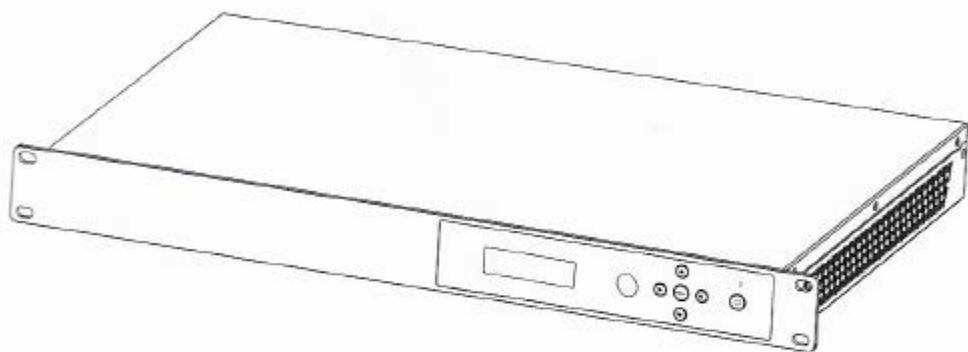


8x8 HDMI 18Gbps Matrix with Audio De-embedded



User Manual

VER 2.1

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 8x8 HDMI Matrix supports the transmission of video (up to 4K2K@60Hz YUV 4:4:4, 18Gbps, HDCP 2.2) and multi-channel digital audio from 8 HDMI sources to 8 HDMI displays. Audio de-embedded is supported from 8 HDMI output ports. Control is via button, IR remote, Web GUI and ASCII command.

2. Features

- ☆ HDMI 2.0b, HDCP 2.2 and HDCP 1.4 compliant
- ☆ Up to 4K2K@60Hz (YUV 4:4:4) on all HDMI ports
- ☆ Supports pass-through audio up to 7.1 channels of High Definition audio (LPCM, Dolby TrueHD, and DTS-HD Master Audio)
- ☆ Audio de-embedded is supported via coax port
- ☆ HDR, CEC and smart EDID management supported
- ☆ Control is via on-panel button, IR remote, Web GUI and ASCII command
- ☆ 1U rack mounted design with metal enclosure

3. Package Contents

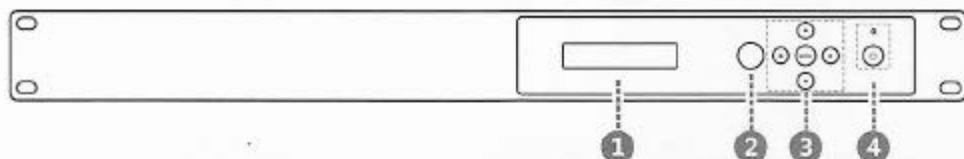
- ① 1x 8x8 HDMI Matrix
- ② 1x 12V/3A Locking Power Adaptor
- ③ 1x IR Remote
- ④ 1x Wideband IR Receiver cable
- ⑤ 1x RS-232 male to female serial cable
- ⑥ 1x User Manual

4. Specifications

Technical	
HDMI Compliance	HDMI 2.0b
HDCP Compliance	HDCP 2.2 and HDCP 1.4
Video Bandwidth	18Gbps
Video Resolutions	Up to 4K2K@50/60Hz (YUV 4:4:4), 4K2K@30Hz, 1080p@120Hz, and 1080p 3D@60Hz
Color Depth	8-bit, 10-bit, 12-bit
Color Space	RGB, YCbCr 4:4:4, YCbCr 4:2:2
HDMI Audio Formats	LPCM 2/5.1/7.1, Dolby Digital, DTS 5.1, Dolby Digital+, Dolby TrueHD, DTS-HD Master Audio, Dolby Atmos, DTS:X
Audio Formats	PCM 2.0, 32K/44.1K/48K/88.2K/96K/192K, 16/20/24bit
ESD Protection	Human-body Model: ±8kV (Air-gap discharge) , ±4kV (Contact discharge)
Connections	
Inputs	8x HDMI Type A [19-pin female] 1x LAN [RJ45, Control] 1x RS-232 [9-pin D-sub, Control] 1x IR EXT [3.5mm Stereo Mini-jack]
Outputs	8x HDMI Type A [19-pin female] 8x Coaxial Audio [RCA]
Mechanical	
Housing	Metal Enclosure
Color	Black
Dimensions	483mm (W)×253mm (D)×44.5mm (H)
Weight	3.35kg
Power Supply	Input: AC100~240V 50/60Hz, Output: DC12V/3A (US/EU standards, CE/FCC/UL certified)
Power Consumption	26.5W (max)
Operating Temperature	0°C ~ 40°C / 32°F ~ 104°F
Storage Temperature	-20°C ~ 60°C / -4°F ~ 140°F
Relative Humidity	20~90% RH (non-condensing)

5. Operation Controls and Functions

5.1 Front Panel



Number	Name	Function descriptions
1	OLED display	Display system input/output port status, EDID management and matrix IP address.
2	IR Window	IR receiver window, it receives IR remote control signal to control this device.
3	Left/Right/Up/Down/Menu Buttons	<p>After system power up, the OLED screen default displays the input and output status of the last power off.</p> <p>A) On the initial OLED display, you can press the 'Left' or 'Right' button firstly to select output port, then press the 'up' or 'down' button to select the input port, then press the 'MENU' button to confirm this operation.</p> <p>B) On the initial OLED display, you can press the 'Up' or 'Down' button to check each input EDID setting, press the 'Menu' button go back to the initial OLED display.</p> <p>C) On the initial OLED display, you can press 'Menu' button to operate the following functions by the combination of these five buttons, press 'Up' or 'Down' button to select function:</p> <p>1. Select EDID: Press the 'Right' button, then press the 'Up' or 'Down' button to select EDID as showed in the below table. Once you complete EDID selection, press the 'Right' button then press the 'Left' or 'Right' button to select your EDID to copy to which input port, press the 'Right' button to confirm this operation.</p> <p>2. PTP Set: Press the 'Right' button to set PTP mode (point to point, means IN1-OUT A, IN2-OUT B, IN3-OUT C...).</p>

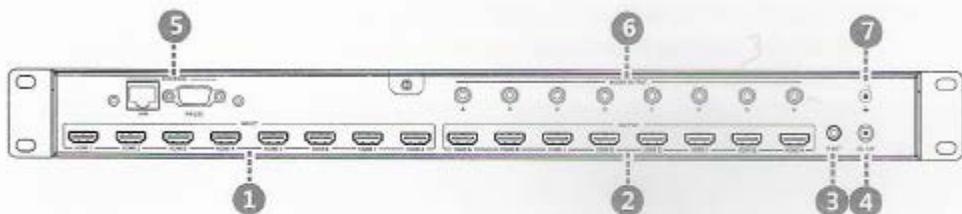
		<p>3. Save Preset: Press the 'Right' button to save current configuration to preset, press 'Up' or 'Down' button to select storage location, press the 'Right' button to confirm this operation.</p> <p>4. Recall Preset: Press the 'Right' button to recall previous preset, press 'Up' or 'Down' button to select preset you want, press the 'Right' button to confirm this operation.</p> <p>5. View IP: Press the 'Right' button to check IP address and DHCP status.</p> <p>6. Select Baud: Press the 'Right' button, then press the 'Up' or 'Down' button to select baud, press the 'Right' button to confirm this operation.</p> <p>7. Factory Reset: Press the 'Right' button to setting factory reset status, then press the 'Right' button to confirm this operation or the 'Left' button to quit this operation.</p>
4	Power and Power LED	Long press this button to power on/off device. The LED will illuminate in green when the device is power on and show in red when this device is standby.

The EDID table:

EDID Mode	EDID Description
1	720P 2.0 CH
2	1080P 2.0 CH
3	1080P 5.1 CH
4	1080P 7.1CH
5	1080I 2.0 CH
6	1080I 5.1 CH
7	1080I 7.1CH
8	3D 2.0 CH
9	3D 5.1 CH
10	3D 7.1 CH
11	4K*2K@30 2.0 CH
12	4K*2K@30 5.1 CH
13	4K*2K@30 7.1 CH
14	4K60_420 2.0CH
15	4K60_420 5.1CH
16	4K60_420 7.1CH

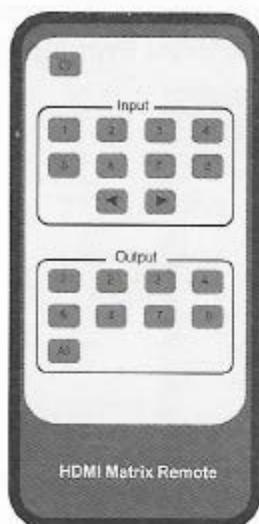
17	4K*2K@60 2.0 CH
18	4K*2K@60 5.1 CH
19	4K*2K@60 7.1 CH
20	Copy HDMI Out A
21	Copy HDMI Out B
22	Copy HDMI Out C
23	Copy HDMI Out D
24	Copy HDMI Out E
25	Copy HDMI Out F
26	Copy HDMI Out G
27	Copy HDMI Out H

5.2 Rear Panel



Number	Name	Function descriptions
1	HDMI INPUT	Connect to the HDMI input source devices such as a DVD player or Set-top Box.
2	HDMI OUTPUT	Connect to the HDMI output source devices such as a TV player or monitor.
3	IR EXT	If the front IR sensor of unit is obstructed or the unit is installed in a closed area out of infrared line of sight, the IR receiver cable can be inserted to this IR EXT port to extend IR signal.
4	DC 12V	Plug the 12V/3A adapter to AC wall outlet for power supply.
5	CONTROL	LAN: connects to an active Ethernet link by an RJ-45 cable. RS-232: Connect to a PC or control system by D-Sub 9-pin cable to control the matrix with RS-232 commands.
6	AUDIO OUTPUT	Connect to audio amplifiers or speakers. The audio is from extract HDMI output port signal.
7	GND	Connect the GND port to the ground.

6. IR Remote



 : Power on or set it to standby status.

Input 1/2/3/4/5/6/7/8: Press these button to select input signal source.

  : Press these button to select the last or the next input signal source.

Output 1/2/3/4/5/6/7/8: Press these button to select output signal source.

All: Press this button to select all output signal source simultaneously.

Operating instructions: User need select output button firstly and then select input button to select output display corresponding input signal source.

7. Web GUI User Guide

The Matrix can be controlled via Web GUI. You must know current Matrix IP address. The static IP address is 192.168.1.100. You can get current IP address via on-panel button. The LAN port of the Matrix connects directly a PC with an UTP cable. The following is the Web GUI connection diagram. Please check the following operation instruction.



Web GUI connection diagram

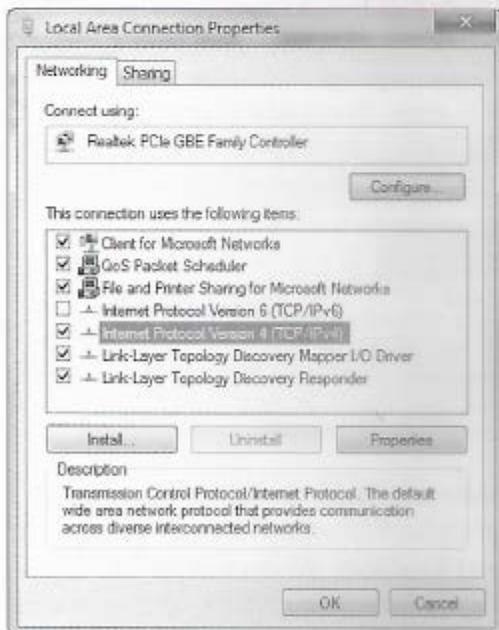
The Matrix gets IP address via on-panel button. On the initial OLED display, you can press "Menu" button to enter function page. Then press "Up" or "Down" button to select function. When select the "View IP" function, then press the "Right" button to check current IP address and DHCP status. At this moment, you can get current IP address.

Step 1: The LAN port connects directly PC with an UTP cable.

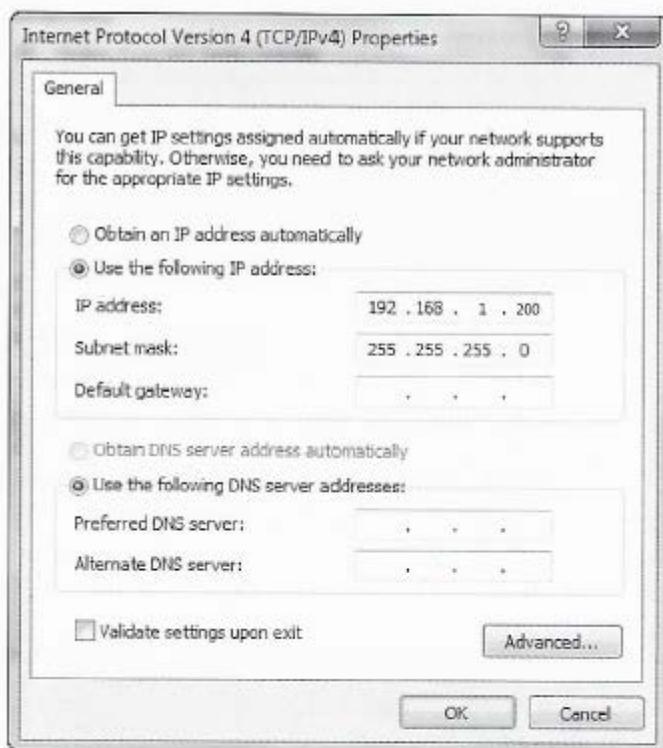
Step 2: On the PC, go to **Control Panel > Network and Internet > Network Connections > Local Area Connections**, right click on it, choose **Properties**.



Double click Internet Protocol Version 4 (TCP/IPv4)



Choose "Use the following IP address", for instance, input 192.168.1.200 as IP address, 255.255.255.0 as Subnet mask, and then click on OK, click on OK again.



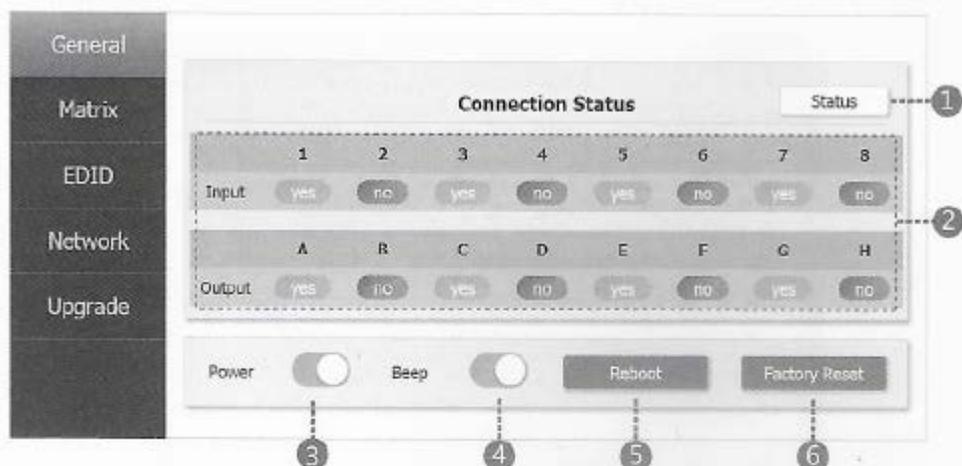
Note: The IP address of the computer and matrix should be in the same network segment. As the matrix's IP address is 192.168.1.100, the computer's IP should be 192.168.1.X (X contains 1~255 except 100).

Step 3. Input the IP address from front panel into a browser on the PC to enter Web GUI page, The pages like below.



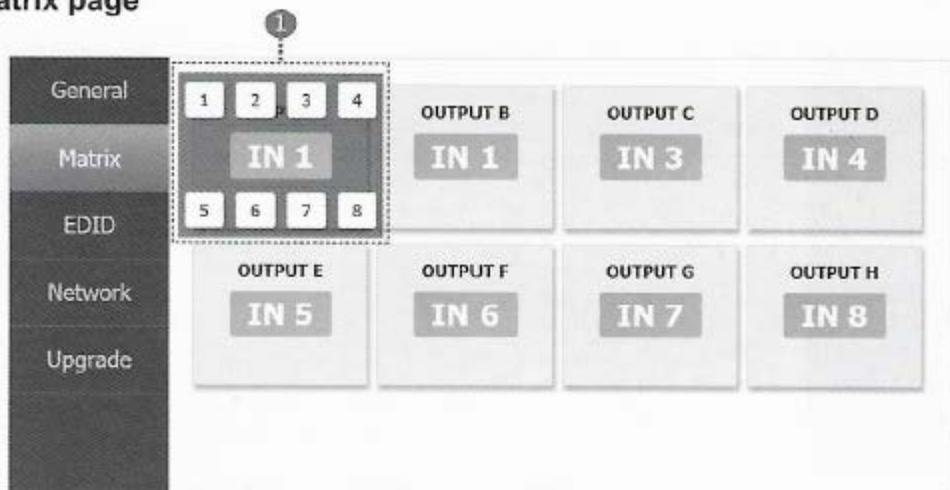
The Web GUI likes below:

General page



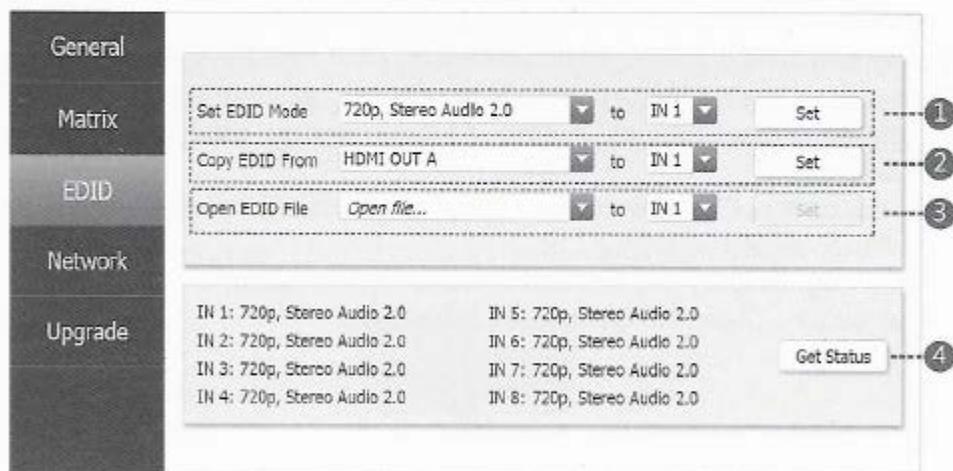
- ① Click this button to check current the Matrix connection status.
- ② Display currently the Matrix input and output port status. The "yes" have connected input or output source and "no" represent not connection.
- ③ Power switch. The Matrix will work when open this switch. Otherwise, the Matrix will standby.
- ④ Beep switch. Open this switch, press the Matrix on-panel button will have voice. Close this switch, it will mute.
- ⑤ Click this button will reboot device.
- ⑥ Click this button will set it to factory reset.

Matrix page



① You need click green area and then choose one input source to the OUTPUT A port. (The others OUTPUT ports have similar to function about Tab ①.)

EDID page



- ① Select EDID mode to input source, then click "Set" button.
- ② Copy EDID from output display to input source, then click "Set" button.
- ③ Open EDID file to input source.
- ④ Display the input source EDID mode status.

Network page

The screenshot shows a web interface for network configuration. On the left is a vertical navigation menu with options: General, Matrix, EDID, Network (highlighted), and Upgrade. The main content area is divided into two panels. The left panel, titled 'Network Configuration' (1), contains a DHCP toggle switch (currently off), a 'Net Status' button, and input fields for IP (192, 168, 8, 165), Subnet (255, 255, 255, 0), Gate (192, 168, 8, 1), and Mac (7a, 20, 0e, ca, 28, 18). A 'Save Changes' button is at the bottom. The right panel, titled 'Status Log' (2), displays a log of network configuration data: DHCP OFF, IP: 192.168.8.165, Subnet: 255.255.255.0, GateWay: 192.168.8.1, and Mac: 7a:20:0e:0a:28:18. A 'Clear' button (3) is located below the log.

① Network Configuration

◆ In DHCP open status:

DHCP switch: Obtain automatically the network configuration information, including IP address, Subnet, Gateway and MAC.

◆ In DHCP close status:

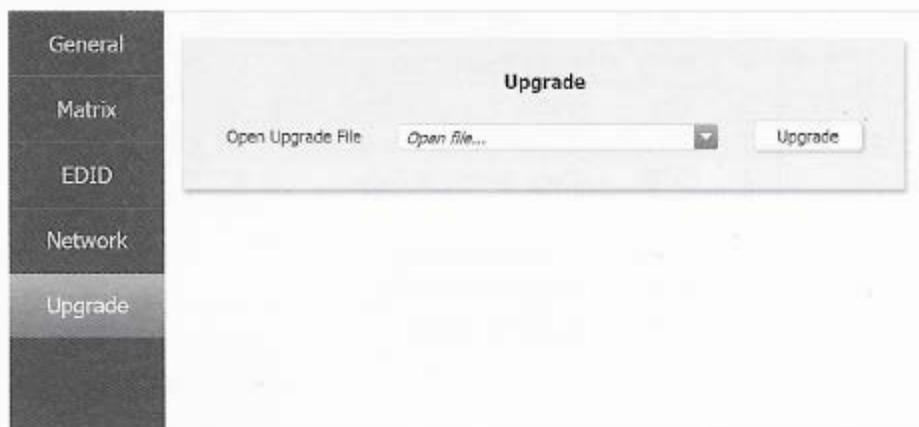
DHCP switch: If the DHCP switch has been closed, user can set IP, Subnet, Gateway and Mac address. In this moment, click the "Save Changes" button to save current status information. (Note: If user have set a new IP address and click the "Save Changes" button. At this moment, user have changed the IP address.)

Net Status button: Click this button will refresh currently network configuration information to display in Status Log.

② Status Log: Display the Net configuration information.

③ Clear button: Clear the Status Log information.

Upgrade page

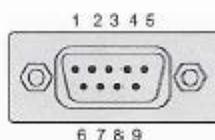


- ① Open upgrade file, then click the “Upgrade” button.

8. ASCII control command

The product also supports ASCII control. You need to a RS-232 male head with DB9 transfer USB male head serial cable. The RS-232 head of the serial cable is connected the RS-232 control port with DB 9 at the rear of the Matrix, and the USB head of the serial cable is connected a PC. Open any of a Serial Command tool on PC such as “Docklight” to send command to control the Matrix.

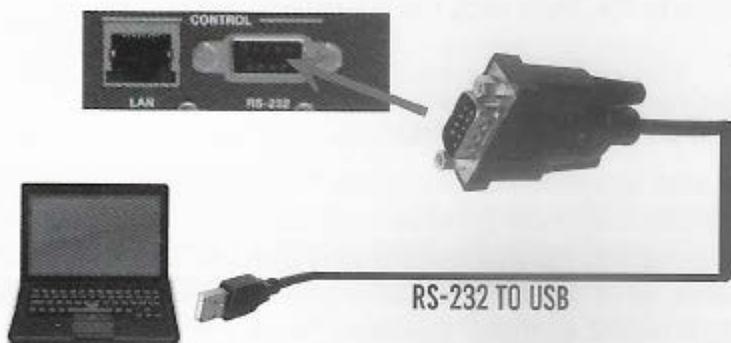
The following is shown RS-232 pin's definition and connection way.



9-Pin male DIN interface

Pin's definition

PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carry Detect
2	SIN	Serial In or Receiver Data
3	SOUT	Serial Out or Transmit Data
4	DTR	Data Terminal Ready
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicate

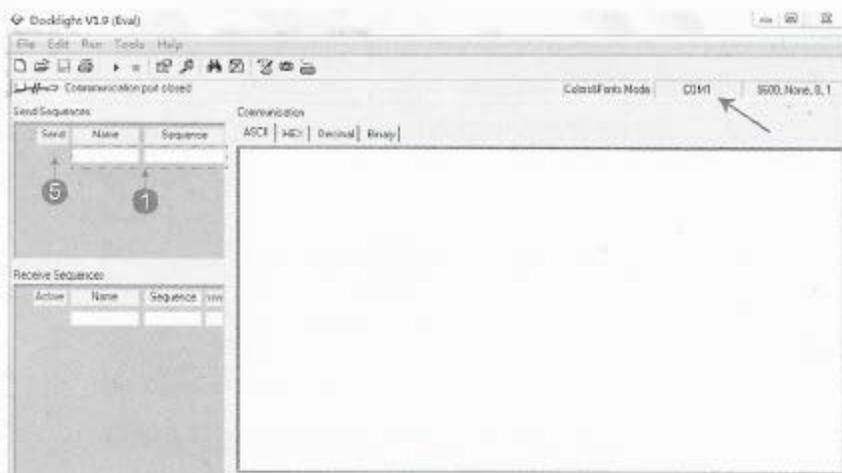


Double click the "Docklight" shortcut icon. Please see the following picture 1.

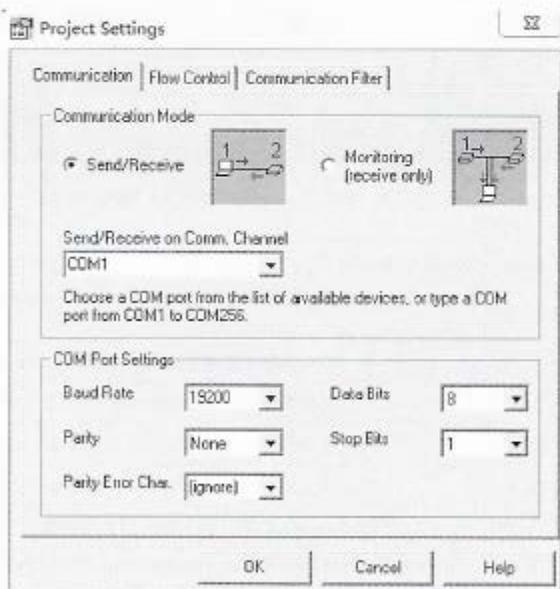


Picture 1

You will see the following page.



Click the “COM” area, there will be a “Project Settings” page. Choose the COM port to connect the software, and you need to setting the Baud Rate, Data Bits, Parity, Stop Bits and then click the “OK” button. Please see the following page.



Double click the "label 1" blank area. You will see the following page. At "label 2", you can explain sequence definition. At "label 3", you need to choose the sequence mode. At "label 4", you can input the RS-232 command of the product. Then click the "OK" button.



Finally, you need to click "label 5" button to send the command.

The ASCII list about the product is shown as below.

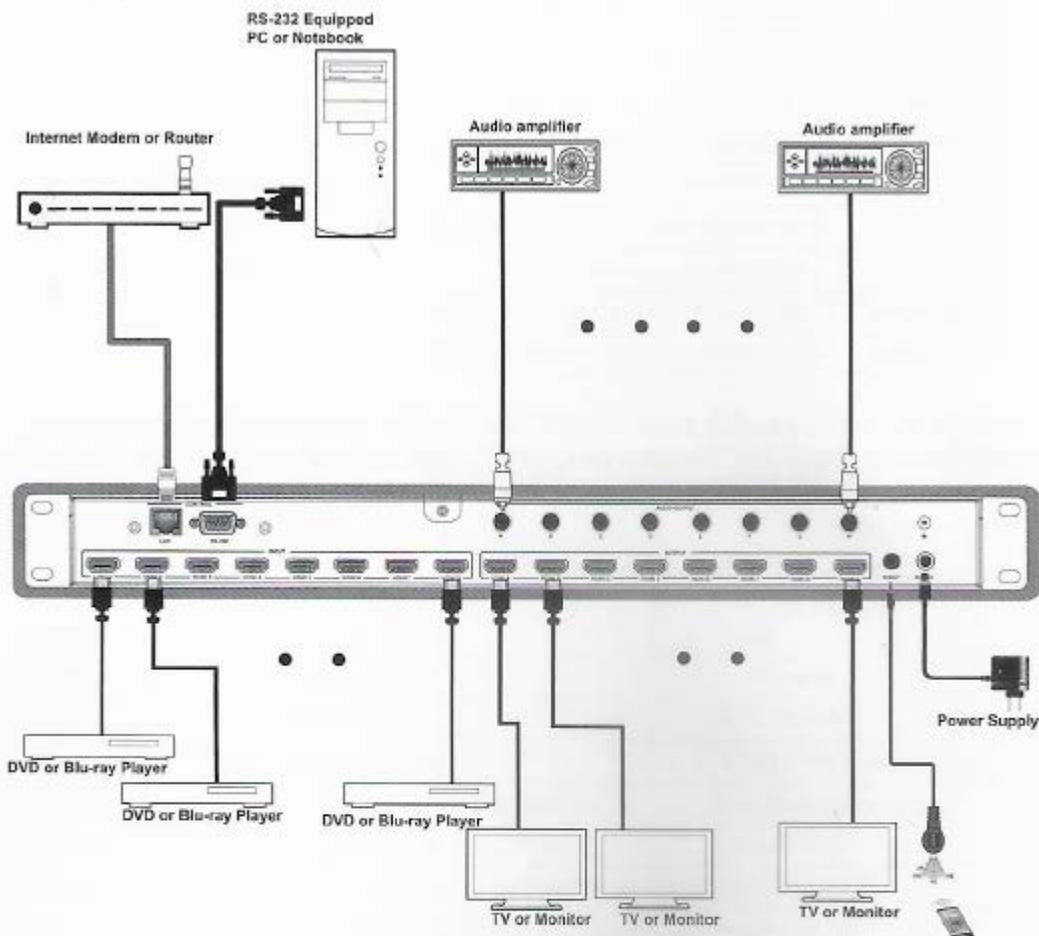
ASCII Commands		
Serial port protocol: Baud rate(default): 19200 Data bits: 8 Stop bits: 1 Check bit: 0		
RS-232 Command	Function description	Feedback
s x av y!	Switch x channel input to y channel output	AV x -> y
s x all!	Switch x channel input to all channel output	x to all
r all out!	Get the corresponding switch state between all output port and the input port	AV 1 -> 1, AV 2 -> 2...
r out 1!	Get the corresponding switch state between the x output port and the input port	AV x -> x
s ptp!	one to one between input and output channels	ptp
r link in x!	Get the connection status of the x input port	HDMI INx: connect
r link out x!	Get the connection status of the x output port	HDMI OUTx: disconnect
r link in all!	Get the connection status of all input port	HDMI INx: connect/disconnect
r link out all!	Get the connection status of all input port	HDMI OUTx: connect/disconnect
s x off!	Turn off the x output channel	out x off
s x on!	Turn on the x output channel	out x on
s all off!	Turn off all the output channel	all out off
s all on!	Turn on all the output channel	all out on
s edid x c y!	Copy the display EDID on the x output port to the y input port	copy EDID from output x to input y
s edid x d y!	Copy the built-in EDID number y to the x input port	use default edid y to input x
s edid all c y!	Copy the display EDID on the x output port to all inputs	copy edid from output y to all inputs
s edid all d y!	Copy the built-in EDID number y to all input ports	use default edid y to all input
s edid default!	Restore the default EDID (1080P 2) to each input port	edid default
r edid x!	Get the Edid state of the x input port	IN1: 1080p, Stereo Audio 2.0
r edid all!	Query the EDID status of all ports	IN1: 1080p, Stereo Audio 2.0
s x hdcp 2.2!	Force opening hdcp of the x output port	out x hdcp 2.2
s x hdcp 1.4!	Force opening hdcp of the x output port	out x hdcp 1.4
s x hdcp off!	Force shutdown hdcp of the x output port	out x hdcp off
s x hdcp auto!	Automatic management hdcp of x output port	out x hdcp auto

RS-232 Command	Function description	Feedback
s all hdcp off!	Force shutdown hdcp of the all output port	all out hdcp off
s all hdcp auto!	Automatic management hdcp of all output port	all out hdcp auto
r hdcp in x!	Get the Hdcp state of the x input port	a hdcp in
r hdcp out x!	Get the Hdcp state of the x output port	a hdcp out
r hdcp all in!	Query all input port HDCP status	a hdcp in all
r hdcp all out!	Query all output port HDCP status	a hdcp out all
s beep on!	Open buzzer function	beep on
s beep off!	Cancel buzzer function	beep off
r beep!	Get the switch state of the buzzer	a beep on
s lock on!	Panel lock	lock on
s lock off!	Panel unlock	lock off
r lock!	Get the status of the panel key lock	a lock on
s power on!	Machine boot	power on
s power off!	Machine shutdown	power off
r power!	Query power state	a power on
s rboot!	Machine reboot	rboot
s factory reset!	Restore factory settings	factory reset
r type!	Query matrix model	a HDM-B88
r version!	Query software version	a aa.bb-aa.bb-aa.bb
r status!	Query the status of the entire machine	a aa.bb-aa.bb-aa.bb.cc.dd
s dhcp off!	Set up network module using static IP	ip mode static
s dhcp on!	Set up network modules using dynamic IP	ip mode DHCP
r dhcp!	Get the Dhcp status of the network module	a ip mode DHCP
s ip addr a.b.c.d!	Set the IP address of the network board	a.b.c.d
s mac addr a-b-c-d-e-f!	Set the MAC address of the network board	a-b-c-d-e-f
s subnet a.b.c.d!	Setting subnet mask of network module	a.b.c.d
s gateway a.b.c.d!	Set up network module gateway	a.b.c.d
s port 8000!	Set control port at 8000	8000

RS-232 Command	Function description	Feedback
s network enable!	When configuring network modules, execute all the commands you need to configure first and then execute this command to reboot network modules	
r ip addr!	Get the IP address of the network board	a a.b.c.d <CR>
r mac addr!	Get the MAC address of the network board	a a-b-c-d-e-f <CR>
r subnet!	Get the subnet mask of the network board	a a.b.c.d <CR>
r gateway!	Get the gateway of the network board	a a.b.c.d <CR>
r port!	Get network port number	a 8000 <CR>
s net name ****!	Set the name of the network module	*****
r net name!	Get the name of the network module	a ***** <CR>

Note: In this table, you can send "RS-232 Commands" to control the product in any serial command tool. The "Function description" will explain function about the command. The "Feedback" will display whether the command sends success and feedback the information you need to.

9. Application Example



10. FAQ

1. Q: Does this product require an HDMI line length for the connection interface?
A: According to HDMI line length test, HDMI input / output with 4K2K@60Hz YUV 4:4:4 is the longest line length up to 16.4ft / 5m.

The use of "Premium High Speed HDMI" cable is highly recommended.