BG-UHD-VW24
Ultra HD Video Wall Processor

User Manual
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statement</td>
<td>4</td>
</tr>
<tr>
<td>Safety Precaution</td>
<td>4</td>
</tr>
<tr>
<td>Introduction</td>
<td>5</td>
</tr>
<tr>
<td>Features</td>
<td>5</td>
</tr>
<tr>
<td>Packing List</td>
<td>5</td>
</tr>
<tr>
<td>Specifications</td>
<td>6</td>
</tr>
<tr>
<td>Operation Controls and Functions</td>
<td>7</td>
</tr>
<tr>
<td>RS232/LAN Control Connection</td>
<td>8</td>
</tr>
<tr>
<td>RS232 Control Connection</td>
<td>8</td>
</tr>
<tr>
<td>Network Control Connection</td>
<td>8</td>
</tr>
<tr>
<td>PC Tool User Guide</td>
<td>9</td>
</tr>
<tr>
<td>Signal Setting Tab</td>
<td>10</td>
</tr>
<tr>
<td>FineTune: PQ Tab</td>
<td>11</td>
</tr>
<tr>
<td>CEC Control Tab</td>
<td>12</td>
</tr>
<tr>
<td>Video Wall Tab</td>
<td>12</td>
</tr>
<tr>
<td>Creating a second video wall</td>
<td>13</td>
</tr>
<tr>
<td>Connection Diagram</td>
<td>16</td>
</tr>
<tr>
<td>Tech Support</td>
<td>17</td>
</tr>
<tr>
<td>Warranty</td>
<td>18</td>
</tr>
<tr>
<td>Mission Statement</td>
<td>19</td>
</tr>
<tr>
<td>Copyright</td>
<td>20</td>
</tr>
</tbody>
</table>
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-UHD-VW24 is an HDMI 2.0 video wall controller with 2 HDMI inputs, 2 HDMI loop outs, and 4 HDMI scaling outputs for video wall processing. The 5-pin phoenix connector provides balanced L/R audio output. The BG-UHD-VW24 also features PC Tool or RS232 commands to control the product for different wall displays.

Features

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

Packing List

- 1 x Ultra HD Video Wall Processor
- 1 x 12V/3A Power Adapter
- 1 x 5-pin Phoenix Connector
- 2 x 3-pin Phoenix Connector
- 1 x RS232 to Phoenix Cable
- 1 x 12V/3A Power Adapter
- 1 x CAT6 cable
- 1 x USB to RS232 Cable
- 1 x User Manual
# Specifications

## Technical

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>HDMI Compliance</td>
<td>HDMI 2.0</td>
</tr>
<tr>
<td>HDCP Compliance</td>
<td>HDCP 2.2/1.4</td>
</tr>
<tr>
<td>RS-232</td>
<td>Baud rate: 57600, data bit: 8, Stop bit: 1, no parity</td>
</tr>
<tr>
<td>Input Video Formats</td>
<td>4096x2160p 24/25/30/50/60Hz</td>
</tr>
<tr>
<td></td>
<td>3840x2160p 24/25/30/50/60Hz</td>
</tr>
<tr>
<td></td>
<td>1080p 24/25/30/50/60Hz</td>
</tr>
<tr>
<td></td>
<td>1080i 50/60Hz</td>
</tr>
<tr>
<td></td>
<td>1920x1200 60Hz</td>
</tr>
<tr>
<td></td>
<td>1680x1050 60Hz</td>
</tr>
<tr>
<td></td>
<td>1600x1200 60Hz</td>
</tr>
<tr>
<td></td>
<td>1440x900 60Hz</td>
</tr>
<tr>
<td></td>
<td>1400x1050 60Hz</td>
</tr>
<tr>
<td></td>
<td>1366x768 60Hz</td>
</tr>
<tr>
<td></td>
<td>1360x768 60Hz</td>
</tr>
<tr>
<td></td>
<td>1280x1024 60Hz</td>
</tr>
<tr>
<td></td>
<td>1280x960 60Hz</td>
</tr>
<tr>
<td></td>
<td>1280x800 60Hz</td>
</tr>
<tr>
<td></td>
<td>1024x768 60Hz</td>
</tr>
<tr>
<td></td>
<td>1280x720p50/60Hz</td>
</tr>
<tr>
<td>Audio Format</td>
<td>2.0 channel, 5.1 channel, LPCM, Dolby, AC3, DTS</td>
</tr>
<tr>
<td>ESD Protection</td>
<td>Human-body Model: ±8kV (Air-gap discharge), ±4kV (Contact discharge)</td>
</tr>
</tbody>
</table>

## Mechanical

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Housing</td>
<td>Metal Enclosure</td>
</tr>
<tr>
<td>Color</td>
<td>Black</td>
</tr>
<tr>
<td>Dimensions</td>
<td>218mm (W)x146mm (D)x43mm (H)</td>
</tr>
<tr>
<td>Weight</td>
<td>2Kg</td>
</tr>
<tr>
<td>Supply Voltage</td>
<td>+12V/3A</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>25W (Max)</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0°C ~ 40°C / 32°F ~ 104°F</td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-20°C ~ 70°C / -4°F ~ 158°F</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>10%~50% RH (non-condensing)</td>
</tr>
</tbody>
</table>
# Operation Controls and Functions

## Front Panel

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Function Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Power LED</td>
<td>The power LED will illuminate when the unit is powered on</td>
</tr>
<tr>
<td>2</td>
<td>INPUT LED</td>
<td>The LED will illuminate when the corresponding HDMI input port is connected to an active HDMI source device.</td>
</tr>
<tr>
<td>3</td>
<td>LOOP LED</td>
<td>The LED will illuminate when the corresponding LOOPOUT port is connected to an HDMI display device.</td>
</tr>
<tr>
<td>4</td>
<td>OUTPUT LED</td>
<td>The LED will illuminate when the corresponding HDMI output port is connected to an HDMI display device.</td>
</tr>
</tbody>
</table>

## Rear Panel

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Function Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>INPUTS</td>
<td>Connect HDMI source devices such as a media player or gaming console with an HDMI cable.</td>
</tr>
<tr>
<td>2</td>
<td>LOOP OUT</td>
<td>HDMI loop out ports. Loop out the HDMI A/B signal for devices connected to each output.</td>
</tr>
<tr>
<td>3</td>
<td>OUTPUTS</td>
<td>HDMI output for video walls.</td>
</tr>
<tr>
<td>4</td>
<td>12V/3A</td>
<td>DC 12V/3A power supply port.</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>Ground the product housing.</td>
</tr>
</tbody>
</table>
| 6   | AUDIO OUTPUT    | • Analog L/R audio output 3.5mm Stereo Jack. 20Hz – 20kHz, 1.5Vrms max  
                    • BALANCED OUT: Balanced audio output port. 5-pin phoenix connector, 20Hz – 20kHz, 1.5Vrms max. |
| 7   | SERVICE         | Firmware update port.                                                                 |
| 8   | CONTROL         | • RS232: Loop out RS232-CTL control command  
                    • RS232-CTL: External RS232 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 RS232-CTL port of the product to a PC using a USB serial cable as shown in the following figure:

Network Control Connection

Connect to the network interface of the product to a PC over the LAN.
PC Tool User Guide

The PC Tool control software supports both UART and network control. PC Tool consists of 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 input

The available predefined EDID options:

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Manual</th>
</tr>
</thead>
<tbody>
<tr>
<td>4K60-2.0CH</td>
<td>1920x1200-2.0CH</td>
</tr>
<tr>
<td>4K60-5.1CH</td>
<td>1680x1050-2.0CH</td>
</tr>
<tr>
<td>4K30-2.0CH</td>
<td>1600x1200-2.0CH</td>
</tr>
<tr>
<td>4K30-5.1CH</td>
<td>1440x900-2.0CH</td>
</tr>
<tr>
<td>1080P-2.0CH</td>
<td>1400x1050-2.0CH</td>
</tr>
<tr>
<td>1080P-5.1CH</td>
<td>1360x768-2.0CH</td>
</tr>
<tr>
<td>720P-2.0CH</td>
<td>1280x1024-2.0CH</td>
</tr>
<tr>
<td>1024x768-2.0CH</td>
<td>Manual</td>
</tr>
</tbody>
</table>

Signal Setting Tab

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

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

**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:

<table>
<thead>
<tr>
<th>Screen Splicing</th>
<th>This option connects the selected screens into a video wall configuration.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancel Splicing</td>
<td>Return the Video Wall configuration to normal outputs.</td>
</tr>
<tr>
<td>Screen 2 – Cancel Splicing</td>
<td>Remove a single screen from the unified video wall to display a separate image. See the example below:</td>
</tr>
</tbody>
</table>

![Video Wall display with bezel compensation and different full frame image on display 3](image)

<table>
<thead>
<tr>
<th>Input Select</th>
<th>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.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Select</td>
<td>This option is only available for a display that is not already assigned to the video wall.</td>
</tr>
<tr>
<td>Output Type</td>
<td>This option is only available for a display that is not already assigned to the video wall.</td>
</tr>
<tr>
<td>Output Format</td>
<td>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.</td>
</tr>
<tr>
<td>Mirror</td>
<td>Manual Two sub-options: OFF (default), ON (H+V Mirror) “ON” will rotate the selected display 180°.</td>
</tr>
<tr>
<td>Test Pattern</td>
<td>When enabled, the output will display a color bar pattern.</td>
</tr>
</tbody>
</table>
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:

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

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:

<table>
<thead>
<tr>
<th>Phone</th>
<th>Email</th>
<th>Live Chat</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.888.499.9906</td>
<td><a href="mailto:support@bzbgear.com">support@bzbgear.com</a></td>
<td>bzbgear.com</td>
</tr>
</tbody>
</table>
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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