

# BG-UHD-VW29

**3X3 4K 18Gbps UHD HDMI 2.0 Video Wall Processor/Controller with  
Audio and IP/RS232 Control**

## User Manual







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## Statement

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

## Safety Precaution

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- 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

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The BG-UHD-VW29 is an HDMI 2.0 Video Wall controller with 2 HDMI inputs, 2 HDMI loop outputs, and 9 HDMI scaling outputs for video wall processing. The 5-pin phoenix connector provides balanced L/R audio output. The product also features an RS-232 bypass feature for daisy chain and cascade connections with different units.

## Features

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- HDMI 2.0 and HDCP 2.2 compliant
- Supports resolutions up to 3840x2160@60Hz video output for video wall
- Bezel Compensation with two modes
- 2 channel HDMI loop out
- PIP on video wall
- 180° display rotation
- RS-232 and TCP/IP control
- CEC control for displays via PC Tool or commands

## Packing List

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- |                                     |                             |
|-------------------------------------|-----------------------------|
| • 1 x Ultra HD Video Wall Processor | • 1x RS232 to Phoenix Cable |
| • 1 x AC Power Cord                 | • 1x CAT6 cable             |
| • 1 x 5-pin Phoenix Connector       | • 1x USB to RS232 Cable     |
| • 2 x 3-pin Phoenix Connector       | • 1x User Manual            |



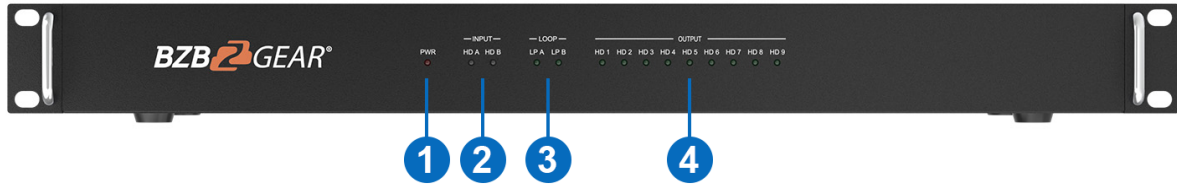
## Specifications

<b>Technical</b>	
HDMI Compliance	HDMI 2.0
HDCP Compliance	HDCP 2.2/1.4
RS-232	Baud rate: 57600, data bit: 8, Stop bit: 1, no parity
Input Video Formats	1024x768@60, 1280x800@60, 1280x1024@60, 1280x960@60, 1360x768@60, 1366x768@60, 1440x900@60, 1400x1050@60, 1600x900@60, 1600x1200@60, 1680x1050@60, 1920x1200@60, 480p@60, 576p@50, 720p@50, 720p@60, 1080i@50, 1080i@60, 1080p@24, 1080p@25, 1080p@30, 1080p@50 1080p@60, 3840x2160@24, 3840x2160@25, 3840x2160@30, 3840x2160@50, 3840x2160@60, 4096x2160@24, 4096x2160@30, 4096x2160@50, 4096x2160@60
Audio Format	2.0 channel, 5.1 channel, LPCM, Dolby, AC3, DTS
ESD Protection	Human-body Model: ±8kV (Air-gap discharge), ±4kV (Contact discharge)
<b>Mechanical</b>	
Housing	Metal Enclosure
Color	Black
Dimension	430mm (W)×220mm (D)×44mm (H)
Weight	5Kg
Supply Voltage	110-220V AC
Operating Temperature	0°C ~ 40°C / 32°F ~ 104°F
Storage Temperature	-20°C ~ 70°C / -4°F ~ 158°F
Relative Humidity	10%~50% RH (non-condensing)



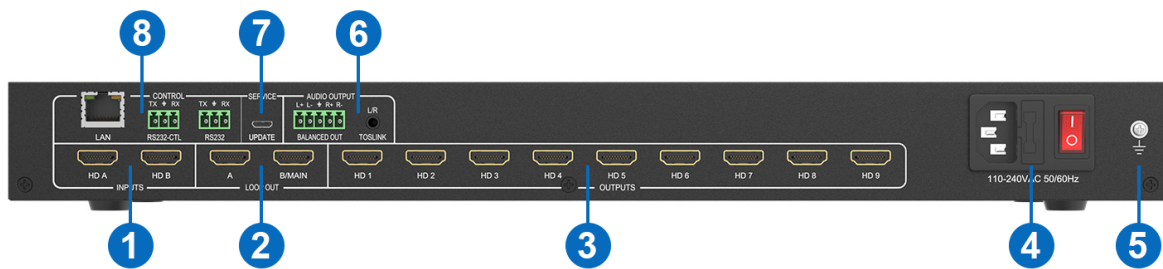
# Operation Controls and Functions

## Front Panel



No.	Name	Function Description
1	Power LED	The power LED will illuminate when the unit is powered on.
2	INPUT LED	The LED will illuminate when the corresponding HDMI input port is connected to an active HDMI source device.
3	LOOP LED	The LED will illuminate when the corresponding LOOP OUT port is connected to an HDMI display device.
4	OUTPUT LED (1-9)	The LED will illuminate when the corresponding HDMI output port is connected to an HDMI display device.

## Rear Panel



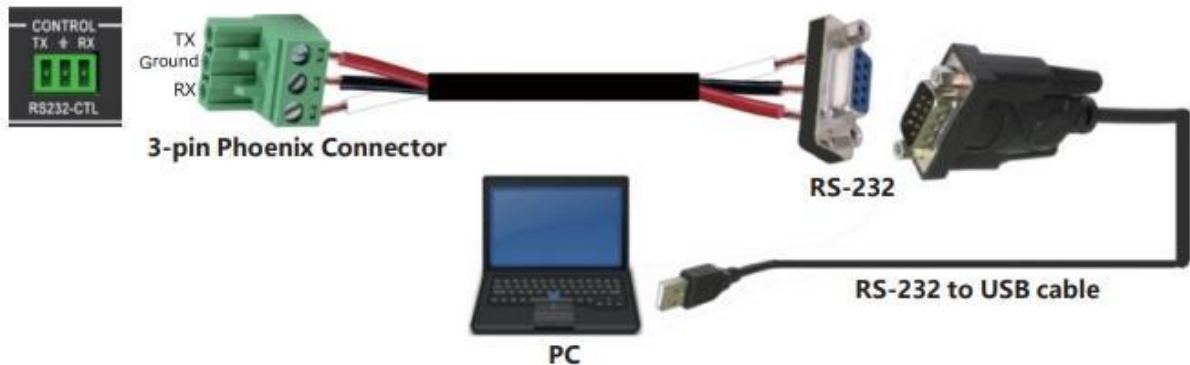
No.	Name	Function Description
1	INPUTS	Connect HDMI source devices such as a media player or gaming console with an HDMI cable.
2	LOOP OUT	HDMI signal loop out ports. Loop out the HDMI A/B signal to display devices to view the source image.
3	OUTPUTS	HDMI signal output for the video wall.
4	110-240 VAC	110-240V AC power input port.
5	GND	Ground the product housing.
6	AUDIO OUTPUT	<ul style="list-style-type: none"> <li>Analog L/R audio output</li> <li>3.5mm Stereo Jack. 20Hz ~ 20kHz, 1.5Vrms max</li> </ul> BALANCED OUT: Balanced audio output port. 5-pin phoenix connector, 20Hz ~ 20kHz, 1.5Vrms max.
7	SERVICE	Firmware update port.
8	CONTROL	RS232: Bypass the RS232-CTL commands to the next unit. RS232-CTL: External RS-232 control, Baud Rate: 57600 Data Bits: 8, Parity: None, Stop Bits:1 LAN: Network port for TCP/IP control. Connect to an active Ethernet link with an RJ45 cable.



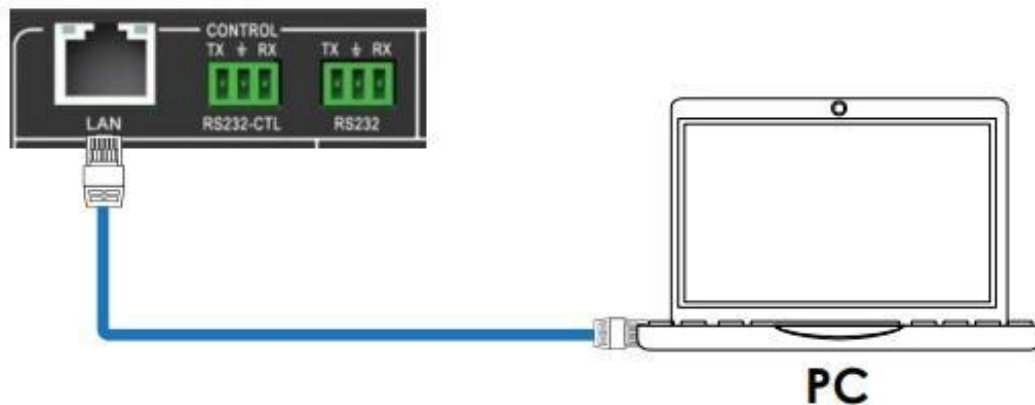
## RS232/LAN Control Connection

### RS232 Control Connection

Connect to the RS-232-CTL port of the product to a PC using a USB serial cable as shown in the following figure:



### Network Control Connection

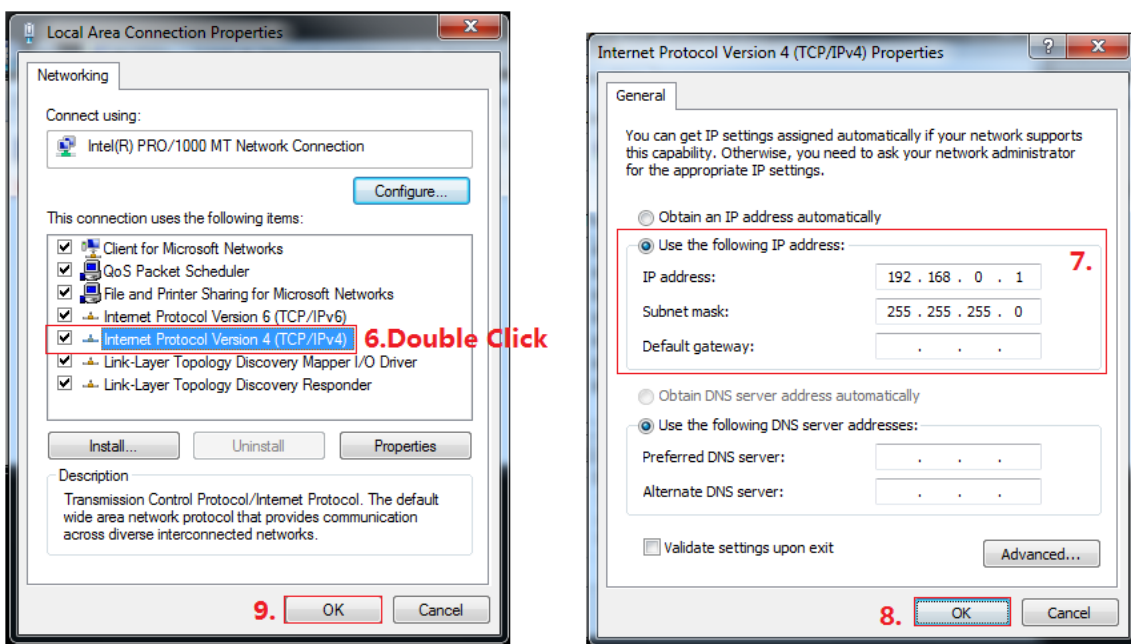
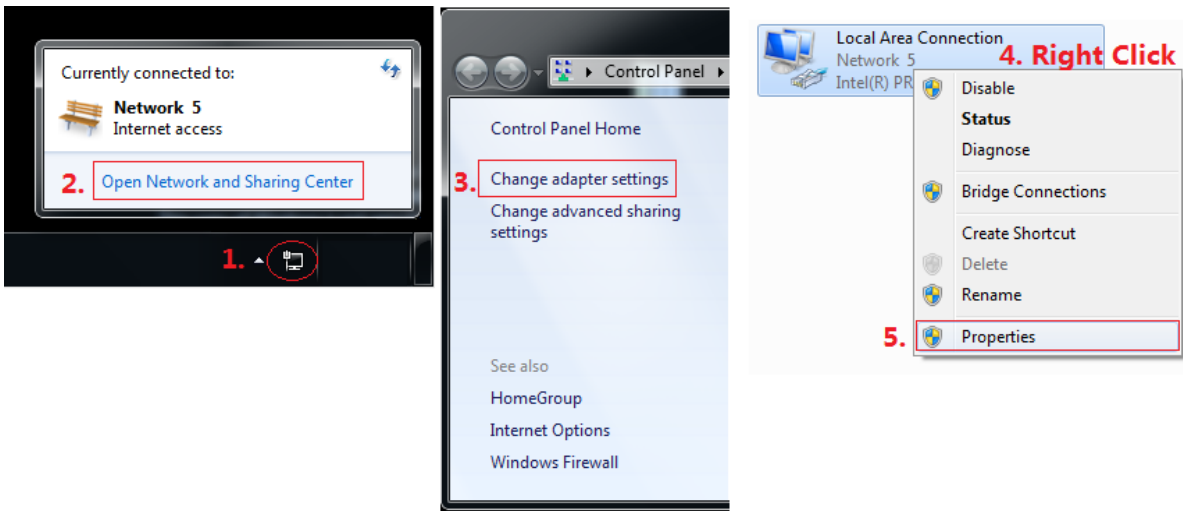


Direct connection via Ethernet cable:

1. Connect the PC and device directly via an Ethernet cable
2. Change the IP address of the PC to be in the same subnet of the device
  - a) Default IP Address: 192.168.0.247
  - b) Default Subnet Mask: 255.255.255.0

See the figure below for manually setting the IP address of a connected Windows PC.





3. Run the PC control software (If you change the IP address of the PC after running the software you will need to close it and run it again).
4. Click to switch "Ctrl Mode" to "Network".
5. Click the "Search Device" button at the bottom.
6. Click the device you want to control in the result list (When you click it, the software will read the network configuration)
7. Click the "Disconnected" button to connect to the device.

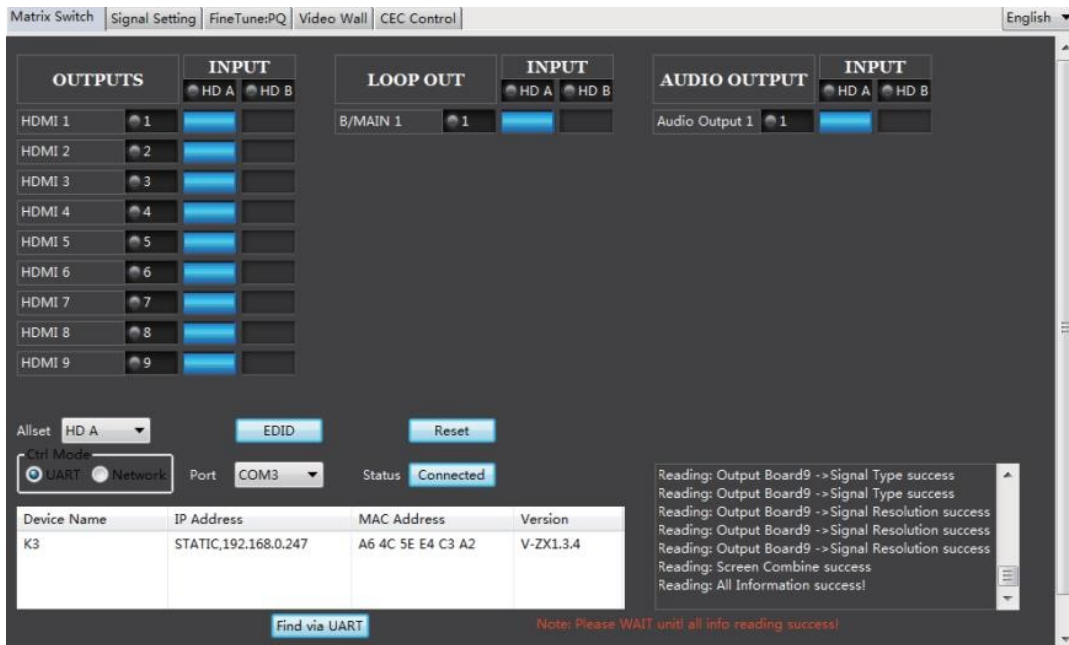
If connected successfully, the "Disconnected" button will show "Connected."



# PC Tool User Guide

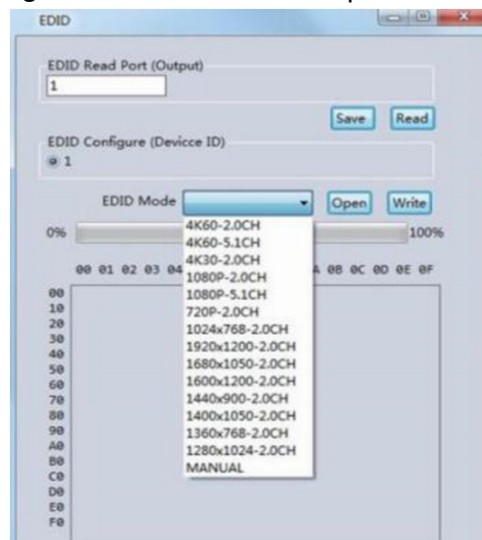
The PC Tool control software supports both UART and network control. PC Tool has five tabs: Matrix Switch, Signal Setting, Fine Tune: PQ, Video Wall, and CEC Control.

The UI is as follows:



## Matrix Switch Tab

1. Select **UART** (with RS232 cable) or **Network** to connect to the device. Baud rate is 57600 bps.
2. Select an input source for each output.
3. "AllSet" function: Apply input HD A or B to all outputs.
4. Select the input source for B/MAIN output.
5. Select the audio source for balanced audio output and 3.5mm output.
6. Reset: Resets the device to factory settings.
7. EDID Control: Clicking the 'EDID' button will open the below EDID control window:





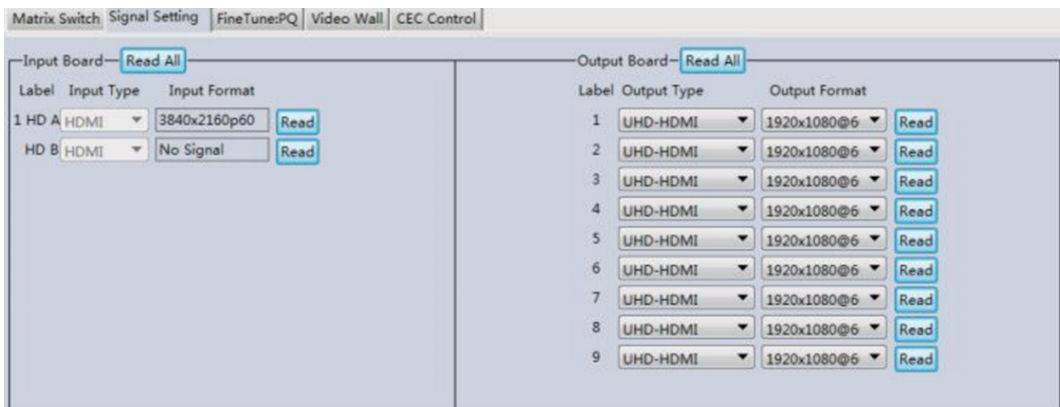
- A. Read the EDID information for devices connected to each output and save as a BIN file.
- B. Open an existing EDID file and write it to the HDMI A and B input port as Manual EDID.
- C. Select the predefined EDID file and write it to the HDMI A and B inputs.

**The available predefined EDID options:**

4K60-2.0CH	1920x1200-2.0CH
4K60-5.1CH	1680x1050-2.0CH
4K30-2.0CH	1600x1200-2.0CH
4K30-5.1CH	1440x900-2.0CH
1080P-2.0CH	1400x1050-2.0CH
1080P-5.1CH	1360x768-2.0CH
720P-2.0CH	1280x1024-2.0CH
1024x768-2.0CH	Manual

**Signal Setting Tab**

The resolution of each input can be read to configure the resolution of each output.



**Available output resolutions:**

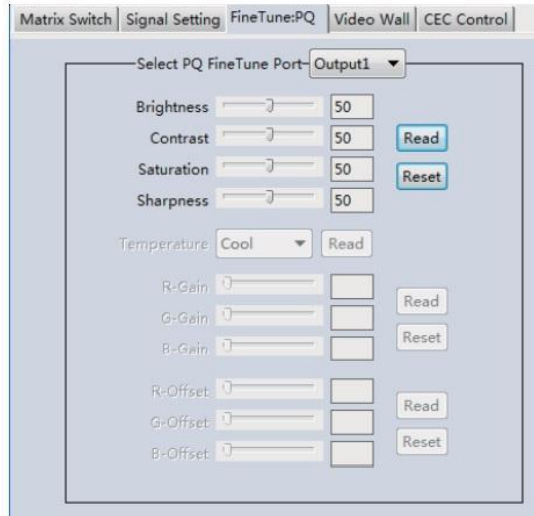
No.	Output Resolution Setting	No.	Output Resolution Setting
1	3840x2160p 60Hz	9	1440x1050 60Hz
2	3840x2160p 50Hz	10	1366x768 60Hz
3	3840x2160p 30Hz	11	1360x768 60Hz
4	3840x2160p 25Hz	12	1280x1024 60Hz
5	1920x1200 60Hz	13	1280x768 60Hz
6	1920x1080p 60Hz	14	1280x720p 60Hz
7	1920x1080p 50Hz	15	1280x720p 50Hz
8	1600x1200 60Hz	16	1024x768 60Hz

**Note:** 3840x2160 25/30Hz is only used for standalone displays and not for video walls.



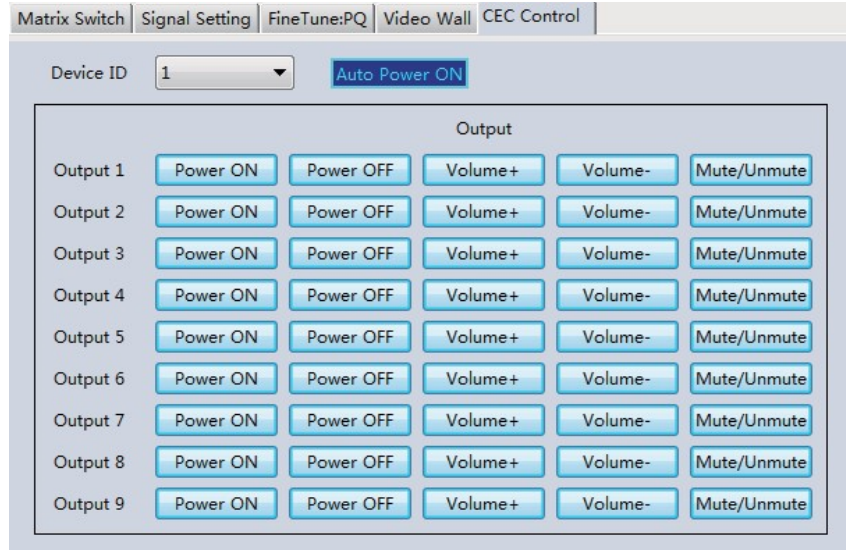
## FineTune: PQ Tab

Configure the brightness, contrast, saturation, and sharpness of each output.



**Note:** The recommended settings are the default 50/50/50/50. Do not change the default settings unless under special circumstances. If problems arise after reconfiguration, click the 'Reset' button to return to default settings.

## CEC Control Tab



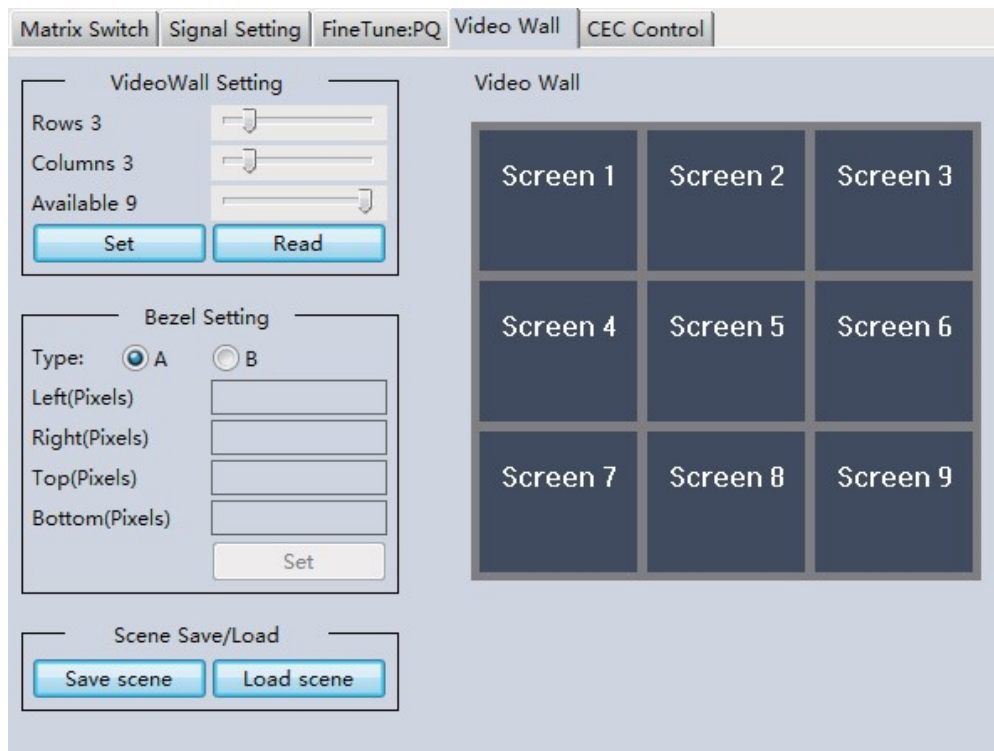
When 'Auto Power On' is enabled, all displays connected to the device will turn on when the device is powered on.

CEC functions, including Power on/off, Volume+/-, Mute/Unmute, are supported but all devices may not be compatible.



## Video Wall Tab

Configure a group of outputs to function together as a video wall.



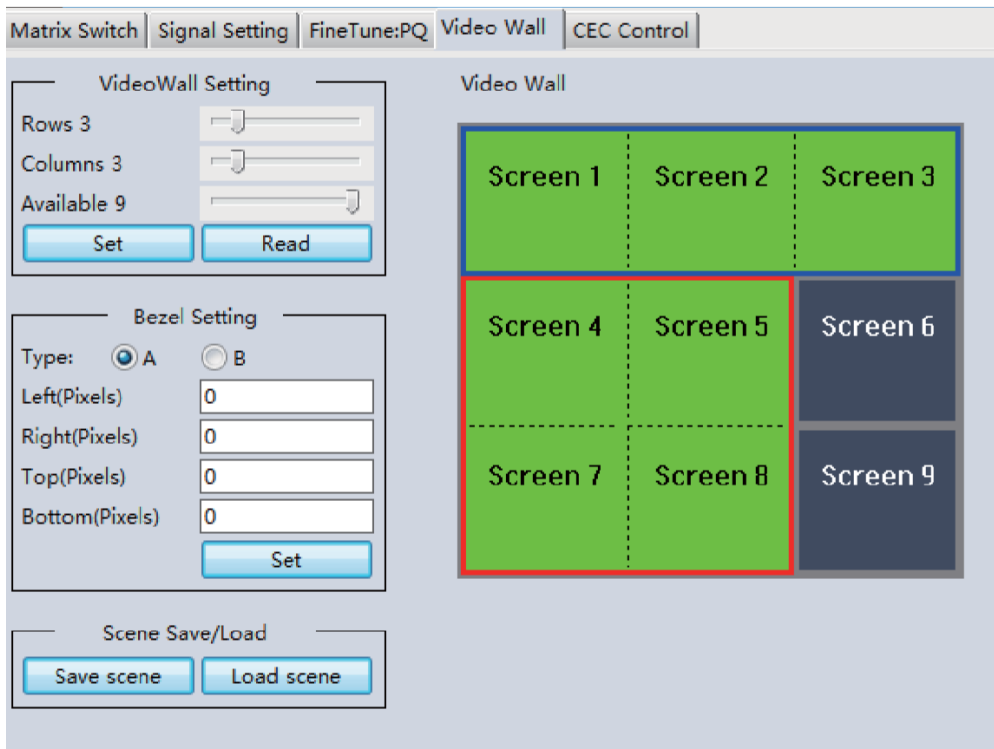
The Video Wall Setting controls manage how the displays are arranged:

1. Adjust the “Rows” and “Columns” sliders to adjust the displayed screens arrangement.
  - The “Available” slider sets the number screens that will be used for the Video Wall.
  - The “Set” button sets changes made to the screen configuration.
2. Using the left mouse button, drag-select the screens that are intended for use in the video wall. The screens selected will be shown as bright blue.
3. Open the pop-up menu by right clicking with the mouse (see context menu below).
4. Select “Screen Stitching” from the menu to configure the video wall. The screens selected will be shown as bright green.
5. To change the image displayed, right-click to open the pop-up menu and select the desired input under “Input Select”. Optionally, the image may also be changed manually following the instructions under the “Operation Controls and Functions” section of this manual.



## Creating a second video wall

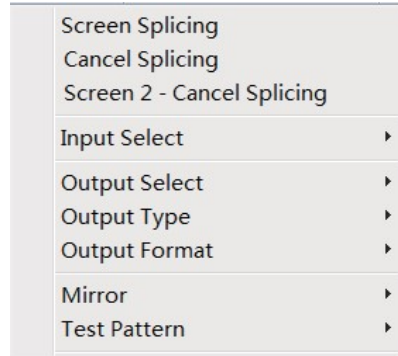
Repeat steps 2-5 above using a different set out output. Please note, changing the “Rows”, “Columns”, and “Available” sliders will automatically delete the current video wall configuration once the “Set” button is clicked. The following example shows an unusual video wall configuration for demonstrative purposes:






## Video Wall Context Menu

Right click on any icon to display the following menu:



<b>Screen Splicing</b>	This option connects the selected screens into a video wall configuration.
<b>Cancel Splicing</b>	Return the Video Wall configuration to normal outputs.
<b>Screen 2 – Cancel Splicing</b>	Remove a single screen from the unified video wall to display a separate image. See the example below:  <div style="text-align: center;">  </div> <p style="text-align: center;">Video Wall display with bezel compensation and different full frame image on display 3</p>
<b>Input Select</b>	Follow the sub-menu to change the input for the video wall display. This function may also be used to change the input for the secondary image as shown in the above example.
<b>Output Select</b>	This option is only available for a display that is not already assigned to the video wall.
<b>Output Type</b>	This option is only available for a display that is not already assigned to the video wall.
<b>Output Format</b>	This option is only available to a display that is not already assigned to the video wall. This setting is for configuring the output resolution of the unassigned display.
<b>Mirror</b>	ManualTwo sub-options: OFF (default), ON (H+V Mirror) “ON” will rotate the selected display 180°.
<b>Test Pattern</b>	When enabled, the output will display a color bar pattern.





## Bezel Setting

The Bezel Setting allows the images displayed on the video wall to be adjusted by compensating for the thickness of the TV's bezel. The displays on the video wall should create a cohesive, unified image. To achieve this, the edge of each display's image must be removed from the sides of displays that meet. The bezel correction may be accomplished using either Type A Bezel Setting, or Type B Bezel Setting.

### Type A Bezel Setting:

Manually remove pixels from each display's image edge until a cohesive image is achieved. Enter the number of pixels that need to be removed from the edges of the displays that meet. Click "Set" to view the effects of the change and adjust if needed.

### Type B Bezel Setting:

Measure the display from top to bottom outside the bezel. Next, measure the display from top to bottom inside the bezel. Enter both measurement values into the entry boxes, click "Set" and the bezel will be corrected automatically.

## Bezel Compensation:

The images below demonstrate a video wall setup without bezel compensation and a video wall setup with correctly configured bezel compensation:



No Bezel Compensation



Correct Bezel Compensation

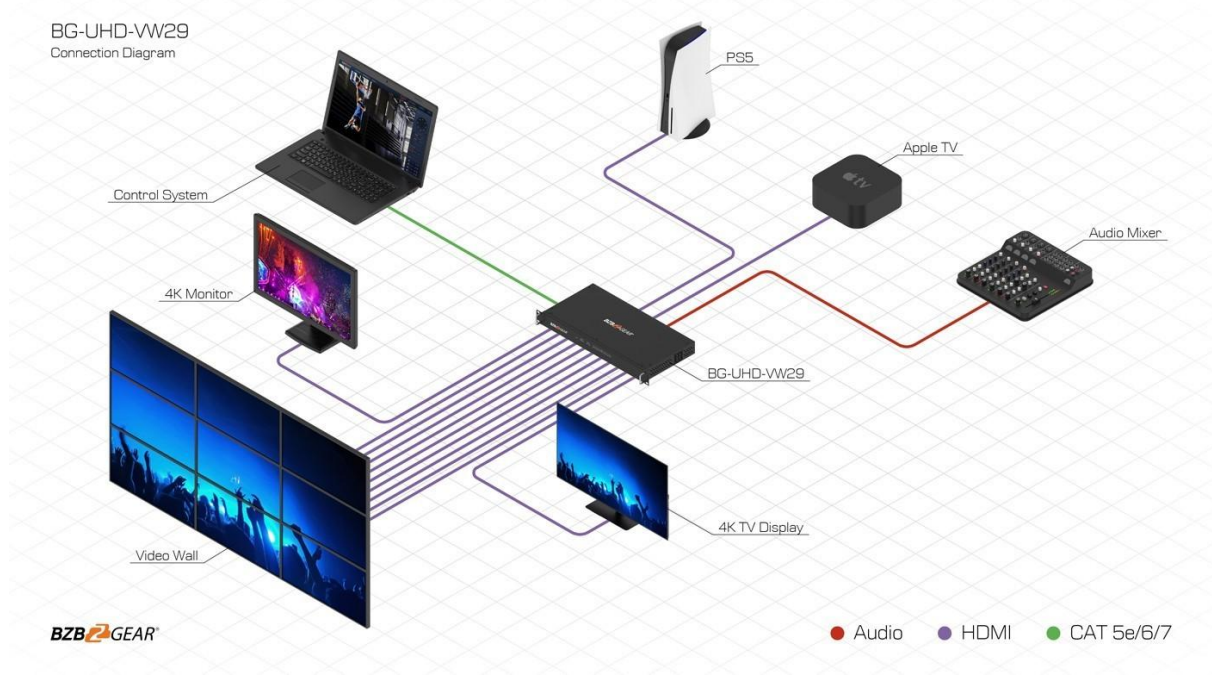
## Layout Save/Load:

The Save Scene/Layout and Load Scene/Layout buttons allow video wall configurations to be saved and used at any time. The system stores up to 10 saved configurations. Each saved configuration can optionally be given a personalized name for easier identification.





# Connection Diagram





## Tech Support

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Have technical questions? We may have answered them already!

Please visit BZBGear's support page ([bzbgear.com/support](http://bzbgear.com/support)) for helpful information and tips regarding our products. Here you will find our Knowledge Base ([bzbgear.com/knowledge-base](http://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](http://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**

1.888.499.9906

**Email**

support@bzbgear.com

**Live Chat**

bzbgear.com



## Warranty

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BZBGear Pro AV products and cameras come with a three-year warranty. An extended two-year warranty is available for our cameras upon registration for a total of five years.

For complete warranty information, please visit [bzbgear.com/warranty](http://bzbgear.com/warranty).

For questions, please call 1.888.499.9906 or email [support@bzbgear.com](mailto:support@bzbgear.com).



## Mission Statement

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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.

## Copyright

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