AK90 / AK90 Pro

10.1-INCH LIVE STREAMING SWITCHER

User Manual

Contents

1. Quick Start

1.1 Overview

The AK90 series is a professional live streaming switcher.
On the input side, the AK90S supports 8 x inputs with 4 multi-resolution input options, featuring 4 SDI inputs and 4 HDMI inputs, while the AK90 supports 4 HDMI inputs. The first two HDMI inputs on both models support 4K resolution. Additionally, both models offer two HDMI output ports, with the AK90S also including an SDI output port. The AK90 series supports NDI input (NDI is optional). On the output side, both HDMI output ports of the AK90 series support variable channel output and Multiview output. The AK90S also features an SDI output port with a fixed PGM output. Through the UVC interface, real-time edited audio and video signals can be transmitted to a computer for live streaming. Alternatively, streaming can be done via an Ethernet connection by entering the streaming URL and stream key.
When using the UVC interface, the AK90 series will be recognized as an HD webcam by PC supporting MJPEG and YUY2 formats (MJPEG format is default under USB2.0, YUY2 format is the default under USB3.0. YUY2 is suggested in priority by providing superior image quality and more efficient decoding performance). Besides, It also includes functions such as PTZ camera control, scene presets, keying, transition effects, mixed audio and monitoring, recording, and so on. It makes an ideal and professional tool for handling various live streaming applications.

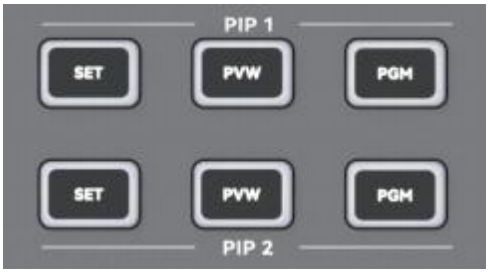
Front panel of AK90 Series

2.Local Panel Operations

2.1 Image Section

2.1.1 The "BKGD" button is used to switch the horizontal and vertical screen mode of the broad- casting station with one click.

2.1.2 The section shown below is the function area for setting PIP (Picture-in-Picture) layers. The AK90 series provides two PIP layers. When you need to preview a PIP layer in PST, press the "PVW" button and then click the "SET" button to activate the PIP layer setup switch. At this point, you can change the input source of the PIP layer and adjust the size of the PIP layer. When you want to synchronize the PIP layer in PST with PGM, simply press the "PGM" button for the corresponding layer.



2.1.3The image below shows the LOGO function area. The AK90 series allows for the simultaneous addition of two logos.

When LOGO1 and LOGO2 are steadily lit, the logos appear in PST. When LOGO1 and LOGO2 are flashing, the left and right direction keys can be used to switch between logos. The joystick allows for repositioning of the logo, while the rotary knob adjusts its size (refer to the menu for specific scaling details).

To synchronize the logo with the PGM output, simply click "ON AIR."

2.1.4 The section shown below is for selecting transition effects and setting transition time. You can choose the desired transition effect and transition duration based on different scenarios.

2.1.5 1The image below shows the settings for the fifth media source.
USER1 corresponds to video mode, while USER2 corresponds to image mode. In video mode, the fifth source plays video files from the video_rec folder. In image mode, it plays imagefiles from the images folder. To enable sequential image switching, the images should be named following the standard file naming conventions of a computer.
The buttons below allow switching or pausing of the video or image playback. Pressing the FILE key provides quick access to the menu, where different storage devices can be selected for media playback.

2.2 Audio Section

2.2.1 Audio Control Area
The diagram below shows the audio control area. CH1 to CH5 correspond to the 5 input signal sources, while MIC1 and MIC2 correspond to the two external audio inputs. Pressing the "AUDIO" button quickly accesses the audio menu.
To keep the audio of a specific input source always on, press the corresponding "ON" button to light it up. To turn it off, press "ON" again.
To switch to audio-follow-video (AFV) mode, first select the desired input source (CH1/CH2/CH3/CH4/CH5), then press the "AFV" button to activate AFV mode. Alternatively, pressing the "AFV" button directly switches all audio channels to AFV mode with one click.

2.3 Auxiliary Function Section

2.3.1 The section shown below contains the power button and lock button. After the switcher switched on, click the power button to turn it on, long press to turn it off. Long press the lock button to lock the panel, and short press to unlock it.

2.3.2 The section shown below contains quick output function buttons for PGM and AUX. After pressing the PGM output button or AUX output button, select the desired output source, and the PGM and AUX output interfaces will output the selected signal source. To switchback to MV output, press the "MV" button again.

2.3.3 The section shown below contains quick scene menu buttons and PTZ control switch. Press the scene shortcut button to quickly access scene settings. When the PTZ control button is flashing, use the joystick to control PTZ movement, and use the knob to select the camera position.

2.3.4 The section shown below contains KEY buttons, which can quickly turn on the chroma key,LUMA key and DSK.

2.3.5 The section shown below contains the screenshot button and background image button. Press "SHOT" to take a screenshot of the current PGM screen. Short press "GFX" to switch the background image to PST or PGM.

2.3.6 The section shown below contains the PST preview button and still button. "PREV" is the preview transition button, which displays the transition effect in the PST window of the Multiview. To ensure the accuracy of the transition, you can simulate the transition effect between PGM and PST signals through preview and then switch to PGM output. "STILL" is the image still button; short press to freeze the PGM screen.

2.3.7 The section shown below contains the streaming and recording buttons. Press briefly to turn on or turn off the streaming and recording (When turning off recording, make sure the REC light is off before removing the recording device.)

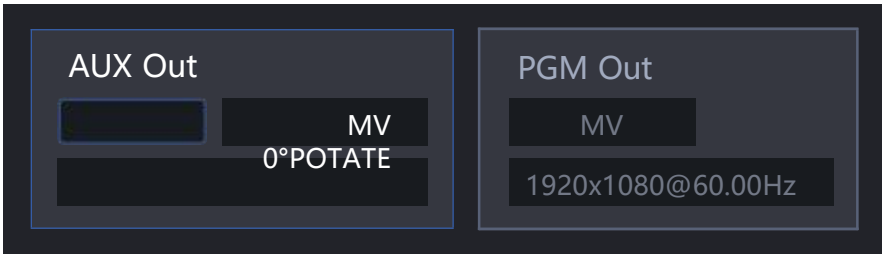
3.Menu Functions

3.1 Input

3.1.1 The input settings mainly include configuration for the four input signal sources and the fifth input source selection and retrieval. When an input source is connected, the system will detect and display its current input resolution. In the fifth input settings, users can choose between a USB camera signal, a stream-pulled signal, or a MEDIA source. Additionally, the input settings allow for horizontal or vertical flipping of the selected signal source.

3.2 Output

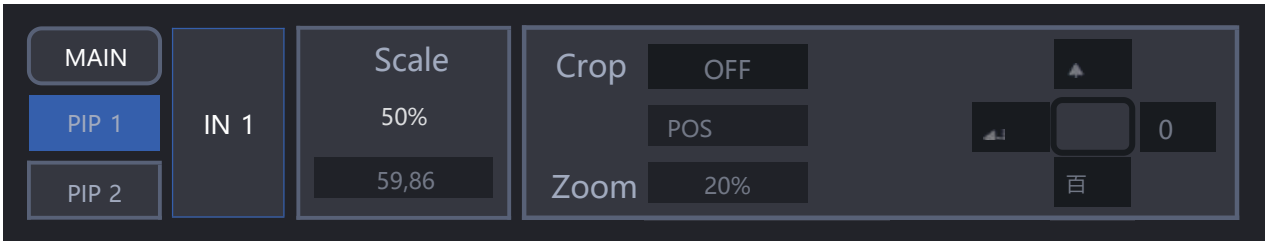
3.2.1 In the output setting, you can configure the AUX output and PGM output. The AUX OUT or PGM OUT output interfaces can be set to Multiview output or a specific signal source output. You can also select the frame rate for the output or rotate the output image.



3.3 Layer

3.3.1 In the Layer menu, you can select the input sources corresponding to the MAIN layer and the two PIP layers.

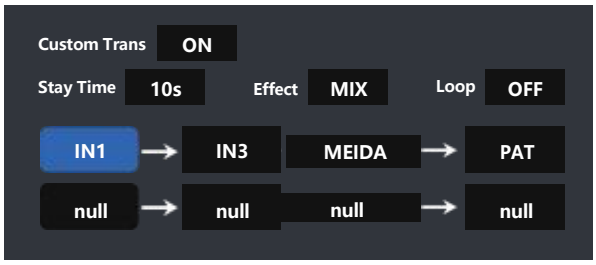
3.3.2 The Layer menu also allows adjustments to the scaling size and cropping of the PIP layers. In the menu, you can choose the edges of the PIP layers to be cropped and control the cropping size by rotate knob controls.



3.4 Effects

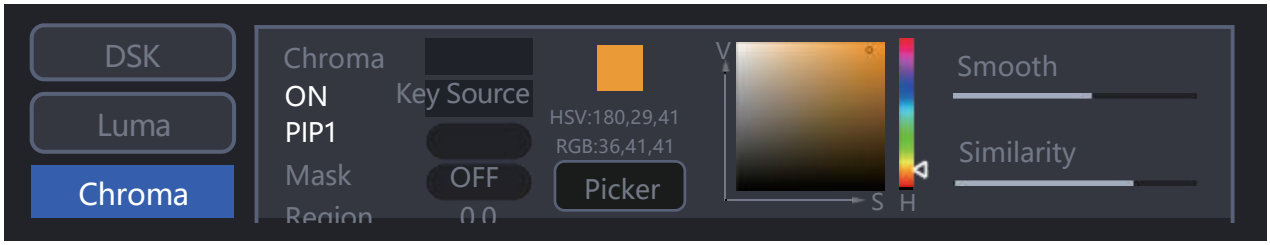
3.4.1 In the transition effects setting, you can choose different transition effects. The AK90 has 36 built-in transition effects. In this setting, you can also set the duration for transitions and FTB (Fade to Black), as well as the edge blending degree. Additionally, you can use rotary knob and the joystick to select the colors for DIP and FTB.

3.4.2 In this menu, up to 8 self-defined transitions for different scenes can be set. The number of selected option boxes represents the transitions between the corresponding number of scenes, and those not selected are set as null. Within the option boxes, you can (select the input source scenes to switch) choose input source scenes 1 to 5 and GFX through the knob. Once the self-defined transition is enabled, the first set scene source will directly apply to the PGM, and the dwell time is the dwell time of each scene.



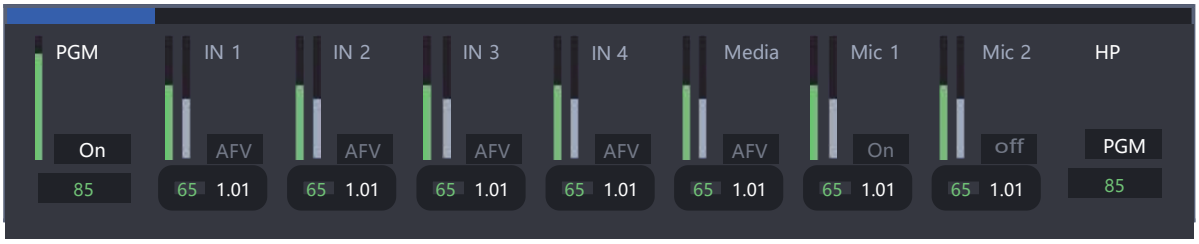
3.5 Chroma Key

In the KEY menu, you can separately configure the DSK, luma key, and chroma key. When chroma key is needed, select the HDMI signal of the PIP and turn on it to perform chroma key. There are two keying methods: one is color picking and another one is manualselection. When color picking is selected, a color picking box will appear in the input source image of the PIP layer, and the joystick can control the box to choose the corresponding color for keying. Manual color selection is supported through the knob and joystick. The bottom layer can be added as needed.



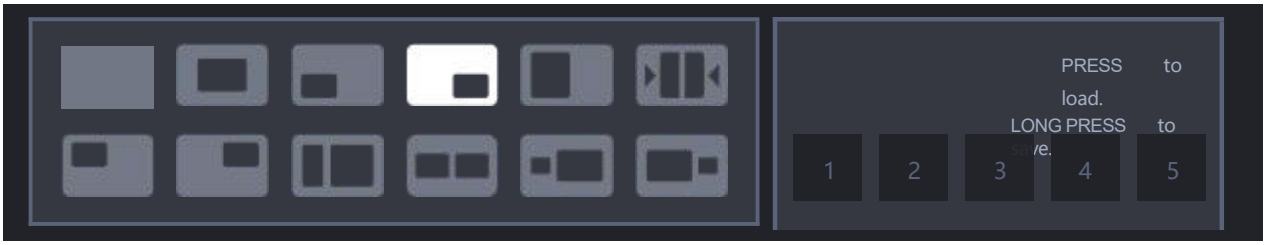
3.6 Audio

3.6.1 In the audio setting, each audio channel can be individually adjusted. Short-pressing any audio channel allows access to the audio menu.
3.6.2 Knob 1 is the VOLUME knob, it adjusts the master output volume. Short press means mute the volume.
3.6.3 Knob 2 is the DELAY knob, which controls the delay of the current output volume.
3.6.4 Knob 3 is the HP (Headphone) knob, which adjusts the monitoring volume.
3.6.5 The menu includes the PGM master output volume, four input source volumes (IN1/IN2/IN3/IN4), two external audio input volumes (MIC1/MIC2), and one monitoring volume (HP). 3.6.6 HP offers selective monitoring, such as during entertainment live stream or video conferences, allowing you to monitor the content by selecting the relevant input source.

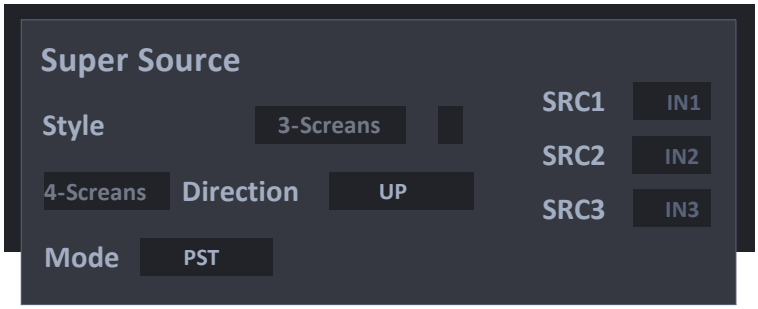


3.7 Scene

3.7.1 The scene menu provides 12 preset scenes, and you can also access the scene menu directly by pressing the "SCENE" button and selecting the desired scene. You can save and load scenes by knob. Long-press means to save the current "PST" scene, and short-press to load preset scene.

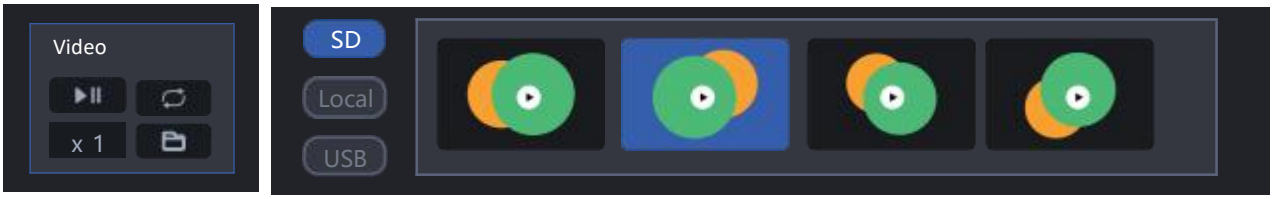


3.7.2 You can also set the gallery mode under the scene menu; You can select the number of pictures in gallery mode, the position of the picture and the position of the picture, and you can choose a different signal source for each picture.



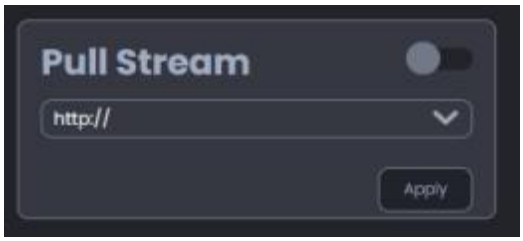
3.8 Media

3.8.1 Media Pool Settings
The media pool allows configuring the fifth input source. In this menu, users can select different storage devices for video sources and enable or disable loop playback.
3.8.2 Media Import and Playback
① Video Playback Settings
The fifth source media files can be imported via a USB drive or SD card.
Insert an empty storage device into the switcher, and the system will automatically generate three folders: images,logos, and video-rec.
Video files should be placed in the video-rec folder and must be in MP4, FLV, TS, or other H.264-encoded formats. The maximum supported resolution is 2560x1440.
Press and hold the video shortcut button to bring up the video progress bar, then use the rotary knob to select a playback time point. Press the knob to start playback from the selected point.
② Image Playback Settings
· Imagefiles should be placed in the images folder.
·The maximum supported image resolution is 1920x1080, and the format must be JPG. ·The naming sequence follows standard computer file naming conventions.
· In image mode, users can choose between manual playback and automatic playback.
·When the single loop icon is displayed, images must be manually switched. When the loop playback icon is displayed, images will automatically switch every 5 seconds.
③ Logo Import
· Logos should be placed in the logos folder. · Maximum supported size: 960x540
· Format: PNG

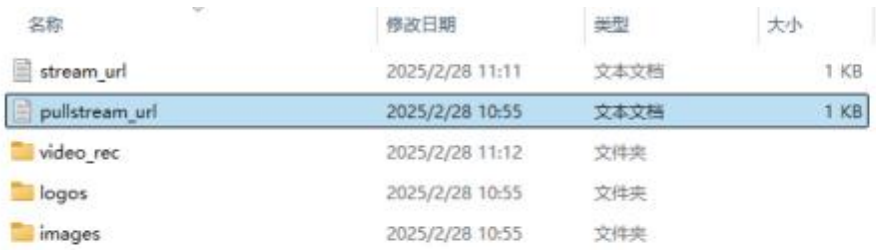


3.8.3 UVC Camera and Streaming Sources
·The AK90 series supports direct connection to UVC cameras.
·When a UVC camera is connected to the USB port of the switcher, click the magnifying glass icon to search for available UVC resolutions and frame rates. Use the rotary knob to select and confirm. ·The fifth input source can also be an NDI signal or stream-pulled source.

3.8.4 Entering Stream Pulling URL
① Web Interface Setup
·The switcher and the computer must be on the same local network.
· In Settings → Network, enable DHCP and click Apply to obtain an IP address.
·Open a web browser, enter the switcher's IP address, and access the web control interface.
· In the web Media Settings, enter the stream pulling URL and click APPLY to sync it to the switcher.



② USB Drive or SD Card Import
·Create a text document on the storage device and name it pullstream_url. ·Copy the stream pulling URL into the document and save it.
· Insert the storage device into the switcher to read the URL.

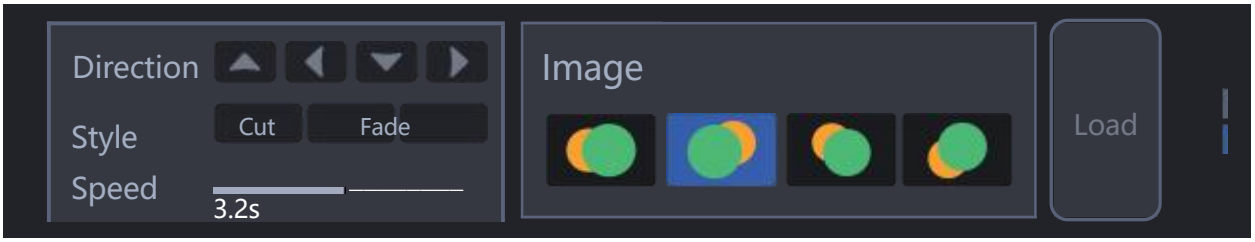


3.9 Image Settings

3.9.1 Importing Logos and Background Images
· Users can import and apply logos and background images from the image menu. · Select a logo or background image and press the rotary knob to apply or delete it. · Users can resize the logo accordingly.
·To import new logos or backgrounds, insert a USB drive or SD card, and the switcher will automatically create the necessary folders. Place the files in the correct folder and select them for loading. (Refer to 3.8.2 for details.

3.9.2 Logo Transition Effects

·The AK90 series provides various logo transition effects, including: oCut transition
oFade transition
oMotion transition (move in four directions: up, down, left, right)
· Users can adjust transition speed with three options: slow, medium, and fast.



3.10 PTZ Camera Control

3.10.1 Connecting a PTZ Camera

·To add a PTZ camera, connect the AK90/AK90S switcher and the PTZ camera to the same router or switch. · Ens ure the first three segments of the PTZ camera's IP address match the switcher’s IP .

3.10.2 PTZ Camera Control

·The AK90 series supports up to 4 PTZ cameras.

·After connecting, click the magnifying glass icon to search for available PTZ cameras on the network. · Select the corresponding camera IP to add it.

3.10.3 PTZ Camera Operation

① Basic PTZ Controls

·After adding a camera, press the PTZ shortcut button or select the PTZ camera number to control it.

· Use the rotary knob to switch between camera numbers. · In PTZ control mode, users can adjust:

oPan & tilt oZoom

oManual or auto focus

② Knob Functions in PTZ Control

· SPEED knob: Adjusts the PTZ movement speed.

·AE knob: Adjusts exposure. Press to switch between auto and manual exposure. ·AF knob: Adjusts focus. Press to switch between auto and manual focus.

· Directional keys next to the logo button adjust the zoom.

③ PTZ Presets

· Up to 10 PTZ presets can be saved.

· Long press a number key to save a preset, short press to recall it.

3.11 System Settings

3.11.1 System Configuration

The system settings menu includes: · Network settings

·Time settings

· Streaming frame rate & bitrate settings

·Video recording format, frame rate & bitrate settings · Device parameters & system information

System reset

3.11.2 Five-Way Key Calibration

·The five-way key can be calibrated in system settings.

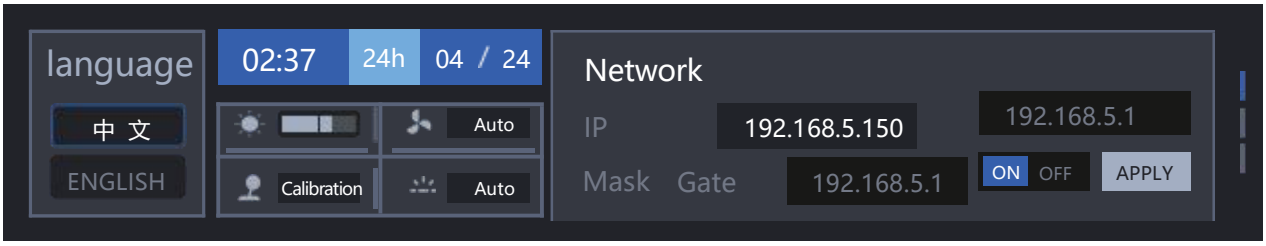
· Select the calibration menu using the rotary knob and press it to start calibration.

3.11.3 IP Address Configuration

·The switcher can obtain an IP address via a wired connection.

·When connected to a local network, enable DHCP and click Apply to obtain an IP address. ·Alternatively, manually enter an IP address using the five-way key and rotary knob.

·After obtaining an IP, users can access the web interface (see 3.8.4 for details).



3.11.4 Streaming Settings

① Configuring Stream Settings

·The streaming frame rate and bitrate can be adjusted.

· Users can choose between landscape and portrait modes for streaming. ·A restart is required after switching the streaming orientation.

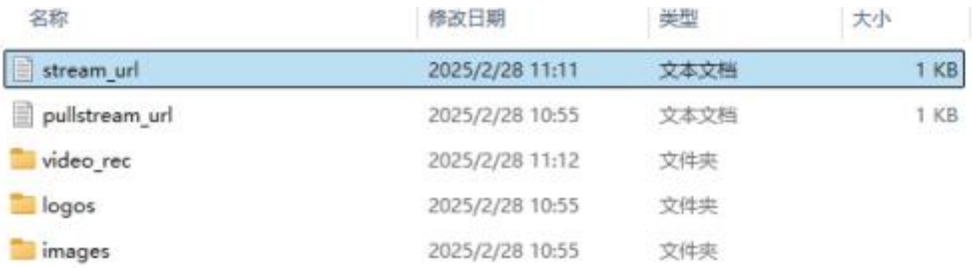
·The streaming URL can be entered in the web system settings (see 3.8.4).

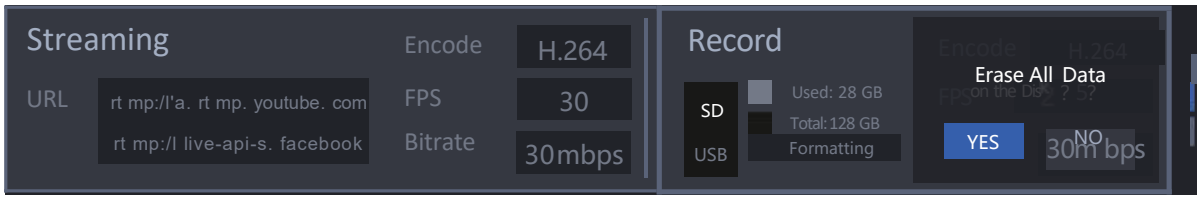
② Importing Stream Settings via USB/SD

·Create a text document on a USB drive or SD card and name it stream_url. · Enter the streaming URL and key on separate lines, then save the file.

· Insert the storage device into the switcher to read the stream settings.

The recording format, frame rate, and bitrate can be adjusted in this menu. Storage devices can be formatted with one click.





③ At the end of the system setup,the product serial number and firmware version can be viewed here.Users can reset the switcher if needed.