

5CH Production Video Switcher

User Manual



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1. Product Introduction

1.1 Overview

switcher is a video switcher with four HDMI and four SDI (HDMI IN1 and 2 support 4K60P input, HDMI IN3 and 4 support 1920×1080p60 input; SDI IN 1, 2, 3, 4 support 3G Level A YCbCr422 10 bit input) and one USB 2.0 input, one SDI PGM + one HDMI PGM + one USB 3.1 (Type-C) and one RJ45 network streaming.

The switcher audio and video switcher is designed based on the FPGA hardware platform and supports broadcast-level functions such as video special effects switching, green screen keying, audio mixing and adjustment, built-in media library, horizontal and vertical screen, PIP at any position and size, LOGO, multi-layer overlay, etc. At the same time, the powerful multimedia function of the switcher can simultaneously support USB 3.1 streaming, live recording, direct multi-channel network streaming and one network pull streaming. The switcher is equipped with a 10.1-inch high-definition screen, which can directly view multi-screen signals and flexible menu operations, and can also operate the five-way joystick and knob to control multiple PTZ cameras.

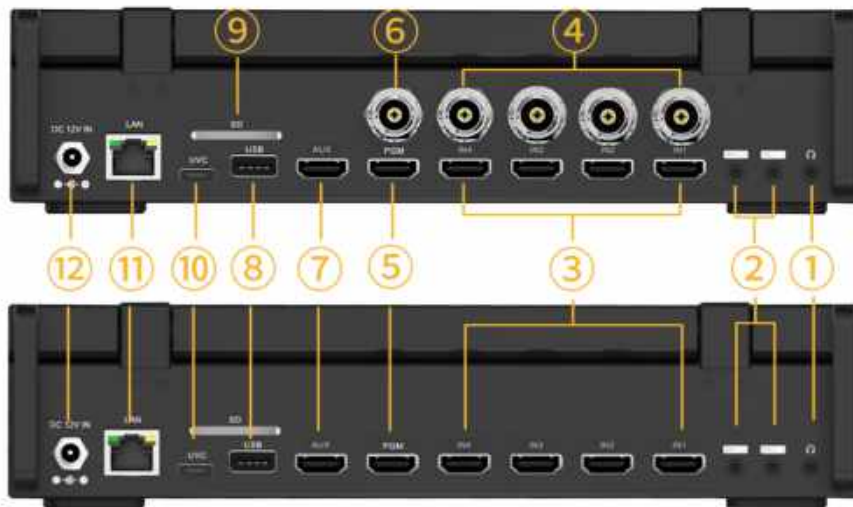


1.2 Main Features

- ✦ ●4-channel HDMI input & 4-channel SDI and USB inputx1, SDI PGMx1, HDMI PGM and HDMI AUX output x1, USB 3.1 lossless output x1
- ✦ ●PGM can superimpose up to 8 layers, providing powerful directing capabilities
- ✦ ●2-channel picture-in-picture, can support arbitrary cropping and resizing to meet the application needs of various scenarios
- ✦ ●2-channel LOGO, support alpha channel, the effect is more realistic and natural
- ✦ ●Support T-Bar switching, support up to 30 switching effects
- ✦ ●2-channel network push, 1-channel network pull
- ✦ ●Built-in media library, picture generator, support user-defined preset patterns and external imported images
- ✦ ●Support DSK, can realize subtitles and other functions
- ✦ ●Flexible switching between horizontal and vertical screens, horizontal and vertical screen push
- ✦ ●Video recording and playback, the played video can be used as an auxiliary source to participate in program production
- ✦ ●Integrated PTZ camera control, one person and one machine are in control
- ✦ ●Professional-level chroma cutout to create a realistic virtual studio
- ✦ ●Brightness key to help users achieve video effects
- ✦ ●Built-in Web, supports flexible control of personal computers, mobile phones and smart devices

2. Interface

2.1 Interface Introduction



1	Line(3.5mm stereo)x1 Audio Output
2	MIC/Line(3.5mm stereo)x2 Audio Input
3	HDMI IN x 4 Input
4	SDI IN x 4 Input (SDI version)
5	SDI PGM x 1 Output (SDI version)
6	HDMI PGM x 1 Output
7	HDMI AUX x 1 Output
8	USB-A Used for video encoding storage, camera, LOGO image, firmware upgrade (Note 1), etc.
9	SD Card for video storage and recording
10	USB TYPE-C (Used for UVC streaming)
11	LAN port for network streaming, PTZ camera control, software control
12	DC 12V IN Power input

Note 1: Put the upgrade file (.img suffix file) in the directory of the USB disk. Insert the USB disk into the USB port. The machine can automatically recognize the upgrade file and pop up a prompt to upgrade. Rotate the knob to select YES to upgrade.

3. Configuration

Parameters	
Video Input	HDMI INx4 SDI INx4 USBx1
Video Output	HDMI PGMx1+HDMNI AUXx1+USB 3.1x1 (Type-C) and RJ45x1 (Network Streaming)
Audio Input	Line(3.5mm Stereo)x2
Audio Output	Line(3.5mm Stereo)x1
USB	Used for video encoding storage, camera, LOGO image, firmware upgrade, etc.
Control Port	LAN x 1 For network streaming, PTZ camera control, software control
SD Card	Video recording storage
Power	DC 7~12V ≤18.5W
Functions	
Transition	T-Bar/AUTO/ CUT
Transition Effects	WIPE (Various patterns)/MIX/DIP/Transition Preview/BKGD/Still (Freeze)/FTB
Key	Upstream Key: Chroma keyx1/Luma keyx1/PIPx2 Downstream key: DSKx1/LOGOx2
Layers	PGM Support up to 8 layers
Audio	HDMI x 4 , SDI x 4, Multimedia and 2-way microphone/analog audio input; Audio delay: 0-1s
PTZ	VISCA IP protocol
Media Library	Supports presetting of multiple background images, logos and video streams
Streaming	H.264 Encoding, supports recording and multi-network streaming, supports recording and streaming bit rate separation
LOGO	Any size (up to 960x540) and position, support alpha transparent channel (png images)
Format Support	
HDMI Input Support	2160p 60/59.94/50/30/29.97/25/24/23.98 (HDMI2.0 input) 1080p 60/59.94/50/30/29.97/25/24/23.98 1080i50/1080i60
HDMI PGM Output	1080p 60/50/48/30/25/24
SDI Input Support	3G Level A YCbCr422 10bit (SDI version)
SDI PGM Output	1080p 60/50/48/30/25/24 (SDI version)
HDMI Color Space	RGB/YUV
UVC Output	USB 3.1 Lossless output, Maximum support YUV2 1080p60
Data Stream Support	1080p 60/59.94/50/30/29.97/25/24/23.98
Others	
Power	7~24V
Power Consumption	≤18.5W
Size (LDW)	250*206*63mm
Weight	2.1kg
Temperature	Working Temp: 0°C~50°C, Storage Temp. : -30°C~70°C
Accessories	DC Adapter(12V 2A)*1; USB Cable(A to C)*1 ; Suitcase*1 (Optional)

4. Front Panel



4.1 Front Panel Introduction

1	Lock Screen/Power Button	Long press to lock the front panel button, the red light flashes when turned on; short press to turn on, the red light is on when turned on
	MV Button	AUX interface display switching, white light is on when turned on, AUX output multi-screen monitoring, off to monitor IN1, IN2, IN3, IN4, AUX, PAT, CIn PGM, PGM, CIn PVW, PVW single screen.
2	CH:1-4	Four-way audio input mixing control, flashing white light when turned on
	MIC:1-2	Two-way MIC audio mixing control, flashing white light when turned on
	AUX	AUX audio mixer switch control, when turned on, the white light flashes
	PGM	PGM audio mixer switch control, when turned on, flashes white light
	Up/down Key	Volume Control
	ON	Audio mixer switch control, when turned on, the white light is on
3	REC	Recording on and off, when on, the red light is on. Note: REC only supports H.264 mode
	STREAM	Push streaming on or off. When on, the green light is on. Note: STREAM only supports H.264 mode
	Rewind Button	Short press to switch to the previous video
	Play Button	Play and pause video
	Fast Forward Button	Short press to switch to the next video

4	Light Guide	Transition complete indicator
5	T-Bar	Manual switching between PVW and PGM via T-Bar
6	User 1	Short press to pop up the USER menu, long press to call the corresponding USER configuration
	User 2	Short press to pop up the USER menu, long press to call the corresponding USER configuration
7	ON AIR	In the PGM layer, turn on or off Luma Key, Chroma Key, PIP 1, and PIP 2. Short press to turn on. When turned on, the red light will turn on.
	LUMA	PVW The Luma Key of the layer is turned on and off. When LUMA is turned on, the white light is on.
	CHROMA	PVW The Chroma Key of the layer is turned on and off. When CHROMA is turned on, the white light is on.
	PIP1	The PIP 1 of the PVW layer is turned on and off. Short press to turn on PIP 1. When it is turned on, the white light is on. Long press to move the PIP 1 layer, and the white light flashes; short press again to exit the move function
	PIP2	PVW The layer's PIP2 is turned on or off. Short press to turn PIP2 on. When it is on, the white light is on. Long press to move the PIP2 layer, and the white light flashes; short press again to exit the move function
8	ON AIR	In the PGM layer, turn on or off DSK Key, LOGO1, and LOGO2. Short press to turn it on. When it is turned on, the red light will be on.
	DSK	The DSK Key of the PVW layer is turned on and off. When DSK is turned on, the white light is on.
	LOGO1	PVW layer LOGO1 on and off
	LOGO2	PVW layer LOGO2 on and off
9	MIX/WIPE/DIP	MIX/WIPE/DIP Transition effect switch control, when turned on, the white light is on
	0.5s/1.0s/CUSTOM	System transition time: 0.5s/1.0s, when turned on, the light is white; User-defined transition time: CUSTOM, when turned on, the light is white
10	PTZ	Camera control, control the coordinates of the camera Position control: 1. Cooperate with PIP1 and PIP2 buttons to control the layer position. 2. Control the mask position. 3. Control the LOGO position
11	CAM/POS/ ZOOM-/ZOOM+	CAM: Camera mode on and off, flashing white light when on POS: Camera coordinates location save Location save: Enter camera mode, turn on the POS button, click the numbers in PGM1-4 to save the camera coordinates. Location acquisition: Enter camera mode, click the numbers in PGM1-4 to save the location, and the camera will reach the specified coordinates. ZOOM-/ZOOM+: Zoom function of PTZ camera lens
12	PGM:1-4/AUX/PAT	PGM signal source, AUX, PAT indication and direct switching control, when turned on, the red light is on
13	PVW:1-4/AUX/PAT	PVW signal source, AUX, PAT selection and indication (PVW layer needs to turn on BKGD function to use), when turned on, the green light is on
14	STILL	Freeze PGM and PVW screens, flash white when turned on
	PREV	Demonstrate the transition effect in the PVW (preview screen) layer. When it is turned on, the white light will turn on.
	GRAB	Take a screenshot of the PGM screen
	BKGD	When closed, the background of PVW remains consistent with PGM
	CUT/ AUTO	CUT: Real time switching between PVW and PGM AUTO: Switching special effects between PVW and PGM
	FTB	PGM emergency black field, FTB flashes red when turned on, PGM is silent
	MENU	System menu control

5. Functional Operation

5.1 Transition Control

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

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

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

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

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

CUT Button: PVW and PGM are switched instantly

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

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

5.2 User Configuration Call Control

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

5.3 Switch Function Button

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

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

LUMA Button: Luma cutout on/off for PVW layer

CHROMA Button: Chroma cutout on/off for PVW layer

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

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

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

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

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

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

Multimedia Function Keys:

REC Button: turn on/off the recording function

STREAM Button: turn on/off the streaming function

Rewind Button: switch the video file of the AUX layer

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

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

STILL Button: PVW, PGM screen still function

GRAB Button: take a screenshot of the PGM layer screen

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

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

5.4 Quick Function Buttons

5.4.1 AUDIO

Quick Operation Menu For Adjusting Audio Mode And Volume

CH1-4 Buttons: used to activate the audio quick operation control of four inputs

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

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

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

Up and down Buttons: used to control the volume

ON Button: audio mixing on/off control

AFV Button: audio follow mode on/off control

5.4.2 TRANSITION

System And Custom Transition Effects And Duration Shortcut Menu

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

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

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

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

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

5.5 Camera Control Operation

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

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

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

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

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

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

5.6 Lock/Power Button

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

5.7 MV Button

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

5.8 FTB Button

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

5.9 Button Light Status

Button Light	Dark	Light	Flash
LOCK	Button unlock		Button lock
MV	Single screen monitoring	Multi-screen monitoring	
CH1-4			Audio mode and volume control
MIC1-2			Audio mode and volume control
AUDIO AUX			Audio mode and volume control
AUDIO PGM			Audio mode and volume control
Up		Volume Up	
Down		Volume Down	
ON	Audio Off	Audio On	
AFV		Turn on audio follow mode	
REC	Recording not started	Recording	
STREAM	Streaming is not started	Streaming	
Rewind		AUX source control	
Play		AUX source control	
Fast Forward		AUX source control	
USER1-2			
ON AIR		Effects applied to the PGM screen	
LUMA	Turn off brightness cutout in PVW	Turn on brightness cutout in PVW	
CHROMA	Turn off chroma cutout in PVW	Enable Chroma Cutout in PVW	
PIP1-2	Turn off Picture-in-Picture 1 and 2 in PVW	Enable Picture-in-Picture 1 and 2 in PVW	
DSK	Turn off DSK cutout in PVW	Enable DSK cutout in PVW	
LOGO1-2	Turn off LOGO1 and 2 display	Turn on LOGO1 and 2 display	
MIX		Enable MIX transition effect	
WIPE		Enable WIPE transition effect	
DIP		Enable DIP transition effect	
0.5S/1.0S		Transition duration setting	
CUSTOM		User-defined transition duration	
Light Guide		Displays the position of the joystick	
CAM	No access to camera controls		Activate Camera Controls
POS		Waiting for camera position to be set	
PGM1~4	This source is not selected	Corresponding source selection	
PVW1~4	This source is not selected	Corresponding source selection	
AUX	This source is not selected	Select AUX as the source	
PAT	This source is not selected	Select PAT as the source	
STILL	PVW, PGM not static		PVW, PGM static state
PREV		Demonstrating transition effects in PVW	
GRAB		Take a screenshot of PGM	
BKGD		PVW and PGM display their respective background images	
CUT	Switching signal source		
AUTO	End of transition	Automatic transition in progress	
FTB			PGM black and mute
MENU	Open and close the		

6. Status Page Display



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

7. Main Menu

7.1 Transition

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

7.1.1 Transition Effect Settings

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



7.1.1.1 MIX

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



7.1.1.2 DIP

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

DIP to Black (fade out):



7.1.1.3 WIPE

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

7.1.2 Transition Time Settings

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



7.1.3 Softness Settings

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



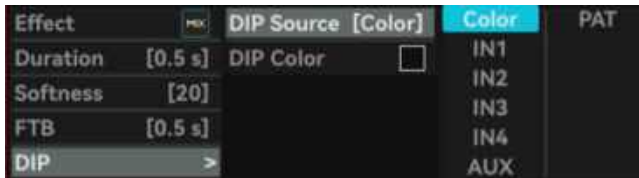
7.1.4 Black Field Settings

Enter the transition settings, select the black field duration, and use the knob to set the black field duration. The longer the duration, the slower the black field speed. The duration can be set from 0.1s to 2.0s, and the default is 0.5s.



7.1.5 Immersion Settings

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



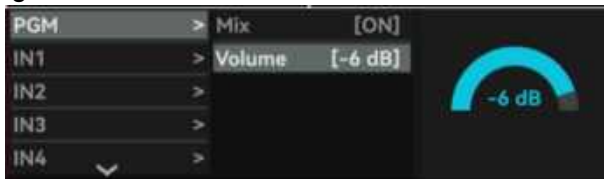
7.2 Audio

The switcher supports 4-channel HDMI digital audio or 4-channel SDI digital audio, and 2-channel independent 3.5mm microphone input. Each audio channel can be independently configured with volume, switch, mixing, and delay. At the same time, HDMI and SDI audio support audio follow mode (AFV).

7.2.1 PGM Audio Settings

PGM audio control, the switcher supports superimposing 6 channels of audio, including 2 channels of HDMI embedded audio, 2 channels of SDI embedded audio, and 2 channels of MIC/Line audio input.

Enter the audio settings and select PGM. Users can mute PGM or adjust the audio volume. The volume range is -60dB-0dB. The default PGM sound is turned on and the volume is -6dB.



7.2.2 Audio Settings For Two HDMI And Two SDI Inputs

Enter the audio settings, select SDIIN1, 2 and HDMIIN 3, 4, and set the embedded audio of the four inputs.

7.2.2.1 Mixing Mode Settings

Users can turn on/off the mixing mode independently, or set it to AFV audio follow mode, which is AFV audio follow mode by default.

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



7.2.2.2 Volume Control

Users can adjust the volume of SDI and HDMI audio in the range of -60dB-0dB. The default is -6dB.



7.2.2.3 Audio Delay

Users can set audio delay for SDIIN 1, SDIIN 2, HDMIIN 3, and HDMIIN 4 in the menu to synchronize audio and video. The maximum audio delay is 1s, and the default is 0.00s.



7.2.3 Multimedia AUX Output Audio Settings

Enter the audio settings, select Multimedia AUX, and set the Multimedia AUX output audio.

7.2.3.1 Mixing mode settings

Users can turn on/off the mixing mode independently, or set it to AFV audio follow mode, which is

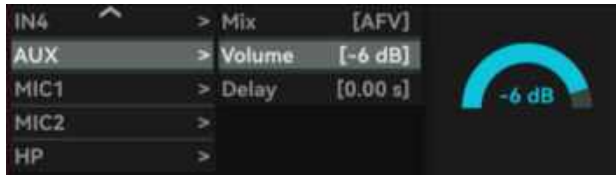
AFV audio follow mode by default.

When the audio mode of Multimedia AUX is set to AFV, it will only take effect when the AUX video is in PGM.



7.2.3.2 Volume Control

Users can adjust the volume of the multimedia AUX output audio. The volume range is -60dB-0dB, and the default is -6dB.



7.2.3.3 Audio Delay

Users can set the audio delay for the multimedia AUX output audio in the menu to synchronize the audio and video. The maximum audio delay can be 1s, and the default is 0s.



7.2.4 Two-Channel Microphone Input Audio Settings

Enter the audio settings, select microphone 1 and microphone 2, and set the two microphones. Users can connect them to linear devices or to desktop and lapel microphones. Users can turn the microphone on/off, adjust the audio volume and audio delay. You can also perform automatic gain control on the microphone input audio.

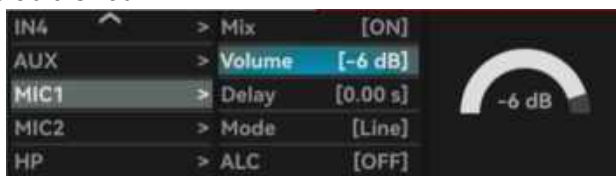
7.2.4.1 Mixing Mode Settings

Users can turn on/off the mixing mode of the microphone independently, which is turned on by default.



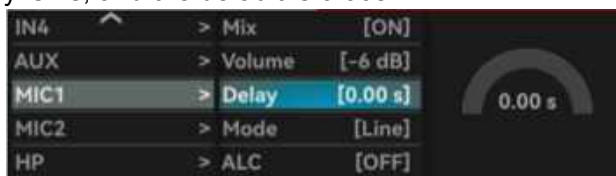
7.2.4.2 Volume Control

Users can adjust the volume of each microphone audio channel. The volume range is -60dB-0dB, and the default is -6dB.



7.2.4.3 Audio Delay

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



7.2.4.4 Audio Mode Settings

If the MIC interface is connected to a microphone device, the audio mode should be selected as microphone mode; if it is connected to a linear device, the audio mode should be selected as linear mode, and the default is Line mode.



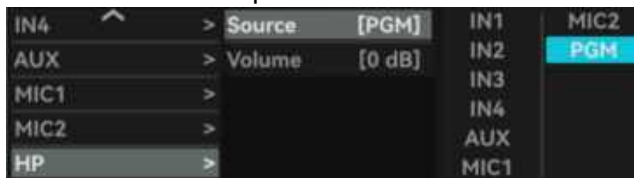
7.2.4.5 ALC Settings

ALC sets the automatic level gain and makes appropriate adjustments based on background noise. Users can customize the three levels of LEVEL1, LEVEL2, and LEVEL3. Default is off.



7.2.5 Headphone Settings

The switcher has a headphone output for monitoring audio. Users can select an audio source from the main audio (PGM), 2 HDMI embedded audio, 2 SDI embedded audio, 2 MIC audio and multimedia AUX output audio as the monitoring output. Users can adjust the headphone monitoring volume in the range of -60dB-0dB. The headphone source defaults to PGM and the volume defaults to 0dB.



7.3 Image

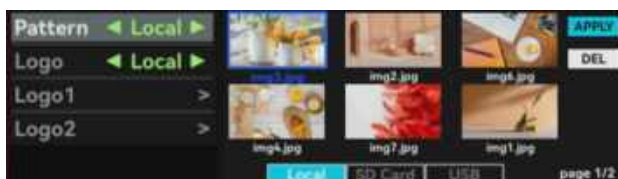
In the image settings, you can customize the background image and logo settings, and put the image into the USB disk or SD card for use.

7.3.1 Image

In the image settings, select the image, and display the default image stored in the switcher. After inserting the USB disk or SD card (can be inserted at the same time), After recognizing the USB or SD card, the icon will turn white. switch the image information inserted inside and outside the system by moving the joystick.

7.3.1.1 Image Application

Use the knob to select the image in the system or USB disk/SD card, press the knob, and click Apply.



7.3.1.2 Image Deletion

Use the knob to select the image in the system or USB disk/SD card, press the knob, and click Delete.



7.3.1.3 Image Addition

Image addition can IMPORT images from USB disk or SD card. When a USB disk/SD card is inserted, a used memory/total memory icon will appear at the bottom of the status/menu page. (Please make sure the image is stored in the "images" directory of the USB disk/SD card) Use the joystick to switch to the USB disk/SD card image menu, and click IMPORT to load it into the switcher. Note: The image resolution supports 3840x1080.



7.3.2 LOGO

Enter the image settings, select the logo, and display the default image stored in the switcher. After inserting the USB disk or SD card, the icon will turn white. Move the joystick to switch the image information inserted inside the system and outside.

7.3.2.1 LOGO Application

Use the knob to select the image in the system or USB disk/SD card, press the knob, and set the image of LOGO 1 or LOGO 2.



7.3.2.2 LOGO Deletion

Use the knob to select the image in the system or USB disk/SD card, press the knob, and click Delete.



7.3.2.3 LOGO Addition

Adding a logo is to load the LOGO image from the USB disk/SD card. When the USB disk/SD card is inserted, a used memory/total memory icon will appear at the bottom of the status/menu page. (Please make sure the LOGO image is stored in the "logos" directory of the USB disk) Use the joystick to switch to the USB disk/SD card LOGOS menu, and click IMPORT to load it into the switcher.

The maximum resolution of the LOGO image is 960x540, and the supported formats are .png, .jpeg, .jpg, .bmp, etc.



7.3.2.4 LOGO Size

Enter the image settings, select the logo 1, 2 size, and switch the size using the knob. The size specifications are x0.4, x0.6, x0.8, x1.0, x1.2, x1.4, and the default is x1.0.



7.3.2.5 LOGO Position

Enter the image settings, select Logo 1, 2 Position, and use the joystick to adjust the logo position.



7.4 Media

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

7.4.1 Video

Enter the media settings, select video, and display the default video stored in the switcher. After

inserting a USB disk or SD card, switch the video information inserted inside the system and outside by moving the joystick.

7.4.1.1 Video Playback

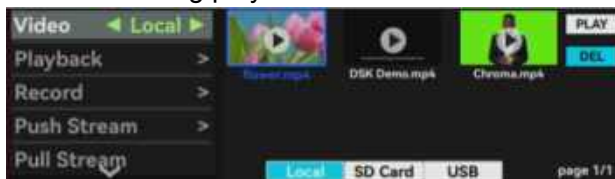
Use the knob to select the video in the system or USB disk/SD card, press the knob, and click play. The video will play on the multimedia AUX port.



7.4.1.2 Video Deletion

Use the knob to select the video in the system or USB disk/SD card, press the knob, and click Delete.

Note: The video being played cannot be deleted.



7.4.1.3 Video Playback Mode

Enter the media settings and select the playback mode.

The loop mode can be set to single loop or list loop; the speed mode can be set to $\times 0.2$, $\times 0.4$, $\times 0.6$, $\times 0.8$, $\times 1.0$, $\times 1.2$. The default speed is $\times 1.0$.



7.4.2 Recording

switcher records the PGM image and sound to the "video_rec" folder of the USB disk/SD card.

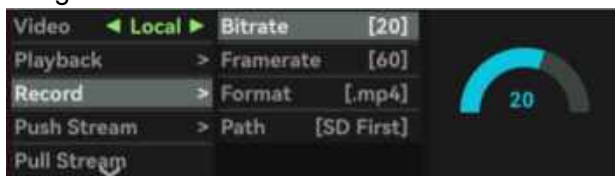
Supported USB disk/SD card formats are FAT32, NTFS, exFAT (FAT32 can record up to 4G video)

Note: The system will automatically stop recording when the USB disk/SD card capacity is insufficient;

The FAT32 format USB disk/SD card will automatically stop recording when recording 4G; If the recording is not stopped normally (such as power failure during recording, unplugging the USB disk/SD card), the recorded file will not be used normally.

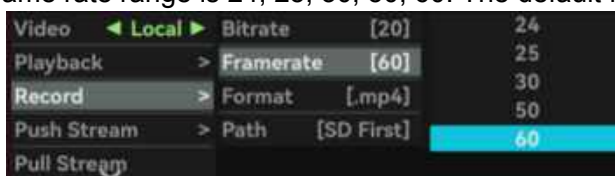
7.4.2.1 Bit Rate

Users can modify the recording bit rate. Enter the media settings, select recording, click bit rate, the bit rate range is 5-30. The default bit rate is 20.



7.4.2.2 Frame Rate

Users can modify the recording frame rate. Enter the media settings, select recording, click frame rate, the frame rate range is 24, 25, 30, 50, 60. The default frame rate is 60.



7.4.2.3 Format

Users can modify the recording format. Enter the media settings, select recording, click the format,

and change it to ".mp4", ".ts", or ".flv". The default format is ".mp4".



7.4.2.4 Storage Path

Users can customize the storage path of recorded videos. Enter the media settings, select recording, click the storage path, and change it to SD card priority or USB drive priority. The default is SD card priority.



7.4.3 Push Streaming

Enter the multimedia settings and select network streaming. Two streaming addresses can be saved in the network streaming. Click the STREAM button to start streaming. If the streaming address is available, the STREAM button lights up green and starts streaming.

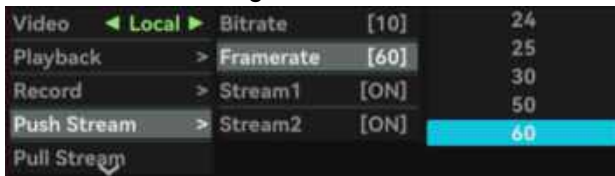
7.4.3.1 Bit Rate

Users can modify the streaming bitrate. Enter the media settings, select streaming, click bitrate, and the bitrate range is 1-20. The default bitrate is 10.



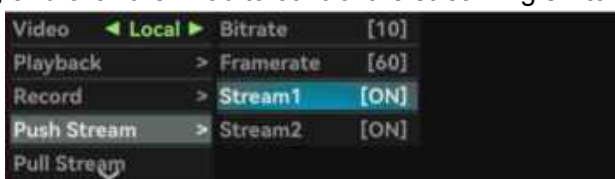
7.4.3.2 Frame Rate

Users can modify the frame rate of streaming. Enter the media settings, select streaming, and click frame rate. The frame rate range is 24, 25, 30, 50, and 60. The default frame rate is 60.



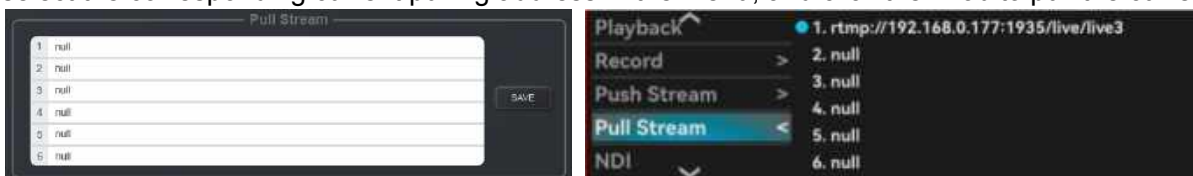
7.4.3.3 Push Streaming Switch Control

Users can control the two-way streaming switch. Enter the media settings, select streaming, click streaming, and click the knob to control the streaming switch.



7.4.4 Pull Stream

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

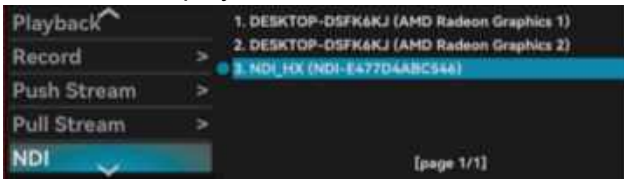


7.4.5 NDI

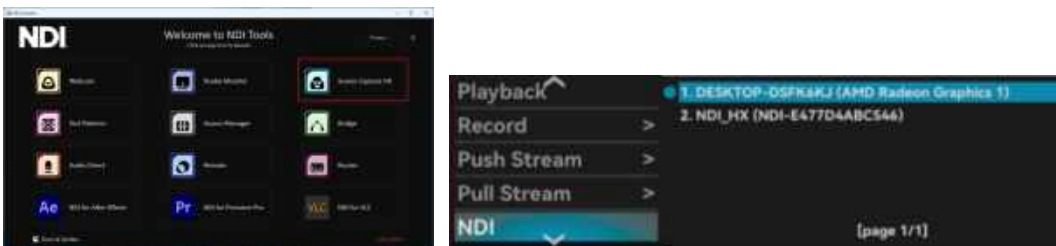
NDI is an efficient network transmission protocol that enables video transfer between multiple

devices without the need for dedicated networking equipment. It allows video signals to be transmitted over the network to multiple devices, facilitating video editing, playback, control, and other functions.

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

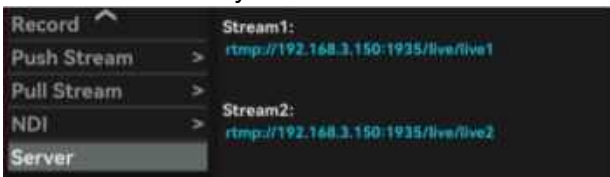


The computer and the switch station remain in the same LAN. Open the network of the switch station, open the NDI software, click Screen Capture HX to open the NDI function of the switch station, and connect the computer through the network. The PC desktop will be displayed in the AUX window.



7.4.6 Streaming Server

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



7.5 Picture-in-Picture

2-way picture-in-picture, can support arbitrary cropping and resizing to meet the application needs of various scenarios; conference multi-screen function helps users to quickly and remotely start meetings. Turn on two-way picture-in-picture, PIP1, PIP2 buttons light up white.

7.5.1 PIP 1 Settings

Users need to use the PIP1 button to turn on the picture-in-picture 1 function, and then enter the picture-in-picture 1 settings to adjust the screen size and cropping.

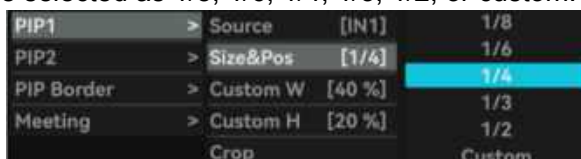
7.5.1.1 Source Selection

Users can modify the source selection of picture-in-picture 1. Enter the picture-in-picture settings, select picture-in-picture 1, click source selection, and the source can be selected from IN1, IN2, IN3, IN4, AUX, PAT. The default is IN1.



7.5.1.2 Size & Position Selection

Users can adjust the size and position of PIP 1. The position can be adjusted by joystick, and the size can be selected as 1/8, 1/6, 1/4, 1/3, 1/2, or custom. The default size is 1/4.



7.5.1.3 Custom Width & Height

Users can customize the size and position of PIP 1. The position can be adjusted by the joystick. Select Custom for Size & Position and adjust the width and height of PIP 1 by the knob. The range of width & height is 10%-100%. The default range of PIP 1 width is 40%, and the default range of height is 20%.



7.5.1.4 Cropping

Users can use the cropping function to select the part of the picture to be displayed in the picture-in-picture. Enter the picture-in-picture settings, select picture-in-picture 1, and click Crop. Use the PTZ joystick to select the part of the picture to be displayed, and rotate the knob to set the zoom size of the picture. The default area size is 25%.



7.5.2 PIP2 Settings

Users need to use the PIP2 button to turn on the PIP2 function, and then enter the PIP2 settings to adjust the image size and cropping.

7.5.2.1 Source Selection

Users can customize the source selection of PIP2. Enter the PIP settings, select PIP2, click source selection, and the source can be selected from IN1, IN2, IN3, IN4, AUX, PAT. The default is IN4.



7.5.2.2 Size & Position Selection

Users can customize the size and position of PIP 2. The position can be adjusted by joystick, and the size can be selected from 1/8, 1/6, 1/4, 1/3, 1/2, and custom. The default size is custom.



7.5.2.3 Custom Width & Height

Users can customize the size and position of PIP 2. The position can be adjusted by the joystick. For Size & Position, select Customize and use the knob to adjust the width and height of PIP 2. The width & height range is 10%-100%. The default range of PIP 2 width is 20% and the default range of height is 40%.



7.5.2.4 Cropping

Users can crop the selected source image as PIP 2. Enter PIP settings, select PIP 2, and click Crop. Use the joystick and knob to set the size of the crop area. The default size is 100%.

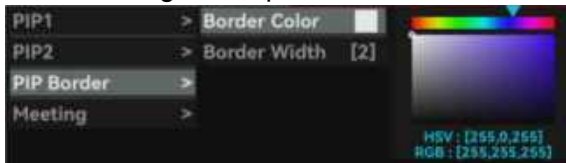


7.5.3 Border Settings

Border settings will be applied to both PIP 1 and PIP 2.

7.5.3.1 Border Color

Users can customize the border color in the color palette. Enter PIP settings, select Border, click Border color, and use the knob and five-way key to modify the red, green, and blue color space and hue, saturation, and brightness parameters.



7.5.3.2 Border Width

Users can customize the border width of the picture-in-picture. Enter the picture-in-picture settings, select Border, and click Border width. The width range is 0-16. The default width is 2.

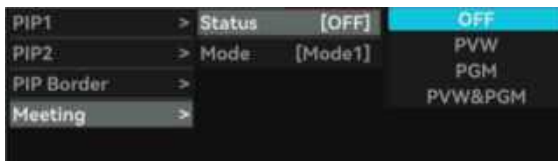


7.5.4 Conference Settings

The conference function can display the signals of the four input channels on the preview screen or the playback screen, or on both screens at the same time.

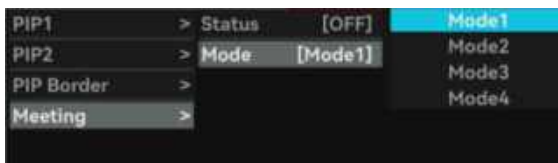
7.5.4.1 Status

The user can customize the screen to be displayed on PVW, PGM, or both. Enter the PIP settings, select Conference, click Status, and the status can be selected from "Off", "PVW", "PGM" and "PVW & PGM". The default status is Off.



7.5.4.2 Mode

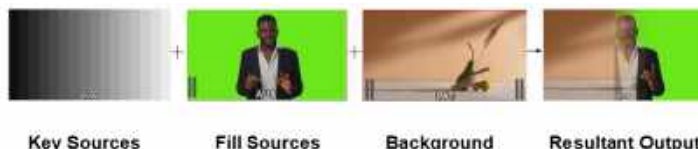
Users can select different conference modes. The default is Mode 1.



7.6 Luma Key

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

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



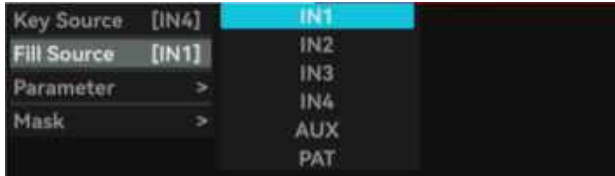
7.6.1 Key Source

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



7.6.2 Fill Source

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



7.6.3 Adjustment

7.6.3.1 Threshold

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



7.6.3.2 Gain

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



7.6.3.3 Inverse

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

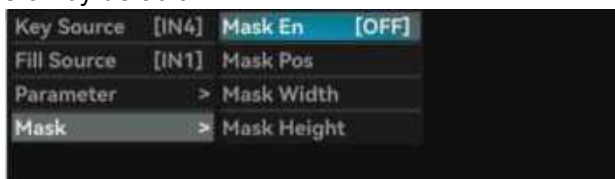


7.6.4 Mask

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

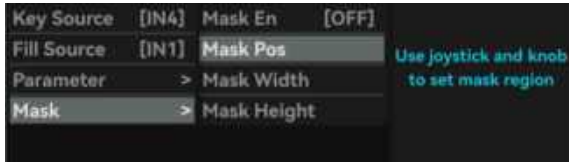
7.6.4.1 Mask Switch

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



7.6.4.2 Mask Position

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



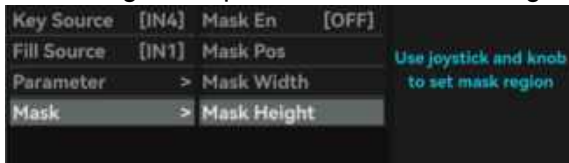
7.6.4.3 Mask Width

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



7.6.4.4 Mask Height

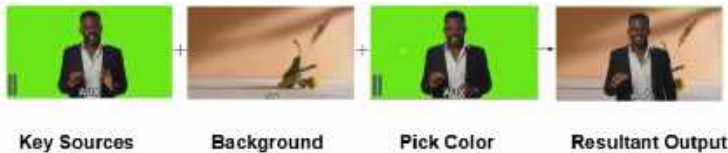
Enter the brightness key settings, click Mask, select Mask Height, and use the knob and five-way key to adjust the height and position of the mask image.



7.7 Chroma Key

Chroma Key is a visual effect and post-production technique used to composite (layer) two images or video streams together based on hue (chroma range). The technique has been used in many fields to remove backgrounds from photo or video subjects, especially in news broadcasting, film, gaming, live broadcasting and other industries.

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



7.7.1 Key Source

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

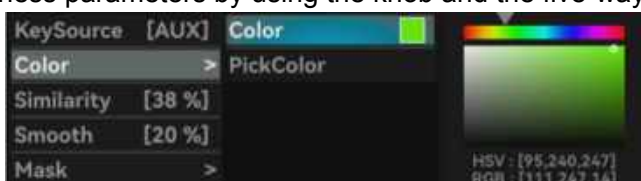


7.7.2 Cutout Color

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

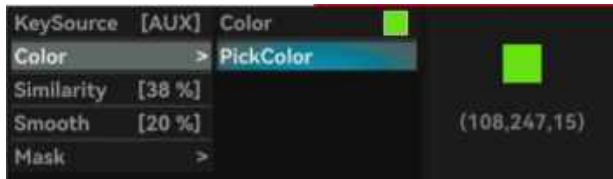
7.7.2.1 Color

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



7.7.2.2 Pick Color

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



7.7.3 Similarity

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



7.7.4 Smoothness

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

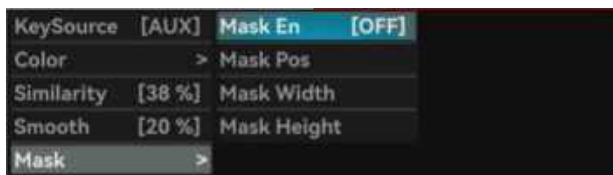


7.7.5 Mask

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

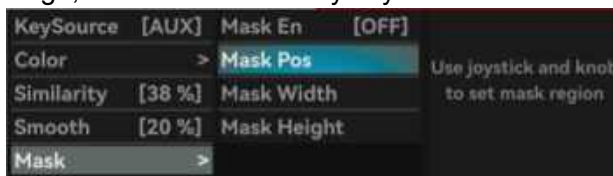
7.7.5.1 Mask Switch

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



7.7.5.2 Mask Position

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



7.7.5.3 Mask Width

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



7.7.5.4 Mask Height

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



7.8 DSK Key

switcher supports DSK keying, allowing users to easily add professional subtitles or graphic packaging systems when broadcasting programs to meet the standards of TV stations, thereby improving the quality of programs and the viewing experience of viewers.



Key Sources Background Resultant Output

7.8.1 Key Source

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



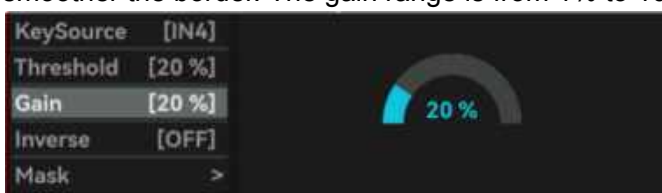
7.8.2 Threshold

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



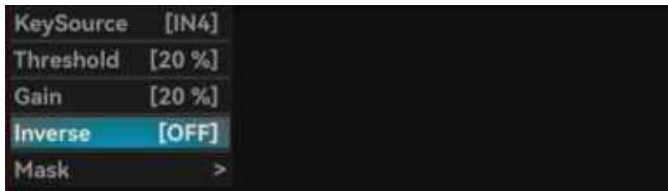
7.8.3 Gain

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



7.8.4 Inverse

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



7.8.5 Mask

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

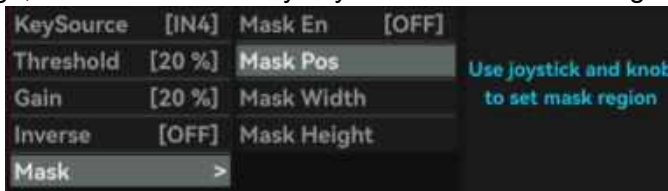
7.8.5.1 Mask Switch

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



7.8.5.2 Mask Position

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



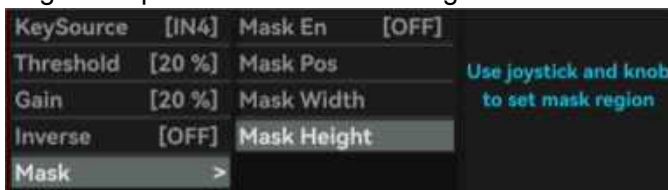
7.8.5.3 Mask Width

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



7.8.5.4 Mask Height

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



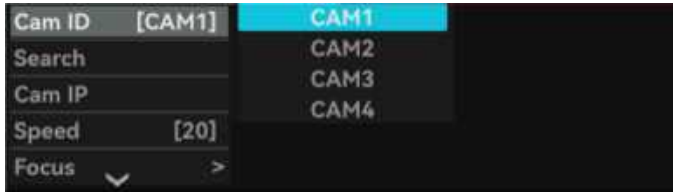
7.9 PTZ Control

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

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

7.9.1 Camera Selection

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

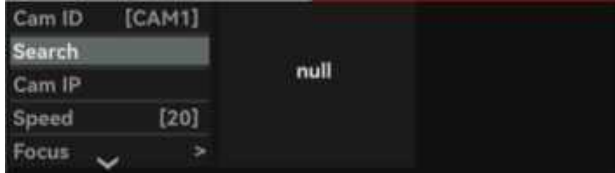


7.9.2 Camera Connection

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

7.9.2.1 Search

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



7.9.2.2 Manual IP

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



7.9.3 Camera Settings

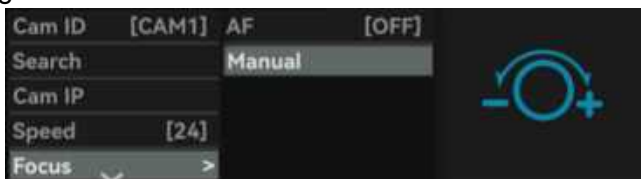
7.9.3.1 Speed

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



7.9.3.2 Focus

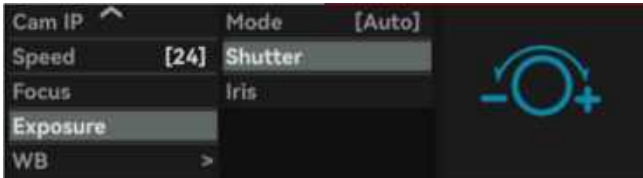
Enter the camera settings and select Focus. You can set auto focus or manual focus. Manual focus is set using the knob.



7.9.3.3 Exposure

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





7.9.3.4 White Balance

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



7.10 Interface

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

7.10.1 View

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

7.10.1.1 MV View

Diagram of Landscape mode:



Local Screen Diagram of Vertical screen mode :

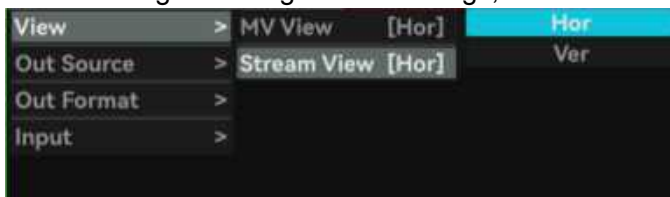


Output Screen Diagram of Vertical Screen Mode :



7.10.1.2 Stream/Record View

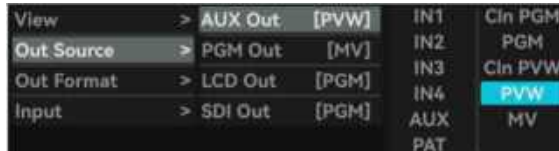
Users can change the streaming/recording screen as needed. Enter the interface settings, go to the streaming/recording screen settings, select horizontal or vertical



7.10.2 Output Source

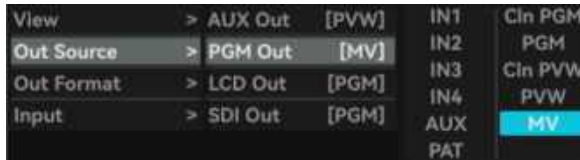
7.10.2.1 AUX Output

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



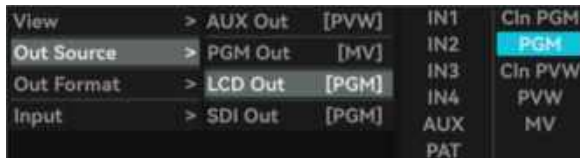
7.10.2.2 PGM Output

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



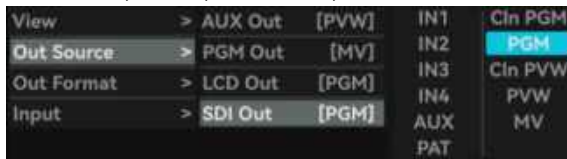
7.10.2.3 Screen Output

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



7.10.2.4 SDI Output

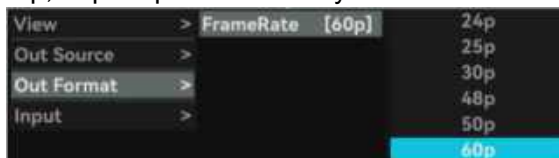
Enter the interface settings, select output, and click SDI output. You can choose IN1, IN2, IN3, IN4, AUX, PAT, CIn PGM, PGM, CIn PVW, PVW. IN1 is selected by default.



7.10.3 Output Format

7.10.3.1 Frame Rate

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



7.10.4 Input

Users can customize the priority display path of the four input signals. By default, SDI signal is prioritized.



7.11 User Configuration

The user function can save 6 custom configurations, which can be quickly called up with the USER button.



7.12 Settings

7.12.1 System Settings

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

7.12.1.1 Language

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



7.12.1.2 Fan

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

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

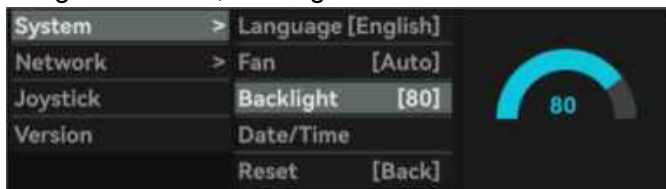
Off mode: Turn off the fan. Only when a certain temperature is reached, it will switch to automatic mode.

On mode: The fan is always on during operation.



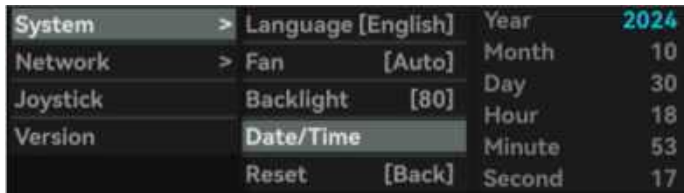
7.12.1.3 Backlight

Enter the system settings, select backlight, and use the knob to adjust the screen backlight from 1 to 100. The larger the value, the brighter the screen.



7.12.1.4 Time/Date

Enter the system settings, select Time/Date, and use the knob and five-way key to modify the year, month, day, hour, minute, and second.



7.12.1.5 Reset

Enter the system settings, select Reset, use the knob to select Confirm, click the knob, and the switch will perform the reset operation. After the reset, all configurations will be cleared and restored to the default state.



7.12.2 Network

7.12.2.1 Network Connection

In the network settings, you can choose to automatically obtain the network IP or configure it manually.



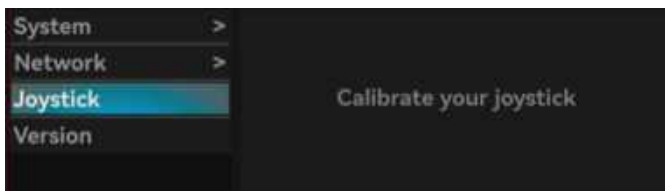
7.12.2.2 Remote Control

Enter the network settings, click Remote Control, use WeChat to scan the remote QR code, and then enter the mobile phone host page.



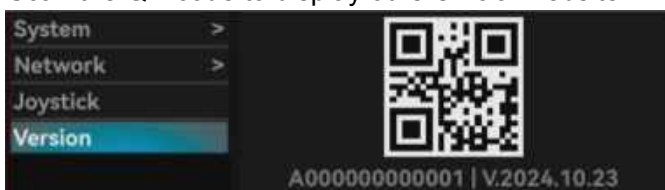
7.12.3 Joystick Calibration

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



7.12.4 Version

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



8. Remote Software Control

8.1 Connection Software

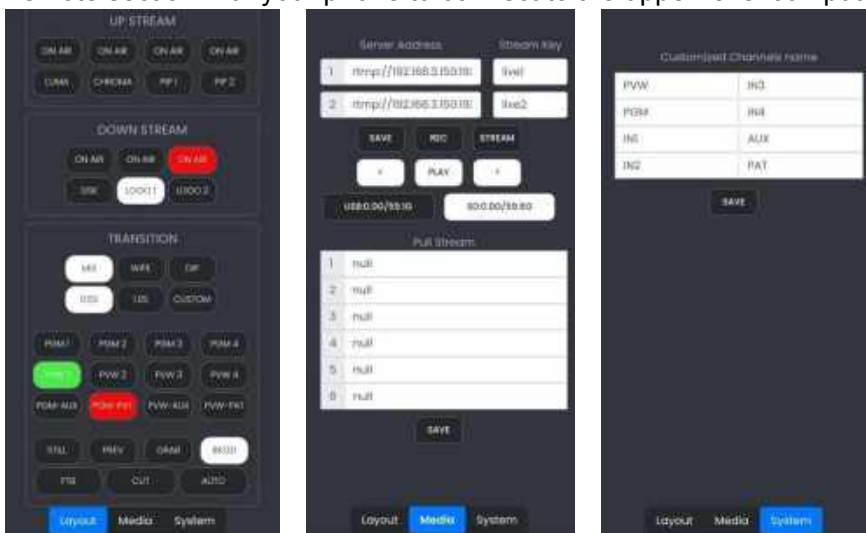
8.1.1 Remote Control With Computers

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



8.1.2 Remote Control With Cellphones

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



8.2 Switcher Front Panel Control

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



8.3 Multimedia Settings

8.3.1 Push Streaming Setting

8.3.1.1 Push Streaming Address Settings

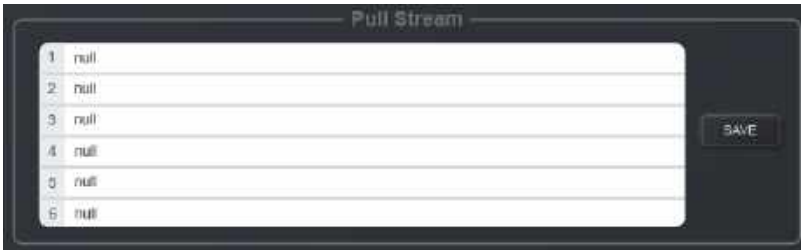
Custom Streaming Address: Enter the upper-level computer page and input the streaming server address and stream key in Streaming Address-1 and Streaming Address-2 (used for streaming to platforms like Bilibili and Huya). Click the stream button to start streaming.

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



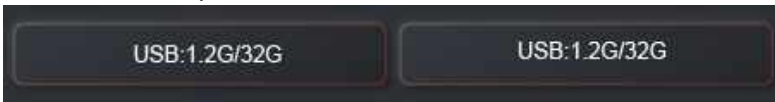
8.3.2 Pull Streaming Setting

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



8.3.3 Storage Path Setting

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





8.4 Systems Settings

Users can customize and modify the name of the channel



9. Warranty Service

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

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

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

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

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