BZB GEAR®
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BZ-MVS4X4-4K

4X4 4K UHD 18Gbps HDMI Video Wall Processor & Seamless Matrix Switcher with Scaler, IR, and Audio

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.
- Unplug this device during lightning storms
- Clean only with a soft dry microfiber cloth.
- 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.
- Only use accessories specified by the manufacture
- Product specifications may be subject to technical upgrades without further notice

Introduction

The BZ-MVS4x4-4K matrix and video wall processor is an incredible tool for anyone seeking a matrix switcher that can support four inputs and four outputs. The device can support multiple video walls simultaneously in various configurations such as a 1x2, 2x2, 1x4, etc. up to 4 displays total. This enables commercial-grade video walls with 4K HDR quality. IR matrix routing is also available on this unit via IR extenders through the 4 IR inputs and outputs.

Features

- HDMI 2.0 and HDCP 2.2 compliant
- 18 Gbps video bandwidth
- Video resolutions up to 4K60 4:4:4
- Color space: RGB, YCbCr 4:4:4, YCbCr 4:2:2
- Seamless switching and video wall function
- CEC management
- IR matrix
- External L/R audio insert on HDMI stream
- EDID management
- Front panel, RS232, and TCP/IP (LAN 10M/100M) control

Packing List

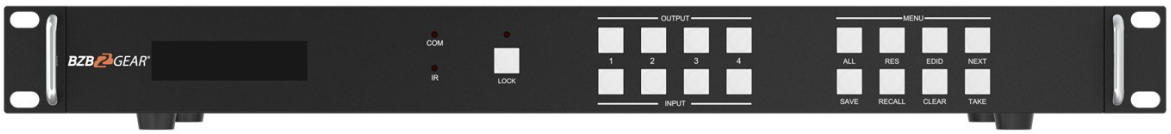
- 1 x BZ-MVS4x4-4K
- 1 x AC Power Cord
- 1 x Matrix IR Remote
- 4 x IR Receiver cable (1.5 meters)
- 4 x IR Blaster cable (1.5 meters)
- 1 x 3-pin Phoenix Connector
- 1× CAT6 cable
- 1× USB to RS232 Cable
- 1× User Manual

Specifications

Technical	
HDMI Compliance	HDMI 2.0
HDCP Compliance	HDCP 2.2
Video Bandwidth	18Gbps
Video Resolution	Up to 4K60 4:4:4
Color Space	RGB, YCbCr 4:4:4/4:2:2
HDMI Amplitude	TM.D.S +/- 0.4Vpp
Differential Impedance	100±15ohm
ESD Protection	Human-body Model: ±8kV (Air-gap discharge) , ±4kV (Contact discharge)
RS232/Ethernet Control	
Baud rate and Protocol	Baud rate: 9600, data bit: 8 Stop bit: 1, no parity checking
Ethernet	IE10.0+,HTML5
Mechanical	
Housing	Metal Enclosure
Color	Black
Dimensions	430mm (W)*220mm (D)*44mm (H)
Weight	5Kg
Power Supply	AC 110 - 240V
Power Consumption	60W (Max)
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



Item	Description
LCD Panel	Displays the current video selections
COM	Power LED (also indicates control commands)
LOCK	Front panel lock/unlock
OUTPUT	Output selection buttons 1~4
INPUT	Input selection buttons 1~4
ALL	Set all outputs to the next input selection
RES	Set the output scaler resolution
EDID	Set the EDID options for the next input selection
NEXT	Select the next available option
SAVE	Save the current matrix setting as a preset
RECALL	Set the matrix setting from a saved preset
CLEAR	Cancel the current command function
ENTER	Set the displayed option

- Press buttons ALL + INPUT # + TAKE in sequence to switch the selected input to all the outputs.
- Press buttons SAVE + OUTPUT # to save the current routing/video wall scene as the selected scene #. Up to 4 scenes can be saved.
- Press buttons RECALL + OUTPUT # to recall the previously saved scene # as the current routing.
- Press buttons RES + OUTPUT # + NEXT + TAKE, to change the resolution of the selected OUTPUT.

Resolution options:

Number	Output Resolution Setting	Number	Output Resolution Setting
1	3840 x 2160p 60Hz	9	1440 x 1050 60Hz
2	3840 x 2160p 50Hz	10	1366 x 768 60Hz
3	3840 x 2160p 30Hz	11	1360 x 768 60Hz
4	3840 x 2160p 25Hz	12	1280 x 1024 60Hz
5	1920 x 1200 60Hz	13	1280 x 768 60Hz
6	1920 x 1080p 60Hz	14	1280 x 720p 60Hz
7	1920 x 1080p 50Hz	15	1280 x 720p 50Hz
8	1600 x 1200 60Hz	16	1024 x 768 60Hz

- Press buttons EDID + INPUT # + NEXT + TAKE to change the EDID mode of the selected input port.

  EDID options:

Number	Output Resolution Setting	Number	Output Resolution Setting
1	Manual	5	1920 x 1080 60Hz
2	3840 x 2160 60Hz	6	1280 x 1024 60Hz
3	3840 x 2160 30Hz	7	1280 x 720p 60H
4	1920 x 1200 60z	8	1024 x 768 60Hz

  Manual EDID is loaded by the PC Tool.

Lock Button

Lock All

The front panel control buttons can be locked to prevent accidental use or operation by unauthorized persons. Press and hold the LOCK button for two seconds to lock or unlock the front panel. When the panel is locked, all buttons (except the LOCK button) will not function until the front panel is unlocked. The LOCKED/UNLOCKED state is shown on the LCD panel and by the LED above the LOCK button which is lit when the front panel is fully LOCKED.

Lock Individual Inputs & Outputs

When the unit is UNLOCKED, press and hold the LOCK button for six seconds - The LCD panel will show the following (any existing numbers indicates that those buttons are already locked):

Output: --------

Input: --------

Pressing any of the numbered Output or Input buttons will toggle the lock status of that button individually. The button will become locked when the respective button number is shown on the LCD panel. When all selections are done, press the ENTER button to set the new LOCK/UNLOCK states of those buttons.

Whenever a locked Output or Input button is activated, the LCD panel will show that the button is locked. In this mode, the LOCK LED is not lit. To unlock those buttons, repeat the above steps to remove the button numbers from the LCD panel before pressing ENTER to accept the changes.

Rear Panel

- LAN (10M/100M) and RS232 are for PC control.
- Analog Audio IN/OUT ports bind to their corresponding HDMI ports by default.

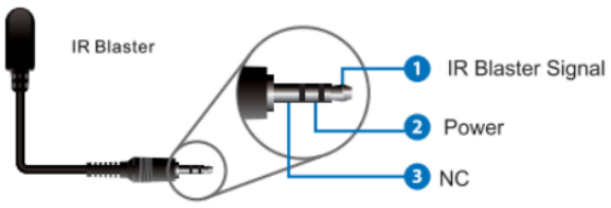
  For example:

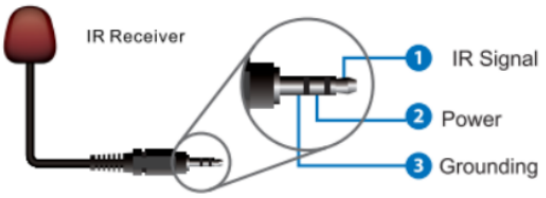
  If HDMI 1 audio source is selected with External LR, then analog AUDIO IN LR1 (with phoenix connector) will be selected to replace the embedded audio of the HDMI input 1 data stream. If HDMI 1 audio source is selected as AUTO by PC TOOL or command, then the original embedded audio of input HDMI 1 will be used as its audio data stream. If the input is DVI signal, no matter how it is set up, the system will get the external analog audio input. Analog AUDIO OUT n will always output the same audio content with HDMI OUTPUT n.
- IR IN and IR OUT

  IR IN/OUT routing follows the video matrix routing. There is no need to separately control the IR matrix.

IR RECEIVER

IR BLASTER





- Audio Input

  4 3-pin Phoenix connectors can embed external analog LR audio. The user can select this audio to replace the corresponding embedded HDMI audio.

- Audio Output

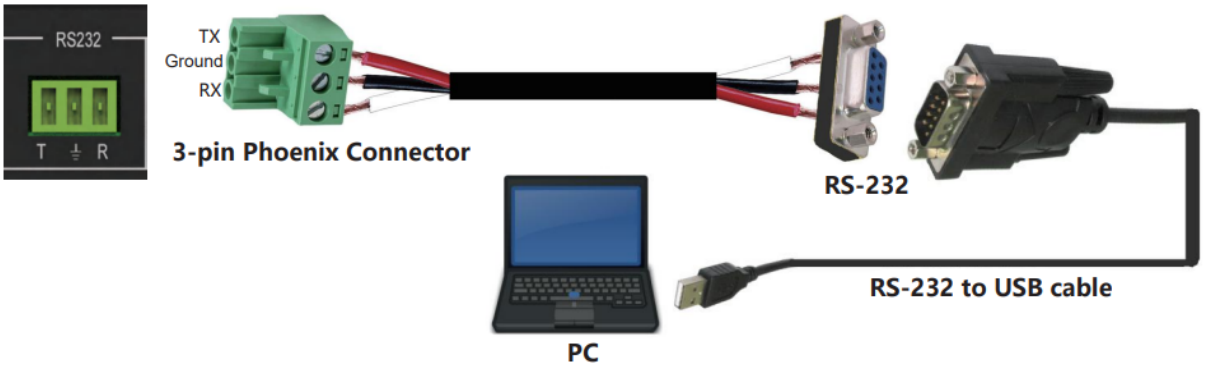
  4 5-pin Phoenix connectors output balanced LR audio and 4 mini TOSLINK jackets output analog LR and digital audio respectively.

  The 4 sets of Audio output (LR and Toslink) channels can be matrixed independently from video and switched using the PC Tool or RS232 commands.

RS232/LAN Control Connection

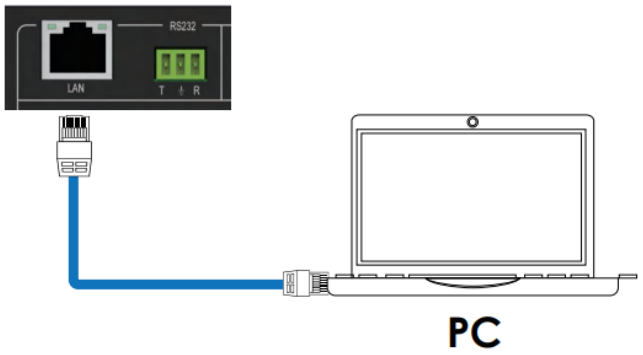
RS232 Control Connection

The product supports RS232 control. Connect the RS232 port of the product to a PC via a serial cable, as shown in the following figure:



Network Control Connection LAN

The product also supports Network control. Connect the LAN port of the product to a PC via a CAT cable, as shown in the following figure:



Note: Factory default network setting:

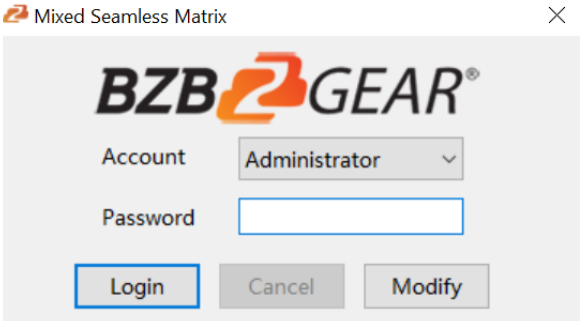
IP Type	Static IP
Static IP	192 . 168 . 0 . 247
Subnet Mask	255 . 255 . 255 . 0
Gateway	192 . 168 . 0 . 1

Note: Your PC's network settings must be manually configured to be on the same subnet as the matrix to be able to communicate.

PC Tool User Guide

Account Authentication

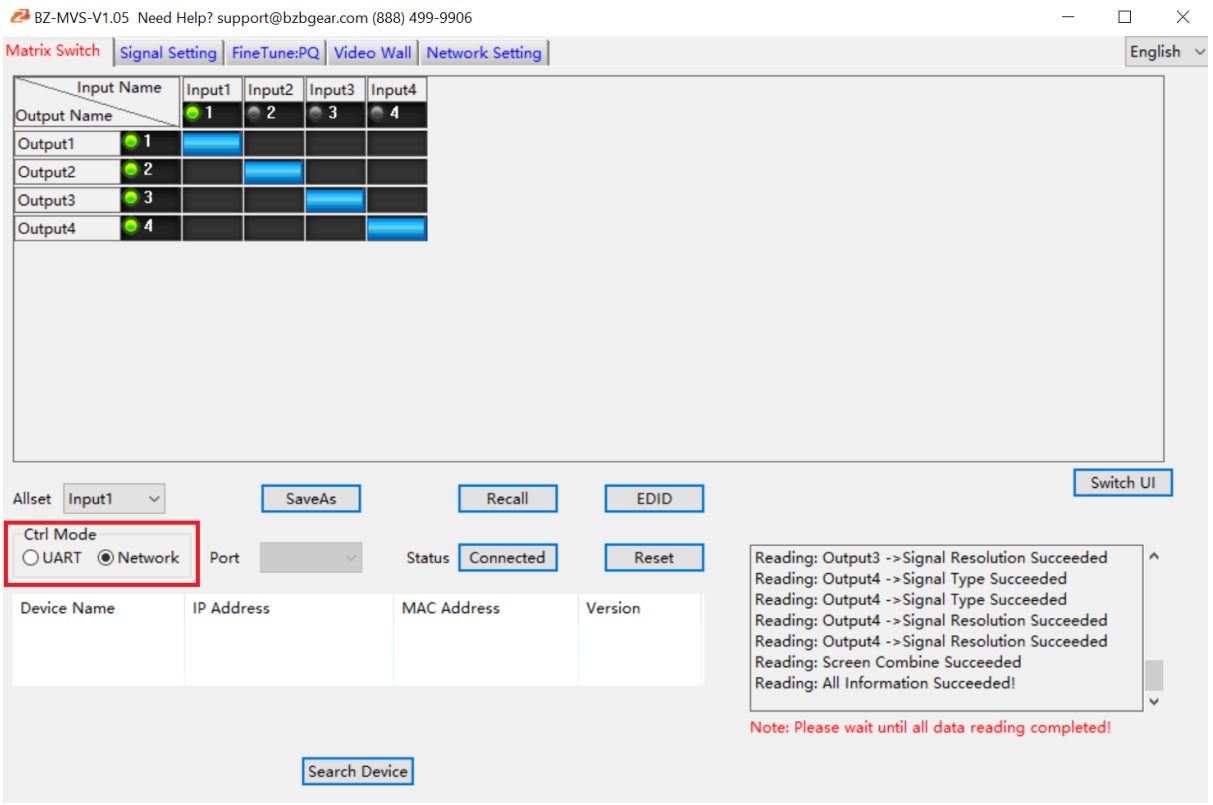
When opening the PC tool you will be prompted for a password.



Default password of Administrator (access to all features): 111111

Default password of User (access to all features, except OSD function) : 000000

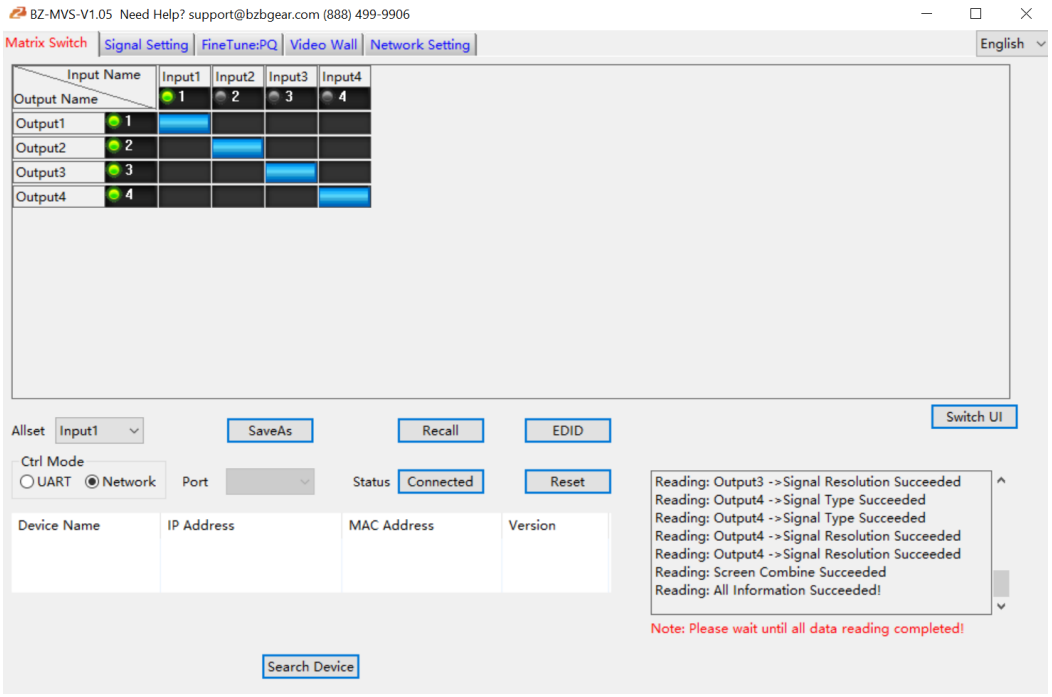
The PC Tool



Connection Methods

1. Select one of the radials in the Ctrl Mode section (UART or Network)
    a. Use “UART” to connect with a RS-232 cable and set your baud rate to 9600 bps.
    b. Use “Network” to connect via ethernet; the Default IP address is 192.168.0.247
2. Click the “Find via UART” or “Search Device” button depending on selected control mode to populate the list of devices.
3. Select your device and then click the Status button to change from “Disconnected” to “Connected” and the box on the bottom right will populate with connection info.

Matrix Switch Page



1. **Allset:** The Allset dropdown is a shortcut button to switch one input to all output ports. For example, to switch input 1 to all outputs users select Input1 as follows:

2. **Recall**: Recall an input/output routing scene which was previously saved.
   The device supports a maximum of 4 scenes.

3. **SaveAs**: Save the current input/output routing as a preset.
   Note: SaveAs & Recall buttons here work the same with front panel save/recall control as well as on the video wall page.

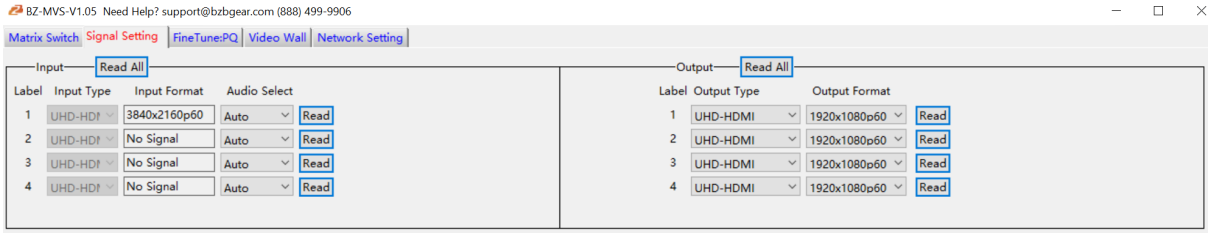
4. **System Reset**: The PC tool supports a factory reset to restore the original factory configuration.

5. **Audio Switching Modes**: Follow Video or Manual
   Manual:
   When selecting Manual mode, users can separately switch the L/R (Phoenix interface) and Toslink outputs independent of their HDMI outputs.
   Users also can select to use the HDMI embedded or corresponding external audio.

   Audio Follow Video (AFV):
   When AFV is active, external audio inputs and outputs are bound to their respective HDMI ports.

6. **EDID Control**: Click the “EDID” button on the Matrix Switch page and there will be a pop-up EDID control window. User can perform the following operations:
   a) Read EDID of one output port
   b) Open one existing EDID file
   c) Write EDID to one input port

Signal Setting Page



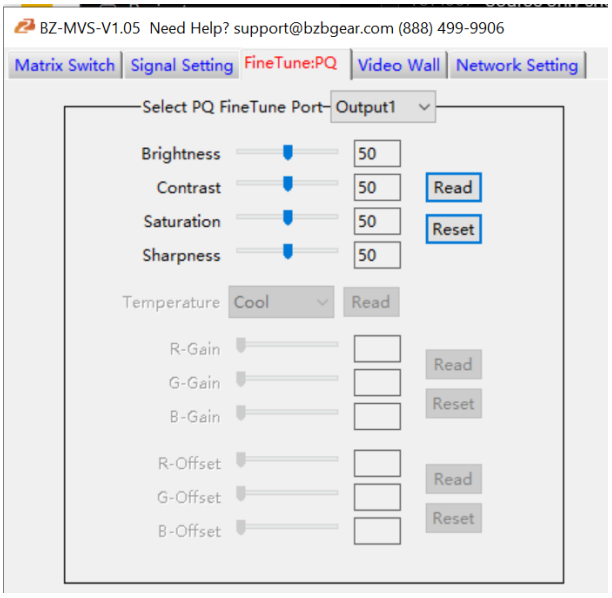
1. Audio Select
   There are two options for input Audio Select.
   a) Auto: If the input source is an HDMI signal the system will get the embedded audio; if the input source is DVI signal, the system will get the corresponding external analog audio.
   b) External: System will get the corresponding analog audio.

2. Input/Output Type
   There are four options for Input/Output Type: UHD-HDMI (HDCP OFF), UHD-DVI, UHD-HDCP-1.4, UHD-HDCP-2.2.

3. Output Format: Select an available resolution from the dropdown menu or press “Read” to refresh and see the current information. (see page 7 for available resolutions).

Fine Tune Page

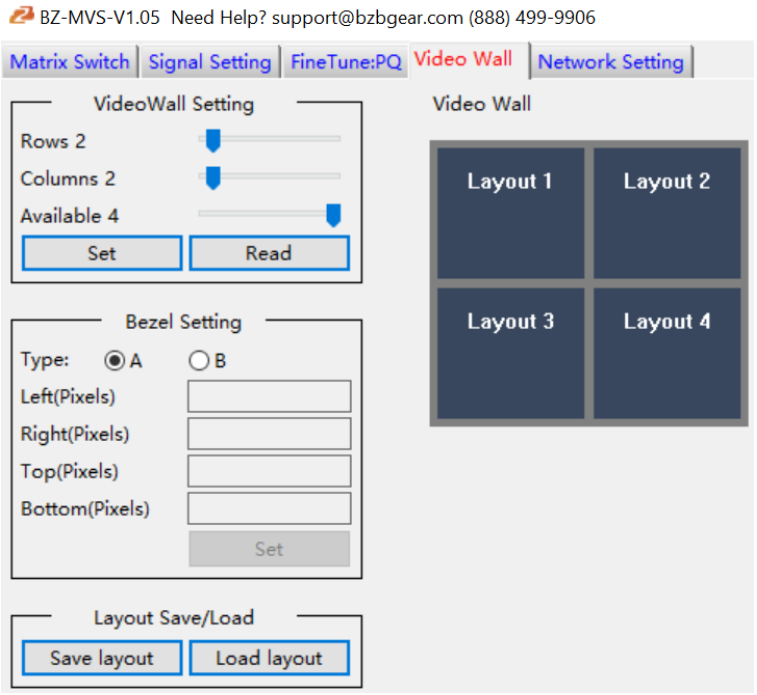
You can read and set the Brightness/Contrast/Saturation/Sharpness of each output.



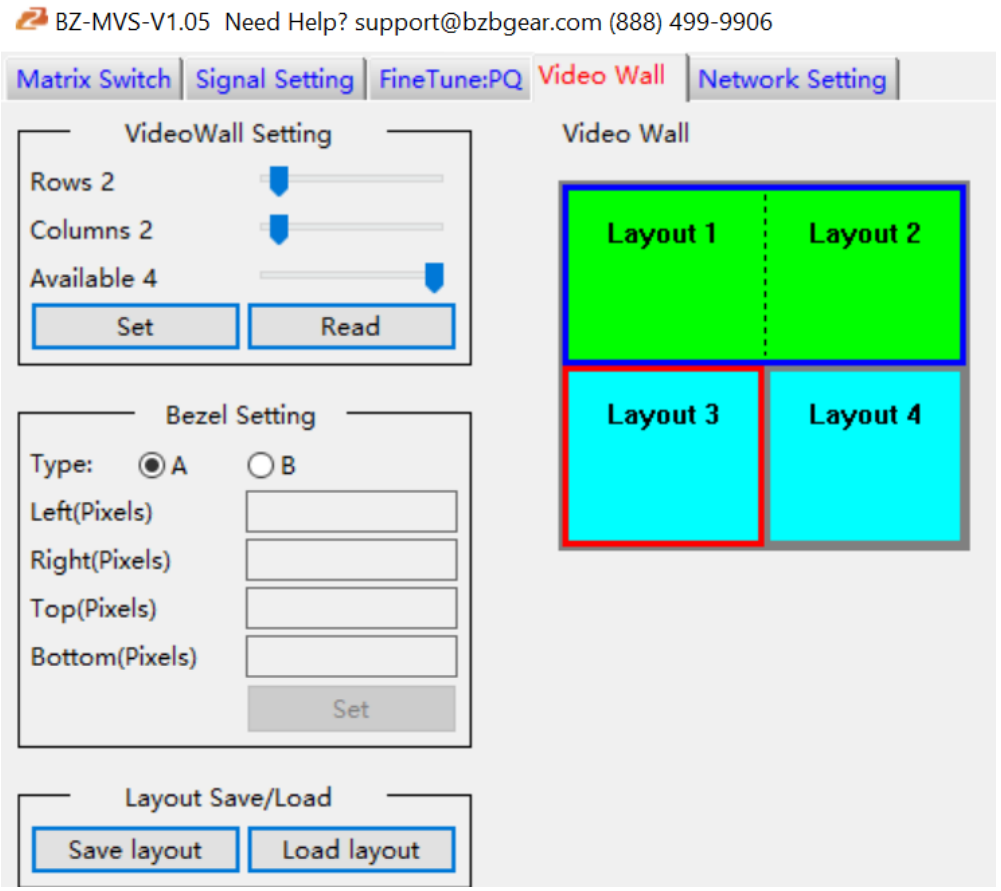
Note: Do not change the default settings unless conditions require modification.
If there is a problem after modifying settings click “Reset” to factory restore settings.

Video Wall Page

This page is used to configure a group of outputs to function as a video wall.

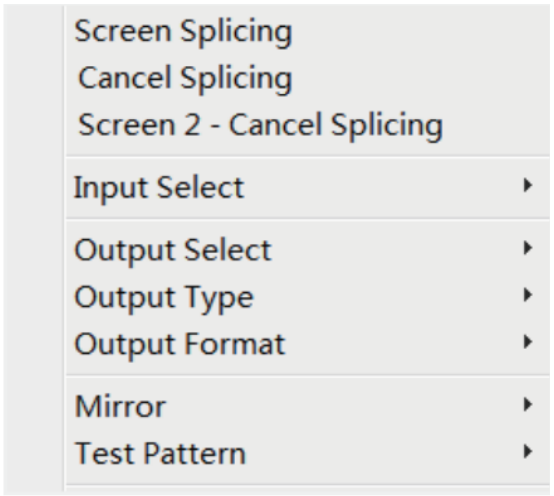


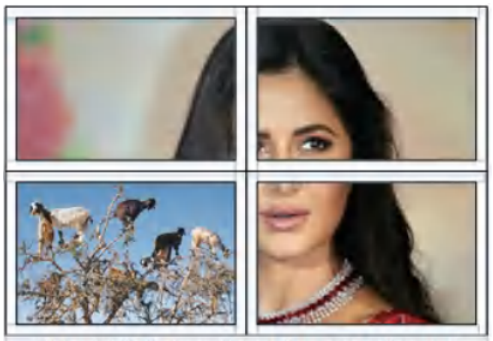
1. Use the “VideoWall Setting” controls to change how the displays are arranged on the Video Wall page:
    a) Adjust the ‘Rows’ and ‘Columns’ sliders to change the displayed screen arrangement to mirror the physical displays and permit proper Drag-and-Select of the desired screens for the video wall.
    b) Change the ‘Available’ slider to set how many outputs will be used for the Video Wall.
    c) Click the “Set” button to change the Screen configuration.
2. Use click and drag the mouse over the screens that will be set for video wall mode. The selected screens will be shown as bright blue.
3. Use the right mouse button to open the menu.
4. Select “Screen Stitching” from the menu to program the video wall mode. The selected screens will now be shown as bright green.
5. To change the displayed image: right-click to open the pop-up menu and select the desired input from the “Input Select” menu option.
6. Repeating steps 2 ~ 5 above with a different set of outputs to allow for the creation of another video wall. If you change the ‘Rows’, ‘Columns’, and ‘Available’ sliders, it will automatically delete the current video wall set up when the “Set” button is clicked.
7. The following example shows a typical video wall set-up of two video walls with two 2x1 configurations:



Video Wall Context Menu

Right clicking on any of the screen icons which will display the following context menu:



Screen Stitching	This option connects the selected screens into a video wall configuration.
Cancel Stitching	Return the Video Wall configuration to normal outputs.
Screen x – Cancel Stitching	Remove a single screen from the video wall to allow the display of another full frame image within the video wall configuration, as shown in this example:  Video Wall display with bezel compensation and different full frame image on display 3
Input Select	Use the sub-menu to select the input to display on the video wall or the secondary input image shown in the above example.
Output Select	This option is only available for any screen that is not assigned to a video wall mode.
Output Type	This option is only available for any screen that is not assigned to a video wall mode.
Output Format	This option is only available for any screen that is not assigned to a video wall mode. It allows setting of the output resolution for the selected screen output.
Mirror	Two sub options : OFF (default), ON (H+V Mirror) When selecting “ON”, you can rotate the image 180° on the selected screen.
Test Pattern	When the Test Pattern is enabled the output will display a Color Bar pattern.

Bezel Setting

The Bezel Setting section allows the entry of values to compensate for the display bezel thickness. These values may be entered either as pixels (Type A) or as millimeters (Type B).

Type A Bezel Settings

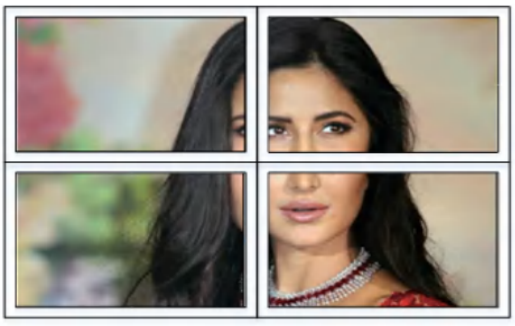
The image size will be adjusted to allow for the number of pixels entered in each of the entry boxes. Click the “Set” button to view the effect of the new values.

Type B Bezel Settings

The image size will be adjusted to allow for the Inner and Outer display dimensions to be entered in each of the boxes . Click the “Set” button to view the effect of the new values.

Bezel Compensation

The following images demonstrate the effect of not having bezel compensation and what a correctly configured bezel should produce:



No Bezel Compensation

Correct Bezel Compensation

Layout Save/Load

The Save Scene/Layout and Load Scene/Layout buttons allow a video wall configuration to be saved or recalled at any time. Up to 4 configurations, each with their own name can be saved or recalled. When saving, each Scene can optionally be given a name to identify that video wall scene setup.

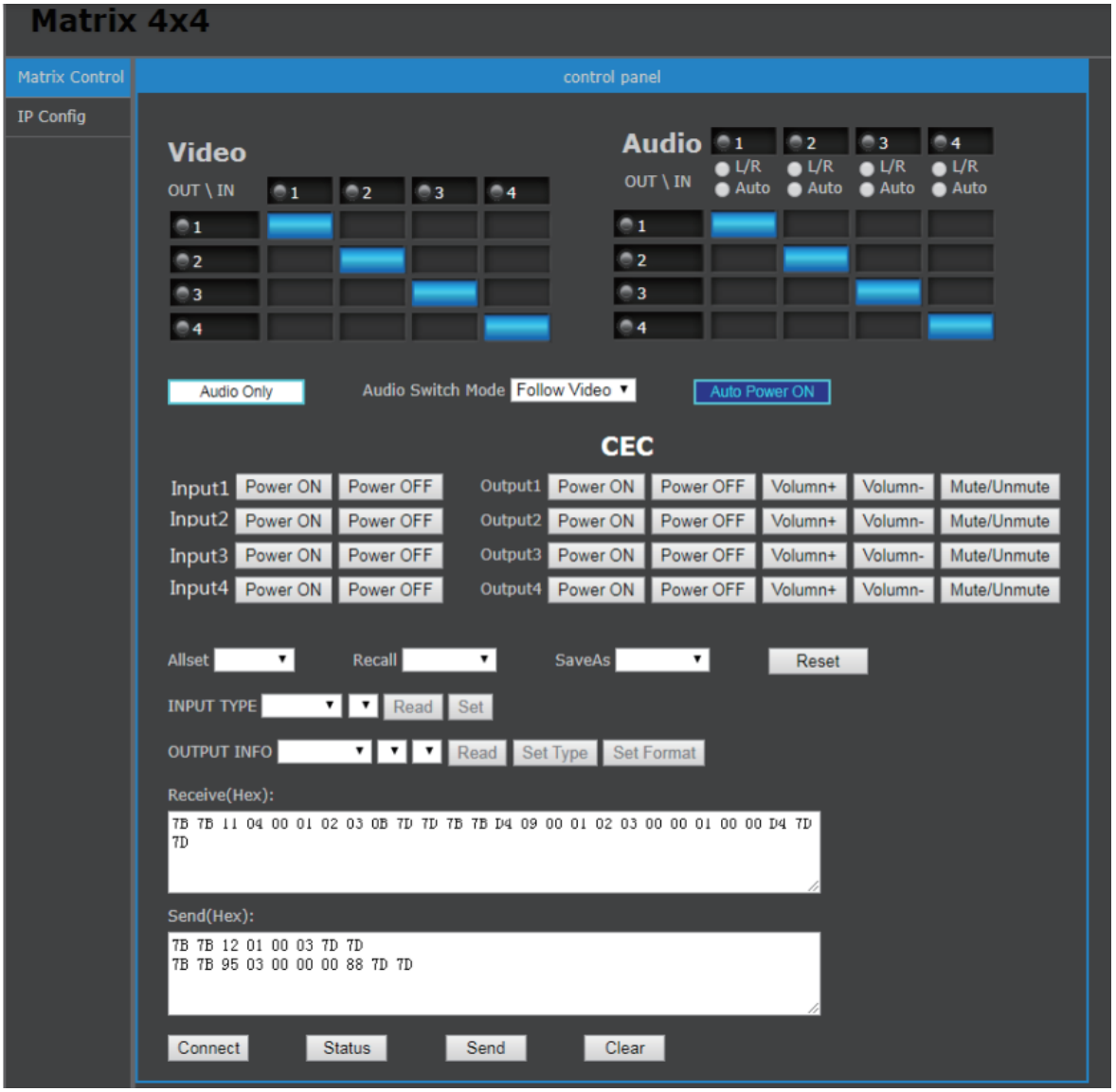
Control via Web Interface

The built-in Web interface provides only basic control of the matrix switcher and access to the network settings.

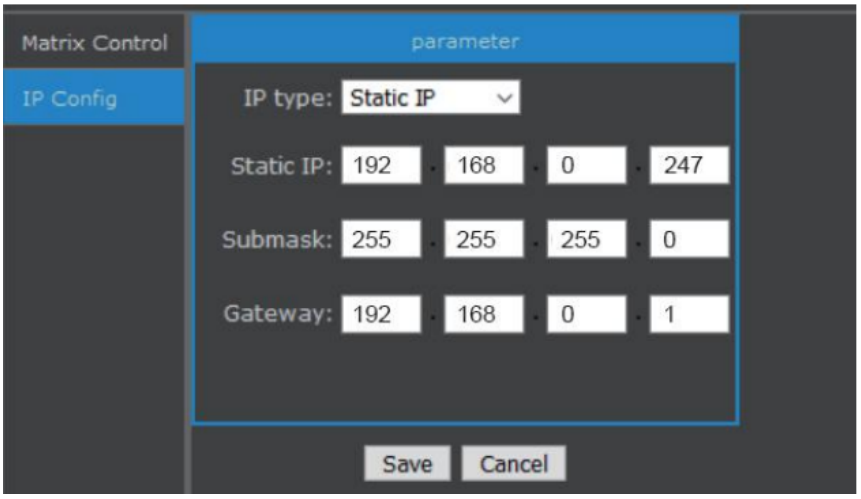
The default User Name is: **admin**

The default Password is: **admin**

After entering the **User Name** and **Password**, an interface similar to the following will be displayed:



IP Config



The IP Config tab is used to change the IP settings of the matrix switcher. Enter any necessary changes and click “Save” to program the switcher to the new settings, or click “Cancel” to reject the changes.

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

Warranty

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.

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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