

4K UHD

H4

4 x 4 HD Matrix

Operations Guide



Safety Instructions

Symbols used in user manuals and equipment indicate the possible harm to users or others and the risk of property damage. In order for you to use the equipment safely and correctly, the signs and their meanings are as follows. Please make sure to correctly understand these signs before reading the user manual.



The Federal Communications Commission's certification mark for electronic products EMC.



The product contains some metal components, please pay attention to environmental protection.



Adopted Directive 2002 / 95 / EC of the European Parliament and of the Council.



CE certification means that this product has reached the safety requirements stipulated by the EU directives, and users can use it with confidence.



This product is Class A, which may cause radio interference in living environment. In this case, users may need to take practical measures against interference.



Remind the user that the uninsulated dangerous voltage in the equipment may cause electric shock.



Warning: To avoid electric shock, please don't open the cover and put the useless parts in the case. Please contact qualified service personnel.

General information indication



Lists the contents that may lead to unsuccessful operation or setup and some related information that needs attention.

Warning

To ensure the reliable use of the equipment and personal safety, please observe the following items during installation, use and maintenance:

Precautions during installation

- Do not use this product in the following places: places with dust, lampblack, conductive dust, corrosive gas and combustible gas; Exposed to high temperature, condensation, wind and rain; There are occasions of vibration and impact. Electric shock, fire and misoperation can also lead to product damage and deterioration;
- During screw hole processing and wiring, do not make metal scraps and wire ends fall into the vent hole of the controller, which may cause fire, failure and misoperation;
- At the end of the product installation, it is necessary to ensure that there are no foreign objects on the ventilation surface, including dust-proof paper and other packaging items, otherwise it may lead to poor heat dissipation during operation, resulting in fire, failure and misoperation;
- Avoid wiring, plugging and unplugging cable plugs in the live state, otherwise it will easily lead to electric shock or circuit damage;
- And the installation and wiring must be firm and reliable, and poor contact may lead to misoperation;
- For applications with serious interference, shielded cables should be used for input or output cables of high-frequency signals to improve the anti-interference performance of the system.

Matters needing attention when wiring

- All external power supply must be cut off before installation, wiring and other operations can be carried out, otherwise electric shock or equipment damage may be caused;
- This product is grounded through the grounding wire of the power cord. To avoid electric shock, the grounding wire must be connected to the earth. Before connecting the input or output of this product, please be sure to properly ground this product.
- After the installation and wiring, remove the foreign matter immediately. Please cover the terminal cover plate of the product before electrifying to avoid electric shock.

Matters needing attention in maintenance

- Do not touch the terminal when it is energized, otherwise it may cause electric shock and misoperation;
- Please clean and tighten the terminals after turning off the power supply, which may cause electric shock when powered on;
- Please connect or remove the communication signal cable, cable connection or removal of expansion module or control unit after turning off the power supply, otherwise it may cause equipment damage and misoperation;
- Do not disassemble the equipment to avoid damaging the internal electrical components;
- Be sure to read this manual carefully and fully confirm the safety before changing, commissioning, starting and stopping the program.

Matters needing attention when scrapping products

- Electrolytic capacitors on circuit boards may explode when burned;
- Please collect and treat them separately, and do not put them into domestic garbage.
- Please treat it as industrial waste or according to local environmental protection regulations.

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1. Technical parameter

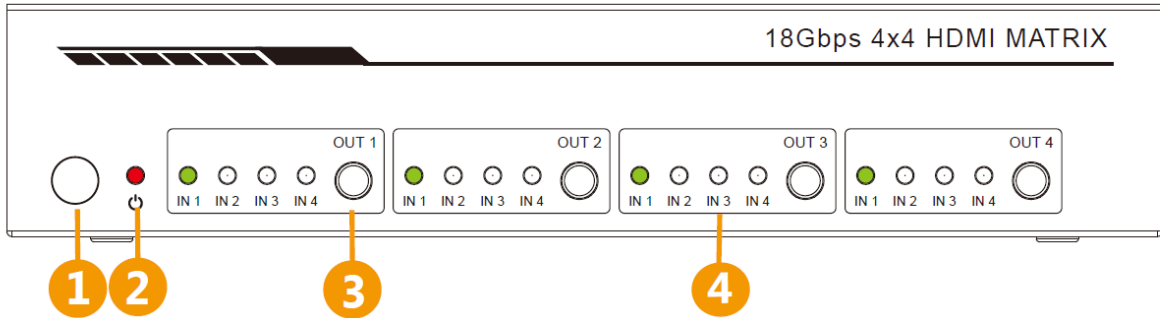
Specifications for the H4 are listed in the following table.

Parameter specification			
HDMI version	HDMI 2.0		
HDCP version	HDCP 2.2, HDCP 1.4		
Video bandwidth	18Gbps		
Video resolution	4K2K 50/60Hz 4:4:4 4K2K 50/60Hz 4:2:0 4K2K 30Hz 4:4:4 1080p, 1080i, 720p, 720i, 480p, 480i All HDMI 3D TV formats Supports all PC resolutions, including 1920 x 1200		
3D	Support		
Output scaling	4K → 1080p		
Color space	RGB, YCbCr 4:4:4, YCbCr 4:2:2, YCbCr 4:2:0		
Color depth	8-bit, 10-bit, 12-bit [1080P, 4K30Hz, 4K60Hz (YCbCr 4:2:0)] 8-bit [4K60Hz (YCbCr4:4:4)]		
HDR	Support HDR10, HDR10+, Dolby Vision, HLG		
HDMI audio format	PCM2.0/5.1/7.1CH, Dolby Digital/Plus/EX, Dolby True HD, DTS, DTS-EX, DTS-96/24, DTS High Res, DTS-HD Master Audio, DSD		
Coaxial audio format	PCM2.0CH, Dolby Digital / Plus, DTS 2.0/5.1		
L/R audio format	PCM 2.0CH		
Electrostatic protection	Mannequin: ±8kV (air discharge), ±4kV (contact discharge)		
Shell	Metal shell		
Color	Black		
Size	220mm[L] × 105mm[W] × 44mm[H]		
Weight	792g		
Power supply	Input: AC 100~240V 50/60Hz Output: DC 5V/2.5A		
Power consumption	10W (Max), 1.56W (Standby)		
Operating temperature	0° C ~ 40° C / 32° F ~ 104° F		
Storage temperature	-20° C ~ 60° C / -4° F ~ 104° F		
Relative humidity	20~90% RH (No condensation)		
Input	4 x HDMI in Type A [19-pin female]		
Output	4 x HDMI out Type A [19-pin female] 4 x L/R audio out [3.5mm Stereo Mini-jack] 4 x COAX audio out [RCA]		
Control port	1 x TCP/IP [RJ45] 1 x RS-232 [3-pin Phoenix] 1 x IR EXT [3.5mm Stereo Mini-jack]		
Resolution / Distance	4K@60Hz - M	4K@30Hz - M	1080P@60Hz - M
HDMI IN/OUT	3M	10M	15M
Advanced high-speed HDMI cable is recommended.			

2. Physical Description

2.1 Panel introduction

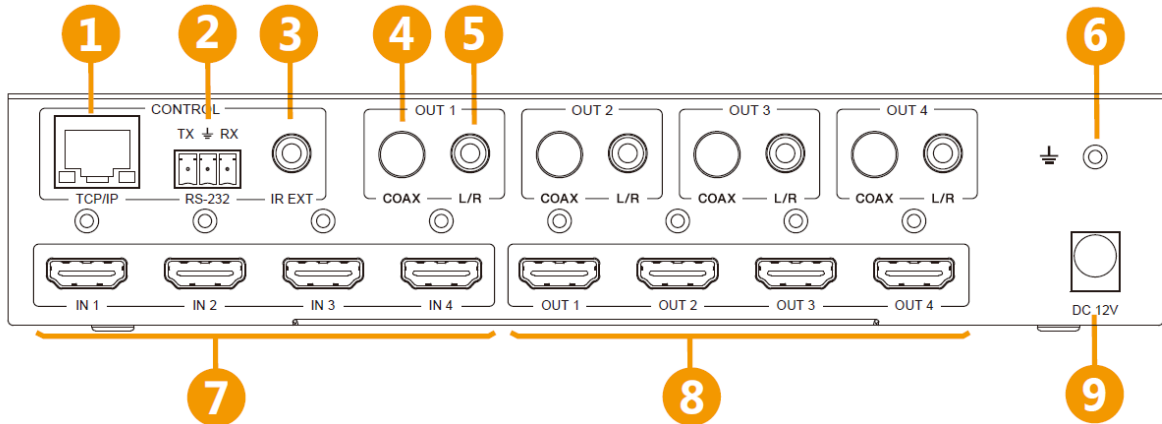
◆ Front View



Connectors, Controls & Indicators

No.	Name	Functional description
1	IR receiving window	Receive IR remote control signals.
2	Power Indicator	Red means power on. When the indicator light is off, the matrix is in a standby state and can be switched through API commands, IR remote control or Web GUI interface.
3	OUT 1-4 button	Signal source selection button of HDMI OUT 1-4 output port, short press to switch input source circularly, long press for 3 seconds to switch to Scaler mode
4	IN 1-4 Signal Indicator	When switching to the corresponding input source, the corresponding green indicator will light up.

◆ Rear View



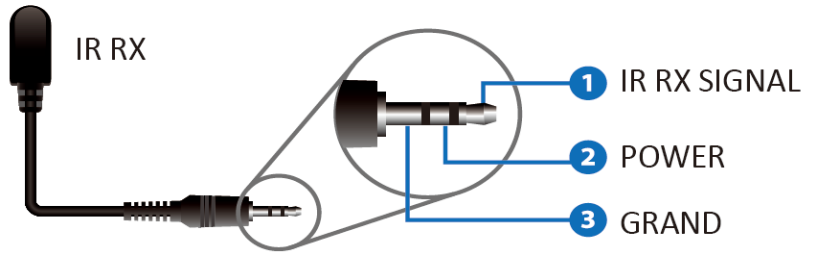
Connectors, Controls & Indicators

No.	Name	Functional description
1	TCP/IP	Control port for TCP/IP control or access to the built-in web GUI.
2	RS-232	Connect to a computer for RS-232 command control.
3	IR EXT	IR signal input port, connect the IR receiving line.
4	Coaxial Audio Output OUT 1 - 4	RCA connectors for coaxial audio output from HDMI OUT 1 - 4 ports.
5	L/R Audio Output OUT 1 - 4	3.5mm Mini-jack connector. For analog stereo audio output from HDMI OUT 1 - 4 ports.
6	Ground	Connect the case to ground.
7	IN 1 - 4	HDMI input port, connect HDMI signal source device through HDMI cable.
8	OUT 1 - 4	HDMI output port, connect HDMI display device through HDMI cable.
9	DC 12V In	12V DC power supply interface.

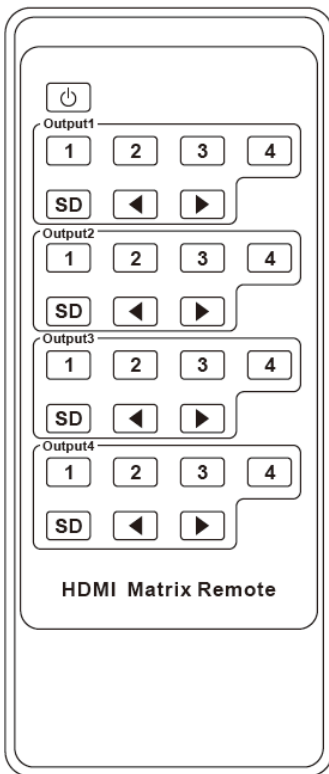
2.2 Infrared receiving line



IR RX



2.3 Infrared remote controller

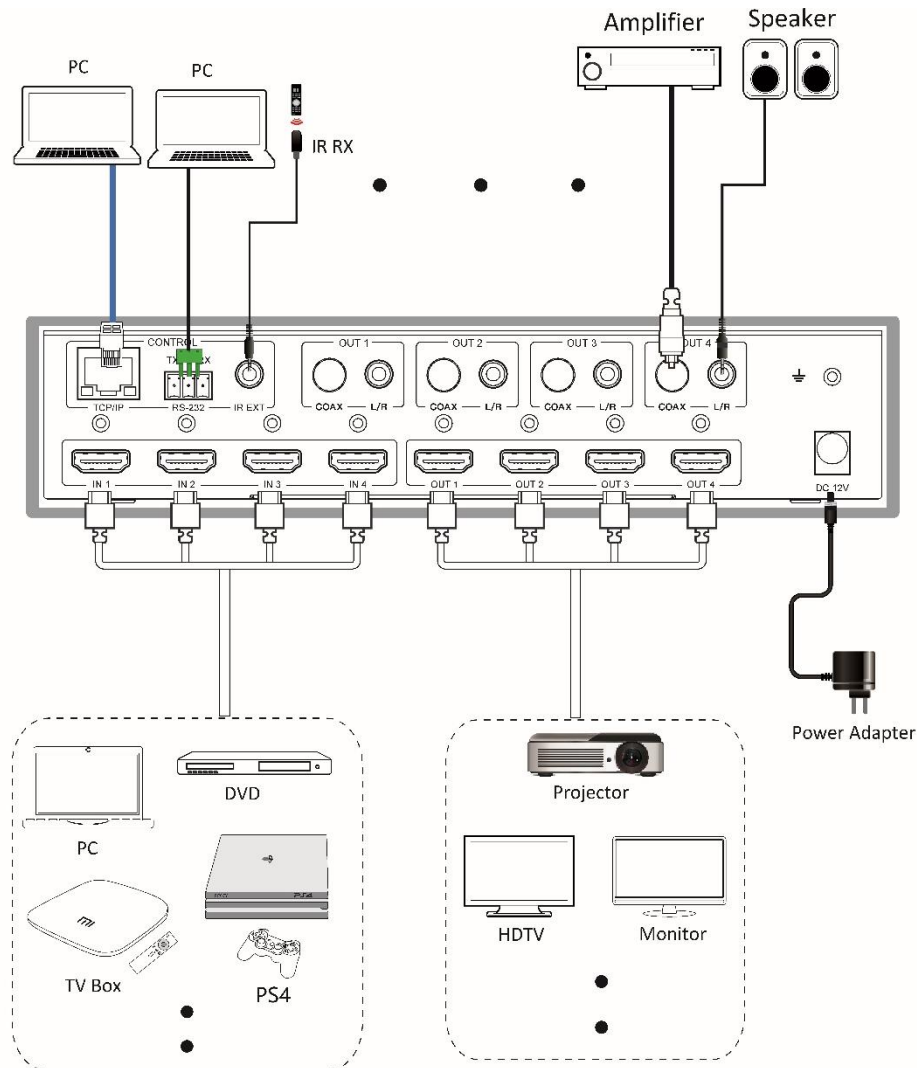


	On/Standby button.
Output 1/2/3/4	
	Select the required input signal source for HDMI out 1 - 4 ports. After selection, the corresponding in 1 - 4 indicator light on the front panel turns green.
	Toggles the video scaling or pass-through function of the output port.
	Select the previous / next input source for HDMI out 1 - 4 port between 1 - 4. After selection, the corresponding in 1 - 4 indicator light on the front panel turns green.

3. Functional performance

- Comply with HDMI 2.0b , HDCP2.2 / HDCP1.4 and DVI 1.0
- Support 18Gbps video bandwidth
- Support high video resolution up to 4K × 2K@ 50/60Hz(4:4:4)
- All ports support 4K->1080P video scaling function
- Supports analog L/R and coaxial audio de-embedding outputs
- Coaxial output port supports ARC (Audio Return) function
- Support EDID management
- Built-in Web GUI for TCP/IP control
- Support via panel buttons, IR remote control, RS-232 and TCP/IP control
- Reasonable design, easy to install

4. Schematic diagram



5. Matrix Instructions

5.1 Connection steps

1. Connect the desired HDMI source device.
2. Connect the desired HDMI display device.
3. Connect the desired control input device: TCP/IP, RS-232 or IR IN.
4. Connect the audio playback device to the coaxial or analog stereo audio output.
5. Connect the 12V DC power supply.
6. Select the signal source for the output port by short pressing the OUT1 - 4 buttons on the front panel (circular selection mode) until the corresponding input source indicator lights up.

5.2 Web GUI operation guide

This matrix comes with a built-in web interface to provide a way to control or configure various settings. There are six pages, and each page is detailed in the following sections:

1. Status – Displays firmware and IP settings information.
2. Video – Switch the desired input source to the output port and make a preset.
3. Input – Displays information about the input signal and EDID settings.
4. Output – Displays information about the output signal and scaling options.
5. Network – Basic network settings management and web login settings.
6. System – Panel lock, beep and serial baud rate settings, and firmware upgrades.

Note: All six pages above are accessible in Admin mode. When using User mode, only the Status and Video pages can be accessed.

Before accessing the web interface, you need to know the IP address of the matrix (the default IP address is 192.168.1.100). The user can also get the current IP address of the matrix through RS-232 control. Use the ASCII command tool to send the command "r ipconfig!", the following feedback will appear:

```
[11:00:55.617]发→◇r ipconfig!
□
[11:00:55.710]收←◆IP Mode: DHCP
IP:192.168.61.103
Subnet Mask:255.255.255.0
Gateway:192.168.61.1
Mac address:6c-df-fb-03-d5-e0
TCP/IP port=85534
telnet port=998
```

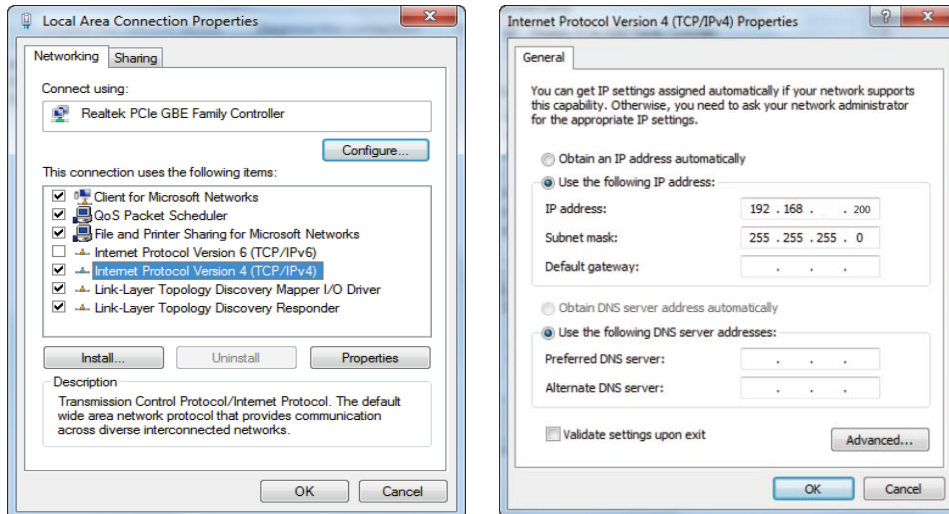
The IP: 192.168.61.103 in the image is the current IP address of the matrix (the IP address is variable, depending on what the machine returns).

For details on RS-232 control, refer to "5.3 RS-232 Control Commands".

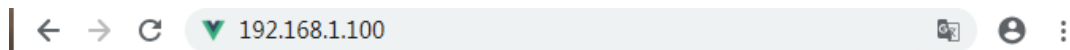
The specific operation method of Web GUI control is as follows:

Step 1: Connect the TCP/IP interface of the matrix to the computer using a UTP cable.

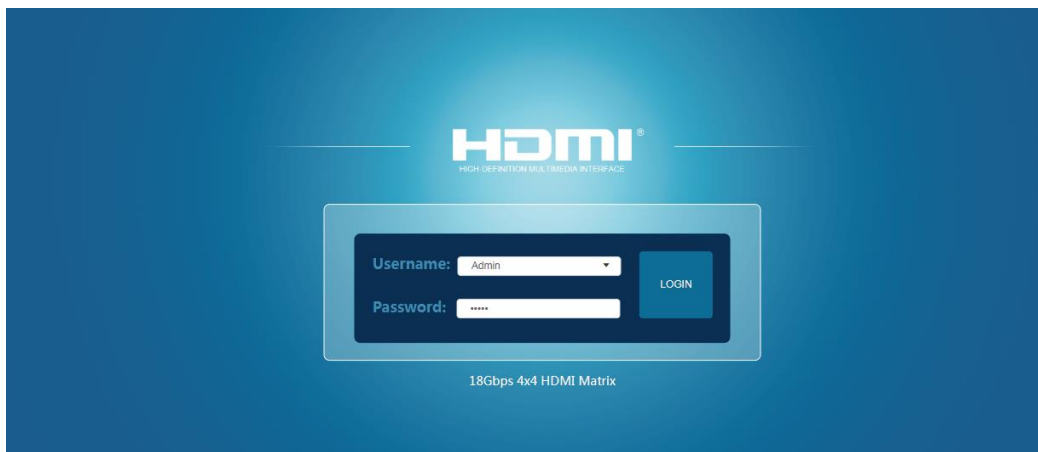
Step 2: Set the IP address of the computer to be in the same network segment as the matrix, for example, set the IP address of the computer to 192.168.1.200 and the subnet mask to 255.255.255.0.



Step 3: Enter the IP address of the matrix in the browser of the computer to enter the Web GUI page.



Before entering the main page of the Web GUI, the login page will appear, as shown below:



Select the username in the drop-down box and enter the password. The default passwords are as follows:

Username	User	Admin
Password	user	admin

After entering the password, click "LOGIN" to log in, and the Status page will appear.

◆ Status Page

This page provides basic information about the device, such as product model, installed firmware version, and network settings. This page is visible in both user and administrator mode.

Status	
Model	HDP-MXB44P
Firmware Version	v1.00.04/L1.37
Hostname	IP-module
IP Address	192.168.1.100
Subnet Mask	255.255.255.0
Gateway	192.168.1.1
Mac Address	6C:DF:FB:02:11:D6

The keys at the top right of the web interface are always available and have the following functions:

Log out: The button to log out of the system can disconnect the current user and display the login interface.

Power on: The power button can switch the power state of the matrix: power on and standby mode.

◆ Video Page

This page can select input source and set preset.

Outputs	Video Source
Output 1	HDMI 1 INPUT
Output 2	HDMI 2 INPUT
Output 3	HDMI 3 INPUT
Output 4	HDMI 4 INPUT

Presets Name	Presets Set	Presets Save	Presets Clear
preset1	Set	Save	Clear
preset2	Set	Save	Clear
preset3	Set	Save	Clear
preset4	Set	Save	Clear

For this preset setting, first you need to select the desired input source for the four output ports. Then click the "Save" button to save the settings. Clicking the "Set" button will use the preset you saved. Clicking the Clear button will clear the preset. Up to 4 presets can be saved.

◆ Input Page

This page displays input port information. When connected correctly, the corresponding signal light turns on. At the same time, it supports to modify the name of the input port. The EDID column provides a list of EDID options for each individual input port.

The screenshot shows the 'Input Setting' page in a web interface. At the top, it says '19Gbps 4x4 HDMI & Matrix'. There are 'Admin', 'Log out', and 'Power on' buttons. The left sidebar has 'Input' selected. The main content area has a table with the following data:

Inputs	Active	Name	EDID
HDMI 1	●	Input1	4K2K60_444.Stereo Audio 2.0 HDR
HDMI 2	●	Input2	4K2K60_444.HD Audio 7.1 HDR
HDMI 3	●	Input3	4K2K60_444.Stereo Audio 2.0 HDR
HDMI 4	●	Input4	4K2K60_444.Stereo Audio 2.0 HDR

Below the table, there are two sections for loading EDID files:

Load EDID to User Memory
 Select EDID File:
 Select Destination:

Load EDID to Computer
 Select EDID File:

The following EDID options are available in any EDID drop-down list:

1080P, Stereo Audio 2.0
 1080P, Dolby/DTS 5.1
 1080P, HD Audio 7.1
 1080I, Stereo Audio 2.0
 1080I, Dolby/DTS 5.1
 1080I, HD Audio 7.1
 3D, Stereo Audio 2.0
 3D, Dolby/DTS 5.1
 3D, HD Audio 7.1
 4K2K30Hz_444 Stereo Audio 2.0
 4K2K30Hz_444 Dolby/DTS 5.1
 4K2K30Hz_444 HD Audio 7.1
 4K2K60Hz_420 Stereo Audio 2.0
 4K2K60Hz_420 Dolby/DTS 5.1
 4K2K60Hz_420 HD Audio 7.1
 4K2K60Hz_444 Stereo Audio 2.0
 4K2K60Hz_444 Dolby/DTS 5.1
 4K2K60Hz_444 HD Audio 7.1
 4K2K60Hz_444 Stereo Audio 2.0 HDR
 4K2K60Hz_444 Dolby/DTS 5.1 HDR
 4K2K60Hz_444 HD Audio 7.1 HDR
 USER_1 USER_2
 COPY_FROM_TX_1
 COPY_FROM_TX_2
 COPY_FROM_TX_3
 COPY_FROM_TX_4

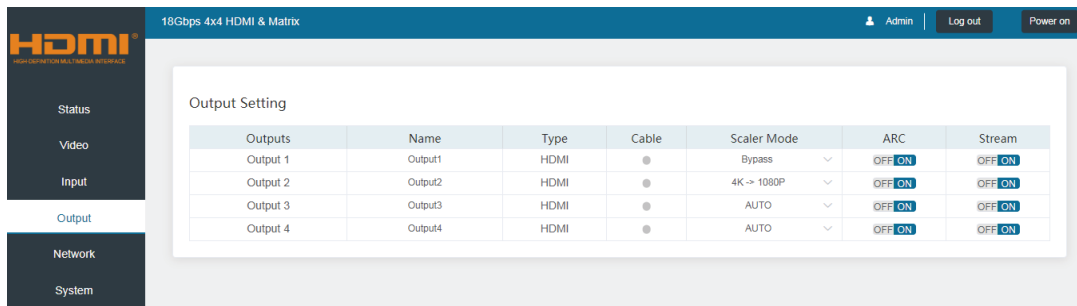
This page also provides a way to send a binary EDID file to the EDID memory of User 1 or User 2:

1. Click the "Browse" button and select the binary EDID file on the computer.
2. Select User 1 or User 2 in the drop-down list.
3. Click the "Upload" button.

EDID data from any input or from User 1 and User 2 locations can be read and stored on your computer.

◆ Output Page

This page displays output port information. Support to modify the output port name.



The Scaler mode menu provides the following options:

Bypass	Follow the input source. (Pass-through).
4K→1080P	Drop the resolution from 4K to 1080P.
Auto	Scaler mode is automatically selected to match display requirements.

The ARC button enables or disables the audio return function. When the ARC function is enabled, the audio of the display device can be returned to the coaxial audio output port, but the L/R stereo audio output port will not output.

The Stream button can open or close the signal output of the corresponding output port.

◆ Network Page

The network page can configure network settings and modify the Web login password.

Notice:

- 1) IP settings can only be performed when Mode is set to Static.
- 2) After modifying any settings, the page will jump to the home page of the web browser or the login interface, and you need to log in again according to the new settings.

The screenshot shows the '18Gbps 4x4 HDMI & Matrix' web interface. The top navigation bar includes the HDMI logo, the title '18Gbps 4x4 HDMI & Matrix', and user controls for 'Admin', 'Log out', and 'Power on'. A left sidebar contains menu items: Status, Video, Input, Output, Network (highlighted), System, and a dark grey section. The main content area is divided into two sections:

- IP Settings:** Features a 'Mode' selector with 'Static' (selected) and 'DHCP' options. Below are input fields for 'IP Address' (192.168.1.100), 'Gateway' (192.168.1.1), 'Subnet Mask' (255.255.255.0), and 'Telnet Port' (23).
- Web Login Settings:** Features a 'Username' selector with 'User' (selected) and 'Admin' options. Below are input fields for 'Old Password', 'New Password', and 'Confirm'. A 'Product Model' field contains 'HDP-MXB44P'. At the bottom are 'Set Network Defaults' and 'Save' buttons.

◆ System Page

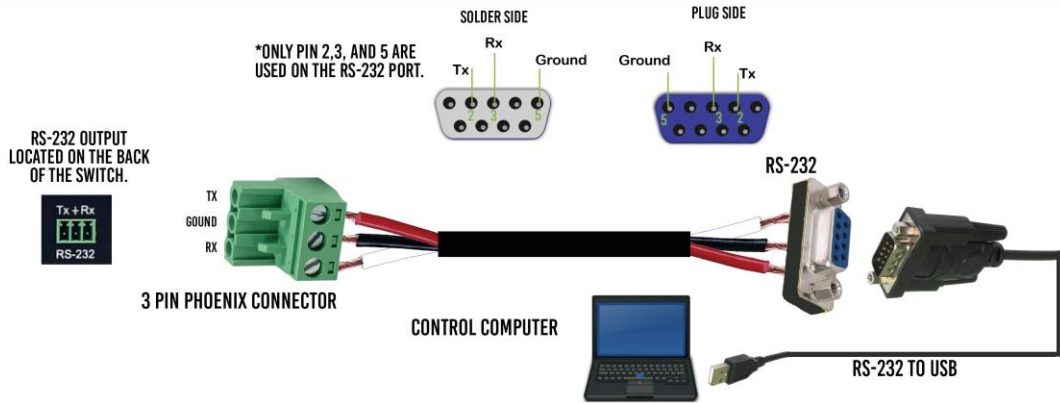
The System page allows you to set panel lock, beep, and serial baud rate, perform firmware upgrades, restore factory defaults, and reboot the device.

The screenshot shows the 'System' page of the HDMI web interface. The left sidebar is identical to the previous screenshot, with 'System' highlighted. The main content area includes:

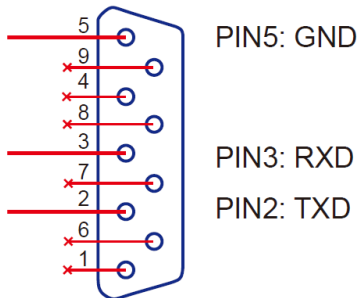
- Panel Lock:** A toggle switch currently set to 'OFF'.
- Beep:** A toggle switch currently set to 'ON'.
- Serial Baud Rate:** A row of buttons for 4800, 9600, 19200, 38400, 57600, and 115200. The '115200' button is selected.
- Firmware Update:** A 'Browse...' button followed by an empty file input field, and an 'Update' button.
- Factory Reset:** A 'Reset' button.
- Reboot:** A 'Reboot' button.

5.1 RS-232 control commands

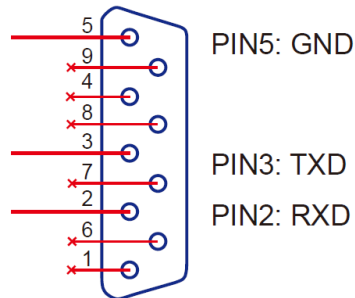
This matrix supports RS-232 serial port command control. Use a serial cable to connect the matrix to the computer, and open a serial command tool on the computer, such as Comm Operator, Dock light or Hercules, etc., and send ASCII commands to control the matrix. The connection diagram is shown below:



RS-232 pin definition:



RS-232 DB9, Female



RS-232 DB9, Male

Pay attention:

1. All instructions sent to the matrix must be terminated with an exclamation mark (!). Any carriage returns after the command ends will be ignored. Status - Displays firmware and IP settings information.
2. All spaces shown in the command are required.
3. All response messages are terminated with a CR/LF sequence.
4. When the same instruction requests all four inputs, the response will report each input on a separate line.
5. When the same instruction requests all four outputs, the response will report each output on a separate line.

The list of ASCII commands for this matrix is as follows:

ASCII commands		
Serial port protocol: Baud rate: 115200 (default), Data bits: 8bit, Stop bits:1, Check bit: None TCP/IP protocol port: 8000 The x, y, z and XXX are parameters.		
ASCII commands	Function description	Feedback
Power		
s power z!	power on/off the device, z=0~1(z=0 power off, z=1 power on)	power on System Initializing... Initialization Finished! power off
r power!	get current power state	power on /power off
s reboot!	reboot the device	Reboot... System Initializing... Initialization Finished!
SYSTEM Setup		
help!	Lists all commands	
r type!	Get device model	HDP-MXB44P
r status!	Get device current status	Get the unit all status: power, beep, lock, in/out connection, video/audio Crosspoint, EDID, scaler, HDCP, network status
r fw version!	Get Firmware version	MCU FW version x.xx.xx
r link in x!	Get the connection status of the x input port, x=0~4(0=all)	HDMI IN1: connect
r link out y!	Get the connection status of the y output port, y=0~4(0=all)	HDMI OUT1: connect
s reset!	Reset to factory defaults	Reset to factory defaults System Initializing... Initialization Finished!

s beep z!	Enable/Disable buzzer function, z=0~1(z=0 beep off, z=1 beep on)	beep on / beep off
r beep!	Get buzzer state	beep on / beep off
s lock z!	Lock/Unlock front panel button, z=0~1(z=0 lock off, z=1 lock on)	panel button lock on panel button lock off
r lock!	Get panel button lock state	panel button lock on/off
s save preset z!	Save switch state between all output port and the input port to preset z, z=1~8	save to preset 1
s recall preset z!	Call saved preset z scenarios, z=1~8	recall from preset 1
s clear preset z!	Clear stored preset z scenarios, z=1~8	clear preset 1
r preset z!	Get preset z information, z=1~8	video/audio crosspoint
s baud rate xxx!	Set the serial port baud rate of RS02 module, z=(115200,57600,38400,19200,9600,4800)	Baudrate:115200
r baud rate!	Get the serial port baud rate of RS02 module	Baudrate:115200
s id z!	Set the control ID of the product, z=000~999	id 888
Output Setting		
s in x av out y!	Set input x to output y, x=1~4, y=0~4(0=all)	input 1 -> output 2
r av out y!	Get output y signal status y=0~4(0=all)	input 1 -> output 1 input 2 -> output 2 input 4 -> output 4
s out y stream z!	Set output y stream on/off, y=0~4(0=all) z=0~1 (0:disable,1:enable)	Enable out 1 stream Disable out 1 stream
r out y stream!	Get output y stream status, y=0~4(0=all)	Enable out 1 stream
s hdmi y scaler z!	Set hdmi output y port output scaler mode, y=0~4(0=all), z=1~3(1=bypass,2=4k->1080p,3=Auto)	hdmi 1 set to bypass mode
r hdmi y scaler !	Get hdmi output y port output mode y=0~4(0=all)	hdmi 1 set to bypass mode
s hdmi y hdcp z!	Set hdmi output y port hdcp status y=0~4(0=all) z=0~1(1=active,0=off)	hdmi 1 hdcp active
r hdmi y hdcp!	Get HDCP status of HDMI out y, y=0~4(0=all)	hdmi 1 hdcp active
Audio Setting		
s hdmi y arc z!	Turn on/off arc of HDMI output y, y=0~4(0=all)z=0~1(z=0,off,z=1 on)	hdmi output 1 arc on hdmi output 1 arc off
r hdmi y arc!	Get the arc state of HDMI output y, y=0~4(0=all)	hdmi out1 arc on

EDID Setting		
r edid in x!	Get EDID status of the input x, x=0~4(0=all inputs)	IN1 EDID: 4K2K60_444, Stereo Audio 2.0 IN2 EDID: 4K2K60_444, Stereo Audio 2.0 IN3 EDID: 4K2K60_444, Stereo Audio 2.0 IN4 EDID: 4K2K60_444, Stereo Audio 2.0
r edid data hdmi y!	Get the EDID data of the hdmi output y port, y=1~4	EDID : 00 FF FF FF FF FF FF 00
s edid in x from z!	Set input x EDID from default EDID z, x=0~4(0=all),z=1~23 1、 1080p,Stereo Audio 2.0 2、 1080p,Dolby/DTS 5.1 3、 1080p,HD Audio 7.1 4、 1080i,Stereo Audio 2.0 5、 1080i,Dolby/DTS 5.1 6、 1080i,HD Audio 7.1 7、 3D,Stereo Audio 2.0 8、 3D,Dolby/DTS 5.1 9、 3D,HD Audio 7.1 10、 4K2K30_444,Stereo Audio 2.0 11、 4K2K30_444,Dolby/DTS 5.1 12、 4K2K30_444,HD Audio 7.1 13、 4K2K60_420,Stereo Audio 2.0 14、 4K2K60_420,Dolby/DTS 5.1 15、 4K2K60_420,HD Audio 7.1 16、 4K2K60_444,Stereo Audio 2.0 17、 4K2K60_444,Dolby/DTS 5.1 18、 4K2K60_444,HD Audio 7.1 19、 4K2K60_444,Stereo Audio 2.0 HDR 20、 4K2K60_444,Dolby/DTS 5.1 HDR 21、 4K2K60_444,HD Audio 7.1 HDR 22、 USER1 23、 USER2 24、 Copy_From_Hdmi_Tx_1 25、 Copy_From_Hdmi_Tx_2 26、 Copy_From_Hdmi_Tx_3 27、 Copy_From_Hdmi_Tx_4	IN1 EDID:1080p,Stereo Audio 2.0

安全指示

用户手册和设备上所使用的符号，指出可能对用户或他人造成的伤害以及财产受损的风险，为了您能够安全、正确使用设备，标识及其含义如下，请确保在阅读用户手册之前正确理解这些标识。



美国联邦通讯委员会对电子产品EMC的认证标志。



产品中含有一些金属元器件，请注意环保。



通过欧盟议会和欧盟理事会2002/95/EC指令。



CE认证表示此产品已经达到了欧盟指令规定的安全要求，用户可放心使用。



此为A级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对干扰采取切实可行的措施。



提醒使用者设备内出现的未绝缘的危险电压可能会导致人遭受电击



警告：为了避免电击，请不要打开机盖，也不要将无用的部分放在机箱内。请与有资格的服务人员联系。

一般信息指示



列示了可能导致操作或设置不成功的内容及一些需要注意的相关信息。

警告

为确保设备可靠使用及人员人身安全，请在安装、使用和维护时，请遵守以下事项：

安装时的注意事项：

- 请勿在下列场所使用本产品：有灰尘、油烟、导电性尘埃、腐蚀性气体、可燃性气体的场所；暴露于高温、结露、风雨的场合；有振动、冲击的场合。电击、火灾、误操作也会导致产品损坏和恶化；
- 在进行螺丝孔加工和接线时，不要使金属屑和电线头掉入控制器的通风孔内，这有可能引起火灾、故障、误操作；
- 产品在安装工作结束，需要保证通风面上没有异物，包括防尘纸等包装物品，否则可能导致运行时散热不畅，引起火灾、故障、误操作；
- 避免带电状态进行接线、插拔电缆插头，否则容易导致电击，或导致电路损坏；
- 安装和接线必须牢固可靠，接触不良可能导致误操作；
- 对于在干扰严重的应用场合，高频信号的输入或输出电缆应选用屏蔽电缆，以提高系统的抗干扰性能。

布线时的注意事项：

- 必须将外部电源全部切断后，才能进行安装、接线等操作，否则可能引起触电或设备损坏；
- 本产品通过电源线的接地导线接地，为避免电击，必须将接地导线与大地相连，在对本产品的输入端或输出端进行连接之前，请务必将本产品正确接地；
- 在安装布线完毕，立即清除异物，通电前请盖好产品的端子盖板，避免引起触电。

保养时的注意事项：

- 请勿在通电时触摸端子，否则可能引起电击、误操作；
- 请在关闭电源后进行清扫和端子的旋紧工作，通电时这些操作可能引起触电；
- 请在关闭电源后进行通讯信号电缆的连接或拆除、扩展模块或控制单元的电缆连接或拆除等操作，否则可能引起设备损坏、误操作；
- 请勿拆卸设备，避免损坏内部电气元件；
- 务必熟读本手册，充分确认安全后，再进行程序的变更、试运行、启动和停止操作。

产品报废时的注意事项：

- 电路板上的电解电容器焚烧时可能发生爆炸；
- 请分类收集和处理，不能投入生活垃圾中；
- 请按工业废弃物进行处理，或者按当地的环境保护规定处理。

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1. 技术参数

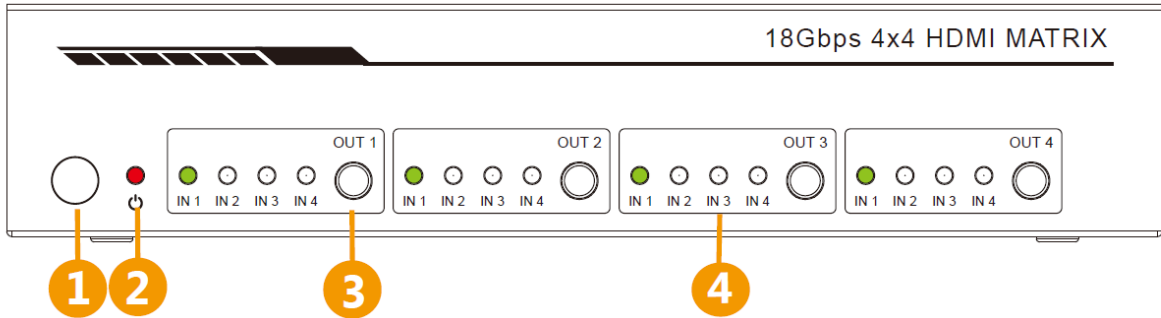
下表列出了H4的规格:

参数规格			
HDMI标准	HDMI 2.0		
HDCP标准	HDCP 2.2, HDCP 1.4		
视频带宽	18Gbps		
分辨率	4K2K 50/60Hz 4:4:4 4K2K 50/60Hz 4:2:0 4K2K 30Hz 4:4:4 1080p, 1080i, 720p, 720i, 480p, 480i 所有HDMI 3D电视格式 支持所有PC分辨率, 包括1920x1200		
3D	支持		
输出缩放	4K→1080p		
颜色空间	RGB, YCbCr 4:4:4, YCbCr 4:2:2, YCbCr 4:2:0		
颜色深度	8-bit, 10-bit, 12-bit [1080P, 4K30Hz, 4K60Hz (YCbCr 4:2:0)] 8-bit [4K60Hz (YCbCr 4:4:4)]		
HDR	支持HDR10, HDR10+, Dolby Vision, HLG		
HDMI音频格式	PCM2.0/5.1/7.1CH, Dolby Digital/Plus/EX, Dolby True HD,DTS, DTS-EX, DTS-96/24, DTS High Res, DTS-HD Master Audio, DSD		
同轴音频格式	PCM2.0CH, Dolby Digital / Plus, DTS 2.0/5.1		
L/R 音频格式	PCM2.0CH		
静电保护	± 8kV (空气放电), ± 4kV (接触放电)		
外壳	金属外壳		
颜色	黑色		
尺寸	220mm[长]×105mm[宽]×44mm[高]		
重量	792克		
供电电源	输入: AC 100~240V 50/60Hz 输出: DC 5V/2.5A		
电源功耗	10W (最大值), 1.56W (待机)		
工作温度	0° C ~ 40° C / 32° F ~ 104° F		
储存温度	-20° C ~ 60° C / -4° F ~ 104° F		
相对湿度	20~90% RH (无凝结)		
输入端口	4 x HDMI in Type A [19-pin母座]		
输出端口	4 x HDMI out Type A [19-pin母座] 4 x L/R audio out [3.5mm Stereo Mini-jack] 4 x COAX audio out [RCA]		
控制端口	1 x TCP/IP [RJ45] 1 x RS-232 [3-pin凤凰端子] 1 x IR EXT [3.5mm Stereo Mini-jack]		
分辨率 / 线长	4K@60Hz - 米	4K@30Hz - 米	1080P@60Hz - 米
HDMI IN/OUT	3米	10米	15米
推荐使用高级高速HDMI线。			

2. 物理描述

2.1 面板介绍

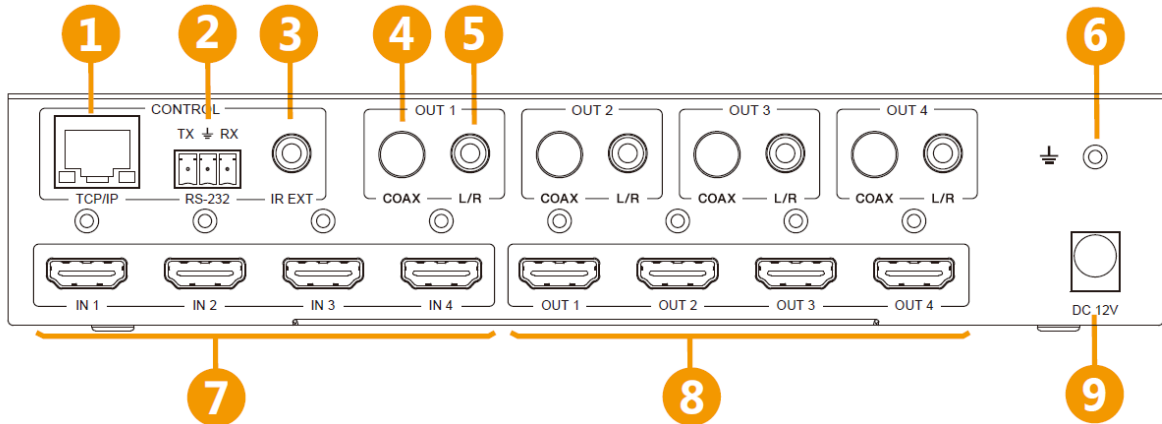
◆ 前面板端口



连接器、控制器和指示器

标号	名称	功能描述
1	IR接收窗	接收IR遥控信号。
2	电源指示灯	当设备通电时，红色指示灯点亮。指示灯熄灭时，矩阵处于待机状态，可以通过API指令、IR遥控或Web GUI界面进行切换。
3	OUT 1-4按键	HDMI OUT 1-4 输出口的信号源选择键，短按循环切换输入源，长按3秒切换Scaler模式
4	IN 1-4信号指示灯	切换到对应的输入源时，对应的绿色指示灯会点亮。

◆ 后面板端口



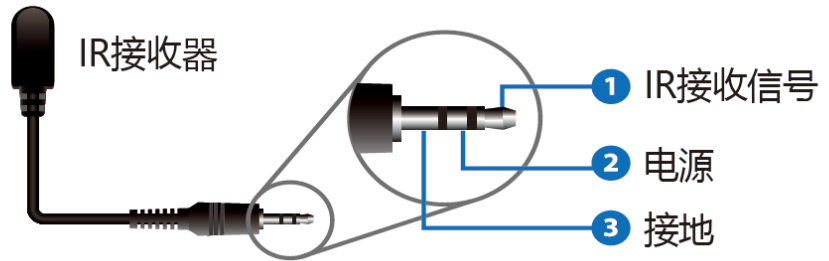
连接器、控制器和指示器

标号	名称	功能描述
1	TCP/IP	用于TCP/IP控制或访问内置Web GUI的控制端口。
2	RS-232	连接电脑，用于RS-232指令控制。
3	IR EXT	IR信号输入口，连接IR接收线。
4	同轴音频输出口 OUT 1 - 4	RCA连接口，用于来自HDMI OUT 1 - 4端口的同轴音频输出。
5	L/R音频输出口 OUT 1 - 4	3.5mm Mini-jack连接口。用于来自HDMI OUT 1 - 4端口的模拟立体声音频输出。
6	接地口	连接外壳接地。
7	IN 1 - 4端口	HDMI输入口，通过HDMI线连接HDMI信号源设备。
8	OUT 1 - 4端口	HDMI输出口，通过HDMI线连接HDMI显示设备。
9	DC 12V 电源	DC 12V电源输入口。

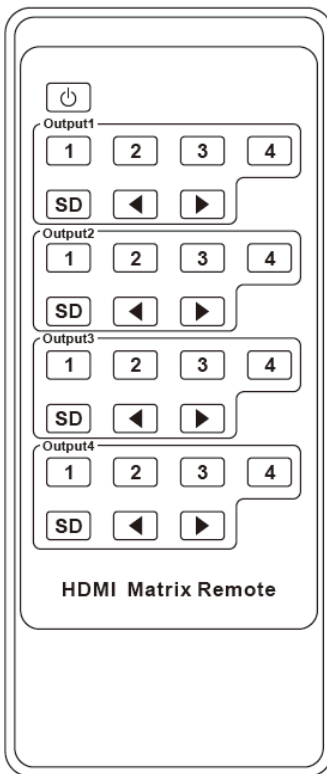
2.2 红外接收线



IR接收器



2.3 红外遥控器

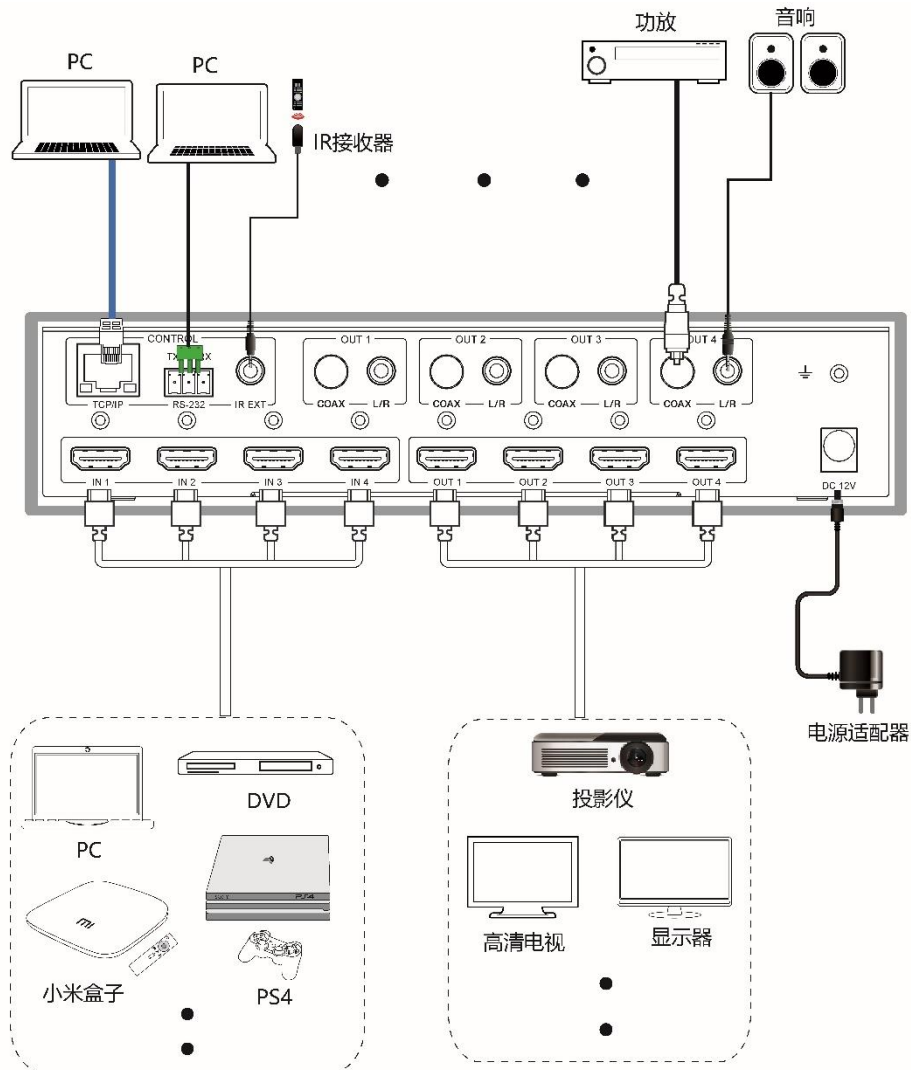


	开机/待机按键。
Output 1 - 4	
	为HDMI OUT 1 - 4端口选择所需的输入信号源。选择之后，前面板上相应的IN 1 - 4指示灯点亮为绿色。
	切换输出端口的视频缩放或直通功能。
	在1 - 4之间为HDMI OUT 1 - 4端口选择上一个/下一个输入信号源。选择之后，前面板上相应的IN 1 - 4指示灯点亮为绿色。

3. 功能特性

- 符合HDMI 2.0b, HDCP 2.2 / HDCP 1.4和DVI 1.0规范
- 支持18 Gbps视频带宽
- 视频分辨率最高支持4K2K@50/60Hz (4:4:4)
- 所有端口都支持4K->1080P 视频缩放功能
- 支持模拟L/R和同轴音频解嵌输出
- 同轴输出端口支持ARC（音频回传）功能
- 支持EDID管理
- 内置Web GUI, 可用于TCP/IP控制
- 支持通过面板按键, IR遥控器, RS-232和TCP/IP控制
- 设计合理, 便于安装

4. 系统连接图



5. 矩阵使用说明

5.1 连接步骤

1. 连接所需的HDMI输入源设备。
2. 连接所需的HDMI显示设备。
3. 连接所需的控制输入设备：TCP / IP, RS-232或IR IN。
4. 连接音频播放设备到同轴或模拟立体声音频输出口。
5. 连接12V DC 电源。
6. 通过短按前面板上的OUT1 - 4按键为输出口选择信号源（循环选择模式），直到对应的输入源指示灯亮起。

5.2 Web GUI操作指南

本矩阵带有内置的Web界面，以提供控制或配置各种设置的方法。共有六个页面，每个页面将在以下各节中详细说明：

1. Status – 显示固件和IP设置信息。
2. Video – 将所需的输入源切换到输出口并进行预设。
3. Input – 显示输入信号和EDID设置的信息。
4. Output – 显示输出信号和缩放选项的信息。
5. Network – 基本的网络设置管理和Web登录设置。
6. System – 面板锁定、哔声和串行波特率设置，以及固件升级。

注意：以上六个页面在Admin (管理员) 模式下都可以访问。当使用User (用户) 模式时，只有Status和Video页面可访问。

访问Web界面之前需要知道矩阵的IP地址（默认IP地址是192.168.1.100）。用户也可以通过RS-232控制获取矩阵的当前IP地址。使用ASCII指令工具发送指令“r ipconfig!”，会出现以下反馈信息：

```
[11:00:55.617]发→◇r ipconfig!
□
[11:00:55.710]收←◆IP Mode: DHCP
IP:192.168.61.103
Subnet Mask:255.255.255.0
Gateway:192.168.61.1
Mac address:6c-df-fb-03-d5-e0
TCP/IP port=65534
telnet port=998
```

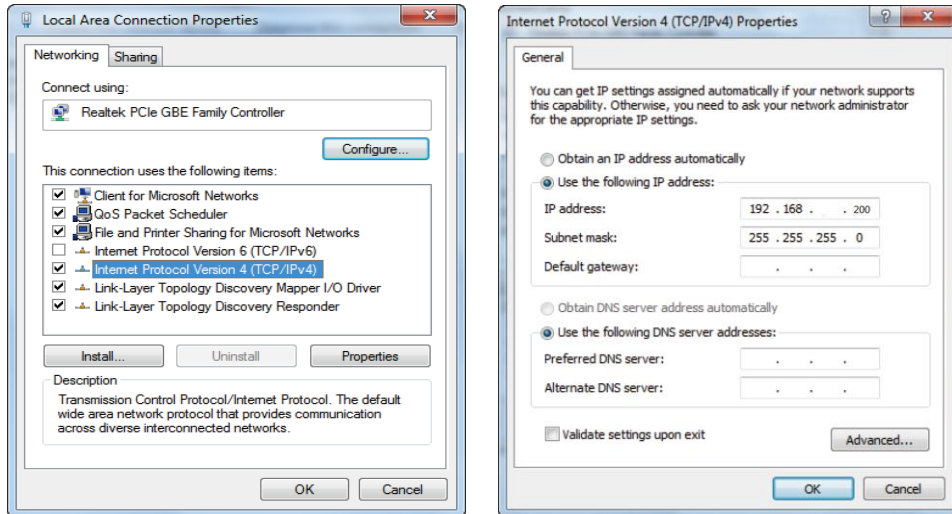
上图中的IP:192.168.61.103就是矩阵的当前IP地址（IP地址是可变的，具体取决于机器返回的内容）。

有关RS-232控制的详情，请参阅“5.3 RS-232控制指令”。

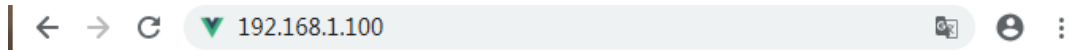
Web GUI控制的具体操作方法如下：

步骤1： 使用UTP线将矩阵的TCP/IP接口连接到电脑。

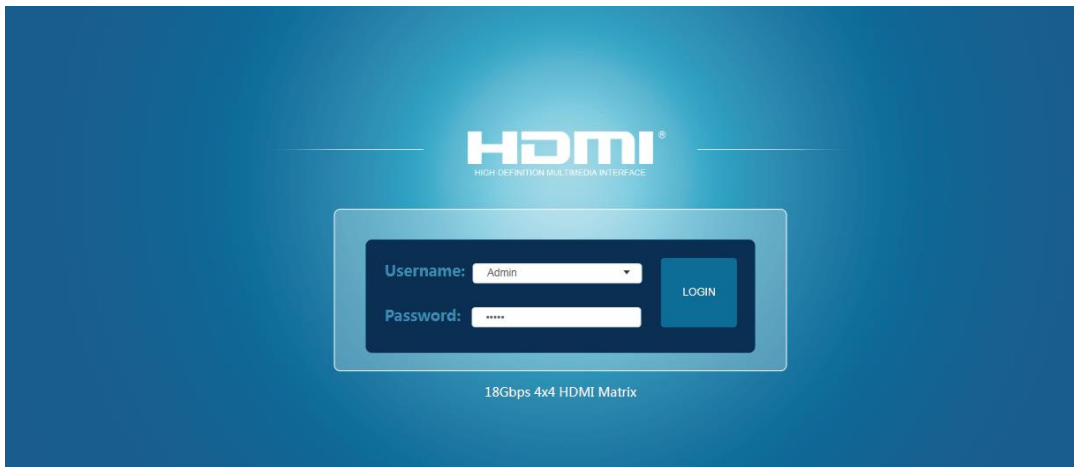
步骤2： 设置电脑的IP地址与矩阵在同一网络段，例如，将电脑的IP地址设置为192.168.1.200，并将子网掩码设置为255.255.255.0。



步骤3： 在电脑的浏览器中输入矩阵的IP地址，进入Web GUI页面。



进入Web GUI主页面之前，先会出现登录页面，如下图所示：



在下拉框中选择用户名，并输入密码。默认密码如下：

Username	User	Admin
Password	user	admin

输入密码之后，点击“LOGIN”登录，将出现Status页面。

◆ Status页面

状态页面提供了设备的基本信息，如产品型号、安装的固件版本和网络设置。此页面在用户和管理员模式下均可见。

Status	
Model	HDP-MXB44P
Firmware Version	v1.00.04/1.37
Hostname	IP-module
IP Address	192.168.1.100
Subnet Mask	255.255.255.0
Gateway	192.168.1.1
Mac Address	6C:DF:FB:02:11:D6

Web界面右上方的按键始终可用，并具有以下功能：

Log out: 退出系统按键，可以断开当前用户连接并显示登录界面。

Power on: 开机按键，可以切换矩阵的电源状态：开机和待机模式。

◆ Video页面

视频页面可以选择输入源及设置预设。

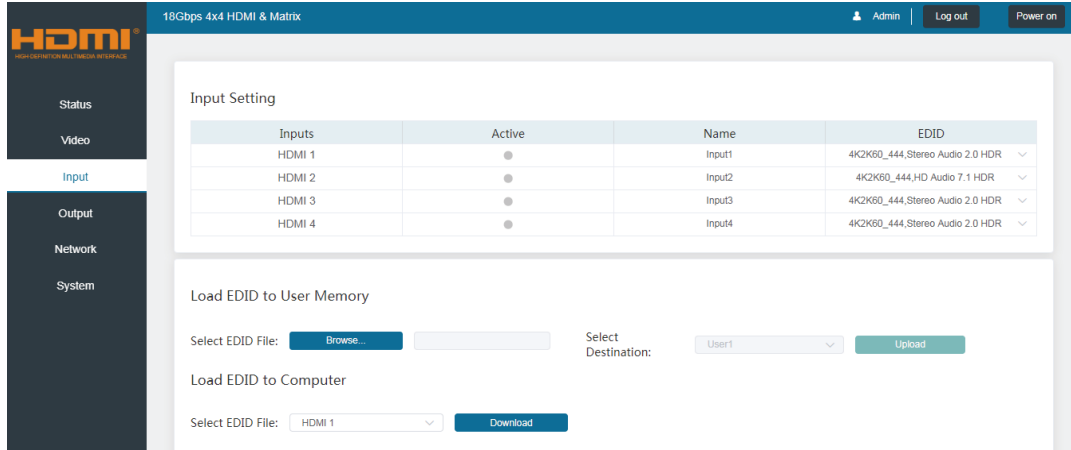
Outputs	Video Source
Output 1	HDMI 1 INPUT
Output 2	HDMI 2 INPUT
Output 3	HDMI 3 INPUT
Output 4	HDMI 4 INPUT

Presets Name	Presets Set	Presets Save	Presets Clear
preset1	Set	Save	Clear
preset2	Set	Save	Clear
preset3	Set	Save	Clear
preset4	Set	Save	Clear

对于此预设设置，首先需要为四个输出端口选择所需的输入源。然后单击“Save”保存按键以保存设置。单击“Set”设置按键，将使用您保存的该预设。单击“Clear”清除按键将清除预设。最多可支持保存4个预设。

◆ Input页面

输入页面显示输入端口信息。当连接成功时，对应信号灯亮起。同时，支持修改输入端口的名称。EDID列为每个单独的输入端口提供了EDID选项的列表。



以下EDID选项在任何EDID下拉列表中均可用：

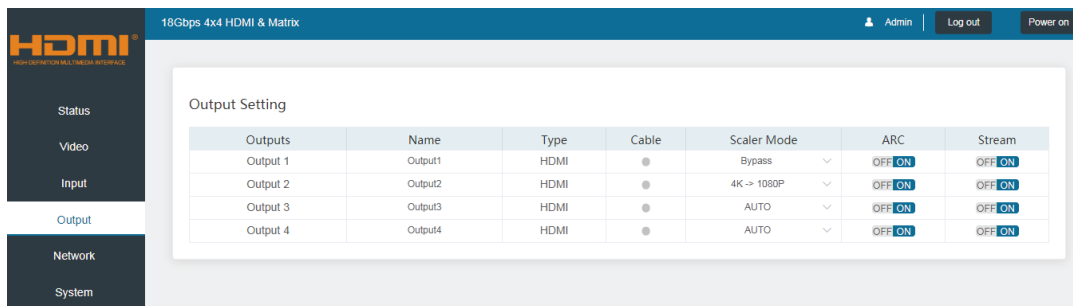
1080P, Stereo Audio 2.0
 1080P, Dolby/DTS 5.1
 1080P, HD Audio 7.1
 1080I, Stereo Audio 2.0
 1080I, Dolby/DTS 5.1
 1080I, HD Audio 7.1
 3D, Stereo Audio 2.0
 3D, Dolby/DTS 5.1
 3D, HD Audio 7.1
 4K2K30Hz_444 Stereo Audio 2.0
 4K2K30Hz_444 Dolby/DTS 5.1
 4K2K30Hz_444 HD Audio 7.1
 4K2K60Hz_420 Stereo Audio 2.0
 4K2K60Hz_420 Dolby/DTS 5.1
 4K2K60Hz_420 HD Audio 7.1
 4K2K60Hz_444 Stereo Audio 2.0
 4K2K60Hz_444 Dolby/DTS 5.1
 4K2K60Hz_444 HD Audio 7.1
 4K2K60Hz_444 Stereo Audio 2.0 HDR
 4K2K60Hz_444 Dolby/DTS 5.1 HDR
 4K2K60Hz_444 HD Audio 7.1 HDR
 USER_1 USER_2
 COPY_FROM_TX_1
 COPY_FROM_TX_2
 COPY_FROM_TX_3
 COPY_FROM_TX_4

此页面还提供了一种将二进制EDID文件发送给用户1或用户2的EDID内存的方法：

1. 单击“Browse”按键，在电脑上选择二进制EDID文件。
2. 在下拉列表中选择 User 1或User 2。
3. 单击“Upload”上传按键。
4. 从任何输入或从用户1和用户2位置的EDID数据都可以读取并存储在您的电脑上。

◆ Output页面

输出页面显示输出端口信息。支持修改输出端口名称。



Scaler模式菜单提供以下选项：

Bypass	跟随输入源。（Pass-through直通）。
4K→1080P	将分辨率从4K降到1080P。
Auto	自动选择Scaler模式，以匹配显示要求。

ARC按键可开启或关闭音频回传功能。ARC功能开启时，显示设备的音频可以回传到同轴音频输出口输出，而L/R立体声音频输出口将不会有音频输出。

Stream按键可开启或关闭相应输出口的的信号输出。

◆ Network页面

网络页面可以配置网络设置以及修改Web登录密码。

注意：

- 1) 只有将Mode设置为Static时，才能进行IP设置。
- 2) 在此页修改任何设置后，页面会跳转到Web浏览器首页或者Web GUI登录界面，您需要按照新的设置重新登录Web GUI。

The screenshot displays the web interface for an HDMI Matrix device. The top navigation bar includes the HDMI logo, the device name '18Gbps 4x4 HDMI & Matrix', and user controls for 'Admin', 'Log out', and 'Power on'. A left sidebar contains menu items: Status, Video, Input, Output, Network, and System. The main content area is divided into two sections:

- IP Settings:** Features a 'Mode' selector with 'Static' (selected) and 'DHCP' options. Below are input fields for 'IP Address' (192.168.1.100), 'Subnet Mask' (255.255.255.0), 'Gateway' (192.168.1.1), and 'Telnet Port' (23). At the bottom of this section are 'Set Network Defaults' and 'Save' buttons.
- Web Login Settings:** Features a 'Username' selector with 'User' (selected) and 'Admin' options. Below are input fields for 'Old Password', 'New Password', and 'Confirm'. A 'Product Model' field contains 'HDP-MXB44P'. At the bottom of this section are 'Set Network Defaults' and 'Save' buttons.

◆ System页面

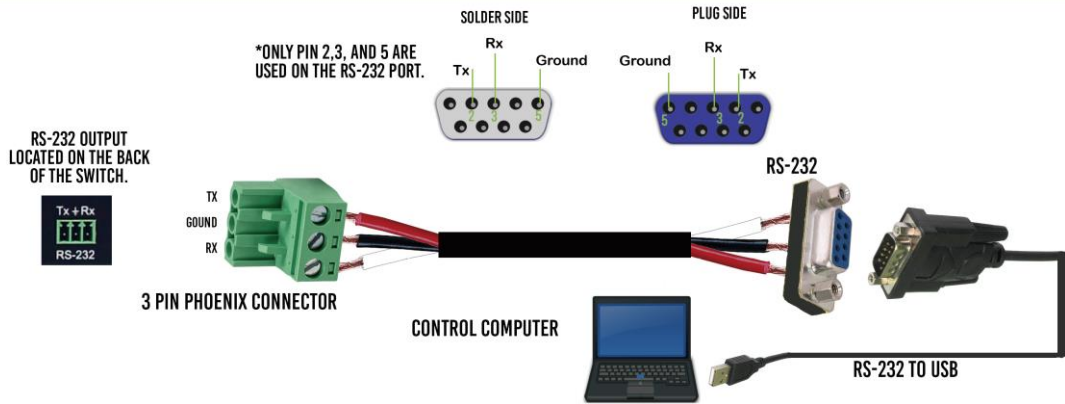
系统页面可以设置面板锁定、哔声和串行波特率，进行固件升级，恢复出厂默认设置以及重启设备。

The screenshot displays the 'System' page of the web interface. The left sidebar is the same as in the previous screenshot, with 'System' highlighted. The main content area includes the following settings:

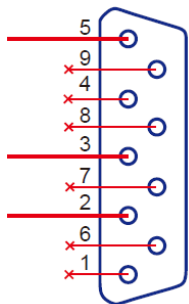
- Panel Lock:** A toggle switch currently set to 'OFF'.
- Beep:** A toggle switch currently set to 'ON'.
- Serial Baud Rate:** A selection menu with options: 4800, 9600, 19200, 38400, 57600, and 115200 (selected).
- Firmware Update:** A section with a 'Browse...' button, an empty text input field, and an 'Update' button.
- Factory Reset:** A button labeled 'Reset'.
- Reboot:** A button labeled 'Reboot'.

5.1 RS-232控制指令

本矩阵支持RS-232串口指令控制。使用串行电缆连接矩阵与电脑，并打开电脑上的串口指令工具，例如Comm Operator，Dock light或Hercules等，发送ASCII指令来控制矩阵。连接图如下所示：



RS-232引脚定义：

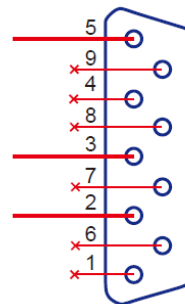


RS-232 DB9, 母头

PIN5: GND (信号地)

PIN3: RXD (接收数据)

PIN2: TXD (发送数据)



RS-232 DB9, 公头

PIN5: GND (信号地)

PIN3: TXD (发送数据)

PIN2: RXD (接收数据)

特别注意：

1. 发送到矩阵的所有指令都必须以感叹号（！）终止。在命令结束后出现的任何回车都将被忽略。Status - 显示固件和IP设置信息。
2. 指令中显示的所有空格都是必需的。
3. 所有响应消息均以CR/LF序列终止。
4. 当同一指令请求所有四个输入时，响应将在单独的行中报告每个输入。
5. 当同一指令请求所有四个输出时，响应将在单独的行中报告每个输出。

本矩阵的ASCII指令列表如下所示：

ASCII指令		
Serial port protocol: Baud rate: 115200 (default), Data bits: 8bit, Stop bits:1, Check bit: None TCP/IP protocol port: 8000 The x, y, z and XXX are parameters.		
ASCII指令	功能描述	反馈
Power		
s power z!	power on/off the device, z=0~1(z=0 power off, z=1 power on)	power on System Initializing... Initialization Finished! power off
r power!	get current power state	power on /power off
s reboot!	reboot the device	Reboot... System Initializing... Initialization Finished!
SYSTEM Setup		
help!	Lists all commands	
r type!	Get device model	HDP-MXB44P
r status!	Get device current status	Get the unit all status: power, beep, lock, in/out connection, video/audio Crosspoint, EDID, scaler, HDCP, network status
r fw version!	Get Firmware version	MCU FW version x.xx.xx
r link in x!	Get the connection status of the x input port, x=0~4(0=all)	HDMI IN1: connect
r link out y!	Get the connection status of the y output port, y=0~4(0=all)	HDMI OUT1: connect
s reset!	Reset to factory defaults	Reset to factory defaults System Initializing... Initialization Finished!

s beep z!	Enable/Disable buzzer function, z=0~1(z=0 beep off, z=1 beep on)	beep on / beep off
r beep!	Get buzzer state	beep on / beep off
s lock z!	Lock/Unlock front panel button, z=0~1(z=0 lock off, z=1 lock on)	panel button lock on panel button lock off
r lock!	Get panel button lock state	panel button lock on/off
s save preset z!	Save switch state between all output port and the input port to preset z, z=1~8	save to preset 1
s recall preset z!	Call saved preset z scenarios, z=1~8	recall from preset 1
s clear preset z!	Clear stored preset z scenarios, z=1~8	clear preset 1
r preset z!	Get preset z infomation, z=1~8	video/audio crosspoint
s baud rate xxx!	Set the serial port baud rate of RS02 module, z=(115200,57600,38400,19200,9600,4800)	Baudrate:115200
r baud rate!	Get the serial port baud rate of RS02 module	Baudrate:115200
s id z!	Set the control ID of the product, z=000~999	id 888
Output Setting		
s in x av out y!	Set input x to output y, x=1~4, y=0~4(0=all)	input 1 -> output 2
r av out y!	Get output y signal status y=0~4(0=all)	input 1 -> output 1 input 2 -> output 2 input 4 -> output 4
s out y stream z!	Set output y stream on/off, y=0~4(0=all) z=0~1 (0:disable,1:enable)	Enable out 1 stream Disable out 1 stream
r out y stream!	Get output y stream status, y=0~4(0=all)	Enable out 1 stream
s hdmi y scaler z!	Set hdmi output y port output scaler mode, y=0~4(0=all), z=1~3(1=bypass,2=4k->1080p,3=Auto)	hdmi 1 set to bypass mode
r hdmi y scaler !	Get hdmi output y port output mode y=0~4(0=all)	hdmi 1 set to bypass mode
s hdmi y hdcp z!	Set hdmi output y port hdcp status y=0~4(0=all) z=0~1(1=active,0=off)	hdmi 1 hdcp active
r hdmi y hdcp!	Get HDCP status of HDMI out y, y=0~4(0=all)	hdmi 1 hdcp active
Audio Setting		
s hdmi y arc z!	Turn on/off arc of HDMI output y, y=0~4(0=all)z=0~1(z=0,off,z=1 on)	hdmi output 1 arc on hdmi output 1 arc off
r hdmi y arc!	Get the arc state of HDMI output y, y=0~4(0=all)	hdmi out1 arc on

EDID Setting		
r edid in x!	Get EDID status of the input x, x=0~4(0=all inputs)	IN1 EDID: 4K2K60_444, Stereo Audio 2.0 IN2 EDID: 4K2K60_444, Stereo Audio 2.0 IN3 EDID: 4K2K60_444, Stereo Audio 2.0 IN4 EDID: 4K2K60_444, Stereo Audio 2.0
r edid data hdmi y!	Get the EDID data of the hdmi output y port, y=1~4	EDID : 00 FF FF FF FF FF FF 00
s edid in x from z!	Set input x EDID from default EDID z, x=0~4(0=all), z=1~23 1、 1080p, Stereo Audio 2.0 2、 1080p, Dolby/DTS 5.1 3、 1080p, HD Audio 7.1 4、 1080i, Stereo Audio 2.0 5、 1080i, Dolby/DTS 5.1 6、 1080i, HD Audio 7.1 7、 3D, Stereo Audio 2.0 8、 3D, Dolby/DTS 5.1 9、 3D, HD Audio 7.1 10、 4K2K30_444, Stereo Audio 2.0 11、 4K2K30_444, Dolby/DTS 5.1 12、 4K2K30_444, HD Audio 7.1 13、 4K2K60_420, Stereo Audio 2.0 14、 4K2K60_420, Dolby/DTS 5.1 15、 4K2K60_420, HD Audio 7.1 16、 4K2K60_444, Stereo Audio 2.0 17、 4K2K60_444, Dolby/DTS 5.1 18、 4K2K60_444, HD Audio 7.1 19、 4K2K60_444, Stereo Audio 2.0 HDR 20、 4K2K60_444, Dolby/DTS 5.1 HDR 21、 4K2K60_444, HD Audio 7.1 HDR 22、 USER1 23、 USER2 24、 Copy_From_Hdmi_Tx_1 25、 Copy_From_Hdmi_Tx_2 26、 Copy_From_Hdmi_Tx_3 27、 Copy_From_Hdmi_Tx_4	IN1 EDID: 1080p, Stereo Audio 2.0

Network setting		
r ipconfig!	Get the Current IP Configuration	IP Mode: Static, IP: 192.168.1.72 Subnet Mask: 255.255.255.0, Gateway: 192.168.1.1 Mac address: 00:1C:91:03:80:01 TCP/IP port=8000, telnet port=10
r mac addr!	Get network MAC address	Mac address: 00:1C:91:03:80:01
s ip mode z!	Set network IP mode to static IP or DHCP, z=0~1 (z=0 Static, z=1 DHCP)	Set IP mode: Static. Please use "s net reboot!" command or repower device to apply new config!
r ip mode!	Get network IP mode	IP mode: Static
s ip addr xxx.xxx. xxx.xxx!	Set network IP address	Set IP address:192.168.1.100 Please use "s net reboot!" command or repower device to apply new config! DHCP on, Device can't config static address, set DHCP off first.
r ip addr!	Get network IP address	IP address:192.168.1.100
s subnet xxx.xxx. xxx.xxx!	Set network subnet mask	Set subnet Mask:255.255.255.0 Please use "s net reboot!" command or repower device to apply new config! DHCP on, Device can't config subnet mask, set DHCP off first.
r subnet!	Get network subnet mask	Subnet Mask:255.255.255.0
s gateway xxx.xxx. xxx.xxx!	Set network gateway	Set gateway:192.168.1.1 Please use "s net reboot!" command or repower device to apply new config! DHCP on, Device can't config gateway, set DHCP off first.
r gateway!	Get network gateway	Gateway:192.168.1.1
s tcp/ip port x!	Set network TCP/IP port (x=1~65535)	Set tcp/ip port:8000
r tcp/ip port!	Get network TCP/IP port	tcp/ip port:8000
s telnet port x!	Set network telnet port(x=1~65535)	Set telnet port:23
r telnet port!	Get network telnet port	telnet port:23
s net reboot!	Reboot network modules	Network reboot... IP Mode: Static IP: 192.168.1.72 Subnet Mask: 255.255.255.0 Gateway: 192.168.1.1 Mac address: 00:1C:91:03:80:01 TCP/IP port=8000 telnet port=10

注意：您可以通过串口指令工具发送“RS232指令”来控制矩阵。“功能描述”说明了有关指令的功能。“反馈”显示指令是否发送成功以及反馈您需要的信息。



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Operations Guide – DOC. H4

Specifications subject to
change without notice.