AVMATRIX

SHARK H4

MICRO 4 CHANNEL HDMI LIVE STREAM MULTI-FORMAT 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.

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

CONTENTS

1. BRIEF INTRODUCTION

1.1. Overview

Shark H4 is a compact design 4-channel HDMI multi-format video switcher with metal housing. It supports various functions including LAN streaming, recording, video switching, audio mixing, PGM/ multiview/ Aux out, different transition effects, Luma Key Chroma Key, DSK, LOGO, PIP/ POP, media library etc. Inputs support multi-format while output can be scaled and configured. Enjoy flexible live streaming and recording options with this unit. Stream directly over the Ethernet or USB, and record to USB disk or SD card, all at up to 1080P resolution and 32Mbps bitrate. Users 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 choice.

1.2. Main Features

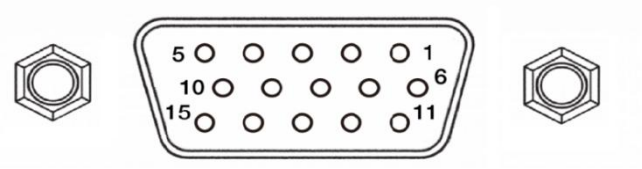
- 4 channel auto-detected HDMI inputs
- 2×HDMI PGM output,1×HDMI multiview out, 1×USB type-C output
- RTMP/SRT stream via Ethernet
- USB disk/ SD card recording
- USB-C for capturing and streaming on PC
- Clearly visible multiview & status page
- Upstream key: Luma key, Chroma key, PIP×2/ POP
- Downstream key : DSK and LOGO overlay
- T-bar/ Auto/ Cut transitions; various effects: WIPE(11×3patterns) / MIX/ DIP
- Audio mixer: 4×HDMI embedded audio and 2-Ch MIC in; audio delay available
- Media library: 39 default patterns, 16 imported images, 16 captured images, 2 color generators
- Customer configuration import and export
- Broadcast video monitoring, FTB/ MUTE/ STILL/ GPIO for tally

2. INTERFACES

2.1. Interface Overview

1	MIC/Line level IN × 2
2	HDMI IN × 4
3	PGM(AUX) OUT × 2
4	MULTIVIEW(AUX) OUT × 1
5	USB OUT × 1 (for live streaming on PC)
6	LAN port (for RTMP streaming and PC control)
7	GPIO (for tally)
8	DC 12V IN × 1
9	Earphone OUT × 1
10	USB type-A × 1 (insert U disk to import images and LOGO; firmware upgrade)
11	SD card slot (for recording)
12	USB REC (for recording)

2.2. Tally PIN Definition



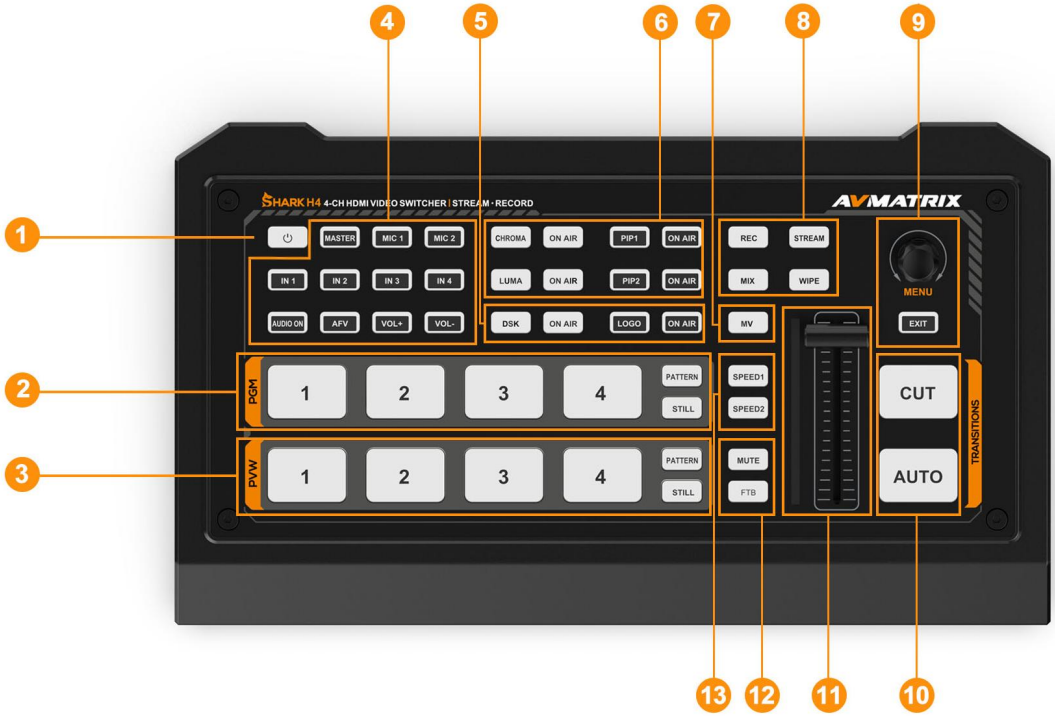
PIN	Definition	PIN	Definition
11	PGM-IN1	**6**	PVW-IN1
12	PGM-IN2	**7**	PVW-IN2
13	PGM-IN3	**8**	PVW-IN3
14	PGM-IN4	**9**	PVW-IN4
15	NC	**10**	NC
3	NC	**4**	NC
5	GND		

3. SPECIFICATION

CONNECTION	
Video In	HDMI type-A ×4
Video Out	HDMI PGM × 2 HDMI Multiview × 1 USB Capture: USB type-C × 1 Streaming: LAN× 1
Recording Port	SD card slot; USB port
Audio In	MIC/ Line level (3.5mm stereo audio) ×2
PC Control Port	LAN×1
Media Library	USB type-A ×1(USB disk port for image import and firmware upgrade)
Tally Port	DB-15 ×1
Power In	DC 12V ×1
STREAM&REC	
Bitrate	2M~32Mbps
Rate control	CBR/VBR
Control protocols	RTMP, RTMPS, SRT
REC SD card format	FAT32/exFAT/NTFS
REC U disk format	FAT32/exFAT/NTFS
REC File segment	1/5/10/20/30/60/90/120mins
FUNCTIONS	
Transitions	T-Bar/AUTO/ CUT
Effects	Wipe (11×3 patterns)/ Mix/ DIP/ Pattern/ Still(freeze)/ MUTE/ FTB
Layouts	2 styles of Multiview layout (6 windows and status)
Keys	Upstream Key: Luma Key ×1/ Chroma Key ×1/ PIP ×2/ POP Downstream Key: DSK ×1/ Logo ×1
Audio Mixer	HDMI ×4 and MIC/ Line level ×2; Audio delay: 0-500ms
Media	Default image: 39 preset patterns Local image: up to 16 imported images Capture image: up to 16 captured images
Generators	Pattern generator ×1 Color generators ×2
STANDARDS	

HDMI In Format Support	1080p 60/ 59.94/ 50/ 30/ 29.97/ 25/ 24/ 23.98 1080i 50/ 59.94/ 60 720p 60/ 59.94 /50/ 30/ 29.97/ 25/ 24/ 23.98 576i 50, 576p 50, 480p 59.94/ 60, 480i 59.94/ 60
HDMI PGM Out	1080p 60/ 59.94/ 50/ 48/ 47.95/ 30/ 29.97/ 25/ 24/ 23.98; 1080i 60/ 59.94/ 50
HDMI Multiview Out	1080p 60/ 59.94/ 50/ 48/ 47.95/ 30/ 29.97/ 25/ 24/ 23.98; 1080i 60/ 59.94/ 50
HDMI Color Space	RGB/ YUV
USB Capture Out	Up to 1080p 60
Media Format	USB disk format support: FAT32, Ext3, Ext4, up to 256GB Image format support: png, bmp, jpg, gif, jpeg, ppm, pbm, tif, jps, mpo, tga Logo format support: png, bmp, jpg, gif, jpeg, ppm, pbm, tif, jps, mpo, tga Logo size support: 10×10 pixel to 600×600 pixel
OTHERS	
Power	Wide voltage: 7~24V; Operating power:15.6W(12V 1.3A)
Dimension (LWD)	244.5 × 143.2 × 44.5mm
Weight	Net: 1009.5g, Gross: 1360g
Temperature	Working: -20℃~60℃, Storage: -30℃~70℃
Accessories	Power supply (12V 2A) ×1; USB cable (type A-C) ×1; Tally connector (DB-15) ×1

4. FRONT CONTROL PANEL



1	**Power**	Start the device
2	**PGM:1-4**	Selecting the signal source for Program. PATTERN for setting a pattern to PGM, STILL for freezing the input source. Note: different patterns can be set including Black/Color Bar/Color1 /Color2/ HDMI In1/HDMI In2/HDMI In3/HDMI In4/Image. (Refers to Part 13.1)
3	**PVW:1-4**	Selecting the signal source for Preview. PATTERN for setting a pattern to PVW (Refers to Part 13.1), STILL for freezing the input source (Refers to Part 7.2).
4	**AUDIO**	User can configure the audio of each channel in this area, including AFV or audio mix mode, audio source selecting, adjust volume + & volume -
5	**DSK**	DSK: Enable the downstream key ON AIR: make the DSK on air LOGO: Add logo bin from USB flash disk, enable the logo overlay ON AIR: make the Logo on air
6	**CHROMA KEY** **LUMA KEY**	CHROMA: Enable the Chroma Key LUMA: Enable the Luma Key PIP1/PIP2: Enable two group of Picture in Picture. Size and position can be set via Menu. ON AIR: make the corresponding Chroma/Luma/PIP on air.
7	**MV**	MV: quickly switch between Multiview and the configured multiview out (Refers to Part 11.2)
8	**STREAM&REC &Transition**	STREAM: Press to stream REC: Press to start or stop recording WIPE: Transition from one source to another MIX: Selects a basic A/B dissolve for the next transition
9	**MENU**	MENU: For menu control, configure different parameters
10	**CUT/ AUTO**	CUT: Performs a simple immediate switch between PGM and PVW. AUTO: Performs an automated switch between PGM and PVW.
11	**T-Bar**	Switch the PVW and PGM through T-Bar
12	**MUTE/ FTB**	MUTE: Mute the master audio FTB: Fade to Black, used for emergency.
13	**SPEED**	SPEED1-2: Control transition rate, speed can be configured on Menu.

5. POWER ON/ OFF

Connect your video sources and the output devices, plug the power adapter. The video switcher start to work.

Press the power button for about 3 seconds when you want to power off the switcher, select YES in the prompt box to shut down the system.

6. MULTIVIEW

The switcher has three HDMI outputs (2PGM/Multiview). The three HDMI ports can be configured as AUX out, IN 1/2/3/4, PGM, clean PGM, PVW, Color bar, or Multiview (Refer to part 11).

Connecting the HDMI Multiview out to an additional monitor, user will get the multiview image. In the Multiview there are windows of PVW, PGM, NI 1, NI 2, NI 3, NI4 and Status/Menu page. See below image.

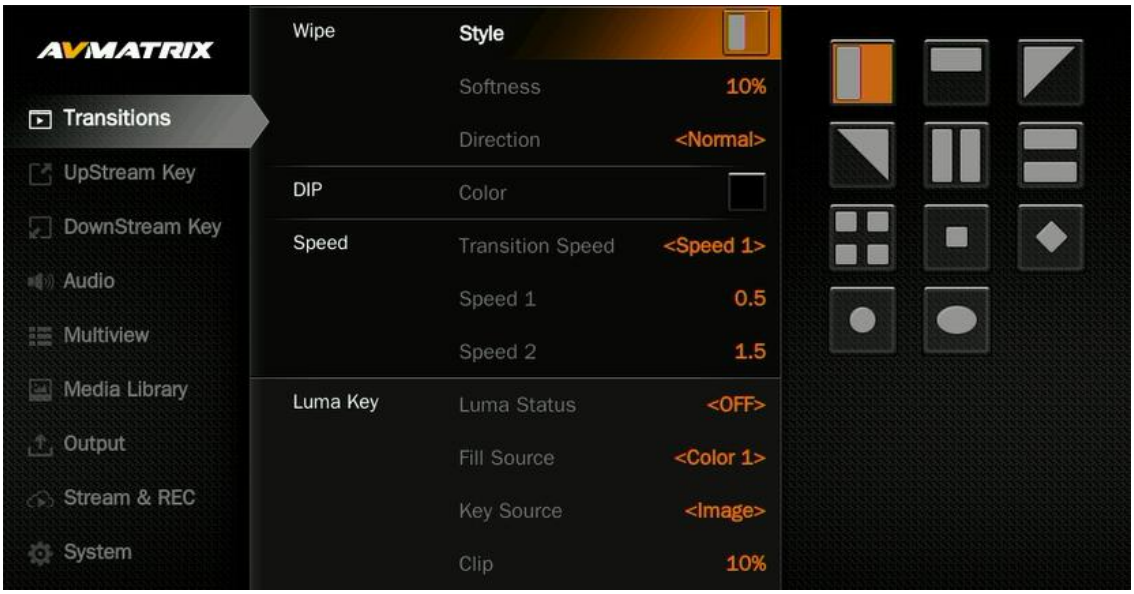
6.1. Status Page

In the status page, there are status information of FTB (Fade to Black), P-PVW (Pattern in PVW row), P-PGM (Pattern in PGM row), Logo, Still, Audio, Transition Effect, Transition Speed, USK (Upstream Key), DSK (Downstream Key),streaming time, recording time, USB disk / SD card status, encoding format and System Time. See below image.

The information of user name, working time, CPU working temperature, system time keeps displaying in the bottom of the Status/Menu page.

The information on the status page will be updated in real time as the settings are changed. It is clear and visible for the user to know the current situation and settings

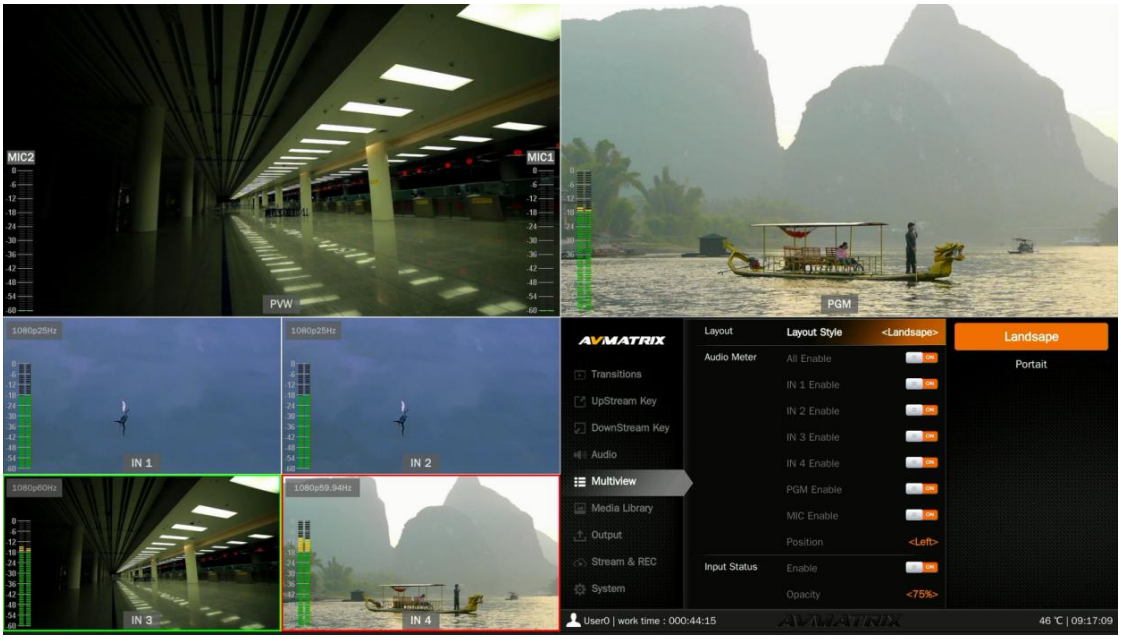
Pressing the menu button on the switcher will switch the status page to the menu page. See below image.



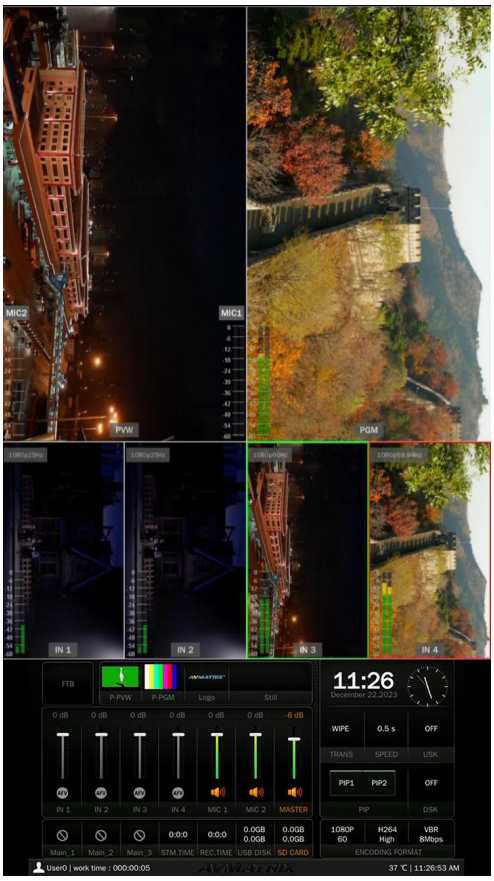
6.2. Layouts

There are two Multiview layouts that can be switched from the horizontal layout to the vertical layout from the menu, as shown in the images below.

- Horizontal layout:

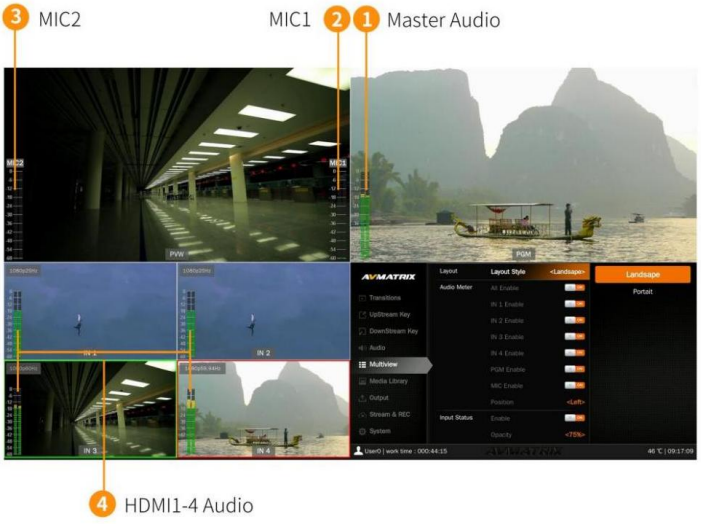


- Vertical Layout:



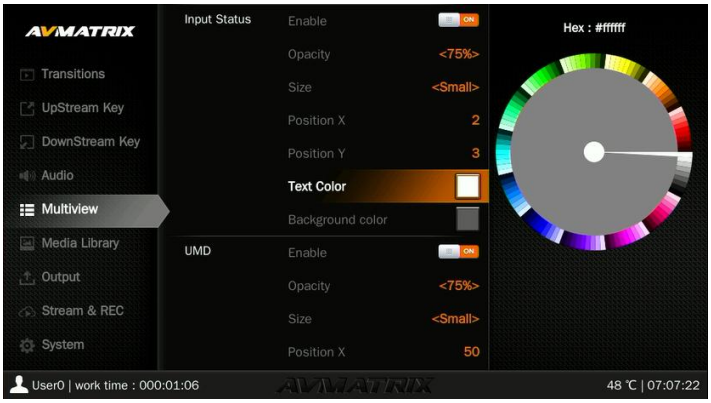
6.3. Audio Meter

There are audio meters in each windows of Multiview, including IN1-4, PGM and MIC to show the audio status of each audio. The audio meters of MIC 1 and MIC 2 show in the left and right of PVW window. User can turn on/ off . All or each audio meter from the menu. The audio meter position can be in the right or left of each window. See below image.



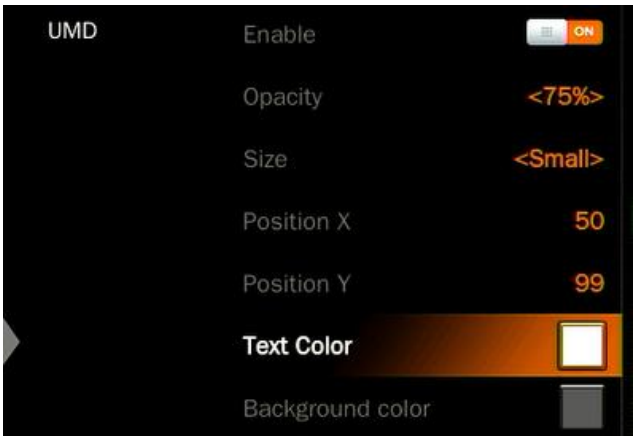
6.4. Input Information

There is an overlay in each window of the IN 1-4 that shows the resolution and frame rate of the HDMI input. The user can turn on or off the overlay in each input window, and set the overlay opacity (50%, 75%, 100%), size (small, medium, large), and position X and Y (1-100), as well as the text color and background color.See below image.



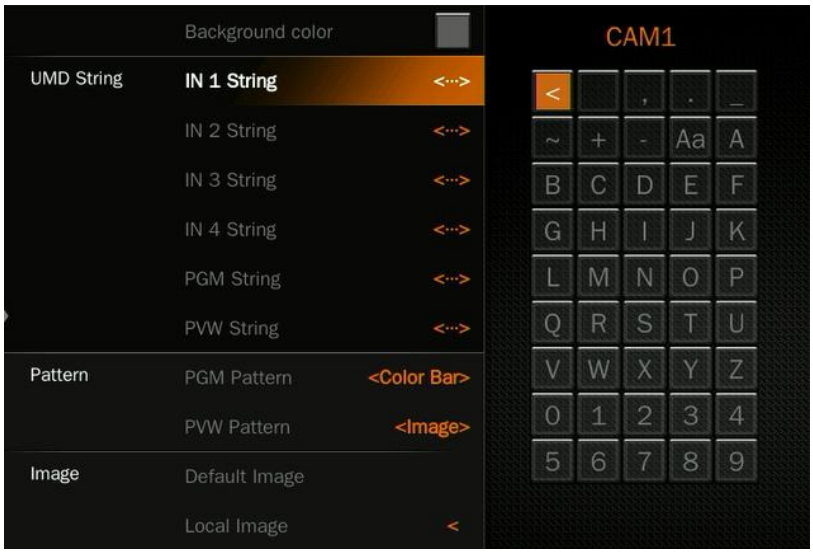
6.5. UMD Settings

The default UMD of the four inputs (IN1, IN2, IN3, and IN4) can be turned on or off in each window. Additionally, the user can set the overlay opacity (50%, 75%, or 100%), size (small, medium, or large), position (X and Y, 1-100), text color, and background color.See below image.



The UMD content for each HDMI input can be set from the on-screen menu. The user can use a virtual

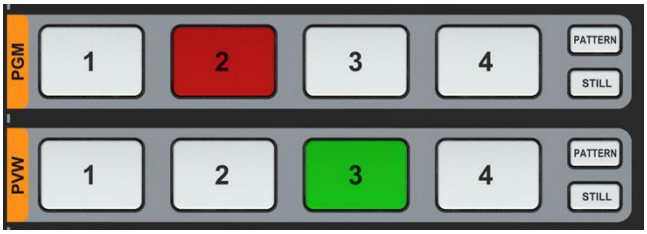
keyboard and rotary button to rename the UMD content for each window. The UMD content can be up to 10 characters long.Below image as an example, rename the IN1 to CAM1.



7. PGM PVW SWITCHING

7.1. PGM PVW Channel Selection

On the front panel, choose PGM and PVW sources from PGM, PVW row, and PATTERN (different patterns can be configured on the menu(see Part 13.1). The selected button for PGM will light up red, and the selected button for PVW will light up green. The PGM source will be circled in red, and the PVW source will be circled in green.



7.2. STILL

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

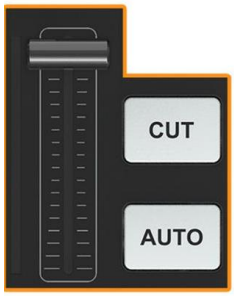
7.3. Transition: CUT/ AUTO/ T-BAR

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

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

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

T-BAR manual transition performs similar to AUTO, but it is more flexible that the timing of the transition depends on the speed of the manual switch.



8. TRANSITION EFFECT

The video switcher provides various transition effects and types for user's choice, including WIPE, DIP, MIX.

8.1. WIPE

Press the WIPE button to perform the wipe transition effect. User can choose different styles of WIPE through menu; as well as set the softness of edge. Select the direction from Normal/ Invert/ Flip-Flop when use AUTO transition.

Press the INV button to invert the selected wipe so it acts in the opposite direction.

Flip-Flop to invert between Normal and Invert.

8.2. DIP

Press the DIP button to perform the DIP transition effect.User can select the various color for DIP from the palette on menu. The default color is black.

DIP to Black (fade out):

DIP to White (fade out):

8.3. MIX

Press the MIX button to perform the MIX transition effect.

8.4. Transition Speed Setting

The user can set two transition speeds on the menu, and the defined speed values will be saved and correspond to the Speed 1 and Speed 2 buttons. The higher the value, the slower the transition speed. A total of 0.1s-8.0s are available to choose from.

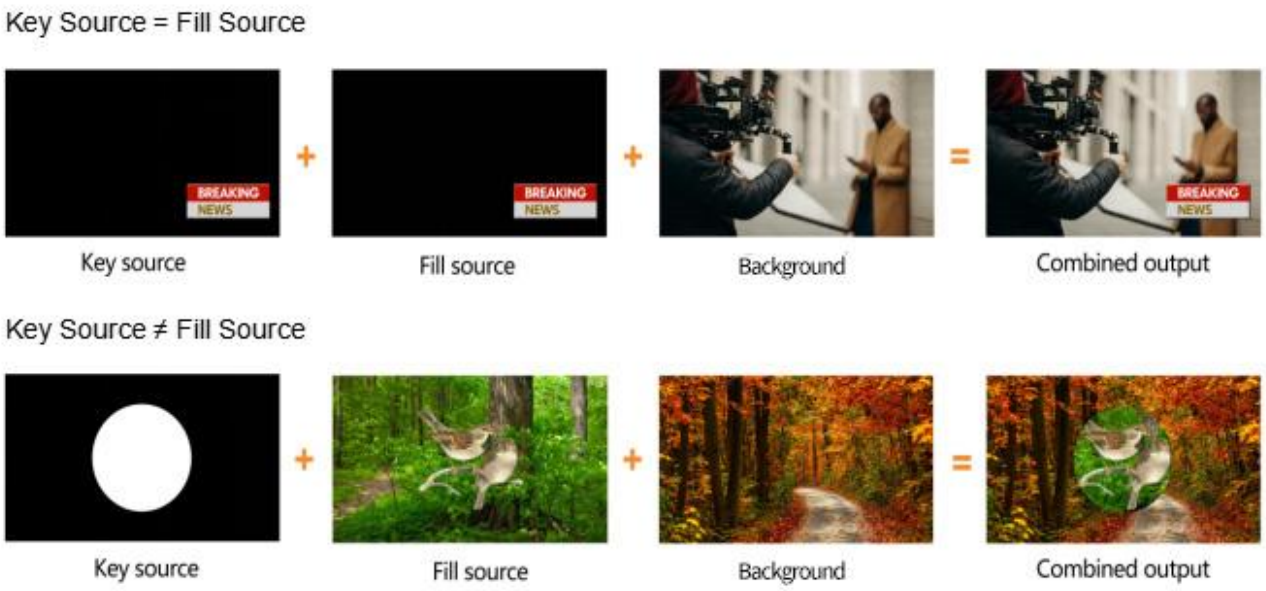
9. UPSTREAM KEY

Upstream Key essentially means that these are keys that are included as part of the transition, so in the

transition from whatever on Preview to Program, anything that's an Upstream key is going to be transitioned with it.

9.1. Luma Key

Luma Key provides a way to composite a Text clip over a background clip based on the luminance levels in the video. Turn on the Luma Key, a color from the key source will be removed, revealing another background image behind it.



Switching a video with background to PVW window, and turn on the Luma Key. Press the menu knob to enter the setting interface. Under Luma Key sub-menu, user can assign the fill and key source from various options including **Black/ Color Bar/ Color1/ Color 2/ IN1/ IN2/ IN3/ IN4/ Image (import from USB disk)**. Configure and adjust the Key parameters including Clip/Gain/mask to achieve the effect needed.

Press ON AIR button, the ON AIR button will be on, and the Key effect will show on PGM.

LUMA button ON: Luma key shows on PVW

ON AIR button ON: Luma Key available on PGM

LUMA and ON AIR button both ON: Luma Key available on both PVW and PGM. Corresponding status in menu is <KEY & ON AIR>

Luma key menu interface and parameter setting as below:

Menu	Sub-menu	Item	Parameter	Default
Upstream Key	Luma Key	Luma Status	OFF/ KEY (PVW)/ ON AIR (PGM)/ KEY & ON AIR	OFF
		Fill Source	Black/ Color Bar/ Color 1/ Color 2/ IN 1/ IN 2/ IN 3/	Color1

	IN 4/ Image	
Key Source	Black/ Color Bar/ Color 1/ Color 2/ IN 1/ IN 2/ IN 3/ IN 4/ Image	Image
Clip	0%-100%	10%
Gain	0%-100%	0%
Invert Key	On/Off	Off
Mask Enable	On/Off	Off
Mask Left	0%-100%	0%
Mask Top	0%-100%	0%
Mask Right	0%-100%	50%
Mask Bottom	0%-100%	50%

Clip: Adjust the threshold at which the key cuts its hole. When decrease the clip degree, more of the background will appear. If the background video is completely black then the clip value is too low.

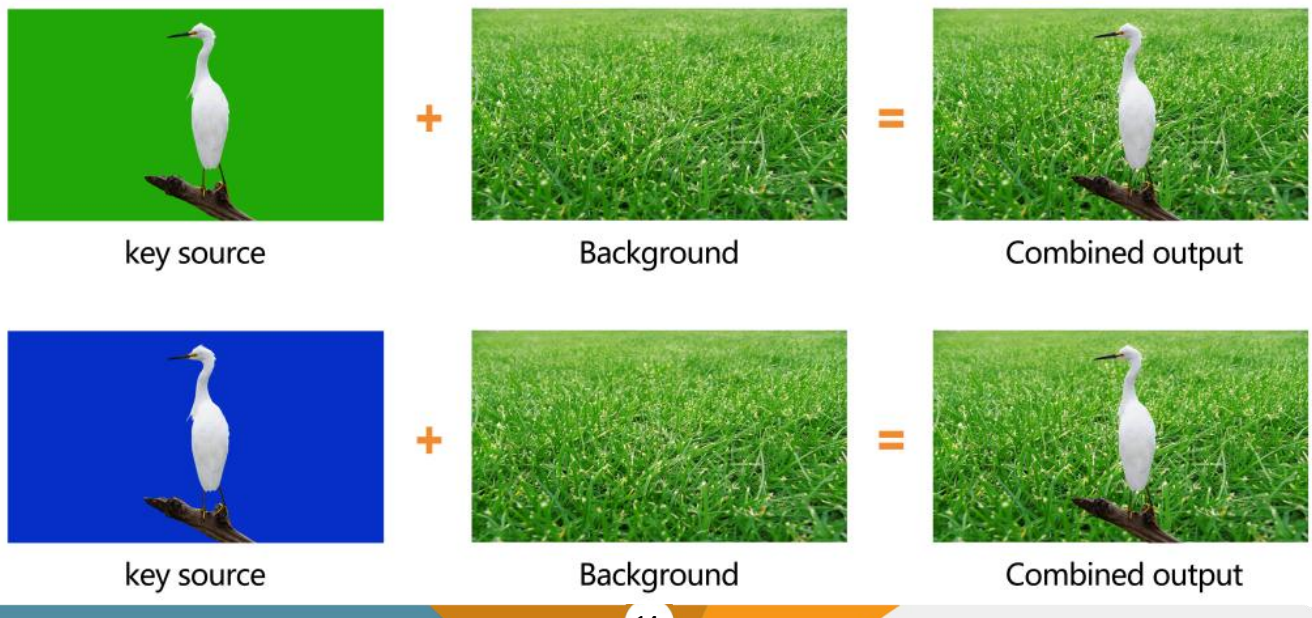
Gain: Adjusts the performance of the chroma key in light or white areas. Apply more Key Gain if the light areas are becoming too transparent.

Invert Key: Inverts the key signal.

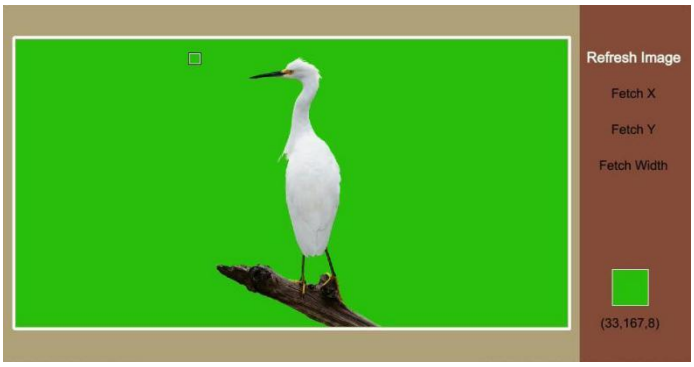
Mask: Configure the Mask for the Key area

9.2. Chroma key

Chroma Key is a visual-effects and post-production technique for compositing (layering) two images or video streams together based on color hues (chroma range). The technique has been used in many fields to remove a background from the subject of a photo or video, particularly the newscasting, motion picture, and video game industries.



User can configure the effect of Chroma Key, including the key source, key color, clip, gain, key fetch and mask, etc. in the menu page.



Press the ON AIR button next to the CHROMA button to enable the KEY on PGM.

CHROMA button ON: Chroma key shows on PVW.

ON AIR button ON: Chroma Key available on PGM

CHROMA and **ON AIR** button both ON: Chroma Key available on both PVW and PGM. Corresponding status in menu is <KEY & ON AIR>

Chroma Key detailed parameters setting as below table:

Menu	Sub-menu	Item	Parameter	Default
Upstream Key	Chroma Key	Chroma Status	OFF/ KEY (PVW)/ ON AIR (PGM)/ KEY & ON AIR	Off
		Key Source	Black/ Color Bar/ Color 1/ Color 2/ IN 1/ IN 2/ IN 3/ IN 4/ Image	Image
		Key Color R	0~255	0
		Key Color G	0~255	255
		Key Color B	0~255	0
		Fetch Color		0
		Key Color Type	Red/Green/Blue/Custom	Green
		Similarity	0-1000	409
		Smoothness	0-1000	82
		Brightness	0%-100%	50%
		Contrast	0%-100%	50%
		Saturation	0%-100%	50%
		Default	Off/Reset Default	Off
		Mask Enable	On/Off	Off
		Mask Left	0%-100%	0%
		Mask Top	0%-100%	0%
		Mask Right	0%-100%	50%

		Mask Bottom	0%-100%	50%

9.3. PIP & POP

The video switcher supports two groups PIP or one POP. When press PIP1 or PIP2 button, there will be a small image display on the top left corner of PVW window. Press the Menu knob and choose the PIP setting interface, user can set parameters including position, size, border etc. PIP1 supports 0°, 90° and 270° rotation. Press ON AIR button next to PIP1 and PIP2 to put the PIP into effect on PGM.

PIP1/ PIP2 button ON: PIP1 or PIP2 shows on PVW.

ON AIR button ON: PIP1 or PIP2 Key available on PGM.

PIP1/ PIP2 and **ON AIR** button both ON: PIP1 or PIP2 available on both PVW and PGM. Corresponding status in menu is <KEY & ON AIR>

Set the POP same on menu, when POP are working, PIP is inoperative.

PIP & POP detailed parameters as below:

Menu	Sub-Menu	Item	Parameter	Default
Upstream Key	PIP/POP	Border Color	Color	White
		Border Width	0~15	2
		PIP1 Status	OFF/ KEY (PVW)/ ON AIR (PGM)/ KEY & ON AIR	Off
		PIP1 Source	Black/ Color Bar/ Color 1/ Color 2/ IN 1/ IN 2/ IN 3/ IN 4/ Image	IN 1
		PIP1 Size	1/2 1/3 1/4 1/8	1/3
		PIP1 Position X	0~100	0
		PIP1 Position Y	0~100	0
		PIP1 Rotation	0° /90° /270°	0°
		PIP2 Status	OFF/ KEY (PVW)/ ON AIR (PGM)/ KEY & ON AIR	Off
		PIP2 Source	Black/ Color Bar/ Color 1/ Color 2/ IN 1/ IN 2/ IN 3/ IN 4/ Image	IN 2

		PIP2 Size	1/2 1/3 1/4 1/8	1/3
		PIP2 Position X	0~100	100
		PIP2 Position Y	0~100	0
		POP Status	OFF/ KEY (PVW)/ ON AIR (PGM)/ KEY & ON AIR	off
		POP Source 1	Black/ Color Bar/ Color 1/ Color 2/ IN 1/ IN 2/ IN 3/ IN 4/ Image	IN 1
		POP Source 2	Black/ Color Bar/ Color 1/ Color 2/ IN 1/ IN 2/ IN 3/ IN 4/ Image	IN 2

10. DOWNSTREAM KEY

10.1. DSK

Downstream keys are the last layers of keying, so they overlay all video switched to the main program output. They operate independently to what's selected as the "background", whatever you place on a Downstream key is going to stay on screen, no matter what you are doing with your transitions. Downstream key is ideal for bringing animated bugs or logos on screen.

Key source Fill source Background Combined output

User can set the source (Fill Source, Key Source), Clip, Gain and mask (Mask Enable, Mask Left, Mask Top, Mask Right, Mask Bottom) of DSK can be set from menu. Parameters as below. Press the ON AIR button next to the DSK button to enable the KEY on PGM. Using AUTO or T-Bar to switch the PVW and DSK to PGM. The Key will not be changed when switching been the PVW and PGM.

Press ON AIR button next to DSK button to put the downstream key into effect on PGM.Use AUTO or T-Bar to switch PVW and DSK to PGM. The key source will not change when switching PVW and PGM.

DSK button ON: DSK key shows on PVW.

ON AIR button ON: DSK Key available on PGM.

DSK and **ON AIR** button both ON: Downstream Key available on both PVW and PGM. Corresponding status in menu is <KEY & ON AIR>

Downstream Key detailed parameters as below:

Menu	Sub-Menu	Item	Parameter	Default

Downstream Key	DSK	DSK Status	OFF/ KEY (PVW)/ ON AIR (PGM)/ KEY & ON AIR	Off
		Fill Source	Black/ Color Bar/ Color 1/ Color 2/ IN 1/ IN 2/ IN 3/ IN 4/ Image	Color 1
		Key Source	Black/ Color Bar/ Color 1/ Color 2/ IN 1/ IN 2/ IN 3/ IN 4/ Image	Image
		Clip	0%-100%	10%
		Gain	0%-100%	0%
		Invert Key	On/Off	Off
		Mask Enable	On/Off	Off
		Mask Left	0%-100%	0%
		Mask Top	0%-100%	0%
		Mask Right	0%-100%	50%
		Mask Bottom	0%-100%	50%

10.2. LOGO

The switcher allows user to import logos. Press the menu knob and choose the logo setting interface, where user can choose the logo from the media pool in the USB disk, set the position, size and opacity. Rotate the menu knob to choose the logo, press the Menu knob to select and delete a logo. User can view the logo effect in PVW.

Logo format support: png, bmp, jpg, gif, jpeg, ppm, pbm, tif, jps, mpo, tga

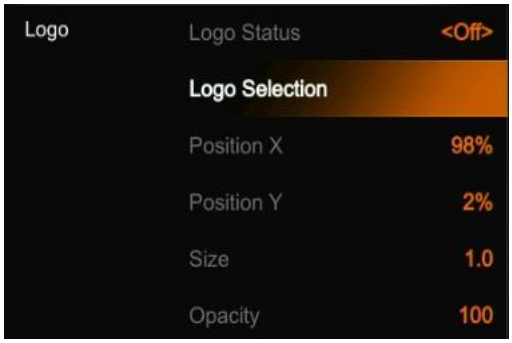
Logo size support: 10×10 pixel to 600×600 pixel

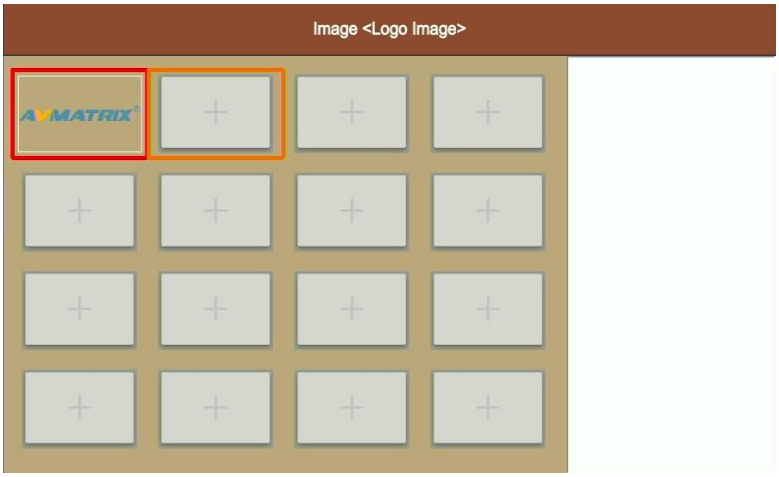
Press ON AIR button next to LOGO button to make it take effect.

LOGO button ON: DSK key shows on PVW.

ON AIR button ON: DSK Key available on PGM

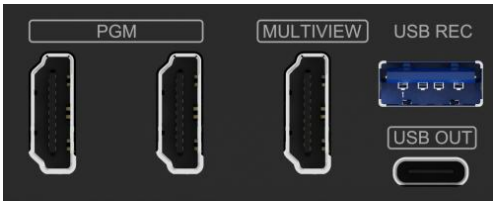
ON AIR and **LOGO** button both ON: LOGO available on both PVW and PGM. Corresponding status in menu is <KEY & ON AIR>





11. OUTPUT SETTING

11.1. Output Interfaces



SHARK H4 has 3 HDMI output and 1 USB output. The three HDMI outputs are default as 1 Multiview out and 2 PGM out . All outputs also can be defined as an AUX OUT from IN1, IN2, IN3, IN4, PVW, PGM, Clean PGM, Color Bar and Multiview out.

11.2. Multiview Out

The defaulted output of multiview port is the Multiview, the LED indicator of MV button in the front panel is green. User can connect it to an additional LCD display to monitor the 4 HDMI inputs, PVW, PGM and status interface clearly. User can also configure the output of multiview port to other options according to their application requirement. When Multiview output is defined as other output, for example IN 1, user can press the MV button to quickly switch the output between multiview out and configured IN 1.

: LED indicator on, multiview output port shows the Multiview.

: LED indicator off, multiview output port shows the configured other output.

11.3. PGM Out

When one of outputs is defined as PGM out, user can connect it to an external LCD display to monitor the PGM out video. The PGM out video is the program video including the overlay images from USK and DSK. PGM Clean out is the program video removing the overlay images from DSK.

11.4. Stream Port

11.4.1. Encode Source

The encoded Source is PGM by default. Users can select the captured source and streaming source according to their needs and configure the output as IN1, IN2, IN3, IN4, PVW, PGM, Clean PGM, Color Bar or Multiview output. When the encoded source is defined as other outputs, such as PVW, the recording and streaming source will be PVW.

11.4.2. Stream Port

Users can select and set the streaming interface as USB or network port through the menu..

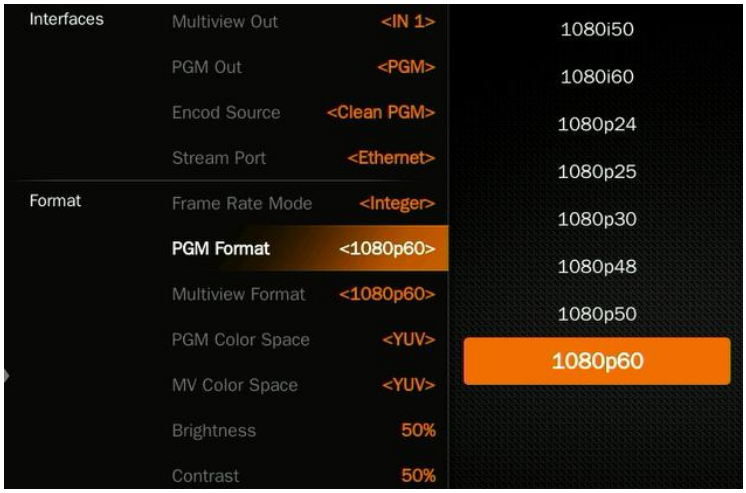
11.5. Output Format Setting

11.5.1. PGM Image Setting

User can set brightness, contrast, saturation of PGM output in the menu. The setting range is from 0%-100%. The default setting is 50%.

11.5.2. PGM and Multiview Format

The switcher supports up/ down scaling output. Besides, user can switch the Frame Rate Mode between Integer or Decimal. When the Frame Rate Mode is integer, there are 1080i50, 1080i60, 1080p24, 1080p25, 1080p30, 1080p48, 1080p50, 1080p60 options available. When the Frame Rate Mode is Decimal, there are 1080i50, 1080i59.94, 1080p23.98, 1080p25, 1080p29.97, 1080p47.95, 1080p50, 1080p59.94 options available. The default format of PGM and Multiview is 1080p60.



11.5.3. PGM and Multiview Color Space

There are YUV, RGB Full, RGB Limit color space options for PGM and Multiview out. The default color space of the output is YUV.

11.6. FTB

The FTB (Fade to Black) feature is usually used for emergency situations when using the switcher for an event. When you press the FTB button, the PGM will be faded to black to hide all other layers. The FTB button will keep flashing until you press the button again to stop the FTB.

Note: When the PGM window display black and keep black even after transition, please check if the FTB button flashing.

(1) Set the FTB and Mute speed

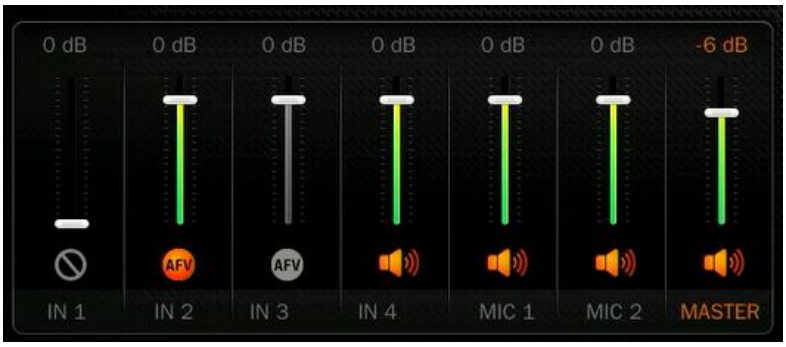
The speed of FTB and MUTE can also be adjusted from 0 to 3 seconds in the menu. The speed setting controls the duration of the entire FTB and MUTE transition. For example, if the speed is set to 2.5s, the PGM video will fade to black and the audio will MUTE gradually over 2.5 seconds.

(2) FTB with MUTE

FTB can also be used with MUTE. Press the MUTE button or enable the FTB with MUTE function from the menu to fade the PGM to black with mute.

12. AUDIO SETTING

All audio status show in the status page of Multiview, and in each Multiview window there is an audio meter for monitoring all the audio status.



=Audio off;

=Audio on, AFV off;

=Audio on, AFV on & activated;

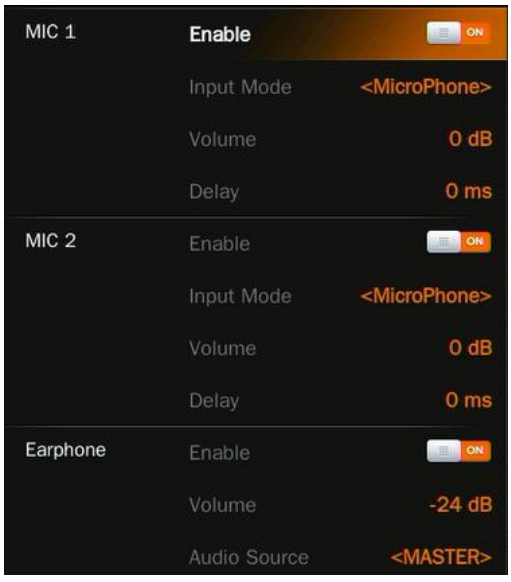
=Audio on, AFV on & non activated;

12.1. Master Audio

Master audio is an audio control for PGM output. It can be mixed audio or AFV audio. User can turn on/off the master audio or adjust audio volume.

12.2. Audio On (MIX)

There are a total of 6 audio sources, including 4 HDMI embedded audio channels and 2 MIC audio inputs. Users can independently turn on/off or adjust the volume of each audio source (IN 1, IN 2, IN 3, IN 4, MIC 1, and MIC 2)



12.3. AFV(Audio-Follow-Video)

Each channel of the 4 HDMI embedded audios can be set to AFV (Audio-Follow-Video). When one IN audio is set to AFV mode, then the audio will be turned on only when the PGM switches to this channel video source.

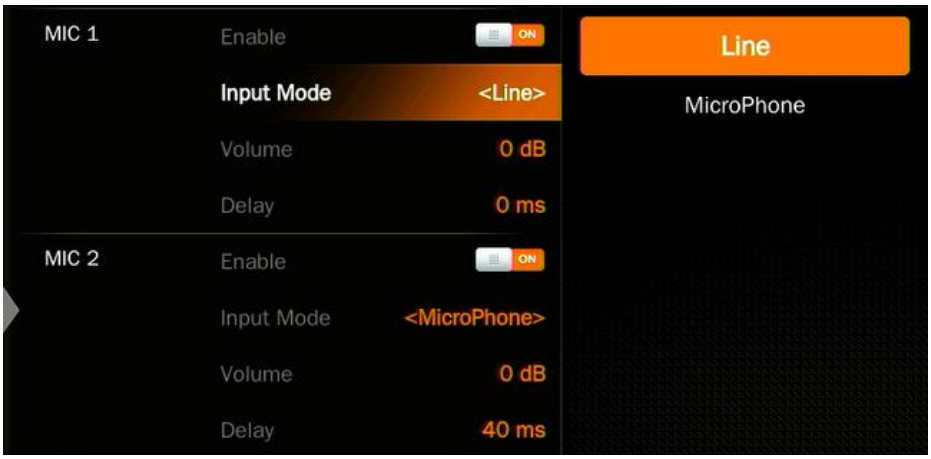
For example, IN1 audio is set to AFV mode, the IN 1 embedded audio will be turn on only when the switcher switches HDMI 1 as the video source of PGM.

12.4. Audio Delay

In the menu, there is an audio delay setting for IN 1, IN 2, IN 3, IN 4, MIC 1 and MIC 2. User can adjust the audio delay to make the audio and video synchronization. One level of the audio delay setting is equal to 5ms, and the audio can be delayed by a maximum of 500ms.

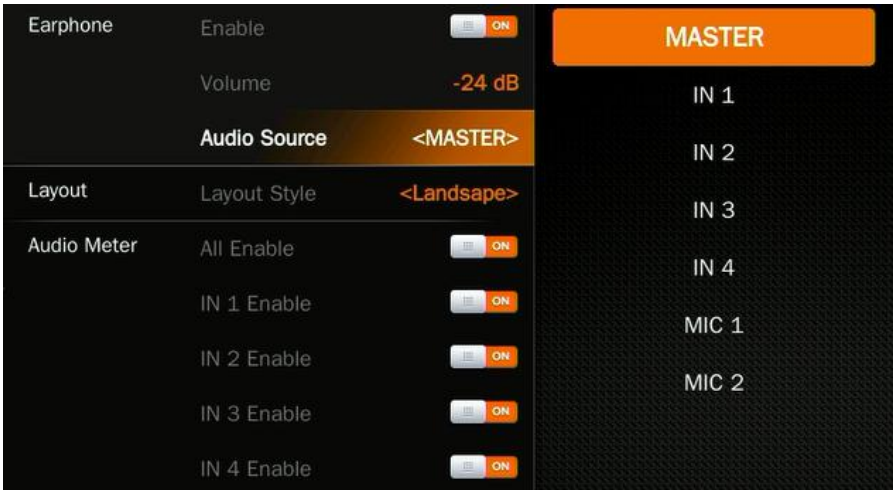
12.5. MIC

The switcher has two MIC inputs that user can connect it with a line-level or a microphone device, and turn on/off, adjust the audio volume and delay level.



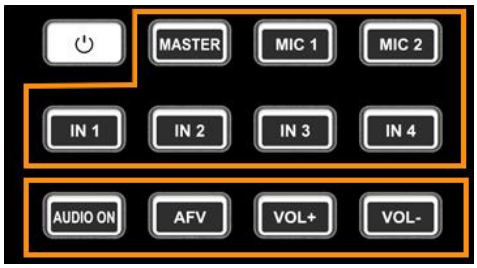
12.6. Earphone

The switcher has an earphone output for monitoring each audio. User can choose one audio source for earphone from Master audio, 4 HDMI embedded audios, and 2 MIC audios. User can turn on/off the earphone or adjust audio volume.



12.7. Audio Keyboard Configuration

The audio not only can be configured by the menu but also can be configured by the keyboard control of the switcher. The keyboard includes two parts as below image.



Part A is for selecting one audio to be configured, including Master, MIC 1, MIC 2, IN 1, IN 2, IN 3 and IN 4.

Part B is for setting audio functions, including AUDIO ON, AFV, VOL+ and VOL-.

12.7.1. Audio Indicator

The LED indicator of buttons shows the current audio status.

When the indicator of button in Part A is on in green means the corresponding audio is on. When the indicator is off means the corresponding audio is off.

As an example, when the indicators of MASTER, MIC 1, IN 2, IN 3 are on, the corresponding audios are on. The indicators of MIC 2, IN 1, IN 4 are off, the corresponding audios are off.

After pressing one Part A button, the indicator of button in Part B is on in green means the corresponding audio function is on. When the indicator is off means the corresponding function is off.

The image as an example, after pressing IN 1 button the indicator of IN keeping flashing, and the indicator of AUDIO ON button is on in green and indicator of AFV button is off, which means the audio of IN 1 is on and the AFV of IN 1 is off.

12.7.2. Audio Configuration Steps

Step 1. Press one button from Part A to select the audio for configuration, the LED indicator of the button

will keep flashing, which means it is available to make configuration.

Step 2. Press AUDIO ON button from Part B to turn on the audio, then LED indicator turns to green, and press AFV button to set the audio following video, and LED indicator turns green. Press the AUDIO ON/ AFV double times to turn it off and indicator turns off too. Press button VOL+/ VOL- to adjust the audio volume. Note: AFV button is not available for MASTER.

Step 3. The selected button from Part A in Step 1 is still flashing, press it again to finish the configuration and the indicator stops flashing. Or when Part A button is flashing press another button from Part A to select the next audio to configurete it in the same way, and when finish all configuration of audio, press again the flashing button from Part A to finish all configuration and stop the flashing indicator.

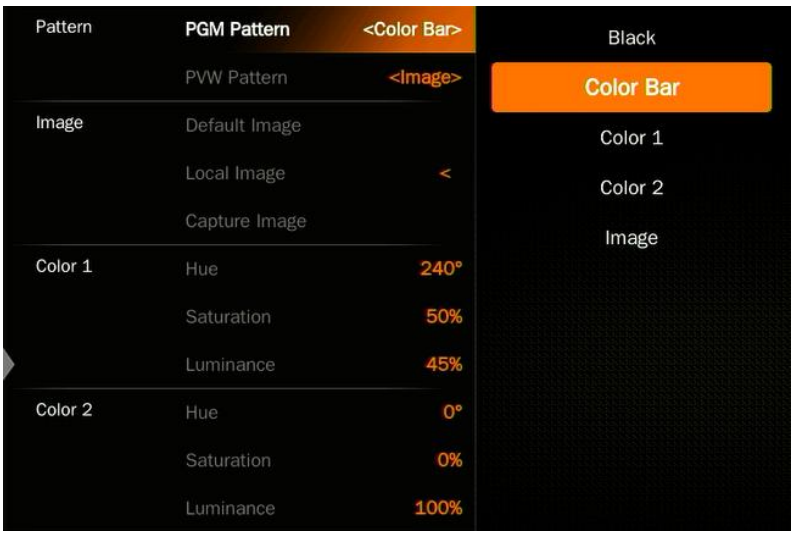
12.8. Mute

The switcher has a MUTE button in the row of PVW keyboard. It is quick and easy for user to press the button to make the Master audio turn off. When MUTE turns on the LED indicator keeps flashing which means the PGM audio is being mute. Besides, the speed of MUTE can be set from menu (Refers to Part 12.8)

13. MEDIA LIBRARY

13.1. PVW Pattern & PGM Pattern

The switcher can generate patterns itself for PVW and PGM. The PVW/PGM pattern source can be selected from the Color Bar, Black, Color 1, Color 2 and Image.



13.2. User-defined Color Pattern

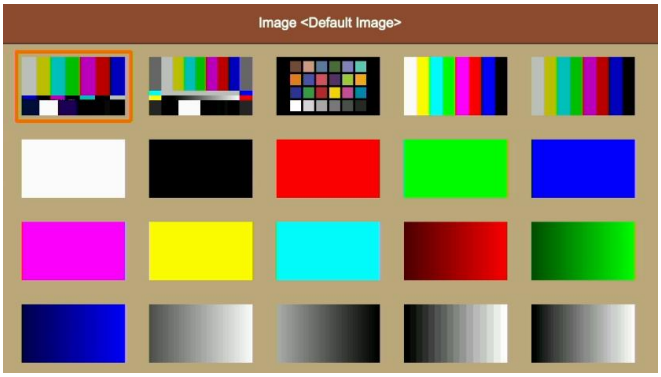
There are two color patterns Color 1 and Color 2 for user-definition. User can set the hue, saturation, and luminance to generate the color pattern for Color 1 and Color 2. See below image.

13.3. Image Setting

The Image as one of sources for PVW Pattern and PGM Pattern. User can choose the Image source from Default Image, Local Image or Capture Image. The selected image is the last selection from Default image, Local Image, and Capture Image.

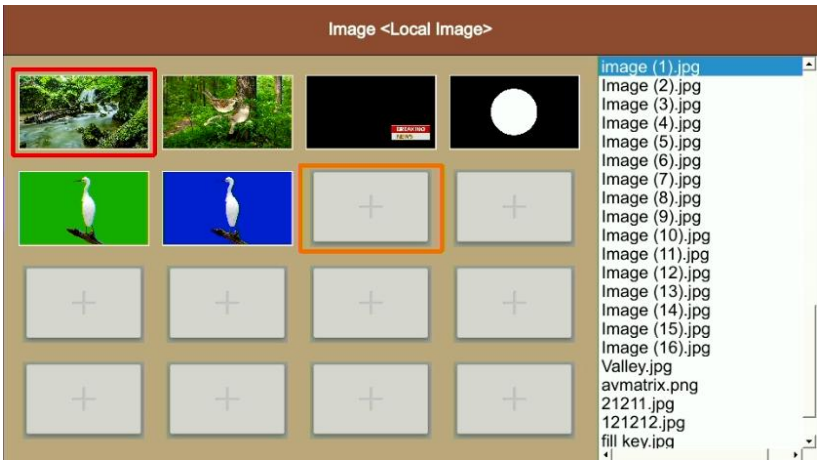
13.3.1. Default Image

The default images are the images preset in the switcher. User can use rotary button to select one of images from the Default Image as the source for PVW or PGM pattern. Total 39 default images for choice.



13.3.2. Local Image

The local images are the images which you upload from USB disk. When you plug in a USB disk, a USB icon  will appear in the bottom of the Status/Menu page. The image list from USB disk can be viewed on the menu. Select one image to upload it into the switcher. The uploaded image will be listed in the media list. User can press the rotary button to select the uploaded image as source for PVW/PGM pattern by selecting the option Select. User can delete the uploaded image from the menu. Up to 16 images can be imported. See below images.



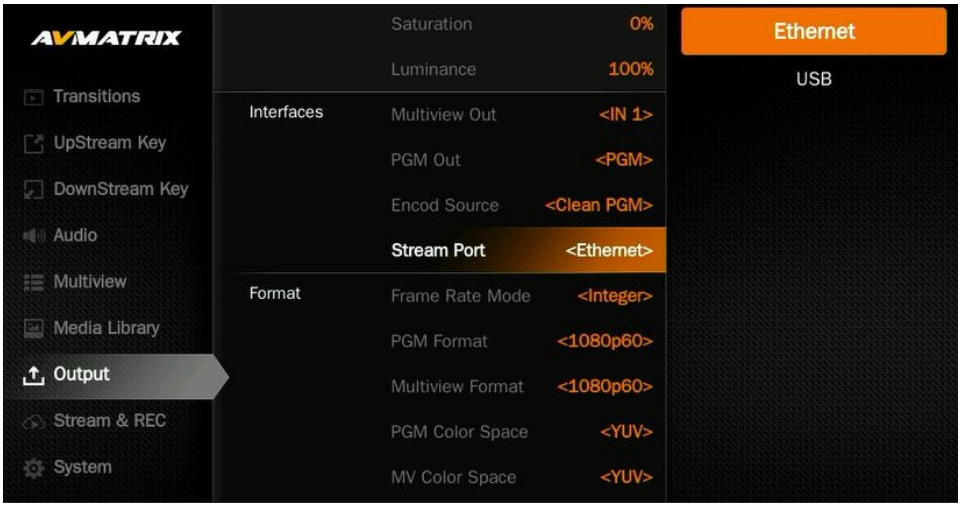
13.3.3. Capture Image

The capture image comes from screenshot of IN1, IN2, IN3, IN4, Clean PGM, PGM. The captured image will be listed in the media list. Up to 16 captured images supported. User can press the rotary button to select the captured image as source for PVW/ PGM pattern by selecting the option Select. User can delete the captured image from the menu. See below images.

14. STREAM & RECORD

14.1. Streaming

The switcher has two live streaming methods: via USB output or Ethernet. Users can select the stream port and method in the output setting.



Using the USB Type-C port, users can capture video to computer, live streaming via streaming software

such as OBS, PotPlayer etc.

The following is the USB acquisition method:

Connecting the USB output to a PC with a type-C USB2.0 cable, user can use software like OBS, PotPlayer, VMix, etc. to play or store the captured USB Out video and audio on live streaming platforms like YouTube, Facebook, Twitter, Wowza etc. It is based on UVC (USB video class) and UAC (USB audio class) standard. No additional drivers need be installed. The relevant video and audio devices will be detected in the Windows Device Manager as below:

- **Under Imaging Devices:** USB Capture Video
- **Under Audio inputs and outputs:** USB Capture Audio

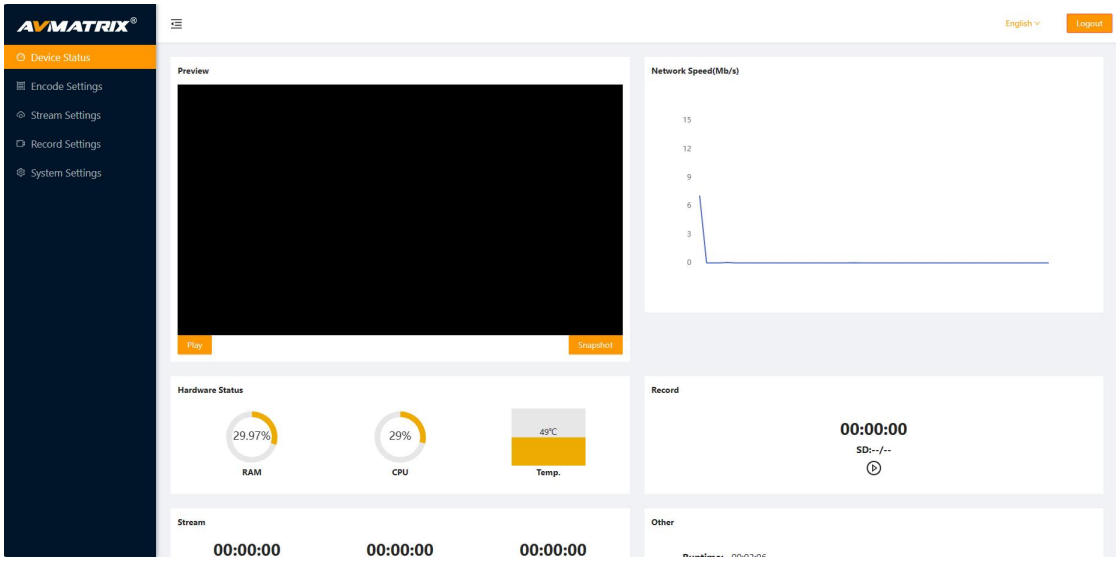
Using the LAN port, users can live streaming directly to the live platform via web page.

Network push streaming:

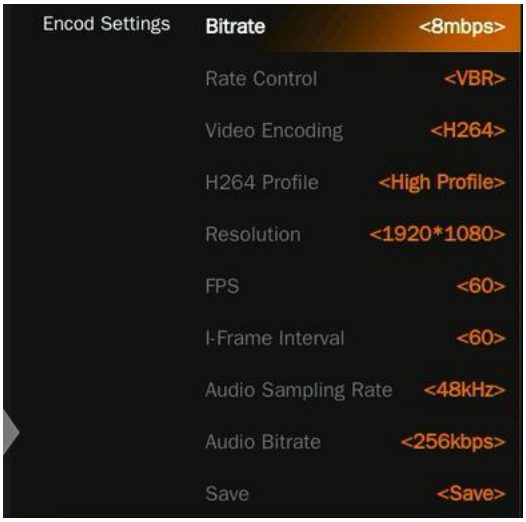
Open the live streaming settings of the streaming platform and get the Stream URL and streaming key of the live platform. Connect the Ethernet, login to the web page (refer to part 15.6) , select "Stream settings", copy the stream URL and streaming key into the URL, and click "√", click "Start Streaming" 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.

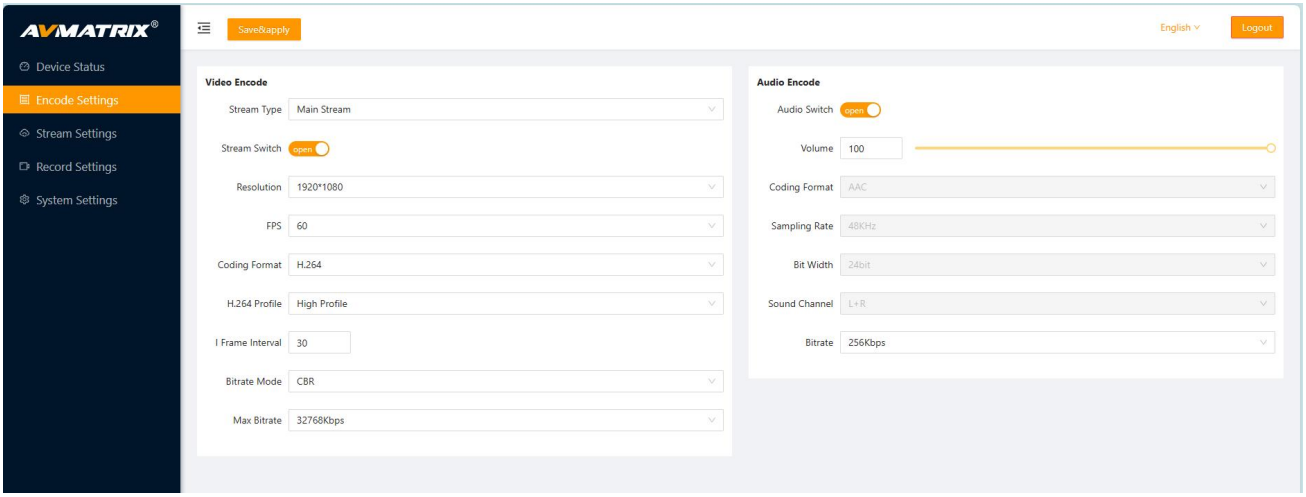
Step1: Access the switcher's web page by entering its IP address (192.168.1.215) into a web browser and login the account (Name: admin, Password: admin), select "Stream settings" section.

(If the IP address has been changed at the beginning, the IP address that has actually been changed shall prevail)

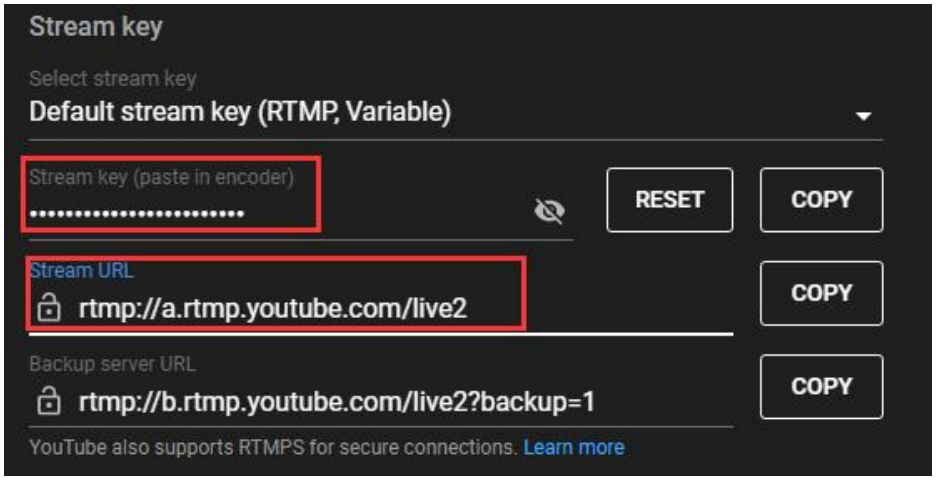


Step2: Users can set the bitrate, rate control, encoder, resolution, FPS of the live video based on operating environment , and click "Save" after the settings. For example, if the network speed is slow, the bitrate control can be switched from CBR to VBR then the bitrate can be adjusted. Users can also set up the settings from the web page.



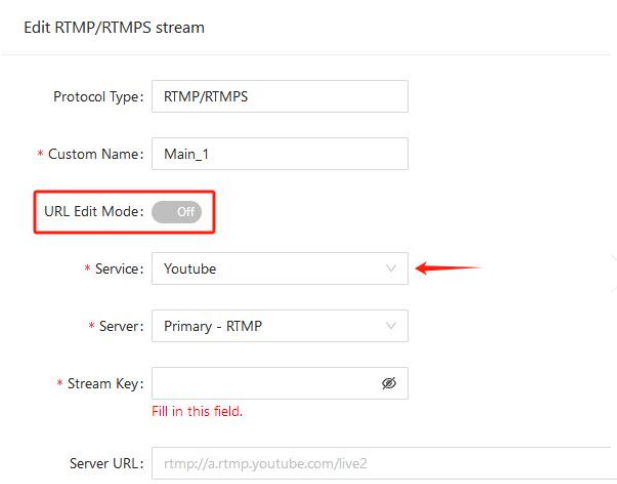


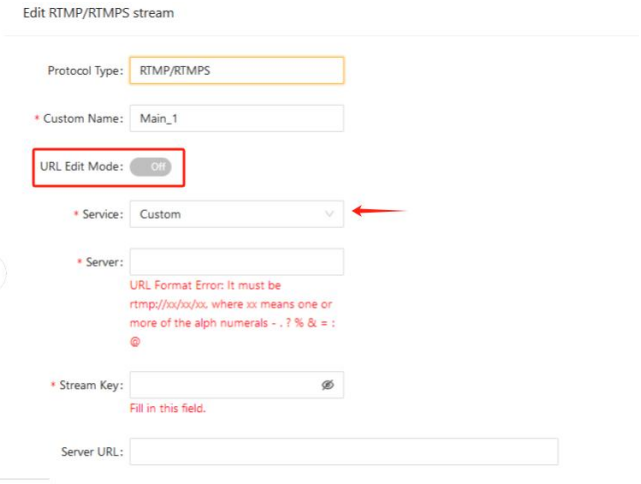
Step3: Open the live streaming settings of the stream platform and get the Stream URL and streaming key of the live platform.

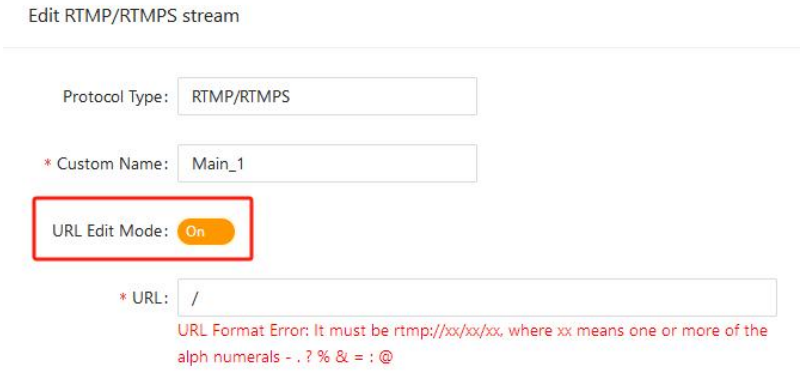


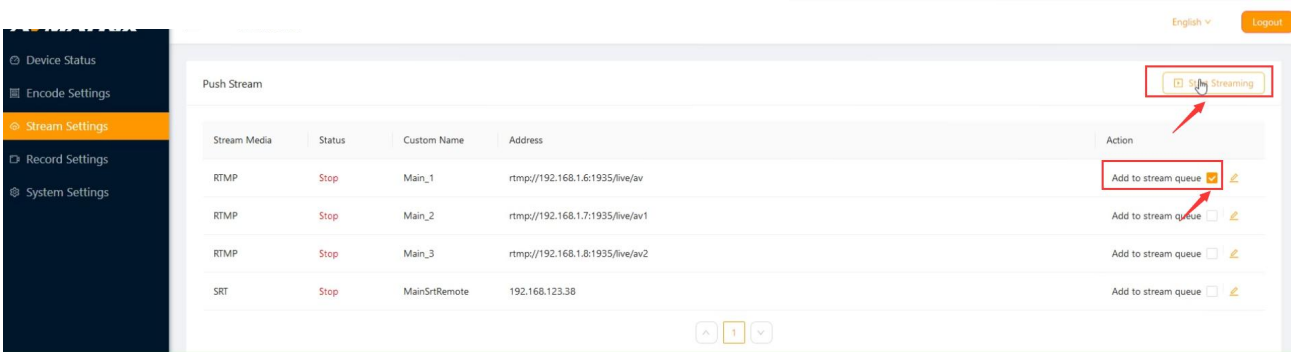
Open the stream settings window, and users can select the desired streaming platform. After selecting the platform, paste the streaming key into the designated field. Enable the "Start" option and click "Save & Apply" to initiate the live stream. Users can customize the main stream and sub-stream names as needed.

If the desired streaming platform is not available in the menu, users can select the custom mode or open the URL editing mode, enter the streaming key and stream URL to start streaming.







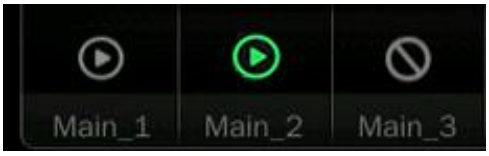


When the streaming status in the multiview turns green, and the streaming time on the menu status page start to count , it means the live streaming starts.

When the streaming status in the multiview turns orange, this means the state of being connected.

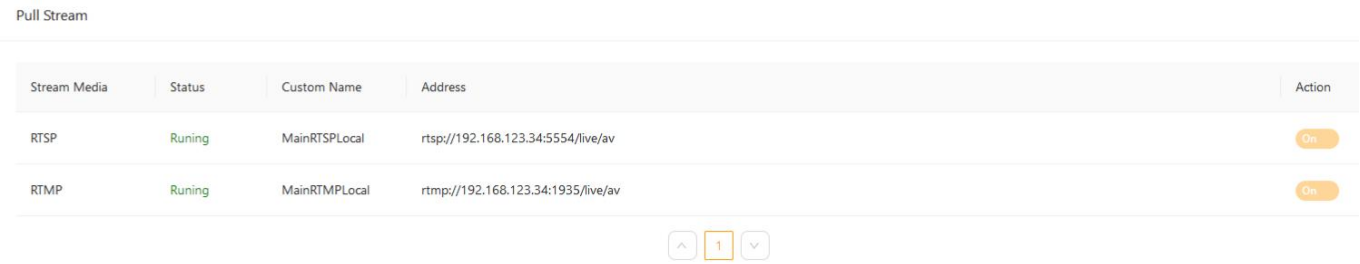
When the streaming status in the multiview turns grey, this means the connection failed.

When the icon is shown disabled, it means the menu is not enabled for streaming.



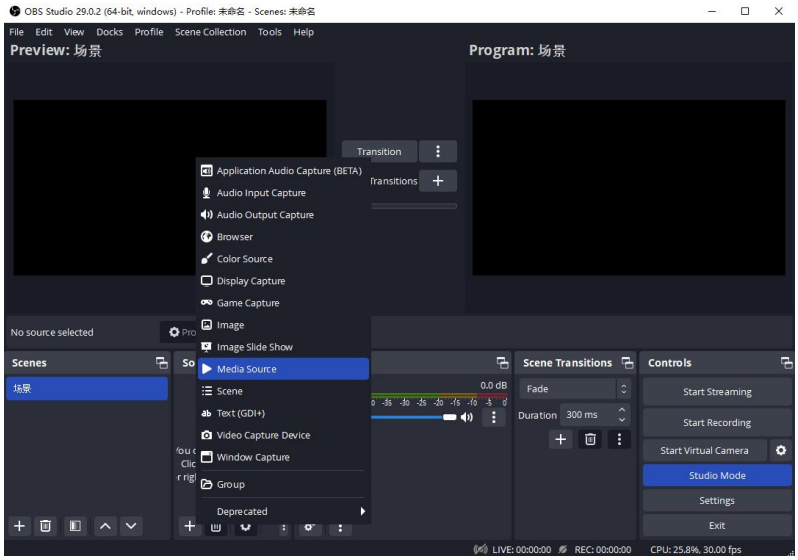
Local pull streaming:

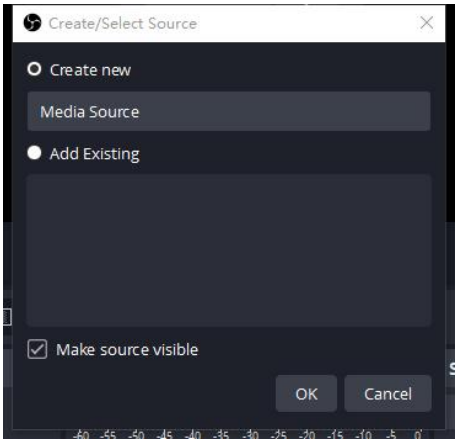
Login to the IP site, select "Stream settings", get the local address, open a video player such as OBS, PotPlayer, etc., and open the copied "local address URL" link to finish local streaming.



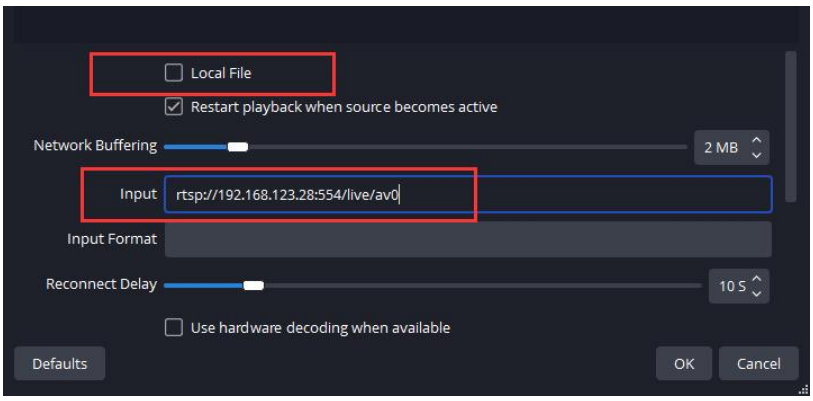
Using OBS as an example.

Step1: Open OBS studio, click "+" key in the sources, create a new Media source.



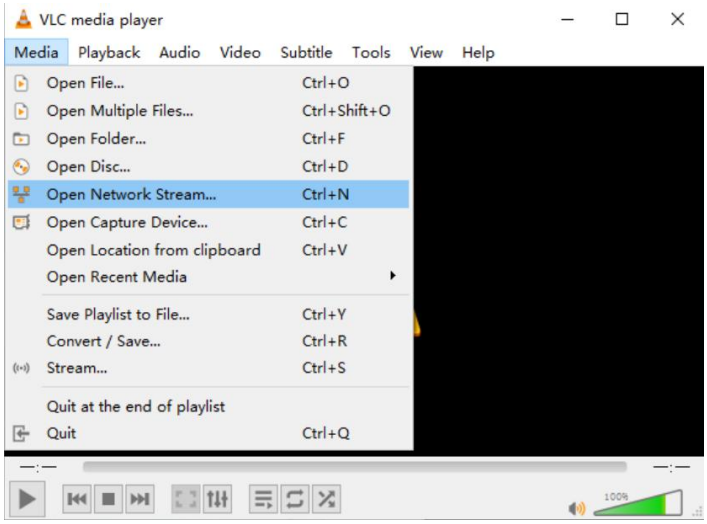


Step 2: Cancel the local file setting, add "local address URL" in the "input", and then click "OK" to finish local streaming.



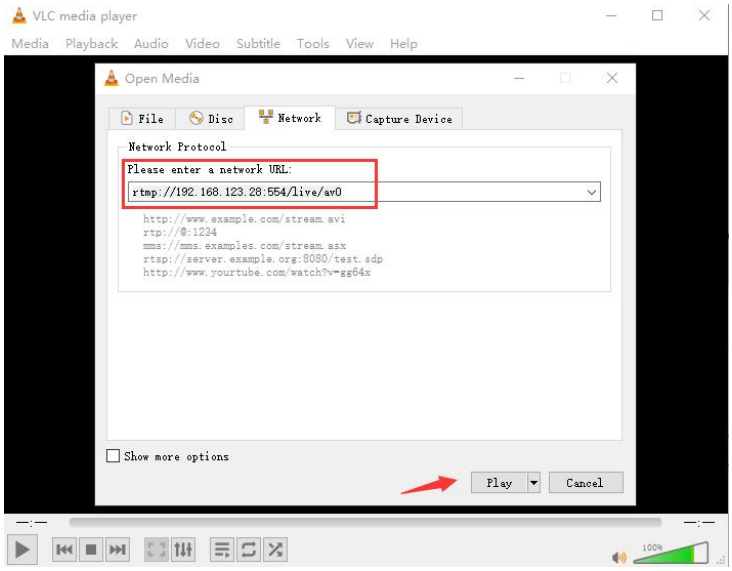
How to play the RTSP Stream by the VLC Player:

Step 1: Open the VLC Player, and click “Open Network” key in the Media.



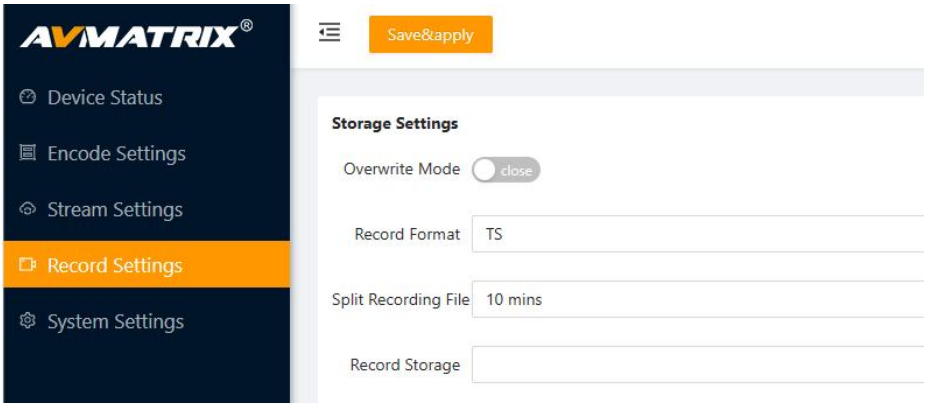
Step 2: Obtain Pull stream from IP site, “Stream settings”—” Pull Stream”.(Refers to 14.1 Local pull streaming)

Step 3: Please enter the RTSP address (av0 means main stream; av1 means sub stream)



14.2. 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, and then click “Save” and press the REC button on the panel to start recording, the status will show the device information. Users can also select the recording format between MP4 and TS through the record settings.



Press the REC button on the panel, when the recording time starts to count 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.

- **Overwrite**

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 disk memory is full, user can enable/disable the overwrite function in the menu and click “ Save ” to complete the setup.

- **Format**

Users can format their USB disk or SD card through the menu. In the recording menu, select "Format USB" or "Format SD Card" to start formatting the corresponding storage device, and the format is exFAT by default. Formatting will permanently erase all data on the disk, so please back up important data beforehand.

15. SYSTEM SETTING

15.1. Language

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

15.2. Fan Setting

Setting the cooling fan speed to control the temperature and noise of the switcher. There are 3 options, AUTO/ OFF/ ON.

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. And when the switcher's operating temperature is increasing and reaching a preset value (57 Degrees Celsius), the words in the bottom of the Status/Menu page will turn to Orange color to warning. And when the operating temperature reach to 60 Degrees Celsius, the fan will be auto turned on in a high speed to cool down the CPU quickly and switch the fan to AUTO mode at the same time. 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 ON option to keep the fan in high speed.

15.3. System Reset

- Reset Preferences: Restore settings to default Settings but remain the part of settings including the Media library, Time, Network, Language, Fan and User Setting.

- Factory Reset: Restore all settings to default Factory Settings.

15.4. Version

Check the switcher's Software Version, FPGA Version, MCU Version, PCB Version.

15.5. Time Setting

15.5.1. Setting Time Manually

User can set Year/ Month/ Day/ Hour/ Minute directly through the Menu. The time format can be set to 12h and 24h. The default setting is 12h.

15.5.2. Time Synchronization

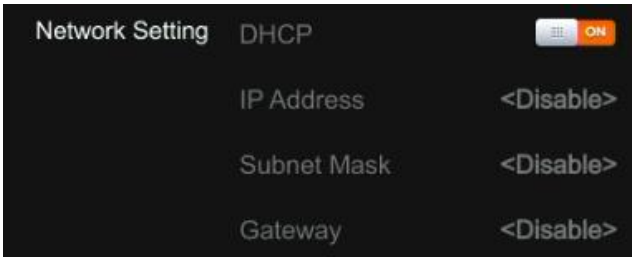
Connect video switcher to a PC (windows OS) via LAN port and use the control software to search the video switcher. The time will be automatically synchronized once the video switcher is searched by the network.

15.6. Network Setting

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.

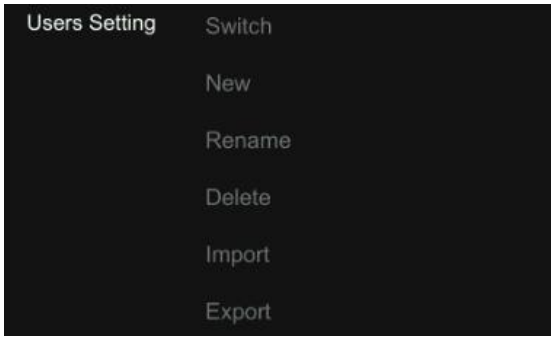
Dynamic: Connecting the video switcher with a router with DHCP features, then it will auto obtain an IP address. Make sure that the video switcher and PC are in the same local area network. If the network segment is 1, you can access the web site either from its assigned IP or from .1.100.

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 192.168.1.215, or set the switcher's IP address to the same range as PC's IP Address. In case of unassigned IP the default will be assigned.1.215.



15.7. User Setting

User can save all current settings into an account in the switcher. Adding a new user account, renaming the account, switching between accounts, deleting the account or even user can import or export the account to a USB flash disk.



15.7.1. New

Adding a new user account and save all current settings to the account. Input the name through a virtual keyboard from the menu.

15.7.2. Rename

Rename the current user account name.

15.7.3. Switch

Switch to another saved user account to have the saved settings easily and quickly. Meanwhile, the User name will be updated in the bottom of the Status/Menu page after switching.

15.7.4. Delete

Delete a saved user account which you will never use again.

15.7.5. Import

Import the current user account and settings to USB flash disk.

15.7.6. Export

Export the user account and settings saved in USB flash disk.