AVMATRIX®

SHARK S8X PLUS

8-channel SDI/HDMI Audio/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

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1. Introduction

1.1. Overview

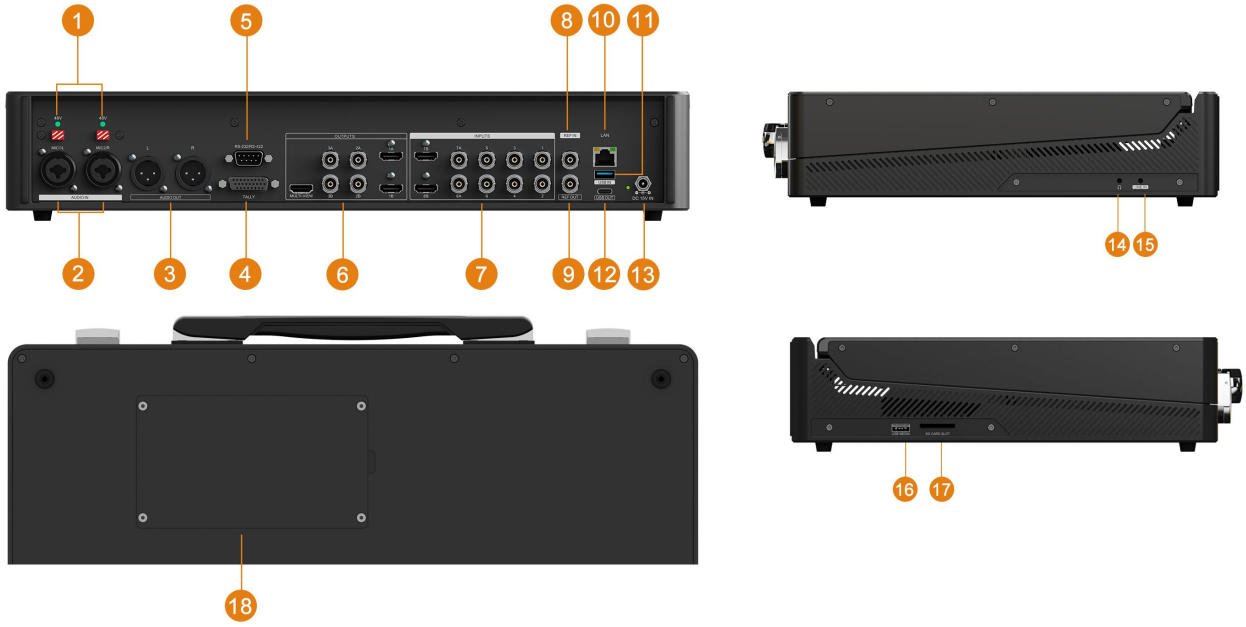
SHARK S8X PLUS, featuring a 17.3-inch FHD IPS switcher, supports 8-ch 3G-SDI and 2-ch 4K HDMI input, with frame synchronization output and an AUX input (supporting video player, UVC, streaming, NDI). Outputs include 2 HDMI, 4 SDI, and 1 HDMI multiview with customizable output source and format option. It supports RTMP(S)/SRT/RTSP/NDI streaming, recording and playback via USB/SD card/2.5-inch SATA, and UVC lossless capture. The switcher offers chroma key, luma key, customizable PIP×3, POP, DSK, and LOGO overlay. For Audio function, it provides two XLR/TRS balanced inputs with 48V phantom power and a 3.5mm stereo input, supporting mixing of 8 embedded video audio channels and two external audio inputs. It also features 8-channel PTZ control with rate, preset, focus control, and manual/auto exposure and color control. The switcher supports macro script functionality for effortless automation of operations a, meeting professional live streaming and production needs.

1.2. Main Features

- 17.3-inch FHD IPS display
- Inputs: 6×3G-SDI and 2×SDI/4K HDMI, 1×BNC REF, 1×AUX (internal interface)
- Multi-view source routing function, supporting the definition of any input signal to any specified view
- AUX input: Video playback/UVC CAM/network pull stream/NDI
- Outputs: 2×HDMI(A/B) PGM (configurable), 4×SDI(A/B) PGM (configurable), 1×HDMI MV (source configurable), 1×REF output
- Streaming: RTMP(S)/SRT/RTSP/NDI(Optional)
- Recording and playback: USB flash drive/SD card/2.5-inch SATA
- USBC port for UVC lossless capture
- Chroma key, luma key, custom position and size PIP×3, POP, DSK, LOGO overlay
- Transition: T-bar/Auto/Cut
- Professional XLR audio input and output, supporting 48V phantom power
- Audio: 8×input video embedded audio & 2×XLR/TRS balanced & 3.5mm stereo input; 3.5mm stereo & XLR balanced output
- 8-channel PTZ control, supporting PTZ speed setting, preset position setting and calling, automatic/manual white balance, automatic/manual color and automatic/manual focus control
- Macro script function, supporting macro recording, playback and user editing of macro scripts
- Tally GPIO port

2. Interface

2.1. Interface Overview



1	48V Phantom Power Switch Indicator
2	Microphone/Balanced Audio Input XLR/TRS Female×2
3	Balanced Audio Output XLR Male×2
4	Tally DB26× 1
5	RS232/RS422 DB9× 1
6	Outputs: HDMI multiview×1, SDI×4, HDMI×2 (A/B interfaces output the same view)
7	Input：3G-SDI× 8 和 4K HDMI× 2
8	REF Input × 1
9	REFF Loop Output× 1
10	LAN Port× 1（Web control, upgrade, streaming）
11	USB type-A × 1（UVC camera input）
12	USB Type-C Output×1 (For UVC lossless capture)
13	DC 15V 4A IN
14	Headphone Monitoring Output×1
15	Stereo Audio Input×1
16	USB Type-A×1 (Recording , configuration import/export, image import, firmware
17	SD Card Slot×1 (Recording storage)
18	SATA Slot×1

- **48V Phantom Power Switch/LED Indicator**

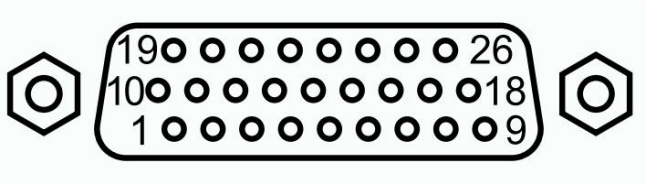
Press this switch to turn on the 48V phantom power indicator light, supplying 48V phantom power to the XLR interface for use with condenser microphones.

Note:

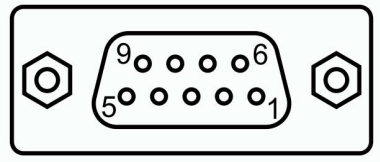
Before pressing this switch, please ensure that the channel mixing is turned off or the volume is reduced to avoid a loud impact sound that could damage the power amplifier or speakers.

When using 48V phantom power, ensure that a condenser microphone is used and connected in a balanced manner for better dynamic response.

2.2. Tally PIN Definition



PIN	Definition	PIN	Definition	PIN	Definition
1	PGM-IN1	**10**	n/c	**19**	n/c
2	PGM-IN2	**11**	PVW IN1	**20**	n/c
3	PGM-IN3	**12**	PVW IN2	**21**	GND
4	PGM-IN4	**13**	PVW IN3	**22**	GND
5	PGM-IN5	**14**	PVW IN4	**23**	GND
6	PGM-IN6	**15**	PVW IN5	**24**	n/c
7	PGM-IN7	**16**	PVW IN6	**25**	n/c
8	PGM-IN8	**17**	PVW IN7	**26**	n/c
9	n/c	**18**	PVW IN8		



PIN	Definition	PIN	Definition
1	RS422_A	**7**	RX232-RTSN
2	RX232RX	**8**	RS232-CTSN
3	RX232TX	**9**	RS422_Y
4	RS422_B	**10**	GND
5	GND	**11**	GND
6	RS422_Z		

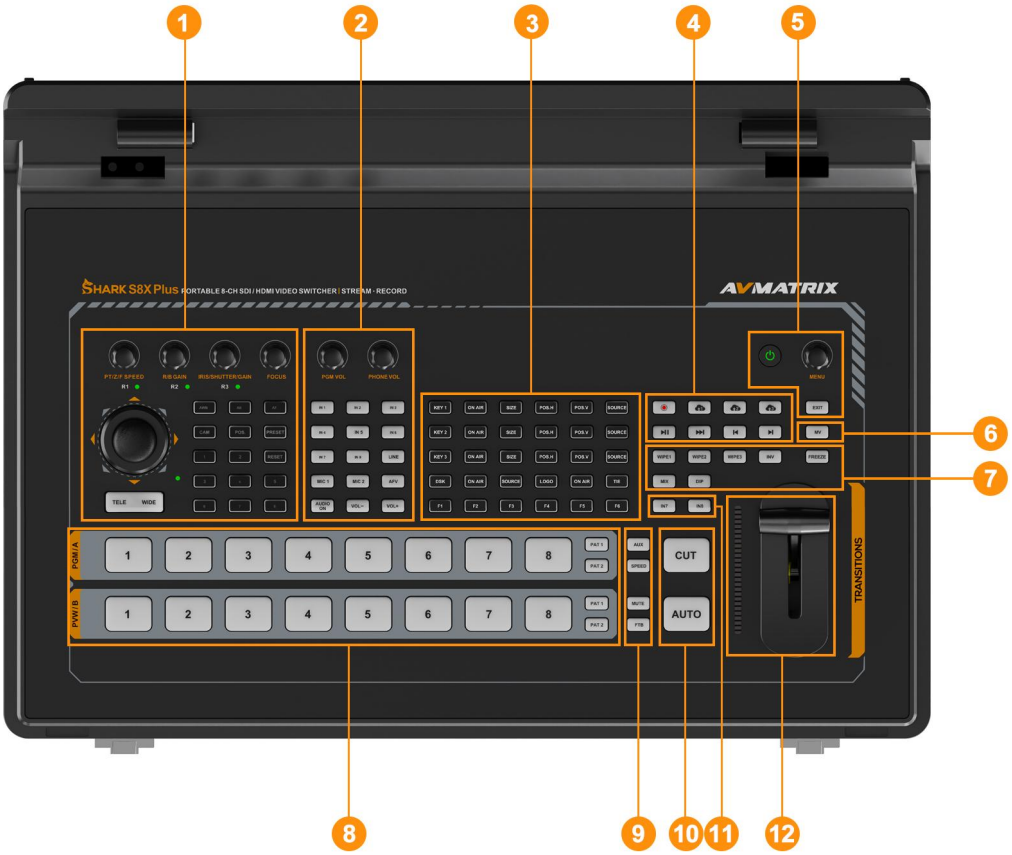
3. Specification

CONNECTION	
Video In	3G/HD/SD-SDI: 75Ω 800mV BNC type x 8 (In1--8A) HDMI(DVI-D): Type A(19pin) x 2(In 1A--8B) USB IN:Type A MJPEG USBCAM
Video Out	3G/HD/SD-SDI: 75Ω 800mV BNC type x 4 HDMI(DVI-D): Type A(19pin) x 2 USB OUT:Type A UVC/UAC Capture Output
Audio Input	XLR/TRS Female: +4 dBu 4kΩ Maximum input +20dBu Maximum gain 37dB Phantom Power: Maximum 48V5mA unloaded 3.5mm TRS: -10dBU, 10kΩ Maximum input +8dBu
Audio Output	XLR Male：+4 dBu 600Ω 3.5mm TRS (Stereo): -10 dBu 1kΩ 3.5mm TRS (Headphone): 70mW+70mW at 32Ω
Ref Input/Output	BNC 75Ω 270Mb/1.5G Black burst or tri-level
Network	LAN×1 (Streaming, web control, PTZ control, firmware update) NDI (optional): NDI|HX2 push streaming ×1, NDI|HX3 pull streaming ×1
USB Ports	USB Type-C×1 (UVC capture) USB Type-A×2 (Recording storage, configuration import/export, image import, firmware upgrade)
Tally Port	RS232/RS422×1, PTZ cameras control
Record	U-Disk×1, SD Card×1, SATA ×1
STANDARDS	
SDI In	1080p 60/59.94/50/30/29.97/25/24/23.98 1080psF 30/29.97/25/24/23.98 1080i 60/59.94/50 720p 60/59.94/50/30/29.97/25/24/23.98 625i 50, 525 i59.94
HDMI In	4K 60/50/30, 2K 60/50/30 1080p 60/59.94/50/30/29.97/25/24/23.98 720p 60/59.94/50/30/29.97/25/24/23.98 576p 50, 480p 60/59.94
SDI Out	1080p 60/59.94/50/48/47.95/30/29.97/25/24/23.98 1080i 60/59.94/50

HDMI Out	1080p 60/59.94/50/47.95/48/30/29.97/25/24/23.98, 1080i 60/59.94/50
Video Format	SDI: YUV 4:2:2 10bit; HDMI: YUV, RGB Full, RGB Limit
Color Space	SDI&HDMI: Rec 709, Rec 601
Recording & Streaming	
USB Capture Out	Formats: YUY2, NV12, RGB32, 1080p60 (200Mbps) Supported Operating Systems: Windows 7/8/10/11, Linux (Kernel version 2.6.38 and above), Mac OS (10.8 and above) Software Compatibility: OBS studio, Skype, ZOOM, Teams, Youtube Live, etc.
Stream	Bitrate: 32Mbps
Record	Storage Formats: USB, SD card, Solid State Drive (FAT32/exFAT/NTFS/ext4) File Formats: MP4/TS, up to 1080p60 (32Mbps) Bitrate Control: CBR/VBR
Protocols	Push Steam：RTMP(S), SRT、NDI|HX2（optional） Pull Stream：RTSP、HTTP、NDI|HX3（optional） PTZ Control：Visca、Onvif、Pelco D/P、NDI（optional）
Media	
Format	Video: MP4, TS; Audio: MP3, AAC Image: JPG, PNG, BMP, JPEG, PBM, JPS, MPO, up to 1920×1080 pixels Logo: JPG, PNG, BMP, JPEG, PBM, JPS, MPO, up to 650×650 pixels
AUX In	Local playback, USB camera, network streaming, NDI (optional)
FEATURES	
Display	17.3-inch FHD LCD display
Macro	20 macros, supporting recording and playback
KEY	Up to 6 keys, adjustable size and position Upstream key×3: Chroma key/Luma key/PIP Downstream key×1: DSK LOGO×1
Audio Mixing	Supports 10-channel audio mixing (8 video channels + 2 XLR/TRS channels)
OTHERS	
Power	Wide voltage range: 9V - 24V Operating voltage: DC 15V, less than 50 W
Dimensions (LWD)	433×307×75.5mm
Weight	Net: 5500g; Gross: 6680g
Temperature	Operating temperature: -20℃~50℃, Storage temperature: -30℃~70℃

Warranty	2 years

4. Front Panel



1	PTZ Camera Control
2	Audio Control
3	Upstream key/downstream key control, F1-F6 custom keys
4	Recording & Streaming & Local Playback
5	Power button, menu, exit button
6	MV multiview/source full-screen preview switching
7	Transition effects, support (11 x 3) x WIPE, MIX, DIP transition effects
8	PGM/PVW, “program”, “preview” source selection keys.
9	AUX input source selection, selectable switching rate, MUTE/ FTB
10	CUT&AUTO, Fast switching and automatic switching
11	IN7 & IN 8, Input 7/8 interface quickly switches SDI/HDMI signals
12	T-bar

5.Front Panel Functions

1.PTZ Camera Control

Control PTZ cameras to achieve pan/tilt, tilt, and zoom control, and support common functions such as manual or automatic focus, gain, aperture, and shutter. Support quick setting/calling/preset positions. Support connecting eight cameras.

R1: Rotate to increase or decrease the speed. Press to switch and adjust the PTZ (red light), zoom (green light) and focus (blue light) speeds. The current control speed status can be synchronously viewed in the status bar in the upper left corner.

R2: Rotate to increase or decrease red and blue gain, press to switch between red gain (red light) and blue gain (blue light)

R3: Rotate to increase or decrease parameters, press to switch and control aperture (red light), shutter (green light), gain (blue light)

FOCUS Knob: Manual focus knob, can be used with the R1 to set the focus rate to achieve fast and precise focus

Joystick: The joystick can control the PTZ movement in 8 directions, and can be used with the R1 to set the speed for fast and accurate framing. Pressing the joystick can lock the joystick to prevent accidental touches, and the red light flashes when locked.

TELE/W Button: Zoom control button for fast and accurate framing in conjunction with R1 set rate.

AWB: Auto white balance, lights up when turned on

AE: Auto exposure, lights up when turned on

AF: Autofocus, lights up when turned on

CAM\POS.\PRESET\RESET: Function buttons, share the following numeric keys, light up when the currently selected function is activated, such as CAM light up, press the number 1 or connect to camera No.1, POS. light up by pressing the number 2 will call the current connected camera No. 2 preset bit, preset and reset correspond to set preset and clear preset respectively. Due to the limitation of numeric key area, only 8 cameras can be connected and 8 preset bits can be called at present.

The upper left status bar of the multi-screen will synchronously display the status and operation prompts of this area.

2. Audio Control

Users can configure the audio for each channel, supporting mixing, AFV mode, volume adjustment and master volume/headphone output/PGM output volume control.

3.Key source control

Supports chroma key and luma key, PIP×3, DSK, LOGO quick switch, and real-time adjustment of size and position.

KEY1-3: The functions of KEY1-3 can be enabled in the menu, including CHROMA, LUMA, and PIP.

DSK: Enable Downstream Key

LOGO: Add logo from USB disk, enable logo overlay

ON AIR: Enable the corresponding Chroma/Luma/DSK/PIP/Logo on the PGM

SIZE: Customize the size of KEY1-3, the size can be adjusted freely.

LOGO:Add logo from USB disk, enable logo overlay

POS.H: Setting the horizontal position of KEY1-3 in the screen

POS.V: Setting the vertical position of KEY1-3 in the screen

SOURCE: Select the desired source for the picture

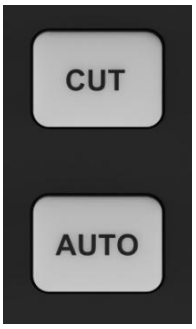
TIE: DSK is usually used to overlay a logo or title directly onto the PGM. But if you want the downstream keyer to work in AUTO or T-Bar, just turn on TIE.

F1-F6: Customizable shortcuts, menu-configurable for use with macros or other frequently used functions

4.Recording & Streaming

Recording：Press to start and stop recording, recording will light up, stopping will turn off the light

Streaming：Press to start and stop streaming on three preset streaming platforms. Flashes when connected, stays on during streaming, and turns off when stopped. Player:  Short press to play (light on)、Pause (flashing light)，Long press to stop playing (light off),  Multiple speed playback, menu-assignable rate,  Skip playback, press to go back 5 seconds and forward 5 seconds, menu can match step amount, long press to switch to previous song and next song **MV**: The multiview channel monitors the specified signal source in full screen. The signal source to be monitored can be configured through the menu. When the button is lit, multiple screens are monitored, and when the light is off, the set source signal is monitored in full screen.	
5.Transition Effects **WIPE1-3**: Scratch effect selection buttons, with menu-configurable scratch effects for the corresponding buttons. **INV**: The switching effect switches in the opposite direction. **MIX**: Gradually blending from one frame to the next, the switching of frames is accomplished in a soft and smooth manner. The dissolve effect enhances the artistry and coherence of the picture. **DIP**: A switching effect where one screen is immersed into another. This immersion effect provides a choice between color immersion and source immersion. The currently selected transition effects button lights up.	
5. POWER&MENU Power on/off button, long press for 5 seconds to realize switch on/off, Red light when power is turned on, power on display green light. Menu knob, control menu, configure different parameters.	

7.CUT/ AUTO **CUT**: simple instant switch between PVW and PGM. **AUTO**: Automatically switch between PVW and PGM. (Switching with animation effects) Support Inversion function In the menu settings, users can set the switch key inversion. Swap the functions of the AUTO key and the CUT key. Meet the usage habits of different operators and improve operating efficiency. Supports passive forbidden switching. When there is no signal from a signal source, the video switcher will not switch to that source, and this action does not take effect to avoid false operation.	
8.T-Bar Switching PVW and PGM via T-Bar The T-bar switch is controllable to enable or disable the switching function of the T-bar. Support A/B mode. In A/B mode, the function of PGM/PVW is determined by the upper and lower positions of the T-bar. Users can make settings in the menu page.	
9.AUX&SPEED **AUX**: AUX optional video signal input, select the AUX input signal source from local playback, USB camera, network streaming and NDI. **SPEED**: Controls the transition speed, the speed can be configured in the menu. 3 levels of transition rate control are available.	
10.MUTE/ FTB **MUTE**: Turn off sound **FTB**: Blackfield for emergency	

6. Power Switch

Connect the video sources and output devices, plug in the power supply adapter, and run the video switcher.

This switcher offers three flexible power-on methods, which users can easily set in the menu according to their needs.

Power-on mode: After connecting the power supply adapter, the switcher will automatically start and enter the working state without the need for additional operations, providing convenient and efficient startup.
Standby mode: After connecting the power transformer, the switcher will be in standby mode. Press the power button on the front panel to activate the device and start working.
Memory power-on : By selecting memory power on, the switcher can remember the way it was shut down last time to choose the power-on method, enhancing the convenience and continuity of use.

7.Multiview Status

The multiview monitoring screen includes 10 small screens and two large screens. The small screens are used to monitor the input sources available for switching and two static images, while the large screens are used to monitor the program and preview view. In conjunction with the source selection buttons PGM/PVW, quick switching between broadcast and preview screens can be easily achieved.

There are two status bars at the top and bottom of the multiview, which display the working status of each module component and some system information.

The audio meter, input signal information, and label display for each screen are also shown on the multiview. Supports landscape and portrait modes.

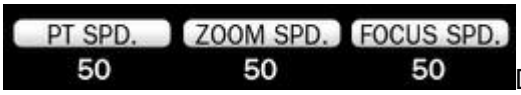
- Landscape multiview display

- Portrait multiview display

7.1. Status Bar

The upper left status bar displays the parameters and status information of PTZ camera control.

Displays the currently connected camera number and the control protocol being used.



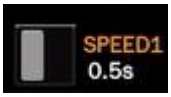
Displays the current PTZ pan, zoom, and focus rates.

Displays control action prompts when performing PTZ control.

Displays the selected function of the three knobs on the current PTZ control area keyboard, which can be switched by pressing the knobs.

Displays the current macro script function status, with the status of macro script recording and calling displayed here.

The upper right status bar displays the current transition, AUX status, recording/streaming status, and a timer.



Displays the current transition effect diagram and transition rate.

Displays the emergency black screen and mute output status.

Displays the current AUX channel signal source, which can be switched between different decoding sources by pressing the AUX button. The current AUX player's working status is also indicated in the upper right corner.

Displays the current recording status, storage medium, and recording duration.

This is a timer, which defaults to displaying the time since power-on. It can be set in the menu to a timer for countdown or count-up, in conjunction with the F shortcut key to quickly start and stop the timer.

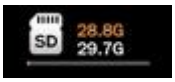
Displays the network card streaming status. You need to import or configure the streaming platform information in the menu or web page first. In conjunction with the streaming button, one-key streaming and status display can be achieved. After successful configuration, the configured streaming platform name will be displayed. When streaming starts, the connection status will be displayed. After a successful connection, the cumulative streaming duration will start to be recorded.

Displays the function status of the F key. The upper part shows the current short press function, and the lower part shows the function set for a long press.

Displays the audio mixing status, with each column indicating the current channel's volume and mixing status and mode. ON indicates that the channel's mixing switch is turned on. When it lights up orange, it means that the channel's audio is being mixed and output. AFV indicates that the channel's audio follows the video for mixing. Only when the current channel's video is broadcast will the

channel's audio be mixed and output. OFF indicates that the channel's audio is turned off, and the column for that channel turns gray. The middle value is the current mixing volume. 0 indicates that the volume is mixed according to the input source's volume unit dB. +1 indicates a digital volume gain of 1dB, and -1 indicates a digital volume attenuation of 1dB. You can select the channel to change its status and volume.

Displays the current main control system's CPU and memory usage. When resource usage is too high, it may affect the performance of recording, streaming, and the AUX channel, which may manifest as frame dropping during streaming or recording. Checking network quality, reducing encoding bitrate, or pausing decoding playback can alleviate resource usage. The current parameter limits ensure that all functions can work normally and stably even when all are turned on.



Displays the status of the currently connected storage media, showing the total capacity and remaining capacity of the SD card, USB Disk, and SATA hard disk.

Displays the current internal temperature of the machine. High temperatures may lead to performance degradation. Under normal room temperature conditions, the working temperature is around 48-55℃. When the displayed temperature exceeds 70℃, performance may be affected. The machine has an air intake at the bottom and an exhaust on the left side. Do not remove the machine's feet during use, and do not place soft fabrics under the machine to prevent blocking the air intake and exhaust ports.

Displays the system time, which can be set in the menu or synchronized with the network to set the local date and time.

7.2.Multiview Layout

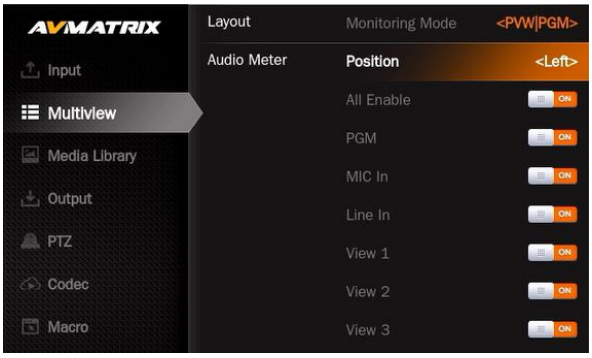
The switcher supports two layout modes, which can be quickly switched between PVW|PGM and PGM|PVW through the menu to flexibly adjust the monitoring layout.

PVW|PGM Mode: The left side displays the preview screen (PVW), and the right side displays the broadcast screen (PGM).

PGM|PVW Mode: The left side displays the broadcast screen (PGM), and the right side displays the preview screen (PVW).

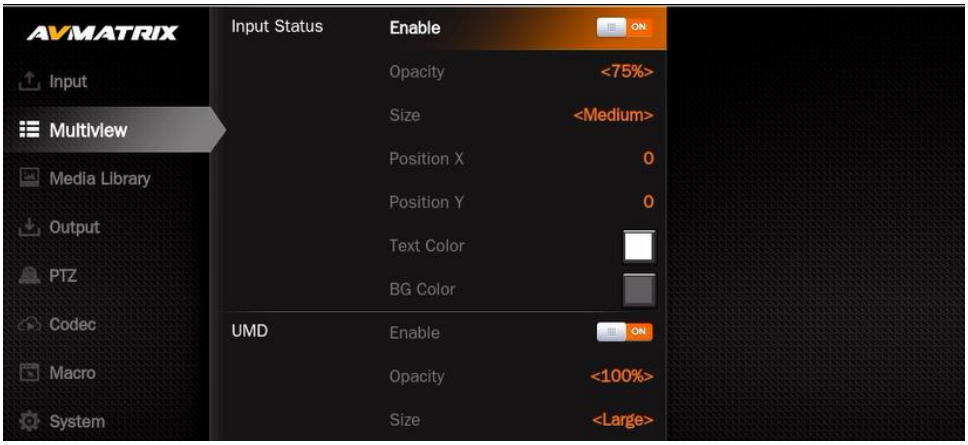
7.3.Audio Meter

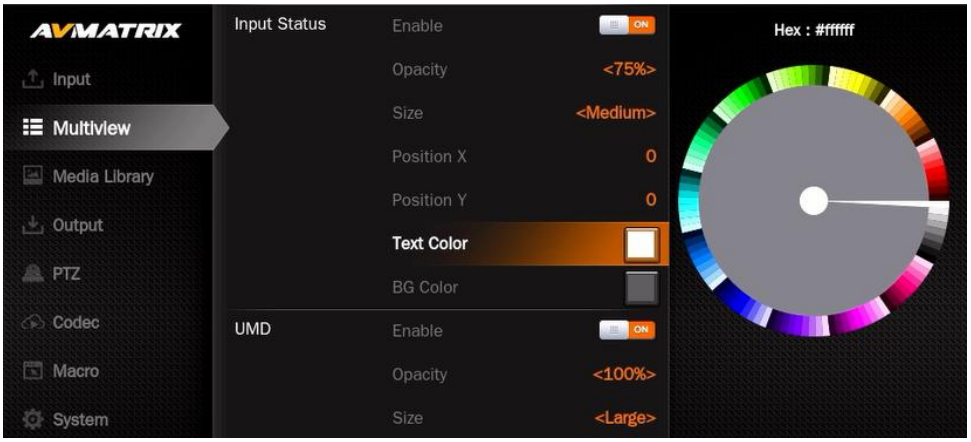
Each window in the multiview has an audio meter, including IN1-IN8, MIC1, MIC2, and LINE to display the status of each audio channel. The audio meters for MIC1 and MIC2 are displayed on the left side of the PVW window, and the audio meter for LINE is displayed on the right side of the PVW window. Users can turn on/off all or individual audio meters through the menu. The position of the audio meter can be chosen to be on the right or left side of each window.



7.4.Source Status

Each window of IN1-IN8 can display the resolution and frame rate of the input video. Users can turn on/off this input information in each input window. Additionally, users can set the opacity (50%, 75%, 100%), size (small/medium/large), X and Y positions (1-100), text color, and background color.

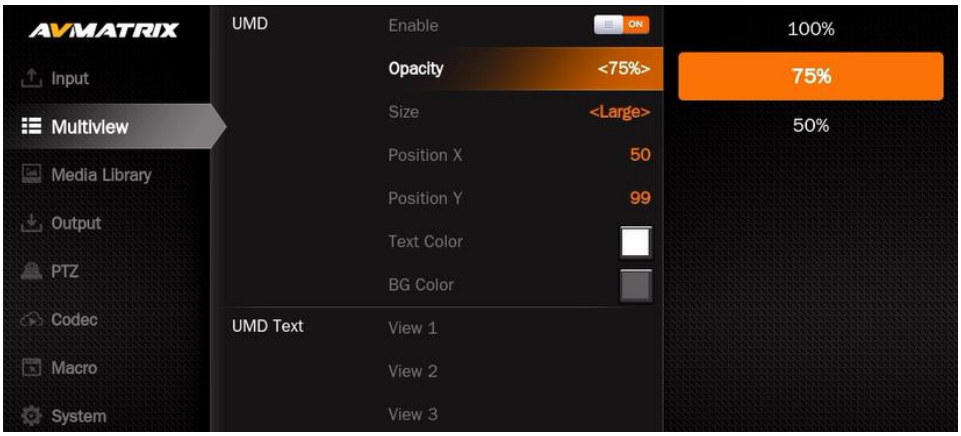




7.5. Label Settings

Users can turn on/off the label for each screen. Moreover, users can set the opacity (50%, 75%, 100%), size (small/medium/large), X and Y positions (1-100), text color, and background color for the overlay.

The character content of the screen labels can be set from the menu. Users can rename the label character content for each screen window through a virtual keyboard and the rotation button. Up to 7 characters of label content are supported. The default label format is the screen number-input interface style. For example, 2-IN2 means that the second screen displays the image from input 2. Labels can be customized according to actual scenarios, such as "telephoto position" or "wide-angle position."



The character content of the screen labels can be set from the menu. Users can rename the label character content for each screen window through a virtual keyboard and the rotation button. Up to 7 characters of label content are supported. The default label format is the screen number-input interface style. For example, 2-IN2 means that the second screen displays the image from input 2. Labels can be customized according to actual scenarios, such as "telephoto position" or "wide-angle position."

7.6.Menu Settings

Users can flexibly adjust the display effect of the menu according to personal preferences, including horizontal position, vertical position, and opacity, to ensure that the operation interface is more in line with usage habits. This prevents the menu from blocking the screen, ensuring both monitoring and operation are not hindered.

8.PGM PVW Switching

8.1.PGM PVW Channel Selection

The user can select PGM and PVW sources from the PGM, PVW and PATTERN (which can be configured in different patterns on the menu) on the front panel button area. The PGM channel button for broadcast will display a red LED and the PVW button for pre-broadcast will display a green LED. the PGM source will be circled in red and the PVW source will be circled in green in the Source Monitor mini-screen.

8.2.Switching modes: CUT/ AUTO/ T-BAR

This video switcher has two types of transition control: switching without effect (CUT) and switching with effect (AUTO, T-Bar).

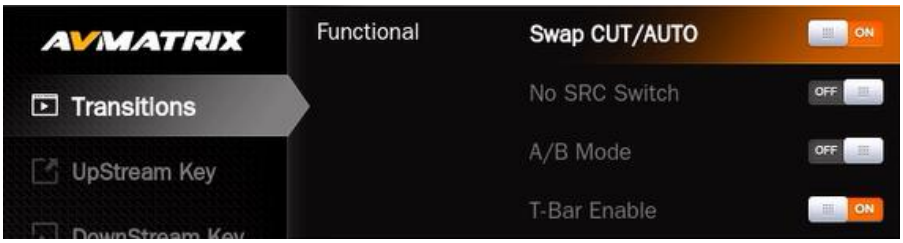
CUT Simple instant switching between preview and program. This is a seamless switch with no delay and does not use the selected transition effects WIPE, MIX or DIP. Direct PGM source key switching also switches the playout in real time without effects.

AUTO is used to automatically switch between preview and program view. The switching time can be set by the speed button. The switching effects WIPE, DIP, MIX can also be used.

T-**BAR** manual switching is similar to AUTO, with more flexible operation and the switching time depends on the speed of manual switching.

8.3.Switching Function

- **Switching Key Inversion:** In the menu settings, users can set the switch key inversion. Swap the functions of the AUTO key and the CUT key. Meet the usage habits of different operators and improve operating efficiency.
- **Passive Switching:** Supports passive switching. When detecting that a signal source has no valid input, video switcher will automatically block the switching operation of the signal source to prevent misoperation and ensure broadcasting safety.
- **A/B Mode:** In A/B mode, the function of the PGM/PVW is determined by the up and down position of the T-bar.
- **T-bar switch:** The toggle function of the T-bar can be enabled or disabled.



9.Transition Effects

The video switcher provides a variety of switching transitions for users to choose from, including WIPE, DIP, and MIX.

9.1.WIPE

WIPE is a transition effect from one screen to another. Press the WIPE key to enable this effect. Users can select different WIPE styles through the menu and set the softness of the edge. The INV key is a direction switch. Press this key and the WIPE effect direction will be reversed. Users can set three quick WIPE effects in the WIPE1-3 keys on the panel.

In some live streaming applications users usually use this effect pushed to about halfway, by adjusting the edge softness to achieve the effect of dual-lens out-of-picture.

9.2.DIP

Press the DIP key to execute the DIP transition effect.The DIP effect supports the following two modes:

Color Immersion：The user can select any color from the menu palette for the immersion screen, and the default color is black.

signal source immersion：Users can select the input signal source as the immersion screen for more flexible transition effects.

DIP to Black (fade out):

DIP to White (fade out):

9.3.MIX

Press the MIX button to perform the MIX transition effect.

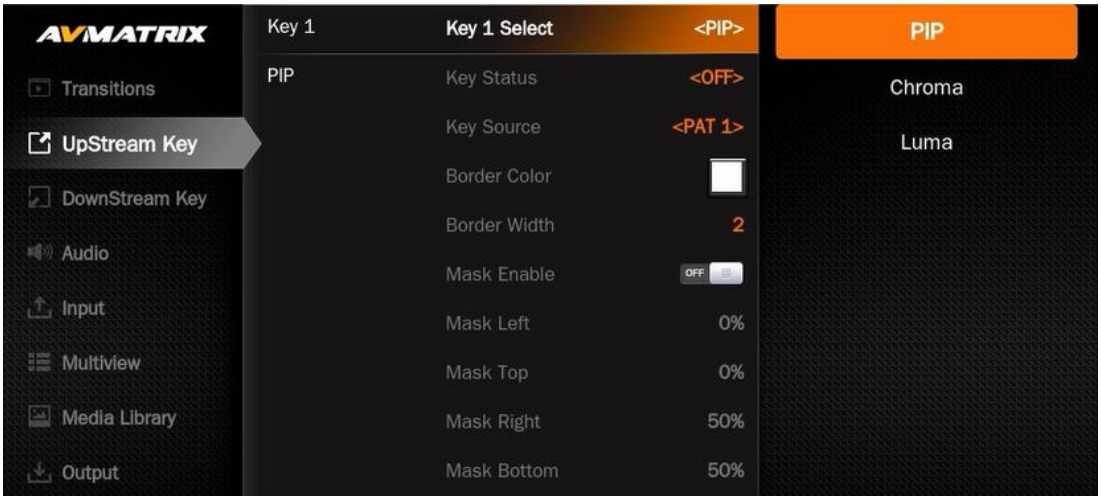
9.4.Transition Speed Settings

Users can set three switching speeds on the menu, the defined speed value will be saved, press the SPEED key on the panel to switch the three rates, the rate information can be viewed in the status bar. The larger the value is, the slower the switching speed is, a total of 0.1s-8.0s can be selected.

10. Upstream Keys

Upstream keys essentially mean that these are keys that are part of the switch, so anything belonging to the upstream keys will be switched over when switching from Preview to Program.

The switcher provides three customizable function keys, KEY1, KEY2, and KEY3, on the panel and in the menu. Users can set them to luma key, chroma key, or PIP mode in the menu. Through the keyboard panel or by pressing the menu knob to enter the corresponding settings interface, users can customize the size, position, key source, etc., of the luma key, chroma key, or PIP to achieve more precise video effect control.



10.1.Luma Key

Key Source = Fill Source

Key source Fill source Bacground Combined output

Key Source ≠ Fill Source

Key source Fill source Bacground Combined output

The luma key provides a method for compositing text clips on a background clip based on the brightness levels in the video. Turn on the luma key and adjust the appropriate brightness threshold. Parts of the key source image with brightness values lower than the set threshold will be removed, and the corresponding parts of the fill source image will be displayed in the removed areas. If the fill source and key source are the same, the removed parts will become transparent, revealing the background image, which is either the PGM or PVW selected source image.

Key Source: Select the source image to be keyed.
Fill Source: Select the source image to fill the removed parts of the key source.
Clip: The brightness value at which parts of the image will be removed. Increasing this value will remove more of the key source image, revealing more of the background. If the entire key source image is visible, it indicates that the keying effect range value is too low.

Gain: The range of brightness values around the threshold that will gradually become transparent. Adjusting this value can make the edges of the key softer or sharper.

Invert Key: Switches whether images with brightness lower than the threshold or higher than the threshold are removed.

Mask: Select the effective area for keying.

Scale and Position: Supports adjusting the size and position of the keyed image. Note that the scale function is not available if the key source and fill source are not the same image source.

When the LUMA button is turned on, the luma key takes effect in PVW.

When the ON AIR button is turned on, the luma key takes effect in PGM. The background will change when switching between AUTO and T-BAR.

When both ON AIR and LUMA buttons are turned on, the luma key is visible in both PVW and PGM. The corresponding state in the menu is <KEY & ON AIR>.

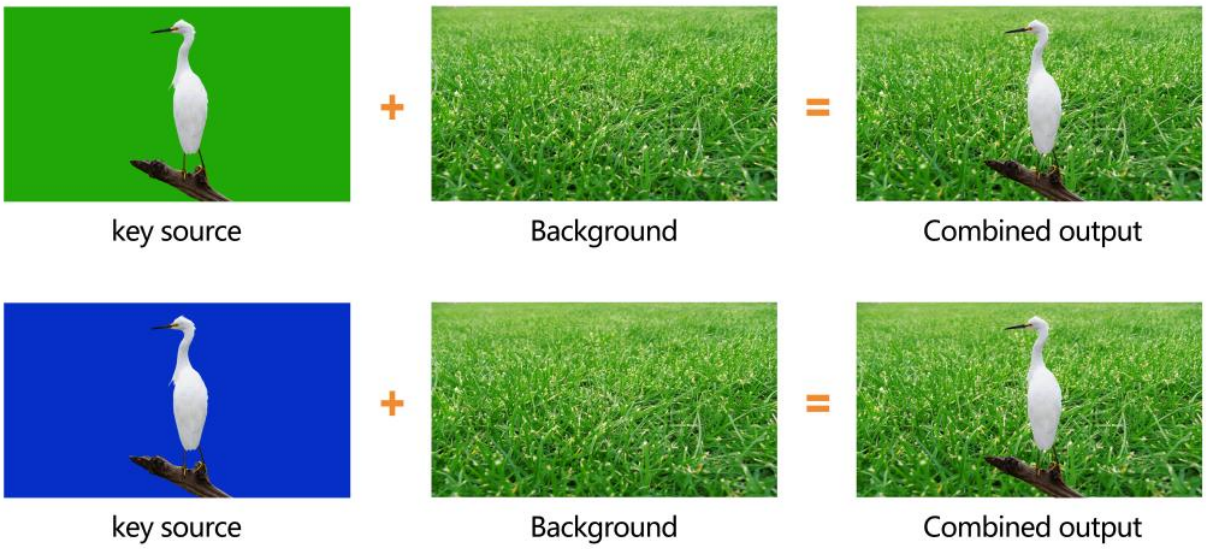
The luma key menu and parameters are as follows:

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// View 1/ View 2/ View 3/ View 4/ View 5/View 6/View 7/View 8/PAT 1/PAT 2	Color1
		Key Source	Black/ Color Bar/ Color 1/ Color 2/ View 1/ View 2/ View 3/ View 4/ View 5/View 6/View 7/View 8/PAT 1/PAT 2	PAT 1
		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%
		Scale Enable	On/Off	ON

	Scale Size	0%-100%	50%
	Horizontal	0%-100%	50%
	Vertical	0%-100%	50%

10.2.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.



Key Source: Select the source image that needs to be keyed, which usually has a large area of solid color background.

Background Color: Select the color to be removed from the key source background. This can be configured through RGB values, preset red/blue/green background colors, or directly sampling the background color from the key source image. Usually, the sampling method is used to quickly obtain the actual background color from the key source.

Similarity: The range of colors to be removed based on the set background color. For example, if the set background color is blue, increasing this value will remove both dark and light blue areas, making them transparent or semi-transparent. The larger the value, the more transparent areas will appear, revealing more of the background. If the entire key source image is visible, it indicates that the keying background color is set incorrectly or the similarity value is too low.

Gain: Feathering the edges of the key to make the transition between the foreground and background more natural.

Mask: Select the effective area for keying.

Scale: Scale the keyed foreground image to the desired size to match the background.

Position: Adjust the horizontal and vertical position of the keyed foreground image to match the background.

Restore Default Parameters: When users are unable to adjust the parameters effectively or are unsure how to proceed, they can restore the default parameters and start over.

When the CHROMA button is turned on, the chroma key takes effect in PVW.

When the ON AIR button is turned on, the chroma key takes effect in PGM.

When both ON AIR and CHROMA buttons are turned on, the chroma key is visible in both PVW and PGM. The corresponding state in the menu is <KEY & ON AIR>.

The detailed settings for the chroma key are as follows:

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/ View 1/ View 2/ View 3/ View 4/ View 5/View 6/View 7/View 8/PAT 1/PAT 2	View 5
		Key Color R	0~255	0
		Key Color G	0~255	255
		Key Color B	0~255	0
		Fetch Color	Refresh Image/Fetch X/Fetch Y/Fetch Width	/
		Key Color Type	Red/Green/Blue/Customize	Green
		Similarity	0~1000	409
		Smoothness	0~1000	82
		Brightness	0%-100%	50%
		Contrast	0%-100%	50%
		Saturation	0%-100%	50%
		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%

		Scale Enable	On/Off	On
		Scale Size	0%-100%	50%
		Horizontal	0%-100%	50%
		Vetical	0%-100%	50%
		Dedault	On/Off	Off

10.3. PIP

The video switcher supports three groups of PIP. When the corresponding button is pressed, a small image will appear in the upper left corner of the PVW window. Press the menu knob or directly operate on the keyboard panel to select the PIP settings interface. Users can set the size, position, key source, border, color, etc., of the PIP. Press the ON AIR button next to the corresponding button to make the PIP on PGM take effect.PIP

When KEY1/KEY2/KEY3 button is turned on: PIP1 or PIP2 or PIP3 takes effect in PVW.

When the ON AIR button is turned on: PIP1, PIP2, PIP3 takes effect in PGM.

When KEY1/KEY2/KEY3 and ON AIR buttons are turned on simultaneously: PIP1 or PIP2 takes effect in both PVW and PGM. The corresponding state in the menu is <KEY & ON AIR>.

The detailed parameters for PIP are as follows:

Menu	Sub-Menu	Item	Parameter	Default
Upstream Key	PIP	Key Status	OFF/ KEY (PVW)/ ON AIR (PGM)/ KEY & ON AIR	Key Status
		Key Source	Black/ Color Bar/ Color 1/ Color 2/ View 1/ View 2/ View 3/ View 4/ View 5/View 6/View 7/View 8/PAT 1/PAT 2	PAT 1
		Border Color	Color	White
		Border Size	0~15	2
		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%
		Scale Enable	On/Off	On
		Scale Size	0%-100%	50%
		Horizontal	0%-100%	50%
		Vetical	0%-100%	50%

11.Downstream Key

11.1 DSK

Key source Fill source Bacground Combined output

Downstream keys are the last layer of keying and operate independently of the selected "background." No matter what operation is performed on the switch, the overlayed downstream key will remain on the screen. Downstream keys are very suitable for displaying logos on the screen.

Key Source: Select the source image to be keyed.
Fill Source: Select the source image to fill the removed parts of the key source.
Clip: The brightness value at which parts of the image will be removed. Increasing this value will remove more of the key source image, revealing more of the background. If the entire key source image is visible, it indicates that the keying effect range value is too low.
Gain: The range of brightness values around the threshold that will gradually become transparent. Adjusting this value can make the edges of the key softer or sharper.
Invert Key: Switches whether images with brightness lower than the threshold or higher than the threshold are removed.
Mask: Select the effective area for keying.
Scale and Position: Supports adjusting the size and position of the keyed image. Note that the scale function is not available if the key source and fill source are not the same image source.

When TIE is off, using AUTO or T-Bar to switch PVW and DSK to PGM. The DSK effect will not change when switching between PVW and PGM.

When the DSK button is turned on, the DSK key takes effect in PVW.

When the ON AIR button is turned on, the DSK key takes effect in PGM. When switching between PVW and PGM using AUTO or T-BAR, the DSK overlay will not change.

When both ON AIR and DSK buttons are turned on, the DSK is visible in both PVW and PGM. The corresponding state in the menu is <KEY & ON AIR>.

The detailed settings for DSK are as follows:

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/ View 1/ View 2/ View 3/ View 4/ View 5/View 6/View 7/View 8/PAT 1/PAT 2	Color 1
		Key Source	Black/ Color Bar/ Color 1/ Color 2/ View 1/ View 2/ View 3/ View 4/ View 5/View 6/View 7/View 8/PAT 1/PAT 2	View 5
		Clip	0%-100%	0%
		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%	0
		Mask Bottom	0%-100%	0

11.2.LOGO

The switcher allows users to import logos. Press the menu button to select the logo settings interface. Users can select a logo from the media pool on a USB Disk, and set its position, size, and opacity. Rotate the menu knob to select a logo, then press the menu knob to select and delete the logo.

Logo format support: JPG，PNG，BMP，JPEQ，PBM，IPS，MPO

Logo size support: 10×10 pixel to 650×650 pixel

LOGO button ON：LOGO shows on PVW.

ON AIR button ON：LOGO shows on PGM

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

Background LOGO Combined output

Menu	Sub-Menu	Item	Parameter	Default
DSK	Logo	Logo status	OFF/ KEY (PVW)/ ON AIR (PGM)/ KEY & ON AIR	Off
		Logo Selection	Picture	/
		Horizontal Position	0%-100%	98%
		Vertical Position	0%-100%	2%
		Scale Ratio	0.5-1.5	1.0
		Opacity	0-100	100

12.Input Settings

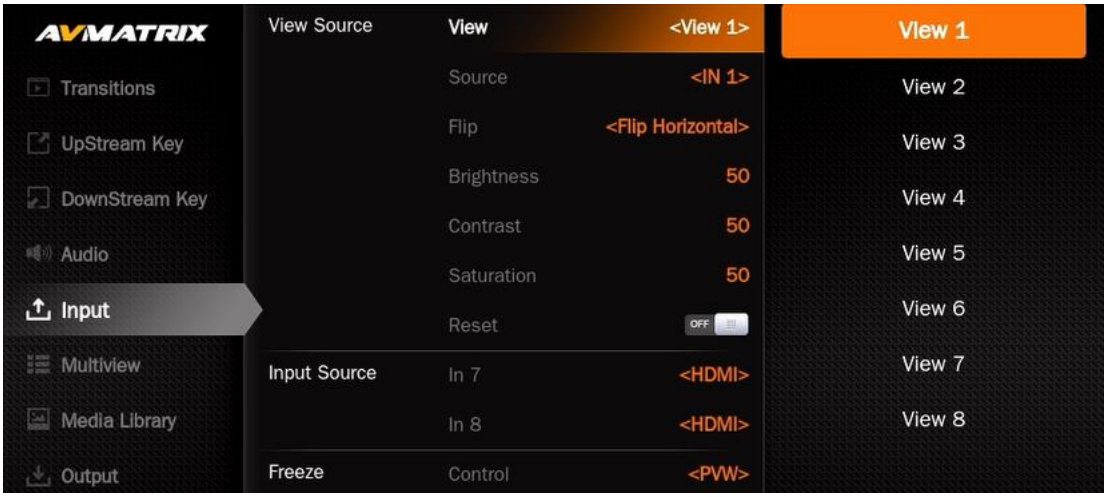
12.1. Source Selection

The S8X supports input signal routing configuration. The 8 preview screens (View1-View8) can freely select the same or different input signal sources (including IN1-IN8 and AUX sources), allowing flexible configuration of screen order. There is no need to unplug and plug interface cables to complete the custom adjustment of screen order.

View 1 and View 2 support flip functions, including horizontal flip, vertical flip, and 180° rotation flip, which are commonly used for correcting image orientation from aerial photography, PTZ inverted cameras, etc. It also supports adjustment of brightness, contrast, and saturation of the image.

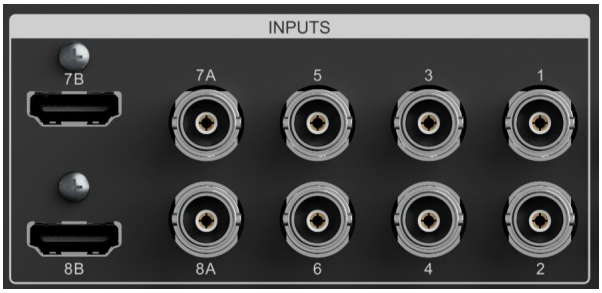
To restore the default routing configuration, you can select the source reset option to restore the default state. In the default state, screens correspond to interfaces in order. Input 7 and Input 8 default to the HDMI input signal.

Note: In all functions of the S8X where there is a corresponding signal source selection, the selection is based on the preview screen number. If the routing is in the default state, it corresponds to the interface. If the routing configuration has been changed, refer to the order of the preview screens, which may not correspond to the interface.



12.2.Multiplexed Interface

The switcher has 8 channels of 3G-SDI input and 2 channels of 4K HDMI input. Among them, the 7th and 8th input interfaces are multiplexed interfaces. Users can set the input signal for IN7 and IN8 to SDI or HDMI in the input settings.



12.3.Freeze

The video switcher supports the FREEZE function, allowing users to freeze the input source image.

Users can select to freeze PGM or PVW in the menu. In the PVW or PGM row, select the channel to be frozen and press the FREEZE button to freeze the input source image of that channel. Select the frozen input channel again and press the FREEZE button to unfreeze it. If needed, users can freeze all 8 inputs.

12.4. Sync Signal

The switcher is equipped with REF input and loop output interfaces, supporting external synchronization with tri-level or black burst signals. Users can select the synchronization mode of line/field or clock + line/field mode in the menu according to the actual needs of the site.

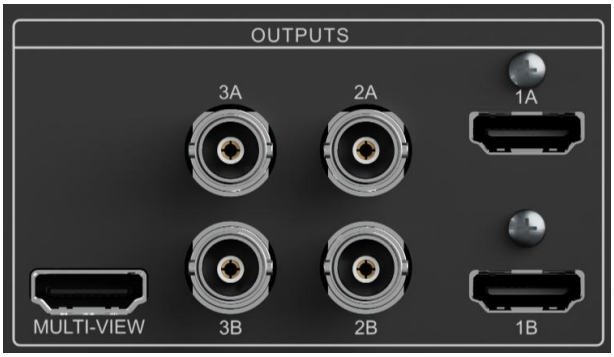
After enabling the REF function, the SDI output signal will be synchronized with the synchronization signal.

Note: This function is usually used in professional systems such as live broadcast television systems. Do not enable this function if not connected to a live broadcast system.

13.Output Setting

13.1.Output Interface

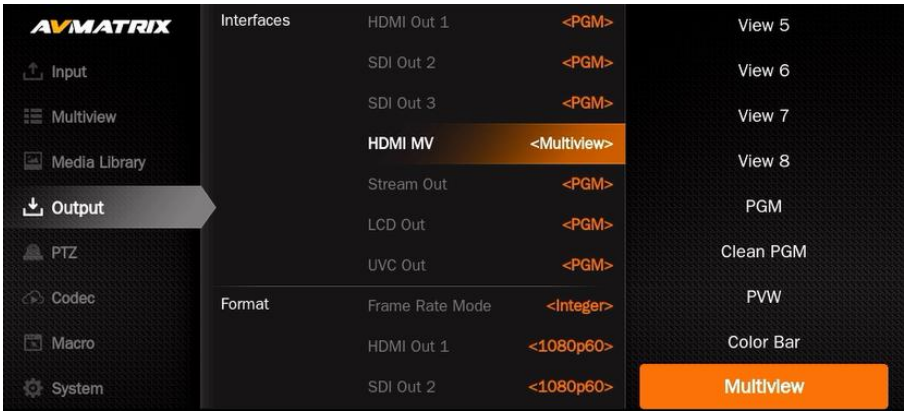
The video switcher has 7 output ports. They are 2 HDMI (A/B) PGM (AUX) outputs, 4 SDI (A/B) PGM (AUX) outputs, 1 x HDMI Multi Picture Output, which can also be defined as AUX outputs, including IN 1-IN8, PVW, PGM, Clean PGM, Color Bar and Multiview outputs.



Note: The A/B interface outputs are two connectors of the same signal.

13.2.Multiview Output

The default output of the multiview port is multiview. Users can connect it to a larger size display, which can be configured through the menu to output other source signals including PGM, clean broadcast signals without downstream keyed caption logos, and various input source signal outputs.



13.3.PGM Output

The factory default is to output the PGM program broadcast screen. The menu can be configured to output other source signals including multi-screen, clean broadcast signal without downstream key

subtitle logo and various input source signal output.

13.4.LCD Output

The video switcher's LCD output supports multiview mode and PGM mode.

By pressing the MV button on the panel, users can quickly switch between the multiview and the currently selected screen on the LCD (such as PGM).

Note: When MV switches to PGM, if an interface chooses to output multiview, it will also switch to PGM full-screen.

13.5.USB Output

When the user connects the USB output to the PC, the user can use software such as OBS, PotPlayer, VMix, etc. to play or capture the USB output video and audio on live platforms such as YouTube, Facebook, Twitter, etc. USB3.0 streaming output is based on UVC (USB video class) and UAC (USB audio class) standards. No additional drivers need to be installed. The relevant video and audio devices will be automatically detected and displayed in the Windows Device Manager:

• **imaging devices**: Switcher Capture

• **Audio Inputs and Outputs:** Switcher Capture

In addition, the USB video source can be not only PGM output, but also IN1-IN8. PVW, PGM, Clean PGM, Color Bar output. Users can set up, capture and stream the video they need.

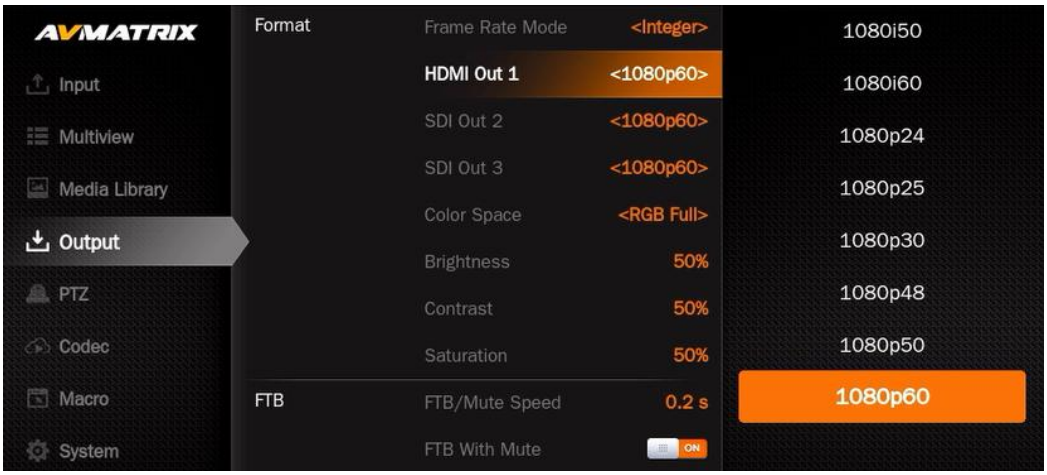
13.6.Output Format

13.6.1.PGM Screen Settings

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

13.6.2.PGM and Multiview Formats

Support up and down conversion output, output formatting supports integers and decimals. When the frame rate mode is an integer, the output format supports 1080i50, 1080i60, 1080p24, 1080p25, 1080p30, 1080p48, 1080p50, 1080p60. When the frame rate m ode is a decimal, there are 1080i50, 1080i59.94, 1080p23.98, 1080p25, 1080p29.97, 1080p47.95, 1080p50, 1080p59.94 to choose from. The default format for PGM and multi-screen is 1080p60.



13.6.3.PGM and MultiView Color Space

The video switcher supports color spaces such as YUV, RGB Full, and RGB Limit. The default color space for output is YUV.

13.7.FTB

The FTB (Fade to black) function is usually used in emergency situations. When the FTB button is pressed, the PGM will fade to a black screen to hide all other layers. The FTB button will keep flashing until the user presses the button again to stop FTB. The FTB status is also displayed in real time in the status bar.

Note: When the PGM window appears black and remains black after the transition, please check if the FTB button is flashing.

(1) Set the FTB and mute speed.

The FTB/MUTE speed can be adjusted in the menu from 0-3s, which is the entire switching time between FTB and MUTE. For example, by setting the speed to 2.5s, the PGM video will fade to black and the audio will fade to silence in 2.5s.

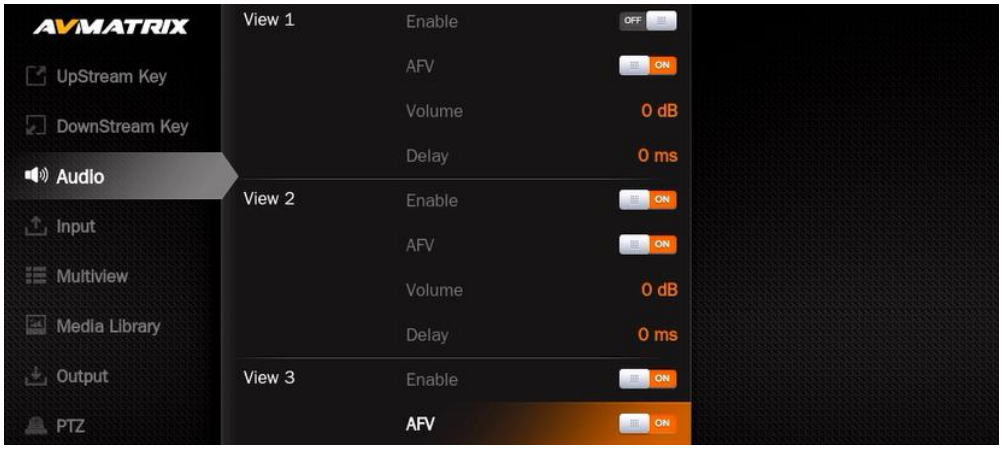
(2) FTB plus MUTE

The FTB can also come with a mute follow function. Turning on the Mute Follow button in the menu will turn the PGM black and mute it.

14.Audio Settings

Users can precisely adjust the level of the 8 embedded audio channels as well as the 2 XLR/TRS/3.5mm audio inputs by accessing the audio interface in the menu. The audio status is displayed in real-time on

the bottom area of the status page, making it easy for users to check and adjust accordingly at any time.



ON = audio on, AFV off, AFV = audio on, AFV effective.

14.1.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.

14.2.AFV Audio Follow Mode

The audio of each SDI and HDMI channel can be set to AFV (Audio-Follows-Video). When the HDMI audio mode of a channel is set to AFV, the audio will be turned on only when the PGM switches to that HDMI. For example, if the audio mode of IN 1 is set to AFV, when the video switcher switches IN 1 to the video source of PGM, the embedded audio of IN 1 will be turned on.

All Follow Functions（（Follow All）： In audio settings, "Follow All" usually means that the audio signal will follow the switching of the video signal without the need to adjust the audio source separately. This means that when you switch between different video input sources, the audio will automatically switch to the corresponding input source as well, without having to manually adjust the audio settings. This setting is particularly useful when using multi-source devices (such as multiple cameras, game consoles or Blu-ray players), as it simplifies the operation process and ensures that the audio and video are always in sync.

For example, when the user enables the "Follow All" function, when you switch from one camera to another, the audio will automatically switch from the first camera to the second camera without additional operation, making the live broadcast or recording process smoother and reducing the errors that may occur due to manual switching of audio sources.

14.3.Audio Delay

Users can set audio delay for IN 1, IN 2, IN 3, IN 4, IN 5, IN 6, IN 7, IN 8 and 2 XLR/TRS/3.5mm in the menu to synchronize audio and video. The maximum audio delay is 500ms.

14.4.MIC/XLR

The video switcher supports 2 XLR/TRS audio inputs, providing a complete solution for the audio system from sound acquisition to signal transmission, and is widely used in the professional audio field.

The XLR/TRS input interface has two working modes, namely microphone input mode and balanced audio input mode. Please select according to the actual application requirements. When working in balanced audio, please do not use 48V power supply to avoid damaging the pre-stage equipment.

The pre-gain is used to amplify the small signal of the microphone, and the maximum gain of the amplifier is 37dB. Usually, the output signal amplitude of the XLR condenser microphone is higher than that of the TRS dynamic microphone. When using a condenser microphone, the pre-gain can be configured to about 7, and the condenser microphone needs to be configured to about 12. The pre-gain can be adjusted in combination with the sound column of the microphone channel until the sound column reaches the yellow area when the microphone is used normally.

The sound column of this audio channel is on the left side of the preview screen by default. When working in microphone mode, MIC1 corresponds to the left channel of the sound column, and MIC2 corresponds to the right channel of the sound column. When working in balanced audio input, it is a stereo sound column.

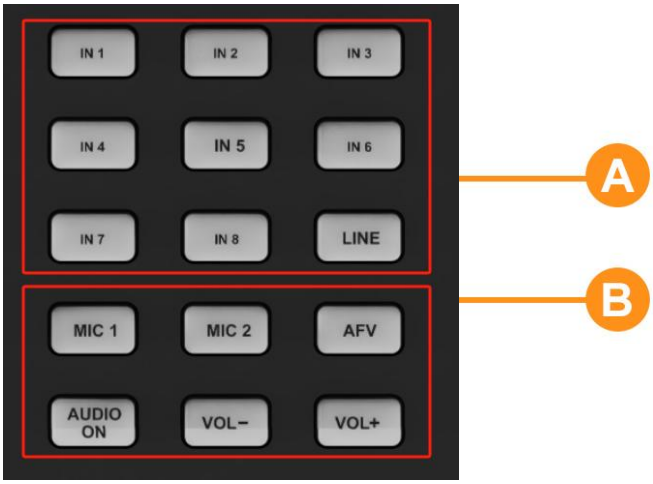
The S8X mixing function only supports mixing two channels. If there is an HDMI signal with 7.1 channels and you need to output 7.1 channels, you can select the surround sound pass-through function of the input. The HDMI output of PGM will include the last 6 channels of the input source and the first two channels of the mix.

14.6.AFV Audio Follow Mode

The audio of each video channel can be set to AFV (Audio-Follows-Video). When the HDMI audio mode of a channel is set to AFV, the audio will be turned on only when PGM switches to that HDMI. For example, if the audio mode of IN 1 is set to AFV, when the switcher switches IN 1 to the video source of PGM, the embedded audio of IN 1 will be turned on. The switch priority is greater than AFV. When the channel audio mixing is turned off, AFV will not take effect.

14.7.Audio Configuration and Operation

Audio can be configured not only through the menu, but also through the video switcher's key area control. The audio key operation area consists of two parts, as shown in the figure below.



Part A is used to select the audio to be configured, including IN 1, IN 2, IN 3, IN 4, IN 5, IN 6, IN 7, IN 8, LINE, MIC 1, MIC 2

Part B is used to set the audio functions, including AUDIO ON, AFV, VOL+ and VOL-.

14.7.1.Audio Indicator Description

The LED indicators of the buttons show the current audio status. When the indicator light of the button in

Part A lights up in white, it indicates that the corresponding audio channel is selected.

When a button in Part A is pressed, the indicator light of the button in Part B lights up in white, indicating that the corresponding audio function is turned on. When the indicator light is off, it means that the corresponding function is turned off.

For example, after pressing the IN 1 button, the indicator light of IN1 keeps flashing, indicating that the audio channel of IN1 is selected. When the indicator light of the AUDIO ON button is pressed, it lights up white, indicating that the audio of IN 1 is turned on.

14.7.2.Audio Configuration

Step 1. Press a button in part A to select audio for configuration. The LED indicator of the button will keep flashing, indicating that configuration is available.

Step 2. Press the AUDIO ON button on part B to turn on the audio, the LED indicator turns white, press the AFV button to set the audio to follow the video, the LED indicator turns white. Press AUDIO ON/AFV twice to turn it off, the LED indicator also turns off. Press the VOL+/VOL- button to adjust the audio volume, the LED indicator turns white.

Note: The AFV button is not applicable to the MASTER output.

Step 3. Press the button in Part A. If the button selected in Part A in the first step is still flashing, press it again to complete the configuration and the indicator light stops flashing. Or, when the button in Part A is flashing, press another button in Part A to select the next audio and configure it in the same way. When all audio configurations are completed, press the flashing button in Part A again to complete all configurations and the indicator light stops flashing.

14.8.Mute

There is a mute button on the PVW column. Users can quickly and easily press this button to turn off the main audio. When MUTE is turned on, the LED indicator flashes continuously, indicating that the PGM audio is muted.

14.9 Guitar Switch Function

14.9.1 Guitar Switch Overview

The Guitar Switch is used to adjust the input impedance to match different types of audio sources.

Typically, Line-level and microphone (MIC) devices have output impedances ranging from 600Ω to 2kΩ, while instruments such as electric guitars and basses have much higher output impedances, typically 100kΩ to 1MΩ.

Impedance mismatch may result in low-frequency loss, reduced dynamic range, and dull sound quality. Enabling the Guitar Switch reduces the load on high-impedance sources, preserving more audio detail and delivering a more natural and accurate sound.

14.9.2 Proper Usage and Adjustment Procedure

1. After connecting the input device to the switcher, set the channel volume to 0 dB;
2. Turn on the audio source and ensure it outputs a stable signal;
3. Monitor the audio level meters on the multiview display and adjust the preamp gain so that peak levels stay within the yellow range, avoiding the red (clipping) zone;
4. Once the preamp gain is properly set, it should remain unchanged. Use the channel volume control for further level adjustments.

14.9.3 Interface and Mode Description

- **XLR/TS Combo Input (Female)**

This interface supports balanced audio input. Each connector corresponds to one audio channel and is located on the rear panel. The working mode can be configured in the device menu:

- **Microphone Mode**:
  The input signal is duplicated to both left and right channels. Default preamp gain: **7**
- **XLR Mode**:
  The XLR connector operates as a balanced audio input, with each connector corresponding to one channel. Default preamp gain: **0**

- **3.5mm TRS Line In**

This is an unbalanced stereo input interface capable of carrying left and right channels simultaneously. It is located on the right side of the device, next to the headphone monitoring port.

14.9.4 Connection Guidelines for Different Audio Devices

- **Microphone Connection**

- **Passive Microphone**:
  Connect via the XLR/TS combo input, select *Microphone Mode*, and ensure 48V phantom power is OFF
- **Condenser Microphone (XLR)**:
  Connect via the XLR/TS combo input and enable 48V phantom power (indicator lights up). Recommended preamp gain: 5–8 (adjust as needed)
- **Dynamic Microphone (TS 6.35mm)**:
  Connect via the XLR/TS combo input with phantom power OFF. Recommended preamp gain: 7–11

- **Active Microphones & Wireless Microphones**

- **Wireless Microphone Receivers**:
  Typically output line-level signals. Connect to the 3.5mm TRS Line In
- **Active Microphones (with preamps)**:
  - Unbalanced output → connect to 3.5mm TRS Line In
  - Balanced output → connect via TS 6.35mm or XLR/TS combo input

- **Audio Mixer Connection**

Professional mixers usually provide both balanced and unbalanced outputs. Balanced connections are recommended for better noise immunity:

- **Balanced Connection**:
  Use XLR cables to connect the mixer's Left (L) and Right (R) outputs to the switcher's XLR/TS inputs
- **Unbalanced Connection (short distance)**:
  RCA (L/R), 6.35mm TRS, or 3.5mm TRS stereo outputs can be connected directly to the 3.5mm TRS Line In

- **Playback Devices**

Devices such as computers, smartphones, and media players output unbalanced stereo audio and should be connected to the 3.5mm TRS Line In.

- **Electric Guitar / Bass**

Electric guitars and basses typically use TS 6.35mm connectors. Connect via the TS interface, select Microphone Mode, enable the Guitar Switch, and adjust the preamp gain so that peaks remain in the yellow range.

14.9.5 Troubleshooting

- **Distortion / Clipping Issues**

1. Monitor audio levels via headphones. If levels reach the red zone, reduce channel volume or preamp gain;
2. If distortion persists, lower the output level of the audio source;
3. If monitoring and PGM outputs are normal but streaming/recording audio is distorted, increase the audio bitrate in encoding settings.

- **Ground Loop Noise**

1. For unbalanced connections, switch to balanced input to reduce interference;
2. If unresolved, disconnect the ground wire on the switcher side of the XLR or TS cable, keeping only the source-side grounding;
3. If the issue persists, use a passive isolation transformer to eliminate ground loop interference.

- **Low Volume or No Sound**

1. Ensure the audio channel is not muted or disabled;
2. Verify that the audio source is outputting signal;
3. Check cables and wiring for correctness and integrity;
4. Increase source output level and fine-tune the switcher's preamp gain and volume.

15.Media Library

15.1Assign Image

The video switcher can set custom patterns for PAT 1 and PAT 2. The pattern sources for PAT 1 and PAT 2 can be selected from Black/Color Bars/Color 1/Color 2/Image 1/Image 2.

15.2 Image Management

The user can select images as patterns for PAT 1 and PAT 2. The user can select the image source from default images, local images, or acquired images.

15.2.1Default Image

The default image is a preset image in the switcher, with a total of 39 default images. The user can use the knob to select an image from the default images as the source of the PAT 1/PAT 2 pattern.

15.2.2Local Images

Local images are images uploaded from SD card/USB storage/SATA mobile hard disk. When a USB disk/SD card/SATA hard disk is inserted, a corresponding icon will appear at the bottom of the status/menu page. Select an image to upload it to the switcher. The images will be listed in the media list, and the user can select the uploaded image and use it as the PAT 1/PAT 2 pattern source by using the knob. The user can also delete the uploaded image from the menu.

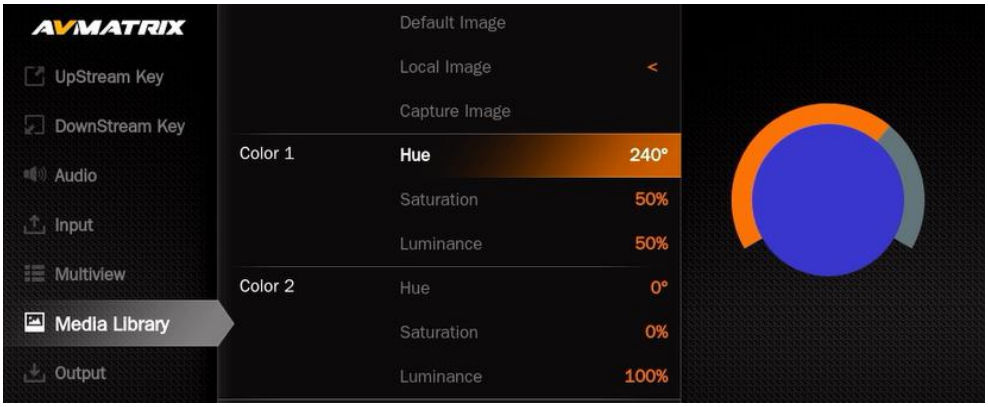
15.2.3 Capture Images

The captured images are from IN 1-IN 8, Clean PGM, PGM screenshots. The captured images will be listed in the media list. Supports up to 16 captured images. Users can select the captured image as PAT 1/PAT 2 pattern source by knob selection. Users can delete the captured image from the menu.

15.3.Color Generator

The video switcher supports cust

om patterns, with two color modes, Color 1 and Color 2, for users to define. Users can generate color patterns of Color 1 and Color 2 by setting hue, saturation, and brightness. See the figure below.

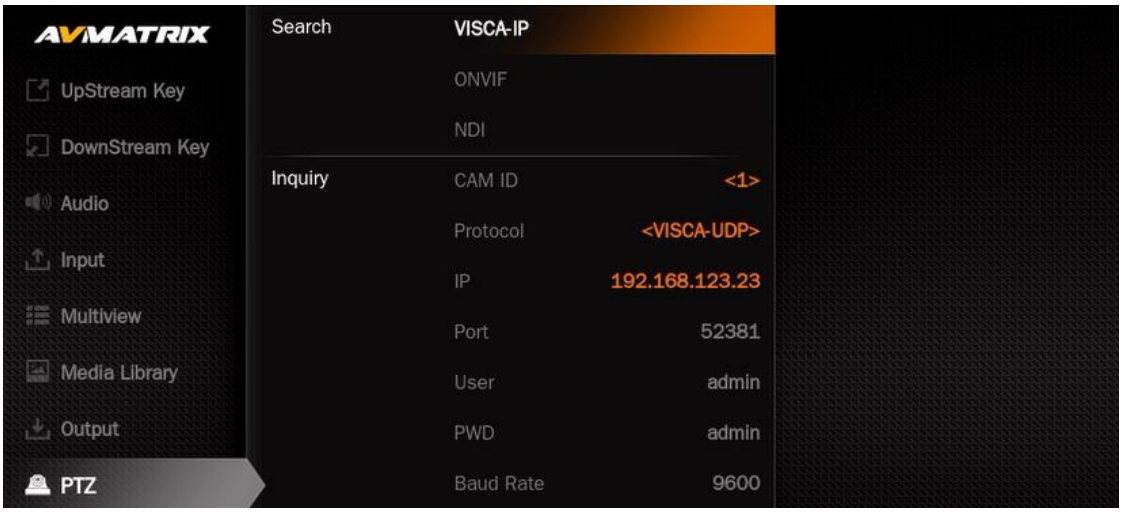


16.PTZ Control

When the switcher and PTZ camera are connected directly or through a switch, make sure the video switcher and PTZ camera are in the same network segment. Search for the camera through VISCA-IP or ONVIF, NDI from the menu, and then add the searched camera to the camera ID. If the camera is directly connected to the switcher, change the switcher's IP address in the system and set them in the same LAN so that the switcher can successfully search for the camera. Use the joystick and buttons to pan, tilt or zoom the camera.

- **Camera Search**

The video switcher supports searching for PTZ cameras connected via the network port or serial port (VISCA only). It supports searching for cameras using the VISCA-IP, Onvif and NDI protocols (requires the camera to also have the network search response function for the protocol).

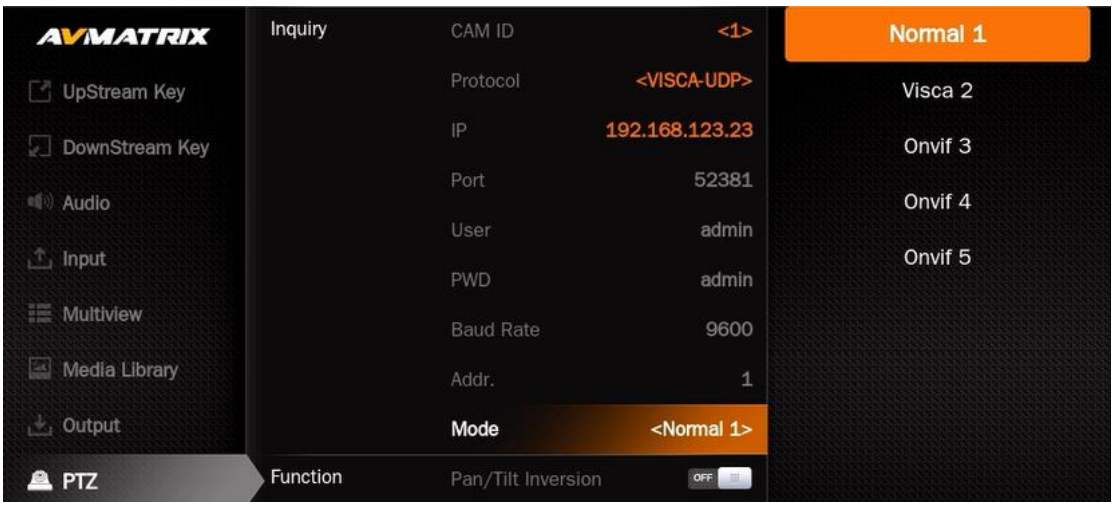


- **Camera Settings**

If the camera does not support search, user can configure it manually, select the control protocol supported by the camera, fill in the camera's IP address and the control port of the protocol, and if you use the onvif protocol, you also need to enter the connection account information.

When using serial port control, user need to select the corresponding protocol, communication baud rate and camera address code.

Because the control protocols of cameras of different brands and models are different, several connection modes are preset. When the connection fails, you can try to change the connection mode.



- **Function**

PT Reverse： can make the up and down, left and right control directions of the camera joystick reverse.

Switch linkage:

1. Set the call option to "Manual", which means setting the ID option for camera numbers 1-8. After connecting to the camera, you can use the camera control area number buttons of the switcher. For example, when setting CAM 2, camera 2 is in control.

2. Set the option to "Follow PGM", which means the controlled camera is the same as the PGM channel selected in Camera 1 - 8. For example, when PGM selects Camera 2 (IN 2), then Camera 2 is in control.

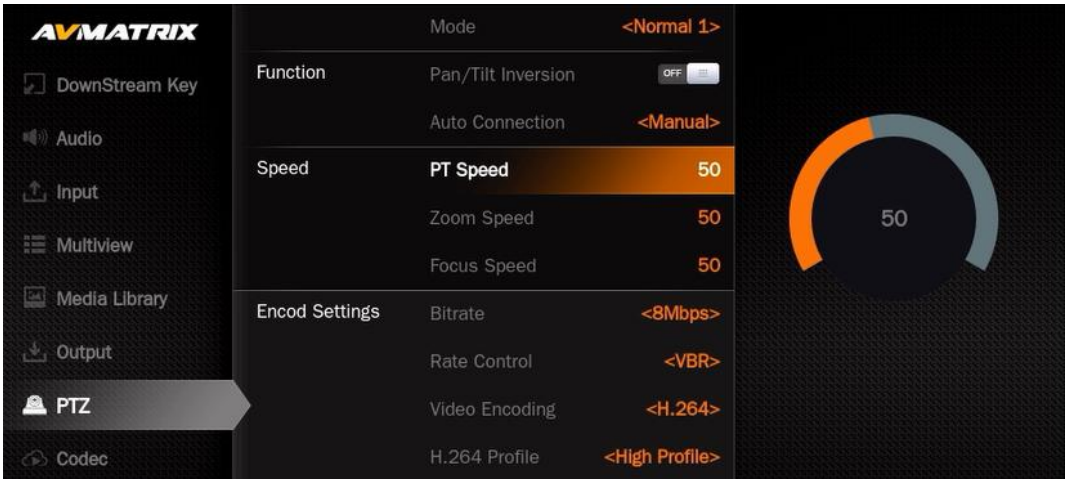
3. Set the option to "Follow PVW", which means the controlled camera is the same as the PVW channel selected in Camera 1-8. For example, when PVW selects Camera 2 (IN 2), then Camera 2 is in control.

- **Rate Setting**

Pan/Tilt speed, selectable from 10-100, default 50.

Zoom rate, can be selected from 10-100, default is 50.

Focus rate, can be selected from 10-100, default is 50.



- **Corresponding Button Functions on The Panel**

R1 (PT/Z/F SPEED): Left/Right/Up/Down/Zoom/Focus speed. Speed control, clockwise to increase, counterclockwise to decrease. Press to switch and adjust the speed of the PTZ (red light), zoom (green light) and focus (blue light). The current speed status can be synchronously viewed in the status bar in the upper left corner.

R2 (R/B GAIN): Red and blue gain. Used for white balance adjustment, clockwise to increase, counterclockwise to decrease. Press to switch the corresponding color gain, with three-color lights. Red gain: red light, blue gain: blue light, no light in automatic mode.

R3 (IRIS/SHUTTER/GAIN): Iris/shutter/gain. Control brightness and exposure, increase clockwise, decrease counterclockwise. Press to switch corresponding parameters, with three-color lights. IRIS: red light, shutter: green light, gain: blue light, no light in automatic mode.

FOCUS: Turn the focus knob clockwise to focus far, and counterclockwise to focus near. It can be combined with the focus rate set on R1 to achieve fast and precise focus.

LOCK	Joystick lock: Press the joystick lock button to disable joystick operation and the red lock indicator will flash every second.
TELE& WIDE	Zoom button, T press/hold to zoom in close-up, W press/hold to zoom out wide-angle
AWB	Auto White Balance, Lights up when turned on
AE	Auto Exposure, Lights up when turned on
AF	Auto Focus, Lights up when turned on
CAM	Select button, with the number keys to connect the camera, press the light will light up, select the corresponding camera number to connect that camera.
POS.	Position key, with the number keys to call the preset position of the currently connected camera, lights up when the currently selected function is active, and calls the preset position after selecting the corresponding number.
PRESET	Preset button, with the number keys to set the preset position of the currently connected camera, light up when the currently selected function is activated, set the preset position after selecting the corresponding number for quick and easy recall.
RESET	Reset button. Works with the numeric keys to reset the preset position of the currently connected camera, lights up when the currently selected function is active, and clears the user-defined settings when the corresponding number is selected.

17.Streaming and Recording

17.1.Streaming and Recording

The switcher offers two streaming methods: via USB output and via LAN port output.

Through the USB Type-C port, users can capture the video to a computer and stream live using software such as OBS, PotPlayer, etc. (Refer to section 13.5)

Using the LAN port, users can stream live directly on a streaming platform by importing streaming configuration via USB, entering it on the device, or selecting it via IP address. Up to three streaming platforms can be preset, and a maximum of two platforms can be streamed to simultaneously.

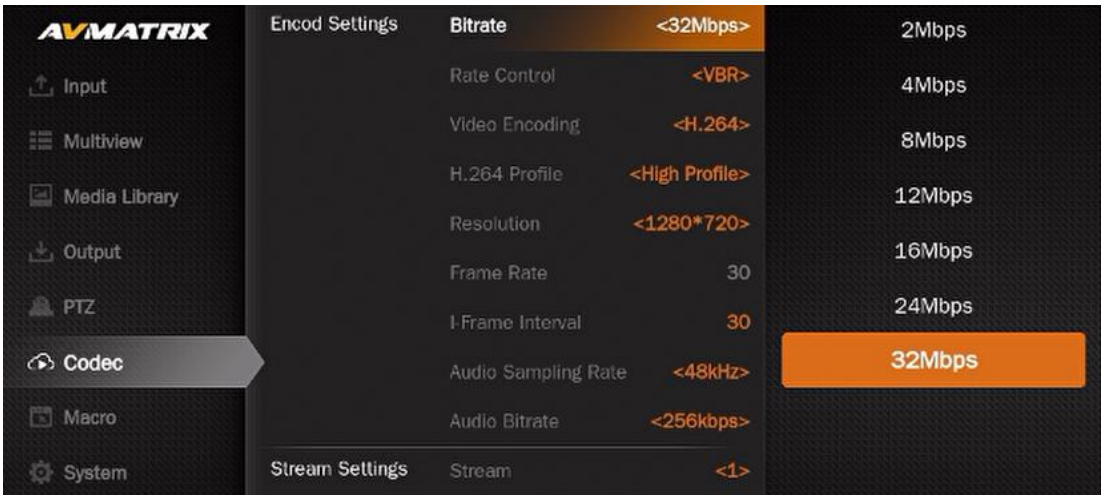
Network Streaming:

Open the streaming settings of the streaming platform to obtain the streaming URL and streaming key of the live platform. Use USB import/device input/IP address selection to stream the platform, enter

the streaming key, and you can start streaming. Users can go to the streaming platform to watch the live broadcast. Additionally, the streaming output video source can not only be PGM output but also IN1-IN8, PVW, PGM, Clean PGM, Color Bar output. Users can set up and stream the video they need.

Here is an example of how to stream using USB import:

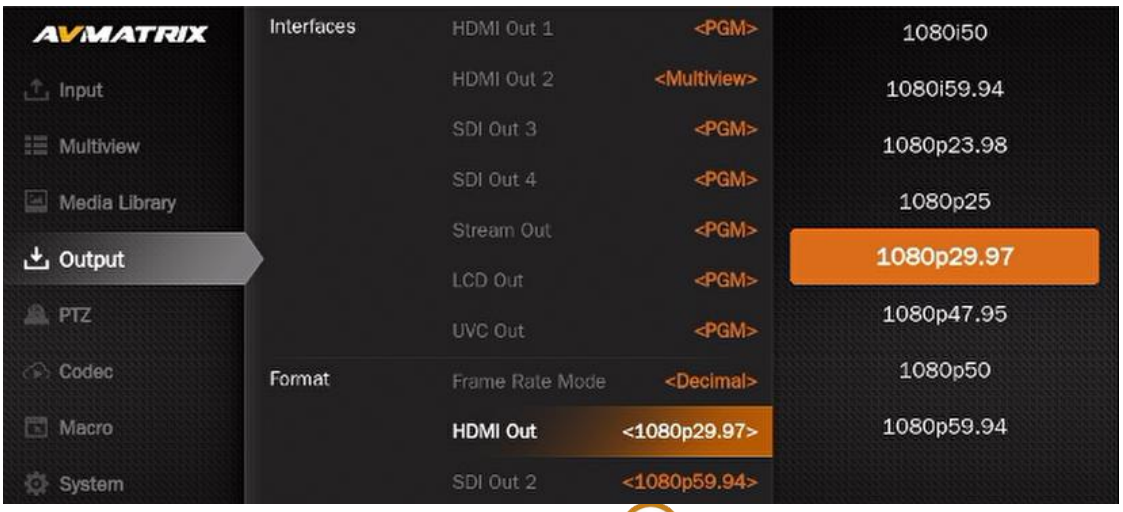
Step 1: In the encoding settings, users can customize the bitrate, bitrate control, encoding method, encoding resolution, etc., of the live video according to the operating environment. For example, if the internet speed is slow, switch the bitrate control from CBR to VBR and adjust the bitrate.



The encoding frame rate automatically follows the HDMI out frame rate and can be selected in the output format settings.

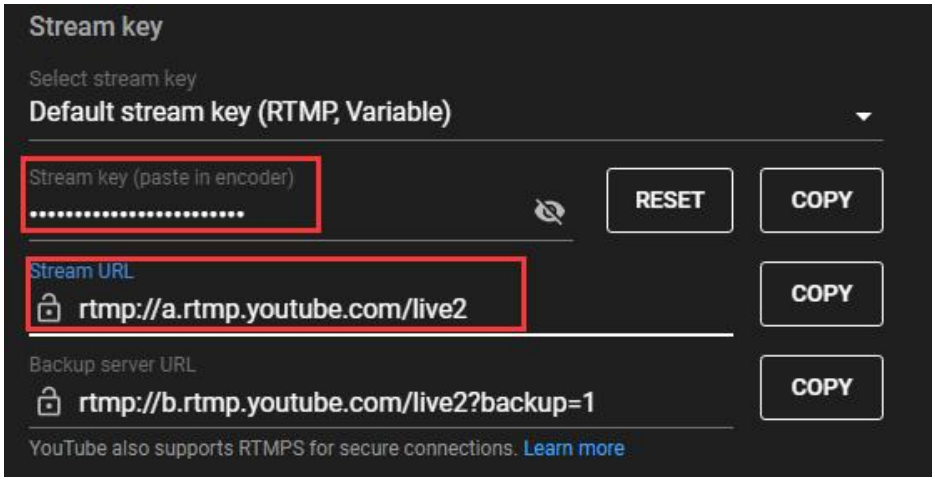
Since the encoder does not support (i) signals or fractional frame rates, when the HDMI output format is set to a decimal frame rate, the encoder will automatically output the corresponding integer frame rate. When the HDMI output format is set to an (i) signal, the encoder will still output in (p) mode.

The specific correspondence is shown in the table below.



HDMI out (Integer)	HDMI out (Decimal)	编码输出帧率
1080i50	1080i50	1080p50
1080i60	1080i59.94	1080p60
1080p24	1080p23.98	1080p24
1080p25	1080p25	1080p25
1080p30	1080p29.97	1080p30
1080p48	1080p47.95	1080p48
1080p50	1080p50	1080p50
1080p60	1080p59.94	1080p60

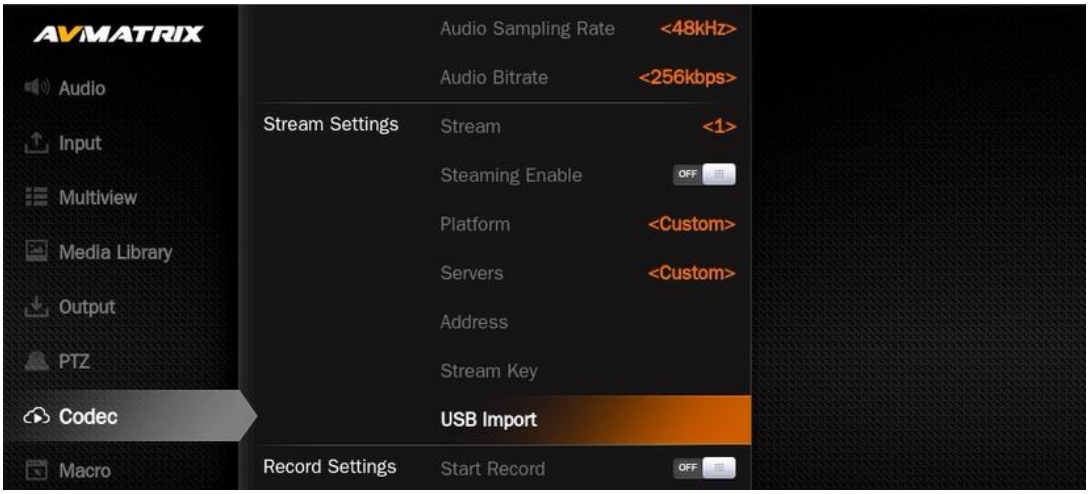
Step 2: Open the streaming settings of the streaming platform to obtain the live platform's URL and streaming key.



Step 3: Insert the USB Disk into the computer and paste the live platform's URL and streaming key into the specified fields of the streaming configuration file.

```
;Streaming configuration parameters for Streaming Platform 1
[stream1]

Platform name = youtub Local Streaming
;Optional field, default is Custom. You can enter the platform name or define a custom name for distinguishing streaming platforms in the menu and status page. It is recommended not to exceed 11 English characters.

Servers = rtmp://192.168.100.108/1935/live/stream
;Enter the streaming server address provided by the live streaming platform. Supports RTMP/RTMPS/SRT (caller) protocol streaming.

Key =
;Enter the streaming key provided by the live streaming platform. If the platform does not require a streaming key, enter a single space.


[stream2]
Platform name = Facebook
Servers =rtmp://192.168.0.99:1935/live/main1
Key= 2xhu-k4va-q46x-22z8-xxxx
[stream3]
Platform name = local
Servers=rtmp://192.168.0.99:1935/live/main2
Key =
```

Step 4： Insert the USB Disk into the switcher, select the streaming configuration file. Start the "streaming Enable," and the switcher will automatically recognize the URL and streaming key and start streaming.



When the streaming status in the status bar turns green, and the streaming time on the menu status page starts counting, it indicates that the live broadcast has started.

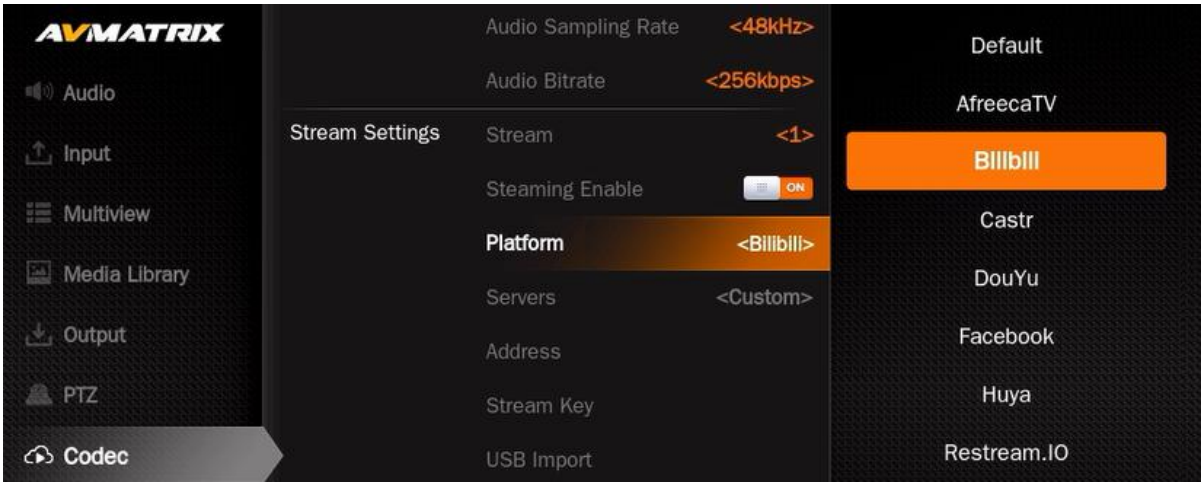
When the streaming status in the status bar turns yellow, it indicates that the connection is being established.

When the streaming status in the status bar turns gray, it indicates that the connection has failed.

Here is an example of how to stream on the device:

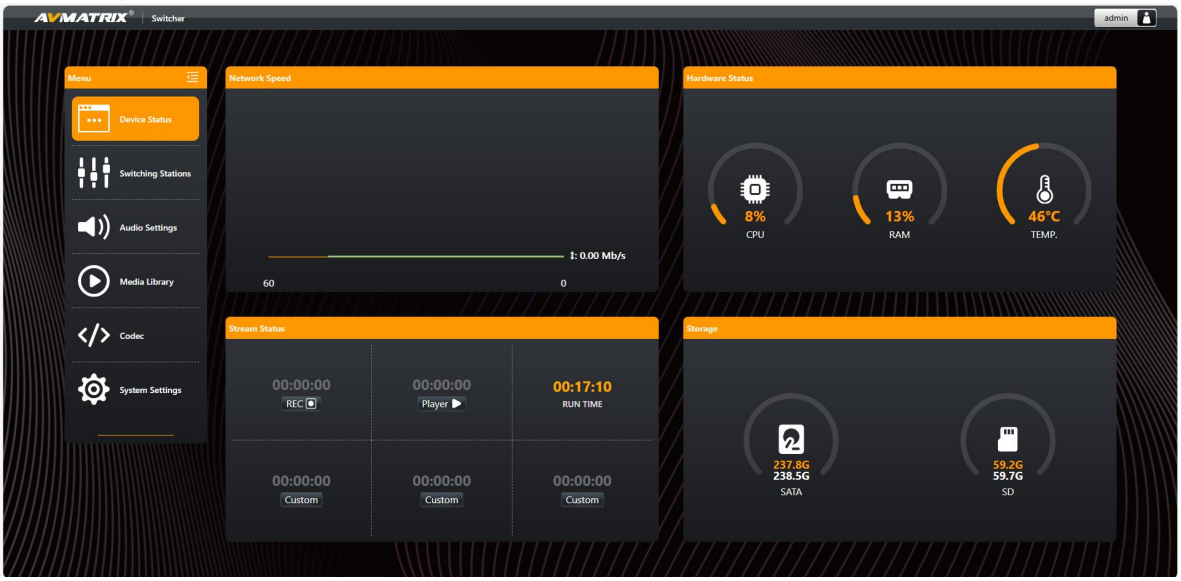
Steps 1 and 2 are the same as using with USB import.

Steps 3: Select the streaming platform, enter the streaming key, and start "streaming." Users can customize the main and sub-stream names as needed. If the desired streaming platform is not in the menu, users can select the custom mode.

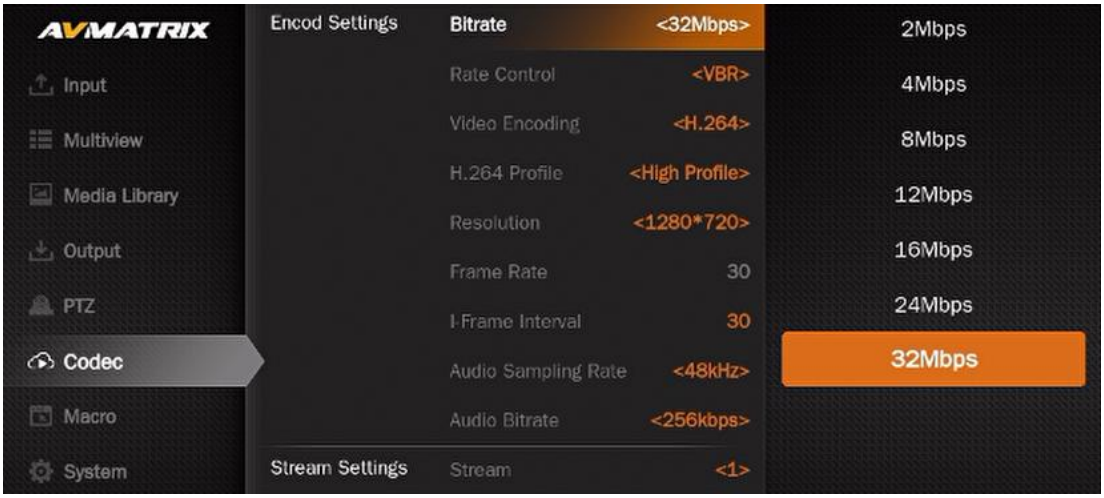


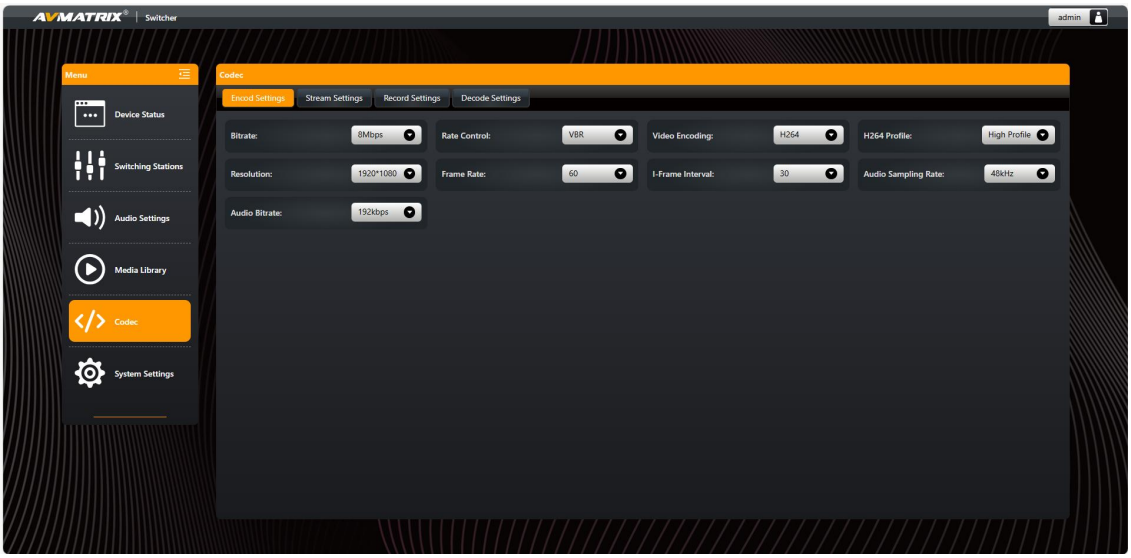
Here is an example of how to stream using IP address:

Steps 1: Enter the IP address of the switcher (192.168.5.216) in a web browser and log in with the account (username: admin, password: admin) to access the switcher's webpage and select "Encoding."

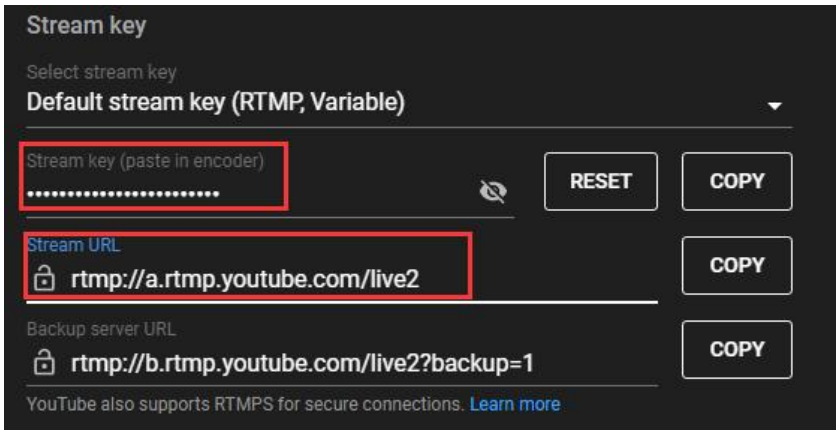


Steps 2：Users can customize the bitrate, bitrate control, encoding method, encoding resolution, etc., of the live video in the encoding settings according to the operating environment. For example, if the internet speed is slow, switch the bitrate control from CBR to VBR and adjust the bitrate. The encoding frame rate automatically follows the HDMI out frame rate and can be selected in the output format settings. Users can also make settings through the web page.

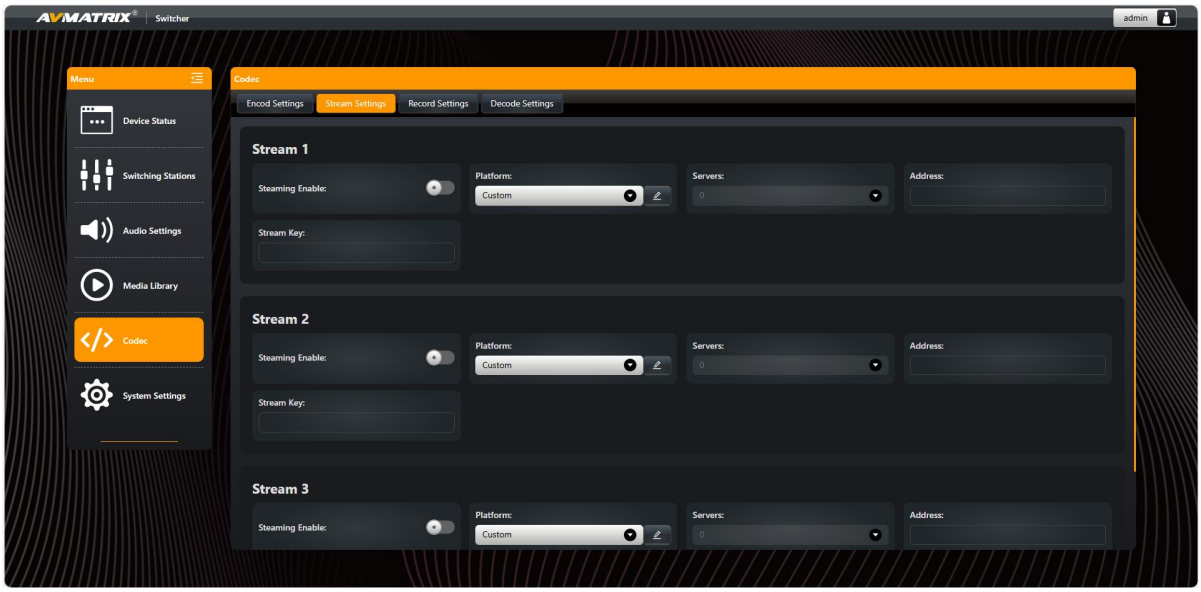




Steps 3：Open the streaming settings of the streaming platform to obtain the live platform's URL and streaming key.



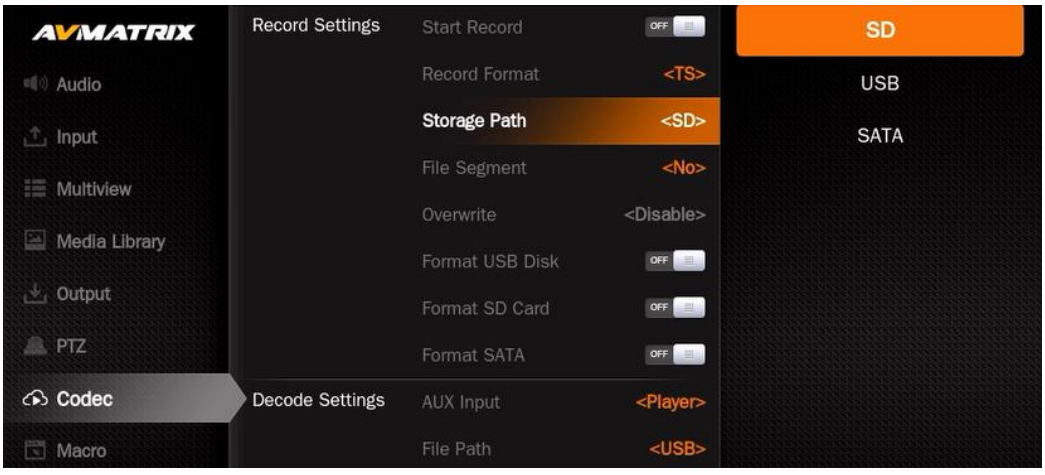
Steps 4: Open the streaming settings, and users can select the desired streaming platform. After selecting the streaming platform, paste the streaming key into the specified field. Enable the "start streaming" option to start the live broadcast. If the desired streaming platform is not in the menu, users can select the custom mode.



When the streaming status in the status bar turns green, and the streaming time on the menu status page starts counting, it indicates that the live broadcast has started. When the streaming status in the status bar turns yellow, it indicates that the connection is being established. When the streaming status in the status bar turns gray, it indicates that the connection has failed.

17.2.Record

The switcher supports three storage media: USB Disk, SD card, and SATA. Select the recording file storage medium in the recording settings and press the REC button on the panel to start recording. The status will display device information. MP4 and TS video file formats are supported for storing recorded files.



Press the REC button on the panel. When the recording time on the multiview starts counting, it indicates that the recording has started. Press the REC button again to end the recording. Additionally, the recording status will display the recording time and the status of the SD card/USB Disk/SATA, making it convenient for users to check.

Moreover, the switcher's recording feature has an overwrite function. When the SD card and USB Disk are full, it will automatically delete and overwrite previously recorded content and start recording new content again. Users can enable/disable this function in the menu.

Note: It is recommended that the storage medium has only one partition. Multiple partitions may only be recognized as one partition.

Inferior low-speed storage media may lead to recording failures, frame dropping, or unplayable videos.

Abnormal operations during recording, such as power loss or removal of the recording storage medium, may result in an unplayable video file. This issue does not occur with TS recording format.

17.3.Formatting Storage Devices

Users can format their USB Disk/SD card/SATA hard disk through the menu. In the recording menu, select "Format USB" or "Format SD" "Format SATA" to start formatting the corresponding storage device. The default format after formatting is exFAT. Formatting will permanently erase all data on the disk, so back up important data in advance.

18. Decoding and Playback

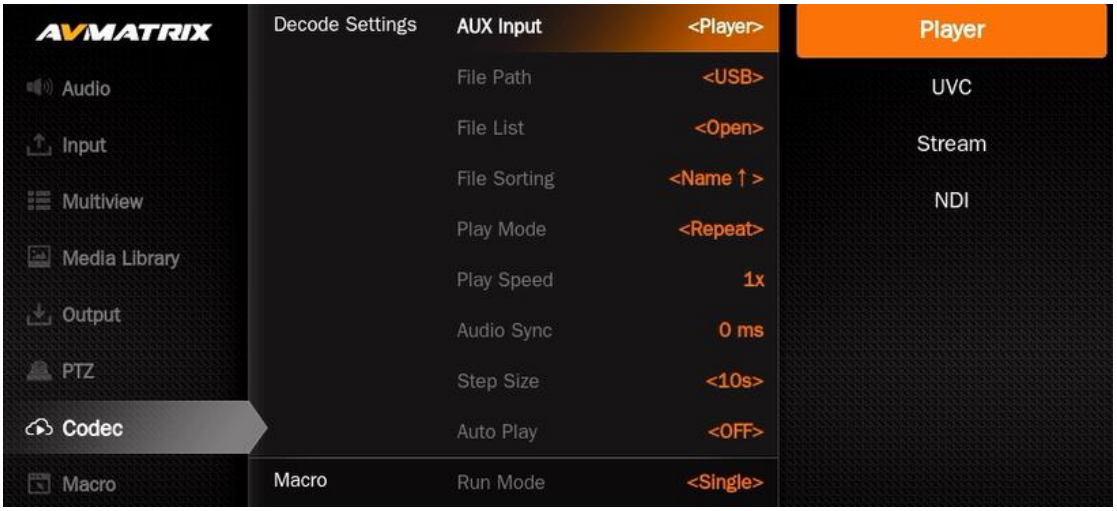
18.1.AUX Source Selection

The switcher supports AUX signal source selection, allowing you to choose from multiple signal sources, including local USB flash drive/SD card playback, USB camera (UVC protocol) camera input, network streaming, and NDI. The device's NDI function supports simultaneous streaming based on the NDI|HX2 protocol and pulling based on the NDI|HX3 protocol.

18.1.1Local Playback

Select one video source from an SD card, USB storage, or SATA hard disk. Users can choose SD card, USB storage, or SATA hard disk in the file path. Open the video selection in the file directory and select the desired video.

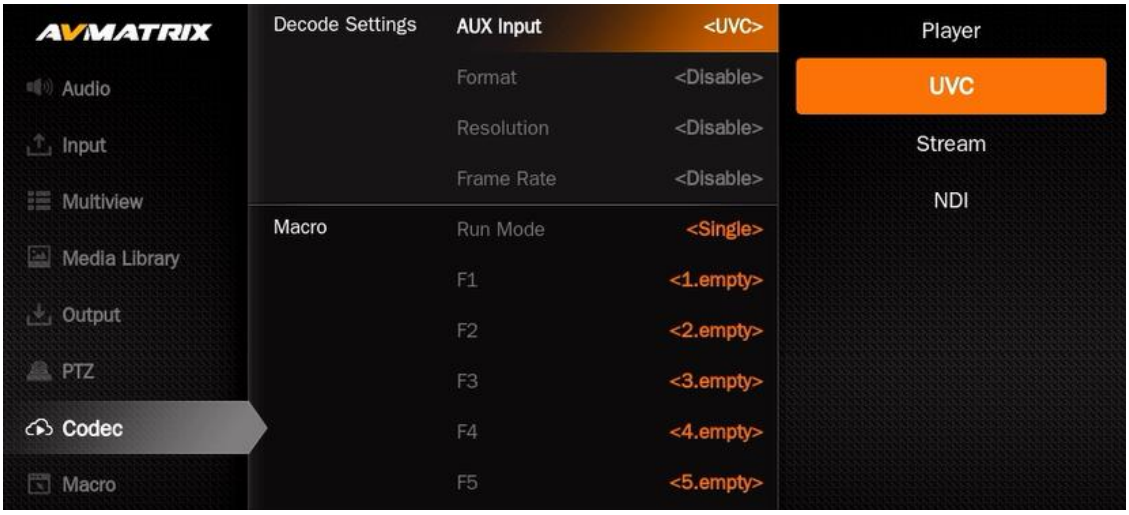
File Sorting: Play in the order of file name a-z, media addition time, or file size.
Playback Mode: Choose between repeat playback, single playback, or loop playback.
Playback Speed: Select slow playback and speed playback from -10X to 10X.
Audio Sync: Choose from -500ms to 500ms.
Step Size: Skip playback time interval, off, 10 seconds, 20 seconds, 30 seconds, 1 minute, 5 minutes.
Auto Play: Choose off, follow PGM, or follow PVW.



Note: It is recommended to play video files no higher than 1080p60. 4K videos can be played normally, but the playback may not be smooth during high-speed playback.

18.1.2 USB Camera

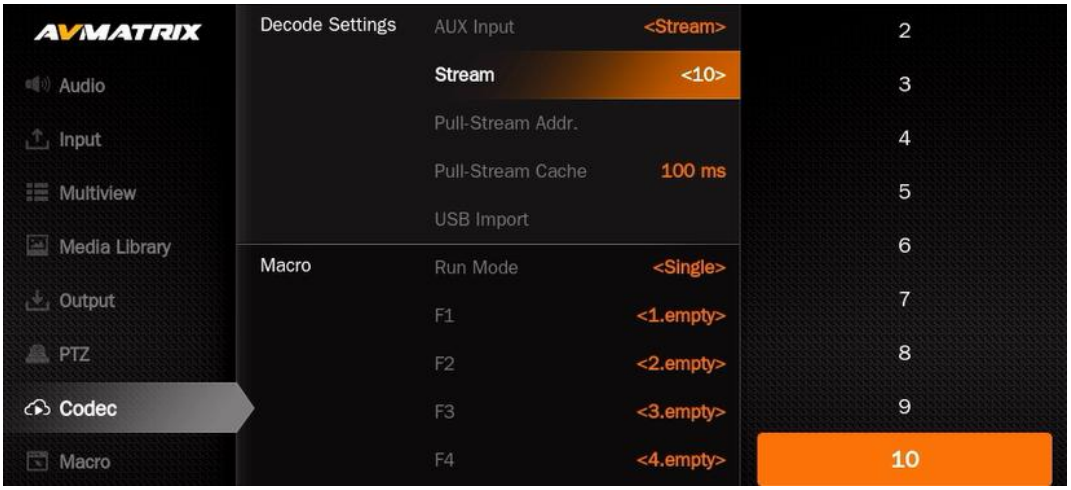
The USB port can connect a USB camera as a video source. Currently, only UVC cameras or capture card devices with MJPG format are supported.



18.1.3 Network pull streaming

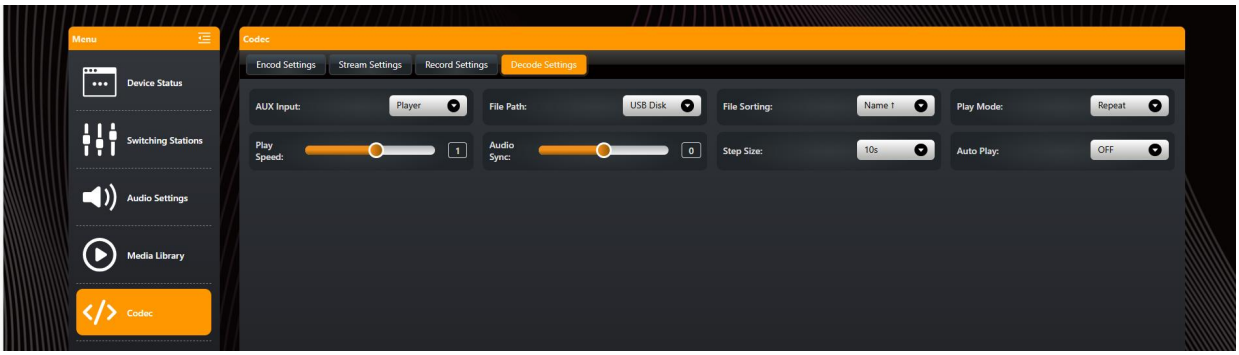
Up to 10 streaming video sources can be preset, supporting video sources in rtsp, http, mp4, m3u8, flv, etc. The video source addresses can be imported via USB or web page to add and modify.

Insert the USB Disk into the SHARK S8X PLUS, and export the configuration file to obtain the "stream.ini" streaming configuration file . Use a computer or other device to edit "stream.ini" and fill in the streaming video source address, then save it. For example: Addr1 = smb://192.168.1.100/move.mp4. Insert the USB Disk into the SHARK S8X PLUS,select to import from the USB Disk, and then select the imported streaming address sequence number from the menu. Press the playback button on the panel to complete the network streaming playback.



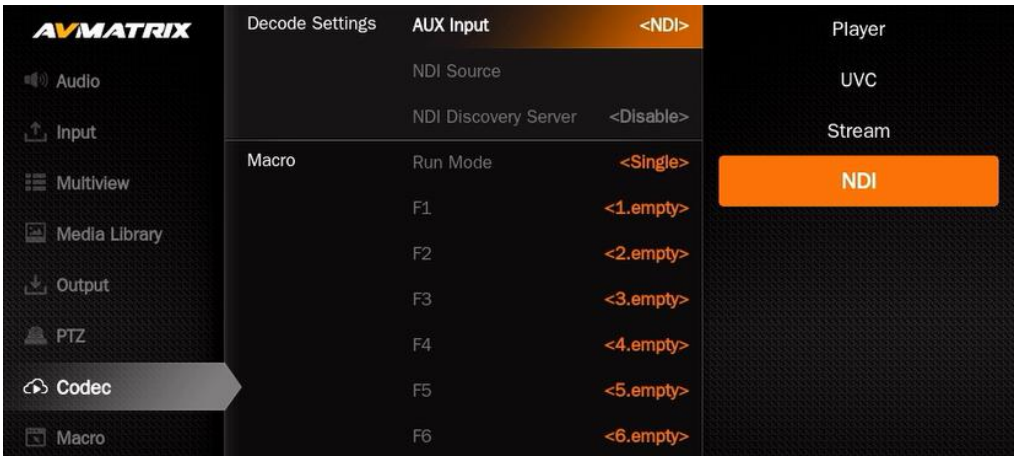
The following configuration presets 10 pull-stream addresses, supporting HTTP/RTSP/RTP/MMS/TS/SMB, etc.
[Pull-Stream]
Addr1 =http://txmov2.a.kwimgs.com/upic/2022/02/01/11/BMjAyMjAyMDExMTEwMjNfNDAzMDAxOTlfNjYzNzA4MTk4NzNfMF8z_b_B898cc7ddd0025bf54ddb18ec1f723c84.mp4
Addr2 = smb://192.168.1.100/move.mp4
Addr3 = rtsp://192.168.16.10/live/av0
Addr4 = udp://192.168.16.10/live/av0
Addr5 = RTP://@:1234
Addr6 = mms://abc.com/stream.asx
Addr7 = https://www.bilibili.com/video/BV1rQB2YMEAC?t=128.4
Addr8 = https://lf-douyin-pc-web.douyinstatic.com/obj/douyin-pc-web/uuu_265.mp4
Addr9 =
Addr10 = http://192.168.16.185/Sync-Footage-V1-H264_60fps.mp4

Alternatively, open the web page of the SHARK S8X PLUS, and enter the streaming address on the "Decoding and Playback" page. Press the playback button on the panel to complete the local streaming playback.



18.1.4 NDI

After selecting NDI, it will automatically search NDI source devices on the current local area network. Select the device to play and press the playback button on the panel to see the NDI streaming. NDI push streaming and pull streaming each support one channel, with push streaming supporting NDI|HX2 and pull streaming supporting NDI|HX3.



19.Macro-recording

The macro recording function of the video switcher allows users to record a series of operation steps (e.g. signal switching, special effect application, screen adjustment, etc.) into one automated command. After the recording is completed, users can call it up with a single key via a shortcut key to quickly execute complex operations, reduce repetitive work and enhance work efficiency. This function is especially suitable for live broadcast, program production and fixed process scenarios. The following is the recording and invocation of macro recording:

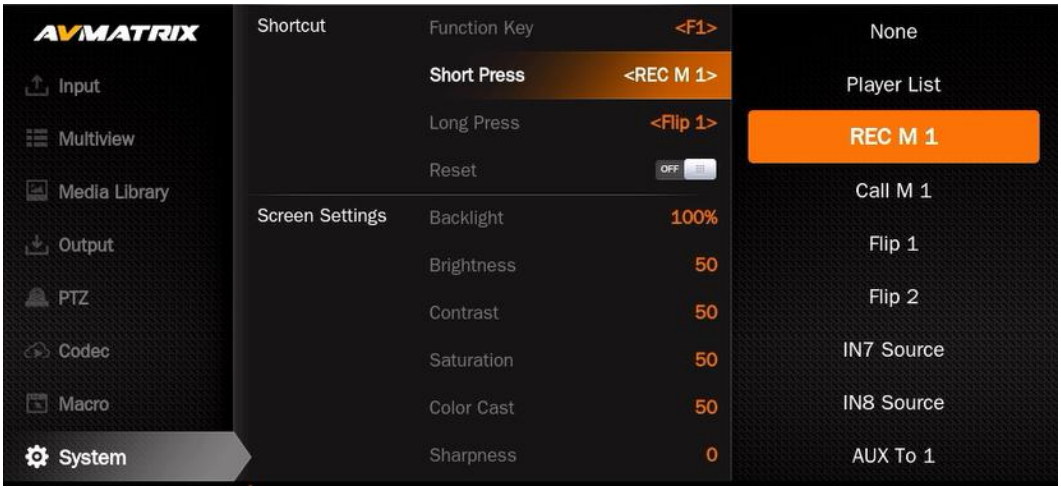
Shortcut Key Setting：First of all, enter the system menu to set the shortcut keys. For example, select F1 shortcut key, the short press function of shortcut key F1 is to record macro 1, and set the long press function of shortcut key F1 to call macro 1.

Recording Macros： After the setting is completed, short press the F1 shortcut key on the panel to start

recording macros, and the status bar will show “Macro Recording in Progress”. Perform the action that needs to be recorded (such as switching signal source, applying special effects, etc.). Short press F1 again to stop recording and the action recording is finished.

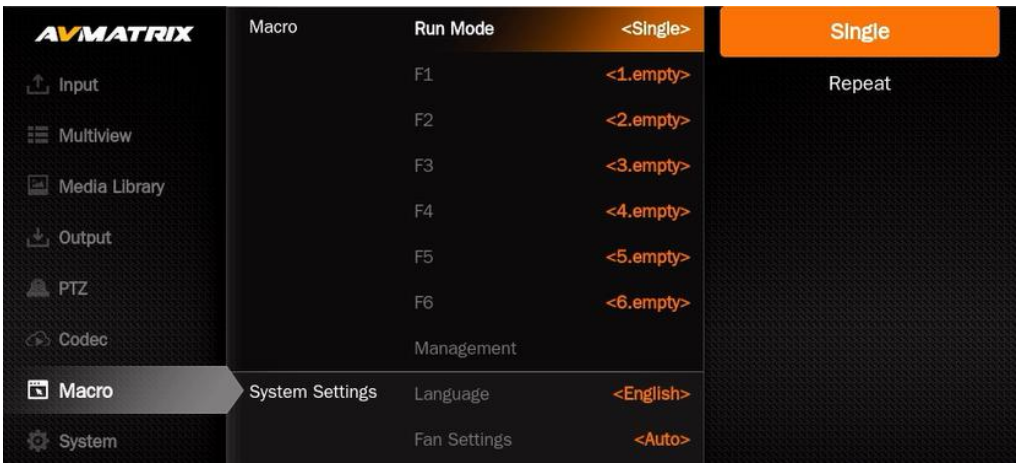
Note: the operation of the T-bar and menu knobs may not be recorded during the recording process.

Calling Macros： Long press the F1 shortcut to recall the recorded macro, and the video switcher will automatically play back the recorded operation.



In the macro menu, the user can select for each macro either a single pass mode (execute once and stop) or a cyclic mode (cycle through until manually stopped). Up to 20 macro scripts can be stored locally and can be configured with shortcut keys for quick recall.

After inserting a USB flash drive, user can export the configuration file to obtain the current macro script, and support text tools to edit the delay time, sequence, and deletion and addition instructions of each operation in the script.



20.System Settings

20.1 Language

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

20.2.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.

20.3Temperature

Users can customize temperature units, flexibly switch between Celsius ℃ and Fahrenheit ℉, or directly turn off the temperature display in the status bar.

20.4.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.

20.5.Version

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

20.6.Shortcut Key Settings

In the shortcut key settings, users can set the functions of long press and short press of the F1-F6 shortcut keys.

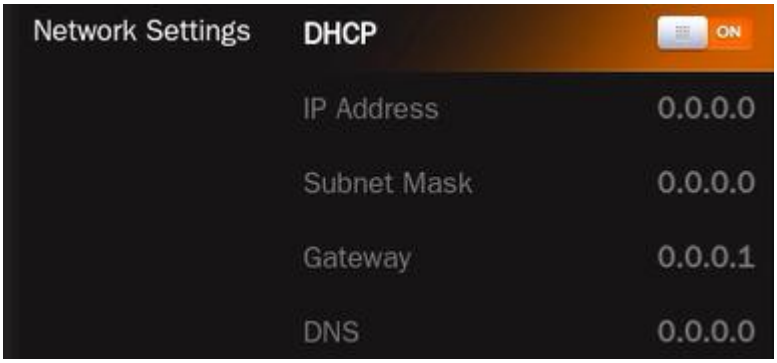
20.7.Screen Settings

Users can set the screen's backlight, brightness, contrast, saturation, color cast, sharpness, color temperature, red gain, green gain, blue gain and other related parameters.

20.8.Network Setting

The video switcher supports two connection methods. When DHCP is selected on the menu, the switcher can automatically obtain an IP address after connecting it to a router that supports DHCP.

When DHCP is turned off, the user can manually set the IP address, subnet mask, and gateway method in the menu. The default IP address of the switcher is 192.168.5.216.



20.9.Time Settings

Users can manually set the year, month, day, hour, and minute through the menu, and select the 12-hour (default) or 24-hour time display mode. They can also achieve automatic time synchronization through NTP. In addition, it supports time zone settings to ensure that the time is synchronized with the local time. Users can also turn on or off the time display in the status bar as needed.

20.10.Timer Setting

The video switch supports two modes, timer and countdown, users can choose flexibly according to their needs. Meanwhile, the timer display in the status bar can be turned on or off.

20.11.User Settings

Users can save all the current settings to the switcher's account according to their needs and different application scenarios. Adding new user accounts, renaming accounts, switching between accounts, deleting accounts, and also importing or exporting accounts to a USB flash drive is very flexible, convenient and user-friendly.

20.11.1.New

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

20.11.2.Rename

Rename the current user account name.

20.11.3.Switch

Switch to another saved user account to easily and quickly make saved settings.

20.11.4.Delete

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

20.11.5.Import

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

20.11.6.Export

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