



8x8 HDMI Matrix 4K with LCD

User's Guide



P/N: Matrix88HD2

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. For technical support, email us at support@gofanco.com. For drivers or manual download, please go to 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 8x8 HDMI Matrix 4K allows you to select and switch between any of the 8 HDMI source devices to display on any of the 8 HDMI outputs.

Features

- Connect up to eight HDMI source devices and independently distribute any source to any of the eight HDMI displays
- Supports up to 4K@60Hz YUV 4:4:4 8-bit, HDR, HDR10, HLG, Dolby Vision, 3D, HDCP 2.2/1.4, 18Gbps bandwidth
- 8x HDMI inputs and 8x HDMI outputs
- 8x Analog audio inputs, 8x Analog audio outputs, 8x S/PDIF audio outputs
- Supports audio embedded and extraction
- Supports PCM 2.0-5.1 / 16-24bit / 32-192KHz, and Dolby TrueHD, Atmos, DTS-HD Master, DTS-X
- Control methods: Panel buttons, IR remote, RS232, IP, and Web GUI
- Supports Telnet, UDP, HTTP, and TCP/IP via Ethernet
- EDID management: Presets and EDID learning
- 1U Rack mountable
- Firmware upgradable via RS232 for expanded capability and compatibility

Package Contents

- 8x8 HDMI Matrix 4K
- IR remote control
- IR Receiver cable
- Software CD
- Phoenix plug
- Power adapter (12VDC/3A)
- User's guide

Installation Requirements

- HDMI source devices
- HDMI displays
- Premium High Speed HDMI cables (not included)

Product Layout

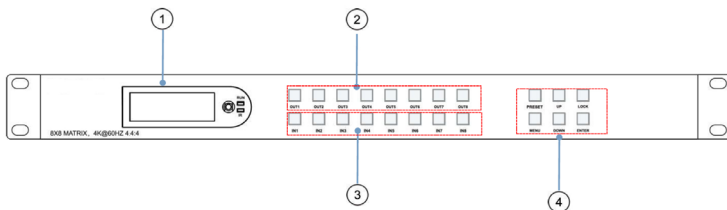


Figure 1: Front Panel Layout

1. **LCD screen:** Display the Matrix information
2. **Output selection buttons (1-8):** Press to select an output port
3. **Input selection buttons (1-8):** Press to select an input source
4. **Function Buttons:**
 - Preset:** Press to add/select a preset configuration
 - Up:** Press to select the previous menu item
 - Lock:** Long press to lock/unlock the Matrix
 - 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)
 - Down:** Press to select the next menu item
 - Enter:** Press to confirm

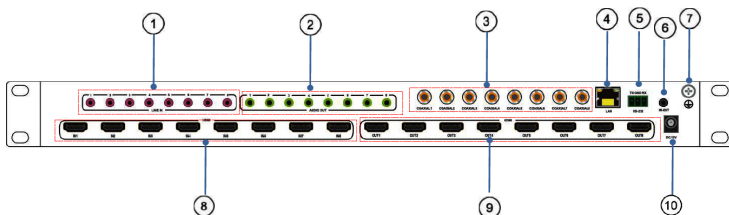


Figure 2: Reel Panel Layout

1. **Analog Audio In (1-8):** Connect to the analog output of your source device
2. **Analog Audio Out (1-8):** Connect to your speakers or headphones
3. **SPDIF Out (1-8):** Connect to your S/PDIF audio device
4. **RJ45:** IP or Web GUI control
5. **RS232:** Connect to your control PC
6. **IR In:** Connect to the IR receiver cable. This is required only if the front panel IR receiver window is blocked
7. **Ground:** Case grounding point
8. **HDMI In (1-8):** Connect to your HDMI source devices
9. **HDMI Out (1-8):** Connect to your HDMI displays
10. **Power Jack:** Connect to the included power adapter

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 8x8 HDMI Matrix 4K.

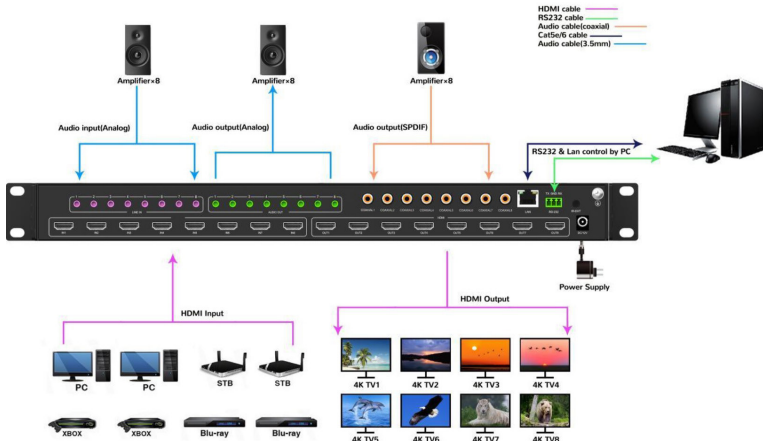


Figure 3: Application Diagram

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 8 source devices to display on any of the 8 displays.

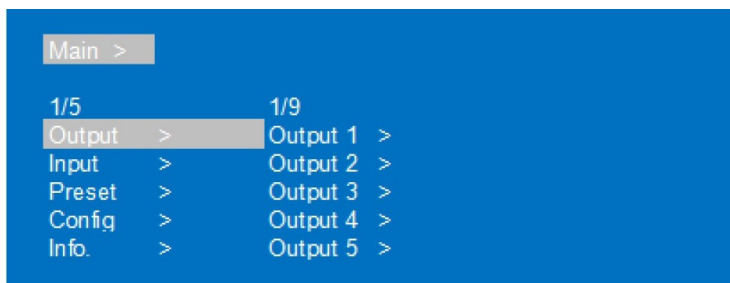
- **Select an input source to display on an output port:**
Example: To select Input 1 source to display on Output 1 port - Press Output 1 button (see #2 on page 5), then press Input 1 button (see #3 on page 5).
- **Select an input source to display on multiple output ports:** Example: Select Input 2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

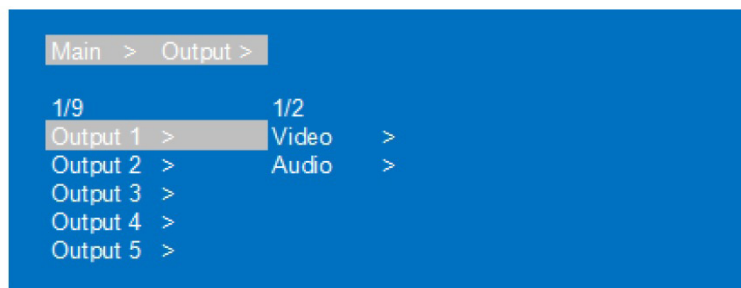
Allows you to control various aspects of your display device and source device.

Output Signal Control

The output interface comprises of nine sub-menus Output 1-8 and All. It allows you to switch source device and/or turn off the audio of any output port.



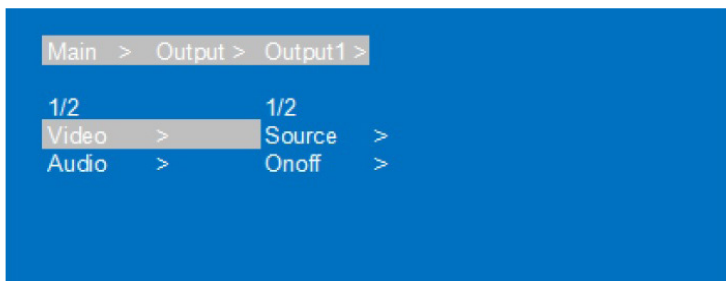
Output menu interface



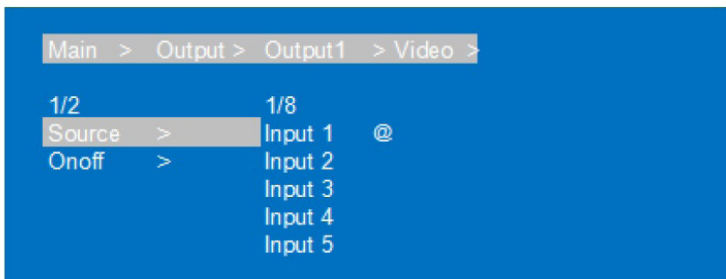
Output port menu interface

Video Switching

Example: Select Input 1 source to display on Output 1 port - Press the Menu button (see #4 on page 5) select Video, then press the Enter button (see #4 on page 5). Press the Up button (see #4 on page 5) or Down button (see #4 on page 5) to choose Source, then press the Enter button.

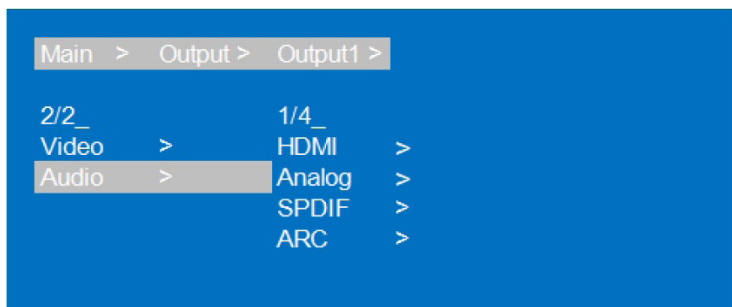


Press the Up button or Down button to select Input 1, then press the Enter button to complete.

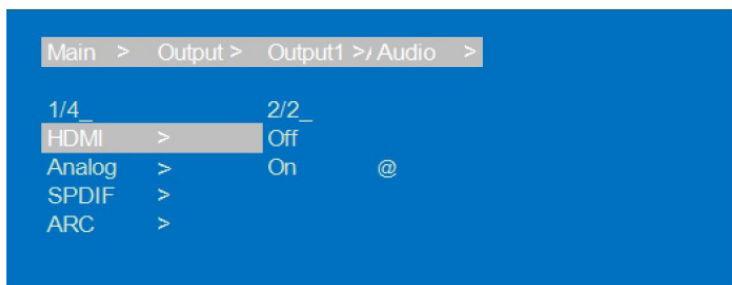


Audio On/Off

Example: Turn off audio Output 1 port - Press the Menu button (see #4 on page 5) select Output, then press Enter button (see #4 on page 5). Press the Up button (see #4 on page 5) or Down button (see #4 on page 5) to choose Output1.



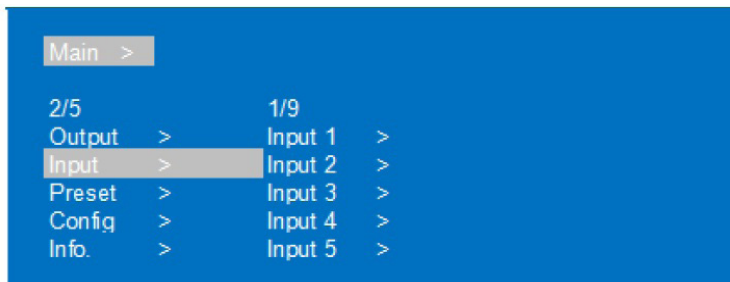
Press Enter button. Press the Up button or Down button to select Audio, then press Enter.



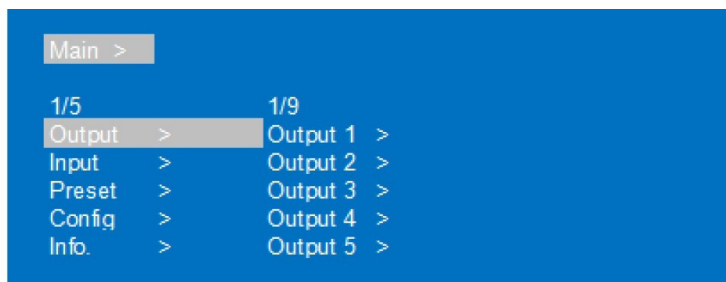
Press the Up button or Down button to select the mode HDMI, then press Enter. Press the Up or Down button to select Off.

Input Signal

There are nine sub-menus, Input 1-8 and All.

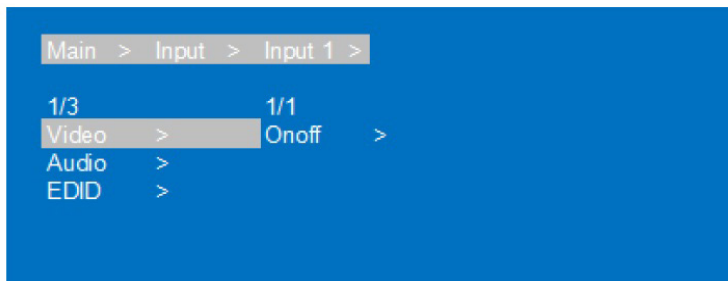


The 3rd level menu includes Video, Audio, and EDID settings.

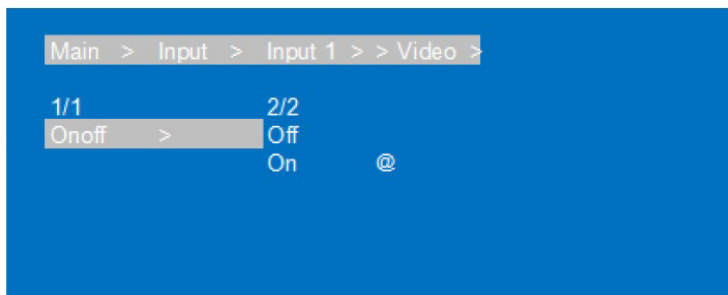


Input Signal ON/OFF

Example: Turn off video of Input 1 - Select Input, then press Enter. Press the UP or Down button to select Input 1, then press Enter. Press the Up or Down button to select Video, then press Enter.

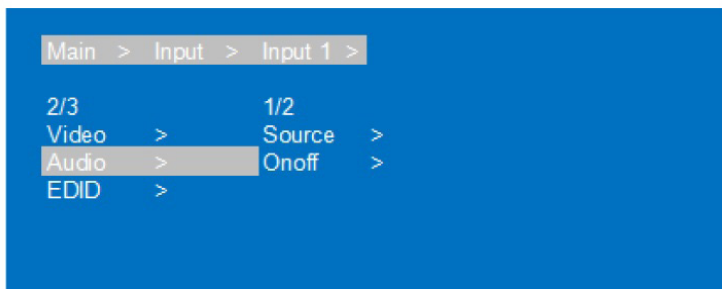


Select Onoff, then press Enter. Press the Up or Down button to select Off, then press Enter to complete.

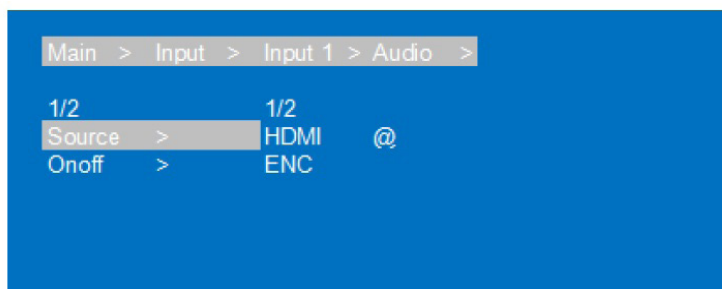


Input Audio On/Off and Select Audio Source

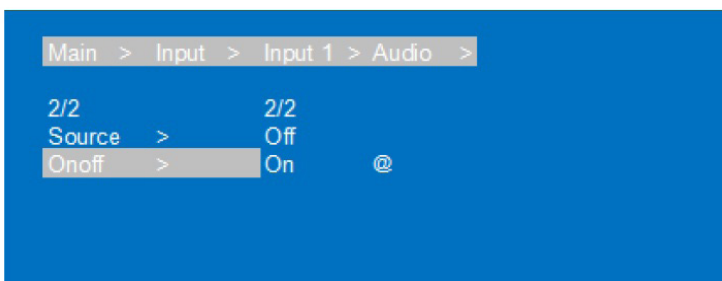
Example: Turn On or Off the Input 1 audio.



From the main menu select Input / Input 1 / Audio



Select Source / HDMI

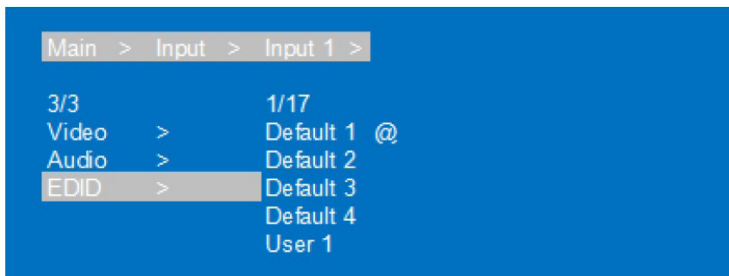


Select Onoff / On or OFF, then press Enter.

EDID

The EDID can be set to each Input. The Matrix is set to Default 1.

Example: Set Default 1 to Input 1 - Select EDID from the main Menu, then press Enter button.



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

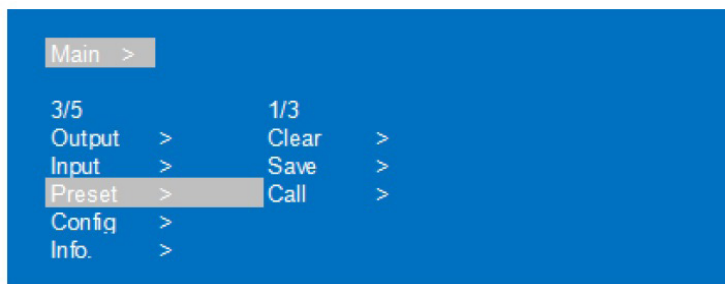


Press Up button or Down button to select Default 1, then press Enter button.

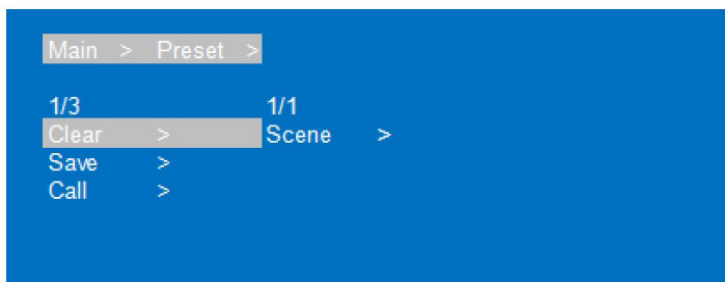
Presets

Allows you to save, select, or delete presets. Supports up to 8 different presets.

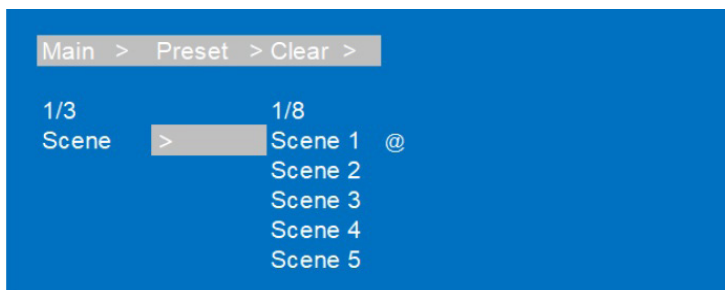
Example: To delete Preset 1 - From the main menu, select Preset, then press Enter.



Select Clear, then press Enter.

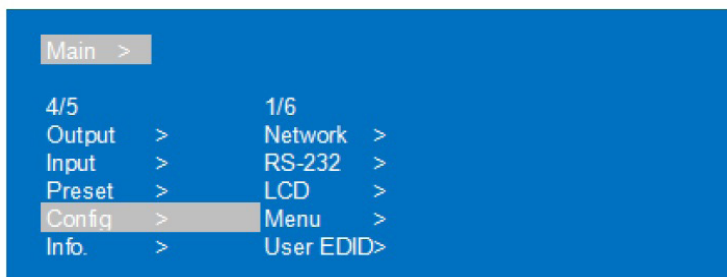


Select Scene 1, then press Enter.



System Configuration Interface

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

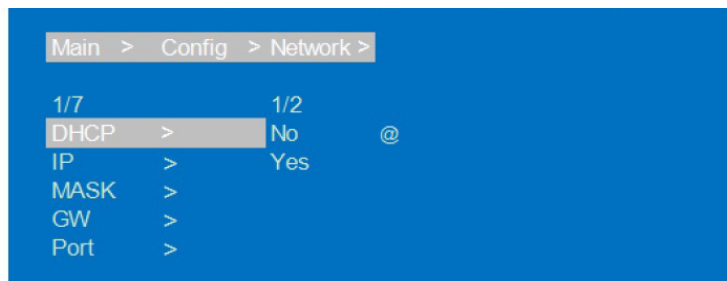


Network



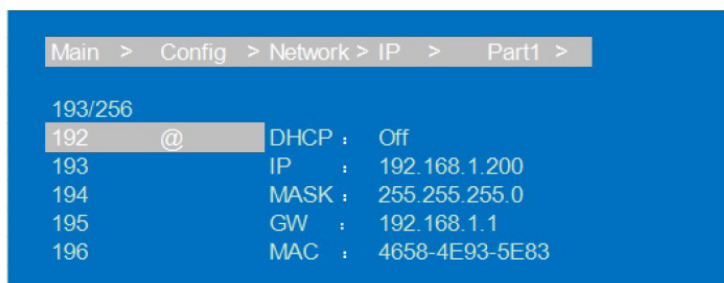
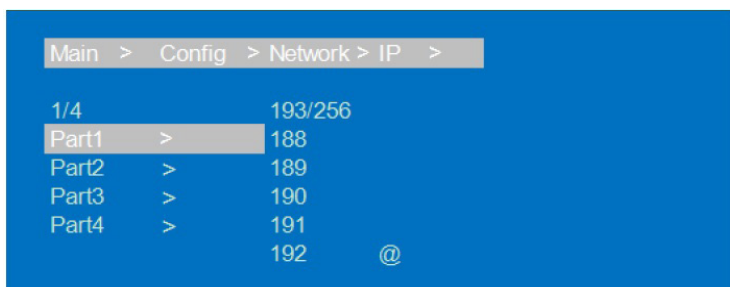
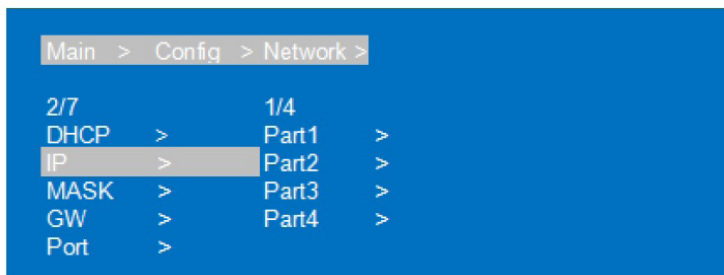
DHCP

Default setting: Off



IP

Displays IP address, Mac address, and DHCP status.



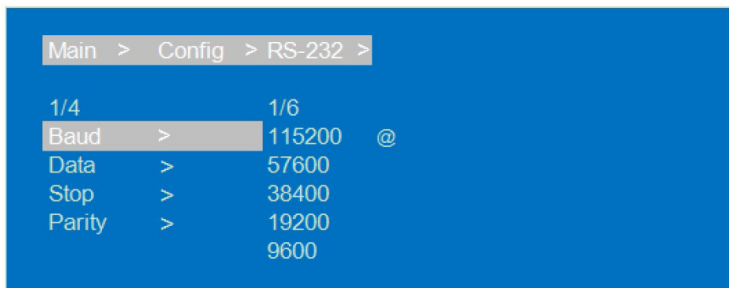
RS232

Configure RS232 settings.

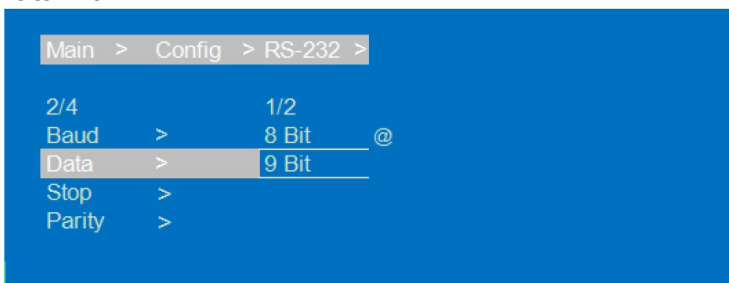
From the Main menu, select Config / RS232.



Baud Rate



Data Bit



LCD Screen

Change LCD screen brightness and screen standby time. Brightness is 8 and standby time is 30 sec by default.

```
Main > Config >  
3/6          1/2  
Network >    Bright >  
RS-232 >    Time >  
LCD >  
Menu >  
User EDIC >
```

```
Main > Config > LCD >  
1/2          9/9  
Bright >     4  
Time >       5  
              6  
              7  
              8      @
```

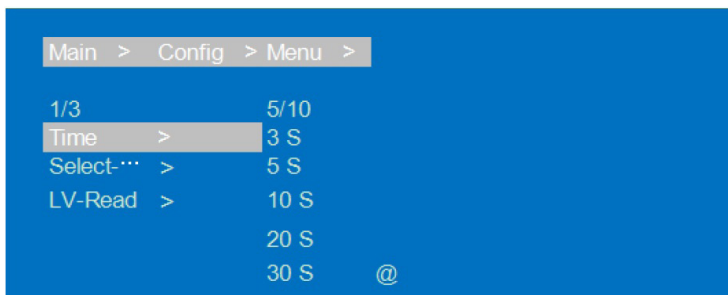
```
Main > Config > LCD >  
2/2          6/11  
Bright >     3 S  
Time >       5 S  
              10 S  
              20 S  
              30 S      @
```

Menu Setting

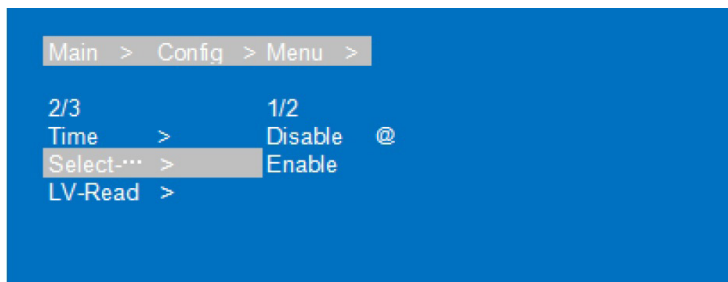
Configures the menu settings.



Select time: Default 30 seconds



Select-run: Default Disabled



User EDID

Save default EDID, output EDID and temporary EDID to a User.

Example: Select a Default EDID for User 1 - From the main menu, select Config press Enter. Select User EDID, press Enter. Select User 1, press Enter. Select Default 1, press Enter.

Main > Config >

5/6		1/5	
Network	>	User 1	>
RS-232	>	User 2	>
LCD	>	User 3	>
Menu	>	User 4	>
User EDID	>	ALL	>

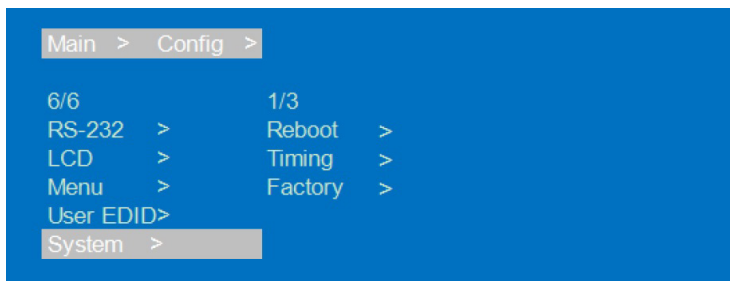
Main > Config > User EDID >

1/5		1/13	
User 1	>	Default 1	@
User 2	>	Default 2	
User 3	>	Default 3	
User 4	>	Default 4	
ALL	>	Output 1	

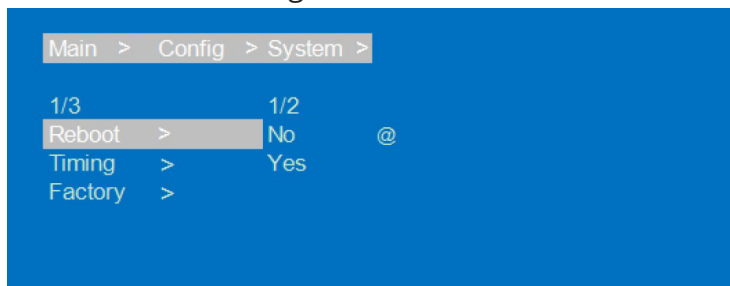
Main > Config > User EDID > User 1 >

1/13	
Default 1	@ Name : XXX1234
Default 2	FMT. : 4096X2160P60
Default 3	Color : 444
Default 4	Audio : LPCM-2 192K
Output 1	

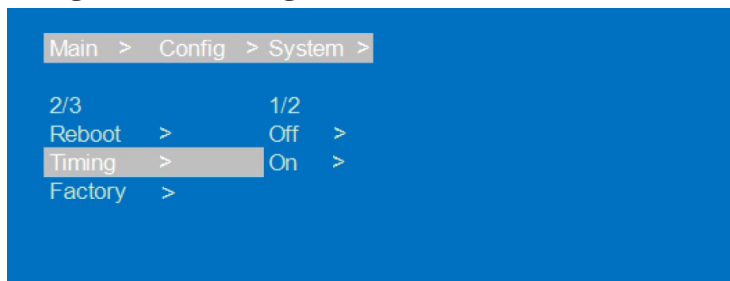
System Settings



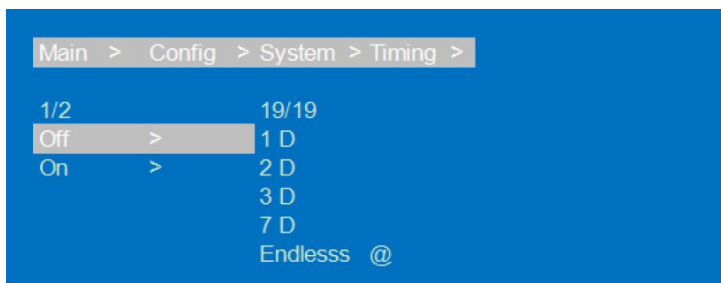
Reboot: Default Setting No



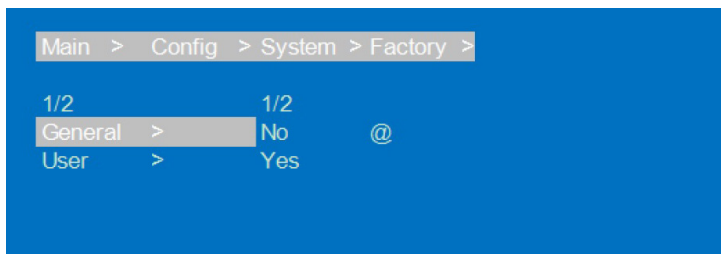
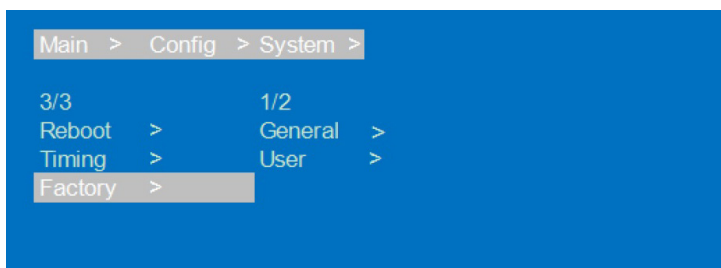
Timing: Default Setting Endless



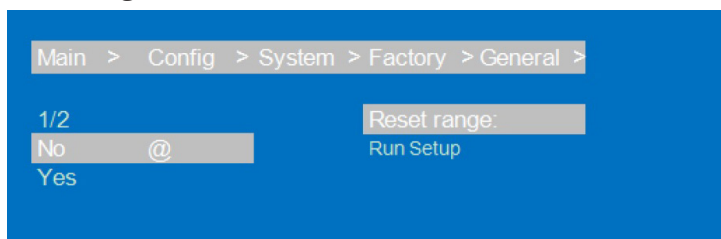
Timing: Default Setting Endless



Factory Reset: Default Setting No

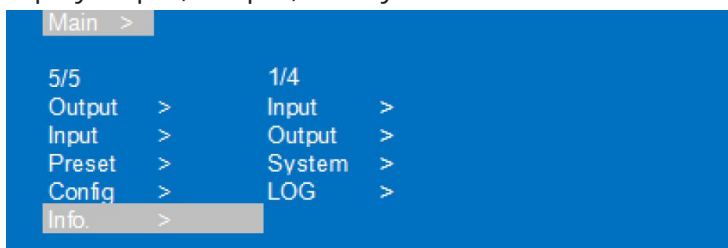


Reset Range

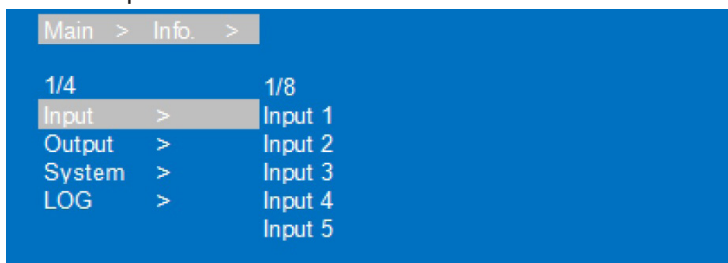


Device Information

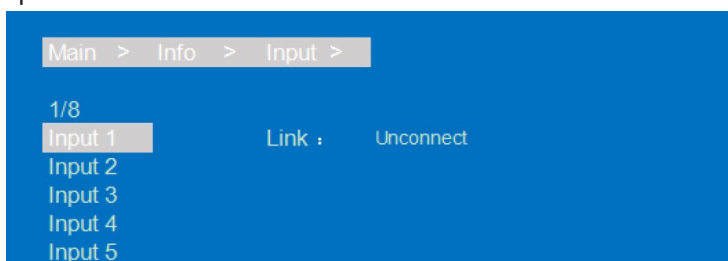
Displays Input, Output, and System information.



Choose Input 1



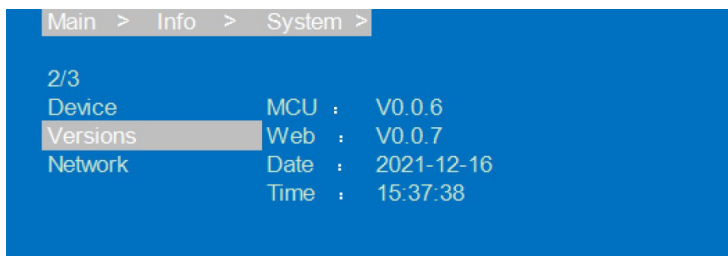
Input 1 Status: Link Unconnect



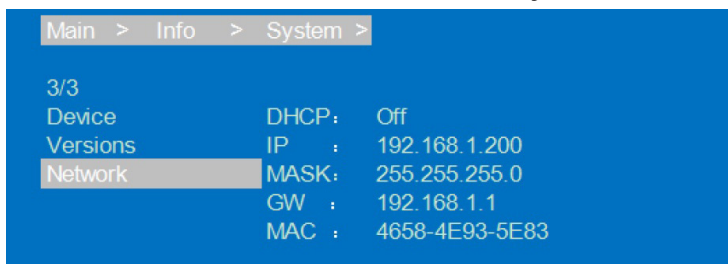
Choose Network



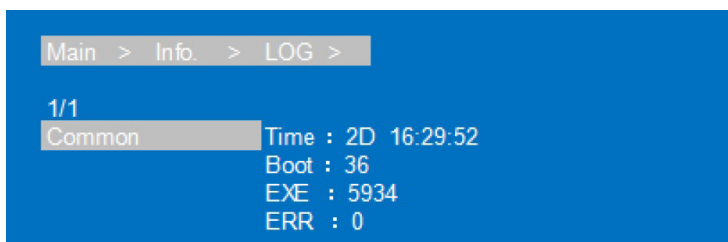
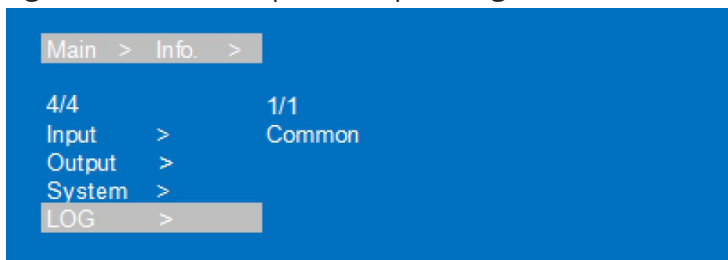
Network Version



Network Status: DHCP, IP, Mask, Gateway, Mac address



Log: Run time, Startup time, Operating time, Errors



Remote Control

Users can control the 8x8 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.

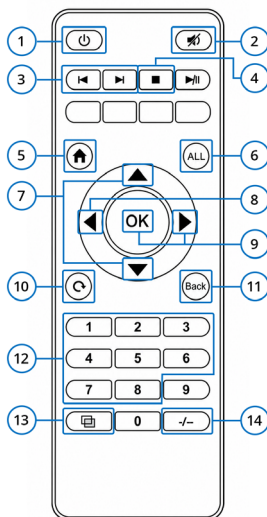


Figure 4: Remote Control

1. **Standby:** Turn the Matrix on or enter standby mode
2. **Mute:** Mute or unmute the audio
3. **Previous/Next:** Switch to the previous or next item
4. **Stop:** Close the current image or video
5. **Home:** Return to the main menu
6. **All:** Select all output displays
7. **Up/Down:** Navigate up or down through menu

options.

8. **Left:** Navigate left through menu
9. **Right/OK:** Confirm the selection
10. Display IP information
11. **Back:** Return to the previous menu level
12. **1-8:** Video switching. Press the output number + Down + input number. Example: Press 1 + Down + 2 to route input 2 to output 1
13. **Preset:** Press briefly to cycle through saved presets
14. **Preset Recall:** Press this button + a number to recall the specified preset

EDID Management

The 8x8 Matrix includes 4 EDID modes: Default EDID, User EDID, Output EDID, and Temp 1. The factory default is 4K60Hz 4:4:4 2Ch.

EDID MODE	EDID Index	EDID
Default EDID	0	4096x2160@60-444 HLG 2CH(default)
	1	4096x2160@60-420 HLG 2CH
	2	4096x2160@30-444 HLG 2CH
	3	1920x1080P@120-444 HLG 2CH
User EDID	4-7	User EDID is set by user, with power-off memory function, new EDID will auto-cover old EDID.
Output EDID	8-15	Copy output 1-8 ports' EDID with storage function. without power-off memory
Temp1	24	Temporary EDID

RS232 Control

Connect the 8x8 HDMI Matrix 4K to a PC using an RS232 cable.

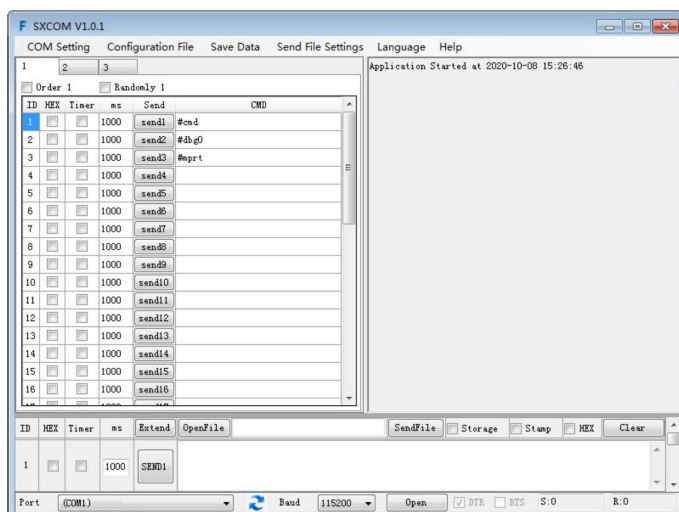
COM Port Setting

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

Software Control

Open the software in 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

Type	Format	Data	Rule
Head of commands	#cmd	nothing	
Function	check all instructions		
Example 1	#cmd check all open instructions		
Type	Format	Data	Rule
Head of commands	#video_%c	d: data	
Target 1	in%8,d	0 7: designated port 255: all ports	only parameter 2
Target 2	out%8,d	0 7:designated port 255:all ports	all parameters
parameter 1	source=%d	0 7: input channels	
parameter 2	onoff=%d	0: screen output off 1: screen output open	
Function	output matrix switch		
Example 1	#video_d out2 source=1 output 3 select input 2		
Example 2	#video_d out255 onoff=0 all outputs off		
Type	Format	Data	Rule
Head of commands	#audio_%c	d: data	
Target 1	in%8,d	0 7: designated port 255: all ports	only parameter 1,2
Target 2	out%8,d	0 7:designated port 255:all ports	parameter 3,4,5,6
parameter 1	source=%d	0:input select HDMI source audio 1:input select external Analog embed audio	
parameter 2	onoff=%d	0:input port Audio off 1:input port Audio on	
parameter 3	arc=%d	0:ARC off 1:ARC on	
parameter 4	hdmi=%d	0:output TV video off 1:output TV video on	
parameter 5	iis=%d	0:Analog audio extraction off 1:Analog audio extraction on	
parameter 6	spdif=%d	0:Digital audio extraction off 1:Digital audio extraction on	
Function	output audio switch		
Example 1	#audio_d out2 hdmi=0 iis=1 output 3 port: HDMI audio off,Analog audio extraction on		
Example 2	#audio_d in3 source=1 input 4 audio select Embed audio		
Type	Format	Data	Rule
Head of commands	#edid_%c	d: data	
Target 1	in%8,d	0 7:designated port 255:all ports	
Target 2	user%8,d	0 7:designated user 255: all user	
parameter 1	source=%d	0 3:default 4 7:user 8 15:output 16-23:input 24-temp	
Function	Set the EDID copy source		
Example 1	#edid_d in0 source=4 set input 1's EDID copy user 1		
Example 2	#edid_d user1 source=24 set user2's EDID copy temp, user EDID has power-off memory(Used to change a custom EDID, The EDID of temp is empty when it is powered on. You can customize by sending an EDID.bin file through the serial port		
Type	Format	Data	Rule
Head of commands	#preset	nothing	
Target 1	scene%d	0 7:designated scene	

RS232 Command List Continued

parameter 1	exe=%d	0:Clear to factory Settings 1:Save the current state to this scene 2:Call this scene to the current state	
Function	scene setting instructions		
Example 1	#preset scene1 exe=1 save the current state to scene 2		
Type	Format	Data	Rule
Head of commands	#name	nothing	
target 1	input%d	0 7:designated input	MAX 19 characters
target 2	output%d	0 7:designated output	MAX 19 characters
target 3	scene%d	0 7:designated preset scene	MAX 19 characters
target 4	system%d	0:company name 1:product name 2:device software version 3:website 4:email 5:telephone number	MAX 31 characters
parameter 1	str=%1,31s	Visible character: input character No character means clear	MAX 19 characters
Function	Naming custom		
Example 1	#name input1 str=apple_tv change input 2's name to apple_tv		
Example 2	#name output2 str= clear output 3's name		
Type	Format	Data	Rule
Head of commands	#power	nothing	
parameter 1	shut=%d	>>1000000: cancel timing shutdown 1'x:Timing shutdown time, unit:second	
parameter 2	start=%d	>>1000000:cancel timing boot 1'x:Timed boot time, unit:second	
parameter 5	help	nothing	Used to check the timing shutdown, timing boot and set auto-sleep time
Function	set timing shutdown and timing boot		
Example 1	#power shut=0 standby mode #power shut=3600 start=7200		
Example 2	Use the current time as a reference. Device'll shutdown after 3600 seconds (1 hour) , Device'll boot after 7200 seconds (2 hours)		
Type	Format	Data	Rule
Head of commands	#network	nothing	
parameter 1	dhcp=%d	0:DHCP off 1:DHCP on	
parameter 2	ip=%d.%d.%d.%d	0 255:IP address	input value 1
		0 255:IP address	input value 2
		0 255:IP address	input value 3
		0 255:IP address	input value 4
parameter 3	mask=%d.%d.%d.%d	0 255:Subnet Mask address	input value 1
		0 255:Subnet Mask address	input value 2
		0 255:Subnet Mask address	input value 3
		0 255:Subnet Mask address	input value 4
parameter 4	gw=%d.%d.%d.%d	0 255:Gateway address	input value 1
		0 255:Gateway address	input value 2
		0 255:Gateway address	input value 3
		0 255:Gateway address	input value 4
parameter 8	port_tcp=%d	1'65534:TCP port number	
parameter 9	port_udp=%d	1'65534:UDP port number	
parameter 10	device=%15T	Capital letters, number;web page,device name	MAX 15 characters
Function	Device IP settings include DHCP switch, IP/MASK/GW/DNS settings. The device does not detect whether the IP is canonical. Users must comply with the basic rules when setting IP addresses. After turn on the DHCP,setting an IP address is invalid, The IP address is the value assigned by DHCP.		
Example 1	#network dhcp=1 open DHCP switch,the router auto assign IP addresses to device		

RS232 Command List Continued

Example 2	#network ip=192.168.1.168 mask=255.255.255.0 gw=192.168.1.1 dhcp=0 Turn Off DHCP, Set the static IP address to 192.168.1.168, Subnet Mask to 255.255.255.0, Gateway to 192.168.1.1		
Type	Format	Data	Rule
Head of commands	#account	nothing	
Target 1	login	Open to all levels of customers (0, 1, 2)	
Target 2	register% <i>d</i>	Account permission level: 0, 1, 2, and 3. The level increases gradually, and lower-level have no permission to view some parameters settings	
parameter 1	id=% <i>l</i> 5t	number, letter, underline:account name	
parameter 2	psd=% <i>l</i> 5t	number, letter, underline:password	
Function	Each level has only one account, and the new account will overwrite the previous one, You can register only accounts with at least the current permission level. The default account name is lowercase.		
Example 1	#account login id=admin psd=123456 Login account is admin , password is 123456		
Example 1	#account register0 id=user_jerry psd=123456 Register a user at level 0, account is user_jerry, password is 123456		
Type	Format	Data	Rule
Head of commands	#lcd	nothing	
Target 1	bl_lv=% <i>d</i>	0:Backlight close 1~8:Backlight level	
Target 2	bl_cnt=% <i>d</i>	0:Always close 1~254:Set screen rest time 255:always open	
Function	LCD operation instruction, set LCD screen rest time, backlight		
Example 1	#lcd bl_lv=8 bl_cnt=30 LCD screen rest time is 30 seconds, backlight is 8		
Type	Format	Data	Rule
Head of commands	#factory% <i>d</i>	0:Restore factory Settings to level 0 1:Restore factory Settings to level 1 Specific contents are displayed according to the level of the menu	Restore range: 0: Some settings will be restored to factory defaults. 1: All settings will be restored to factory defaults except account.
Function	Restore factory Settings		
Example 1	#factory0 Restore some settings to factory Settings		
Type	Format	Data	Rule
Head of commands	#aem	nothing	
parameter 1	call=% <i>l</i> 6,d	0 x:Menu level 1 selected lable 0 x:Menu level 2 selected lable ... 0 x:Menu level n selected lable	input value 1 input value 2 ... input value n
parameter 2	cmd=% <i>k</i> % <i>d</i>	u:menu up d:menu down l:menu left r:menu right	input value 1
parameter 3	time_to_main=% <i>d</i>	1 x: press times 0 255:Time required to return to the main screen when no operation is performed	input value 2
Function	menu settings		
Example 1	#aem cmd=d1 Menu select the next lable		

Web Control

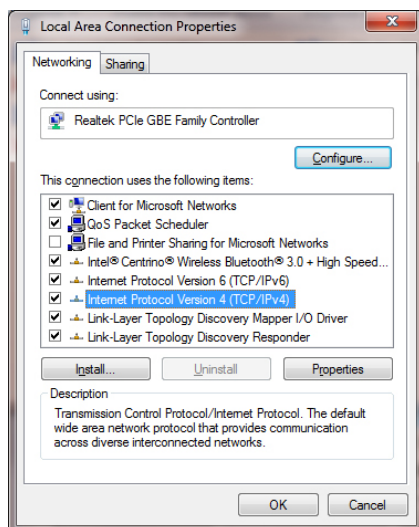
Default IP Address

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

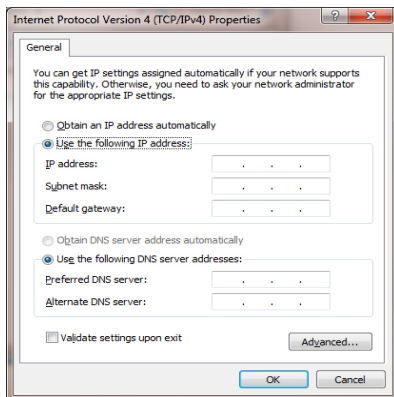
Change the IP address of your PC

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.

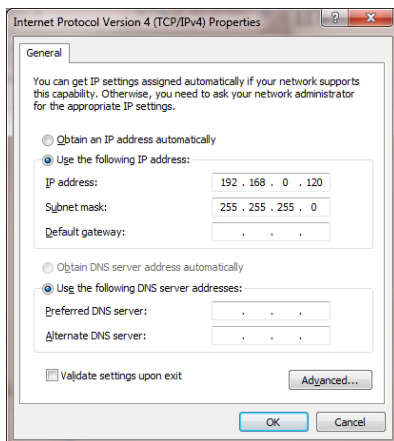
1. Connect the Matrix 4K and your PC to the LAN.
2. Configure you PC as follows:
 - 1) Click Start / Control Panel / Network and Sharing Center.
 - 2) Click Change Adapter Settings.
 - 3) Highlight the network adapter you want to use to connect to the device and click Change settings of the connection.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

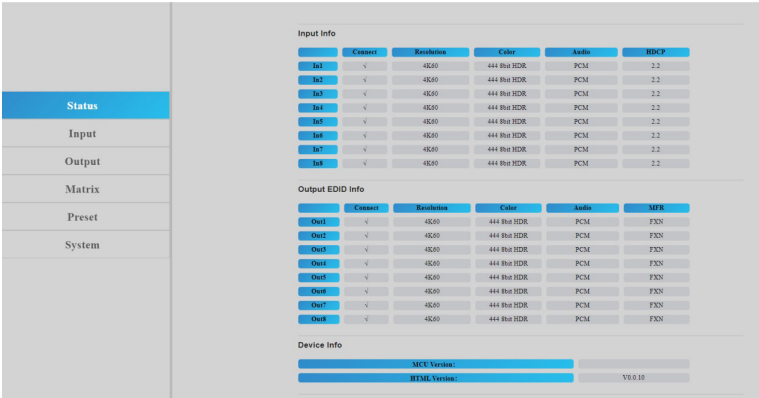
7. Click Close to exit.

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.

Status

Displays the Matrix current status.



Input

Rename, switch input video and audio source, switch EDID.



Output

Rename, switch output video and audio output, ARC function.



Matrix

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



Preset

Rename, Clear, Save, or Call a saved preset.



System Setting

Change password, Reboot, Restore Factory Settings, enter network settings, and enable DHCP.

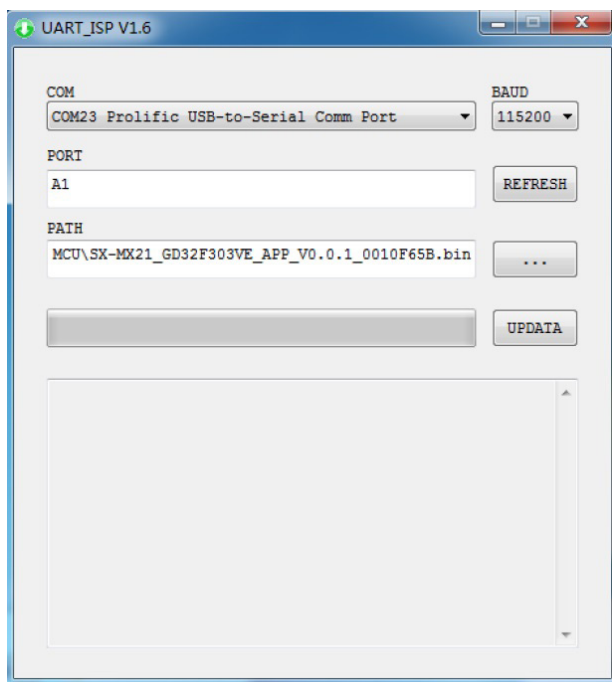


Firmware Update

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.

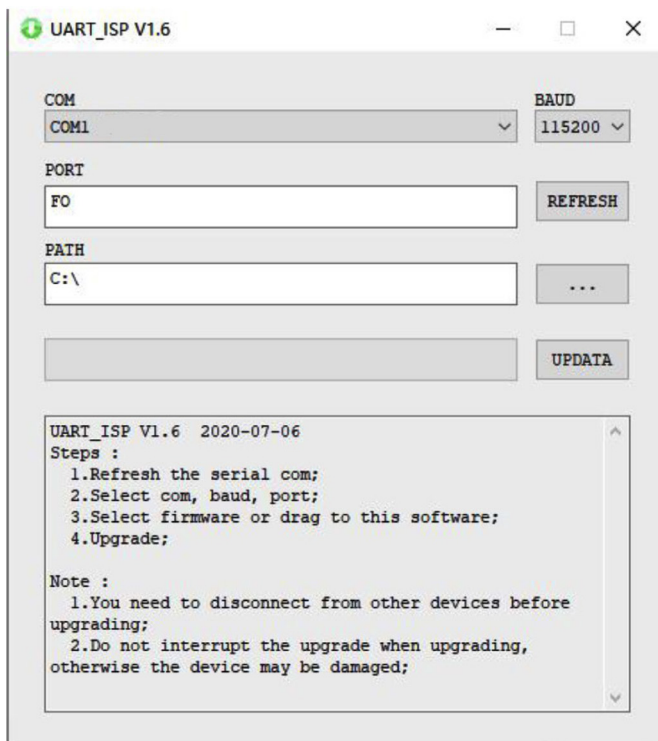
MCU Update

1. Connect the Matrix 4K to the PC using the RS232 port.
2. Open the update software in 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 in 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

Bandwidth	18 Gbps
Resolution	480p@60Hz, 576p@50Hz, 720p@60Hz, 1080p@24/50/60Hz, 4K@24/30/60Hz YUV 4:2:0, 4K@60Hz YUV 4:4:4
Video Input Connectors	8x HDMI Type-A, 19-pin, Female
Video Output Connectors	8x HDMI Type-A, 19-pin, Female
Audio Input Connectors	8x Analog audio, 3.5mm, Female
Audio Output Connectors	8x Analog audio, 3.5mm, Female 8x S/PDIF Coaxial, Female
RS-232 Serial Port	DB9, Female
Ethernet Port (IP Control)	RJ45, Female
IR Ext Port	1x 3.5mm, Female
Dimensions	482.4mm x 220mm x 44mm (L) x (W) x (H)
Weight	2.8 kg
Operating Temperature	32° to 140° F (0° to 40°C)
Storage Temperature	14° to 140° F (-10° to 60°C)
Power Consumption	28W (Max.)

Disclaimer

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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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