			
Set HDMI output format	Esc X5 VTPO ←	Vtpo X5 ↵	Set the video format (DVI or HDMI), color space (RGB 4:4:4, YUV 4:2:2, or YUV 4:4:4), and quantization range (full or limited).
View HDMI output format	Esc VTPO ←	Vtpo X5 ↵	
Video bit depth			
Set video bit depth	Esc V X6 BITD ←	BitdV X6 ↵	Set the video bit depth.
View video bit depth	Esc VBITD ←	BitdV X6 ↵	

KEY:

X3 = Horizontal or vertical shift	Ø to 65535 (32768 = default)
X4 = Horizontal or vertical size	Ø to 65535
X5 = HDMI output format	Ø = auto (default) 1 = DVI RGB 444 2 = HDMI RGB 444 “Full” 3 = HDMI RGB 444 “Limited” 4 = HDMI YUV 444 “Full” 5 = HDMI YUV 444 “Limited” 6 = HDMI YUV 422 “Full” 7 = HDMI YUV 422 “Limited”
X6 = Video bit depth	Ø = auto (default) 1 = 8 bit

Command	ASCII Command (host to XTP)	ASCII Response (XTP to host)	Additional Description
Output scaler rate			
Set output rate	Esc X7 RATE ←	Rate X7 ↵	Select output resolution and refresh rate.
NOTE: Bypass mode outputs the input signal without being scaled like a standard non-scaling receiver. This prevents higher resolutions from being scaled to a lower resolution and potential input and output sync issues in 3D applications.			
View output rate	Esc RATE ←	Rate X7 ↵	Show selected output rate.

KEY:

X7 = Output scaler rate

See the table below (39 = default).

Resolution	29.98 Hz	24 Hz	25 Hz	29.97 Hz	30 Hz	48 Hz	50 Hz	59.94 Hz	60 Hz
640x480									1
800x600									2
1024x768									3
1280x768									4
1280x800									5
1280x1024									6
1360x768									7
1366x768									8
1440x900									9
1400x1050									10
1600x900									11
1680x1050									12
1600x1200									13
1920x1200									14
2048x1200									15
2048x1536									16
2060x1080									17
2560x1440						70			18
2560x1600									19
480p								20	21
576p							22		
720p			23	24	25		26	27	28
1080i							29	30	31
1080p	32	33	34	35	36		37	38	39*
2K (2048x1080)	40	41	42	43	44	69	45	46	47
1920x2160	48	49	50	51	52		53	54	55
2048x2160	56	57	58	59	60		61	62	63
4K (3840x2160)	64	65	66	67	68				
Bypass scaling	0								

* = Default

Command	ASCII Command (host to XTP)	ASCII Response (XTP to host)	Additional Description
Audio Configuration Commands			
Volume			
Set volume	X8V	Vol X8 ↵	Set output volume to X8.
Increase volume level	+V	Vol X8 ↵	Increase the audio volume by 1 dB.
Decrease volume level	-V	Vol X8 ↵	Decrease audio volume by 1 dB.
View volume level	V	Vol X8 ↵	View current volume setting.
Audio mute			
Set mute	X9Z	Amt X9 ↵	Set the audio mute for various outputs.
View mute status	Z	Amt X9 ↵	View the audio mute status.

KEY:

X8 = Volume

Ø to 64 in 1 dB steps (64 = default)

X8	dB of Attenuation	Output Volume	X8	dB of Attenuation	Output Volume	X8	dB of Attenuation	Output Volume
Ø	76	0%	22	42	37.0%	44	20	70.0%
1	63	5.5%	23	41	38.5%	45	19	71.5%
2	62	7.0%	24	40	40.0%	46	18	73.0%
3	61	8.5%	25	39	41.5%	47	17	74.5%
4	60	10.0%	26	38	43.0%	48	16	76.0%
5	59	11.5%	27	37	44.5%	49	15	77.5%
6	58	13.0%	28	36	46.0%	5Ø	14	79.0%
7	57	14.5%	29	35	47.5%	51	13	80.5%
8	56	16.0%	3Ø	34	49.0%	52	12	82.0%
9	55	17.5%	31	33	50.5%	53	11	83.5%
1Ø	54	19.0%	32	32	52.0%	54	10	85.0%
11	53	20.5%	33	31	53.5%	55	9	86.5%
12	52	22.0%	34	30	55.0%	56	8	88.0%
13	51	23.5%	35	29	56.5%	57	7	89.5%
14	50	25.0%	36	28	58.0%	58	6	91.0%
15	49	26.5%	37	27	59.5%	59	5	92.5%
16	48	28.0%	38	26	61.0%	6Ø	4	94.0%
17	47	29.5%	39	25	62.5%	61	3	95.5%
18	46	31.0%	4Ø	24	64.0%	62	2	97.0%
19	45	32.5%	41	23	65.5%	63	1	98.5%
2Ø	44	34.0%	42	22	67.0%	64	0	100.0%
21	43	35.5%	43	21	68.5%			

X9 = Audio mute

Ø = unmute (default)
1 = mute HDMI audio output
2 = mute analog audio output
3 = mute HDMI and analog audio outputs
4 = mute S/PDIF audio output
5 = mute S/PDIF and HDMI audio outputs
6 = mute S/PDIF and analog audio outputs
7 = mute all audio outputs

Command	ASCII Command (host to XTP)	ASCII Response (XTP to host)	Additional Description
Preset Commands			
User presets			
Recall preset	X10 .	Rpr X10 ↵	Recall user preset X10.
Save preset	X10 ,	Spr X10 ↵	Save the current settings to user preset X10.
Auto memories			
Set auto memories	Esc X11 AMEM ←	Amem X11 ↵	Enable or disable auto memory.
View setting	Esc AMEM ←	Amem X11 ↵	View the auto memories status.
Advanced Configuration Commands			
Video Mute			
Mute video and sync	2B	Vmt2 ↵	Mute the video and sync.
Mute video	1B	Vmt1 ↵	Mute the selected input.
Unmute video	ØB	VmtØ ↵	Display the selected input.
View mute status	B	Vmt X12 ↵	View mute status.
Aspect ratio			
Set aspect ratio to Fill	Esc 1ASPR ←	Aspr1 ↵	Fill the entire output raster.
Set aspect ratio to Follow	Esc 2ASPR ←	Aspr2 ↵	Use the native aspect ratio of the input.
View aspect ratio setting	Esc ASPR ←	Aspr X13 ↵	View the current aspect ratio setting.
Test pattern			
NOTE: See **figure 15** on page 21 for examples of the available test patterns.			
Set pattern	X14 J	Tst X14 ↵	Set the test pattern to X14.
View test pattern	J	Tst X14 ↵	View the current test pattern.
Freeze			
Enable	1F	Frz1 ↵	Freeze the selected input.
Disable	ØF	FrzØ ↵	Unfreeze the selected input.
View freeze status	F	Frz X15 ↵	View the freeze status.

KEY:

X10 = User preset — 1 to 8

X11 = Enable or disable — Ø = disabled 1 = enabled (default)

X12 = Video mute — Ø = unmute (default); 1 = mute video; 2 = mute video and sync

X13 = Aspect ratio — 1 = fill (default) 2 = follow

X14 = Test pattern — Ø = off (default); 1 = crop; 2 = alternating pixels; 3 = crosshatch; 4 = colorbars; 5 = greyscale

X15 = Freeze — Ø = unfreeze image (default) 1 = freeze image

Command	ASCII Command (host to XTP)	ASCII Response (XTP to host)	Additional Description
Screen saver			
Set timeout duration	Esc X16 SSAV ←	Ssav X16 * X17 ↵	Set the required duration of inactivity before the screen saver activates.
View timeout duration	Esc SSAV ←	Ssav X16 * X17 ↵	View the required duration of inactivity before the screen saver activates and how much time is left before it activates.
Switch mute			
NOTE: The basic mute specifies the mute duration when switching. The advanced mute adds an additional mute to help compensate for switching between different input resolutions.			
Set switch mute	Esc X18 * X19 AUTB ←	Autb X18 * X19 ↵	Set the mute duration between switching inputs.
View switch mute setting	Esc AUTB ←	Autb X18 * X19 ↵	View the basic and advanced mute durations between switching inputs.
Front Panel Lockout (Executive) mode			
Enable executive mode	1X	Exe1 ↵	Lock the entire front panel.
Disable executive mode	ØX	ExeØ ↵	Unlock the front panel.
View executive mode status	X	Exe X20 ↵	View the executive mode status.
HDCP mode			
Set HDCP mode	Esc S X21 HDCP ←	HdcpS X21 ↵	Set the HDCP mode to X21.
View HDCP mode setting	Esc SHDCP ←	HdcpS X21 ↵	View the HDCP mode setting.

KEY:

X16 = Screen saver timeout duration	Ø = never time out (default) 1-255 in 1 minute steps
X17 = Time in seconds until timeout	Ø = screen saver never times out or the screen saver is currently activated 1-255 in 1 minute steps
X18 = Basic mute	Ø-255 where 1 step = 100 ms or 10 steps = 1 s (Ø = default)
X19 = Advanced mute	Ø-255 where 1 step = 100 ms or 10 steps = 1 s (Ø = Default)
X20 = Front panel lockout mode	Ø = allow front panel operation (default) 1 = prevent front panel operation
X21 = HDCP mode	Ø = auto or encrypt the output only when required by the input (default) 1 = always encrypt the output

Command	ASCII Command (XTP to host)	ASCII Response (host to XTP)	Additional Description
Device Commands			
Relay control			
Pulse relay	X22*3*X23O	RlyX22*X24↵	Pulse relay X22 for a duration of X23.
Toggle relay	X22*2O	RlyX22*X24↵	Toggle relay X22.
Turn relay on	X22*1O	RlyX22*1↵	Turn relay X22 on.
Turn relay off	X22*ØO	RlyX22*Ø↵	Turn relay X22 off.
View relay status	X22O	RlyX22*X24↵	View relay status.
Reset mode			
System reset	Esc ZXXX←	Zpx↵	Resets unit to factory default.
Information requests			
View input signal status	ØLS	FrqX25↵	View the input signal status.
View HDMI output status	Esc OHDCP←	HdcpOX26↵	Query the HDCP status of the output.
View firmware version	Q	x.xx↵	View the firmware version.
View firmware build	*Q	x.xx.xxxx↵	View the firmware build version.
View part number	N	6Ø-1278-2x↵	View the device part number where the value for x depends on the device model.

KEY:

X22 = Relay	1 = relay 1 2 = relay 2
X23 = Pulse time	1 to 65535 (in 16 ms steps)
X24 = On or off	Ø = off 1 = on
X25 = Input signal status	Ø = no input 1 = input detected
X26 = HDCP status	Ø, 2, 4, 6 = no sink device detected 1, 3, 5 = sink detected with no HDCP encryption 7 = sink detected with HDCP encryption

Configuration Software

This section contains installation and configuration procedures for the XTP System Configuration Software to directly configure and control the XTP SFR HD 4K. It can also be configured and controlled remotely through the XTP System Configuration Software and the XTP matrix switcher (see the *XTP System Configuration Software Help* file). Topics in this section include the following:

- **Software Installation**
- **Software Connection**
- **Software Operation**

Software Installation

The XTP System Configuration Software is compatible with most Microsoft Windows operating systems and available for download on the Extron website, **www.extron.com**. To download the software from the Extron website, locate it on the `Download Center` page or go to the XTP System Configuration Software product page.

Software Download Center Page

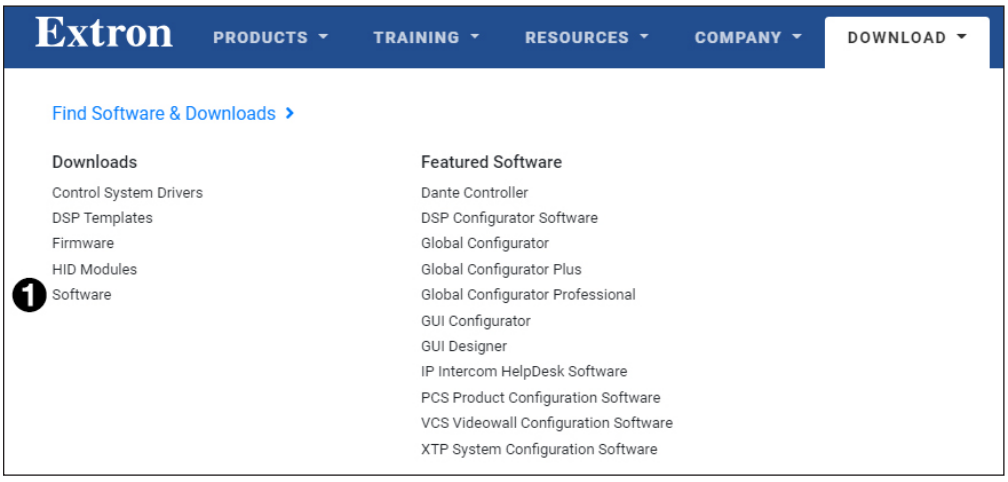


Figure 17. Extron Website Download Page

1. On the Extron website, go to the **`Download`** tab and click **`Software`** (see figure 19, ❶).

> **TIP:** If the XTP System Configuration Software is listed under "Featured Software" on the **`Download`** tab, click the **`XTP System Configuration Software`** link to go directly to the product page (see **Software Product Page** on the next page).

Figure 18. XTP System Configuration Software Download Link

2. Click the **X** link (see figure 18, ❶).
3. Locate the XTP System Configuration Software and click the **Download** link (see figure 18, ❷) to the right of the product name.
4. Submit any required information to start the download. Note where the file is saved.
5. Open the saved executable (.exe) file.
6. Follow the instructions that appear on the screen to install the program.

Software Product Page

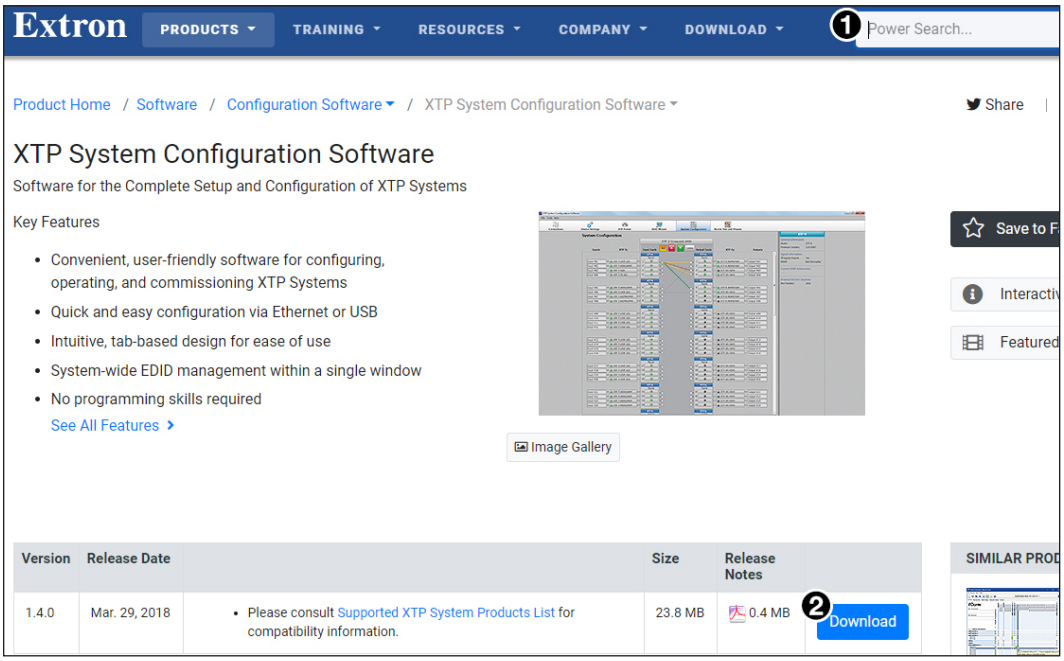


Figure 19. XTP System Configuration Software Product Page

To download and install the XTP System Configuration Software from this page, perform the following:

1. In the **Search** field (see figure 19, ❶) type "XTP System Configuration Software."
2. Press <Enter> on the keyboard or select **XTP System Configuration Software** from the drop-down menu.
3. Click the **Download** button (❷).
4. Submit any required information to start the download. Note where the file is saved.
5. Open the saved executable (.exe) file.
6. Follow the instructions that appear on the screen to install the program.

Software Connection

To connect the software directly to the XTP SFR HD 4K , connect the computer running the software to the configuration connector (see **figure 8**, B on page 12).

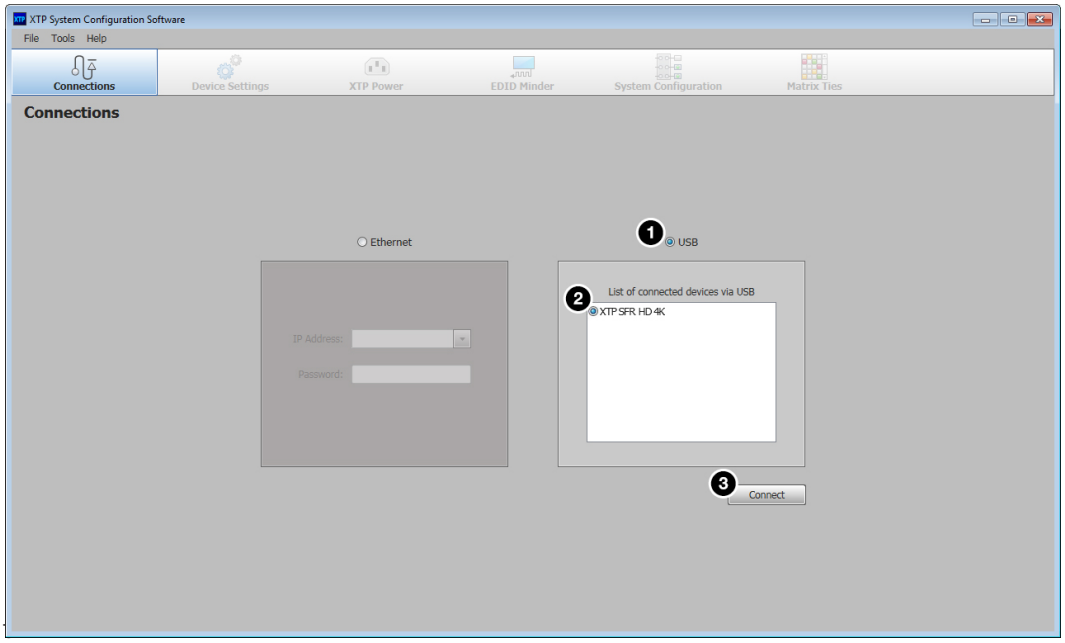


Figure 20. Connections Screen

To connect to a device:

1. Open the XTP System Configuration Software.
2. On the **Connections** screen in the XTP Configuration Software, select the **USB** radio button (see figure 20, ❶).
3. From the displayed list, select the connected device to be controlled (❷).
4. Click the **Connect** button (❸). The **Device Settings** screen opens (see **Device Settings** on page 38).

Software Operation

Menu Bar

The menu bar contains three menus for configuring software settings.

File menu

The `File` menu contains options for disconnecting from the XTP device and exiting the program. To access the menu, click the **`File`** menu.

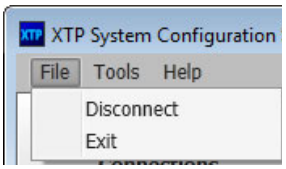


Figure 21. File Menu

Disconnect

This option disconnects the connected device from the XTP System Configuration Software.

From the **`File`** menu, select **`Disconnect`**. The `Connections` screen opens.

NOTE: If the device is already disconnected, the **`Disconnect`** option is disabled until a device is connected.

Exit

This option disconnects the XTP device from the software and closes the application.

From the **`File`** menu, select **`Exit`**. The application closes.

Tools menu

The `Tools` menu contains an option for updating firmware. To access this menu, click the **`Tools`** menu.

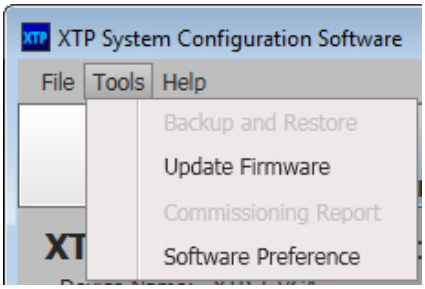


Figure 22. Tools Menu

NOTE: The **`Backup and Restore`** and **`Commissioning Report`** options are not available when the XTP System Configuration Software is directly connected to the device (see an XTP matrix switcher user guide, available at **www.extron.com**, for more information on these features).

Update Firmware

This option uploads firmware from the PC to the connected device. If necessary, download firmware from the Extron website (see **Firmware Download** on page 48).

1. From the **Tools** menu, select **Update Firmware**. A dialog box opens to ask permission to disconnect from the device.

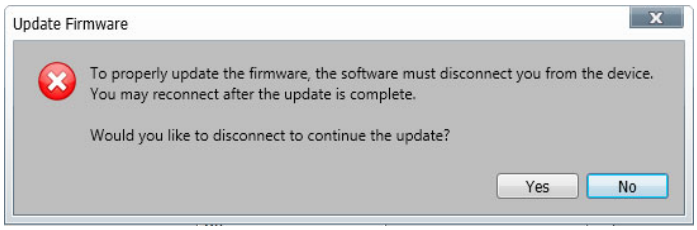


Figure 23. Confirm Disconnect Dialog Box

2. Click the **Yes** button to disconnect from the device and continue with the firmware update process. The Update Firmware dialog box opens.

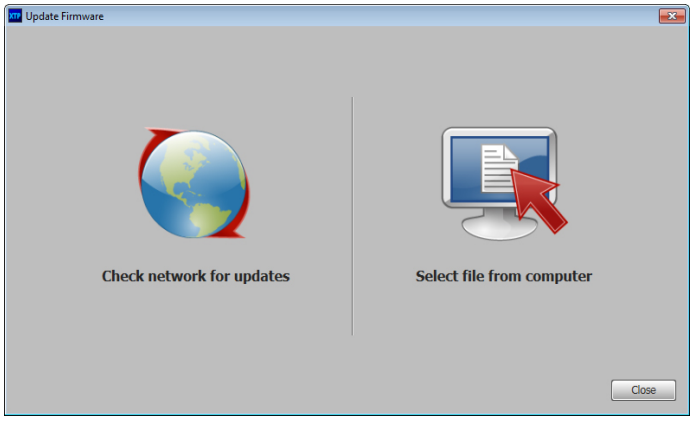


Figure 24. Update Firmware Dialog Box

3. Click one of the following options:
   - **Select file from computer** — Uploads a manually selected firmware file saved on the connected computer.
   - **Check network for updates** — Checks the connected network for firmware updates. If any are found, click the **Update X Devices** button to update the firmware for the applicable connected devices or click **Save File to Computer** to save the firmware file to the connected computer.
4. Click the **Close** button when finished.

Software Preference

This option resets all disabled confirmation dialogs to the default settings.

1. From the **Tools** menu, select **Software Preference**. The Software Preference dialog box opens.

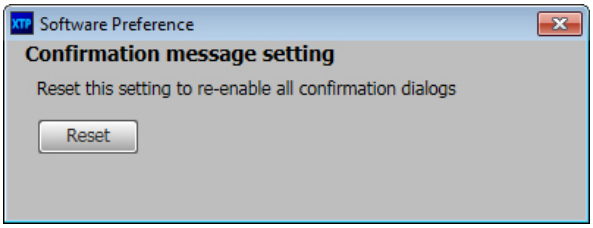


Figure 25. Software Preference Dialog Box

2. Click the **Reset** button. The dialog box closes.

Help menu

The **Help** menu contains a way to access XTP System Configuration Software information, a link to the help file, and a link to the Extron website.

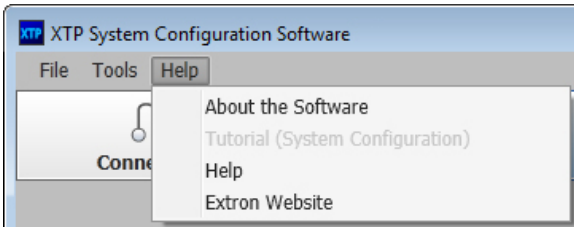


Figure 26. Help Menu

NOTE: The **Tutorial (System Configuration)** option is not available when the XTP System Configuration Software is directly connected to the device.

About the Software

This option provides basic information about the XTP System Configuration Software, including version number and copyright information.

Figure 27. About - XTP Dialog Box

1. From the **Help** menu, select **About the Software**. The About dialog box opens.
2. Click the **Details** button for more information.
3. Click the **Ok** button to close the dialog box.

Help

This option opens the *XTP System Configuration Software Help* file in a web browser.

From the **Help** menu, select **Help**.

Extron Website

This option opens the Extron website in a web browser.

From the **Help** menu, select **Extron Website**.

Device Settings

The `Device Settings` screen allows a user to view and edit various device settings for the receiver directly connected to the PC running the XTP software. Click the **`Device Settings`** icon (see figure 28, ❶) on the `Global Navigation Bar` to open the `Device Settings` screen.

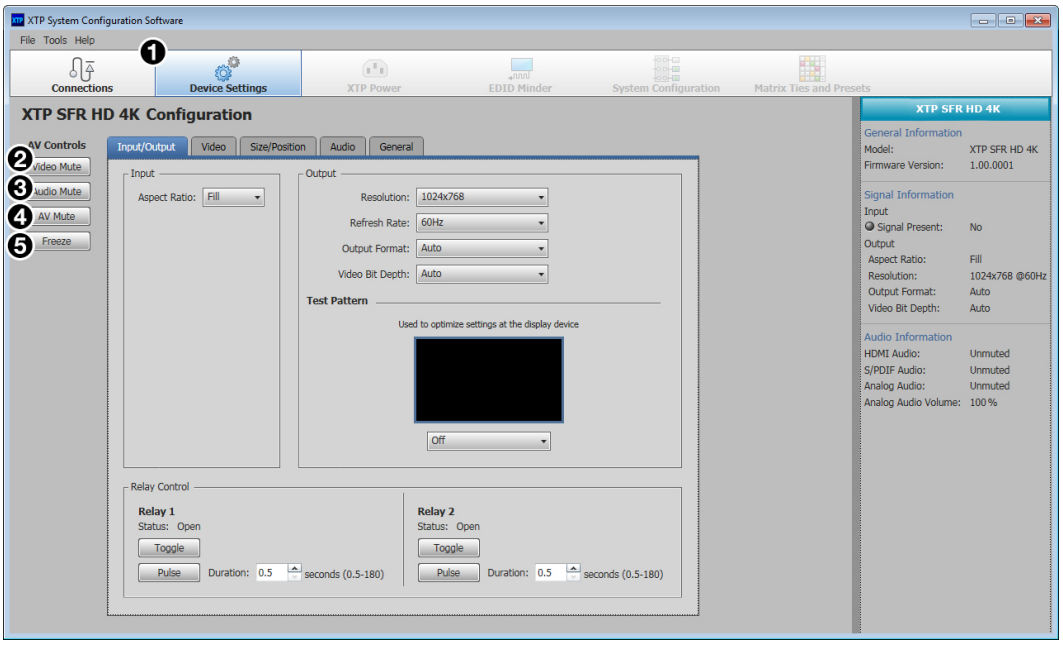


Figure 28. Device Settings Screen

AV Controls panel

The `AV Controls` panel, located on the left, is used to perform audio or video mutes.

NOTE: The mute buttons turn red when they are enabled.

❷ **Video mute** — Click the **`Video Mute`** button to mute or unmute the video output.

❸ **Audio mute** — Click the **`Audio Mute`** button to mute or unmute the audio output.

❹ **Audio and video mute** — Click the **`AV Mute`** button to mute or unmute audio and video output.

❺ **Freeze** — Click the **`Freeze`** button to freeze the current video frame.

Input/Output tab

Click the **`Input/Output`** tab (see figure 29, ❶) to open the `Input/Output` screen. This screen contains input and output configurations as well as relay controls.

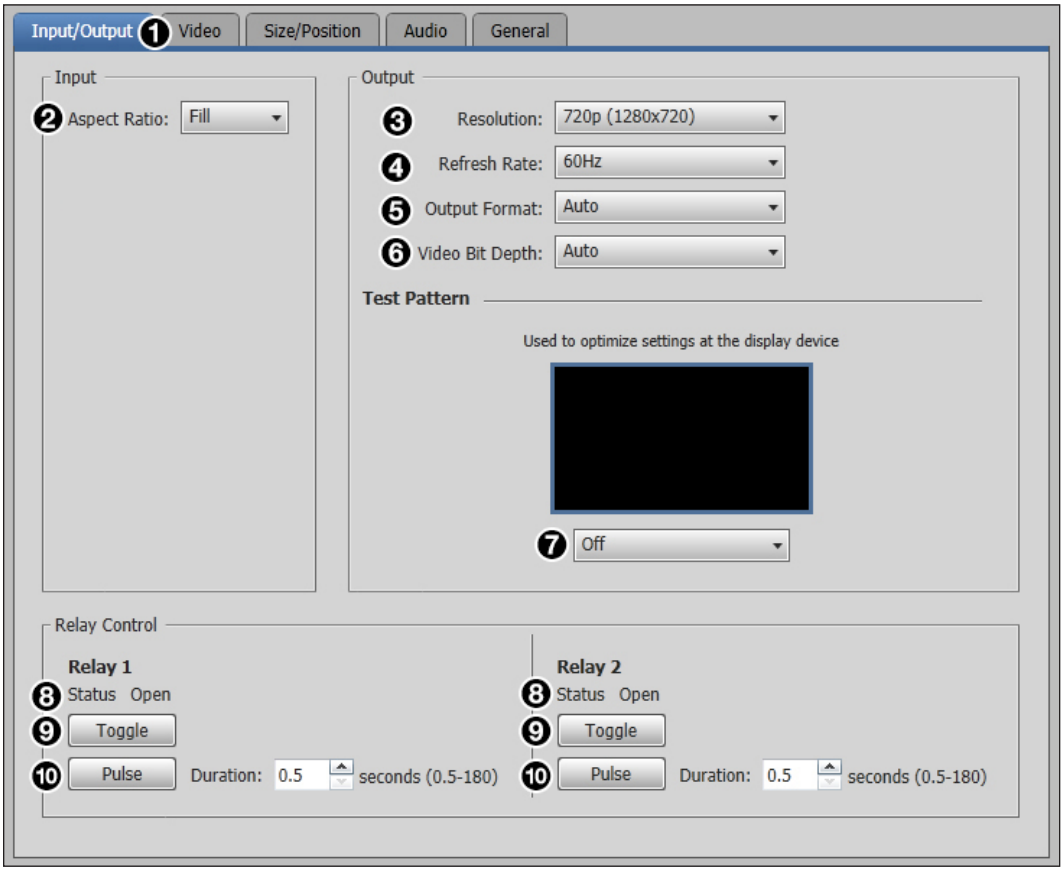


Figure 29. Input/Output Tab

Input panel

The `Input` panel on the `Input/Output` screen is used to set the aspect ratio.

❷ **Aspect Ratio** — From the **`Aspect Ratio`** drop-down list, select **`Fill`** or **`Follow`**.

- **Fill** — Scales the input signal to fill the entire video output.
- **Follow** — Maintains the signal aspect ratio, with respect to the current output resolution.

Output panel

The **Output** panel on the **Input/Output** screen is used to set the resolution, refresh rate, and test pattern.

❸ **Resolution** (see figure 29 on the previous page) — From the **Resolution** drop-down list, select the desired resolution.

❹ **Refresh Rate** — From the **Refresh Rate** drop-down list, select the desired refresh rate.

❺ **Output Format** — Sets the output format to a specific setting or to automatically select a format based on the display EDID.

❻ **Video Bit Depth** — Sets the color bit depth of the output signal.

❼ **Test Pattern** — From the drop-down list below the test pattern preview, select the desired test pattern (see **figure 15** on page 21 for examples of the available test patterns).

Relay Control panel

The **Relay Control** panel on the **Input/Output** screen toggles or pulses relay 1 or 2.

❽ **Status** — Displays whether the relay is open or closed.

❾ **Toggle** — Click the **Toggle** button in the desired relay panel to toggle either relay open or closed.

❿ **Pulse** — In the desired **Relay** panel, select a length of time from the **Duration** field. Click the **Pulse** button to pulse the relay for the time specified in the **Duration** field.

Video tab

Click the **Video** tab to open the Video screen. This screen contains picture control settings and user preset management options.

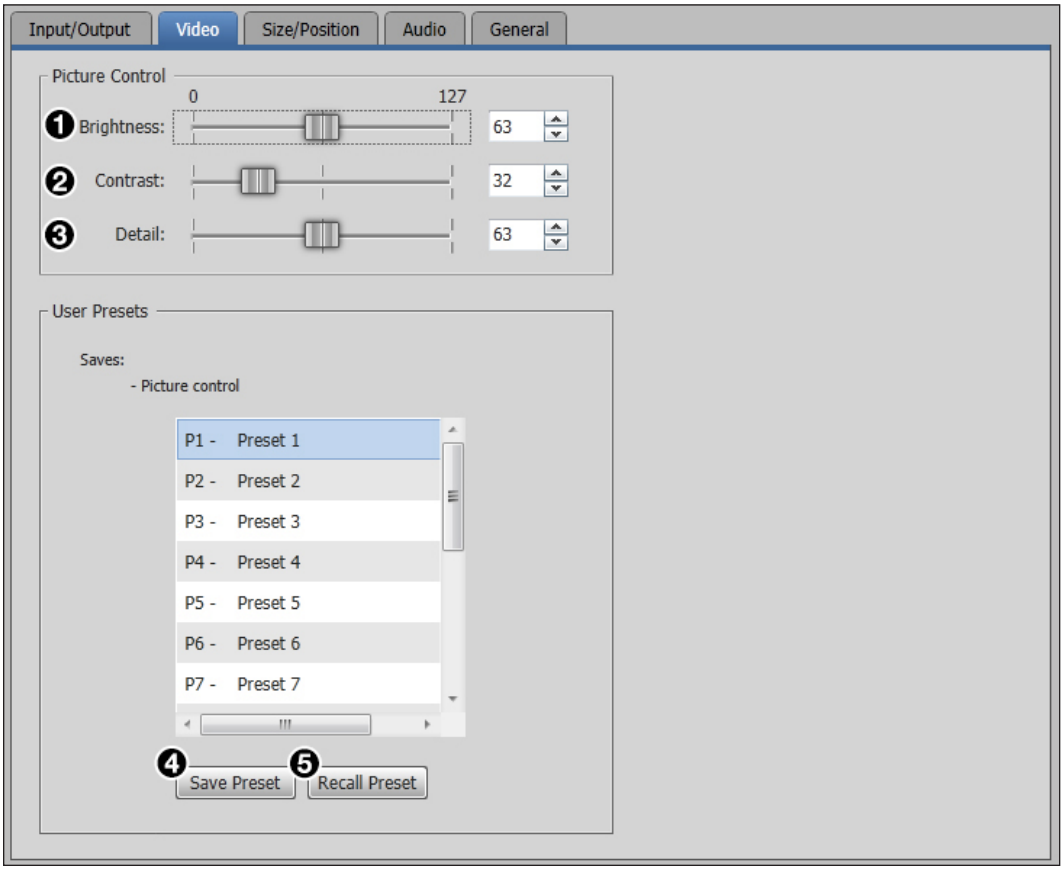


Figure 30. Video Tab

Picture Control panel

The Picture Control panel on the Video screen is used to adjust brightness, contrast, and detail settings. Adjust picture control settings in one of the following ways:

- Click and drag the handle of the slider for the desired setting.
- Click in the desired field to the right of the slider and enter a new value.
- Click the **Up** and **Down** arrows to the right of the desired setting.

❶ **Brightness** — Adjust the brightness level of the output.

❷ **Contrast** — Adjust the contrast level of the output.

❸ **Detail** — Adjust the detail level of the output.

User Presets panel

User presets save picture control settings that can be recalled later.

❹ **Save Preset** — Select a preset from the list of presets and click the **Save Preset** button. The current settings are saved.

❺ **Recall Preset** — Select the desired preset from the list of presets and click the **Recall Preset** button.

Size and Position tab

Click the **Size/Position** tab (see figure 31, ❶) to open the Size and Position screen. This screen contains several different ways to adjust the size and position of the output.

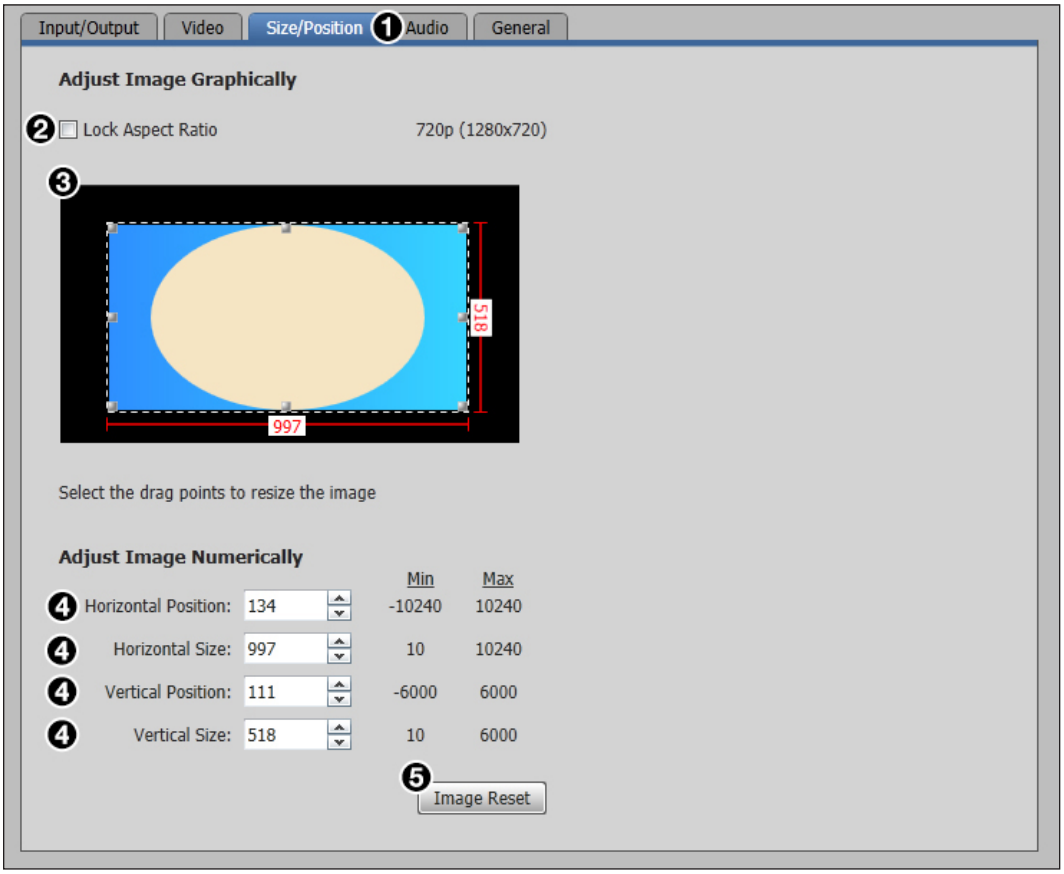


Figure 31. Size/Position Tab

To adjust the size and position graphically:

If desired, click the **Lock Aspect Ratio** check box (❷) to constrain proportions.

1. Click and drag the drag points of the sample image in the Preview box (❸) to resize the image within the designated space (defined by the black area in figure 31).
2. Click anywhere inside the sample image and drag it anywhere within the Preview box.

To adjust the size and position numerically:

1. Enter a value or click the **Up** and **Down** arrows in the **Horizontal Size** and **Vertical Size** fields (❹).
2. Enter a value or click the **Up** and **Down** arrows in the **Horizontal Position** and **Vertical Position** fields (❹).

To reset all position and size settings to default values:

Click the **Image Reset** button (❺).

Audio tab

Click the **Audio** tab (see figure 32, ❶) to open the **Audio** screen. This screen contains audio output settings.

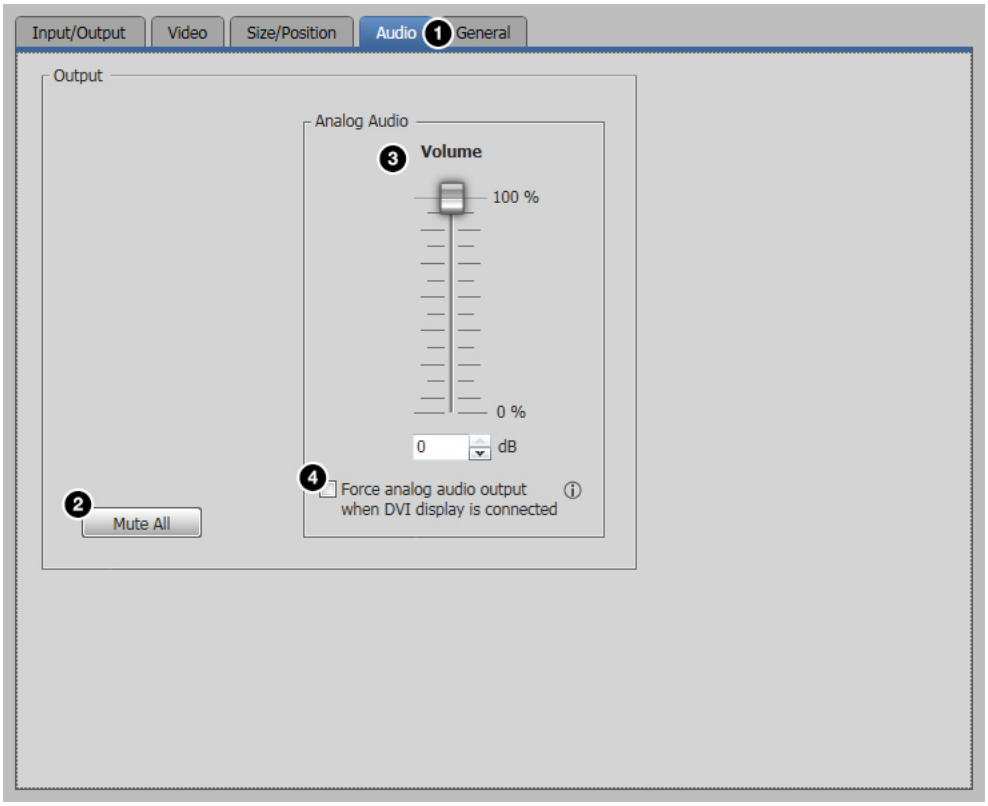


Figure 32. Audio Tab

Output panel

The **Output** panel on the **Audio** screen is used to mute or unmute all audio output and control volume on the analog audio output.

❷ **Mute All** — Click the **Mute All** button to mute or unmute all audio output. When muted, the button turns red.

❸ **Volume fader** — Click and drag the handle of the **Volume** fader, enter a value in the **Volume** field, or click the **Up** and **Down** arrows to adjust analog audio output volume.

❹ **Analog audio for DVI displays** — Select the check box below the **Volume** slider to send analog audio to a display receiving DVI signals.

> **NOTE:** When this check box is selected, Extron EDID Minder does not show the EDID information of the connected display. It shows a 720p Extron EDID.

General tab

Click the **General** tab (see figure 33, ❶) to open the General screen. This screen contains executive mode and video and sync settings.

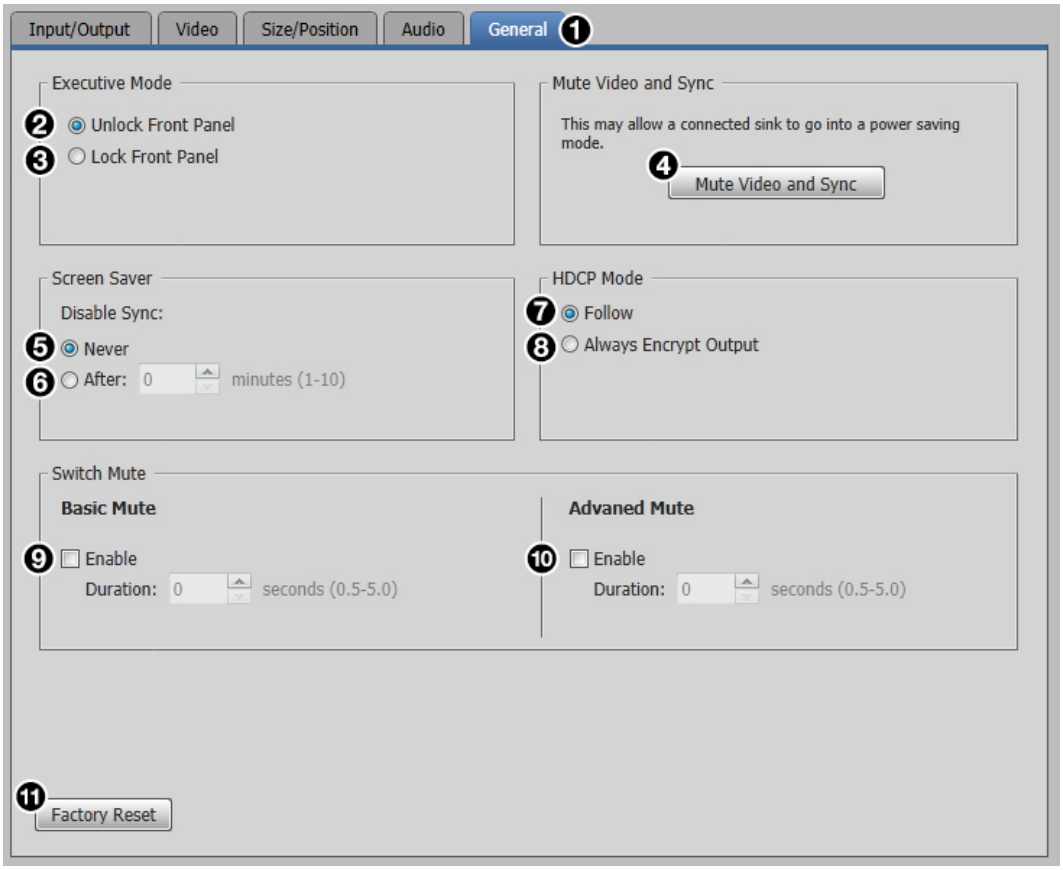


Figure 33. General Tab

Executive Mode panel

The Executive Mode panel on the General screen is used to enable or disable front panel lockout mode (executive mode).

❷ **Unlock front panel** — Click the **Unlock Front Panel** radio button (default) to disable executive mode and allow full use of the receiver front panel.

❸ **Lock front panel** — Click the **Lock Front Panel** radio button to enable executive mode and lock the front panel.

NOTE: In executive mode, access to the OSD menu is disabled.

Mute Video and Sync panel

The Mute Video and Sync panel on the General screen is used to mute or unmute output video and sync.

❹ **Mute video and sync** — Click the **Mute Video and Sync** button to mute the active video and disable sync on the output.

Screen Saver panel

The **Screen Saver** panel on the **General** screen is used to enable or disable a screen saver. When enabled, the output sync is disabled after a specified amount of time.

❺ **Never** (see figure 33 on the previous page) — Click the **Never** radio button to disable the screen saver setting.

❻ **Duration** — Enter a value in the **After:** field, or click the **Up** and **Down** arrows to specify a duration of inactivity before a screen saver is activated. The duration is set in seconds.

HDCP Mode panel

The **HDCP Mode** panel on the **General** screen is used to set HDCP encryption of the output signal.

❼ **Follow** — Click the **Follow** radio button to set the HDCP encryption of the output signal to follow the input signal setting.

❽ **Always Encrypt Output** — Click the **Always Encrypt Output** radio button to always encrypt the output regardless of the encryption status of the input signal.

Switch Mute panel

The **Switch Mute** panel on the **General** screen is used to enable or disable mutes during switching.

❾ **Basic mute** — Select the **Enable** check box in the **Basic Mute** panel to mute the output during switching.

If enabled, enter a value in the associated **Duration:** field, or click the **Up** and **Down** arrows to specify a mute duration between switching. The duration is set in 0.5 second increments.

❿ **Advanced mute** — Select the **Enable** check box in the **Advanced Mute** panel to add an additional mute to help compensate for switching between different input resolutions.

If enabled, enter a value in the associated **Duration:** field, or click the **Up** and **Down** arrows to specify a duration of the additional mute. The duration is set in 0.5 second increments.

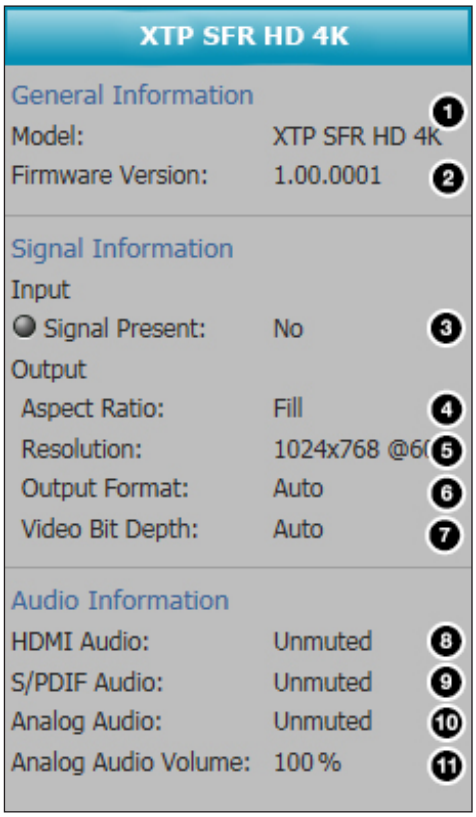
Factory Reset

⓫ **Factory Reset** — Click the **Factory Reset** button to reset the receiver to factory settings (except for firmware).

NOTE: This is the same as the Esc ZXXX SIS command (see the **Reset mode** SIS command on page 31).

Device Information panel

The `Device Information` panel displays device information and signal status information.



1. **Model** — Displays the device model.
2. **Firmware Version** — Displays the firmware version.
3. **Input Signal Present** — Displays the signal presence. The indicator to the left turns green when there is an input signal present.
4. **Aspect Ratio** — Displays the aspect ratio.
5. **Resolution** — Displays the output resolution and refresh rate.
6. **Output Format** — Displays the HDMI output format setting.
7. **Video Bit Depth** — Displays the video bit depth setting.
8. **HDMI Audio** — Displays the mute status of the HDMI audio output.
9. **S/PDIF Audio** — Displays the mute status of the audio on the S/PDIF output.
10. **Analog Audio** — Displays the mute status of the analog audio output.
11. **Analog Audio Volume** — Displays the analog audio output volume level.

Reference Information

This section contains mounting information and instructions for downloading firmware. Topics in this section include the following:

Mounting

The XTP SFR HD 4K can be placed on a tabletop or mounted in a rack or underneath a desk.

Tabletop Mounting

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

Furniture Mounting

Go to **www.extron.com** for a list of available furniture mounting kits. To install the device to furniture, follow the mounting kit instructions.

Rack Mounting

Go to **www.extron.com** for a list of compatible rack mounting kits. To install the device in a rack, follow the mounting kit instructions and see the UL guidelines for rack-mounted devices below.

UL guidelines for rack-mounted devices

The following Underwriters Laboratories (UL) guidelines pertain to the safe installation of the XTP SFR HD 4K in a rack.

1. **Elevated operating ambient temperature** — If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature, Therefore, install the XTP SFR HD 4K in an environment compatible with the maximum ambient temperature (Tma = +122 °F, +50 °C) specified by Extron.
2. **Reduced air flow** — Install the equipment in a rack so that the amount of air flow required for safe operation of the equipment is not compromised.
3. **Mechanical loading** — Mount the equipment in the rack so that a hazardous condition is not achieved due to uneven mechanical loading.
4. **Circuit overloading** — Connect the equipment to the supply circuit and consider the effect that circuit overloading might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

5. **Reliable earthing (grounding)** — Maintain reliable grounding of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (for example, the use of power strips).

Firmware Download

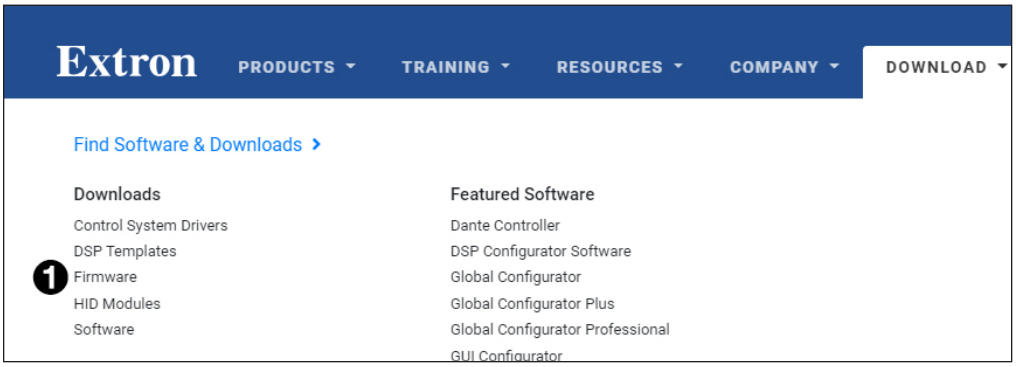


Figure 34. Downloading Firmware from the Extron Website

1. On the Extron website, **www.extron.com**, go to the **`Download`** tab and click **`Firmware`** (see figure 34, ❶).
2. Navigate to the desired product (see figure 35, ❷).

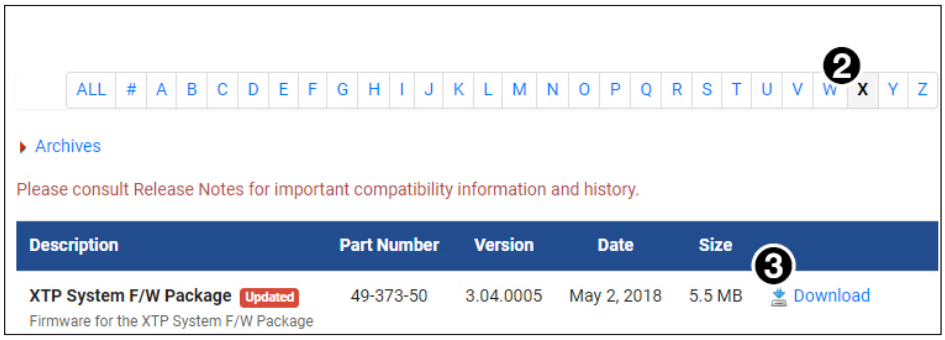


Figure 35. Downloading Firmware from the Extron Website

3. Ensure the available firmware version is a later version than the current one on the device, and click the **`Download`** link (❸).

NOTE: The firmware release notes are a PDF file that provides details about the changes between different firmware versions. The file can be downloaded from the same page as the firmware.

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

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.

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

Europe:
Extron Europe
Hanzeboulevard 10
3825 PH Amersfoort
The Netherlands

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

Africa:
Extron South Africa
3rd Floor, South Tower
160 Jan Smuts Avenue
Rosebank 2196, South Africa

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	**Asia**:	65.6383.4400
Europe:	31.33.453.4040 or 800.3987.6673	**Japan**:	81.3.3511.7655
Africa:	27.11.447.6162	**Middle East**:	971.4.299.1800

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.