# 48Gbps 8K 2×8 HDMI Matrix Splitter with Independent Downscaling & Audio De-embedding

The KanexPro SP-HDMI2X8-8K eliminates the multi-box problem of chaining a separate switcher into a distribution amplifier by combining two-source HDMI 2.1 switching with eight independently scaled outputs in a single compact enclosure. Each output downscales 8K to 4K or 2K and converts HDR to SDR on the fly, enabling mixed-resolution display fleets to receive optimized video without external scalers or EDID workarounds.

**Surge Protection Recommended —** This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, or lightning strikes. Use of surge protection systems is highly recommended.

## TABLE OF CONTENTS



## FEATURES

- ✓ Routes two HDMI 2.1 sources to eight displays at up to 8K@60Hz 4:2:0 12-bit with 48Gbps bandwidth and HDCP 2.3 compliance
- ✓ Independent 8K→4K/2K downscaling on each output — auto, bypass, or force 1080p per display for mixed-resolution fleets
- ✓ Per-output HDR→SDR conversion preserves accurate imagery on non-HDR displays without manual EDID intervention
- ✓ HDR10, HDR10+, Dolby Vision, HLG, ALLM, and VRR pass-through for gaming and cinematic content
- ✓ Audio de-embedding via optical S/PDIF (LPCM/Dolby/DTS 5.1CH) and balanced/unbalanced analog (LPCM 2CH) with adjustable gain
- ✓ Built-in HDMI signal generator with 15 resolutions (8K to 480p) and 13 test patterns for commissioning and cable diagnostics
- ✓ Advanced EDID management with 16 hardware DIP presets and 33 software presets including 2 user-defined slots
- ✓ Control via front panel, IR remote, and RS-232 ASCII commands — USB-C service port for firmware updates

## PACKAGE CONTENTS

1× 48Gbps 2×8 HDMI Splitter • 1× 12V/2.5A Multinational Locking Power Supply • 1× IR Remote • 1× IR Wideband Receiver (1.5m) • 1× 3-pin Phoenix Connector • 1× 5-pin Phoenix Connector • 2× Mounting Ears • 4× Machine Screws (KM3×6) • 1× User Manual

# Specifications

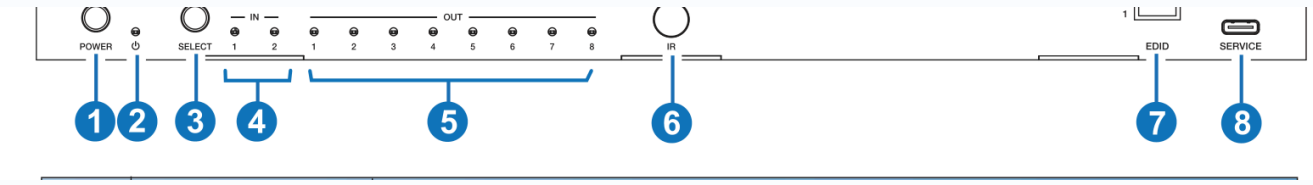
| TECHNICAL | |
|---|---|
| HDMI Compliance | HDMI 2.1 |
| HDCP Compliance | HDCP 2.3 |
| Video Bandwidth | 48Gbps |
| Video Resolution | Up to 8K@60Hz 4:2:0 12-bit, 8K@30Hz 4:4:4 12-bit, 4K@120Hz 4:4:4 12-bit |
| Color Depth | 8-bit, 10-bit, 12-bit |
| Color Space | RGB, YCbCr 4:4:4 / 4:2:2, YCbCr 4:2:0 |
| HDR Formats | HDR, HDR10, HDR10+, Dolby Vision, HLG |
| Gaming Features | ALLM, VRR |
| HDMI Audio (Pass-through) | LPCM, Dolby Digital/Plus/EX, Dolby TrueHD, Dolby Atmos, DTS, DTS-EX, DTS-96/24, DTS High Res, DTS-HD Master Audio, DSD |
| Audio De-embed (Optical) | LPCM / Dolby / DTS up to 5.1CH |
| Audio De-embed (Analog) | LPCM 2CH — balanced (8.2 dBu max) or unbalanced (2.2 dBu max) |
| Analog Audio S/N | 99 dB @ 2 Vrms, 1 kHz, A-weighted |
| Analog Audio THD+N | <0.2% @ 0 dBV, 1 kHz |
| IR Level / Frequency | 12 Vp-p • Wideband 20K–60 kHz |
| Transmission Distance | 3m / 9.8 ft over HDMI cable |
| ESD Protection | IEC 61000-4-2: ±8kV (air-gap) & ±4kV (contact) |

| CONNECTION | |
|---|---|
| Input | 2× HDMI Type A [19-pin female] |
| Output | 8× HDMI Type A [19-pin female]<br>1× Optical S/PDIF<br>1× L/R Analog [5-pin phoenix connector] |
| Control | 1× RS-232 [3-pin phoenix connector]<br>1× IR CTL [3.5mm stereo mini-jack]<br>1× SERVICE [USB Type-C, firmware update] |

| MECHANICAL | |
|---|---|
| Housing | Metal Enclosure, Black |
| Dimensions | 320mm (W) × 100mm (D) × 21.5mm (H) |
| Weight | 810 g |
| Power Supply | DC 12V / 2.5A (multinational locking adapter) |
| Power Consumption | 9.6W (max) |
| Operating Temp | 32–104°F / 0–40°C |
| Storage Temp | −4–140°F / −20–60°C |
| Operating Humidity | 20–80% RH (non-condensing) |
| Storage Humidity | 10–90% RH (non-condensing) |

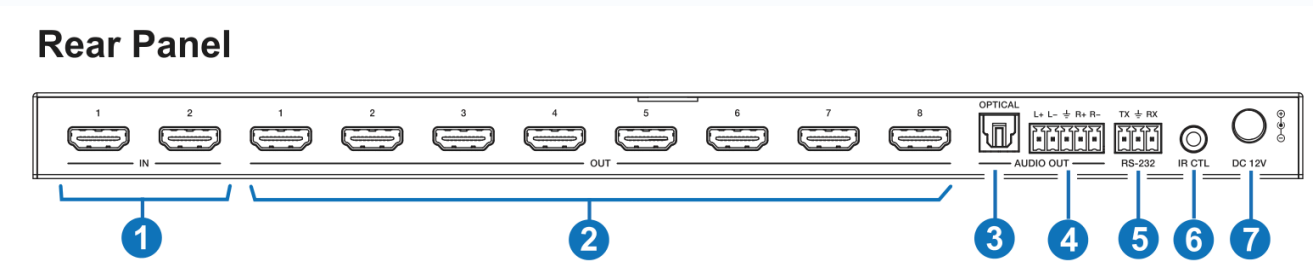
# Operation Controls

## FRONT PANEL




| No. | Name | Function Description |
|---|---|---|
| 1 | **POWER Button** | Press to power on; press and hold to enter standby mode. |
| 2 | **POWER LED** | Green when powered on; red on standby. |
| 3 | **SELECT Button** | Press to select input source IN 1/IN 2 circularly. |
| 4 | **IN LED (1–2)** | Green LED on for the selected input channel. |
| 5 | **OUT LED (1–8)** | Green LED on when corresponding output detects an active display. |
| 6 | **IR Window** | IR signal receiving window for the included remote control. |
| 7 | **EDID DIP Switch** | 4-bit DIP switch to set EDID mode (see EDID table on page 4). |
| 8 | **SERVICE** | USB Type-C port for firmware updates. |

## REAR PANEL




| No. | Name | Function Description |
|---|---|---|
| 1 | **IN (1–2)** | HDMI signal input ports. Connect to source devices (PC, PS5, Blu-ray, etc.) with HDMI cable. |
| 2 | **OUT (1–8)** | HDMI signal output ports. Connect to display devices (TV, monitor, projector) with HDMI cable. |
| 3 | **OPTICAL** | Digital S/PDIF audio output. Connect to audio device (soundbar, AVR). |
| 4 | **L/R (AUDIO OUT)** | Analog audio output (5-pin phoenix). Supports balanced (L+, L−, ⊥, R+, R) and unbalanced (L+, ⊥, R+) connection. |
| 5 | **RS-232** | RS-232 serial port (3-pin phoenix). Connect to PC or control system for API command control. |
| 6 | **IR CTL** | 12V IR input port (3.5mm). Connect the included IR wideband receiver cable. |
| 7 | **DC 12V** | DC 12V/2.5A power input. Connect the included locking power adapter. |

## IR REMOTE

⏻ **Power:** Power on or set to standby. • **1/2:** Select HDMI input source IN 1 or IN 2 directly. • ↻ **Cycle:** Cyclically switch between IN 1 and IN 2.

# EDID Management

EDID can be set via the 4-bit hardware DIP switch on the front panel or via API command (`set edid x to y`). DIP switch overrides API setting when changed.

## DIP SWITCH EDID PRESETS (HARDWARE)

| DIP Code | EDID Mode |
|---|---|
| 0000 | EDID pass-through (Copy from Sink 1) — default |
| 0001 | HDMI 1080p@60Hz, Audio 2CH PCM |
| 0010 | HDMI 1080p@60Hz, Audio 5.1CH DTS/DOLBY |
| 0011 | HDMI 4K@60Hz 4:4:4, 8-bit, Audio 2CH PCM |
| 0100 | HDMI 4K@60Hz 4:4:4, 8-bit, Audio 5.1CH DTS/DOLBY |
| 0101 | HDMI 4K@120Hz 4:4:4, 10-bit HDR/DV, Audio 2CH PCM |
| 0110 | HDMI 4K@120Hz 4:4:4, 10-bit HDR/DV, Audio 5.1CH DTS/DOLBY |
| 0111 | HDMI 4K@120Hz 4:4:4, 12-bit HDR/DV, Audio 2CH PCM |
| 1000 | HDMI 4K@120Hz 4:4:4, 12-bit HDR/DV, Audio 5.1CH DTS/DOLBY |
| 1001 | HDMI 8K@60Hz 4:2:0, 10-bit HDR/DV, Audio 2CH PCM |
| 1010 | HDMI 8K@60Hz 4:2:0, 10-bit HDR/DV, Audio 5.1CH DTS/DOLBY |
| 1011 | HDMI 8K@60Hz 4:2:0, 12-bit HDR/DV, Audio 2CH PCM |
| 1100 | HDMI 8K@60Hz 4:2:0, 12-bit HDR/DV, Audio 5.1CH DTS/DOLBY |
| 1101 | HDMI 8K@60Hz 4:2:0, 12-bit HDR/DV, Audio 2CH PCM — Inc VRR/DSC |
| 1110 | HDMI 8K@60Hz 4:2:0, 12-bit HDR/DV, Audio 5.1CH DTS/DOLBY — Inc VRR/DSC |
| 1111 | EDID Software if possible or HDMI 1080p@60Hz, Audio 2CH PCM |

## SOFTWARE EDID PRESETS (API COMMAND)

Use `set edid x to y` where x = input (0=all, 1–2) and y = preset number (0–32). The full list includes 33 presets covering 1080p through 8K with various audio and HDR combinations, plus 2 user-defined EDID slots (y=30, y=31) and pass-through (y=32). Key presets:

| y | EDID Mode |
|---|---|
| 0 | HDMI 1080p@60Hz, Audio 2CH PCM (default) |
| 3 | HDMI 4K@60Hz 4:4:4, 8-bit, Audio 2CH PCM |
| 6 | HDMI 4K@120Hz 4:4:4, 8-bit, Audio 2CH PCM |
| 9 | HDMI 4K@120Hz 4:4:4, 10-bit HDR/DV, Audio 2CH PCM |
| 12 | HDMI 4K@120Hz 4:4:4, 12-bit HDR/DV, Audio 2CH PCM |
| 15 | HDMI 4K@120Hz 4:4:4, 12-bit HDR/DV, Audio 2CH PCM — Inc VRR/DSC |
| 18 | HDMI 8K@60Hz 4:2:0, 10-bit HDR/DV, Audio 2CH PCM |
| 21 | HDMI 8K@60Hz 4:2:0, 12-bit HDR/DV, Audio 2CH PCM |
| 24 | HDMI 8K@60Hz 4:2:0, 12-bit HDR/DV, Audio 2CH PCM — Inc VRR/DSC |
| 27 | DVI 1920×1080@60Hz, Audio None |
| 29 | HDMI 1920×1200@60Hz, Audio 2CH PCM |
| 30 | User EDID 1 |
| 31 | User EDID 2 |
| 32 | EDID pass-through (Copy from Sink 1) |

**Note:** Odd-numbered presets (y=1, 4, 7, 10…) add 5.1CH DTS/DOLBY audio; even+2 presets (y=2, 5, 8, 11…) add 7.1CH DTS/DOLBY/HD audio to the same video mode.

## SIGNAL GENERATOR

The built-in signal generator outputs test patterns at selectable resolutions for commissioning and cable verification. Use `set generator x y` where x = resolution (1–15) and y = pattern (01–13).

**Resolutions:** 8K30Hz, 4K120Hz, 4K100Hz, 5K60Hz, 5K50Hz, 5K30Hz, 5K25Hz, 5K24Hz, 4K60Hz, 4K50Hz, 4K25Hz, 4K24Hz, 1080P60Hz, 480P60Hz, 576P50Hz

**Patterns:** Color bar, Checkboard, Strip, Red, Green, Blue, White, Ramp, Red ramp, Green ramp, Blue ramp, PRBS, Black

# API Commands

Connect the SERVICE (USB-C) or RS-232 (3-pin phoenix) port to a PC and open a serial terminal. **SERVICE port:** 115200 bps fixed. **RS-232 port:** 4800–115200 bps configurable (default 115200). Data: 8, Stop: 1, Parity: none. End mark: <CR><LF>.

| Command | Function | Example | Default |
|---|---|---|---|
| ? | List all commands | ? | |
| get fw version | Get firmware version | get fw version | |
| set power on/off | Power on or standby | set power on | |
| get power | Get power status | get power | |
| set reboot | Reboot the device | set reboot | |
| set reset | Factory reset (requires confirmation) | set reset | |
| get status | Full system status report | get status | |
| set key on/off | Lock/unlock front panel buttons | set key off | on |
| set IR on/off | Enable/disable IR receiver | set IR off | on |
| set baud x | RS-232 baud rate (1=4800, 2=9600, 3=19200, 4=38400, 5=57600, 6=115200) | set baud 6 | 115200 |
| set input x | Select input (0=Off, 1–2=HDMI 1–2) | set input 1 | 1 |
| get input | Get active input | get input | |
| set autoswitch x | Auto-switch on/off (5V detection) | set autoswitch on | on |
| set output x downscale y | Set downscale per output (x=0–8, y: 0=auto, 1=bypass, 2=force 1080p) | set output 0 downscale 0 | 0 |
| set output x display y | Display mode (y: 0=off, 1=input, 2=AVMUTE, 3=internal pattern) | set output 0 display 1 | 1 |
| set output x HDCP y | HDCP mode (y: 0=reserved, 1=follow sink, 2=follow source, 3=force 1.4, 4=force 2.2) | set output 0 HDCP 1 | 1 |
| set generator x y | Signal generator (x=resolution 1–15, y=pattern 01–13) | set generator 1 1 | |
| set analog mute x | Mute analog audio (On/Off) | set analog mute on | off |
| set analog gain x | Analog gain (0dB to −79dB) | set analog gain -79dB | 0dB |
| set edid x to y | Set EDID preset (x=0–2 input, y=0–32 preset) | set edid 0 to 0 | 0 |
| get edid x | Get EDID preset for input(s) | get edid 0 | |
| set user edid x <y> | Upload user EDID (x=1–2, y=256 bytes hex) | set user edid 1 <data> | |
| get hdmi5v | Get 5V status on inputs | get hdmi5v | |

### RS-232 Wiring (3-pin Phoenix)

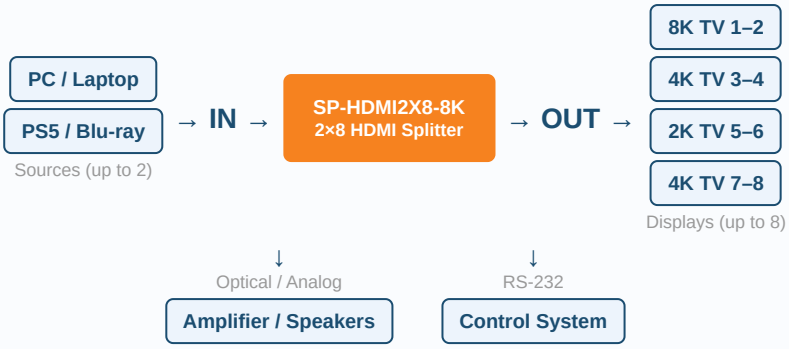
**Pin 1:** TX • **Pin 2:** GND • **Pin 3:** RX

### Balanced Audio Wiring (5-pin Phoenix)

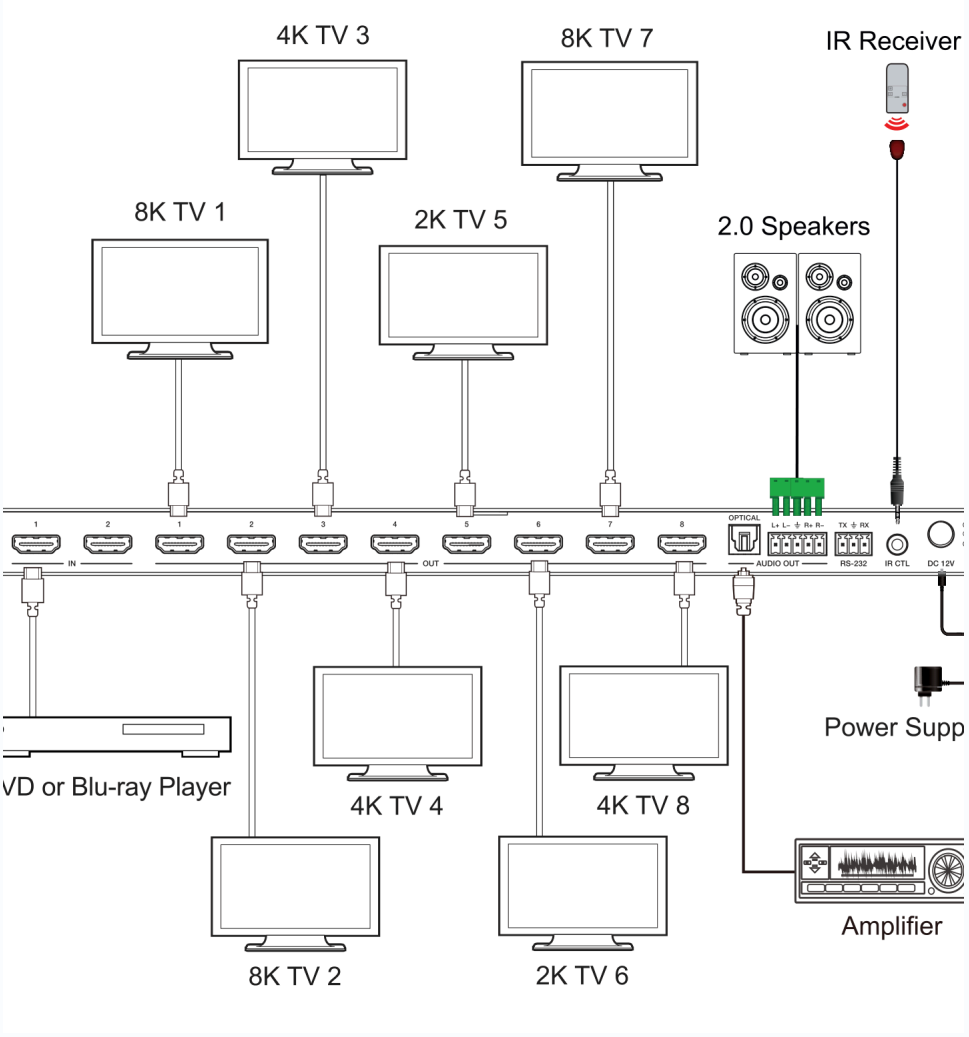
**Balanced:** L+, L−, ⊥ (GND), R+, R− • **Unbalanced:** L+, ⊥ (GND), R+

# Application Example

## Two-Source / Eight-Display with Audio De-embedding




## CONNECTION DIAGRAM




**How it works:** Connect up to two HDMI sources to IN 1–2. Route the selected source to all eight outputs simultaneously. Each output independently downscales 8K to 4K or 1080p based on the connected display's capability. HDR→SDR conversion ensures correct imagery on legacy screens.
**Audio:** De-embedded audio routes to optical S/PDIF and/or balanced analog output for connection to external amplifiers or PA systems.
**Signal Generator:** Use the built-in generator to verify cabling and display connectivity before connecting live sources.

# Troubleshooting

**Q: No video on one or more displays?**
**A:** Confirm Ultra High Speed HDMI cables are used (required for 48Gbps / 8K). Maximum cable length is 3m / 9.8ft. Try setting the EDID to match the display's native resolution. If displays have mixed resolutions, set downscaling to "auto" (`set output 0 downscale 0`) to let each output adapt.

**Q: No audio from the optical or analog output?**
**A:** Verify the EDID preset includes audio (select a preset with "5.1CH DTS/DOLBY" for optical, or any preset for analog LPCM 2CH). Check that analog mute is off (`set analog mute off`) and gain is at 0dB (`set analog gain 0dB`). For balanced audio, verify the 5-pin phoenix wiring matches L+, L−, ⊥, R+, R−.

**Q: Image flickers or drops out?**
**A:** At 8K@60Hz, cable quality is critical. Use certified 48Gbps HDMI cables no longer than 3m. For longer runs, reduce resolution to 4K@120Hz or 4K@60Hz. The built-in signal generator can help isolate whether the issue is the cable or the source.

**Q: How do I access RS-232 control?**
**A:** Connect the 3-pin phoenix RS-232 port (TX/GND/RX) to a PC serial port or USB-to-serial adapter. Open a terminal at 115200 bps (default), 8N1. Type `?` and press Enter to list all commands. Alternatively, connect via the USB-C SERVICE port at 115200 bps fixed.

**Q: Can I save a custom EDID from a connected display?**
**A:** Yes. Use `get edid data x` to read the raw EDID from input x, then `set user edid 1 <data>` to store it in user slot 1 or 2. Select it with `set edid 0 to 30` (slot 1) or `set edid 0 to 31` (slot 2).