CineTreak

STREAM MASTER/ MASTER SDI

Four-channel live Production Switcher



1. Product Introduction

1.1 Overview

STREAM MASTER/MASTER SDI features with 4 HDMI (+ 4 SDI) (HDMI IN1 and HDMI IN 2 support 4K60P, HDMI IN 3 and HDMI IN 4 support 1080p60, SDI IN1, 2, 3, 4 support 3G Level A YCbCr422 10 bit Input) and one USB 3.1 Input, one HDMI PGM+one HDMI AUX (+ 1 SDI PGM)+One USB 3.1 (Type-C) and one RJ45 network port Output video switcher.

The video switcher is designed based on an FPGA hardware platform and supports video effect switching, green screen keying, audio mixing and adjustment, a built-in media library, landscape and portrait modes, PIP (Picture-in-Picture) of any position and size, LOGO, and multi-layer overlay, among other broadcast-level features. At the same time, the powerful multimedia capabilities of the video switcher can support USB 3.1 streaming, live recording, as well as direct multi-channel network streaming and single-channel network pulling. It can also control multiple PTZ cameras using a five-way joystick and knobs.



1.2 Main Features

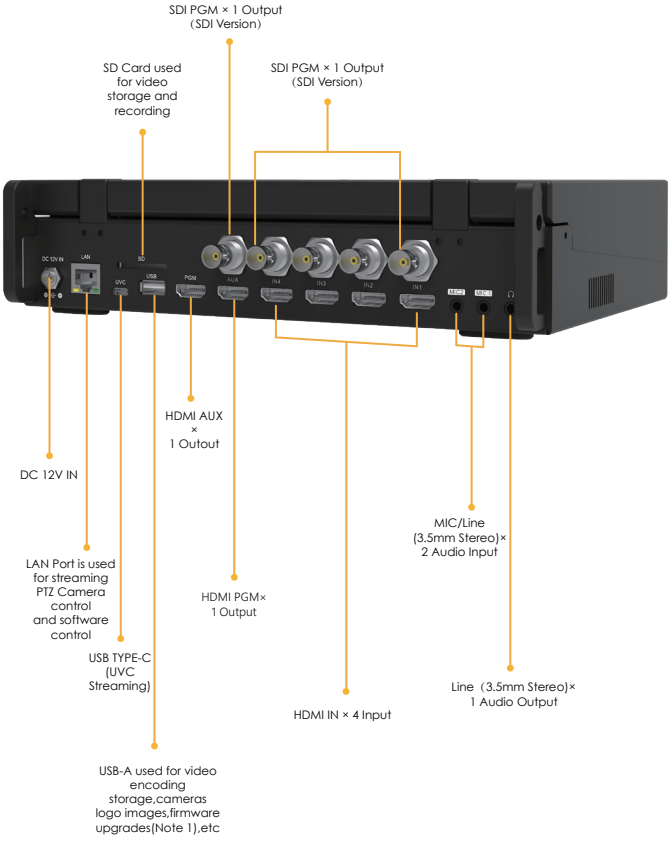
- 4-channel HDMI input, 4-channel SDI Input, HDMI PGM x1 and HDMI AUX x1 output, USB 3.1 x1 lossless output
- PGM can overlay up to 8 layers, providing powerful switching capabilities
- 2 (PIP) channels, support arbitrary cropping and resizing to meet various application needs
- 2 logo channels, supports alpha channel for more realistic and natural effects
- Supports T-Bar switching with over 30 transition effects
- 2 network streaming outputs, 1 network streaming input
- Built-in media and images, support user-defined preset patterns and external image imports
- Supports DSK (Downstream Keying) for subtitles and other functions
- Flexible switching between landscape and portrait modes for streaming
- Video recording and playback, with recorded videos available as auxiliary sources for program production
- Integrated PTZ camera control, allowing one person to manage everything
- Professional grade chroma keying to create realistic virtual studios
- Luma key to help users achieve video effects
- Built-in web server supports computers and smartphones

2. Interface

2.1 Introduction

whether to upgrade. Rotate the knob to select YES to proceed with the upgrade.

Note 1： Place the upgrade file (with the .img extension) in the root directory of the USB drive. Insert the USB drive into the USB port, and the device will automatically recognize the upgrade file, prompting whether to upgrade. Rotate the knob to select YES to proceed with the upgrade.



Specifications

	STREAM MASTE	MASTER SDI
Screen		
Size	10.1 Inch	10.1 Inch
Interface		
Video Input	HDMI 2.0*2+HDMI*2	SDI*4+HDMI*4
Video Output	HDMI PGM*1+ Aux*1USB3.1*1(Type-C)LAN*1	HDM1 PGM*1+AUX*1SDI*1, USB3.1 1(Type-C) LAN*1
Audio Input	Line(3.5mm stereo)*2	
Audio Output	Line(3.5mm stereo)*1	
Control Interface	LAN*1For Network Livestream, PTZ camera Control.oftware Control	
UvC Output	USB-C*1	
USB	For Video Recording Storage,Camera, Tally, LOGO,Firmware Upgrades, etc,	
SD Card	Video Recording Storage	
Functionality		
Transition	T-Bar/AUTO/CUT	
Effects	WIPE(Multiple Patterns)/MIX/DIP/Transition Prewiew/BKGD/STILL (Freeze)/MUTE/FTB	
Live Mode	Portrait Screen & Landscape	
Key	Upstream Key:Lumax1/ChromaKeyx1/PIPx2/POP Downstrean Key:DSKx1/LOGO*2	
Layers	PGM Supports Up To 8 Layers	
Audio	HDMI*4,Multimedia & 2 Microphone/Analog Audio Inputs	
PTZ	VISCA IP Protocol	
Media library	Preset A Variety Of Background Images, Logos, And Videos	
Stream	H.264/Support Recording And RTMPs Support RecordingStreaming Bit Rate Separation	
LOGO	Max 940*540 Pixel,Support Alpha Transparent Channel(PNG Image)	
IP Control	WB Server(Support Phone,PC,IPad)	
Video Format		
PGM Output	1080p 60/59.90/50/30/29.97/25/24/23.98 108050/1080i60	
Color Space	RGB/YUV	
UVC Output	USB3.1/Max YUV2 1080p60	
SDI Input	NO	HD-3G Level A YcbCr422 10bit
HDMI Input	2160p6059.94/503029.97/25/24/23.98 (HDM12.0]1080p 60159,94/50130129, 97/25124/23 98 1080150/1080160	2160p60/59.94/50/3029.97/25/24/ 3.98(HDM12.0)1080p 60159 99150/ 30129,97/25/24/23.98 1080150/1080160
More Info		
Voltage	7~24V	7~24V
Power Dissipation	<18.5W	<18.5W
Size(LDW)	250*206*63MM	250*206*63MM
Weight	2.1KG	2.1KG
Accessories	Adapter(12v 2A}x1USB3,0 Cable 1(A to C)	Adapter (12V 2A)x1USB3,0 cable*1(A to C)

Front Panel
4.1 Introduction



01	**Lock/Power**	Long press to lock the front panel buttons, the red light will flash when lock is active. Short press to power on, the red light will remain illuminated.
	AUDIO	CH 1-4, MIC1-2, AUX, PGM, HP of Audio mode control and volume adjustment, flashing white light when turned on
02	**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
	AFV	Four-way audio input follows the switch control, when turned on, the white light is on
03	**REC**	Recording on and off. When on, the red light will illuminate. Note: REC only supports H.264 mode.
	STREAM	Stream on and off. When active the green light will illuminate. Note: STREAM only s upports H.264 mode.
	Previous Key	Short press to switch to the previous video.
	Play Key	Play and pause the video.
	Next Key	Short press to switch to the next video.
04	**Positioning Light**	Indicator light for T-bar transition completion.

05	**T-Bar**	Manually switch between PVW and PGM using the T-Bar.
06	**USER1**	A short press brings up the USER menu, while a long press calls up the corresponding USER configuration.
	USER2	A short press brings up the USER menu, while a long press calls up the corresponding USER configuration.
07	**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
08	**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 LOGO1 on and off
09	**MIX/WIPE/DIP**	MIX / WIPE / DIP Transition effect switch control, when turned on, the white light will illuminate.
	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/off; when turned on, the white light flashes. POS: Save the camera's coordinate position. Position Saving: Enter camera mode, turn on the POS button, and click the numbers PGM1-4 to save the camera's coordinate position. Position Retrieval: Enter camera mode, click the numbers saved in PGM1-4, and the camera will move to the specified coordinate position. ZOOM-/ZOOM+: Zoom function of PTZ camera lens
12	**PVW:1-4/AUX /PAT**	PGM signal source, AUX, PAT indicators and direct switch control, when active, the button will illuminate red.
13	**PGM:1-4/AUX /PAT**	Selection and indication of PVW signal source, AUX, and PAT (the PVW layer needs to have the BKGD function enabled to be used). When enabled, the green light will illuminate.
	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
	BKGO	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. Function Operation

5.1 Transition Control

The transition control consists of buttons PVW1-4, PGM1-4, CUT, AUTO, AUX, PAT, and a fader.

PAT:
Used to control the source selection of the current layer for the preview screen (PVW) and the program screen (PGM).
AUX:
Used to control the source selection of the current layer for the preview screen (PVW) and the program screen (PGM).
PVW1~4:
Used to control the source selection of the current layer for the preview screen (PVW).
PGM1~4:
Used to switch the source of the corresponding layer for the program screen (PGM).
CUT:
Provides an instant switch between PVW and PGM.
AUTO:
Automatically switches effects between PVW and PGM based on the set transition time and transition effect settings.
Fader:
Manually switches effects between PVW and PGM based on the position of the fader.

5.2 User Configuration

All current settings can be saved to the user functions of the switcher based on needs and different application scenarios, allowing for quick access to custom function configurations by pressing the USER button.

5.3 Switch Function Button

Upstream Keys:
Upstream keys essentially mean that these are keys that are part of the switching process, so when switching from anything on PVW to PGM, anything that belongs to the upstream keys will be switched over as well.

LUMA Key:
Turn on/off the luminance keying of the PVW layer.

CHROMA Key:
Turn on/off the chroma keying of the PVW layer.

PIP1, **PIP2 Keys:**
Turn on/off picture-in-picture 1 and 2 of the PVW layer.

Upstream Keys:
Downstream keys are the final layer of keying, operating independently of the selected "background." No matter what you do with the switch, the overlaid downstream keys will remain on the screen. Downstream keys are great for displaying logos and similar graphics on the screen.

ON AIR DSK / LOGO1 / LOGO2:
Turn on/off the DSK keying for the PGM layer, LOGO1 / LOGO2.

DSK Key:
Turn on/off the DSK keying for the PVW layer.

LOGO1 Key:
Turn on/off LOGO1 for the PVW layer.
LOGO2 Key:
Turn on/off LOGO2 for the PVW layer.

Multimedia Function Keys:

REC Key:
Turn recording function on/off
STREAM Key:
Turn streaming function on/off
Rewind key:
Switch video files in the AUX layer
Play key:
Play/Pause video files in the AUX layer
Fast forward key:
Switch video files in the AUX layer
STILL Key:
Freeze the PVW and PGM screens
GRAB Key:
Take a screenshot of the PGM layer
PREV Key:
Demonstrate transition effects in the preview screen (PVW) layer
BKGD Key:
When off, the background of PVW remains consistent with PGM

5.4 Shortcut Function Keys
5.4.1 AUDIO

Five-way key:
for quick operation control of switching audio from different signal sources
Knob:
used to adjust the volume

5.4.2 TRANSITION:
System and custom transition effects and duration shortcut operation menu.
Button MIX:
Used for the switch control of mix transition effects, default is on, lights up white when enabled.
Button WIPE:
Used for the switch control of wipe transition effects.

5.5 PTZ Camera Control Operations

After connecting to the camera, you can control the PTZ camera using the CAM, POS buttons, the five-way joystick, knobs, and buttons PVW1~4, PGM1~4.

To activate the camera:

Press the CAM button briefly; the light will flash to indicate that you have entered camera control mode.

For motion control:

Press and hold the CAM button, then use the knob to select the camera you want to control on the camera selection interface. After that, you can use the PTZ joystick to control the camera's left-right panning and up-down movement.

To save the camera position:

After activating the camera, press the POS button. Once the POS light is on, press the PVW1~4 buttons to save the current position of the camera to positions 1~4.

To call up the camera position:

After activating the camera, press the PGM1~4 buttons to directly call up the stored camera positions 1~4.

The ZOOM-/ZOOM+ buttons are used for the zoom function of the PTZ camera lens.

5.6 Lock/Power Key

Press and hold the lock/power button for 2 seconds to lock all key operations, and the lock indicator will flash; a short press will 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 Key

AUX interface signal output switching: when enabled, the white light is on; AUX output allows for multi-screen monitoring; when disabled, you can monitor IN1, IN2, IN3, IN4, AUX, PAT, Cln PGM, PGM, Cln PVW, and PVW in single screen mode.

5.8 FTB Key

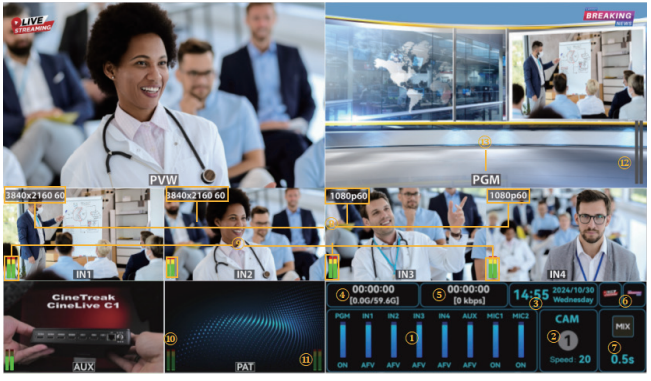
After pressing the FTB button, the PGM outputs a black screen and is muted, while the FTB light blinks; pressing it again will exit.

5.9 Key Light Status

Key Light	Off	On	Flashes
LOCK	Unlock		Lock
MV	Single screen monitor	Multi-View monitoring	
REC	off	on	Audio mode and volume control
STREAM	off	on	
Previous Key		AUX source control	
Play Key		AUX source control	
Next Key		AUX source control	
USER		Volume down	
ON AIR		Added to the PGM scree	
CHROMA	Off	On	
PIP1-2	Off	On	
DSK	Off	On	
LOGO1-2	Off	On	
MIX		MIX transition effect enabled	
WIPE		WIPE transition effect enabled	
DIP		DIP transition effect enabled	
Positioning Light		Shows the putter position	
CAM	Off		Activate Camera Control
POS		Waiting for camera position to be set	
PGM1~4	off	On	
PVW1~4	off	On	
AUX	off	On	
PAT	off	On	
PREV		Demonstrate transition effects in the PVW screen	
BKGD		PVW and PGM display their respective background images	
BKGD	PVW and PGM display their respective background images		

CUT	Switching signal		
AUTO	End of transition	Performing an automatic transition	
FTB			PGM black and mute
MENU	Off		Activate camera control

6、Status Display



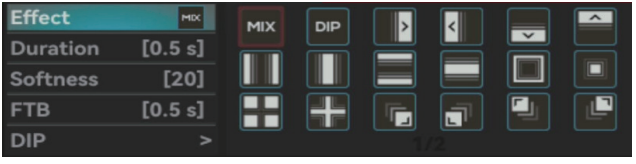
❶	Audio adjustment	❼	Transition effects	⓭	UMD Displa
❷	Current PTZ camera	❽	Input signal display		
❸	Date and time	❾	Input signals sound histogram display		
❹	Recording status	❿	MIC 1 sound histogram		
❺	Streaming status	⓫	MIC 2 sound histogram		
❻	LOGO1, 2	⓬	PGM sound histogram		

7、Menu
7.1 TRANSITION

A variety of professional transition effects such as WIPE, MIX and DIP are built into the video switcher, which can be switched by using the AUTO key or T-BAR manual push rod.

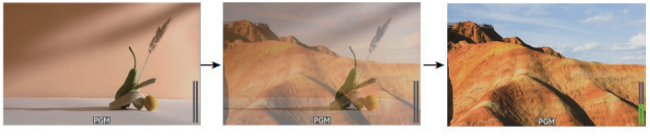
7.1.1 Transition Effect Settings

Enter the transition settings and select the transition effect, including MIX, DIP, WIPE and More than 30 other types of transition effects, 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. In conjunction with the immersion settings, select the immersion source. The default immersion source is color, which defaults to black.

DIP to Black（fade out）:

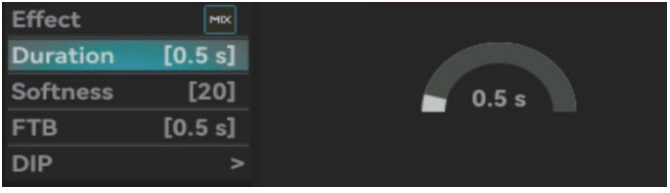


7.1.1.3 WIPE

WIPE is a transition effect that changes from one image to another. Users can select different WIPE styles through the menu and adjust the softness settings for the transition.

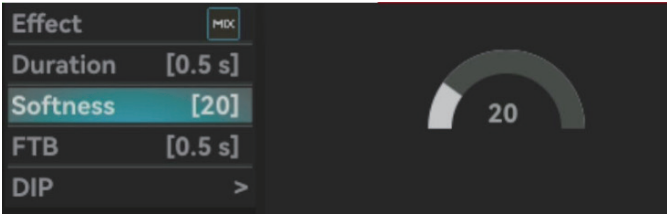
7.1.2 Duration Setting

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



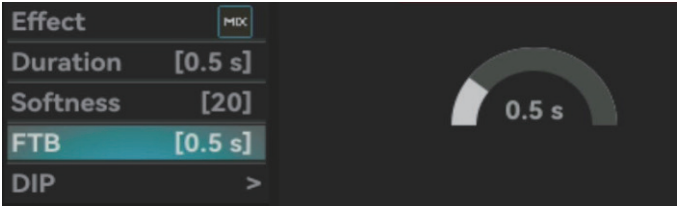
7.1.3 Softness Setting

Enter the transition settings and select Softness. Use the knob to set the softness setting. the lower the Softness, the clearer the border during the transition, can be set to 0-100, the default 20.



7.1.4 Fade-to-Black Setup

Enter the transition settings and select FTB. You can adjust the duration of the fade-to-black using the knob. The longer the duration, the slower the fade speed. You can set the duration from 0.1s - 2.0s, the default is 0.5s.



7.1.5 DIP Source Setting

Go to Transition Settings and select DIP Settings, and then select DIP source. You can customize the settings to color, IN1, IN2, IN3, IN4, AUX, PAT. The default DIP source is color, and the default color is black.



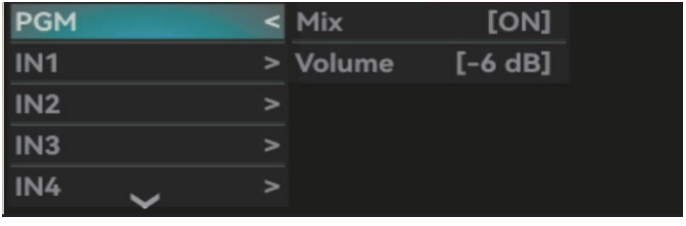
7.2 Audio

Supports 4 HDMI digital audio sources, and 2 independent 3.5mm microphone inputs. Each audio source can be independently configured including volume, switch, mix, delay. HDMI audio support audio follow mode (AFV).

7.2.1 PGM Audio Setting

PGM audio control: this switcher supports the overlay of 6 audio channels, including 4 channels of embedded HDMI audio and 2 channels of MIC/Line audio input.

Enter the audio settings, select PGM, and users can mute PGM or adjust the audio volume, which ranges from -60dB to 0dB. The default state for PGM audio is enabled, with a volume level of -6dB.

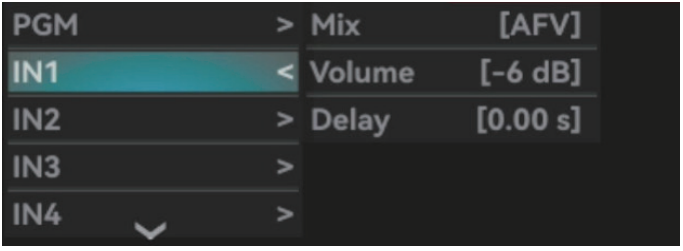


7.2.2 HDMI Input Audio Settings

Enter the audio Settings, select Input 1 - 4, and set the embedded audio source for the four inputs.

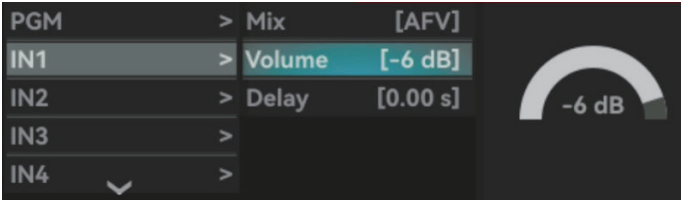
7.2.2.1 Mix Mode Settings

The user can turn the mixing mode on/off independently, or set it to AFV Audio Follow mode, which is the default.
When the audio mode of a channel is set to AFV, the channel audio takes effect only when the video is in PGM mode.



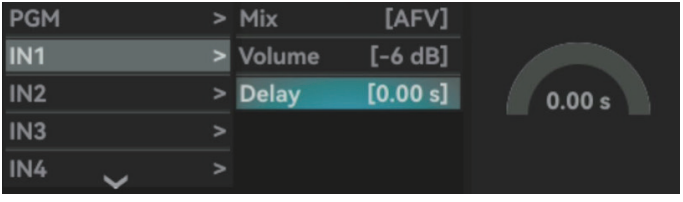
7.2.2.2 Volume Control

The user can adjust the volume of each HDMI audio source, the volume range is -60dB - 0dB, the default is -6dB.



7.2.2.3 Audio Delay

The user can set the audio delay for input 1 - 4 in the menu to synchronize audio and video. The maximum audio delay is 1s. The default value is 0.00s.

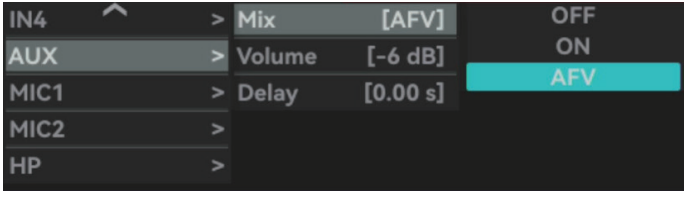


7.2.3 AUX Output Audio Settings

Enter the audio settings, select AUX, and configure the audio output for Multimedia AUX.

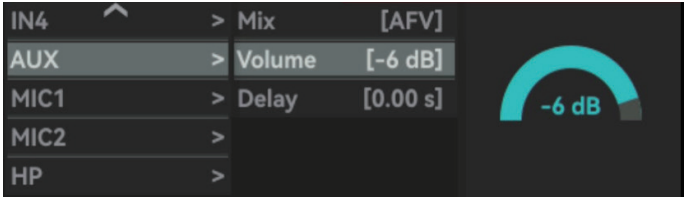
7.2.3.1 Mixing Mode Settings

Users can independently enable/disable the mixing mode or set it to AFV (Audio Follows Video) mode, with AFV being the default setting. When the audio mode for AUX is set to AFV, it only takes effect when the AUX video is in PGM



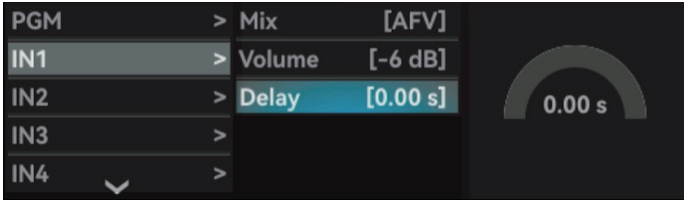
7.2.3.2 Volume Control

Users can adjust the output audio volume for AUX, with a volume range from -60dB to 0dB, and the default setting is -6dB



7.2.3.3 Audio Delay

Users can set audio delay for Multimedia AUX output audio in the menu to synchronize audio with video. The maximum audio delay is 1 second, with the default setting at 0 seconds.

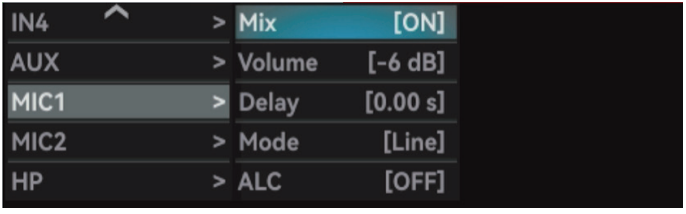


7.2.4 Microphone Settings

Enter the audio settings, select Mic1 and Mic 2 to configure the two microphone inputs. Users can connect them to line devices or to desktop and lavalier microphones. Users can enable / disable the microphones, adjust audio volume and audio delay, and apply automatic gain control to the microphone input audio.

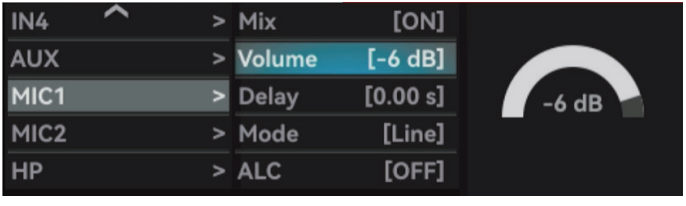
7.2.4.1 Mixing Mode Settings

Users can independently enable / disable the mixing mode for the microphones, with the default setting being enabled.



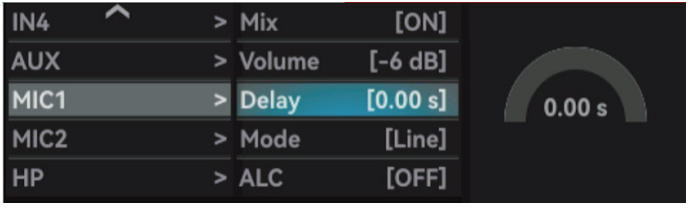
7.2.4.2 Volume Control

The user can adjust the volume of the microphone audio for each channel. The volume range is -60dB-0dB. The default value is -6dB.



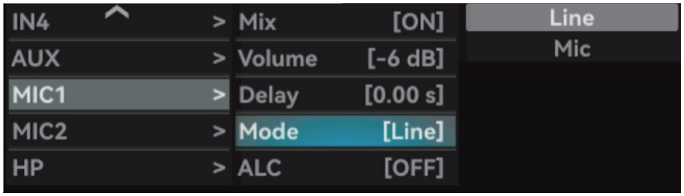
7.2.4.3 Audio Delay

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



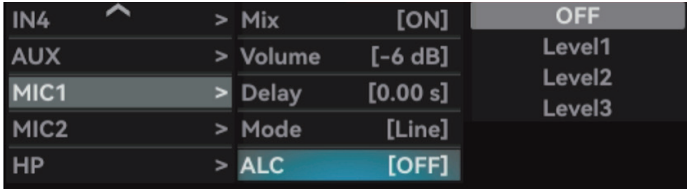
7.2.4.4 Audio Mode Setting

TIf connected to a microphone, the audio mode should be set to Mic. If connected to a line level device, then the audio mode should be set to line mode, the default is Line mode.



7.2.4.5 ALC Setting

ALC (Automatic Level Control) settings adjust the gain automatically based on background noise. Users can customize settings for three levels: LEVEL 1, LEVEL 2, and LEVEL 3. The default setting is off



7.2.5 Headphone Settings

The switcher has a headphone output for audio monitoring. Users can select an audio source for monitoring output from the main audio (PGM), 4 embedded HDMI audio channels, 2 MIC audio channels, or AUX output audio. Users can adjust the headphone monitoring volume, which ranges from -60dB to 0dB. The default headphone source is PGM, with a default volume of 0dB.



7.3 Image

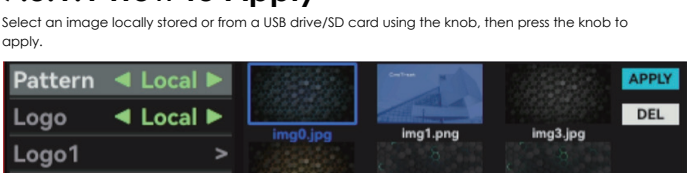
Enter the image settings to customize the background image and logo settings. Users can store images on a USB drive or SD card for use.

7.3.1 Pattern

Enter the Pattern settings and you can select an image. By default, it will show images stored internally in the switcher. After inserting a USB drive or SD card (both can be connected simultaneously) You can use the joystick to switch between the images stored locally, SD Card, or USB.

7.3.1.1 How to Apply

Select an image locally stored or from a USB drive/SD card using the knob, then press the knob to apply.



7.3.1.2 Image Deletion

Select an image stored locally or from a USB drive/SD card using the knob, then press the knob to delete it.



7.3.1.3 How to Import an Image

ou are able to import images from a USB drive or SD card. When inserting a USB drive / SD card, a Used Memory / Total Memory icon appears at the bottom of the Status / Menu page. (Please make sure that the image is stored in a folder named “images” on the USB drive / SD card.) Switch to the image menu of the USB drive / SD card through the joystick and click Import to add it to the switcher's local storage. Note: Supports images up to 3840x1080 resolution.

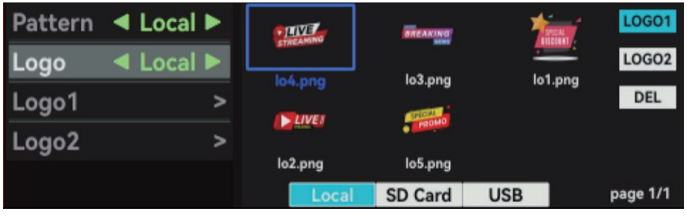


7.3.2 Logo

Select Logo to display the default images stored internally in the switcher. After inserting a USB drive or SD card, use the joystick to switch between the internal images and those from the external sources.

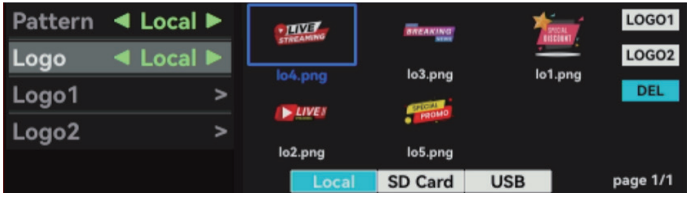
7.3.2.1 How to Apply

Select an image from the local storage or USB drive / SD card using the knob, then press the knob to set the image for LOGO 1 or LOGO 2.



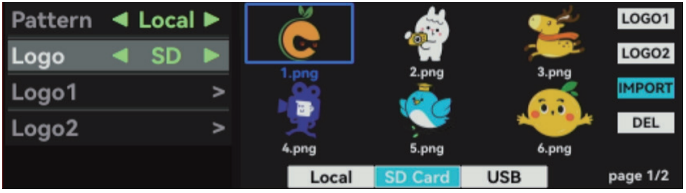
7.3.2.2 Logo Deletion

Select an image from the system or USB drive/SD card using the knob, then press the knob to delete it.



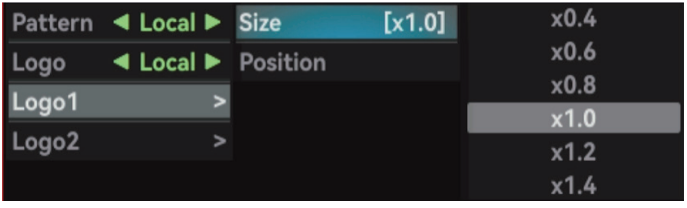
7.3.2.3 How to Import a Logo

You can import a logo from a USB drive or SD card. When the USB drive or SD card is inserted, an icon indicating used memory / total memory will appear at the bottom of the status / menu page. (Please ensure that the logo images are stored in a folder named "Logos" on the USB drive or SD card first.) Use the joystick to navigate to the USB drive / SD card Logos menu and click 'Import' to load them into the switcher. Logo images can be resolutions up to 960x540. Supported formats including .png, .jpeg, .jpg, and .bmp.



7.3.2.4 Logo Size

Enter the Image settings, select Logo 1 or Logo 2 size, and use the knob to switch between sizes. The size options are ×0.4, ×0.6, ×0.8, ×1.0, ×1.2, and ×1.4, with the default set to ×1.0.



7.3.2.5 Logo Position

Enter the image settings, select the position for Logo 1 or Logo 2, and use the joystick to adjust the logo's position.



7.4 Media

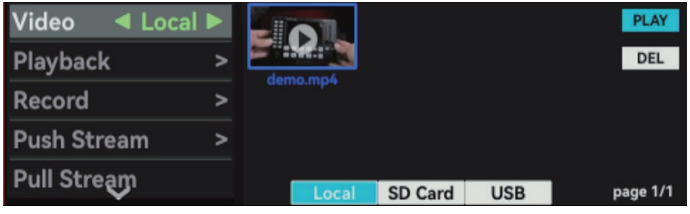
Video recording and playback: recorded videos can serve as auxiliary sources for program production. It uses H.264 encoding and supports both recording and multi-network streaming, allowing for separate recording and streaming bitrates

7.4.1 Video

Enter the media settings and select video. This will display the default videos stored internally in the switcher. After inserting a USB drive or SD card, the icons will turn white, and you can use the joystick to switch between the internal videos and those from external sources.

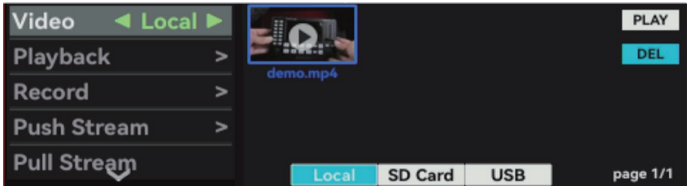
7.4.1.1 Playback

Select a video from the local storage or USB drive / SD card using the knob, then press the knob to click 'Play.' The video will play through the AUX output.



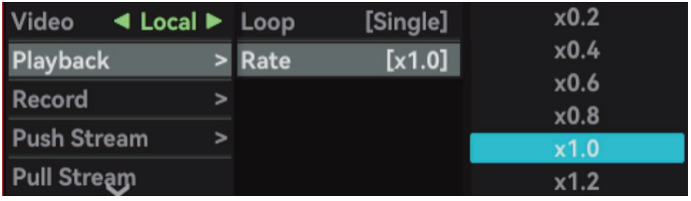
7.4.1.2 Video Deletion

Select the video on the system or USB /SD card through the knob, press the knob, and click Delete. Note: The playing video cannot be deleted.



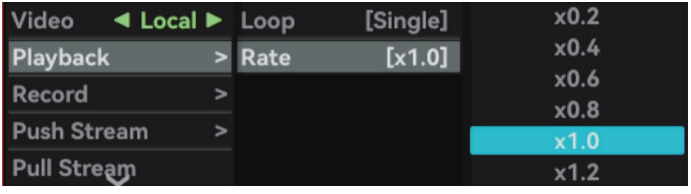
7.4.1.3 Playback Mode

Go to Media Settings and select Playback.
Loop mode can be set to single or list; The Rate mode can be set ×0.2, ×0.4, ×0.6, ×0.8, ×1.0, ×1.2.
Default x 1.0 times speed.



7.4.1.3 Playback Mode

Go to Media Settings and select Playback.
Loop mode can be set to single or list; The Rate mode can be set ×0.2, ×0.4, ×0.6, ×0.8, ×1.0, ×1.2.
Default x 1.0 times speed.



7.4.2 Recording

The Stream 1 records the PGM picture and sound to the "video_rec" folder on the USB drive /SD card.

Supported storage formats:
FAT32, NTFS, exFAT (FAT32 can only record up to 4GB video files).

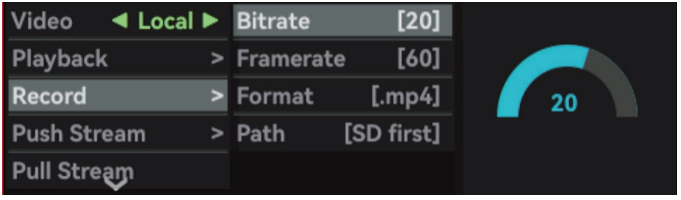
Note:
When there is not sufficient space on the storage device, the system will automatically stop recording.

When using a FAT32 formatted USB drive / SD card the system will stop recording once the file reaches 4GB in size..

If the recording is stopped abruptly (for example, the unit is powered off or external storage unplugged the recorded file will corrupted and unusable..

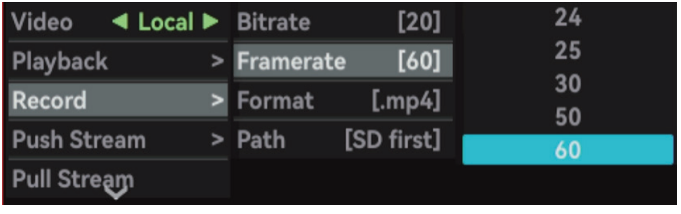
7.4.2.1 Bit Rate

Users can modify the recording bit rate. Go to Media Settings, select Record, click on the bit rate, the bit rate range is 5-30. The default bit rate is 20.



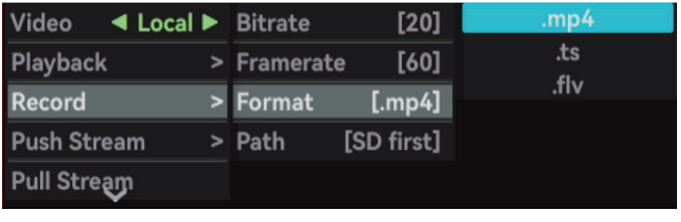
7.4.2.2 Frame Rate

Users can modify the recording frame rate. Go to Media Settings, select Record, click Frame rate, the frame rate range is 24, 25, 30, 50, 60. The default frame rate is 60.



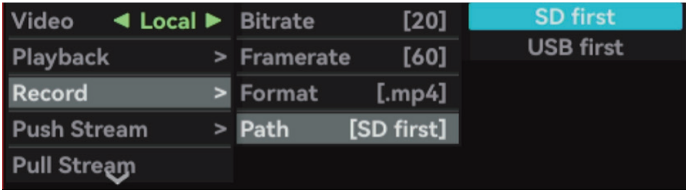
7.4.2.3 Format

Users can modify the recording format. Enter the media settings, select recording, click format, and change it to".mp4", ".ts", ".flv". The default format is".mp4".



7.4.2.4 Storage Path

Users can customize the storage path of recorded videos. Go to the media Settings, select Record then click path. You can change the storage priority. The SD card will be prioritized first by default.

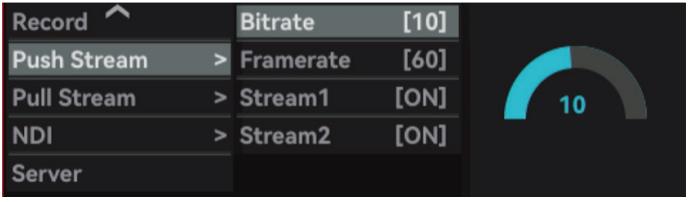


7.4.3 Streaming

Select Stream. Two push addresses can be stored in a network push stream. Click the STREAM button to start pushing the stream. If the push address is available, the STREAM button lights green and starts pushing.

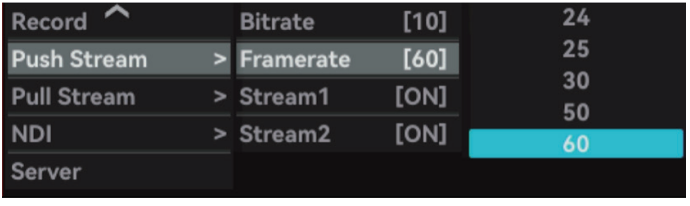
7.4.3.1 Bit Rate

Users can modify the push bitrate. Go to Media Settings and select Push Stream. Click bitrate to change. The range is 1-20 and the default bit rate is 10.



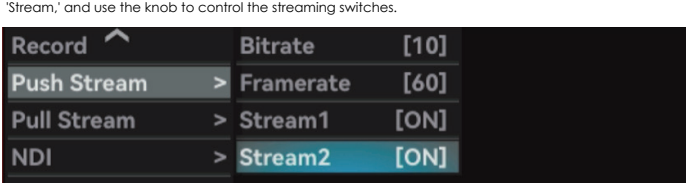
7.4.3.2 Frame Rate

Users can modify the push framerate. Go to Media Settings and select Push Stream. Click Frame rate to change the frame rate. The options are 24, 25, 30, 50, 60. The default frame rate is 60.



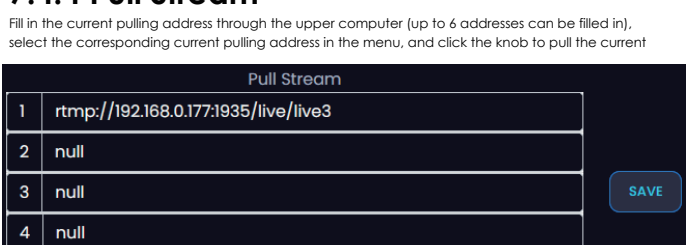
7.4.3.3 Stream Switch Control

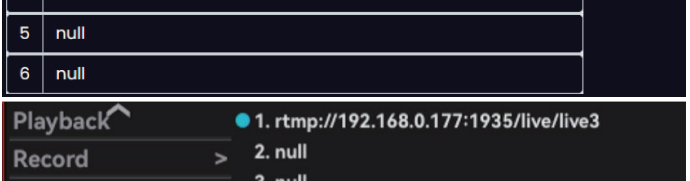
Users can control the two streaming switches. Enter the media settings, select streaming, click on 'Stream,' and use the knob to control the streaming switches.



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

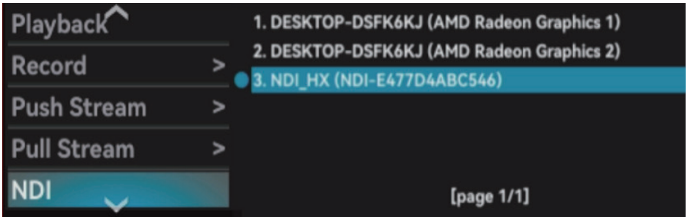




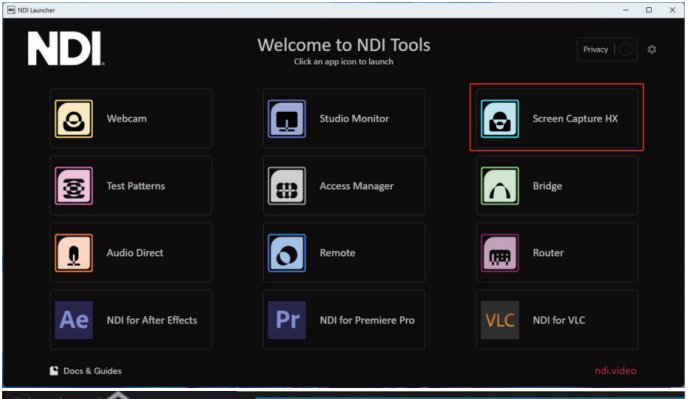
7.4.5 NDI

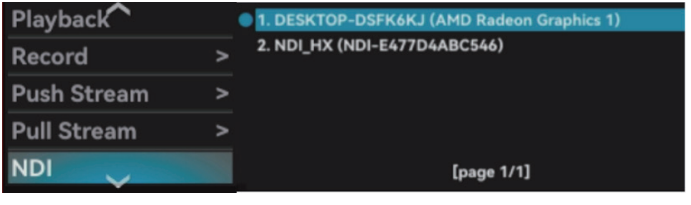
iple devices without the need for dedicated networking equipment. It allows video signals to be transmitted over the network to multiple devices, facilitating video editing, playback, control, and other functions.

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.



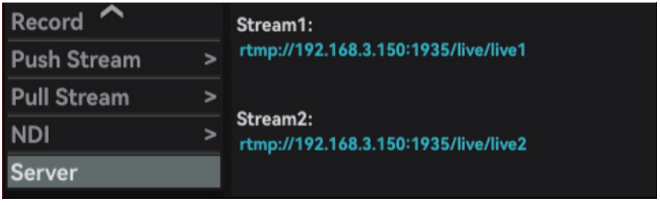
The computer and the switcher remain on the same LAN. Open the network settings for the switcher, open the NDI software, click Screen Capture HX to open the NDI function of the switcher, and connect the computer through the network. The PC desktop will be displayed in the AUX window.





7.4.6 Streaming Server

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



7.5 PIP

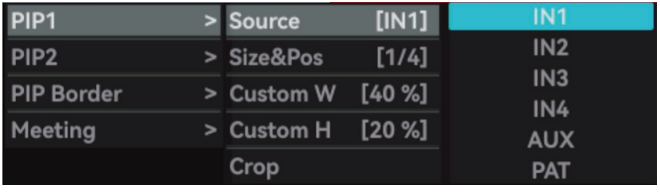
Two Picture-in-Picture (PIP) feeds support arbitrary cropping and resizing to meet various application needs. The multi-screen feature for meetings helps users quickly start remote meetings. When both PIP feeds are enabled, the PIP1 and PIP2 buttons will light up white.

7.5.1 PIP1 Setting

You can press the PIP1 button to open the PIP 1 functions menu and then enter the PIP 1 setting to adjust the screen size and crop.

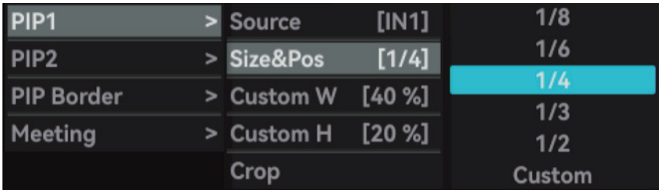
7.5.1.1 Source

The user can choose the source for PIP 1. Enter the PIP Settings, select PIP 1, click Source, and then select IN1, IN2, IN3, IN4, AUX, PAT. The default is IN1.



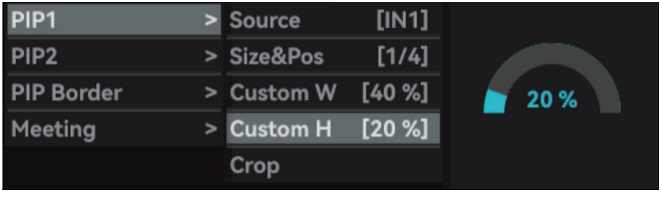
7.5.1.2 Size & Position

The user can adjust the size and position of PIP 1. Position can be adjusted by the rocker, the size can be selected 1/8, 1/6, 1/4, 1/3, 1/2, custom. The default size is 1/4.



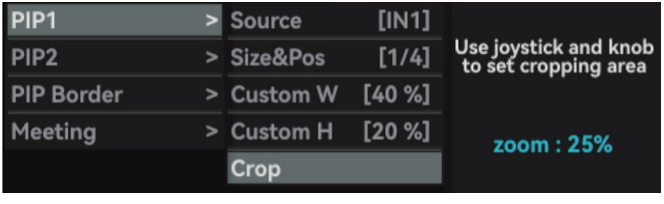
7.5.1.3 Custom Width & Height

Users can customize the size and position of PIP 1. The position can be adjusted using the joystick, and the size and position can be set to custom. The width and height of PIP 1 can be adjusted using the knob, with a range from 10% to 100%. The default width for PIP 1 is 40%, and the default height is 20%.



7.5.1.4 Crop

Users can use the cropping feature to select which part of the image to display in PIP. Enter the PIP settings, select PIP 1, and click on 'Crop.' Use the PTZ joystick to choose the part of the image to display and rotate the knob to set the zoom level. The default area size is 25%.

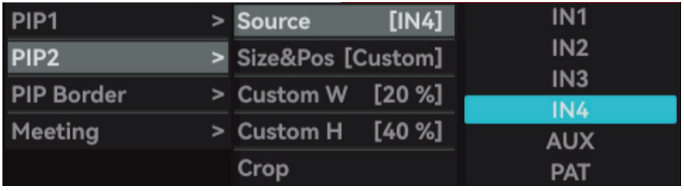


7.5.2 PIP2 Setting

Users need to use the PIP2 button to open the PIP functions menu, and then enter the PIP 2 setting to adjust the screen size and crop.

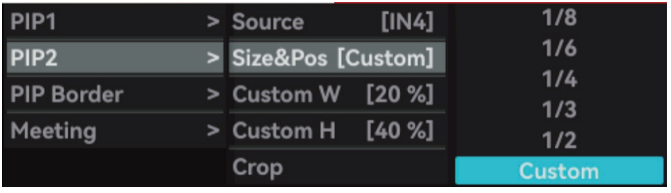
7.5.2.1 Source

The user can select the source of PIP 2. Enter the PIP Settings, select PIP 2, click Source, and then select IN1, IN2, IN3, IN4, AUX, PAT. The default is IN1.



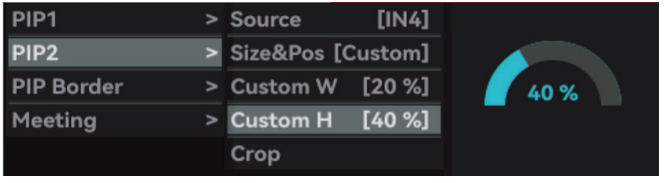
7.5.2.2 Size & Position

The user can adjust the size and position of PIP 2. Position can be adjusted by the rocker, the size can be selected 1/8, 1/6, 1/4, 1/3, 1/2, custom. The default size is 1/4.



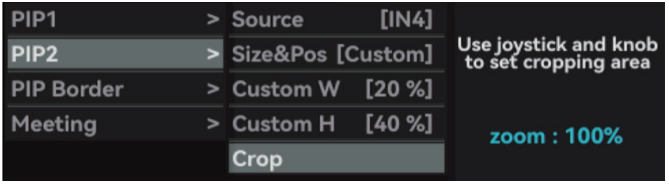
7.5.2.3 Custom Width & Height

Users can customize the size and position of PIP 2. The position can be adjusted using the joystick, and the size and position can be set to custom. The width and height of PIP 2 can be adjusted using the knob, with a range from 10% to 100%. The default width for PIP 2 is 40%, and the default height is 20%.



7.5.2.4 Crop

TUsers can use the cropping feature to select which part of the image to display in PIP. Enter the PIP settings, select PIP 2, and click on 'Crop.' Use the PTZ joystick to choose the part of the image to display, and rotate the knob to set the zoom level. The default area size is 25%.

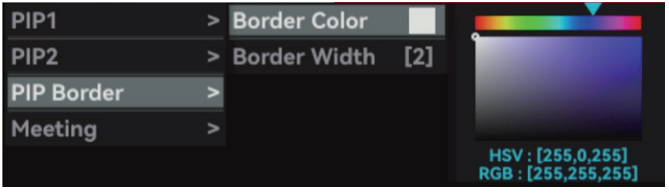


7.5.3 Border Settings

The border Settings apply to both PIP1 and PIP 2.

7.5.3.1 Border Color Setting

The user can customize and adjust the border color in the palette. Go to Picture in picture Settings, select PIP border, click border color, and modify the red, green and blue color space and hue, saturation and brightness parameters using the knob and five-way key.



7.5.3.2 Border Width Setting

Users can customize and adjust the width of the border drawn in the picture. Go to Picture in Picture Settings, select PIP border and click border width. The width range is 0 - 16. The default width is 2.

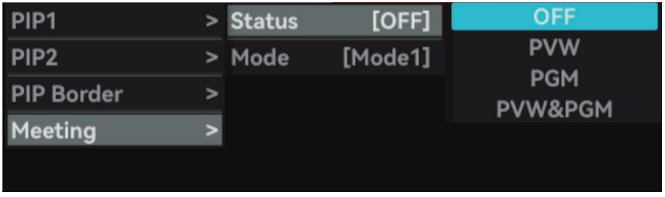


7.5.4 Meeting Mode

The Meeting Mode can display the signals of the four input channels in the preview screen or the playback screen, or it can be displayed in two screens at the same time.

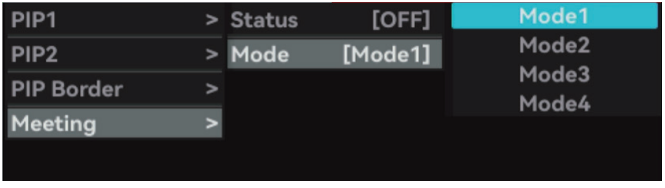
7.5.4.1 Status

Users can customize the screen to display in PVW, PGM or at the same time. Go to PIP Settings, select Meeting and click Status. The status can be selected to "Off", "PVW", "PGM" and "PVW & PGM". The status is off by default.



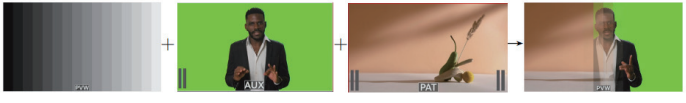
7.5.4.2 Mode

Users can select different meeting modes. The default is mode 1.



7.6 Luma

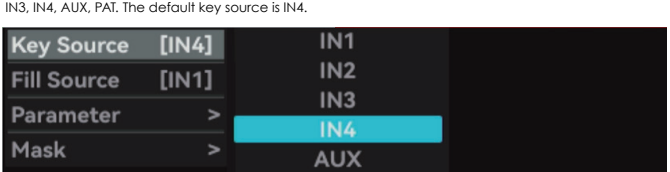
Luma key provides a method for compositing text over background clips based on the luma levels in the video.
Enter the luma key settings, select the key source, and set the luma key effect. The luma key can be activated in both PVW and PGM modes. When the luma key function is enabled in PVW, the LUMA key will light up in white. In PGM, enabling the luma key function will cause the LUMA ON AIR key to light up in red.



Key Sources **Fill Sources** **Background** **Resultant Output**

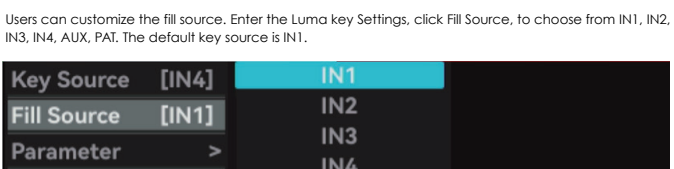
7.6.1 Key Source

Users can customize the key source. Enter the Luma key Settings, click Key Source, to choose from IN1, IN2, IN3, IN4, AUX, PAT. The default key source is IN4.



7.6.2 Fill Source

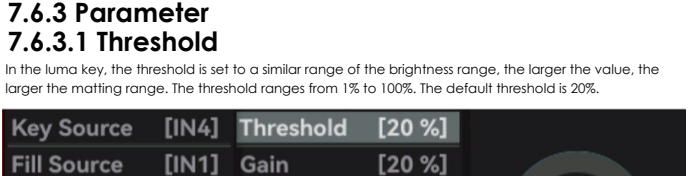
Users can customize the fill source. Enter the Luma key Settings, click Fill Source, to choose from IN1, IN2, IN3, IN4, AUX, PAT. The default key source is IN1.



7.6.3 Parameter

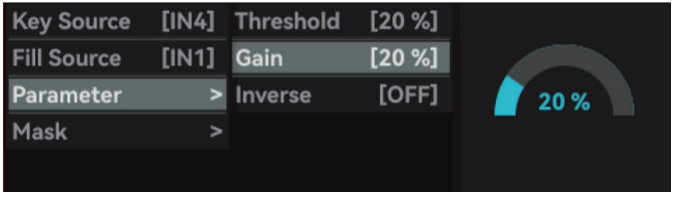
7.6.3.1 Threshold

In the luma key, the threshold is set to a similar range of the brightness range, the larger the value, the larger the matting range. The threshold ranges from 1% to 100%. The default threshold is 20%.



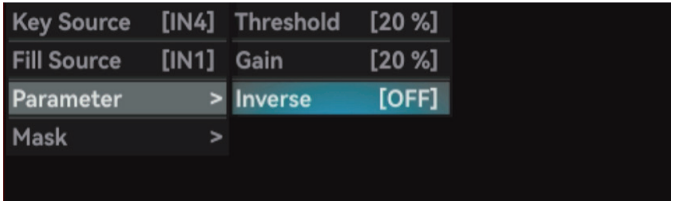
7.6.3.2 Gain

In the luma key, gain sets a smoothness of the edge when matting, the higher the value, the smoother the edge. The gain ranges from 1% to 100%, with a default gain value of 20%.



7.6.3.3 Inverse

In the luma key, Inverse is turned on and the range greater than the threshold is picked out. It is disabled by default.



7.6.4 Mask

The mask function adjusts the part of the screen displayed by masking layers.

7.6.4.1 Mask Enable

Enter the luma key Settings, click Mask to select from Mask Enable on or off. It is disabled by default.



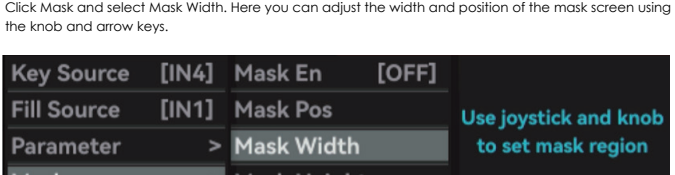
7.6.4.2 Mask Position

Enter the luma key Settings, click Mask, and select Mask Position. Use the knob to zoom in and out of the mask screen, use the five-way key to move the mask screen position.



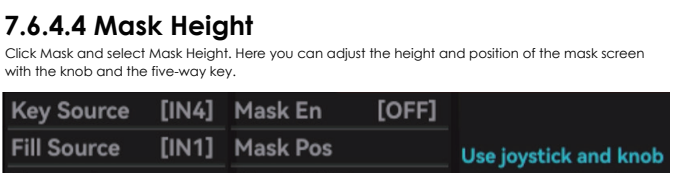
7.6.4.3 Mask Width

Click Mask and select Mask Width. Here you can adjust the width and position of the mask screen using the knob and arrow keys.



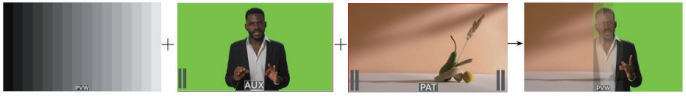
7.6.4.4 Mask Height

Click Mask and select Mask Height. Here you can adjust the height and position of the mask screen with the knob and the five-way key.



7.7 Chroma Key

Chroma key is a visual effects and post-production technique used to layer two images or video streams together based on hue (range of chroma). The technology is used to remove backgrounds from a photo or video subject, especially in the news broadcast, film, gaming, and live streaming. Enter Chroma Key and select the key source, then set the chroma key effect. CHROMA key can be used in PVW and PGM. When using the Chroma key function in PVW, the CHROMA key illuminates white. When the CHROMA key function is turned ON in PGM, the CHROMA ON AIR key illuminates red.



Key Sources | Fill Sources | Background | Resultant Output

7.7.1 Key Source

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

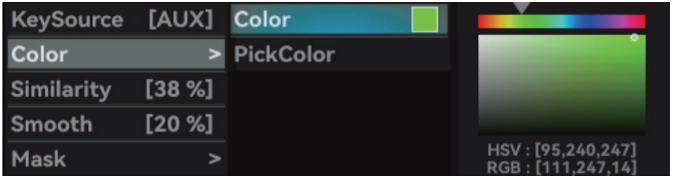


7.7.2 Keying Color

Users can customize the matting color of the chroma key by using the knob and arrow keys.

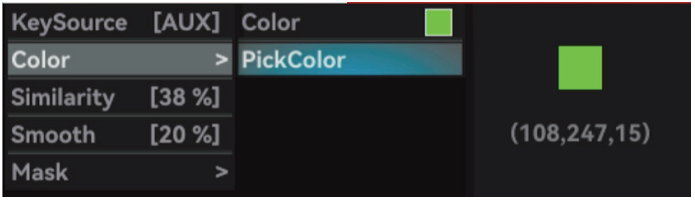
7.7.2.1 Color

The user can customize the colors to be removed in the palette. Go to Chroma Key Settings, select Color, click Color, and choose a color from the color picker with the knob and five-way key.



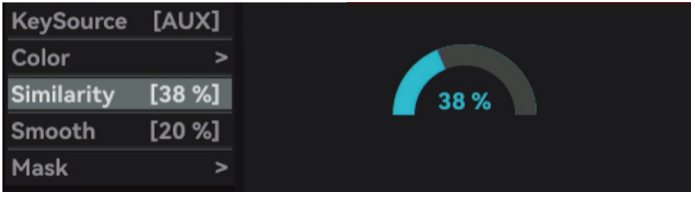
7.7.2.2 Pick Color

Users can customize the colors they want to be removed from the key source. Enter the chroma key Settings, select Pick Color, click color, through the five-way key to remove the color in the key source.



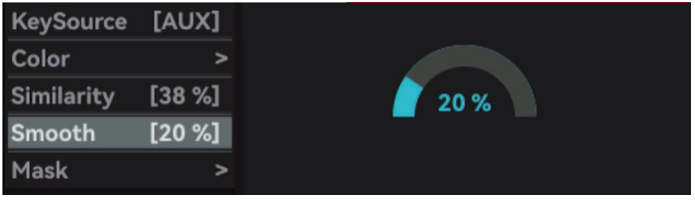
7.7.3 Similarity

In Chroma Key, similarity sets the range of similarity to the color that will be removed, and the larger the number, the larger the range of the matting. The similarity ranges from 1% to 100%, with a default



7.7.4 Smoothness

In Chroma Key, Smooth sets the smoothness of the edges when applying a key. The larger the number, the smoother the border. Smoothness ranges from 1% to 100%, with a default smoothness of 20%.



7.7.5 Mask

The mask function adjusts the displayed portion of the image using a mask layer.

7.7.5.1 Mask Enable

Enter the chroma key settings, click on 'Mask,' and select the 'Mask En' to enable or disable the mask function. The default setting is off.



7.7.5.2 Mask Position

Enter the chroma key settings, click on 'Mask,' and select 'Mask Pos'. Use the knob to proportionally zoom in or out on the mask image and use the directional keys to move the mask image's position.



7.7.5.3 Mask Width

Enter the chroma key settings, click on 'Mask,' and select Mask Width. Use the knob and directional keys to adjust the width and position of the mask image.



7.7.5.4 Mask Height

Enter the chroma key settings, click on 'Mask,' and select Mask Height. Use the knob and directional keys to adjust the height and position of the mask image.



7.8 DSK Key

This switcher supports DSK (Downstream Keying) keying, allowing users to easily add professional subtitles or graphics during broadcasts, meeting television broadcasting standards and enhancing the quality of the program and the viewer's experience.



Key Sources **Background** **Output**

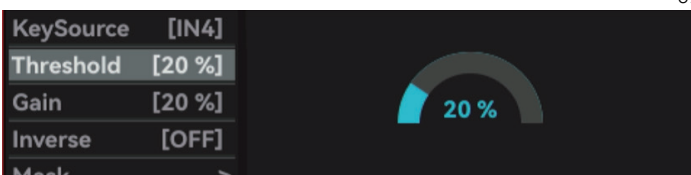
7.8.1 Key Source

EUsers can customize the key source. Enter the DSK key settings, click on 'Key Source,' and select from IN1, IN2, IN3, IN4, AUX, or PAT. The default key source is IN4.



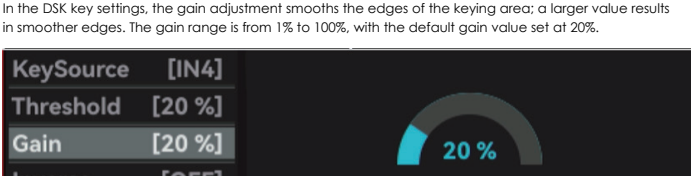
7.8.2 Threshold

In the DSK key settings, the threshold adjustment is similar to the brightness range; a larger value increases the keying range. The threshold range is from 1% to 100%, with the default threshold set at 20%.



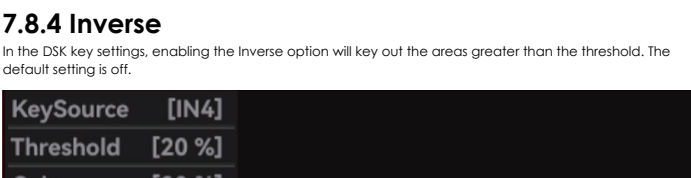
7.8.3 Gain

In the DSK key settings, the gain adjustment smooths the edges of the keying area; a larger value results in smoother edges. The gain range is from 1% to 100%, with the default gain value set at 20%.



7.8.4 Inverse

In the DSK key settings, enabling the Inverse option will key out the areas greater than the threshold. The default setting is off.



7.8.5 Mask

IThe mask function adjusts the displayed portion of the image using a mask layer.

7.8.5.1 Mask Enable

Enter the DSK key Settings, click Mask and select Mask En. This turns on and off the mask function. It is disabled by default.



7.8.5.2 Mask Position

Enter the DSK key Settings, click Mask and select Mask Position. Use the knob to zoom in and out of the mask screen, and use the arrow keys to move the mask screen position.



7.8.5.3 Mask Width

Enter the DSK key Settings, click Mask and select Mask Width. Use the knob and arrow keys to adjust the width and position of the mask screen.



7.8.5.4 Mask Height

Enter the DSK key Settings, click Mask and select Mask Height. Adjust the height and position of the mask screen with the knob and the five-way key.

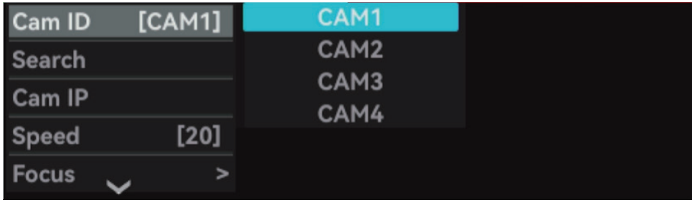


7.9 PTZ Control

The switcher supports the VISCA camera control protocol, allowing users to easily control camera movements using the directional keys and knob. Additionally, camera parameters such as focus, exposure, and white balance can be adjusted in the camera menu.
It also supports camera position storage, enabling quick recall of saved positions (see Chapter 5.5

7.9.1 Camera Selection

Go to PTZ Settings, click Cam ID and select the camera position you want to set through the knob.Camera Control Operation').

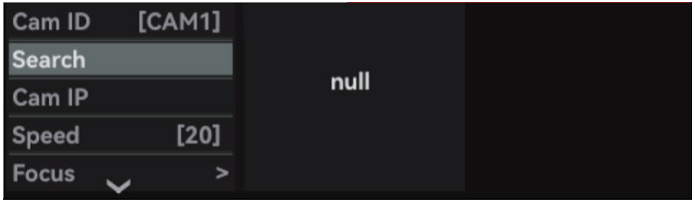


7.9.2 Camera Connection

The PTZ camera is connected to the switcher through HDMI cables and network cables. The camera must be on the same LAN as the switcher.

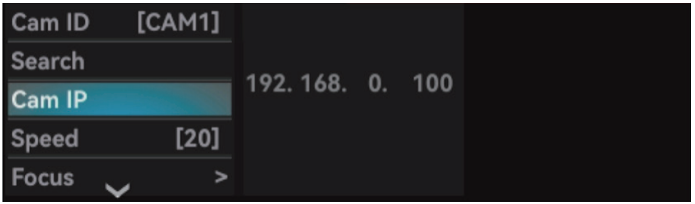
7.9.2.1 Search

Enter the PTZ Settings and select Search. This will display all the found camera IPs in the same local area network, use the knob to select the camera IP.



7.9.2.2 Manual IP

Enter the PTZ settings and select Cam IP. You can manually configure the IP address for the camera.



7.9.3 Camera Settings

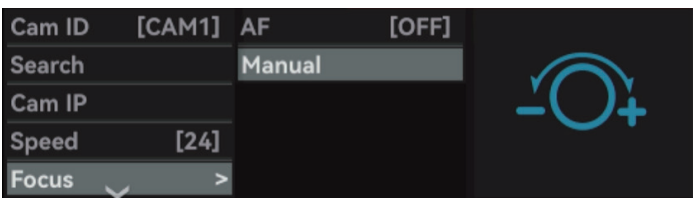
7.9.3.1 Speed

Go to the Camera Settings and select Speed. You can adjust the camera lens movement speed, the speed range is 1-24. The default speed is 20.



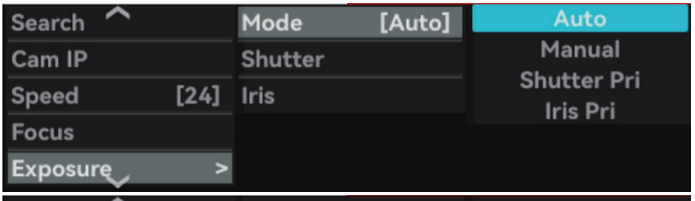
7.9.3.2 Focus

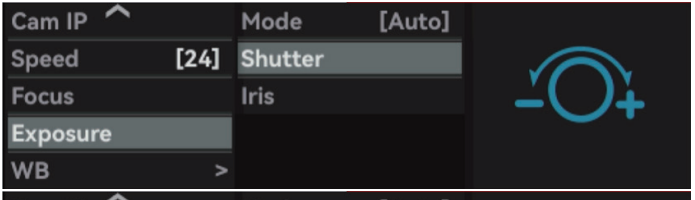
Enter the Camera Settings and select Focus. You can set auto focus or manual focus. Manual focus is set through the knob.

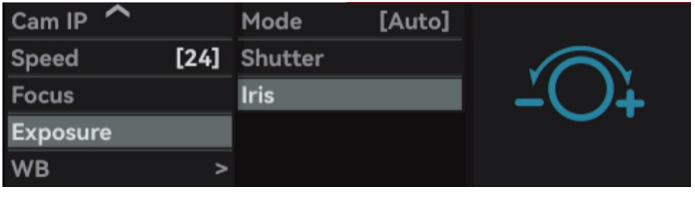


7.9.3.3 Exposure

Go to the Camera Settings and select exposure. Exposure mode can be set to automatic, manual, shutter priority and aperture priority. After selecting manual exposure, the shutter and aperture are set via the knob.

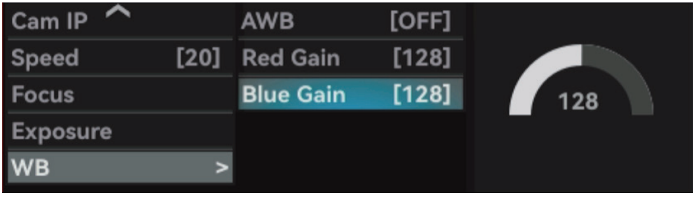






7.9.3.4 White Balance

Enter the Camera Settings and select WB. You can set automatic or manual mode. In manual mode you can use the knob to set the red gain, blue gain, gain range from 0 to 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
7.10.1.1 MV View

Go to Interface Settings and select the horizontal or vertical layout of the monitor and output screen. When entering landscape mode, the system layout and screen are displayed horizontally.



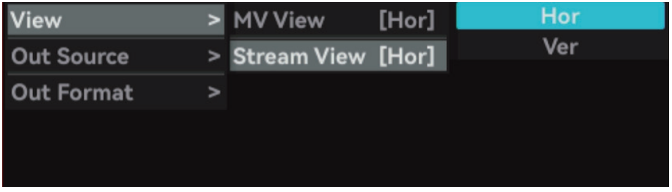
In portrait mode, the system layout rotates 90° counterclockwise. The image does not flip and maintains a horizontal display, requiring a portrait source to be connected.



In portrait mode, the system layout rotates 90° counterclockwise; the image does not flip and maintains a horizontal display, requiring a portrait source to be connected.

7.10.1.2 Stream View

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



7.10.2 Output Source

7.10.2.1 AUX Output

Go to Port Settings, select Out Source and click AUX Out. Choose from IN1, IN2, IN3, IN4, AUX, PAT, Cln PGM, PGM, Cln PVW, PVW. PVW is selected by default.



7.10.2.2 PGM Output

Go to Port Settings, select Output, and click PGM Output. Available IN1, IN2, IN3, IN4, AUX, PAT, Cln PGM, PGM, Cln PVW, PVW. PGW is selected by default.



7.10.2.3 Screen Output

Enter the Port settings, select LCD Out, and click screen output. IN1, IN2, IN3, IN4, AUX, PAT, Cln PGM, PGM, Cln PVW, PVW. PGW is selected by default.



7.10.2.4 SDI Output

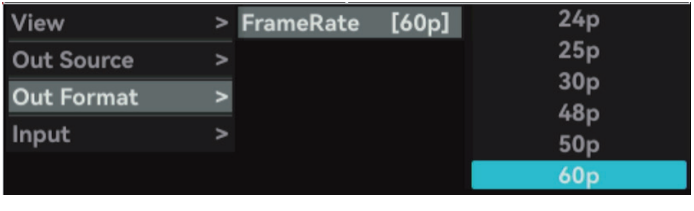
Enter the port settings, select output, click SDI Out. IN1, IN2, IN3, IN4, AUX, PAT, Cln PGM, PGM, Cln PVW, PVW. Default Selection is IN1.



7.10.3 Output Format

7.10.3.1 Frame Rate

Go to Port Settings, select Out Format and click Frame Rate. The value can be 24p, 25p, 30p, 48p, 50p, or 60p. The default value is 60p.



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 six customized configurations, which can be quickly enabled with the user key.



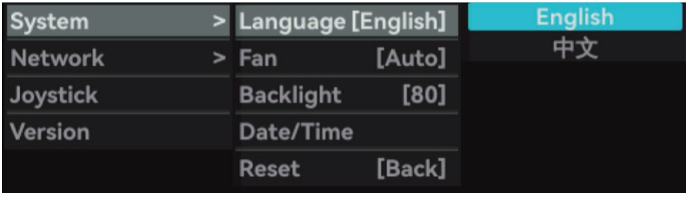
7.12 System Settings

7.12.1 Settings

Select System Settings to configure settings such including language, fan settings, date/time, and reset options.

7.12.1.1 Language

Enter the System Settings and select Language. Use the knob to select the language. Default display is English.



7.12.1.2 Fan

Go to System settings and select Fan. Press 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 fan speed.

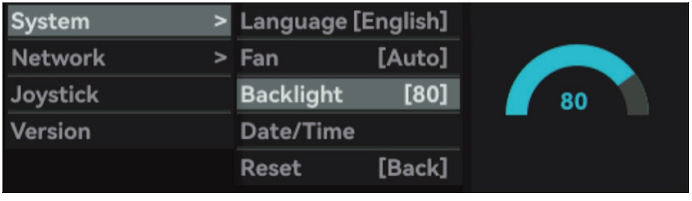
Off mode: Turn off the fan and switch to automatic mode only when the temperature reaches a certain level.

On mode: The fan is on all the time.



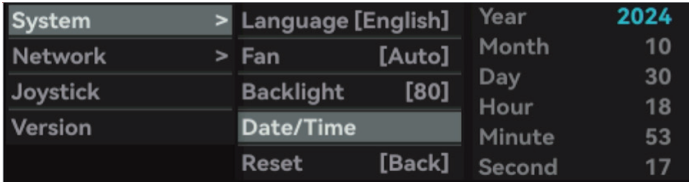
7.12.1.3 Backlight

Enter the system settings, select backlight and use the knob to adjust the screen backlight from 10% to 100%. The larger the value, the brighter the screen.



7.12.1.4 Time/Date
Date/Time

Enter the system settings and select Reset. Using the knob you can select Confirm. If the knob is pressed, the switcher will perform a reset. After the process all setting will be restored back to default.



7.12.1.5 Reset

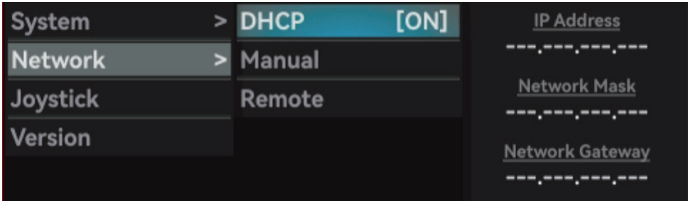
Enter the system settings and select Reset. Using the knob, you can select Confirm. If the knob is pressed, the switcher will perform a reset. After the process all setting will be restored back to default.



7.12.2 Network

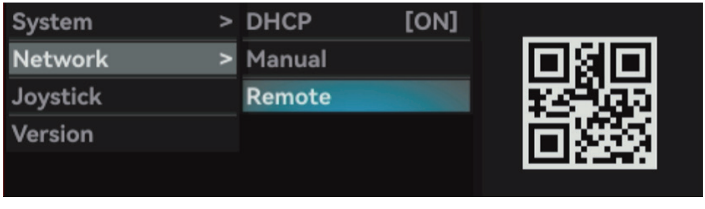
7.12.2.1 Network Connection

In Network Settings, you can choose to automatically obtain the network IP address or manually configure the network IP address.



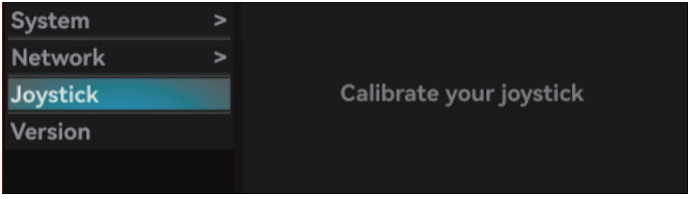
7.12.2.2 Remote Control

Enter the Network Settings and click Remote, use your phone's camera to scan the remote QR code. This will take you to the remote control interface on your phone.



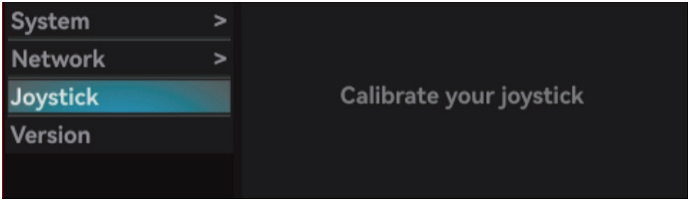
7.12.3 Joystick Calibration

Enter the Settings, click Joystick, follow the system prompts to calibrate the joystick.



7.12.3 Joystick Calibration

Enter the Settings, click Joystick, follow the system prompts to calibrate the joystick.



7.12.3 Version

Go to Settings and click Version, the version number and help address will be displayed.

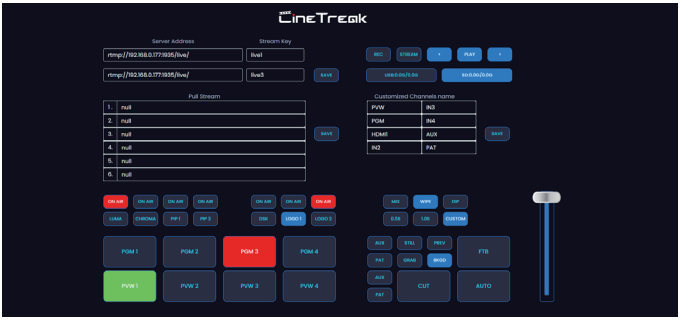


8. Remote Software Control

8.1 Connect to Software

8.1.1 Remote Control with Computers

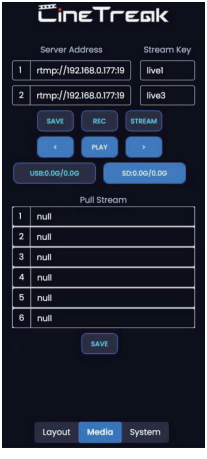
Automatically obtain or manually set the switcher's network IP address. Then ensure that the computer and switcher are connected to the same local area network. On the computer, open a browser and enter the switcher's IP address, and press Enter to connect to the switcher's homepage.

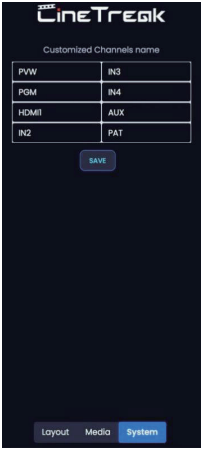


8.1.2 Remote Control with Cellphones

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 switcher's homepage. Alternatively, go to the switcher's settings menu, select Network - Remote, and scan the QR code in the Remote section with your phone.







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.

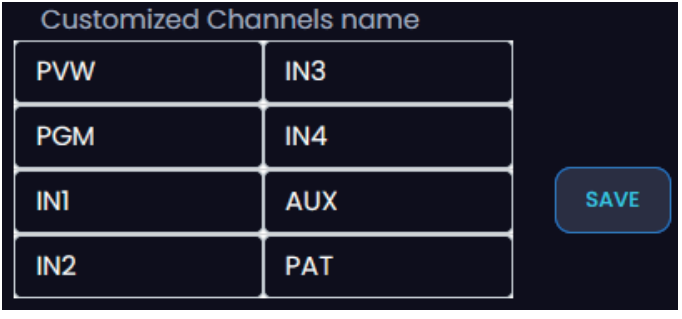


8.3 Multimedia Settings



8.3.1 Streaming Setting
8.3.1.1 Streaming Address Settings

Custom Streaming Address: Enter the switcher's homepage 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 streaming button to start streaming.
Default Streaming: Enter the switcher's homepage 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 Storage Path Setting

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



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