

4x4 4K HDMI Audio and Video Matrix with Downscaling

EVMX4K4A Product Manual

EVOLUTION

⚠ Safety Instructions

For optimum performance and safety, please read these instructions carefully before use and keep this guide for future reference. Please have the part number, serial number, and invoice available when requesting support.

- To prevent an electrical shock, please ensure all devices are properly grounded.
- Place the device in a well-ventilated area and do not block any ventilation openings.
- Do not expose or place device near water - liquid may cause a failure, fire, or electrical shock.
- Do not place the device on an uneven or unstable surface - a fall may result in a malfunction.
- Never insert anything metallic into the device - this may cause an electrical shock.
- If a third-party power supply is used, please ensure it meets the requirements of this device.



Additional Resources

Visit the product page at www.vanco1.com for the latest version of this document and other resources.

Description

The EVMX4K4A is a powerful and versatile 4x4 4K HDMI matrix designed for high-performance AV distribution in professional environments. This matrix supports full 4K@60Hz resolutions with HDR and features four independently switchable outputs with built-in downscaling, allowing for seamless integration with both 4K and 1080p displays. An integrated audio matrix provides flexible analog and digital audio routing and extraction, enabling independent audio distribution alongside video switching. Control is streamlined with built-in IR, RS-232, and IP options, ensuring compatibility with a wide range of control systems. The matrix also offers enhanced compatibility with active optical HDMI cables, delivering reliable long-distance signal transmission. Ideal for conference rooms, residential AV systems, and digital signage applications, the EVMX4K4A ensures robust performance and flexibility.

Key features:

- 4x4 4K HDMI audio and video matrix switcher
- Supports 4K@60, 4:4:4, HDR resolutions
- HDCP 2.3 compliant
- Integrated audio matrix to route and de-embed analog or digital audio
- Variable volume adjustments available on each L+R output.
- Supports 4K to 1080p downscaling
- Additional 2.5W of power for enhanced Active Optical Cable (AoC) stability
- Controllable by front panel, IR, RS232, and TCP/IP

Box contents:

- (1) EVMX4K4A matrix
- (2) Mounting ears with 6 screws
- (4) Plastic cushions
- (1) IR remote
- (1) IR receiver
- (1) RS232 cable (3-pin to DB9)
- (1) Power adaptor (DC 24V/1.25A)
- (1) Quick start guide



Specifications

Vanco International LLC reserves the right to change the specifications, features, and/or appearance of this product at any time without notice. Visit www.vanco1.com for the latest versions of the manual and other resources.

Video	
Video Input	4 x HDMI
Video Input Connector	4 x Type-A female HDMI
Video input Video Resolution	Up to 4K@60Hz 4:4:4
Video Output	4 x HDMI
Video Output Connector	4 x Type-A female HDMI,
Video output Video Resolution	Up to 4K@60Hz 4:4:4
HDMI Output	Supports up to 5V/0.5A for AoC cable
HDMI Version	HDMI 2.0
HDCP Version	HDCP 2.3
HDMI Audio Signal	LPCM 7.1 audio, Dolby Atmos®, Dolby® TrueHD, Dolby Digital® Plus, DTS:X™, and DTS-HD® Master Audio™ pass-through.
Digital Audio Output	
Output	4 x Digital S/PDIF audio
Output Connector	4 x Toslink connector
Digital SPDIF Audio Format	Supports PCM, Dolby Digital, DTS, DTS-HD
Frequency Response	20 Hz to 20 kHz, ±1dB
Max Output level	±0.05dBFS
THD+N	< 0.05%, 20 Hz – 20 kHz bandwidth, 1 kHz sine at 0dBFS level (or max level)
SNR	> 90dB, 20Hz-20 kHz bandwidth
Crosstalk Isolation	< -70 dB, 10 kHz sine at 0dBFS level (or max level before clipping)
Noise	-90dB
Analog Audio Output	
Output	4 x Analog L/R Audio
Output Connector	4 x L&R (RCA)
Digital SPDIF Audio Format	PCM 2CH
Frequency Response	20 Hz to 20 kHz, ±1dB
Max output level	2.0Vrms ± 0.5dB. 2V = 16dB headroom above -10dBV (316 mV) nominal consumer line level signal
THD+N	< 0.05%, 20 Hz – 20 kHz bandwidth, 1 kHz sine at 0dBFS level (or max level)
SNR	> 80dB, 20Hz-20 kHz bandwidth
Crosstalk Isolation	< -80 dB, 10 kHz sine at 0dBFS level (or max level before clipping)
L-R Level Deviation	< 0.05 dB, 1 kHz sine at 0dBFS level (or max level before clipping)
Frequency Response Deviation	< ± 0.5dB 20Hz - 20KHz
Output Load Capability	1k ohm and higher (supports 10x paralleled 10k ohm loads)
Noise	-80dB

Control	
Control Port	1 x IR EYE, 1 x RS-232, 1 x FIRMWARE, 1 x TCP/IP
Control Connector	1 x 3.5mm jack, 1 x 3-pin terminal block, 1 x USB-A, 1 x RJ45,
General	
Transmission Distance	4K@60Hz 4:4:4 up to 16ft/5m, 4K@60Hz 4:2:0 up to 33ft/10m, and 1080p up to 50ft/15m
Bandwidth	18Gbps
Operation Temperature	23 ~ 131°F / -5 ~ +55°C
Storage Temperature	13 ~ 158°F / -25 ~ +70°C
Relative Humidity	10 - 90%
External Power Supply	Input: AC 100~240V, 50/60Hz;
Output: DC 24V/1.25A	> 90dB, 20Hz-20 kHz bandwidth
Maximum Power Consumption	18.3W
Dimension (W*H*D)	17" x 1.7" x 9.3" / 436.4mm x 44mm x 236mm
Net Weight	5.7lbs / 2.6kg

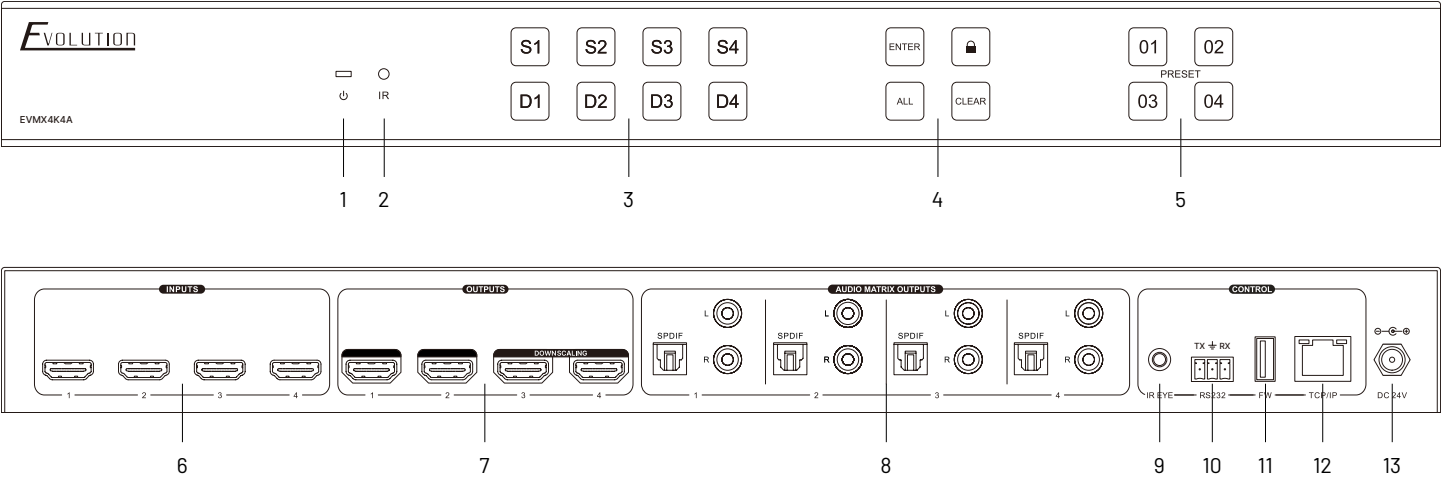
Video Resolution Downscaling

This product supports video resolution downscaling with the 4K to 1080p downscaling for compatibility. See chart below for downscaling specifications.

Control				Output	
#	Resolution	Refresh	Color Space	Downscale	1080p Specs
1	3840x2160	60	4:4:4	Support	1080p@60Hz 4:4:4
2	3840x2160	30	4:4:4	Support	1080p@30Hz 4:4:4
3	3840x2160	24	4:4:4	Support	1080p@24Hz 4:4:4
4	3840x2160	60	4:2:0	Support	1080p@60Hz 4:4:4
5	3840x2160	30	4:2:0	Support	1080p@30Hz 4:4:4
6	3840x2160	24	4:2:0	Support	1080p@24Hz 4:4:4
7	3840x2160	60	4:2:2	Not Support	N/A
8	3840x2160	30	4:2:2	Not Support	N/A
9	3840x2160	24	4:2:2	Not Support	N/A

Note: Only the last two outputs (output 3 and output 4) have down-scaling functionality.

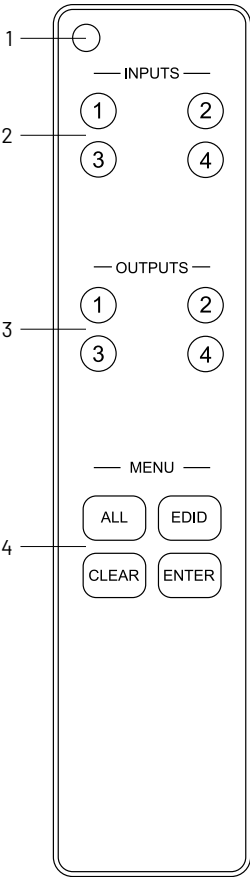
Panel Descriptions



Front Panel		
1	Power Indicator	Illuminates green when device is powered on, illuminates red in standby mode.
2	IR Sensor	Built-in IR sensor, receives IR signal sent from IR remote.
3	Input & Output Selector Buttons	S1-S4: Total 4 input selector buttons, press one of buttons to switch input source. D1-D4: Total 4 output selector buttons, press the buttons to select output channel.
4	Enter	LOCK: Press and hold this button for 3 seconds to lock/unlock all front buttons. ALL: Select all outputs to switch an input to all outputs: Press[S1/2/3/4] + [ALL] + [ENTER] CLEAR: Clears actions
5	Preset	Press and hold the button 1-4 to save the current switching status to the corresponding preset 1-4. Press the button 1-4 to recall the saved preset 1-4.
Rear Panel		
6	Inputs	HDMI input ports, 4 in total, connects with HDMI sources.
7	Outputs	4 in total, connects with HDMI displays. The last 2 HDMI ports have down-scaling functionality.
8	Audio Matrix Outputs	S/PDIF: audio output ports for de-embedded HDMI audio, 4 in total. L&R(RCA): audio output ports for de-embedded HDMI audio, 4 pairs in total.
9	IR Eye	Connects with external IR receiver for using the IR remote to control the Matrix Switcher.
10	RS232	3-pin terminal block to connect the RS232 control device (e.g. PC) or a device to be controlled by RS232 commands.
11	FW	USB-A port for updating firmware.
12	TCP/IP	RJ-45 port to connect the control device (e.g. PC or third-party control system) to control the matrix.
13	DC 24V	Connect with DC 24V/1.25A power adaptor.

IR Remote Control

The matrix features one built-in IR receiver to receive IR signal from the IR remote to enable IR control. If the external IR receiver or other IR control device needs to be used, the IR EYE port on rear panel can be connected.



IR Remote		
1	Standby Mode	Press it to enter/ exit standby mode.
2	Inputs	Input channel selection buttons, same with the corresponding front panel buttons.
3	Outputs	Output channel selection buttons, same with the corresponding front panel buttons.
4	Menu	ALL: Select all inputs/outputs. To convert an input to all outputs: Example: Input 1 to all Outputs: Press INPUTS 1 + ALL + ENTER
		EDID management button: 1) One input port follows the EDID data from one output port. Example: Input 2 learns EDID data from output 4: Press EDID + INPUTS 2 + OUTPUTS 4+ ENTER 2) All input ports learn EDID data from one output port. Example: All input ports learn EDID data from output 3: Press EDID + ALL + OUTPUTS 3 + ENTER
		CLEAR: Clears actions
		ENTER: Confirm operation

Front Panel Control



Input/Output Switching

The front panel features four input selection buttons and four output selection buttons for switching I/O connection.

1. To switch 1 input to 1 output:
Example: Input 1 to Output 3
Press S1 + D3 + ENTER.
2. To switch 1 input to outputs 2, 3, and 4:
Example: Input 1 to Output 2, Output 3, Output 4.
Press S1 + D2, D3, D4 + ENTER.
3. To switch 1 input to 4 outputs:
Example: Convert Input 2 to all outputs
Press S2 + ALL + ENTER.

Note: Indicators of the pressed buttons will blink blue three times if the conversion is done, then it will be off. If the conversion failed, they will be off immediately.

Input/Output Status

Press OUTPUTS button D1, D2, D3 or D4 to inquire about the corresponding input, and then the indicator of the input button will turn blue.

LOCK Function

Long press the LOCK button for three seconds, all buttons on the front panel disable to work. Long press the LOCK button for three seconds again to unlock or can unlock the front panel using the GUI.

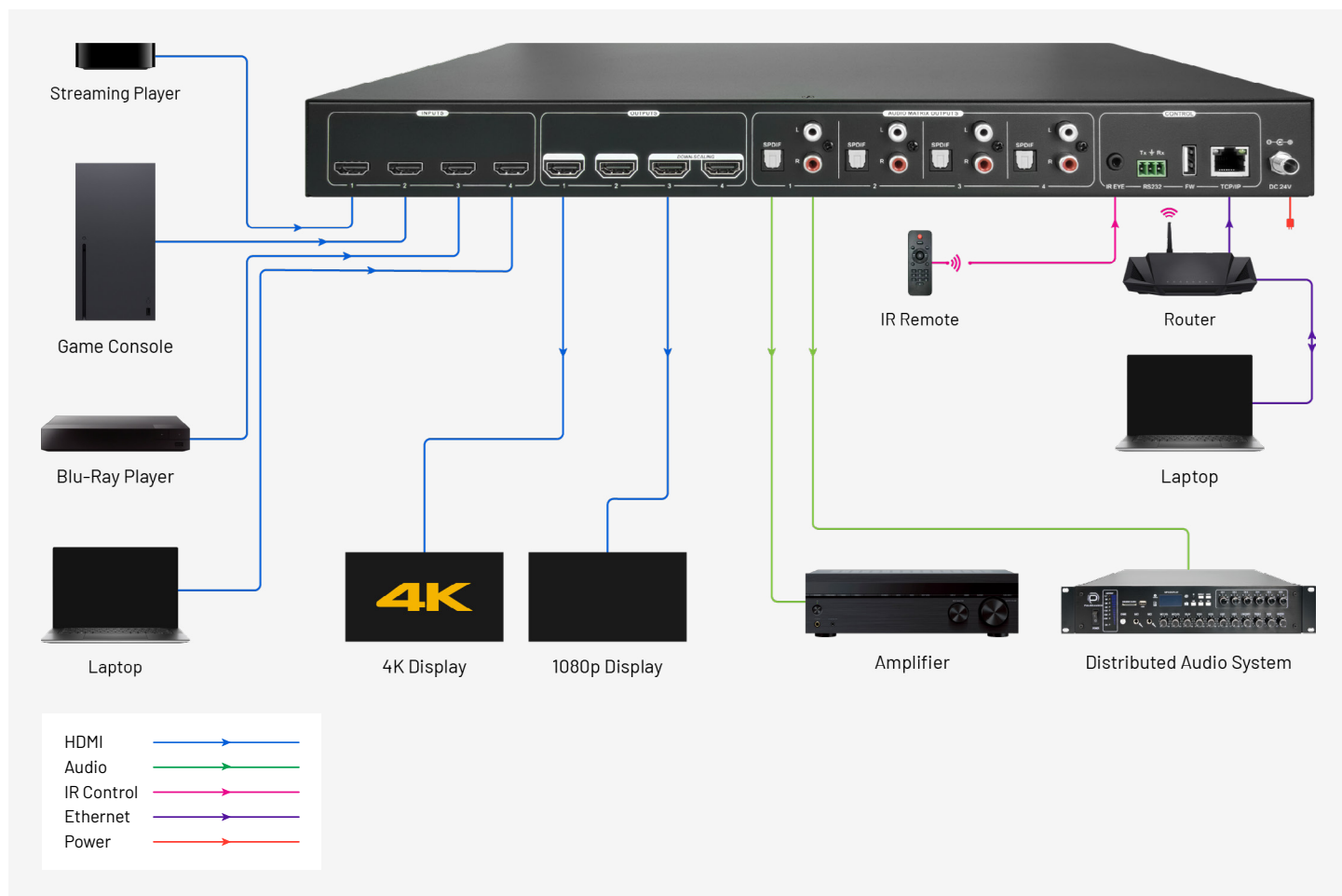
PRESET RECALL Function

Press and hold the PRESET 1-4 at least three seconds to save the current switching status to the corresponding preset 1-4.
Press the PRESET 1-4 to recall the saved preset 1-4.

Note: The matrix switcher supports 9 presets but only preset 1-4 can be saved and recalled by button control. Please manage other preset by GUI control or RS232 control.

Connect & Operate

Please reference the diagrams below for how to connect and operate the PA6X series of amplifiers.



Connection Diagram

1. Connect up to 4 sources such as a streaming player, video game console, Blu-Ray player, etc. to the HDMI inputs on the unit.
2. Connect up to 4 displays such as an HDTV, projector, etc. to the HDMI outputs on the unit.
3. OPTIONAL: Connect a third party control system via the RS232 port.
4. OPTIONAL: Connect a third party audio system via SPDIF port.
5. Connect the included DC 24V locking power supply.
6. Power up the EVMX4K4A and then the connected components.

Note: Ensure HDMI cabling is 2.0 compliant or HDMI certified for the best 4K resolution display.

CLEAR Button

Press the CLEAR button if you want to withdraw an operation before pressing the ENTER button comes into effect and the matrix will return to the previous state.

Vanco Tech Support

Phone: 800-626-6445

Email: techsupport@vanco1.com

Web: www.vanco1.com/tech-support



GUI Control

The matrix can be controlled via TCP/IP.

The default IP settings are:

IP Address: 192.168.0.178

Subnet Mask: 255.255.255.0

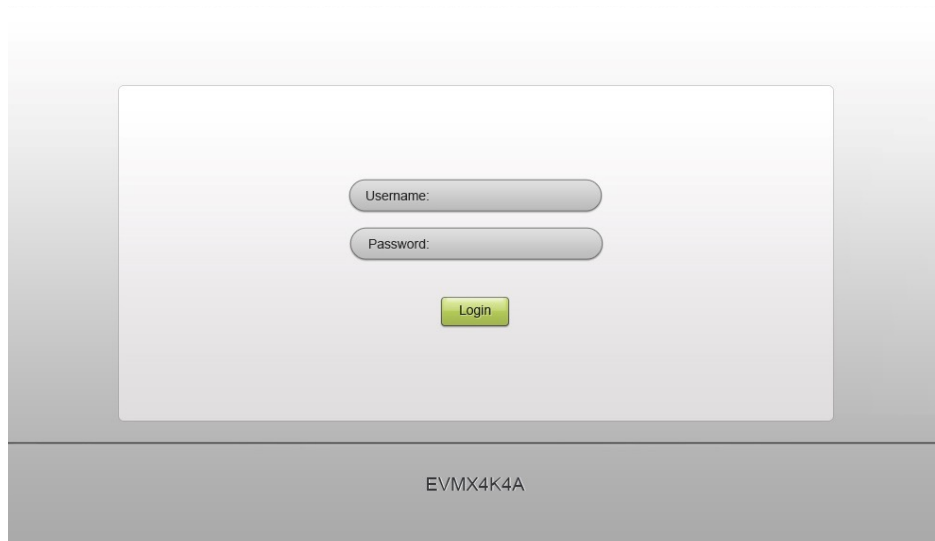
Gateway: 192.168.0.1

Type 192.168.0.178 in the internet browser, it will enter the below log-in webpage:

Username: admin

Password: admin

Type the username and password, and then click Login to enter the section for video switching.



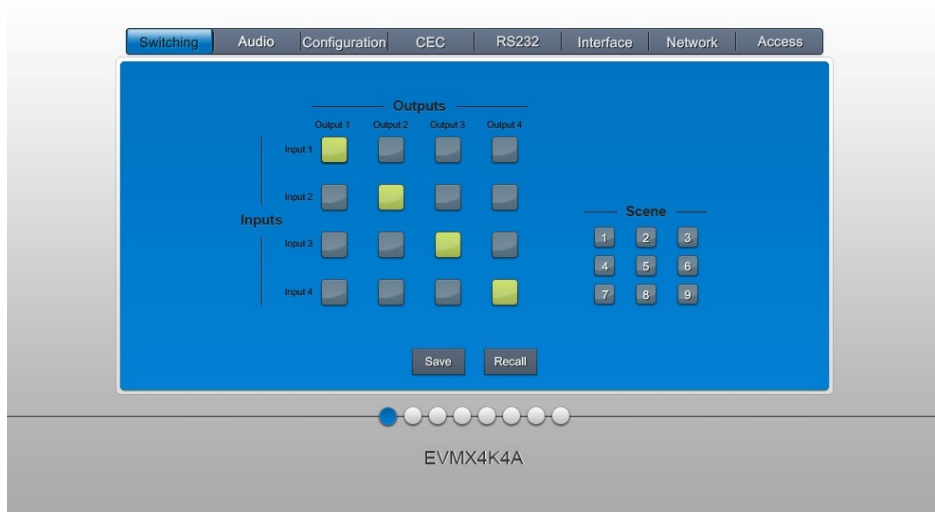
Switching Tab

Use the 4x4 button grid on the page to set which inputs are directed to which outputs.

For example, clicking the button on the Input 1 row and Output 1 column, directs input 1 to output 1.

Use the 9 numbered buttons under scene area to save and load layout presets.

- To save a given layout, first click one of the numbered buttons, then click the Save button.
- To load a previously saved layout, first click one of the numbered buttons, then click the Recall button.



Audio Tab

Audio Setting

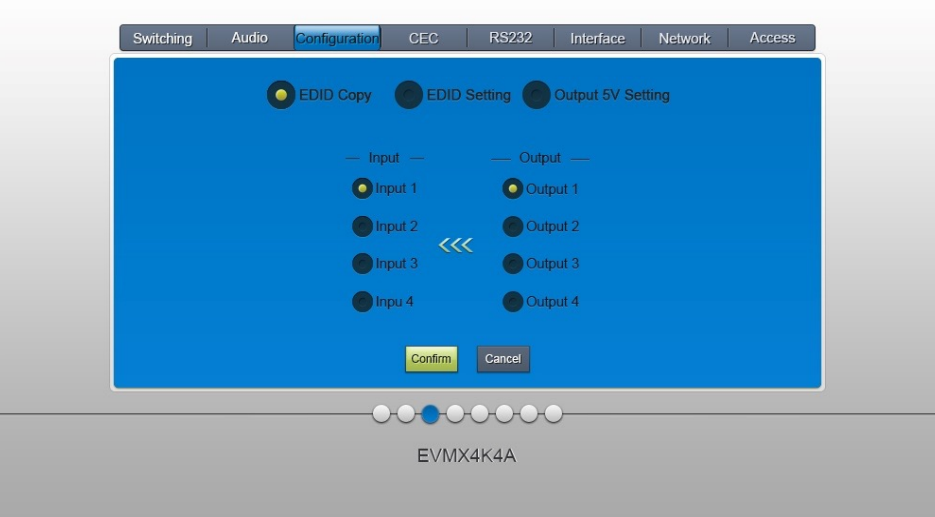
There are 4 HDMI audio sources that can be selected for 4 digital SPDIF output ports or 4 analog output ports.



Audio Sources		
Audio Output Ports	Input Breakout	Output Breakout
SPDIF 1 & Analog 1	Audio on Input 1	Audio on Output 1
SPDIF 2 & Analog 2	Audio on Input 2	Audio on Output 2
SPDIF 3 & Analog 3	Audio on Input 3	Audio on Output 3
SPDIF 4 & Analog 4	Audio on Input 4	Audio on Output 5

Audio Volume

Four pairs analog L/R audio to control their volume.



Configuration Tab

EDID Copy

Copy the EDID of the selected output device to one or more input source device.



EDID Setting

Select the compatible built-in EDID for the selected input source.

Upload user-defined EDID by the below steps:

1. Prepare the EDID file (.bin) on your computer.
2. Select the User-defined.
3. Click the on box , and then select the EDID file (.bin).
4. Click Apply to upload the user-defined EDID, then click Confirm to the save setting.



Output 5V Setting

(for enhanced AoC stability)

To turn a display on or off, just toggle the output button accordingly.

For example, if you want to turn off the display that connects to OUTPUT 1, just toggle OFF the 'Output 1 5V' from On to Off.



CEC Tab

If the source(s), and display(s) supports CEC, they can be controlled via the following CEC interface.

1. Input Source Device Control

Select one input source device to be controlled, and then press function buttons.

Note: It cannot control two or more input sources simultaneously.



2. Output Display Device Control

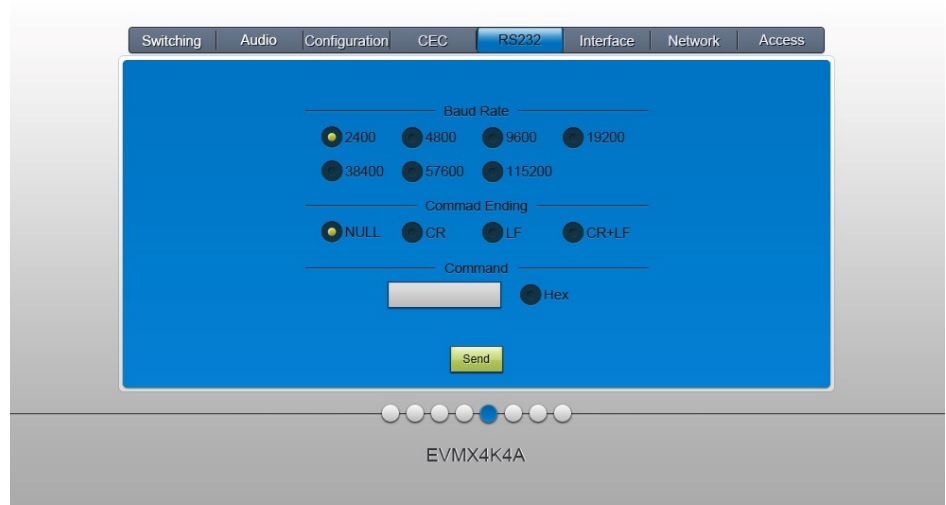
Select one output device to be controlled, and then press one of the function buttons.

Note: It cannot control two or more outputs simultaneously.



RS232 Tab

- ASCII or HEX command format can be selected.
- Baud Rate: Supports 2400, 4800, 9600, 19200, 38400, 57600 or 115200.
- Command Ending: NULL, CR, LF or CR+LF can be chosen.
- Command: Type the command into the command box to control the third-party device which is connected to the RS232 port of the switcher.



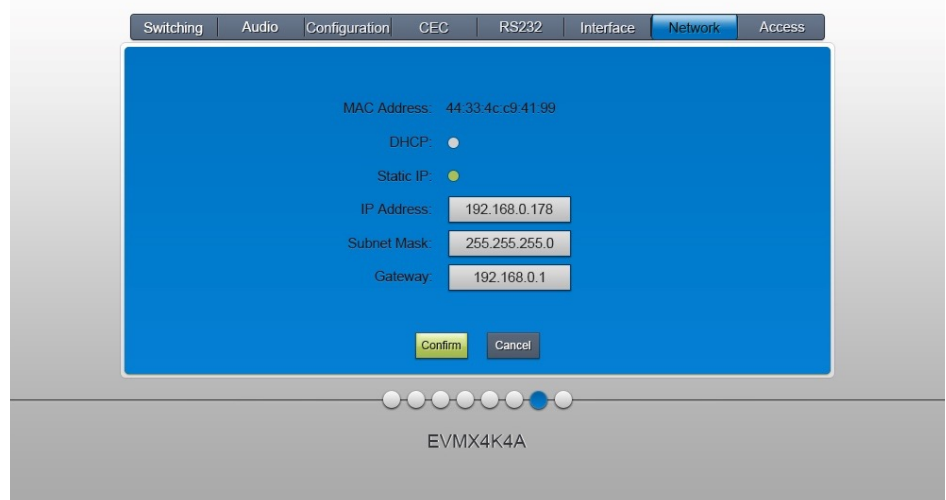
Interface Tab

- Used to modify the title bar label.
- Used to modify the button labels.



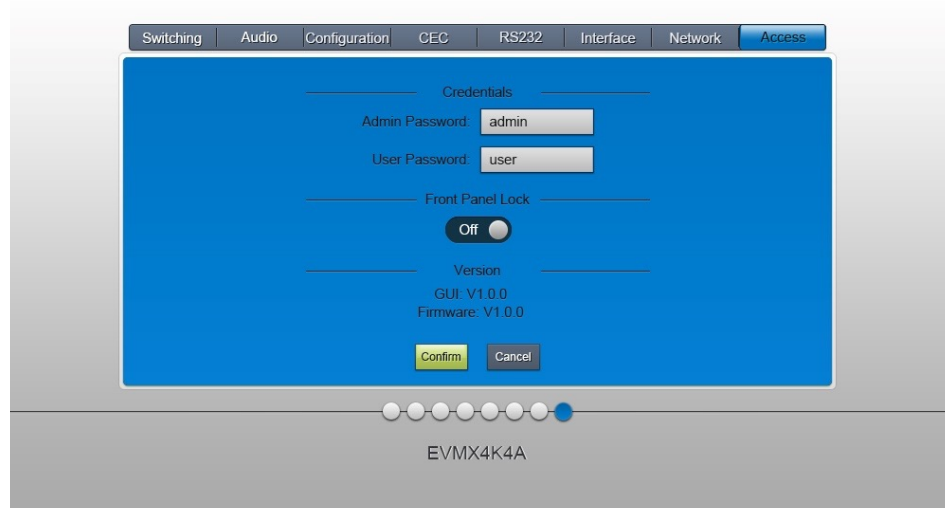
Network Tab

- Static IP or Dynamic Host Configuration Protocol (DHCP).
- Used to modify the static IP Address, Subnet Mask, and Gateway.



Access Tab

- Use to modify the login password.
- Lock or unlock the front panel buttons.



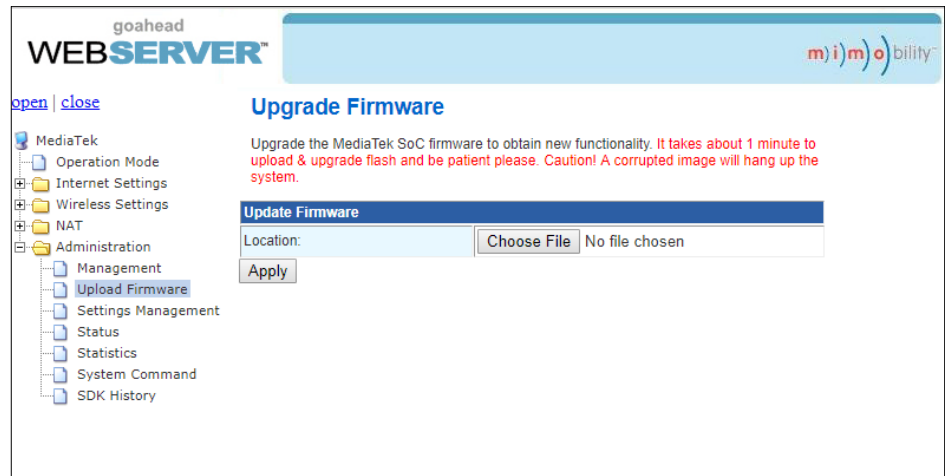
GUI Upgrade

Please visit at <http://192.168.0.178:100> for GUI online upgrade.

Note: If the matrix was provided a different IP address, replace that and add :100 to perform an upgrade.

Type the username and password (the same as the GUI log-in setting, modified password will be available only after rebooting) to login the configuration interface. After that, click **Administration** in the source menu to get to **Upload Firmware** as shown.

Select the desired update file and press **Apply**, it will start upgrading then.



Troubleshooting & Maintenance

Problems	Potential Causes	Solutions
Color loss or no video signal output	The connecting cables may not be connected correctly or it may be broken.	Check whether the cables are connected correctly and are in working condition.
	Fail or loose connection.	Make sure the connection is good.
No output image when switching	No signal at the input / output end.	Check with oscilloscope or multimeter if there is any signal at the input/ output end.
	Fail or loose connection.	Make sure the connection is good.
	Input source is with HDCP while the HDCP compliance is switched off.	Send command /%[Y]/[X]:1. or change HDCP compliance status in GUI.
	The display doesn't support the input resolution.	Switch to another input source or enable the display to learn the EDID data of the input.
Cannot control the device via front panel buttons	Front panel buttons are not responsive and control is locked	Send command /%Unlock; or select unlock in GUI interface to unlock.
Cannot control the device via IR remote	The battery has died.	Change for new battery.
	The IR remote is broken.	Send it to an authorized dealer for repair
	Beyond the effective range of the IR signal or not pointing at the IR receiver.	Adjust the distance and angle and point right at the IR receiver.
	The IR receiver connected to IR IN port is not with carrier.	Change for an IR receiver with carrier.
Power Indicator remains off when powered on	No power.	Check whether the cables are connected correctly.
EDID management does not work normally	The HDMI cable is broken at the output end.	Change for another HDMI cable which is in good working condition.
There is a blank screen on the display when switching	The display does not support the resolution of the video source.	Switch again.
		Manage the EDID data manually to make the resolution of the video source automatically compliant with the output resolution.
Cannot control the device by control device (e.g. a PC) through RS232 port	Wrong connection.	Check to ensure the connection between the control device and the unit.
	Wrong RS232 communication parameters.	Type in correct RS232 communication parameters: Baud rate:9600; Data bit: 8; Stop bit: 1; Parity bit: none
	Broken RS232 port.	Send it to authorized dealer for checking.