BZBGEAR®

Amplify Your World™

BG-MVS4X4-CV

4x4 4K HDMI Seamless Matrix Switcher/Video Wall Processor with Scaler, IR, Audio, and RS-232 Control

User Manual

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Statement

Please read these instructions carefully before connecting, operating, or configuring this product. Please save this manual for future reference.

Safety Precaution

- To prevent damaging this product, avoid heavy pressure, strong vibration, or immersion during transportation, storage, and installation.

- The housing of this product is made of organic materials. Do not expose to any liquid, gas, or solids which may corrode the shell.

- Do not expose the product to rain or moisture.

- To prevent the risk of electric shock, do not open the case. Installation and maintenance should only be carried out by qualified technicians.

- Do not use the product beyond the specified temperature, humidity, or power supply specifications.

- This product does not contain parts that can be maintained or repaired by users. Damage caused by dismantling the product without authorization from BZBGEAR is not covered under the warranty policy.

- Installation and use of this product must strictly comply with local electrical safety standards.

Introduction

The BG-MVS4X4-CV is a 4x4 seamless HDMI matrix switcher and video wall processor that supports input resolutions up to 4K@30Hz. It enables instant routing of any input to any output and can split a single source across 2 to 4 displays in configurations like 2×2, 4×1, or 1×4. With seamless switching, up/downscaling to 720p, 1080p, 1920×1200, or 4K@30Hz, and support for audio formats including LPCM, Dolby Digital, and DTS, it ensures smooth integration across AV systems. Control options include front panel, IR, and RS-232, while HDCP 1.4 compliance and a compact design make it ideal for signage, classrooms, control rooms, and more.

Features

- **Flexible Output Scaling:** Output resolutions can be upscaled or downscaled to 1080p, 720p, 1920×1200, or 4K@30Hz
- **4x4 Matrix Mode:** Seamless switching of any input to any output
- **Video Wall Mode:** Supports configurations such as 2×2, 4×1, 1×4, and more
- **Seamless Switching:** Instant transitions with no delay or image loss
- **Audio Format Support:** Compatible with LPCM, Dolby Digital (DD), Dolby Digital Plus (DD+), and DTS
- **Versatile Control Options:** Manage via front panel buttons, IR remote, or RS-232 commands
- **HDCP Compliance:** Fully compliant with HDCP 1.4 for secure content transmission
- **High Bandwidth Support:** Handles video bandwidth up to 10.2Gbps
- **Advanced Video Wall Features:** Includes image mirroring for flexible display setups
- **Input Resolution:** Supports HDMI input resolutions up to 4K@30Hz
- **Compact Form Factor:** Space-saving design for easy integration into any AV environment

Packing List

- 1 × 4K 4x4 HDMI Seamless Matrix Switcher & Video Wall Processor
- 1 × IR Remote Control for Matrix Switching
- 1 × 3-Pin 3.5mm Phoenix Connector (Male)
- 2 × Mounting Ears
- 4 × KM3×4 Machine Screws
- 1 × 12V/1A Locking Power Adapter
- 1 × User Manual

Specifications

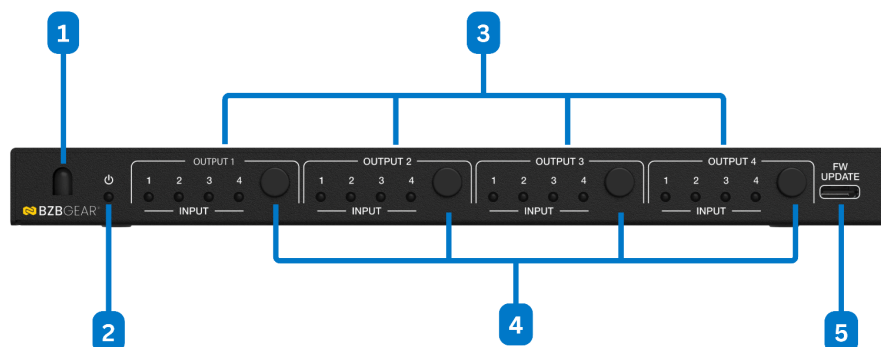| Technical	
HDMI Compliance	HDMI 1.4b
HDCP Compliance	HDCP 1.4
Video Bandwidth	10.2Gbps
Input Video Resolution	Up to 4K2K@30Hz
Output Video Resolution	4096x2160p30Hz, 3840x2160p30Hz, 1920x1200p60Hz, 1920x1080p60Hz, 1920x1080p50Hz, 1600x1200p60Hz, 1600x900p60Hz, 1440x900p60Hz, 1360x768p60Hz, 1280x1024p60Hz, 1280x720p60Hz, 1280x720p50Hz, 1024x768p60Hz
Color Space	RGB 4:4:4, YCbCr 4:4:4, YCbCr 4:2:2, YCbCr 4:2:0
Color Depth	8/10/12-bit
IR Level	5Vp-p
IR Frequency	Fixed frequency 38KHz
HDMI Audio Formats	LPCM 2.0, LPCM 5.1, Dolby 2.0, Dolby 5.1, Dolby Digital Plus, DTS 2.0, DTS 5.1
Transmission Distance	4K30: 5m / 16ft (HDMI cable); 1080p 4:4:4: 10m / 33ft (HDMI cable)
ESD Protection	IEC 61000-4-2: ±8kV (Air-gap discharge), ±4kV (Contact discharge)
Connection	
Input	4x HDMI (Type A, 19-pin female)
Output	4x HDMI (Type A, 19-pin female)
Control	1x RS-232 (3-pin 3.5mm Phoenix connector), 1x SERVICE (USB Type-C, 24-pin female)
Mechanical	
Housing	Metal Enclosure
Color	Black
Dimensions (W×D×H)	8.7in × 4.1in × 0.75in / 220mm × 105mm × 19mm

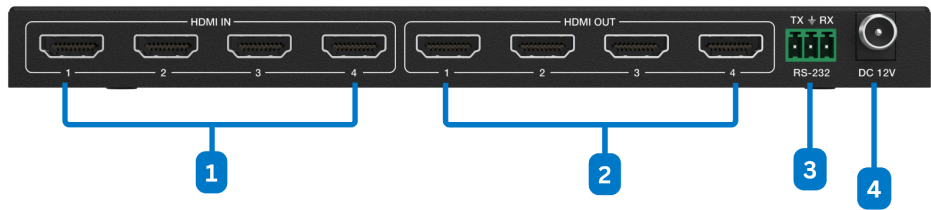| Weight	1.1 lbs [508g]
Power Supply	Input: AC 100–240V 50/60Hz; Output: DC 12V/1A (US/EU, CE/FCC/UL certified)
Power Consumption	3.6W (Max)
Operating Temperature	32°F ~ 104°F / 0°C ~ 40°C
Storage Temperature	-4°F ~ 140°F / -20°C ~ 60°C

Operation Controls and Functions

Front Panel

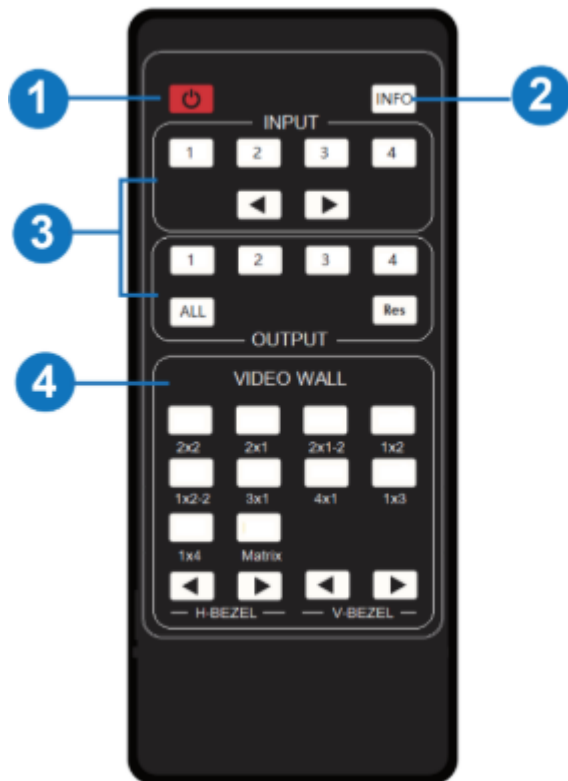| No.	Name	Function Description
1	IR Window	IR signal receiving window; only receives IR remote signals from this product.
2	Power LED	Lights green when the unit is operating; lights red when in standby mode.
3	Signal Source LEDs	Indicators for the OUT 1–4 ports. When IN 1/2/3/4 is selected as the input, the corresponding LED lights green.
4	Input Source Switching Buttons	Buttons for selecting the input source for OUT 1–4. Press to cycle through available input channels.
5	SERVICE Port	Port used for firmware upgrades.

Rear Panel

No.	Name	Function Description
1	IN 1–4	HDMI signal input ports; connect to HDMI source devices.
2	OUT 1–4	HDMI signal output ports; connect to HDMI display devices.
3	RS-232	RS-232 serial port; connects to a PC or control system for firmware upgrades or command control.
4	DC 12V	DC 12V/1A power input port.

IR Remote

1. Power On / Standby

Toggle the matrix switcher between powered-on and standby mode.

2. INFO

Displays the current serial port baud rate in the upper-right corner of the screen.

Note: The information will disappear after 5 seconds.

3. INPUT / OUTPUT Controls

- INPUT 1 / 2 / 3 / 4: Select a specific HDMI input channel.
- ◄ / ►: Navigate to the previous or next input channel.
- OUTPUT 1 / 2 / 3 / 4: Select a specific HDMI output channel.
- ALL: Select all output channels simultaneously.
    - Example: Press "ALL," then press "INPUT 1" to send the INPUT 1 signal to all outputs.

Resolution Switching (Matrix Mode Only)

- Res: Used to cycle through available output resolutions.
    - How to use: Press an OUTPUT (1–4 or ALL), then press Res to change the resolution of the selected output(s).

Basic Input/Output Operation

- First press the desired OUTPUT button (1–4 or ALL).
- Then press the desired INPUT button (1–4) to assign the input source to the selected output(s).
    - Example: Press OUTPUT 2 → then press INPUT 3 to route Input 3 to Output 2.

4. VIDEO WALL Controls

- Video Wall Mode Selection: Press a preset video wall mode button to activate the corresponding layout.
- Source Selection for Video Wall Group:
    - Press OUTPUT 1 / 2 / 3 / 4 to select a video wall group.
    - Then press INPUT 1 / 2 / 3 / 4, or use ◄ / ► to select the desired input source.

Bezel Adjustment

- Use the arrow buttons for H-BEZEL and V-BEZEL to fine-tune horizontal and vertical bezel compensation.

Video Wall Mode

The device supports 10 distinct display modes, which can be selected using the IR remote control or via RS-232 commands.
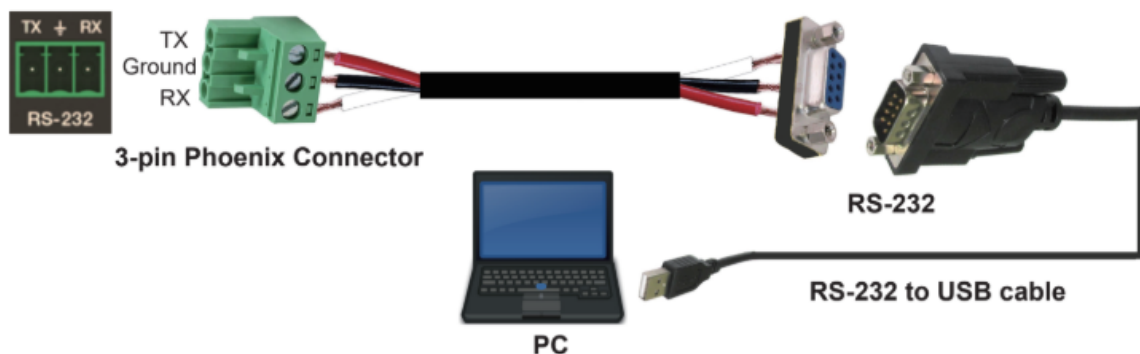

Notes:

1. In video wall mode, displays assigned to the video wall will output at a fixed resolution of 1080p. Other outputs will operate in pass-through (transparent) mode. *Example: In 1x2 video wall mode, Outputs 1 and 2 will display at 1080p. Outputs 3 and 4 will pass the original signal format—e.g., if the source is 4K30, the output will also be 4K30.*

2. The output image mirror function is only available when the system is operating in video wall mode.

RS-232 Control Commands

The product also supports RS-232 command control. To enable this feature, connect the RS-232 port to a PC using a 3-pin Phoenix connector cable along with an RS-232 to USB adapter. Refer to the following connection method for proper setup.

Next, launch a serial command tool on the PC to send ASCII commands for controlling the device. The list of supported ASCII commands is provided below.

Serial Port Protocol

- **Baud Rate**: 115200 (default)
- **Data Bits**: 8
- **Stop Bits**: 1
- **Check Bit**: 0

Legend:
 x = Parameter 1, y = Parameter 2, z = Parameter 3, ! = Delimiter

System Setting Commands

Command Code	Function Description	Example	Feedback	Default Setting
help!	Lists all commands	help!	(Lists all commands)	
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 type!	Get device model	r type!	4x4 HDMI seamless matrix	
r fw version!	Get firmware version	r fw version!	MCU FW version x.xx.xx	
s power z!	Power on/off the device, z=0~1 (0=off, 1=on)	s power 1!	power on system initializing... initialization finished! MCU FW version x.xx.xx	
r power!	Get current power state	r power!	power on / power off	
s beep z!	Enable/disable buzzer function, z=0~1 (0=off, 1=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	s lock 1!	panel button lock on / panel button lock off	

	(0=unlock, 1=lock)			
r lock!	Get panel button lock state	r lock!	panel button lock on/off	
s reboot!	Reboot the device	s reboot!	reboot... system initializing... initialization finished! MCU FW version x.xx.xx	
s reset!	Reset to factory defaults	s reset!	reset to factory defaults system initializing... initialization finished! MCU FW version x.xx.xx	

Output Setting Commands

Command Code	Function Description	Example	Feedback	Default Setting
s in x av out y!	Set input x to output y (x=14, y=04, 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 output y x!	Set output y resolution (y=04, x=113)	s output 1 2!	output 1 resolution: 3840x2160p30	
r output y res!	Get output y resolution (y=0~4)	r output 1 res!	output 1 resolution: 3840x2160p30	
s output y csc x!	Set output y color space (y=04, x=13)	s output 1 csc 1!	output 1 csc: rgb444	
r output y csc!	Get output y color space status (y=0~4)	r output 1 csc!	output 1 csc: rgb444	
s output y mirror x!	Set output y mirror (y=04, x=03)	s output 1 mirror 0!	output 1 mirror off	
r output y mirror!	Get output y mirror status (y=0~4)	r output 1 mirror!	output 1 mirror off	
s output y stream x!	Enable/disable output y stream (y=04, x=01)	s output 1 stream 1!	output 1 stream: enable	
r output y stream!	Get output y stream status (y=0~4)	r output 1 stream!	output 1 stream: enable	

EDID Setting Commands

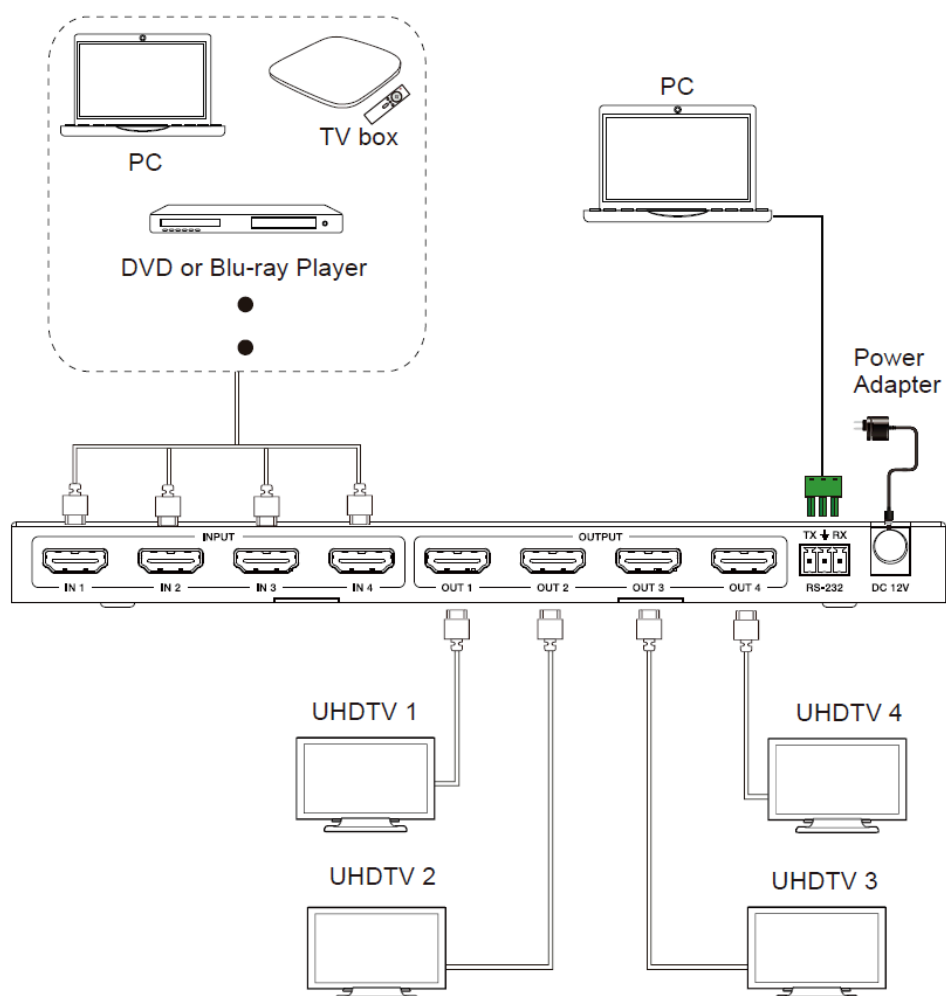| Command Code	Function Description	Example	Feedback	Default Setting
s edid in x from z!	Set input x EDID from default EDID z (x=04, z=111)	s edid in 1 from 1!	input 1 EDID: 4k30, 2.0ch	
r edid in x!	Get input x EDID mode (x=0~4)	r edid in 0!	input 1 EDID: 4K2K30_444, stereo audio 2.0 ...	

Video Wall Setting Commands

Command Code	Function Description	Example	Feedback	Default Setting
s tw mode x!	Set TV wall display mode (x=1~10)	s tw mode 1!	TV wall mode: 2x2	
r tw mode!	Get TV wall display mode	r tw mode!	TV wall mode: 2x2	
s tw h bezel x!	Set TV wall horizontal bezel (x=0~10, +, -)	s tw h bezel 0!	TV wall horizontal bezel: 0	
r tw h bezel!	Get TV wall horizontal bezel	r tw h bezel!	TV wall horizontal bezel: 0	
s tw v bezel x!	Set TV wall vertical bezel (x=0~10, +, -)	s tw v bezel 0!	TV wall vertical bezel: 0	

r tw v bezel!	Get TV wall vertical bezel	r tw v bezel!	TV wall vertical bezel: 0	
s tw group y input x!	Set TV wall group y display which source input (y=04, x=14)	s tw group 1 input 1!	TV wall group 1 input: HDMI input 1	
r tw group y source!	Get TV wall group y display which source input (y=0~4)	r tw group 0 source!	TV wall group 1 input: HDMI input 1 ...	

Connection Diagram

Troubleshooting

Problems	Causes	Solutions
No Power / All LED off	Power supply not connected, connected fully, or wrong power supply.	Check if the power supply is connected correctly and the output voltage value is within recommended specifications.
No sound or sound issues	The HDMI connection is faulty, the audio format is not supported by the displays, or the source player is set to another port for audio output	Check if the HDMI cables are connected correctly. Check if the audio format is supported by the display and that a user has not changed the supported audio format on the player`s audio output. Ensure output settings from the HDMI source device as set correctly.
No picture or picture flickers	The HDMI cable may be faulty or the category cable quality is faulty.	Check if the HDMI and category cable connections are correct and undamaged. Change to another good working HDMI cable or category cable (CAT6 or better cable is recommended).

Tech Support

Have technical questions? We may have answered them already!

Please visit BZBGEAR's support page (bzbgear.com/support) for helpful information and tips regarding our products. Here you will find our Knowledge Base (bzbgear.com/knowledge-base) with detailed tutorials, quick start guides, and step-by-step troubleshooting instructions. Or explore our YouTube channel, BZB TV (youtube.com/c/BZBTVchannel), for help setting up, configuring, and other helpful how-to videos about our gear.

Need more in-depth support? Connect with one of our technical specialists directly:

Phone	**Email**	**Live Chat**
1.888.499.9906	support@bzbgear.com	bzbgear.com

Limited Product Warranty Terms

Pro Line: 5-year warranty from the date of purchase for AV/Broadcasting products bought on or after August 1, 2024.

Essential Line: 3-year warranty from the date of purchase for AV/Broadcasting products bought on or after August 1, 2024.

Cables: Lifetime Limited Product Warranty.

For complete warranty information, please visit bzbgear.com/warranty.

For questions, please call 1.888.499.9906 or email support@bzbgear.com.

Mission Statement

BZBGEAR is a breakthrough manufacturer of high-quality, innovative audiovisual equipment ranging from AVoIP, professional broadcasting, conferencing, home theater, to live streaming solutions. We pride ourselves on unparalleled customer support and services. Our team offers system design consultation, and highly reviewed technical support for all the products in our catalog. BZBGEAR delivers quality products designed with users in mind.

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