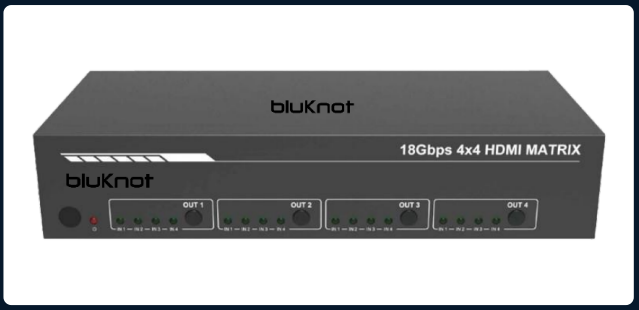
MATRIX SWITCHER · HDMI MATRIX

BLU-HDM2-44AD

Any of four 4K60 sources, to any of four screens.

A high-performance 4×4 HDMI 4K 18Gbps matrix that switches any of four HDMI 2.0 sources to four displays at up to 4K60 (4:4:4). Each output can be individually scaled (4K→1080p); de-embedded audio outputs to analog L/R and coaxial, and ARC returns display audio to the coaxial port. Advanced EDID management, controlled from the front panel, RS-232, IR remote or TCP/IP.



4 × 4	18Gbps	4K60 4:4:4	4K→1080P	ARC
HDMI MATRIX	VIDEO BANDWIDTH	MAX RESOLUTION	PER-OUTPUT SCALER	& SMART EDID

SPECIFICATION SUMMARY

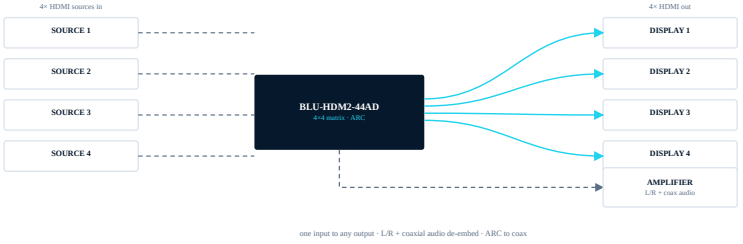
Matrix	4 × 4 HDMI
HDMI Compliance	HDMI 2.0
HDCP	HDCP 2.2 / 1.4, DVI 1.0
Video Bandwidth	18Gbps
Max Resolution	4K2K 50/60Hz 4:4:4
Down Scaler	4K→1080P, each output
HDR	HDR10, HDR10+, Dolby Vision, HLG
Audio de-embed	4× L/R + 4× Coaxial
Control	Panel, RS-232, IR, TCP/IP
Power	DC 12V/2.5A, 10W max

CONTENTS

KEY FEATURES

- HDMI 2.0, HDCP 2.2/1.4 & DVI 1.0 compliant
- 18Gbps bandwidth, 4K2K@60Hz (4:4:4)
- Per-output 4K→1080p scaling
- De-embed to L/R and coaxial; ARC to coax

One source to any screen. Each of the four HDMI outputs can be individually scaled (4K→1080p), and ARC audio from the display is returned to the coaxial output. Compact design for flexible installation.



ONE INPUT TO ANY OUTPUT · L/R + COAXIAL AUDIO DE-EMBED · ARC TO COAX

01 Overview

What the matrix does, and what's in the box.

This high-performance **4×4 HDMI 4K 18Gbps Matrix** can switch any of four HDMI 2.0 sources to four HDMI 2.0 displays. Each input and output supports up to **4K60 4:4:4** resolution and HDCP 2.2. The outputs can be individually scaled (**4K→1080p**). De-embedded audio can be output through analog L/R and coaxial audio output ports; the ARC function returns display device audio to the coaxial port only. Advanced EDID management is supported. Control from the front panel, RS-232, IR remote or TCP/IP.

FEATURES

- HDMI 2.0, HDCP 2.2 / HDCP 1.4 and DVI 1.0 compliant
- Video resolution up to 4K2K@60Hz (YUV 4:4:4)
- Support 18Gbps video bandwidth
- Four outputs can be individually scaled (4K→1080p)
- De-embedded audio to analog L/R and Coaxial ports output
- ARC audio return to the coaxial ports output only
- Built-in Web GUI for TCP/IP control
- Advanced EDID management supported
- Four methods of control: Front panel, RS-232, IR remote and TCP/IP
- Compact design for easy and flexible installation

AT A GLANCE

Matrix 4×4	**HDMI** 2.0	**HDCP** 2.2/1.4
BW 18Gbps	**Max** 4K60 4:4:4	**Scaler** 4K→1080p
Audio L/R + Coax	**Design** Compact	

PACKAGE CONTENTS

1×	4×4 HDMI 4K 18Gbps Matrix
1×	12V/2.5A Locking Power Adapter
1×	IR Remote
2×	Mounting Ears
1×	38KHz IR Receiver Cable (1.5m)
1×	3pin-3.81mm Phoenix Connector
4×	Machine Screws (KM3*4)
1×	User Manual

02 Specifications

Technical, connection, mechanical and environmental figures.

TECHNICAL

HDMI Compliance	HDMI 2.0
HDCP Compliance	HDCP 2.2 and HDCP 1.4
Video Bandwidth	18Gbps
Video Resolution	4K2K 50/60Hz 4:4:4 & 4:2:0, 4K2K 30Hz 4:4:4, 1080p/i, 720p/i, 480p/i, 3D formats, PC to 1920×1200
Output Scaling	4K→1080p
3D Support	Yes
Color Space	RGB, YCbCr 4:4:4 / 4:2:2 / 4:2:0
Color Depth	8/10/12-bit [1080P, 4K30, 4K60 4:2:0]; 8-bit [4K60 4:4:4]
HDMI Audio Formats	PCM 2.0/5.1/7.1CH, Dolby Digital/Plus/EX, Dolby True HD, DTS, DTS-EX, DTS-96/24, DTS High Res, DTS-HD Master Audio, DSD
Coaxial Audio Formats	PCM 2.0, Dolby Digital / Plus, DTS 2.0/5.1
L/R Audio Formats	PCM 2.0CH
HDR Support	HDR10, HDR10+, Dolby Vision, HLG
ESD Protection	Human-body Model: ±8kV (Air-gap), ±4kV (Contact)

CONNECTION

Input Ports	4 × HDMI Type A [19-pin female]
Output Ports	4 × HDMI Type A [19-pin female] 4 × L/R audio out [3.5mm Mini-jack] 4 × COAX audio out [RCA]
Control Ports	1 × TCP/IP [RJ45] 1 × RS-232 [3-pin phoenix] 1 × IR EXT [3.5mm Mini-jack]

MECHANICAL

Housing	Metal Enclosure
Color	Black
Dimensions	220mm (W) × 105mm (D) × 44mm (H)
Weight	792 g

POWER

Power Supply	Input: AC 100–240V 50/60Hz Output: DC 12V/2.5A (Locking connector)
Power Consumption	10W (Max), 1.56W (Standby)

ENVIRONMENT

Operating Temp.	0°C ~ 40°C / 32°F ~ 104°F
Storage Temp.	-20°C ~ 60°C / -4°F ~ 140°F
Relative Humidity	20~90% RH (non-condensing)

HDMI REACH (CABLE LENGTH)

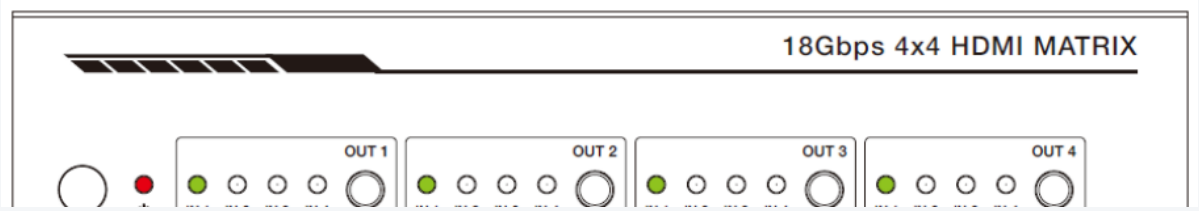
4K60	10ft / 3M
4K30	30ft / 10M
1080P60	42ft / 15M

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

03 Front & rear panel

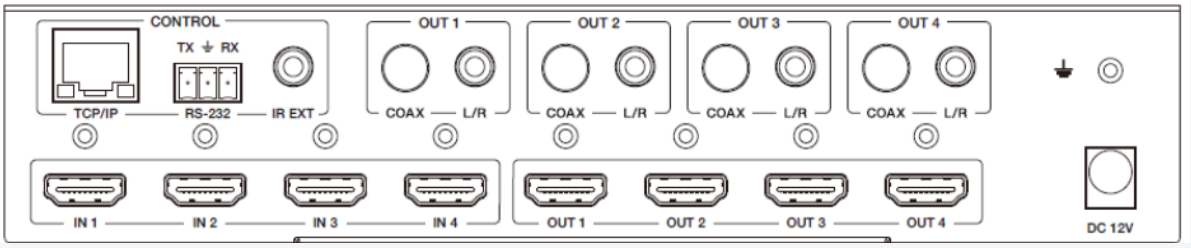
Every control and connector on the unit.

FRONT PANEL



1	IR Receiver Window	IR input for remote control of the Matrix.
2	Power LED	Red LED indicates that the unit is powered ON.
3	OUT 1/2/3/4 button	Short press to circularly select the desired input source IN 1/2/3/4 for the OUT 1/2/3/4 port. Press and hold for 3 seconds to switch the scaler mode for that output port.
4	IN 1/2/3/4 LEDs	When an IN 1/2/3/4 port is selected as the input channel for an OUT port, the corresponding green LED lights up.

REAR PANEL



1	TCP/IP	Control port for TCP/IP control or accessing the built-in Web GUI.
2	RS-232	3-pin pluggable connector for RS-232 control of the Matrix.
3	IR EXT	If the IR window is blocked or the unit is out of line of sight, insert the IR receiver cable here to receive the IR remote signal.
4	Coaxial Audio OUT 1–4	RCA connectors for coaxial audio output from HDMI OUT 1–4.
5	L/R Audio OUT 1–4	3.5mm Mini-jack connectors for stereo audio output from HDMI OUT 1–4.
6	GND	Screw terminal for earthing the Matrix.
7	IN / OUT 1–4	HDMI input ports (to sources) and HDMI output ports (to displays).
8	DC 12V	DC 12V input for the 12V / 2.5A PSU.

04 IR remote & EDID

Remote operation, then EDID management modes.

FRONT-PANEL & IR CONTROL

- **Power on / Standby** — power on the Matrix or set it to standby.
- **OUT 1–4** — short press cyclically selects the input source (IN 1–4) for that output.
- **IN 1–4** — the green LED lights for the input currently routed to an output.
- **Scaler** — press and hold an OUT button 3 seconds to switch that output's scaler mode.

> **Output-first switching:** select the signal source for an output by pressing its OUT 1–4 button (cyclic selection) until the corresponding input-source LED lights up.

EDID MANAGEMENT

This Matrix supports **advanced EDID management** with 21 factory-defined EDID settings, 2 user-defined modes and 4 copy-from-output modes. Select an EDID mode for an input port via RS-232 control or the Web GUI.

RS-232	`Send ASCII command "s edid in x from z!" with z = 1–27 (see RS-232 Control).`
Web GUI	`Set EDID in the "Input page" of the Web GUI.`

DEFINED EDID LIST

27 EDID modes: 21 factory-defined, 2 user-defined, 4 copy-from-output.

Mode	EDID Description	Mode	EDID Description
1	1080p, Stereo Audio 2.0	15	4K2K60_420, HD Audio 7.1
2	1080p, Dolby/DTS 5.1	16	4K2K60_444, Stereo Audio 2.0
3	1080p, HD Audio 7.1	17	4K2K60_444, Dolby/DTS 5.1
4	1080i, Stereo Audio 2.0	18	4K2K60_444, HD Audio 7.1
5	1080i, Dolby/DTS 5.1	19	4K2K60_444, Stereo Audio 2.0 HDR
6	1080i, HD Audio 7.1	20	4K2K60_444, Dolby/DTS 5.1 HDR
7	3D, Stereo Audio 2.0	21	4K2K60_444, HD Audio 7.1 HDR
8	3D, Dolby/DTS 5.1	22	USER1
9	3D, HD Audio 7.1	23	USER2
10	4K2K30_444, Stereo Audio 2.0	24	Copy_From_Hdmi_Tx_1
11	4K2K30_444, Dolby/DTS 5.1	25	Copy_From_Hdmi_Tx_2
12	4K2K30_444, HD Audio 7.1	26	Copy_From_Hdmi_Tx_3
13	4K2K60_420, Stereo Audio 2.0	27	Copy_From_Hdmi_Tx_4
14	4K2K60_420, Dolby/DTS 5.1		

05 Web GUI user guide

Log in over the network, then drive the matrix from a browser.

GETTING CONNECTED

1. **Step 1 — Get the IP address.** Default is **192.168.1.100**. Read it via RS-232 by sending "r ipconfig!", or from the Web GUI network page.
2. **Step 2 — Connect.** Link the TCP/IP port to a PC and set the PC to the same network segment as the Matrix.
3. **Step 3 — Open.** Enter the Matrix IP address in a browser to reach the Web GUI.
4. **Step 4 — Log in.** Select the Username and enter the password.

Username	`User / Admin`
Password	`user / admin (default)`

STATUS PAGE

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

VIDEO PAGE

Output — the device's OUTPUT port; select a signal source for it.

Input — click the drop-down to select a signal source for the OUTPUT port.

Presets Name / Set / Save / Clear — name (max 12 chars), restore, save or clear an audio-video matrix switching relationship.

INPUT PAGE

Inputs — input channel of the device.

Active — indicates whether the channel is connected to a signal source.

Name — modify the input channel name (max 12 characters).

EDID — set the current channel's EDID. Browse and upload a .bin file to User 1 / User 2, and download the EDID file of a selected input channel.

OUTPUT PAGE

Outputs — output channel of the device.

Cable — connection status (green = display connected, gray = not).

Name — modify the output channel name (max 12 characters).

Scaler Mode — set the current output resolution mode.

HDCP — set the output HDCP status.

ARC — turn the ARC function on / off.

Stream — turn the output stream on / off.

CEC PAGE

Input Control — control each input source by clicking the on-page icons (multiple inputs at once).

Output Control — control each display: power on/off, volume +/-, active source switching (multiple outputs at once).

NETWORK PAGE

Set Network Defaults — restore default network, then re-search the IP address.

Modify Username — enter Old / New / Confirm password, then Save. Password can't be empty; New can't equal Old; New and Confirm must match.

Modify Network Setting — change Mode / IP Address / Gateway / Subnet Mask / Telnet Port, then Save. Static switches to the set IP; DHCP takes the router-assigned IP.

SYSTEM PAGE

Panel Lock — lock / unlock the panel buttons.

Beep — turn the beep on / off.

LCD — turn the LCD on / off and set the on-time (15s / 30s / 60s).

Serial Baud Rate — set the serial baud rate.

Firmware Update — browse to the update file, then Update.

Factory Reset — reset the unit to factory defaults.

Reboot — reboot the unit.

> After reset / reboot, the Web GUI returns to the login page.

06 RS-232 control command

Serial control over a D-Sub 9 connection.

The product supports RS-232 control. Use a serial cable with an RS-232 male head and a DB9-to-USB male head. Connect the RS-232 end to the RS-232 port (DB9) on the rear of the Matrix and the USB end to a PC, then open a Serial Command tool to send ASCII commands.

Baud rate	`115200`
Data bits	`8 bit`
Stop bits	`1`
Check bit	`0`
Syntax	`x = Parameter 1, y = Parameter 2, ! = Delimiter`

> The full ASCII command list follows. Command codes, function descriptions, examples, feedback and default settings are reproduced from the product manual.

COMMAND CODE	FUNCTION DESCRIPTION	EXAMPLE	FEEDBACK	DEFAULT
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! power off	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!	
System Setting				
help!	Lists all commands	help!		
r type!	Get device model	r type!	HDP-MXB44P	
r status!	Get device current status	r 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	r fw 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)	r link in 1!	HDMI IN1: connect	
r link out y!	Get the connection status of the y output port, y=0~4 (0=all)	r link out 1!	HDMI OUT1: connect	
s reset!	Reset to factory defaults	s reset!	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)	s beep 1!	beep on beep off	
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	
r lock!	Get panel button lock state	r lock!	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	s save preset 1!	save to preset 1	

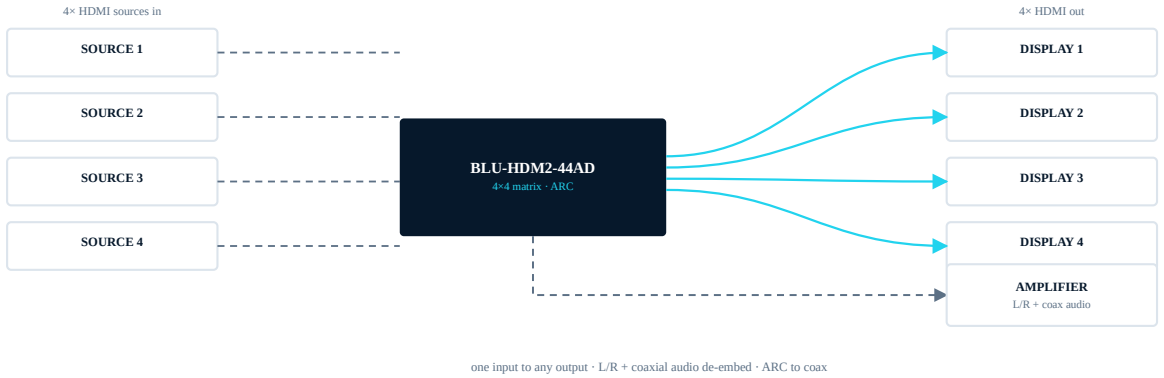
COMMAND CODE	FUNCTION DESCRIPTION	EXAMPLE	FEEDBACK	DEFAULT
s recall preset z!	Call saved preset z scenarios, z=1~8	s recall preset 1!	recall from preset 1	
s clear preset z!	Clear stored preset z scenarios, z=1~8	s clear preset 1!	clear preset 1	
r preset z!	Get preset z information, z=1~8	r preset 1!	video/audio crosspoint	
s baud rate xxx!	Set the serial port baud rate of RS02 module, z= (115200,57600,38400,19200,9600 ,4800)	s baud rate 115200!	Baudrate:115200	
r baud rate!	Get the serial port baud rate of RS02 module	r baud rate!	Baudrate:115200	
s id z!	Set the control ID of the product, z=000~999	s id 888!	id 888	
Output Setting				
s in x av out y!	Set input x to output y, x=1~4, y=0~4 (0=all)	s in 1 av out 2!	input 1 -> output 2	
r av out y!	Get output y signal status y=0~4 (0=all)	r av out 0!	input 1 -> output 1 …… 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)	s out 1 stream 1!	Enable out 1 stream Disable out 1 stream	
r out y stream!	Get output y stream status, y=0~4 (0=all)	r out 1 stream!	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)	s hdmi 1 scaler 1!	hdmi 1 set to bypass mode	
r hdmi y scaler!	Get hdmi output y port output mode y=0~4 (0=all)	r hdmi 1 scaler!	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)	s hdmi 1 hdcp 1!	hdmi 1 hdcp active	
r hdmi y hdcp!	Get HDCP status of HDMI out y, y=0~4 (0=all)	r hdmi 1 hdcp!	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)	s hdmi 1 arc 1!	hdmi output 1 arc on hdmi output 1 arc off	

COMMAND CODE	FUNCTION DESCRIPTION	EXAMPLE	FEEDBACK	DEFAULT
r hdmi y arc!	Get the arc state of HDMI output y, y=0~4 (0=all)	r hdmi 1 arc!	hdmi out1 arc on	
EDID Setting				
r edid in x!	Get EDID status of the input x, x=0~4 (0=all inputs)	r edid in 0!	IN1 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	r edid data hdmi 1!	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=1~27. 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 / 24~27: Copy_From_Hdmi_Tx_1~4	s edid in 1 from 1!	IN1 EDID:1080p, Stereo Audio 2.0	
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 Mac address: 00:1C:91:03:80:01 TCP/IP port=8000, telnet port=10	
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. 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. 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	

COMMAND CODE	FUNCTION DESCRIPTION	EXAMPLE	FEEDBACK	DEFAULT
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	
s net reboot!	Reboot network modules	s net reboot!	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	

07 Application example

Any of four sources to any of four screens, with audio de-embedded.



Route anything, anywhere. Any of the four HDMI inputs can be sent to any of the four outputs, independently, at up to 4K2K 50/60Hz (4:4:4).

Audio, extracted. Each output de-embeds to both analog L/R and coaxial audio; with ARC enabled, display audio returns to the coaxial output.

ORDERING

BLU-HDM2-44AD	4×4 HDMI 4K 18Gbps Matrix — HDMI 2.0, HDCP 2.2/1.4, DVI 1.0, 4K2K 50/60Hz (4:4:4), per-output 4K→1080p scaling, L/R + coaxial audio de-embed, ARC to coax, advanced EDID, control via panel / RS-232 / IR / TCP/IP

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