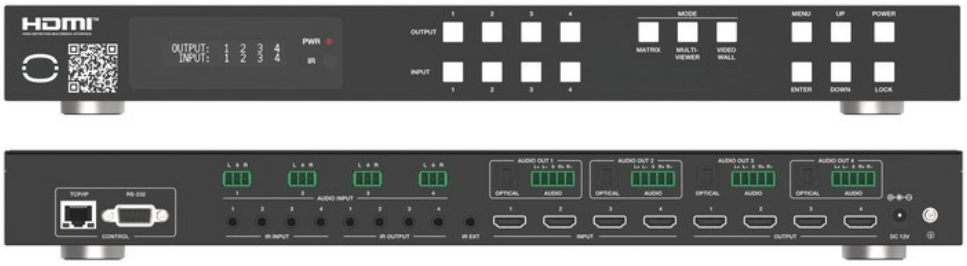
# 4K60 4×4 Seamless Matrix, Video Wall & Multiviewer Processor

Route Any Source, Build a 2×2 Wall or 12-Layout Multiview from One Chassis — 9 Splicing Modes, RS-232/IP/Web Control



**Consolidates seamless 4×4 matrix routing, a video wall and a multiviewer into one 1U chassis, so a single box does the work that once took three separate devices.** Housed in a full-rack-width black metal enclosure drawing just 25W, it routes four HDMI 2.0 sources to four displays at 4K@60Hz 4:4:4 across an 18Gbps path with HDCP 2.2, scaling each source individually and switching without a black-screen or re-sync gap. It is the right choice for mid-market control rooms, retail, hospitality and worship installs where matrix, wall, multiview and audio breakout in one controllable box matter more than a modular chassis-and-card platform.

Video-wall mode offers nine splicing modes with 0–10 bezel compensation, multiviewer mode offers twelve layouts including PIP, dual, triple and quad, and a built-in 4×4 IR matrix carries source control back from the display side. The unit is driven from the front panel, IR remote, RS-232, TCP/IP and a built-in Web GUI, with CEC for display power and advanced EDID management. Its strongest differentiator is a complete dual-format audio stage: four optical S/PDIF and four analog L/R outputs de-embed HDMI source audio to a house amplifier or DSP, while four analog L/R inputs embed a local source onto an HDMI signal, replacing a separate audio de-embedder in the chain.

**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

continued



# 1. Features

- ✓ HDCP 2.2 compliant, HDMI 2.0.
- ✓ Video resolution up to 4K@60Hz 4:4:4 with 18Gbps video bandwidth.
- ✓ Seamless switching with individual per-source scaling and no frame loss on transition.
- ✓ 12 display categories in multi-viewer mode and 9 splicing modes in video-wall mode.
- ✓ Video-wall bezel compensation, adjustable 0–10 horizontal and vertical.
- ✓ Audio de-embedding to 4 optical S/PDIF outputs and 4 analog L/R outputs (balanced up to 2Vrms, or unbalanced).
- ✓ 4 analog L/R audio inputs for embedding a local source onto an HDMI input.
- ✓ Three ext-audio routing modes: Bind to Input, Bind to Output and Audio Matrix.
- ✓ HDMI audio formats: LPCM, Dolby Digital/Plus/EX, Dolby TrueHD, DTS, DTS-EX, DTS-96/24, DTS High Res and DTS-HD Master Audio.
- ✓ CEC control and multiple output resolutions.
- ✓ Advanced EDID management with 12 preset, 2 user-defined and 4 copy EDID modes.
- ✓ Built-in 4×4 IR matrix that follows the HDMI routing.
- ✓ Control via front-panel buttons, IR remote, RS-232, TCP/IP and Web GUI.
- ✓ Up to 8 saveable presets.

# 2. Package Contents

- ✓ 1x 18Gbps 4×4 seamless matrix
- ✓ 1x 12V/2.5A locking power adapter
- ✓ 5x 12V IR wideband receiver cable (1.5 m)
- ✓ 4x IR blaster cable (1.5 m)
- ✓ 1x RS-232 serial cable (1.5 m, male-to-female)
- ✓ 4x 5-pin 3.81mm Phoenix connector
- ✓ 4x 3-pin 3.81mm Phoenix connector
- ✓ 8x Machine screw
- ✓ 2x Mounting ear

# 3. Specifications

| VIDEO | |
|---|---|
| **HDMI compliance** | HDMI 2.0 |
| **HDCP compliance** | HDCP 2.2 |
| **Video bandwidth** | 594MHz / 18Gbps |
| **Video resolution** | 480i to 1080p@50/60Hz, 4K2K@24/30Hz, 4K2K@60Hz |
| **Color space** | RGB, YCbCr 4:4:4, YCbCr 4:2:2, YCbCr 4:2:0 |
| **Color depth** | 8/10/12-bit |

continued

| | |
|---|---|
| **Display modes** | Seamless matrix; video wall (9 splicing modes); multi-viewer (12 layouts) |
| **AUDIO** | |
| **HDMI audio formats** | LPCM, Dolby Digital/Plus/EX, Dolby TrueHD, DTS, DTS-EX, DTS-96/24, DTS High Res, DTS-HD Master Audio |
| **Analog audio out** | Balanced up to 2Vrms, or unbalanced |
| **IR** | |
| **IR level** | 12Vp-p |
| **IR frequency** | Wideband 20K–60KHz |
| **CONNECTIONS** | |
| **Input ports** | 4 × HDMI input (Type A, 19-pin female); 4 × L/R audio input (3.81mm, 3-pin Phoenix) |
| **Output ports** | 4 × HDMI output (Type A, 19-pin female); 4 × optical S/PDIF audio out; 4 × L/R audio out (3.81mm, 5-pin Phoenix) |
| **Control ports** | 1 × TCP/IP (RJ45); 1 × RS-232 (D-Sub 9); 1 × IR EXT (3.5mm); 4 × IR input (3.5mm); 4 × IR output (3.5mm) |
| **EDID** | |
| **EDID management** | 12 factory presets, 2 user-defined, 4 copy modes |
| **HDMI CABLE LENGTH** | |
| **4K60** | 16 ft (5 m), HDMI in / out |
| **4K30** | 32 ft (10 m), HDMI in / out |
| **1080p60** | 50 ft (15 m), HDMI in / out |
| **POWER** | |
| **Power supply** | Input AC 100–240V, 50/60Hz; output DC 12V/2.5A |
| **Power consumption** | 25W (max) |
| **ENVIRONMENTAL** | |
| **Operating temperature** | 32–104°F (0–40°C) |
| **Storage temperature** | -4–140°F (-20–60°C) |
| **Relative humidity** | 20–90% RH, non-condensing |
| **ESD protection** | IEC 61000-4-2: ±8kV air discharge, ±4kV contact discharge |
| **PHYSICAL** | |
| **Housing** | Black metal enclosure |
| **Dimensions (unit)** | 17.32 x 7.99 x 1.75 in (440 x 203 x 44.5 mm), W x D x H |
| **Weight (unit, net)** | 5.62 lbs (2.55 kg) |
| **Certifications** | CE, FCC, RoHS |

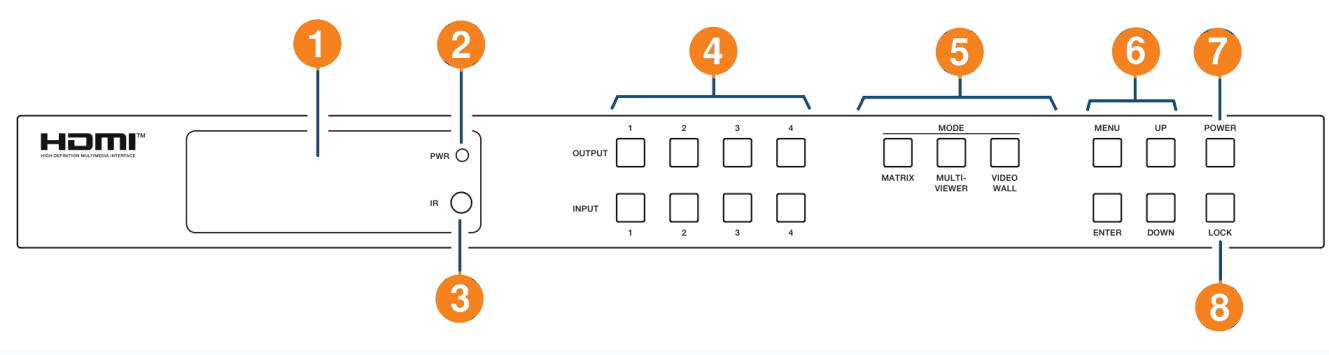
## 4. Introduction

The 18Gbps 4×4 Seamless Matrix routes video from four HDMI sources to four HDTV displays. It offers video-wall and multi-viewer functions with multiple display modes, is a 4×4 IR matrix, and supports audio embedding and de-embedding. Video resolution is supported up to 4K@60Hz 4:4:4. Each source can be individually scaled, and seamless switching gives a smooth picture transition without frame loss. The matrix can be controlled from the front-panel buttons, the IR remote, RS-232, and the Web GUI.

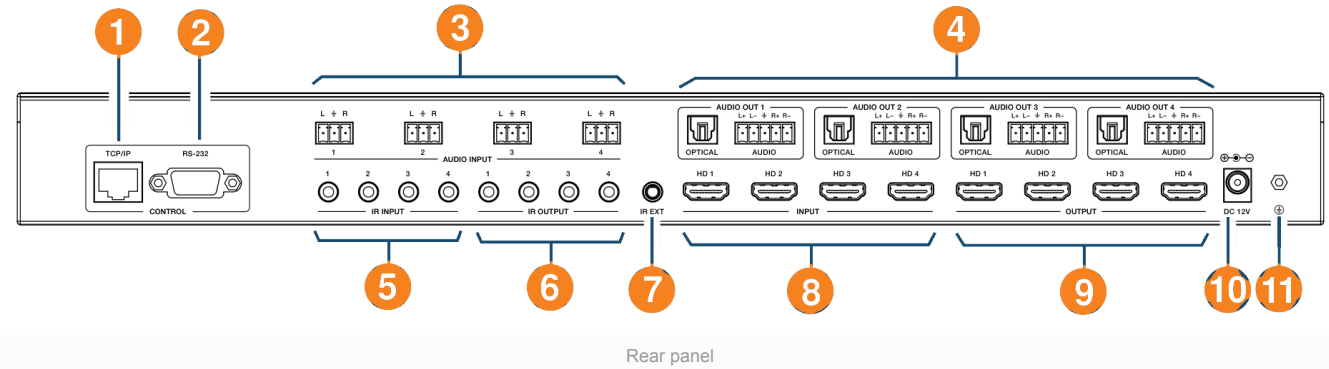
The manufacturer recommends using a surge-protection device: the product contains sensitive electronics that can be damaged by electrical spikes, surges, shock, or lightning.

**Cabling note (from the Caution page):** Use UTP connectors and wire them straight-through — do not cross-connect. The direct-interconnection (T568B-style) pin order given is: white/orange, orange, white/green, blue, white/blue, green, white/brown, brown.

## 5. Panel Descriptions




Front panel




Rear panel

### FRONT PANEL

| No. | Name | Description |
|---|---|---|
| 1 | **LCD screen** | Shows matrix switching status, input/output port, EDID, baud rate, IP address, and similar information. |
| 2 | **PWR LED** | Lights green when the device is working and red when it is on standby. |
| 3 | **IR** | The IR signal receiver, which picks up the signal from the IR remote. |
| 4 | **INPUT / OUTPUT buttons** | To route a source, first press an output button (1–4), then press an input button (1–4) to assign that input to the selected output. |

continued

| No. | Name | Description |
|---|---|---|
| 5 | **MODE (MATRIX / MULTIVIEWER / VIDEO WALL)** | Press to select the video mode you need. MATRIX enters matrix mode. MULTIVIEWER enters multi-viewer mode (the output buttons then act as windows). VIDEO WALL enters video-wall mode (the output buttons then act as groups). In every mode you can set further detail from the front panel, RS-232 commands, or the Web GUI. |
| 6 | **MENU / ENTER / UP / DOWN** | Navigate the on-screen menus. For example, to reset: press MENU (you can then choose OUTPUT/MV/VW/INPUT/EXTAUDIO/SET), use UP/DOWN to select SET, press ENTER to open the next level (LCD ONTIME/BAUD RATE/IP INFO/BG PATTERN/REBOOT/RESET), use UP/DOWN to select RESET, press ENTER to confirm, then press ENTER again — the screen prompts SUCCESS! Pressing MENU returns to the previous menu, and any menu returns to the initial display screen after 10 seconds of inactivity. |
| 7 | **POWER button** | Press and hold for one second to enter standby, then briefly press to wake the device. |
| 8 | **LOCK button** | Briefly press to lock the front-panel buttons (except the power button); press again to unlock. |

## REAR PANEL

| No. | Name | Description |
|---|---|---|
| 1 | **TCP/IP** | TCP/IP control port. Connect it to a PC or router with a CAT cable. |
| 2 | **RS-232 port** | Connect to a PC or control system with a D-Sub 9-pin cable to send RS-232 commands. |
| 3 | **AUDIO INPUT (1~4)** | L/R analog audio inputs. Connect an analog source such as a DVD or Blu-ray player. Each pairs with its HDMI input (1–4): set that input's audio to EMBED and this analog audio is embedded onto the HDMI signal in place of the original. Audio embedded this way is carried on HDMI only; it cannot be sent out of the AUDIO OUT ports. |
| 4 | **AUDIO OUT (1~4)** | OPTICAL: an optical (S/PDIF) output for an audio device such as an amplifier. L/R AUDIO: an analog output supporting balanced audio (up to 2Vrms) and unbalanced audio. Wire balanced as L+, L–, ground, R+, R–; wire unbalanced as L+, ground, R+. |
| 5 | **IR INPUT (1~4)** | Connect an IR receiver cable here. |

continued

| No. | Name | Description |
|---|---|---|
| 6 | **IR OUTPUT (1~4)** | Connect an IR blaster cable here. |
| 7 | **IR EXT** | If the unit's IR receiver window is blocked or the unit is out of infrared line of sight, connect the IR receiver cable to this port to pick up the remote signal. |
| 8 | **HDMI INPUT ports (1~4)** | HDMI inputs. Connect HDMI sources such as a computer, DVD, or set-top box. |
| 9 | **HDMI OUTPUT ports (1~4)** | HDMI outputs. Connect HDMI displays such as a TV or monitor. |
| 10 | **DC 12V** | Connect the 12V/2.5A power adapter. |
| 11 | **GND** | Connect the housing to ground. |

Notes from this page: you can restore factory settings from the front panel, Web GUI, or an RS-232 command; power-cut memory is retained except for standby status and panel lock; and RS-232 and the Web GUI become available a few minutes after the device is powered on.

## 6. LCD Display Navigation

The front-panel buttons — INPUT (1–4), OUTPUT (1–4), MATRIX, MULTIVIEWER, VIDEOWALL, MENU, ENTER, UP, DOWN — drive the LCD menu. The menu structure is:

| LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 |
|---|---|---|---|
| **OUTPUT** | RESO | OUT1 / OUT2 / OUT3 / OUT4 | 4K×2K60W, 4K×2K50W, 4K×2K30W, 4K×2K25W, 4K×2K24W, 4K×2K60, 4K×2K50, 4K×2K30, 4K×2K25, 4K×2K24, 1080P60, 1080P50, 1080P30, 1080P25, 1080P24, 1080i60, 1080i50, WUXGA60_RB, 1360×768@60, 1280×800@60, 720P60, 720P50, XGA60, AUTO |
| **OUTPUT** | CSC | OUT1 / OUT2 / OUT3 / OUT4 | RGB 444 / YUV 444 / YUV 422 / YUV 420 |
| **OUTPUT** | STREAM | OUT1 / OUT2 / OUT3 / OUT4 | ENABLE / DISABLE |
| **OUTPUT** | H MIRROR | OUT1 / OUT2 / OUT3 / OUT4 | ENABLE / DISABLE |
| **OUTPUT** | V MIRROR | OUT1 / OUT2 / OUT3 / OUT4 | ENABLE / DISABLE |

continued

| LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 |
|---|---|---|---|
| MV | MODE | SINGLE / PIP / DUAL / TRIPLE-1 / TRIPLE-2 / TRIPLE-3 / QUAD-1 / QUAD-2 / QUAD-3 / USER-1 / USER-2 / USER-3 | — |
| MV | ASPECT | FULL / 16:9 | — |
| MV | PIP POSITION | UPPER LEFT / LOWER LEFT / UPPER RIGHT / LOWER RIGHT | — |
| MV | PIP SIZE | SMALL / MIDDLE / LARGE | — |
| VW | MODE | 2×2 / 2×1 / 2×2-2 / 1×2 / 1×2-2 / 3×1 / 4×1 / 1×3 / 1×4 | — |

continued

| LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 |
|---|---|---|---|
| VW | RESO | 4K2K60W / 4K2K50W / 4K2K30W / 4K2K25W / 4K2K24W / 4K2K60 / 4K2K50 / 4K2K30 / 4K2K25 / 4K2K24 / 1080P60 / 1080P50 / 1080P30 / 1080P25 / 1080P24 / 1080i60 / 1080i50 / WUXGA60_RB / 1360x768@60 / 1280x800@60 / 720P60 / 720P50 / XGA60 | — |
| VW | H BEZEL | 0–10 | — |
| VW | V BEZEL | 0–10 | — |
| INPUT | EDID | IN1 / IN2 / IN3 / IN4 | 4K60 2.0CH; 4K60 5.1CH; 4K60 7.1CH; 4K30 2.0CH; 4K30 5.1CH; 4K30 7.1CH; 1080P 2.0CH; 1080P 5.1CH; 1080P 7.1CH; WUXGA 2.0CH; 768P 2.0CH; XGA 2.0CH; USER1; USER2; COPY OUT1; COPY OUT2; COPY OUT3; COPY OUT4 |
| INPUT | AUDIOSEL | IN1 / IN2 / IN3 / IN4 | ORIGINAL / EMBED |
| EXTAUDIO | OUT | OUT1 / OUT2 / OUT3 / OUT4 | ENABLE / DISABLE |
| EXTAUDIO | MODE | BIND TO INPUT / BIND TO OUTPUT / AUDIO MATRIX | — |
| EXTAUDIO | MATRIX | OUT1 / OUT2 / OUT3 / OUT4 | INPUT1 / INPUT2 / INPUT3 / INPUT4 |

continued

| LEVEL 1 | LEVEL 2 | LEVEL 3 | LEVEL 4 |
|---|---|---|---|
| SET | LCD ONTIME | OFF / ALWAYS ON / 15 SECONDS / 30 SECONDS / 60 SECONDS | — |
| SET | BAUD RATE | 4800 / 9600 / 19200 / 38400 / 57600 / 115200 | — |
| SET | IP INFO | DHCP: ON / OFF | — |
| SET | BG PATTERN | BLACK SCREEN / BLUE SCREEN / COLOR BAR / GRAY SCALE / CROSS / CROSS HATCH | — |
| SET | REBOOT | Y / N | — |
| SET | RESET | Y / N | — |

## 7. IR Remote

The matrix can be operated with the supplied IR remote. To route a source, first press an output button, then press an input button — for example, press an Output button (1–4, or ALL), then press an Input button (1–4). The remote's keys work as follows:

- **VIDEO MODE:** selects among the three output modes — MATRIX, VIDEO WALL, and MULTI-VIEWER. The matrix remembers the input-to-output correspondence and configuration you last set for each mode on the Web page when you switch modes.
- **Power key:** powers the matrix on or sets it to standby.
- **INPUT 1/2/3/4:** selects the input source.
- **OUTPUT 1/2/3/4:** selects the output display device.
- **ALL:** selects every output at once — for example, press ALL then Input 1 to send input 1 to all displays.
- **INFO:** shows the serial baud rate and IP address in the top-right corner of the screen; it disappears after five seconds, or press the key again to clear it.
- **◄ ► :** selects the previous or next input source.

After the matrix is turned on, ALL is selected by default — pressing INPUT 1 directly, for instance, sends input 1 to all displays at once.

There are two ways to receive the remote signal. First, aim the remote at the matrix's IR window: the maximum distance is 8 meters head-on, or 5 meters at a ±45° angle. Second, if the IR window is blocked or the matrix is installed out of line of sight, plug an IR receiver cable into the IR EXT port; the maximum distance is then 5 meters head-on, or 3 meters at ±45°.

## 8. IR Cable Pin Assignment

The IR blaster cable carries an IR blaster signal (the remaining conductor is not connected, NC). The IR receiver cable carries an IR receiver signal, power, and ground. Use the blaster cables on the IR OUTPUT ports and the receiver cables on the IR INPUT ports.

## 9. IR Control System

The product supports one-way IR control. When the matrix is connected to IR receiver and IR blaster cables, you can control the source devices remotely from the display side. Place the four IR blaster cables (connected to the IR outputs) near the four HDMI sources, and the four IR receiver cables (connected to the IR inputs) near the displays on the four HDMI outputs.

IR routing follows the HDMI matrix. For example, if HDMI INPUT 3 is selected for HDMI OUT 1, the IR OUT 3 signal near HDMI INPUT 3 is emitted to IR IN 1 near HDMI OUT 1 — so from the TV on HDMI OUT 1 you can control the DVD player on HDMI INPUT 3. Likewise, if HDMI INPUT 1 is routed to all four outputs, the IR OUT 1 signal near HDMI INPUT 1 is emitted to IR IN 1/2/3/4 near all four displays.

## 10. Video Wall

The matrix supports the following splicing display modes: 2×2, 2×1, 2×1-2, 1×2, 1×2-2, 3×1, 4×1, 1×3, and 1×4. You can select a mode from the front-panel buttons, the Web GUI, or RS-232 commands, and adjust the horizontal and vertical bezel (0–10) and the output resolution for the wall.

*(The manual's section-9 heading text says "10 categories of display modes," while the Features list, the Web GUI, and the RS-232 command set all specify 9 modes. Flagged for a human — see Flags.)*

## 11. Multi-Viewer

The matrix supports these multi-viewer display modes: SINGLE, PIP, Dual, Triple 1, Triple 2, Triple 3, Quad 1, Quad 2, Quad 3, User 1, User 2, and User 3 (12 modes). In multi-viewer mode, all four HDMI outputs show the same composited image. Operations available depend on the mode:

- **SINGLE:** input selection.
- **PIP:** input selection, plus sub-window size and position.
- **Dual, Triple 1/2/3, Quad 1/2/3:** input selection, display-mode selection, and display-aspect selection.

## 12. EDID Management

The matrix has 12 factory-defined EDID settings, 2 user-defined EDID modes, and 4 copy-EDID modes. You can assign an EDID to an input port from the front panel, RS-232, or the Web GUI.

- **Front panel:** from the initial LCD screen, press MENU, use UP/DOWN to select INPUT, press ENTER, select EDID, press ENTER, use UP/DOWN to choose the EDID mode, then press ENTER to confirm.
- **RS-232:** connect the matrix to a PC with a serial cable and send the ASCII command `s input x edid z!` (see section 13).
- **Web GUI:** use the EDID controls on the Input page (see section 12).

Defined EDID settings:

| EDID MODE | EDID DESCRIPTION |
|---|---|
| 1 | 4K60, 2.0CH |
| 2 | 4K60, 5.1CH |
| 3 | 4K60, 7.1CH |
| 4 | 4K30, 2.0CH |
| 5 | 4K30, 5.1CH |
| 6 | 4K30, 7.1CH |
| 7 | 1080P, 2.0CH |
| 8 | 1080P, 5.1CH |
| 9 | 1080P, 7.1CH |
| 10 | WUXGA, 2.0CH |
| 11 | 768P, 2.0CH |
| 12 | XGA, 2.0CH |
| 13 | USER1 |

continued

| EDID MODE | EDID DESCRIPTION |
|---|---|
| 14 | USER2 |
| 15 | COPY OUT1 |
| 16 | COPY OUT2 |
| 17 | COPY OUT3 |
| 18 | COPY OUT4 |

## 13. Web GUI User Guide

The matrix can be controlled from a web browser. First find the unit's current IP address (default `192.168.0.100`): press INFO on the IR remote to see the IP and baud rate in the top-right corner of the screen, or send the RS-232 command `r ip addr!`. Then connect the matrix's TCP/IP port to a PC with a UTP cable, set the PC to the same network segment, and enter the matrix's IP address in your browser.

At the login page, choose a username and enter the password — the defaults are **User / user** and **Admin / admin**. Use the Language drop-down to select English or Simplified Chinese, then click LOGIN.

- **Status page** — shows basic information: the model, the installed firmware version, and the network settings.
- **Input page** — for each input you can see whether a source is connected (Active: green connected, gray not), rename the channel (up to 32 characters), and select the current EDID from a drop-down. You can also load an EDID bin file into User memory ("Load EDID to user memory"), and download an existing EDID to your computer, then upload it to User Define 1 or User Define 2.
- **Output page** — for each output you can see cable/connection status (green connected, gray not), rename the channel (up to 32 characters), set the output resolution (24 options; AUTO follows the display's EDID), set the color space (four options), set the HDCP version (1.4, 2.2, Follow Sink, or Follow Source), toggle horizontal mirror, toggle vertical mirror, and toggle the output stream.
- **CEC page** — control inputs and outputs by CEC. For an input you can power on/off, return, switch, pause, fast-forward, fast-back, mute, and unmute; for an output you can power on/off, adjust volume, and so on.
- **Video page** — set the video mode (Matrix, Video Wall, or Multi-Viewer) and save, recall, or clear up to 8 presets (preset names up to 32 characters). In Matrix mode, select an output (1–4) then an input (1–4), or drag and drop a source onto an output. In Video Wall mode, select a window (1–4) then a source, adjust horizontal/vertical bezel with +/– (0–10), and set the output resolution; 9 splicing modes are available. In Multi-Viewer mode, choose from 12 modes; all four outputs show the same image, and output audio can follow any input source or the corresponding window. In a user-defined mode, all four windows show by default, each can be dragged and zoomed, sources can be dropped onto any window, per-window setup is available, and double-clicking maximizes a window (double-click again to restore).
- **Audio page** — select the input audio in "Input Audio Select" and set the ext-audio mode in "Ext Audio Select." The ext-audio has three modes: **Bind to Input** (AUDIO OUT 1–4 follow HDMI INPUT 1–4, one-to-one), **Bind to Output** (AUDIO OUT 1–4 follow HDMI OUTPUT 1–4, so the ext-audio tracks whichever input is assigned to that output), and **Audio Matrix** (route any HDMI input's audio to any ext-audio out). Each audio-out channel can be enabled or disabled. Note: embedded audio cannot be extracted to the audio-out channels.
- **Network page** — modify IP mode, IP address, gateway, subnet mask, and Telnet port, then click Save. In Static mode you set these manually; in DHCP mode the router assigns them and you cannot edit them. You can also change the User password (cannot be empty, must differ from the old password, and must match the confirm field) and restore default network settings.
- **System page** — panel lock on/off, beep on/off, LCD on-time (OFF / Always ON / 15s / 30s / 60s), test pattern (6 patterns), serial baud rate, firmware update (Browse then Update), factory reset, and reboot. After a reset or reboot the unit returns to the login page.

# 14. RS-232 Control Command

The product supports RS-232 control. Use a serial cable with an RS-232 male head and a DB9-to-USB male head: connect the RS-232 end to the matrix's rear RS-232 (DB9) port and the USB end to a PC, then open a serial-command tool to send ASCII commands.

**Serial protocol:** baud rate 115200, data bits 8, stop bits 1, parity/check bit none. In the syntax, `x` = parameter 1, `y` = parameter 2, `z` = parameter 3, and `!` is the delimiter.

**Output-resolution index** (used by `s output y res x!`, `s tw res x!`, and `s mv res x!`): 1. 4096x2160p60 · 2. 4096x2160p50 · 3. 4096x2160p30 · 4. 4096x2160p25 · 5. 4096x2160p24 · 6. 3840x2160p60 · 7. 3840x2160p50 · 8. 3840x2160p30 · 9. 3840x2160p25 · 10. 3840x2160p24 · 11. 1920x1080p60 · 12. 1920x1080p50 · 13. 1920x1080p30 · 14. 1920x1080p25 · 15. 1920x1080p24 · 16. 1920x1080i60 · 17. 1920x1080i50 · 18. 1920x1200p60rb · 19. 1360x768p60 · 20. 1280x800p60 · 21. 1280x720p60 · 22. 1280x720p50 · 23. 1024x768p60 · 24. auto *(index 24/auto applies to `s output y res x!` only; the video-wall and multi-viewer resolution commands run 1–23).*

## SYSTEM SETTING

| COMMAND | FUNCTION | EXAMPLE → FEEDBACK | DEFAULT |
|---|---|---|---|
| `help!` | List all commands | `help!` | |
| `r status!` | Get device current status (power, beep, lock, in/out connection, video/audio crosspoint, EDID, scaler, network) | `r status!` | |
| `r type!` | Get device model | `r type!` → `4x4 hdmi seamless matrix` | |
| `r fw version!` | Get firmware version | `r fw version!` → `mcu fw version: x.xx.xx / web gui: x.xx.xx` | |
| `s power z!` | Power on/off (z=0 off, z=1 on) | `s power 1!` → `power on / system initializing… / initialization finished!` | |
| `r power!` | Get power state | `r power!` → `power on / power off` | |
| `s beep z!` | Enable/disable buzzer (z=0 off, z=1 on) | `s beep 1!` → `beep on` | beep off |
| `r beep!` | Get buzzer state | `r beep!` → `beep on / beep off` | |

continued

| COMMAND | FUNCTION | EXAMPLE → FEEDBACK | DEFAULT |
|---|---|---|---|
| s lock z! | Lock/unlock front panel (z=0 off, z=1 on) | s lock 1! → panel button lock on | lock off |
| r lock! | Get panel lock state | r lock! → panel button lock on/off | |
| s lcd on time z! | Set LCD on-time (0 off, 1 always, 2=15s, 3=30s, 4=60s) | s lcd on time 3! → lcd on 30 seconds | lcd on 30 seconds |
| r lcd mode! | Get LCD backlight status | r lcd mode! → lcd always on | |
| s logo1 ****! | Set the label on line 1 of the LCD (max 16 chars) | s logo1 Matrix Switch! → logo1:Matrix Switch | |
| s reboot! | Reboot the device | s reboot! → reboot… / initialization finished! | |
| s reset! | Reset to factory defaults | s reset! → reset to factory defaults … | |
| s save preset z! | Save preset z (z=1–8) | s save preset 1! → save to preset 1 | |
| s recall preset z! | Recall preset z (z=1–8) | s recall preset 1! → recall from preset 1 | |
| s clear preset z! | Clear preset z (z=1–8) | s clear preset 1! → clear preset 1 | |

continued

| COMMAND | FUNCTION | EXAMPLE → FEEDBACK | DEFAULT |
|---|---|---|---|
| r preset z! | Get preset z info (z=1–8) | r preset 1! → video/audio crosspoint | |

## OUTPUT SETTING

| COMMAND | FUNCTION | EXAMPLE → FEEDBACK | DEFAULT |
|---|---|---|---|
| s display mode x! | Set output display mode (0 matrix, 1 video wall, 2 multi-viewer) | s display mode 0! → display mode: matrix | matrix |
| r display mode! | Get output display mode | r display mode! → display mode: matrix | |
| r output y res! | Get output y resolution (y=0 all, 1–4) | r output 1 res! → output 1 resolution: 3840x2160p60 | |
| s output y res x! | Set output y resolution (y=0–4, x=1–24; see index) | s output 1 res 6! → output 1 resolution: 3840x2160p60 | 3840x2160p60 |
| s output y csc x! | Set output color space (y=0–4; x=1 rgb444, 2 ycbcr444, 3 ycbcr422, 4 ycbcr420) | s output 1 csc 1! → output 1 csc: rgb444 | rgb444 |
| s output y hdcp x! | Set output HDCP (y=0–4; x=1 hdcp1.4, 2 hdcp2.2, 3 follow sink, 4 follow source) | s output 1 hdcp 1! → output 1 hdcp: hdcp 1.4 | follow sink |
| r output y csc! | Get output color space (y=0–4) | r output 1 csc! → output 1 csc: rgb444 | |

continued

| COMMAND | FUNCTION | EXAMPLE → FEEDBACK | DEFAULT |
|---|---|---|---|
| r output y hdcp! | Get output HDCP (y=0–4) | r output 1 hdcp! → output 1 hdcp: hdcp 1.4 | |
| s output y hmirror x! | Set output horizontal mirror (y=0–4; x=0 off, 1 on) | s output 1 hmirror 1! → output1 h mirror on | |
| s output y vmirror x! | Set output vertical mirror (y=0–4; x=0 off, 1 on) | s output 1 vmirror 0! → output1 v mirror off | |
| r output y mirror! | Get output mirror status (y=0–4) | r output 0 mirror! → output 1 h mirror on, v mirror off … | |
| s output y stream x! | Set output stream (y=0–4; x=0 disable, 1 enable) | s output 1 stream 1! → output 1 stream: enable | enable |
| r output y stream! | Get output stream status (y=0–4) | r output 1 stream! → output 1 stream: enable | |
| s output bg x! | Set no-signal background (x=1 black, 2 blue, 3 color bar, 4 gray scale, 5 cross, 6 cross hatch) | s output bg 1! → output background : black screen | black screen |
| r output bg! | Get no-signal background mode | r output bg! → output background : black screen | |

## EDID SETTING

| COMMAND | FUNCTION | EXAMPLE → FEEDBACK | DEFAULT |
|---|---|---|---|
| s input x edid z! | Set HDMI input x EDID mode (x=0 all, 1–4; z=1–18, per the EDID list in section 11) | s input 1 edid 1! → input 1 edid:4k60,2.0ch | 4k60,2.0ch |
| r input x edid! | Get input x EDID mode (x=0 all, 1–4) | r input 1 edid! → input 1 edid:4k60,2.0ch | |

## VIDEO MATRIX SETTING

| COMMAND | FUNCTION | EXAMPLE → FEEDBACK | DEFAULT |
|---|---|---|---|
| s output y in source x! | Route input x to output y (y=0–4, x=1–4) | s output 1 in source 1! → output1->input1 | output1->input1 … output4->input4 |
| r output y in source! | Get output y selected source (y=0–4) | r output 1 in source! → output1->input1 | |

## VIDEO WALL SETTING

| COMMAND | FUNCTION | EXAMPLE → FEEDBACK | DEFAULT |
|---|---|---|---|
| s tw mode x! | Set TV-wall mode (x=1 2x2, 2 2x1, 3 2x1-2, 4 1x2, 5 1x2-2, 6 3x1, 7 4x1, 8 1x3, 9 1x4) | s tw mode 1! → tv wall mode: 2x2 | tv wall mode: 2x2 |
| r tw mode! | Get TV-wall mode | r tw mode! → tv wall mode: 2x2 | |
| s tw h bezel x! | Set horizontal bezel (x=0–10, +, –) | s tw h bezel 0! → tv wall horizontal bezel: 0 | 0 |
| r tw h bezel! | Get horizontal bezel | r tw h bezel! → tv wall horizontal bezel: 0 | |

continued

| COMMAND | FUNCTION | EXAMPLE → FEEDBACK | DEFAULT |
|---|---|---|---|
| **s tw v bezel x!** | Set vertical bezel (x=0–10, +, –) | s tw v bezel 0! → tv wall vertical bezel: 0 | 0 |
| **r tw v bezel!** | Get vertical bezel | r tw v bezel! → tv wall vertical bezel: 0 | |
| **s tw group y input x!** | Set which source group y shows (y=0–4, x=1–4) | s tw group 1 input 1! → tv wall group 1 input: hdmi input 1 | group1: hdmi input 1 … |
| **r tw group y source!** | Get group y source (y=0–4) | r tw group 0 source! → tv wall group 1 input: hdmi input 1 … | |
| **s tw res x!** | Set TV-wall resolution (x=1–23; see index) | s tw res 6! → tv wall resolution: 3840x2160p60 | 3840x2160p60 |
| **r tw res!** | Get TV-wall resolution | r tw res! → tv wall resolution: 3840x2160p60 | 3840x2160p60 |

## MULTI-VIEWER SETTING

| COMMAND | FUNCTION | EXAMPLE → FEEDBACK | DEFAULT |
|---|---|---|---|
| **r multiview!** | Get multi-viewer mode | r multiview! → single screen | |
| **s window y in x!** | Select input x for window y (y=0–4, x=1–4) | s window 1 in 1! → window 1 select hdmi 1 | |
| **s multiview x!** | Set multi-viewer mode (x=1 single, 2 pip, 3 dual, 4 triple, 5 quad, 6 user) | s multiview 1! → single screen | single screen |
| **r window y in!** | Get window y source (y=0–4) | r window in! → window 1 select hdmi 1 | |
| **s pip position x!** | Set PIP position (1 upper left, 2 lower left, 3 upper right, 4 lower right) | s pip position 3! → pip on upper right | pip on upper right |
| **r pip position!** | Get PIP position | r pip position! → pip on upper right | |
| **s pip size x!** | Set PIP size (1 small, 2 middle, 3 large) | s pip size 3! → pip size: large | pip size: large |
| **r pip size!** | Get PIP size | r pip size! → pip size: large | |
| **s dual x mode!** | Set dual-window mode (x=1 dual 1) | s dual 1 mode! → dual 1 mode | dual 1 mode |
| **r dual mode!** | Get dual-window mode | r dual mode! → dual 1 mode | |

continued

| COMMAND | FUNCTION | EXAMPLE → FEEDBACK | DEFAULT |
|---|---|---|---|
| **s triple x mode!** | Set triple mode (1 triple 1, 2 triple 2 = 2pip-left, 3 triple 3 = 2pip-right) | s triple 1 mode! → triple 1 mode | triple 1 mode |
| **r triple mode!** | Get triple mode | r triple mode! → triple 1 mode | |
| **s quad x mode!** | Set quad mode (1 quad 1, 2 quad 2, 3 quad 3) | s quad 1 mode! → quad 1 mode | quad 1 mode |
| **r quad mode!** | Get quad mode | r quad mode! → quad 1 mode | |
| **s aspect x!** | Set aspect ratio (1 full screen, 2 16:9) | s aspect 1! → aspect: full screen | full screen |
| **r aspect!** | Get aspect ratio | r aspect! → aspect: full screen | |
| **s user x mode!** | Set user-defined mode (1 user 1, 2 user 2, 3 user 3) | s user 1 mode! → user 1 mode | user 1 mode |
| **r user mode!** | Get user-defined mode | r user mode! → user1 mode | |
| **s mv output audio x!** | Set output audio (0 follow window 1 source, 1–4 input audio) | s mv output audio 1! → output audio: select input 1 audio | follow window 1 selected source |

continued

| COMMAND | FUNCTION | EXAMPLE → FEEDBACK | DEFAULT |
|---|---|---|---|
| r mv output audio! | Get output audio source | r mv output audio! → output audio: follow window 1 selected source | |
| s mv res x! | Set multi-viewer resolution (x=1–23; see index) | s mv res 6! → multi-viewer resolution : 3840x2160p60 | 3840x2160p60 |
| r mv res! | Get multi-viewer resolution | r mv res! → multi-viewer resolution : 3840x2160p60 | 3840x2160p60 |

## EMBEDDED AUDIO SETTING

| COMMAND | FUNCTION | EXAMPLE → FEEDBACK | DEFAULT |
|---|---|---|---|
| s input x as z! | Set input x audio source (x=0–4; z=0 HDMI original, z=1 embed analog) | s input 1 as 1! → input 1 select hdmi original audio | hdmi original audio |
| r input x as! | Get input x audio source (x=0–4) | r input 0 as! → input 1 select hdmi original audio … | |

## EXT-AUDIO SETTING

| COMMAND | FUNCTION | EXAMPLE → FEEDBACK | DEFAULT |
|---|---|---|---|
| s output y exa x! | Set output y ext-audio (y=0–4; x=0 disable, 1 enable) | s output 1 exa 1! → output 1 ext-audio: enable | enable |
| r output y exa! | Get output y ext-audio status (y=0–4) | r output 1 exa! → output 1 ext-audio: enable | |
| r output exa mode! | Get output ext-audio mode | r output exa mode! → output ext-audio mode: bind to input | |
| s output y exa in source x! | Route input audio x to ext-audio output y (y=0–4, x=1–4) | s output 1 exa in source 1! → output 1 ext-audio->input 1 | output n ext-audio->input n |
| s output exa mode x! | Set ext-audio mode (0 bind to input, 1 bind to output, 2 matrix) | s output exa mode 0! → output ext-audio mode: bind to input | bind to output |
| r output y exa in source! | Get output y ext-audio source (y=0–4) | r output 0 exa in source! → output 1 ext-audio->input 1 … | |

## CEC SETTING

| COMMAND | FUNCTION | EXAMPLE → FEEDBACK |
|---|---|---|
| s cec in x on! | Power on input x by CEC (x=0 all, 1–4) | s cec in 1 on! → input 1 power on |
| s cec in x off! | Power off input x by CEC | s cec in 1 off! → input 1 power off |
| s cec in x menu! | Open input x menu by CEC | s cec in 1 menu! → input 1 open menu |
| s cec in x back! | Input x back operation | s cec in 1 back! → input 1 back operation |

continued

| COMMAND | FUNCTION | EXAMPLE → FEEDBACK |
|---|---|---|
| s cec in x up! | Input x menu up | s cec in 1 up! → input 1 menu up operation |
| s cec in x down! | Input x menu down | s cec in 1 down! → input 1 menu down operation |
| s cec in x left! | Input x menu left | s cec in 1 left! → input 1 menu left operation |
| s cec in x right! | Input x menu right | s cec in 1 right! → input 1 menu right operation |
| s cec in x enter! | Input x menu enter | s cec in 1 enter! → input 1 menu enter operation |
| s cec in x play! | Input x play | s cec in 1 play! → input 1 play operation |
| s cec in x pause! | Input x pause | s cec in 1 pause! → input 1 pause operation |
| s cec in x stop! | Input x stop | s cec in 1 stop! → input 1 stop operation |
| s cec in x rew! | Input x rewind | s cec in 1 rew! → input 1 rewind operation |
| s cec in x mute! | Input x volume mute | s cec in 1 mute! → input 1 volume mute |
| s cec in x vol-! | Input x volume down | s cec in 1 vol-! → input 1 volume down |
| s cec in x vol+! | Input x volume up | s cec in 1 vol+! → input 1 volume up |
| s cec in x ff! | Input x fast forward | s cec in 1 ff! → input 1 fast forward operation |
| s cec in x previous! | Input x previous | s cec in 1 previous! → input 1 previous operation |
| s cec in x next! | Input x next | s cec in 1 next! → input 1 next operation |
| s cec hdmi out y on! | Power on HDMI output y by CEC (y=0 all, 1–4) | s cec hdmi out 1 on! → hdmi output 1 power on |
| s cec hdmi out y off! | Power off HDMI output y | s cec hdmi out 1 off! → hdmi output 1 power off |
| s cec hdmi out y mute! | HDMI output y volume mute | s cec hdmi out 1 mute! → hdmi output 1 volume mute |
| s cec hdmi out y vol-! | HDMI output y volume down | s cec hdmi out 1 vol-! → hdmi output 1 volume down |
| s cec hdmi out y vol+! | HDMI output y volume up | s cec hdmi out 1 vol+! → hdmi output 1 volume up |

continued

| COMMAND | FUNCTION | EXAMPLE → FEEDBACK |
|---|---|---|
| s cec hdmi out y active! | Set HDMI output y as active source | s cec hdmi out 1 active! → hdmi output 1 active source |

## NETWORK SETTING

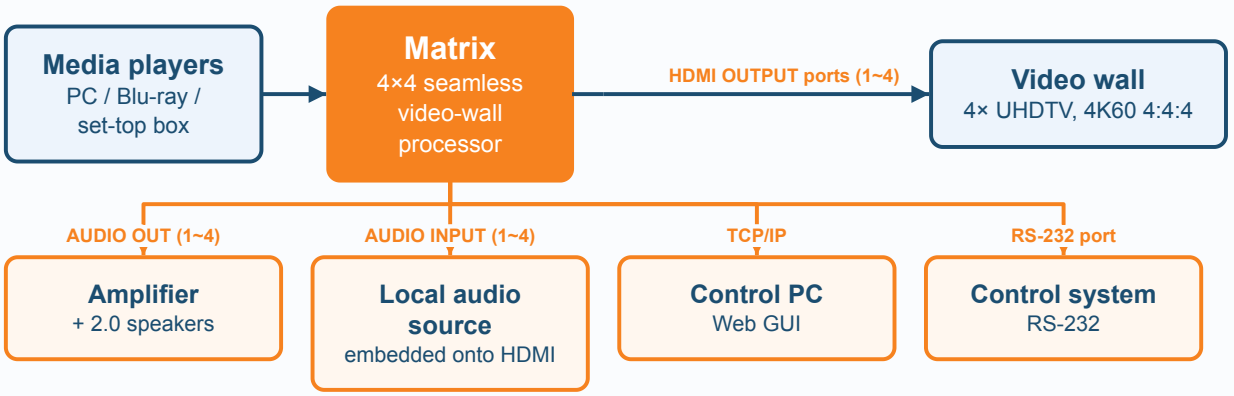
| COMMAND | FUNCTION | EXAMPLE → FEEDBACK |
|---|---|---|
| r ipconfig! | Get current IP configuration | r ipconfig! → ip mode: static / ip: 192.168.0.100 / subnet mask: 255.255.255.0 / gateway: 192.168.0.1 / tcp/ip port=8000 / telnet port=23 / mac address: 00:1c:91:03:80:01 |
| r mac addr! | Get MAC address | r mac addr! → mac address: 00:1c:91:03:80:01 |
| s ip mode z! | Set IP mode (z=0 static, z=1 dhcp) | s ip mode 0! → set ip mode:static. (use "s net reboot!" or repower to apply) |
| r ip mode! | Get IP mode | r ip mode! → ip mode: static |
| s ip addr xxx.xxx.xxx.xxx! | Set IP address | s ip addr 192.168.0.100! → set ip address: 192.168.0.100 (apply as above) |
| r ip addr! | Get IP address | r ip addr! → ip address:192.168.0.100 |
| s subnet xxx.xxx.xxx.xxx! | Set subnet mask | s subnet 255.255.255.0! → set subnet mask: 255.255.255.0 (apply as above) |
| r subnet! | Get subnet mask | r subnet! → subnet mask:255.255.255.0 |
| s gateway xxx.xxx.xxx.xxx! | Set gateway | s gateway 192.168.0.1! → set gateway:192.168.0.1 (apply as above) |
| r gateway! | Get gateway | r gateway! → gateway:192.168.0.1 |
| s tcp/ip port x! | Set TCP/IP port (x=1–65535) | s tcp/ip port 8000! → set tcp/ip port:8000 |
| r tcp/ip port! | Get TCP/IP port | r tcp/ip port! → tcp/ip port:8000 |
| s telnet port x! | Set Telnet port (x=1–65535) | s telnet port 23! → set telnet port:23 |
| r telnet port! | Get Telnet port | r telnet port! → telnet port:23 |
| s net reboot! | Reboot network modules | s net reboot! → network reboot… / ip mode: static … |

*(When DHCP is on, the device refuses to set a static address, subnet, or gateway until DHCP is turned off first.)*

## 15. Application Example

TYPICAL SETUP

### 4K60 4×4 Seamless Matrix, Video Wall & Multiviewer Processor




**How it works:** Video-wall mode offers nine splicing modes with 0–10 bezel compensation, multiviewer mode offers twelve layouts including PIP, dual, triple and quad, and a built-in 4×4 IR matrix carries source control back from the display side. The unit is driven from the front panel, IR remote, RS-232, TCP/IP and a built-in Web GUI, with CEC for display power and advanced EDID management. Its strongest differentiator is a complete dual-format audio stage: four optical S/PDIF and four analog L/R outputs de-embed HDMI source audio to a house amplifier or DSP, while four analog L/R inputs embed a local source onto an HDMI signal, replacing a separate audio de-embedder in the chain.

## 16. Troubleshooting

**Q: A display shows no image. What should I check?**
**A:** Confirm the front-panel PWR LED is green (red means standby; press and hold POWER one second to wake). Open the Web GUI Input page and verify the source shows Active green, check the Output page shows the display connected, and make sure the HDMI cable is within the length limit for the resolution (16 ft at 4K60).

**Q: I cannot reach the Web GUI. What should I try?**
**A:** RS-232 and the Web GUI become available a few minutes after the unit is powered on, so allow time first. Then confirm the PC is on the same network segment as the matrix and browse to its actual IP address, which you can read with INFO on the remote or r ip addr!; note that when DHCP is on the router assigns the address and the static fields cannot be edited.

**Q: The IR remote is not controlling a source device. What should I check?**
**A:** First aim the remote at the matrix IR window within range (8 m head-on, 5 m at plus or minus 45 degrees), or plug a receiver cable into IR EXT if the window is blocked. Then confirm a blaster cable is on the IR OUTPUT near the source and a receiver cable is on the IR INPUT near the display, and remember IR follows the HDMI routing, so control reaches the source currently assigned to that output.

**Q: The front-panel buttons do not respond. What should I check?**
**A:** Check whether the panel is locked: briefly press the LOCK button to unlock (the power button stays active even when locked). Also confirm the unit is awake rather than in standby by checking the PWR LED, and note the menu returns to the initial display after 10 seconds of inactivity.

**Q: An analog audio output is silent. What should I check?**
**A:** Embedded audio cannot be extracted to the AUDIO OUT ports, so if that input's audio is set to EMBED it will not appear there. On the Web GUI Audio page confirm the ext-audio channel is enabled and set to the correct mode (Bind to Input, Bind to Output, or Audio Matrix) for the source you expect.

**Need help? —** For additional support, contact KanexPro technical support at support@kanexpro.com or 888.975.1368, or scan the QR code below for the product page.

## 17. Installation FAQ

**Q: How does the MMX-4X4VWMV power up?**
**A:** Connect the supplied 12V/2.5A locking power adapter to the DC 12V jack; the adapter accepts AC 100-240V, 50/60Hz. A GND terminal is provided to bond the housing to ground, and a surge-protection device is recommended.

**Q: How do I connect it to the network for Web GUI control?**
**A:** Connect the TCP/IP (RJ45) port to a PC or router with a CAT cable, then set the PC to the same network segment as the unit. The default IP address is 192.168.0.100; press INFO on the IR remote or send r ip addr! over RS-232 to confirm the current address before browsing to it.

**Q: How are the balanced and unbalanced analog audio outputs wired?**
**A:** The MMX-4X4VWMV L/R AUDIO OUT uses a 5-pin 3.81mm Phoenix connector supporting balanced output up to 2Vrms or unbalanced. Wire balanced as L+, L-, ground, R+, R-, and unbalanced as L+, ground, R+.

**Q: Where do the IR blaster and receiver cables go?**
**A:** Place the four IR blaster cables (on the IR OUTPUT ports) near the four HDMI sources, and the four IR receiver cables (on the IR INPUT ports) near the displays on the four HDMI outputs. If the unit's own IR window is blocked or out of line of sight, plug a receiver cable into the IR EXT port to pick up the remote.

**Q: Can the MMX-4X4VWMV be rack mounted?**
**A:** Yes. The unit ships with 2 mounting ears and 8 machine screws, and its chassis measures 17.32 x 7.99 x 1.75 in (440 x 203 x 44.5 mm).

## 18. Integration FAQ

**Q: What control methods does the MMX-4X4VWMV accept?**
**A:** It can be operated from the front-panel buttons, the supplied IR remote, RS-232, and the Web GUI. It also supports CEC control of connected sources and displays.

**Q: What are the RS-232 serial settings for third-party control?**
**A:** Set the controller to 115200 baud, 8 data bits, 1 stop bit, no parity. Commands are ASCII strings ending in an exclamation delimiter; for example, s output 1 in source 3! routes input 3 to output 1 on the MMX-4X4VWMV.

**Q: Can it control source and display devices over CEC?**
**A:** Yes. On the MMX-4X4VWMV a CEC input can be powered on/off, played, paused, muted and more (for example s cec in 1 on!), and an output can be powered, made active, or have its volume adjusted (for example s cec hdmi out 1 vol+!).

**Q: How does IP control connect, and on what ports?**
**A:** The MMX-4X4VWMV is reached over its TCP/IP (RJ45) port; r ipconfig! reports the default TCP/IP port 8000 and Telnet port 23, both of which are adjustable. IP mode can be set to static or DHCP, and network changes apply after s net reboot! or a repower.

**Q: What does a typical MMX-4X4VWMV system look like?**
**A:** HDMI sources such as a PC, a Blu-ray player and a TV box connect to the four inputs, and up to four UHDTVs connect to the four outputs. An amplifier and 2.0 speakers connect to the audio outputs, IR receivers and blasters provide remote control at each end, and a PC on the LAN reaches the matrix through the TCP/IP port for Web GUI control.