NEXIS

MTH1616

18Gbps 16x16 HDMI Matrix with ARC Function



User Manual

VER 1.0

Thank you for purchasing this product

For optimum performance and safety, please read these instructions carefully before connecting, operating or adjusting this product. Please keep this manual for future reference.

Surge protection device recommended

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lighting strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

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1. Introduction

The 18Gbps 16x16 HDMI Matrix supports the transmission of video (resolution up to 4K2K@60Hz YUV 4:4:4) and multi-channel high resolution digital audio from 16 HDMI sources to 16 HDMI displays. Audio de-embedded to coaxial audio is supported from 16 HDMI output ports. While HDMI output ARC function is enabled, the ARC audio from HDMI display devices will be extracted to coaxial audio output. Each HDMI output of this 16x16 HDMI Matrix supports 4K2K to 1080P downscaler independently. Control via front panel buttons, IR remote, RS-232, LAN and Web GUI.

2. Features

- ☆ HDMI 2.0b, HDCP 2.2/1.x and DVI 1.0 compliant
- ☆ Video resolution up to 4K2K@60Hz (YUV 4:4:4) on all HDMI ports
- ☆ Support 18Gbps video bandwidth
- ☆ HDR, HDR10, HDR10+, Dolby Vision and HLG are supported.
- ☆ Support 4K->1080P Down Scaler for each output port
- ☆ HDMI audio pass-through up to 7.1CH HD audio (LPCM, Dolby TrueHD and DTS-HD Master Audio)
- ☆ Audio de-embedded is supported via coax ports
- ☆ ARC, CEC and smart EDID management are supported
- ☆ 1U rack mounted design with front panel OLED display
- ☆ Control via front panel buttons, IR remote, RS-232, LAN and Web GUI

3. Package Contents

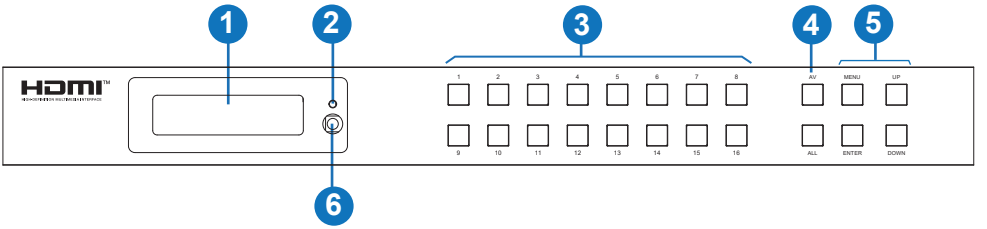
① 1 x 18Gbps 16x16 HDMI Matrix
② 1 x 24V/3.75A Power Adapter
③ 1 x IR Remote
④ 1 x RS-232 serial cable (1.5 meters, male to female head)
⑤ 2 x Mounting Ear
⑥ 1 x User Manual

4. Specifications

Technical			
HDMI Compliance	HDMI 2.0b		
HDCP Compliance	HDCP 2.2/1.x		
Video Bandwidth	18Gbps		
Video Resolution	Up to 4K2K@60Hz (4:4:4)		
Color Space	RGB, YCbCr 4:4:4/4:2:2/4:2:0		
Color Depth	8-bit, 10-bit, 12-bit		
HDMI Audio Formats (Pass-through)	LPCM 2/5.1/7.1, Dolby Digital, DTS 5.1, Dolby Digital+, Dolby TrueHD, DTS-HD Master Audio, Dolby Atmos, DTS:X		
Coax Audio Formats	LPCM 2.0, Dolby Digital / Plus, DTS 5.1		
HDR formats	HDR10,HDR10+,Dolby Vision, HLG		
ESD Protection	Human-body Model: ±8kV (Air-gap discharge) , ±4kV (Contact discharge)		
Connection			
Input Ports	16×HDMI Type A [19-pin female]		
Output Ports	16×HDMI Type A [19-pin female] 16×Coax Audio (RCA)		
Control Ports	1×TCP/IP [RJ45] 1×RS-232 [D-Sub 9]		
Mechanical			
Housing	Metal Enclosure		
Color	Black		
Dimensions	440mm (W)×200mm (D)×44mm (H)		
Weight	3.1kg		
Power Supply	Input: AC 100 - 240V 50/60Hz, Output: DC 24V/3.75A (US/EU standard, CE/FCC/ULcertified)		
Power Consumption	76.8W		
Operating Temperature	-10°C ~ 45°C / 14°F ~ 113°F		
Storage Temperature	-20°C ~ 60°C / -4°F ~ 140°F		
Relative Humidity	20~90% RH (non-condensing)		
Resolution / Cable length	**4K60 - Feet / Meters**	**4K30 - Feet / Meters**	**1080P60 - Feet / Meters**
HDMI IN / OUT	16ft / 5M	32ft / 10M	50ft / 15M
The use of “Premium High Speed HDMI” cable is highly recommended.			

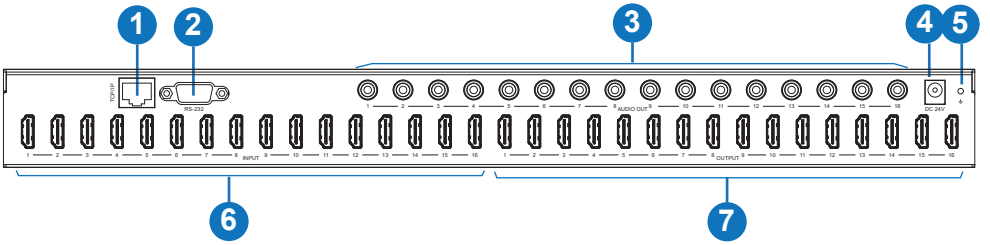
5. Operation Controls and Functions

Front Panel



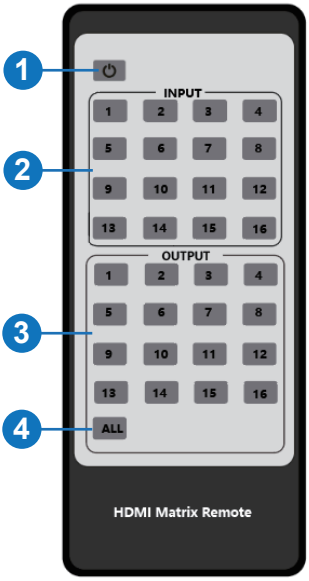
NO.	Name	Function Description
1	OLED screen	Display matrix switching status, input / output port, EDID, Baud rate, IP Address.
2	Power LED	The LED will illuminate in green when the product is connected to power supply, and red when the product is on standby.
3	Input / Output buttons	You need to press input button (1~16) firstly, then press the "AV" button, finally press input button (1~16, including "ALL") to select the corresponding input and output ports.
4	AV / ALL buttons	**AV:** Used to switch signal source to output. e.g. Pressing "1→AV→3" represents signal source 1 is output to display 3. **All:** It represents all the output ports. e.g. Pressing "1→AV→ALL" represents signal source 1 is output to all displays.
5	MENU / ENTER / UP /DOWN	①**Switching status check:** On the initial OLED display screen, press "MENU" button to enter the Matrix switching status interface, then press "UP/DOWN" button to check the switching state of all ports. ②**EDID setting:** On the initial OLED display screen, press "MENU" button to enter the EDID setting interface, press "UP/DOWN" button to select the required EDID, and press the "ENTER" button. A prompt "copy to input :" will appear. Then press "UP/DOWN" button to select the input port you need to set, and press "ENTER" button again to confirm. ③**Baud rate setting:** On the initial OLED display screen, press "MENU" button to enter the Baud rate interface, and press "UP/DOWN" button to select the required Baud rate, finally press the "ENTER" button to confirm the setting. ④**IP Address check:** On the initial OLED display screen, press "MENU" button to enter the IP interface, then press "UP/DOWN" button to check the current IP address. Pressing the "MENU" button again will return to the initial OLED display status.
6	IR Window	IR receiver window, it only receives the IR remote signal from this product.

Rear Panel



No.	Name	Function Description
1	TCP/IP port	TCP/IP control port, connect to PC or router with an RJ45 cable.
2	RS-232 port	Connect to a PC or control system by D-Sub 9-pin cable to transmit RS-232 command.
3	AUDIO OUT (1-16)	Coaxial audio output port, connect to audio output device such as audio amplifier via a coaxial cable.
4	DC 24V	Connect to 24V power adapter.
5	GND	Connect the housing to the ground.
6	INPUT ports (1-16)	HDMI input ports , connect to HDMI source device such as DVD or set-top box with an HDMI cable.
7	OUTPUT ports (1-16)	HDMI output ports, connect to HDMI display device such as TV or monitor with an HDMI cable.

6. IR Remote



① **Power on or Standby:** Power on the Matrix or set it to standby mode.

② **Input 1/2/3/4/5/6/7/8/9/10/11/12/13/14/15/16:** Select input source button.

③ **Output 1/2/3/4/5/6/7/8/9/10/11/12/13/14/15/16:** Select output source button.

④ **All:** Select all output sources simultaneously.

For example, when you press input “1” button and then press the “All” button, at this time the input “1” source will be output to all display devices.

Operation instruction: You need to press the input button firstly and then press output button. For example,
Press Input-Y
(Y means input button from 1 to 16)
Then press Output-X
(X means output button from 1 to 16, including “All” button)

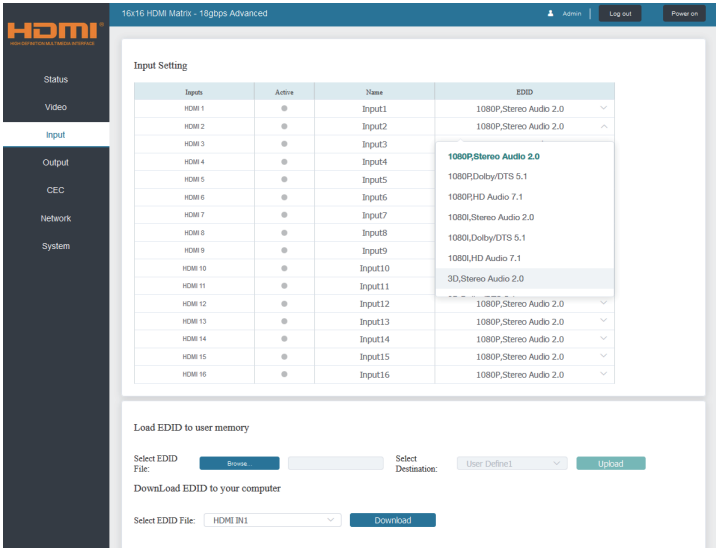
7. EDID Management

This Matrix has 21 factory defined EDID settings, 2 user-defined EDID modes and 16 copy EDID modes. You can select defined EDID mode or copy EDID mode to input port through front panel buttons, RS-232 control or Web GUI.

On-panel button operation: On the initial OLED display screen, press “MENU” button to enter the EDID setting interface, press “UP/DOWN” button to select the required EDID, and press the “ENTER” button. A prompt “copy to input :” will appear. Then press “UP/DOWN” button to select the input port you need to set, and press “ENTER” button again to confirm this operation.

RS-232 control operation: Connect the Matrix to PC with a serial cable, then open a Serial Command tool on PC to send ASCII command “s edid in x from z!” to set EDID. For details, please refer to “EDID Setting” in the ASCII command list of “9. RS-232 Control Command”.

Web GUI Operation: Please check the EDID management in the “Input page” of “8. Web GUI User Guide”.



The defined EDID setting list of the product is shown as below:

EDID Mode	EDID Description
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 7.1HDR
22	USER1
23	USER2
24	Copy from hdmi output 1
25	Copy from hdmi output 2
26	Copy from hdmi output 3
27	Copy from hdmi output 4
28	Copy from hdmi output 5
29	Copy from hdmi output 6
30	Copy from hdmi output 7
31	Copy from hdmi output 8
32	Copy from hdmi output 9
33	Copy from hdmi output 10
34	Copy from hdmi output 11
35	Copy from hdmi output 12
36	Copy from hdmi output 13
37	Copy from hdmi output 14
38	Copy from hdmi output 15
39	Copy from hdmi output 16

8. Web GUI User Guide

The Matrix can be controlled by Web GUI. The operation method is shown as below:

Step 1: Get the current IP Address.

The default IP address is 192.168.1.100. You can get the current Matrix IP address in two ways:

The first way: You can get the IP address via panel buttons. On the initial OLED display, press "MENU" button to enter the IP interface, then press "UP/DOWN" button to check the current IP address.

The second way: You can get the IP address via RS-232 control. Send the command " r ipconfig!" through an ASCII Command tool, then you'll get the feedback information as shown below:

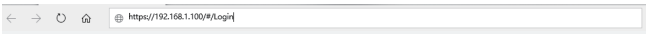
```
IP Mode: DHCP
IP:192.168.62.100
Subnet Mask:255.255.255.0
Gateway:192.168.62.1
TCP/IP port=8000
Telnet port=23
Mac address:6C:DF:FB:03:FB:6F
```

IP:192.168.62.100 in the above figure is the IP Address of the Matrix (the IP address is variable, depending on what the specific machine returns).

For the details of ASCII control, please refer to "9. RS-232 Control Command".

Step 2: Set the IP address of the PC to be in the same network segment with the Matrix.

Step 3: Input the IP address of the Matrix into your browser on the PC to enter Web GUI page.



After entering the Web GUI page, there will be a Login page, as shown below:



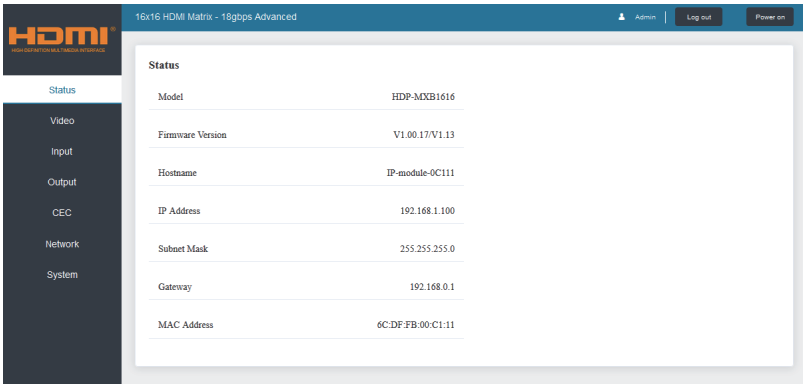
Select the Username from the list and enter the password. The default passwords are:

Username	**User**	**Admin**
Password	**user**	**admin**

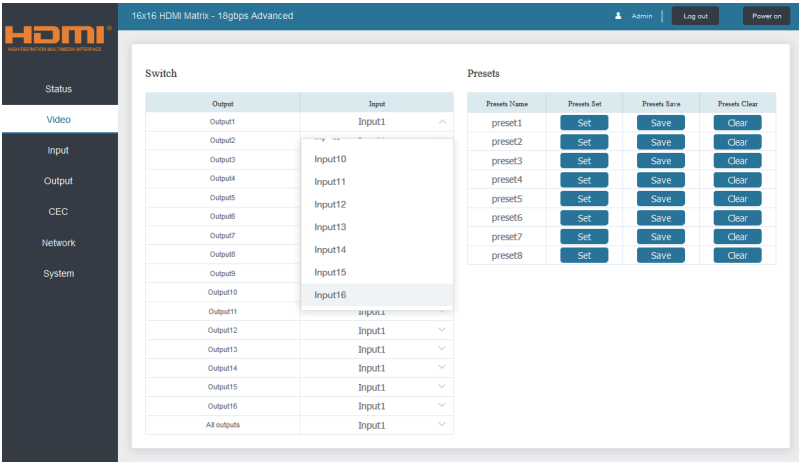
After entering the password, click the “LOGIN” button and the following Status page will appear.

■ Status Page

The Status page provides basic information about the Model, the installed firmware version and the network settings of the device.



■ Video Page



You can do the following operations on the Video page:

① **Output:** The current device’s OUTPUT port. You can select signal source for it.

② **All Output**: All OUTPUT ports for the current device. You can select signal source for them.

③ **Input:** You can click the drop-down menu to select signal source for the corresponding OUTPUT port .

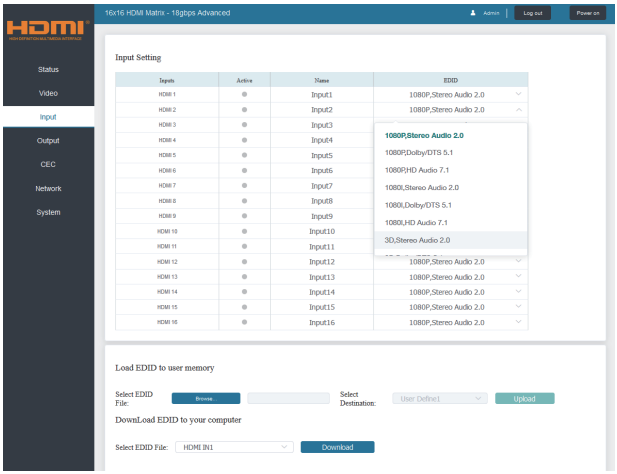
④ **Presets Name:** You can name the current scene with maximum length of 12 characters (Chinese name is unsupported).

⑤ **Presets Set:** You can restore the settings of the last saved audio-video matrix switching relationship.

⑥ **Presets Save:** You can save audio-video matrix switching relationship.

⑦ **Presets Clear:** You can clear the saved audio-video matrix switching relationship.

■ Input Page



You can do the following operations on the Input page:

① **Inputs:** Input channel of the device.

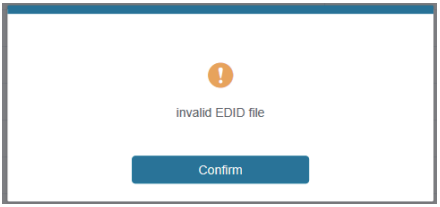
② **Active:** It indicates whether the channel is connected to a signal source.

③ **Name:** The input channel's name. You can modify it by entering the corresponding name (max length: 12 characters) in the input box (Chinese name is unsupported).

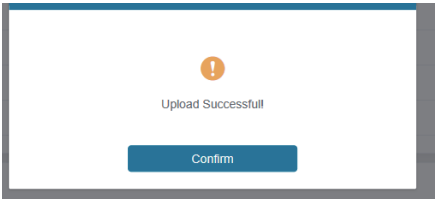
④ **EDID:** You can set the current channel's EDID. The specific operation is as follows:

Set EDID for the User

Click the "Browse" button, then select the bin file. If you select the wrong EDID file, there will be a prompt, as shown in the following figure:



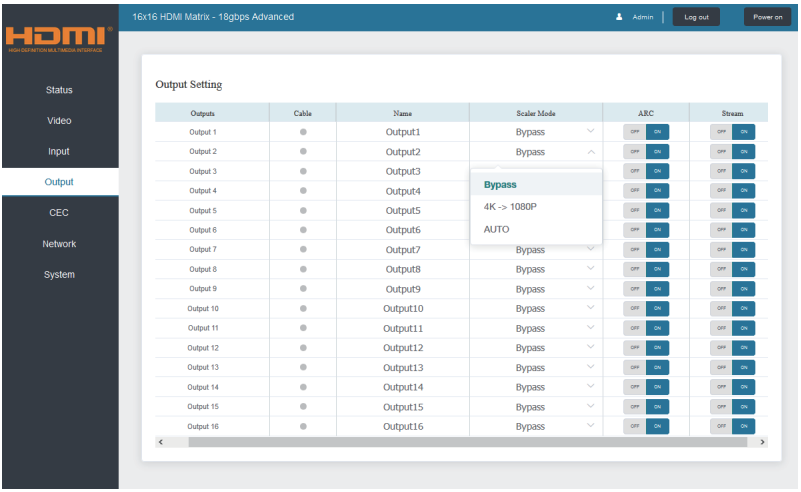
Make sure to select the correct file, then you can check the name of the selected file. Select "User 1" or "User 2", then click "Upload". After successful setting, it will prompt as follows:



Download the EDID File of the Corresponding Input Channel

Click the drop-down box of "Select EDID File" to select the corresponding input channel. Then click "Download" to download the corresponding EDID file.

■ Output Page



You can do the following operations on the Output page:

① **Outputs:** Output channel of the device.

② **Name:** The current output channel's name. You can modify it by entering the corresponding name (max length: 12 characters) in the input box (Chinese name is unsupported).

③ **Cable:** It indicates the connection status of output ports. When the output port is connected to the display, it shows green, otherwise, it shows gray.

④ **Scalar Mode:** Set the current output resolution mode.

⑤ **ARC:** Turn on/off the ARC function.

⑥ **Stream:** Turn on/off the output stream.

■ CEC Page

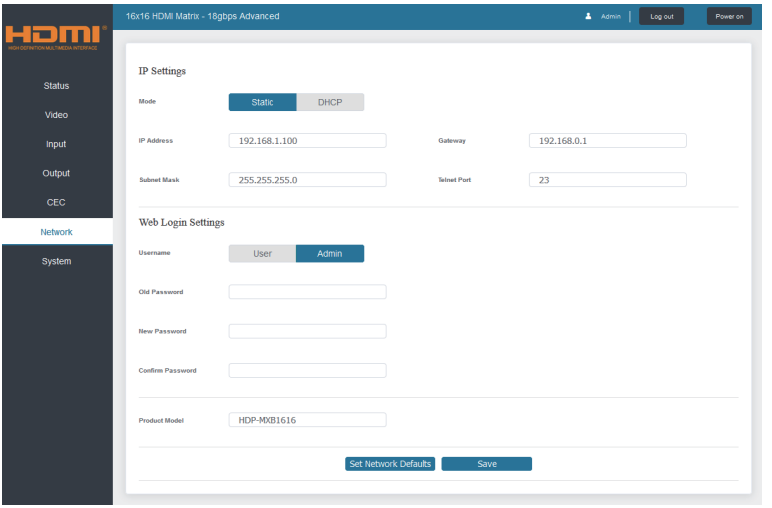


You can perform CEC management on this page:

① **Input Control:** You can control the operation of each input source by clicking the icons on the page.

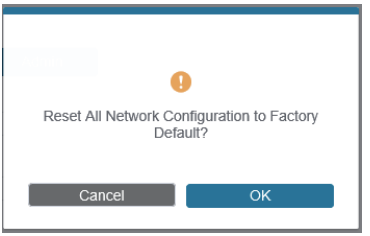
② **Output Control:** You can control the operation of each display, such as power on/off, volume +/-, active source switching.

■ Network Page

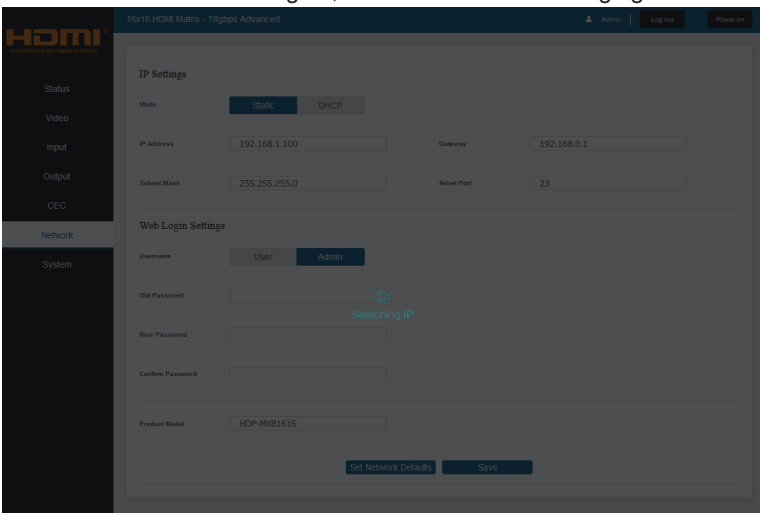


Set the Default Network

Click “Set Network Defaults”, there will be a prompt, as shown in the following figure:



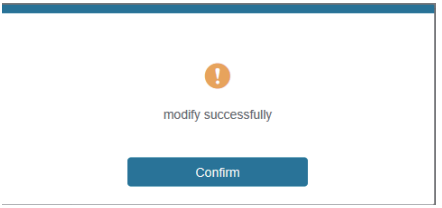
Click “OK” to search the IP Address again, as shown in the following figure:



After searching is completed, it will switch to the login page, the default network setting is completed.

Modify Username

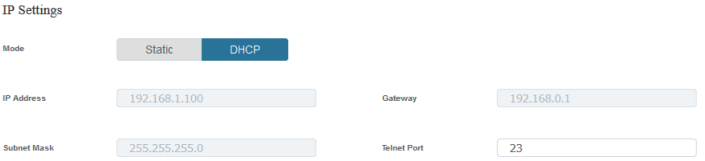
Click the “User” button, enter the correct Old Password, New Password, and Confirm Password, then click “Save”. After successful modification, there will be a prompt, as shown in the following figure:



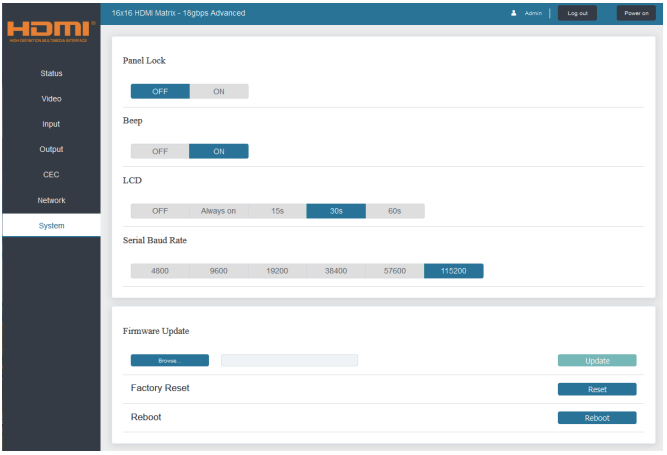
Note: Input rules for changing passwords:
(1) The password can’t be empty.
(2) New Password can’t be the same as Old Password.
(3) New Password and Confirm Password must be the same.

Modify Network Setting

Modify the Mode/IP Address/Gateway/Subnet Mask/Telnet Port as required, click “Save” to save the settings, then it will come into effect.
After modification, if the Mode is “Static”, it will switch to the corresponding IP Address; if the Mode is “DHCP”, it will automatically search and switch to the IP Address assigned by the router.



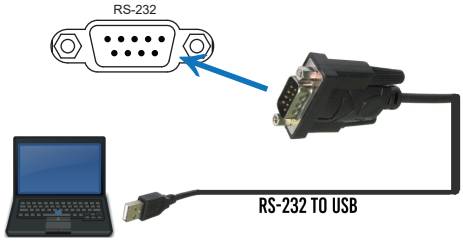
■ System Page



① **Panel Lock:** Click “Panel Lock” to lock/unlock panel buttons. “On” indicates that panel buttons are unavailable; “Off” indicates panel buttons are available.
② **Beep:** Click “Beep” to turn on/off the beep.
③ **LCD:** You can turn on/off the LCD, and set the turn-on time (15s/30s/60s).
④ **Serial Baud Rate:** Click the value to set the Serial Baud Rate.
⑤ **Firmware Update:** Click “Browse” to select the update file, then click “Update” to complete firmware update.
⑥ **Factory Reset:** You can reset the unit to factory defaults by clicking “Reset”.
⑦ **Reboot:** You can reboot the unit by clicking “Reboot”.
Note: After reset/reboot, it will switch to the login page.

9. RS-232 Control Command

The product also supports RS-232 control. You need a serial cable with RS-232 male head and DB9 transfer USB male head. The RS-232 head of the serial cable is connected to the RS-232 control port with DB 9 at the rear of the Matrix, and the USB head of the serial cable is connected to a PC. The connection method is as follows:



Then, open a Serial Command tool on PC to send ASCII command to control the Matrix. The ASCII command list about the product is shown as below.

ASCII Command				
Serial port protocol. Baud rate: 115200, Data bits: 8bit, Stop bits:1, Check bit: 0				
x - Parameter 1 y - Parameter 2 ! - Delimiter				
Command Code	**Function Description**	**Example**	**Feedback**	**Default Setting**
Power				
s power z!	Power on/off the device,z=0~1 (z=0 power off, z=1 power on)	s power 1!	Power on System Initializing... Initialization Finished! FW version x.xx.xx	power on
r power!	Get current power state	r power!	power on/power off	
s reboot!	Reboot the device	s reboot!	Reboot... System Initializing... Initialization Finished! FW version x.xx.xx	
System Setup				
help!	List all commands	help!		
r type!	Get device model	r type!	HDP-MXB1616	

Command Code	Function Description	Example	Feedback	Default Setting
r status!	Get device current status	r status!	Get the unit all status: power, beep, lock, in/ out connection, video/ audio crosspoint, edid, scaler, network status	
r fw version!	Get Firmware version	r fw version!	MCU BOOT: Vx.xx.xx MCU APP: Vx.xx.xx WEB GUI: Vx.xx	
r link in x!	Get the connection status of the x input port，x=0~16(0=all)	r link in 1!	hdmi input 1: connect	
r link out y!	Get the connection status of the y output port，y=0~16(0=all)	r link out 1!	hdmi output 1: connect	
s reset!	Reset to factory defaults	s reset!	Reset to factory defaults System Initializing... Initialization Finished! FW version x.xx.xx	
s beep z!	Enable/Disable buzzer function, z=0~1(z=0 beep off, z=1 beep on)	s beep 1!	beep on beep off	beep on
r beep!	Get buzzer state	r beep!	beep on / beep off	
s lock z!	Lock/Unlock front panel button, z=0~1(z=0 lock off,z=1 lock on)	s lock 1!	panel button lock on panel button lock off	panel button lock off
r lock!	Get panel button lock state	r lock!	panel button lock on/off	
s lcd on time z!	Set LCD screen remain on time, z=0~4(0:off, 1:always on, 2:15s, 3:30s, 4:60s)	s lcd on time 1!	lcd on 15 seconds	lcd on 30 seconds
r lcd mode!	Get the backlight status of lcd screen	r lcd mode!	lcd always on	
s save preset z!	Save switch state between all output port and the input port to preset z, z=1~8	s save preset 1!	save to preset 1	
s recall preset z!	Call saved preset z scenarios, z=1~8	s recall preset 1!	recall from preset 1	
s clear preset z!	Clear stored preset z scenarios, z=1~8	s clear preset 1!	clear preset 1	
r preset z!	Get preset z information, z=1~8	r preset 1!	video/audio crosspoint	
Output Setting				
s in x av out y!	Set input x to output y, x=1~16, y=0~16(0=all)	s in 1 av out 2!	input 1 -> output 2	PTP
r av out y!	Get output y signal status y=0~16(0=all)	r av out 0!	input 1 -> output 1 input 2 -> output 2 …… input 16 -> output 16	
s hdmi y stream z!	Set output y stream on/off, y=0~16(0=all) z=0~1(0:disable,1:enable)	s hdmi 1 stream 1! s hdmi 0 stream 1!	Enable hdmi output 1 stream Disable hdmi output 1 stream Enable hdmi all outputs stream Disable hdmi all outputs stream	enable
r hdmi y stream!	Get output y stream status, y=0~16(0=all)	r hdmi 1 stream!	Enable hdmi output 1 stream	
s hdmi y scaler z!	Set hdmi output y port output scaler mode，y=0~16 (0=all), z=1~3(1=bypass, 2=4k->1080p, 3=Auto)	s hdmi 1 scaler 1! s hdmi 0 scaler 1!	hdmi output 1 set to bypass mode hdmi all outputs set to bypass mode	hdmi all outputs set to bypass mode

Command Code	Function Description	Example	Feedback	Default Setting
r hdmi y scaler!	Get hdmi output y port output mode y=0~16(0=all)	r hdmi 1 scaler !	hdmi output 1 set to bypass mode	
EDID Setting				
s edid in x from z!	Set input x EDID from default EDID z, x=0~16 (0=all),z=1~39 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 output 1 25, copy from hdmi output 2 26, copy from hdmi output 3 27, copy from hdmi output 4 28, copy from hdmi output 5 29, copy from hdmi output 6 30, copy from hdmi output 7 31, copy from hdmi output 8 32, copy from hdmi output 9 33, copy from hdmi output 10 34, copy from hdmi output 11 35, copy from hdmi output 12 36, copy from hdmi output 13 37, copy from hdmi output 14 38, copy from hdmi output 15 39, copy from hdmi output 16	s edid in 1 from 1! s edid in 0 from 1!	input 1 EDID:1080p, Stereo Audio 2.0 all inputs EDID:1080p, Stereo Audio 2.0	1080p,Stereo Audio 2.0
r edid in x!	Get EDID status of the input x, x=0~16(0=all input)	r edid in 0!	input 1 EDID: 4K2K60_444, Stereo Audio 2.0 input 2 EDID: 4K2K60_444, Stereo Audio 2.0 input 3 EDID: 4K2K60_444, Stereo Audio 2.0 input 4 EDID: 4K2K60_444, Stereo Audio 2.0	
r edid data hdmi y!	Get the EDID data of the hdmi output y port, y=1~16	r edid data hdmi 1!	EDID: 00 FF FF FF FF FF FF 00 ……	
Audio Setting				
s hdmi y arc z!	Turn on/off ARC of HDMI output y, y=0~16(0=all) z=0~1(z=0,off,z=1 on)	s hdmi 1 arc 1! s hdmi 0 arc 1!	hdmi output 1 arc on hdmi output 1 arc off hdmi all outputs arc on hdmi all outputs arc off	
r hdmi y arc!	Get the ARC state of HDMI output y, y=0~16(0=all)	r hdmi 1 arc!	hdmi output 1 arc on	off

Command Code	Function Description	Example	Feedback	Default Setting
CEC Setting				
s cec in x on!	set input x power on by CEC, x=0~16(0=all input)	s cec in 1 on!	input 1 power on	
s cec in x off!	set input x power off by CEC, x=0~16(0=all input)	s cec in 1 off!	input 1 power off	
s cec in x menu!	set input x open menu by CEC, x=0~16(0=all input)	s cec in 1 menu!	input 1 open menu	
s cec in x back!	set input x back operation by CEC, x=0~16(0=all input)	s cec in 1 back!	input 1 back operation	
s cec in x up!	set input x menu up operation by CEC, x=0~16(0=all input)	s cec in 1 up!	input 1 menu up operation	
s cec in x down!	set input x menu down operation by CEC, x=0~16(0=all input)	s cec in 1 down!	input 1 menu down operation	
s cec in x left!	set input x menu left operation by CEC, x=0~16(0=all input)	s cec in 1 left!	input 1 menu left operation	
s cec in x right!	set input x menu right operation by CEC, x=0~16(0=all input)	s cec in 1 right!	input 1 menu right operation	
s cec in x enter!	set input x menu enter by CEC, x=0~16(0=all input)	s cec in 1 enter!	iInput 1 menu enter operation	
s cec in x play!	set input x play by CEC, x=0~16(0=all input)	s cec in 1 play!	input 1 play operation	
s cec in x pause!	set input x pause by CEC, x=0~16(0=all input)	s cec in 1 pause!	iInput 1 pause operation	
s cec in x stop!	set input x stop by CEC, x=0~16(0=all input)	s cec in 1 stop!	input 1 stop operation	
s cec in x rew!	set input x rewind by CEC, x=0~16(0=all input)	s cec in 1 rew!	input 1 rewind operation	
s cec in x mute!	set input x volume mute by CEC, x=0~16(0=all input)	s cec in 1 mute!	input 1 volume mute	
s cec in x vol-!	set input x volume down by CEC, x=0~16(0=all input)	s cec in 1 vol-!	input 1 volume down	
s cec in x vol+!	set input x volume up by CEC, x=0~16(0=all input)	s cec in 1 vol+!	input 1 volume up	
s cec in x ff!	set input x fast forward by CEC, x=0~16(0=all input)	s cec in 1 ff!	input 1 fast forward operation	
s cec in x previous!	set input x previous by CEC, x=0~16(0=all input)	s cec in 1 previous!	input 1 previous operation	
s cec in x next!	set input x next by CEC, x=0~16(0=all input)	s cec in 1 next!	input 1 next operation	
s cec hdmi out y on!	set hdmi output y power on by CEC, y=0~16(0=all output)	s cec hdmi out 1 on!	hdmi output 1 power on	
s cec hdmi out y off	set hdmi output y power off by CEC, y=0~16(0=all output)	s cec hdmi out 1 on!	hdmi output 1 power off	
s cec hdmi out y mute!	set hdmi output y volume mute by CEC, y=0~16(0=all output)	s cec hdmi out 1 mute!	hdmi output 1 volume mute	
s cec hdmi out y vol-!	set hdmi output y volume down by CEC, y=0~16(0=all output)	s cec hdmi out 1 vol-!	hdmi output 1 volume down	
s cec hdmi out y vol+!	set hdmi output y volume up by CEC, y=0~16(0=all output)	s cec hdmi out 1 vol+!	hdmi output 1 volume up	
s cec hdmi out y active!	set hdmi output y active source by CEC, y=0~16(0=all output)	s cec hdmi out 1 active!	hdmi output 1 active source	

Command Code	Function Description	Example	Feedback	Default Setting
Network Setting				
r ipconfig!	Get the Current IP Configuration	r ipconfig!	IP Mode: Static IP: 192.168.1.72 Subnet Mask: 255.255.255.0 Gateway: 192.168.1.1 TCP/IP port=8000 Telnet port=10 Mac address: 00:1C:91:03:80:01	
r mac addr!	Get network MAC address	r mac addr!	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)	s ip mode 0!	Set IP mode:Static (Please use "s net reboot!" command or repower device to apply new config!)	
r ip mode!	Get network IP mode	r ip mode!	IP Mode: Static	
s ip addr xxx.xxx.xxx.xxx!	Set network IP address	s ip addr 192.168.1.100!	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	r ip addr!	IP address: 192.168.1.100	
s subnet xxx.xxx.xxx.xxx!	Set network subnet mask	s subnet 255.255.255.0!	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	r subnet!	Subnet Mask: 255.255.255.0	
s gateway xxx.xxx.xxx.xxx!	Set network gateway	s gateway 192.168.1.1!	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	r gateway!	Gateway:192.168.1.1	
s tcp/ip port x!	Set network TCP/IP port (x=1~65535)	s tcp/ip port 8000!	Set TCP/IP port:8000	
r tcp/ip port!	Get network TCP/IP port	r tcp/ip port!	TCP/IP port:8000	
s telnet port x!	Set network telnet port (x=1~65535)	s telnet port 23!	Set Telnet port:23	
r telnet port!	Get network telnet port	r telnet port!	Telnet port:23	

Command Code	Function Description	Example	Feedback	Default Setting
s net reboot!	Reboot network modules	s network reboot!	Network reboot… IP Mode: Static IP: 192.168.1.72 Subnet Mask: 255.255.255.0 Gateway: 192.168.1.1 TCP/IP port=8000 Telnet port=10 Mac address: 00:1C:91:03:80:01	

11. Application Example

