BZB GEAR®
Solutions to Amplify Your World™

BG-4K120CHA

USB-C 4K120 Video Capture Box with Scaler, HDMI 2.1 Loopout, Audio & HDR10 to SDR Conversion

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.
- 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-4K120CHA is a cutting-edge USB-C 4K120 video capture device with a scaler, HDMI 2.1 loopout, audio, and HDR10 to SDR conversion, designed for professional HDMI video signal capturing. It utilizes a USB 3.1 Type-C Gen 1 (USB 3.0) interface for high-speed transmission. Additionally, the HDMI input and loopout can support up to 4K2K 120Hz, enabling users to connect to a 4K2K 120Hz source and capture Ultra HD (4K2K@30) video. The BG-4K120CHA also captures and displays original uncompressed HDMI video, resulting in more realistic color rendition.

Moreover, the BG-4K120CHA incorporates large volume image buffer technology to effectively avoid video tearing, and the high sampling rate and accuracy ensure images with high sharpness, rich details, and fewer color edges. Furthermore, with HDR10 to SDR conversion, PS5/Xbox Players can enjoy 4K2K@120 HDR games on a 4K TV while recording real-time 4K2K@30/1080P@120 video streams with SDR quality through USB 3.0 simultaneously.

With its advanced features and high-end capabilities, the BG-4K120CHA is an ideal choice for demanding HDMI video capture applications, offering professional-grade performance and versatility.

* PS5 & Xbox Series X also support 1080P120

Features

- HDMI video and audio streams over USB 3.1 Type-C Gen 1
- UVC1.0/1.1/1.5
- Video resolution up to 4K2K@30/1080P@120 (Video stream over USB-C)
- HDMI 2.1 compliant
- HDMI input & output up to 4K2K 120Hz 4:4:4/4:2:2/4:2:0
- HDR 4K2K@60 4:2:0 10 bits/12 bits
- HDCP 2.3 and 1.4 compliant
- Allows any output to view any HDMI source at any time
- Deinterlace & scaling (upscaling supports up to 1080P@120)
- Mic-in mix with HDMI audio
- HDMI audio extraction
- HDR10 to SDR conversion***
- Play 4K@120 HDR on HDMI out while streaming 4K2K@30/1080P@120 with SDR colors for gameplay capture.
- Volume control knob to adjust the MIC/Headphone volume.
- Auto-detection on video format to ensure plug-play operations
- Supported operating systems: Windows 7/8.1/10/11, Mac, & Linux OS
- Compatible with most 3rd party software such as OBS Studio and AMCap
- USB 3.1 Gen 1 (RGB/YUY2/NV12/P010) 4 (capture up to 4K2K@30) and USB 2.0 (YUY2/NV12) (capture up to 1080@15)
- Low Latency (3~4ms at 1080P)

Note: Please use the included USB 3.0 cable in the box to protect the device and avoid further compatible issues. Video resolution changes may require users to restart software. Does NOT support HDR10 plus, HLG, and Dolby Vision to SDR conversion

Packing List

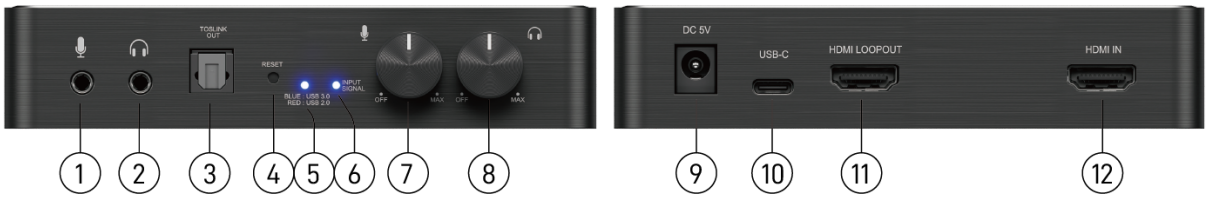
- 1x BG-4K120CHA
- 1x 5V power adapter
- 1x USB 3.0 A to C Cable (host to device)
- 1x User Manual

Specifications

Model Name		BG-4K120CHA
Technical		
Role of usage		Video Capture Device
Input Video bandwidth		Up to FRL 5 (40G)
Output bandwidth(USB-C)		Up to 5 Gbps (USB-C)
Output bandwidth(HDMI)		Up to FRL 5 (40G)
Video support(USB-C)		Up to 4K2K@30/1080P@120
Video support(HDMI)		Up to 4K2K 120Hz 4:4:4/4:2:2/4:2:0
Audio Input		HDMI Embedded Audio & Stereo audio Input
Audio Support		HDMI output up to 7.1ch, TOSLINK up to 5.1ch, Stereo audio up to 2ch
Recording Mode		Software Compression
Recording Video Format		RGB/YUY2/NV12/P010 (USB3.1 Gen 1), YUY2/NV12 (USB2.0)
ESD protection		Human body model — ±15kV [air-gap discharge] & ±8kV [contact discharge]
PCB stack-up		4-layer board [impedance control — differential 100Ω; single 50Ω]
Firmware update		Feasible via USB-C Port
Input		1x HDMI+ 1x 3.5mm
Output		1x USB-C + 1x HDMI + 1x 3.5mm + 1x TOSLINK
HDMI connector		Type A [19-pin female]
USB connector		USB 3.1 Type-C (SuperSpeed USB)
Software compatibility (not complete list)		OBS Studio (Windows, Linux, MAC), AMCap (Windows), Potplayer (Windows), VLC (OS X, Linux), XSplit Broadcaster (Windows), Skype (Windows, OS X), Zoom (Windows), Hangout (Windows), TeamViewer (Windows)
OS Support		Windows 7 /8.1 /10/11, Mac and Linux OS
Mechanical		
Housing		Metal enclosure
Dimensions [L x W x H]	Model	177 x 81 x 22mm [7" x 3.2" x 0.9"]
	Package	198 x 137 x 74mm [7.8" x 5.4" x 2.9"]
	Carton	420 x 400 x 300mm [1'4"x 1'3" x 11.8"]
Weight	Model	165g[5.8 oz]
	Package	445g[1 lbs]
Power supply		Via USB-C
Power consumption		4.5 Watts [max]
Operation temperature		0~40°C [32~104°F]
Storage temperature		-20~60°C [-4~140°F]
Relative humidity		20~90% RH [no condensation]

Operation Controls and Functions

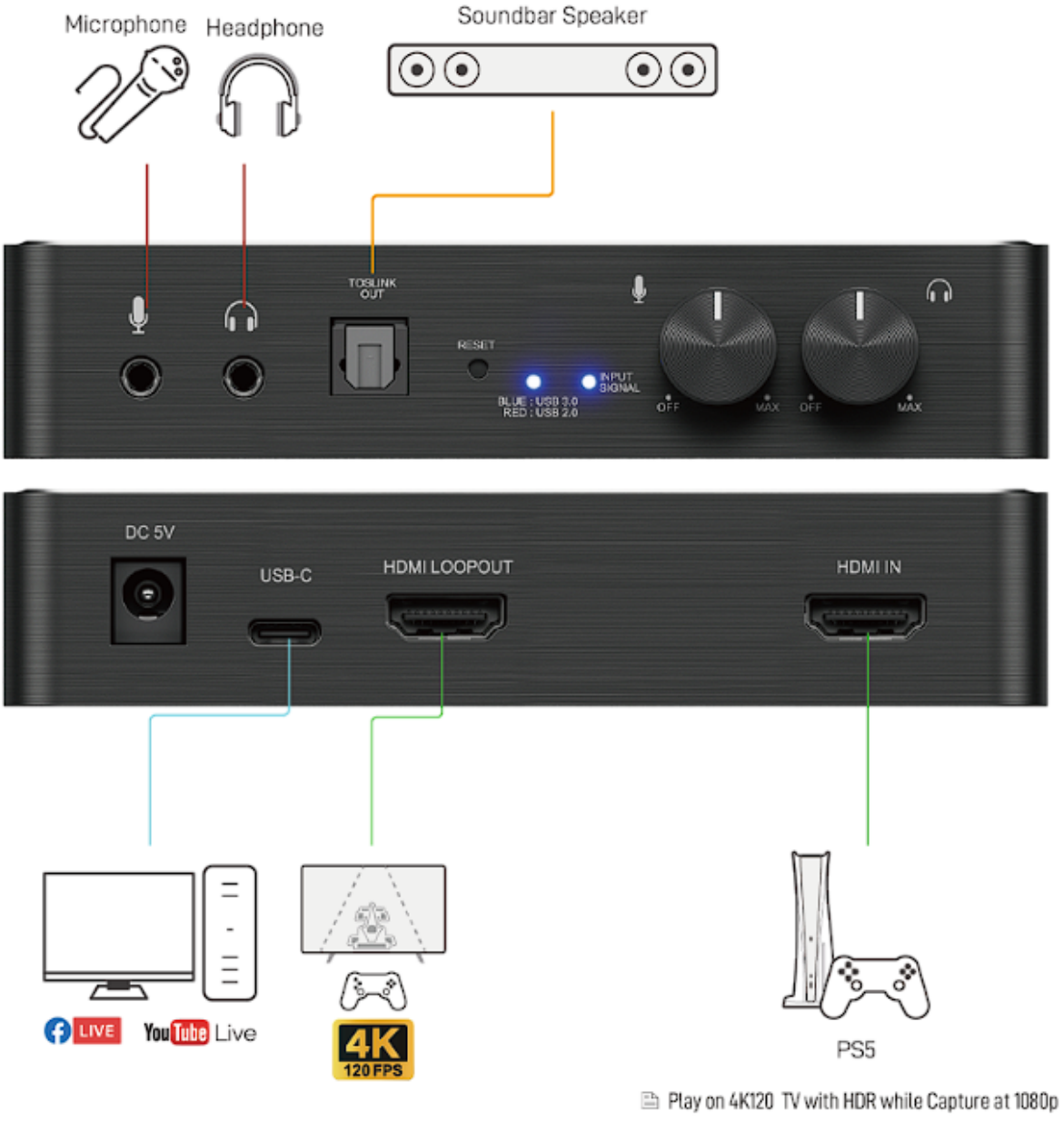
Front and Rear Panel



No.	Name	Function Description
1	**STEREO AUDIO IN**	Audio extracts from HDMI input
2	**STEREO AUDIO OUT**	Connect to an analog stereo audio source
3	**S/PDIF OUT**	Audio extracts from HDMI input
4	**RESET BUTTON**	Reset the device
5	**LED INDICATOR**	USB-C indicator LED [Red] The device is connected to the USB 2.0 port on the host [Blue] The device is connected to the USB 3.0 port on the host
6	**LED INDICATOR**	Power & input signal indicator LED [Blue] Device powered on (no input signal) [Green] Input detects HDMI signal [Red] Input source is HDCP protected
7	**STEREO AUDIO IN VOLUME KNOB**	To adjust the stereo audio in sound level
8	**STEREO AUDIO OUT VOLUME KNOB**	To adjust the stereo audio out sound level
9	**POWER JACK**	Connect to the +5V DC power supply unit
10	**USB-C OUT**	Connect to a USB host (PC, NB, MAC…)
11	**HDMI OUT**	Connect to a HDMI display
12	**HDMI IN**	Connect to a HDMI source

1. When the input source is HDCP protected, LED will become red to indicate the content is legally encrypted and can NOT be captured.
2. If you plug the capture device into the USB 3.0 port on the host, but the LED indicator lights up red, it means that the device is working according to the USB 2.0 specification. There could be an issue with the USB cable or USB Port.

Connection Diagram



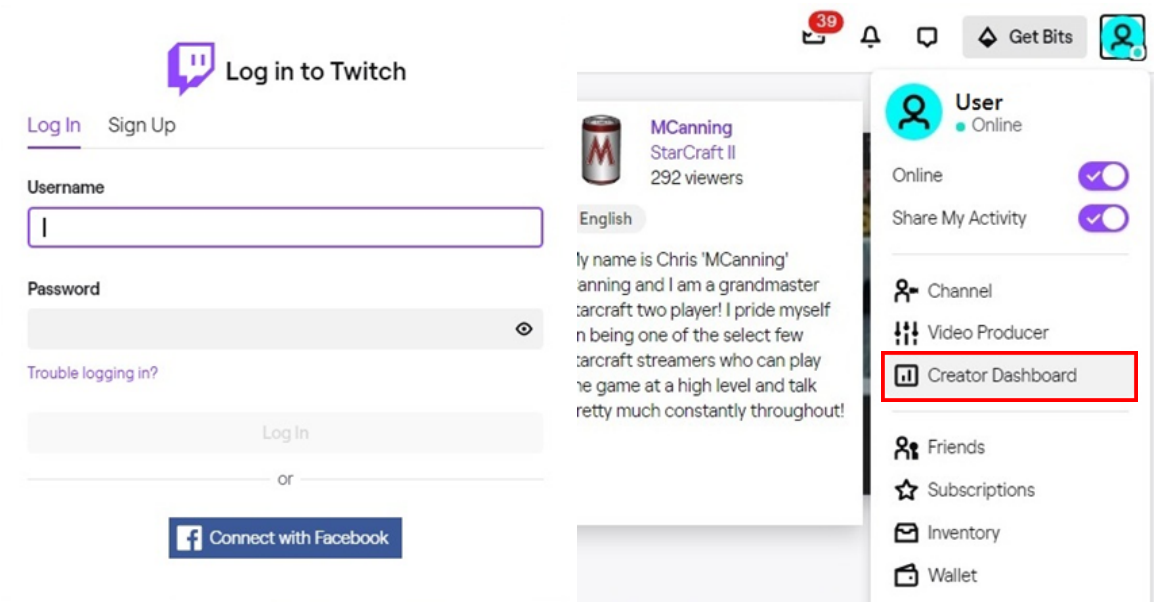
Video Streaming

Create a Video Streaming

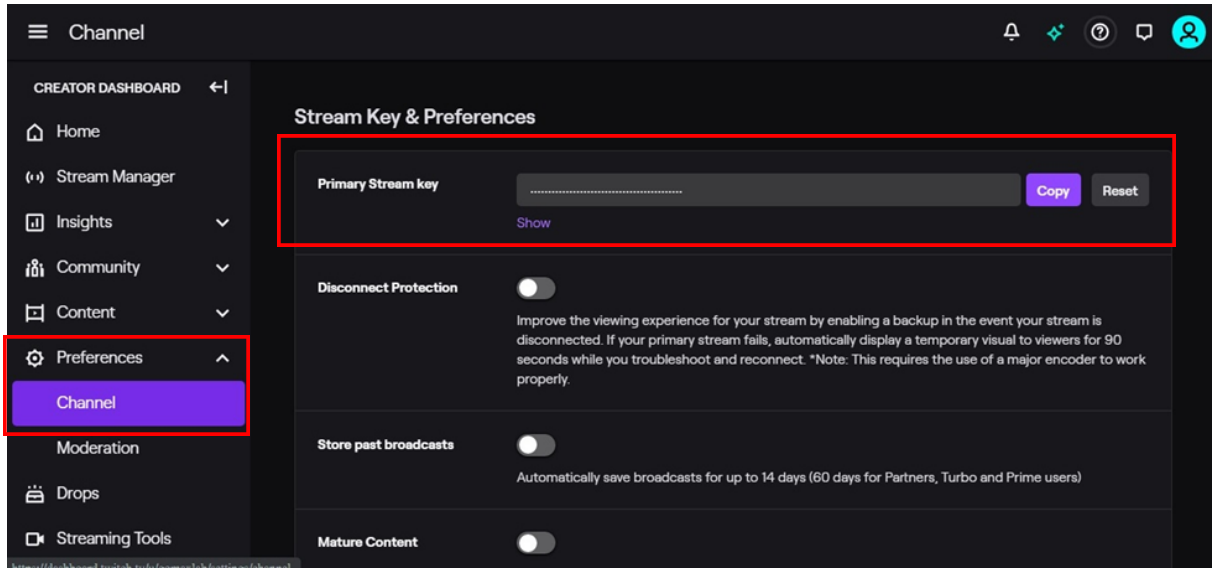
Users can create video streams on their streaming service platform. The steps below show how to complete video streaming settings from Twitch and YouTube.

Twitch

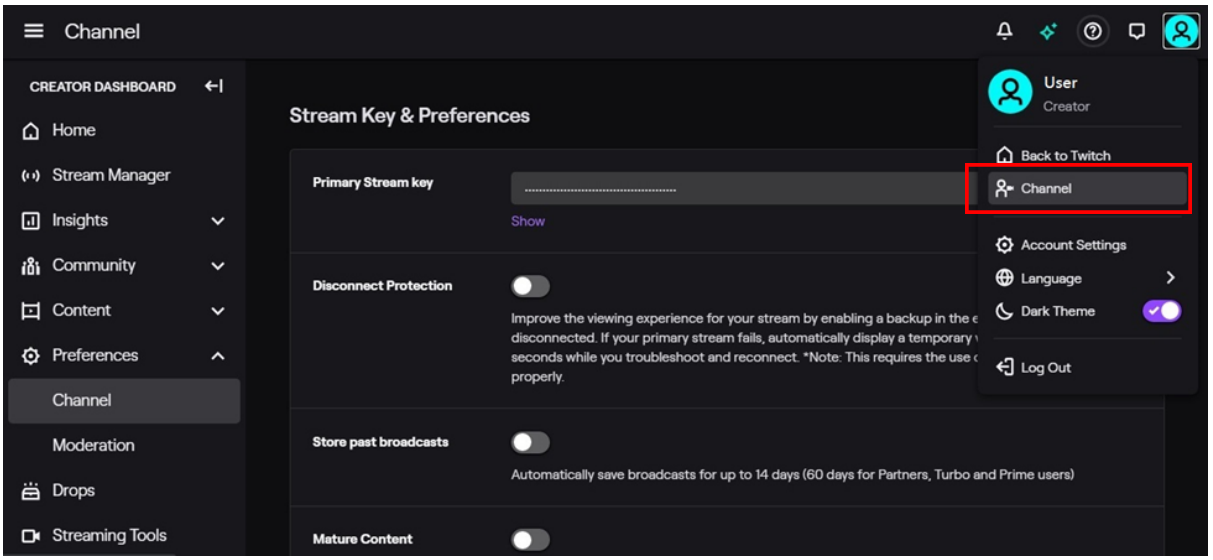
1. Browse to the Twitch website (https://www.twitch.tv/) and log in. Next, select **"Creator Dashboard"** from your account drop-down menu at the top right of the screen.



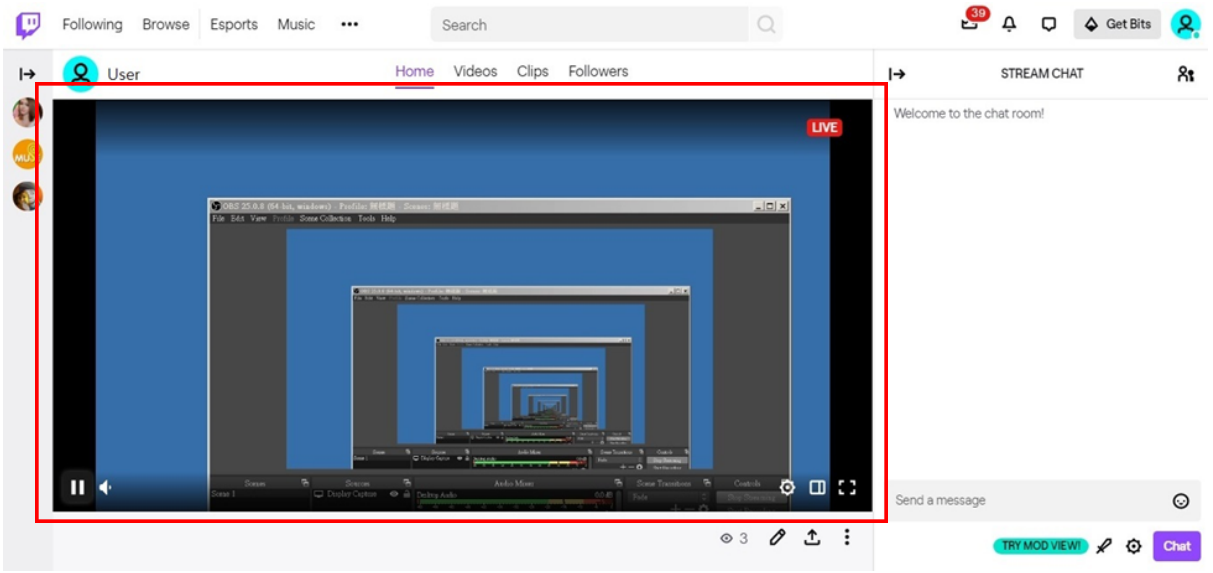
2. Find **"Preferences"** in the left menu, and click **"Channel"**, then you will see **"Primary Steam key"** on the screen. Copy the **"Primary Steam key"** and paste it into the **"Stream Key"** field in the OBS, then click **"Start Streaming"** in the software.
   * Please refer to steps 4-6 of the OBS software control program.



3. Go back to Twitch and select **"Channel"** from your account drop-down menu.



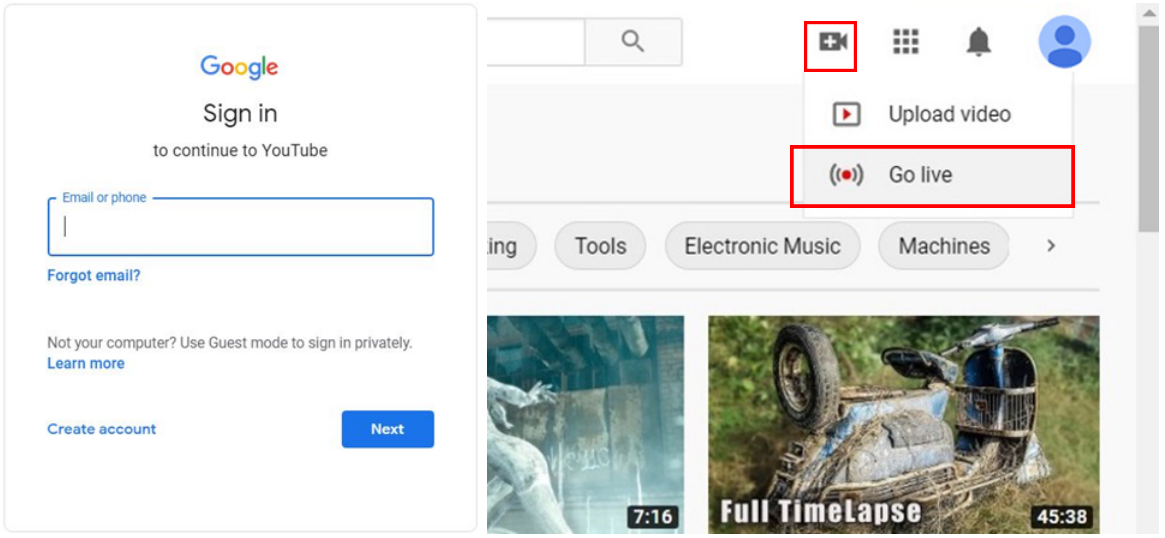
At this point, you will see the players live stream..



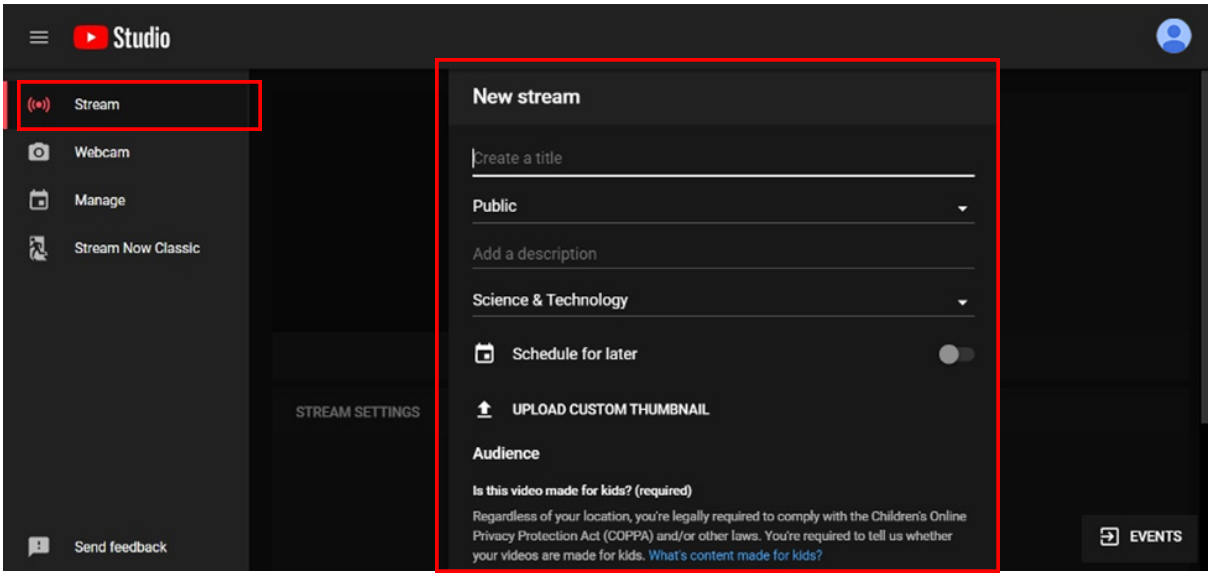
YouTube

1. Browse to the YouTube website (https://www.youtube.com/) and log in. Next, click **"Go live"** from the **"Create"** icon menu at the top right of the screen.

* If you are using YouTube for the first time to create a video stream, you need to wait 24 hours to enable the function.

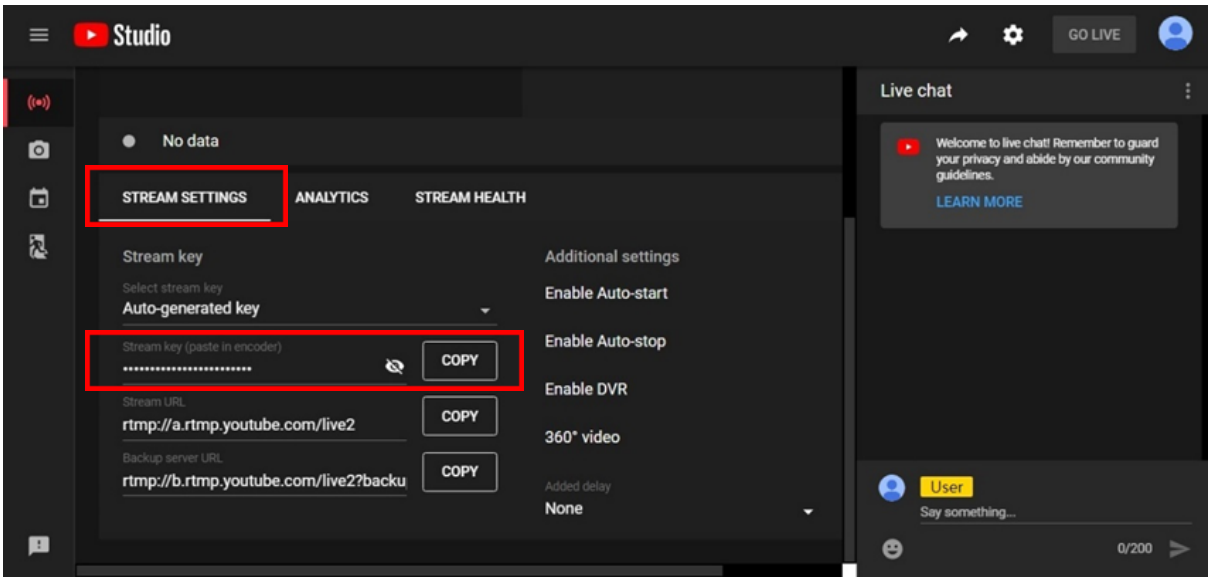


2. Click **"Stream"** in the left menu, and fill in the relevant information for the live video to create a new stream.

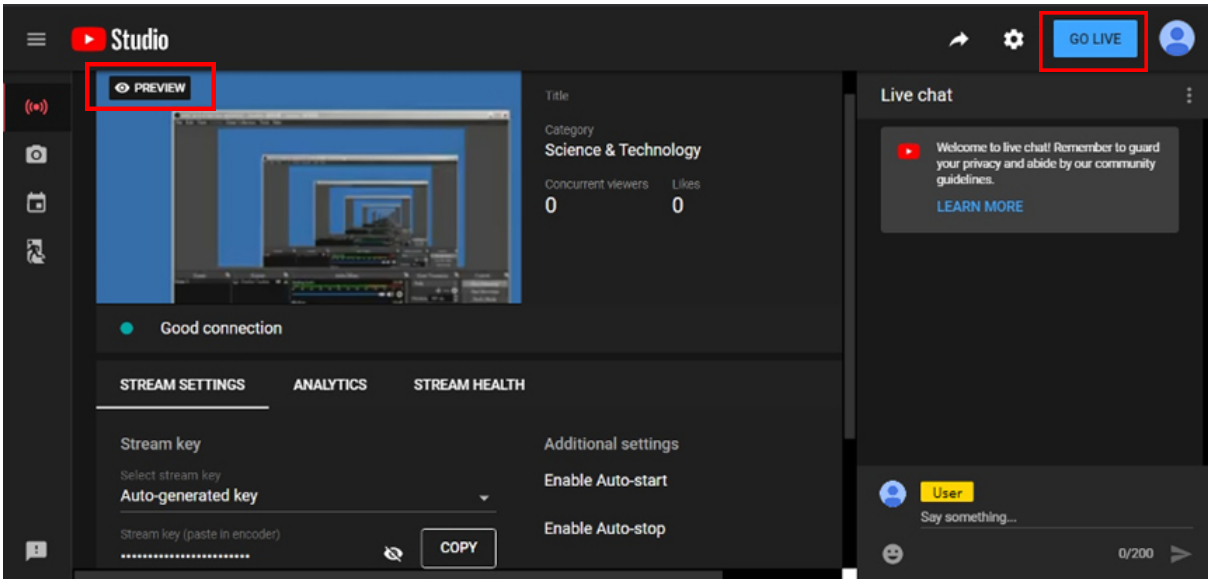


3. You will see the **"Stream key"** from the **“STREAM SETTINGS”** below. Copy the **"Stream key"** and paste it into the **"Stream Key"** field in the OBS, then click **"Start Streaming"** in the software.

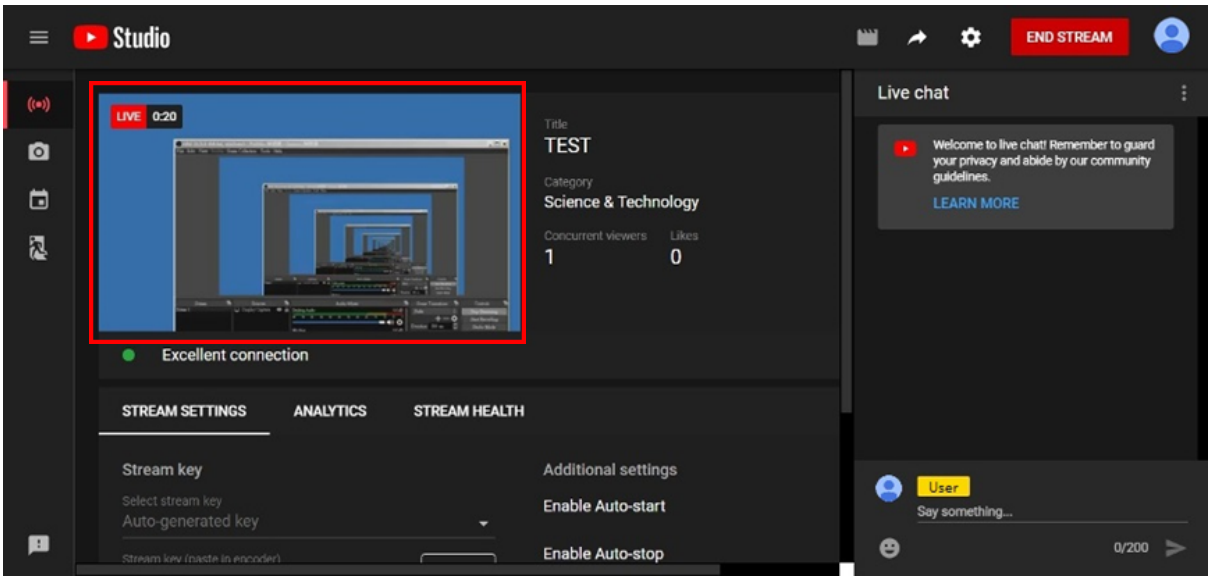
* Please refer to steps 4-6 of the OBS software control program.



4. Next, go back to YouTube, and then wait for 30-60 seconds, the player will display the live preview. At the same time, the **"GO LIVE"** button at the top right will turn blue, please press this button.



5. The player on YouTube will start live streaming.



Stream and record videos with OBS

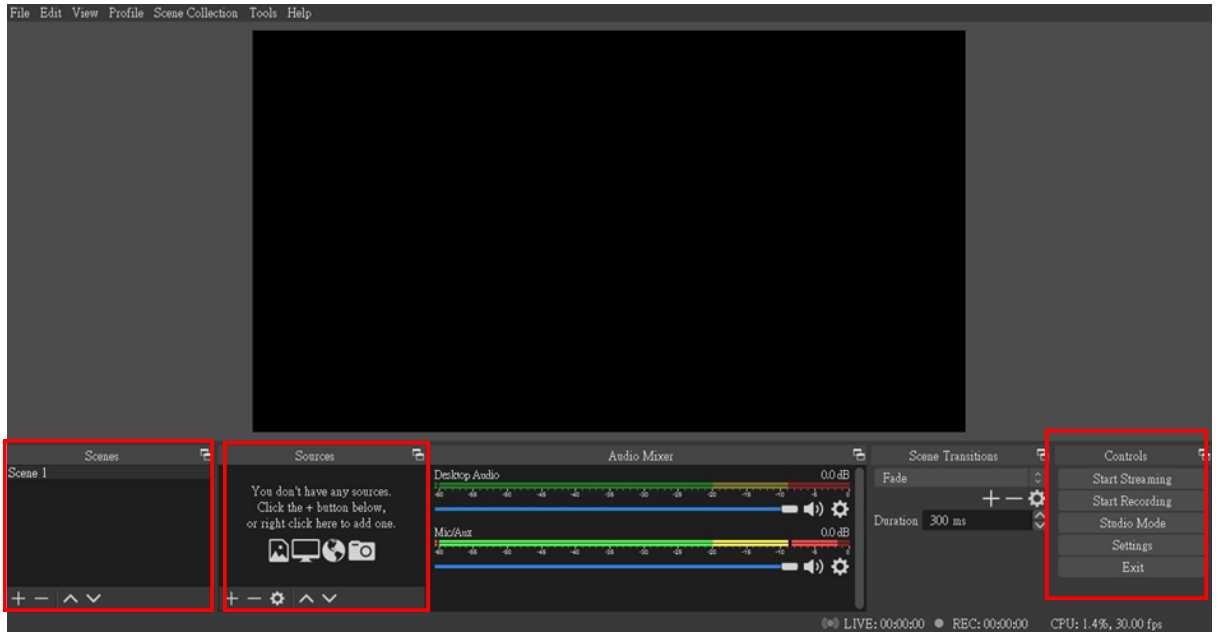
OBS is a popular USB capture freeware and has excellent compatibility. Please start with OBS if users are not familiar with USB capture devices.

Download the software

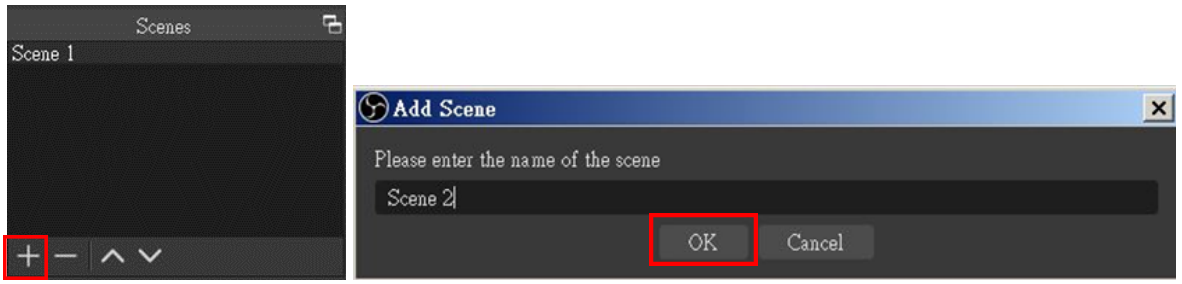
Browse to the download page of the OBS official website (https://obsproject.com/download), then select the suitable computer operating system and start downloading.

Start the software control program

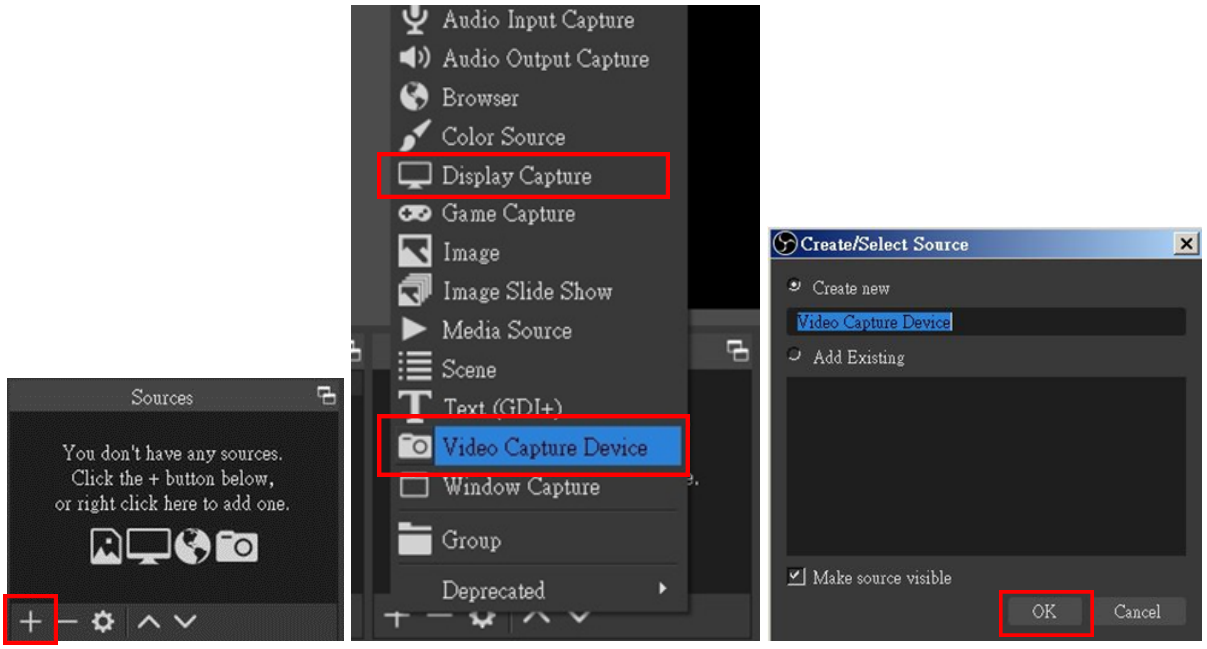
After downloading the software, please open it and follow the below steps to complete the video streaming settings.



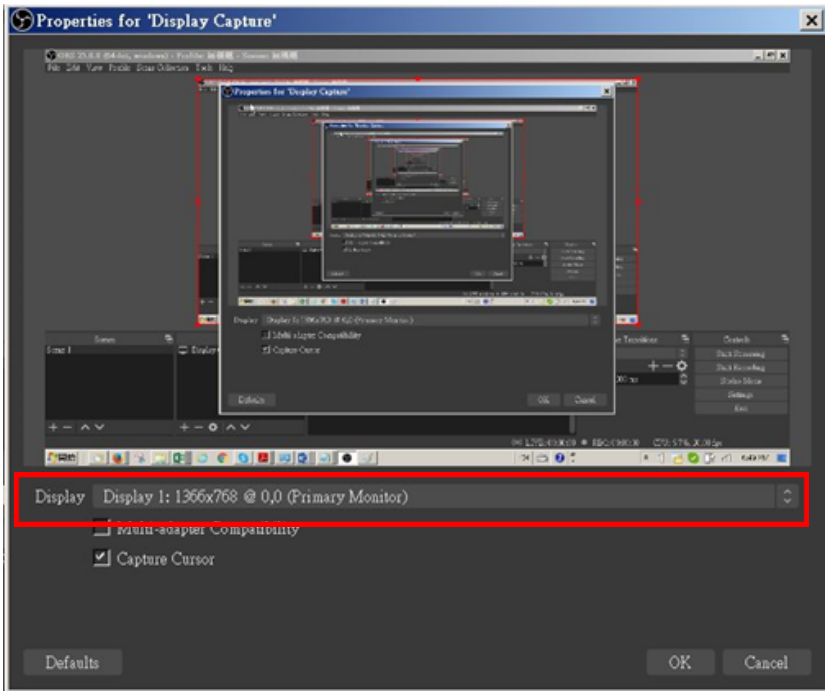
1. First, find the **"Scenes"** window, click **"+"** in the lower left corner, and then enter the name of the scene to create a new scene.

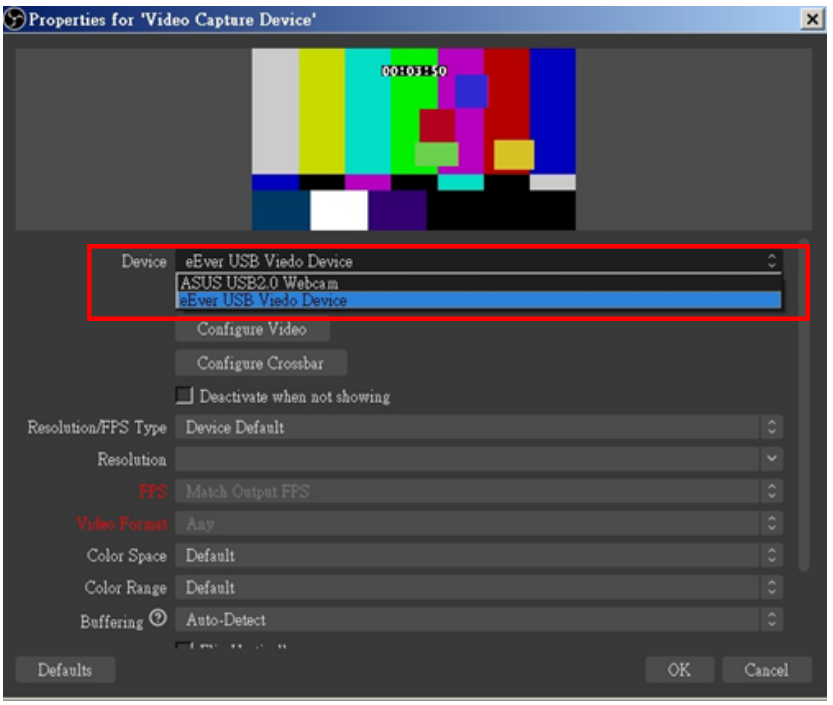


2. Find the **"Source"** window, click **"+"** in the lower left corner, and then select **"Display Capture"** or **"Video Capture Device"** to create a new source.

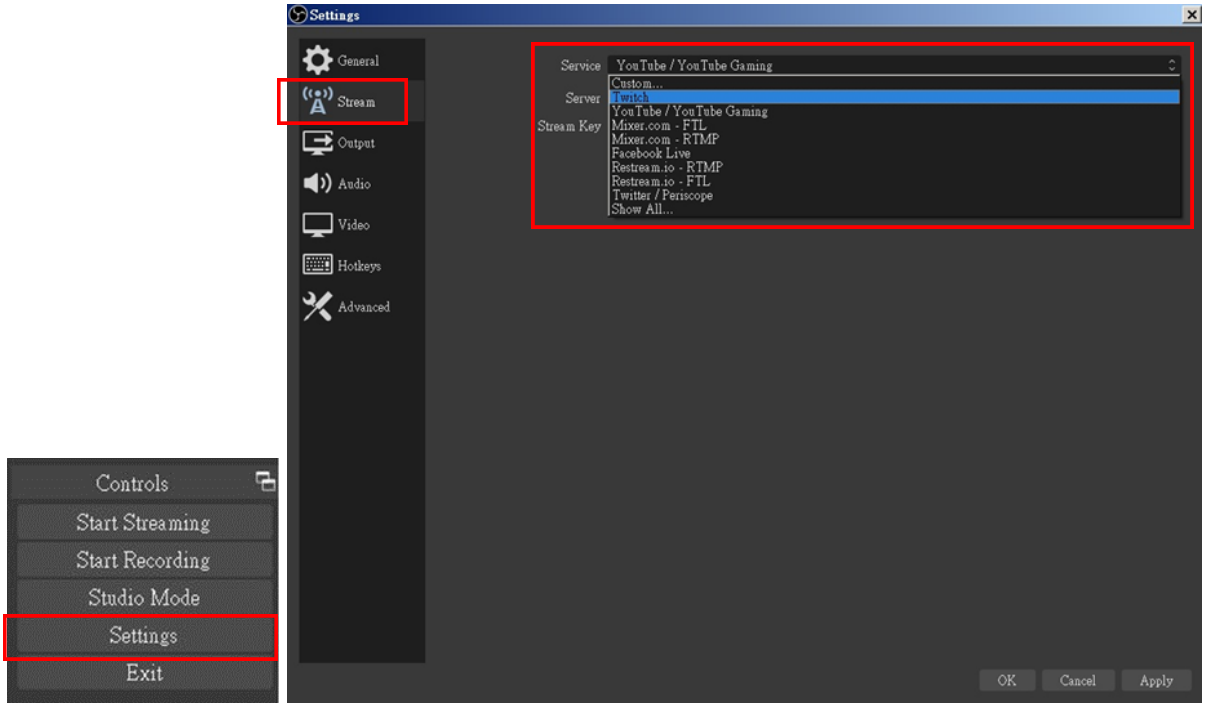


3. Next, you can set display capture properties. If you select **"Display Capture"** in step 2, you can select the primary monitor or other extended monitor as the display source. If you select **"Video Capture Device"** in step 2, you can select a USB video device as the display source. After all settings are completed, click **"OK"**.

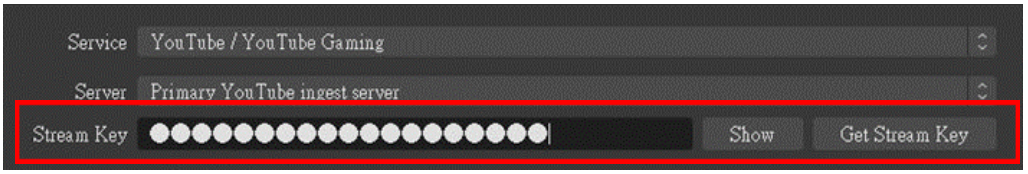




4. Click **"Settings"** and then select **"Stream"** to perform streaming settings. Users can choose service providers, including Twitch, YouTube, etc.

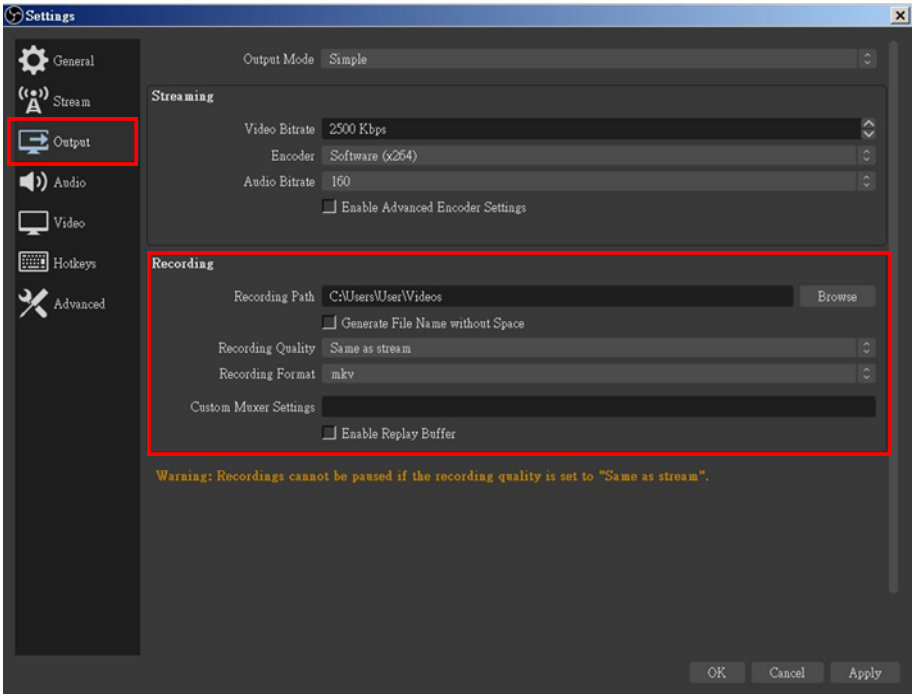


5. Paste the stream key provided by the service provider into the **"Stream Key"** field, then click **"Apply"** and **"OK"** after setting. In addition, users can click **"Get Stream Key"** at this step to open the service provider website.



6. Please click **"Start Streaming"**. At this time, the screen after clicking **"Start Streaming"** will be displayed in the live video.

7. On the other hand, users can also click **"Start Recording"** to record videos with OBS. Besides, you can click **"Settings"** and then select **"Output"** to set **“Recording Path”** and **“Recording Format”**.



The procedures the manual demonstrates are based on the interface that each website provides at the time when the manual is written. Please note that the above procedures are subject to change due to platform updates.

Troubleshooting

Our USB device has done comprehensive tests before shipment. Most of the incompatibilities we have experienced are not from the USB capture device itself, but from the sophisticated software and hardware combination of PC or laptop. Please follow the following suggestions to see any help.

1. OBS is a popular USB capture freeware and has excellent compatibility. Please download it and start with OBS if users are not familiar with USB capture devices. https://obsproject.com/download
2. Due to the complexities of OS and computer hardware, different USB ports on PC or laptop may have different performance or limitations. Please try all USB ports to see if there are any differences.
3. Please use the USB cable in the box. We do not guarantee the overall performance when the USB capture box works with some other USB cables.
4. HDMI/SDI cable quality may also play an essential role when capturing. Please be sure that HDMI/SDI cable can do 4K2K@60 HDMI/SDI signal transmission or better. Try different cables when the device is not able to work as expected.
5. If audio has noise when using the PotPlayer software, please adjust the audio renderer to WaveOut on the software. The setting path is:
   PotPlayer→ Audio → Audio Output → Audio Renderer → WaveOut
6. If there are problems such as video flipping or wrong direction when using VLC software, please rotate, flip or transpose the video in the VLC software to correct the video. The setting path is:
   Tool → Effects & Filters → Video Effects → Geometry → Transform

USB Pin Definition

	P1	P2	
VBUS	A4, B4, A9, B9	1	VBUS
Dn1	A7	2	D-
Dp1	A6	3	D+
GND	A1, B1, A12, B12	4	GND
SSTxn1	A3	5	SSRX-
SSTxp1	A2	6	SSRX+
GND	A1, B1, A12, B12	7	GND
SSRxn1	B10	8	SSTX-
SSRxp1	B11	9	SSTX+

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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