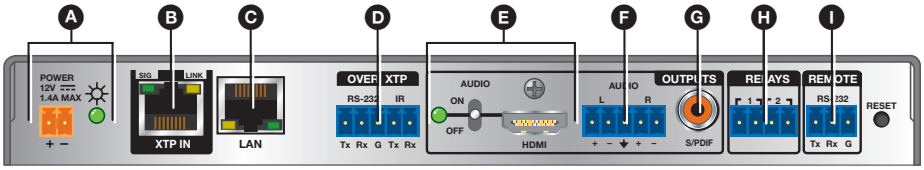
Extron Electronics
INTERFACING, SWITCHING AND CONTROL

IMPORTANT: Go to www.extron.com for the complete user guide, installation instructions, and specifications before connecting the product to the power source.

XTP SR HD 4K • Setup Guide

The Extron XTP SR HD 4K is a scaling receiver for extending video, audio, bidirectional RS-232 and IR control, and Ethernet over a shielded twisted pair cable. This guide provides instructions for an experienced installer to install and connect the XTP SR HD 4K scaling receiver.



Power and Throughput Connections	Output Connections	Control Connections
A DC power connector and power LED	E HDMI output connector and HDMI audio switch	H Relay connectors
B XTP input connector and LEDs	F Analog audio output connector	I Remote RS-232 connector
C LAN connector and LEDs	G S/PDIF digital audio output connector	
D RS-232 and IR Over XTP connector		

Figure 1. Rear Panel Features

Installation

Before starting, turn off or disconnect all equipment power sources and mount the XTP SR HD 4K on a table top or in a rack.

Output Connections

1. Connect a digital video display to the female HDMI connector (E).

   NOTE: Use an Extron LockIt® Lacing Bracket to secure an HDMI cable to the rear panel connector.

2. Connect a balanced or unbalanced, stereo or mono audio output device to the 3.5 mm, 5-pole captive screw connector (F) for 2-channel stereo analog audio (see **Audio Wiring** on the next page for wiring details).
3. Connect an audio device to the female orange RCA connector for digital S/PDIF audio output (G).

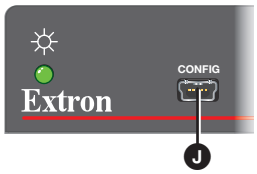
XTP Interconnections

1. Connect a shielded twisted pair cable between the XTP input connector on the receiver (B) and an XTP output connector on an XTP twisted pair transmitter or XTP matrix switcher. For cable recommendations, see **Twisted Pair Recommendations for XTP Communication** on the next page.

   ATTENTION: Do not connect this connector to a computer data or telecommunications network.

2. Connect a control or controllable device to the LAN RJ-45 connector (C) to pass 10/100 Ethernet communication. The LEDs indicate link and activity status.
3. To pass bidirectional serial or infrared signals to a control or controlled device, connect the device to the RS-232 and IR Over XTP connector (D). For wiring details, see **RS-232 and IR Over XTP Communication** on the next page).

Control Devices, Relays, and Power Connections



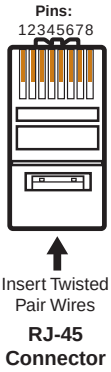
1. Connect a host device, such as a computer, to the front panel female USB mini-B connector (see J to the right) of the receiver to configure the device or update firmware.
2. Connect the equipment controlled via momentary or latching contact, like projector screens or lifts, to these normally open relays (H). Do not exceed 24 V at 1 A for each port.
3. For serial control of the receiver, connect a host device to the remote RS-232 3.5 mm, 3-pole captive screw connector (I).
4. Power the device in one of the following methods:
   - Connect the provided external power supply to the 2-pole captive screw connector (A) for local power.
   - Connect an XTP power injector to the XTP twisted pair interconnection between the XTP SR HD 4K and a locally powered XTP transmitter or XTP matrix switcher (see the XTP power injector user guide at **www.extron.com**),
   - Connect the XTP SR HD 4K to an XTP matrix switcher and enable remote power on the XTP matrix switcher.

Connection Details

Twisted Pair Recommendations for XTP Communication

The XTP SR HD 4K is compatible with shielded twisted pair (F/UTP, SF/UTP, and S/FTP) cable. Extron recommends using the following practices to achieve full transmission distances up to 330 feet (100 meters) and reduce transmission errors.

- Use Extron XTP DTP 24 SF/UTP cable for the best performance. At a minimum, Extron recommends 24 AWG, solid conductor, STP cable with a minimum bandwidth of 400 MHz.
- Terminate cables with shielded connectors to the TIA/EIA-T568B standard.
- Limit the use of more than two pass-through points, which may include patch points, punch down connectors, couplers, and power injectors. If these pass-through points are required, use shielded couplers and punch down connectors.



TIA/EIA-T568B	
Pin	**Wire Color**
1	White-orange
2	Orange
3	White-green
4	Blue
5	White-blue
6	Green
7	White-brown
8	Brown

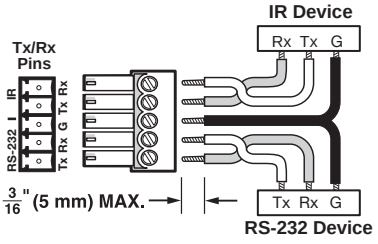
NOTE: When using shielded twisted pair cable in bundles or conduits, consider the following:

- Do not exceed 40% fill capacity in conduits.
- Do not comb the cable for the first 20 meters, where cables are straightened, aligned, and secured in tight bundles.
- Loosely place cables and limit the use of tie wraps or hook-and-loop fasteners.
- Separate twisted pair cables from AC power cables.

RS-232 and IR Over XTP Communication

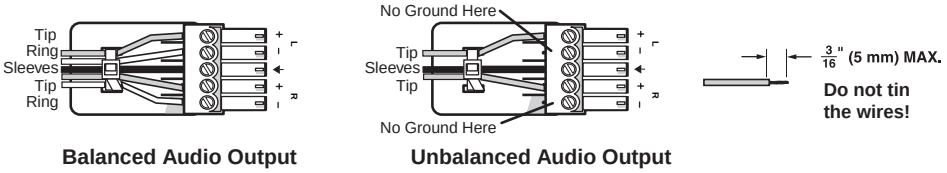
To pass bidirectional serial command signals, connect a control or controlled device to the three poles (Tx, Rx, and G) under "RS-232" of the 5-pole captive screw connector. To transmit and receive IR signals, connect a control device to the three poles (G, Tx, and Rx) under "IR." The ground (G) pole is shared.

NOTE: RS-232 and IR data can be transmitted or received simultaneously.



Audio Wiring

Wire the audio output connector as shown to the right. Use the supplied tie-wrap to strap the audio cable to the extended tail of the connector.



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

Operation

After the receiver and all related devices are properly connected and powered on, the system is fully operational.

Front Panel Overview

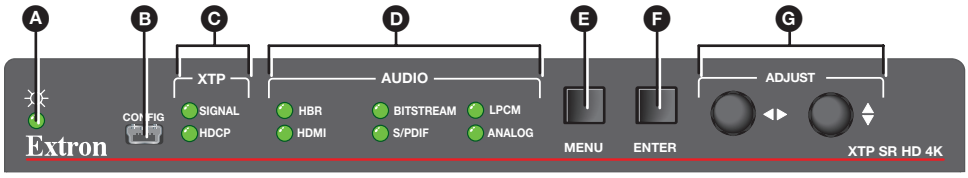


Figure 2. Front Panel Features

A **Power LED** — Lights on the front and rear panels when power is applied to the device.

B **Configuration port** — Connect a host device to the USB mini-B connector for configuration, control, and firmware upgrades.

C **XTP LED indicators**

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

D **Audio LED indicators**

- **HBR LED** — Lights when the embedded audio signal is high bit rate audio.
- **HDMI LED** — Lights when HDMI embedded audio output (HBR, bitstream, or LPCM) is enabled.
- **Bitstream LED** — Lights when the input audio signal is Dolby® Digital, DTS®, or 2-channel Dolby.
- **LPCM LED** — Lights when the embedded audio input signal is 2-channel LPCM.
- **S/PDIF LED** — Lights when S/PDIF audio output (multi-channel or LPCM) is enabled.
- **Analog LED** — Lights when analog audio output is enabled.

E **Menu button** — Press this button to access and navigate the on-screen display (OSD) menu system

F **Enter button** — Press this button to select submenus and submenu items.

G **Adjustment knobs** — Rotate the horizontal (◄►) and vertical (▲▼) knobs to navigate the OSD menu and to adjust settings.

Front Panel Lockout Mode (Executive Mode)

The front panel lockout mode limits operation of the device from the front panel. When enabled, use SIS commands or the XTP System Configuration Software to configure the device. To enable or disable the front panel lockout mode through the front panel, press and hold the **Menu** (E) and **Enter** (F) buttons simultaneously for 2 seconds or until the power LED blinks.

HDMI Audio

Move and hold (for about 1 second) the HDMI audio switch up (see **figure 1**, E on page 1) to enable embedded audio on the display connected to the HDMI output connector or move and hold (for about 1 second) the HDMI audio switch down to disable it. The switch returns to the middle position after it has been released. The associated LED lights when the audio is enabled and remains unlit when audio is disabled.

Configuration and Control

To configure the XTP SR HD 4K, use the front panel controls and the on-screen display (OSD) menu, Simple instruction Set (SIS) commands, or the XTP System Configuration Software.

On-screen display menu system

The OSD menu consists of six submenus that can be accessed using the front panel **Menu** button. View the menu on a display connected to the HDMI output connector (see **figure 1**, E). The submenus are:

- **Image Reset** — Use this submenu to center and size the image to fill the output screen.
- **Picture Control** — Use this submenu to adjust the horizontal and vertical position, horizontal and vertical size, brightness, contrast, and detail of the image.
- **User Presets** — Use this submenu to save or recall a user preset.
- **Input Configuration** — Use this submenu to view the total pixels and horizontal and vertical active pixels of the input signal.
- **Output Configuration** — Use this submenu to select an output rate from a list of common resolutions and refresh rates or view color space, color bit depth, and HDMI data settings (by default, all three are set to Auto).
- **Advanced Configuration** — Use this submenu to apply a test pattern, enable or disable a blank screen, freeze the output, set the aspect ratio, or reset the receiver to factory default settings.

To adjust settings:

1. Press the **Menu** button to access the main menu.
2. Rotate either adjustment knob to navigate to a desired submenu.
3. Press the **Enter** button to access submenu items of a selected submenu.
4. Rotate either adjustment knob to navigate a desired submenu item.
5. Press the **Enter** button to select a submenu item for adjustment.
6. As required, rotate the adjustment knobs or press the **Enter** button to adjust submenu items.
7. Press the **Menu** button to return to the list of submenus or exit the OSD menu.

XTP System Configuration Software

The XTP SR HD 4K can be configured by the XTP System Configuration Software when it is installed on a connected host device, such as a PC, through the front panel USB port (see the *XTP SR HD 4K User Guide* for more details).

Basic SIS commands

To use SIS commands, connect a host device to the RS-232 or USB connector. Use the Extron DataViewer utility or a control system to send SIS commands and receive responses. The following table identifies a selection of SIS commands (for a full list of SIS commands and variable definitions, see the *XTP SR HD 4K User Guide* at **www.extron.com**).

Command Name	SIS Command	SIS Response	Additional Description
Picture adjustments			
Execute image reset	A	Img↵	Execute a one-time image reset.
Output configuration			
Set output rate	Esc X5 RATE↵	Rate X5 ↵	Set the output resolution and refresh rate.
View scaler output rate	Esc RATE↵	Rate X5 ↵	View the selected output resolution and refresh rate.
Audio configuration			
Mute audio	3Z	Amt3↵	Mute all audio outputs.
Unmute audio	ØZ	AmtØ↵	Unmute all audio outputs.
Set volume level	X8 V	Vol X8 ↵	Set the output volume to X8.
View volume level	V	Vol X8 ↵	View the current volume setting.
Advanced configuration			
Mute video to black	1B	Vmt1↵	Mute video and display black video.
Mute video and sync	2B	Vmt2↵	Mute video and sync.
Unmute video	ØB	VmtØ↵	Unmute the video.
Set a test pattern	X12 J	Tst X12 ↵	Set the test pattern to X12.
View the test pattern	J	Tst X12 ↵	View the current test pattern status.
Enable executive mode	1X	Exe1↵	Lock the front panel.
Disable executive mode	ØX	ExeØ↵	Unlock the front panel.
Set aspect ratio to fill	Esc 1ASPR↵	Aspr1↵	Set the aspect ratio to fill the entire display.
Set aspect ratio to follow	Esc 2ASPR↵	Aspr2↵	Set the aspect ratio to match the native value.
View aspect ratio setting	Esc ASPR↵	Aspr X11 ↵	View the current aspect ratio setting.
Device settings			
Reset to factory default	Esc ZXXX↵	Zpx↵	Resets all settings back to factory defaults.

NOTE:

X5 = Output rate (see the table below for selected values or the *XTP SR HD 4K User Guide* for a full list) (37 = default)
X8 = Volume (Ø - 64, where Ø = 0% and 64 = 100%, default)
X11 = Aspect ratio (1 = fill [default], 2 = follow)
X12 = Test pattern (Ø = off [default], 1 = crop, 2 = alternating pixels, 3 = crosshatch, 4 = color bars, 5 = grayscale)

SIS Variable X5 for Selected Output Resolution and Refresh Rate Combinations (Where X5 = 10 through 77, 199)

Resolution	23.98 Hz	24 Hz	25 Hz	29.97 Hz	30 Hz	50 Hz	59.94 Hz	60 Hz
1024x768								12
1280x800								14
1280x1024								15
1680x1050								21
1920x1200								23
720p			32	33	34	35	36	37
1080p	41	42	43	44	45	46	47	48
2K (2048x1080)	49	5Ø	51	52	53	54	55	56
4K (3840x2160)	73	74	75	76	77			
Bypass scaling	199							