AVMATRIX


# SHARK H4 PLUS

## PORTABLE 4-CH 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 PLUS is a portable design 4-channel HDMI multi-format video switcher integrated with a full HD 10.1inch FHD LCD panel. It supports various functions including 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, compatible with a variety of equipment. 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

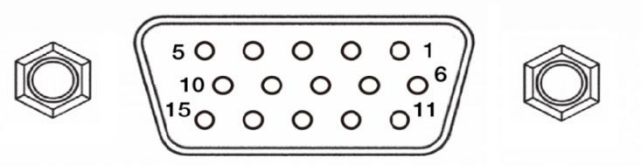
- 10.1 inch FHD IPS LCD display
- 4 channel auto-detected HDMI inputs
- 2×HDMI PGM output,1×HDMI multiview out, 1×USB type-C output
- RTMP/SRT stream via Ethernet
- USB disk/ SD card recording
- USB-C for capturing and streaming on PC
- Clearly visible multiview & status page
- Upstream key: Luma key, Chroma key, PIP×2/ POP
- Downstream key and LOGO overlay
- T-bar/ Auto/ Cut transitions; various effects: WIPE(11×3 patterns) / MIX/ DIP
- Audio mixer: 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



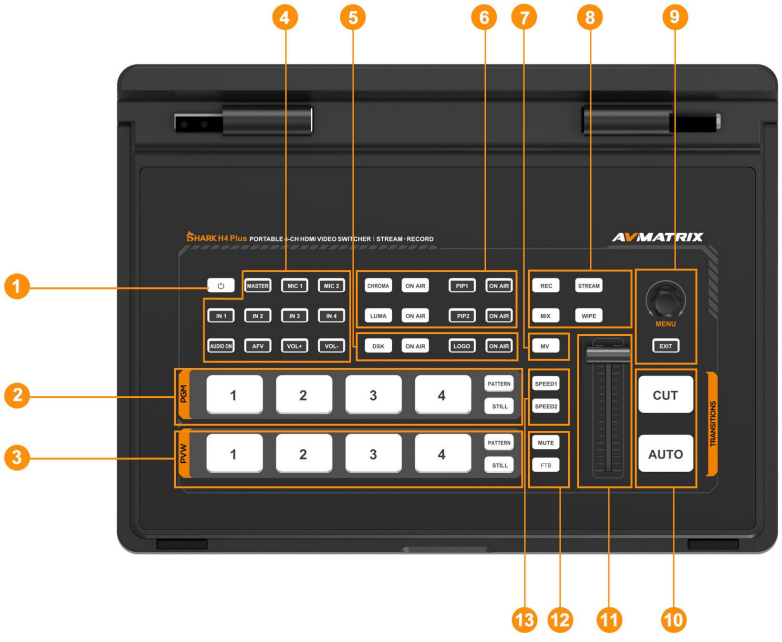

| PIN | Definition | PIN | Definition |
|---|---|---|---|
| **11** | PGM-IN1 | **6** | PVW-IN1 |
| **12** | PGM-IN2 | **7** | PVW-IN2 |
| **13** | PGM-IN3 | **8** | PVW-IN3 |
| **14** | PGM-IN4 | **9** | PVW-IN4 |
| **15** | NC | **10** | NC |
| **3** | NC | **4** | NC |
| **5** | GND | | |

# 3. SPECIFICATION

| | |
|---|---|
| **CONNECTION** | |
| Video In | HDMI type-A ×4 |
| Video Out | HDMI PGM × 2<br>HDMI Multiview × 1<br>USB Capture: USB type-C × 1<br>Streaming: LAN× 1 |
| 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 | 2mbps/4mbps/8mbps/12mbps/16mbps/24mbps/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<br>Downstream Key: DSK ×1/ Logo ×1 |
| Audio Mixer | HDMI ×4 and MIC/ Line level ×2;<br>Audio delay: 0-500ms |
| Media | Default image: 39 preset patterns<br>Local image: up to 16 imported images<br>Capture image: up to 16 captured images |
| Generators | Pattern generator ×1<br>Color generators ×2 |
| Display | 10.1 Inch IPS FHD display |
| **STANDARDS** | |

| | |
|---|---|
| HDMI In Format Support | 1080p 60/ 59.94/ 50/ 30/ 29.97/ 25/ 24/ 23.98<br>1080i 50/ 59.94/ 60<br>720p 60/ 59.94 /50/ 30/ 29.97/ 25/ 24/ 23.98<br>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<br>Image format support: png, bmp, jpg, gif, jpeg, ppm, pbm, tif, jps, mpo, tga<br>Logo format support: png, bmp, jpg, gif, jpeg, ppm, pbm, tif, jps, mpo, tga<br>Logo size support: 10×10 pixel to 600×600 pixel |
| **OTHERS** | |
| Power | Wide voltage: 7~24V; Operating power:20.4W(12V 1.7A) |
| Dimension (LWD) | 261.4 × 193.9 × 58mm |
| Weight | Net: 1734.5g, Gross: 2240g |
| Temperature | Working: -20℃~50℃, Storage: -30℃~70℃ |
| Accessories | Power supply (12V 3A) ×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.<br>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.<br>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<br>ON AIR: make the DSK on air<br>LOGO: Add logo bin from USB flash disk, enable the logo overlay<br>ON AIR: make the Logo on air |
| **6** | **CHROMA KEY**<br>**LUMA KEY** | CHROMA: Enable the Chroma Key<br>LUMA: Enable the Luma Key<br>PIP1/PIP2: Enable two group of Picture in Picture. Size and position can be set via Menu.<br>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:For streaming<br>REC: Press to start or stop recording<br>WIPE: Transition from one source to another<br>MIX: Selects a basic A/B dissolve for the next transition |
| **9** | **MENU** | MENU: For menu control, configure different parameter |
| **10** | **CUT/ AUTO** | CUT: Performs a simple immediate switch between PGM and PVW.<br>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<br>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, HDMI 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, IN 1, IN 2, IN 3, IN4 and Status/Menu page. See below image.

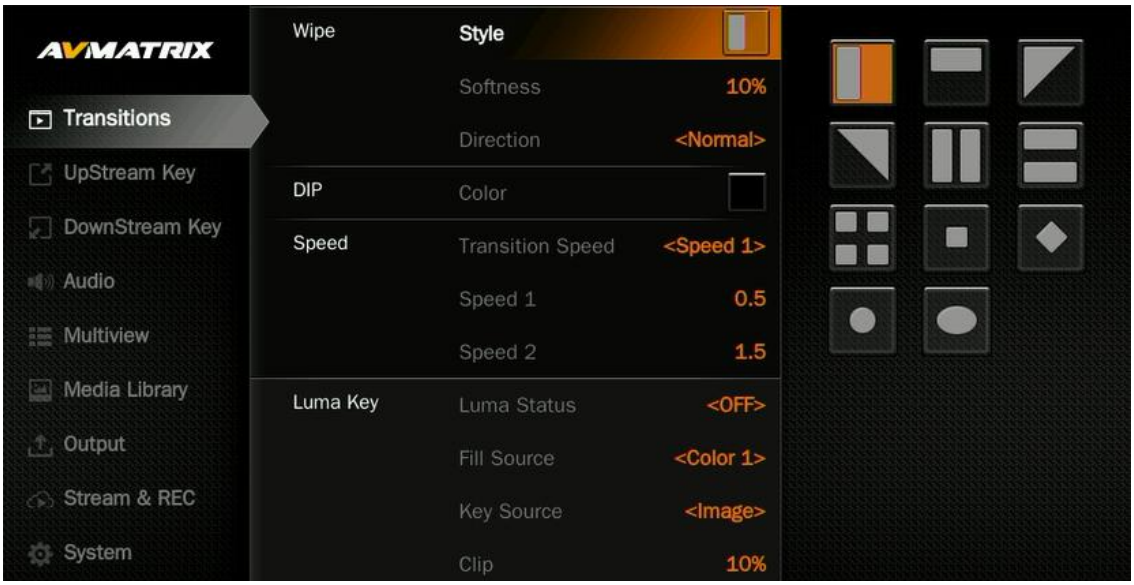
### 6.1. Status Page

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.

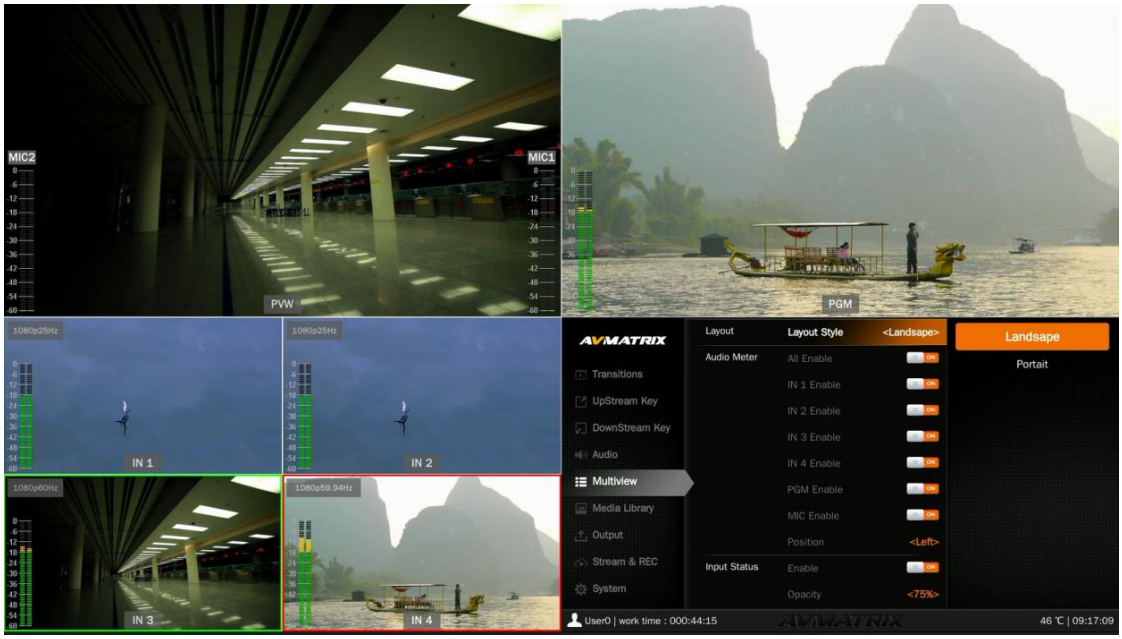
Pressing the menu button on the switcher will switch the status page to the menu page. See below image.



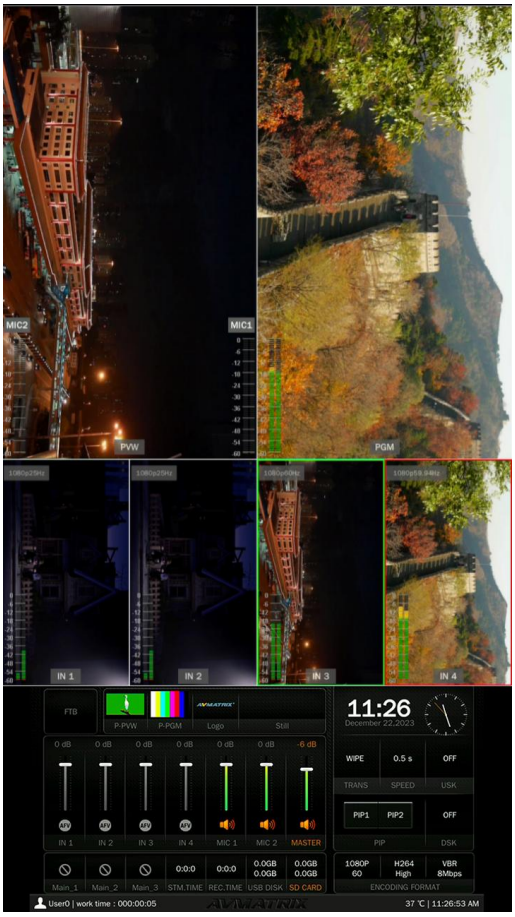

## 6.2. Layouts

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:**



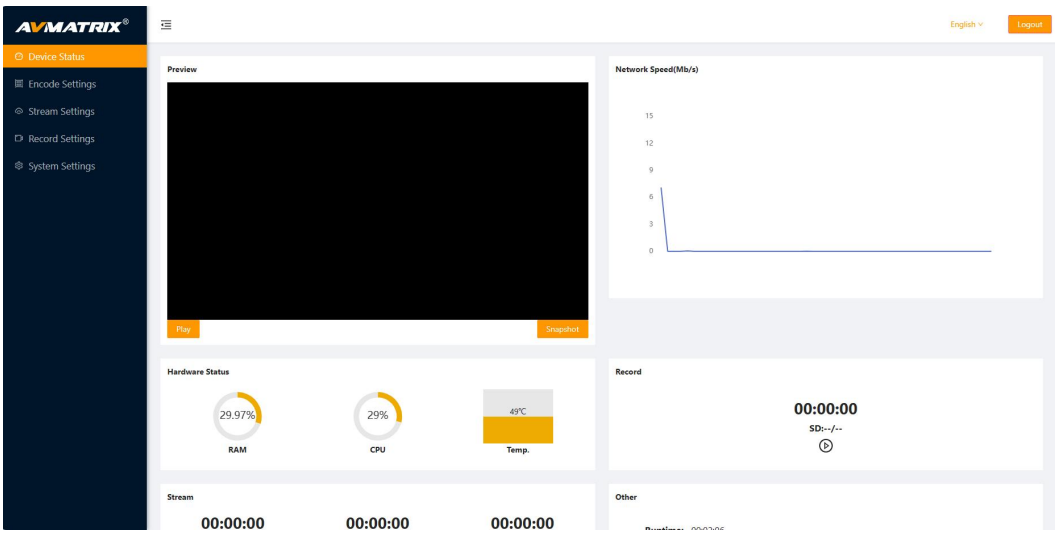
**- Vertical Layout:**




**- Web Page Layout**

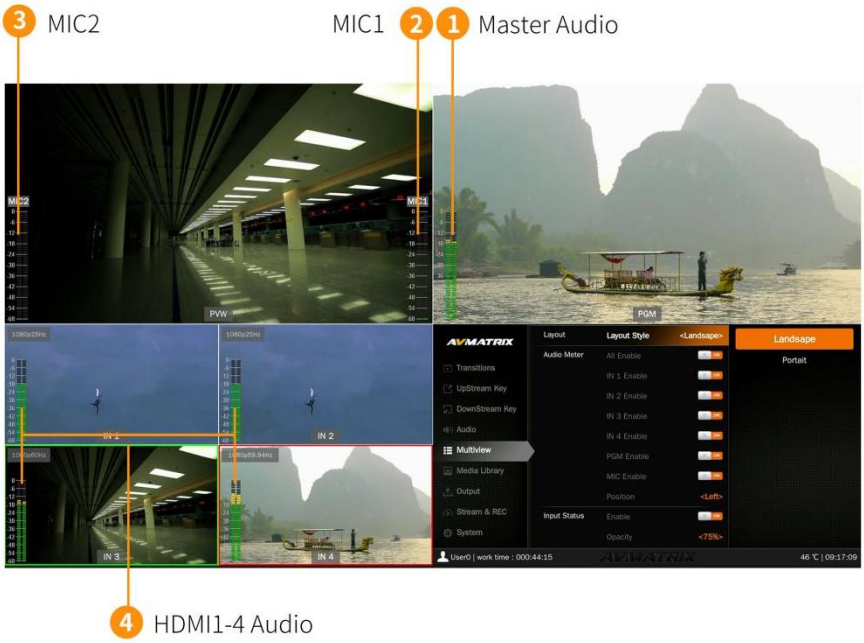
Connect the video switcher to the PC through the LAN port (see Section 15.6), log in to the web control page. The web page includes PVW (Preview), network speed, hardware status, streaming status, recording status, other runtime, input video,output mode, and system settings, encode settings, record and stream settings, etc.

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

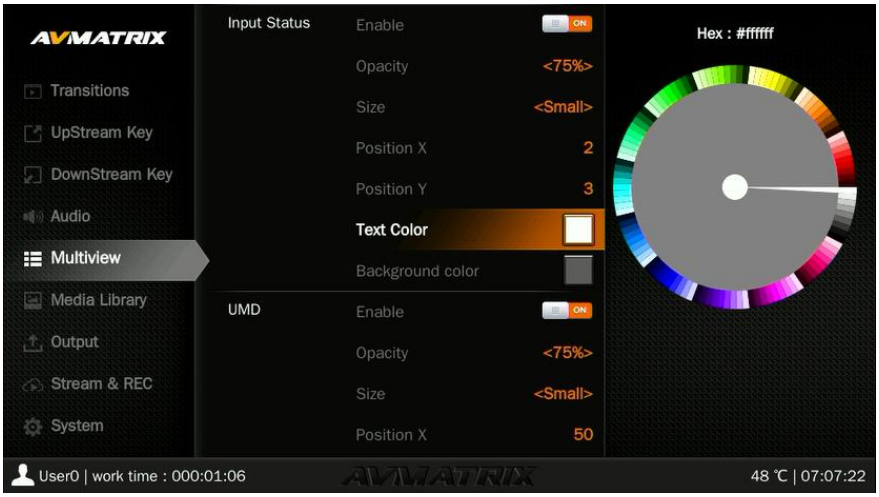


## 6.3. Audio Meter

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.

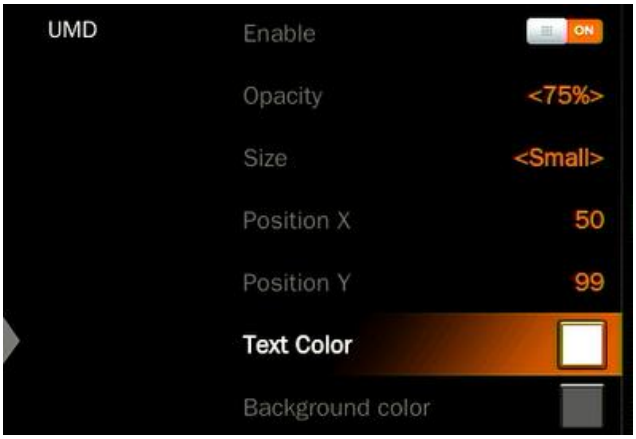



There is an Overlay in each window of the IN 1-4 that shows the resolution and frame rate of the HDMI input. The user can turn on or off the Overlay in each input window, and set the Overlay Opacity (50%, 75%, 100%), Size (Small, Medium, Large), and Position X and Y (1-100), as well as the Text color and Background Color.See below image.

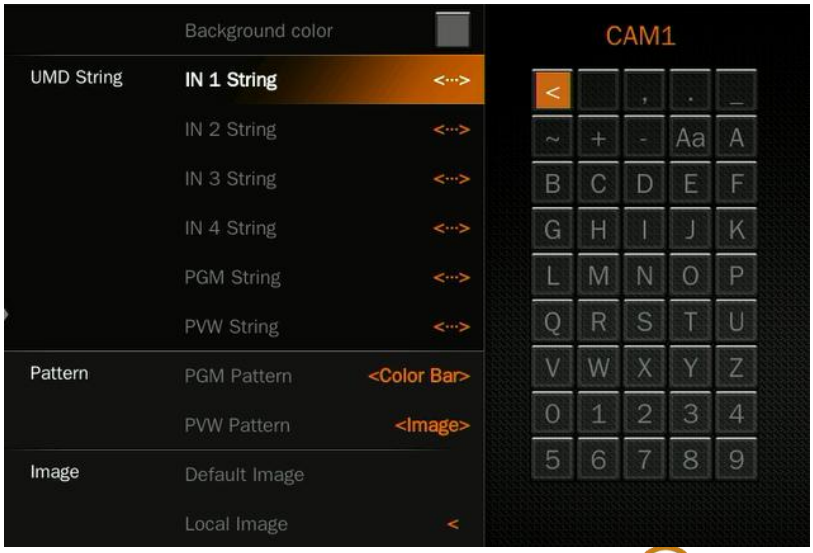



## 6.5. UMD Settings

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.



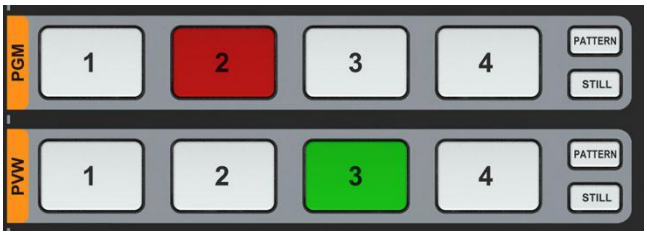

The UMD content for each HDMI input can be set from the on-screen menu. The user can use a virtual keyboard and rotary button to rename the UMD content for each window. The UMD content can be up to 10 characters long.Below image as an example, rename the IN1 to CAM1.



# 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

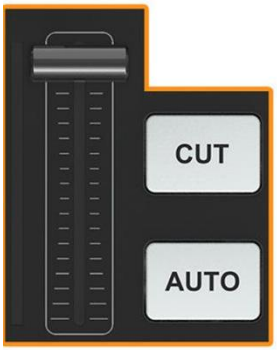
There are two transition control types for this video switcher: Transition without effects (CUT) and Transition with effects (AUTO, T-Bar).

**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.

Key Source = Fill Source


Key Source ≠ Fill Source


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/ IN 4/ Image | Color1 |
| | | 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.

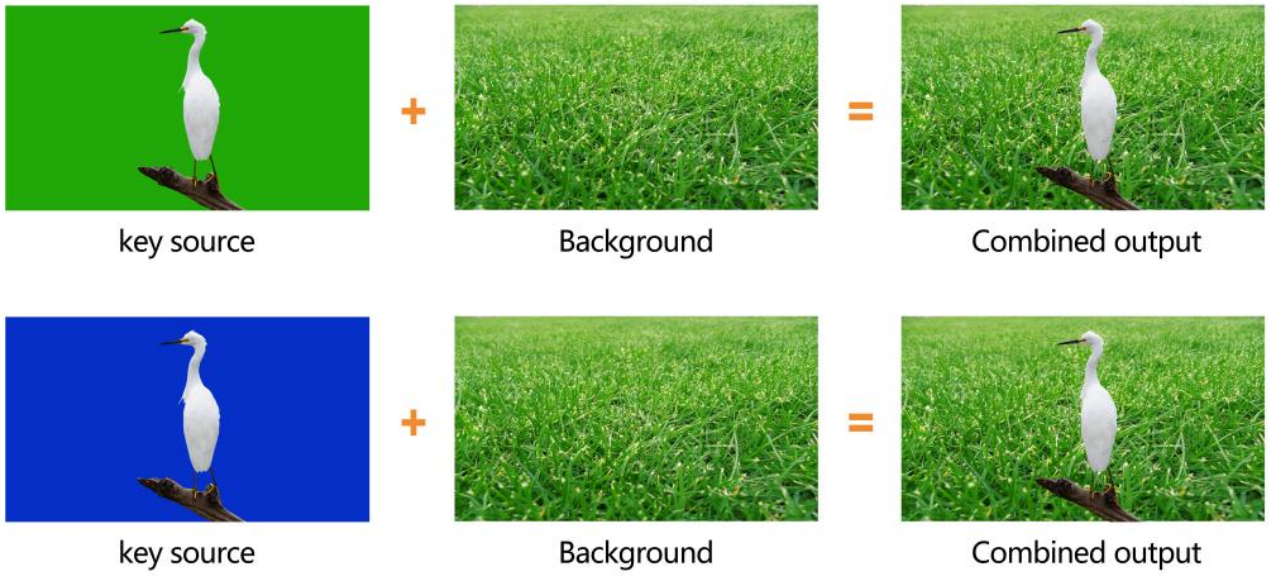
**Gain:** Adjusts the performance of the chroma key in light or white areas. Apply more Key Gain if the light areas are becoming too transparent.

**Invert Key:** Inverts the key signal.

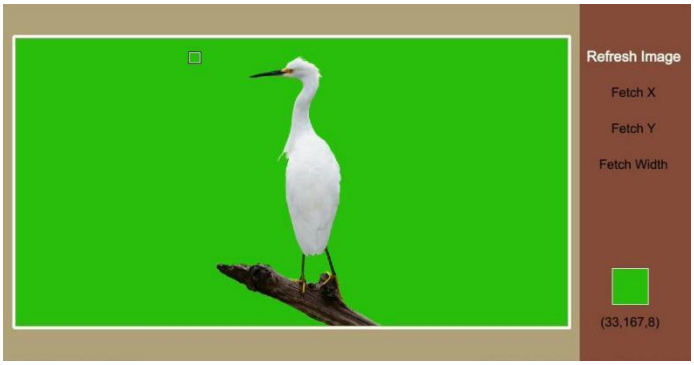
**Mask:** Configure the Mask for the Key area

## 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 | | 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. 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 |
| | | 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.

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.

**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/ | Color 1 |

| | | | | |
|---|---|---|---|---|
| | | | IN 3/ 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% |

## 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

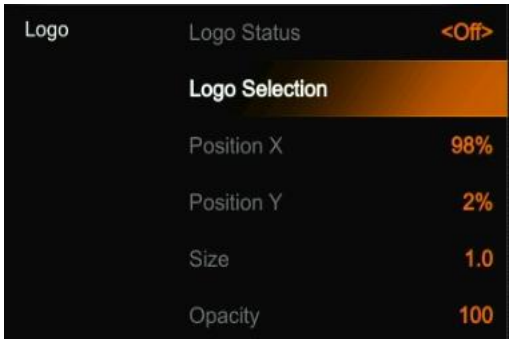
**Logo size support:** 10×10 pixel to 600×600 pixel

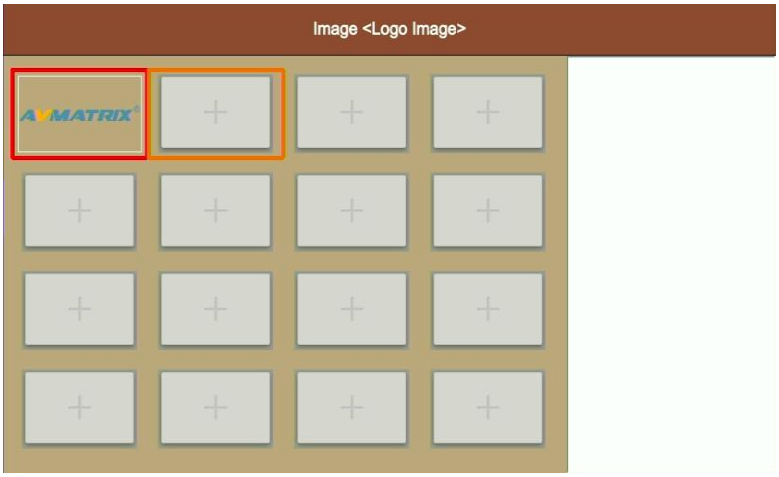
Press ON AIR button next to LOGO button to make it take effect.

**LOGO** button ON: DSK key shows on PVW.

**ON AIR** button ON: DSK Key available on PGM

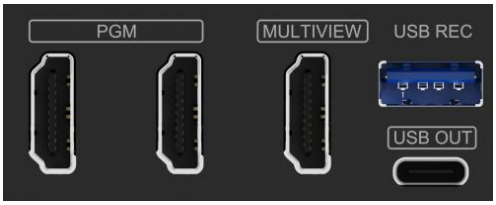
**ON AIR** and **LOGO** button both ON: LOGO available on both PVW and PGM. Corresponding status in menu is <KEY & ON AIR>


# 11. OUTPUT SETTING

## 11.1. Output Interfaces




SHARK H4 PLUS 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 HDMI 1, user can press the MV button to quickly switch the output between multiview out and configured HDMI 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.

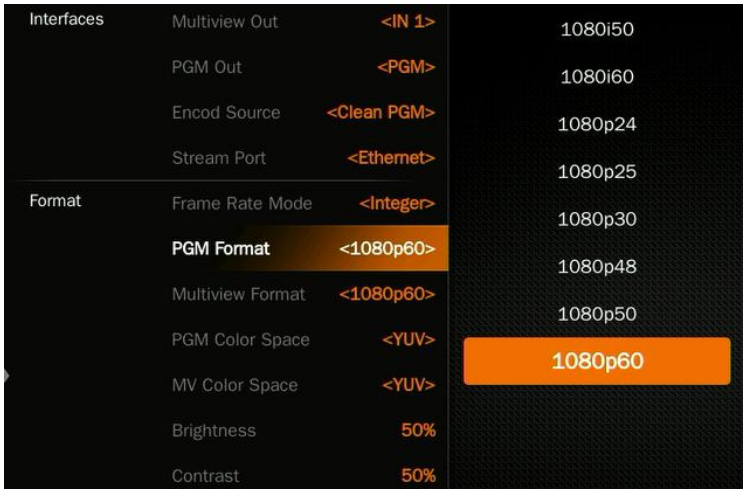
## 11.5. Output Format Setting

### 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

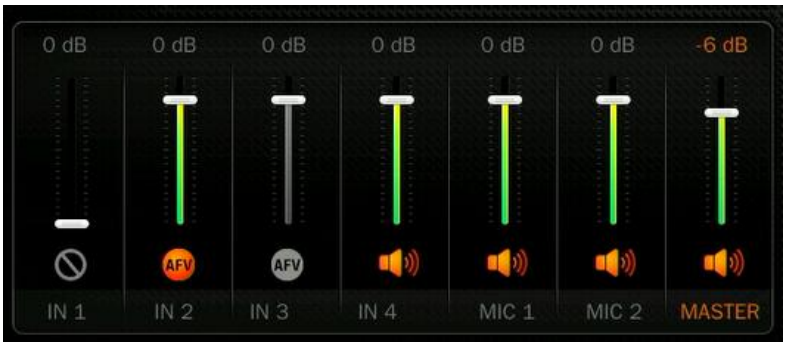
The speed of FTB and MUTE can also be adjusted from 0 to 3 seconds in the menu. The speed setting controls the duration of the entire FTB and MUTE transition. For example, if the speed is set to 2.5s, the PGM video will fade to black and the audio will MUTE gradually over 2.5 seconds.

(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). When an audio source is turned on, it will be permanently mixed into the PGM output.



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

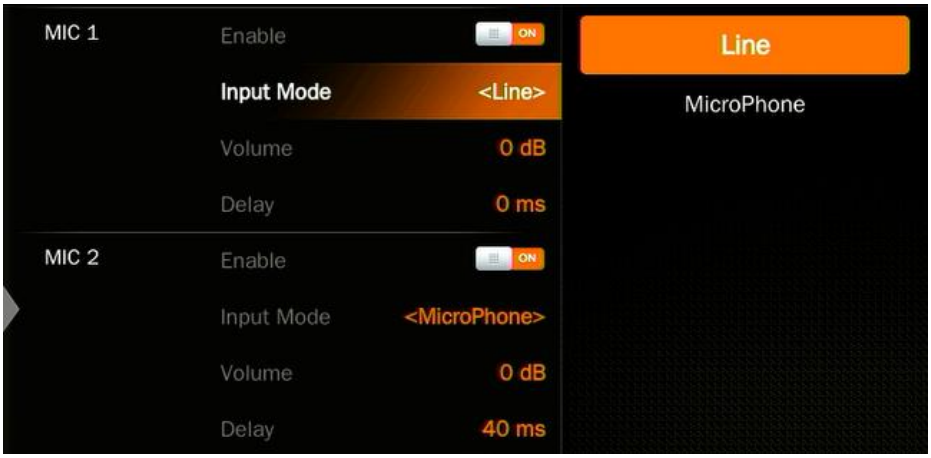
## 12.4. Audio Delay

In the menu there is an audio delay setting for IN1, 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.



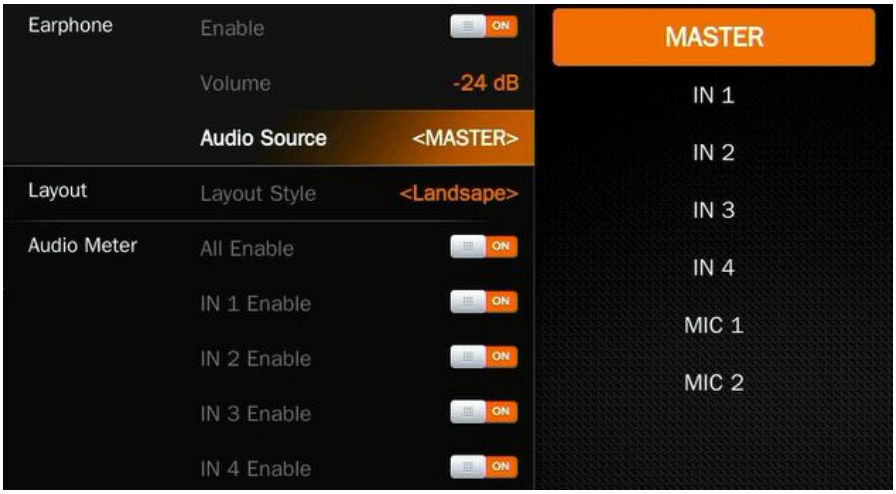
## 12.5. MIC

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 configurate 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.

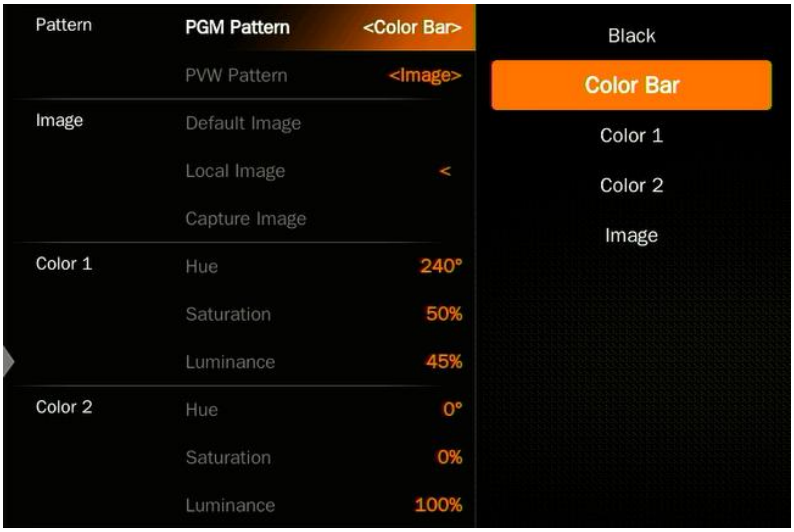
## 12.8. Mute

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

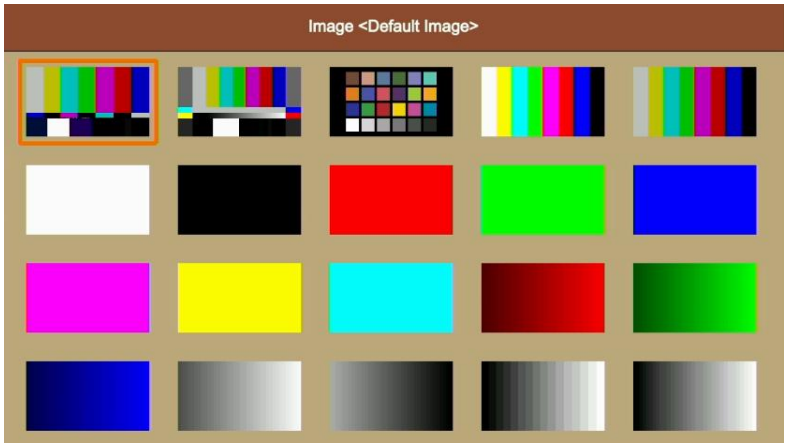
There are two color patterns Color 1 and Color 2 for user-definition. User can set the hue, saturation, and luminance to generate the color pattern for Color 1 and Color 2. See below image.


## 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.

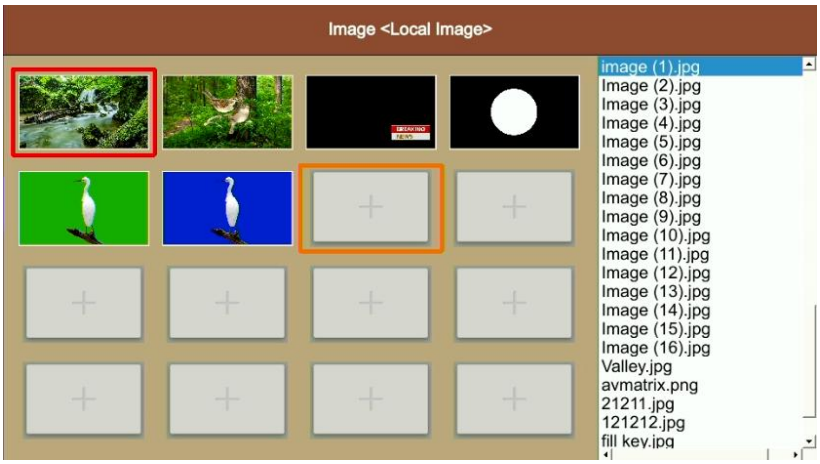
### 13.3.1. Default Image

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.



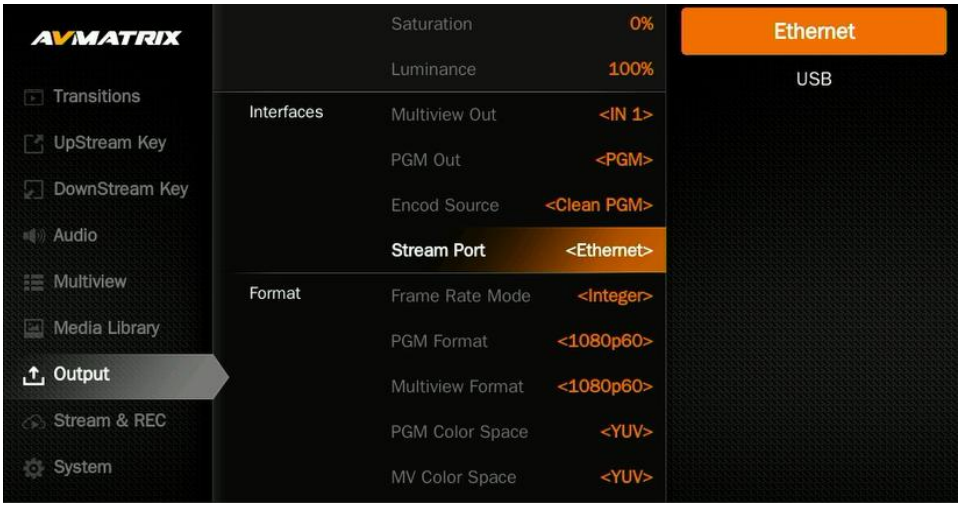

### 13.3.3. Capture Image

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 or Ethernett. Users can select the output method in the output settings.




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, users can use software like OBS, PotPlayer, VMix, etc. to play or store the captured USB Out video and audio on live streaming platforms like Zoom,Teams, Skype, etc. The USB output 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

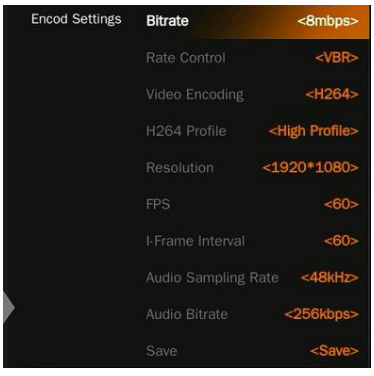
The video source of USB out defaults to PGM output.

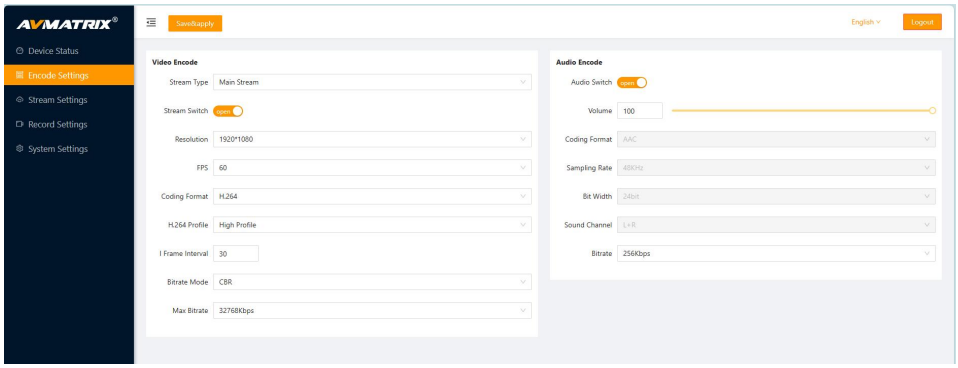
Using the LAN port, users can live streaming directly to the live platform via IP address.

**Network push streaming:**

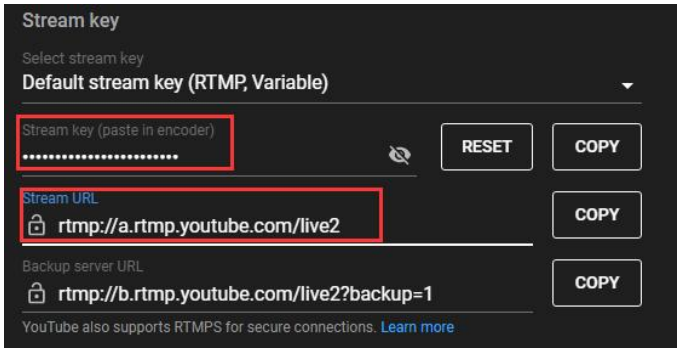
Open the live streaming settings of the streaming platform and get the Stream URL and streaming key of the live platform. Connect the Ethernet, login to the web page (refer to part 15.6) , select "Stream settings", copy the stream URL and streaming key into the URL, and click " √ ", click "Start Streaming" 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: Users can customize the Bitrate, Rate control, Encoder, Resolution, FPS of the live video based on operating environment in the encode settings, and 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. Users can also set up from the web page.

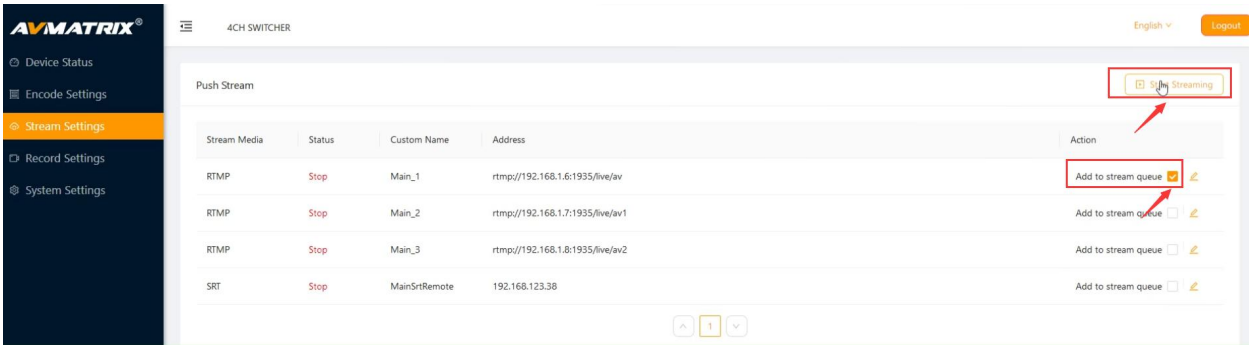


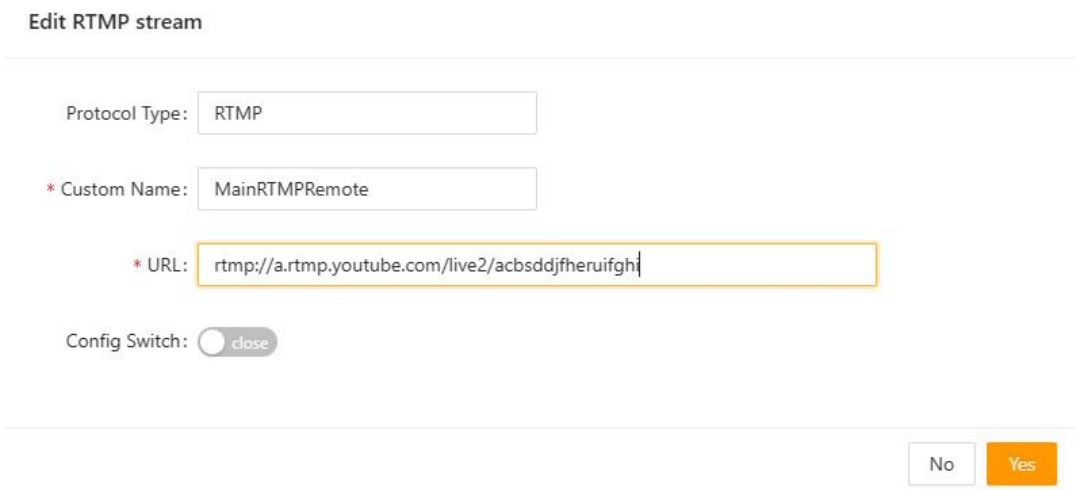




Step2: Open the live streaming settings of the stream platform and get the Stream URL and streaming key of the live platform.



Step3: Open the web page, select "Stream settings", copy the stream URL and streaming key into the URL, and click " √ ", click "Start Streaming"to live stream, users can also customize the main stream and sub-stream names.



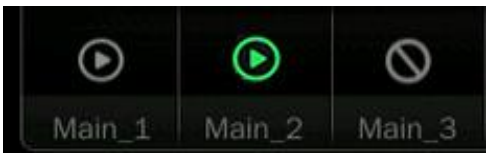




When the streaming status in the multiview turns green, and the streaming time on the menu status page start to count , it means the live streaming starts.

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

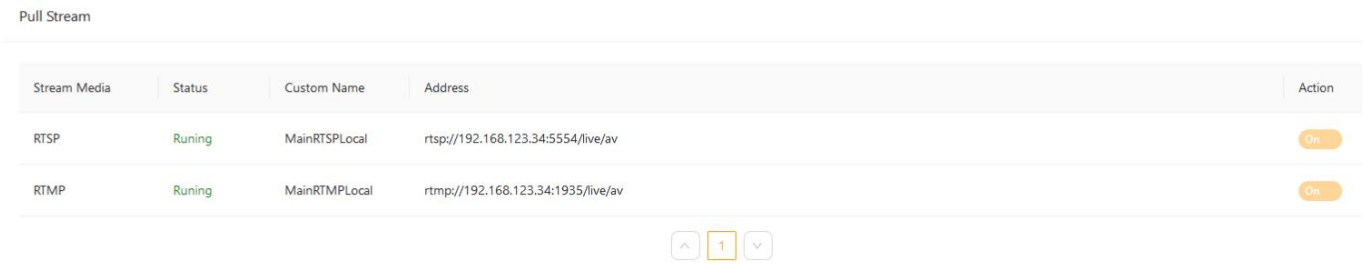
When the streaming status in the multiview turns grey, this means the connection failed.

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



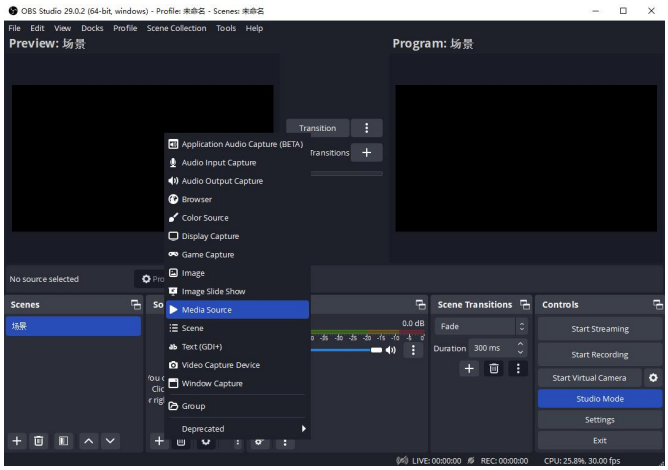

**Local pull streaming:**

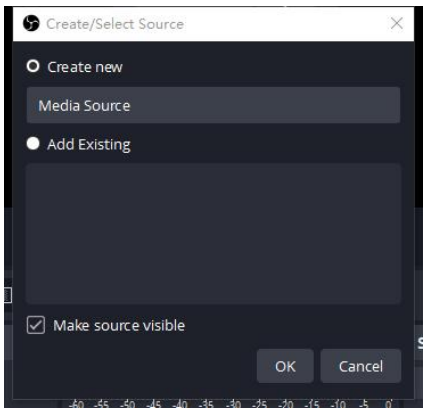
Login to the IP site, select "Stream settings", get the local address, open a video player such as OBS, PotPlayer, etc., and open the copied "local address URL" link to finish local streaming.



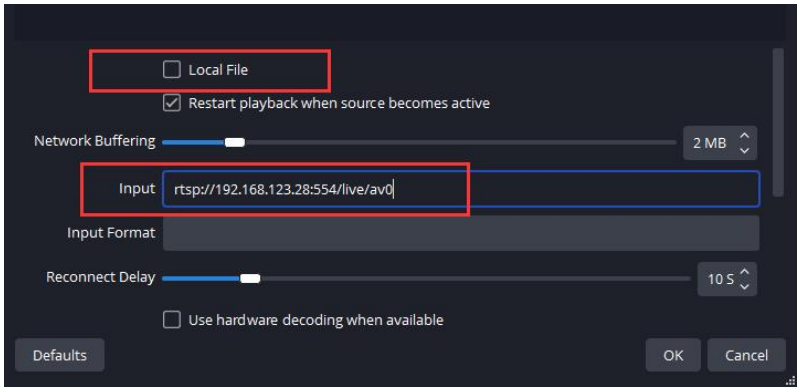

Using OBS as an example.

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



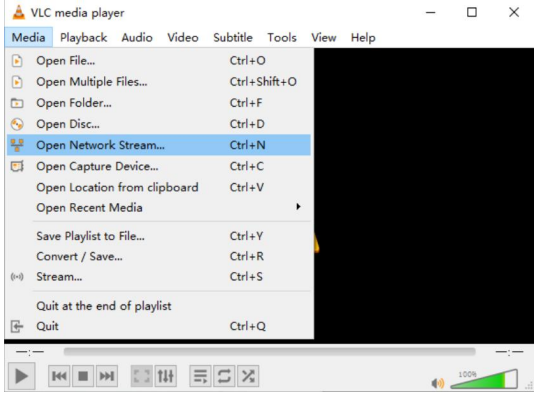




Step 2: Cancel the local file setting, add "local address URL” in the "input", and then click “OK” .to finish local streaming.



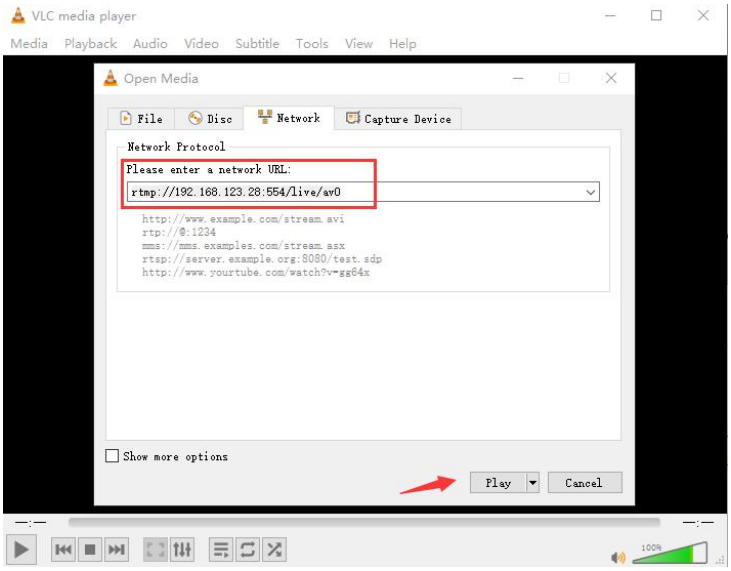

**How to play the RTSP Stream by the VLC Player:**

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



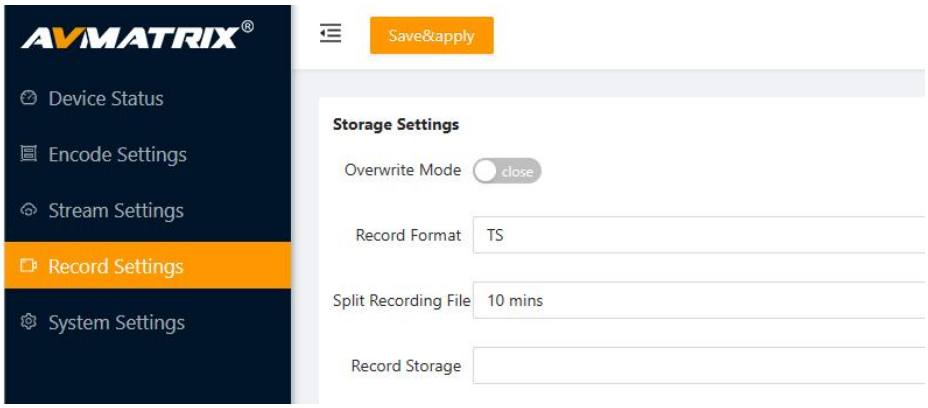
Step 2: Obtain Pull stream from IP site, “Stream settings”—” Pull Stream”.(Refers to 14.1 Local pull streaming)

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

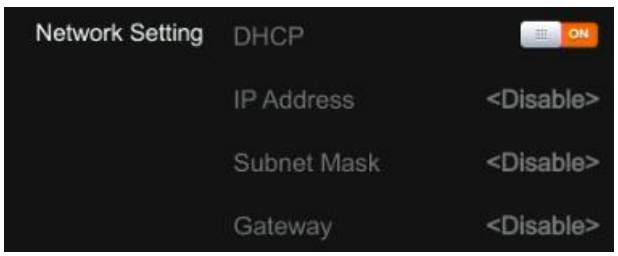
Connect video switcher to a PC (windows OS) via Ethernet and use the control software to search the video switcher. The time will be automatically synchronized once the video switcher be searched on the network


## 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.

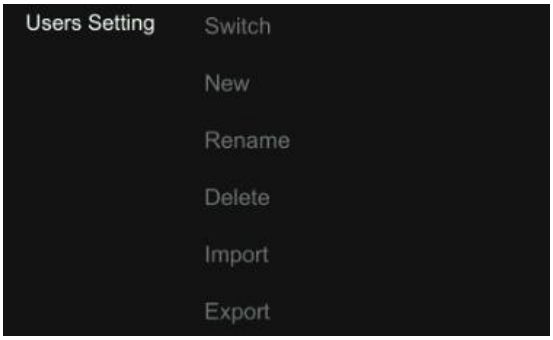
**Dynamic:** Connecting the video switcher with a router with DHCP features, then it will auto obtain an IP address automatically. Make sure that the video switcher and PC are in the same local area network. If the network segment is 1, you can access the web site either from its assigned IP or from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