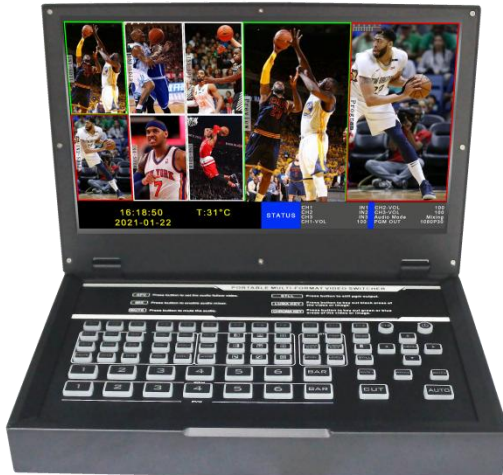![DeviceWell®]

Users' Manual

6-CH SWITCHER

HDS9226

VER 1.0

Preparation Before Installation

 Caution

●During transportation, handling, and installation of switchboard equipment, avoid collisions between the switchgear equipment and doors, walls, shelves, etc.

●When the equipment is unpacked and transported, it is strictly forbidden to put it down and drag it gently to avoid damage to the switchboard equipment.

●Do not place the switcher equipment in a flammable, explosive atmosphere or smoke environment. Do not perform any operation in this environment.

●Operating equipment should be kept away from water and moisture. The water in the switchgear or moisture will cause damage to the circuit of the switchgear equipment.

●A certain amount of heat will be generated during the operation of the switcher. Ensure that the switchgear equipment is ventilated and the switcher device can operate normally.

 Danger

●It is a fatal hazard that indirect contact with the power supply by wet objects is prohibited. Unregulated, incorrect high-voltage operation can cause accidents such as fire or electric shock.

●It is forbidden to install and remove the switchgear equipment and power cord. When the power cord is in contact with the conductor, an arc or spark may be generated, which may result in fire or electric shock.

Contents

1. **Overview**

1.1 Introduction

DeviceWell HD Video Switcher HDS9226, adopts a portable integrated design, a clamshell metal shell, and an 11.6-inch LCD display. Standard size: 285*190*43mm, suitable for video effects switching requirements in small outdoor scenes . The equipment integrates common components of switcher such as multiview processor, special effect generator, audio processor, control keyboard and so on.

HDS9226 supports 4 channels of broadcast-grade SDI and 2 channels of HDMI, totaling 6 channels of video signals. The external preview signal can be output synchronously. HDS9226 supports SDI embedded audio + external analog audio. After mixing, it can be embedded in the output SDI signal or output from the analog port. The resolution of all input signals is automatically adapted, and the output signal resolution can be selected as required, which is quite flexible. For video switching needs such as broadcast and television, outdoor sports events, school courseware production, etc., the functions of HDS9226 can fully meet.
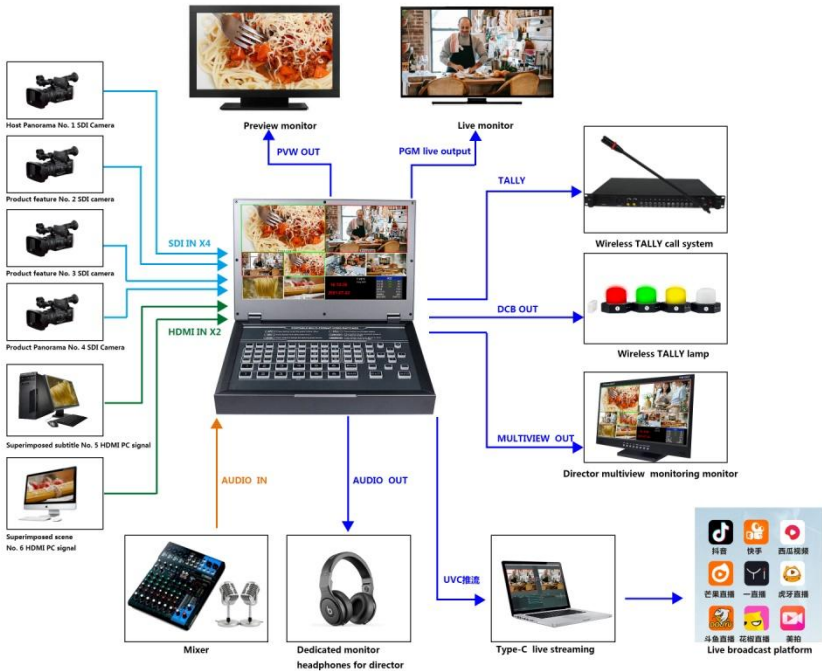
2. **Functional characteristics**

The DeviceWell HDS9226 6-channel HD video switcher is a multi-function switcher that requires no special knowledge and can be used for video switching and audio mixing with simple operation. This unit can be used in radio and television, live broadcast and various activities

◆ Portable integrated design
◆ High-grade black metal body, high strength
◆ Integrated control keyboard
◆ Comes with 11.6-inch guide screen monitoring
◆ Hidden interface design to prevent the interface from breaking
◆ Supports up to 4 SDI and 2 HDMI inputs
◆ Support 3.5mm analog audio output to monitor any channel of audio
◆ Support PIP/POP screen window function
◆ Audio supports follow and mix assignment modes
◆ Support Type-c interface UVC output
◆ 1 analog audio input; 1 analog audio output; support SDI audio de-embedding, external audio and SDI/HDMI de-embedding audio can be arbitrarily assigned output, support audio follow and mix switching function
◆ 1 group of KEY, support Luma key, chroma key, key image and superimposed character function

◆ PGM output：2xSDI&1xHDMI MULTIVIEW OUT：1xHDMI&1xSDI
◆ Support 1 channel SDI output custom PGM/PVW
◆ Support MIX/FADE/WIPE switching effects; support CUT hard cutting, AUTO automatic switching and FTB emergency switching, the switching rate can be set
◆ Support PIP function, sub-window size and position can be adjusted arbitrarily, border thickness and color can be set
◆ Adjustable transition rate
◆ Support Tally interface to connect to the call system
◆ Built-in chassis temperature detection and fan intelligent control system
◆ Color bar test screen output can also be generated inside the device
◆ Support software online upgrade
◆ Support one-key vertical screen display
◆ Support one-key screen freeze function
◆ Support supporting DEVICEWELL TALLY lamp system

2.1 Size：285*190*43mm
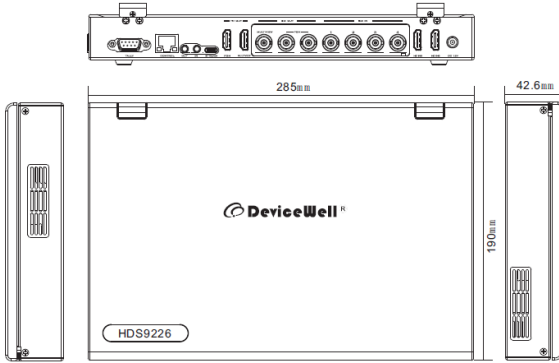
3. Interface Specification

3.1 Interface Introduction

The interface of DeviceWell HDS9226 is shown below

No.	Definition	Description
1	VOL	Listen volume adjustment
2	PHONES	3.5mm audio listen
3	DCB	Cascade equipment, supporting TALLY lamp module
4	TALLY	Direct broadcast call system (DB-15)
5	RJ45	Network upgrade
6	LINE OUT/ IN	Analog stereo audio output/ input
7	Type-C	UVC output
8	HDMI OUT	PGM output
9	MULTIVIEW OUT	MULTIVIEW output
10	SDI PGM OUT	PGM output, SDI OUT2 custom PGM/PVW output
11	SDI IN	4xSDI input
12	HDMI IN	2xHDMI input
13	DC POWER IN	DC12V/5A power input

3.2 TALLY Interface
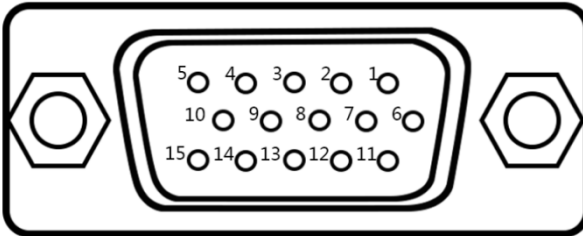
PIN	Function	PIN	Function
11	PGM-IN1	6	PVW-IN1
12	PGM-IN2	7	PVW-IN2
13	PGM-IN3	8	PVW-IN3
14	PGM-IN4	9	PVW-IN4
15	PGM-IN5	10	PVW-IN5
3	PGM-IN6	4	PVW-IN6
5	GND		

Note：PIN1　PIN2 not used.

TALLY : Online schematic：
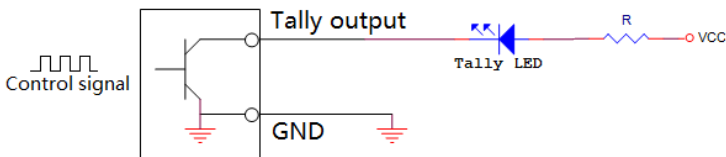
Note：Tally LED: for external display devices

Tally output : Active low (Tally LED is lit) High level is invalid (Tally out is off)

3.3 Parameter

| Name	Portable Video Switcher	
Model	HDS9226	
Video Signal Input	Input signal	SDI/HDMI Video Signal
	Bit rate	270Mbps~10.2Gbps
	Connector	Standard
	Reflection loss	>15dB 5MHz~3GHz
	Signal amplitude	800mV±10%（SDI /HDMI)
	Impedance	100Ω (HDMI)　75 Ω(SDI)
	Equilibrium	Adaptive
Video Signal Output	Output signal	SDI/HDMI Video Signal
	Bit rate	270Mbps~10.2Gbps
	Connector	Standard
	Reflection loss	>15dB 5MHz~3GHz
	Signal amplitude	800mV±10%（SDI /HDMI/)
	Impedance	100Ω (HDMI)　75 Ω(SDI)
	DC offset	0V±0.5V
	Clock recovery	Optional
Common Parameters	Power supply	12V/DC
	Power	<20W
	Size	285*190*43mm
	Control panel	Support on-site production and integrate multiple buttons.
	Weight	2KG
	Operating temperature	0℃~50℃ No condensation
	Storage temperature	-20℃~75℃
	Working humidity	20%~70%RH
	Storage humidity	0%~90%RH，　No condensation

4. Control Panel and Interface

Before using the HD Switcher , please take a few minutes to read this section. This chapter will introduce you the panel and interface of the HD switcher to facilitate your subsequent use and operation.

The new high-strength characteristics of the new aluminum alloy with high-strength characteristics improve the anti-drop, anti-shock and shock-proof capabilities of the whole machine, and effectively protect the internal components of the equipment. Ultra-lightweight features make the unit easier to transport and maintain without the need for additional equipment; it also offers unparalleled thermal performance.

In addition to the innovation of the case, the HD switcher has also been completely optimized for the interface connector. Environmentally friendly materials with new RoHS standards are More demanding in terms of durability and environmental protection, to provide customers with more stable, more environmentally friendly, more cost-effective products.

4.1 Control Panel
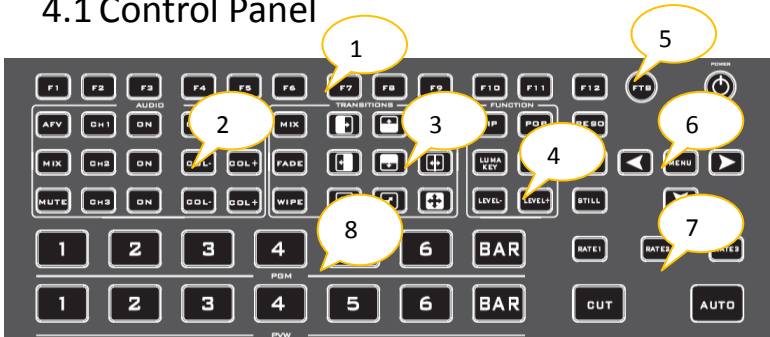
4.1.1 Area Description

NO.	Name	Description
1	Functional area	Functions reserved
2	Audio Control	Mainly for Audio Follow and mix settings
3	Transition Effect Control	Select transition effects
4	Comprehensive control area	PIP&POP effects
5	FTB	FTB
6	Menu control area	Use keys to set menu information
7	Transition special effects control area	Control transition switching and transition rate adjustment
8	PVW& PGM Select	Live broadcast and preview selection

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4.1.2 Key Description

4.1.2.1 Audio Control Area

Audio mode is divided into follow　and mixing assignment ;

Follow：The audio is output to the PGM live broadcast following the video, which means what is the audio coming in from the camera, and what is the audio output from the live broadcast of the switcher;

Mixing：Mixing three different audio live outputs at the same time means that I designate the audio of a camera as the live sound, and designate the audio of the camera as the audience applause, and then I use the audio from a mixer to embed it into my switcher; After the audio channel is fixed, the video channel can be switched at will.
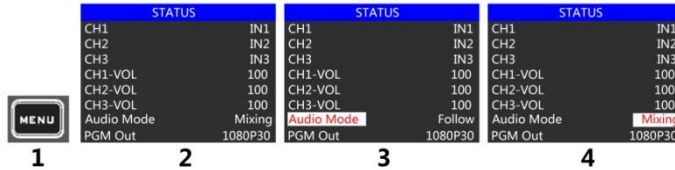
● **Audio mode switching**

Switch the audio mode through the menu button on the operation panel (as shown in Figure 1)

Corresponding to the menu in the lower right corner of the LCD screen (as shown in Figure 2)

Press the menu button to enter the Audio Mode option (as shown in Figure 3)

Press the menu button to enter the mode selection (as shown in Figure 4)

Menu button to select mixing or follow：

● **How to use audio follow mode**

1、First adjust the audio mode to follow through the menu button

Press the CH1 button (the button is on)

The channel of the audio follow mode is on, press , Adjust the PGM output volume; switch a video signal with audio to the PGM window, then the audio meter of the PGM window will have sound column fluctuations

If you want to turn off the audio output, you can Press to the end, or press the CH1 button (the button light goes out).

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2、Audio channel   IN1-SDI1、IN2-SDI2、IN3-SDI3、IN4-SDI4、IN5-HDMI5、IN6-HDMI6, Corresponding operation panel keys

3. The volume adjustment of the audio follow mode is controlled by the mixer of the operation panel; press the AFV button of the follow mode, the corresponding CH1 light will also light up,

press the [COL-] the volume is smaller ,press the [COL+] the volume is Bigger.

4. Audio delay function, select in the menu, enter the main menu-system settings-audio delay-0-30 level (a value means 20 milliseconds).

● **How to use mix assignment mode：**

1. First adjust the audio mode to Mixing through the menu button (as shown in Figure 1)

The status bar of the corresponding LCD screen displays the audio channel source. The factory default of the device is CH1 source IN1, CH2 source IN2, and CH3 source IN3 (as shown in Figure 2)

Two audio channels can choose IN1, IN2, IN3, IN4, IN5, IN6, TRS_IN, TRS_IN means external audio interface input (as shown in Figure 3)
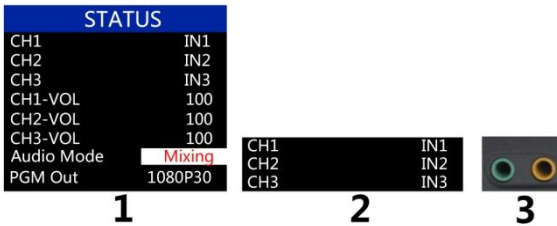
2. Operate the audio control area, press the CH1 button repeatedly to enter the first audio channel to select IN1, IN2, IN3, IN4, IN5, IN6, TRS_IN, and the corresponding menu status bar will change in real time according to your selection

After confirming the audio channel you selected, press the CH1 button (the button lights up in blue)

Indicates to turn on the first audio channel, and finally turn on the MUTE button master switch (the button lights up in blue)

Adjust the volume of the first channel of audio. At this time, the audio output from the PGM live broadcast will always be the first channel you turned on.

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3. Operate the mixer control area, press the CH2 button repeatedly to enter the second audio channel selection IN1, IN2, IN3, IN4, IN5, IN6, TRS_IN, the corresponding menu status bar will change in real time according to your selection (as shown in the figure) As shown below)

After confirming the audio channel you have selected, press the CH2 button ON (the button is on)

Indicates to turn on the second audio channel, press the corresponding VOL-/VOL+ of the second channel to adjust the audio volume of the second channel. At this time, the audio output from the PGM live broadcast is fixed to the first and second audio channels you turned on .

4. Operate the audio control area, press the CH3 button repeatedly to enter the third audio channel. Select IN1, IN2, IN3, IN4, IN5, IN6, TRS_IN, and the corresponding menu status bar will change in real time according to your selection (as shown in the figure below)

After confirming the audio channel you have selected, press the ON button (the button is on)

Indicates to turn on the third audio channel, press the VOL-/VOL+ corresponding to the second channel to adjust the volume of the third audio. At this time, the audio output from the PGM live broadcast is fixed to the first, second, and Three-way audio.
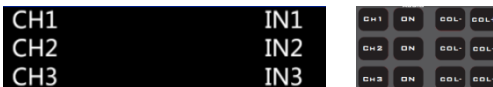
- **How to use listen audio：**

Operate the audio control area, press the MUTE button repeatedly to select the monitoring source, the corresponding menu status bar will change in real time according to your selection (as shown in the figure below)

The factory default of the monitor source channel is PGM, the channel selection of the monitor source is IN1, IN2, IN3, IN4, IN5, IN6, PGM, TRS_IN, and the 3.5mm headphone hardware interface is on the side of the switcher

Select PGM for the earphone monitor channel, and adjust the earphone monitor volume through the red fader of the mixer; select the IN1, IN2, IN3, IN4, IN5, IN6, TRS_IN audio channel, and the earphone monitor fixed volume cannot be adjusted.

4.1.2.2 Transition control area

There are 12 transition modes:

MIX mixed special effects transition, FADE fade-in and fade-out transition, and WIPE wipe transition, as shown on the right
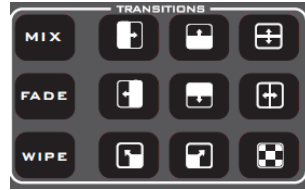
● MIX effects

The MIX effect is a transition effect. After setting, the original live screen will gradually fade in the main output of the transition, and then it will completely transition to the new live screen.

Click MIX **MIX** in the special effect control area (it shows a green light after pressing), then click the CUT button or AUTO to switch. The effect diagram is as follows

MIX transition effects, superimpose and gradually superimpose the B picture on the A picture, until the end of the transition, the picture is completely replaced by the B picture

● **FADE in and fade out transition effects**

Click FADE **FADE** in the special effect control area (it will show a green light when pressed), then click the CUT button or AUTO to switch. The effect diagram is as follows

FADE in and fade out special effects, A gradually darkens the picture until it is completely black, and then gradually

Gradually change from black to B screen

- **WIPE special effects transition**

There are four transition methods for Wipe

Up transition: Click **WIPE** in the special effect control area (press and display a green light), then click in the special effect control area (press and display a green light), and then click the CUT button or AUTO to switch. The effect diagram is as follows, the other three transition operations are the same.

Up wipe transition effects, the A picture remains unchanged, and the B picture moves through the upward direction.

- **Adjustment of transition rate**

When operating the transition special effect control area, you can control the transition rate by operating RATE1, RATE2, and RATE3 in the key panel. Note: The effect is only available when using AUTO transition
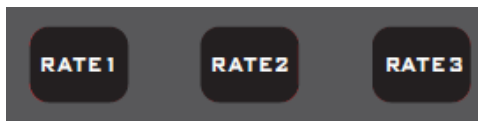
4.1.2.3 Integrated control area

Optimize the PIP/POP implementation method. When the PIP/POP function is turned on, the PGM main screen will be superimposed on the PVW preview screen, and then the live broadcast will be cut out;

- **PIP Picture in Picture Special Effects**

Picture-in-picture effect: Press **PIP** on the control panel (the green light will be displayed after pressing), then click the CUT button or AUTO to switch. The effect diagram is as follows

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The information on the LCD screen will switch to the PIP picture-in-picture setting, which can be set as required after pressing the key. As shown on the right

PIP size and position

You can use the key to set the PIP picture-in-picture

parameters, as follows (the horizontal position/

vertical position size is based on the smallest display

image).

PIP	
Window	1
H Position	0
V Position	0
Size	Small
Border Enable	ON
Border Width	2
BorderColor	White
Exit	

Horizontal position setting: The value from the upper left end to the upper right end is 0-140, and the value will increase/decrease by 10 for each division of the key.

Vertical position setting: The value from the upper left end to the lower left end is 0-810, and the value increases/decreases by 10 every time you turn the key.

Display size setting: You can choose small/medium/large settings.

Border switch setting: You can choose the on/off setting.

Border width setting: The border width can be selected from 2-7 thickness borders, and the value will increase/decrease by 1 every time you turn the key.

Border color setting: You can choose white/red/green/green to set the border color.

● **POP** Picture out picture effects

POP

Picture out picture effect: Press   on the control panel (the green light is displayed after pressing), then click the CUT button or AUTO to switch. The effect diagram is as follows

POP	
Window	1
H Position	0
V Position	0
Size	Large
Border Enable	ON
Border Width	2
BorderColor	White
Exit	
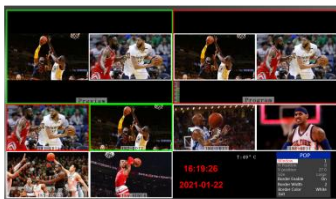
The information on the LCD screen will switch to the POP picture outside picture setting, which can be set according to your needs after pressing the key. As shown on the right

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POP size and position

You can use the knob to set the parameters of the POP picture outside picture, the situation is as follows

Picture selection setting: You can choose 1/2 pictures.

Horizontal position setting: the value from the upper left end to the upper right end is 0-960, and the value increases/decreases by 10 every time you turn the key.

Vertical position setting: The value from the upper left end to the lower left end is 0-540, and the value increases/decreases by 10 every time you turn the key.

Border switch setting: You can choose the on/off setting.

Border width setting: The border width can be selected from 2-7 thickness borders, and the value will increase/decrease by 1 every time you turn the key.

Border color setting: You can choose white/red/green/green to set the border color.

● **Freeze screen function**

The STILL button is defined as the screen freeze function. Press the button to turn on the green light to turn on the screen freeze function, press the button to turn off the green light, and the screen freeze function to turn off;

● **FTB emergency black field**

The FTB button is defined as the emergency black field screen output, press the button and the green light flashes to turn on the FTB emergency black field output function, press the button to turn off the green light, and the FTB emergency black field function is off;

4.1.2.4 PGM and PVW

● **Introduction of multiview output window**

Horizonta display   Vertical display

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Preview and Program are pre-monitoring and live output respectively. As shown below


PVW   PGM

There are 6 windows at the bottom of the multiview, corresponding to the input source monitoring, respectively corresponding to buttons 1-6 on the switcher control panel. As shown below


● **PGM and PVW output signal**

After the device is connected to the video signal source, press 1 (PGM) and 2 (PVW) in the button panel, and the live and preview signal sources in the output multi-screen monitor are 1 (PGM) and 2 (PVW) respectively, the signal sources are SDI IN1 and SDI IN2 respectively. The effect diagram is as follows

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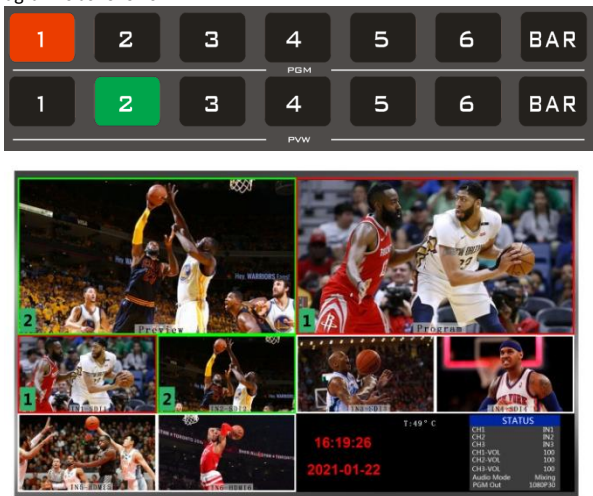
● **PGM and PVW source switching**

If you want to switch between live broadcast and preview signal sources in multiple screens (Live ⇌ preview)

Suppose you want to convert the live source 1 (PGM) and preview source 2 (PVW) in the multi-screen into 2 (PGM) and 1 (PVW), just press 2 (PGM) and 1 (PVW), then use the menu to switch. The live PGM signal source 1-6 can be switched freely with the preview PVW signal source. The effect diagram is as follows
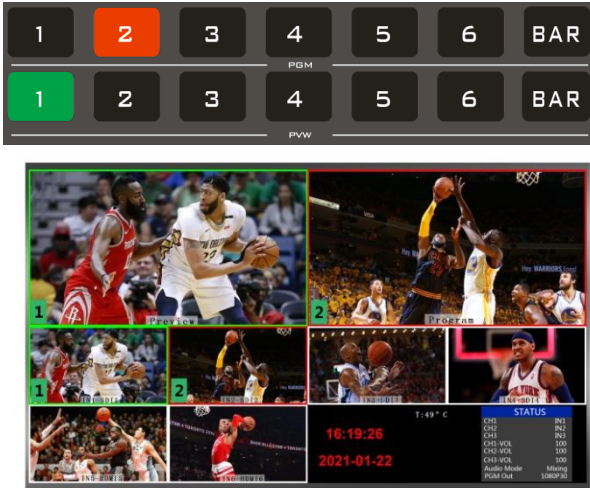
After pressing the button in the button panel, the screen will output color bars.

● **Luma Key**

Turning on this function will deduct the black part of the key source. Then overlap with the background image to achieve the purpose of keying and superimposing the background. This function is generally used for superimposing subtitles in a virtual studio.
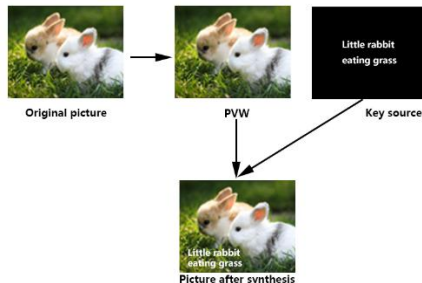
● **The panel realizes luma keying**

Switch the white font video or picture with black background to the PVW preview window, turn on the brightness key function of KEY1, at this time a brightness key parameter setting interface will appear on the LCD, and then use CUT/AUTO to switch to superimpose the characters on PGM,

Luma key settings:

After pressing luma [LUMA KEY] Key, the display menu will display the current luma key information, as shown in the figure below.

KEY	
KEY	Luma
BKGD	Green
Level	0-64
Exit	
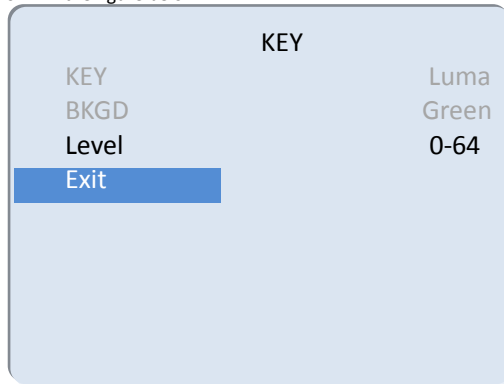
Under the menu, you can set the key source, select the video source, press the menu, and then adjust various parameters through the menu

● **Chroma KEY**

Chroma key keying supports dynamic video source image and static source keying. Switching the opportunity to key out the blue or green part of the key source, keep other colors, and then overlap with the background image to achieve the purpose of keying and superimposing the background. This function generally used for superimposing subtitles in virtual studios.

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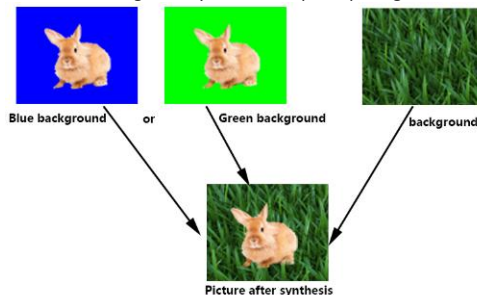
● **The panel realizes chroma keying**

Switch the blue background or green background to the PVW preview window, and then turn on the Chroma KEY function. At this time, a chroma key parameter setting interface will appear on the LCD screen. Use the knob to select the background of your keying. After selection, you can use CUT/AUTO to achieve keying. At this time, the image you want to superimpose appears on the PGM live broadcast. In the picture.
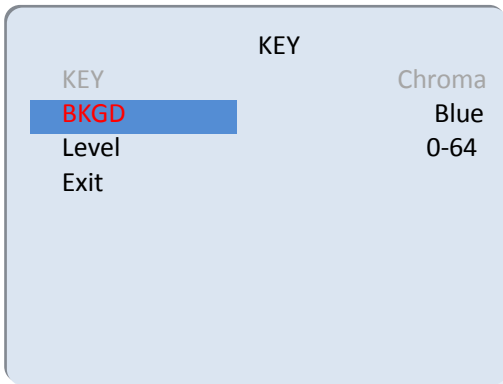
When the key [CHROMA KEY] is pressed, the display menu will display the current chroma key keying information, as shown in the figure below.

The video source item can select the key source, the KEY type has chroma key_green and chroma key_blue, and the level setting range is 0-64.

● **Reso resolution control**

Press F1 on the keypad to adjust the screen output resolution. Each time you press the button, you can adjust the output resolution. The resolutions are 1080P60Hz / 1080P50Hz / 1080P30Hz / 1080P25Hz / 1080P24Hz / 1080I60Hz / 1080I50Hz.

5. **System Menu Setting**

There is a status menu display in the lower right corner of the device's multiview, and the device status is displayed by default when it is turned on;

CH1/CH2/CH3 source indicates the current mixing channel status of the device;

The monitor source represents the audio channel currently being monitored;

The SDI OUT2 interface can customize the PGM/PVW output and switch through the knob;

The audio mode corresponds to the selection of mixing and following, which can be selected through the knob;

The output resolution is the PGM output of the corresponding device, which can be switched by the knob, 1080I50/60, and 1080P24/25/30/50/60;

In the power-on default state, press the knob to enter the main menu, as shown in the figure below.

	Status	
CH1	100	IN1
CH2	100	IN2
CH2	100	IN3
Earphone		Phone_IN
SDI OUT 2		PGM
Audio Mode		Mixing
PGM Output		1080P30

Main Menu

System Settings
Network Settings
Device Info
Exit

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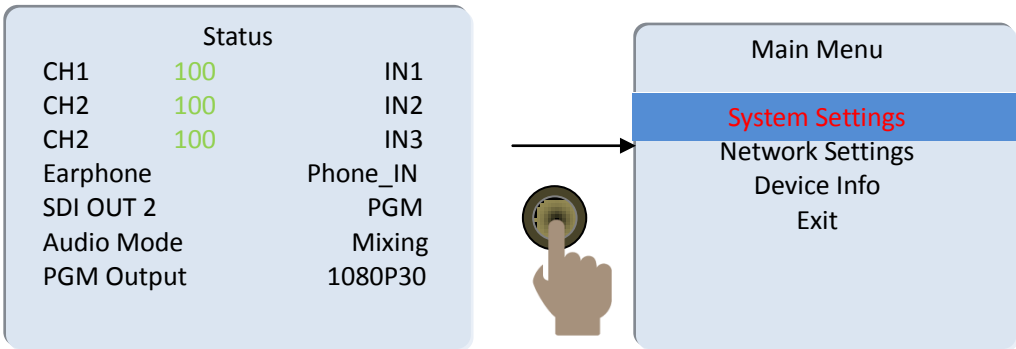
5.1 System Settings

After turning the knob to the system setting, you can click the knob to enter the system setting submenu, as shown below:

System Settings
Language selection   English/Chinese
Clock   Digital/analog
Audio Delay   0-30/ OFF
Reset
Return

The audio delay corresponds to the PGM output video, there are 0-30 values that can be adjusted, and one value means 20 milliseconds;

Whether the date display switch is displayed on the analog clock;

5.2 Network Settings

Network Settings
IN Acquisiting   Dynamic
IP   192.168.   1.227
NetMask   255.255.255.   1
GateWay   192.168.   1.   1
Savet
Return

There are two modes for obtaining an IP address. One is dynamic configuration, and the other is a static IP address that needs to be manually configured. Remember to save and exit after the setup is complete.

Note: When setting the device IP address, do not repeat the IP address to avoid address conflicts.

5.3 Device Information


```
           Device Information
  S/N              07-03-33-02-24
                   -24-00-02-02-11
  Return
```

6. **Failure and Maintenance**

● Common Faults and Solutions

(1) The output image may be flickered by interference. The quality of the wire used may be poor, and the shielding layer of the wire is not well prepared. When there is a strong radio near the use environment, radio waves may interfere with the transmission of the signal, resulting in unstable signal flicker. Please use the wire produced by regular manufacturers, such as Belden, Jia Nai Mei.

(2) When plugging in the audio and video interface, if there is obvious static electricity, the device power ground wire may not be good grounding, please ground in the correct way; otherwise it will easily damage the host and shorten the life of the mainframe.

(3) When RJ45 (generally: Computer network port) cannot control the Switcher, check whether the communication port set by the control software corresponds to the serial port of the connected device; check if the communication port of the computer is good.

● Maintenance

Use a soft, dry cloth to clean the device. Do not use alcohol, paint thinner or benzene to clean. Make sure that the device is stored and operated in an environment away from liquids and stains.

● Warranty information

The company guarantees that the process and materials of the product are not defective within 12 months after purchase from the company or its authorized distributors, under normal use and service support. We offer a one-year warranty after sale

7. More switcher options

No.	Model	Description
1	HDS9101	Portable 6-CH switcher（4xSDI+2xHDMI ,15.6"LCD）
2	HDS9105	Portable switcher（4HDMI +1DP）
3	HDS9105C	Portable switcher（4HDMI +1DP）
4	HDS9125	Portable switcher (4HDMI+1DP)
5	HDS9135	Portable switcher (4HDMI+1DP)
6	HDS9325	Portable switcher (4HDMI+1DP)
7	HDS9335	Portable switcher (4HDMI+1DP)
8	HDS9226	Portable switcher (4SDI+2HDMI)
9	HDS9236	Portable switcher (4SDI+2HDMI)
10	HDS9326	Portable switcher (4SDI+2HDMI)
11	HDS9336	Portable switcher (4SDI+2HDMI)
12	HDS9108	Portable switcher (4HDMI+4SDI)
13	HDS9106	Portable switcher (4SDI+2HDMI)

14	HDS9106MINI	MINI Portable switcher (4SDI+2HDMI)
15	HDS9110	Portable switcher (8 SDI+2 HDMI)
16	HDS9112	Portable switcher (12 SDI)
17	HDS6506	All-in-one switcher(6-CH)
18	HDS6110	All-in-one switcher (10-CH)
19	HDS6112	All-in-one switcher (12-CH)
20	HDS7105S	Simple switcher(4HDMI+1DP)
21	HDS7105	Simple switcher(4HDMI+1DP)
22	HDS7105P	HDS7105 with T-Bar
23	HDS7205S	Simple switcher(4HDMI+1DP)
23	HDS7205	Simple switcher(4HDMI+1DP)
25	HDS7106	Simple switcher(4SDI+2HDMI)

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