# 5CH Production Video Switcher

# User Manual

# Catalog

# 1.Product Introduction

## 1.1 Summarize

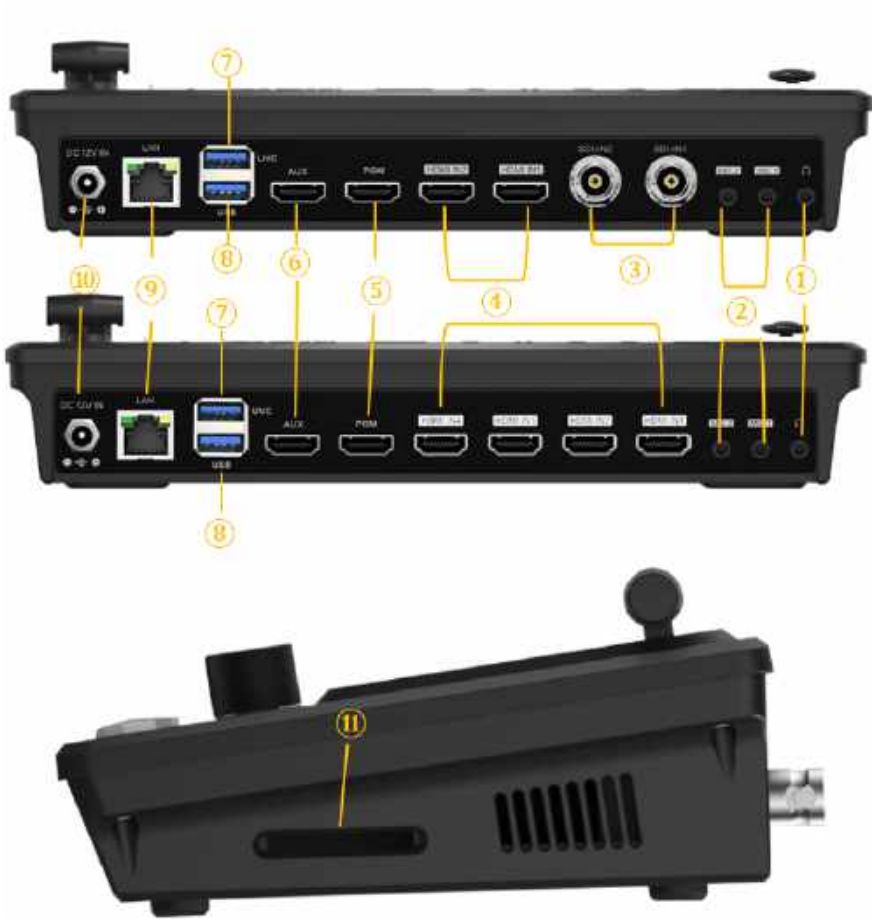
The video switcher that features 4 HDMI inputs ( HDMI IN1 and IN2 support 4Kp60 input, HDMI IN3 and IN4 support 1920×1080p60 input)&2 HDMI inputs+2 SDI inputs, USB 2.0 input x1, HDMI PGM output x1, USB 3.1 (Type-A) output x1, and RJ45 network output x1.

The video switcher is designed based on an FPGA hardware platform and supports video effect switching, green screen keying, audio mixing and adjustment, a built-in media library, landscape and portrait modes, PIP (Picture-in-Picture) of any position and size, LOGO, and multi-layer overlay, among other broadcast-level features. At the same time, the powerful multimedia capabilities of the video switcher can support USB 3.1 streaming, live recording, as well as direct multi-channel network streaming and single-channel network pulling. It can also control multiple PTZ cameras using a five-way joystick and knobs.


## 1.2 Features

- 4 HDMI input&2 HDMI+2 SDI input, HDMI PGM x1 and HDMI AUX x1 output, USB 3.1 x1 lossless output
- PGM can overlay up to 8 layers, providing powerful switching capabilities
- 2 (PIP) channels, support arbitrary cropping and resizing to meet various application needs
- 2 logo channels, supporting alpha channel for more realistic and natural effects
- Supports T-Bar switching with over 30 transition effects
- 2 network streaming outputs, 1 network streaming input
- Built-in media and images , support user-defined preset patterns and external image imports
- Supports DSK (Downstream Keying) for subtitles and other functions
- Flexible switching between landscape and portrait modes for streaming
- Video recording and playback, with played videos available as auxiliary sources for program production
- Integrated PTZ camera control, allowing one person to manage everything
- Professional-grade chroma keying to create realistic virtual studios
- Luma key to help users achieve video effects
- Built-in web server, support the computers and smart cellphones

# 2.Interface
## 2.1 Introduce



| | |
|---|---|
| 1 | Line(3.5mm stereo) x1 Audio Output |
| 2 | MIC/Line(3.5mm stereo) x2 Audio Input |
| 3 | SDI IN x 2 Input |
| 4 | HDMI IN x 4 Input |
| 5 | HDMI PGM x1 Output |
| 6 | HDMI AUX x1 Output |
| 7 | USB TYPE-A（UVC Streaming） |
| 8 | USB-A Used for video encoding storage, cameras, logo images, firmware upgrades (Note 1), etc |
| 9 | LAN Used for streaming, PTZ camera control, and software control. |
| 10 | DC 12V IN |
| 11 | SD Card Used for recording. |

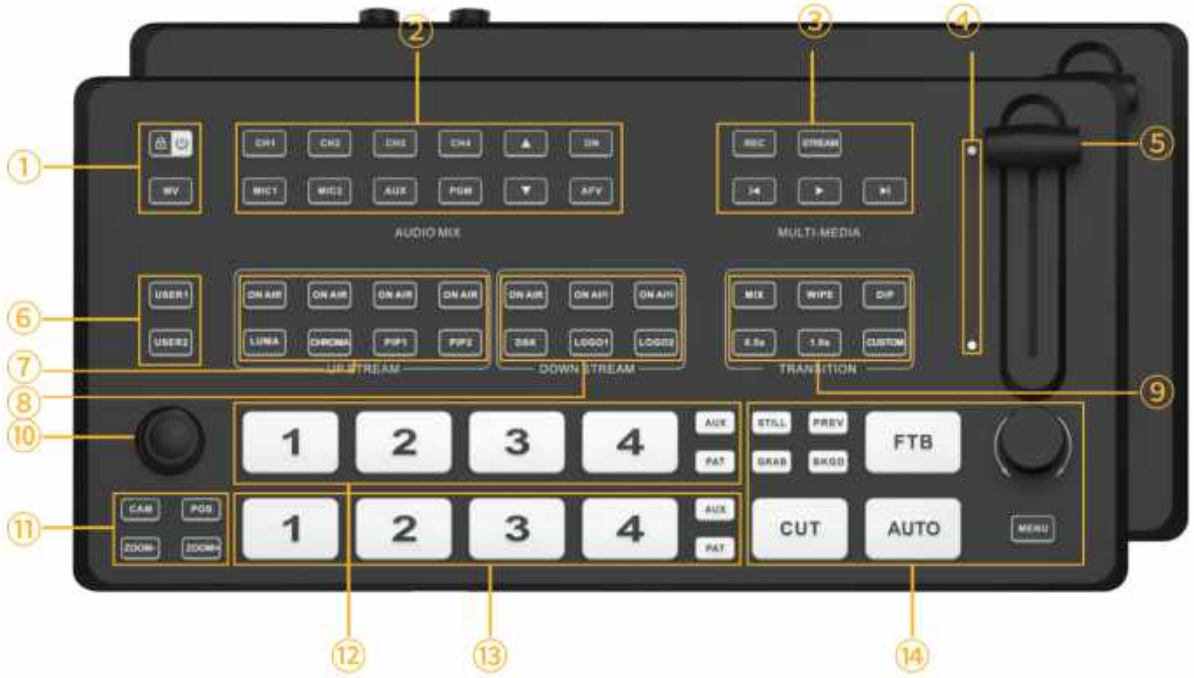
Note 1：Place the upgrade file (with the .img extension) in the root directory of the USB drive. Insert the USB drive into the USB port, and the device will automatically recognize the upgrade file, prompting whether to upgrade. Rotate the knob to select YES to proceed with the upgrade.

# 3.Parameter

| Parameter | |
|---|---|
| Video Input | HDMI IN x4（HDMI IN x2+SDI INx2）USB x1 |
| Video Output | HDMI PGM x1+HDMI AUX x1+USB 3.1 x1（Type-A）and RJ45 x1（Streaming） |
| Audio Input | Line(3.5mm stereo)x2 |
| Audio Output | Line(3.5mm stereo)x1 |
| USB | Used for encoding,cameras, logo images, firmware upgrades, etc. |
| Control Interface | LAN x 1 Used for streaming, PTZ camera control, and software control |
| SD | Video recording, image updates. |
| Power | DC 7~12V ≤12W |
| **Function** | |
| Transition | T-Bar/AUTO/CUT |
| Effects | WIPE（Various patterns）/MIX/DIP/PreView/BKGD/Still/FTB |
| Key | Upstream key：Luma x1/keying x1/PIP x2<br>downstream key：DSK x1/LOGO x2 |
| Layer | PGM Supports up to 8 layers. |
| Audio | HDMI x 4、Multimedia and dual microphones/line input;<br>Audio delay.: 0-1s |
| PTZ | VISCA IP |
| Media | Supports presetting multiple background images, logos, and streaming. |
| Encoding | H.264，Support for separate recording and streaming bitrate. |
| LOGO | Any size(up to 960x540)and position, supports alpha transparency channel (png images). |
| **Format** | |
| HDMI Input | 2160p 60/59.94/50/30/29.97/25/24/23.98（HDMI2.0接口）<br>1080p 60/59.94/50/30/29.97/25/24/23.98 1080i50/1080i60 |
| SDI Input | 3G Level A YCbCr422 10bit（SDI version） |
| HDMI PGM Output | 1080p 60/50/48/30/25/24 |
| HDMI Color Space | RGB/YUV |
| USB Output | USB 3.1 Lossless output, maximum support YUV2 1080P60 |
| Data | 1080p 60/59.94/50/30/29.97/25/24/23.98 |
| **Others** | |
| Voltage | 7~24V |
| Power | ≤12W |
| Size (LDW) | 244*120*50mm |
| Weight | 608g |
| Temperature | Working temperature: 0℃~50℃,<br>Storage temperature: -30℃~70℃ |
| Attachment | Adapter(12V 2A) x1；<br>USB3.0 cable (A TO A) x1 |

# 4.Front Panel

## 4.1 Introduce




| | | |
|---|---|---|
| 1 | Lock/Power | Long press to lock the front panel button, the red light flashes when turned on; short press to power on, the red light is on when turned on. |
| | MV | The AUX interface display switch, when turned on, lights up a white light,AUX output multi-screen monitoring.When closed, you can monitor IN1, IN2, IN3, IN4, AUX, PAT, Cln PGM, PGM, Cln PVW, and PVW in single screen mode. |
| 2 | CH:1-4 | Control for four-channel input audio mixing; when activated, the white light flashes. |
| | MIC:1-2 | Control of dual-channel MIC audio mixing, when turned on, the white light flashes. |
| | AUX | AUX audio mixing switch control, when turned on, the white light flashes. |
| | PGM | PGM audio mixing switch control, when turned on, the white light flashes. |
| | Up&Down Keys | Volume control |
| | ON | Audio mixing switch control, when turned on, the white light is bright. |
| | AFV | Four-channel input audio follows switch control; when turned on, the white light is illuminated. |
| 3 | REC | Recording on and off; when on, the red light is on. Note: REC only supports H.264 mode. |
| | STREAM | Stream on and off; when on, the green light is on. Note: STREAM only supports H.264 mode. |
| | Previous key | Short press to switch to the previous video. |
| | Play key | Play and pause the video. |
| | Next key | Short press to switch to the next video. |
| 4 | Positioning Light | Indicator light for T-bar transition completion. |
| 5 | T-Bar | Manually switch between PVW and PGM using the T-Bar. |
| 6 | User1 | A short press brings up the USER menu, while a long press calls up the corresponding USER configuration. |
| | User2 | |
| 7 | ON AIR | In the PGM layer, turn on or off Luma keying, chroma keying, PIP 1, and PIP 2. A short press to turn on; when turned on, the red light will be on. |

| | | |
|---|---|---|
| | LUMA | The Luma keying of the PVW layer can be turned on or off. When LUMA is turned on, the bright white light is activated. |
| | CHROMA | The chroma keying for the PVW layer can be turned on or off. When CHROMA is on, the bright white light is activated. |
| | PIP1 | The PIP 1 layer can be turned on or off. A short press turns on PIP 1, and the white light will be on when it is activated. A long press allows you to move the PIP 1 layer, and the white light will flash. A second short press exits the moving function. |
| | PIP2 | The PIP 2 layer can be turned on or off. A short press will turn on PIP 2, and the white light will be on when it is activated. A long press will allow you to move the PIP 2 layer, and the white light will flash. A second short press will exit the moving function. |
| 8 | ON AIR | In the PGM layer, turn on or off DSK keying, LOGO1, and LOGO2. A short press to turn on; when turned on, the red light will be on. |
| | DSK | The DSK keying for the PVW layer can be turned on or off. When DSK is on, the white light is on. |
| | LOGO1 | Toggle the LOGO1 layer in the PVW. |
| | LOGO2 | Toggle the LOGO2 layer in the PVW. |
| 9 | MIX/WIPE/DIP | MIX/WIPE/DIP Transition effect switch control, when turned on, the white light is bright. |
| | 0.5s/1.0s/CUSTOM | System transition time: 0.5s/1.0s, when turned on, bright white light; user-defined transition time: CUSTOM, when turned on, bright white light. |
| 10 | PTZ | Camera control, controlling the coordinates of the camera.<br>Position control: 1. Work with the PIP1 and PIP2 buttons to control the layer position. 2. Control the mask position. 3. Control the logo position. |
| 11 | CAM/POS/<br>ZOOM-/<br>ZOOM+ | CAM: Camera mode on/off; when turned on, the white light flashes.<br>POS: Save the camera's coordinate position.<br>Position Saving: Enter camera mode, turn on the POS button, and click the numbers PGM1-4 to save the camera's coordinate position.<br>Position Retrieval: Enter camera mode, click the numbers saved in PGM1-4, and the camera will move to the specified coordinate position.<br>ZOOM-/ZOOM+: Zoom function for PTZ camera lens. |
| 12 | PGM:1-4/AUX/PAT | PGM signal source, AUX, PAT indicators and direct switch control, when turned on, the red light is on. |
| 13 | PVW:1-4/AUX/<br>PAT | Selection and indication of PVW signal source, AUX, and PAT (the PVW layer needs to have the BKGD function enabled to be used). When enabled, the green light is on. |
| 14 | STILL | Freeze all input signal display, and when turned on, flash the white light. |
| | PREV | In the PVW (Preview) layer, demonstrate the transition effects, and when activated, the bright white light will turn on. |

# 5. Functional Operation

## 5.1 Transition Control

The transition control consists of buttons PVW1-4, buttons PGM1-4, CUT, AUTO, AUX, PAT and push rods

PAT Button: used to control the source selection of the current layer of the preview screen (PVW) and the broadcast screen (PGM)

AUX Button: used to control the source selection of the current layer of the preview screen (PVW) and the broadcast screen (PGM)

PVW1~4 Buttons: used to control the source selection of the current layer of the preview screen (PVW)

PGM1~4 Buttons: used to control the source switching of the corresponding layer of the broadcast screen (PGM)

CUT Button: PVW and PGM are switched instantly

AUTO Button: PVW and PGM are switched automatically according to the transition time setting and the transition effect setting

Push Rod: PVW and PGM are switched manually according to the position of the push rod

## 5.2 User Configuration Call Control

All current settings can be saved to the user functions of the switcher according to needs and different application scenarios, and customized function configurations can be quickly called through the USER1 and USER2 buttons.

## 5.3 Switch Function Button

**Upstream Keys: Upstream keys essentially mean that these are the keys that are part of the switch, so when switching from anything on PVW to PGM, anything that is an upstream key will be switched over with it.**

ON AIR LUMA/CHROMA/PIP1/PIP2 Buttons: Luma cutout, chroma cutout, PIP1 and PIP2 on/off for PGM layer

LUMA Button: Luma cutout on/off for PVW layer

CHROMA Button: Chroma cutout on/off for PVW layer

PIP1 and PIP2 Buttons: PIP1 and PIP2 on/off for PVW layer

**Downstream Keys: Downstream Keys are the last layer of keying, they operate independently of the selected "background", no matter what you do to the switch, the superimposed downstream Key will remain on the screen. Downstream Keys are great for showing logos on the screen, etc.**

ON AIR DSK/LOGO1/LOGO2 Buttons: Turn on/off the DSK cutout and LOGO1/LOGO2 of the PGM layer

DSK Button: Turn on/off the DSK cutout of the PVW layer

LOGO1 Button: Turn on/off the LOGO1 of the PVW layer

LOGO2 Button: Turn on/off the LOGO2 of the PVW layer

**Multimedia Function Keys:**

REC Button: turn on/off the recording function

STREAM Button: turn on/off the streaming function

Rewind Button: switch the video file of the AUX layer

Play Button: play/pause the video file of the AUX layer

Fast forward Button: switch the video file of the AUX layer

STILL Button: PVW, PGM screen still function

GRAB Button: take a screenshot of the PGM layer screen

PREV Button: demonstrate the transition effect in the preview screen (PVW) layer

BKGD Button: when turned off, the background of PVW and PGM remain the same

## 5.4 Quick Function Buttons

### 5.4.1 AUDIO

**Quick Operation Menu For Adjusting Audio Mode And Volume**

CHI1-4 Buttons: used to activate the audio quick operation control of four inputs

MIC1-2 Buttons: used to activate the audio mixing quick operation control of two MICs

AUX Button: used to activate the audio quick operation control of the AUX port

PGM Button: used to activate the audio quick operation control of the PGM port

Up and down Buttons: used to control the volume

ON Button: audio mixing on/off control

AFV Button: audio follow mode on/off control

### 5.4.2 TRANSITION

**System And Custom Transition Effects And Duration Shortcut Menu**

MIX Button: used to control the switch of mixed transition effects, turned on by default, and the white light is on when it turned on

WIPE Button: used to control the switch of wipe transition effects

DIP Button: used to control the switch of dip transition effects

0.5S/1.0S Button: used to control the switch of transition time

CUSTOM Button: used to control the switch of user-defined transition time

## 5.5 Camera Control Operation

After connecting the camera, you can control the PTZ camera through the buttons CAM, POS, five-way joystick, knob, PVW1~4, PGM1~4.

Activate the camera: short press the CAM button, the light flashes to enter the camera control mode;

Motion control: long press the CAM button, select the camera to be controlled by the knob in the camera selection interface, and then control the left and right translation and up and down movement of the camera through the PTZ joystick.

Camera position saving: after activating the camera, press the POS button, and after the POS light is on, press the PVW1~4 button to save the current position of the camera to position 1~4.

Camera position call: after activating the camera, press the PGM1~4 button to directly call the camera stored position 1~4.

ZOOM-/ZOOM+ Button: used for the zoom function of the PTZ camera lens.

## 5.6 Lock/Power Button

Long press the lock/power button for 2 seconds to lock all button operations and the lock light flashes; short press the the lock/power button to exit the lock state. pressing and holding the lock/power button for 4 seconds will automatically turn off the device; a short press will turn it on.

## 5.7 MV Button

The AUX interface displays switching, and the white light is on when it is turned on; AUX outputs multi-screen monitoring; when it is turned off, you can monitor IN1, IN2, IN3, IN4, AUX, PAT, Cln PGM, PGM, Cln PVW, and PVW single screens.

## 5.8 FTB Button

After pressing the FTB button, PGM outputs black field and PGM is muted, and the FTB light flashes; press it again to exit.

## 5.9 Button Light Status

| Light | Off | On | Flashes |
|---|---|---|---|
| LOCK | Button unlock | | Button lock |
| MV | Single screen monitoring | Multi-screen monitoring | |
| CH1-4 | | | Audio mode and volume control |
| MIC1-2 | | | Audio mode and volume control |
| AUDIO AUX | | | Audio mode and volume control |
| AUDIO PGM | | | Audio mode and volume control |
| Up | | Volume Up | |
| Down | | Volume Down | |
| ON | Audio Off | Audio On | |
| AFV | | Turn on audio follow mode | |
| REC | Recording not started | Recording | |
| STREAM | Streaming is not started | Streaming | |
| Rewind | | AUX source control | |
| Play | | AUX source control | |
| fast forward | | AUX source control | |
| USER1-2 | | | |
| ON AIR | | Effects applied to the PGM screen | |
| LUMA | Turn off brightness cutout in PVW | Turn on brightness cutout in PVW | |
| CHROMA | Turn off chroma cutout in PVW | Enable Chroma Cutout in PVW | |
| PIP1-2 | Turn off Picture-in-Picture 1 and 2 in PVW | Enable Picture-in-Picture 1 and 2 in PVW | |
| DSK | Turn off DSK cutout in PVW | Enable DSK cutout in PVW | |
| LOGO1-2 | Turn off LOGO1 and 2 display | Turn on LOGO1 and 2 display | |
| MIX | | Enable MIX transition effect | |
| WIPE | | Enable WIPE transition effect | |
| DIP | | Enable DIP transition effect | |
| 0.5S/1.0S | | Transition duration setting | |

| | | | |
|---|---|---|---|
| CUSTOM | | User-defined transition duration | |
| Light Guide | | Displays the position of the joystick | |
| CAM | No access to camera controls | | Activate Camera Controls |
| POS | | Waiting for camera position to be set | |
| PGM1~4 | This source is not selected | Corresponding source selection | |
| PVW1~4 | This source is not selected | Corresponding source selection | |
| AUX | This source is not selected | Select AUX as the source | |
| PAT | This source is not selected | Select PAT as the source | |
| STILL | PVW, PGM not static | | PVW, PGM static state |
| PREV | | Demonstrating transition effects in PVW | |
| GRAB | | Take a screenshot of PGM | |
| BKGD | | PVW and PGM display their respective background images | |
| CUT | Switching signal source | | |
| AUTO | End of transition | Automatic transition in progress | |

# 6. Status Page Display


| | | | | | |
|---|---|---|---|---|---|
| ① | Audio mode and volume level display | ⑦ | Transition duration and special effects display | ⑬ | UMD display |
| ② | PTZ camera status and lens movement speed display | ⑧ | Input signal display | | |
| ③ | Date and time display | ⑨ | HDMI IN Sound bar graph display | | |
| ④ | Recording time and used/total memory display | ⑩ | MIC 1 Sound bar graph display | | |
| ⑤ | Streaming duration and bitrate display | ⑪ | MIC 2 Sound bar graph display | | |
| ⑥ | LOGO1、2 display | ⑫ | PGM Sound bar graph display | | |

# 7. Main menu

## 7.1 Transition

The video switcher has built-in WIPE, MIX, DIP and other professional transition effects, and special effects switching can be achieved through the AUTO button or T-BAR manual push rod.

### 7.1.1 Transition Effect Settings

Enter the transition settings and select the transition effect, including more than 30 transition effects such as MIX, DIP, WIPE, etc. The default is MIX transition effect.


#### 7.1.1.1 MIX

Select MIX and click the AUTO button to execute the MIX transition effect.

#### 7.1.1.2 DIP

Select DIP and click the AUTO button to execute the DIP transition effect. According to the immersion setting, select the immersion source. The default immersion source is color, and the default color is black.


#### 7.1.1.3 WIPE

WIPE is the switching effect from one screen to another. Users can select different WIPE styles through the menu and make transitions with the set softening degree.

### 7.1.2 Transition Time Settings

Enter the transition settings, select the transition time, and set the transition time through the knob. The longer the time, the slower the transition speed. The duration can be set from 0.1s to 5.0s, and the default is 0.5s.


### 7.1.3 Softness Settings

Enter the transition settings, select Softness, and use the knob to set the softness. The lower the softness, the clearer the transition boundary. It can be set from 0-100, with the default value of 20.

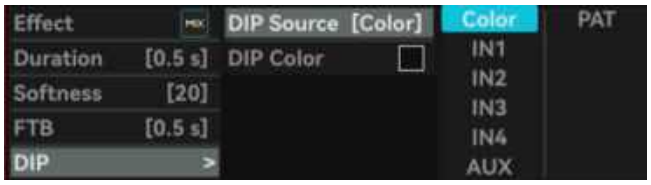

### 7.1.4 Black Field Settings

Enter the transition settings, select the black field duration, and use the knob to set the black field duration. The longer the duration, the slower the black field speed. The duration can be set from 0.1s to

2.0s, and the default is 0.5s.


### 7.1.5 Immersion Settings

Enter the transition settings, select immersion settings, and select the immersion source. You can customize the settings to color, IN1, IN2, IN3, IN4, AUX, and PAT. The default immersion source is color, and the default color is black.



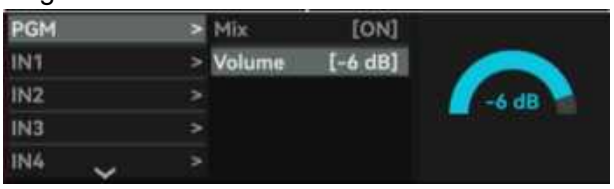

## 7.2 Audio

Support 4 HDMI digital audio, 2 independent 3.5mm microphone input, each audio can be independently configured volume, switch, mix, delay, and HDMI audio support audio follow mode (AFV).

### 7.2.1 PGM Audio Setting

PGM audio control: this switcher supports the overlay of 6 audio channels, including 4 channels of embedded HDMI audio and 2 channels of MIC/Line audio input.

Enter the audio settings, select PGM, and users can mute PGM or adjust the audio volume, which ranges from -60dB to 0dB. The default state for PGM audio is enabled, with a volume level of -6dB.




### 7.2.2 HDMI Input Audio Settings

Enter the audio Settings, select Input 1-4, and set the embedded audio for four inputs.

#### 7.2.2.1 Mix Mode Settings

The user can turn the mixing mode on/off independently, or set it to AFV Audio Follow mode, which is the default.

When the audio mode of a channel is set to AFV, the channel audio takes effect only when the video is in PGM mode.


#### 7.2.2.2 Volume Control

The user can adjust the volume of each HDMI audio, the volume range is -60dB-0dB, the default is -6dB.


#### 7.2.2.3 Audio Delay

The user can set the audio delay for input 1-4 in the menu to synchronize audio and video. The maximum audio delay is 1s. The default value is 0.00s.


## 7.2.3 Multimedia AUX Output Audio Settings.

Enter the audio settings, select Multimedia AUX, and configure the audio output for Multimedia AUX.

### 7.2.3.1 Mixing Mode Settings

Users can independently enable/disable the mixing mode or set it to AFV (Audio Follows Video) mode, with AFV being the default setting. When the audio mode for Multimedia AUX is set to AFV, it only takes effect when the AUX video is in PGM


### 7.2.3.2 Volume Control

Users can adjust the output audio volume for Multimedia AUX, with a volume range from -60dB to 0dB, and the default setting is -6dB


### 7.2.3.3 Audio Delay

Users can set audio delay for Multimedia AUX output audio in the menu to synchronize audio with video. The maximum audio delay is 1 second, with the default setting at 0 seconds.


## 7.2.4 Microphone Settings

Enter the audio settings, select Mic1 and Mic 2 to configure the two microphone inputs. Users can connect them to line devices or to desktop and lavalier microphones. Users can enable/disable the microphones, adjust audio volume and audio delay, and also apply automatic gain control to the microphone input audio.

### 7.2.4.1 Mixing Mode Settings

Users can independently enable/disable the mixing mode for the microphones, with the default setting being enabled.


### 7.2.4.2 Volume Control

The user can adjust the volume of the microphone audio for each channel. The volume range is -60dB-0dB. The default value is -6dB.


### 7.2.4.3 Audio Delay

The user can set the audio delay for microphone 1 and microphone 2 in the menu. The maximum audio delay is 1s. The default value is 0.00s.


### 7.2.4.4 Audio Mode Setting

MIC interface If connected to the microphone device, then the audio mode to select the microphone mode; If connected to a linear device, then the audio mode should be linear mode, which defaults to Line (linear) mode.


### 7.2.4.5 ALC Setting

ALC (Automatic Level Control) settings adjust the automatic gain level based on background noise. Users can customize settings for three levels: LEVEL 1, LEVEL 2, and LEVEL 3. The default setting is off


## 7.2.5 Headphone Settings

The switcher has a headphone output for audio monitoring. Users can select an audio source for monitoring output from the main audio (PGM), 4 embedded HDMI audio channels, 2 MIC audio channels, or Multimedia AUX output audio. Users can adjust the headphone monitoring volume, which ranges from -60dB to 0dB. The default headphone source is PGM, with a default volume of 0dB.


# 7.3 Image

In the image settings, you can customize the background image and logo settings, and put the image into the USB disk or SD card for use.

## 7.3.1 Pattern

Enter the Pattern settings, select an image, and display the default images stored internally in the switcher. After inserting a USB drive or SD card (both can be connected simultaneously),After recognizing the USB or SD card, the icon will turn white,use the joystick to switch between the internal images and those inserted from external sources.

### 7.3.1.1 Application

Select an image from the system or USB drive/SD card using the knob, then press the knob to apply it.


### 7.3.1.2 Image Deletion

Select an image from the system or USB drive/SD card using the knob, then press the knob to delete it.


### 7.3.1.3 Image Addition

Image Add can import images from a USB flash drive or SD card. When inserting a USB flash drive /SD card, a Used memory/Total Memory icon appears at the bottom of the Status/menu page. (Please make sure that the image is stored in the "images" directory of the USB drive /SD card.) Switch to the image menu of the USB drive /SD card through the joystick and click Import to load it into the switch console. Note: The image resolution supports 3840x1080.


## 7.3.2 LOGO

Select the logo Enter the display the default images stored internally in the switcher. After inserting a USB drive or SD card, use the joystick to switch between the internal images and those from the external sources.

### 7.3.2.1 LOGO Application

Select an image from the system or USB drive/SD card using the knob, then press the knob to set the image for LOGO 1 or LOGO 2.


### 7.3.2.2 LOGO Deletion

Select an image from the system or USB drive/SD card using the knob, then press the knob to delete it.


### 7.3.2.3 LOGO Addition

Logo addition involves loading logo images from a USB drive or SD card. When the USB drive or SD card is inserted, an icon indicating used memory/total memory will appear at the bottom of the status/menu page. (Please ensure that the logo images are stored in the 'logos' directory on the USB drive or SD card first.) Use the joystick to navigate to the USB drive/SD card LOGOS menu, and click 'Import' to load them into the switcher.

Logo image resolutions support up to 960x540, with supported formats including .png, .jpeg, .jpg, and .bmp.


### 7.3.2.4 LOGO Size

Enter the Image settings, select LOGO 1 or LOGO 2 size, and use the knob to switch between sizes. The size options are ×0.4, ×0.6, ×0.8, ×1.0, ×1.2, and ×1.4, with the default set to ×1.0.


### 7.3.2.5 LOGO Position

Enter the image settings, select the position for LOGO 1 or LOGO 2, and use the joystick to adjust the logo's position.


## 7.4 Media

Video recording and playback, recorded videos can be used as auxiliary sources to participate in program production; H.264 encoding, support recording and multi-network streaming, support recording and streaming bit rate separation

## 7.4.1 Video

Enter the media settings, select video, and display the default videos stored internally in the switcher. After inserting a USB drive or SD card, After recognizing the USB or SD card, the icon will turn white,use the joystick to switch between the internal videos and those from external sources.

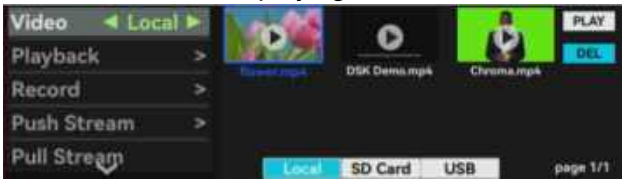
### 7.4.1.1 Playback

Select a video from the system or USB drive/SD card using the knob, then press the knob to click 'Play.' The video will play through the Multimedia AUX output.


### 7.4.1.2 Video Deletion

Select the video on the system or USB disk/SD card through the knob, press the knob, and click Delete.

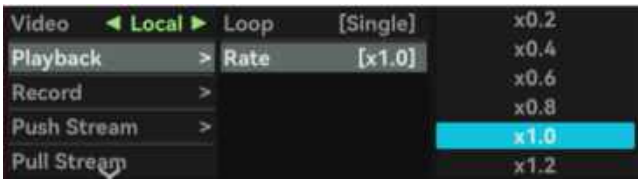
Note: The playing video cannot be deleted.




### 7.4.1.3 Playback Mode

Enter the Media Settings and select Play mode.

Cycle mode can be set single cycle or list cycle; The double speed mode can be set ×0.2, ×0.4, ×0.6, ×0.8, ×1.0, ×1.2. Default x 1.0 times speed.




## 7.4.2 Recording

The video switch station records the PGM picture and sound to the "video_rec" folder on the USB disk/SD card.

Support USB disk/SD card format FAT32, NTFS, exFAT (FAT32 can record up to 4G video)

Note: When the capacity of USB disk/SD card is insufficient, the system will automatically stop recording;

FAT32 format USB disk/SD card recording 4G hours automatically stop recording;

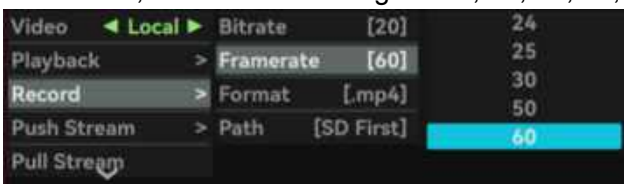
If the recording is not stopped normally (for example, the recording power is interrupted, unplug the USB disk/SD card), the recording file cannot be used normally.

### 7.4.2.1 Bit Rate

Users can modify the recording bit rate. Enter the Media Settings, select Record, click on the bit rate, the bit rate range is 5-30. The default bit rate is 20.


### 7.4.2.2 Frame Rate

Users can modify the recording frame rate. Enter the Media Settings, select Record, click Frame rate, the frame rate range is 24, 25, 30, 50, 60. The default frame rate is 60.

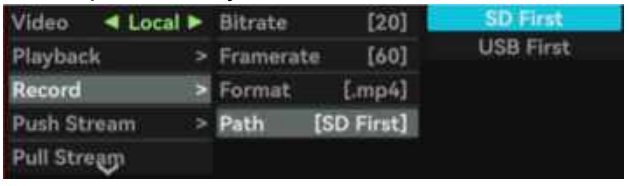



### 7.4.2.3 Format

Users can modify the recording format. Enter the media Settings, select Record, click Format, can be changed to ".mp4 ", ".ts ", ".flv ". The default format is.mp4.


### 7.4.2.4 Storage Path

Users can customize the storage path of recorded videos. Enter the the media Settings, select Record, click the storage path, you can change the SD card priority, USB flash drive priority. SD card is preferred by default.




## 7.4.3 Push Stream

Select Stream. Two push addresses can be stored in a network push stream. Click the STREAM button to start pushing the stream. If the push address is available, the STREAM button lights green and starts pushing.

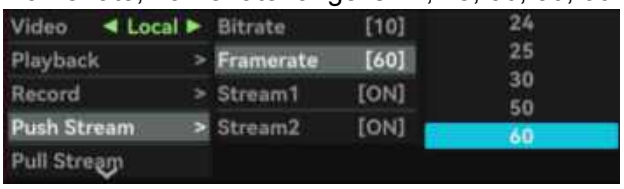
### 7.4.3.1 Bit Rate

Users can modify the push rate. Enter the Media Settings, select Push Stream, click the bit

rate, the bit rate range is 1-20. The default bit rate is 10.


### 7.4.3.2 Frame Rate

Users can modify the push frame rate. Enter the Media Settings, select Push Stream, click Frame rate, frame rate range is 24, 25, 30, 50, 60. The default frame rate is 60.

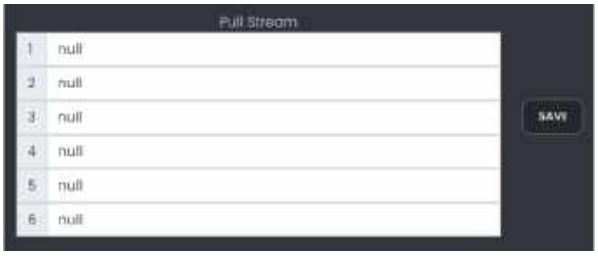



### 7.4.3.3 Stream Switch Control

Users can control the two streaming switches. Enter the media settings, select streaming, click on 'Stream,' and use the knob to control the streaming switches.


## 7.4.4 Pull Stream

Fill in the current pulling address through the upper computer (up to 6 addresses can be filled in), select the corresponding current pulling address in the menu, and click the knob to pull the current





## 7.4.5 NDI

NDI is an efficient network transmission protocol that enables video transfer between multiple devices without the need for dedicated networking equipment. It allows video signals to be transmitted over the network to multiple devices, facilitating video editing, playback, control, and other functions.

Ensure that the PTZ camera and switcher are on the same local area network. Enable the network on the switcher, activate the NDI feature, and connect to the PTZ camera. The PTZ camera's feed will be displayed in the AUX window.


The computer and the switch station remain in the same LAN. Open the network of the switch station, open the NDI software, click Screen Capture HX to open the NDI function of the switch station, and connect the computer through the network. The PC desktop will be displayed in the AUX window.



### 7.4.6 Streaming Server

Users can customize and change the push address在上位机. The push stream address stored in the "stream_url.txt" file of U disk, insert USB disk/SD card, push stream address will be automatically modified.


## 7.5 PIP

Two Picture-in-Picture (PIP) feeds support arbitrary cropping and resizing to meet various application needs. The multi-screen feature for meetings helps users quickly start remote meetings. When both PIP feeds are enabled, the PIP1 and PIP2 buttons will light up white.

### 7.5.1 PIP1 Setting

Users need to use the key PIP1 to open the PIP 1 function, and then enter the PIP 1 setting to adjust the screen size and crop.

#### 7.5.1.1 Source

The user can modify the source selection of PIP 1. Enter the PIP Settings, select PIP 1, click Source selection, source can select IN1, IN2, IN3, IN4, AUX, PAT. The default is IN1.


#### 7.5.1.2 Size＆Position

The user can adjust the size and position of PIP 1. Position can be adjusted by the rocker, the size can be selected 1/8, 1/6, 1/4, 1/3, 1/2, custom. The default size is 1/4.


#### 7.5.1.3 Custom Wight＆High

Users can customize the size and position of PIP 1. The position can be adjusted using the joystick, and the size and position can be set to custom. The width and height of PIP 1 can be adjusted using the knob, with a range from 10% to 100%. The default width for PIP 1 is 40%, and the default height is 20%.

### 7.5.1.4 Crop

Users can use the cropping feature to select which part of the image to display in PIP. Enter the PIP settings, select PIP 1, and click on 'Crop.' Use the PTZ joystick to choose the part of the image to display, and rotate the knob to set the zoom level. The default area size is 25%.


## 7.5.2 PIP2 Setting

Users need to use the key PIP2 to open the PIP 2 function, and then enter the PIP 2 setting to adjust the screen size and crop.

### 7.5.2.1 Source

The user can modify the source selection of PIP 2. Enter the PIP Settings, select PIP 2, click Source selection, source can select IN1, IN2, IN3, IN4, AUX, PAT. The default is IN1.


### 7.5.2.2 Size＆Position

The user can adjust the size and position of PIP 2. Position can be adjusted by the rocker, the size can be selected 1/8, 1/6, 1/4, 1/3, 1/2, custom. The default size is 1/4.


### 7.5.2.3 Custom Wight＆High

Users can customize the size and position of PIP 1. The position can be adjusted using the joystick, and the size and position can be set to custom. The width and height of PIP 1 can be adjusted using the knob, with a range from 10% to 100%. The default width for PIP 1 is 40%, and the default height is 20%.


### 7.5.2.4 Crop

Users can use the cropping feature to select which part of the image to display in PIP. Enter the PIP settings, select PIP 1, and click on 'Crop.' Use the PTZ joystick to choose the part of the image to display, and rotate the knob to set the zoom level. The default area size is 25%.


## 7.5.3 Border Setting

The border Settings apply to both Picture in Picture 1 and picture in Picture 2.

### 7.5.3.1 Border Color Setting

The user can customize and adjust the border color in the palette. Enter the Picture in picture Settings, select the border, click the border color, and modify the red, green and blue color space and

hue, saturation and brightness parameters using the knob and five-way key.


### 7.5.3.2 Border Width Setting

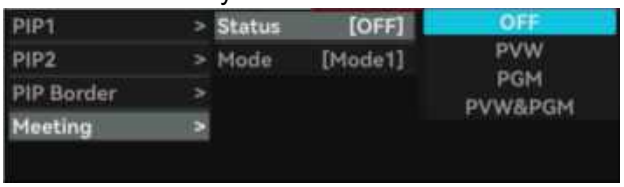
Users can customize and adjust the width of the border drawn in the picture. Enter the Picture in Picture Settings, select the border, click the border width, the width range is 0-16. The default width is 2.

## 7.5.4 Meeting Mode

The Meeting Mode can display the signals of the four input channels in the preview screen or the playback screen, or it can be displayed in two screens at the same time.

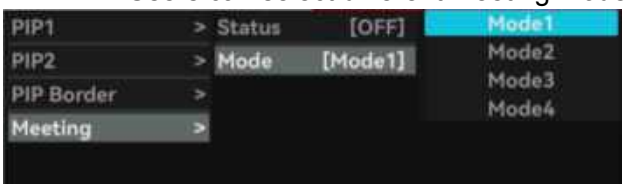
### 7.5.4.1 Status

Users can customize the screen to display in PVW, PGM or at the same time. Enter the PIP Settings, select Meeting, click Status, status can be selected "Off", "PVW", "PGM" and "PVW&PGM". The status is off by default.




### 7.5.4.2 Mode

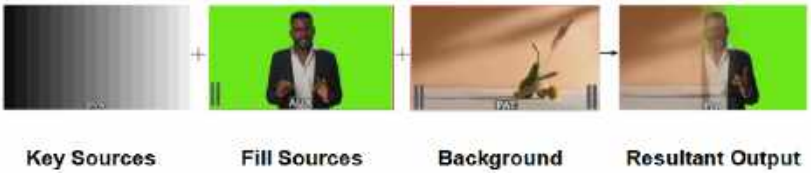
Users can select different meeting modes. The default is mode 1.




# 7.6 Luma Key

The Luminance Key provides a method to composite text clips on background clips based on the brightness level in the video.

Enter the Luminance Key, select the key source, and set the Luminance Key effect. The Luminance Key works in PVW and PGM. When the Luminance Key function is turned on in PVW, the LUMA key lights up white; when the Luminance Key function is turned on in PGM, the LUMA ON AIR key lights up red.




## 7.6.1 Key Source

Users can customize the key source. Enter the brightness key setting, click the key source, and the key source can be selected from IN1, IN2, IN3, IN4, AUX, and PAT. The default key source is IN4.


## 7.6.2 Fill Source

Users can customize the fill source. Enter the brightness key settings, click Fill Source, and the fill source can be selected from IN1, IN2, IN3, IN4, AUX, and PAT. The default key source is IN1.


## 7.6.3 Adjustment

### 7.6.3.1 Threshold

In the brightness key, the threshold setting is similar to the brightness range. The larger the value, the larger the range of the cutout. The threshold range is from 1% to 100%, and the default threshold is

20%.


### 7.6.3.2 Gain

In the brightness key, the gain sets the smoothness of the border when cutting out. The larger the value, the smoother the border. The gain range is from 1% to 100%, and the default gain value is 20%.


### 7.6.3.3 Inverse

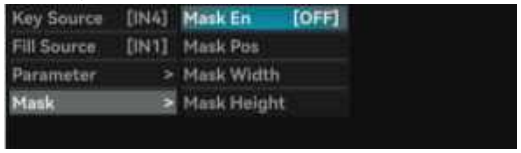
In the brightness key, turn on Inverse, and the range greater than the threshold will be cut out. It is off by default.


## 7.6.4 Mask

The mask function adjusts the displayed part of the screen through the mask layer.

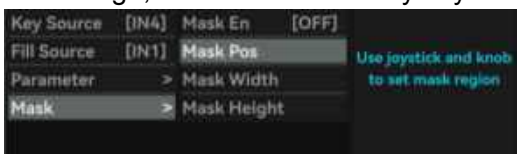
### 7.6.4.1 Mask Switch

Enter the brightness key settings, click Mask, select Mask switch, and turn the mask function on and off. It is off by default.




### 7.6.4.2 Mask Position

Enter the brightness key settings, click on the mask, select the mask position, use the knob to scale the mask image, and use the five-way key to move the mask image.




### 7.6.4.3 Mask Width

Enter the brightness key settings, click Mask, select Mask width, and use the knob and five-way key to adjust the width and position of the mask image.


### 7.6.4.4 Mask Height

Enter the brightness key settings, click Mask, select Mask Height, and use the knob and five-way key to adjust the height and position of the mask image.


# 7.7 Chroma Key

Chroma Key is a visual effect and post-production technique used to composite (layer) two images

or video streams together based on hue (chroma range). The technique has been used in many fields to remove backgrounds from photo or video subjects, especially in news broadcasting, film, gaming, live broadcasting and other industries.

Enter Chroma Key, select the key source, and set the Chroma Key effect. Chroma Key works in PVW and PGM. When Chroma Key is turned on in PVW, the CHROMA key lights up white; when Chroma Key is turned on in PGM, the CHROMA ON AIR key lights up red.


## 7.7.1 Key Source

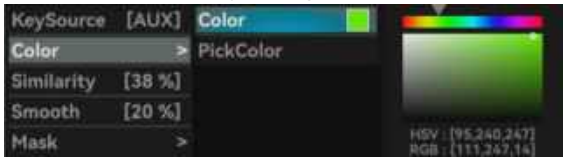
Users can customize the key source. Enter the chroma key setting, click the key source, and the key source can be selected from IN1, IN2, IN3, IN4, AUX, PAT, PIP1, PIP2. The default key source is IN4.


## 7.7.2 Cutout Color

Users can adjust the cutout color of the chroma key by using the knob and the five-way key.

### 7.7.2.1 Color

Users can select the color to be cutout in the color palette. Enter the chroma key settings, select the cutout color, click the color, and modify the red, green, and blue color space and hue, saturation, and brightness parameters by using the knob and the five-way key.




### 7.7.2.2 Pick Color

Users can customize the color to be cut out in the key source. Enter the chroma key settings, select the cutout color, click Pick Color, and use the five-way key to pick the color in the key source for cutout.


## 7.7.3 Similarity

In the chroma key, the similarity setting is the similarity range with the cutout color. The larger the number, the larger the cutout range. The similarity range is from 1% to 100%, and the default similarity is 38%.


## 7.7.4 Smoothness

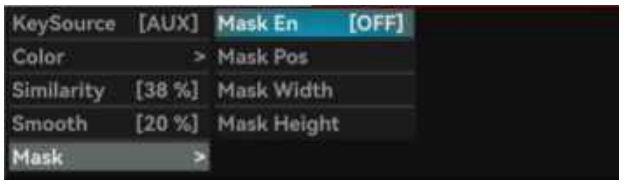
In chroma keying, smoothness sets the smoothness of the border when cutting out. The larger the number, the smoother the border. The smoothness range is from 1% to 100%, and the default smoothness is 20%.


## 7.7.5 Mask

The mask function adjusts the displayed part of the image through the mask layer.

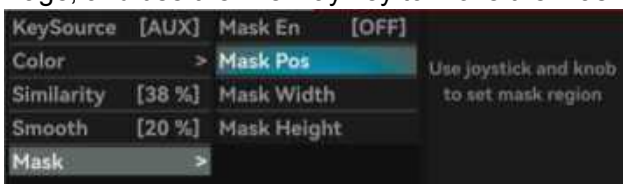
### 7.7.5.1 Mask Switch

Enter the chroma key settings, click Mask, select Mask switch, and turn the mask function on or off. It is off by default.




### 7.7.5.2 Mask Position

Enter the chroma key settings, click on the mask, select the mask position, use the knob to scale the mask image, and use the five-way key to move the mask image.




### 7.7.5.3 Mask Width

Enter the brightness key settings, click Mask, select Mask width, and use the knob and five-way key to adjust the width and position of the mask image.


### 7.7.5.4 Mask Height

Enter the brightness key settings, click Mask, select Mask Height, and use the knob and five-way key to adjust the height and position of the mask image.


# 7.8 DSK Key

This switcher supports DSK (Downstream Keyer) keying, allowing users to easily add professional subtitles or graphic packaging systems during broadcasts, meeting television broadcasting standards and enhancing the quality of the program and the viewer's experience.


Key Sources Background Resultant Output

## 7.8.1 Key source

Users can customize the key source. Enter the DSK key setting, click the key source, and the key source can be selected from IN1, IN2, IN3, IN4, AUX, and PAT. The default key source is IN4.


## 7.8.2 Threshold

In DSK key, the threshold setting is similar to the brightness range. The larger the value, the larger the range of the cutout. The threshold range is from 1% to 100%, and the default threshold is 20%.


## 7.8.3 Gain

In the DSK key, the gain setting is the smoothness of the border when cutting out. The larger the value, the smoother the border. The gain range is from 1% to 100%, and the default gain value is 20%.


## 7.8.4 Inverse

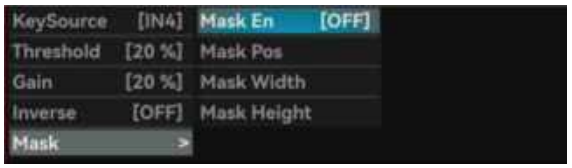
In the DSK key, turn on Inverse, and the range greater than the threshold will be cut out. It is closed by default.


## 7.8.5 Mask

The mask function adjusts the displayed part of the screen through the mask layer.

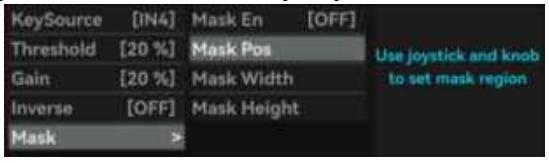
### 7.8.5.1 Mask Switch

Enter the DSK key settings, click Mask, select Mask switch, and turn the mask function on and off. It is off by default.



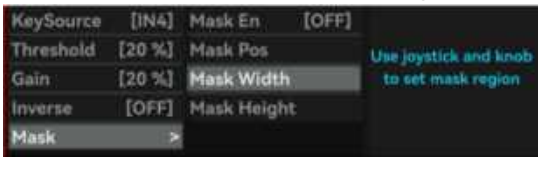

### 7.8.5.2 Mask Position

Enter the DSK key settings, click on the mask, select the mask position, use the knob to scale the mask image, and use the five-way key to move the mask image position.



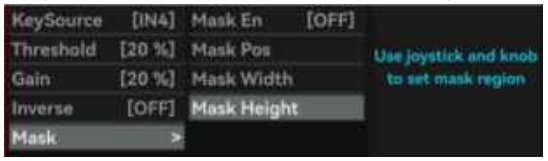

### 7.8.5.3 Mask Width

Enter the DSK key settings, click Mask, select Mask Width, and use the knob and five-way key to adjust the width and position of the mask image.



#### 7.8.5.4 Mask Height

Enter the DSK key settings, click Mask, select Mask Height, and use the knob and five-way key to adjust the height and position of the mask image.



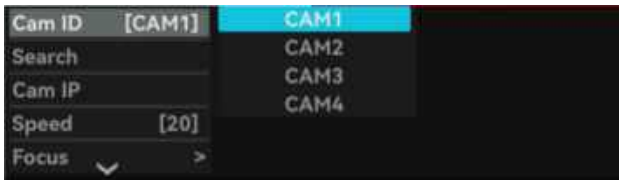

## 7.9 PTZ Control

This switcher supports VISCA camera control protocol. The five-way key and knob can be used to quickly and conveniently control the camera movement. At the same time, the camera focus, exposure, white balance and other parameters can be set in the camera menu.

In addition, it also supports the camera position storage function, which can be quickly called (see "5.5 Camera Control Operation")

### 7.9.1 Camera Selection

Enter PTZ settings, click Camera Selection, and use the knob to select the camera position to be set.

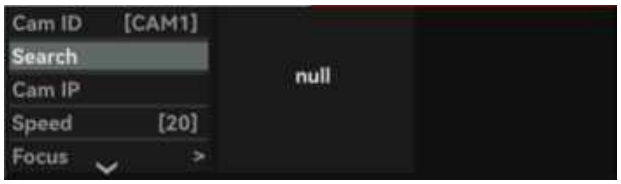



### 7.9.2 Camera Connection

The PTZ camera is connected to the switcher via an HDMI cable and an Ethernet cable. The camera needs to be in the same LAN as the switcher.

#### 7.9.2.1 Search

Enter the PTZ settings, select Search, and all the camera IPs found in the same LAN are displayed. Use the knob to select the camera IP.



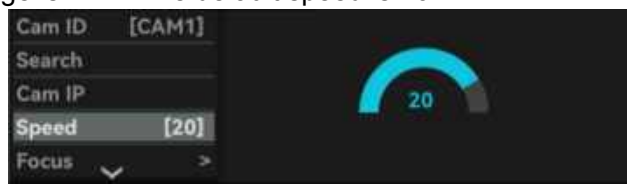

#### 7.9.2.2 Manual IP

Enter the PTZ settings, select the camera IP, and the IP address of the camera is displayed. The IP address can be manually set.


### 7.9.3 Camera Settings

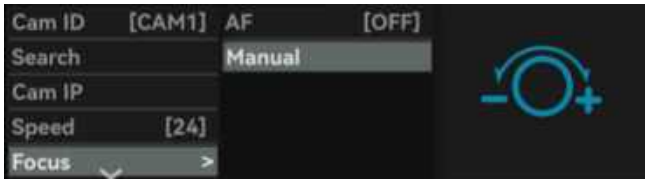
#### 7.9.3.1 Speed

Enter the camera settings, select Speed, and adjust the movement speed of the camera lens. The speed range is 1-24. The default speed is 20.




#### 7.9.3.2 Focus

Enter the camera settings and select Focus. You can set auto focus or manual focus. Manual focus is set using the knob.



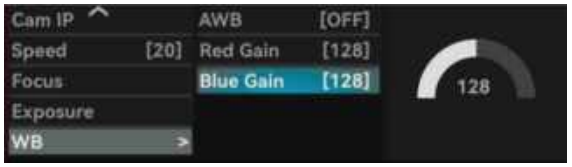

### 7.9.3.3 Exposure

Enter the camera settings and select exposure. The exposure mode can be set to automatic, manual, shutter priority and aperture priority. After selecting manual exposure, use the knob to set the shutter and aperture.




### 7.9.3.4 White Balance

Enter the camera settings, select white balance, and set the automatic or manual mode. Manually, you can use the knob to set the red gain and blue gain. The gain range is 0-255. The default gain value is 0.




# 7.10 Interface

This interface is used to control the layout of monitor and output screen

## 7.10.1 View

Enter the Interface Settings and select the horizontal or vertical layout of the monitor and output screen.

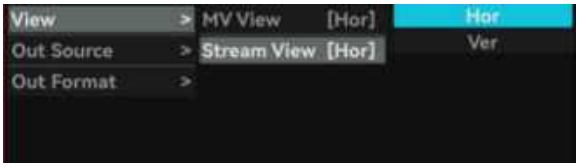
### 7.10.1.1 MV View

Diagram of Landscape mode :

Output Screen Diagram of Vertical Screen Mode :

### 7.10.1.2 Stream/Record View

Users can change the streaming/recording screen as needed. Enter the interface settings, Enter the the streaming/recording screen settings, select horizontal or vertical




## 7.10.2 Output Source

### 7.10.2.1 AUX Output

Enter the interface settings, select output, and click AUX output. You can choose IN1, IN2, IN3, IN4, AUX, PAT, Cln PGM, PGM, Cln PVW, PVW. PVW is selected by default.


### 7.10.2.2 PGM Output

Enter the interface settings, select output, and click PGM output. You can choose IN1, IN2, IN3, IN4, AUX, PAT, Cln PGM, PGM, Cln PVW, PVW. PGW is selected by default.


## 7.10.3 Output Format

### 7.10.3.1 Frame Rate

Enter the interface settings, select output, and click output frame rate. You can choose 24p, 25p, 30p, 48p, 50p, 60p. 60p is selected by default.


# 7.11 User Configuration

The USER function can save six customized configurations, which can be quickly invoked with the user button.


# 7.12 System Setting

## 7.12.1 Setting

Select System Settings to set the switcher system, including language, fan, date/time, and reset settings.

### 7.12.1.1 Language

Enter the system settings, select language, and use the knob to select multiple languages. The default display is English.


### 7.12.1.2 Fan

Enter the system settings, select the fan, and use the knob to select the fan mode. The default is automatic mode.

Automatic mode: The fan speed is controlled according to the temperature of the switcher. The higher the temperature, the faster the speed.

Off mode: Turn off the fan. Only when a certain temperature is reached, it will switch to automatic mode.

On mode: The fan is always on during operation.


### 7.12.1.3 Date/Time

Enter the system settings, select the time/date, and modify the year, month, day, hour, minute, and second by using the knob and the five-way key.


### 7.12.1.4 Reset

Enter the system settings, select reset, through the knob, select Confirm, click the knob, switch station to perform reset operation, after reset, all configurations will be cleared, restore to the default state.

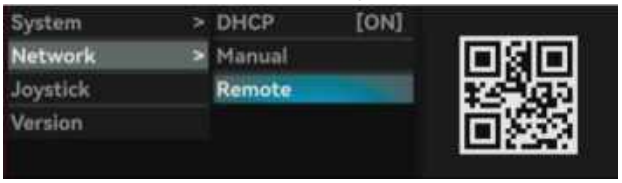

## 7.12.2 Network

### 7.12.2.1 Network Connection

In Network Settings, you can choose to automatically obtain the network IP address or manually configure the network IP address.


### 7.12.2.2 Remote Control

Enter the network Settings, click remote control, use wechat to scan the remote QR code, you can enter the upper computer page of the mobile phone.




## 7.12.3 Joystick Calibration

Enter the settings, click Joystick Calibration, and calibrate the five-way key according to the system prompts.

### 7.12.4 Version

Enter the settings, click on the version, and the the serial number and version date will be displayed. Scan the QR code to display ours Official website.


# 8、Remote Software Control

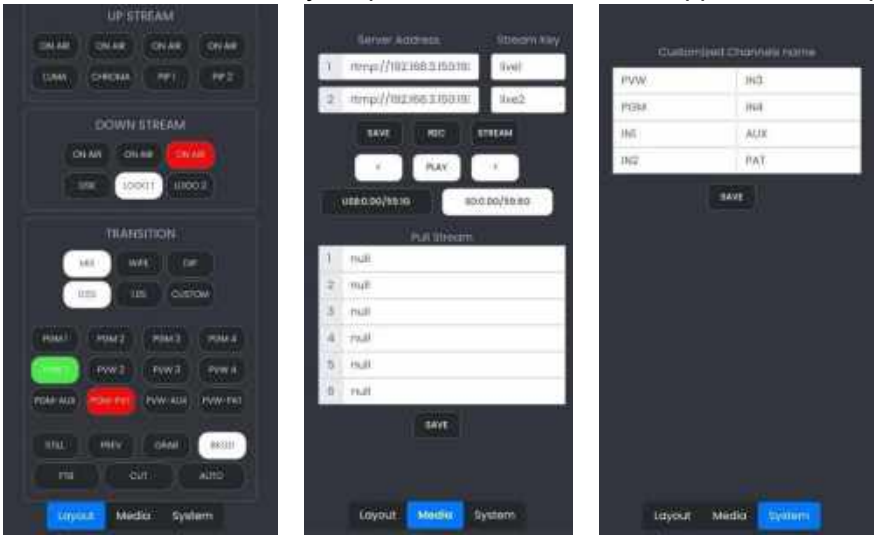
## 8.1 Connection Software

### 8.1.1 Remote Control With Computers

Automatically obtain or manually set the switcher's network IP address, ensuring that the computer and switcher are connected to the same local area network. On the computer, open a browser, enter the switcher's IP address, and press Enter to connect, accessing the upper-level computer homepage, which is the switcher page.


### 8.1.2 Remote Control With Cellphones

Ensure that the mobile device and switcher are on the same local area network. In the mobile browser, enter the switcher's IP address and open it to connect to the upper-level computer. Alternatively, Enter the the device settings module, select Network - Remote, and scan the QR code in the Remote section with your phone to connect to the upper-level computer.



# 8.2 Switcher Front Panel Control

The switcher's front panel includes buttons and a fader. Pressing the buttons allows control of the corresponding functions on the switcher, as well as setting transition times. Moving the fader executes fader transition operations.


# 8.3 Multimedia Settings

## 8.3.1 Push Streaming Setting

### 8.3.1.1 Push Streaming Address Settings

Custom Streaming Address: Enter the upper-level computer page and input the streaming server address and stream key in Streaming Address-1 and Streaming Address-2 (used for streaming to platforms like Bilibili and Huya). Click the stream button to start streaming.

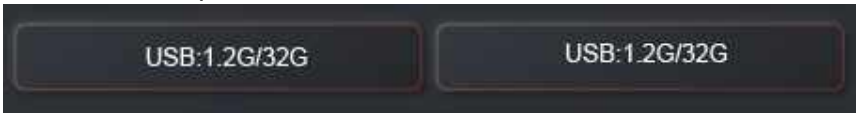
Default Streaming: Enter the upper-level computer page and input the default server addresses and stream keys for Streaming Address-1 and Streaming Address-2. Click the streaming button to begin local streaming.


## 8.3.2 Pull Streaming Setting

Fill in the current pulling address through the upper computer (up to 6 addresses can be filled in),Click to save and synchronize to the switching station


## 8.3.3 Storage Path Setting

Click the button to customize and adjust the storage path of screenshots and recorded videos on the host computer.




# 8.4 Systems Settings

Users can customize and modify the name of the channel

# 9、Warranty Service

If there is any problem with the product, please contact our service center.



REP

llow these
result in
nage, or
er incompatible

products.

other injury

- Do not place the device near high-temperature equipment to avoid hazards.
- Do not use wireless functions, including Bluetooth, during thunderstorms; operating wireless transmitting devices in lightning conditions increases the risk of lightning strikes.
- Charge the device promptly after use; do not leave the battery in a discharged state for extended periods.
- If not used frequently, charge the product at least once every 3 months to prevent reducing the battery's lifespan.
- If the battery life is exhausted, please contact the company's after-sales service.
- Do not replace the battery yourself, as using incompatible batteries or improper handling may lead to hazards.

Please provide proof of purchase or warranty card during repairs to obtain the appropriate warranty service.

Warranty will be voided if the serial number, date code label, product label is removed, or if the device is disassembled without authorization.

The company is not responsible for any incidental or consequential damages resulting from misuse or misunderstanding.