



# 4x4 HDMI Matrix 4K with LCD

## User's Guide



P/N:Matrix44HD2-LCD

Thank you for purchasing from gofanco. Our products aim to meet all your connectivity needs wherever you go. For optimum performance and safety, please read the instructions carefully and keep this User's Guide for future reference. If you need more information about our products, please visit [www.gofanco.com](http://www.gofanco.com). For technical support, email us at [support@gofanco.com](mailto:support@gofanco.com). For drivers or manual download, please go to [www.gofanco.com/downloads](http://www.gofanco.com/downloads).

## **Important Safety Notices**

Please read safety instructions carefully before installation and operation.

- Please pay close attention to all warnings and hints for this device
- Do not expose this unit to rain, heavy moisture, or liquid
- Do not put any items into the device or attempt to modify its operation
- Do not repair the device or open the enclosure without professional guidance to avoid electric shocks. Doing so may void your warranty
- Keep the product in a well-ventilated location to avoid damage from overheating
- Shut off power and make sure environment is safe before installation
- Do not plug the HDMI cables and IR cables in/out when the device is in use to avoid cable damage. Make sure they are plugged into the correct ports
- Use the included 12VDC power adapter only. Make sure the specification matches if using 3rd-party DC power adapters

## **Introduction**

The 4x4 HDMI Matrix 4K-LCD allows you to select and switch between any of the 4 HDMI source devices to display on any of the 4 HDMI outputs.

## **Features**

- Connect up to four HDMI source devices and independently distribute any source to any of the four HDMI displays
- Supports up to 4K@60Hz YUV 4:4:4 8-bit, HDR, HLG, Dolby Vision, HDCP 2.2, 18Gbps bandwidth
- Supports audio extraction to S/PDIF RCA and Analog
- Supports PCM2.0, Dolby TrueHD, DTS-HD Master, LPCM 7.1, audio sampling rate up to 192 KHz
- Control methods: Panel buttons, IR remote, RS232, and Web GUI
- EDID management: Presets and EDID learning
- Firmware upgradable for expanded capability and compatibility

## **Installation Requirements**

- HDMI source devices
- HDMI displays
- HDMI cables (not included)

## **Package Contents**

- 4x4 HDMI Matrix 4K
- IR remote control
- IR Receiver cable
- Software CD
- Phoenix plugs (5pcs)
- Power adapter (12VDC /2A)
- User's guide



## Product Layout

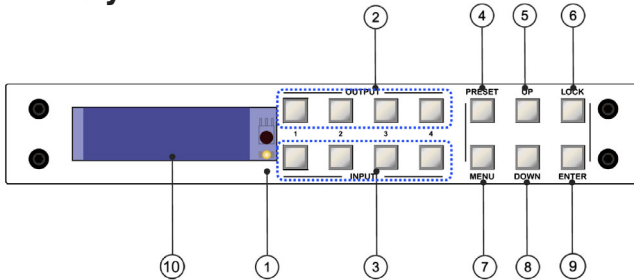
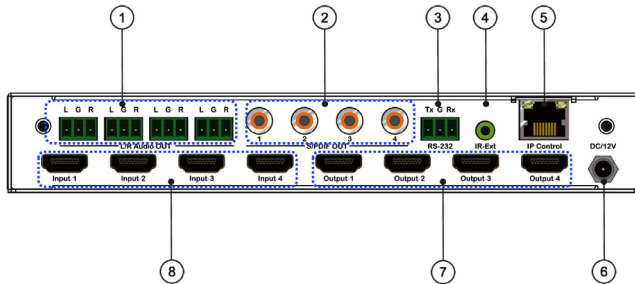


Figure 1: Front Panel Layout

1. **IR receiver window:** Receives IR signal from the remote control
2. **Output selection buttons (1-4):** Press to select an output port
3. **Input selection buttons (1-4):** Press to select an input source
4. **Preset:** Press to add/select a preset configuration
5. **Up:** Press to select the next menu item
6. **Lock:** Long press to lock/unlock the Matrix
7. **Menu:** Press to activate the LCD's the main menu interface, press again to return to previous screen. **Note:** When entering the main menu, press a button within 30 seconds, otherwise the LCD screen will return to the previous display and turn off within 60 seconds
8. **Down:** Press to select the previous menu item
9. **Enter:** Press to confirm
10. **LCD screen:** Press Menu button (see #7) to view the main menu options



**Figure 2: Rear Panel Layout**

1. **Analog Out (1-4):** Connect to your speakers or headphones
2. **S/PDIF Out (1-4):** Connect to your S/PDIF audio device
3. **RS232:** Connect to your control PC
4. **IR In:** Connect to the IR receiver cable. This is required only if the front panel IR receiver window is blocked
5. **RJ45:** Connect to your network router or switch
6. **Power Jack:** Connect to the included power adapter
7. **HDMI Out (1-4):** Connect to your HDMI displays
8. **HDMI In (1-4):** Connect to your HDMI source devices

## Hardware Installation

1. Power off all devices including your HDMI source(s) and HDMI display(s).
2. Connect your HDMI source devices to the Matrix 4K's HDMI Input connectors with HDMI cables (HDMI cables not included).
3. Connect your HDMI displays to the Matrix 4K's HDMI Output connectors with HDMI cables (HDMI cables not included).
4. Optional: Connect the included IR Receiver cable to the IR interface port. This connection is needed only if the front panel IR receiver window is blocked.
5. Optional: Connect an AVR amplifier or speakers to the S/PDIF output ports.
6. Optional: Connect the Matrix 4K's RS232 socket and your PC's serial port or a CAT cable between the Matrix 4K's RJ45 port and router or PC's ethernet port. This connection is needed only if matrix device control using a PC is required.
7. Plug the included power adapter into the Matrix 4K's Power Jack, then plug the power adapter into a reliable power outlet.
8. Power on all connected devices. The Matrix 4K is ready for use.

# Application Diagram

The application diagram shows the most typical input and output devices used with the 4x4 HDMI Matrix 4K.

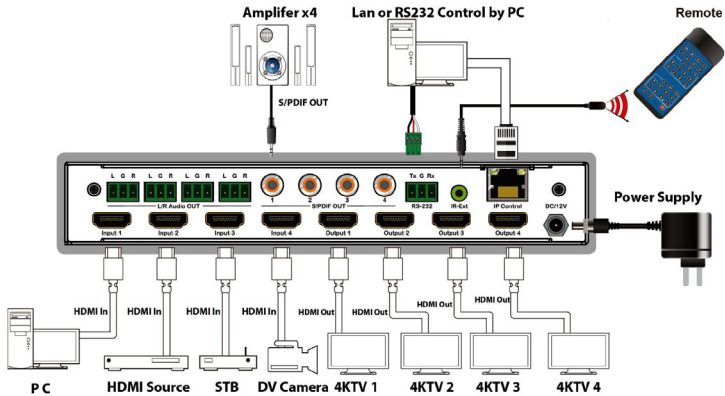


Figure 3: Application Diagram

## Matrix Device Control

### Input Selection and Output Selection Buttons

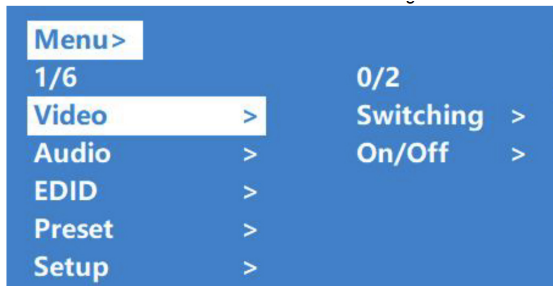
Use the Input selection buttons (see #3 on page 5) and Output selections (see #2 on page 5) to select and switch between any of the 4 source devices to display on any of the 4 displays.

- **Select an input source to display on an output port:** Example: To select Input 1 source to display on Output 1 port - Press Output 1 button (see #2 on page 5), then press Input 1 button (see #3 on page 5).
- **Select an input source to display on multiple output ports:** Example: Select Input 2 source to display on Output ports 1, 2, and 3 - Press Output 1, 2, and 3 buttons (see #2 on page 5), then press Input 2 button (see #3 on page 5)
- **Select an input source to display on all output ports:** Example: Select Input 4 source to display on all Outputs - Long press Output 4 button (see #2 on page 5), then long press Input 4 button (see #3 on page 5)

### Menu

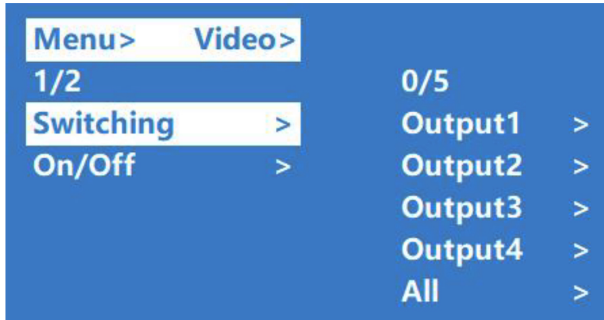
#### Video

Allows you to control various aspects of your display device and source device.

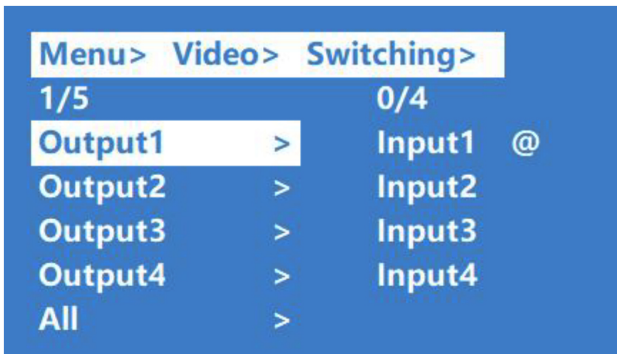


## Video Switching

To select Input 1 source to display on Output 1 port - Press the Menu button (see #7 on page 5) select Video, then press Enter button (see #9 on page 5). Press the Up button (see #5 on page 5) or Down button (see #8 on page 5) to choose Switching.



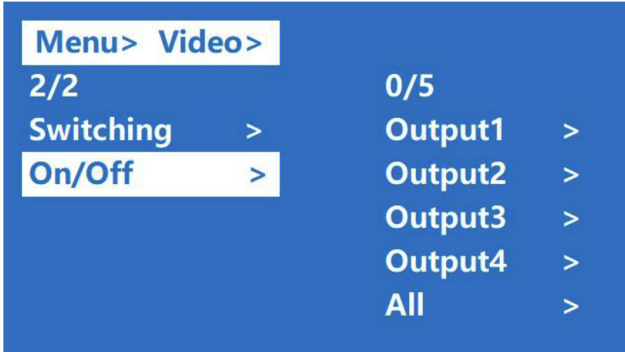
Press Enter button to select the next submenu, press the Up button or Down button to select Output 1.



Press Enter button to select the next submenu, press the Up button or Down button to select Input 1, then press Enter button to complete the video switching.

## On/Off

To turn off Output 1 port - Press the Menu button (see #7 on page 5) select Video, then press Enter button (see #9 on page 5). Press the Up button (see #5 on page 5) or Down button (see #8 on page 5) to choose On/Off.



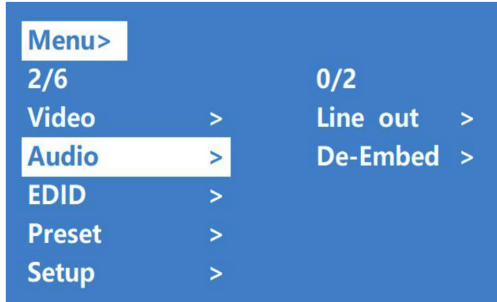
Press Enter button to select the next submenu, then the Up button or Down button to select Output 1.



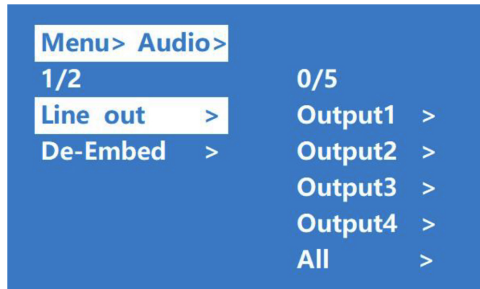
Press Enter button to select the next submenu, then the Up button or Down button to select On or Off, then press Enter button to confirm the changes.

## Audio

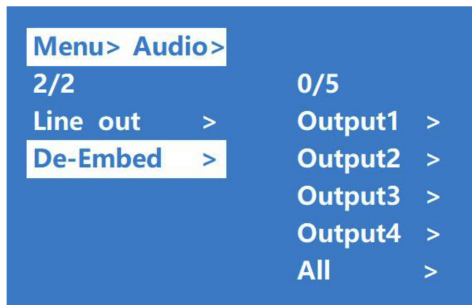
There are two sub-menus, Line Out and De-Embed, both are set to open by default.



Line out allows you to switch and mute the sound.



De-Embed allows you to set the output audio





# EDID

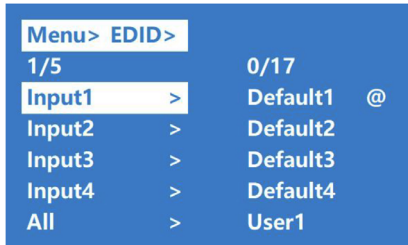
There are four EDID modes, the Matrix is set to **Default1**.

Default1	4K60 444-LPCM: 2.0, HDR:HLG	Default2	4K60 420-LPCM: 2.0, HDR:None
Default3	4K30 444-LPCM: 2.0, HDR:None	Default4	1080P60 444-LPCM: 2.0, HDR:None

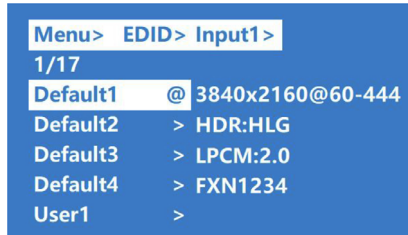
Example: Set Default1 to Input1- Select EDID from the main Menu, then press Enter button.



Press Up button or Down button to select Input 1, then press Enter button.

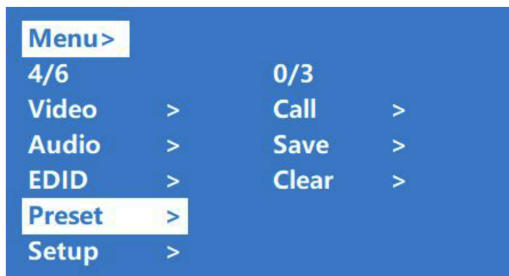


Press Up button or Down button to select Default 1, then press Enter button to save the changes.



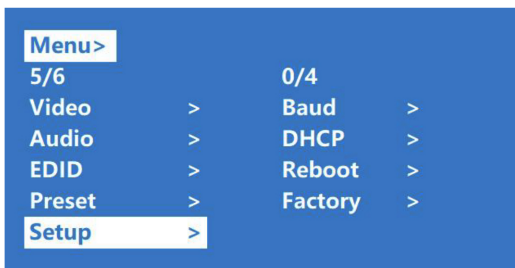
## Presets

Allows you to save, select, or delete video, audio, EDID system configurations. Supports up to 8 different presets.



## Setup Interface

Allows you to set Baud rate, DHCP, reboot, and restore factory settings.



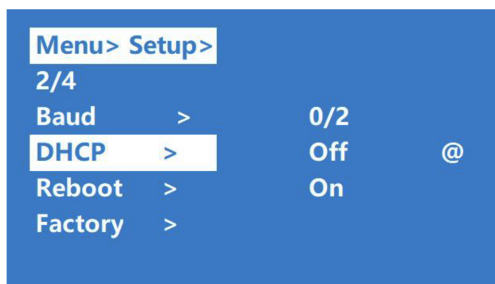
### Baud Rate

Default setting: 115200



### DHCP

Default setting: Off



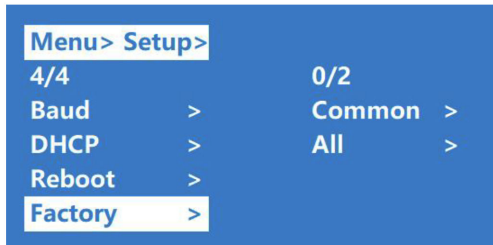
## Reboot

Default setting: No



## Factory Reset

Default setting: No



Common: Resets Video, Audio, EDID, Setup



All: Resets video, audio, EDID, Setup, Preset, Name



## System Information

Displays system and IP information.



## System

Displays company name, device name, and version.



## IP

Displays IP address, Mac address, and DHCP status.



The image shows a screenshot of a network configuration menu. The background is blue. At the top left, there is a white box containing the text "Menu>INFO.>". Below this, the text "2/2" is displayed. The main content is a table with two columns: "System" and "DHCP Off". The "System" column has a white box containing the text "IP". The "DHCP Off" column contains the text "DHCP Off". The table lists the following information:

System	DHCP Off
IP	192 . 168 . 1 . 168
	MASK 252 . 255 . 255 . 0
	WG 192 . 168 . 1 . 1
	MAC 0008-DC40-7454

## Remote Control

Users can control the 4x4 HDMI Matrix 4K using the included IR remote. Point the remote control towards the built-in IR receiver window located on the front panel. An optional IR receiver cable is included to improve IR function in space constrained installations.

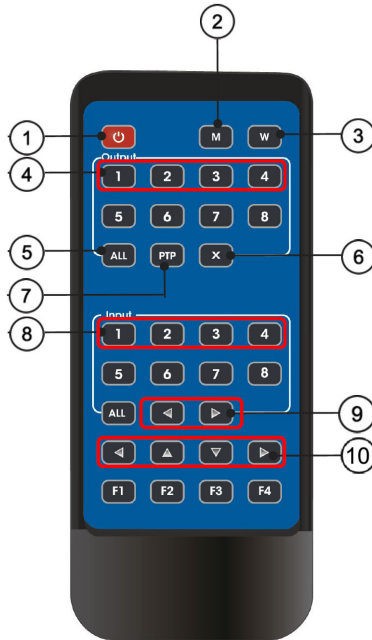


Figure 4: Remote Control

1. **Standby:** Press to place the Matrix in standby mode. Press again to wake up the Matrix
2. **Mute:** Turns audio On/Off. Choose the output first, then press **M**. Example: To mute output 1 - press **Output 1** button (see #4), then press **M**

3. **Lock:** Press to lock the remote control. Press again to unlock the remote control
4. **Outputselect (1-4):** Selects an input source to display on an output port. Example: To select Input 1 source to display on Output 1 port - Press Output 1 button (see #4), then press Input 1 button (see #8)
5. **All:** Selects one input device to display on all outputs. Example: To select Input 2 source to display on all outputs- Press All button (see #5), then press Input 2 (see #8)
6. **X:** Turns off an output port. Example: To turn off display on Output 1 - Press Output 1 button (see #4), then press X (see #6). To turn on the display, press Output 1 + X again
7. **PTP:** Press to assign all inputs and outputs to their numeric counterparts. Example: Input 1 to Output 1, Input 2 to Output 2, Input 3 to Output 3, Input 4 to Output 4
8. **Input select (1-4):** Press to select Input 1/2/3/4
9. **Next/Last:** Switch to the next or previous input device. Example 1: To switch Output 1 to the next input device - Press Output 1 button (see #4), then press >. Example 2: To switch Output 1 to the previous input device - Press Output 1 button (see #4), then press <. Note: if the next input device is inactive it will automatically skip to the next active input device
10. **Left/Right/Up/Down:** Menu control buttons. Navigate the menu options



# RS232 Control

Connect the 4x4 HDMI Matrix 4K to a PC using an RS232 cable.

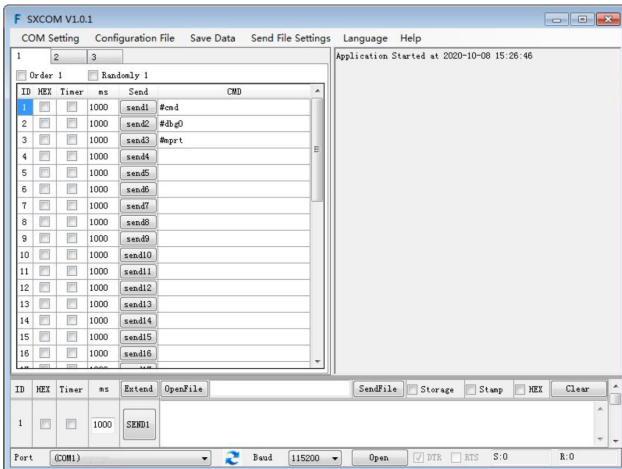
## COM Port Setting

Baud Rate:	115200 bps
Parity:	None
Data Bits:	8 bit
Stop Bits:	1 bit

## Software Control

Open the software on the included software CD and the control window appears as shown below.

In COM Setting, select the PC's COM port and click Connect.



## RS232 Command List

- All commands start with "#".
- Do not omit the "\_".
- Add a space to Command head, Parameter and target

Substitution character	Instruction	Value
[in-ch]	input channel qnty	4
[in-mx]	input matrix switch channel qnty	4
[out-ch]	Output channel qnty including HDMI,HDBT	4
[out-mx]	input matrix switch channel qnty	4
[HDBT]	HDBT qnty	0
[preset]	preset qnty	8
[EDID-user]	EDID qnty which can be user-defined	4

Type	format	value	Rule
Command head	#cmd	Without	
Instruction	to query command: when receive this command, will feedback all open command format field		
Example1	#cmd query all open command		
Type	format	value	Rule
Command head	#video_%c	d: data	
		l: lock	
		s: save	
Target1	out%9,d	0: all output 1:[out-ch]:specified output	only Parameter1/2
Parameter1	matrix=%d	1~[in-mx]:input channel	when command head value d
		0:unlock	when command head value l
		1:lock	when command head value l
		0: power off reset 1:power off save	when command head value s
Parameter2	onoff=%d	0: turn off channel 1: open channel	when command head value d
		0:unlock	when command head value l
		1:lock	when command head value l
		0: power off reset 1:power off save	when command head value s
Instruction	Video operation: switch output , open/turn off output channel , lock/unlock and save/unsave for above function		
Example1	#video_d out2 matrix=1 output 2 switch to input 1		
Example2	#video_d out2,3 matrix=1 onoff=1 output2/3 switch to input1;open output2/3 channel		
Example3	#video_s out0 matrix=0 all output power off reset		

# RS232 Command List Continued

Type	format	value	Rule
Command head	#audio_%c	d: data	
		f: lock	
		s: save	
Target1	out%9,d	0:all output 1~[out-ch]:specified output	only Parameter1/2
Parameter1	hdmi=%d	0:turn off TV audio	when command head value d
		1:turn on TV audio	when command head value l
		0:unlock	when command head value l
		1:lock	when command head value l
		0: power off reset	when command head value s
Parameter2	dec=%d	0:close audio extraction	when command head value d
		1:open audio extraction	when command head value d
		0:unlock	when command head value l
		1:lock	when command head value l
		0: power off reset	when command head value s
Instruction	#audio_d out2,3 hdmi=0 dec=1	Video operation: turn on/off TV audio , open/close audio extraction, lock/unlock and save/unsave for above function	
		turn off output2/3 TV audio,open audio extraction	
Example1	#audio_s out0 hdmi=0 dec=1	all output TV audio power off reset, audio extraction power off memory	
Example2	#audio_s out0 hdmi=0 dec=1	all output TV audio power off reset, audio extraction power off memory	
Category	format	value	Rule
Command head	#edid		
Target1	in%9,d	0:all input	
		1~[[in-ch]:specified input	
Target2	user%9,d	0:all input	
		1~[EDID-user]:specified input	
Parameter1	cfg=%d/%d	0: default	
		1: user	
		2: output	
		3: input	
		4: tempe1	
Instruction	#edid in0 user1 cfg=2/2	EDID operation	
Example1	#edid in1 cfg=0/1	input1 choose default1 EDID	
Example1	#edid user2 cfg=2/1	Save output1 EDID to user2	
Example1	#edid in0 user1 cfg=2/2	All input copy output2 EDID,and output2 EDID to user1 at the same time	

## RS232 Command List Continued

Category	format	value	Rule
Command head	#power	without	
Parameter1	shut=%d	0:cancel timing shut down	
		1~x:timing shut down/s	
Parameter2	start=%d	0:cancel timing turn on	
		1~x:timing On/s	
Instruction	system power, timing shut down,timing turn on...		
Example1	#power shut=0 cancel timing shut down		
Example2	#power shut=3600 start=7200 shut down after 3600s(1hour); turn on after 7200s (2hours)		
Category	format	value	Rule
Command head	#preset:%8,d	0:all preset	
		1~[preset]:specified input	
Parameter1	exe=%d	0:call preset	
		1:save preset	
		2:clear preset	
Instruction	preset call and save		
Example1	#preset:1 exe=1 save all current state to preset0		
Example2	#preset:3 exe=0 call preset3		
Example3	#preset:0 exe=0 call preset1		
Example4	#preset:0 exe=2 clear all presets,recover to factory reset and can be called at the same time.		
Category	format	value	Rule
Command head	#factory%d	0:factory reset operation data	
		1:factory reset all data	
Instruction	factory reset operation data: reset video/audio/EDID/IP/baud,etc... factory reset all data: additional reset for preset/name/user EDID,etc		
Example1	#factory0 factory reset operation data		

## RS232 Command List Continued

Category	format	value	Rule
Command head	#ip	N/A	
Parameter1	dhcp=%d	0:DHCP on 1:DHCP off	
Parameter2	ip=%d.%d.%d.%d	0~255:IP address	type in 1
		0~255:IP address	type in 2
		0~255:IP address	type in 3
		0~255:IP address	type in 4
Parameter3	mask=%d.%d.%d.%d	0~255:mask address	type in 1
		0~255:mask address	type in 2
		0~255:mask address	type in 3
		0~255:mask address	type in 4
Parameter4	gw=%d.%d.%d.%d	0~255:gateway address	type in 1
		0~255:gateway address	type in 2
		0~255:gateway address	type in 3
		0~255:gateway address	type in 4
Parameter5	dns=%d.%d.%d.%d	0~255:DNS address	type in 1
		0~255:DNS address	type in 2
		0~255:DNS address	type in 3
		0~255:DNS address	type in 4
Parameter6	netbios=%15T	character string:netbios value	
Instruction	IP setting including:DHCP on/off, IP/MASK/GW/DNS etc., Note:device does not do IP normative testing, user Settings should meet the basic specifications when DHCP on, IP setting is unworkable, will allocated by DHCP		
Example1	#ip dhcp=1 open DHCP, Router automatically assigns IP addresses to the device		
Example2	#ip dhcp=0 ip=192.168.1.168 mask=255.255.255.0 gw=192.168.1.1 close DHCP, set static IP:192.168.1.168, subnet mask: 255.255.255.0, Gateway:192.168.1.1		
Example3	#ip netbios=WEB set Netbios as WEB, when input in webpage, should add ' / ' behind and then press enter		
Category	format	value	Rule
Command head	#name%d	0: all output 1~[out-chn]: specified input	type in 2 ( when type in value 1=1)
Parameter1	str=%15t	character string:name	
Instruction	set port name		
Example1	#name2 str=bedroom		
	set output2 port name:bedroom		
Example2	#name0 str=output		
	set all output name:output		

## RS232 Command List Continued

Category	format	value	Rule
Command head	#register%d	0:user grade	
		1:admin grade	
		2:factory grade	
Target1	id=%15t	id string:account	use together with Target2
Target2	psd=%15t	id string:password	use together with Target1
Instruction	each grade only have one account, old account will be covered when register new account only able to register an account that is not lower than the current permission level		
Example1	#register0 id=user_Tom psd=123456 register user , account:user_Tom , password:123456		
Category	format	value	Rule
Command head	#login	N/A	
Target1	id=%15t	id string:account	use together with Target2
Target2	psd=%15t	id string:password	use together with Target1
Instruction	will set authority grade according to the account grade;some function can be proceed when under higher authority grade		
Example1	#login id=user_jerry psd=123456 login, account: user_jerry, password:123456		
Category	format	value	Rule
Command head	#lcd		
Target1	contrast=%d	LCD contrast	
Target2	bl_lv=%d	LCD backlight brightness	
Target3	bl_time=%d	LCD turn off time	
Target4	home_time=%d	when no operation,time for return ing main interface	
Target5	ch_sel_time=%d	time of select output	
Instruction	LCD operation instruction: set LCD contrast, backlight and turn off time		
Example1	#lcd bl_lv=100 set LCD operation instruction to 100		
Example2	#lcd bl_time=10 no operation,LCD turn off after 10s		
Example3	#lcd home_time=10 no operation, return to main interface after 10s		

## Web Control

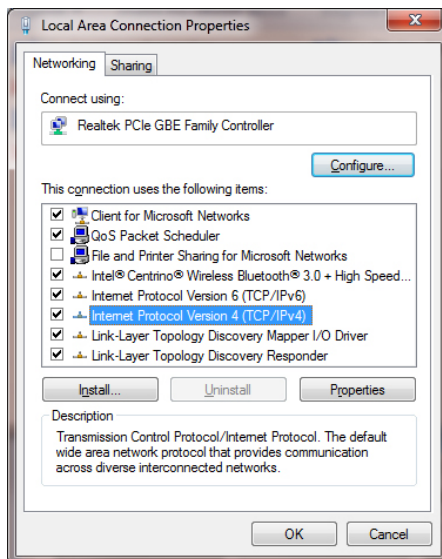
### Default IP Address

The default IP address of the Matrix 4K is 192.168.1.168.

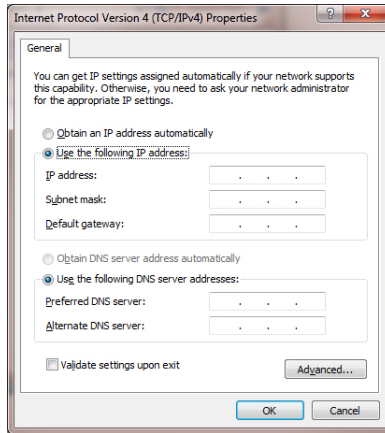
### Change the IP address of your PC

If the IP address of your PC is in the range from 192.168.1.2 to 192.168.1.254, except 192.168.1.168, then there is no need to change it.

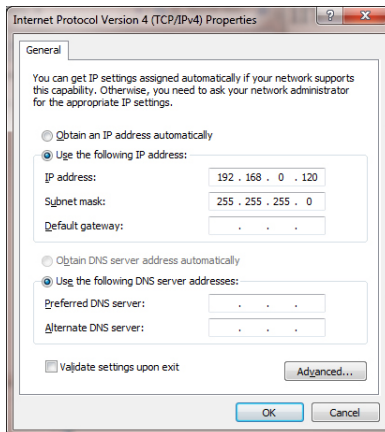
1. Connect the Matrix 44 and your PC to the LAN.
2. Configure you PC as follows:
  - 1) Click Start / Control Panel / Network and Sharing Center.
  - 2) Click Change Adapter Settings.
  - 3) Highlight the network adapter you want to use to connect to the device and click **Change settings of the connection.**
3. Highlight **Internet Protocol Version 4 (TCP/IP/4).**



#### 4. Click **Properties**.



5. Select **Use the following IP Address**, and then enter the IP address. **Note:** You can use any IP address in the range: 192.168.1.2 to 192.168.1.254 (excluding 192.168.1.168).



6. Click **OK** to save the changes.
7. Click **Close** to exit.

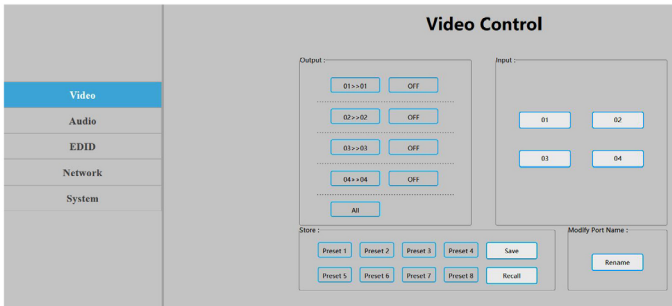


## Web Browser Control

Open your web browser and enter the Matrix 4K's IP address 192.168.1.168 into the address bar, and press **Enter**. Type in user name: **admin** and password: **123456**, then click **Login**.

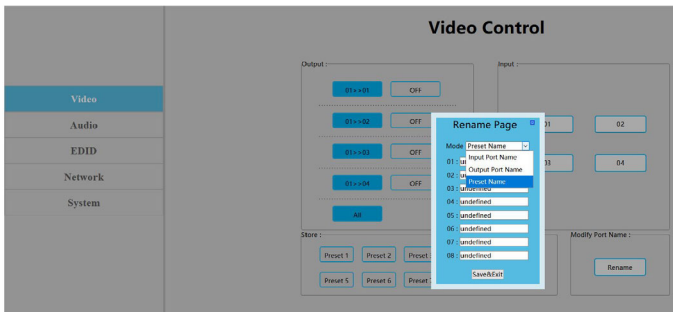
### Video Control

Assign any of the input devices to any of the outputs.



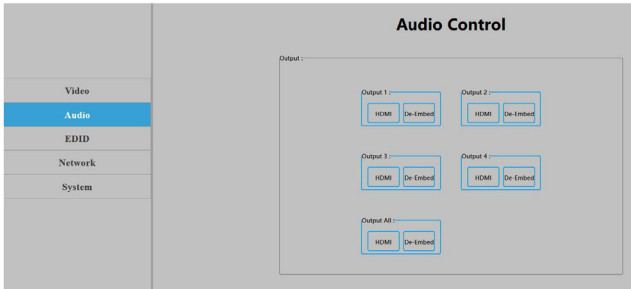
### Modify Port Name

Select an input or output port to rename.



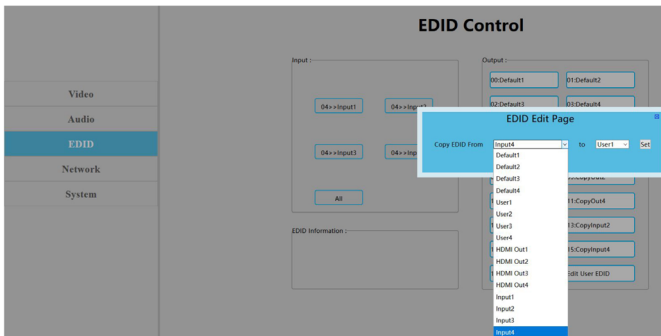
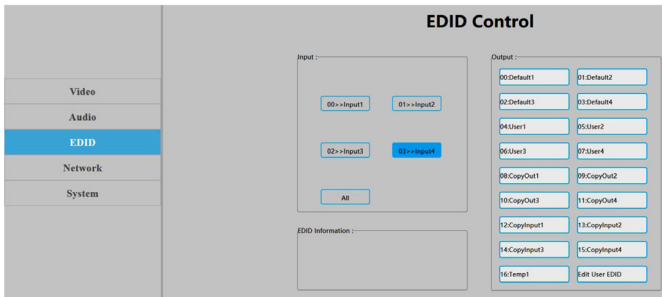
## Audio Control

Set the audio for the HDMI outputs.



## EDID Control

Set EDID for the HDMI inputs.



## EDID Table

00	4K60 444-LPCM: 2.0, HDR:HLG	01	4K60 420-LPCM: 2.0, HDR:None
02	4K30 444-LPCM: 2.0, HDR:None	03	1080P60 444-LPCM: 2.0, HDR:None
04	User1	05	User2
06	User3	07	User3
08	Copy HDMI out1	09	Copy HDMI out2
10	Copy HDMI out3	11	Copy HDMI out4
12	Copy input1	13	Copy input2
14	Copy input3	15	Copy input4
16	Default is empty, need save EDID to device to take effect,don't support power-off memory		

## Network

Enter network settings, and enable DHCP.

**Network Information**

Mac Address :

IP Address :

Net Mask Address :

Gate Way Address :

DHCP :  Off

## System Setting

Change password, Reboot, Restore Factory Settings.

**System Setting**

System Setting

Change Password

User Name :

New Password :

Confirm the Password :

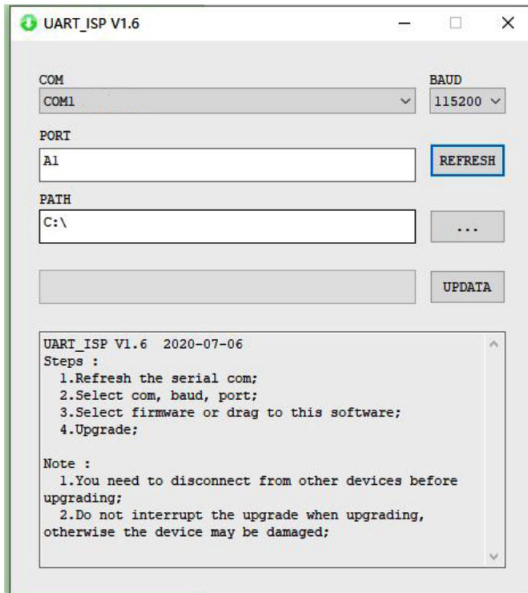
Version: Web Ver:0.0.2

# Firmware Update

In most cases, the Matrix comes with the latest available firmware version when we ship. If available, firmware updates for critical fixes will be posted to gofanco's website for download.

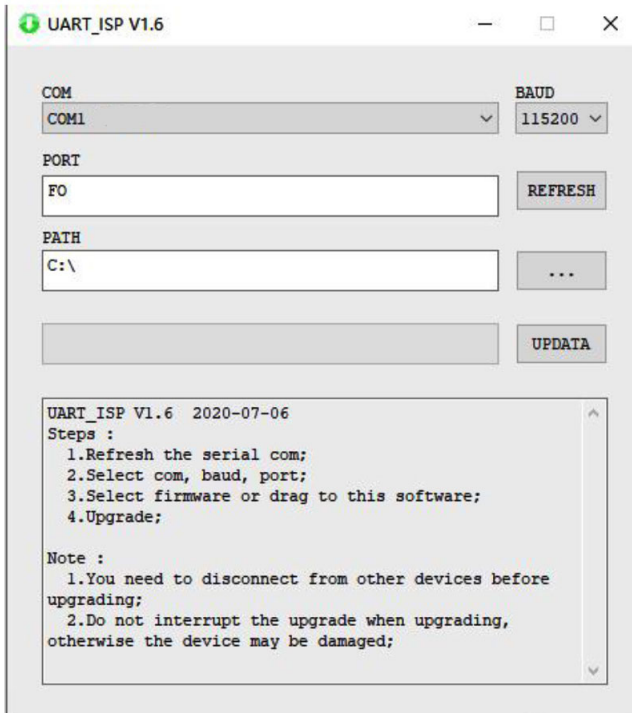
## MCU Update

1. Connect the Matrix 4K to the PC using the RS232 port.
2. Open the update software on the CD.
3. Choose the COM port of the PC, set BAUD rate to 115200, type **A1** into Port.
4. Load the firmware in PATH.
5. Click **UPDATA**. The update process will take up to 1 minute to complete.



## Web Update

1. Connect the Matrix 4K to the PC using the RS232 port.
2. Open the update software on the CD.
3. Choose the COM port of the PC, set BAUD rate to 115200, type **F0** into Port.
4. Load the firmware in PATH.
5. Click **UPDATA**. The update process will take up to 1 minute to complete.



# Specifications

Operating Temperature	0°C to +40°C(+32°F to +104°F)
Operating Humidity	5 to 90%RH (No Condensation)
Max resolution	4K@60hz YUV4:4:4
HDCP Compliant	HDCP2.2 and HDCP1.4
Output Video	HDMI compliant
Audio Format Supported	PCM2.0,Dolby True HD and DTS-HD master audio, LPCM7.1
RS-232 serial port	3PIN terminal block connectors
Ethernet port (IP control)	RJ45, female
IR Ext port	3.5mm jack
Bandwidth	18 Gbps
Default IP	192.168.1.168
Dimensions	216.2mm(L) x 128.5mm(W) x 34m(H)
Net Weight	0.47kg
Power consumption	14W(Max)

## **Disclaimer**

The product name and brand name may be registered trademarks of related manufacturers. TM and ® may be omitted on the user's guide. The pictures on the user's guide are just for reference, and there may be some slight differences with the actual products.

We reserve the right to make changes without prior notice to a product or system described herein to improve reliability, function, or design.



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