18Gbps 16×16 HDMI Matrix with ARC Function

The KanexPro MMX-16X16AUD is an 18Gbps 16×16 HDMI matrix switcher that routes up to sixteen HDMI sources to sixteen displays at resolutions up to 4K2K@60Hz 4:4:4. Audio is de-embedded from all sixteen HDMI outputs to dedicated coaxial audio ports. When ARC is enabled, each output can extract return audio from the connected display to its coaxial port. Each output includes an independent 4K-to-1080p downscaler. Control via front panel buttons, IR remote, RS-232, TCP/IP, and Web GUI.

Surge Protection Recommended — This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, or lightning strikes. Use of surge protection systems is highly recommended.

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FEATURES

- ✓ HDMI 2.0b, HDCP 2.2/1.x, and DVI 1.0 compliant
- ✓ Supports 18Gbps video bandwidth with resolution up to 4K2K@60Hz (YUV 4:4:4)
- ✓ HDR10, HDR10+, Dolby Vision, and HLG pass-through
- ✓ Audio pass-through up to 7.1CH HD audio (LPCM, Dolby TrueHD, Dolby Atmos, DTS-HD Master Audio, DTS:X)
- ✓ Coaxial audio de-embedding on all 16 outputs; supports LPCM 2.0, Dolby Digital/DD+, DTS 5.1
- ✓ ARC function extracts return audio from connected displays to coaxial output
- ✓ Independent 4K→1080p downscaler on each output
- ✓ Smart EDID management (21 factory, 2 user-defined, 16 copy modes) and CEC pass-through
- ✓ 1U rack-mountable with front panel OLED display
- ✓ Control via front panel buttons, IR remote, RS-232, TCP/IP (LAN), and Web GUI

PACKAGE CONTENTS

1× 18Gbps 16×16 HDMI Matrix • 1× 24V/3.75A Power Adapter • 1× IR Remote • 1× RS-232 Cable (1.5m, male to female) • 2× Mounting Ears • 1× Product Manual

Specifications

TECHNICAL	
HDMI Compliance	HDMI 2.0b
HDCP Compliance	HDCP 2.2/1.x • DVI 1.0
Video Bandwidth	18 Gbps
Video Resolution	Up to 4K2K@60Hz (4:4:4)
Color Depth	8-bit, 10-bit, 12-bit
Color Space	RGB, YCbCr 4:4:4 / 4:2:2 / 4:2:0
HDR Formats	HDR10, HDR10+, Dolby Vision, HLG
HDMI Audio (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
ESD Protection	IEC 61000-4-2: ±8kV (air-gap) & ±4kV (contact)

CONNECTION	
Input	16× HDMI Type A [19-pin female]
Output	16× HDMI Type A [19-pin female] 16× Coaxial Audio (RCA)
Control	1× TCP/IP [RJ45] • 1× RS-232 [D-Sub 9]

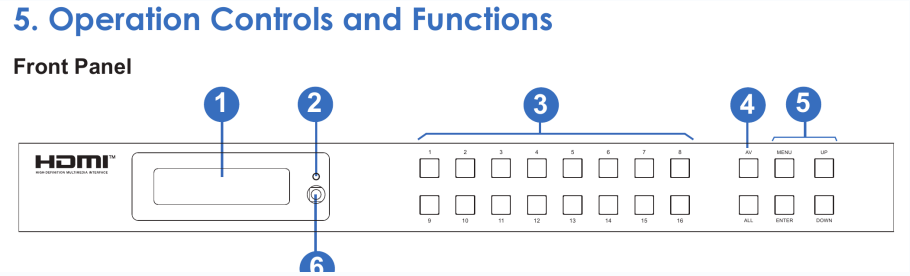
MECHANICAL	
Housing	Metal Enclosure, Black
Dimensions	440mm (W) × 200mm (D) × 44mm (H) — 1U
Weight	3.1 kg
Power Supply	AC 100–240V 50/60Hz → DC 24V/3.75A (CE/FCC/UL certified)
Power Consumption	76.8W
Operating Temp	14–113°F / −10–45°C
Storage Temp	−4–140°F / −20–60°C
Humidity	20–90% RH (non-condensing)

CABLE LENGTH	
4K60	Up to 16 ft / 5m
4K30	Up to 32 ft / 10m
1080p60	Up to 50 ft / 15m

The use of Premium High Speed HDMI cables is highly recommended.

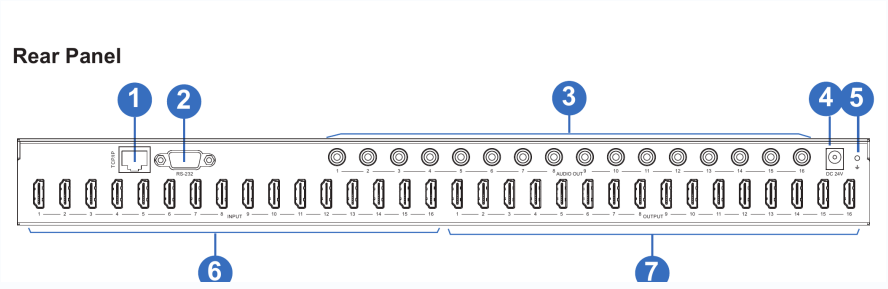
Operation Controls and Functions

FRONT PANEL



No.	Name	Function Description
1	OLED Screen	Displays matrix switching status, input/output port assignment, EDID mode, baud rate, and IP address.
2	Power LED	Green when powered on; red on standby.
3	Buttons (1–16)	Input/output selection buttons. Press input (1–16), then AV, then output (1–16 or ALL) to route.
4	AV / ALL	**AV:** Confirms input-to-output routing. **ALL:** Routes selected input to all 16 outputs.
5	MENU / ENTER / UP / DOWN	Navigate EDID settings, baud rate, and IP address via the OLED menu.
6	IR Window	Receives IR remote signals from the included remote control.

REAR PANEL



No.	Name	Function Description
1	TCP/IP	RJ45 LAN port for Web GUI and TCP/IP control.
2	RS-232	D-Sub 9-pin serial control port.
3	AUDIO OUT (1–16)	Coaxial audio output (RCA). De-embedded audio from corresponding HDMI output. With ARC enabled, outputs display return audio.
4	DC 24V	24V/3.75A power adapter input.
5	GND	Ground terminal — connect housing to earth ground.
6	INPUT (1–16)	HDMI input ports. Connect to source devices.
7	OUTPUT (1–16)	HDMI output ports. Connect to display devices.

IR Remote & EDID Management

IR REMOTE

The included IR remote provides direct source-to-display routing. Press Input-Y (Y=1–16), then Output-X (X=1–16, or ALL).

No.	Button	Function
1	**Power**	Power on the Matrix or set to standby mode.
2	**Input 1–16**	Select input source.
3	**Output 1–16**	Select output destination.
4	**ALL**	Route selected input to all 16 outputs simultaneously.

EDID MANAGEMENT

21 factory-defined EDID settings, 2 user-defined modes, and 16 copy modes. Set via front panel, RS-232, or Web GUI.

#	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

#	EDID Description
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 2.0 HDR
20	4K2K60_444, Dolby/DTS 5.1 HDR
21	4K2K60_444, HD Audio 7.1 HDR

22–23: User 1 / User 2 • 24–39: Copy from HDMI Output 1–16

DEFAULT SETTINGS

Parameter	Default Value
IP Mode	Static
IP Address	192.168.1.100
Subnet Mask	255.255.255.0
Gateway	192.168.0.1
TCP/IP Port	8000
Telnet Port	23
Admin Login	Admin / admin
User Login	User / user
Serial Baud Rate	115200 (8N1)
Panel Lock	Off
Beep	On
LCD Timeout	30 seconds
Default EDID	1: 1080p, Stereo Audio 2.0
ARC	Off
Scaler Mode	Bypass
Video Routing	Point-to-Point (PTP)

Web GUI User Guide

Connect the TCP/IP port to your network. Navigate to the Matrix IP address (default: **192.168.1.100**) in a browser. Login as **Admin** (password: **admin**) or **User** (password: **user**). The Admin account has full access; the User account is limited to routing and preset operations.

■ Status Page

Displays the device model number, firmware version, hostname, IP address, subnet mask, gateway, and MAC address. Use this page to verify network connectivity and firmware level.

■ Video Page

Route any input source to any output display via drop-down selectors. The routing matrix allows individual or batch assignments. Save, recall, and clear up to 8 presets with custom names (maximum 12 characters each). Presets store the complete routing table for instant recall.

■ Input Page

View input channel status (active/inactive signal detection), rename input channels with custom labels, and set EDID per channel from 39 available modes (21 factory + 2 user + 16 copy). Upload custom EDID files to User 1 or User 2 slots, or download the current EDID from any input for backup or analysis.

■ Output Page

View output cable connection status (connected/disconnected), rename output channels, and configure per-output settings:

- **Scaler Mode:** Bypass (native resolution), 4K→1080p (forced downscale), or Auto (automatic based on display EDID)
- **ARC:** Enable or disable Audio Return Channel per output — extracts display audio to the corresponding coaxial port
- **Stream:** Enable or disable HDMI output signal per channel — useful for turning off unused outputs

■ CEC Page

Input Control: Power on/off, menu navigation (up/down/left/right/enter/back), playback controls (play/pause/stop/rewind/fast-forward/previous/next), and volume controls (vol+/vol−/mute) for connected source devices.

Output Control: Power on/off, volume (±), mute, and active source switching for connected displays. Supports individual or all-output CEC commands.

■ Network Page

Configure IP mode (Static or DHCP), IP address, subnet mask, gateway, and telnet port. Change login passwords for Admin and User accounts. Apply a network reset to restore default network settings without affecting routing or other configurations.

■ System Page

Configure system-level settings:

- **Panel Lock:** Lock or unlock the front panel buttons to prevent unauthorized changes
- **Beep:** Enable or disable the key press confirmation tone
- **LCD Timeout:** Set OLED backlight timeout (Off / Always On / 15s / 30s / 60s)
- **Serial Baud Rate:** Select baud rate for RS-232 communication (4800 / 9600 / 19200 / 38400 / 57600 / 115200)
- **Firmware Update:** Upload new firmware via the Web GUI
- **Factory Reset:** Restore all settings to factory defaults
- **Reboot:** Restart the device remotely

RS-232 Control Commands

Serial protocol: Baud rate **115200**, Data bits: 8, Stop bits: 1, Parity: None. Connect via D-Sub 9-pin RS-232 port. All commands end with **!** delimiter.

POWER

COMMAND	FUNCTION	DEFAULT
`s power z!`	Power on/off (z=0 off, z=1 on)	power on
`r power!`	Get current power state	—
`s reboot!`	Reboot the device	—

SYSTEM SETUP

COMMAND	FUNCTION	DEFAULT
`help!`	List all commands	—
`r type!`	Get device model	—
`r status!`	Get all device status	—
`r link in x!`	Connection status of input x (x=0–16, 0=all)	—
`r link out y!`	Connection status of output y (y=0–16, 0=all)	—
`s reset!`	Reset to factory defaults	—
`s beep z!`	Enable/disable beep (z=0 off, z=1 on)	on
`r beep!`	Get beep state	—
`r fw version!`	Get firmware version	—
`s lock z!`	Lock/unlock front panel (z=0 off, z=1 on)	off
`r lock!`	Get panel lock state	—
`s lcd on time z!`	LCD timeout (z=0:off, 1:always, 2:15s, 3:30s, 4:60s)	30s
`r lcd mode!`	Get LCD backlight status	—

PRESETS

COMMAND	FUNCTION	DEFAULT
`s save preset z!`	Save current routing to preset z (z=1–8)	—
`s recall preset z!`	Recall preset z (z=1–8)	—
`s clear preset z!`	Clear preset z (z=1–8)	—
`r preset z!`	Get preset z info (z=1–8)	—

OUTPUT / VIDEO ROUTING

COMMAND	FUNCTION	DEFAULT
`s in x av out y!`	Route input x to output y (x=1–16, y=0–16, 0=all)	PTP
`r av out y!`	Get signal status of output y (y=0–16, 0=all)	—
`s hdmi y stream z!`	Enable/disable output stream (y=0–16, z=0/1)	enable
`r hdmi y stream!`	Get output stream status (y=0–16, 0=all)	—
`s hdmi y scaler z!`	Set scaler (y=0–16, z=1:bypass, 2:4K→1080p, 3:auto)	bypass
`r hdmi y scaler!`	Get scaler mode (y=0–16, 0=all)	—

EDID SETTING

COMMAND	FUNCTION	DEFAULT
`s edid in x from z!`	Set input x EDID from mode z (x=0–16, z=1–39)	1: 1080p, Stereo 2.0
`r edid in x!`	Get EDID status of input x (x=0–16, 0=all)	—
`r edid data hdmi y!`	Get EDID data from HDMI output y (y=1–16)	—

RS-232 Control Commands (continued)

AUDIO / ARC SETTING

COMMAND	FUNCTION	DEFAULT
`s hdmi y arc z!`	Turn ARC on/off for output y (y=0–16, z=0/1)	off
`r hdmi y arc!`	Get ARC state of output y (y=0–16, 0=all)	—

CEC — INPUT CONTROL

COMMAND	FUNCTION	DEFAULT
`s cec in x on!`	CEC power on input x (x=0–16, 0=all)	—
`s cec in x off!`	CEC power off input x	—
`s cec in x menu!`	Open menu on input x	—
`s cec in x up!`	Menu up on input x	—
`s cec in x down!`	Menu down on input x	—
`s cec in x left!`	Menu left on input x	—
`s cec in x right!`	Menu right on input x	—
`s cec in x enter!`	Menu enter on input x	—
`s cec in x back!`	Back operation on input x	—
`s cec in x play!`	Play on input x	—
`s cec in x pause!`	Pause on input x	—
`s cec in x stop!`	Stop on input x	—
`s cec in x rew!`	Rewind on input x	—
`s cec in x ff!`	Fast forward on input x	—
`s cec in x previous!`	Previous track on input x	—
`s cec in x next!`	Next track on input x	—
`s cec in x vol+!`	Volume up on input x	—
`s cec in x vol-!`	Volume down on input x	—
`s cec in x mute!`	Mute on input x	—

CEC — OUTPUT CONTROL

COMMAND	FUNCTION	DEFAULT
`s cec hdmi out y on!`	CEC power on output y (y=0–16, 0=all)	—
`s cec hdmi out y off!`	CEC power off output y	—
`s cec hdmi out y vol+!`	Volume up on output y	—
`s cec hdmi out y vol-!`	Volume down on output y	—
`s cec hdmi out y mute!`	Mute on output y	—
`s cec hdmi out y active!`	Set active source on output y	—

RS-232 Control Commands (continued)

NETWORK SETTING

COMMAND	FUNCTION	DEFAULT
`r ipconfig!`	Get current IP configuration	—
`r mac addr!`	Get MAC address	—
`s ip mode z!`	Set Static (z=0) or DHCP (z=1)	Static
`r ip mode!`	Get IP mode	—
`s ip addr xxx.xxx.xxx.xxx!`	Set IP address	192.168.1.100
`r ip addr!`	Get IP address	—
`s subnet xxx.xxx.xxx.xxx!`	Set subnet mask	255.255.255.0
`r subnet!`	Get subnet mask	—
`s gateway xxx.xxx.xxx.xxx!`	Set gateway	192.168.0.1
`r gateway!`	Get gateway	—
`s tcp/ip port x!`	Set TCP/IP port (x=1–65535)	8000
`r tcp/ip port!`	Get TCP/IP port	—
`s telnet port x!`	Set telnet port (x=1–65535)	23
`r telnet port!`	Get telnet port	—
`s net reboot!`	Reboot network modules	—

PASSWORD SETTING

COMMAND	FUNCTION	DEFAULT
`s admin pw xxxx!`	Set Admin password (4–8 characters)	admin
`s user pw xxxx!`	Set User password (4–8 characters)	user
`r admin pw!`	Get Admin password	—
`r user pw!`	Get User password	—

NAMING / LABELS

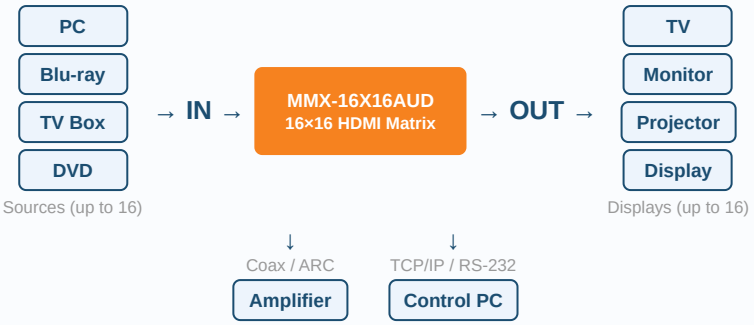
COMMAND	FUNCTION	DEFAULT
`s in x name yyyy!`	Set input x name (x=1–16, max 12 chars)	IN1–IN16
`r in x name!`	Get input x name (x=0–16, 0=all)	—
`s out y name yyyy!`	Set output y name (y=1–16, max 12 chars)	OUT1–OUT16
`r out y name!`	Get output y name (y=0–16, 0=all)	—
`s preset z name yyyy!`	Set preset z name (z=1–8, max 12 chars)	Preset1–8
`r preset z name!`	Get preset z name (z=0–8, 0=all)	—

BAUD RATE

COMMAND	FUNCTION	DEFAULT
`s baud rate z!`	Set baud rate (z=1:4800, 2:9600, 3:19200, 4:38400, 5:57600, 6:115200)	115200
`r baud rate!`	Get current baud rate	—

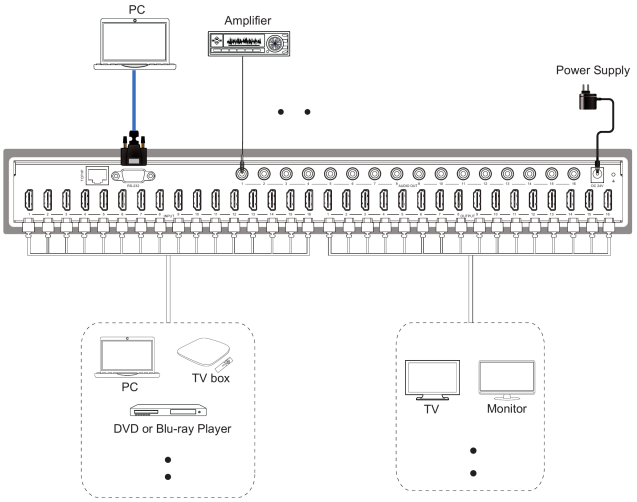
Application Example

Multi-Source / Multi-Display with Audio De-embedding & ARC



How it works: Connect up to 16 HDMI sources to inputs IN 1–16. Route any source to any display using front panel buttons, IR remote, RS-232, TCP/IP, or Web GUI. Each output passes full 4K60 4:4:4 video with HDR to the connected display, while simultaneously de-embedding audio to the corresponding coaxial (RCA) port.
ARC: Enable ARC on any HDMI output to extract return audio from a connected TV's ARC channel to the coaxial output.
Downscaler: Each output independently downscales 4K to 1080p for mixed-resolution display environments.

DETAILED WIRING REFERENCE



TROUBLESHOOTING

Q: No audio from my amplifier connected to the coaxial output?
A: Verify the coaxial cable is connected to the AUDIO OUT port corresponding to the HDMI output in use. If using ARC, ensure ARC is enabled via Web GUI or RS-232 (**s hdmi y arc 1!**). Check the TV's ARC/CEC output is enabled.

Q: No video on one or more displays?
A: Use Premium High Speed HDMI cables. For 4K60, max 5m cable. Set EDID to match display resolution. For mixed resolutions, enable 4K→1080p downscaler.

Q: How do I access the Web GUI?
A: Connect TCP/IP port to your network. Default IP: **192.168.1.100**. Login: **Admin / admin**.