BZB GEAR®

Solutions to Amplify Your World ™

BG-PS41-BYOD-4K

4-Port 4K 18Gbps UHD HDMI/USB-C/BYOD Conference Room

Wireless Presentation Switcher

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

- Unpack the equipment carefully and save the original box and packing material for possible future shipment.

- Follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.

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

- Do not dismantle the housing or modify the module.

- Using supplies or parts not meeting the products' specifications may cause damage, deterioration or malfunction.

- Do not put any heavy items on the extension cable in case of extrusion.

- Install the device in a place with fine ventilation to avoid damage caused by overheat.

- Do not twist or pull by force ends of the optical cable. It can cause malfunction.

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

- Unplug this device during lightning storms.

- Do not use liquid or aerosol cleaners to clean this unit. Clean only with a soft dry microfiber cloth.

- Always unplug the power to the device before cleaning.

- If an object or liquid falls or spills on to the housing, unplug the module immediately.

- 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.

- Product specifications may be subject to technical upgrades without further notice.

- Unplug the power cord when left unused for a long period of time.

- Information on disposal for scrapped devices: do not burn or mix with general household waste, please treat them as normal electrical wastes.

Introduction

The BG-PS41-BYOD-4K 18G 4x1 Presentation Switcher is designed with one wireless Miracast/Airplay input, two HDMI inputs, one USB-C input and one HDMI output. It supports HDMI 2.0b, 4K2K@60Hz 4:4:4, HDR 10, Dolby Vision, and it is HDCP 2.2 compliant. In addition, there are also smart built-in EDID settings that can be selected by utilizing the 4-pin DIP switch on the front panel.

The switcher supports HDMI audio de-embedding and USB device extension by providing two type-B USB ports for host connection, and two type-A USB ports for USB devices such as webcams, microphones, keyboard, etc.

The BG-PS41-BYOD-4K has multiple methods of control. When AUTO mode is selected the switcher will automatically switch to the first detected source device. The switcher can also be manually controlled by the front panel buttons and RS232 commands. CEC support allows a compatible display device to be controlled via the front panel buttons, RS232, and CEC commands.

Features

- 18G 4x1 presentation switcher with soft codec & wireless BYOD.
- HDMI 2.0b, 4K2K@60Hz 4:4:4, HDR 10, Dolby Vision and HDCP 2.2.
- Wireless BYOD (Bring Your Own Device) capability via AirPlay and Miracast.
- Provide up to 60w charging, USB data (USB 3.0/2.0) and 4K video transmission on the USB-C port.
- HDMI output audio can be de-embedded out via balanced analog audio port.
- Two type-B USB ports for host connection and two type-A USB ports for USB devices like webcams, mic, and keyboard.
- Video source auto-switching.
- Smart EDID management.
- Front panel buttons trigger both CEC and RS232 commands for display control.

Packing List

- 1x BG-PS41-BYOD-4K Switcher
- 2x Mounting Ears with 4 Mounting Screws
- 4x Plastic Cushions
- 1x 5-pin Terminal Block
- 1x RS232 Cable (3-pin terminal block - DB9)

- 1x External Antenna
- 1x Power Adapter (24V DC 5A)
- 1x User Manual
- 1x Quick Start Guide

Technical Specifications

| Video	
Video Input	(1) AirPlay/Miracast, (2) HDMI, (1) USB-C
Video Input Connector	(1) External antenna connector, (2) Type-A female HDMI, (1) Type-C USB 3.0
AirPlay/Miracast Input Resolution	Up to 4K@30Hz 4:4:4
HDMI Input Resolution	Up to 4Kx2K@60Hz 4:4:4 HDR10, Dolby Vision
USB-C Input Resolution	Up to 4K@30Hz 4:4:4
Video Output	(1) HDMI
Video Output Connector	(1) Type-A female HDMI
HDMI Output Resolution	Up to 4Kx2K@60Hz 4:4:4 HDR10, Dolby Vision
HDMI Standard	Up to HDMI 2.0b
HDCP Version	Up to HDCP 2.2
Audio	
HDMI Embedded Audio Format	Supports Dolby Atmos, Dolby TrueHD, Dolby Digital Plus, Dolby Digital, DTS-X, DTS-HD Master Audio, DTS 5.1, 2 - 8Ch PCM 32-192kHz 16-24 bits; 2-8Ch PCM 32-192kHz 16-24 bits
Balanced Analog Audio Output	(1) AUDIO OUT
Balanced Analog Audio Output Connector	(1) 5-pin terminal block
Frequency Response	20Hz–20KHz, ±3dB
Max Output Level	2.0Vrms ± 0.5dB
THD+N	< 0.05%, 20Hz – 20KHz bandwidth, 1KHz sine at 0dBFS level (or max level)
SNR	>80dB, 20Hz - 20KHz bandwidth
Crosstalk Isolation	<-80dB, 10KHz sine at 0dBFS level (or max level before clipping)
L-R Level Deviation	<0.05dB, 1KHz sine at 0dBFS level (or max level before clipping)
Output Load Capability	1KΩ and higher (Supports 10x paralleled 10KΩ loads)
Noise Level	-80dB
Control port	(1) 4-pin DIP switch, (1) FW, (2) HOST (PC1&PC2), (2) DEVICES, (1) RS232
Control Connector	(1) Micro-USB, (2) Type-B USB 3.0, (2) Type-A USB 3.0, (1) 3-pin terminal block
Network Connectivity	
WLAN Standards	IEEE 802.11ac
Band	2.4 and 5GHz
Max. Wireless Coverage	≤5m, environment dependent, reduce disturbance to increase transmission distance up to 10m
Max. Output Resolution	4K@30Hz
Version	iOS 7 or above, MacOS, Android 4.0 or above,Windows8.1 or above.
General	
Operation Temperature	23°F ~ 131°F / -5°C ~ +55°C
Storage Temperature	13°F ~ 158°F / -25°C ~ +70°C
Relative Humidity	10% ~ 90%
External Power Supply	Input: AC 100~240V, 50/60Hz; Output: 24V DC 5A.
Power Consumption	85w (Max)
USB-C Power Charging	60w (Max)
Dimension (W*H*D)	9.4" x 0.98" x 5.3" [238mm x 24.5mm x 135mm]
Net Weight	1.8lbs [825g]

Operation Controls and Functions

Front Panel
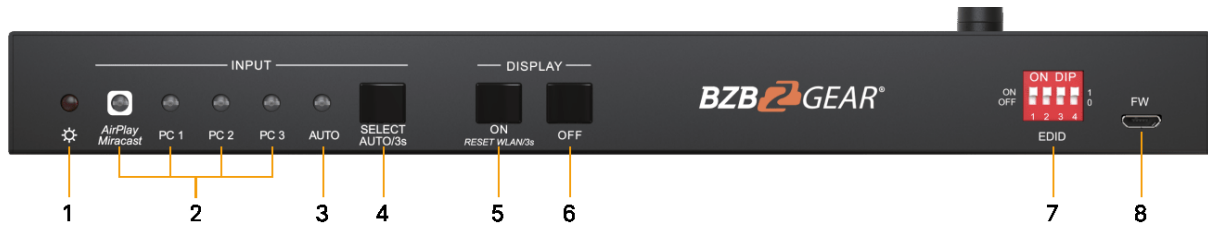
1. **POWER LED**: The LED illuminates red when power is supplied.

2. **Input LEDs 1-4**: The LED illuminates orange when the video signal is detected on the corresponding input channel. It will illuminate green when the video signal/channel is chosen as the input source.

3. **AUTO LED**: The LED illuminates green when the switcher is in auto-switching mode.

4. **SELECT AUTO/3s**: Press the button to select an input source, or press and hold it for at least 3 seconds to enable auto-switching mode.

5. **DISPLAY ON**: Press the button to turn on the display.

6. **DISPLAY OFF**: Press the button to turn off the display.

7. **EDID**: 4-pin DIP switch for EDID setting.

8. **FW**: Micro USB port for firmware upgrade.

Rear Panel
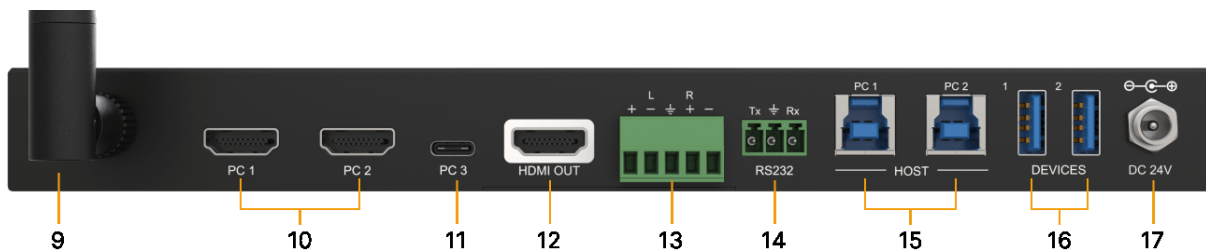
9. **Miracast/Airplay Input**: Connect to the external antenna.

10. **PC1-PC2**: Two type-A female HDMI input ports to connect HDMI source devices.

11. **PC3**: Type-C USB with charging capability to connect the Laptop/Macbook or other device with SlimPort output.

12. **HDMI OUT:** Type-A female HDMI output port to connect display device.

13. **AUDIO OUT**: 5-pin terminal block for audio de-embedding from HDMI output.

14. **RS232**: 3-pin terminal block to connect the RS232 control device (e.g. PC) or a third-party device to be controlled by RS232 commands.

15. **HOST (PC1 & PC2)**: Two type-A USB ports to connect USB devices.

16. **DEVICE (1 & 2)**: Two type-A USB ports to connect USB devices.

17. **DC 24V**: DC connector for power adapter connection.

Diemensions
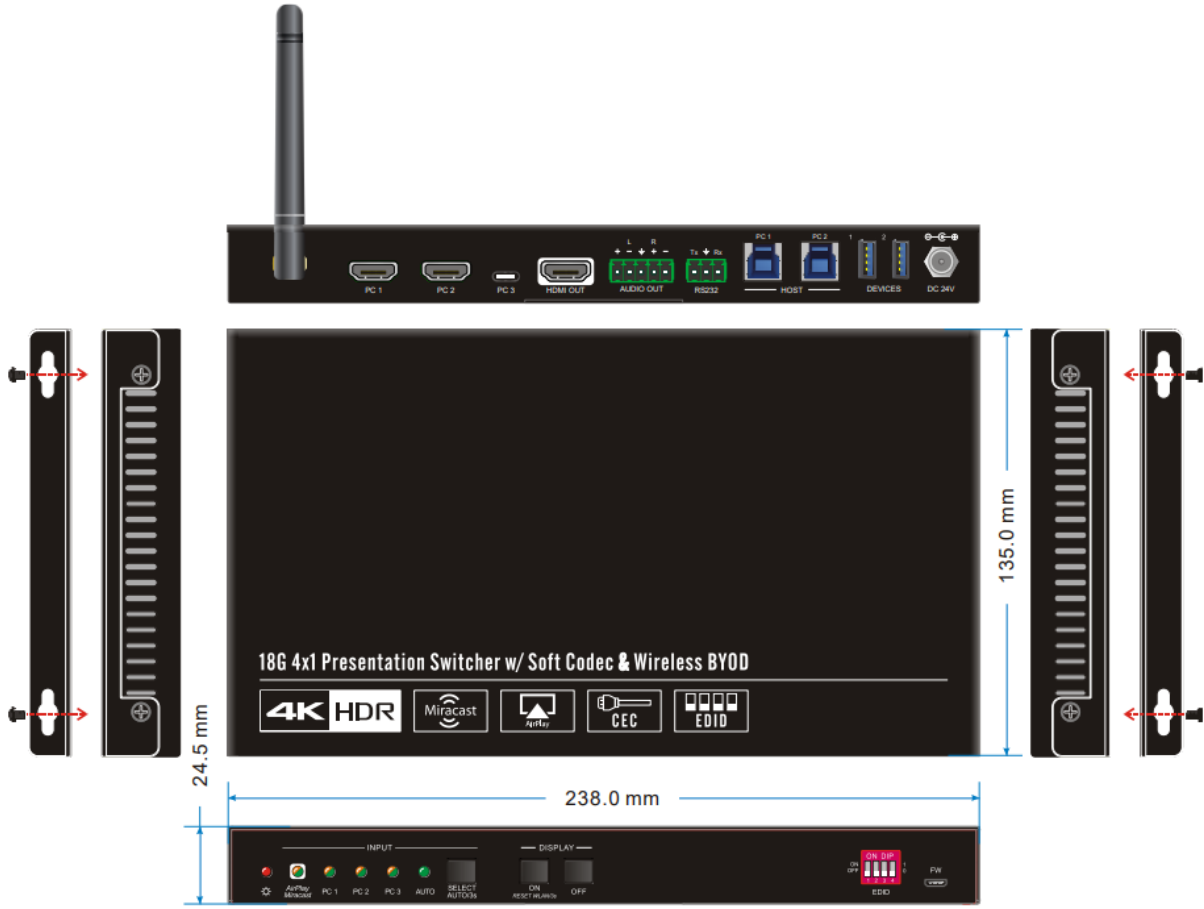
System Connection Methods

Miracast/Airplay Connection

A device using MacOS/iOS, Android, Windows 8.1 or later that supports AirPlay/Miracast can be used as an input source. Switch to the Miracast/Airplay input by pressing the SELECT AUTO/3s button for 3 seconds and then the Wi-Fi SSID and password will be shown on the display device.
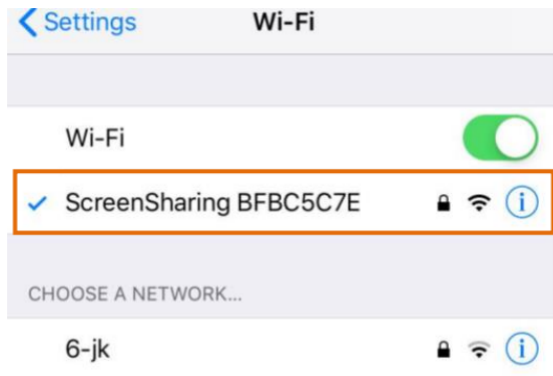
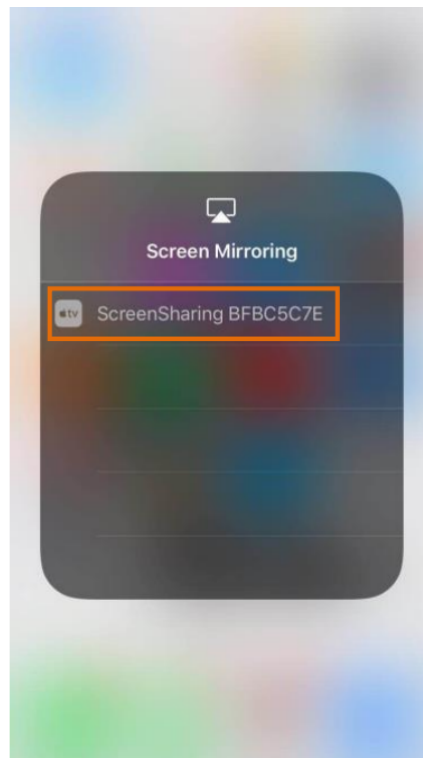SSID: ScreenSharing XXXXXX

Password: 12345678
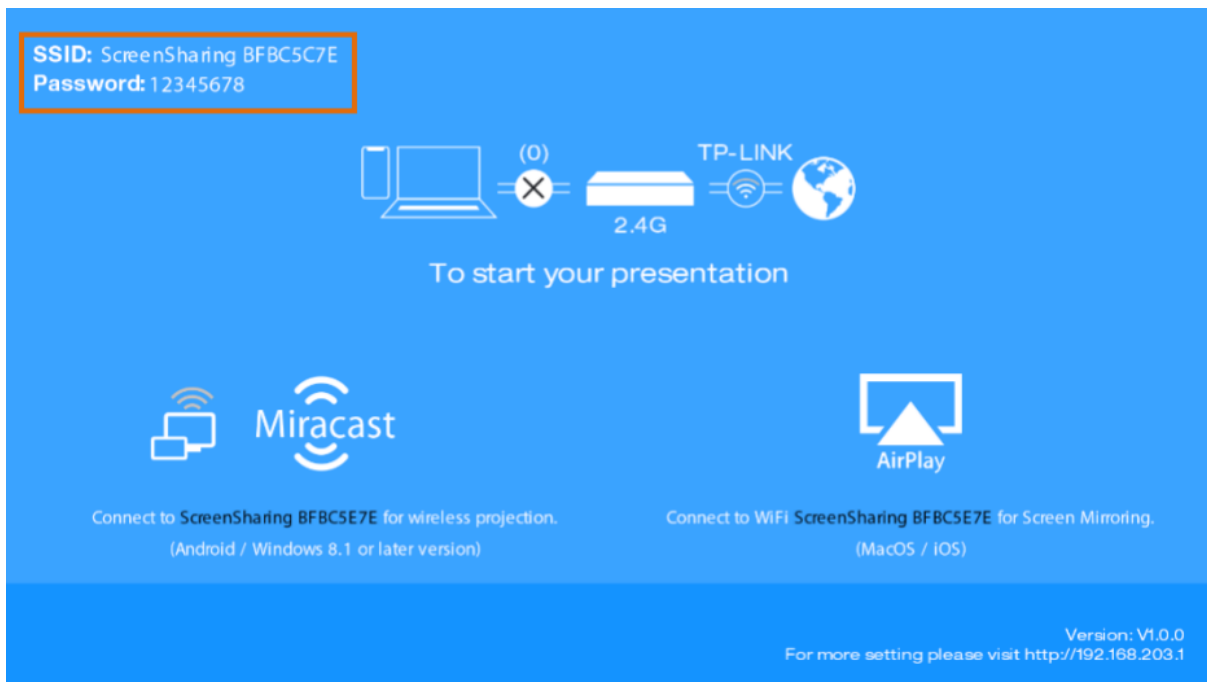
● **iPhone Connection:**

1) Connect the Apple iPhone to the Wi-Fi SSID.

2) Slide up on the screen of the iPhone from the bottom to enter the Control Center, click Screen Mirroring, and then click the SSID for the BG-PS41-BYOD-4K screen mirroring.
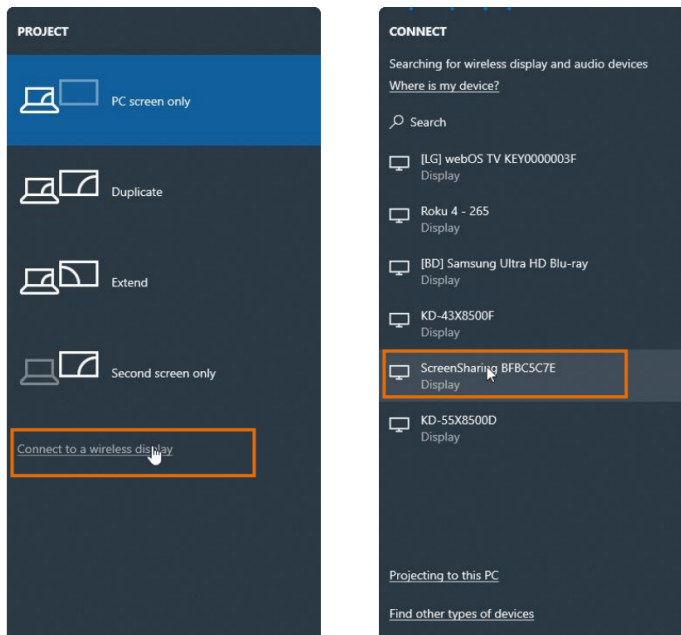
● **Android Connection (Samsung):**

Slide down on the Android screen and click the "Smart View" icon and then click the SSID of the BG-PS41-BYOD-4K for screen mirroring.
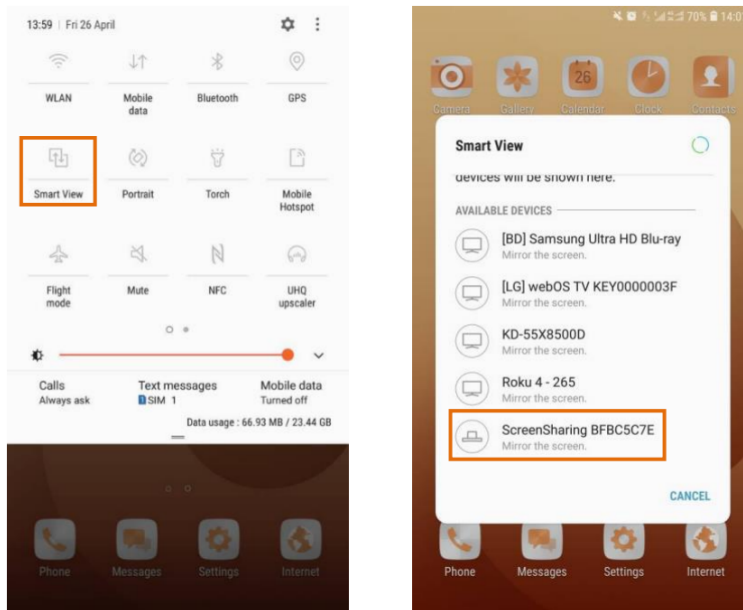
● **Windows 10 Connection:**

1) Press the Windows key + P on keyboard, and then click Connect to a wireless display in the pop-up window.

2) Click the SSID of the BG-PS41-BYOD-4K for screen mirroring.

Front Panel Control

Manual-Switching

When the switcher is in the manual switching mode, press the SELECT AUTO/3S button repeatedly to cycle through the four video inputs, and the corresponding source LED will illuminate green.

Auto-Switching

Press and hold the SELECT AUTO/3s button for at least three seconds to enable auto-switching and the AUTO LED will turn green.

When in AUTO mode, the switcher will switch according to the following rules:

- The switcher will switch to the first active input starting at AirPlay/Miracast to PC3.

- New input: The switcher will automatically select the new input once a new input is detected.

- Reboot: If power is lost and then restored to the switcher, it will automatically reconnect to the last used input before shutdown.

- Source removed: When an active source is removed, the switcher will switch to the first active input starting at AirPlay/Miracast input to PC3.

- In auto mode, the input source also can be switched by the manual switching steps.

- Press and hold the SELECT AUTO/3s button for at least three seconds again to exit AUTO mode. The input source will not be changed.

Note: The AirPlay/Miracast is not an active input when there is no screen sharing device connected.

Display Control

- Manual Control: Press the DISPLAY ON/OFF buttons on the front panel to simultaneously send RS232 and CEC commands to turn on/off the connected display device.

- Auto Control: When detecting a video input signal (5V or TMDS), automatically send CEC and RS232 commands to turn on the connected display device. When no video signal is detected within the setting time (default 10mins), automatically send RS232 and CEC commands to turn off the display device.

Please refer to the **Special Commands** section for setting RS232 commands for more details.

EDID Setting

The Extended Display Identification Data (EDID) is used by the source device to match its video resolution with the connected display. The DIP switch on the front panel can be used to set the EDID to a fixed value to ensure compatibility of video resolution between devices. When the switch is set to "0" in the lower position it is OFF, and "1" while in the up position the switch is considered ON.
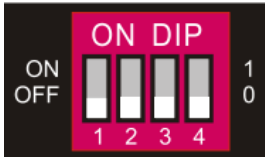
Note: The EDID DIP switch can only be used for setting EDID of the HDMI source devices and the USB-C source device will automatically gain the EDID of the display device.

Switch Status	Video Resolution	Audio Format
0000	EDID Pass-Through	-
0001	1280x720@60Hz	Stereo
0010	1920x1080@60Hz DVI	-
0011	1920x1080@60Hz 8bit	Stereo
0100	1920x1080@60Hz 8bit	High Definition
0101	1920x1200@60Hz 8bit	Stereo
0110	3840x2160@30Hz 8bit	Stereo
0111	3840x2160@30Hz 8bit	High Definition
1000	3840x2160@30Hz 8bit HDR	Stereo
1001	3840x2160@60Hz Deep Color	Stereo
1010	3840x2160@60Hz Deep Color HDR	High Definition
Switch Status	**EDID**	**Note**
1011	User-defined EDID 1	
1100	User-defined EDID 2	The five user-defined EDID can be uploaded by sending RS232 command "#UPLOAD_USER_EDID [PARAM]", please refer to the chapter **Function Setting** for more details.
1101	User-defined EDID 3	
1110	User-defined EDID 4	
1111	User-defined EDID 5	

- Stereo: LPCM 2CH.

- High Definition Audio: LPCM 8Ch, AC-3 6Ch, DTS 5.1, Dolby Digital 5.1, DTS-HD7.1, Dolby TrueHD 7.1

- Deep Color: 8bit, 10bit, 12bit

RS232 Control

The switcher can be controlled by sending RS232 commands. Connect the RS232 port of the BG-PS41-BYOD-4K to a control device such as a PC with a RS232 cable.
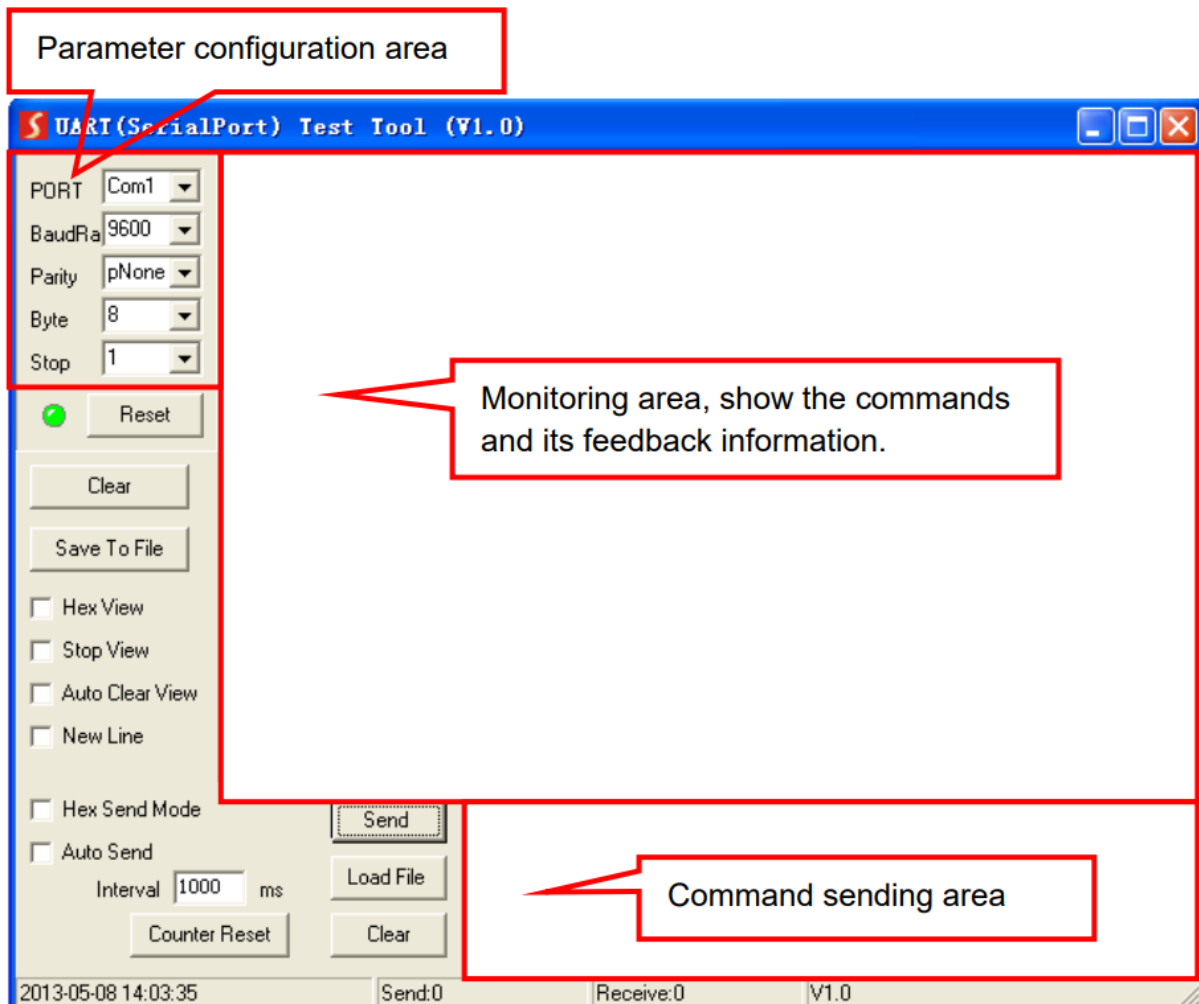
Basic Settings:

Connect the switcher with all input devices and output devices as needed. Next, connect the unit to a PC that has RS232 control software installed.

This example uses CommWatch.exe but other RS232 control programs such as Access Port or DockLite will also work:

CommWatch.exe

The main screen for CommWatch is shown as below:

NOTE: You need to set the parameters for com port, baud rate, data bit, stop bit, and parity bit correctly in any program to be able to connect to the device and send commands.

RS232 Command

Com PORT: determined by the PC (sometimes a program will automatically fill this section but if it does not, the information can be found in Device Manager on Windows OS devices)

Baud rate: 9600

Data bit: 8

Stop bit: 1

Parity bit: none

System Control

The ending mark of command is "<CR><LF>".

Command	Description	Command & Feedback Example
#GET_FIRMWARE_VERSION	Get the firmware version.	@V1.0.0
#FACTORY_RESET	Restore to factory defaults.	@FACTORY_RESET
#REBOOT	System reboot.	@REBOOT
#HELP [PARAM]	Get the command details. • [PARAM]=Null; Get all command list. • [PARAM]=Any command; Get the English description and usage of the command.	#HELP SET_AV
		@SELECT VIDEO AND AUDIO INPUT PORT #SET_AV PARAM 1 PARAM=A,PC1 ,PC2,PC3 A - Airplay/Miracast PC1 - HDMI1 PC2 - HDMI2 PC3 - TYPE-C
#SET_RST_WIRELESS	Reset Airplay/Miracast power	@RESET WIRELESS DEVICE
#SET_KEYPAD_LOCK 1	Lock front panel buttons.	#SET_KEYPAD_LOCK 1
#SET_KEYPAD_LOCK 0	Unlock front panel buttons (Default).	#SET_KEYPAD_LOCK 0
#GET_KEYPAD_LOCK	Get the locking status of the front panel buttons.	@KEYPAD_LOCK 1

Source Switching

Command	Description	Command & Feedback Example
#SET_AV A	Select the input source: Airplay/Miracast (Default).	@AV Airplay/Miracast
#SET_AV PC1	Select the input source: PC1.	@AV PC1
#SET_AV PC2	Select the input source: PC2.	@AV PC2
#SET_AV PC3	Select the input source: PC3.	@AV PC3
#GET_AV	Get the current input source.	@AV PC1
#SET_A UT0_S WITC H 0	Disable auto-switching mode.	@AUTO_SWITCH 0
#SET_AUTO_SWITCH 1	Enable auto-switching mode.	@AUTO_SWITCH 1
#GET_AUTO_SWITCH	Get the auto-switching status.	@AUTO_SWITCH 1

CEC/RS232 Function Setting

The ending mark of command is "<CR><LF>".

Command	Function	Command & Feedback Example
#SET_SYNCACT_CEC 1	Enable the function of automatically sending CEC commands. When detecting a video input signal or not detecting any video signal, the switcher will automatically send the corresponding CEC command to control the display device.	@SYNCACT_CEC 1
#SET_SYNCACT_CEC 0	Disable the function of automatically sending CEC commands.	@SYNCACT_CEC 0
#GET_SYNCACT_CEC	Get the function setting status of automatically sending CEC commands.	@SYNCACT_CEC 1
#SET_SYNCACT_RS232 1	Enable the function of automatically sending RS232 commands. When detecting a video input signal or not detecting any video signal, the switcher will automatically send the corresponding RS232 command to control the display device.	@SYNCACT_RS232 1
#SET_SYNCACT_RS232 0	Disable the function of automatically sending RS232 commands.	@SYNCACT_RS232 0
#GET_SYNCACT_RS232	Get the function setting status of automatically sending RS232 commands.	@SYNCACT_RS232 1
#SET_DISPLAY 1	Power on display device (Simultaneously sending CEC and RS232 commands to display device).	@DISPLAY 1
#SET_DISPLAY 0	Power off display device (Simultaneously sending CEC and RS232 commands to display device).	@DISPLAY 0

Function Setting

The ending mark of command is "<CR><LF>".

Command	Description	Command & Feedback Example
#SET_OFF_CNT 1	Set the number of sending DISPLAY OFF command to 1 time.	@OFF_CNT 1
#SET_OFF_CNT 2	Set the number of sending DISPLAY OFF command to 2 times.	@OFF_CNT 2
#GET_OFF_CNT	Get the number of sending DISPLAY OFF command.	@OFF_CNT 1
#SET_OFF_DELAY [PARAM]	Set the delay time of sending DISPLAY OFF command to [PARAM]. [PARAM]=5~100 (1=100ms).	#SET_OFF_DELAY5 @OFF_DELAY 5
#GET_OFF_DELAY	Get the delay time of sending DISPLAY OFF command.	@OFF_DELAY 5
#SET_OUTPUT_HDCP [PARAM]	Set the HDCP mode of output port to [PARAM]. [PARAM]=1-3: 1 - ACTIVE 2- ON 3- OFF	#SET_OUTPUT_HDCP 1 @OUTPUT_HDCP 1
#GET_OUTPUT_HDCP	Get the HDCP mode of output port.	@OUTPUT_HDCP 1
#SET_SW_HDCP_MODE [PARAM]	Switch the input ports to support HDCP2.2 status. [PARAM]= 0/1. 0 - UNSUPPORT HDCP2.2 1 - SUPPORT HDCP2.2	#S ET_S W_H D C P_M ODE 1 @SW_HDCP_MODE 1
#GET_SW_HDCP_MODE	Get the HDCP2.2 status of input ports.	@SW_HDCP_MODE 1
#UPLOAD_USER_EDID [PARAM]	Upload the user-defined EDID [PARAM], PARAM = 1 ~ 5 1 - User-defined EDID 1 2 - User-defined EDID 2 3 - User-defined EDID 3 4 - User-defined EDID 4 5 - User-defined EDID 5 When the command applied, system prompts to upload the EDID file (.bin). Operation will be canceled in 10 seconds.	#UPLOAD_USER_EDID 1 @USER_EDID 1 READY PLEASE SEND EDID DATA IN 10S OK/ERROR

Command	Description	Command & Feedback Example
#SET_DTIME [PARAM1]: [PARAM2]	When not detecting a video input signal, set the auto power-off time of the display device to [PARAM1]: [PARAM2], The default time is 10 minutes. [PARAM1]=0~30 minutes. [PARAM2]=0~1800 seconds.	#SET_DTIME 1:30 @DTIME 1:30
#GET_DTIME	Get the auto power-off time of the display device.	@DTIME 30:0

Special Commands

Note: The below commands don't need an ending mark

Command	Description	Command & Feedback Example

#SET_ON_[PARAM1]_ [PARAM2]:XXXX	Set the ASCII RS232 command XXXX to be sent to control the third-party device when the DISPLAY ON button is pressed.
	● [PARAM1] = 00~06 (Baud Rate)
	    00 - 115200
	    01 - 57600
	    02 - 38400
	    03 - 19200
	    04 - 9600
	    05 - 4800
	    06 - 2400
	● [PARAM2] = 00~99. The delay time of sending command.
	● XXXX: Any ASCII code (up to 48 bytes).
		#SET_ON_05_30:123456 7
		
		@BAUDRATE: 4800 @DELAY TIME: 30 s @DISPLAY ON TO SEND:1234567

#SET_H_ON_[PARAM1]_ [PARAM2]:XX XX	Set the HEX RS232 command XX XX to be sent to control the third-party device when the DISPLAY ON button is pressed.
	● [PARAM1] = 00~06 (Baud Rate)
	    00 - 115200
	    01 - 57600
	    02 - 38400
	    03 - 19200
	    04 - 9600
	    05 - 4800
	    06 - 2400
	● [PARAM2] = 00~99. The delay time of sending command.
	● XX XX: Any HEX code (0-9, A-F; up to 20 bytes. It must have a blank between 2 different XX).
		#SET_H_ON_05_30:31 32 33 34 35
		
		@BAUDRATE: 4800 @DELAY TIME: 30 s @DISPLAY ON HEX TO SEND:31 32 33 34 35

#SET_OF_[PARAM1]_ [PARAM2]:XXXX	Set the ASCII RS232 command XXXX to be sent to control the third-party device when the DISPLAY OFF button is pressed.
	● [PARAM1] = 00~06 (Baud Rate)
	    00 - 115200
	    01 - 57600
	    02 - 38400
	    03 - 19200
	    04 - 9600
	    05 - 4800
	    06 - 2400
	● [PARAM2] = 00~99. The delay time of sending command.
	● XXXX: Any ASCII code (up to 48 bytes)
		#SET_OF_05_30:ABCDE FG
		
		@BAUDRATE: 4800 @DELAY TIME: 30 s @DISPLAY OFF TO SEND:ABCDEFG

#SET_H_OF_[PARAM1]_ [PARAM2]:XX XX	Set the HEX RS232 command XX XX to be sent to control the third-party device when the DISPLAY OFF button is pressed.
	● [PARAM1] = 00~06 (Baud Rate)
	    00 - 115200
	    01 - 57600
	    02 - 38400
	    03 - 19200
	    04 - 9600
	    05 - 4800
	    06 - 2400
	● [PARAM2] = 00~99. The delay time of sending command.
	● XX XX: Any HEX code (0-9, A-F; up to 20 bytes. It must have a blank between 2 different XX).
		#SET_H_OF_05_30:41 42 43 44 45
		
		@BAUDRATE: 4800 @DELAY TIME: 30 s @DISPLAY OFF HEX TO SEND:41 42 43 44 45

Firmware Upgrade

Please follow the steps below to upgrade the firmware using the FW port on the rear panel:

1) Prepare the latest upgrade file (.bin) and rename it as "FW_MERG.bin" on a PC.

2) Power off the switcher and connect the FW port of the switcher to the PC with a USB cable.

3) Power on the switcher and then the PC will automatically detect a U-disk named "BOOTDISK".

4) Double-click the U-disk and a file named of "READY.TXT" would be shown.

5) Directly copy the latest upgrade file (.bin) to the "BOOTDISK" U-disk.

6) Close and Reopen the U-disk to check if the filename "READY.TXT" changed to "SUCCESS.TXT", if yes, the firmware was updated successfully, otherwise, the firmware update failed. Check the name of the upgrade file (.bin) and then follow the above steps to attempt to update again.

7) Remove the USB cable after firmware upgrade.

8) After the firmware upgrade is complete, factory restore the unit using RS232 commands.

Application Example
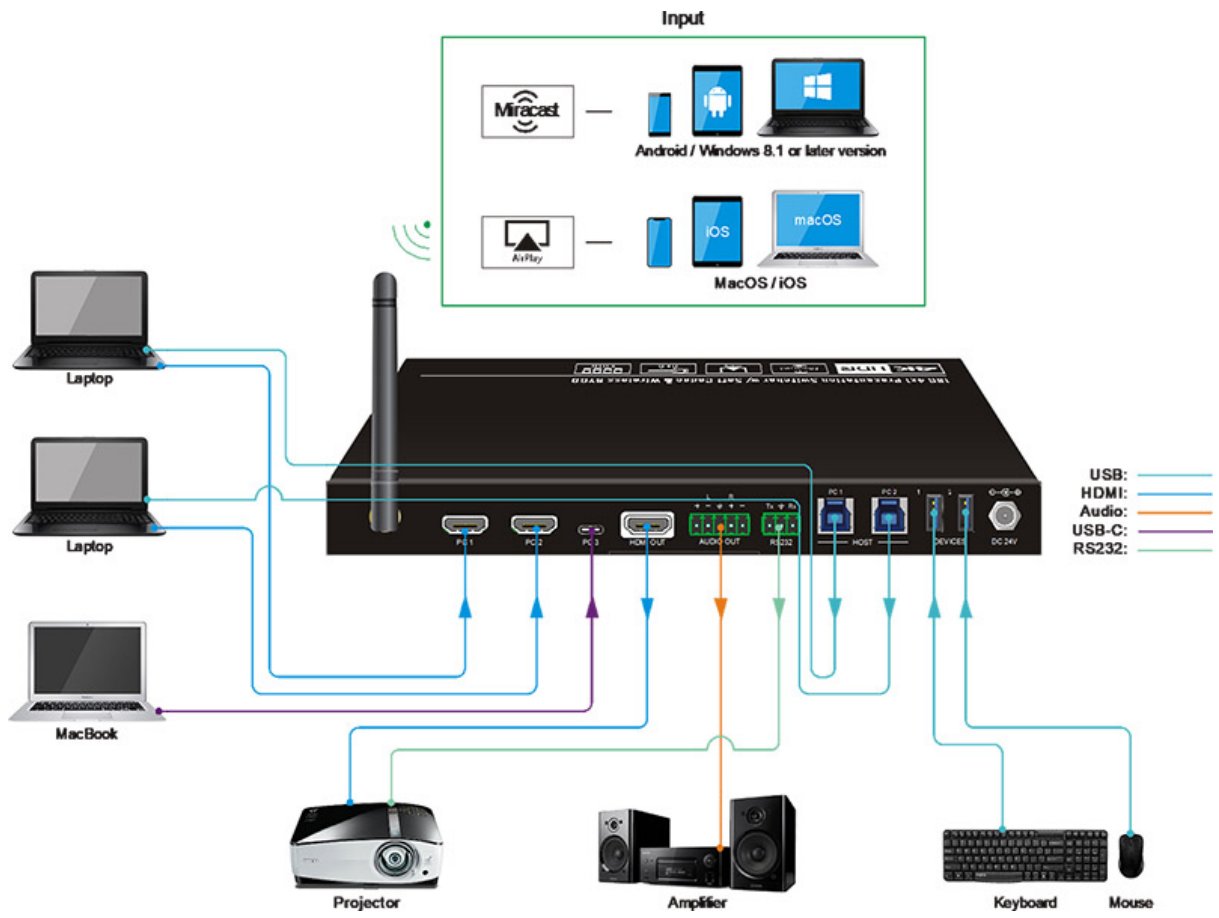
Tech Support

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:

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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