

HVS0401E

MICRO 4-CHANNEL HDMI  
VIDEO SWITCHER

**AVMATRIX**<sup>®</sup>



**HVS0401E**

**MICRO 4-CH HDMI VIDEO SWITCHER**

## USING THE UNIT SAFELY

Before using this unit, please read below warning and precautions which provide important information concerning the proper operation of the unit. Besides, to assure that you have gained a good grasp of every feature of your new unit, read below manual. This manual should be saved and kept on hand for further convenient reference.



### Warning And Cautions

- ※ Operate unit only on the specified supply voltage.
- ※ Disconnect power cord by connector only. Do not pull on cable portion.
- ※ Do not place or drop heavy or sharp-edged objects on power cord. A damaged cord can cause fire or electrical shock hazards. Regularly check power cord for excessive wear or damage to avoid possible fire / electrical hazards.
- ※ Ensure unit is properly grounded at all times to prevent electrical shock hazard.
- ※ Do not operate unit in hazardous or potentially explosive atmospheres. Doing so could result in fire, explosion, or other dangerous results.
- ※ Handle with care to avoid shocks in transit. Shocks may cause malfunction. When you need to transport the unit, use the original packing materials or alternate adequate packing.
- ※ Do not remove covers, panels, casing, or access circuitry with power applied to the unit! Turn power off and disconnect power cord prior to removal. Internal servicing / adjustment of unit should only be performed by qualified personnel.
- ※ Turn off the unit if an abnormality or malfunction occurs. Disconnect everything before moving the unit.



## Please select the best installation position

- ※ Do not cover the air inlet and outlet of the unit, make sure that there is sufficient space around the ventilation holes on both sides to avoid blockage of ventilation.
- ※ To avoid falling or damage, please do not place this unit on an unstable cart, stand, or table. Make sure install this unit on a very stable horizontal surface for use.
- ※ Do not use this unit in a humid, dusty location or near water. Avoid liquids, metal pieces or other foreign materials to enter the unit.
- ※ Do not use this unit in an environment where the temperature is too cold or too hot.
- ※ Avoid placing this unit in direct sunlight or in a place where hot air from other products can blow.

Ventilation holes



Ventilation holes

Note: due to constant effort to improve products and product features, specifications may change without notice.

## CONTENT

1.BRIEF INTRODUCTION .....	1
1.1 Overview .....	1
1.2 Main Features .....	1
2. INTERFACES .....	2
3.SPECIFICATION .....	3
4.FRONT CONTROL PANE .....	4
5.OPERATION INSTRUCTION .....	5
6.USB CAPTURE .....	6
7.PIP MODE .....	6
8.PGM PVW SWITCHING .....	7
8.1 PGM PVW Channel Selection .....	7
8.2 STILL .....	8
8.3 Transition:CUT/AUTO .....	8
9.TRANSITION EFFECT .....	8
9.1 WIPE .....	8
9.2 MIX .....	8
9.3 FADE .....	9
10.MENU SETTINGS .....	9
10.1Audio Settings .....	9
10.2 System Settings .....	10
10.3 Network Settings .....	12
10.4 Streaming .....	13
10.5 Recording .....	15
10.6 Firmware .....	16

# 1. BRIEF INTRODUCTION

## 1.1 Overview

HVS0401E is a 4-channel HDMI/DP multi-format video switcher with a compact and rugged metal housing design that allows for video switching, audio mixing and different transition effects. Inputs support multi-format, PGM output can be scaled, compatible with a variety of equipment. The switcher supports capture to a PC for performance and presentation via the USB Type-C port and can be directly pushed for streaming via the LAN port. A built-in video recorder allows direct recording via USB disk and SD card. User can also customize different settings and import or export the configuration quickly for various scenarios. It's a powerful and professional video switcher for your choices.



## 1.2 Main Features

- Inputs 1~3: HDMI, Input 4: HDMI/DP
- Outputs: HDMI PGM×2, HDMI multiview×1, USB type-C×1, LAN×1
- LAN port for RTMP streaming and upgrade
- USB disk/ SD card for PGM recording
- USB Type-C for video capturing (UVC)
- PIP function, adjustable size and position
- Audio mixer: 3.5mm MIC/ RCA/ HDMI embedded audio
- AUTO/ CUT transitions and MIX/ FADE/ WIPE effects
- GPIO interface for live tally system
- FTB for emergency situation

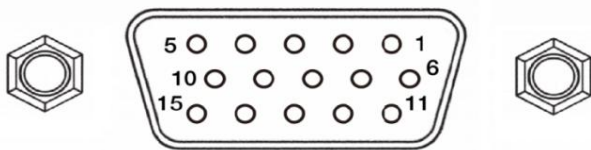
## 2. INTERFACES

### 2.1. Interface Overview



1	IN1~IN3: HDMI×3; IN4: HDMI / Display Port × 1
2	PGM OUT × 2
3	MULTIVIEW(AUX) OUT × 1
4	LAN port (For live streaming and upgrade)
5	DC 12V IN × 1
6	POWER ON/OFF
7	USB × 1 (For recording)
8	USB CAM × 1 (For capturing on PC)
9	AUDIO IN × 2
10	MIC × 2
11	LINE OUT × 1
12	GPIO (For tally)
13	SD Card Slot × 1(For recording)

### 2.2. Tally PIN Definition



PIN	Definition	PIN	Definition
11	PGM-IN1	6	PVW-IN1
12	PGM-IN2	7	PVW-IN2
13	PGM-IN3	8	PVW-IN3
14	PGM-IN4	9	PVW-IN4
15	NC	10	NC
3	NC	4	NC
5	GND		

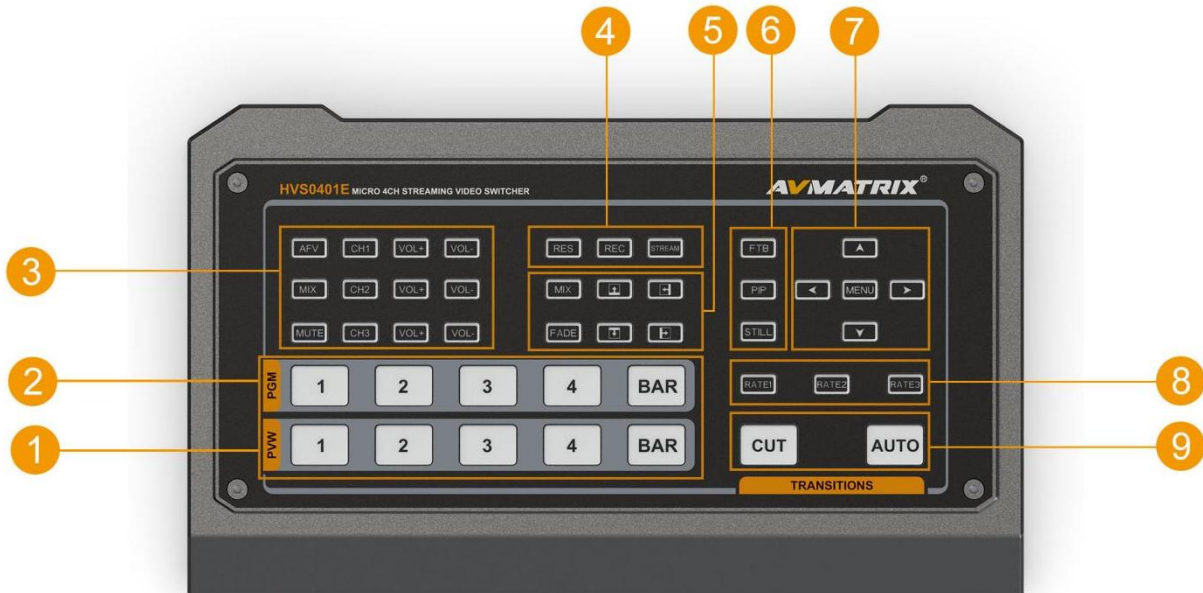
### 3.SPECIFICATION

CONNECTION	
Video In	IN1~IN3: HDMI type-A ×3; IN4: HDMI type-A/ Display Port ×1
Video Out	PGM: HDMI type-A×2 Multiview: HDMI type-A×1 USB Capture: USB type-C ×1 Streaming & PC control: LAN Port×1
Audio In	MIC/ Line ×2 (3.5mm audio) RCA ×2 (stereo audio)
Tally Port	DB-15 ×1
Power In	DC 12V IN ×1
STREAM & RECORD	
Encode Bitrate	2/ 4/ 8/ 12/ 16/ 24/ 32Mbps
Rate Control	CBR/ VBR
Stream Protocol	RTMP
Storage Format	SD card:FAT32/exFAT; USB disk: FAT32/exFAT/NTFS
REC Format	MP4/ TS
Encoder	H.265/ H.264 High/ H.264 Main/ H.264 Base
REC File Segment	1/ 5/ 10/ 20/ 30/ 60/ 90mins
FUNCTIONS	
Functions	Image Still/ Transitiion Speed/ MUTE/ Audio follows Video/ Audio Mixer
Transitions	AUTO/ CUT
Effects	WIPE/ MIX/ FADE/ FTB
Layouts	PIP, Multiview
STANDARDS	
HDMI In Format Support	1080p 60/ 59.94/ 50/ 30/ 29.97/ 25/ 24/ 23.98/23.976 1080i 50/ 59.94/ 60 720p 60/ 59.94 /50/ 30/ 25/ 24 576i 50, 576p 50, 480p 59.94/ 60, 480i 59.94/ 60
PC HDMI/DP Input Format Support	2560×1600, 2048×1152, 1920×1080,1680×1050, 1600×1200, 1600×900, 1400×1050, 1440×900, 1366×768, 1360×768, 1280×1024, 1280×960, 1280×800, 1280×768, 1280×720, 1280×600, 1152×864, 1024×768, 800×600, 640×480
HDMI PGM Out	1080p 60/ 50/ 30/ 25/ 24 1080i 60/ 50
HDMI Multiview Out	1080p60



HDMI Color Space	RGB/ YCbCr
USB Capture Out	MJPEG/ H.265/ H.264 , Up to 1080p60
<b>OTHERS</b>	
Power	≤14.4W(12V 1.2A)
Dimension (LWD)	238.5×140.4×44.5mm
Weight	Net: 968.3g; Gross: 1365.8g
Temperature	Working: -20℃~60℃, Storage: -30℃~70℃
Standard Accessories	Power supply(12V 2A ) ×1, USB cable(type A-C) ×1, Tally connector(DB-15) ×1
Optional Accessories	Handbag ×1, Tally cable ×1

## 4.FRONT CONTROL PANEL



1	<b>PVW</b>	Selecting the signal source for Preview
2	<b>PGM</b>	Selecting the signal source for Program
3	<b>AUDIO</b>	User can configure the audio of each channel in this area, including AFV or audio mix mode, audio source selecting, adjust volume + & volume -
4	<b>REC &amp; STREAM</b>	RES: Adjust the resolution of the PGM output REC: Start recording STREAM: Start live streaming
5	<b>TRANSITION</b>	MIX, FADE & WIPE transition effects MIX: Selects a basic A/B dissolve for the next transition

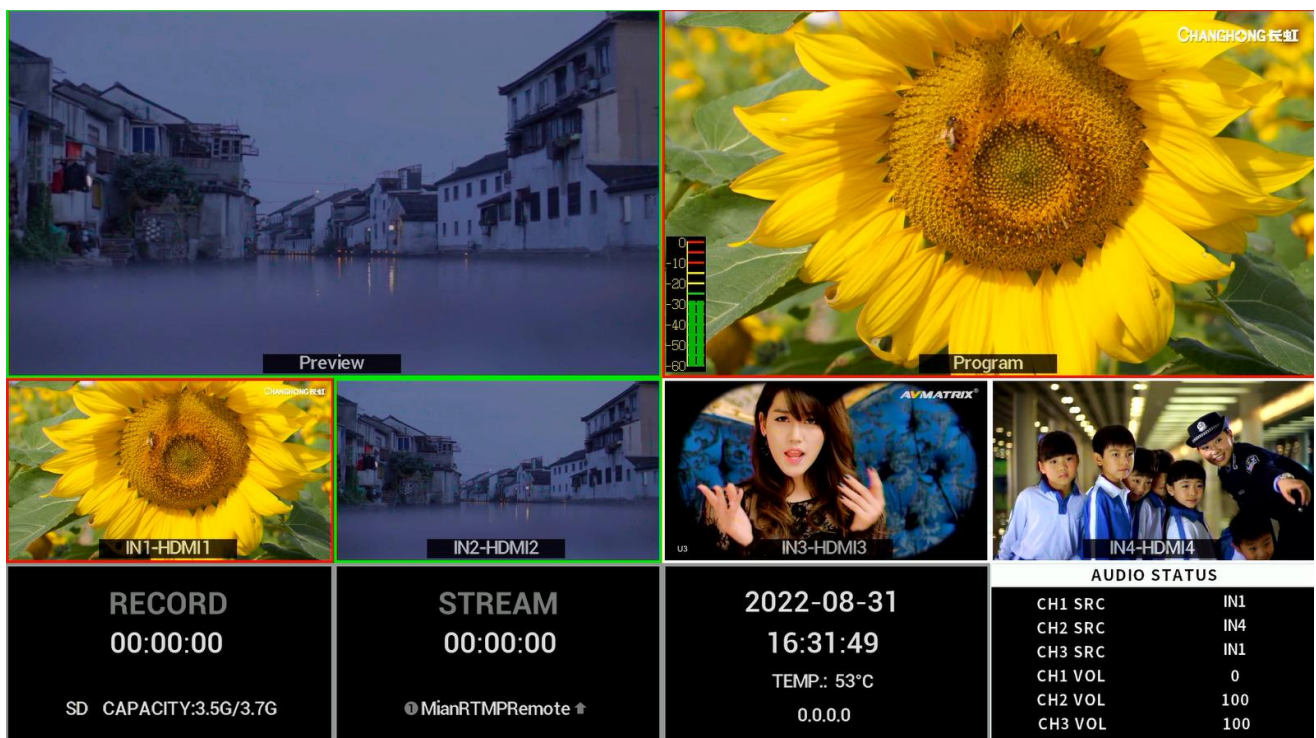


	<b>EFFECT</b>	WIPE: Transition from one source to another FADE: Gradual transition that transitions from one source to another
6	<b>FUNCTIONS</b>	FTB: Fade to Black, used for emergency PIP: Picture-in-picture, adjustable position & size STILL: PGM output still
7	<b>MENU</b>	MENU: For menu control KEYS: Up and down keys to select menu, Left and right keys to select parameters
8	<b>RATE</b>	Three levels of transition speed rates
9	<b>CUT/ AUTO</b>	CUT: Performs a simple immediate switch between Program and Preview AUTO: Performs an automated switch between Program and Preview

## 5. OPERATION INSTRUCTION

### 5.1 Multiview Output Layout

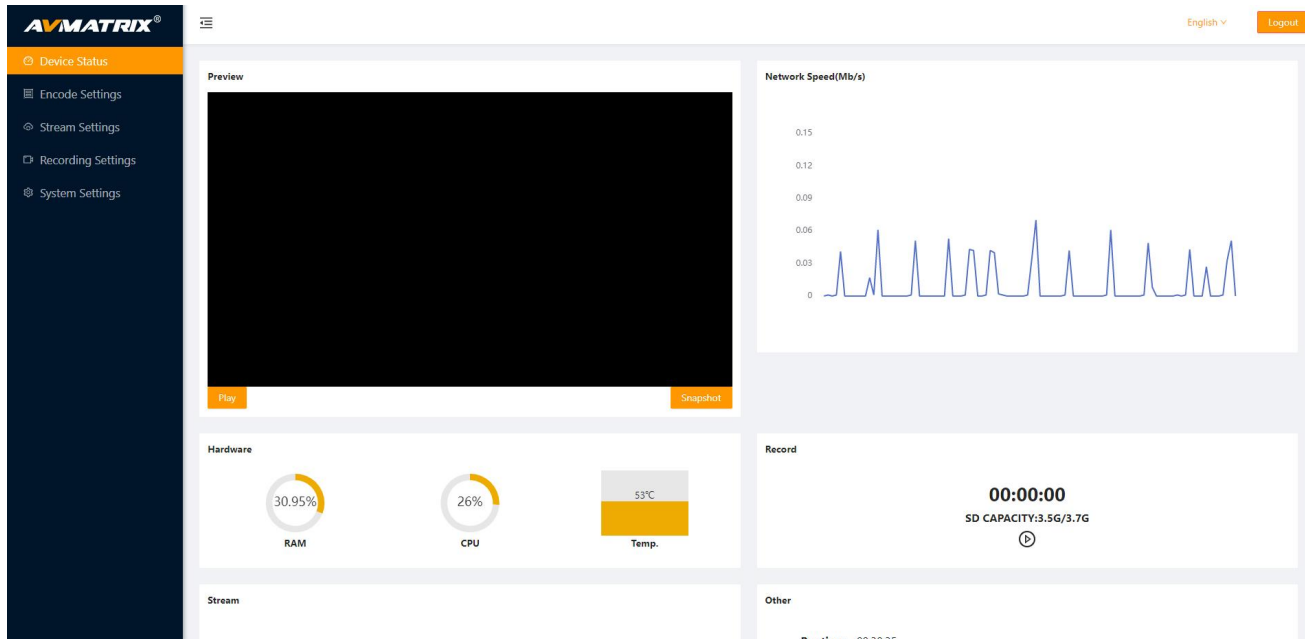
The Multiview includes PGM (Program), PVW (Preview), 4 HDMI signal sources, menu, clock, working temperature, streaming status and recording status.



### 5.2 Web Page Layout

Connect video switcher to a PC via IP address, open the website, the web page includes PVW (Preview), network speed, hardware status, streaming status, recording status, other runtime, Input Video, output Mode, and system settings, encord settings, record and stream settings, etc.

The default web page login account number is: admin, Password default is: admin.



## 6.USB CAPTURE

The video switcher's USB output is based on UVC (USB video class) and UAC (USB audio class) standard. No additional drivers must be installed. After installation in operating system, the relevant video and audio devices will be added. In the Windows Device Manager, for example, it will appear two new devices:

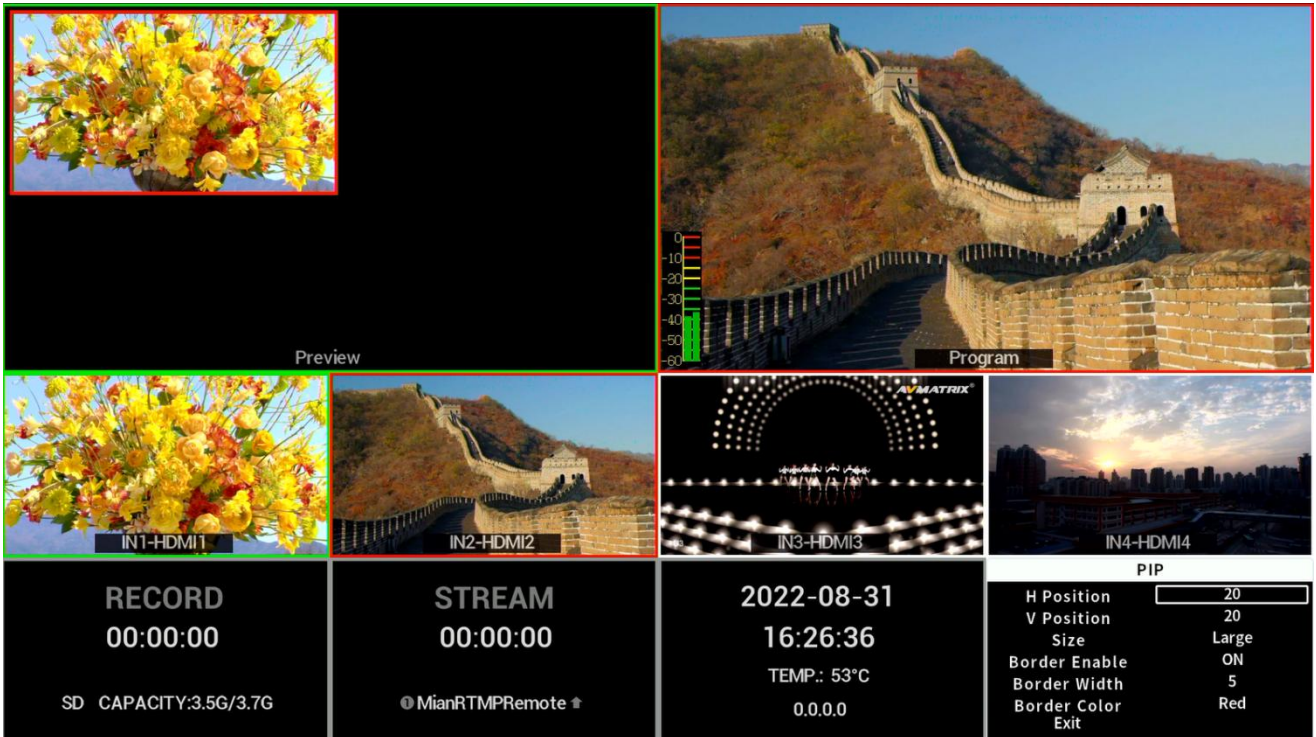
- Under Camera: Switcher USB Video
- Under Audio inputs and outputs: Switcher USB audio

Use a third-party Video Media Player software like OBS, PotPlayer, VLC, Windows Media Player to play and store the captured video content.

## 7.PIP MODE

When press PIP, there will be a small image display on the top left corner of PVW window as below image. And the menu will enter an interface as below image for PIP settings. The window size (Small, Large, Medium), position (Horizontal position and Vertical position) and border (Border enable, Border width, Border color) of PIP can be set from menu.

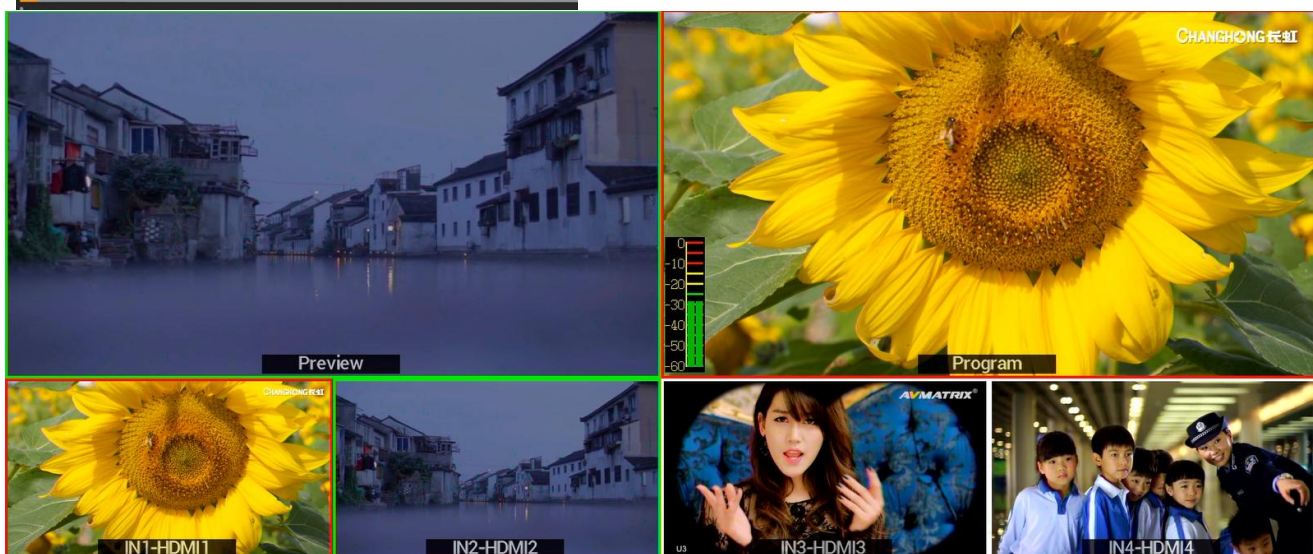
Press PIP again, the menu returns to STATUS page.



## 8.PGM PVW SWITCHING

### 8.1 PGM PVW Channel Selection

Choose PGM and PVW source from PGM, PVW row in the front panel. The selected button for PGM will turn on to red LED, and the selected button for PVW will turn on to green LED. The PGM source will be circled with red border, while the PVW source will be circled with green border.





## 8.2 STILL

The video switcher supports STILL function, which user can freeze the output sources. Press the channel you want to freeze in the PGM row, then press the STILL button to make the output source freeze. User can freeze all the four outputs separately if they need. Press the output channel and STILL again to unfreeze.

## 8.3 Transition:CUT/AUTO

There are two transition control types for this video switcher: Transition without effects (CUT) and Transition with effects (AUTO).

CUT performs a simple immediate switch between Preview and Program. This is no delay seamless switching and the selected transition effect WIPE, MIX or FADE is not used.

AUTO performs an automated switch between Preview and Program views. The timing of the transition can be set by rate button. The transition effects WIPE, FADE, MIX will also be used.

# 9.TRANSITION EFFECT

The video switcher provides various transition effects and types for user's choice, including WIPE, MIX, FADE. Users can also switch directly to the CUT button for simple and instant quick switching without transition effects.

## 9.1 WIPE

Press the WIPE button to perform the wipe transition effect. User can choose different styles through menu. Then press AUTO to execute the transition. Different transition rates can be switched by pressing the RATE1/RATE2/RATE3 buttons on the panel.



: Upward wipe transition effects



: Leftward wipe transition effects



: Downward wipe transition effects



: Rightward wipe transition effects

## 9.2 MIX

Press the MIX button and press the AUTO button to perform the MIX transition effect. In addition, different transition rates can be switched by pressing the RATE1/RATE2/RATE3 buttons on the panel.



## 9.3 FADE

Select the FADE button and press the AUTO button to execute the FADE transition effect (as shown in the image below). In addition, you can press the RATE1/RATE2/RATE3 buttons on the keyboard to switch between different transition rates.



## 10.MENU SETTINGS

### 10.1Audio Settings

AUDIO STATUS	
CH1 SRC	IN1
CH2 SRC	RCA
CH3 SRC	RCA
CH1 VOL	100
CH2 VOL	100
CH3 VOL	100

This video switcher supports both MIX mode and AFV mode (audio follows video), users can press AFV or MIX on the panel to select the audio mode, adjust the volume level, or enter the main menu to set the audio mode, master volume and mute switch in the audio settings.

- MIX mode

Press button MIX to set audio mode as mixing. Press CHI/CH2/CH3 to switch the audio sources from IN1/IN2 /IN3 /IN4 /RCA/MIC1/MIC2. Press button VOL- or VOL+ to adjust the corresponding audio volume.

Besides, you also can set the audio though menu. Press UP/DOWN to select and press MENU to confirm.

MAIN MENU	AUDIO SETTINGS
Audio Setting	Audio Mode
System Settings	Master VOL
Network Settings	Mute
Streaming	Return
Recording	
Firmware	
Exit	

- AFV Mode

Press AFV button to enable the audio-follow-video mode. Under Follow mode the audio is coming from the embedded audio of Program video source. You can control the audio volume by adjusting the button VOL- and VOL+.

AUDIO SETTINGS	
Audio Mode	AFV
Master VOL	70
Mute	OFF
Return	

## 10.2 System Settings

- Language

Entering system settings from the menu to switch the system language between English and Chinese.

SYSTEM SETTINGS	
Language	English
Output Port	Ethernet
PGM Out	1080P24
IN4 SRC	HDMI4
Fan RPM	Low
Reset	
Return	

- Output Port

Entering system settings from the menu can select the output port as Ethernet or USB.

SYSTEM SETTINGS	
Language	English
Output Port	Ethernet
PGM Out	1080P25
IN4 SRC	HDMI4
Fan RPM	Auto
Reset	
Return	

- PGM Out

Users can select the resolution of the PGM output from the menu, or by pressing RES on the panel.

SYSTEM SETTINGS	
Language	English
Output Port	Ethernet
PGM Out	1080P25
IN4 SRC	HDMI4
Fan RPM	Auto
Reset	
Return	

- IN4 SRC

Select IN4 input source as HDMI4 or DP4.

SYSTEM SETTINGS	
Language	English
Output Port	Ethernet
PGM Out	1080P25
IN4 SRC	HDMI4
Fan RPM	Medium
Reset	
Return	

- Fan RPM

Setting the cooling fan speed to control the temperature and noise of the switcher. There are 5 options, AUTO/ OFF/ HIGH/MEDIUM/LOW. The default setting of the fan is in AUTO mode that the speed of the fan is adjusted automatically depending on the switcher's operating temperature. If the working environment requires special quiet for a special application, the user can turn off the fan manually from the menu. If the switcher is working in a high temperature environment, the auto fan setting cannot meet the cooling requirement, then user can select the fan setting to HIGH option to keep the fan in high speed.

SYSTEM SETTINGS	
Language	English
Output Port	Ethernet
PGM Out	1080P25
IN4 SRC	DP4
Fan RPM	Medium
Reset	
Return	



- Reset

Restore all settings to default Factory Settings.

SYSTEM SETTINGS	
Language	English
Output Port	Ethernet
PGM Out	1080P25
IN4 SRC	DP4
Fan RPM	Medium
Reset	
Return	

### 10.3 Network Settings

- Network

There are two methods to acquire the IP: Dynamic (IP configured by router) and Static (set IP freely by yourself). Select the method you need by menu. The default setting is Dynamic.

**Dynamic:** Connecting the video switcher with a router with DHCP features, then it will auto obtain an IP address automatically. Make sure that the video switcher and PC are in the same local area network.

**Static:** Select static IP acquire method when the PC is without DHCP. Connect the video switcher with PC via network cable, set the PC's IP address to the same IP range as video switcher (the video switcher's default IP address 192.168.1.100), or set the switcher's IP address to the same range as PC's IP address.

NETWORK SETTINGS	
DHCP	OFF
IP	192. 168. 001. 100
NetMask	255. 255. 255. 000
GateWay	192. 168. 001. 001
Save	
Return	

NETWORK SETTINGS	
DHCP	ON
IP	000. 000. 000. 000
NetMask	000. 000. 000. 000
GateWay	000. 000. 000. 000
Save	
Return	

- NetMask

Set the NetMask. The default setting is 255.255.255.000.

- GateWay

Set the GateWay according to current IP address.

Save the configuration when network setting finish.

## 10.4 Streaming

The switcher has two output ports, a USB output and a LAN network output, and the user can select the output method in the system settings.

Using the USB Type-C port, users can capture video to computer, live streaming via streaming software such as OBS, PotPlayer etc.

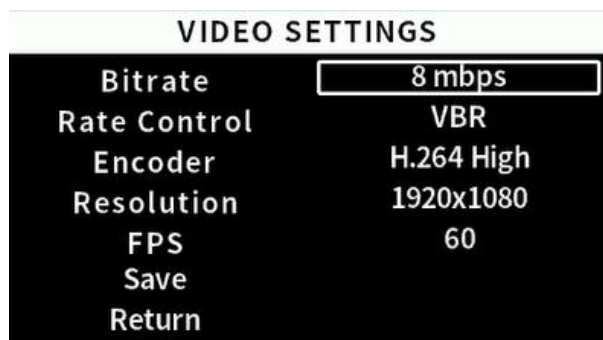
Using the LAN port, users can live streaming directly to the live platform via IP address.

### Network push streaming:

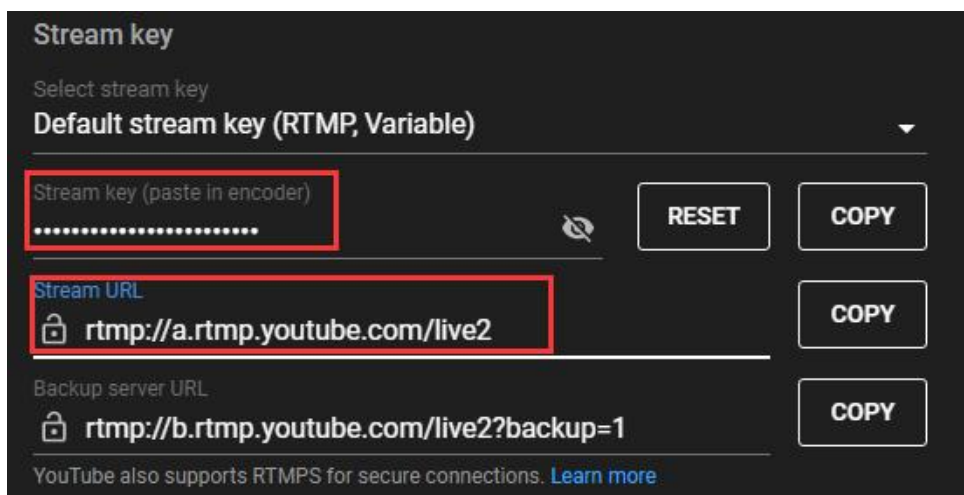
Open the live streaming settings of the streaming platform and get the Stream URL and streaming key of the live platform. Using the LAN port, login to the IP website, select "Stream settings", copy the stream URL and streaming key into the URL, and turn on "switch", click "Save&apply" to achieve the push stream, users can go to the live streaming platform to view.

Following is an example to show how to live stream.

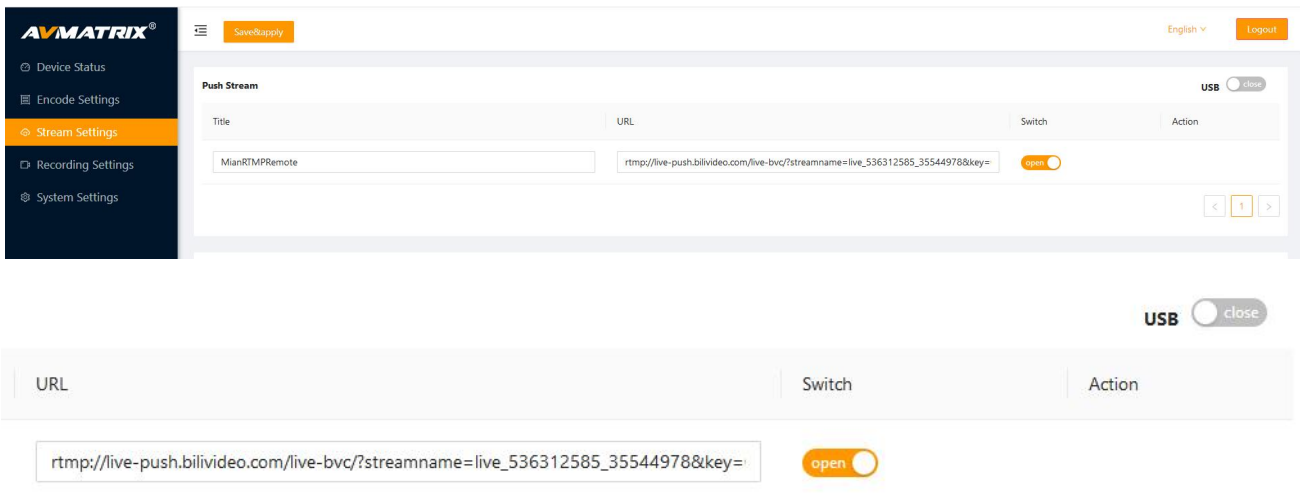
Step1:Users can according to the actual situation adjust the Bitrate, Rate control, Encoder, Resolution, FPS of the live video in the video settings, click "Save" after the settings. For example, if the network speed is slow, the Bitrate Control can be switched from CBR to VBR and adjust the Bitrate.



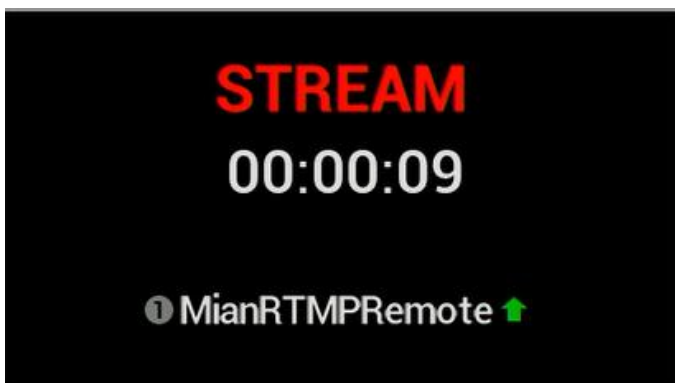
Step2:Open the live streaming settings of the stream platform and get the Stream URL and streaming key of the live platform.



Step3:Login to the IP website, select "Stream settings", copy the stream URL and streaming key into the URL, and turn on "switch", click "Save&apply" to live stream.

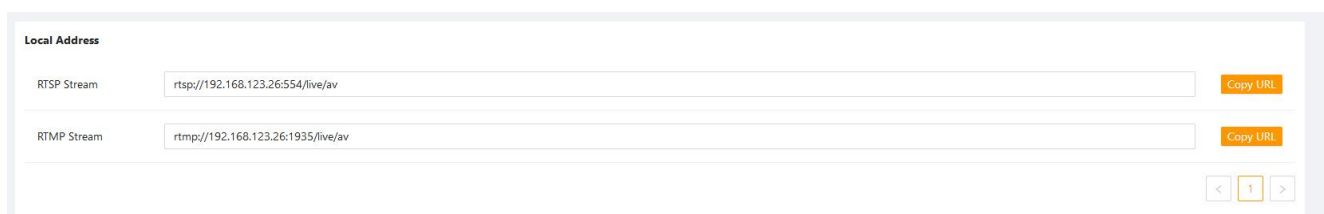


When the streaming status in the multiview turns red, and the stream indicator arrow turns green, it means the live streaming starts. At the same time, the status page will show the time and platform of the live streaming to make it easy for users to view.



**Local pull streaming:**

Login to the IP site, select "Stream settings", get the local address, open a video player such as OBS, PotPlayer, etc., and open the copied "local address URL" link to finish local streaming.



## 10.5 Recording

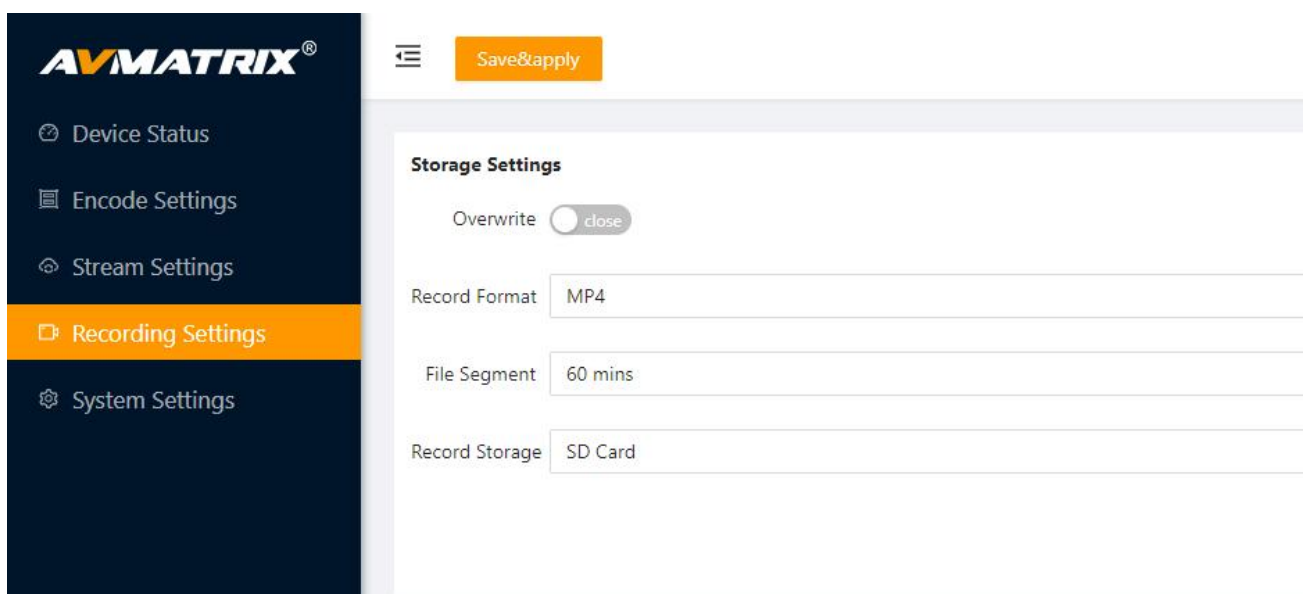
The switcher has two recording methods, one is recording through USB disk and the other is recording through SD card.

Insert the USB disk or SD card, select the recording device in the record settings according to user's need, then click "Save" and press the REC button on the panel to start recording, the status will show the device information. When the recording status turns red in multiview, it means the video recording has been started. Press REC again to end recording. In addition, the recording status will also show the recording time and SD card/U disk status to make it easy for users to view.



Users can select the recording format between MP4 and TS through the record settings. Recorded video can be stored every 1mins/ 5mins/ 10mins/ 20mins/ 30mins/60mins/90mins/no, continuous storage, user can also select through the web page of the storage settings.

At the same time, the switcher recording has an overwrite function that will automatically delete and overwrite the previously recorded content and re-record the new content when the SD card and USB stick memory is full.



### 10.6 Firmware

SN (Serial number) is the CPU ID of the switcher.

Users can view the system version of this switch in Firmware, SN etc.

MAIN MENU	FIRMWARE
Audio Setting	HARDWARE V5.1
System Settings	BOOTLOAD V1.0.0
Network Settings	SYSTEM V3.1.0.1
Streaming	FPGA VER V1.0.6
Recording	HDMI VER V1.0.5
<b>Firmware</b>	DEVICE SN 270e29c865c39dce
Exit	<b>Return</b>

Firmware and time settings can be updated from the web interface.

**Maintaining**

Device Name

Device No.

Mac Address

Hardware Ver.

Device Ver.

Upgrade

Import Settings