G44 HDMI User Guide

This user guide provides basic instructions for setting up SEADA G44 HDMI video wall controllers using its management software.

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1. Product Introduction

1.1. Product profile

The G44 HDMI version of video wall controller accepts up to 4 HDMI inputs and displays them on 4 different displays, each with a resolution up to 4K@60fps 4:4:4. G44 HDMI not only allows the user to display a single input across all four screens, but also to display different input videos onto different screens working like a matrix switcher. Moreover, it also supports audio matrix, IR matrix and CEC management.

1.2. Product capability

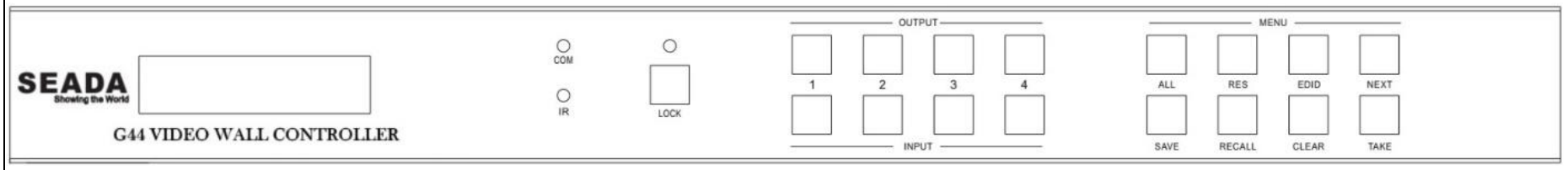
- Four HDMI 2.0 inputs with embedded audio
- Four HDMI 2.0 outputs with embedded audio
- Each input and output support resolutions up to 4K@60Hz 4:4:4
- Four analog audio inputs
- Four analog audio outputs
- Four digital audio outputs
- Independent 4x4 IR Matrix
- Support audio embedded and de-embedded
- Support video wall function
- Support presentation switching function
- Support seamless matrix switching function
- Support CEC management
- Support EDID management
- Custom pre-set layouts for both Matrix and Video Wall Modes
- HDCP compliant
- Adjust Display settings such as Contrast and Saturation remotely
- Controllable via IP/serial port
- Controllable via front panel buttons

1.3. Specification & Parameters

Interface	HDMI-A
HDMI Version	HDMI2.0, HDCP2.2
Bandwidth	18Gbps
Input	800x600@60Hz,1024x768@60Hz, 1280x768@60Hz, 1280x800@60Hz,1280x1024@60Hz,1360x768@60Hz, 1366x768@60Hz,1400x1050@60Hz,1440x900@60Hz, 1600x1200@60Hz,1680x1050@60Hz, 1920x1200@60Hz,480p,576p,720p,1920x1080i, 1920x1080p,3840x2160@24Hz/25Hz/30Hz/50Hz/60Hz, 4096x2160@24Hz/25Hz/30Hz/50Hz/60Hz.
Output	3840x2160@60Hz, 3840x2160@50Hz, 3840x2160@30Hz, 3840x2160@25Hz, 1920x1200@60Hz,1920x1080@60Hz, 1920x1080@50Hz,1600x1200@60Hz, 1400x1050@60Hz,1366x768@60Hz, 1360x768@60Hz, 1280x1024@60Hz, 1280x768@60Hz, 1280x720@60Hz, 1280x720@50Hz, 1024x768@60Hz
HDMI Amplitude	T.M.D.S +/- 0.4Vpp
Differential impedance	100±15ohm
RS232/Ethernet control	
Baud rate and protocol	Baud rate：9600, data bit：8，
	stop bit：1, no parity checking
Ethernet	IE10.0+, HTML5
Power	
Max Consumption	60W, 110-240VAC
Matrix Mechanical dimensions	
Size(mm)	480(L)X245(W)X44.55 (H) including brackets
Weight	3.2Kg
Operating temperature	0 to 40°C
Storage temperature	-20 to 70°C
Permissible humidity	10%-50%

2. Hardware Overview

2.1.Front Panel



- **OUTPUT/INPUT Buttons**

Press buttons OUTPUT n + INPUT m+ ENTER by sequence, switch input n to output m

- **Lock Button**

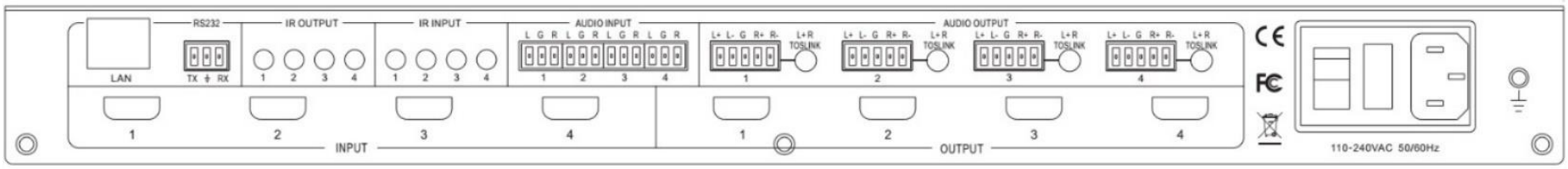
Press button more than 2 seconds and less than 6 seconds, to lock or un-lock front buttons. When locked, the Lock LED will be on.
Press button LOCK more than 6 seconds enter into the input output lock menu, then press INPUT Or OUTPUT button to toggle the input or output lock status, then press ENTER to confirm, Press CLEAR to exit.

- **MENU Buttons**

Press buttons ALL + INPUT m + ENTER by sequence, to switch input m to all the outputs
Press buttons SAVE + OUTPUT n to save current matrix/video wall layout as layout n. it can save up to 8 layouts
Press buttons RECALL + OUTPUT n to recall layout n
Press buttons RES + OUTPUT n + NEXT + ENTER, to change output resolution on OUTPUT n
Resolution choices: 3840x2160@60, 3840x2160@50, 3840x2160@30, 3840x2160@25, 1920x1200@60,1920x1080@60, 1920x1080@50, 1600x1200@60, 1400x1050@60, 1366x768@60,1360x768@60,1280x1024@60, 1280x768@60,1280x720@60, 1280x720@50, 1024x768@60
Press buttons EDID + INPUT m + NEXT + ENTER, change the EDID mode of port INPUT m
EDID option: Manual, 3840x2160@60, 3840x2160@30, 1920x1200@60,1920x1080@60, 1280x1024@60, 1280x720@60, 1024x768@60
Manual EDID is loaded using G44H software

Note: all these functions are also available using G44H software.

2.2. Rear Panel



- **LAN(10M/100M/1000M) and RS232 Ports**
- **IR IN and IR OUT**

IR IN/OUT routing follows video matrix routing

- **Audio Input**

4 x 3-way Phoenix connectors to input external analog LR audio, user can select this audio to replace the corresponding embedded HDMI audio

- **Audio Output**

4 x 5-way Phoenix connectors to output balanced LR audio, and 4 mini Toslink jackets to output analog LR audio and digital Spdif audio.
The 4 Audio output (LR and Toslink) channels can be independent from video and switched by G44H software or 3rd party controller using command lines

- **HDMI Inputs**

4 x HDMI 2.0 inputs with embeded audio

- **HDMI Outputs**

4 x HDMI 2.0 outputs with embeded audio

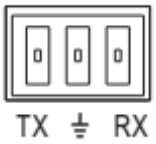
- **Power Supply Socket**

110 ~ 240 VAC

3. Connection Setup

3.1. RS232 wiring

RS-232 control, baud rate 9600, 3-Pin Phoenix connector



TX Pin, G44 HDMI--->PC

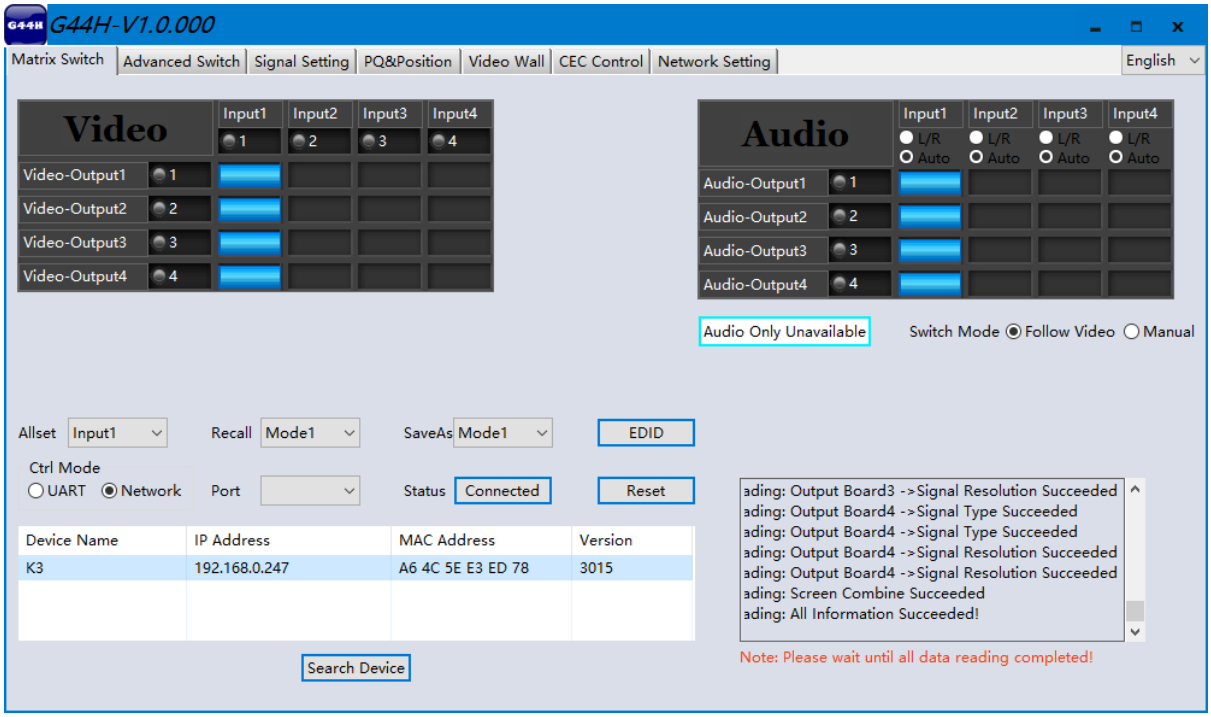
RX Pin, G44 HDMI<---PC

3.2. RS232 and Ethernet Connection

Connect the G44 HDMI unit with the control PC using either CAT cable or wired serial cable.

4. G44H Software User Guide

Users can run the G44H.exe software directly without installation. Software is on the disk in the package or you can download it from the SEADA website. Double click the G44H software to get the UI as below:



There are **7** main tabs in this software to help users set up and control the G44 HDMI video wall controller.

4.1. Matrix Switch

Users can connect the G44 HDMI device to control PC and set up the device as matrix switcher in this section.

4.1.1. Connect to the G44 HDMI via UART for RS232

Connect the G44 HDMI to the control PC with a serial cable (a RS232 to USB cable is included in the package)

If the software was connected via UART (RS232) last time, software will connect to the G44 HDMI automatically via RS232. If it was used at Network last time, a 'Network Timeout' error message will be shown on screen and users need to set up as below for RS232 connection in the software

- • Choose '**UART**' instead of '**Network**'
- • Select the **COM port** from the **Port** dropdown menu
- • Press **'Disconnected'** button to connect

The software will check all the parts of the device. A 'Read data succeeded' dialog box will be shown on screen when finished.

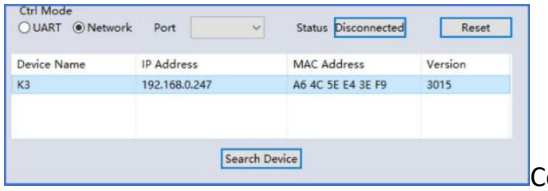
4.1.2. Connect to the G44 HDMI via Network

The default IP address for G44 HDMI controller is **192.168.0.247**, Users need to change the IP address of the control PC to the same network segment as the G44 HDMI.

• Change the **'Obtain an IP address automatically'** to **'Use the following IP address'** to set up a **static** IP address of **TCP/IPv4** in **Ethernet Properties**

➢IP address: any address between **192.168.0.2** and **192.168.0.254** except the address which has been taken by the G44 HDMI

➢Subnet mask: **255.255.255.0,** Default Gateway: **192.168.0.1**



Connect the G44 HDMI with a CAT cable to the control PC (cable included in the package)

If the software was connected via Network last time, software will connect to the G44 HDMI automatically via network. If it was used at serial port last time, a 'Please select COM port' error message will be shown on screen and users need to set up as below for Network connection in the software

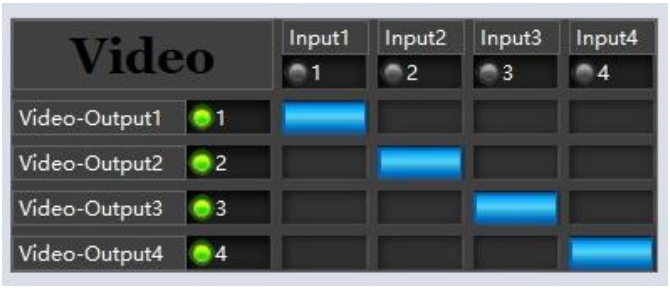
• Choose **'Network'** instead of **'UART'**

• Press **'Search Device'** button to find the G44 HDMI on the network

• Highlight the device Press **'Disconnected'** button to connect

4.1.3. Matrix Switch Routing

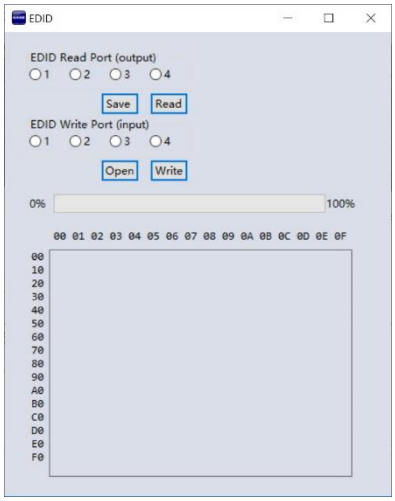
Users can switch and assign different inputs to the selected outputs in the matrix. The name of the input/output can also be changed by selecting the default name – Input1/Video-Output1 and replacing it with the chosen name.



Users need to disable the video wall mode (Cancel the splicing) to enable the matrix switcher mode

4.1.4. Allset, Recall, Save As and Reset

- The **Allset** dropdown menu helps the users select a single input to be displayed on all of the screens (i.e. Allset Input 4 would display Input 4 on Output 1, Output 2, Output 3 and Output 4)
- **Recall** Mode: Recall a preset layout. The device supports maximum 8 scenes.
- **SaveAs** Mode: Save up to 8 preset layouts
- **Reset**: Reset the unit to default factory configuration.
- **EDID**:



- ✓ **Read:** read the EDID of the selected output
- ✓ **Save:** save the displayed EDID after 'Read'
- ✓ **Open:** open an EDID from previous saved EDID
- ✓ **Write:** write the current displayed EDID onto selected input to customized input EDID

4.1.5. Audio Matrix

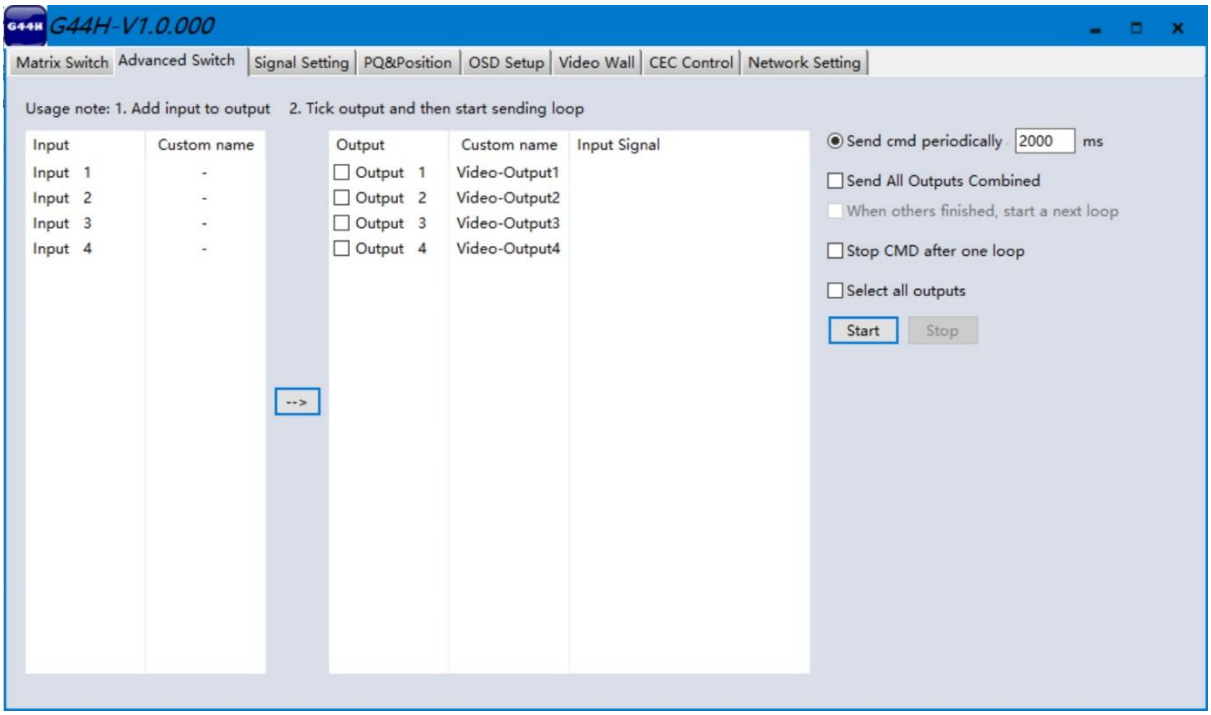
- **Follow Video Mode –** The LR and Toslink audio outputs will follow the video output embedded audio. Meaning that analog audio output 1 will have the same audio as HDMI output 1, analog audio output 2 will have the same audio as HDMI output 2 etc.
- **Manual Mode –** This allows the user to control the audio source separately from the HDMI output ports. The analog audio output can be from any analog audio input port or any embedded audio of HDMI input.
- **L/R**

HDMI output embedded audio will get the audio from the corresponding analog audio of the HDMI input to be displayed on the output channel

- **Auto**

HDMI output embedded audio will get the audio from the embedded audio of the HDMI input to be displayed on the output channel. If the input source is DVI, the output system will get the audio from the input analog audio

4.2. Advanced Switch



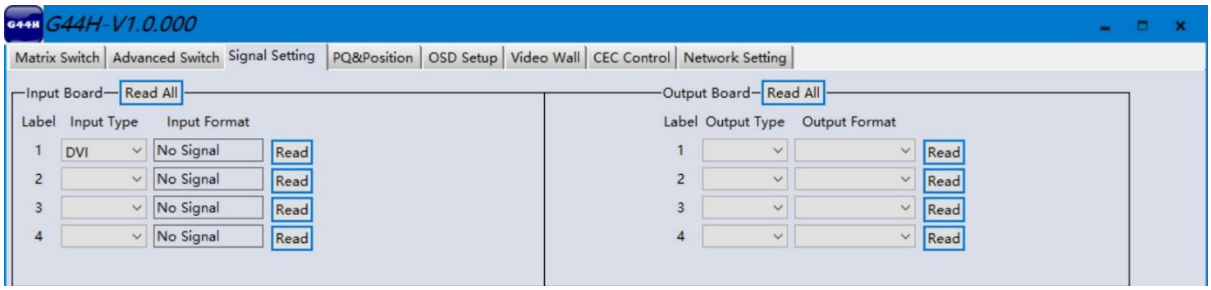
The **Advanced Switch** tab will repeatedly send a batch of matrix selection commands at the interval time specified in 'Send cmd Periodically'

1. Select one or more outputs.
2. Select one input.
3. Use the arrow button (-->) to assign that input to the selected output or outputs.
4. When all required selections have been set up, click the Start button to run the commands.

The available options are:

- **All outputs send combined** – Include all outputs that have the content from the same input as a single command.
- **When others finished, start a next loop** – Wait for all commands in the previous to finish before sending the next batch of commands.
- **Stop cmd after one loop** – Only send the commands once, no looping.
- **Select all outputs** – Selects all outputs when checked. Unselects all outputs when unchecked.
- **Start** – Begin the command cycles.
- **Stop** – Stop the command cycles.

4.3. Signal setting



Signal Settings tab, users can use the **'Read All'** function button to recognize the type and resolution automatically. Additionally, you can also manually read one Input/output at a time – pressing the **Read** button next to the selected input will only read that input alone.

I. **Input Type** Shows the input video sources type (HDMI or DVI)

II. **Input Format** Shows the resolution of the input video sources

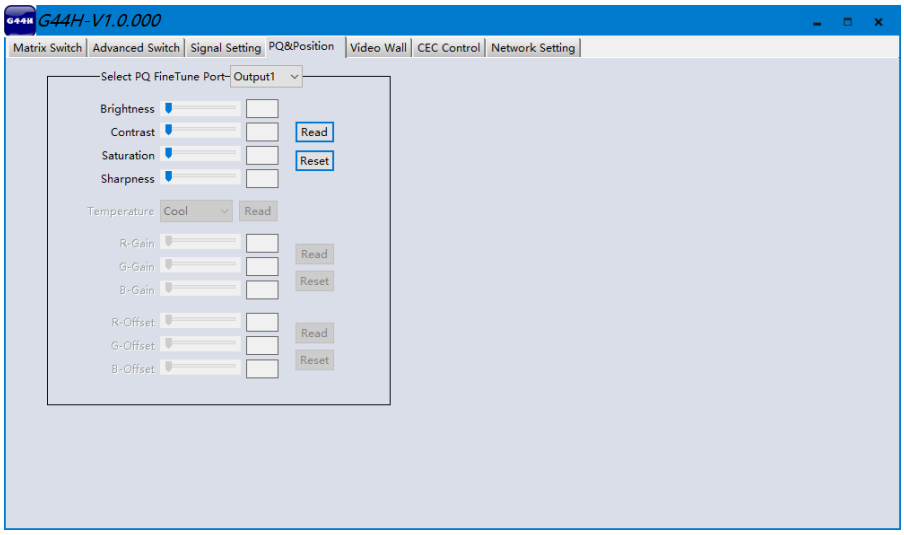
III. **Output Type**

- **UHD-HDMI** Set the respective output signal to HDMI without HDCP.
- **UHD-DVI** Set the respective output signal to DVI, with no audio output
- **UHD-HDMI 1.4** Set the respective output signal to HDMI with HDCP 1.4 compliance.
- **UHD-HDMI 2.2** Set the respective output signal to HDMI with HDCP 2.2 compliance.

IV. **Output Format**

Users can manually change the output resolution here to match the requirement of the receiving side (the default setting is 1920 x 1080@60, there are total 16 preset resolutions to choose from)

4.4. PQ & Position



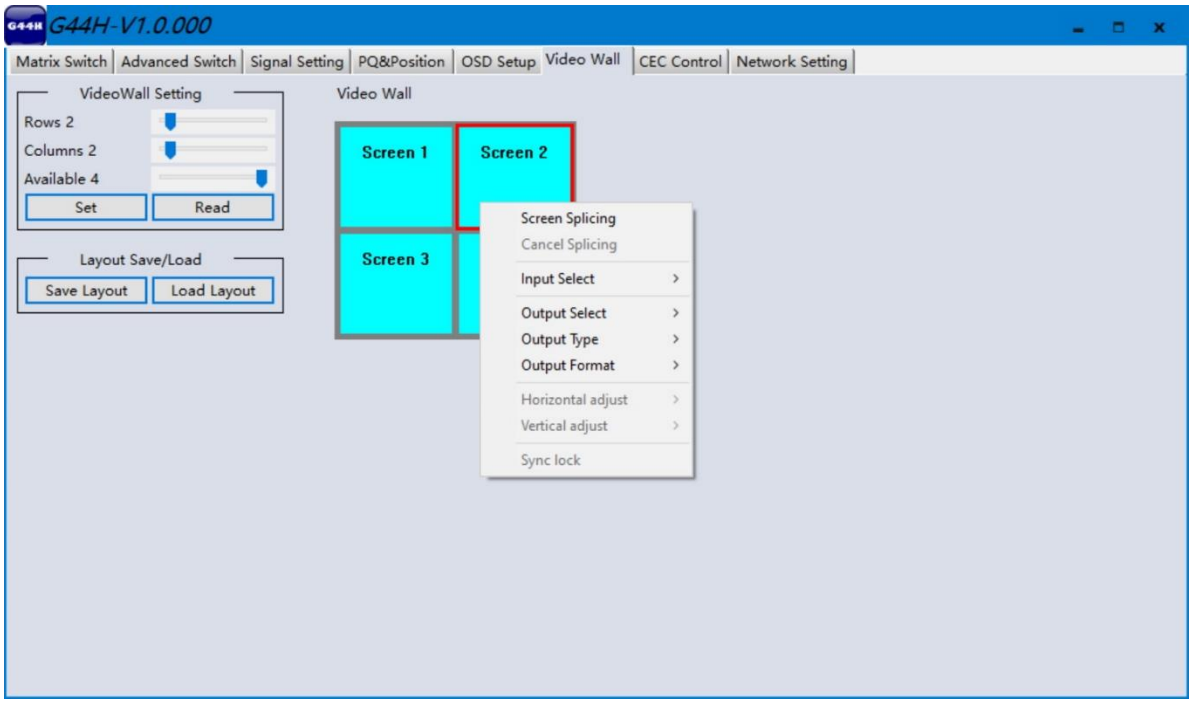
4.4.1. PQ Control

This section allows the user to fine-tune the settings of their screen from the G44H software.

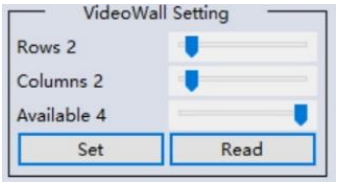
The dropdown menu at the top of the section allows the user to select which screen to apply the settings to.

The read option reads the settings of the monitor/screen that are already in place and adjusts the values in the software, while the reset button will reset the settings to their default after they have been manually adjusted.

4.5. Video Wall

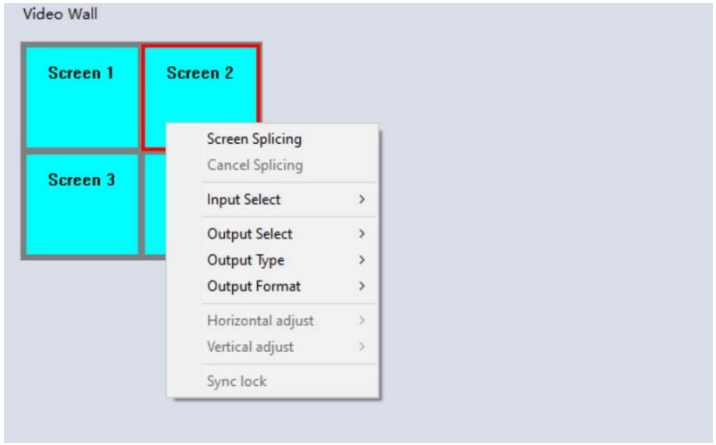


4.5.1. Video Wall Layout Setup



Users can set up the layout of the video wall in 'VideoWall Setting' by simply choosing how many rows and columns the video wall consists of. Total screens amount is up to 4 for G44 HDMI video wall controllers.

4.5.2. Creating the video wall

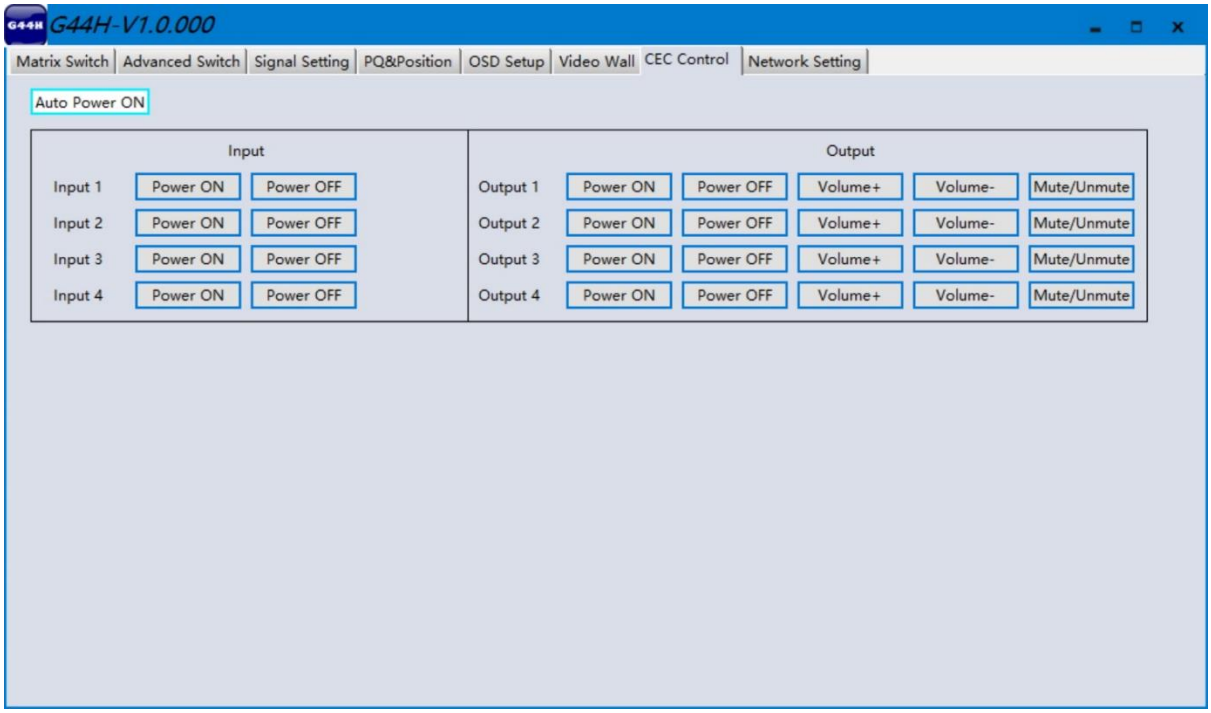


Click to select the screen, then drag & select the screens to splice, right-click, and click Screen splicing to form a video wall.

- **Screen Splicing** - This combines the selected screens into one and displays the selected input across all the splicing screens. For example, in the setup below 2x2, if all of them are spliced, then the input selected by the user will be displayed across all the 4 screens (Note: this is not the same as duplicating a single input on each output).
- **Cancel Splicing –** This will cancel the video wall and revert to the matrix switching mode.
- **Input Select –** Similarly to the video routing matrix, this allows the user to control which output is displayed on which screen (Note: Selecting an input on any of the screens when spliced will display it on the spliced screen and not on the individual screen).
- **Output Select –** The user can control which screen should be mapped to which output.
- **Output Type –** Allows the user to adjust the type of the output – HDMI or DVI.
- **Output Format –** Controls the resolution of the output.
- **Horizontal adjust –** Lets the user adjust the horizontal position of the screen.
- **Vertical adjust –** Lets the user adjust the vertical position of the screen.

The user can save the video wall preset layouts and load it later via the Save Layout and Load Layout dropdown menu.

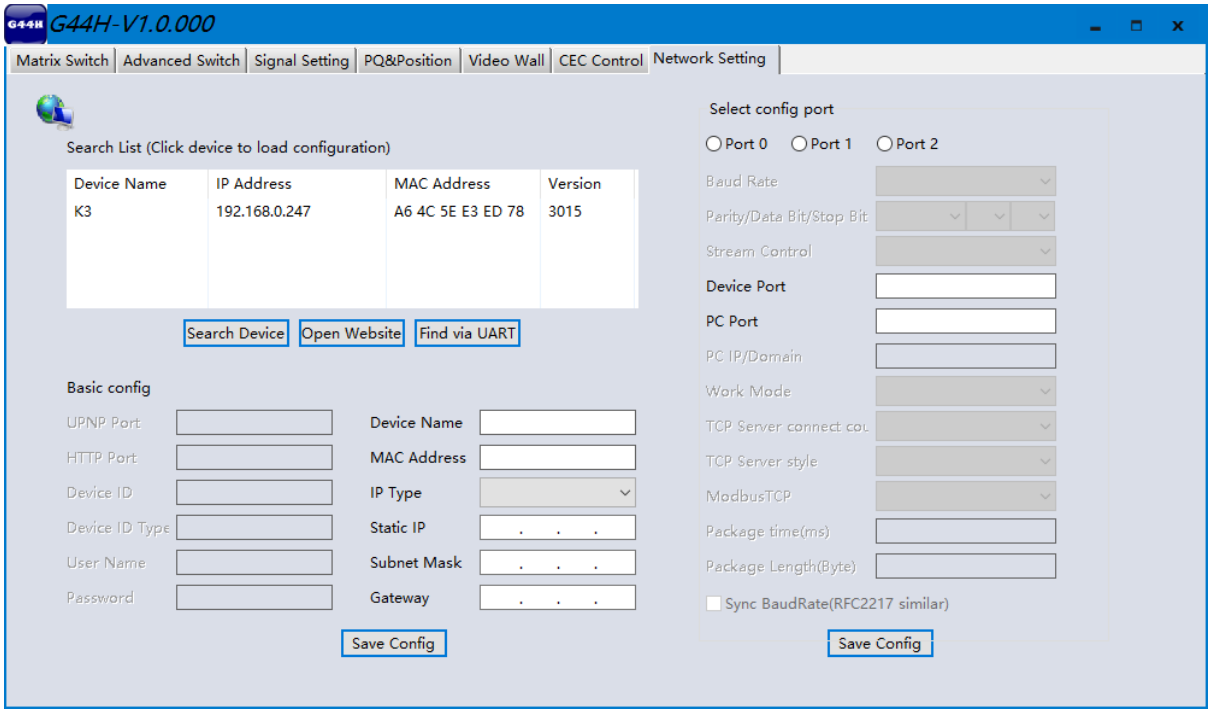
4.6. CEC Control



When **Auto Power On** is enabled, once G44 HDMI is powered up, all the video source devices and displayers, which support CEC, connecting to G44 HDMI unit will be switched on.

G44 HDMI version CEC function include Power on/off, Volume+/- Mute/Unmute

4.7. Network Setting



Users can find all the device network information in this section and do the modification if needed.

5. Remote Control

- **Output/Input Buttons**

Press buttons Input **x** under the Output (A/B/C/D) section, switch input x to output y

- **Arrow Buttons**

Cycles through the inputs on your selected output (A/B/C/D)

6. Command Lines

6.1. Matrix Video Routing

Operation type (3 byte)	Spacer (1 byte)	Target (N bytes)	Spacer (1 byte)	Command type (10 bytes)	Command parameters (N bytes)	Command tail (1 byte)
SET	Space	INx/INxx/INxxx x is the input port number For example, IN1/IN01/IN001	Space	VIDEO	OUTa *[OUTb OUTc …]* or ALL	↵ This is ASCII carriage return 0x0d

A. Set video route: Input port-x/xx/xxx switch to output port-a/b/c…, or all output ports

For example: SET video route: Input port 1 switch to output port 1

Send: SET IN1 VIDEO OUT1↵ **Receive:** IN1 VIDEO OUT1

For example: SET video route: Input port 1 switch to output port 1,2,3

Send: SET IN1 VIDEO OUT1 OUT2 OUT3↵ **Receive:** IN1 VIDEO OUT1 OUT2 OUT3

For example: SET video route: Input port 1 switch to all output ports

Send: SET IN1 VIDEO ALL↵ **Receive:** IN1 VIDEO ALL

6.2. Matrix Audio Routing

Operation type (3 byte)	Spacer (1 byte)	Target (N bytes)	Spacer (1 byte)	Command type (10 bytes)	Command parameters (0 or 1/2/3 bytes)	Command tail (1 byte)
GET/SET	Space	INx/INxx/INxxx x is the input port number For example, IN1/IN01/IN001	Space	AUDIO-ROUTE	OUTx/OUTxx/OUTxxx	↵ This is ASCII carriage return 0x0d

Send: GET IN1 AUDIO-ROUTE↵ **Receive:** IN1 AUDIO-ROUTE OUT1

Send: SET IN1 AUDIO-ROUTE OUT2 **Receive:** IN1 AUDIO-ROUTE OUT2

6.3. Recall/Save Layout

Operation type (3 byte)	Spacer (1 byte)	Target (N bytes)	Spacer (1 byte)	Command type (10 bytes)	Command parameters (1/2/3 bytes)	Command tail (1 byte)
SET/GET	Space	SYS	Space	ROUTE-MODE	x/xx/xxx x is the mode value	↵ This is ASCII carriage return 0x0d

A. GET (Recall) the route mode saved before:
For example, GET (Recall) the route mode 1
Send: GET SYS ROUTE-MODE 1↵ **Receive:** SYS ROUTE-MODE 1

B. SET (Save) current route to a mode:
For example: SET (Save) current route to mode 1
Send: SET SYS ROUTE-MODE 1↵ **Receive:** SYS ROUTE-MODE 1

6.4. Set Video Wall:

Operation type (3 byte)	Spacer (1 byte)	Target (N bytes)	Spacer (1 byte)	Command type (10 bytes)	Command parameters (N bytes)	Command tail (1 byte)
SET	Space	OUTx/OUTxx/OUTxxx x is the output port number For example, OUT1/OUT01/OUT001	Space	TVWALL	Line: Column: P: Q: Margin-Left: Margin-Right: Margin-Top: Margin-Bottom: Input:	↵ This is ASCII carriage return 0x0d

A. SET Video Wall mode of one output port
Picture-1 Screen 6/7/10/11, and the source input is input 1

For example:

Send: SET OUT6TVWALL 2 2 1 1 0 20 0 20 1↵ **Receive:** OUT6 TVWALL 2 2 1 1 0 20 0 20 1

Send: SET OUT7TVWALL 2 2 1 2 20 0 0 20 1↵ **Receive:** OUT7 TVWALL 2 2 1 2 20 0 0 20 1

Send: SET OUT10 TVWALL 2 2 2 1 0 20 20 0 1↵ **Receive:** OUT10 TVWALL 2 2 2 1 0 20 20 0 1

Send: SET OUT11 TVWALL 2 2 2 2 20 0 20 0 1↵ **Receive:** OUT11 TVWALL 2 2 2 2 20 0 20 0 1

Sending these four commands will create a 2x2 splice

B. How to Exit Video Wall mode:

e.g. Exit Video Wall combination of output port 6,7,10,11

Send: SET OUT6TVWALL 1 1 1 1 0 20 0 20 1↵ **Receive:** OUT6 TVWALL 1 1 1 1 0 20 0 20 1

Send: SET OUT7TVWALL 1 1 1 1 0 20 0 20 1↵ **Receive:** OUT7 TVWALL 1 1 1 1 0 20 0 20 1

Send: SET OUT10TVWALL 1 1 1 1 0 20 0 20 1↵ **Receive:** OUT10 TVWALL 1 1 1 1 0 20 0 20 1

Send: SET OUT11TVWALL 1 1 1 1 0 20 0 20 1↵ **Receive:** OUT11 TVWALL 1 1 1 1 0 20 0 20 1

6.5. Video Wall Mode Save/Recall:

Operation type (3 byte)	Spacer (1 byte)	Target (N bytes)	Spacer (1 byte)	Command type (10 bytes)	Command parameters (1/2/3 bytes)	Command tail (1 byte)
SET/GET	Space	SYS	Space	TVWALL-MODE	x/xx/xxx x is the mode value	↵ This is ASCII carriage return 0x0d

GET (Recall) the route mode saved before:
For example, GET (Recall) the route mode 1
Send: GET SYS TVWALL-MODE 1↵ **Receive:** SYS TVWALL-MODE 1
SET (Save) current route to a mode:
For example, SET (Save) current route to mode 1
Send: SET SYS TVWALL-MODE 1 ↵ **Receive:** SYS TVWALL-MODE 1

6.6. Source Power On/Off

Operation type (3 byte)	Spacer (1 byte)	Target (N bytes)	Spacer (1 byte)	Command type (10 bytes)	Command parameters (N bytes)	Command tail (1 byte)
SET	Space	INx/INxx/INxxx	Space	POWER	ON/OFF	↵ This is ASCII carriage return 0x0d

For example:
Send: SET IN1 POWER ON↵ **Receive:** IN1 POWER ON

6.7. Sink Power on/Off

Operation type (3 byte)	Spacer (1 byte)	Target (N bytes)	Spacer (1 byte)	Command type (10 bytes)	Command parameters (N bytes)	Command tail (1 byte)
SET	Space	OUTx/OUTxx /OUTxxx	Space	POWER	ON/OFF	↵ This is ASCII carriage return 0x0d

For example:
Send: SET OUT1 POWER ON↵ **Receive:** OUT1 POWER ON

7. Troubleshooting

7.1. No Connection

7.1.1. Ensure the G44 HDMI is powered up

7.1.2. Ensure the PC and G44 HDMI at the same IP group

7.1.3. Ensure the IP address is correct for G44 HDMI

7.1.4. IP address of each device will be shown on screen when no video input is applied.

7.2. No Output

7.2.1. Ensure the video source is on

7.2.2. Ensure the video source device sends the signal out (G44 HDMI INPUT statue LED light will be on if input video signal presents)

7.3. Black screen

7.3.1. Ensure the G44 HDMI and screens are powered up

7.3.2. Ensure the connection to screens are OK

7.3.3. Ensure the screens on correct channel (DVI or HDMI)

7.3.4. Ensure that the inputs are assigned correctly (i.e. Input 1 on Output 1, Input 2 on Output 2 etc.

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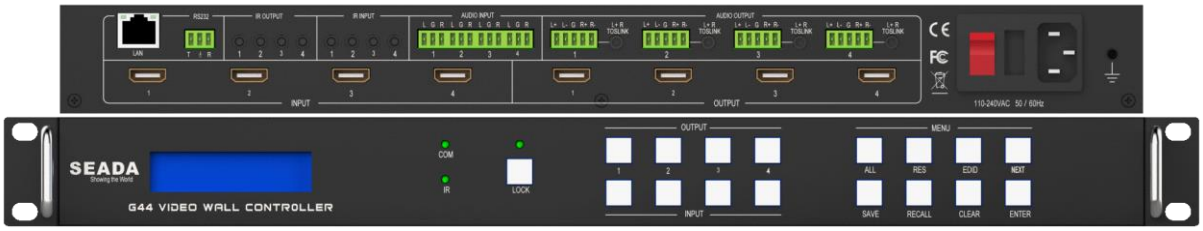

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