

KM32-4K

4K HDMI Keying Master

AVMATRIX



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USING THE UNIT SAFELY

Before using this unit, please read below warning and precautions which provide important information concerning the proper operation of the unit. Besides, to assure that you have gained a good grasp of every feature of your new unit, read below manual. This manual should be saved and kept on hand for further convenient reference.



Warning And Cautions

- ※ Operate unit only on the specified supply voltage.
- ※ Disconnect power cord by connector only. Do not pull on cable portion.
- ※ Do not place or drop heavy or sharp-edged objects on power cord. A damaged cord can cause fire or electrical shock hazards. Regularly check power cord for excessive wear or damage to avoid possible fire / electrical hazards.
- ※ Ensure unit is properly grounded at all times to prevent electrical shock hazard.
- ※ Do not operate unit in hazardous or potentially explosive atmospheres. Doing so could result in fire, explosion, or other dangerous results.
- ※ Handle with care to avoid shocks in transit. Shocks may cause malfunction. When you need to transport the unit, use the original packing materials or alternate adequate packing.
- ※ Do not remove covers, panels, casing, or access circuitry with power applied to the unit! Turn power off and disconnect power cord prior to removal. Internal servicing / adjustment of unit should only be performed by qualified personnel.
- ※ Turn off the unit if an abnormality or malfunction occurs. Disconnect everything before moving the unit.

Please select the best installation position

- ※ Do not cover the air inlet and outlet of the unit, make sure that there is sufficient space around the ventilation holes on both sides to avoid blockage of ventilation.
- ※ To avoid falling or damage, please do not place this unit on an unstable cart, stand, or table. Make sure install this unit on a very stable horizontal surface for use.
- ※ Do not use this unit in a humid, dusty location or near water. Avoid liquids, metal pieces or other foreign materials to enter the unit.
- ※ Do not use this unit in an environment where the temperature is too cold or too hot.
- ※ Avoid placing this unit in direct sunlight or in a place where hot air from other products can blow.

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

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1. Introduction

1.1. Overview

The KM32-4K is equipped with three 4K HDMI inputs, supporting Foreground, Background, and Downstream Key (DSK) sources. It features four 4K HDMI outputs that can distribute PGM, Clean PGM, Matte, and AUX signals flexibly. The built-in one-touch smart chroma key function enables quick and precise keying, handling complex backgrounds easily. It supports both green and blue screen keying for professional results across various scenarios. It also integrates DSK and PIP overlay functions.

The device supports dual control platforms: front panel and PC software, allowing for flexible operation. Additionally, it includes external audio and Tally input interfaces for efficient multi-camera production.

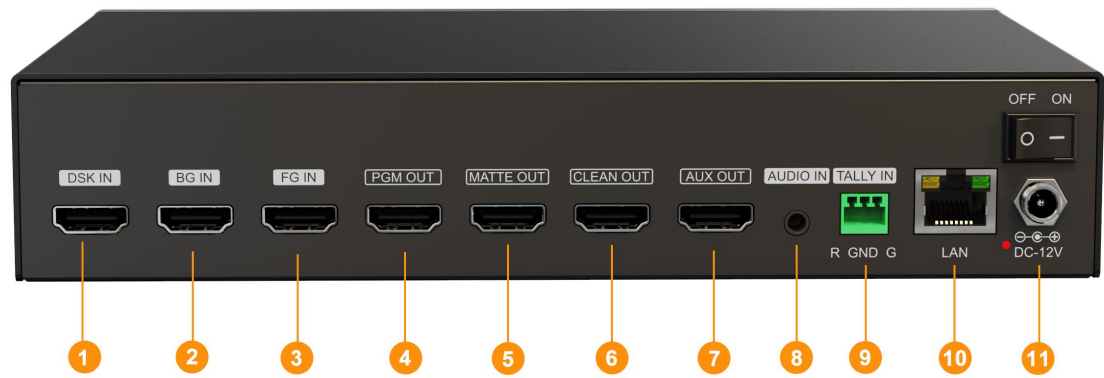


1.2. Features

- 3× 4K HDMI Inputs: Support Foreground, Background, and DSK key source.
- 4× 4K HDMI Outputs: Flexible outputs for PGM, Clean PGM, Matte, and AUX.
- One-Touch Smart Keying: Fast and accurate, ideal for complex backgrounds.
- Green/Blue Screen Support: Suitable for multiple scenarios with professional results.
- DSK & PIP Overlay
- Dual-Platform Control: Front panel + PC software for easy operation.
- External Audio & Tally Input: Ideal for multi-camera coordination.

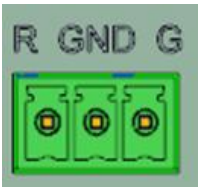
2. Interfaces

2.1. Interfaces



1	DSK Key Source Input
2	Background Input (base image in compositing)
3	Foreground Video Input (USK key source)
4	PGM Output (mixed video from DSK IN, BG IN, and FG IN)
5	Matte Output (DSK Mono and USK Mono modes)
6	Clean Output (mixed video from BG IN and FG IN)
7	AUX OUT (user-configurable)
8	Line-In Audio Input
9	Tally Interface (external tally input, shown on display status page)
10	100M LAN (supports PoE, PC control, and firmware upgrade)
11	DC 12V Power and Power Switch

2.2. Tally Definition



PIN	Definition	PIN	Definition
R	PGM-IN	G	PVW-IN
GND	GND		

3. Specifications

Connect	Video Inputs	3× HDMI (DSK, BG, FG)
	Video Outputs	4× HDMI (PGM, Matte, Clean, AUX)
	Audio Input	1× 3.5mm Line-In
	Tally Input	3 PIN Tally ×1
	LAN	1× RJ45 (PC control, PoE, firmware upgrade)
	Power	DC 12V ×1
Standards	Display	2.2" built-in screen
	Supported HDMI Input Formats	(4K) 4096x2160p 60/59.94/50/30/29.97/25/24/23.98 (4K) 3840x2160p 60/59.94/50/30/29.97/25/24/23.98 (HD) 1920x1080p 60/59.94/50/30/29.97/25/24/23.98 (HD) 1920x1080i 60/59.94/50 (HD) 1280x720p 60/59.94/50/30/29.97/25/24/23.98
	Supported HDMI Output Formats	(4K)4960x2160p60/59.94/50/30/29.97/25/24/23.98 (4K)3840x2160p60/59.94/50/30/29.97/25/24/23.98 (HD)1920x1080p60/59.94/50/30/29.97/25/24/23.98 (HD)1920x1080i60/50 (HD)1280x720p60/50
	Color Space	REC601、REC709、REC2020
	Video Sampling	4:2:2
	Color Depth	10bit
Functions	Keying	Upstream: Luma Key ×1/ Chroma Key ×1/ USK PIP ×1 Downstream: DSK ×1/ DSK PIP ×1
	Audio	FG HDMI in ×1, Line ×1
	Media Pattern	PATTEN ×1
Other	Power	Power Range: 7~24V; Power: 16.8W (12V 1.4A)
	Dimensions	220×141.3×44mm
	Weight	Net: 1115g, Gross: 1630g
	Temperature	Operation: -20℃~60℃, Storage: -30℃~70℃
	Accessories	Power Adapter(12V 3A)×1, 3-PIN Tally Connector×1

	Warranty	2 years
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4. Button Functions

1.CHROMA Access the Chroma keying menu to configure chroma key parameters.	
2.Luma Access the Luma keying menu to configure brightness-based keying.	
3.BG SRC Set the fill source for USK. Default is the BG input. Includes a Color submenu to edit two background color presets.	
4.MASK Access the mask parameter setting menu.	
5.USK PIP Configure picture-in-picture (PIP) parameters for the upstream key.	
6.AUTO One-touch auto keying using built-in Chroma key algorithms.	
7.DSK Access the Downstream Key (DSK) parameter setting menu.	
8.OUTPUT Output setting menu, including: Matte Output: Choose DSK Mono / USK Mono AUX OUT: Select output source (PGM, Clean PGM, DSK In, BG In, FG In)	
9.DSK SRC Set the key source for DSK. Default is DSK In.	
10.FORMAT Set the video output format.	
11. DSK PIP Configure picture-in-picture settings for DSK overlay.	

12. PATTEN Configure test pattern for PGM OUT.	
13. LOCK Lock the physical control panel. All buttons and knobs will be disabled to avoid misoperation.	
14. AUDIO Change the audio embedding source for PGM OUT: Line In, HDMI In, or Mute.	
15. EXIT Exit the menu.	

5. Status Interface

The default status interface displays the Foreground Input, Background Input, DSK Input, PGM Output, and the currently selected user profile name (e.g., “Profile1”). Additionally, the bottom-left corner of the status screen shows the current IP address, as illustrated below:



the corresponding input field (Foreground, Background, or DSK) will show the input signal format. For example, when a signal source is connected to the FG IN (Foreground Input), the foreground input field will display the corresponding format, such as 1920×1060p60.

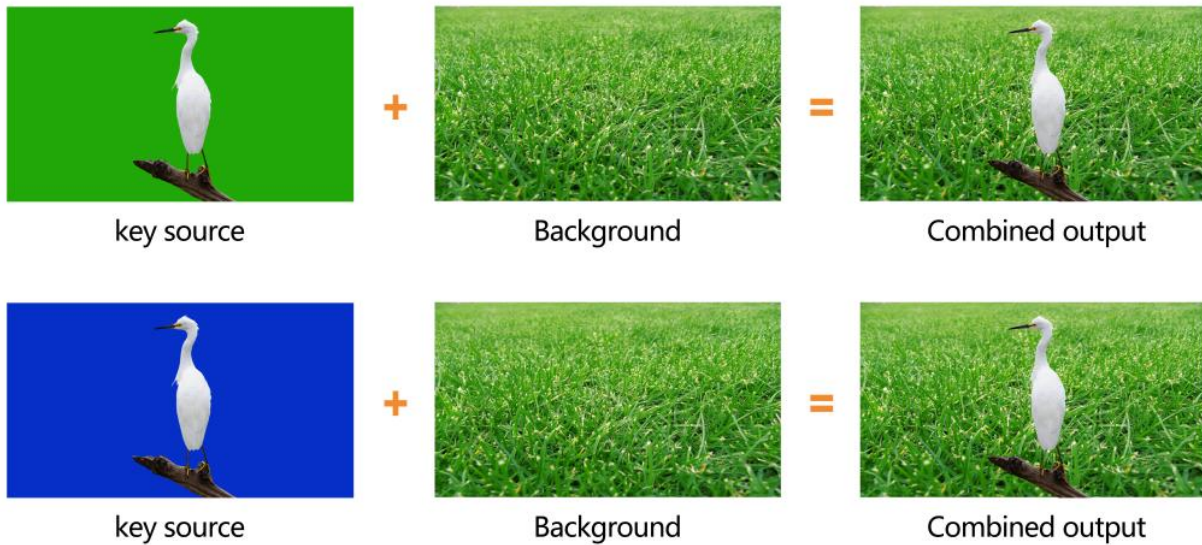
Users can add, select, or delete usernames through the menu. To do so, go to Menu → Configuration, then: Use the “New” option to add a profile, Use the “Switch” option to select a username, Use the “Delete” option to remove the selected username.

6. Upstream Key

6.1 Chroma Key

Chroma key is a post-production technique that combines two images or video streams based on hue

(color range). It is widely used to remove backgrounds from photos or videos, especially in news broadcasts, films, and video games. Users can configure chroma key effects in the menu.



The chroma keyer supports both automatic and manual keying modes to meet different usage scenarios.

Automatic Keying:

The AUTO keying function of the KM32-4K allows for quick chroma keying. By pressing the [AUTO] button on the front panel, the system automatically identifies and removes a preset chroma key background (such as green or blue screen) based on built-in algorithms. This is ideal for fast setup or general-purpose chroma key applications.

Operation Steps:

1. Before using AUTO keying, ensure that the subject and the chroma key background (e.g., green/blue screen) are evenly lit with no noticeable shadows or reflections.
2. Press the [AUTO] button on the front panel. The keyer will automatically analyze the image and remove the preset chroma key color. Connect an external display to preview the result in real-time — the background area will be replaced with the designated image or video source.
3. If there is any color spill at the edges or loss of fine detail, you can manually adjust parameters such as tolerance and softness to optimize the keying result.

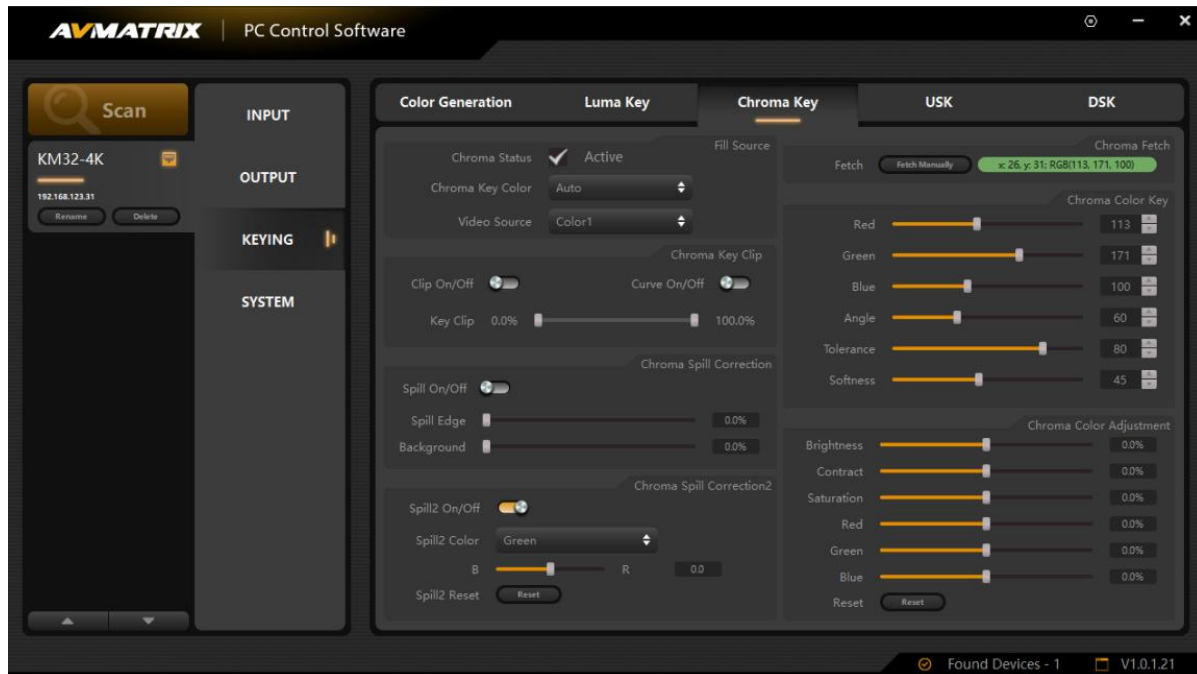
Manual Keying:

For higher-precision chroma keying, manual mode can be enabled. Users can fine-tune keying parameters such as key source, angle, tolerance, softness, and more to meet the demands of complex

lighting conditions and achieve optimal keying results.

Adjustments can also be made via the control software, which is available for download at the official website: www.avmatrix.com.

Username: admin, Password: admin



The detailed parameter settings for Chroma Key are as follows:

Menu	Submenu	Item	Parameter	Default
USK	Chroma	status	Inactive/Active	Active
		Key Color	Green/Blue/Auto	Green
		Key Source	FG In /Color1/Color2	FG In
		Angle	0-180	60
		Tolerance	0%-100%	80%
		Softness	0%-100%	45%
		Key Clip	Off/On/Curve	Off
		Clip Value	(0.0%,100.0%)	(0.0%,100.0%)
		Correction	Off/Red/Green/Blue	Off

6.2 Luma Key

Luma Key is a keying technique based on image brightness (grayscale values), ideal for scenarios lacking color contrast but with clear differences in brightness. Common applications include overlaying subtitles or graphics with pure white or black backgrounds.

When the Luma button on the front panel is pressed, the system processes the image based on the defined brightness range, making selected areas transparent and compositing the foreground with the background. Corresponding adjustments can also be made via the control software, which can be downloaded from the official website.

Key Parameter Descriptions:

Tolerance: Defines the brightness range allowed for keying. You can selectively make a brightness range transparent by adjusting the upper and lower limits.

Invert: Reverses the tolerance range, so pixels outside the defined range are keyed instead.

Curve: Applies a gradient for smoother transitions along the edges.

Curve and Invert: Enables both invert and curve at the same time, achieving reversed selection with softened edges.

Clip: Limits the brightness range that can be keyed to avoid accidental keying of undesired areas.

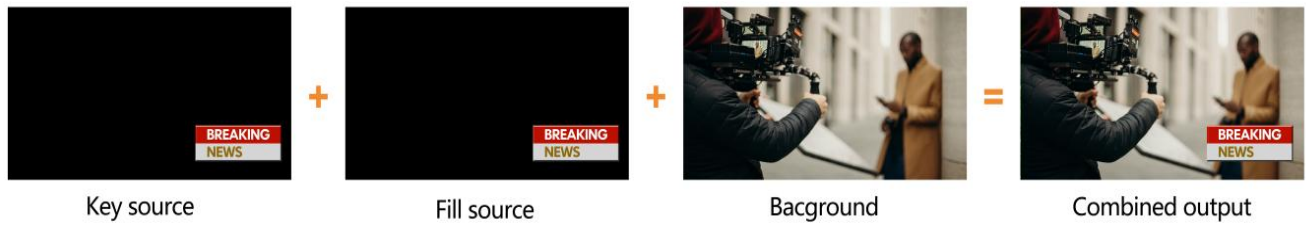
Clip Value: Controls the keying strength or sensitivity. Higher values result in stronger keying; lower values produce smoother edges.

This feature is recommended for keying subtitles, graphics, or logo files on pure white or pure black backgrounds. If edges appear harsh, enabling Curve will soften the transition. For complex lighting conditions in the background, fine-tuning Clipping and Clipping Value will help achieve more accurate results.

The detailed Luma Key parameter table is as follows:

Menu	Submenu	Item	Parameter	Default
USK	Luma	status	Inactive/Active	Active
		Tolerance	Default/Invert/Curve/Curve and Invert	Default
		Value	(0.0%,100.0%)	(0.0%,100.0%)
		Key Clip	Off/On/Curve	Off
		Clip Value	(0.0%,100.0%)	(0.0%,100.0%)

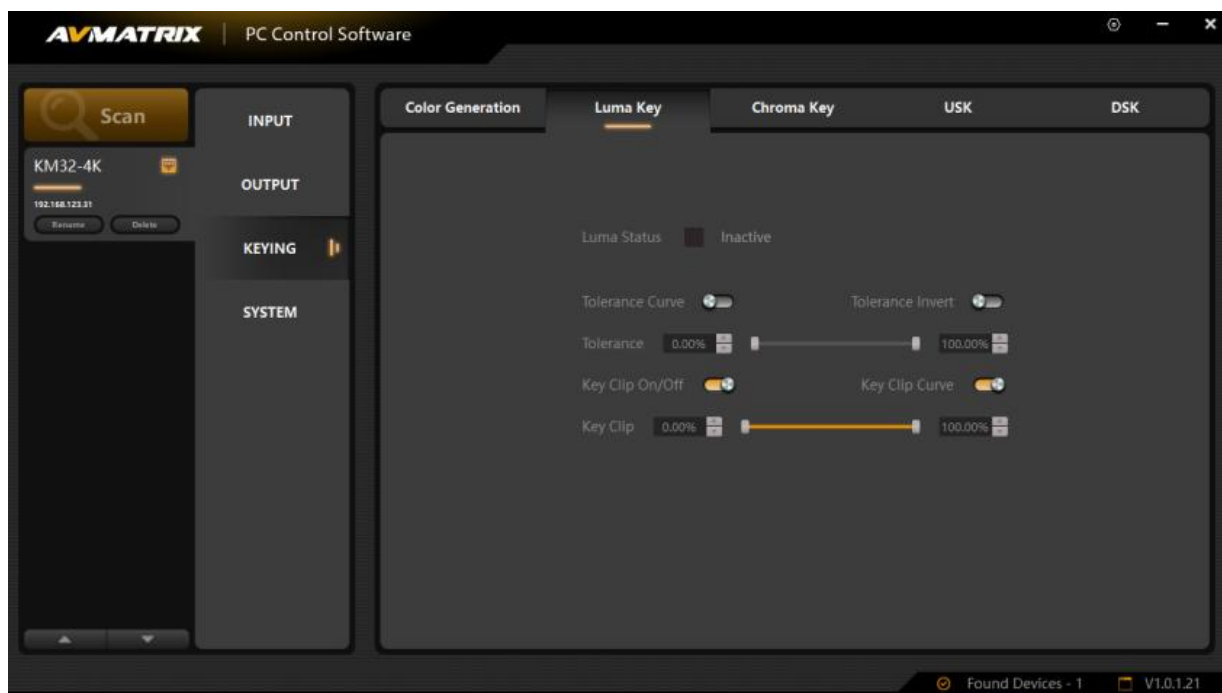
Key Source = Fill Source



Key Source $\neq$ Fill Source



Users can also make corresponding adjustments in the control software.



6.3 PIP

The device supports upstream/downstream key (USK/DSK) for picture-in-picture (PIP) overlay, which can achieve both chroma key and luminance key modes to precisely composite multiple images. The upstream/downstream key picture-in-picture (USK PIP) function allows users to overlay a keyed sub-image on the main image, creating a dual-image composite effect. This is suitable for virtual studios

(host + background/PPT), game streaming (live footage + camera portrait), and video conferences (presenter + shared screen). Pressing the USK/DSK PIP button enables the USK/DSK picture-in-picture function, and users can adjust the position of the USK/DSK PIP (horizontal coordinate, vertical coordinate, width, height) as needed.

Users can also make corresponding adjustments in the control software, which can be downloaded and installed from the official website.

The detailed parameter settings for USK/DSK PIP are as follows:

Menu	Item	Parameter	Default
USK PIP /DSK PIP	Status	Off/On	Off
	H.Pos	0%-100%	50%
	V.Pos	0%-100%	50%
	Width	0%-100%	25%
	Height	0%-100%	25%

7. Downstream Key

The downstream key is the last layer of keying. It operates independently of the selected "background." No matter what operation is performed on the switcher, the downstream key overlay will remain on the screen. Users can set parameters such as the source of the DSK, tolerance, DSK value, and clamping from the menu. Connect the signal source to the DSK IN, press DSK SRC to select the DSK key source. Press the DSK button to enable downstream keying. Adjust the downstream key parameters according to user needs.

The detailed parameter settings are as follows in the table:

Menu	Item	Parameter	Default
DSK	Tolerance	Default/Invert	Default
	Value	0%-100%	50%
	Key Clip	Off/On/Curve	Off
	Clip Value	0%-100%	50%
	Level	0%-100%	50%

Users can also make corresponding adjustments in the control software. The control software can be downloaded and installed from the official website.

8. Output Settings

8.1 Output Interfaces

The KM32-4K is equipped with four output interfaces, namely PGM OUT (Program Output), MATTE OUT (Matte Output), CLEAN OUT (Clean Output), and one AUX OUT (Auxiliary Output). Additionally, the KM32-4K supports Pattern output, which is used to configure the display image on PGM OUT. By briefly pressing the OUTPUT button on the panel, a menu will pop up. In the output settings, you can select and configure the matte output, auxiliary output, and Pattern. The light should be in a constantly lit state during this process. To close the menu, briefly press the button again, and the light will turn off.



- PGM OUT: Outputs the mixed video of DSK IN , BG IN, and FG IN.
- MATTE OUT: Contains two modes, USK Mono and DSK Mono.

DSK Mono: The monochrome (black and white) mode of the downstream key, used to overlay a matte in the final stage of video signal processing.

USK Mono: The monochrome (black and white) mode of the upstream key, used to apply a matte in the early stages of the video processing workflow (such as before mixing).

- CLEAN OUT: Outputs the mixed video of BG IN and FG IN.
- AUX OUT : A configurable output mode. Users can customize AUX OUT according to the application scenario and requirements, setting it to PGM out, Clean PGM out, DSK in, BG in, or FG in.
- Pattern: Used to configure the display image on PGM OUT. It includes Window, H-Ramp, V-Ramp, H-Gray, V-Gray, Moving-box, and Moving-Bar.

8.2 Output Format Settings

Press the FORMAT button on the panel briefly to enter the settings, and the green light will light up to indicate that you are in the output format setting mode. The output format supports both integers and decimals frame rates. When the frame rate mode is set to an integer, the available output formats are:

4960x2160p60, 4960x2160p50, 4960x2160p30, 4960x2160p25, 4960x2160p24, 3840x2160p60, 3840x2160p50, 3840x2160p30, 3840x2160p25, 3840x2160p24, 1920x1080p60, 1920x1080p50, 1920x1080p30, 1920x1080p25, 1920x1080p24, 1920x1080i60, 1920x1080i50, 1280x720p60, 1280x720p50.

When the frame rate mode is a decimal, there are 4960x2160p59.94, 4960x2160p29.97, 4960x2160p23.98, 3840x2160p59.94, 3840x2160p29.97, 3840x2160p23.98, 1920x1080p59.94, 1920x1080p29.97, 1920x1080p23.98. The default output format is 3840x2160p60.

9. Audio Settings

9.1 Audio Source Selection

Supports changing the audio embedding source for PGM OUT. In the audio settings, you can choose between Line in, HDMI in, and Mute.

Line In: The device's analog audio input. When connecting an external audio device, select this option. Connect the audio output cable from the external device to the Line In interface of this device, and then select "Line In" in the audio source settings to play the audio from the external device.

HDMI In: The audio is extracted from the HDMI signal of the foreground input (FG IN).

Mute: Selecting the "Mute" option will silence the audio output.

9.2 Volume Adjustment

Volume Range for Line In and HDMI In Modes: When "Line In" or "HDMI In" is selected as the audio source, the volume adjustment range is from 0dB to 14dB. Users can adjust the volume to a suitable level according to personal preferences and environmental needs using the volume control buttons or relevant control interface.

Volume in Mute Mode: When in "Mute" state, there is no audio output.

10. System Menu Settings

10.1 System Settings

10.1.1 Language

Allows users to select the system language, making it convenient for users with different language backgrounds to use the device.

10.1.2 Version Number

Displays the software version information of the device, helping users understand the current software

status of the device and providing accurate information when seeking technical support.

10.1.3 Fan

Used to adjust the speed of the device's fan to control the device's heat dissipation. Users can adjust the fan speed according to the actual usage environment and needs to achieve the desired cooling effect. The adjustable range is from "0%-100%". The default setting is "50%".

10.1.4 Reset

When users need to restore the device to its initial state, this function can be used. After entering this option, a "menu confirmation" operation is required to complete the reset to prevent accidental operations from causing data loss or setting confusion.

10.2 Network Settings

The keying device supports two connection methods. When DHCP is enabled in the menu, connecting the keying device to a router that supports DHCP will automatically assign an IP address to the device.

When DHCP is disabled, users can manually set the IP address, subnet mask, and gateway in the menu. The default IP address is 192.168.1.216. The subnet mask is set to "255.255.255.0" by default. The default format for the gateway address is "192.168.1.1".

10.3 Parameter Configuration

10.3.1 Switch

Switch to another saved user account to easily and quickly access saved settings. You can choose from "Profile 1-8". The default setting is "Profile 1".

10.3.2 New

Add a new user account and save all current settings to that account. Up to 8 user profiles can be created on the device.

10.3.3 Delete

Delete a saved user account that is no longer in use.