

Users' Manual

5-CH SWITCHER



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.

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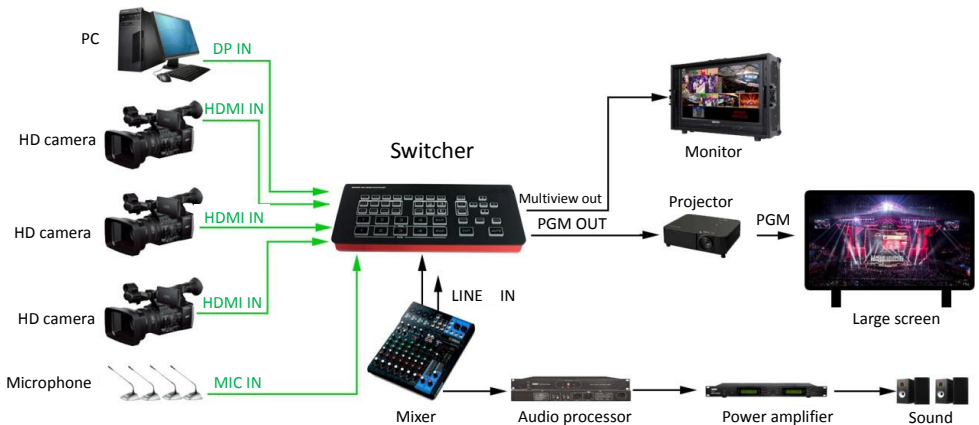
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1. Overview

1.1 Introduction

High-definition video switcher adopts a portable integrated design, metal casing, small size and light weight. Standard size: 236mm * 105mm * 47mm, which can be used for small-scale out-of-field video effects switching requirements. The device integrates multiview processor, special effect generator, audio processor, control keyboard and other common components of the switcher.

Switcher supports 4 HDMI + 1 DP signal inputs, a total of 5 video signals. The external preview signal can be output simultaneously. The switcher supports HDMI embedded audio + external analog audio. After mixed processing, it can be embedded in the output HDMI signal or output from the analog port. The resolution of all input signals is automatically adapted, and the output signal resolution can be selected according to requirements, which is quite flexible. For the needs of video switching such as radio and television, program production, live production of interviews and lectures, outdoor sports events, and school courseware production, the functions of the switcher can be fully met.



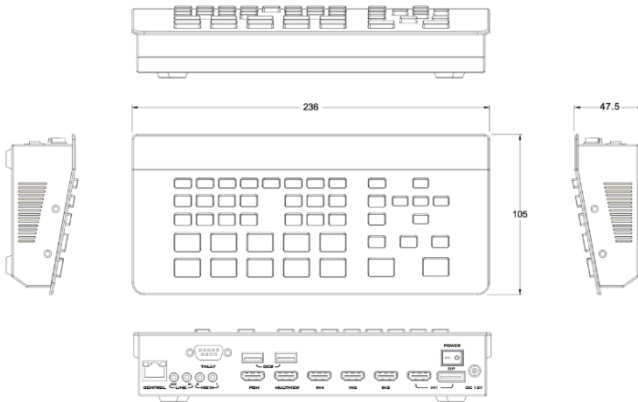
2. Functional characteristics

Switcher five-channel high-definition video switcher is a multi-functional switcher, which requires no professional knowledge and can perform video switching and audio mixing with simple operations. This machine can be used in broadcasting, live broadcasting and various event venues.



- ◆ Portable integrated design
- ◆ Metal body, high strength and light weight
- ◆ Integrated control keyboard
- ◆ Support up to 4 HDMI + 1 DP inputs
- ◆ 2 stereo MIC inputs
- ◆ 1 LINE IN input
- ◆ 1 LINE OUT output
- ◆ Support 1 USB output video stream, clear picture quality
- ◆ Support PC remote control
- ◆ The equipment comes with color bar output screen
- ◆ Support audio follow, mix function
- ◆ Support HDMI audio de-embedding
- ◆ PGM output: 1 HDMI
- ◆ Multiview output: 1 HDMI
- ◆ Support special effects switching such as MIX / FADE
- ◆ Support CUT hard cut, support AUTO special effect switching
- ◆ Support Tally / Network control
- ◆ Support still function
- ◆ Support PIP window function
- ◆ Support vertical menu output, must be used with PM1005, PM1007

2.1 Size



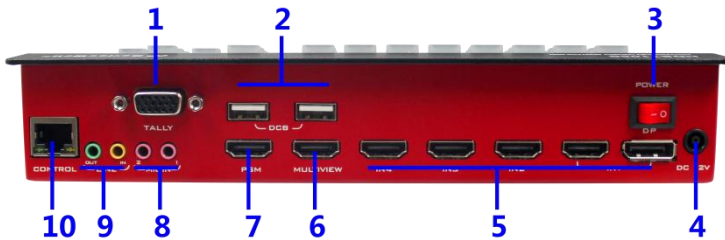
Size:236mm*105mm*47mm



3. Interface Specification

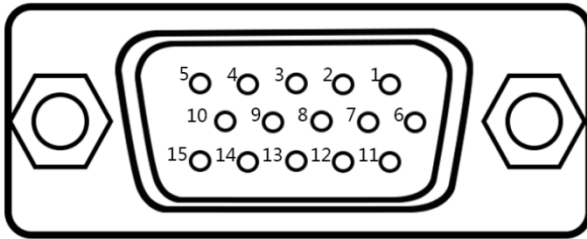
3.1 Interface Introduction

The Switcher interface is shown below.



NO.	Definition	Description
1	TALLY	DB15 pin, external call system
2	DCB	Cascade equipment, supporting TALLY lamp module (reserved)
3	Switch	Power switch button
4	DC 12V	Power Input
5	HDMI IN/DP IN	4 HDMI + 1 DP inputs, The first input can be switched to DP input
6	MULTIVIEW	Multiview output
7	HDMI OUT	1*PGM live output
8	MIC IN	2 stereo MIC inputs
9	LINE IN/OUT	Line audio input and output
10	RJ45	Network upgrade, PC remote control

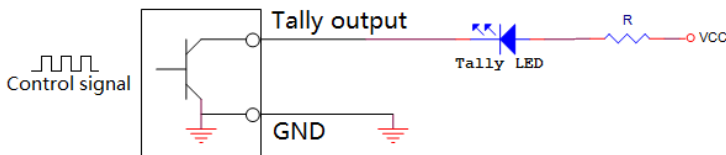
3.2 TALLY Interface



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
5	GND		

Note: PIN1 PIN2 not used.

TALLY Online schematic:



Note: Tally LED: for external display device

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

3.3 parameters

Name	4*HDMI+1*DP Switcher	
Video Signal Input	Input signal	HDMI/DP video signal
	Rate	270Mbps~3Gbps
	Connector	Standard
	Reflection loss	>15dB 5MHz~3GHz
	Signal amplitude	800mV \pm 10%(HDMI)
	Impedance	100 Ω (HDMI)
	Balance	Adaptive
	DVD input HDMI support	480i/576i,480p/576p,720p,1080i,1080p,
	Computer HDMI input support	1920x1080,1680x1050,1600x900,1440x1050,1366x768,1360x768,1360x768,1280x1024,1280x960,1280x800,1280x768,1280x720,1280x600,1152x864,1024x768,800x600,
Video Signal Output	output signal	HDMI video output
	Code rate	270Mbps~3Gbps
	Connector	Standard
	Return Loss	>15dB 5MHz~3GHz
	Signal amplitude	800mV \pm 10%(HDMI)
	impedance	100 Ω (HDMI)
	DC offset	0V \pm 0.5V
	Clock recovery	Support
Control Parameter	Control	9600 baud, 8 bits, 1 stop bit, no parity
	Connection	15-pin D-port, 2-RX, 3-TX, 5-GND
	Network control	RJ45,100M
General Parameter	power supply	12V/DC
	Power rate	18w
	control panel	Support on-site production, integration of a variety of buttons.
	Operating temperature	0℃~50℃, No condensation
	Storage temperature	-20℃~75℃
	Working humidity	20%~70%RH
	Storage humidity	0%~90%RH, No condensation

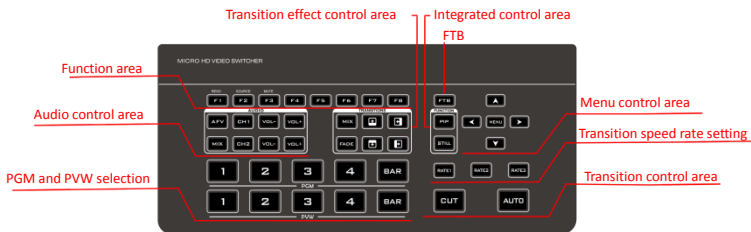
4. Control Panel and Interface

Before using the HD Mini 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	Function area	Currently supports F1/F2/F3 function
2	Audio control area	Mainly set the audio follow-up mix and audio volume control
3	Transition effect control area	Select transition effects
4	Integrated control area	PIP and STILL effects
5	Menu control area	Setting menu information with keys
6	PGM and PVW selection	Program and preview selection
7	Transition control area	Control transition switching and transition rate adjustment

4.1.2 Key Description

4.1.2.1 Function area

- F1---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.

- F2--- Source channel switching control

Press F2 on the keypad to select the input source of the fourth channel. When the HDMI and DP signals are connected to the back interface of the switcher at the same time, you can choose between IN1-HDMI and IN1-DP after pressing F2.

- F3--- Mute one-key mute

Press F3 on the key panel to switch to the mute function, turn off all the audio volume output

4.1.2.2 Audio Control Area

- How to use the audio follow mode:

1. Press the AFV button on the operation panel, the button will light green at this time, and the corresponding multiview menu will also display the current audio status. The Audio Mode in the menu shows Follow, which indicates that the audio is in follow mode; as shown in the figure on the right

(Note: the color of the keys displayed in the picture is different from the actual effect picture.)



STATUS	
CH1	IN1
CH2	RCA_IN
CH1_VOL	44
CH2_VOL	100
Audio Mode	Follow
PGM Out	1080P30

2. The channels of the audio follow mode are IN1、IN2、IN3、IN4 , and the corresponding operation panel keys (the button panel 2 lights up at this time, indicating that Operate the IN2-HDMI2 signal source as shown below.)



3. The volume adjustment of the audio follow mode is controlled by the keys on the operation panel. Pressing the AFV button in the follow mode (green light is displayed) will follow the audio of the PGM live channel by default. At this time, you need to increase or decrease the volume. Next to VOL + (increase volume) and VOL- (decrease volume) to adjust.

Keep clicking the VOL + and VOL- buttons, the corresponding menu section can also display the current volume value.



● How to use mix assignment:

1、 Press the MIX button on the operation panel.
Lights up green as shown on the right

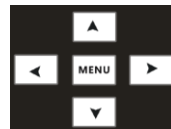


The menu corresponding to the multiview will also display the current audio status. The Audio Mode in the menu displays Mixing, which indicates that the audio is in the mixing assignment mode, as shown in the right figure.

STATUS	
CH1	IN1
CH2	IN2
CH1_VOL	44
CH2_VOL	100
Audio Mode	Mixing
PGM Out	1080P30

2. The mixing assigned channels are IN1、IN2、IN3、IN4、PHONE_IN、MIC_IN1、MIC_IN2. Under the mixing assignment mode, there are two more audio embedding functions; PHONE_IN means 3.5mm stereo audio interface, MIC_IN means 3.5mm microphone audio interface; PGM live output can mix two audio channels at any time, and the volume of the two audio channels can also be adjusted separately.

3. Audio channel adjustment for mixing assignment: It is adjusted through the buttons on the panel, including audio control area and menu control area. As shown below.



You can also press MIX (showing green light) in the key panel, then press the "up and down" buttons of the menu button to enter the audio channel selection, press the "down" button to enter the CH1 channel, click "MENU" to enter the audio source selection, audio The source can be selected from IN1、IN2、IN3、IN4、PHONE_IN、MIC_IN1、MIC_IN, after confirming the selection, press "MENU" to exit; as shown in the right figure, the audio source of the first channel is from IN1-HDMI1 becomes IN4-HDMI4.

The second audio selection operation is the same. As shown in the right figure, the audio source of the second channel has changed from IN2-HDMI2 to MIC_IN1.

Note: When there is a white bar displayed in the menu, you can only exit by pressing the "up" button on the key panel, and you can only operate the operating system menu after exiting

STATUS	
CH1	IN1
CH2	IN2
CH1_VOL	44
CH2_VOL	100
Audio Mode	Mixing
PGM Out	1080P30

STATUS	
CH1	IN4
CH2	MIC_IN1
CH1_VOL	44
CH2_VOL	100
Audio Mode	Mixing
PGM Out	1080P30

4. The volume adjustment of the audio mixing mode is controlled by the buttons on the operation panel; press the MIX button (showing green light) in the mixing mode. At this time, you need to increase or decrease the volume, just operate VOL+ (increase volume) and VOL- (decrease volume) button to adjust.

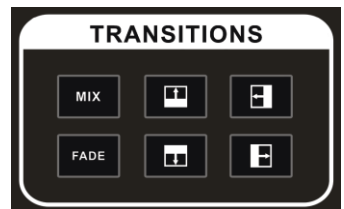
Keep clicking the VOL+ and VOL- buttons, and the corresponding menu part can also display the current volume value.



4.1.2.3 Transition Effect Control Area

There are 3 transition modes:

MIX transitions, FADE, and Wipes, where the Wipes include: up, down, left, and right.



● MIX Transition

MIX special effects are transition effects. After setting the transition, the main output will fade from the original live picture and then transition to the new live picture until it completely disappears.

Click **MIX** in the special effect control area (green light is displayed after pressing), and then click AUTO or CUT to switch. The effect is shown below.



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

● FADE Transition

Click **FADE** in the special effect control area (green light is displayed after pressing), and then click AUTO or CUT to switch, the effect picture is below.

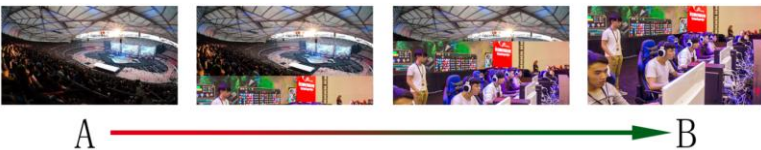


FADE in and fade out effects, A gradually darkens the picture until it is completely black, and then gradually changes from black to B picture.

● Four special effects wipe transitions

There are four types of transition modes in wipe, which are up / down / left / right.

Transition up: Click **Up** in the special effect control area (green light is displayed after pressing), and then click AUTO or CUT to switch. The other three transition operations are the same.



Wipe up the transition effect, the A picture is unchanged, and the B picture is gradually wiped in by the upward direction until the picture completely becomes B

● Transition rate adjustment

When operating the transition effect control area, you can also control the transition rate by operating the RATE1, RATE2, and RATE3 in the keypad (rate1: 640ms; rate2: 1280ms; rate3: 2560ms) Note: Only when using AUTO transition effective.



4.1.2.4 Integrated control area

● PIP picture-in-picture special effects

PIP special effects: Press **PIP** on the control panel (the green light is displayed after pressing), and then click AUTO or CUT to switch. The effect is shown below.



At this time, the information on the LCD screen will be switched to the PIP setting. The control menu key can be set according to requirements, as shown below.

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

PIP size and position

You can use the knob to set the parameters of PIP picture-in-picture, the situation is as follows (the horizontal / vertical position size is based on the smallest display image as an example)

Horizontal position setting: The value from the upper left end to the upper right end is 0-1440, and the value increases / decreases by 10 each time the knob is rotated.

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 each time the knob is rotated.

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

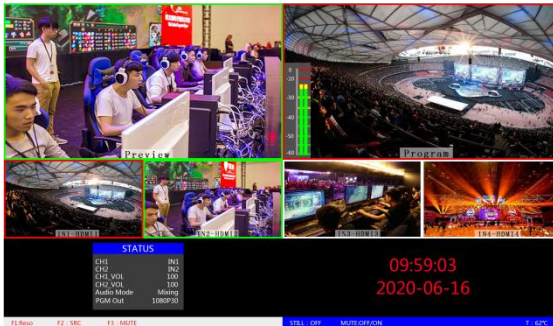
Bezel switch settings: You can choose on / off settings.

Border width setting: The border width can be selected from 2-7 thickness borders, and the value increases / decreases by 1 each time the knob is turned.

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

● STILL screen freeze effects

Screen freeze special effect: Press **STILL** on the control panel (green light is displayed after pressing), and then the output PGM video animation will enter the freeze phenomenon. Press the button again to unfreeze the screen, the effect is shown below.

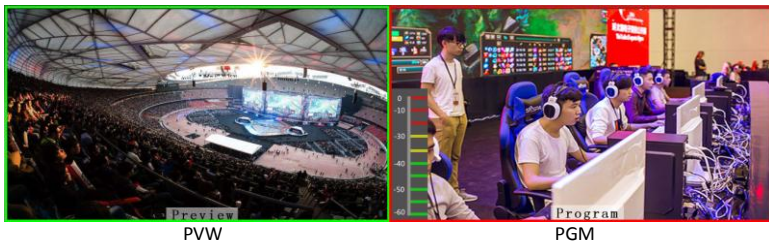


4.1.2.5 PGM and PVW selection

● Multiview output window introduction



Among them Preview and Program are preview and live broadcast output respectively, as shown below.



There are 4 windows below corresponding to the input source monitoring, which correspond to the No. 1 to No. 4 buttons on the switcher control panel.



● PGM and PVW output signals

After the device is connected to the video signal source, press 1 (PGM) and 2 (PVW) in the keypad. The live and preview signal sources in the output multiview monitor are 1 (PGM) and 2 (PVW), respectively. The signal sources are HDMI IN1 and HDMI IN2.

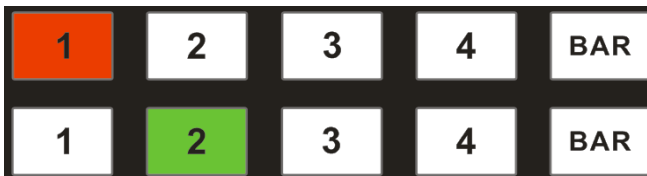
The effect diagram is as follows

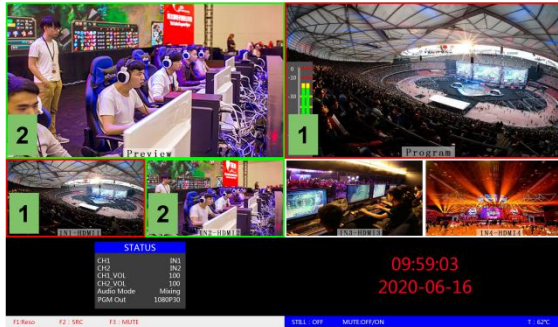


● PGM and PVW source switching

If you want to switch between PGM and PVW video sources in multiview ($PGM \rightleftharpoons PVW$) Suppose you want to convert live signal source 1 (PGM) and preview signal source 2 (PVW) into 2 (PGM) and 1 (PVW) in a multiview. You only need to press 2 (PGM) and 1 (PVW), and then use the CUT or AUTO to switch. The live PGM signal sources 1-4 can be switched arbitrarily with the preview PVW signal source.

The effect diagram is as follows:





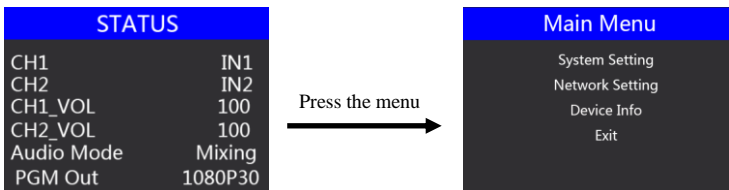
After pressing the BAR button in the button panel, the screen will output color bars

5. System menu settings

- **Menu display**

In the menu bar, you can perform IP settings on the device, restore the factory settings, and change the language.

In the default state of power on, press the menu to enter the main menu, as shown below.

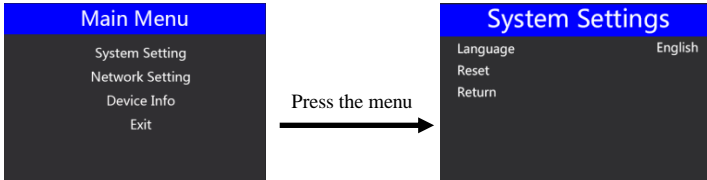


Press MENU under the status bar to set the audio mode and output resolution;

Audio mode; menu to select mix or follow;

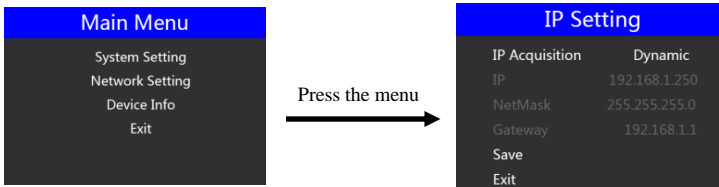
Output resolution: menu can be operated, you can choose 1080p60 / 1080p50 / 1080p30 / 1080p25 / 1080p24 / 1080i50 / 1080i60

- **System settings**



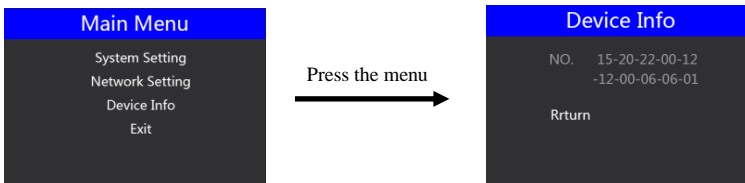
In the system setting menu, you can choose between two languages: Chinese or English; if you encounter an unknown error during use, you can choose to restore the factory Settings, reset.

- **Network settings**



In the network setting menu, you can choose in the IP acquisition: dynamic IP or static IP. After selecting the static IP, you can also set the IP address, subnet mask, and network management settings accordingly, and save and return.

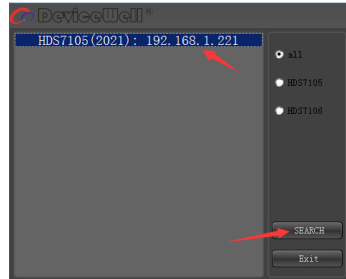
- **Device information**



In the device information menu, you can read the serial number of the device. You cannot modify it here.

6.Switcher software control

The seitcher supports docking software control, software operation panel and switcher key panel are used correspondingly.(The software can be downloaded from Devicewell official website)



(1) Click “SCANNING” to search for the corresponding device, as shown in the figure below:



(1) After searching for the device, you can perform the following operations on the switcher: function area, black field control area, audio control area, transition effect control area, comprehensive control area, PGM and PVW selection area, and transition control area. Settings. As shown below:



● Functional area

F1 --- Resolution control

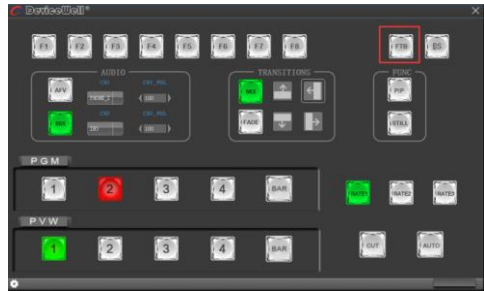
After clicking F1 on the key panel, you can adjust the resolution of the screen output. Each time you press the button, you can adjust the output resolution. The resolution is 1080P60Hz / 1080P50Hz / 1080P30Hz / 1080P25Hz / 1080P24Hz / 1080I60Hz / 1080I50Hz. Select as shown below



- Black field control area

FTB --- Black field control area

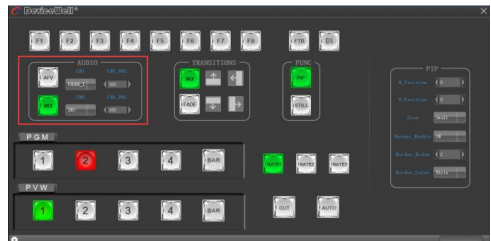
During the live broadcast, if you encounter an unexpected situation, you can press the FTB black button. At this time, the PGM live screen will output a black screen. The FTB in the software control panel will display a red light flashing. Press the FTB again to cancel the black setting. As shown below



- Audio control area (default is AFV follow mode)

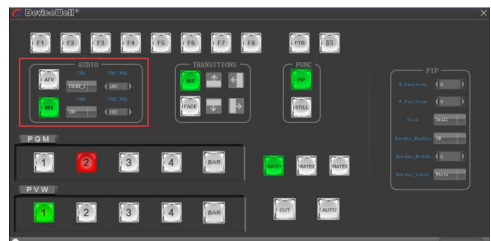
(A) AFV follow mode

Press AFV follow mode (green light is displayed). The channels of audio follow mode are IN1-HDMI1, IN2-HDMI 2, IN3- HDMI3, IN4-HDMI4. By default, it follows the audio of PGM live channel. At this time, you can only adjust the audio volume. Size, you need to increase or decrease the volume. You can set the volume from 0 to 100 through the slider. As shown below



1) MIX mixing mode

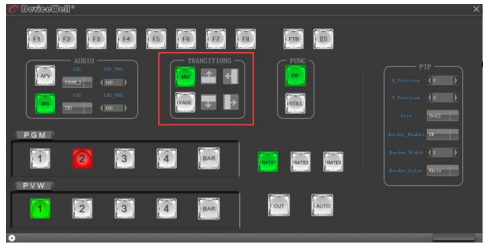
Press the MIX mixing mode (green light is displayed) to support the two-channel mixing mode. The assigned channels for the mix are IN1-HDMI1, IN2-HDMI 2, IN3- HDMI3, IN4- HDMI4, PHONE_IN, MIC_IN1, MIC_IN2, which can be accessed through Press CH1 and CH2 on the control panel to select the audio channel. If you need to increase or decrease the volume, you can set the volume from 0 to 100 through the slider. As shown below



● Transition effect control area

In the transition effect control area, you can press MIX (mixed transition), FADE (fade in and fade out transition) and up, down, left, right, up and down to six special effect transition settings. As shown below

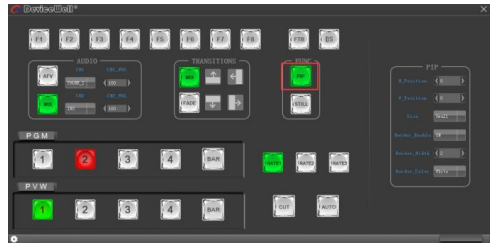
In the transition control area, you can set the transition rate. Press RATE1, RATE2, and RATE3 on the panel to control the transition rate definition. It's effective only when playing.



● Integrated control area

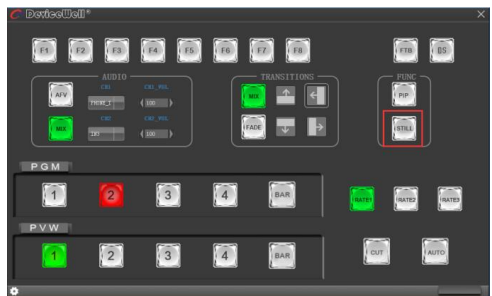
(1) PIP Picture-in-Picture Settings

Press PIP (display green light) in the software control panel to enter picture-in-picture settings. At this time, you can set the horizontal position, vertical position, display size, border switch, border width, and border color of the screen. As shown below



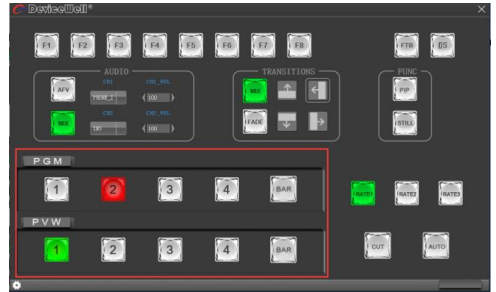
(1) STILL screen freeze setting

Press STILL (display green light) in the software control panel to enter the picture freeze setting. At this time, you can freeze the live output picture. Click STILL again to cancel the freeze effect. As shown below



- PGM and PVW selection area

PGM and PVW are preview output and live broadcast output respectively. You can switch the input source of the console by clicking the buttons 1-4 on the software control panel. Where BAR is the color bar output. As shown below



Note: If the switcher is operated on the device side, the PC-side interface cannot be displayed synchronously. You must click the synchronization button to control the interface to display synchronously:

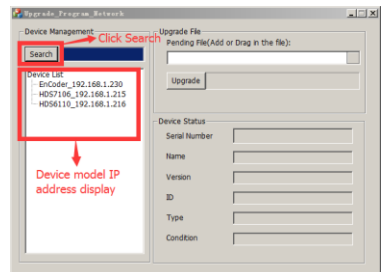


7. Manual for synchronizing local time and upgrading the device

7.1. Upgrade firmware instructions

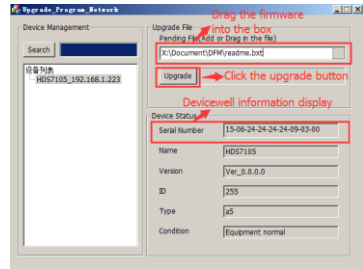
1. Search device

Prepare a network cable, connect the RJ45 interface of the switcher to the LAN, open the upgrade software provided by Zhongdiwei, and click Search Device. The device name and IP address will appear in the following figure;



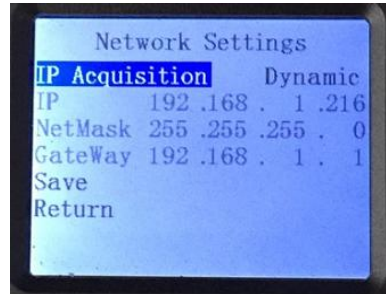
2. Upgrade firmware

Continue the above steps, double-click the device model you want to upgrade in the left device column, drag the firmware provided by Zhongdiwei into the upgrade tool, click the upgrade button, the device will automatically upgrade, and the software will display upgrade after the upgrade is successful Success; as shown in the figure below (note that the device cannot be powered off and unplugged during the upgrade process)



3. What to do if the software cannot find the device

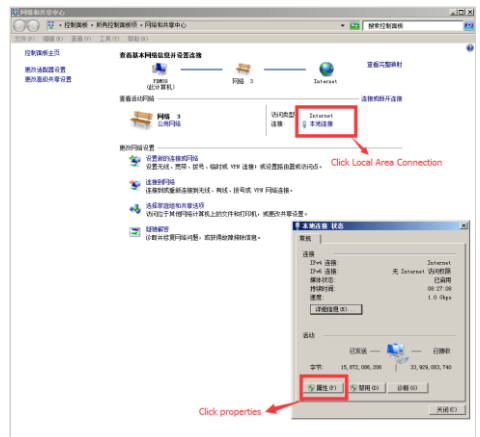
The first method: first check whether the IP settings of the switcher device are set to dynamic IP acquisition (DHCP), and operate the network setting function in the menu through the knob; if the switcher has been set for dynamic IP acquisition, connect the LAN cable of the LAN to the switcher, Your LAN will automatically assign an IP address to the switcher. At this time, you can search for the device again when you search again; as shown below

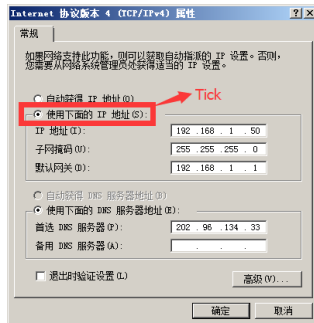
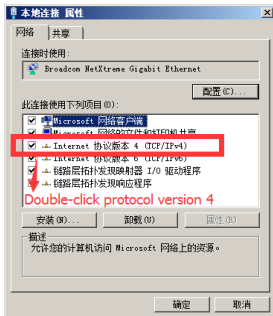


The second method: directly connect the switcher to the computer with a network cable, first set the switcher to the static IP function, and use the knob to operate the network setting function in the menu;

Fix the switcher with an IP address. For example, if the switcher is fixed at 192.168.1.20, the computer must be set to a fixed IP address.

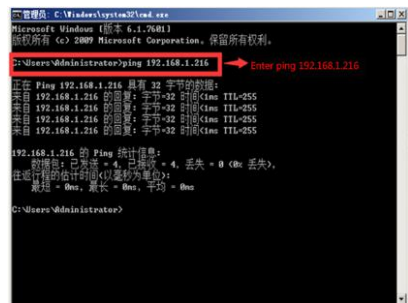
To set the IP address of the computer, open the Network and Sharing Center → click Local Area Connection → click Properties → double-click Internet Protocol Version 4 (TCP IPv4). An IP address setting page will appear. Select the IP address below and manually fill it in IP address 192.168.1.30, manually fill in the subnet mask 255.255.255.0, and finally click OK.





The third method: confirm whether the device IP address is properly connected to the local area network. There is a Windows Start menu in the lower left corner of the desktop of the computer. Click Start and a search box will pop up. Enter cmd and press Enter. A command line will pop up. Is the so-called console, enter the IP address of the device you are searching for, such as ping 192.168.1.20 and press Enter;

(Note that you need to press the space bar after typing ping)



7.2. Synchronize regional time

1.Go to Devicewellofficial website to download the time synchronization software, www.devicewell.com search keyword time synchronization;

2.Double-click to open the time synchronization software



3.Software function introduction, open the software default automatic setting function①

Connect the device to the internet cable and be in the same local area network as the computer. Click Auto Sync, and the computer will automatically synchronize your device time. The red box in the figure is the IP address of your device that is normally connected;

4.Manual setting, if you change the time by yourself, you need to check the manual setting function; after filling in the time you need to set, click manual confirmation; ②



①



②

8. 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

