

Users' Manual

VER 1.0



4K UHD Video Switcher

Precautions

Failure to observe these precautions could result in personal injury or death, possibly resulting in damage to equipment, loss of data, reduced equipment performance, or unpredictable results.



Electrical Safety Features

- To avoid serious damage caused by possible electric shock, before moving the product, please temporarily remove the power cord from the power port of the product.

- When you need to add new hardware to the product or remove existing hardware from the product, be sure to power off the product first. If conditions permit, it is recommended to temporarily remove the power cord from the product interface.

- Before use, confirm whether the product is grounded and whether the power supply voltage has been adjusted to the applicable range of the product. Failure to do so may result in damage to the product, reduced performance, or unpredictable results.

- Do not use loose or damaged power sockets or touch the power sockets with wet hands, otherwise there is a risk of electric shock and fire.

- If you hear noises from the power cord and the power interface, please unplug the power cord immediately and seek help from your sales representative, otherwise there will be a risk of fire or electric shock.

- If foreign objects or liquids enter the product or need to clean the product, please remove the power cord and any other cables from the product; otherwise there will be danger of electric shock, fire and damage to the product.

- If the power supply is damaged, please do not try to repair it yourself. Please contact professional technical service personnel or distributors to deal with it.

Due to the continuous update of product functions, the user manual in your hand may be different from the actual application. Please download the latest user manual from the DeviceWell official website. The update date of this user manual is July 15, 2023.

There are technical changes in the future without notice.

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1. Overview

1.1 Product Introduction

The 4K UHD switcher integrates a variety of control methods. The special effects and transition methods can be set through the keyboard. The built-in menu display function can set the device more intuitively and efficiently. The camera joystick can control the distance of the camera.

It is a dedicated broadcasting switcher for broadcast & TV stations, supporting up to 8-CH 4K60 signals. The device integrates HDMI decoder, DP decoder, the highest input resolution supports 4K60HZ, backward compatible with 1080P/720P high-definition video signal, built-in format converter, adaptive front-end different video signal input; Built-in special effect generator, audio processor, video streaming processing and other common components of switcher.

The video signal interface supports 4-CH HDMI+4-CH DP, a total of 8-CH video input and 4-CH HDMI output.

The audio signal interface supports 2-CH Analog Audio input and 2-CH Analog Audio output.

Support DCB control system and tally output.

Optional H.26x encoding module, video stream can be output through UVC.

It can be applied to broadcast and TV station studios and the needs of switching video effects on location. For professional users, the control keyboard can be expanded through the DCB interface.

It is suitable for live performances, course recording and studio guidance, etc. The switcher has a variety of functions, such as multi-format video input and input resolution adaptive, analog and balanced audio input and output, audio embedding and de-embedding, audio mixing, USB3.0 streaming, keying function, RS422 control, etc., with remote upgrade capability. Users can perform video switching and audio mixing functions with additional effects through simple operation



2. Function Features

The switcher is a directing system controlled by up to 4 cameras, which is suitable for the needs of many events. With the development of the times, it is especially prominent in the remote live broadcast of sports games, large-scale concerts or evening parties. . In order to use super multi-camera live broadcasting operations in large-scale events, there must be more than 4 sets of input on the directing system, so that the wonderful program content can be presented in front of the audience from time to time, and the live broadcasting pictures have multiple Pattern change effect. It can meet the on-site production needs of various occasions and create exciting and wonderful pictures.

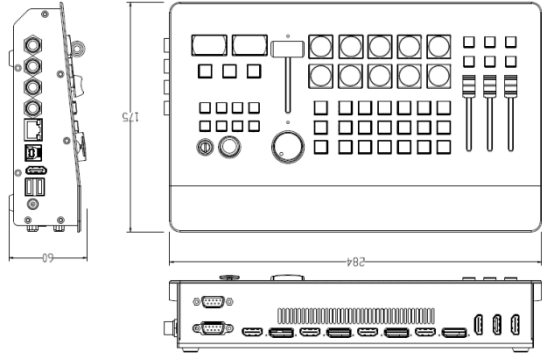
The switcher is a super multi-camera broadcasting device that requires no professional knowledge, and can perform video switching and audio mixing with simple operations. This machine can be used in radio and television, live broadcast and various event venues.



- ◆ Metal aluminum alloy material, high strength and light weight
- ◆ Industrial-grade mechanical keys
- ◆ Hall sensor T-Bar
- ◆ A separate PATTERN KEY, which can set various special-shaped patterns,
- ◆ The position, size and number of images can be adjusted
- ◆ Hundreds of special effect wipes such as circle, rhombus, fan, plum blossom, shutter, etc.
- ◆ Support joystick, camera control
- ◆ Support RJ45 remote control
- ◆ Support DCB control
- ◆ Broadcast & TV standard Tally interface
- ◆ Support GPI control
- ◆ Support pedal, control handle and other input
- ◆ Support 3840x2160p60/50/30/25/24,
- ◆ HDMI interface output 1-CH 1080P60 PGM output
- ◆ Support screen freeze function
- ◆ Support FTB black field emergency switching
- ◆ 4x4K60HDMI+4x4K60DP input
- ◆ MULTIVIEW output: 1-CH HDMI
- ◆ PGM output: 3-CH HDMI
- ◆ 2-CH Analog Audio input
- ◆ 2-CH Analog Audio output
- ◆ Support 4K HDR
- ◆ Support HDMI audio de-embedding
- ◆ The device comes with color bar output
- ◆ Support PIP and POP function
- ◆ Support MIX/FADE transition effects;
- ◆ Support CUT hard cutting, AUTO automatic switching
- ◆ Support Luma key and Chroma key
- ◆ Support RS422 interface to control the camera
- ◆ Support PC software remote upgrade
- ◆ Support audio follow and mix function
- ◆ Support DC12V power input

2.1 Size

Size: 284*175*60mm



3. Interfaces

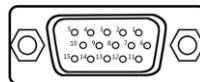
3.1 Interface Introduction

The switcher interface is shown in the picture



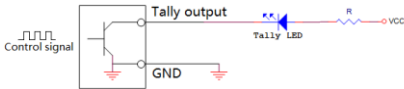
No.	Definition	Description
1	2 Analog Audio OUT	2-CH Analog Audio output
2	2 Analog Audio in	2-CH Analog Audio input
3	RJ45	Network upgrade /Remote control
4	USB3.0	USB3.0 stream
5	HDMI OUT	1080P PGM output
6	DCB	DCB support cascade equipment, director tally light system
7	DC 12V	DC 12V power supply
8	RS422	PTZ camera control
9	Tally /GPI	Connected to director tally light system (DB-15)/GPI control
10	HDMI IN/DP IN	4-CH HDMI+4-CH DP Input
11	HDMI OUT	MultiView OUT
12	HDMI OUT	2x4K60 HDMI PGM OUT

3.2 TALLY-GPI Interfaces



PI	Function(TALLY)	PIN	Function(GPI)
11	PGM-IN1	1	GPI -IN1
12	PGM-IN2	2	GPI -IN2
13	PGM-IN3	3	GPI -IN3
14	PGM-IN4	4	GPI -IN4
6	PVW-IN1	10	GPI -IN5
7	PVW-IN2	15	GPI -IN6
8	PVW-IN3	5	GND
9	PVW-IN4		

TALLY Diagram:



Note: Tally LED: for external display device

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

GPI Optional feature list:

GPI-Inx Optional feature		Description
1	PGM1	Simulate PGM1 button messages
2	PGM2	Simulate PGM2 button messages
3	PGM3	Simulate PGM3 button messages
4	PGM4	Simulate PGM4 button messages
5	PGM_BA	Simulate PGM_BAR button messages
6	CUT	Simulate CUT button messages
7	AUTO	Simulate AUTO button messages
8	MUTE	Simulate MUTE button messages
9	FTB	Simulate FTB button messages
10	STILL	Simulate STILL button messages

GPI Control Schematic:



3.3 Parameters

Name	4K UHD Video Switcher	
Video Signal Input	Input signal	HDMI/DP video signal
	Code rate	270Mbps~18Gbps
	Connector	Standard
	Signal amplitude	800mV±10%(HDMI /DP)
	Impedance	100Ω (HDMI) 100Ω (DP)
	Balance	Adaptive
	DVD input	480i/576i,480p/576p,720p,1080i,1080p,2160p
	HDMI/DP input support	3840x2160,1920x1080,1680x1050,1600x900,1440x1050,1366x768,1360x768,1280x102,1280x960,1280x800,1280x768,1280x720,1280x600,1152x864,1024x768,800x600
Video Signal Output	output signal	HDMI video signal
	Code rate	6Gbps ~18Gbps
	Connector	Standard
	Return Loss	>15dB 5MHz~3GHz
	Signal amplitude	800mV±10%(HDMI/DP)
	Impedance	100Ω (HDMI) 100Ω (DP)
	DC offset	0V±0.5V
	Clock recovery	Support
General Parameter	power supply	12V
	Power rate	≤35W
	Size	284*175*60mm
	Control Panel	Support on-site production, integration of a variety of buttons.
	Operating	0℃~50℃ No condensation
	Storage temperature	-20℃~75℃
	Working humidity	20%~70% RH
	Storage humidity	0%~90% RH, No condensation

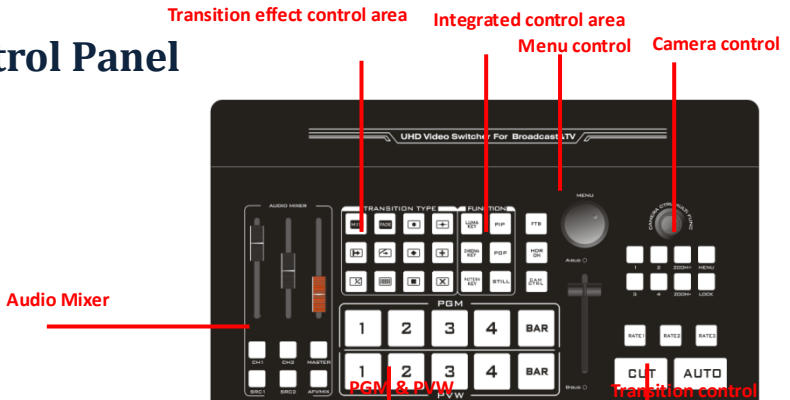
4. Control Panel & Interfaces

Please take a few minutes to read this chapter before using your switcher equipment. This chapter will give you a detailed introduction to the panel and interface of the switcher to facilitate your subsequent use and operation.

The high-strength feature of the switcher equipment improves the anti-drop, anti-compression, and anti-seismic capabilities of the whole machine, and effectively protects the components inside the equipment. The ultra-thin feature makes the equipment more convenient during transportation and maintenance without the need for other equipment; it also has unparalleled heat dissipation performance.

In addition to the innovation of the shell, the switcher has also made a new optimization of the interface connector. Adopting new RoHS-compliant environmentally friendly materials, the requirements for durability and environmental protection are more stringent, providing customers with more stable and environmentally friendly products.

4.1 Control Panel



4.2 Area Description

NO.	Name	Description
1	Audio Mixer	Mainly for audio follow and mix settings
2	Transition effect control area	Select transition effects
3	Integrated control area	Mainly to control the switcher overlay effects
4	Menu control	Use the knob to adjust the menu information
5	Camera control	Switch 1-4 cameras
6	Transition control	Control transition switching and transition rate adjustment
7	PGM & PVW	Manually control live and preview selection

4.2.1 Button Description

4.2.1.1 Audio Mixer

Audio channel control:

IN PUT1/IN PUT2/IN PUT3 means that 3 kinds of input audio can be controlled,

MASTER: Adjusts the output master volume.

Audio Source switch:

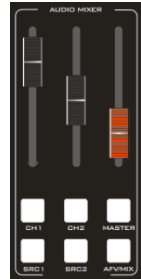
Where SRC is the audio channel binding selection, press SRC1/SRC2/SRC3

Cycle through and select the desired audio channel.

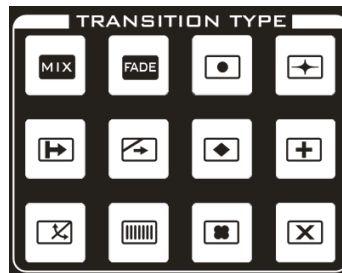
Audio Mode:

When the button light is on, it means that the audio is currently in follow mode, and when the button light is off, it means that the audio is currently in mixing mode.

To return to the previous, press the EXIT key



4.2.1.2 Transition effect control area



The transition mode is divided into:

MIX special effects transition, FADE in and fade out transition.

Transition effects:

Hundreds of special effect wipes such as circle, rhombus, fan, plum blossom, shutter, etc.

4.2.1.3 Integrated control area



Luma Key, press it to delete black in the background.



Chroma Key, press it to delete the specified color (Blue or Green), superimposed with the background source.



A separate PATTERN KEY can set various special-shaped patterns, and the position, size, and number of images can be adjusted.



PIP special effects button, open picture-in-picture function



POP special effects button, open picture-out-picture function



Press STILL on the control panel (the green light will be displayed after pressing), then the output PGM video animation will enter the freezing phenomenon, press the button again to unfreeze the screen



Black field, it will flash after clicking to indicate that the main output is outputting black field.

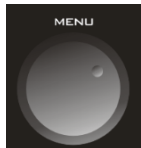


HDR parameters setting



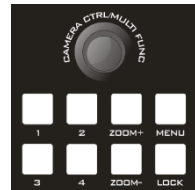
Turn on camera control

4.2.1.4 Menu control

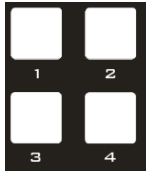


Menu settings are made via the rotary knob.

4.2.1.5 Camera control



The switcher supports 4-CH camera control, and the distance of the 4-CH camera can be controlled by the joystick.



Press to select camera No.1, No.2, No.3 and No.4 respectively



Zoom in/increase the shooting distance

Zoom out/ reduced shooting distance

Push the camera rocker up: the lens is up

Push the camera rocker down: the lens is down

Push the camera rocker left: rotate the lens counterclockwise

Push the camera rocker right: rotate the lens clockwise

Mic	
Mic Volume	32dB
Mic Type	Passive
Exit	

CAM	
Address	1
Baud rate	9600
Protocol	PELCOD
Rotation rate	16
Exit	

4.2.1.6 Transition control

The T-bar system of the switcher consists of a T-bar module and an indicator light. Pushing up the T-bar can complete the transition.

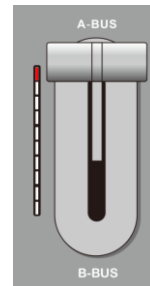
When the push T-bar, the indicator light will move accordingly, to the top position 1 (one light will be on when the T-bar is pushed to the bottom and top).



Hard cut transitions, no transition effects.



Automatic transition with transition effects.



Transition rate selection: RATE1, RATE2, and RATE3 can respectively select the transition rate through the menu.

The rotation rates are: rate1: 640ms; rate2: 1280ms; rate3: 2560ms

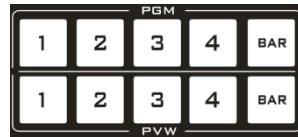
(Note: Only available when using AUTO transition)



4.2.1.7 PGM & PVW

Mainly choose PGM (live) and PVW (preview)

The output channel, red means PGM Live, green means preview.



5. Button Operation Introduction

5.1 Multiview Output Window



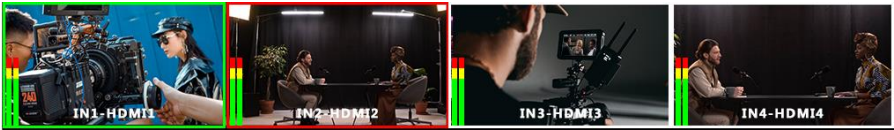
Preview and Program are PVW and PGM output respectively; as shown below:



PVW

PGM

There are 4 windows below that correspond to the input source monitoring, corresponding to the 1 - 4 buttons on the control panel.



5.2 PGM & PVW Switch

5.2.1 T-bar Calibration

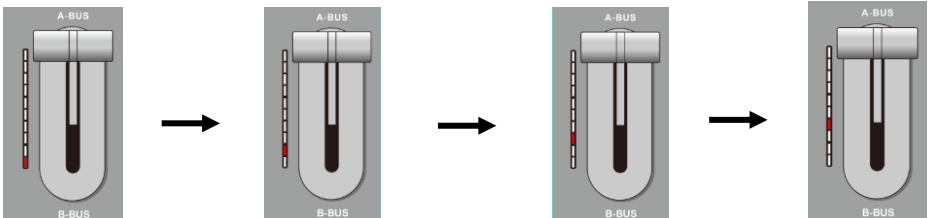
When the switcher is in use, the fader misalignment may occur, and the origin of the switcher fader is offset. Therefore, the switcher pushrod system should be calibrated before use.

First press the 1 and 2 buttons in the PGM area simultaneously with the device turned off. As shown below:

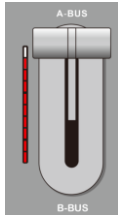


Note: The 1 and 2 keys cannot be released during the calibration process.

Turn on the power switch again, and the indicator light next to the push rod will light up in sequence after the power is turned on, as shown below.



At this time, push the T-bar back and forth until the indication is normal. (All lights up or all lights down) as shown below.



The picture on the left shows the status of the push indicator light from bottom to top.

If the display on the left indicates that the calibration is complete, you can release the 1 and 2 buttons that were previously pressed.

After the device is wired, input camera 1 and camera 2, the default will be displayed in the red mark 1 and 2 position in the figure below; then press 1 and 2 respectively in the PGM and PVW areas of the control panel, then the PGM and PVW boxes above will display correspondingly. Signal source.



After the device is connected to the video signal source, press 1 (PGM) and 2 (PVW) in the key panel, the live and preview signal sources in the output multiview monitor are 1 (PGM) and 2 (PVW) respectively, the signal sources are IN1 and IN2 respectively, as shown in the figure below



Then press the AUTO, CUT, or manually push the T-bar on the control panel to switch. Among them, AUTO can be set to switch effects, CUT is hard cut, no transition effect, manual putter can set special effects, and push speed is proportional to the speed of switching.

Note: In the process of switching between AUTO and T-bar, if the 1 button of PGM and the 2 button of PVW are both red, the channel for switching PGM or PVW is invalid. As shown below



5.2.2 PGM & PVW Channel Selection by Panel

The button board and the 1-4 channels in the PGM & PVW of the PC control software correspond to the 4 multiview under the 4-screen segmentation.

Press the selection in the PGM area as shown below, and the button will turn red (live). Pressing PVW will display green (preview).



Suppose you want to convert the live signal source 1 (PGM) and the preview signal source 2 (PVW) in the multiview into 2 (PGM) and 1 (PVW), just press 2 (PGM) and 1 (PVW), and then click AUTO or CUT to switch. The live PGM signal source 1-4 can be switched arbitrarily with the preview PVW signal source. As shown above.

5.2.3 Transition Control

There are mainly two transition control methods for portable switchers, one is transition with transition effects, and the other is transition without transition effects.

1. No transition effect: Press CUT, CUT button is hard cut. If you select the preview (PVW) screen to switch directly to the main output (PGM), because there is no delay seamless switching, there is no transition effect.

2. There are transition effects:



- AUTO button, first select the rate of transition, select the pre-stored transition time in the user-defined area, as shown below, (displayed red after pressing).
- Then select the transition effect, the transition effects have been connected: MIX, FADE, WIPE, INV mirror button (special effects more details after this). At last press AUTO, you can make a transition with the special effects.
- The T-bar transition, the T-bar transition is consistent with the AUTO effect setting. The difference is that the speed of the push determines the speed of the transition is proportional and flexible.

5.2.4 PGM Output Black Field

In the integrated control area FTB button FTB, this button function is: PGM output black field, press the FTB button will flash the main output will be blackened, can deal with various emergencies, the effect is as shown below.

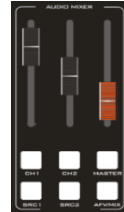


If the PGM output is found to be black and it is still black after the transition, please check if the FTB button is pressed (flashing). Press again to turn off the black field.

5.3 Audio Settings

5.3.1 Audio Introduction

Audio modes are divided into Mix and Follow.

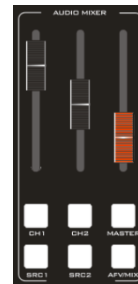


5.3.2 Audio description of mixer control area

5.3.2.1 Audio Introduction

The switcher supports analog balanced audio input and output; supports HDMI audio de-embedding, external audio and HDMI de-embedded audio can be arbitrarily assigned to output, supports audio follow and mix switching functions, the menu and panel display as shown below.

STATUS		
CH1	100	PGM
CH2	100	IN2
Audio Mode		Mixing
PGM Out		2160P60
Mic Volume		32dB
HDR CFG		HLG



5.3.2.2 Audio Follow

The default audio mode of the device is audio follow-up (the audio source is HDMI input). If pressed Master, the volume output is turned on. The volume level corresponds to the position of the audio fader. Push the fader to adjust the volume of the following audio.

5.3.2.3 Audio Embedding

After accessing the Canon audio, operate any audio channel of the mixer SRC1/SRC2 to control the external

embedded audio. The volume level corresponds to the position of the audio fader. Turn on the MASTER master volume audio channel, at this time the PGM source is externally embedded. At this time, the push fader can adjust the volume of the embedded audio and control the PGM output volume.

5.3.2.4 Mixing mode

The knob can be switched to the mix mode (default follow mode). After setting to the mix mode, press INPUT1, INPUT2 to turn on the mix mode. Up to 2 channels can be mixed. The sound can be adjusted by the audio fader. .

5.3.2.5 Audio Source Switching

Press the SRC1, SRC2 to bind the source of the audio channel multiple times. The default order is multiview channel 1 – 4 channel audio source and then external audio input source.

5.3.3 Audio usage analysis

The audio mode is divided into Follow and Mixing;

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

Mixing: Mixing three different audio outputs to PGM at the same time, which means that I specify the audio of one camera as the live sound, and specify the audio of the camera as the audience applause, then I use the audio from the mixer. Embedded in my switcher; after the audio channel is fixed, the video channel can be switched at will.

5.3.3.1 Audio mode switching

Switch the audio mode through the black knob of the operation panel (as shown in Figure 1)

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

Turn the knob clockwise to the Audio Mode option (shown in Figure 3)

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

Rotate the knob to select Mixing or Follow ;



①

STATUS		
CH1	100	IN1
CH2	100	IN2
Audio Mode		Mixing
PGM Out		2160P60
Mic Volume		20dB
HDR CFG		Close

②

STATUS		
CH1	100	IN1
CH2	100	IN2
Audio Mode		Mixing
PGM Out		2160P60
Mic Volume		20dB
HDR CFG		Close

③

STATUS		
CH1	100	IN1
CH2	100	IN2
Audio Mode		Follow
PGM Out		2160P60
Mic Volume		20dB
HDR CFG		Close

④

5.3.3.2 How to use the audio follow mode

1. First adjust the audio mode to follow by the knob

Press the mixer's MASTER button (the button lights up in green)

The channel of the audio follow mode is turned on, pushes the corresponding red fader upwards, adjusts the volume of the PGM output, and switches the video signal with audio to the PGM window. At this time, the audio table of the PGM window will have a sound column fluctuation.

To turn off the audio output, push the red fader down or press the MASTER button (the button light goes out).

STATUS		
CH1	100	IN1
CH2	100	IN2
Audio Mode		Follow
PGM Out		2160P60
Mic Volume		20dB
HDR CFG		Close



2. The audio following channels are IN1-HDMI1//DP1、IN2-HDMI2/DP2、IN3-HDMI3/DP3、IN4-HDMI4/DP4 corresponding operation panel buttons.



5.3.3.3 Function analysis of the mixer

According to the picture on the right:

1. CH1 means the first audio channel open key, and SRC1 means the source selection of the first audio channel;
2. CH2 means the second audio channel open key, and SRC2 means the source selection of the second audio channel;
3. MASTER means the total volume switch button;

STATUS		
CH1	100	IN1
CH2	100	IN2
Audio Mode		Mixing
PGM Out		2160P60
Mic Volume		20dB
HDR CFG		Close



5.3.3.4 How to use the mix assignment

1. Adjust the audio mode to Mixing by the knob first (As shown in Figure 1)

Corresponding to the status bar of the LCD screen, the audio channel source is displayed. The factory default is CH1 source IN1, CH2 source IN2. (As shown in Figure 2)

STATUS		
CH1	100	IN1
CH2	100	IN2
Audio Mode		Mixing
PGM Out		2160P60
Mic Volume		20dB
HDR CFG		Close

①

CH1	IN1
CH2	IN2

②

2. Operate the mixer control area; press the SRC1 button to enter the first audio channel to select IN1, IN2, IN3, and IN4. The corresponding menu status bar will change according to your choice in real time.

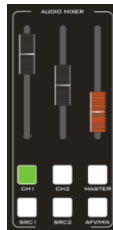
After confirming the audio channel you have selected, press the CH1 button (as shown in Figure 2)

Indicates that the first audio channel is turned on, and finally the MASTER button main switch is turned on (as shown in Figure 3)

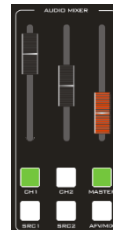
Push the white fader corresponding to the first channel to adjust the volume of the first channel audio. At this time, the audio output of the PGM live broadcast is fixed as the first audio that you turn on.

CH1	IN1
CH2	IN2

①



②



③

3. Operate the mixer control area, press the SRC2 button to enter the second audio channel to select IN1, IN2, IN3, IN4. The corresponding menu status bar will change according to your choice in real time. (as shown in Figure 1)

After confirming the audio channel you selected, press the CH2 button (as shown in Figure 2)

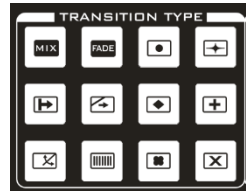
It means to open the second audio channel, push the white fader corresponding to the second channel, and adjust the volume of the second channel audio. At this time, the audio output of the PGM live broadcast is fixed to the audio of the first and second channels that you turn on.

CH1	IN1
CH2	IN2

①



②



5.4 Special effects instructions

5.4.1 MIX Transition Effects

The MIX blend effect is a transition effect. After setting, the transition will have the original live screen fade in the main output and then disappear until it disappears completely to the new live screen, as shown below.



A → B

MIX mixed transition effect, superimposed and superimposed B picture in A picture until the transition to the end, the picture is completely replaced with B picture

Select the effect control area MIX and then click to use the T-bar or AUTO to switch.

5.4.2 FADE In and Out Transition Effects

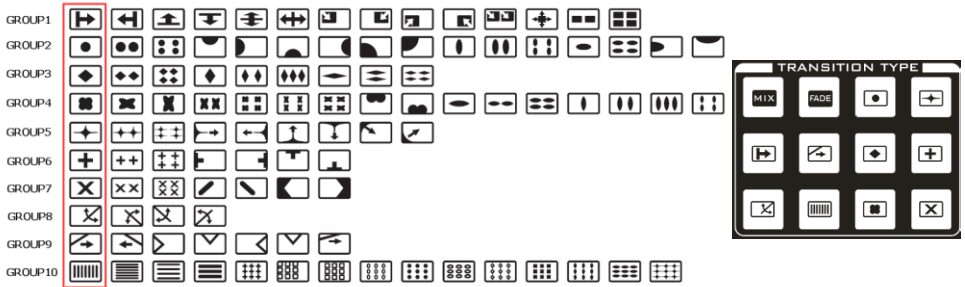
Select the effect control area FADE and click to use the T-bar or AUTO to switch.




A → B

FADE fades in and out, and A gradually darkens until it is completely black, and then gradually changes from black to B.


5.4.3 Hundreds of Special Effect Wipes such as Circle/Diamond/Fan



Perform special effect style conversion according to the 10 buttons in the red frame.

 GROUP1 start button, switch by button, click the switch button in the special effect control area (the green light will be displayed after pressing) and then click AUTO or T-bar or CUT to switch. Press the current switching key repeatedly, and then click AUTO or the T-bar or CUT to switch. Note that the next group of pictures will be displayed completely after each screen switch is completed.

The same GROUP2~GROUP10, the same operation switching effect as GROUP1.

 After the PATTERN KEY function is turned on, 10 special effect patterns can be selected, the size, position and shape of the pattern can be changed, and the number of each type of image can be increased.

5.4.4 PIP Picture-In-Picture Special Effects

When the T-bar is operated in the B-BUS state, the PIP button will have a small screen appearing in the upper left corner of the preview. The source signal of the SD11 is displayed by default. The default background is PVW. As shown below



At this time, the information on the LCD screen will be switched to the PIP picture-in-picture setting. After

pressing the knob, it can be set according to the requirements. As shown below

PIP	
Screen Select	1
Horizontal	0
Vertical	0
Display Size	Large
Border Switch	ON
Border Width	2
Border Color	Green
Exit	

PIP size and position

You can use the knob to set the parameters of the PIP picture-in-picture, as follows:

Horizontal position setting: The value from the top left to the top right is 0-1280, and the value of each rotation knob is increased/decreased by 10.

Vertical position setting: The value from the top left to the bottom left is 0-760, and the value of each rotation knob is increased/decreased by 10.

Display size setting: Small/medium/large settings can be selected.

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

Border width setting: The border width can be selected from 2-7 thickness borders, and the value of each rotation knob is increased/decreased by 1.

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

Picture-in-picture source switching

You can switch the input source of the PIP by pressing 1, 2, 3... in the PVW number keys.

5.4.5 POP Picture-Out-Picture Special Effect

The T-bar operates in the B-BUS state. Clicking on the POP button will display a small screen in the upper left corner of the preview. The source signal of the SD11 is displayed by default. The default background is PVW. As shown below:



At this time, the information on the LCD screen will be switched to the POP picture-out-picture setting, and

the knob can be set as required. As shown below

POP	
Window	1 ↕
H Position	0 ↕
V Position	0 ↕
Size	Large ↕
Border Enable	On ↕
Border Width	2 ↕
Border Color	Green ↕
Exit	

POP size and position

You can use the knob to set the parameters of the POP drawing, as follows

Screen selection setting: You can select 1/2 two screens.

Horizontal position setting: The value from the top left to the top right is 0-960, and the value of each rotation knob is increased/decreased by 10.

Vertical position setting: The value from the top left to the bottom left is 0-540, and the value of one rotation per knob is increased/decreased by 10.

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

Border width setting: The border width can be selected from 2-7 thickness borders, and the value of each rotation knob is increased/decreased by 1.

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

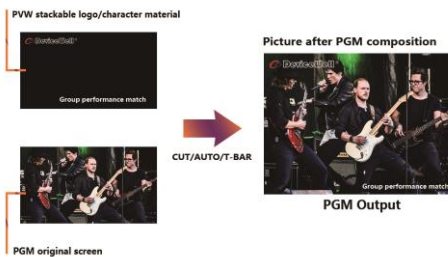
Picture-out-picture source switching

Press 1, 2, 3... in the PVW number keys to switch the input source of the picture.

5.4.6 Luma KEY

The Luma key image supports the dynamic video source image and the static source image. The switcher will deduct the black part of the key source and retain other colors. Then it overlaps with the background image to achieve the purpose of keying and superimposing the background. This function is generally used for superimposing subtitles in virtual studios.

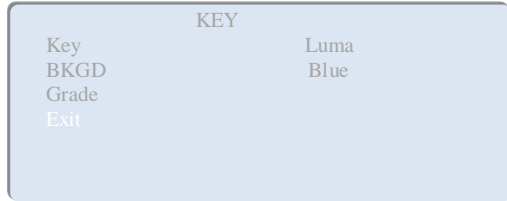
Luma Key Operation:



5.4.6.1 Panel Luma Key

Switch the video or picture of the black background white font to the PVW preview window, and turn on the Luma KEY brightness key function. At this time, the LCD will display a brightness key parameter setting interface, and then use the CUT/AUTO/push switch to superimpose the characters. PGM live window.

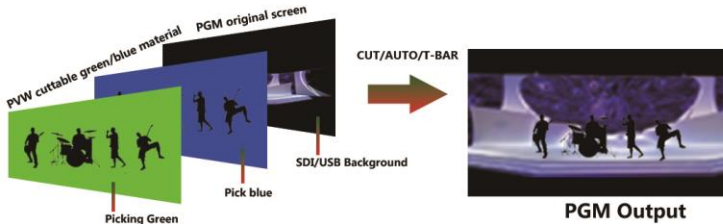
Image color gamut setting: After pressing the Luma KEY , the LCD panel will display the current luma key image information, as shown below.



5.4.7 Chroma KEY

The Chroma key image supports dynamic video source image and static source image, switching the opportunity to buckle the blue or green part of the key source, retaining other colors, and then overlapping the background image to achieve the purpose of image and overlay background. Generally used for superimposing subtitles in virtual studios.

Chroma Key Operation:



5.4.7.2 Panel Chroma Key

Switch the blue background or green background to the PVW preview window, and then turn on the Chroma KEY function. At this time, the LCD screen will display a parameter setting interface for the chroma key. Use the knob to select the background of your key image. After the selection, The image can be achieved by CUT/AUTO/Pusher, and the image you want to superimpose appears in the PGM live view;

When the chroma key is pressed, the LCD panel displays the current chroma key image information as shown below.

Key	Chroma
BKGD	Blue
Grade	16
Exit	

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

5.5 System Menu Setting

5.5.1 Menu Display

In the menu, you can perform IP settings on the device, restore the system to factory settings, change the language, etc.

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

Status		
CH1	100	IN1
CH2	100	IN 2
CH3	100	IN 3
Audio Mode		MIX
Resolution		2160P60
MIC Vol.		20dB
HDR		OFF



Main Menu
System Settings
Network Settings
GPI Settings
Recording Settings
Device Info
Exit

Rotate the knob below the status bar to set the audio mode, output resolution, Mic volume, and HDR settings;

Audio mode; turn the knob to select mix or follow;

Output resolution: Rotate the knob to operate, select 3840x2160@P60/50/30/25/24

Mic volume: -18~32dB. HDR Settings: Follow, HDR10, HLG, Off

5.5.2 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	Chinese
Fan Control	Intelligent
Fan Speed	300
AUX_IN	Phone
Reset	
Return	

In this menu, you can choose between Chinese or English. If you encounter an unknown error during use, you can choose to restore the factory settings and reset it.

5.5.3 Network Settings

Network Settings	
IP Source	static IP
IP Address	192.168.1.237
Subnet Mask	255.255.255.0
Gateway Settings	192.168.1.1
Save	
Return	

5.5.4 GPI Settings

Main Menu	
GPI1	PGM1
GPI2	PGM2
GPI3	PGM3
GPI4	PGM4
GPI5	PGM5
GPI6	PGM6
Return	

5.5.5 Device Info.

Device Info.	
Version	xxxxxx -10-60
Serial No.	02-09-00-16-16- 16-16-00-11-11- 02-00
Return	

There are two modes for obtaining an IP address. One is dynamic configuration, and the other is a static IP address. The static IP address 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.

GPI-Inx Optional Function		Description
1	PGM1	Simulate PGM1 button messages
2	PGM2	Simulate PGM2 button messages
3	PGM3	Simulate PGM3 button messages
4	PGM4	Simulate PGM4 button messages
5	PGM_BAR	Simulate PGM_BAR button messages
6	CUT	Simulate CUT button messages
7	AUTO	Simulate AUTO button messages
8	MUTE	Simulate MUTE button messages
9	FTB	Simulate FTB button messages
10	STILL	Simulate STILL button messages

6. USB3.0 to OBS Instructions

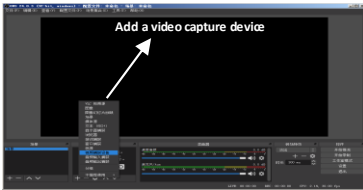
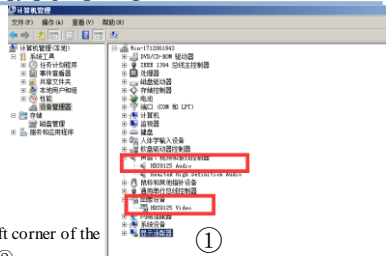
Step 1: Connect the board to WIN7 through the USB3.0 data cable. After the WIN7 terminal recognizes, Device Audio and Device Video will appear in the device list, indicating that the recognition is ok.

As shown in Figure ①. Figure ① Audio and Video nodes in the device manager.

Step 2: Add a video capture device

Open the OBS software, click the "+" in the source box in the lower left corner of the interface, and then click "Video Capture Device", as shown in Figure ②.

After clicking "Video Capture Device", an interface for changing the name will appear, and you can customize the name. As shown in Figure ③



Step 3: Set video capture device properties

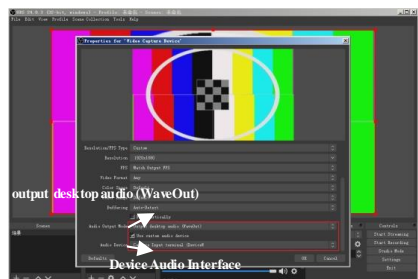
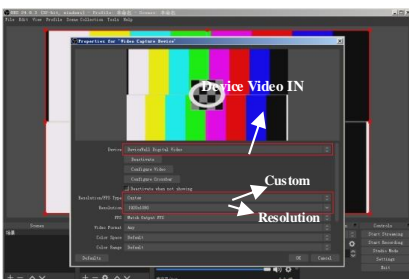
Device selection: Device Video IN;

Resolution/frame rate type selection: custom; resolution: must be selected to be consistent with the PGM output resolution of the switcher. In addition to the resolution, the FPS item also needs to be selected to be consistent with the frame rate of the output resolution. As shown in Figure 4.

②Pull down to set audio properties.

Audio output mode selection: output desktop audio (WaveOut); check to use a custom audio device

Audio device selection: Capture Input terminal (Device Audio), as shown in Figure 5.



Description:

1. The resolution setting needs to be customized to display the video. If there is no image display after setting, you need to set the video format and modify it to MJPEG. (The latest OBS version 25.0.1 can choose H264 in the video format, so the image quality will be improved)
2. Before each use, you need to connect the device to the computer before opening the OBS software, otherwise the OBS software cannot recognize the USB device.

7. Failure and Maintenance

7.1 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 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.

7.2 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.

7.2.1 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.

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