

BG-QuadFusion-4K

Direktronik art: 20124429

**4-Channel 4K UHD HDMI & DisplayPort Production Switcher with
Built-in Audio Mixer & USB 3.0 Capture Card**

User Manual





DIREKTRONIK

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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
- Do not hot plug when it is working.



Introduction

The BG-QuadFusion-4K production switcher is a flexible control device that supports up to 4 simultaneous inputs. With its 4 HDMI inputs and 1 alternate DisplayPort video input, the BG-QuadFusion-4K provides users with multiple connection options that all support 4K@60Hz resolutions. The diverse selection of outputs includes an HDMI multiview output to easily monitor your video productions, 2x HDMI 4K PGM outputs and 1x HD HDMI PGM output for local broadcasts. The BG-QuadFusion-4K also features a built-in USB video capture device which uses H.264 encoding to ensure seamless recording and streaming.

Other features include a format converter, special effect generator, and audio processor. The audio interface supports 2-CH analog audio embedding and extraction with a 3.5mm stereo line level input, 2x 3.5mm microphone inputs, and a 3.5mm stereo output. DCB control and Tally/GPI outputs provide support for 3rd party control systems. The intuitive push button controls, on-screen menu displayed through the multiview output, and an included PC control application for remote network control ensure ease of use. With the BG-QuadFusion-4K at hand, users can make the most out of their video productions in studios or mobile, on-location, video production environments.

Features

- 4x 4K@60Hz HDMI Inputs and 1x 4K@60Hz DP Inputs
- 3x Program (PGM) HDMI outputs and 1x Multiview HDMI output
- Metal aluminum alloy provides a high strength and lightweight body
- Hall sensor T-Bar and a diverse selection of transition effects
- Pattern key can customize the BAR key to display various test patterns or images
- Broadcast & TV standard Tally interface support via GPI control interface
- Capable of PGM screen freeze (STILL), Fade to Black (FTB), Picture-in-Picture (PiP), and Picture-out-Picture (PoP) functions
- Luma and Chroma key
- Hard CUT and AUTO transition effects
- 2 channel audio embedding and extraction



Package Contents

- 1 x BG-QuadFusion-4K
- 1 x User Manual
- 1 x Power Adapter (12V DC)
- 1x 3ft USB 3.0 Type-B to Type-A cable

Specifications

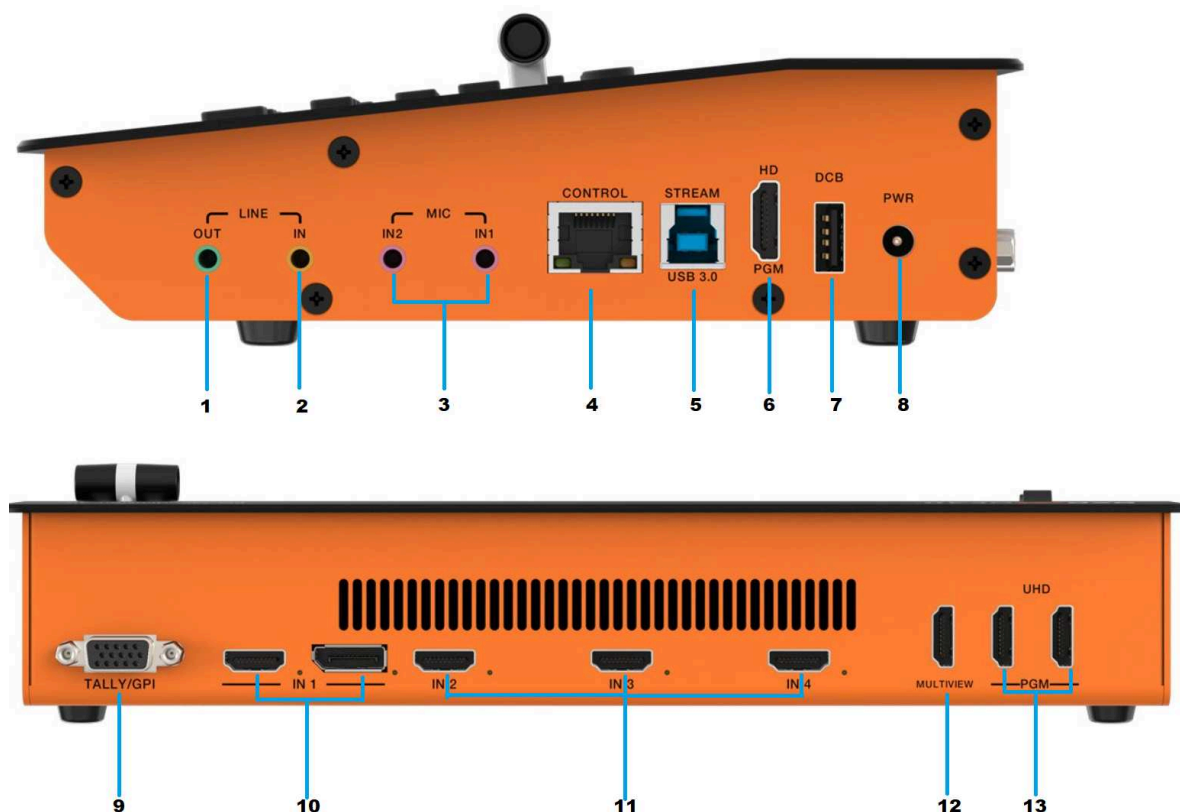
Technical Specifications		
Video Input Signal	Input Connections	4x HDMI 1x DisplayPort
	Data Rate	270Mbps - 18Gbps
	Signal Amplitude	800mV \pm 10%
	Impedance	100 Ω
	Balance	Adaptive
	HDMI/DP Input Resolutions	480i, 576i, 480p, 576p, 720p, 1080i, 1080p, 2160p 3840x2160, 1920x1080, 1680x1050, 1600x900, 1440x1050, 1366x768, 1360x768, 1280x1020, 1280x960, 1280x800, 1280x768, 1280x720, 1280x600, 1152x864, 1024x768, 800x600
Video Output Signal	Output Connections	1x HDMI Multiview Output 3x HDMI PGM Outputs 1x USB 3.0 Type-B
	Output Resolutions	2160p60, 2160p50, 2160p30, 2160p25, 1080p60
	Data Rate	270Mbps - 18Gbps
	Return Loss	>15dB 5MHz-3GHz
	Signal Amplitude	800mV \pm 10%
	Impedance	100 Ω
	DC Offset	0V \pm 0.5V
Control	RJ45 15-Pin Serial	Baud Rate: 9600 Data Bits: 8 Stop Bits: 1 Parity: None
Audio	Line In / Out	3.5mm stereo mini
	MIC	2x 3.5mm stereo mini



Mechanical Specifications	
Dimensions(W x D x H)	284mm x 175mm x 60mm
Working Humidity	20%-70%RH
Operating Temperature	32°F to 122°F (0°C to 50°C)
Storage Temperature	-4°F to 167°F (-20°C to 75°C)
Power Supply	12V
Power Rate	≤35w



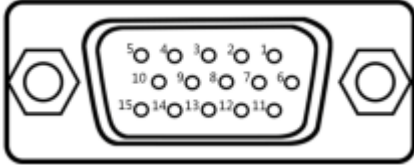
Panel Descriptions



No.	Name	Description
1	Line Out	3.5mm stereo line level output for audio extraction.
2	Line In	3.5mm stereo line level input for audio embedding.
3	MIC Inputs 1/2	2x 3.5mm stereo mini microphone inputs for audio embedding.
4	Control	RJ45 LAN connection for software control and network access.
5	Stream USB 3.0	1080p60 USB 3.0 PGM output / capture
6	HD PGM	1x HDMI program output capable of downscaling to 1080p60.
7	DCB	External control for keyboard, wireless tally, or device cascade
8	PWR	DC 12v power supply.
9	Tally/GPI	Connect to a director tally light/GPI control system.
10	HDMI/DP Input 1	Selectable HDMI or alternate DisplayPort input connections capable of 4K60.
11	HDMI 2-4	3x HDMI input connections capable of 4K60 inputs
12	Multiview	HDMI multiview output capable of displaying 4 connected inputs and device menu.
13	PGM	2x HDMI program outputs capable of 4K60.



Tally/GPI Pinout

PIN	Tally Function	Pin	GPI Function	
11	PGM-IN 1	1	GPI-IN 1	
12	PGM-IN 2	2	GPI-IN 2	
13	PGM-IN 3	3	GPI-IN 3	
14	PGM-IN 4	4	GPI-IN 4	
6	PVW-IN 1	10	GPI-IN 5	
7	PVW-IN 2	15	GPI-IN 6	
8	PVW-IN 3	5	GND	
9	PVW-IN 4			

GPI Optional Feature List:

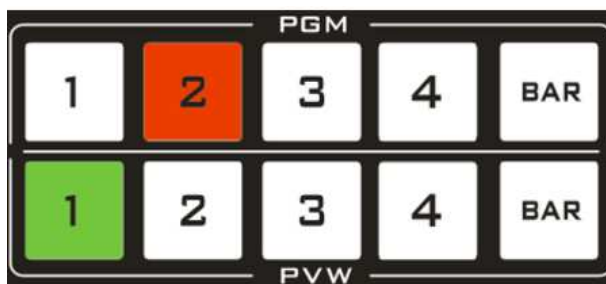
GPI-INx Optional Feature		Description
1	PGM 1	Simulate PGM 1 button
2	PGM 2	Simulate PGM 2 button
3	PGM 3	Simulate PGM 3 button
4	PGM 4	Simulate PGM 4 button
5	PGM_BAR	Simulate PGM BAR button
6	CUT	Simulate CUT transition button
7	AUTO	Simulate AUTO transition button
8	MUTE	Simulate MUTE button
9	FTB	Simulate Fade to Black (FTB) button
10	STILL	Simulate STILL button



Multiview Window



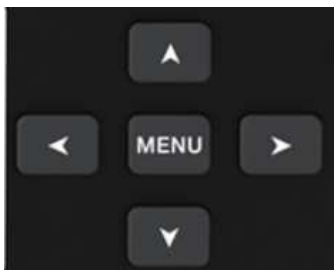
- The selected preview (PVW) window is shown on the top left and highlighted in green.
- The select program (PGM) window is shown on the top right and highlighted in red.
- The 4 windows below correspond to the input sources 1 - 4. Sources can be toggled between the HDMI and DisplayPort connections for each input.
- This image below represents the corresponding button selection on the unit and will illuminate to match the windows shown above on the multiview screen. PGM buttons will illuminate red when selected while PVW buttons will illuminate green.





Button Descriptions

Menu and Directional Arrows



MENU: Press the Menu button to open / enter / select a highlighted on screen menu item in the multiview window.

Directional Arrows: Use the Directional Arrows to navigate the menu or to change values.

PGM and PVW Buttons



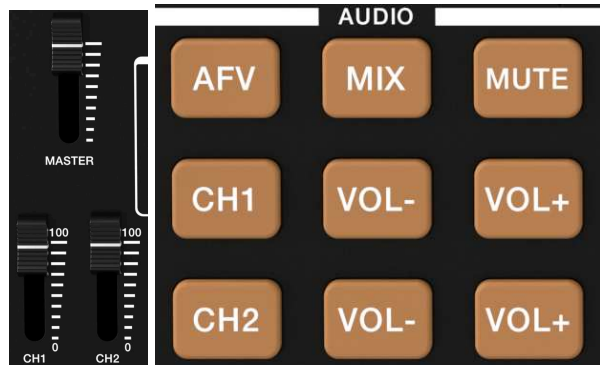
PGM: Use the PGM buttons to select which source is being used as the two HDMI Program outputs.

PVW: Use the PVW buttons to select which source will be used next / swapped with the current PGM source.

BAR: Displays and outputs the currently selected test pattern for the selected source.



Audio Mixer



The BG-QuadFusion-4K supports analog balanced audio input and output, HDMI audio extraction, as well as audio matrixing using the Audio Follow Video (AFV) and MIX functions.

- **Volume Sliders**

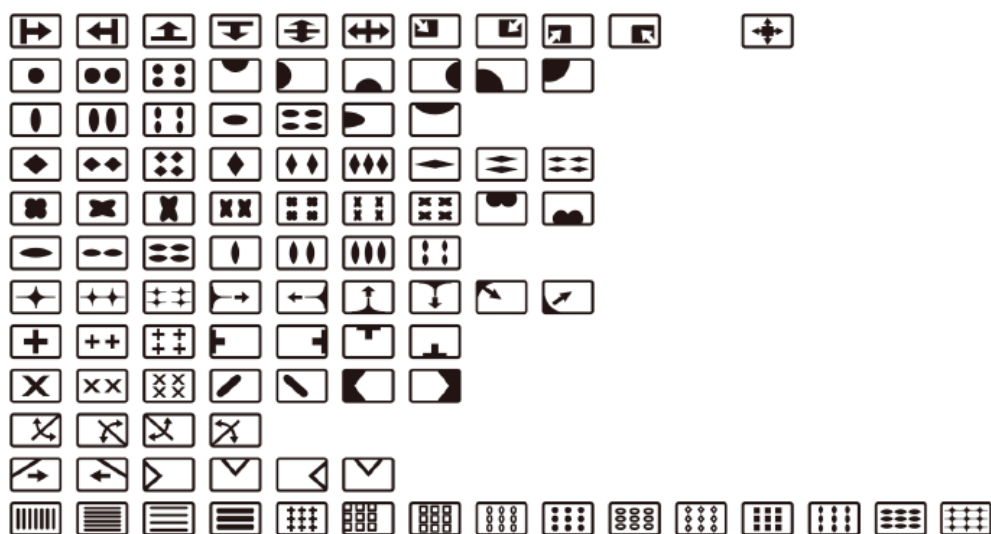
- **Master:** Overall system volume can be controlled by moving the Master slider up and down and it affects all audio channels.
- **CH1/CH2:** Changes the output volume for the selected audio channel.
- **AFV:** Audio Follow Video (AFV) means the current video source is tied to its audio source. When the video is switched, the audio also switches to the new source.
- **MIX:** Allows users to change the audio source of the selected channel for the PGM video outputs. Audio can come from another HDMI source or the balanced audio inputs.
- **MUTE:** Mutes all audio output.
- **CH1/VOL-/VOL+:** Pressing the CH1 button cycles which audio source is being used while in MIX mode. The adjacent VOL- and VOL + control the audio source/input volume level.
- **CH2/VOL-/VOL+:** Pressing the CH2 button cycles which audio source is being used while in MIX mode. The adjacent VOL- and VOL + control the audio source/input volume level.



Transition Types



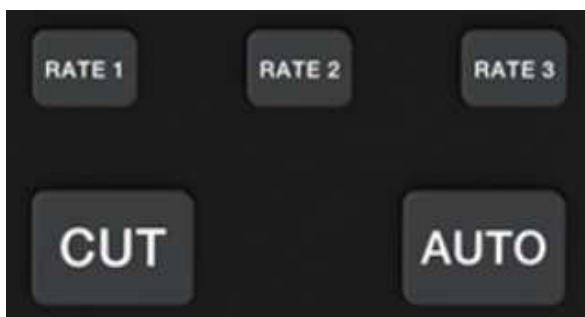
- The transition mode section contains the following options:
 - **MIX:** Superimposes the PVW image over the current PGM image.
 - **Fade:** Dissolve the images in and out
- The other shape options each have several variations.
 - Options can be changed by repeatedly pressing the desired symbol and include: Circle, Rhombus, Fan, Plum blossom, shutter, cross, diamond, wipe, X, and many more shown in the image below:



- The currently enabled transition type/button will be illuminated green on the keyboard.
- The specific sub-option will be shown at the bottom of the multiview window or in the control software and be illuminated green as well when enabled.



Transition Controls



- **CUT:** Immediately switches the PVW and PGM outputs with no transition.
- **AUTO:** Automatically transition between PVW and PGM selections using the selected transition type.
- **Rate 1 - Rate 3:** Set the speed at which the AUTO transition button functions. Rate 1 is the highest speed while Rate 3 is the slowest speed.
- **T-BAR:** Manually control the transition rate between PVW and PGM selections.

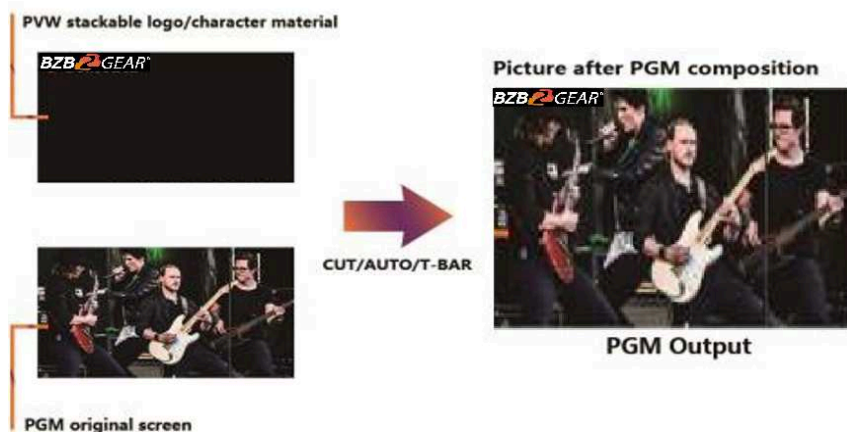




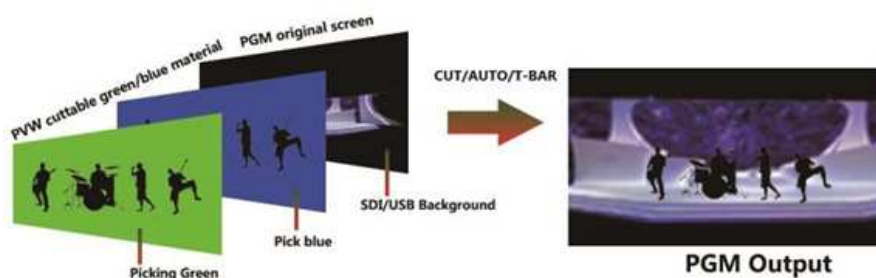
Function Keys



- LUMA:** Removes the color black from the background of the PVW image and overlays the remaining imager on top of the PGM output. Typically used to place a watermark, logo, text, or subtitles on the PGM output



- CHROMA:** Removes the specified image background color (Blue or Green), and then overlays the PGM source over the PVW background source.





- **PATTERN:** Allows users to change the BAR key test pattern. Users can select from the following options: all red, all green, all blue, all white, black & white checkerboard, or color bars.
- **PIP:** Picture-in-Picture (PIP) overlays a smaller image of the currently selected preview (PVW) source on top of the current program (PGM) output.



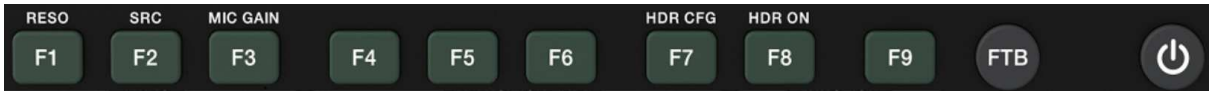
- The PIP window will be active when the T-BAR is in the B-Bus state.
 - The PIP window can have its position, size, and border modified using the control application or on screen menu.
- **POP:** Picture-out-Picture (POP) allows users to display both the PVW and PGM outputs simultaneously.



- While similar to PIP, the POP function allows both the PGM and PVW window size, position, and borders to be modified.
 - Windows can be overlaid or placed side-by-side for a multiview effect.
- **STILL:** The PGM video will freeze on the currently displayed image. The STILL button will illuminate green while active. Pressing the STILL button a second time will resume normal playback.



F1 - F9, FTB, and Power

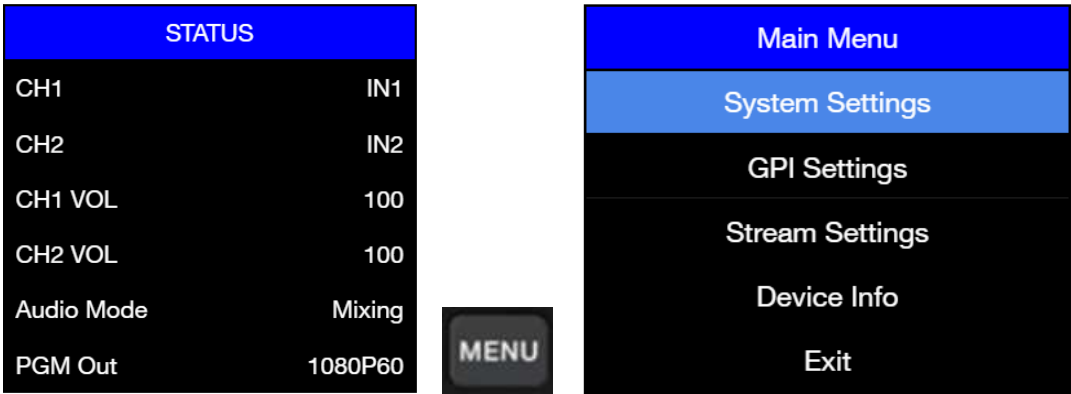


- F1:** Press F1 to change the output resolution
- F2:** Press F2 to change the source port of Input 1 (HDMI or DisplayPort)
- F3:** Press F3 to adjust the Mic Gain, F7 to open the HDR configuration
- F8:** Press F8 to turn HDR On or Off.
- FTB:** Press the Fade to Black (FTB) button to transition the PGM outputs to show a black screen with no image. The button will flash while active.
- Power:** Press and hold the power button to turn on/off the unit.

Main Menu / System Settings

Using the on screen multiview menu or control software users can access the Main Menu or System Settings to set the IP address on the device, restore the system to factory default settings, change the language and more.


- To access the Main Menu, press the Menu Key when no options are highlighted on the Status Menu. Press the up arrow to deselect the top Status option.





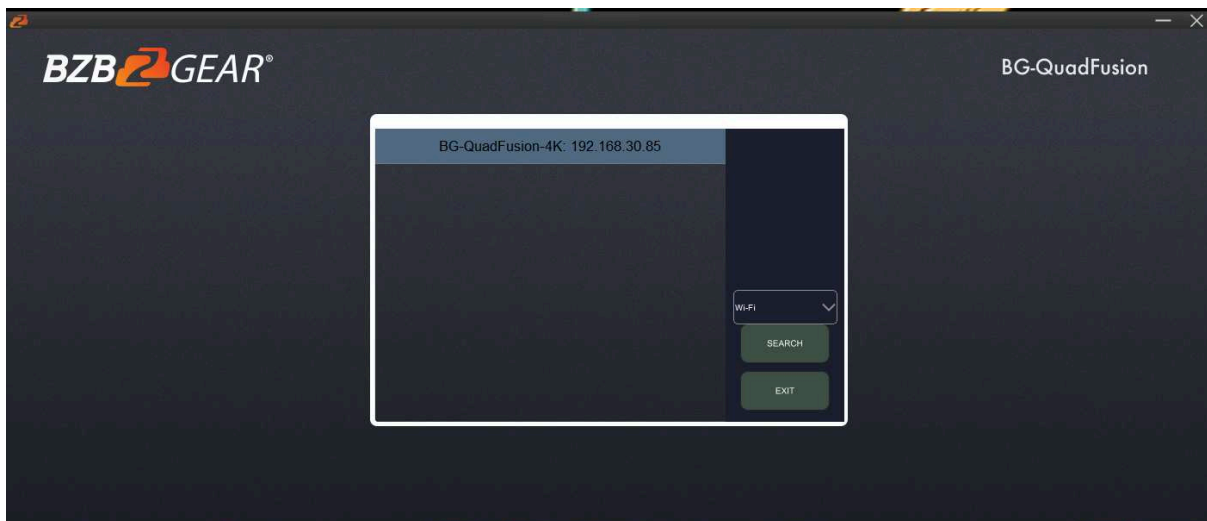
PC QuadFusion Control Application

A free Windows PC control software is provided for both of the QuadFusion production switches and allows for full remote control of the connected device. Software can be found and downloaded from the device product page on www.BZBGear.com.

After downloading the application, extract the BG-QuadFusion.exe file to your desired location. Double click the application to start.  BG-QuadFusion.exe

Upon opening the application, your device should be listed in the box in the center along with its IP address if both the device and computer are on the same network.

You can also use the dropdown on the right to select a different internet adapter if your computer has more than one or to search again if the device was not found initially.

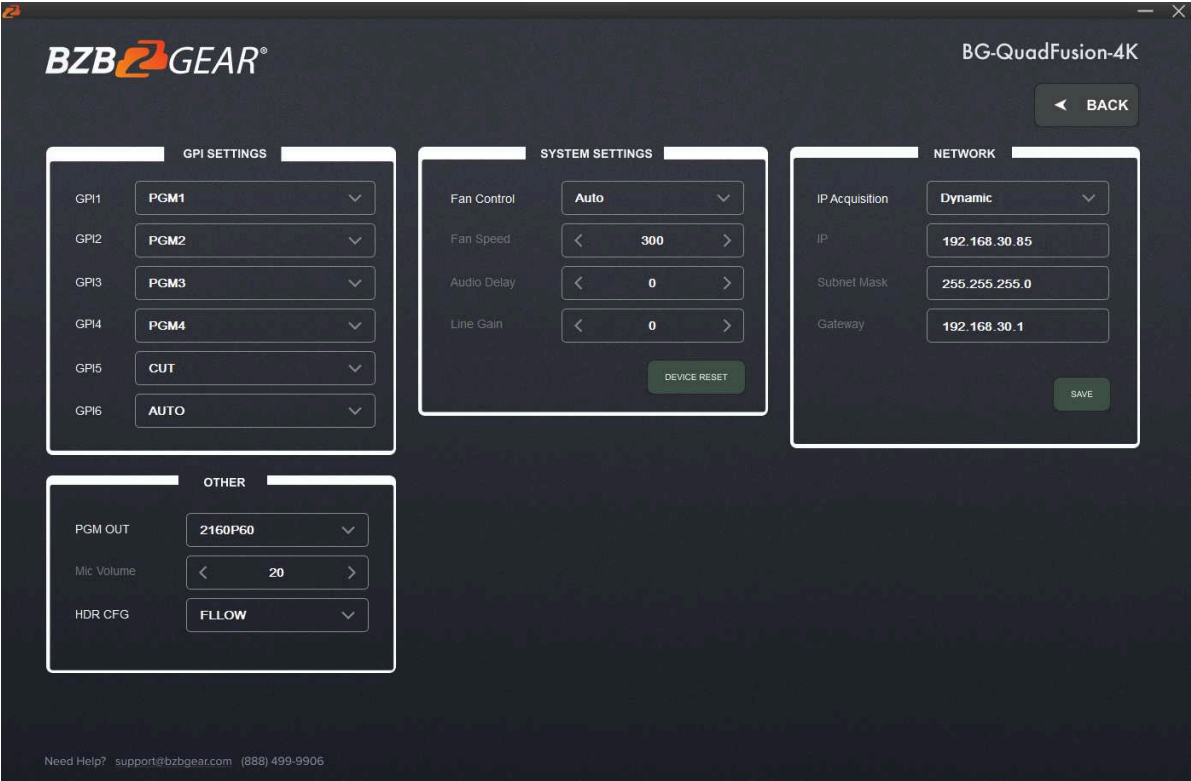


Double click on the device name in the center to access the virtual production switch.



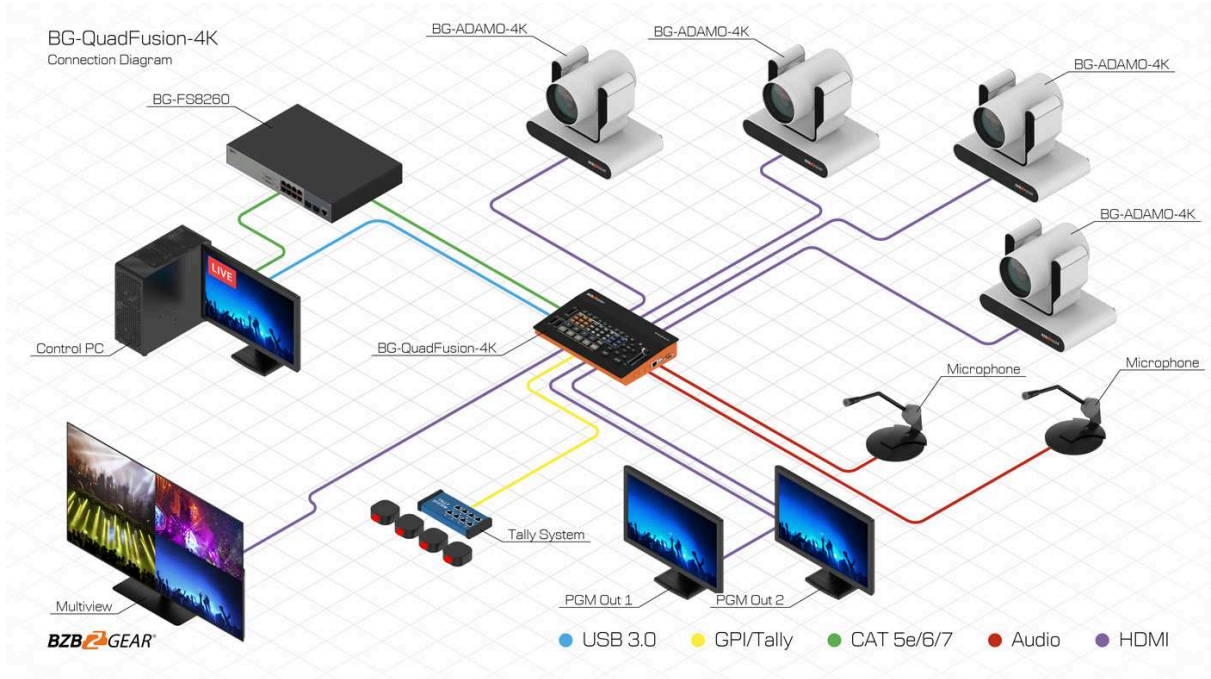
The virtual software functions exactly the same as if you were pressing the buttons on the unit itself and it will cause the physical unit to mirror your actions. NOTE: T-Bar and volume sliders will re-adjust when they are physically moved on the unit.

The “Settings” button in the top right will open a menu which provides most of the multiview on screen settings as shown below.





Application Example





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:

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1.888.499.9906

Email

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Live Chat

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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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